Cl **00** *SC*   *P*   *L*   # 175
HU, Wendong   STMicroelectronics

Comment Type **TR** *Comment Status* **D**
 Enhance BS to BS Communications by using connection based over-the-air approach.
 Control messages for connection based over-the-air methods are needed.

SuggestedRemedy
 Include the text of the related contribution (from STMicro and Huawei) to the draft standard:
 submitted to January 2007 London meeting.

Proposed Response *Response Status* **O**
 DEFER FOR SUBMISSION OF DOCUMENT

Cl **00** *SC*   *P*   *L*   # 174
HU, Wendong   STMicroelectronics

Comment Type **TR** *Comment Status* **D**
 Enhance spectrum sensing performance and WRAN system performance by using
 Simultaneous Sensing and Data Transmissions.

SuggestedRemedy
 Include the text to the draft standard from the document ""22-07-0017-00-
 0000_STM_Simultaneous_Sensing_Transmission.doc"" contributed by STMicroelectronics.

Proposed Response *Response Status* **W**
 Defer (New Topic)

Cl **00** *SC* **8.2**   *P* **187**   *L* **9**   # 141
Pirat, Patrick   France Telecom

Comment Type **E** *Comment Status* **X**
 Table 231: Spreading factor and Transformation matrix are not defined at this stage of the
 document (optional?).

SuggestedRemedy
 Remove Spreading and Transform matrix columns from the table.

Proposed Response *Response Status* **O**

Cl **00** *SC* **8.4**   *P*   *L*   # 143
Pirat, Patrick   France Telecom

Comment Type **ER** *Comment Status* **X**
 The values of the number of sub-channels, size of the sub-channels, pilots should be
 updated to fit the OFDMA parameters.

 The same for the location of the pilots.

SuggestedRemedy
 Draft this section without figures and specify the values of the parmeters when agreed.

Proposed Response *Response Status* **O**

Cl **00** *SC* **Nil**   *P* **Nil**   *L* **0**   # 61
Chang, Soo-Young   Huawei Technologies

Comment Type **TR** *Comment Status* **D**
 In the proposal ""Connection Based Over-the-air Inter Base Station Communications""
 (IEEE802.22-06/0111r1), there is no MAC management message design to support the
 methodology.

SuggestedRemedy
 Four MAC management messages, namely Base Station Switch Request, Base Station
 Switch Response, Base Station Switch Report, and Base Station Switch Acknowledgement,
 are designed to facilitate the reliable Inter-BS communication.

Proposed Response *Response Status* **O**
 Defer (Yellow)

Cl **01** *SC* **1.3**   *P* **1**   *L* **17**   # 371
Vlantis, George   STMicroelectronics

Comment Type **ER** *Comment Status* **X**
 Subclause 1.3 ""Reference Model"" is blank.

SuggestedRemedy
 Minimally, a reference to Gerald's model should be given. The model should have a
 permanent location on the ieee802.org/22 website.

Proposed Response *Response Status* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **01**
SC **1.3**

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Cl **02**   *SC* **2**   *P* **2**   *L* **9**   # |1

Chouinard, Gerald   Communications Rese

Comment Type **E**   *Comment Status* **X**

Line 9: Document number missing.

Line 12: refer to the latest revision

SuggestedRemedy

Line 9: 22-05-0007-46-0001_RAN_Requirements.doc

Line 12: Delete r12

Proposed Response   *Response Status* **O**

Cl **03**   *SC* **3**   *P* **3**   *L* **10**   # |2

Chouinard, Gerald   Communications Rese

Comment Type **ER**   *Comment Status* **X**

Correction and improvement to definitions.

SuggestedRemedy

3.6 Downstream: The direction of the transmission from the BS to a CPE.

3.9 Downstream map (DS-MAP): A MAC message from the BS that defines burst start time, burst length and sub-channel usage allocations for the CPEs in the orthogonal frequency division multiplex (OFDM) of the downstream.

3.10 Frame: Comprised of one Downstream (DS) and one Upstream (US) Subframes, by which BS and CPEs communicate with each other.

3.12 MAC PDU: The smallest unit of transmission/reception by the MAC. It is comprised of the MAC header, the payload, and Cyclic Redundancy Check (CRC).

3.13 Security association (SA): The set of security information a base station (BS) and one or more of its CPEs share in order to support secure communications. This shared information includes traffic encryption keys (TEKs) and cipher block chaining (CBC) initialization vectors.

3.14 Security association identifier (SAID): An identifier shared between the base station (BS) and a CPE that uniquely identifies a security association (SA).

3.15 Self-Coexistence: Coexistence between wireless systems of the same type. In the case of 802.22, this means coexistence of multiple overlapping 802.22 cells using the same TV channel.

3.16 Subframe: Formed by a number of bursts to be sent in the same transmission direction.

3.17 Superframe: Group of 16 frames signalled by the transmission from the BS of preambles for synchronization and channel training and the Superframe Control Header (SCH).

3.19 Orthogonal frequency division multiple access (OFDMA) burst: A contiguous portion of a OFDMA data stream using PHY parameters, determined by the Upstream Interval Usage Code (UIUC), that remain constant for the duration of the burst.

3.20 Orthogonal frequency division multiplexing (OFDM) burst: A contiguous portion of a OFDM data stream using PHY parameters, determined by the Downstream Interval Usage Code (DIUC), that remain constant for the duration of the burst.

3.22 TV channel: Refers to a specific physical TV Channel as defined by TV broadcast communication standards (see ITU-R Recommendation xxx).

3.23 Upstream: The direction of the transmission from a CPE to the BS.

3.24 Upstream channel descriptor (UCD): A medium access control message that describes

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **03**
SC **3**

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the PHY characteristics of an upstream channel.

3.25 Upstream interval usage code (UIUC): An interval usage code specific to an upstream. See also: interval usage code.

3.26 Upstream map (US-MAP):A MAC message from the BS that defines burst start time, burst length and sub-channel usage allocations in the orthogonal frequency division multiple access (OFDMA) upstream subframe for the CPEs to access the network.

Proposed Response   *Response Status* **O**

Cl **03**   *SC* **3.13**   *P* **3**   *L* **24**   *#* 375
Vlantis, George   STMicroelectronics

Comment Type   **E**   *Comment Status* **X**
Definition of ""Security Association"": ""subscriber station"" not defined in the Definitions, although CPE is.

SuggestedRemedy
Either define ""subscriber station"" as a CPE or substitute CPE here.

Proposed Response   *Response Status* **O**

Cl **03**   *SC* **3.26**   *P* **4**   *L* **11**   *#* 376
Vlantis, George   STMicroelectronics

Comment Type   **E**   *Comment Status* **X**
Definition of ""US-Map"": replace ""for a scheduling interval"" with ""for an upstream scheduling interval"". ""upstream"" is missing.

SuggestedRemedy
Replace ""for a scheduling interval"" with ""for an upstream scheduling interval"".

Proposed Response   *Response Status* **O**

Cl **03**   *SC* **3.3**   *P* **3**   *L* **1**   *#* 372
Vlantis, George   STMicroelectronics

Comment Type   **E**   *Comment Status* **X**
Definition of ""Cell"": Change ""A 802.22 cell..."" to ""An 802.22 cell...""

SuggestedRemedy
Change ""A 802.22 cell..."" to ""An 802.22 cell...""

Proposed Response   *Response Status* **O**

Cl **03**   *SC* **3.5**   *P* **3**   *L* **8**   *#* 373
Vlantis, George   STMicroelectronics

Comment Type   **E**   *Comment Status* **X**
Definition of ""CPE"": Change spelling of ""premise"" to ""premises"".

SuggestedRemedy
Change spelling of ""premise"" to ""premises"".

Proposed Response   *Response Status* **O**

Cl **03**   *SC* **3.9**   *P* **3**   *L* **15**   *#* 374
Vlantis, George   STMicroelectronics

Comment Type   **E**   *Comment Status* **X**
Definition of ""DS-Map"" is incorrect. The map specifies the burst start times by the BS for the various CPEs on the downstream.

SuggestedRemedy
Correct the definition of ""DS-Map"".

Proposed Response   *Response Status* **O**

Cl **04**   *SC* **4**   *P* **4**   *L* **13**   *#* 3
Chouinard, Gerald   Communications Rese

Comment Type   **ER**   *Comment Status* **X**
AAS relates to an optional feature to be discussed later.

Missing acronyms.

SuggestedRemedy
Delete AAS from the list for the time being.

Add DCD and UCD.

Proposed Response   *Response Status* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

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Cl **04**   *SC* **4**   *P* **4**   *L* **13**   # 377
Vlantis, George   STMicroelectronics

Comment Type **E**   *Comment Status* **X**
Abbreviations and Acronyms: ""QPSK"" and ""QAM"" defined, but not ""BPSK"".

SuggestedRemedy
Add definition of ""BPSK"" as ""Binary Phase-Shift Keying"".

Proposed Response   *Response Status* **O**

Cl **04**   *SC* **4**   *P* **6**   *L* **0**   # 378
Vlantis, George   STMicroelectronics

Comment Type **E**   *Comment Status* **X**
""WirelessRAN"" defined to be ""Wireless RAN"". Redundant, and ""WirelessRAN"" is only
used once in the document.

SuggestedRemedy
Delete the definition of ""WirelessRAN"". Replace the one instance of ""WirelessRAN"" on
page ii to ""WRAN"".

Proposed Response   *Response Status* **O**

Cl **05**   *SC* **5**   *P* **6**   *L* **1**   # 379
Vlantis, George   STMicroelectronics

Comment Type **T**   *Comment Status* **A**
""Packet Convergence Sublayer"" clause is blank.   Either put a reference, to 802.16 for
example, or delete this clause.

SuggestedRemedy
""Packet Convergence Sublayer"" clause is blank.   Either put a reference, to 802.16 for
example, or delete this clause.

Response   *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

If needed create normative text, if not needed remove. Consider use/modification of the IP
convergence sublayer from 802.16.

Cl **05**   *SC* **5**   *P* **6**   *L* **1**   # 108
Cordeiro, Carlos   Philips

Comment Type **TR**   *Comment Status* **A**
Do we need this?

SuggestedRemedy
Discuss within the WG the need or not for a convergence sublayer, and write/remove this
section accordingly.

Response   *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

If needed create normative text, if not needed remove. Consider use/modification of the IP
convergence sublayer from 802.16.

Cl **06**   *SC* **6**   *P* **6**   *L* **5**   # 380
Vlantis, George   STMicroelectronics

Comment Type **E**   *Comment Status* **D**
In this specification the ""MAC"" and ""CMAC"" are one and the same. The ""CMAC""
acronym also has two meanings. Eliminate the ""CMAC"" acronym, unless there is some
distinction between it and the 802.22 MAC.

SuggestedRemedy
Eliminate the usage of CMAC. Substitute ""the MAC"".

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT.

Editor to carefully review because CMAC has two meanings/usages in the document.

Cl **06**   *SC* **6**   *P* **6**   *L* **6**   # 381
Vlantis, George   STMicroelectronics

Comment Type **E**   *Comment Status* **D**
The sentence beginning with ""CMAC is built..."" is not normative nor informative, and is
possibly argumentative. It does not belong in a specification.

SuggestedRemedy
Delete the sentence.

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line   *Cl* **06**   Page 4 of 76
                                                                                                                             SC **6**   1/27/2007 9:02:51

Cl **06**   *SC* **6**   *P* **6**   *L* **9**   # 382

Vlantis, George   STMicroelectronics

Comment Type **E**   *Comment Status* **D**

Specifications don't have goals in mind. Replace the first part of this sentence ""With this major coexiestence design goal in mind, CMAC..."" with ""CMAC...""

SuggestedRemedy

Replace the first part of this sentence ""With this major coexiestence design goal in mind, CMAC..."" with ""The MAC.""

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **06**   *SC* **6**   *P* **6**   *L* **10**   # 4

Chouinard, Gerald   Communications Rese

Comment Type **ER**   *Comment Status* **X**

Indicate TV band incumbents.

Change TDM and TDMA for OFDM and OFDMA.

SuggestedRemedy

Line 10: ""and protection of TV bands incumbent services, as well as for self-coexistence.""

Line 12: ""CMAC regulates downstream medium access by OFDM [frequency and time division multiplex], while the upstream is managed by using a DAMA OFDMA [frequency and time division multiple access] system.""

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6**   *P* **6**   *L* **14**   # 383

Vlantis, George   STMicroelectronics

Comment Type **E**   *Comment Status* **X**

Insert a comma between the words ""cell"" and ""and"". In this way, it is clear that the ""and"" is separating two independent clauses, rather than two objects of the prepositional phrase (i.e. withing it 802.22 cell and associated CPES).

SuggestedRemedy

nsert a comma between the words ""cell"" and ""and"".

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.1**   *P* **6**   *L* **18**   # 5

Chouinard, Gerald   Communications Rese

Comment Type **ER**   *Comment Status* **X**

Change TDM and TDMA into OFDM and OFDMA.

Change user for CPE.

SuggestedRemedy

Line 18: ""downstream direction (from BS to CPEs) is regulated by OFDM and typically broadcast, while CPEs will listen only to those messages addressed to them. The upstream direction (from CPEs to BS) is shared by CPEs on a demand basis, according to a DAMA OFDMA scheme. Depending on the class of service utilized, the CPE may be issued continuing rights to transmit, or the right to transmit may be granted by the BS after receipt of a request from the CPE.""

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.1.1**   *P* **7**   *L* **15**   # 384

Vlantis, George   STMicroelectronics

Comment Type **E**   *Comment Status* **X**

The paragraph is unnecessarily clumsy. Replace it with: ""A suitable reference architecture for 802.22 WRANs, based on cognitive radios, must be flexible and efficient. The adopted reference architecture model, depicted in Figure 1, satisfies these requirements. The MAC natively supports IP, but other CSs may be included in cases where more than one network technology needs to be supported.""

SuggestedRemedy

Replace the first 2 sentences with the text in the Comment.

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.1.1**   *P* **7**   *L* **21**   # 6

Chouinard, Gerald   Communications Rese

Comment Type **ER**   *Comment Status* **X**

Channel bonding and aggregation are to be discussed later and should not appear in the first draft. See Annexes.

SuggestedRemedy

Line 21: The unique and distinctive characteristic of this architecture is that it is scalable and so its capacity can be expanded over time, as the need arises. Hence, it is can be comprised of one or more PHY/MAC air interface module and a new entity called Spectrum Manager (SM). This is supported by the architecture as shown in Figure 1.

Proposed Response   *Response Status* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied   Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.1.1**

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Cl **06**   *SC* **6.1.1**   *P* **7**   *L* **23**   # 385
Vlantis, George   STMicroelectronics

Comment Type **E**   *Comment Status* **X**
Grammatically, ""module"" should be ""modules"". ""new"" won't be new for very long. Maybe ""unique"" is a better word.

SuggestedRemedy
Replace ""module and a new entity..."" with ""modules and a unique entity...""

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.1.1**   *P* **7**   *L* **23**   # 507
Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **A**
""...need arises. Hence, it is comprised of one or more PHY/MAC air interface module and a new entity called Spectrum Manager (SM).""

The spectrum manager does not get much technical description in this section. It may be outside the scope of the standard, but if it has a ""key role"", it should be described in more detail somewhere, perhaps an annex.

SuggestedRemedy
""...need arises. Hence, it is comprised of one or more PHY/MAC air interface modules and a new entity called a Spectrum Manager (SM).""

Response   *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

Need to create a section on the spectrum manager function.

Rewrite section to define mandatory single channel system and optional channel bonding/aggregation.

Cl **06**   *SC* **6.1.1**   *P* **7**   *L* **24**   # 386
Vlantis, George   STMicroelectronics

Comment Type **E**   *Comment Status* **X**
Grammar: insert the word ""the"" before the word ""frequency"".

SuggestedRemedy
Replace ""in frequency domain"" with ""in the frequency domain"".

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.1.1**   *P* **7**   *L* **34**   # 7
Chouinard, Gerald   Communications Rese

Comment Type **ER**   *Comment Status* **X**
Channel bonding and aggregation are to be discussed later and should not appear in the first draft. See Annexes.

SuggestedRemedy
Line 24: ""The SM has a key role in the overall architecture as it allows the system to take advantage of multiple channels while keeping the simplicity of CMAC (and also of the PHY) and allowing the system to scale (and also evolve) over time. In other words, the SM allows for an effective multiple channel mechanism to be implemented.

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.1.1**   *P* **7**   *L* **37**   # 387
Vlantis, George   STMicroelectronics

Comment Type **E**   *Comment Status* **X**
Since the reference (subclause 1.3) is blank, the location of SM is indefinitely specified, and the sentence beginning ""It is the entity..."" is a little clumsy, I suggest replacing the beginning of the sentnce with sentence with: ""SM is responsible for maintaining an updated global view...""

SuggestedRemedy
Rewrite the sentence in the Comment as specified.

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.1.1**   *P* **8**   *L* **1**   # 388
Vlantis, George   STMicroelectronics

Comment Type **T**   *Comment Status* **A**
In the parentheses, it is mentioned that disjoint channels are only assigned when the antennas are not directional, but no explanation is given why.

SuggestedRemedy
Provide the reason(s) why disjoint channels cannot be allocated if directional antennas are used.

Response   *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

Delete the parenthetical text about directional antennas.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.1.1**

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Cl **06**   *SC* **6.1.1**   *P* **8**   *L* **8**   *#* 8

Chouinard, Gerald   Communications Rese

Comment Type **ER**   *Comment Status* **X**

Channel bonding and aggregation are to be discussed later and should not appear in the first draft. See Annexes.

SuggestedRemedy

A simplified version of Figure 2 should be included here to avoid referring to channel bonding and aggregation. This figure should be transferred to the annex on channel bonding.

The title of the figure should read: Figure 2 - Illustrative diagram of spectrum allocations. Proper frequency separation is enforced in order to protect incumbent services.

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.10**   *P* **102**   *L* **30**   *#* 55

Chang, Soo-Young   Huawei Technologies

Comment Type **TR**   *Comment Status* **D**

It is meaningful to introduce HARQ to IEEE 802.22 according to its existing frame structure and coding scheme, since it provides an efficient way to improve system error performance. However, unlike 802.16, the HARQ for 802.22 should be able to provide robust link performance in the presence of interference due to the 802.22 operations.

SuggestedRemedy

On the top of conventional HARQ design, we propose adaptive frequency interleaver (based on soft HARQ) on the retransmission packets such that frequency diversity can be explored while maintaining simple chase-combining at the receiver. Refer to 22-07-0039-00-0000_Huawei_HARQ_Adaptive_Freq_Spreading_Updated which will be posted in the Jan. meeting document area for details.

Proposed Response   *Response Status* **O**

Defer (new topic)

Cl **06**   *SC* **6.10**   *P* **102**   *L* **32**   *#* 350

Vlantis, George   STMicroelectronics

Comment Type **ER**   *Comment Status* **X**

ARQ Mechanism refers to ""xxx"" clause of 802.16.

SuggestedRemedy

Add the reference, if references to 802.16 are OK (and I believe that a reference is OK in this case). If not allowed, insert the specification.

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.11**   *P* **102**   *L*   *#* 56

Chang, Soo-Young   Huawei Technologies

Comment Type **TR**   *Comment Status* **D**

This comment relates to the current downstream CSIT collection mechanism at the base station for efficient cross-layer scheduling. It is a mandatory requirement in WRAN to maintain QoS requirement (e.g. average delay) for various service flows (namely UGS, rtPS, nrtPS, BE). In order to maintain delay performance while at the same time, exploit cross-layer multiuser diversity gain, it is important for the BS to have both the downstream CSIT (channel state information) as well as QSI (queue state information) for efficient scheduling (delay-sensitive cross-layer scheduling). However, there is no existing mechanism described in the draft on how the WRAN BS can collect the downstream CSIT from all active CPEs. Moreover, brute-force approach of downstream CSIT collection is very expensive in terms of signaling / feedback overhead because the CSI of all subchannels (even those not assigned to the CPE) from all active CPE are required for efficient cross-layer scheduling.

SuggestedRemedy

We propose a low-overhead polling / event-driven downstream CSIT collection mechanism to enable delay-sensitive cross-layer scheduling of various service flows at the base station with small feedback overhead. Refer to 22-07-0037-00-0000_Huawei_event-driven_DS_CSIT_collection which will be posted in the Jan. meeting document area for details.

Proposed Response   *Response Status* **O**

Defer (New Topic)

Cl **06**   *SC* **6.11.1**   *P* **103**   *L* **36**   *#* 186

HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**

Traffic constaints of CBP is not sufficiently an efficient and fair method of WRAN systems coexistence.

SuggestedRemedy

Consider other coexistence methods such as on-demand spectrum contention and credit token renting protocol that address fairness and efficiency issues for ""interference free"" scheduling and coexistence.
Proposed normative text provided in document 22-06-0229-00-0000.

Proposed Response   *Response Status* **O**

Defer (salmon)

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.11.1**

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Cl **06**   *SC* **6.13.1**   *P* **109**   *L* **6**   # 508
Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **D**
""FDD is also supported.""

Most effort seems to be focused on TDD. Are we really still supporting FDD?

SuggestedRemedy

Proposed Response   *Response Status* **O**
Defer (yellow), pending normative text for annex.

Cl **06**   *SC* **6.13.1**   *P* **109**   *L* **6**   # 106
Cordeiro, Carlos   Philips

Comment Type **TR**   *Comment Status* **D**
Currently, the spec is only defined for TDD (e.g., frame, control messages, etc.). There are no details or support for FDD.

SuggestedRemedy
WG needs to decide whether FDD is going to be supported or not. If so, much work has to be done as to accomodate this duplexing scheme. If not, we need to clean up the text.

Proposed Response   *Response Status* **O**
Defer (yellow), pending normative text for annex.

Cl **06**   *SC* **6.13.5**   *P* **111**   *L* **1**   # 137
Mazzarese, David   Samsung

Comment Type **TR**   *Comment Status* **D**
Revisions are required to the method that determines the maximum allowed transmitted EIRP for one WRAN device, taking in account TV operations in nearby TV channels in the vicinity of the WRAN device, which is described in Section 6.13.5 of 22-06-0259-00-0000_v0.2_with_line_numbers.doc. FRD 195 and FRD 168 in 22-06-0138-05-0000-Compliance_with_FRD.doc mandate a limit on maximum transmitted EIRP on channels adjacent to a TV channel operation when the CPE or the BS is located inside the TV protected contour, and co-channel when the CPE or the BS is located at some distance of the TV protected contour. Section 6.13.5 requires updating based firstly on the most recent calculations on required separation distances to meet the D/U ratios at the TV protected contour, and secondly on a more accurate description of the decision process (flowchart and tables) and language suitable to describe requirements in technical specifications. Changes are also required to precisely identify mandatory and optional features of TPC for maximum transmitted EIRP.

SuggestedRemedy
The proposed text changes are presented in section 2.0 of document 22-06-0219-01-0000_Proposed_text_changes_to_P802-22_D0.1_Final_Section_6_13_5.doc. Sub-sections 6.13.5.1 and 6.13.5.2 are submitted as a replacement of section 6.13.5 in 22-06-0259-00-0000_v0.2_with_line_numbers.

Proposed Response   *Response Status* **W**
Defer (green) pending PHY review of document 22-06-0219-01-0000_Proposed_text_changes_to_P802-22_D0.1_Final_Section_6_13_5.doc.

Cl **06**   *SC* **6.13.5.1**   *P* **111**   *L* **27**   # 30
Chouinard, Gerald   Communications Rese

Comment Type **TR**   *Comment Status* **D**
Section still need further system work.

SuggestedRemedy
Update text with the latest findings from the discussions.

Proposed Response   *Response Status* **O**
Defer pending discussions of 22-06-0219-01-0000

Cl **06**   *SC* **6.13.5.2**   *P* **111**   *L* **35**   # 351
Vlantis, George   STMicroelectronics

Comment Type **ER**   *Comment Status* **X**
Reference to ""xxx"".

SuggestedRemedy
Fix the reference on Line 35 of page 111.

Proposed Response   *Response Status* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.13.5.2**

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Cl **06**   *SC* **6.13.5.2**   *P* **112**   *L* **2**   # 352
Vlantis, George   STMicroelectronics

Comment Type   **ER**   *Comment Status*   **X**
    Reference to ""xxx"".

SuggestedRemedy
    Fix the reference in Line 2 of Page 112.

Proposed Response   *Response Status*   **O**

Cl **06**   *SC* **6.13.5.2**   *P* **112**   *L* **16**   # 343
Vlantis, George   STMicroelectronics

Comment Type   **ER**   *Comment Status*   **X**
    Equation in the box in the flow chart of Figure 19, that gives the instruction ""Limit max
    transmit power as a function of distance"", is unintelligible. Equation Editor hiccup with
    matrices. The caption for Figure 19 is chopped on the left.

SuggestedRemedy
    Fix the equation in the ""Limit max transmit power..."" box in the flow chart of Figure 19. Fix
    the caption of Figure 19, as well.

Proposed Response   *Response Status*   **O**

Cl **06**   *SC* **6.13.5.2**   *P* **113**   *L* **9**   # 509
Kuffner, Stephen   Motorola

Comment Type   **T**   *Comment Status*   **D**
    ""If the CPE is only using 1.5 MHz, then its maximum transmit power can be increased by
    times (up to 4W EIRP). ""

    The number of times the transmit power can be increased is missing. Also, it is not clear
    why the CPE can transmit higher power if using narrower bandwidth (1.5 MHz).

SuggestedRemedy
    Fill in the number of times and give some explanation as to why a CPE can scale up to
    higher power if using less bandwidth.

Proposed Response   *Response Status*   **O**
    Defer

Cl **06**   *SC* **6.15**   *P* **115**   *L* **40**   # 97
Cordeiro, Carlos   Philips

Comment Type   **TR**   *Comment Status*   **A**
    There are a number of subclauses in this section that have not been included. This section
    is incomplete.

SuggestedRemedy
    Use the 802.16 spec as a starting point and update this section with all the needed
    subclauses.

Response   *Response Status*   **W**
    PROPOSED ACCEPT IN PRINCIPLE.

    Adapt material from corresponding 802.16 section on Network Entry and Initialization,
    starting from 6.15.5 onward.

    Assigned to Carlos Cordeiro.

Cl **06**   *SC* **6.15**   *P* **115**   *L* **41**   # 68
Chang, Soo-Young   Huawei Technologies

Comment Type   **TR**   *Comment Status*   **D**
    Before a CPE can be served by a BS, it needs to enter the network and negotiate its
    capabilities with the BS. This may involve many tasks (e.g., sensing channels) and frame
    exchanges between the CPE and the BS. This whole procedure is hereby referred to as
    network entry and initialization. More importantly, during this procedure the CPE needs to
    ensure that before it transmits to the BS for the first time, its communication will not cause
    harmful interference with incumbents. In other words, the network entry and initialization
    procedure has to be designed to be what is hereby referred to as incumbent safe, which
    essentially means that incumbent system protection shall be guaranteed.

