**IEEE P802.15**

**Wireless Personal Area Networks**

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| Project | IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs) |
| Title | Peer Aware Communications (PAC) Task Group minutes for November 2012 |
| Date Submitted | 16November, 2012 |
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| Re: |  |
| Abstract | PAC Task Group. |
| Purpose | To develop interest in this technology with a view to determine its possible standardization within the 802.15 WG. |
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These are the minutes of IEEE 802.15.8Task Group PAC meeting held at the Grand Hyatt San Antonio,November12-15, 2012.

**Monday November12th, 2012, PM1 Session**

1. The Chair called the meeting to order at 13:30pm.
2. Chairman: Myung Lee, Secretary: Huan-Bang Li
3. Attendees were asked to sign in the IMAT system for attendance.
4. Discuss the agenda
5. Approve the agenda
6. Approve the minite of last meeting
7. Huan-Bang Li presents 0578-00 [Reports on Telconferences After Palm Springs’ Meeting]

MyungLee : Did you have a consensus of the common communication mode

Huan-Bang: Not yet, agree to have further discussion

1. Zhao Junhupresens 0566-00 [Secure Access to WPAN using Mobile Phone ]

Ryuji: SIM card can protect mobile phone but not WPAN side malicious attack

Junhu: could be authorized by gateway

Ryuji: Who authorizes? WPAN does not have the function.

Myung Lee: Could be operators.

Ryuji: WPAN does not have SIM card, you should consider how to protect WPAN.

Junhu: gateway will take care

Ryuji: Your proposal does not specify to PAC.

Junji: That is true.

Robert: PKI is for Key registration application. Instead, TPI is becoming a common standard for mobile device.

What is the exact architecture you are talking about? Is it a mobile phone centric architecture?

Myung Lee: he will specify in future.

Ryuji: what kind of attack you are assuming before design the algorithm.

CheolRyu: Your proposal is not related to PAC. PAC devices can talk each other without gateway.

Junji: when a new device joins the network, we need do the authentication

CheolRyu: I’m not sure your idea is applicable to PAC

Myung Lee: The idea needs to be specified to PAC in future

Seung-Hoon: we don’t use coordinator in PAC. Security will be an issue in further discussion

Allan Zhu: Basic assumption of access between coordinator and cellular is not usual.

Myung Lee: Sometimes it is. E.g., for a car model.

Seung-Hoon: PAC, M2M, and cellular are based on different bands

1. Seung-Hoon presents 0568-00

Marco: What is Synchonization ‘TBD’?

Seung-Hoon: Just copy from agreed, not content yet.

Myung Lee: what need to be further discussed?

Seung-Hoon: multicast, broadcast, Security, etc

1. The meeting recessed at15:30pm.

**Monday November12th, 2012, PM2 Session**

The group reconvened at 16:00pm.

Shannon continues presentation of 0568-00

Marco: decrease higher layer signaling (Section 6.6)

Myung: OK

CheolRyu: change ‘an optional matching’ to ‘optional matching’.

Myung Lee: ‘an optional matching’ is better.

Jimkyeong: need to clarify where the interference come from (Section 6.7)

Myung Lee: include interfererece from PDs and others.

Seung-Hoon: need definition for muliticast (Section 6.8)

Marco: we already have one-to-many definition.

CheolRyu: that is for topology.

Myung Lee: add ‘including both one-hop and multi-hop cases’.

Myung Lee: Special case of multicast (Section 6.9)

Seung-Hoon: Broadcast could not know the destination.

CheolRyu: reliability is also an issue.

Discussion on 6.12 Power management and Scalability

Jimkyeong: delete ‘discovery’

Marco: in that sense, the second sentence is redundant.

Jimkyeong: delete ‘application’

Seung-Hoonn: Application stands for use cases. Suggest to refer Application Matrix.

Section 6.16

Myung Lee: change two ‘shall’ to ‘may’

Section 7.2

Myung Lee: need a number for TBD.

Igor: There is no meaning to have this requirement.

Myung Lee: suggest to delete this clause.

Section 7.3

Marco: no need for this also

Jimkyeong: already delete link spectrum sufficiency

Seung-Hoon: Areal efficiency is not based on that

Myung Lee: come back after discussion on simulation scenarios

Igor: need correct definition on link efficiency

Seung-Hoon: it is link-to-link throughput per bandwidth.