SuggestedRemedy
    More details and related solutions can be referred to ""22-06-0126-01-
    0000_Huawei_Network_Entry_and_Initialization"".

Proposed Response   *Response Status*   **O**
    Defer (salmon)

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied   Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.15**

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Cl **06**   *SC* **6.15**   *P* **116**   *L* **9**   # 188
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **A**

Figure 20 and the associated text have no consideration with respect to the Keep-out Region of either BS or CPE to the DTV protection contour.

SuggestedRemedy

Modify Figure 20 and revise the associated text to illustrate and explain the need for a keepout region extending beyond the protected contour.

Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **06**   *SC* **6.15**   *P* **116**   *L* **22**   # 187
HU, Wendong   STMicroelectronics

Comment Type   **ER**   *Comment Status* **X**

SCH is designed for the optional channel bonding, hence not appropriate for the mandatory single channel case.

SuggestedRemedy

Specify that super frame control header (SCH) is optional or re-designed SCH for single channel operations.

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.15**   *P* **118**   *L*   # 265
Caldwell, Winston   Fox

Comment Type   **TR**   *Comment Status* **A**

A section should be added detailing the Perform Key Exchange block referred to in Figure 21.

SuggestedRemedy

Add section.

Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Adapt material from corresponding 802.16 section on Network Entry and Initialization, starting from 6.15.5 onward.

Assigned to Carlos Cordeiro.

Cl **06**   *SC* **6.15**   *P* **118**   *L*   # 267
Caldwell, Winston   Fox

Comment Type   **TR**   *Comment Status* **A**

A section needs to be added detailing the Set up Connections block referred to in Figure 21.

SuggestedRemedy

Add section.

Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Adapt material from corresponding 802.16 section on Network Entry and Initialization, starting from 6.15.5 onward.

Assigned to Carlos Cordeiro.

Cl **06**   *SC* **6.15**   *P* **118**   *L*   # 266
Caldwell, Winston   Fox

Comment Type   **TR**   *Comment Status* **X**

A section needs to be added detailing the Perform Registration block referred to in Figure 23.

SuggestedRemedy

Add section.

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.15**   *P* **118**   *L*   # 264
Caldwell, Winston   Fox

Comment Type   **TR**   *Comment Status* **A**

A section detailing the Authorize CPE block referred to in Figure 21 should be added.

SuggestedRemedy

Add section.

Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Adapt material from corresponding 802.16 section on Network Entry and Initialization, starting from 6.15.5 onward.

Assigned to Carlos Cordeiro.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied   Z/withdrawn
SORT ORDER: Clause, Subclause, page, line   *Cl* **06**   Page 10 of 76
                                                                                                              SC **6.15**   1/27/2007 9:02:51

Cl **06**   *SC* **6.15**   *P* **115**   *L* **40**   **#** 263

Caldwell, Winston   Fox

Comment Type   **TR**   *Comment Status*   **D**

Need a new Section in the Draft describing Network Prohibition and Exit Procedures (like Nework Access and Initialization) in a problematic event, such as an incumbent signal is detected or the CPE has moved.

SuggestedRemedy

Add section.

Proposed Response   *Response Status*   **W**

Defer (green) new topic
Need contribution

Cl **06**   *SC* **6.15.1**   *P* **117**   *L* **10**   **#** 57

Chang, Soo-Young   Huawei Technologies

Comment Type   **TR**   *Comment Status*   **D**

This comment relates to the BS initialization procedure. The current initialization procedure may cause severe interference to the incumbent users due to the following drawbacks.
1.   The BS can only select the operating channel based on the sensing result of its own since the CPEs cannot report their sensing results to the BS before initialization. As referred to the function requirement version 48, the channel entry time for a CPE is within 10 seconds, while the permitted channel move time is 2 seconds. In other words, in the worst case the BS should wait for 10 seconds before receiving channel measurement reports from its CPEs, however, the maximum tolerance time for interfering incumbent users is 2 seconds. Therefore, before the CPEs are able to report, the incumbent users may be interfered illegally.
2.   Hidden incumbent problem. The CPEs harmfully interfered by the incumbent users may not be able to enter the network. Even when the initialization is finished, the CPEs that are harmfully interfered by the incumbent users may not be able to synchronize with the BS. Hence, they still can not report the BS about the incumbent users.

SuggestedRemedy

The BS increases the power gradually in the initialization procedure. In particular, it starts the initialization procedure in a small region with small power. If no incumbent users are found, it increases the power and operates the initialization procedure in a larger region, so on and so forth. Refer to 22-07-0047-00-0000-Huawei_Incumbent_Protecting_Initialization which will be posted in the Jan. meeting document area for details.

Proposed Response   *Response Status*   **O**

Defer (New Topic)

Cl **06**   *SC* **6.15.1**   *P* **117**   *L* **14**   **#** 510

Kuffner, Stephen   Motorola

Comment Type   **T**   *Comment Status*   **D**

""The WRAN BS starts by consulting the TV usage database and the regional WRAN information base to find potentially empty channels. To ensure these channels are indeed empty, it performs sensing to find one or more empty channels. The WRAN BS begins its service on channels found vacant.""

""Empty"" should be defined. A WRAN shouldn't be constrained to operate only on absolutely empty channels. WRANs may operate on channels occupied by licensed incumbents provided they are outside of the interference range, and on channels occupied by other unlicensed systems provided the interference floor is tolerable. Channels occupied by other WRANs can be negotiated for partial use if need be.

Are we assured there will be a ""regional WRAN information base""?

SuggestedRemedy

""The WRAN BS starts by consulting the TV usage database and the regional WRAN information base to find potentially available channels. Should the TV usage database be unavailable for any reason, the WRAN shall not operate. To ensure these potential channels are indeed available, the WRAN performs sensing to aid in the channel choice decision. The WRAN BS begins its service only on channels where it can satisfy interference constraints.

Proposed Response   *Response Status*   **W**

Defer (green)

BS initialization needs to be defined. (Normative text and flowchart)

Regulatory requirements could exist and some max outage time for database access may need to be defined.

Database requirements need further development/clarification

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied   Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.15.1**

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Cl **06**   *SC* **6.15.3**   *P* **119**   *L* **2**   # 511
Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **A**

""To improve the joining latency in case a long superframe is in use by the BS, the CPE shall use energy detection to help ascertain about the presence/absence of an 802.22 BS in a particular channel. If the energy detected is below the detection threshold, the CPE can safely move to the next channel.""

All superframes are 160 ms long now.

The detection dwell time should be at least one frame long in case there is no scheduled traffic and only the preamble and control bauds are transmitted. If it's going to dwell this long, shouldn't it just look for a frame preamble instead of performing energy detection?

SuggestedRemedy

Change the text to: ""To improve the joining latency the CPE shall use energy detection to help ascertain about the presence/absence of an 802.22 BS in a particular channel. If the energy detected is below the detection threshold, the CPE can safely move to the next channel.""

Add timer specification - (part of modifying flowchart to clearly define behavior).

Response   *Response Status* **W**

PROPOSED ACCEPT.

Assigned to Carlos Cordeiro.

Cl **06**   *SC* **6.15.3**   *P* **119**   *L* **6**   # 110
Cordeiro, Carlos   Philips

Comment Type **TR**   *Comment Status* **R**

Sentence needs to be corrected

SuggestedRemedy

Replace it with ""After having received an SCH in a channel, the CPE shall perform not only in-band sensing on channels indicated in the SCH, but also out-of-band sensing (...) as to meet the out-of-band emission mask""

Response   *Response Status* **W**

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Cl **06**   *SC* **6.15.3**   *P* **119**   *L* **6**   # 190
HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **A**

The FRD requires that ""The first time a CPE is turned on, it MUST start by sweeping the RF range in which it is to operate to identify the presence of incumbent operations, as well as to access information from the WRAN networks accessible in the area."" However, the procedure specifies the a CPE shall start with searching for SCH, and then scan channels of N+-15, where N is the working channel of the target BS.

SuggestedRemedy

Modify the CPE initialization procedure to satisfy the FRD.

Response   *Response Status* **W**

PROPOSED ACCEPT.

Assigned to Carlos Cordeiro.

Cl **06**   *SC* **6.15.3**   *P* **119**   *L* **6**   # 189
HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **R**

Using ""shall"", the text ""the CPE shall perform sensing not only in the set of channels indicated in the SCH, but also in all other affected channels"" implies optional channel bonding feature is used as mandatory.

SuggestedRemedy

Modify the text to eliminate implied mandatory use of Channel bonding.

Response   *Response Status* **W**

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.15.3**

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Cl **06**   *SC* **6.15.3**   *P* **119**   *L* **7**   *#* 111
Cordeiro, Carlos   Philips

Comment Type **TR**   *Comment Status* **D**

Sentence needs corrections "" During this sensing, the CPE shall attempt to identify incumbent operation. If incumbents are detected, the MAC should disregard the channel and, if permitted (e.g., by the DFS model parameters), send a short control message to the BS indicating that is using a channel occupied by an incumbent. In case the BS receives such notification, it may take numerous actions as described in 6.21.1.""

SuggestedRemedy

Change text to: "" During this sensing, the CPE shall attempt to identify incumbent operation. If incumbents are detected on the operating channel or either first adjacent channel, the MAC shall cause the CPE to cease transmitting application traffic on the channel and, at the first transmit opportunity, if permitted (e.g., by the DFS model parameters), send a short control message to the BS indicating that it is using a channel occupied by an incumbent. In case the BS receives such notification, it may take numerous actions as described in 6.21.1.""

Proposed Response   *Response Status* **W**

Defer (Green)
Need to be rephrased, related to CID no.512

Cl **06**   *SC* **6.15.3**   *P* **119**   *L* **8**   *#* 512
Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **D**

""...the MAC should disregard the channel and, if permitted (e.g., by the DFS model parameters), send a short control message to the BS...""

Unless I'm misunderstanding the DFS portion of the FRD (15.1.2), we get 100 msec aggregate closing time over a 2 sec duration to close out communications on a channel at the present power level (could be the time to backoff the power level too, not just terminate). So why the ""if permitted...""?

SuggestedRemedy

""...the MAC should disregard the channel and send a short control message to the BS... . The aggregate duration of the short control messages shall not exceed 100 ms of transmissions by the WRAN system before remedying the interference condition (i.e., changing channels, backing off transmit power, terminating transmissions, etc.).""

Proposed Response   *Response Status* **W**

Defer (Green)
Need to be rephrased, related to CID no.111

Cl **06**   *SC* **6.15.5.1**   *P* **124**   *L* **6**   *#* 513
Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **A**

""In the case that the receive and transmit gain of the CPE antennae are substantially different ...""

Will the MAC know the antenna gains (see also 6.8.7.3.7.10), cable losses, etc.? It's not like an integral device where antenna and circuit board traces are well understood. Does this force professional installation?

SuggestedRemedy

""In case the receive and transmit gain of the CPE antennas are substantially different ...""

Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE. Accepted in Principle

Factor linking EIRP to Maximum Transmit Power needs to be known by the MAC.

Professional installation should not be forced. Because the antenna gain and cable losses should be set by the manufacturers to not exceed the limit.

Cl **06**   *SC* **6.15.5.1**   *P* **125**   *L* **16**   *#* 31
Chouinard, Gerald   Communications Rese

Comment Type **ER**   *Comment Status* **X**

Matters related to channel bonding should be reported for later.

SuggestedRemedy

Delete following note 2:

2. For multichannel support, the CPE shall attempt initial ranging on every suitable upstream channel before moving to the next available downstream channel.

Proposed Response   *Response Status* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.15.5.1**

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Cl **06**　　　*SC* **6.15.5.1**　　　　　*P* **125**　　　*L* **45**　　　# 134
Chu, Liwen   STMicroelectronics

Comment Type　**T**　　　*Comment Status*　**A**
Here the draft says that ""Within the RNG-RSP message shall be the Basic and Primary Management CIDs assigned to this CPE"". In page 125, line 14, the drafrt says that ""For multichannel support, the CPE shall attempt initial ranging on every suitable upstream channel before moving to the next available downstream channel"". Does BS allocate basic, primary management CIDs in each channel of multiple channel support?

SuggestedRemedy
Clarify it.

Response　　　　　*Response Status*　**W**
PROPOSED ACCEPT IN PRINCIPLE.

Move the texts (Page 125, lines 14 - 15) regarding Multiple Channel Support to A.1.

Cl **06**　　　*SC* **6.20**　　　　　*P* **134**　　　*L* **4**　　　# 98
Cordeiro, Carlos   Philips

Comment Type　**TR**　　　*Comment Status*　**A**
There are a number of subclauses missing in this section.

SuggestedRemedy
Use the 802.16 spec as a starting point and update this section with all the required text.

Response　　　　　*Response Status*　**W**
PROPOSED ACCEPT IN PRINCIPLE.

Assign to Carlos to recommend 802.16 text.

Cl **06**　　　*SC* **6.20**　　　　　*P* **134**　　　*L* **5**　　　# 353
Vlantis, George   STMicroelectronics

Comment Type　**ER**　　　*Comment Status*　**X**
Reference to ""xxx"".

SuggestedRemedy
Fix the reference in Line 5 of Page 134.

Proposed Response　　　　*Response Status*　**O**

Cl **06**　　　*SC* **6.20.9**　　　　　*P* **142**　　　*L* **20**　　　# 354
Vlantis, George   STMicroelectronics

Comment Type　**ER**　　　*Comment Status*　**X**
Reference to ""xxx"".

SuggestedRemedy
Fix the reference on Line 20 of Page 142.

Proposed Response　　　　*Response Status*　**O**

Cl **06**　　　*SC* **6.21**　　　　　*P* **142**　　　*L* **25**　　　# 191
HU, Wendong   STMicroelectronics

Comment Type　**TR**　　　*Comment Status*　**D**
CBP would be questionable to be claimed as an efficient self-coexistence method for overlapping 802.22 cells. CBP also could not provide fair accesses to the spectrum for the coexisting 802.22 cell.

SuggestedRemedy
Need more debate and proof-of-concept on CBP as the baseline self-coexistence method. CBP should not be standardized as a mandatory feature.

Proposed Response　　　　*Response Status*　**W**
Defer (Green)

Assign to Wendong and Carlos to resolve.

Cl **06**　　　*SC* **6.21.1**　　　　　*P* **143**　　　*L* **11**　　　# 32
Chouinard, Gerald   Communications Rese

Comment Type　**ER**　　　*Comment Status*　**X**
Change MAC management ""frames"" by MAC management ""messages""

SuggestedRemedy
Line 11: ""pool of MAC management messages, ...""

Proposed Response　　　　*Response Status*　**O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.21.1**

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Cl **06**   *SC* **6.21.1.1**   *P* **143**   *L* **20**   # 33

Chouinard, Gerald   Communications Rese

Comment Type   **ER**   *Comment Status*   **X**

It should be clear that the measurements discussed are for sensing.

The in-band and out-of-band terms should read in-channel and off-channel since it means measurements made inside the TV channel being used and outside and not inside and outside the TV bands.

SuggestedRemedy

Line 20: 6.21.1.1 Sensing Measurements Classification

Line 21:
""Measurements can be of types: in-channel and off-channel. In-band measurements refer to the case when the stations sense the same channels used for normal cell operation. For example if a BS uses channel N to communication with its CPEs, in-channel measurement refers to the incumbent sensing activity which is performed in those channels (e.g., N-t through N+t, where, say, t ú 1), where sensing will be directly affected by the 802.22 operation in channel N. Similarly, out-of-band measurements refer to the case when the incumbent sensing activity is carried out in those channels other than N-t through N+t where sensing will not be affected by the 802.22 operation in channel N.""

Line 30:
""It is important to note, however, that in-channel and ooff-channel sensing measurements have a different meaning when used in the context of CBP measurements. For beacon measurements, all channels other than channel N are classified as being off-channel rather than in-channel since operation in these channels is not prohibited, as it is the case with respect to incumbent protection.""

Proposed Response   *Response Status*   **O**

Cl **06**   *SC* **6.21.1.1**   *P* **143**   *L* **25**   # 192

HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status*   **A**

Should ""t<=1"" be a typo?

SuggestedRemedy

Should it be ""t>=1""?

Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change the words "have a direct effect" by "experience leakages due to limited IF filtering"

Replace "e.g." by "i.e.,"

Move the definition of "in-band sensing" and "out-of-band sensing" to the definition section.

Cl **06**   *SC* **6.21.1.2**   *P* **143**   *L* **36**   # 34

Chouinard, Gerald   Communications Rese

Comment Type   **ER**   *Comment Status*   **X**

It should be clear that the measurements discussed are for sensing.

SuggestedRemedy

Line 36: 6.21.1.2 Sensing Measurements Management

Page 144, line 9: ""Each single measurement request specifies several parameters such as the periodicity at which the BS ...""

Line 13: ""BLM-REP message which contains measurement results of what ...""

Page 145, line 5: ""(either with incumbents or for self-coexistence).

Proposed Response   *Response Status*   **O**

Cl **06**   *SC* **6.21.1.3**   *P* **145**   *L* **12**   # 193

HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status*   **A**

Only TV services and Part 74 services are considered as incumbent. How about other types of licensed services in the TV bands, such as public safety servics?

SuggestedRemedy

Shall include all other types of licensed services in the TV bands worldwise, such as public safety.

Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change "both TV signals and Part 74 services, according to the DFS model defined in the FRD" to "incumbent devices defined in clause 15.1 of the FRD according to the DFS model defined in the same document".

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.21.1.3**

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Cl **06**   *SC* **6.21.1.3**   *P* **145**   *L* **13**   # 35
Chouinard, Gerald   Communications Rese

Comment Type **ER**   *Comment Status* **X**

This section mentions the periodic incumbent sensing being done during quiet periods. It should also mention that it can be done for off-channel while the system is in operation (if a separate RF sensing chain is used) and refer to a section where it will be explained.

SuggestedRemedy

Add the following sentences at the end of the paragraph:
""Off-channel sensing can also be done without the need for quiet periods (if a separate RF sensing chain is used). This is explained in section zzz.""

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.21.1.4.1**   *P* **146**   *L* **7**   # 36
Chouinard, Gerald   Communications Rese

Comment Type **TR**   *Comment Status* **A**

Title of section is unclear.

For off-channel sensing, the quiet periods may not be necessary.

The UCS slot will need to contain sufficient symbols to allow channel response capture.

SuggestedRemedy

Change title for: 6.21.1.4.1 Notification Phase for Sensing During Quiet Period

Line 16:
""CPEs that are allocated upstream bandwidth shall use it to send to the BS a report on its overall measurement outcome (e.g., incumbent detected or not, and in which channel). If sensing off-channel, the quiet period may not be necessary. The way ...""

Page 147,line 6:
""... particular CPE or schedule UCS notification slots. This UCS slot shall contain 7 symbols to allow the pilot carriers to fully quantify the transmission channel response.""

Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **06**   *SC* **6.21.1.4.1**   *P* **146**   *L* **7**   # 196
HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **R**

It's not clear how the BS acknowledge the measurement reports sent by a CPE?

SuggestedRemedy

Need further specifications.

Response   *Response Status* **W**

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Cl **06**   *SC* **6.21.1.4.1**   *P* **146**   *L* **7**   # 194
HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**

If the quiet time is long enough, e.g. close to 20ms, and the subsequent frames are devoted for measurement report, the overall service interruption time could be longer than 20ms which is not acceptable for VoIP or other timing sensitive applications. So a dedicated quiet period notification phase with frames immediately follows the quiet period shall not be mandated, and more flexible reporting scheme shall be allowed.

SuggestedRemedy

A dedicated quiet period notification phase with frames immediately follows the quiet period shall not be mandated, and more flexible reporting scheme shall be allowed.

Proposed Response   *Response Status* **W**

Defer (Green)

Cl **06**   *SC* **6.21.1.4.1**   *P* **147**   *L* **12**   # 195
HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**

It is not convincing that how these two type of UCS notification windows could improve the reliability and performance of the system.

SuggestedRemedy

Need elaborations. Remove or revise this scheme if needed.

Proposed Response   *Response Status* **W**

Defer (Green)

Assigned to Carlos and Wendong.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.21.1.4.1**

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Cl **06**   *SC* **6.21.1.4.2**   *P* **147**   *L* **22**   # 37

Chouinard, Gerald   Communications Rese

Comment Type **TR**   *Comment Status* **A**

Title of section is unclear.

Clarify sentence.

SuggestedRemedy

6.21.1.4.2 Notification Phase for Sensing During Normal System Operation

Line 30: ""During this phase, the BS should allocate the UCS notification slots only for the specific purpose of incumbent notification given the lower expected demand.

Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **06**   *SC* **6.21.1.4.2**   *P* **147**   *L* **23**   # 199

HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **A**

If the the quiet period notification phase ends when the BS has acquired a reliable picture of the measurement outcome in its cell, it wouldn't make sensng to have urgent situations being reported (if such situation happens, it means the picture is NOT reliable enough).

SuggestedRemedy

Please explain how to define ""reliability"" in this context and why urgent situation would still occur given a reliable reporting result. The reporting method shall be revised or not be standardized as mandatory feature.

Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change the sentence (Page 147, Line 23) "The quiet period notification phase ends whenever the BS has acquired a reliable picture of the measurement outcome in its cell" to "The quiet period notification phase ends whenever the BS has acquired a picture of the measurement outcome in its cell"

Cl **06**   *SC* **6.21.1.4.2.1**   *P* **147**   *L* **43**   # 197

HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **A**

It's not clear why only ""a small amount of sensitive traffic (e.g. voice)"" is considered in this context? What if the ""amount of sensitive traffic"" is not ""small""?

SuggestedRemedy

The specified scheme is not robust and shall not be standarded as a mandatory feature. The standard shall have a much more robust solution than what is specified in this subclause.

Response   *Response Status* **W**

PROPOSED ACCEPT. delete the word "a small amount of" in Line 43, Page 147

Cl **06**   *SC* **6.21.1.4.2.1**   *P* **148**   *L* **4**   # 516

Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **A**

""In case no other CPEs report the same UCS with incumbents, the BS may conclude that a measurement report by a single CPE is not reliable and may disregard it.""

Shouldn't this depend on the spatial distribution of CPEs? If the CPE is in an area were they are very sparsely distributed, a report of an incumbent detection should be taken seriously and another sensing period should be scheduled. If CPEs are in a very densely distributed area, a report from one but not others can probably be ignored. The impact on probability of missed detection needs to be considered.

SuggestedRemedy

""In case no other CPEs report the same UCS with incumbents, the BS may, after consideration of the physical distribution of CPEs, conclude that a measurement report by a single CPE is not reliable and may disregard it.""

Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Refer to Comment 198. The sentences (Page 148, Lines 3 - 7) have been deleted.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.21.1.4.2.1**

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Cl **06**   *SC* **6.21.1.4.2.1**   *P* **148**   *L* **3**   # 198
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **A**
How can the BS disregard an urgent measurement report from a CPE if this is the only report received by the BS? This would be dangerous!!

SuggestedRemedy
The BS shall never disregard an urgent measurement report from a CPE even if this is the only report from CPEs. The reporting method shall be revised or not be standardized as mandatory feature.

Response   *Response Status* **W**
PROPOSED ACCEPT.

Delete (Page 148, Lines 3 - 7) "In case no other CPEs report the same UCS with incumbents, the BS may conclude that a measurement report by a single CPE is not reliable and may disregard it. On the other hand, if multiple CPEs report the same coexistence situation in the same Channel Number, then the BS may take one of the measures discussed above in order to resolve the issue."

Cl **06**   *SC* **6.21.1.4.2.2**   *P* **148**   *L* **15**   # 200
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **X**
How reliable is it to use UCS slot for reporting in the congestive reporting situation?

SuggestedRemedy
Please elaborate.

Proposed Response   *Response Status* **W**
PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Cl **06**   *SC* **6.21.1.4.2.2.2**   *P* **148**   *L* **35**   # 201
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
Why should CDMA UCS notification be supported?

SuggestedRemedy
Need elaborations or the CDMA UCS notification can be eliminated.

Proposed Response   *Response Status* **W**
Defer (Green)

Cl **06**   *SC* **6.21.1.4.2.2.2**   *P* **148**   *L* **39**   # 517
Kuffner, Stephen   Motorola

Comment Type   **T**   *Comment Status* **A**
""As specified in 8, the PHY has available a subset of Incumbent Codes that shall be used for contention-based CDMA UCS Notification.""

A search of the document didn't find 'incumbent code' in the PHY section (8).

SuggestedRemedy
Determine proper reference if it exists, maybe somewhere in 6.8, or put table of codes in appropriate PHY section.

Response   *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

Assigned to Carlos and Wendong

Cl **06**   *SC* **6.21.1.5**   *P* **149**   *L* **9**   # 202
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
Incumbent Detection Recovery protocol is too complex.

SuggestedRemedy
It shall be modified toward a simplified scheme or shall not be mandated.

Proposed Response   *Response Status* **W**
Defer (Green) until submission of text with simulations comparable to doc no. 22-05-105r1.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.21.1.5**

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Cl **06**   *SC* **6.21.1.5**   *P* **150**   *L*   # 518

Kuffner, Stephen   Motorola

Comment Type   **T**   *Comment Status*   **A**

Figure 41:
After the ""Channels left?"" ""No"" decision, there's a box ""Select a candidate channel as per the optimization criteria""... what is the optimization criteria?

Further down this chain, ""Did I receive a occupied channel notification from a CPE in this selected channel?"" and ""Wait for CPE free channel notification"" - how does a CPE notify the BS if the answer to ""channels left?"" was ""No""? Is the BS operating anywhere? Also applies to text on p. 149, line 50:

""To overcome this (as shown in Figure 42), the CPE has to periodically re-evaluate the status of a channel it has previously reported as occupied by incumbents. If this channel becomes free once again in the future, the CPE shall send the corresponding notification (by appropriately configuring the CN field and setting the UCS to zero in the MAC header) to the BS which would, in turn, periodically listen in this channel for any such incoming notification as shown in Figure 41."" How is the CPE sending without an active BS?

SuggestedRemedy

Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

Assign to Carlos

Cl **06**   *SC* **6.21.1.5**   *P* **151**   *L* **1**   # 38

Chouinard, Gerald   Communications Rese

Comment Type   **ER**   *Comment Status*   **X**

Error in Figure 42. A Yes node in the middle of the diagram becomes No.

SuggestedRemedy

Correction to the diagram.

Proposed Response   *Response Status*   **O**

Cl **06**   *SC* **6.21.1.5**   *P* **151**   *L* **1**   # 519

Kuffner, Stephen   Motorola

Comment Type   **T**   *Comment Status*   **D**

Figure 42:
1. The ""Is channel N in-band?"" decision has ""no"" going back to ""operational"". But couldn't there be an impact on EIRP due to the EIRP profile and the fact that this new incumbent is not in-band? If the EIRP is significantly cut back due to its presence, a channel change might be required to continue to serve the operator's more remote customers.

2. The junction after the ""yes"" on the ""is channel N in-band"" decision is confusing and should be redrawn.

3. Does the ""no"" output of the ""did I detect the incumbent service in channel N?"" go to the ""backup channel information available?"" decision?

SuggestedRemedy

Proposed Response   *Response Status*   **W**

Defer (Green) for point (1) on EIRP profile

Assign (2) and (3) to Carlos.

Cl **06**   *SC* **6.21.1.5.1**   *P* **152**   *L* **3**   # 107

Cordeiro, Carlos   Philips

Comment Type   **TR**   *Comment Status*   **D**

Needs integration.

SuggestedRemedy

Integrate this section with the previous one. Ask the MAC team to undertake this task.

Proposed Response   *Response Status*   **W**

Defer (Green)

Assign to Ko

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

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SC **6.21.1.5.1**   1/27/2007 9:02:52

Cl **06**   *SC* **6.21.1.5.1**   *P* **152**   *L* **3**   # 203
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
The section is not consistent with the spec in 6.21.1.5. The procedures are too complex. No idea how these two different approaches can be merged.

SuggestedRemedy
Shall consider simple but effective recovery schemes. These procedures shall not be mandated.

Proposed Response   *Response Status* **W**
Defer (Green)

Assign to Ko

Cl **06**   *SC* **6.21.1.5.1**   *P* **152**   *L* **14**   # 39
Chouinard, Gerald   Communications Rese

Comment Type   **TR**   *Comment Status* **A**
Modify this section to describe sensing process for TDD. FDD option should be removed from the standard.

SuggestedRemedy
Line 14:
- Case 0: When IU is detected by both BS and CPE
- Case 1: When IU is detected by BS
- Case 2: When IU is detected by CPE

Align Figure 44 for TDD operation.

Page 153, line 4: Delete paragraphs and modify tables to deal with TDD.

Response   *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

Assign to Ko

Cl **06**   *SC* **6.21.1.6**   *P* **155**   *L* **2**   # 204
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
Dynamic Frequency Hopping (DFH) is a control method of DFS hence it should be included in this subclause.

SuggestedRemedy
Consider adding DFH.

Proposed Response   *Response Status* **W**
Defer (Gray)

Cl **06**   *SC* **6.21.1.7**   *P* **155**   *L* **8**   # 205
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
This section, ""class B CPE for the protection of part 74 services"", is out of the scope of 802.22.

SuggestedRemedy
Remove this section from 802.22 standard.

Proposed Response   *Response Status* **W**
Defer (Gray)

Cl **06**   *SC* **6.21.2**   *P* **155**   *L* **10**   # 246
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
For IEEE 802.22 WRAN self coexistence, inter base stations channel renting between one offrer BS and multiple renter BSs should differentiate and integrate mechanisms considering intra and inter operators situation (

SuggestedRemedy
Include the text of the following contribution to the draft standard: ""Inter Base Stations Adaptive Channel Renting for IEEE 802.22 WRAN Self Coexistence"" submitted to January 2007 London meeting.

Proposed Response   *Response Status* **W**
Defer (Salmon) until submission

Cl **06**   *SC* **6.21.2**   *P* **155**   *L* **10**   # 506
Kuffner, Stephen   Motorola

Comment Type   **T**   *Comment Status* **D**
For IEEE 802.22 WRAN self coexistence, inter base stations channel renting between one offrer BS and multiple renter BSs should differentiate and integrate mechanisms considering intra and inter operators situation.

SuggestedRemedy

Proposed Response   *Response Status* **W**
Defer (Salmon)

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.21.2**

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Cl **06**   *SC* **6.21.2**   *P* **155**   *L* **10**   *#* 505
Kuffner, Stephen   Motorola

Comment Type   **T**   *Comment Status* **D**

For IEEE 802.22 WRAN self coexistence, inter base station on demand channel contention between one contention source BS (requestor) and multiple contention destination BSs (offerer) should differentiate and integrate mechanisms considering intra and inter operators situation.

SuggestedRemedy

Proposed Response   *Response Status* **W**
Defer (Salmon)

Cl **06**   *SC* **6.21.2**   *P* **155**   *L* **10**   *#* 245
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**

For IEEE 802.22 WRAN self coexistence, inter base stations on demand channel contention between one contention source BS (requestor) and multiple contention destination BSs (offerer) should differentiate and integrate mechanisms considering intra and inter operators situation.

SuggestedRemedy

Include the text of the following contribution to the draft standard: ""Inter Base Stations Adaptive On Demand Channel Contention for IEEE 802.22 WRAN Self Coexistence"" submitted to January 2007 London meeting (Doc: IEEE 802.22-07/0xxx)

Proposed Response   *Response Status* **W**
Defer (Salmon)

Cl **06**   *SC* **6.21.2**   *P* **155**   *L* **10**   *#* 504
Kuffner, Stephen   Motorola

Comment Type   **T**   *Comment Status* **D**

Efficient self coexistence mechanisms require reliable communications procedures between BSs operating on different channels. Such inter-BS communications establishment and maintenance procedures based on CBP and any connection oriented communications should be specified.

SuggestedRemedy

Proposed Response   *Response Status* **W**
Defer (Green) for submission

Cl **06**   *SC* **6.21.2**   *P* **155**   *L* **11**   *#* 66
Chang, Soo-Young   Huawei Technologies

Comment Type   **TR**   *Comment Status* **D**

Contrary to other IEEE 802 standards where self-coexistence issues are only considered after the specification essentially is finalized, the IEEE 802.22 takes the proactive approach (as specified in its Requirements Document) and mandates that the MAC shall include self-coexistence protocols and algorithms as part of the initial standard conception and definition.

SuggestedRemedy

Some algorithms are introduced in ""22-06-0124-01-0000_Huawei_Inter-BS_Synchronization"".

Proposed Response   *Response Status* **W**
Defer (Gray)

Cl **06**   *SC* **6.21.2**   *P* **155**   *L* **17**   *#* 40
Chouinard, Gerald   Communications Rese

Comment Type   **TR**   *Comment Status* **A**

Use of directional TX/RX antennas should not be implementation dependent.

SuggestedRemedy

Line 17: ""Even if directional antennas are used at the CPEs, self-coexistence issues are not at all overcome (see Figure 54).""

Response   *Response Status* **W**
PROPOSED ACCEPT.

Delete "although this may be implementation dependent" in Page 155 Line 17

Cl **06**   *SC* **6.21.2**   *P* **155**   *L* **22**   *#* 206
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**

It is not convincing that the CBP and inter-BS communication can address sufficiently the appropriate self-coexistence amongst collocated 802.22 cells.

SuggestedRemedy

These two scheme shall not be standardized as mandatory features. These two schemes shall be carefully verified and proven. If needed, they shall be modified or integrated with more effective schemes (such as spectrum contention, logical control connections, etc.) in order to address the self-coexistence requirements.

Proposed Response   *Response Status* **W**
Defer (Green)

Assign to Carlos and Wendong

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.21.2**

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Cl **06**   *SC* **6.21.2**   *P* **176**   *L* **13**   # 64

Chang, Soo-Young   Huawei Technologies

Comment Type   **TR**   *Comment Status*   **D**

The IEEE 802.22 takes the proactive approach (as specified in its Requirements Document) and mandates that the MAC shall include self-coexistence protocols and algorithms as part of the initial standard conception and definition. WRAN system utilizes cognitive radio technologies to identify vacant frequency bands to communicate. Therefore when many CPEs need to make use of confined frequency resources, it makes WRAN system cell be overloaded. To reduce this cell load, the BS needs to move some CPEs in this overlapping area to another neighbor cell. Thus before load balancing, it is needed that BSs can provide the functions to CPEs in the overlapping area to synchronize and to co-exist.

When multiple CPEs are located inside overlapping area of multiple BSs, they need to notify S-BS on whether they can be served by other BSs. This procedure will be performed in two stages: initial ranging stage and normal operation stage. At initial ranging stage, CPEs may send BS Id which covers the CPE to S-BS. At normal operation, CPEs shall send this information to S-BS aperiodically. S-BS and CPEs shall save this data information in memory and update it periodically.

When there are new CPEs which are trying to access a network, if their bandwidth allocation requests exceed this cell bandwidth limit, S-BS shall redirect CPEs in overlapping area to other collocated cells. Firstly S-BS needs to judge how many CPEs can be served by other BSs through collocated BSs load information. Then S-BS shall negotiate with C-BS. S-BS sends Load Shunt Request (LS-REQ) to C-BS. This request includes number of load and number of subcarriers. After C-BS receives this request, a response message will be fed back to S-BS.

SuggestedRemedy

Proposed Solution
1. CPE's candidate BS Notification
CPE can notify S-BS of a list of BSs which can be candidate BSs serving this CPE's in initial ranging stage and normal operation stage.

BS ID notification message is sent to S-BS by a CPE within overlapping area, which can notify S-BS of how many BSs can serve it. S-BS and CPE need to store this data information and update it.

In initial ranging stage, after CPE finishes synchronization, ranging, negotiation, authorization and registration, CPE will send BS ID notification message to S-BS in optional initialization steps to inform S-BS of how many C-BS can serve the CPE and C-BS ID.

In normal operation stage, C-BS can adjust its coverage area to avoid interfering incumbent users by changing the number of CPEs covered within overlapping area. Hence in normal operation CPE also sends this message to S-BS aperiodically so that S-BS can update data information.

2. Load balance negotiation
When S-BS is overloaded, it needs to send LS-REQ message to C-BS through bridge CPEs in the overlapping area, which includes the numbers of shunt CPEs, number of subcarriers

and slots which need to be borrowed. After C-BS receives this message from S-BS, it shall calculate the number of its own vacant channels. Then it selects channels from the set of vacant channels according to S-BS's request and sends IDs of these channels to S-BS. Then it sends LS-RSP message to S-BS through bridge CPEs in the overlapping area. After S-BS receives feedback information from C-BS, it sorts all the information from other cells in ascending order. If the numbers of CPE shunt are smaller than the largest number of vacant channels, S-BS selects a cell with the largest number of vacant channels as a target cell. If some of the numbers of CPEs shunt are bigger than the largest number of vacant channels, S-BS selects a target cell according to the numbers of vacant channels from highest to lowest. Then S-BS will redirect CPE within overlapping area to target C-BS.

S-BS sends LSReq message to C-BS through inter-BS communication mechanism to request CPE belonging to S-BS to access network of C-BS.

C-BS sends LSRsp message to S-BS through inter-BS communication mechanism to identify whether C-BS can share load with CPE belonging to S-BS.

3. CPE Redirect
After S-BS receives LS-response and finishes choosing a target cell, it shall start redirection procedure. S-BS shall communicate with C-BS through shunt CPEs to finish this procedure, which is named inter-cell communication. To address the reliable inter-cell communication, a novel inter-cell communication scheme where reliable communication can be guaranteed is introduced. The inter-cell communication proposal can reference to STM proposal ""22-06-0111-02-0000_STM-MOT-ConnectionBased-InterBS-Comm"".

After these CPEs finish redirection procedure, they will release their channels used before redirecting and pause connection with S-BS until load balance process of S-BS is completed. This procedure solves overload problem of S-BS. Also, when some of the numbers of shunt CPEs are bigger than the largest number of vacant channels, the same procedure can be applied. The only difference is that S-BS needs to communicate with multiple cells synchronously.

4. Conclusions
(1) S-BS can compare load status of its own cell with other C-BS and select a target cell flexibly. While solving overload, this proposed solution can achieve the purpose of utilizing frequency resource more efficiently.
(2) Before switching CPEs, S-BS will keep serve with shunt CPEs, which will not interrupt CPEs service and can assure CPEs service continuity and QoS.
(3) Extra cost does not need to be increased and S-BS can directly utilize CPEs in overlapping area to finish synchronization and signaling alternation.
Refer to 22-06-0126-01-0000_Huawei_Network_Entry_and_Initialization for details.

Proposed Response   *Response Status*   **W**

Defer (Salmon)

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied Z/withdrawn
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SC **6.21.2**   1/27/2007 9:02:52

Cl **06**   *SC* **6.21.2.1**   *P* **156**   *L* **7**   *#* 217

HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**

Regarding CBP:
This is a Best Effort, Contention Based Beaconing Mechanism, that has inherent reliability
and efficiency issues.

SuggestedRemedy

Addess the issues. Enhance CBP with logical control connection (inter-BS control
connections).

Proposed Response   *Response Status* **W**

Defer (Green)

Assign to Carlos and Wendong

Cl **06**   *SC* **6.21.2.1**   *P* **156**   *L* **7**   *#* 213

HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**

The spec defines a time where the CPEs shall not perform any transmission but simply
listen to the medium for CBP packets and, possibly, BS SCH beacons. This is achieved by
synchronized BSs.
Question: This is to schedule a time window for all beacons to be transmitted. Again,
reliable? Efficient? How about the transmission delay?

SuggestedRemedy

Address the questions. Enhance the scheme by integrating with Logical Control Connection
(inter-BS control connections).

Proposed Response   *Response Status* **W**

Defer (Green)

Assign to Carlos and Wendong

Cl **06**   *SC* **6.21.2.1**   *P* **156**   *L* **7**   *#* 215

HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**

Traffic contraint of CBP requires that Downstream/upstream bandwidth allocations made by
BS to CPEs in a certain frame shall not change for a number of consecutive frames.
Question: This requirements bring in undesirable limitations. Can we do better job providing
flexibility?

SuggestedRemedy

Address the issue and question. Enhance CBP with spectrum contention algo for flexibility.

Proposed Response   *Response Status* **W**

Defer (Green)

Assign to Carlos and Wendong

Cl **06**   *SC* **6.21.2.1**   *P* **156**   *L* **7**   *#* 214

HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**

Traffic contrait of CBP: CBP allow that future upstream bandwidth reservation requests can
contain time allocation constraints, for example, a CPE can specify: ôGive me 100Kb of
airtime, but not between T1 and T2ö.
Question: Is this fair? what if it is always unacceptably large between T1 and T2 (no room
for spectrum sharing for other WRANs)?

SuggestedRemedy

Address the question. Enhance CBP with spectrum contention algo for fairness.

Proposed Response   *Response Status* **W**

Defer (Green)

Assign to Carlos and Wendong

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

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Cl **06**   *SC* **6.21.2.1**   *P* **156**   *L* **7**   # 218
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
   Regarding CBP:
   How multi-channel inter-BS communications are facilitated? More serious reliability and
   efficiency issue can be raised.

SuggestedRemedy
   Address the issues. Enhance CBP with logical control connection (inter-BS control
   connections).

Proposed Response   *Response Status* **W**
   Defer (Green)

   Assign to Carlos and Wendong

Cl **06**   *SC* **6.21.2.1**   *P* **156**   *L* **7**   # 219
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
   Regarding CBP:
   Beaconing during normal operations? Issues include interferences to other cells and
   unknown TX time make it difficulty to receive CBP packets.

SuggestedRemedy
   Address the issues. Enhance CBP with logical control connection (inter-BS control
   connections).

Proposed Response   *Response Status* **W**
   Defer (Green)

   Assign to Carlos and Wendong

Cl **06**   *SC* **6.21.2.1**   *P* **156**   *L* **7**   # 221
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
   Regarding CBP:
   Require static BW allocations for CPEs, meaning BW allocation for CPEs shall not be
   changed for consecutive a number of frames.
   Another issue is that it requires guard band in the coexistence window due to propagation
   delay.

SuggestedRemedy
   Address the issues. Enhance CBP with logical control connection (inter-BS control
   connections).

Proposed Response   *Response Status* **W**
   Defer (Green)

   Assign to Carlos and Wendong

Cl **06**   *SC* **6.21.2.1**   *P* **156**   *L* **7**   # 207
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
   It is not convincing CBP shall be a mandatory coexistence feature itself due to its limitations
   and unsatisfactory efficiency.

SuggestedRemedy
   Integrate CBP with Logical control connection (connection based inter BS communication
   method) for enhancement.

Proposed Response   *Response Status* **W**
   Defer (Green)

   Assign to Carlos and Wendong

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn   *Cl* **06**   Page 24 of 76
SORT ORDER: Clause, Subclause, page, line   *SC* **6.21.2.1**   1/27/2007 9:02:53

Cl **06**   *SC* **6.21.2.1**   *P* **156**   *L* **7**   *#* 220
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
Regarding CBP:
Beaconing during coexistence time window?
It makes sense but it could be very likely to have collisions.
Beaconing during quiet period?
Does not look feasible because of synchronized quiet periods and interference to sensing,
etc.

SuggestedRemedy
Address the issue. Enhance CBP with logical control connection (inter-BS control
connections).

Proposed Response   *Response Status* **W**
Defer (Green)

Assign to Carlos and Wendong

Cl **06**   *SC* **6.21.2.1**   *P* **156**   *L* **9**   *#* 208
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
Consider the following text - ""The CBP is a best-effort protocol based on coexistence
beacon transmissions."" It follows the best-effort model, successful reception of coexistence
beacons is not guaranteed. Reliability and Efficiency are big issues for addressing a variety
of coexistence requirements.

SuggestedRemedy
Integrate CBP with Logical control connection (connection based inter BS communication
method) for enhancement.

Proposed Response   *Response Status* **W**
Defer (Green)

Assign to Carlos and Wendong

Cl **06**   *SC* **6.21.2.1**   *P* **156**   *L* **10**   *#* 210
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
Consider the following text - ""CPEs do not continuously stay locked to a BS"".
Does a CPE searches CBP packets in other channels? In essence, the question is how the
multi-channel CBP communications can be facilitated, in other words, how to facilitate that a
transmission on a channel can be received by another WRAN that is operating on anther
channel? This would add more uncertainties to the inter-BS communications.

SuggestedRemedy
Address the questions. Enhance CBP by integrating with Logical Control Connection (inter-
BS control connections).

Proposed Response   *Response Status* **W**
Defer (Green)

Assign to Carlos and Wendong

Cl **06**   *SC* **6.21.2.1**   *P* **156**   *L* **10**   *#* 211
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
Consider the following text - ""CPEs do not continuously stay locked to a BS"".
In fact, a CPE would have to perform more work, such as out-of-band sensing and in-band
sensing, rather than being dedicated to CBP listening. This would decrease the probability
CBP beacons can be received by CPEs.

SuggestedRemedy
Address the issue. Enhance CBP by integrating with Logical Control Connection (inter-BS
control connections).

Proposed Response   *Response Status* **W**
Defer (Green)

Assign to Carlos and Wendong

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.21.2.1**

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Cl **06** *SC* **6.21.2.1** *P* **156** *L* **10** # 212
HU, Wendong   STMicroelectronics

Comment Type **TR** *Comment Status* **D**

Consider the following text - ""CPEs do not continuously stay locked to a BS"".
How to handle the interference issue when a beacon is transmitted while CPEs in other cells
are transmitting/receiving?

SuggestedRemedy

Address the question. Enhance CBP by integrating with Logical Control Connection (inter-BS control connections).

Proposed Response *Response Status* **W**

Defer (Green)

Assign to Carlos and Wendong

Cl **06** *SC* **6.21.2.1** *P* **156** *L* **10** # 209
HU, Wendong   STMicroelectronics

Comment Type **TR** *Comment Status* **D**

Consider the following text - ""CPEs do not continuously stay locked to a BS"". Simulations
on this? How much time has a CPE need to monitor for beacons in order to achieve the
satisfactory reception?

SuggestedRemedy

Provide convincing simulation results.

Proposed Response *Response Status* **W**

Defer (Green)

Assign to Carlos and Wendong

Cl **06** *SC* **6.21.2.1** *P* **156** *L* **14** # 41
Chouinard, Gerald   Communications Rese

Comment Type **TR** *Comment Status* **A**

Optional mechanisms should be introduced in the standard when they have been discussed
and agreed upon.

SuggestedRemedy

Line 14: Delete the following paragraph:
""Several mechanisms are implemented on top of CBP, such as the renter/offerer algorithm
and etiquette for channel assignment.""

Response *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change "Several mechanisms are implemented on top of CBP"(Page 156. Line 14) to
"There are several optional mechanisms that are implemented on top of CBP in the annex"

Cl **06** *SC* **6.21.2.1.2** *P* **158** *L* **4** # 42
Chouinard, Gerald   Communications Rese

Comment Type **TR** *Comment Status* **D**

Looking at this paragraph, is it possible that the CPE may not lose synch with its own BS
while sensing for a coexistence beacon? If there is no CBP beacon, there is no reason. If
there is one and the BSs are synchronized, there is no reason.

Page 158, line 33: Packet scheduling based on CBP will help in the case of the upstream
but not for downstream. Is it possible that upstream coexistence would be aproblem while
downstream coexistence is not? If no, upstream scheduling would not help.

SuggestedRemedy

Line 4: Clarify the need for loss of synchronization.

Page 158, line 33: Clarify the need for upstream scheduling only.

Proposed Response *Response Status* **W**

Defer (Green)
Assigned to Carlos

Cl **06** *SC* **6.21.2.3** *P* **159** *L* **15** # 100
Cordeiro, Carlos   Philips

Comment Type **TR** *Comment Status* **D**

As it agreed by the group over telcos, emails and face-to-face, CBP is the mandatory mode
on top of which all mechanisms presented under this subclause are to operate. This is not
clear from this write-up and hence needs to be included for clarity and understandability.

SuggestedRemedy

Include introductory text (see below) in this section to clarify this point, and then refer to the
Appendix where more information about the specific technologies can be found.

1) Include the following paragraph:
""The CBP protocol is the mandatory and default self-coexistence protocol on top of which
the mechanisms described in this section are implemented. In addition to the basis resource
sharing functionality of CBP, it can also be used to negotiate which (if any) of the schemes
described in Appendix A.4 are supported by the different 802.22 systems. Figure <XXX>
illustrates the self-coexistence architecture of this standard.""

2) Include the Figure <XXX> (see above) that depicts the self-coexistence architecture. I
have the figure available and can provide it upon request.

Proposed Response *Response Status* **W**

Defer (Green)

Assign to Carlos and Wendong

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

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Cl **06** *SC* **6.21.2.4**   *P* **159**   *L* **17**   # 216
HU, Wendong   STMicroelectronics

Comment Type **TR** *Comment Status* **D**

 Regarding Inter-BS Communications using CBP, it specifies that BS may either periodically
 listen to or even schedule downstream/upstream per frame quiet periods with the goal of
 detecting SCH frames transmitted by other BSs within its transmission range. Another
 possibility is that a BS receives CBP packets (either during normal operation or during quiet
 periods).
 Questions: How can a CBP packet be received/transmitted during a quiet period,
 considering quiet periods of all collocated WRANs are synchronized?
 How can a beacon be detected in a reliable way if the time of beacon transmissions is
 unknown to other BSs?
 So it seems that it only makes sense to TX/RX coexistence beacons during the
 synchronized coexistence time slots (intervals).

SuggestedRemedy

 Address the issues and questions. Enhance CBP with logical control connection (inter-BS
 control connections).

Proposed Response *Response Status* **W**
 Defer (Green)

 Assign to Wendong and Carlos

Cl **06** *SC* **6.21.3**   *P* **159**   *L* **36**   # 222
HU, Wendong   STMicroelectronics

Comment Type **TR** *Comment Status* **A**

 Considering the following text - ""Whenever not engaged in communication with its BS
 during normal cell operation, CPEs shall perform out-of-band sensing first, and then
 opportunistic in-band sensing (see 6.21.3.3). ""

 Out-of-band sensing should also been performed whenever it is possible, regardless of the
 BS is communicating with its CPEs or not.

SuggestedRemedy

 modify the text.

Response *Response Status* **W**
 PROPOSED ACCEPT IN PRINCIPLE.

 Change "not engaged in communication with its BS during normal cell operation" to
 "possible"

Cl **06** *SC* **6.21.3**   *P* **159**   *L* **36**   # 223
HU, Wendong   STMicroelectronics

Comment Type **TR** *Comment Status* **X**

 Out-of-band sensing should also been performed whenever it is possible, regardless of the
 BS is communicating with its CPEs or not. This is true, for example, CPEs can
 simultaneously perform sensing in the DL when they're receiving.

SuggestedRemedy

 Address the comment, and revise the text if appropriate.

Proposed Response *Response Status* **W**
 PROPOSED REJECT.

 This comment was WITHDRAWN by the commenter.

Cl **06** *SC* **6.21.3**   *P* **159**   *L* **45**   # 43
Chouinard, Gerald   Communications Rese

Comment Type **TR** *Comment Status* **D**

 ""For out-of-band measurements, quiet periods are not necessary ..."" [Not necessary true:
 sensing may not be done during CPE burst transmission because of the large signal
 differential, and even during reception if a single RF path is used for RX and sensing.]

SuggestedRemedy

 Clarify sentence accordingly and include the above explanation and any other material from
 the Sensing Tiger Team.

Proposed Response *Response Status* **W**
 Defer (Green) until submission of text

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.21.3**

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Cl **06**   *SC* **6.21.3**   *P* **159**   *L* **45**   # 521

Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **D**

""For out-of-band measurements, quiet periods are not necessary and hence the BS can allow, if desired, a certain level of autonomy to the CPE to decide when to perform these measurements.""

...well, sort of. If neighboring WRANs are operating on these channels, we cannot sense those channels for incumbents unless the occupying WRAN has a quiet period while we're visiting that channel.

SuggestedRemedy

We should say that to keep CPEs low complexity, they may not be able to sense offchannel during upstream communications. Note that this would pretty much limit sensing techniques to those requiring less than about 5 ms with 50% U/D split. Even if a CPE isn't scheduled to transmit, his neighbor might be, which could interfere with his sensing depending on receiver dynamic range (unless this is accounted for with location-based scheduling).

Proposed Response   *Response Status* **W**

Defer (Green) until submission of text

Cl **06**   *SC* **6.21.3**   *P* **160**   *L* **2**   # 522

Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **A**

""Immediately after the end of a quiet period longer than one frame size, the BS shall transmit a preamble for the purpose of resynchronization of all CPEs in the cell and for channel estimation (see 8 for further details).""

If the quiet period is not an integer number of frames, is a partial frame used (which would maintain phase with the original superframe), or does a new frame start after the quiet period, which would result in a superframe phase slip?

SuggestedRemedy

Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

If the quiet period is not an integer number of frames, a partial frame is used.

Cl **06**   *SC* **6.21.3**   *P* **160**   *L* **2**   # 224

HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**

How long is the time for resync and channel estimation? This time, together with reporting time, DFS signaling time, and quiet sensing time, add into the service interruption time.

SuggestedRemedy

Address the issue. Consider DFH for enhancing the performance.