Section 7.4

Marco: suggest to have either bit error rate or packet error rate.

Myung Lee: the difference is measured at PHY layer or AC layer. Also need a quantized number.

Igor: can define 1% packet error rate.

Myung Lee: need a simulation scenario to evaluate. If not, no meaning.

Myung Lee: Pleaseupdate the document and post on the server.

Seung-Hoon: Will do.

The meeting recessed at18:030pm.

**TuesdayNovember13th, 2012, AM1 Session**

1. The group reconvened at 8:00am.
2. Marco (NICT) presented the document (15-12-0459-01-0008)named ‘Channel-models for PAC.’Groups asked that the channel model can support angle of departure or arrival and can operated in all different bands. He said that this model don’t consider angle because it’s complex and ITU delay model can support all different bands.
3. From the next presentation, group started ID and discovery presentation and discussion.
4. Sungguen (ETRI) presented the document (15-12-0573-00-0008) named ‘How to manage IDs for the PAC.’Groups discussed that what is the exact device ID, service ID, user ID and what is peer ID. For example, device ID is MAC address, service ID is facebook, and user ID is xx@facebook.Sungguen thought service ID is peer.
5. Sungguen (ETRI) presented the document (15-12-0572-00-0008) named ‘Elapsed Time of Device Discovery and Spatial Filtering.’He presented that look-and-link communications has benefits to reduce discovery time and increase power efficiency.
6. Jinyoung (LG) presented the document (15-12-0571-00-0008) named ‘Views of the communication type, discovery and infrastructure.’Group discussed that what is the application ID and user unique ID. User unique ID can be device ID as well as whatever groballyunique one, and application ID includes user unique ID and service ID.
7. The meeting recessed at 10:00am.

**TuesdayNovember13th, 2012, AM2 Session**

1. The group reconvened at 10:30am.
2. Seung-Hoon (Samsung) presented the document (15-12-0577-01-0008) named ‘Thoughts on Peer Discovery.’ He suggested that peer ID is user ID + application ID, which user ID means account ID and application ID means application such as facebook. Marco suggested that we use PAC specified application example instead of facebook because it’s infrastructure-based application.Chair said that group need to define device ID but it’s a group’s decision whether it is used to discovery procedures.
3. Chair said that group has to make definitions of IDs and peer and it is group’s decision whether it is used or not. And groups made the definitions as below:
* **Device ID**: MAC address (physical address). IEEE802.15 uses 48 or 64 bits for the ID.
* **Application ID**: application type + unique application.
	+ Application type is the categorized application types e.g. ftp, email, printer, social networking. Group maybe can use first a few bits.
	+ Unique application is the detail applicatione.g. facebook, twitter. Group maybe canuse remained bits.
	+ Some memberssuggested dividing it to application type ID and application ID.But some members disagreeed it because we can’t categorize applications. Groups said that we don’t know how we can define application ID in our scope. Group decided to define **application type ID** and **application ID**. Application ID can include application type ID.
* **Application specific user ID**: E.g. account number.
* **Group ID**:Group is the group of selected peers or application specific users.
* **Peer**: application specific user.Peer ID is equal to user ID

Groups defined the five IDs. And the definitions will be included in TGD.

1. The meeting recessed at 12:15pm.

**Wednesday November14th, 2012, PM1 Session**

1. The group reconvened at 13:30pm
2. Huan-Bang presented 0579-00

Seung-Hoon: What is the exact transmission distance.

Huan-Bang: depending on required date rate.

Seung-Hoon: need a common band for mobile device.

Huan-Bang: That is a case to be takn into consideration.

Myung: with the common band of 1.25GHz, what will be the distance.

Igor: for 100kbps, could be 50meters

1. Seung-Hoon presented 0645-00

Jinyoun: Not all IDs are for discovery.

Marco: they are under discovery clause

Myung: just definitons. Could add to the definition clause.

Myung: Let’s clarify definition first.

Device ID (MAC address)

 Application type ID (Social network, Game, Navigation …)

 Application specific ID (Facebook, Twitter, Space Invaders …)

 Application specified user ID (Account, Phone number …)

 Application specific group ID (Selected

<< can we use service ID

Myung: already used in infrastructure based

CheolRyu:also need devicegroupID

Jinyoun: when we need use Group device ID

Robert: may be needed when do multicast at MAC layer.

Myung: don’t need classify PHY or MAC layers in definitions.