Proposed Response   *Response Status* **W**

Defer (Green)

See the document 22-05-0105-01-0000

Cl **06**   *SC* **6.21.3**   *P* **160**   *L* **3**   # 93

Cordeiro, Carlos   Philips

Comment Type **TR**   *Comment Status* **D**

It is not 'transmit a preamble'

SuggestedRemedy

Replace 'a preamble' by 'both the short and the long training sequences'

Proposed Response   *Response Status* **W**

Defer (Green) until the discussion on preamble

Cl **06**   *SC* **6.21.3.1**   *P* **160**   *L* **13**   # 225

HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**

Why don't we simply consider GPS for sharing a common clock among coexisting WRAN systems? Cost is not an critical issue for BSs.

SuggestedRemedy

Consider using GPS for WRAN systems synchronization.

Proposed Response   *Response Status* **W**

Defer (Green) until submission of proposal.

Reference from text of 802.16h

Assign it to Wendong

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
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Cl **06**   *SC* **6.21.3.2**   *P* **160**   *L*   # 70
Chang, Soo-Young   Huawei Technologies

Comment Type **TR**   *Comment Status* **D**

It is based on a two-stage sensing approach: fast sensing and fine sensing. The fast sensing is done before the fine sensing, and typically uses a quick and simple detection algorithm such as energy detection. It is done primarily over in in-band channels, and the outcome of these measurements determines the need and the duration of the upcoming fine sensing.""

In order to detect signals of LU, QP (Quiet Period) is used by the WRAN. But in the QP, the whole system is required to keep quiet which means the whole system shall not perform any transmissions. This brings some points to be considered for performance improvement:
1) higher stringent requirement to the WRAN system;
2) because of the multipath, QP may be longer than tens milliseconds which affects the interference detection result;
3) because in the QP the whole system shall not perform any transmissions, this is a waste of the system resource;
4) in order to detect LU in time, using QP frequently is needed while this causes a lot of waste of the system resource.

SuggestedRemedy

More details and some algorithms are explained in 22-06-0262-00-0000_Huawei_Orthogonal_Interference_Detection.

Proposed Response   *Response Status* **W**

Defer until the discussion in the Sensing Tiger Team

Cl **06**   *SC* **6.21.3.2**   *P* **160**   *L* **49**   # 226
HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**

The text - ""how can a 802.22 network protect incumbents through quieting channels while, at the same time, supporting the expected QoS required by 802.22 users?"", is one of the motivation of DFH, which can effectively address the issue.

SuggestedRemedy

Consider DFH as the solution to the issue described here.

Proposed Response   *Response Status* **W**

Defer (Gray)

Cl **06**   *SC* **6.21.3.2**   *P* **161**   *L* **4**   # 227
HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**

Considering the efficiency and effectiveness issues, the Two Stage Mechanism for Quiet Period Management shall not be mandatory.

SuggestedRemedy

Considering the efficiency and effectiveness issues, the Two Stage Mechanism for Quiet Period Management shall not be mandatory. Consider DFH as the solution to the requirements for both incumbenet sensing and QoS support of WRAN.

Proposed Response   *Response Status* **W**

Defer (Green)

efficiency and effectiveness issues will not be resolved until the sensing methods are selected.

Cl **06**   *SC* **6.21.3.2**   *P* **161**   *L* **6**   # 125
Chu, Liwen   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**

here the standard says that ""It is done primarily over in in-band channels, and the outcome of these measurements determine the need and the duration of the upcoming fine sensing."". This is controdictory with synchronization among overlapped cells (some cells do not need fine sensing and some cells need fine sensing).

SuggestedRemedy

Fix it.

Proposed Response   *Response Status* **W**

Defer (Green) until submission on how to synchronize inter-cell's quiet period if this mechanism is used.

Cl **06**   *SC* **6.21.3.2**   *P* **161**   *L* **14**   # 228
HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**

How can energy detection in micro seconds achieves the sensing requirement of -116dBm and the required(Pd, Pfa) performance? Reality is likely that energy sensing would never feasible for such stringent sensing requirements.

SuggestedRemedy

Address the feasibility and practicalily of using ""fast sensing"" for weak signal energy detection. Considering the efficiency and effectiveness issues, the Two Stage Mechanism for Quiet Period Management shall not be mandatory.

Proposed Response   *Response Status* **W**

Defer (Green)

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

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Cl **06**   *SC* **6.21.3.2**   *P* **161**   *L* **14**   # 231
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
For relatively weak signals (e.g. below the noise floor), it doesn't make sensing to have fast sensing because it doesn't help. Fine sensing is always needed in many situations.

SuggestedRemedy
Address the issue. Consider DFH as the alternative to the problem being addressed. Considering the efficiency and effectiveness issues, the Two Stage Mechanism for Quiet Period Management shall not be mandatory.

Proposed Response   *Response Status* **W**
Defer (Green)

efficiency and effectiveness issues will not be resolved until the sensing methods are selected.

Page 163 Line 18 and Line 26 imply that the fast sensing is mandatory. Consider inserting conditional clause if fast sensing is implemented.

Assign to Carlos.

Cl **06**   *SC* **6.21.3.2**   *P* **161**   *L* **17**   # 94
Cordeiro, Carlos   Philips

Comment Type   **TR**   *Comment Status* **A**
Specific numbers should not be mentioned

SuggestedRemedy
- Replace 'a few' by 'in the order of'
- Delete the text between parenthesis '(e.g., 20usec ....)'

Response   *Response Status* **W**
PROPOSED ACCEPT.

Cl **06**   *SC* **6.21.3.2**   *P* **161**   *L* **20**   # 229
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
If the energy in the affected channel is always below the threshold, Can we conclude that the channel is incumbent free such that the fine sensing can be cancelled? It seems not making sense.

SuggestedRemedy
Address the issue. Considering the efficiency and effectiveness issues, the Two Stage Mechanism for Quiet Period Management shall not be mandatory.

Proposed Response   *Response Status* **W**
Defer (Green)

efficiency and effectiveness issues will not be resolved until the sensing methods are selected.

Cl **06**   *SC* **6.21.3.2**   *P* **161**   *L* **22**   # 230
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
At lease quiet time for 1 chnanel is needed if there is any doubt. Fine sensing quiet time would be 24ms/channel!!! QoS issue is still unsolved.

SuggestedRemedy
Address the issue. Consider DFH as the solution for the problem. Considering the efficiency and effectiveness issues, the Two Stage Mechanism for Quiet Period Management shall not be mandatory.

Proposed Response   *Response Status* **W**
Defer (Green)

efficiency and effectiveness issues will not be resolved until the sensing methods are selected.

Clarify the meaning of "mandatory" in Page 161, Line 4

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

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Cl **06**   *SC* **6.21.3.2**   *P* **161**   *L* **28**   # 233
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
Dynamically appearance of fine sensing doesn't actually resolve the QoS requirement issue. Quiet periods of more than 20ms are still needed in many situations.

SuggestedRemedy
Address the issue. Consider DFH as the alternative solution to the problem being addressed. Considering the efficiency and effectiveness issues, the Two Stage Mechanism for Quiet Period Management shall not be mandatory.

Proposed Response   *Response Status* **W**
Defer (Green)

efficiency and effectiveness issues will not be resolved until the sensing methods are selected.

Cl **06**   *SC* **6.21.3.2**   *P* **161**   *L* **31**   # 232
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **A**
Why 3 orders?

SuggestedRemedy
Address the question.

Response   *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

Replace "the fine sensing could be over 3 orders of magnitude larger than the fast sensing" by "the fine sensing time could be orders of magnitude larger than the fast sensing"

Cl **06**   *SC* **6.21.3.2**   *P* **161**   *L* **37**   # 234
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
Fine sensing shall not ends at the end of the channel detection time because extra time is needed to be reserved for sensing reporting on the same channel.

SuggestedRemedy
Address the issue and revise the scheme. Considering the efficiency and effectiveness issues, the Two Stage Mechanism for Quiet Period Management shall not be mandatory.

Proposed Response   *Response Status* **W**
Defer (Green)

efficiency and effectiveness issues will not be resolved until the sensing methods are selected.

Cl **06**   *SC* **6.21.3.2**   *P* **161**   *L* **41**   # 44
Chouinard, Gerald   Communications Rese

Comment Type   **TR**   *Comment Status* **D**
Fast sensing may be sufficient to indicate presence of incumbent. Then the WRAN system can change channel and do the fine sensing off-channel since this could possibly be done while the system operates normally if a separate sensing RF chain is used.

SuggestedRemedy
Line 41: Add the following sentences:
""IF fast sensing gives sufficient information on incumbent, fine sensing may not be needed on-channel. The system could change channel and carry out the fine sensing off-channel.""

Proposed Response   *Response Status* **W**
Defer (Green)

Informative.

Cl **06**   *SC* **6.21.3.2**   *P* **161**   *L* **46**   # 235
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
This would only make sense if the incumbent signal is strong enough most of the time. Otherwise, fast sensing will never help for both incumbent protection and WRAN QoS.

SuggestedRemedy
Address the issue. Consider DFH as the alternative to the problem being addressed. Considering the efficiency and effectiveness issues, the Two Stage Mechanism for Quiet Period Management shall not be mandatory.

Proposed Response   *Response Status* **W**
Defer (Green)

efficiency and effectiveness issues will not be resolved until the sensing methods are selected.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

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Cl **06**   *SC* **6.21.3.2**   *P* **163**   *L* **7**   *#* 236
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status*   **D**

How to synchronize ""dynamically allocated"" fine sensing periods of overlapping WRANs? Imagine some WRANs need fine sensing but others don't. How can fine sensing be effective conducted for those WRANs that need it when others who don't need it are transmitting data?

SuggestedRemedy

Address the issue. Consider DFH as the alternative to the problem being addressed. Considering the efficiency and effectiveness issues, the Two Stage Mechanism for Quiet Period Management shall not be mandatory.

Proposed Response   *Response Status*   **W**

Defer (Green)

Issue: How to synchronize ""dynamically allocated"" fine sensing periods of overlapping WRANs?

Cl **06**   *SC* **6.21.3.2**   *P* **163**   *L* **11**   *#* 45
Chouinard, Gerald   Communications Rese

Comment Type   **TR**   *Comment Status*   **D**

So all WRAN systems would synchronize their frames and quiet periods in an area. How would the SCH be detectable by adjacent cell BS and CPEs in a nearly synchronized case if they all occur at the same time? How would the fine tining be done?

SuggestedRemedy

Augment the paragraph to explain the mechanism for the fine super-frame alignment.

Proposed Response   *Response Status*   **W**

Defer (Green) until submission on how to synchronize inter-cell's quiet period if this mechanism is used.

Cl **06**   *SC* **6.21.3.2.1**   *P* **163**   *L* **22**   *#* 523
Kuffner, Stephen   Motorola

Comment Type   **T**   *Comment Status*   **D**

""This is not the case, for example, if such sensing is performed during the TTG window as shown in Figure 87, as overlapping networks have different ratios between upstream and downstream traffic.""

If overlapping TDD networks have different T/R splits, then one network's CPE can be transmitting while his neighbor (belonging to the other network) is listening. Can overlapping networks really have different T/R splits?

SuggestedRemedy

Proposed Response   *Response Status*   **W**

Defer (Green)

Refer this issue to the WG.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.21.3.2.1**

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Cl **06**   *SC* **6.21.3.2.1**   *P* **163**   *L* **26**   # 46
Chouinard, Gerald   Communications Rese

Comment Type   **TR**   *Comment Status* **D**
""More specifically, the RTG window shall be used to perform the fast sensing, as this it will
be more than sufficient to, for example, perform a simple energy detection.""
Not sure! The RTG may be as small as 46 usec and removing the channel time spread and
filter ringing, it would not be sufficient to secure a quiet channel. A larger RTG would then be
needed but would be wasteful since on-channel sensing does not occur necessary on every
frame. I t would cost too much in overhead.

""For this scheme to be implemented, the BS has to inform CPEs in which frame fast
sensing is to be performed. Not only that, the BS should also specify in which channel to
perform fast sensing ...""
It would be known since it is on-channel sensing! Off-channel sensing is another story since
it could be done by a CPE if a separate sensing chain is used when the BS has indicated in
its DS-MAP that there is no data addressed to it in the current frame.

""... and how large the Sensing RTG window has to be.""
RTG is not a variable. It is set by the PHY parameters of the system. The last slots of the
frame could be declared as 'quiet' however.

SuggestedRemedy
Line 27: Add text to the paragraph to clarify the use of the last slots of a frame for sensing
rather than the RTG.

Line 30: Clarify why it would need to indicate the channel and describe the off-channel
sensing scheme.

Line 31: Clarify that RTG has a set length for a given cyclic prefix and that last data slots
could be used for sensing.

Proposed Response   *Response Status* **W**
Defer (Green)

[1] Scheduling Issues
[2] Sensing Architecture Issues

Cl **06**   *SC* **6.21.3.2.2**   *P* **164**   *L* **14**   # 237
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **A**
Figure 59 needs to be changed for single channel operation instead of channel bonding.

SuggestedRemedy
Change the figure 59.

Response   *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

Assign to Carlos to redraw the figure for single channel operation and move the current
figure (Figure 59) to annex

Cl **06**   *SC* **6.21.3.2.3**   *P* **164**   *L* **16**   # 238
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
Considering the text - ""Once the BS receives the reports from enough CPEs about their fast
sensing measurements, it can make a decision with respect to the following fine sensing
stage(s). "" What criteria is used for the decision?

SuggestedRemedy
Specify the criteria that are used to decide if fine sensing is need.

Proposed Response   *Response Status* **W**
Defer (Green)

Editoral Comment:

Replace "following" by "subsequent" in Page 164, Line 15

Cl **06**   *SC* **6.21.4**   *P* **165**   *L* **22**   # 239
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **A**
""this can be done through clustering"" - Why is clustering mentioned in particular?

SuggestedRemedy
Address the question and revise the text where appropriate.

Response   *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

Delete the text "(e.g., this can be done through clustering)" In Page 165, Lines 21-22

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line
Cl **06**
SC **6.21.4**
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Cl **06**   *SC* **6.21.4**   *P* **165**   *L* **26**   # |126
Chu, Liwen   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
Since the explicit channel management mode provides more flexible
(unicast/multicast/broadcast, being sent out at any time) and the same spectrum utilization
(broadcast). The 802.22 do not need embedded channel management mode.

SuggestedRemedy
remove embedded channel management mode from the draft.

Proposed Response   *Response Status* **W**
Defer (Green)

Clarify is broadcasting in explicit channel mode equivalent to embedded channel mode?

Cl **06**   *SC* **6.21.4.1**   *P* **166**   *L* **9**   # |240
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **A**
Active set 1 and set 2: Channels used for BS and CPEs can be different only when optional
features such as channel aggregation and channel bonding are employed.

SuggestedRemedy
Such categorization would only make sense as optional. The specification shall not be
mandated. Address the issue.

Response   *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

Assign to Ko.

Cl **06**   *SC* **6.21.4.2**   *P* **166**   *L* **31**   # |127
Chu, Liwen   STMicroelectronics

Comment Type   **T**   *Comment Status* **D**
The channel in the sets other than occupied set should become useless as incumbent
service appears.

SuggestedRemedy
modify 1) accordingly.

Proposed Response   *Response Status* **W**
Defer (Green)

Assign to Carlos to clarify the discrepancy between the text and Figure 61 for transition 1.

Cl **06**   *SC* **6.21.4.2**   *P* **167**   *L* **36**   # |128
Chu, Liwen   STMicroelectronics

Comment Type   **T**   *Comment Status* **A**
This item should be redefined. Otherwise the candidate channel set will include only one
channel with best quality.

SuggestedRemedy

Response   *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

Assign to Ko.

Cl **06**   *SC* **6.21.4.3**   *P* **167**   *L* **4**   # |241
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
How effective is it that a WRAN detect the collision, given a 33km coverage radius and
much longer interference radius of a WRAN? It could interfere but not be able to detect the
existence of another WRAN in the neighborhood. It may be able to detect but the response
time could be quite long given a long propagation delay of the signal. If collision happens,
interference may not be acceptable for WRANs. When a WRAN backoff when it detects a
collision, its services have to be interrupted and such service interruption way hurt the QoS
of the WRAN.

SuggestedRemedy
Address the issues. The scheme should not be standardized as a mandatory feature.

Proposed Response   *Response Status* **W**
Defer (Green)

Assign to Thomson to address this issue.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.21.4.3**

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Cl **06**   *SC* **6.21.5**   *P* **168**   *L* **3**   # 53

Ji, Baowei   Samsung Telecom. A

Comment Type **TR**   *Comment Status* **D**

The method of synchronization of overlapping BSs in the current 802.22 spec. draft does not address the propagation delays between a CBP transmitter and a CBP receiver. The precision of net synchronization is directly limited by this kind of propagation delay. In other words, two neighbor cells could be off synch by up to hundreds of microseconds, which is far from the desired precision (say 25Ásec).

SuggestedRemedy

Please insert a new section 6.21.5.4 right above Section 6.21.6.1 on Page 172, Line 32. The suggested text for this new section is on Slides 28 - 30 of the document 22-07-0021-01-0000_Revisit_CBP_and_Synchronization_of_Overlapping_WRAN.ppt.

Proposed Response   *Response Status* **W**

Defer (Green) new topic.

Cl **06**   *SC* **6.21.5**   *P* **168**   *L* **3**   # 244

HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**

OFDMA based spectrum sharing requires accurate sychronization which would need a common system clock for every base station.

So the sychronization method proposed in this subclause is not necessary and not appropriate since a method to provide more accurate common systme clock will have to be provided.

SuggestedRemedy

Achieve BS synchronization by sharing a common system clock. Such common system clock is provided by Global positioning system (GPS).

Proposed Response   *Response Status* **W**

Defer (Green)

Assign to Wendong to bring the text from 802.16h

Cl **06**   *SC* **6.21.5**   *P* **168**   *L* **3**   # 242

HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**

The ""Synchronization of Overlapping BSs"" precedure is too complex and has limitations. Suggest to use GPS for synchronizing the BS by sharing a common clock.

SuggestedRemedy

Suggest to use GPS for synchronizing the BS by sharing a common clock.

Proposed Response   *Response Status* **W**

Defer (Green)

Assign to Wendong to bring the text from 802.16h

Cl **06**   *SC* **6.21.5**   *P* **168**   *L* **18**   # 47

Chouinard, Gerald   Communications Rese

Comment Type **TR**   *Comment Status* **D**

""This will further enhance the incumbent detection probability, which can otherwise be compromised if it occurs randomly.""
One could imagine that the WRAN cell closest to the incumbent would first detect this incumbent and change frequency. This would then allow the second closest cell to then detect the incumbent and change channel and so on. This is true for DTV but not necessarily for Part 74 microphone operation.

SuggestedRemedy

Larify paragraph as to the possibility of a progressive sensing of the incumbent based on proximity but possible difficulty with Part 74 microphones.

Proposed Response   *Response Status* **W**

Defer (Green)

Assign to Carlos.

Cl **06**   *SC* **6.21.5**   *P* **168**   *L* **3**   # 136

Chu, Liwen   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**

Synchronization of BSs by common clock provided by GPS should be included in the 802.22 standard.

SuggestedRemedy

Proposed Response   *Response Status* **W**

Defer (Green)

Get the text from 802.16h

Note: Currently, there is no proposal regarding this topic.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.21.5**

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Cl **06**   *SC* **6.21.5.1**   *P* **169**   *L* **6**   *#* 48
Chouinard, Gerald   Communications Rese

Comment Type **ER**   *Comment Status* **X**
Clarify the assumptions used and make sure they are aligned with the characteristics of the standard.

SuggestedRemedy
Modify the two paragraphs as follows:

""For any synchronization scheme to be mostly effective, some constraints need to be imposed on the overall frame timings. In the specific case of the 802.22 CMAC, the superframes shall have the same length in terms of time, that is 16 frames. Individual frames within a superframe shall also have the same size, that is 10 ms. This will facilitate not only in establishing synchronization amongst overlapping cells, but, most importantly, in keeping it with very low overheads.

If a GPS device is available at the 802.22 BSs, synchronization can be accomplished by imposing an additional requirement that BSs shall only initiate superframes at specific absolute points in time. But for the purpose of this standard, no mandatory GPS device is assumed at the BS.""

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.21.5.1**   *P* **169**   *L* **6**   *#* 95
Cordeiro, Carlos   Philips

Comment Type **TR**   *Comment Status* **D**
This section is no longer required given that all of the assumptions have been fully addressed and overcome in the current draft.

SuggestedRemedy
Delete section 6.21.5.1

Proposed Response   *Response Status* **W**
Defer (Green)

Cl **06**   *SC* **6.21.5.1**   *P* **169**   *L* **38**   *#* 49
Chouinard, Gerald   Communications Rese

Comment Type **TR**   *Comment Status* **A**
""... where NSTQP is the Number of Superframes within an Incumbent Quiet Period.""

If a quiet period is allowed to include a number of super-frames, it is unlikely that the QoS will be provided. Sensing should not require more than a few 10s of ms, not multiple of 160 ms!

SuggestedRemedy
Change NSTQP in NSIQP in the extracted phrase and clarify text.

Response   *Response Status* **W**
PROPOSED ACCEPT.

Replace "NSTQP" by "NSIQP"

Cl **06**   *SC* **6.21.5.3**   *P* **172**   *L* **21**   *#* 50
Chouinard, Gerald   Communications Rese

Comment Type **TR**   *Comment Status* **D**
""... the BS shall schedule self-coexistence windows with an appropriate guard band, which is recommended to be at least three slots.""
If the complete characterization of the channel response is to be made, then the self coexistence window needs to be at least 7+3= 10 slots.

SuggestedRemedy
Modify the extracted phrase accordingly.

Proposed Response   *Response Status* **W**
Defer (Green) for Gerald's clarification on 7 slots

Cl **06**   *SC* **6.21.6**   *P* **172**   *L* **32**   *#* 243
HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **A**
The ""Clustering"" procedure and algorithm are too complex to implement and have limitations. The algorithm shall not be standardized.

SuggestedRemedy
Address the issue. Clustering procedure shall not be mandated. The specific clustering algorithm shall not be included in the standard.

Response   *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

Change "shall" to "may" in Page 176, Line 1
Insert "For example," in front of the first sentence in Page 176, Line 1

Remark: the algorithm refers to "k-means algorithm"

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.21.6**

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Cl **06**   *SC* **6.21.6.2**   *P* **176**   *L* **1**   # 524

Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **A**

""The k-means clustering algorithm shall be used for implementing clustering in a 802.22 cell.""

Why is this a ""shall""? Maybe clustering can be imposed, but does a clustering algorithm need to be mandated? If this is something done internal to the BS, can't they use whatever algorithm they want?

SuggestedRemedy

Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change "shall" to "may" in Page 176, Line 1
Insert "For example," in front of the first sentence in Page 176, Line 1

Cl **06**   *SC* **6.21.6.2**   *P* **177**   *L* **3**   # 129

Chu, Liwen   STMicroelectronics

Comment Type **TR**   *Comment Status* **A**

Since clustering algorithm is only implemented in each BS. No cooperations are required among neighboring BSs, BS and CPEs. It is a totally implementation issue. So it is not necessary to indicate a mandatory algorithm.

SuggestedRemedy

clearly says that the standard do not need to define a clustering algorithm and the k-means clustering algorithm is a informative algorithm.

Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change "shall" to "may" in Page 176, Line 1
Insert "For example," in front of the first sentence in Page 176, Line 1

Cl **06**   *SC* **6.3**   *P* **9**   *L* **29**   # 176

HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**

The specified Superframe structure is designed for the optional channel bonding feature.

SuggestedRemedy

The specified Superframe structure shall be optional or redeisgned for mandatory features.

Proposed Response   *Response Status* **W**

Defer (Green)

Cl **06**   *SC* **6.3**   *P* **9**   *L* **30**   # 525

Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **A**

""The mandatory superframe structure employed in CMAC is depicted in Figure 3, where it can be seen that it is comprised of three main parts:

""   A PHY preamble - see 8
""   A Superframe Control Header (SCH) - see 6.5.1
""   A number of frames - see 6.4

The number of frames is fixed now.

SuggestedRemedy

""The mandatory superframe structure employed in CMAC is depicted in Figure 3, where it can be seen that it is comprised of three main parts:

""   A PHY preamble - see 8
""   A Superframe Control Header (SCH) - see 6.5.1
""   A fixed number (16) of frames.

Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Suggested remedy:
A fixed number of frames, not to mention the number

Cl **06**   *SC* **6.3**   *P* **9**   *L* **30**   # 331

Vlantis, George   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**

Channel bonding is an optional feature in the draft. In cases where channel bonding is not implemented, the superframe preamble and SCH field are unneeded. A preamble similar to 802.16, using FCH for the downstream, is suitable. If the receiver detects the optional presence of the superframe preamble he can interpret the SCH field correctly and decide whether and how the channel bonding feature will work across channels. An acceptable method for doing downstream channel bonding is defined in DOCSIS 2.5/3.0

SuggestedRemedy

Remove the superframe structure. Implement the DOCSIS method for doing channel bonding. Minimally, make the superframe structure optional.

Proposed Response   *Response Status* **W**

Defer (Green) until presentation

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.3**

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Cl **06**		*SC* **6.3**				*P* **9**			*L* **33**			# 9
Chouinard, Gerald						Communications Rese

Comment Type **ER**		*Comment Status* **X**

Channel bonding and aggregation are to be discussed later and should not appear in the first draft. See Annexes.

SuggestedRemedy

Line 33:
À A PHY preamble (composed of a synchronization symbol and two channel training symbols)- see 8
À A Superframe Control Header (SCH) - see 6.5.1
À 16 frames, of which the first frame comes without a preamble and is shortened so that its total length is still equal to the nominal frame length (10 ms) when the superframe preamble and the SCH are included - see 6.4

Line 37:
At the beginning of every superframe, the BS shall transmit a special preamble and channel training symbols and SCH (with a known modulation/coding). Any device tuned to the TV channel that synchronizes and receives the SCH, is able to obtain the information it needs in order to establish communication with the BS. During the lifetime of a superframe, 16 MAC frames are transmitted. During each MAC frame, the BS has the responsibility to manage the upstream and downstream directions, which may include ordinary data communication, measurement activities, coexistence procedures, and so on.

Line 46:
The superframe shall have a fixed and pre-determined size of 16 frames (see Table 27 for a list of frame sizes). This is needed to guarantee that overlapping 802.22 BSs can efficiently coexist and share resources through the numerous coexistence mechanisms described in 6.21.

Proposed Response			*Response Status* **O**

Cl **06**		*SC* **6.3**				*P* **10**			*L* **1**			# 10
Chouinard, Gerald						Communications Rese

Comment Type **ER**		*Comment Status* **X**

Channel bonding and aggregation are to be discussed later and should not appear in the first draft. See Annexes.

SuggestedRemedy

Figure 3 needs to be re-done to depict the super-frame structure without the 'bonding' mechanism. Include illustration of the shorter first frame.

Proposed Response			*Response Status* **O**

Cl **06**		*SC* **6.4**				*P* **9**			*L* **10**			# 526
Kuffner, Stephen						Motorola

Comment Type **T**		*Comment Status* **A**

Figure 4:
sliding coexistence slots need to be fixed in the figure.

SuggestedRemedy

Response				*Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Assign to Carlos.

Cl **06**		*SC* **6.4**				*P* **10**			*L* **3**			# 177
HU, Wendong						STMicroelectronics

Comment Type **TR**		*Comment Status* **A**

Sliding self-coexistence slots shall be only appeared in the US subframe and located in between the US and DS subframes. Figure 4 has error.

SuggestedRemedy

Sliding self-coexistence slots shall be only appeared in the US subframe and located in between the US and DS subframes. Fix such error in Figure 4.

Response				*Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Assign to Carlos.

Cl **06**		*SC* **6.4**				*P* **10**			*L* **3**			# 178
HU, Wendong						STMicroelectronics

Comment Type **TR**		*Comment Status* **A**

Self-coexistence slots shall not be slided and shall be in fixed sized and well-known/synchronized locations in the frame.

SuggestedRemedy

Self-coexistence slots shall not be slided and shall be in fixed sized and well-known/synchronized locations in the frame. Specify fixed sized self-coexistence slots.

Response				*Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Assign to Carlos.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.4**

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Cl **06**   *SC* **6.4**   *P* **10**   *L* **10**   # 87

Cordeiro, Carlos   Philips

Comment Type   **TR**   *Comment Status*   **A**

Figure 4 needs to be updated to indicate the Self-coexistence window at the end of the frame

SuggestedRemedy

I have the updated figure and can provide it upon request.

Response   *Response Status*   **W**

PROPOSED ACCEPT.

Carlos to insert new figure.

Cl **06**   *SC* **6.4**   *P* **10**   *L* **11**   # 11

Chouinard, Gerald   Communications Rese

Comment Type   **TR**   *Comment Status*   **A**

Self co-existence slot should be at the end of the frame, not at the TTG which varies based on US/DS capacity split.

SuggestedRemedy

Modify Figure 4 accordingly.

Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

Assign to Carlos

Cl **06**   *SC* **6.4**   *P* **11**   *L* **4**   # 12

Chouinard, Gerald   Communications Rese

Comment Type   **TR**   *Comment Status*   **A**

Remove the ""possible contention intervals for coexistence"" in the DS sub-frame.

Shouldn't the notion of sub-channels be added in the text around line 8 to reflect the OFDMA structure rather than the TDMA structure?

SuggestedRemedy

Line 3:
""the downstream and upstream capacity can be easily done. The downstream subframe consists of only one downstream PHY PDU. An upstream subframe consists of contention intervals ...""

Line 8:
of fixed size (MAC) slots, which are, in turn, an integral number of modulation symbols and sub-channels (currently, 1 MAC slot = 1 modulation symbol x 1 sub-channel).""

Response   *Response Status*   **W**

PROPOSED ACCEPT.

Delete "possible contention intervals for coexistence with purposes" (Line 4, Page 11)

Change the sentences in Lines 8 - 9 as "of fixed size (MAC) slots, which are, in turn, an integral number of modulation symbols and sub-channels (currently, 1 MAC slot = 1 modulation symbol x 1 sub-channel)."

Cl **06**   *SC* **6.4**   *P* **11**   *L* **30**   # 13

Chouinard, Gerald   Communications Rese

Comment Type   **TR**   *Comment Status*   **D**

Line 30: Clarification of the sentence.

Also, remenber, in OFDMA, the bursts are defined in terms of time slots and sub-channels, not only time slots.

Line 33: Why is the SSS a sliding window. This window should occupy the last time slots of the US subframe.

SuggestedRemedy

Line 30:
""allocation and use the resource for some other purpose. Preceding upstream CPE PHY bursts, in this case, the BS may schedule up to four contention windows (see 6.14) before the next scheduled upstream CPE PHY burst. The initialization window is used ...""

Proposed Response   *Response Status*   **W**

Defer (Green) for the upstream OFDMA parameters (subchannelization) to be resolved.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied   Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.4**

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Cl **06**   *SC* **6.4**   *P* **11**   *L* **36**   # 333
Vlantis, George   STMicroelectronics

Comment Type **T**   *Comment Status* **A**

Delete paragraph beginning at Line 36 of page 11 and ending on Line 2 of Page 12. There is no normative nor informative content--just proselytization.

SuggestedRemedy

Delete the paragraph.

Response   *Response Status* **W**

PROPOSED ACCEPT.

Move this paragraph (beginning at Line 36 of page 11 and ending on Line 2 of Page 12.) to Technology Overview Document

Cl **06**   *SC* **6.4**   *P* **11**   *L* **37**   # 332
Vlantis, George   STMicroelectronics

Comment Type **E**   *Comment Status* **X**

Replace the phrase ""It is common sense that self-coexistence..."" with ""Self-coexistence..."" Assumptions about the readers state of mind don't belong in a specification.

SuggestedRemedy

Replace the phrase ""It is common sense that self-coexistence..."" with ""Self-coexistence...""

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.4**   *P* **12**   *L* **5**   # 527
Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **X**

""The SSS window (depicted in Figure 4) can appear in either the downstream or upstream part of a frame ...""

Is this still true?

SuggestedRemedy

Proposed Response   *Response Status* **W**

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Cl **06**   *SC* **6.4**   *P* **12**   *L* **5**   # 14
Chouinard, Gerald   Communications Rese

Comment Type **TR**   *Comment Status* **A**

Why does the SS need to slide? Its place should be at the end of the US sub-frame.

SuggestedRemedy

Line 5:
""together with coexistence beacons (i.e., through CBP) shall be employed. The SSS window (depicted in Figure 4) is scheduled at the end of the upstream subframe for simpler multiplexing and to accommodate simpler receiver designs. These beacons are transmitted by ...""

Response   *Response Status* **W**

PROPOSED ACCEPT.

Change the sentence in Line 5 as follows: "together with coexistence beacons (i.e., through CBP) shall be employed. The SSS window (depicted in Figure 4) is scheduled at the end of the upstream subframe for simpler multiplexing and to accommodate simpler receiver designs. These beacons are transmitted by ...""

Cl **06**   *SC* **6.4**   *P* **12**   *L* **15**   # 15
Chouinard, Gerald   Communications Rese

Comment Type **TR**   *Comment Status* **A**

CBP bursts are to signal the possibility of coexistence situation ""on the same channel"". This is done through on-channel decoding.

SuggestedRemedy

Line 15:
Whenever a CPE is neither receiving nor sending data to its BS, it is capable to, first, perform out-of-band measurements (see 6.21.1.5), and/or, depending on whether sensing is performed by the same RF chain or a different one, decode CBP packets transmitted by nearby CPEs belonging to other BSs operating on the same TV channel ...

Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change the sentence in Line 15 as "Whenever a CPE is neither receiving nor sending data to its BS, it is capable of decoding CBP packets transmitted by nearby stations belonging to other BSs operating on the same TV channel, and/or performing out-of-band measurements (see 6.21.1.5), which depends on whether sensing is performed by the same RF chain or a different one."

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied   Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.4**

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Cl **06**   *SC* **6.5.1**   *P* **12**   *L* **29**   # |179
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status*   **D**
Super frame control header, designed for optional featurs such as channel bonding, should be optional or re-designed for single channel operations.

SuggestedRemedy
Specify that super frame control header (SCH) is optional or re-designed SCH for single channel operations.

Proposed Response   *Response Status*   **W**
Defer (Green)

Cl **06**   *SC* **6.5.1**   *P* **12**   *L* **31**   # |16
Chouinard, Gerald   Communications Rese

Comment Type   **TR**   *Comment Status*   **D**
Bonding: later option
AAS: later option
Better coexistence with FCC Part 74 systems: not clear since Part 7 devices are sensed all the time for the beacon sync burst

SuggestedRemedy
Line xx:
""802.22 cell and brings with it many benefits including control over the time a device takes to join the network, better self-coexistence, support for quiet periods, better coexistence with incumbents and FCC Part 74 systems employing beacon signals, eventual support for channel bonding (see annex X), and so on.

Proposed Response   *Response Status*   **W**
Defer (Green) until discussion on superframes.

Cl **06**   *SC* **6.5.1**   *P* **12**   *L* **45**   # |17
Chouinard, Gerald   Communications Rese

Comment Type   **TR**   *Comment Status*   **D**
Table 1:
Second parameter seems to be redundent since by definition 802.22 Standard will carry 80.22 system type. Footnote on page 12 goes against what 802.22.1 is developing as beacon for Part 74 devices.

Insert new 4th parameter: BSID. It will replace the later TxID since SCH is only transmitted by BS. Reordering makes it consistent with other similar tables.

Old 5th parameter (FS) is redundant if we decide that the number of frames in a super-frame is 16. Should it be variable?

Bonding is an option to be discussed later (see annexes). Parameters for bonding should be marked ""Reserved"" in the Table 1.

Parameter GIF connot be only 1 bit since it has 5 option.

SuggestedRemedy
Delete second parameter (ST=0)

Insert new 4th parameter:
SID   48 bits   Address that uniquely identifies the transmitting BS.

Remove FS parameter in Table 1 unless it is decided that the number of frames in a super-frame is a variable.

Change parameter PP for ""Reserved""

Remove parameter TxID

Change parameter CN for ""Reserved""

Change parameter NC for ""Reserved""

Change parameter BFD for ""Reserved""

Change the size of parameter GIF to 3 bits.

Proposed Response   *Response Status*   **W**
Defer (Green)

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.5.1**

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Cl **06**   *SC* **6.5.1**   *P* **13**   *L* **1**   # 529
Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **A**
Table 1, GIF size:
Is 1 bit sufficient to represent the various guard interval factors? I count 4 cyclic prefix options: 1/32, 1/16, 1/8, and 1/4. Don't we need 2 bits?

SuggestedRemedy

Response   *Response Status* **W**
PROPOSED ACCEPT.

Cl **06**   *SC* **6.5.1**   *P* **13**   *L* **1**   # 528
Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **A**
Table 1, FS and FDC entries, are superfluous and should be eliminated.

SuggestedRemedy

Response   *Response Status* **W**
PROPOSED ACCEPT.

Cl **06**   *SC* **6.5.2**   *P* **15**   *L* **7**   # 18
Chouinard, Gerald   Communications Rese

Comment Type **TR**   *Comment Status* **D**
Table 4:

The modulation/coding for the FCH has to be decided upon.

DS-MAP Length: 8 bit addressing => up to 256 bits, this is not suffifient to map 30 sub-channels with the CIDs of 16 bit each. It only allows for 16 CID's and then there is no room for the burst start and length for each CID.

US-MAP Length: 8 bit addressing => up to 256 bits, up to 256 bits, this is not sufficient to map 60 sub-channels with the CID's of 16 bit each?

Repetition Indication parameter is not clear.

There will likely be an agreement on the absence of the training symbol following a Super-frame header. No need for the Short Training Sequence Present parameter.

SuggestedRemedy
Change the note for the FCH in Table 4 to:
Transmitted with modulation/coding QPSK rate ¢.

Increase the addressing size for the DS-MAP Length.

Increase the addressing size for the DS-MAP Length.

Clarify or remove Repetition Indication parameter.

Remove the Short Training Sequence Present parameter.

Proposed Response   *Response Status* **W**
Defer (Green) until Gerald's clarification about the increase in addressing size and the QPSK rate.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.5.2**

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Cl **06**   *SC* **6.6.1.2**   *P* **17**   *L* **3**   # 180

HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status*   **D**

    CBP Beacons, base station beacons are designed for CBP (coexistence beaconing protocol), which is not sufficiently an efficient and fair coexistence method.

SuggestedRemedy

    CBP should not be standardized as a mandatory feature. Consider negotiation based coexistence protocols such as on-demand spectrum contention protocol or/and credit token renting protocol instead. Or consider integrate CBP with on-demand spectrum contention or/and credit token renting protocols.

Proposed Response   *Response Status*   **W**

    Defer (Green)

    Assign to Carlos and Wendong

Cl **06**   *SC* **6.6.1.2**   *P* **18**   *L* **21**   # 19

Chouinard, Gerald   Communications Rese

Comment Type   **TR**   *Comment Status*   **X**

    Table 8:

    Explanation is needed for parameters 5 to 11.

    Same channels would be used for DS and US in a TDD system.

SuggestedRemedy

    If these parameters relate to bonding, replace them by ""Reserved"". If they relate to the stack of reserved channels for DFS, then clarify the wording.

    Remove parameters 9 to 11 since the parameters 5-8 apply also to US in a TDD system.

Proposed Response   *Response Status*   **W**

    PROPOSED REJECT.

    This comment was WITHDRAWN by the commenter.

    Explanation is given.

Cl **06**   *SC* **6.7.3**   *P* **22**   *L* **8**   # 20

Chouinard, Gerald   Communications Rese

Comment Type   **ER**   *Comment Status*   **X**

    What is the unit of power in Table 19.

SuggestedRemedy

    Indicate unit of power in Table 19 in the definition of the value.

Proposed Response   *Response Status*   **O**

TYPE: TR/technical required   ER/editorial required   GR/general required   T/technical   E/editorial   G/general
COMMENT STATUS: D/dispatched   A/accepted   R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied   Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.7.3**

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Cl **06**   *SC* **6.8.1.1**   *P* **25**   *L* **10**   # 21

Chouinard, Gerald   Communications Rese

Comment Type   **TR**   *Comment Status*   **A**

Table 26:
TTG parameter should be expressed as a fraction of a time slot since it is 210 usec to absorb the round-trip delay for 30 km while the time slot is 330 usec.

RTG is redundent since it will represent the left-over of the 10 ms frame once all the header, DS and US slots are known.

The 802.22 WG is likely to adopt a single frame period.

The numbering of the Super-frames is limited to 8 bits, giving a repetition period of 40.8 sec. A longer period may be necessary to avoid repetitions.

The ""Number of Channel for Backup"" parameter should indicate the number of backup channels available in the stack in case incumbents appear on one or more operational and backup channels. It is not clear why it should be 1 to maximize the probability of the channel to be vacant as indicated in the Table. Once this parameter is given, then the list of these backup channels should be included in a following parameter.

The parameter Sensing RTG is unlikely to be useful since the RTG is likely to be very short (46 usec for CP= 1/8). The filter ringing and channel spreading is likely to make such RTG useless for sensing. This feature should be removed.

SuggestedRemedy

Code the TTG in number of sampling periods.

Remove the RTG parameter.

Remove the Frame Duration Code.

Increase the length of the Action Super-frame Number parameter.

Change the note for the parameter: Number of Channels for Backup to: Number of backup channels in the BS stack to align the CPE stack.

Insert a new parameter with a loop based on the previous parameter to list the backup channels stored in the BS stack.

Remove parameters Sensing RTG and Channel Number for Sensing RTG.

Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.
Assign to Carlos.
Defer (green) sensing RTG until submission (quiet periods?)

Table 26:

Change the word "slots" to " by 8 samples increment" for both TTG and RTG

Delete the Frame Duration Code

Explanation is given for the comments on "repetition period of 40.8 sec"

Insert a new parameter with a loop based on the previous parameter to list the backup channels stored in the BS stack.

Cl **06**   *SC* **6.8.1.1.1**   *P* **27**   *L* **5**   # 22

Chouinard, Gerald   Communications Rese

Comment Type   **TR**   *Comment Status*   **A**

""In addition, in the TDD case, note that the RTG and TTG guard intervals must be included in a frame.""

The 802.22 WG should decide that the WRAN standard only addresses TDD. That RTG and TTG guard intervals have to bve included inb a frame is motherhood.

The 802.22 WG should decide on 10 ms for the frame period.

SuggestedRemedy

This section 6.8.1.1.1 should be deleted.

Response   *Response Status*   **W**

PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.8.1.1.1**

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Cl **06**   *SC* **6.8.1.2**   *P* **27**   *L* **12**   # 367

Vlantis, George   STMicroelectronics

Comment Type **TR**   *Comment Status* **A**

In Table 29, FEC code type and modulation type fields are not specified. Add BCC and
LDPC coding types. Define the values and remove the ""TBD"".

SuggestedRemedy

All of the above.

Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Delete "Offset"

In Table 29, element ID 150, bits 3 - 7 should be reserved.
Bits 0 - 2 have the following values:
000 = DBTC
001 = CTC
010 = LDPC
011 = SBTC

bits 3 - 5 have the following values:
000 = Spreading
001 = reserved
010 = QPSK
011 = 16QAM
100 = 64QAM

bits 6 - 7 have the following values:
00 = rate 1/2
01 = rate 2/3
10 = rate 3/4
11 = rate 5/6

Cl **06**   *SC* **6.8.1.2**   *P* **27**   *L* **12**   # 530

Kuffner, Stephen   Motorola

Comment Type **TR**   *Comment Status* **X**

""Table 29, FEC code type notes:
Spreading
(0ffset)QPSK; (0ffset)16-QAM; (0ffset)64-QAM;
Coding rates : 1/2, 2/3, 3/4
RS+CC/CC; CTC codes
Detailed specification TBD."" See also Table 41, 6.8.3.2.

What is meant by ""offset"" in relation to the constellation sizes?
Doesn't RS+CC indicate concatenated Reed-Solomon and Convolutional codes? We don't
have this in our system, do we?

SuggestedRemedy

CTC codes should not be mentioned. Either mention ""optional advanced coding
techniques"" or mention all options (CTC, LDPC, SBTC). Remove RS+CC if that indicates
Reed Solomon.

Proposed Response   *Response Status* **W**

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.8.1.2**

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Cl **06**   *SC* **6.8.15.3.3.2**   *P*   *L*   *#* 26

Chouinard, Gerald   Communications Rese

Comment Type **TR**   *Comment Status* **A**

The parameter that need to be monitored by the WRAN system is the EIRP and not the output power. The gain of the transmit antenna will need to be known by the manufacturer and controlled through tamper-proof equipment.

The range that can be covered by 8 bit address is -64 dBm to 64 dBm in 0.5 dBm steps.

SuggestedRemedy

In the title and the text of this section, the word power should read EIRP.

The step size should be changed to 0.5 dB

In Table 122, Value should read:

Byte 0: Maximum transmitted power for QPSK
Byte 1: Maximum transmitted power for 16-QAM
Byte 2: Maximum transmitted power for 64-QAM.

Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Change title to "Maximum Transmit Power and EIRP"

The 8-bit values should indicate -64 to +64 dBm in 0.5 dB steps.

Manufacturer in the regulatory domain has to guarantee that the EIRP and power constraints are not exceeded in the ideal cabling and antenna gain case.

Cl **06**   *SC* **6.8.15.3.3.2**   *P* **56**   *L* **13**   *#* 342

Vlantis, George   STMicroelectronics

Comment Type **ER**   *Comment Status* **X**

First sentence of sub-clause 6.8.15.3.3.2 ""Maximum Transmit Power"" is a fragment.
Replace ""The maximum available..."" with ""This field indicates the maximum available..."

SuggestedRemedy

Replace ""The maximum available..."" with ""The three fields of the Maximum Transmit Power information element indicate the maximum available..."

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.8.15.3.3.4.1**   *P*   *L*   *#* 27

Chouinard, Gerald   Communications Rese

Comment Type **TR**   *Comment Status* **A**

The 802.22 WG agreed to limit the systemto 2k FFT. This section is no longer necessary.

SuggestedRemedy

Delete section 6.8.15.3.3.4.1

Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

Delete bit 0 = 1K FFT, change to "reserved"

Other FFT sizes are only for channel bonding.

Assign to Carlos.

Cl **06**   *SC* **6.8.15.3.3.4.2**   *P* **57**   *L* **16**   *#* 531

Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **A**

Table 125, CTC is called out. Does RS stand for ""Reed Solomon""? If so, that should be cut. Same goes for Table 126 (p. 58)

SuggestedRemedy

Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.

In Table 125, bits 3 - 7 should be reserved.
Bits 0 - 2 have the following values:
000 = DBTC
001 = CTC
010 = LDPC
011 = SBTC
values 4 - 7 are reserved

In Table 126, bits 0 - 1: reserved, the other bits remain unchanged.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.8.15.3.3.4.2**

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Cl **06**   *SC* **6.8.15.3.3.4.4**   *P* **58**   *L* **6**   # 532
Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **A**
    table 127 (also table 39) , are we using the PUSC and FUSC terminology elsewhere?

SuggestedRemedy
    Use consistent terminology.

Response   *Response Status* **W**
    PROPOSED ACCEPT IN PRINCIPLE.

    In Table 127, bits 0 - 1 should be reserved.

Cl **06**   *SC* **6.8.2**   *P* **28**   *L* **4**   # 88
Cordeiro, Carlos   Philips

Comment Type **TR**   *Comment Status* **A**
    Table 30
    Message should be an integer number of bytes

SuggestedRemedy
    Delete Padding Nibble of 4 bits

Response   *Response Status* **W**
    PROPOSED ACCEPT.

Cl **06**   *SC* **6.8.2**   *P* **28**   *L* **9**   # 62
Chang, Soo-Young   Huawei Technologies

Comment Type **TR**   *Comment Status* **A**
    Referring to Section 6.8.2, it states ""If the length of the DS-MAP message is a non-integral
    number of bytes, the length field in the MAC header is rounded up to the next integral
    number of bytes. The message shall be padded to match this length, but the CPE shall
    disregard the four pad bits"". However, since byte-processing is always preferable, the 4
    pad bits can be removed.

SuggestedRemedy
    Refer to 22-06-0086-01-0000 Huawei_MAC_Overhead_Reduction_for_Downlink_Bursts for
    details.

Response   *Response Status* **W**
    PROPOSED ACCEPT.

    Delete Padding Nibble of 4 bits in Table 30.

Cl **06**   *SC* **6.8.2**   *P* **28**   *L* **9**   # 89
Cordeiro, Carlos   Philips

Comment Type **TR**   *Comment Status* **X**
    Table 32
    Message should be an integer number of bytes

SuggestedRemedy
    Delete padding nibble of 4 bits

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.8.2**   *P* **65**   *L* **14**   # 90
Cordeiro, Carlos   Philips

Comment Type **TR**   *Comment Status* **X**
    Table 143
    The CHO-UPD does not provide priority amongst channels. This should be added to the
    table.

SuggestedRemedy
    Under the for() loop, add a 2 bit 'Priority' field that can take the following values: i) Low; ii)
    Medium; iii) High; vi) Undefined.

Proposed Response   *Response Status* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.8.2**

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Cl **06**　　　*SC* **6.8.2**　　　　　　*P* **66**　　　*L* **3**　　　# 63
Chang, Soo-Young　　　　　　　　Huawei Technologies

Comment Type　**TR**　　*Comment Status*　**X**

This comment relates to the current MAC management messages which is described in Section 6.8.22

The MAC management messages in the current draft do not address discontiguous channels, which will impose a heavy overhead penalty on the systems that need to specify such kinds of channels for sensing. Specifically, a lot of overhead is needed to specify discontinuous to sense. In particular, one BLM-REQ message can only facilitate one continuous set of channels. Therefore, N BLM-REQ messages with almost identical contents are required to specify N discontiguous channel intervals for sensing, which add a lot of overheads to the system.

It is possible that the incumbents are not fixed TV incumbents but only strong incumbent signals which may leave after some time (e.g. a television station's remote-news van, which is dispatched to somewhere in the WRAN cell and sends a signal back to the station). In this case, the base station does not have a priori information of its presence from the database. But due to the strong signal of the incumbent, only few CPEs are sufficient to detect its presence very reliably. Most of the CPEs can save the sensing period to sense the other channels whose statuses are more uncertain. In this case, BS needs to specify discontiguous channels

SuggestedRemedy

Refer to 22-06-0084-03-0000 Huawei_MAC_Management_Messages_for_Efficient_Sensing for details.

Proposed Response　　　*Response Status*　**O**

Cl **06**　　　*SC* **6.8.2**　　　　　　*P* **69**　　　*L* **7**　　　# 91
Cordeiro, Carlos　　　　　　　　Philips

Comment Type　**TR**　　*Comment Status*　**X**

Table 151
Since the Threshold value may change over time and is dependent on factors such as CPE distribution, it would be important to amend this table to allow for the specification of this possibily time varying threshold.

SuggestedRemedy

Include a 'Threshold' (15 bits) and 'Threshold valid' (1) bit in this table.

Proposed Response　　　*Response Status*　**O**

Cl **06**　　　*SC* **6.8.22.1.1**　　　*P* **69**　　　*L* **2**　　　# 154
Shellhammer, Steve　　　　　　　Qualcomm

Comment Type　**T**　　*Comment Status*　**X**

Entry 6 is titled ""Beacon (Part 74) Measurement Request."" This needs to be more specific.

SuggestedRemedy

Change Entry 6 to ""IEEE 802.22.1 Beacon Measurement Request""

Proposed Response　　　*Response Status*　**O**

Cl **06**　　　*SC* **6.8.22.1.1**　　　*P* **69**　　　*L* **2**　　　# 153
Shellhammer, Steve　　　　　　　Qualcomm

Comment Type　**T**　　*Comment Status*　**X**

The sencond row of Table 150 is a ""Part 74 System Related Measurement Request"" This needs to be more specific

SuggestedRemedy

Change to ""Wireless Microphone Related Measurement Request ""

Proposed Response　　　*Response Status*　**O**

Cl **06**　　　*SC* **6.8.22.3.1**　　　*P* **72**　　　*L* **6**　　　# 155
Shellhammer, Steve　　　　　　　Qualcomm

Comment Type　**T**　　*Comment Status*　**X**

Once again the reference to Part 74 is too vauge.

SuggestedRemedy

Change entry 130 to ""Wireless Microphone Measurement Report ""
Change entry 134 to ""IEEE 802.22.1 Beacon Measurement Report ""

Proposed Response　　　*Response Status*　**O**

Cl **06**　　　*SC* **6.8.22.3.1.1**　　*P* **72**　　　*L* **10**　　# 28
Chouinard, Gerald　　　　　　　Communications Rese

Comment Type　**ER**　　*Comment Status*　**X**

The type of measurement needs to be known from a number of possible options (e.g., RSSI, SINR, etc.

SuggestedRemedy

Add the parameter to Table 162:
Type of Measurement

Proposed Response　　　*Response Status*　**O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.8.22.3.1.1**

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Cl **06**   *SC* **6.8.22.3.1.1**   *P* **73**   *L* **1**   # 158
Shellhammer, Steve   Qualcomm

Comment Type   **TR**   *Comment Status* **X**
Table 163 does not say what is to be reported. It only says the ""value of the measurement"" and gives an example of SINR. This cannot be implemented since the standard needs to specify what is to be reported and in what format.

SuggestedRemedy
Specify exactly what is to be reported and in what format. I recommend that an estimate of the field strength be reported and that a reasonable range and of field strength values be specified so it is clear how to format the report.

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.8.22.3.1.1**   *P* **73**   *L* **1**   # 159
Shellhammer, Steve   Qualcomm

Comment Type   **TR**   *Comment Status* **X**
The entry entitled ""precision"" is not specific enough to be implemented. Also, it is not clear if precision is what is useful here or would it be better to change this to accuracy. Precision tends to inply the numerical resoluion and not the accuracy.