Robert: should be classification at MAC

Jimkyeong: Why need Application specified user ID

Myung: User ID may be different for different applications.

Myung: 802.11 also does discovery without association. We need consider the uniqueness of PAC.

Jimkyeong: some are linked to upper layers.

Myung: may be true but should move on

1. The meeting recessed at 15:30pm.

**Wednesday November14th, 2012, PM2 Session**

1. The group reconvened at 16:00pm
2. Continue discussion on 0645-00

Section 6.3 --- change several ‘shall’ to ‘may’.

<< What does ‘state-based presence’ mean?

>>on, off, etc.

>>change to ‘state of peers’

1. Section 7.4

<< 500m is also difficult for 2.4GHz and 5GHz.

>> will discuss later

<<suggest to change the length of octet.

* Straw poll between ‘512 octet’ and ‘256 octet’

3 for ‘512 octet’

4 for ‘256 octet’

>> change ‘128 octet’ to ‘256 octet’.

1. Section 7.5.1 (TGD 0385-08)

<<difficult to decide discovery latency.

>> may take reference from application matrix.

* Straw poll to take out Section 7.5.1

Yes = 7

No = 4

Abstain = 2

>> Take out Section 7.5.1.

>> add definitions of discovery latency and data latency.

1. Section 7.6 (TGD 0385-08)

<<why do we need to define ‘fairness’?

<< 802.16 is for cellular and needs this definition for latency and bandwidth comparison.

>>change‘shall’ to ‘may’

1. Section 7.8

<< have only general information.

>> leave as it is

1. 9.2 channel model

Marco: already finished.

Myung: any further questions for the channel model.

 Accept as it is.

1. Section 8 Regulation

>>check document from Suhook (0477-00) and discuss tomorrow.

1. Section 9.3 (0645-01)

>> Simulation scenarios for all frequency bands.

<<only unlicensed band. Also need licensed band like 700MHz, 1.9GHz, 2.3GHz.

HanGyu Cho: will provid models by tomorrow.

>> should include both unlicensed and licensed band as stated in PAR.

1. The meeting recessed at 15:30pm.

**ThuresdayNovember15th, 2012, AM1 Session**

1. The group reconvened at 8:00am
2. Attendees were asked to sign in the IMAT system for attendance.
3. Marco Hernandez presented a material on proof of transmission range concept that transmission range of 2.4GHz and 5GHz frequency bands can indeed achieve up to 500m in line-of-sight (LoS) case. Shannon suggested adding the term “LoScondition”in the section 7.1 of TGD.However, the ultimate documentation on setting the lower or upper limit of transmission range is yet to be settled.
4. The group reviewed the latest merged comments in 15-12-645-01. The group did not come up with a common concensusregarding Section 5.4 of the TGD. Some suggested adopting the idea of having a common mode, and the other group members suggested let the proposals lead to a decision.
5. Eldad’s comment on 6.16 was accepted. New comments on Section 9.3 were shown. The group agreed on modification suggeseted by 15-12-0645-01.
6. The meeting recessed at 10:00am.
7. The group reconvened at 10:30am.
8. Transmission range issue regarding Section 7.4, described in 15-12-0645-01,was deleted since the group agreed to let it be decided by the proposals.
9. However, there are several issues yet be resovled. They are common mode, simulation scenarios & parameters for MAC, definition of discovey/data latency, regulations, security, states of the PD, synchronization, relative positioning, and channel model for licensed bands. Such topics are expected to be tackledand to be hopefully resovledby group members in the next Vancouver session.
10. The chair acknowledged that call for proposal should be delayed for at least one meeting session due to unresolved issues remained in the TGD.
11. The group members agreed upon having two teleconference meetings to finalize the technical guidance document.
12. Teleconference bridges will be provided by LGE. The telephone number and the access code are:
	1. International: 1-877-668-4493
	2. Access code: 627805157
13. Tentative schedule and the objectives for the teleconference meetings will be:
	1. Nov. 27th (TUE): US EST 8:00pm, US PST 5:00pm, Japan/Korea 10:00am, China: 9:00am.
	2. Dec. 18th (TUE): US EST 9:00am, US PST 6:00am, Japan/Korea 11:00pm, China 10:00pm.
14. The meeting adjounred at 11:50am.

The next meeting will be held during Jan.14-18, 2013, at the Hyatt Regency Vancouber, Vancouver, BC Canada.