SuggestedRemedy
Change ""precision"" to ""accuracy"" and define it as the standard deviation of the field strength estimate. Specify the mapping from bits to field strength.

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.8.22.3.1.2**   *P* **73**   *L* **6**   # 92
Cordeiro, Carlos   Philips

Comment Type   **TR**   *Comment Status* **X**
Sentence is not fully complete

SuggestedRemedy
add 'and/or BSs' right after 'other CPEs'

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.8.22.3.1.6**   *P* **77**   *L* **14**   # 29
Chouinard, Gerald   Communications Rese

Comment Type   **TR**   *Comment Status* **X**
The parameter ""Duration"" in Table 171 is not clear. Is it the duration of each measurement for each channel or the total duration of the group of measurements?

The way the channels are specified in the table only allow measurement on a group of contiguous TV channels. It should allow a list of specific TV channels such as those on the stack of backup channels.

SuggestedRemedy
Clarify the ""Duration"" parameter in the Notes of Table 171. Clarify the unit for this duration.

Instead of having a starting ans a number of channels, it should have a list of specific channels where the measurements have been done for more flexibility and more optimized measurement process.

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.8.23**   *P* **78**   *L* **6**   # 182
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **X**
The Scheduling Contraint is spectified to support CBP which is not sufficiently an efficient and fair method for self coexistence and spectrum sharing.

SuggestedRemedy
The scheduling contraint feature shall not be specified as mandatory.

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.8.25**   *P* **80**   *L* **9**   # 184
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **X**
Frame synchronization of WRAN systems benefits WRAN self-coexistance. Using frame sliding, however, complicates the process of frame synchronization by iteratively exchanging CBP packets and performing computation, and has limitation that only BSs that can reliably exchange control messages are able to synchronize.

SuggestedRemedy
Frame sliding method is not appropriate to be standardized as a mandatory feature. GPS shall be used instead for frame synchronization such that all BSs are synchronized without the above mentioned limitations and complexity. Frame slide message is not needed.

Proposed Response   *Response Status* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.8.25**

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Cl **06**   *SC* **6.8.25**   *P* **80**   *L* **9**   # 183
HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **X**
Frame slide message is transmitted by BS only. This constrains message exchange among base stations, however, base stations may not reliably hear one another even though self-coexistence is needed, i.e. they have overlapping coverage areas.

SuggestedRemedy
Frame slide message shall be able to be transmitted by CPEs as well, which behave as relays.

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.8.28**   *P* **84**   *L* **1**   # 347
Vlantis, George   STMicroelectronics

Comment Type **T**   *Comment Status* **X**
Subclause 6.8.28 and it's children subclauses, 6.8.28.1 to 6.8.28.20 (pages 84 through 96) use a number of security acronyms that are not defined anywhere in the draft, not is a reference given to where the acronyms are defined. Examples: PAK, EIK, EAP, AK, AKID, AAS, EAP etc.

SuggestedRemedy
Please provide definitions and explanations to the RSA acronyms and/or provide a suitable reference citation to the References section of the spec. If the first 2 normative references on pages 1 and 2 (FIPS 46-3 and FIPS 180-1) and the 3 NIST references and the 1 RSA reference at the bottom of page 2 are the proper references, then a reference citation should be put in subclause 6.8.28.

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.8.28.10**   *P* **91**   *L* **0**   # 346
Vlantis, George   STMicroelectronics

Comment Type **T**   *Comment Status* **X**
""Security Negotiation Parameters"" row of Table 205: ""ConfirCPE"" is not defined anywhere in the draft. ""(See 11.8.4)"" references a subclause that does not exist in the draft.

SuggestedRemedy
Clarify the contents of the ""Security Negotiation Parameters"" in Table 205 of page 91.

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.8.28.10**   *P* **91**   *L* **0**   # 268
Vlantis, George   STMicroelectronics

Comment Type **T**   *Comment Status* **X**
""Security Negotiation Parameters"" row of Table 205: ""ConfirCPE"" is not defined anywhere in the draft. ""(See 11.8.4)"" references a subclause that does not exist in the draft.

SuggestedRemedy
Clarify the contents of the ""Security Negotiation Parameters"" in Table 205 of page 91.

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.8.28.9**   *P* **90**   *L* **18**   # 344
Vlantis, George   STMicroelectronics

Comment Type **TR**   *Comment Status* **X**
""Security Negotiation Parameters"" row of Table 204: ""ConfirCPE"" is not defined anywhere in the draft. ""(See 11.8.4 xxx)"" references a subclause does not exist in the draft.

SuggestedRemedy
Clarify the contents of the ""Security Negotiation Parameters"". Define ConfirCPE and fix the reference that defines the capabilities.

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.8.28.9**   *P* **90**   *L* **18**   # 345
Vlantis, George   STMicroelectronics

Comment Type **TR**   *Comment Status* **X**
""PKM configuration settings"" row of Table 204: Reference to subclause ""11.9.36 xxx"" does not exist in the draft.

SuggestedRemedy
Clarify the contents of the ""PKM configuration settings"" row of Table 204 on page 90.

Proposed Response   *Response Status* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.8.28.9**

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1/27/2007 9:02:55

Cl **06**   *SC* **6.8.3.1**   *P* **31**   *L* **5**   # 23
Chouinard, Gerald   Communications Rese

Comment Type **TR**   *Comment Status* **X**
In a TDD system, the US frequency is the same as the DS frequency.

SuggestedRemedy
In Table 38, the Frequency parameter should be deleted.

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.8.3.2**   *P* **33**   *L* **5**   # 368
Vlantis, George   STMicroelectronics

Comment Type **TR**   *Comment Status* **X**
In Table 41, ""FEC code type and modulation type"" fields are not specified. Add BCC and LDPC coding types. Define the values and remove the ""TBD"".

SuggestedRemedy
All of the above.

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.8.30**   *P* **98**   *L* **1**   # 185
HU, Wendong   STMicroelectronics

Comment Type **T**   *Comment Status* **X**
DFH Messages is needed to be filled in in this section.

SuggestedRemedy
Fill in DFH messages.

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.8.30**   *P* **98**   *L* **2**   # 348
Vlantis, George   STMicroelectronics

Comment Type **TR**   *Comment Status* **X**
Subclause 6.8.30 is blank except for a ""TBD"". The DFH Messages should be defined here.

SuggestedRemedy
Dynamic Freqency Hopping (DFH) messages (and DFH Community messages) need to be added in section 6.8.30.

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.8.4.1**   *P* **34**   *L* **14**   # 24
Chouinard, Gerald   Communications Rese

Comment Type **TR**   *Comment Status* **X**
The algorithm for mapping the US data capacity has to be changed to correspond to the symbol granularity so that each US burst contains all the necessary pilots to train for the channel. The linear laying of the capacity as proposed will not work.

In Table 43, there seems to be a confusion between channel and sub-channel.

The 802.22 WG will likely agree that there is no preamble for the US burst.

SuggestedRemedy
Rewrite the first paragraph of the section and the detailed allocation algorithm given in Table 43 to align with the new capacity allocation scheme.

Table 43: all the words ""channel"" in the table need to be changed for ""sub-channel"".

Table 43: delete the parameter ""Preamble Present""

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.8.4.1.2.1**   *P* **36**   *L* **1**   # 25
Chouinard, Gerald   Communications Rese

Comment Type **TR**   *Comment Status* **X**
At various places in the Draft 0.5, the granularity of the power levels and TPC is indicated as 0.25 dB, 0.5 dB and also 1 dB. Can we agree that it will be 0.5 dB in all cases?

SuggestedRemedy
Table 46, Power Control parameter, indicate that the signed integer will be in 0.5 dB.

Align the other tables as well (e.g., Table 110 and section 6.8.15.3.3.2).

Proposed Response   *Response Status* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**   Page 51 of 76
SC **6.8.4.1.2.1**   1/27/2007 9:02:55

Cl **06**   *SC* **6.8.7.3.7.10**   *P* **43**   *L* **8**   # 480
Kuffner, Stephen   Motorola

Comment Type **TR**   *Comment Status* **X**
""Antenna gain in dB... ""

How does the MAC know? Does it also know cable losses? Does this force professional installation?

SuggestedRemedy

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.8.7.3.7.9**   *P* **43**   *L* **9**   # 157
Shellhammer, Steve   Qualcomm

Comment Type **TR**   *Comment Status* **X**
In Table 70 on of the entries is ""Part 74."" That is too vauge since there are mulitple Part 74 devices.

SuggestedRemedy
In Table 70 change the entry entitled ""Part 74"" into two entries:

1. Wireless Microphones
2. IEEE 802.22.1 beacons

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.8.7.3.7.9**   *P* **43**   *L* **9**   # 156
Shellhammer, Steve   Qualcomm

Comment Type **TR**   *Comment Status* **X**
The title of Table 70 is ""System Profiles."" This title is very confusing. What is listed in the table are all the signal types that need to be sensed. So I think a better title is needed.

SuggestedRemedy
Change the title of Table 70 from ""System Profiles"" to ""Signal Types."" Change all references in the text accordingly.

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.8.8.10.13**   *P* **50**   *L* **7**   # 481
Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **X**
Table 96: tolerated jitter has 4 bytes, units are Ms.
Even if this is supposed to be usec, $2^{32} * 1e-6 = 4295$ sec, a lot of jitter.

What's the right value? Would this even still be considered jitter?

SuggestedRemedy

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.8.8.10.14**   *P* **50**   *L* **10**   # 482
Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **X**
Table 97: maximum latency has 4 bytes, units are Ms.

Even if this is supposed to be usec, $2^{32} * 1e-6 = 4295$ sec, a lot of latency. What's the right value? $2^{24} * 1e-6 = 16.8$ sec, still pretty long.

SuggestedRemedy

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **6.88.22.1**   *P* **66**   *L* **19**   # 181
HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **X**
Measurements management is designed for contigueous channels only.

SuggestedRemedy
Measurement management shall be modified for supporting non-contigueous channel set as well.

Proposed Response   *Response Status* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**
SC **6.88.22.1**

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1/27/2007 9:02:55

Cl **06**   *SC* **figure 41**   *P* **151**   *L*   # 124
Chu, Liwen   STMicroelectronics

Comment Type   **TR**   *Comment Status*   **X**
It is difficult to understand figure 63. There are the following problems:
1) connect two input events/messages directly,
2) connect decision criterion and input event/signal directly.
3) not clear which timer is used.

SuggestedRemedy
Fix these problems to make the figure clear.

Proposed Response   *Response Status*   **O**

Cl **06**   *SC* **table 1**   *P* **13**   *L*   # 116
Chu, Liwen   STMicroelectronics

Comment Type   **TR**   *Comment Status*   **X**
FS field is not needed since the superframe shall have a fixed and pre-determined size of 16 frames as defined in L46, P9.

SuggestedRemedy
Delete FS field from Table 1

Proposed Response   *Response Status*   **O**

Cl **06**   *SC* **table 1**   *P* **13**   *L*   # 117
Chu, Liwen   STMicroelectronics

Comment Type   **TR**   *Comment Status*   **X**
In SCH, some felds are used for superframe control. Some fields are used for CBP. These fields should be replaced by two IEs: SCH IE and CBP IE. Fields used by both SCH and CBP should be fixed fields. This can decrease SCH related message length.

SuggestedRemedy
define SCH IE and CBP IE and reorganize SCH accordingly.

Proposed Response   *Response Status*   **O**

Cl **06**   *SC* **table 1**   *P* **13**   *L*   # 118
Chu, Liwen   STMicroelectronics

Comment Type   **T**   *Comment Status*   **X**
It is difficult to parse the SCH.

SuggestedRemedy
reorganize the SCH fields to make message parsing more easier.

Proposed Response   *Response Status*   **O**

Cl **06**   *SC* **table 162**   *P* **74**   *L*   # 135
Chu, Liwen   STMicroelectronics

Comment Type   **T**   *Comment Status*   **X**
""start frame""in table 162 has 8 bits length, but ""start frame""in table 164 has 16 bits length. Which one is correct?

SuggestedRemedy
Clarify it.

Proposed Response   *Response Status*   **O**

Cl **06**   *SC* **table 21**   *P* **22**   *L*   # 120
Chu, Liwen   STMicroelectronics

Comment Type   **T**   *Comment Status*   **X**
It is not clear what do ""REQ-REQ"" and ""REQ-RSP"" mean.

SuggestedRemedy
Provide the meaning of ""REQ-REQ"" and ""REQ-RSP""

Proposed Response   *Response Status*   **O**

Cl **06**   *SC* **table 25**   *P* **25**   *L*   # 121
Chu, Liwen   STMicroelectronics

Comment Type   **T**   *Comment Status*   **X**
It is not clear what does ""n"" mean.

SuggestedRemedy
Add the meaning of ""n"" to the table.

Proposed Response   *Response Status*   **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **06**   Page 53 of 76
SC **table 25**   1/27/2007 9:02:55

Cl **06**   *SC* **table 30**   *P* **27**   *L*   # 122

Chu, Liwen   STMicroelectronics

Comment Type **T**   *Comment Status* **X**

It is not clear what does ""n"" mean.

SuggestedRemedy

Add the meaning of ""n"" to the table.

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **table 37**   *P* **31**   *L*   # 123

Chu, Liwen   STMicroelectronics

Comment Type **T**   *Comment Status* **X**

It is not clear what does ""n"" mean.

SuggestedRemedy

Add the meaning of ""n"" to the table.

Proposed Response   *Response Status* **O**

Cl **06**   *SC* **table 8**   *P* **18**   *L*   # 119

Chu, Liwen   STMicroelectronics

Comment Type **TR**   *Comment Status* **X**

Backup channels normally are disjoint channels, so channel number+number of channels is not a good structure.

SuggestedRemedy

use number of channel+channel numbers to indicate backup channels.

Proposed Response   *Response Status* **O**

Cl **07**   *SC* **7**   *P* **179**   *L* **8**   # 109

Cordeiro, Carlos   Philips

Comment Type **TR**   *Comment Status* **X**

This section seems to be far from complete.

SuggestedRemedy

Start from the 802.16 spec and fill in this section accordingly.

Proposed Response   *Response Status* **O**

Cl **07**   *SC* **7**   *P* **179**   *L* **9**   # 355

Vlantis, George   STMicroelectronics

Comment Type **ER**   *Comment Status* **X**

Reference to ""xxx"".

SuggestedRemedy

Fix the reference on Line 9 of page 179.

Proposed Response   *Response Status* **O**

Cl **07**   *SC* **7**   *P* **179**   *L* **8**   # 113

Chu, Liwen   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**

CMAC put coexistence in pretty important position. Inter-cell communication play a important role in CMAC. The inter-cell communication should be encrypted to guarantee security. Current draft does not support this kind of security.

SuggestedRemedy

Provide authentication, encryption to the inter-cell communication.

Proposed Response   *Response Status* **W**

Defer (Green) new topic

Cl **07**   *SC* **7.2**   *P* **179**   *L* **37**   # 356

Vlantis, George   STMicroelectronics

Comment Type **ER**   *Comment Status* **X**

3 references to ""xxx"" on Lines 37-38.

SuggestedRemedy

Fix the 3 references on Lines 37 and 38 of page 179

Proposed Response   *Response Status* **O**

Cl **07**   *SC* **7.2.1**   *P* **180**   *L* **29**   # 357

Vlantis, George   STMicroelectronics

Comment Type **ER**   *Comment Status* **X**

Reference ""xxx"" to Draft 12 of 802.16e. Should reference the published standard and not the draft.

SuggestedRemedy

Fix the reference on Line 29 of Page 180, and refer to the published standard.

Proposed Response   *Response Status* **O**

TYPE: TR/technical required   ER/editorial required   GR/general required   T/technical   E/editorial   G/general
COMMENT STATUS: D/dispatched   A/accepted   R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied   Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **07**
SC **7.2.1**

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Cl **07**   *SC* **7.2.2**   *P* **180**   *L* **35**   # 358

Vlantis, George   STMicroelectronics

Comment Type **ER**   *Comment Status* **X**
Fix the 4 ""xxx"" references in lines 35, 37, 42, and 45.

SuggestedRemedy
Fix the 4 references on Lines 35, 37, 42, and 45 of Page 180.

Proposed Response   *Response Status* **O**

Cl **07**   *SC* **7.3**   *P* **181**   *L* **12**   # 359

Vlantis, George   STMicroelectronics

Comment Type **ER**   *Comment Status* **X**
Reference to the 802.16-2004 standard is ""xxx""

SuggestedRemedy
Fix the reference on Line 12 of Page 181 to the IEEE 802.16-2004 standard.

Proposed Response   *Response Status* **O**

Cl **07**   *SC* **7.4.1**   *P* **181**   *L* **22**   # 360

Vlantis, George   STMicroelectronics

Comment Type **ER**   *Comment Status* **X**
3 references to ""xxx"" in lines 22, 25, 26.

SuggestedRemedy
Fix the 3 references on Lines 22, 25, and 26 of page 181.

Proposed Response   *Response Status* **O**

Cl **07**   *SC* **7.4.2**   *P* **181**   *L* **35**   # 361

Vlantis, George   STMicroelectronics

Comment Type **ER**   *Comment Status* **X**
2 references to ""xxx"" in Lines 35 and 38.

SuggestedRemedy
Fix the references on Lines 35 and 38 of page 181.

Proposed Response   *Response Status* **O**

Cl **07**   *SC* **7.4.2**   *P* **182**   *L* **29**   # 130

Chu, Liwen   STMicroelectronics

Comment Type **TR**   *Comment Status* **X**
here the standard says that ""All MAC management messages shall be sent in the clear to facilitate registration, ranging, and normal operation of the MAC."". But Line 2 in page 183 says that ""all critical management packets are digitally signed, and their integrity is checked by the receiver before further use: there is thus no mean for an attacker to craft such a packet.""

So I have the following questions:
1) does 802.22 provide security to the MAC management packets?
2) if yes what are the defination of critical management packets?
3) does 802.22 provide partial protection of a management packet to guarantee the security and provide enough information for new CPEs to join the cell?

SuggestedRemedy
Clarify all these questions.

Proposed Response   *Response Status* **O**

Cl **07**   *SC* **7.5**   *P* **182**   *L* **20**   # 389

Vlantis, George   STMicroelectronics

Comment Type **E**   *Comment Status* **X**
The word ""fear"" should be replaced with ""threat"", ""concern"", ""issue"", or some other word that does relate to human emotion.

SuggestedRemedy
Replace ""fear"" with ""concern"" on Line 20.

Proposed Response   *Response Status* **O**

Cl **07**   *SC* **7.5**   *P* **182**   *L* **29**   # 329

Vlantis, George   STMicroelectronics

Comment Type **E**   *Comment Status* **X**
The word ""fear"" should be replaced with ""threat"", ""concern"", ""issue"", or some other word that does relate to human emotion.

SuggestedRemedy
Replace ""fear"" with ""concern"" on Line 29.

Proposed Response   *Response Status* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **07**
SC **7.5**

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Cl **07**   *SC* **7.5**   *P* **182**   *L* **33**   # 362

Vlantis, George   STMicroelectronics

Comment Type   **ER**   *Comment Status*   **X**
   Two References: [20] and ""xxx"".

SuggestedRemedy
   Fix the references on Lines 32 and 33 on page 182.

Proposed Response   *Response Status*   **O**

Cl **08**   *SC* **8**   *P* **182**   *L* **34**   # 51

Chouinard, Gerald   Communications Rese

Comment Type   **TR**   *Comment Status*   **D**
   Align the PHY section with the outcome of the PHY discussions in 802.22.

SuggestedRemedy

Proposed Response   *Response Status*   **W**
   PROPOSED ACCEPT IN PRINCIPLE.

Cl **08**   *SC* **8**   *P* **182**   *L* **42**   # 483

Kuffner, Stephen   Motorola

Comment Type   **T**   *Comment Status*   **D**
   Table 225:
   ""Service coverage -- Typical range 33 km""

   In the remarks column perhaps we should state the caveat ""For default 4W EIRP and 300
   m BS HAAT"" per Gerald's WRAN reference model spreadsheet.

   More generally, does this mean 33 km is the range to provide 4.8 Mbps (the ""minimum"" in
   the data rate row of the same table)? The FRD defines service coverage as that which
   provides 1.5 Mbps DS, 384 kbps US:

   ""FRD Clause 5.3 Service Capacity
   The required minimum peak throughput rate at edge of coverage SHALL be 1.5 Mbit/s per
   subscriber in the forward direction and 384 kbit/s per subscriber in the return direction. The
   capacity of the base station will need to be higher to provide service to a number of
   subscribers in this P-MP system.""

SuggestedRemedy
   By using 3x repetition coding on the 4.8 Mbps minimum, we could reach even more remote
   CPEs at the FRD rate. We're advertising DSL and greater data rates in the press; may as
   well deliver this case to economically serve the most remote customers. If we don't have
   repetition coding mode, perhaps we should.

Proposed Response   *Response Status*   **W**
   PROPOSED ACCEPT IN PRINCIPLE.

   Include remark about EIRP and BS antenna height.

   Defer remedy for discussions of more robust coding techniques for 1.5 Mbps minimum data
   rate. (rate 1/4 code?)

   Assign: PHY (Zander/Ramon)

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **08**
SC **8**

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Cl **08**   *SC* **8**   *P* **182**   *L* **42**   # 484

Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **A**

Table 225
""Data rate -- Maximum: 72.6 Mbps""

This value is for 3 bonded channels. The maximum value should be for a single channel. In the remarks column, the bonded channel value could be pointed out.

SuggestedRemedy

Response   *Response Status* **W**

PROPOSED ACCEPT.

Follow same principle as in the bandwidth row of Table 225.

Put single channel maximum; in remarks column, put "up to 72.6 Mbps with 3 bonded channels."

Cl **08**   *SC* **8.2**   *P* **187**   *L* **9**   # 489

Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **R**

Table 231:
Ranging as discussed in Clause 6.17 mentions monitoring the CINR and comparing the average value against the allowed range of operation (p. 125, line 39, Fig.26). Perhaps Table 231 or a new table should indicate the CINR thresholds or otherwise give guidance for these PHY modes using the mandatory convolutional code.

SuggestedRemedy

Response   *Response Status* **W**

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Cl **08**   *SC* **8.3**   *P* **187**   *L* **10**   # 247

HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **X**

Superframe incurs an additional level of complexcity to the system design and hardware design. Superframe is not necessary function-wise.

SuggestedRemedy

Superframe is not needed function-wise and should be made optional or removed.

Proposed Response   *Response Status* **W**

Defer (green) pending PHY/MAC discussions.

Cl **08**   *SC* **8.3**   *P* **187**   *L* **10**   # 58

Chang, Soo-Young   Huawei Technologies

Comment Type **TR**   *Comment Status* **D**

The preambles defined in the current draft are formed by QPSK symbols with I and Q components generated by two binary PN sequences, respectively. However, the frame and superframe preambles defined in this way have high peak-to-average-power ratios (PAPR) (> 7 dB). High-PAPR preambles may be clipped by the power amplifier, resulting in lower synchronization and channel estimation accuracy and hence degraded detection performance. The PAPR of preambles should be minimized as much as possible so as to allow improved performance by boosting up the transmission power of preambles, especially when some effective methods (e.g. clipping, coding, companding) for reducing the PAPR of the data modulation signals may be applied.
Furthermore, to reduce the adverse effect of adjacent cell interference on the synchronization and channel estimation accuracy, a set of low-PAPR preambles with low cross-correlation is desirable.

SuggestedRemedy

Based on the unified construction of polyphase perfect or constant amplitude zero auto correlation (CAZAC) sequences, sets of low-PAPR polyphase preambles with low cross-correlation energy are obtained. Since the design criterion for preambles is very similar to that for the polyphase sounding sequences specified in the current draft, it is possible to use the same lookup table for generating both the sounding sequences and the proposed preambles. Consequently, the improved PAPR gain can be obtained at the price of affordable complexity and memory. Refer to 22-07-0002-00-0000 Huawei_sequences_low_PAPR for details.

Proposed Response   *Response Status* **W**

Defer (green) pending presentation and discussion.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **08**
SC **8.3**

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Cl **08**   *SC* **8.3.1.1**   *P* **189**   *L* **16**   # 491
Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **D**

I'm trying to understand why only +/- 756 subcarriers are used (1513 including DC) in the superframe preamble. Doesn't this only span 5.062 MHz, while the modulation uses 1728 subcarriers and spans 5.785 MHz? Why the difference? If a frame 0 preamble doesn't have to follow a superframe preamble in single channel applications (PP bit in SCH), doesn't that mean the superframe preamble is used for channel estimation in frame 0? Shouldn't it then span the modulation domain?

SuggestedRemedy

Proposed Response   *Response Status* **W**

PROPOSED ACCEPT IN PRINCIPLE.
Defer (green)

Superframe preamble will change to span the same number of subcarriers as the frame preamble.

Preamble text will be changed by PHY editors pending decision on preamble sequences.

Cl **08**   *SC* **8.3.1.1**   *P* **189**   *L* **19**   # 490
Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **R**

""Note that the preamble symbols are transmitted at 3 dB higher power compared to the control and payload symbols"".

What does this mean regarding EIRP? Don't we have to comply with a regulatory EIRP cap in the US? Does it mean we're transmitting the preamble at 8W EIRP, or that we're transmitting the control and payload at 2W EIRP?

SuggestedRemedy

I'm not saying we shouldn't do this but should we square it with the Commission first and also consider it in our interference range analyses? Is the frame preamble also transmitted with a 3dB boost? Then we'd have to ask for at most 7.5% duty cycle at this higher power (2 bauds over a 10 ms frame)

Response   *Response Status* **W**

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Cl **08**   *SC* **8.3.1.2**   *P* **190**   *L* **24**   # 96
Cordeiro, Carlos   Philips

Comment Type **TR**   *Comment Status* **D**

It is not 'short and long preamble'

SuggestedRemedy

Replace it by 'short and long training sequences'

Proposed Response   *Response Status* **W**

Defer (Green) pending PHY preamble discussions.

Cl **08**   *SC* **8.3.2.1**   *P* **191**   *L* **13**   # 492
Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **A**

""The SCH is transmitted using the basic data rate mode.""

Table 231 indicates that the SCH is transmitted with a spreading factor of 4 (PHY mode 0). Is this the ""basic data rate mode""?

SuggestedRemedy

""The SCH is transmitted using PHY mode 0 (see Table 231).""

Response   *Response Status* **W**

PROPOSED ACCEPT.

Cl **08**   *SC* **8.3.2.1**   *P* **191**   *L* **21**   # 493
Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **D**

""The 42 bytes of the SCH are encoded ...""

What happens when the SCH is only 19 bytes long as in line 10, or some intermediate value? Is it padded to 42 bytes? Otherwise the spreading factor of 4 would not seem to span the central 28 subchannels. If it is padded, that should be indicated in line 10 and in Table 1.

Note the SCH gets shorter by 12 bits if the FS and FDC fields are removed.

SuggestedRemedy

Proposed Response   *Response Status* **W**

Defer (green)

Spreading method needs to be defined.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **08**
SC **8.3.2.1**

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Cl **08**   *SC* **8.4.1.2**   *P* **195**   *L* **14**   # 494
Kuffner, Stephen   Motorola

Comment Type   **T**   *Comment Status* **D**
What is the minimum US resource allocation? Is it a single subchannel? If a CPE doesn't need to fill an entire US frame over a single subchannel, can another CPE finish out the US frame on that subchannel? This seems to be indicated by e.g. Figure 59. Are the US steps in blocks integer steps of a single subchannel?

SuggestedRemedy

Proposed Response   *Response Status* **W**
Defer (green)

PHY group needs to decide how subchannels can be used; also ties in with OFDMA parameters.

Draft doesn't support Figure 59; needs to be fixed; the 'steps' don't align with baud boundaries.

Cl **08**   *SC* **8.4.2**   *P* **197**   *L* **2**   # 495
Kuffner, Stephen   Motorola

Comment Type   **T**   *Comment Status* **D**
How is the adaptive or variable pilot pattern announced? Would it be in the SCH? Would it use the most robust pilot pattern to announce it?

SuggestedRemedy

Proposed Response   *Response Status* **W**
Defer (green)

Delete clause 8.4.2; we have only one pilot pattern now. Need a new figure in describing pilot patterns in the appropriate clause. Overall pilot text needs to be added throughout document.

Cl **08**   *SC* **8.9.2**   *P* **203**   *L* **27**   # 336
Vlantis, George   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
Subclause 8.9.2 ""Ranging"" is blank.

SuggestedRemedy
Specify the parameters.

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

Defer (green) pending PHY decision on ranging methods. See document 22-06-0092r1.

Cl **08**   *SC* **8.9.3**   *P* **203**   *L* **28**   # 337
Vlantis, George   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
Subclause 8.9.3 ""Power Control"" is blank.

SuggestedRemedy
Specify the parameters.

Proposed Response   *Response Status* **W**
PROPOSED ACCEPT IN PRINCIPLE.

Defer (green) pending PHY decision on power control methods.

Cl **08**   *SC* **C.6.2.1.4**   *P* **261**   *L* **25**   # 339
Vlantis, George   STMicroelectronics

Comment Type   **TR**   *Comment Status* **A**
Equations on Line 25, 26, and 29 are unintelligible. Equation Editor hiccups with matrices.

SuggestedRemedy
Fix the equations on Lines 25, 26, and 29 of page 261.

Response   *Response Status* **W**
PROPOSED ACCEPT.

Fix equations.

Cl **11**   *SC* **11.3**   *P* **280**   *L* **5**   # 65
Chang, Soo-Young   Huawei Technologies

Comment Type   **TR**   *Comment Status* **D**
Digital Video Broadcasting-Terrestrial (DVB-T), the European Standard on digital TV radio, has already been adopted by more than 30 countries. So it is reasonable to develop DVB-T sensing algorithms for IEEE 802.22 WRAN system. There are some distinct characteristics of DVB-T signal, such as OFDM, Cyclic Prefix (CP), Pilot symbols etc.

SuggestedRemedy
Several sensing algorithms based on these characteristics are proposed in the document referenced here. They are cyclic prefix based sliding correlation detection,, time domain pilot signals ,based sliding correlation, time domain pilot signals in cyclic prefix based sliding correlation and multi-antennas detection. These algorithms should be included in the standard. All of these algorithms are described and corresponding simulation results are presented in ""22-06-0263-00-0000_Huawei_Sensing_Scheme_for_DVB-T"".

Proposed Response   *Response Status* **W**
Defer (red). See "22-06-0263-00-0000_Huawei_Sensing_Scheme_for_DVB-T".

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **11**
SC **11.3**

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Cl **8**   *SC* **8.1.2.3.3**   *P* **186**   *L* **11**   *#* 144

Pirat, Patrick   France Telecom

Comment Type   **T**   *Comment Status*   **D**

Table 230 : The figures should be updated with the parameters under discussion in 802.22

SuggestedRemedy

Proposed Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

Defer (green) pending PHY discussions.

Cl **8**   *SC* **8.4.1.1**   *P* **194**   *L*   *#* 145

Pirat, Patrick   France Telecom

Comment Type   **T**   *Comment Status*   **A**

Equation 7 is confusing. What is ""SubCarrier(n,k)""?. When k<27 the value of SubCarrier(n,k) is negative. How are indexed the sub-carriers?

SuggestedRemedy

Give an example with the sub-carriers location of a specific sub-channel.

Response   *Response Status*   **W**

PROPOSED ACCEPT IN PRINCIPLE.

Need to define subcarrier indexing.

Cl **8**   *SC* **8.4.1.2**   *P* **195**   *L* **15**   *#* 149

Pirat, Patrick   France Telecom

Comment Type   **TR**   *Comment Status*   **D**

Equation 2 is missing.

SuggestedRemedy

Proposed Response   *Response Status*   **W**

Defer (green)

This whole section needs to change pending PHY decisions on OFDMA parameters.

Cl **8**   *SC* **8.5.3**   *P* **201**   *L*   *#* 151

Pirat, Patrick   France Telecom

Comment Type   **TR**   *Comment Status*   **A**

The parameter NCBPB (number of coded bits per encoded block) is not clearly defined. What is an encoded block? Is it related to the capacity of a sub-channel in an OFDM symbol?

SuggestedRemedy

Define NCBPB.

Response   *Response Status*   **W**

PROPOSED ACCEPT.

One "encoded block" is one subchannel per OFDMA symbol.

NCBPB = number of coded bits per subchannel per OFDMA symbol.

Fix definition.

Cl **8**   *SC* **8.5.3**   *P* **201**   *L*   *#* 150

Pirat, Patrick   France Telecom

Comment Type   **TR**   *Comment Status*   **X**

Bit interleaving is an operation that is related to frequency interleaving (sub-channel allocation). The mechanism proposed in this section is similar to the 802.16'one but 802.22 system uses a different sub-channel allocation mechanism.
Efficiency of bit interleaving combined with sub-channel allocation should be demonstrated.

SuggestedRemedy

To be investigated by the ""OFDMA parameters"" working group and harmonized with sub-channel allocation.

Proposed Response   *Response Status*   **W**

Defer (green)

Clarify interleaving method, pending PHY OFDMA discussions.

Cl **8**   *SC* **8.6.1.1**   *P*   *L*   *#* 147

Pirat, Patrick   France Telecom

Comment Type   **T**   *Comment Status*   **A**

Table 235: It seems from this table that a block is the content of one subchannel in one OFDM symbol (see my remark on subclause 8.5.3)

SuggestedRemedy

Provide a definition of a ""block"".

Response   *Response Status*   **W**

PROPOSED ACCEPT.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied   Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **8**
SC **8.6.1.1**

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Cl **8**   *SC* **8.6.1.1**   *P* **201**   *L* **24**   # 152
Pirat, Patrick   France Telecom

Comment Type **TR**   *Comment Status* **A**
    Is there only one way of doing the Gray-coded constellation mapping? I suspect not.

SuggestedRemedy
    Specify the constellation mapping for each constellation type.

Response   *Response Status* **W**
    PROPOSED ACCEPT.

    Ramon: Need to supply reference code.

Cl **8**   *SC* **8.9.1.3**   *P* **203**   *L*   # 148
Pirat, Patrick   France Telecom

Comment Type **T**   *Comment Status* **D**
    This section is misleading. This table was presented as the experimental results of an uplink
    under conditions (1K FFT, 1/4 guard interval, upstream on 1 subcarrier) far from the system
    specified here.

SuggestedRemedy
    Cancel this section.

Proposed Response   *Response Status* **W**
    PROPOSED ACCEPT.

    This was for DVB-RCT, and is not applicable to these OFDMA parameters. Delete clause.

Cl **8.4**   *SC*   *P* **192**   *L*   # 146
Pirat, Patrick   France Telecom

Comment Type **T**   *Comment Status* **D**
    Adjacent subcarrier permutation is not described.

SuggestedRemedy

Proposed Response   *Response Status* **W**
    PROPOSED ACCEPT IN PRINCIPLE.

    Defer (green) pending PHY OFDMA discussions.

Cl **8.6**   *SC*   *P* **201**   *L* **19**   # 142
Pirat, Patrick   France Telecom

Comment Type **E**   *Comment Status* **X**
    Usually the section on frequency interleaving (or sub-channel allocation, section 8.4 of the
    document) is placed just before this section

SuggestedRemedy
    Swap sections 8.4 and 8.5

Proposed Response   *Response Status* **O**

Cl **99**   *SC*   *P*   *L*   # 115
Chu, Liwen   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**
    SCH makes frame parsing difficult.

SuggestedRemedy
    Delete SCH from the standard

Proposed Response   *Response Status* **W**
    Defer (green) MAC/PHY discussion

Cl **A**   *SC* **A.1.1**   *P* **208**   *L* **25**   # 250
HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**
    Superframe and SCH are ""channel bonding"" oriented. The text enforce a ""shall"" which is
    not appropriate for ""channel bonding"" oriented description.

SuggestedRemedy
    Any ""channel bonding"" oriented descriptions (text, figures, terminologies, etc.) shall be
    made optional in the text.

Proposed Response   *Response Status* **W**
    Defer (Yellow) the discussion on optional channel bonding

    Defer (Green) Refer the topic of superframe to the main group

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **A**
SC **A.1.1**

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Cl **A** *SC* **A.1.2**   *P* **209** *L* **7** # 251

HU, Wendong   STMicroelectronics

Comment Type **TR** *Comment Status* **X**

""the MAC shall never change the MAC frame size"" - this makes optional ""channel bonding"" mandatory (fixed MAC frame size for the three-channel bonding case).

SuggestedRemedy

Any ""channel bonding"" oriented descriptions (text, figures, terminologies, etc.) must be made optional.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

Withdraw

Cl **A** *SC* **A.1.3**   *P* **209** *L* **12** # 252

HU, Wendong   STMicroelectronics

Comment Type **TR** *Comment Status* **D**

This section, ""channel grouping and matching"", is designed for FDD mode, which is not specified in the spec.

SuggestedRemedy

it has to clarify if FDD is supported, and how it is supported if it is supported.

Proposed Response *Response Status* **W**

Defer (Yellow) until discussion on FDD

Cl **A** *SC* **A.1.3**   *P* **209** *L* **12** # 253

HU, Wendong   STMicroelectronics

Comment Type **TR** *Comment Status* **D**

No definition for termologies such as ""active set"", FA, Spectrum Manager, etc.
Not clear how ""channel grouping and matching"" would benefit overhead reduction.

SuggestedRemedy

Need more information to be convienced. Remove ""channel grouping and matching"" if this method does not benefit the system operation with justified complexity.

Proposed Response *Response Status* **W**

Defer (Green) for discussion

Cl **A** *SC* **A.1.4.1**   *P* **211** *L* **16** # 254

HU, Wendong   STMicroelectronics

Comment Type **TR** *Comment Status* **D**

The ""Hidden Incumbent Scenarios"" should not exist, given the fact that keep-out distances of BS and CPE to the DTV protection contour are enfored.

SuggestedRemedy

This feature as described in subclause A.1.4 would not be appropriate. Revise or remove the A.1.4.

Proposed Response *Response Status* **W**

Defer (Yellow) until Samsung's clarification about if it is stable or transitory situation.

Cl **A** *SC* **A.1.5**   *P* **214** *L* **1** # 255

HU, Wendong   STMicroelectronics

Comment Type **TR** *Comment Status* **D**

This feature is to support optional channel bonding. So it shall make it clear that this feature is also optional.

SuggestedRemedy

Replace ""shall"" with ""may"" or words along the line to indicate the optional nature of this feature.

Proposed Response *Response Status* **W**

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **A** Page 62 of 76
SC **A.1.5** 1/27/2007 9:02:57

Cl **A**   *SC* **A.1.6**   *P* **215**   *L* **4**   # 112
Cordeiro, Carlos   Philips

Comment Type   **TR**   *Comment Status* **D**

I believe that 802.22 WG is not assuming that 802.22 will be the only system operating in the TV white spaces. If that is the case, consider a scenario where we have a number of 802.22 networks and non-802.22 networks operating in vicinity. In addition, assume that some (or all) of the 802.22 networks operate using DFH.

In this scenario, isn't true to say that the DFH-enabled 802.22 networks may constantly step onto the other non-802.22 wireless systems operating in the same band? After all, it is unlikely that these systems will coordinate.

To make matters worse, would it not be possible that the non-802.22 systems using the same band can also employ something similar to DFH and harm 802.22 operations in a similar way?

Please note that the problem may be particularly worse here than in other existing unlicensed bands due to the much higher transmit powers of 802.22 devices.

SuggestedRemedy

The WG needs to discuss this and come to a resolution on the best approach to employ DFH. Do we need some sort of etiquette?

Proposed Response   *Response Status* **W**

Defer (Gray)

Refer the topic on coexistence between 802.22 systems and non-802.22 systems to main group

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Cl **A**   *SC* **A.1.6**   *P* **215**   *L* **4**   # 256
HU, Wendong   STMicroelectronics

Comment Type   **ER**   *Comment Status* **X**

DHF text and figures need to be refine.

SuggestedRemedy

More editorial work on the DHF text and figures.

Proposed Response   *Response Status* **O**

Cl **A**   *SC* **A.1.7**   *P* **222**   *L* **3**   # 257
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**

The ""out-band distributive sensing scheme for active set 2"" scheme would increase the probability of false alarm by reporting incumbent appearances out side the interference arrange of a WRAN device.

SuggestedRemedy

Address the issue of over-protection (increased Pfa). Revise the scheme.

Proposed Response   *Response Status* **W**

Defer (Yellow)

Cl **A**   *SC* **A.1.7.2**   *P* **224**   *L* **7**   # 99
Cordeiro, Carlos   Philips

Comment Type   **ER**   *Comment Status* **X**

There is no need for a 'Conclusion' section here

SuggestedRemedy

Delete this section

Proposed Response   *Response Status* **O**

Cl **A**   *SC* **A.2.3**   *P* **226**   *L* **5**   # 248
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**

Figure A.22 is based on the optional channel bonding feature, hence it is appropriate for the mandatory case where single channel is in use by the system.

SuggestedRemedy

Modify Figure A.22 to reflect the mandatory single channel case.

Proposed Response   *Response Status* **W**

PROPOSED REJECT.

This comment was WITHDRAWN by the commenter.

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **A**   Page 63 of 76
SC **A.2.3**   1/27/2007 9:02:57

Cl **A**   *SC* **A.3**   *P* **227**   *L* **20**   # 258
HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**

With quiet period allocated within a channel detection time (2s), channel can be vacated
with guarantee within the required time limit. Why do we need extra effort to vacate channel
faster than what is acturally needed?

SuggestedRemedy

Address the issue and question and revise the related mehtod.

Proposed Response   *Response Status* **W**

Defer (Yellow)

Cl **A**   *SC* **A.3**   *P* **227**   *L* **26**   # 259
HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**

How to synchronized sensing frames of overlapped WRANs so that clean sensing is
guaranteed for opportunistic sensing?

SuggestedRemedy

Address the issue by revising the related mehtod.

Proposed Response   *Response Status* **W**

Defer (Yellow)

Cl **A**   *SC* **A.3**   *P* **227**   *L* **29**   # 260
HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**

""Note that the Channel Detection Time Interval need not be of fixed duration. The sensing
duration also need not occupy exactly one frame."" - Why is this important?

SuggestedRemedy

Address the question and revise the text if appropriate.

Proposed Response   *Response Status* **W**

Defer (Yellow)

Cl **A**   *SC* **A.3**   *P* **228**   *L* **14**   # 261
HU, Wendong   STMicroelectronics

Comment Type **TR**   *Comment Status* **D**

Consider the text - ""whenever a CPE is neither transmitting nor receiving it shall first
perform out-of-band sensing through the method depicted in Figure 43. "" Actually out-of-
band sensing can be conducted when a CPE is receiving.

SuggestedRemedy

Resolve the issue by revising the method.

Proposed Response   *Response Status* **W**

Defer (Yellow)

Cl **A**   *SC* **A.4.1**   *P* **229**   *L* **17**   # 101
Cordeiro, Carlos   Philips

Comment Type **TR**   *Comment Status* **D**

There is no specification for this scheme. How does it work? What are the frame exchanges?

SuggestedRemedy

It needs to be specified and integrated with the CBP protocol. Ask MAC team to undertake
this task.

Proposed Response   *Response Status* **W**

Defer (Salmon) for Samsung

Cl **A**   *SC* **A.4.2**   *P* **229**   *L* **25**   # 102
Cordeiro, Carlos   Philips

Comment Type **TR**   *Comment Status* **D**

There is no specification for this scheme. How does it work? What are the frame exchanges?

SuggestedRemedy

It needs to be specified and integrated with the CBP protocol. Ask the MAC team to
undertake this task.

Proposed Response   *Response Status* **W**

Defer(Salmon) for Samsung

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **A**
SC **A.4.2**

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Cl **A**   *SC* **A.4.3**   *P* **230**   *L* **4**   # 103
Cordeiro, Carlos   Philips

Comment Type   **TR**   *Comment Status* **D**
Is Etiquette an implementation or a standardization issue?

SuggestedRemedy
In case this is about implementation, this section should be deleted. Otherwise, the algorithm has to be specified. Ask the MAC team to undertake this discussion.

Proposed Response   *Response Status* **W**
Defer (Salmon) for Samsung to clarify if it is an implementation or a standardization issue. If it is the latter, documents should be provided.

Cl **A**   *SC* **A.4.4**   *P* **230**   *L* **12**   # 262
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
Update the text for Spectrum Contention Algorithm.

SuggestedRemedy
Replace subclause A.4.4 with text from the following document: 22-06-0229-00-0000_Spectrum_Contention_Algorithm_Submission.doc.

Proposed Response   *Response Status* **W**
Defer (Salmon)

Cl **A**   *SC* **A.4.4**   *P* **230**   *L* **12**   # 104
Cordeiro, Carlos   Philips

Comment Type   **TR**   *Comment Status* **D**
There is no specification for this scheme. How does it work? What are the frame exchanges?

SuggestedRemedy
It needs to be specified and integrated with the CBP protocol. Ask the MAC team to undertake this task.

Proposed Response   *Response Status* **W**
Defer (Salmon)

See the document 22-06-0229-00-0000_Spectrum_Contention_Algorithm_Submission.doc

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Cl **A**   *SC* **A.4.5**   *P* **233**   *L* **11**   # 105
Cordeiro, Carlos   Philips

Comment Type   **TR**   *Comment Status* **D**
There is no specification for this scheme. How does it work? What are the frame exchanges?

SuggestedRemedy
It needs to be specified and integrated with the CBP protocol. Ask the MAC team to undertake this task.

Proposed Response   *Response Status* **W**
Defer (Salmon)

See the document 22-07-0024-00-0000

Cl **A**   *SC* **A.5.1**   *P* **236**   *L* **22**   # 133
Chu, Liwen   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
Here the draft says that ""Upon initialization, this CPE shall scan the desired channel for a multiple number of the maximum superframe size in search for SCH packets transmitted by 802.22 BSs"". What does ""multiple number"" mean?

SuggestedRemedy
Clarify it.

Proposed Response   *Response Status* **W**
Defer (Gray)

Cl **AA**   *SC*   *P*   *L*   # 173
HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status* **D**
Enhance BS to BS Communications by using connection based over-the-air approach (inter-BS control connections). Logical inter-BS control connection method provides reliability, efficiency, and security benefits to inter-BS communications.

SuggestedRemedy
Add the text to the draft from the following document: 22-06-0228-00-0000_Scheduling_Connection_Based_Inter_BS_communications.doc.

Proposed Response   *Response Status* **W**
Defer (Yellow)

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **AA**
SC

Page 65 of 76
1/27/2007 9:02:57

Cl **AA**   *SC*   *P*   *L*   # | 132

Chu, Liwen   STMicroelectronics

Comment Type   **TR**   *Comment Status*   **D**
Add 22-06-0229-00-0000_Spectrum_Contention_Algorithm_Submission.doc to the draft
standard

SuggestedRemedy

Proposed Response   *Response Status*   **W**
Defer Salmon

Normative Text for Appendix

Cl **AA**   *SC*   *P*   *L*   # | 131

Chu, Liwen   STMicroelectronics

Comment Type   **TR**   *Comment Status*   **D**
Add 22-06-0228-00-0000_Scheduling_Connection_Bsed_Inter_BS_Communications.doc to
the draft standard

SuggestedRemedy

Proposed Response   *Response Status*   **W**
Defer Yellow

Normative text for Appendix A

Cl **AA**   *SC*   *P*   *L*   # | 114

Chu, Liwen   STMicroelectronics

Comment Type   **TR**   *Comment Status*   **D**
The protocol should provide basic non hopping mode and DFH mode.

SuggestedRemedy
Provide basic non hopping mode and DFH mode.

Proposed Response   *Response Status*   **W**
Defer (grey)

Cl **AA**   *SC* **A.1.1**   *P* **208**   *L* **17**   # | 514

Kuffner, Stephen   Motorola

Comment Type   **T**   *Comment Status*   **D**
""...conclude that it is safe to do it so, the BS may group multiple contiguous TV channels...""

SuggestedRemedy
""...conclude that it is safe to do so, and the BS has determined that at least some of its
presently associated CPEs are capable of channel bonded operation, the BS may group
multiple contiguous TV channels ...""

Proposed Response   *Response Status*   **W**
Defer (Yellow)

Cl **AA**   *SC* **A.1.1**   *P* **208**   *L* **19**   # | 249

HU, Wendong   STMicroelectronics

Comment Type   **TR**   *Comment Status*   **D**
Considering the following text - ""When in the multiple channel mode of operation, the BS
shall transmit in each TV channel the SCH frame preceded by the superframe preamble as
shown in Figure 3. Within the SCH the BS shall indicate which TV channels are being
grouped together, which will allow CPEs to detect the multiple channel mode of operation.""
The ""multiple channel mode"" implies ""channel bonding"" mode with the specially designed
SCH in the text. In fact, ""multiple channel mode"" would include channel aggregation and
dynamic frequency hopping, hence the text describing multiple channel support with SCH is
not sufficient to support all other multiple channel modes.

SuggestedRemedy
Eliminate/modify the ""channel bonding"" oriented description/procedure in the text and
accommadate other types of multiple channel operation such as channel aggregation and
dynamic frequency hopping.

Proposed Response   *Response Status*   **W**
Defer (Yellow)

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **AA**   Page 66 of 76
SC **A.1.1**   1/27/2007 9:02:57

Cl **AA**   *SC* **A.1.4**   *P* **211**   *L* **15**   *#* 515

Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **D**

The outband signalling would at first seem to be an inefficient use of spectrum if it is constantly idling on other channels to provide a means of backup communications for hidden incumbent situations. But that might be the price that has to be paid to coexist safely in licensed spectrum. If the spectrum is available, then there is no real harm and it might as well be exploited, but the cost of a second transceiver in the BS may be objectionable.

What if spectrum starts getting squeezed in the area and outband channels cannot be found? How is outband signaling altered/coordinated?

SuggestedRemedy

Proposed Response   *Response Status* **W**

Defer (Yellow) for Samsung

Cl **AA**   *SC* **A.4.1**   *P* **229**   *L* **20**   *#* 520

Kuffner, Stephen   Motorola

Comment Type **T**   *Comment Status* **D**

""Upon reception of the resource request, the neighboring WRANs respond through CBP with their active and candidate sets. The union of candidate sets from the neighbor BSs forms the grand candidate set for the renter. The transaction is completed by sending the channel number chosen and the amount of renting time to the neighbor WRANs and receiving the acknowledgement from the offerer.""

I understand exchanging active sets, but can a BS ""reserve"" a candidate channel? If a system is not transmitting on a channel, isn't it available for any other system to use?

SuggestedRemedy

Proposed Response   *Response Status* **W**

Defer (Salmon) for Samsung

Cl **AA**   *SC* **AA.A.2**   *P* **224**   *L*   *#* 59

Chang, Soo-Young   Huawei Technologies

Comment Type **TR**   *Comment Status* **D**

In upstream, the polling strategy for BW requesting of the CPEs in the extended coverage is not efficient. This is because the BS shall waste time polling the AAS-CPEs which do not have BW request while the CPEs do have a BW requesting may wait for quite a long time before the BS poll them. It may be necessary to extend the existing upstream access to include a more efficient BW requesting mechanism for upstream of AAS-CPE.

SuggestedRemedy

To remedy the comment, the BS can maintain N fixed beams and capture the bandwidth request from CPEs from all the beams simultaneously (using N parallel correlators). The N fixed beams shall cover the whole cell and hence, each AAS-CPE may belong to one of these beams. When an AAS-CPE sends an autonomous upstream bandwidth request, at least one of the N correlators at the BS could capture the request. Refer to 22-07-xxxx-00-0000_Huawei_Random_Access_Adaptive_Antenna which will be posted in the Jan. meeting document area for details.

Proposed Response   *Response Status* **W**

Defer (Yellow) New Topic

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **AA**   Page 67 of 76
SC **AA.A.2**   1/27/2007 9:02:58

| *Cl* **AA** | *SC* **AA.c.3** | *P* **253** | *L* **1** | # 69 |

Chang, Soo-Young   Huawei Technologies

Comment Type **TR**   *Comment Status* **D**

When the narrowband incumbent (i.e. wireless microphone) users operate in a single TV channel, they only occupy portion of the TV channel, and the rest vacant channel can be used by other IU or RU users with guard band from the narrowband incumbent users. However, not only the rest vacant channel but also the neighboring TV channel can not be used by the WRAN system in fractional usage mode or channel bonding mode. This would waste the vacate spectrum resource.

SuggestedRemedy

One solution for this case is to divide a WRAN sub-band into M fractional sub-bands with the width 1MHz. The core idea of the fractional bandwidth usage is that WRAN system will transmit preamble, pilot and data in fractional sub-bands that will be used. The fractional bandwidth usage mode can be divided into two types according to whether or not preamble be segmented, segmented preamble insertion type and full preamble insertion type.

Segmented Preamble Insertion:
BS assigns pseudo random sequence PNi whose length equals to length of subcarrier band in fragment sub-band that will be used, then transmit pilot and data in this part of fragmented sub-band. These M preamble sequences will form a full OFDM preamble sequence in sub-band. The fractional bandwidth usage mode can be identified by detecting whether PN sequence exits in corresponding fragmented sub-band. This detection method can be implemented by frequency domain correlation and compare correlation values with predetermined threshold after OFDM demodulation.

Full Preamble Insertion:
First of all, receiver is notified of the mode of fractional bandwidth in advance (the method of segmented preamble insertion), The next step is inserting the longer or flexible PN sequence in corresponding fragmented sub-band. The difference between segmented and full insertions is that receiver will take out received data in unused fragmented sub-band before frequency domain correlation, and using the rest of data for correlation and synchronization.

Proposed Response   *Response Status* **W**

Defer (Salmon)

| *Cl* **AA** | *SC* **AA.C.6** | *P* **258** | *L* **1** | # 60 |

Chang, Soo-Young   Huawei Technologies

Comment Type **TR**   *Comment Status* **D**

The existing schemes do not fully utilize the information provided by limited feedback, which can already be used for the following:
1. Power adaptation
2. MCS adaptation
3. Mode selection (number of spatial streams)
Furthermore, the current schemes do not take into account the potential spatial correlation between antennas. This is important because antennas are likely to be correlated when the operating frequency is low.

SuggestedRemedy

We propose an integrated framework of joint optimizing the MCS, mode and precoder adaptation design for WRAN systems with limited feedback. Two MAC management messages are show proposed to support our limited feedback design. Refer to 22-07-xxxx-00-0000_Huawei_MIMO_Limited_Feedback which will be posted in the Jan. meeting document area for details.

Proposed Response   *Response Status* **W**

Defer New Topic

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **AA**   Page 68 of 76
SC **AA.C.6**   1/27/2007 9:02:58

Cl **AA**   *SC* **AA.D.11.3**   *P* **280**   *L* **5**   # 67

Chang, Soo-Young   Huawei Technologies

Comment Type **TR**   *Comment Status* **X**

When channel measurement is mandated by the BS, CPEs shall make the required channel measurement. The channel measurements can range from simple received signal strength measurements (RSSI) or signal energy in a given TV band or frequency, or the detection of the characteristics of the signal. The RSSI can be used for quality measurement of the signal from the BS station, or for detecting the presence of any other signal in a TV band.

One point which can be improved as following: Because a WRAN system needs to detect interference from other system, every CPE should have the capability of sensing. The basic sensing methods of WRAN are coarse power detection and fine/feature detection. But, WRAN will be used in many countries and regions, coexistence environments are different in different regions, and the coexistence requirements will change in the same region. For example, the LU to be detected is ASTC in the U. S. A., while the LU is DVB in China. Moreover, the LU is DVB at present in China, but DMB may be used as the technology is developed. Hence, as the coexistence environment changes, it is needed that WRAN can detect new LU systems. In this case, WRAN system will deploy CPEs with the capability of detecting new LU systems. So, CPEs with capabilities of detecting different LU systems will coexist in the same cell. In addition, new advanced sensing technologies will be developed for old LU systems as the technologies of WRAN system advanced. CPEs with new sensing technologies will exist in markets, and then CPEs with different capabilities of detection will coexist in a WRAN cell. For that case, BS does not know detecting capabilities of every CPE, which means that BS does not know detecting methods of CPEs to detect signals of LUs. Otherwise, in the process of data fusion, WRAN needs to distinguish sensing reports from every CPE, especially in fine detection phase. For example, there are some CPEs (set 1) with old ATSC system fine characteristics detection method called Method 1,and some CPEs (set 2) with the latest ATSC system fine characteristics detection method called Method 2. When BS requests the CPEs of set 1and set 2 to detect ATSC signals, because Method 2 is more veracious than Method 1, in data fusion, the BS must have more trust in the sensing result of CPEs in set 2 than in set 1. So it is very important for the whole sensing judgment process that the BS knows sensing capabilities of every CPE in advance.

SuggestedRemedy

The procedure to improve sensing capability for this case as follows:
First, every CPE notifies detection capability to BS. BS cluster CPEs with different sensing goal (for example, BS can notify CPEs in an area to detect a specific type of interference signals). When BS requests CPEs in every cluster to send sensing reports back to BS, it will assign detection methods to CPEs. Finally, CPEs send sensing reports to BS, and BS judges the existence of interferences by data fusion.

Proposed Response   *Response Status* **O**

Cl **AA**   *SC* **AA4.3**   *P* **230**   *L* **4**   # 54

Ji, Baowei   Samsung Telecom. A

Comment Type **TR**   *Comment Status* **X**

Spectrum Etiquette was included in the WG draft v0.1 (Section 6.21.2.3.3), and has been moved to A.4.3 with all other optional features. However, the details in the original contribution have not been captured in the draft from the begining. Those details are necessary for the completeness of the standard.

SuggestedRemedy

Please replace section A.4.3 with the text suggested in Section 2.0 of the document 22-07-0023-00-0000_Proposed_text_changes_on_Spectrum_Etiquette.doc.

Proposed Response   *Response Status* **O**

Cl **AB**   *SC* **B.2**   *P* **243**   *L* **1**   # 340

Vlantis, George   STMicroelectronics

Comment Type **ER**   *Comment Status* **X**

Equations on Line 1 of page 243 is unintelligible. Equation Editor hiccup with matrices.

SuggestedRemedy

Fix the equation on Line 1 of page 243.

Proposed Response   *Response Status* **O**

Cl **AC**   *SC* **C.3**   *P* **249**   *L* **4**   # 330

Vlantis, George   STMicroelectronics

Comment Type **TR**   *Comment Status* **X**

It is not clear whether the PN sequences for the preambles for fractional bandwidth usage in Table C.4 meet the PAPR requirements of the PHY.

SuggestedRemedy

State the PAPR for the PN sequences.

Proposed Response   *Response Status* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **AC**
SC **C.3**

Page 69 of 76
1/27/2007 9:02:58

Cl **AC**   *SC* **C.4.2**   *P* **253**   *L* **7**   # 334

Vlantis, George   STMicroelectronics

Comment Type **TR**   *Comment Status* **X**

The original paragraph in Draft 0.1, which was a reference to the 802.16e LDPC code, has been deleted in Draft 0.2. Replace (in Draft 0.1) or insert in Draft 0.2 the correct text in the ""Verbatim 802.16e LDPC Specification"" section of the submission doc. #22-06-0160-00-000. Subclause 8.4.9.2.5 through 8.4.9.5.3 of the submission should replace Annex C subclause C.4.2 in the 802.22 draft 0.2.

Subclause 8.4.9.2 of this submission should be inserted in subclause 8.5.2 ""Forward Error Correction (FEC)"" on page 199 line 16 of the 802.22 draft 0.2.

Annex H of this submission should be added as another annex to the 802.22 draft 0.2.

SuggestedRemedy

Follow the editorial instructions above to incorporate submission doc. #22-06-0160-00-000. Renumber the subclause, equations, figures and tables, as need.

Proposed Response   *Response Status* **O**

Cl **AC**   *SC* **C.4.2**   *P* **253**   *L* **7**   # 335

Vlantis, George   STMicroelectronics

Comment Type **TR**   *Comment Status* **X**

Once the text from ""Verbatim 802.16e LDPC Specification"" section of the submission doc. #22-06-0160-00-000 has been completed. The issues indicated in the ""Known Shortcomings"" section of this submission should be addressed. See the submission for details. There are a few editorial issues. The technical issues that need to be resolved are: the definition of the TLV parameters for BCC, Turbo Codes and LDPC; the appropriateness of the concatenation rules if the 802.22 OFDMA scheme is sufficiently different that 802.16e; and whether to delete the specification of multiple transmit antenna cases, based on 802.22 capabilities.

SuggestedRemedy

Address the issues in the ""Known Shortcomings"" section of submission, doc. #22-06-0160-00-000, after the verbatim 802.16e text is added.

Proposed Response   *Response Status* **O**

Cl **AC**   *SC* **C.6**   *P* **258**   *L* **3**   # 338

Vlantis, George   STMicroelectronics

Comment Type **E**   *Comment Status* **X**

In the introductory paragraph of subclause C.6 ""Multiple antenna options"", replace ""It is well known that the..."" with ""The..."". References to the reader's state of mind don't belong in a specification.

SuggestedRemedy

Replace ""It is well known that the..."" with ""The..."".

Proposed Response   *Response Status* **O**

Cl **AC**   *SC* **C.6.2.1.6**   *P* **262**   *L* **29**   # 341

Vlantis, George   STMicroelectronics

Comment Type **ER**   *Comment Status* **X**

$W_{k,s}$ is missing a circumflex accent (hat).

SuggestedRemedy

Add circumflex accent (hat) to $W_{k,s}$ on Line 29 of Page 262.

Proposed Response   *Response Status* **O**

Cl **AC**   *SC* **C.6.4**   *P* **266**   *L* **7**   # 364

Vlantis, George   STMicroelectronics

Comment Type **ER**   *Comment Status* **X**

Two references to [5] and ""xxx"".

SuggestedRemedy

Fix the reference on Line 7 of Page 266.

Proposed Response   *Response Status* **O**

Cl **AC**   *SC* **C.6.5.2**   *P* **269**   *L* **6**   # 365

Vlantis, George   STMicroelectronics

Comment Type **TR**   *Comment Status* **X**

Clarify the condition ""For xxx, the...""

SuggestedRemedy

Clarify the meaning of ""xxx"" or replace ""For xxx, the.."" with ""The..."".

Proposed Response   *Response Status* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied   Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **AC**   Page 70 of 76
SC **C.6.5.2**   1/27/2007 9:02:58

Cl **AD**   *SC* **11.3**   *P* **280**   *L* **4**   # 369
Vlantis, George   STMicroelectronics

Comment Type **E**   *Comment Status* **X**
The subclause numbers of Annex D (pages 280 to 295) are numbered ""11.3.x.y.z"". They should be renumbered ""D.x.y.z"".

SuggestedRemedy
Renumber the subclause numbers of Annex D (pages 280 to 295) as ""D.x.y.z"".

Proposed Response   *Response Status* **O**

Cl **AD**   *SC* **11.3.3.1**   *P* **283**   *L* **8**   # 349
Vlantis, George   STMicroelectronics

Comment Type **TR**   *Comment Status* **X**
How the CPE should report confidence of detection is a ""TBD"" in the Sensing Annex D.

SuggestedRemedy
Define how the CPE shall report its confidence of detection.

Proposed Response   *Response Status* **O**

Cl **AD**   *SC* **11.3.3.3**   *P* **289**   *L* **13**   # 363
Vlantis, George   STMicroelectronics

Comment Type **ER**   *Comment Status* **X**
Reference to ""xxx"".

SuggestedRemedy
Fix the reference on Line 13 of Page 289.

Proposed Response   *Response Status* **O**

Cl **AG**   *SC* **Table G.1**   *P* **305**   *L* **6**   # 366
Vlantis, George   STMicroelectronics

Comment Type **E**   *Comment Status* **X**
Last line: ""Amen!"" without a ""Hallelujah!"".

SuggestedRemedy
Replace ""Amen!"" with ""Amen, Hallelujah!"" or delete the ""Amen!"".

Proposed Response   *Response Status* **O**

Cl **Annex**   *SC*   *P* **240**   *L*   # 138
Mazzarese, David   Samsung

Comment Type **TR**   *Comment Status* **X**
""Multiple CPE joint TPC"" was identified as ""URGENT work - results needed for green zone"" in 22-06-0200-01-0000_Table_of_Options_in_P802-22_D0.1. The current version of Annex B.2 in 22-06-0259-00-0000_v0.2_with_line_numbers is not technically accurate.

The current transmitted EIRP control mechanism guarantees the transmission from each individual WRAN device meets the D/U ratio requirement at the TV protected contour. However, when multiple WRAN devices are scheduled to transmit within one TV channel simultaneously, the interferences induced at the TV protected contour aggregate. A method is proposed herein for the mandatory joint transmitted power control of multiple WRAN devices simultaneously transmitting on the same TV channel, in order to control the aggregate interference created at the edge of the TV protected contour, when these devices are located in a certain vicinity of each other.

SuggestedRemedy
Section 2.0 in the companion document of this comment [22-07-016-00-0000_Proposed_text_changes_to_22-06-0259-00-0000_v0.2_AnnexB2] presents the proposed text for inclusion as sections 6.13.5.3 and 6.13.5.4, in replacement of Annex B.2. Sections 6.13.5.1 and 6.13.5.2 have been submitted in a separate comment supported by the document 22-06-0219-01-0000_Proposed_text_changes_to_P802-22_D0.1_Final_Section_6_13_5.doc, as a replacement of section 6.13.5 in 22-06-0259-00-0000_v0.2_with_line_numbers.

Proposed Response   *Response Status* **O**

Cl **Annex**   *SC* **11.3**   *P* **280**   *L* **5**   # 160
Shellhammer, Steve   Qualcomm

Comment Type **TR**   *Comment Status* **X**
The section states ""The channel measurements can range from simple received signal strength measurements (RSSI) or signal energy in a given TV band or frequency, or the detection of the characteristics of the signal. The RSSI can be used for quality measurement of the signal from the BS station, or for detecting the presence of any other signal in a TV band. The measurement messages are specified in 6.8.22""

However, there are no specifics about what the CPE is to report in Clause 6.8.22.

SuggestedRemedy
Change text to ""The measurement messages are specified in 6.8.22""

Proposed Response   *Response Status* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **Annex**   Page 71 of 76
SC **11.3**   1/27/2007 9:02:58

Cl **Annex**   *SC* **11.3.1**   *P* **280**   *L* **13**   # 161
Shellhammer, Steve   Qualcomm

Comment Type **TR**   *Comment Status* **X**

The text states ""(iii) signal detection block to process the signals and detect the presence of interested signal or identify the signal types""

However, there is no support for ""identifying the signal types"" in the document.

SuggestedRemedy

Change text to ""(iii) signal detection block to detect the presence of various signal types.""

Proposed Response   *Response Status* **O**

Cl **Annex**   *SC* **11.3.1**   *P* **280**   *L* **1825**   # 162
Shellhammer, Steve   Qualcomm

Comment Type **TR**   *Comment Status* **X**

The text says that ""The unoccupied channel selection may be done by one step or two step approach ... In the two step approach, multiple unoccupied channel candidates are first determined by energy detection method""

However, the working document does not have any support for specifying what detection technique is used, so there is no way of implementing a two step approach. Also, it is not clear what value a two step approach has. If the ED does not detect a signal it is likely that another technqiue would need to be attempted subsequently anyways. So the ED is only useful for identifying channels that are definatley occupied by something, not necessarity a licensed system.

SuggestedRemedy

Either drop the entire secion on the ""two step approach"" or add support for specifying the detection technique in the document.

Proposed Response   *Response Status* **O**

Cl **Annex**   *SC* **11.3.2.1**   *P* **281**   *L*   # 163
Shellhammer, Steve   Qualcomm

Comment Type **TR**   *Comment Status* **X**

This section decribes how to calcuate the RSSI and states that the RSSI is reported to the BS. In the section on measurement reporting there are no reports of the RSSI, as far as I can tell. It is not clear at all that RSSI is a useful report for sensing.

Also, since the equation for p(k) divides by the number of samples, it seems that this might be a measure of the power and not the energy.

SuggestedRemedy

Do one of the following,

1. Show that RSSI is a useful report and then added support for RSSI reporting to the document.

2. Delete this section.

Proposed Response   *Response Status* **O**

Cl **Annex**   *SC* **11.3.22**   *P* **282**   *L*   # 164
Shellhammer, Steve   Qualcomm

Comment Type **TR**   *Comment Status* **X**

I have not seen any simulation results for this technique. So it is unclear how well it works.

SuggestedRemedy

Do one of the following,

1. Supply simulation results.

2 Delete this section.

Proposed Response   *Response Status* **O**

Cl **Annex**   *SC* **11.3.3.1**   *P* **282**   *L*   # 165
Shellhammer, Steve   Qualcomm

Comment Type **TR**   *Comment Status* **X**

This seems like another section on energy detection. It is not clear to me what the phrase ""fine energy-based detection"" means. What does it mean to be ""fine?""

SuggestedRemedy

If they is anything new in this section add to the engergy detection section, otherwise delete.

Proposed Response   *Response Status* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **Annex**   Page 72 of 76
SC **11.3.3.1**   1/27/2007 9:02:58

Cl **Annex**   *SC* **11.3.3.2.1**   *P* **283**   *L*   # 166
Shellhammer, Steve   Qualcomm

Comment Type   **TR**   *Comment Status* **X**

I do not believe I have seen any results for this approach, so I am not clear how well it works.

SuggestedRemedy

Supply simulation results for this approach.

Proposed Response   *Response Status* **O**

Cl **Annex**   *SC* **11.3.3.2.2**   *P* **283**   *L*   # 167
Shellhammer, Steve   Qualcomm

Comment Type   **TR**   *Comment Status* **X**

This approach has been shown to have issues. However, if the running mean and variance are removed and replaced with a max() operation on the output of the correlator, this approach has been shown to work and simulation results have been presented. Also, an improved method that uses ""peak combining"" has been shown to give better performance than the max of the correlator output, if for longer sensing times.

SuggestedRemedy

Replace the text with the running mean and variance with a max operation. Also, add text on the ""peak combining"" technique.

Proposed Response   *Response Status* **O**

Cl **Annex**   *SC* **11.3.3.2.3**   *P* **285**   *L*   # 168
Shellhammer, Steve   Qualcomm

Comment Type   **TR**   *Comment Status* **X**

This is an interesting idea. However, the CPE is required to track the BS clock, which is accurate to within 2 ppm. It is not clear that having a more accurate clock is useful. It may be useful, but I have not seen any results to show that it is useful.

SuggestedRemedy

Supply some simulation results showing that this is a useful feature.

Proposed Response   *Response Status* **O**

Cl **Annex**   *SC* **11.3.3.2.3**   *P* **288**   *L*   # 169
Shellhammer, Steve   Qualcomm

Comment Type   **TR**   *Comment Status* **X**

Table 239 is a useful table. If is my impression that after the DTV transition is complete that only two of the rows in this table will still apply. Since 802.22 can only be deployed after the completion of the DTV transition, this table needs to be updated.

SuggestedRemedy

Update this table to be correct after the completion of the DTV transition. I think this table should be in a section giving backgroup information on ATSC and not this section. Of course, it should be in an informative section.

Proposed Response   *Response Status* **O**

Cl **Annex**   *SC* **11.3.3.3**   *P* **288**   *L*   # 170
Shellhammer, Steve   Qualcomm

Comment Type   **TR**   *Comment Status* **X**

I have not seen any results for this approach.

SuggestedRemedy

Supply simulation results for this approach.

Proposed Response   *Response Status* **O**

Cl **Annex**   *SC* **11.3.3.4**   *P* **290**   *L*   # 171
Shellhammer, Steve   Qualcomm

Comment Type   **TR**   *Comment Status* **X**

It is not clear to me the purpose of this section. If does not give any specific sensing technique.

SuggestedRemedy

Explain what the purpose of this section is.

Proposed Response   *Response Status* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **Annex**   Page 73 of 76
SC **11.3.3.4**   1/27/2007 9:02:58

Cl **Annex**   *SC* **11.3.4**   *P* **291**   *L*   *#* 172
Shellhammer, Steve   Qualcomm

Comment Type   **TR**   *Comment Status* **X**

I do not believe I have seen any simulation results for any of the ideas described in this section.

SuggestedRemedy

Supply simulation results for the approaches described in this section.

Proposed Response   *Response Status* **O**

Cl **C4**   *SC* **C4.1**   *P* **251**   *L* **4**   *#* 52
Benko   , John   France Telecom

Comment Type   **T**   *Comment Status* **X**

The duo-binary turbo is missing some parts. Specifically the interleaver parameters (P,P1,P2,P3) are not defined for relevant block sizes for 802.22. In addition the block concatention scheme is not defined (which is required for OFDMA). The missing parts are included in an updated version of the duo-binary turbo code. The changes are only the addition of the interleavers parameters, the concatention scheme, and a puncturing scheme for a rate 5/6 code. Everything else remains the same.

SuggestedRemedy

Incorporate sections of updated duo-binary turbo code in 22-07-0030-00-0000.doc

Proposed Response   *Response Status* **O**

Cl **CC**   *SC* **C.3**   *P* **247**   *L* **3**   *#* 485
Kuffner, Stephen   Motorola

Comment Type   **TR**   *Comment Status* **X**

""In this case, it is efficient to use the fractionally vacant bandwidth of the TV channel. ""

Fractional BW operation may or may not be allowed for operating co-channel with incumbents, depending on the local regulations. It may find more applicability in outband signaling and in sharing of a TV channel with other unlicensed users when spectrum opportunities are scarce.

Note that the FCC proposes location-based protection for co-primary licensed land mobile operations in the TV spectrum, so co- or adjacent channel operation to land mobile should be considered with the same restrictions as co- or adjacent channel operation to TV.

SuggestedRemedy

""When local regulations permit co-channel operation with narrowband licensed incumbents, the spectrum may be more efficiently utilized with fractional channel use.""

Proposed Response   *Response Status* **O**

Cl **CC**   *SC* **C.4.1.4**   *P* **252**   *L* **29**   *#* 496
Kuffner, Stephen   Motorola

Comment Type   **T**   *Comment Status* **X**

""Three code rates are defined here (more code rates can be defined if required): R = 1/2, 2/3, and 3/4. ""

Doesn't the coder have to support the convolutional coding rates? Isn't a rate 5/6 then needed? (see Table 233)

SuggestedRemedy

Proposed Response   *Response Status* **O**

Cl **CC**   *SC* **C.5**   *P* **257**   *L* **37**   *#* 497
Kuffner, Stephen   Motorola

Comment Type   **T**   *Comment Status* **X**

""The spreading matrix for SCH is defined 8.3.2.1.""

It is not really defined there. It is said to be spread by a factor of 4 (p. 191, line 23), but it doesn't detail the nature of this spreading.

SuggestedRemedy

Proposed Response   *Response Status* **O**

Cl **CC**   *SC* **C.6.2.1.2**   *P* **260**   *L* **17**   *#* 486
Kuffner, Stephen   Motorola

Comment Type   **T**   *Comment Status* **X**

Should this be $H_{k,21} = H^*_{k,12}$ or is $H_{k,22} = H^*_{k,12}$ correct?

SuggestedRemedy

Proposed Response   *Response Status* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open   W/written   C/closed   U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **CC**   Page 74 of 76
SC **C.6.2.1.2**   1/27/2007 9:02:58

Cl **CC**   *SC* **C.6.2.1.5**   *P* **261**   *L* **17**   # 487
Kuffner, Stephen   Motorola
Comment Type   **T**   *Comment Status*   **X**
Should the second part of this equation use M2 instead of M1?

SuggestedRemedy

Proposed Response   *Response Status*   **O**

Cl **CC**   *SC* **C.6.5.4**   *P* **272**   *L* **7**   # 488
Kuffner, Stephen   Motorola
Comment Type   **T**   *Comment Status*   **X**
Both clause C.6.5.4 and C.6.5.5 apply to techniques more general than beamforming alone
and should be moved up to a higher sublayer, e.g. C.6.7.

SuggestedRemedy

Proposed Response   *Response Status*   **O**

Cl **DD**   *SC* **11.3.1**   *P* **280**   *L* **19**   # 498
Kuffner, Stephen   Motorola
Comment Type   **T**   *Comment Status*   **X**
""In the two step approach, multiple unoccupied channel candidates are first determined by
energy detection method.""

Also figs 91 and 92.

We haven't yet determined that energy detection is the best way to do fast sensing.
SuggestedRemedy
""In the two step approach, multiple unoccupied channel candidates are first determined by
e.g. energy detection methods.""

Proposed Response   *Response Status*   **O**

Cl **DD**   *SC* **11.3.2.1**   *P* **281**   *L* **12**   # 500
Kuffner, Stephen   Motorola
Comment Type   **T**   *Comment Status*   **X**
""The RSSI measurement shall be reported in units of dBm. ""

To what accuracy and precision? This can make a big difference in implementation.

SuggestedRemedy

Proposed Response   *Response Status*   **O**

Cl **DD**   *SC* **11.3.2.1**   *P* **281**   *L* **15**   # 499
Kuffner, Stephen   Motorola
Comment Type   **T**   *Comment Status*   **X**
Equation 18
The constants in the equation suggest a specific implementation.

SuggestedRemedy

Proposed Response   *Response Status*   **O**

Cl **DD**   *SC* **11.3.3.1**   *P* **283**   *L* **6**   # 501
Kuffner, Stephen   Motorola
Comment Type   **T**   *Comment Status*   **X**
""The noise power can simply be estimated form the thermal noise adjusted for any other
gain of the RF front-end. Alternatively, the CPE can also periodically estimate its input noise
power using a vacant channel or by disconnecting the antenna.""

The suggested alternatives may be of limited utility, depending on environment and receiver
design. Sensing noise power on a vacant channel will not necessarily reflect the noise
power on the channel of interest, depending on the environmental noise, RF gain flatness,
noise figure flatness, etc.

Likewise, disconnecting the antenna does not reflect the environmental noise component,
which can be significant at lower frequencies, and the antenna impedance can result in a
different LNA noise figure than a termination (though
the antenna impedance is somewhat isolated from the LNA by the cable losses...).
SuggestedRemedy

Proposed Response   *Response Status*   **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **DD**   Page 75 of 76
SC **11.3.3.1**   1/27/2007 9:02:58

Cl **DD**   *SC* **11.3.3.2**   *P* **283**   *L* **11**   # 502
Kuffner, Stephen   Motorola

Comment Type   **T**   *Comment Status* **X**

""Upon request by the BS, the CPE shall identify the type of the signal seen at its input,
example ATSC TV, DVB-T, Part 74 devices. The following subsections describe some of
the method to be used for this signal feature detection.""

These methods have not been determined to be the methods to be used. Is ""Part 74
devices"" intended to cover the TG1 beacons as well?

SuggestedRemedy

""Upon request by the BS, the CPE shall identify the type of the signal seen at its input, for
example ATSC TV, DVB-T, or Part 74 devices/IEEE802.22.1 beacons. The following
subsections describe some of the methods that can be used for this signal feature detection.

Proposed Response   *Response Status* **O**

Cl **DD**   *SC* **11.3.3.4**   *P* **291**   *L* **12**   # 503
Kuffner, Stephen   Motorola

Comment Type   **T**   *Comment Status* **X**

""Apparently they can put their video carrier anywhere between minus 10 kHz and plus 10
kHz in relation to the standard carrier frequency.""

Do we have more concrete wording we can put in here?

SuggestedRemedy

Proposed Response   *Response Status* **O**

Cl **Intro**   *SC* **Introduction**   *P* **iii**   *L* **2**   # 370
Vlantis, George   STMicroelectronics

Comment Type   **E**   *Comment Status* **X**

(1) In the Introduction the Draft number D0.1 should be D0.2
(2) In the Headers of all the pages, except the very first page, have the wrong Draft Number
D0.1 and the wrong date (May 2006). Should be November 2006.

SuggestedRemedy

Fix the Introduction and page headers with the current version/date.

Proposed Response   *Response Status* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed U/unsatisfied Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **Intro**   Page 76 of 76
SC **Introduction**   1/27/2007 9:02:59