Project: IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)

Submission Title: [IL Comments Resolution]
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Abstract: [This document proposed resolutions to comments on DF02]

Purpose: [For consideration and discussion by IEEE 802.15 TG3C.]

- **Comment 103**: There is no code rate between 1/2 and 3/4. This causes large jumps in the available rates.
- **Suggested Resolution**: Add the following LDPC rate 5/8 parity check matrix to both SC and HSI-OFDM
- Entries in read mean deleted(i.e. replace by '-')

Rate 5/8 Parity Check Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
1	0	-	-	5	-	18	16	-	-	-	3	6	10	-	-	0	-	7	-	5	-	-	4	4	-	10	-	5	-	7	-	19
2	-	-	6	-	7	-	-	-	-	2	-	-	-	-	9	-	20	-	-	-	4	-	-	-	-	-	19	-	10	-	-	-
3	-	18	-	-	-	-	-	0	10	-	-	-	-	16	-	-	-	-	9	-	-	12	-	-	4	-	-	-	-	-	17	-
4	5	0	-	-	-	-	18	16	6	-	-	3	0	10	-	-	5	-	7	-	4	-	-	4	5	-	10	-	19	-	7	-
5	-	-	-	6	-	7	-	-	-	-	2	-	-	-	-	9	-	20	-	-	-	4	-	-	-	-	-	19	-	10	-	-
6	-	-	18	-	0	-	-	-	-	10	-	-	-	-	16	-	-	-	-	9	-	-	12	-	-	4	-	-	-	-	-	17
7	-	5	0	-	16	-	-	18	3	6	-	-	-	0	10	-	-	5	-	7	4	4	-	-	-	5	-	10	-	19	-	7
8	6	-	-	-	-	-	7	-	-	-	-	2	9	-	-	-	-	-	20	-	-	-	4	-	19	-	-	-	-	-	10	-
9	-	-	-	18	-	0	-	-	-	-	10	-	-	-	-	16	9	-	-	-	-	-	-	12	-	-	4	-	17	-	-	-
10	-	-	5	0	18	16	-	-	-	3	6	-	-	-	0	10	7	-	5	-	-	4	4	-	10	-	5	-	7	-	19	-
11	-	6	-	-	-	-	-	7	2	-	-	-	-	9	-	-	-	-	-	20	-	-	-	4	-	19	-	-	-	-	-	10
12	18	-	-	-	-	-	0	-	-	-	-	10	16	-	-	-	-	9	-	-	12	-	-	-	-	-	-	4	-	17	-	-

- **Comment 231, 244, 103**: Too much gap between rate 1/2 and 3/4, add a rate in the middle (Add rate 5/8 add an MCS using 16QAM and LDPC rate 5/8 in HSI-OFDM)
- **Suggested Resolution:**

Add the followings HSI-OFDM EEP MCS in Tables 125 & 126 :

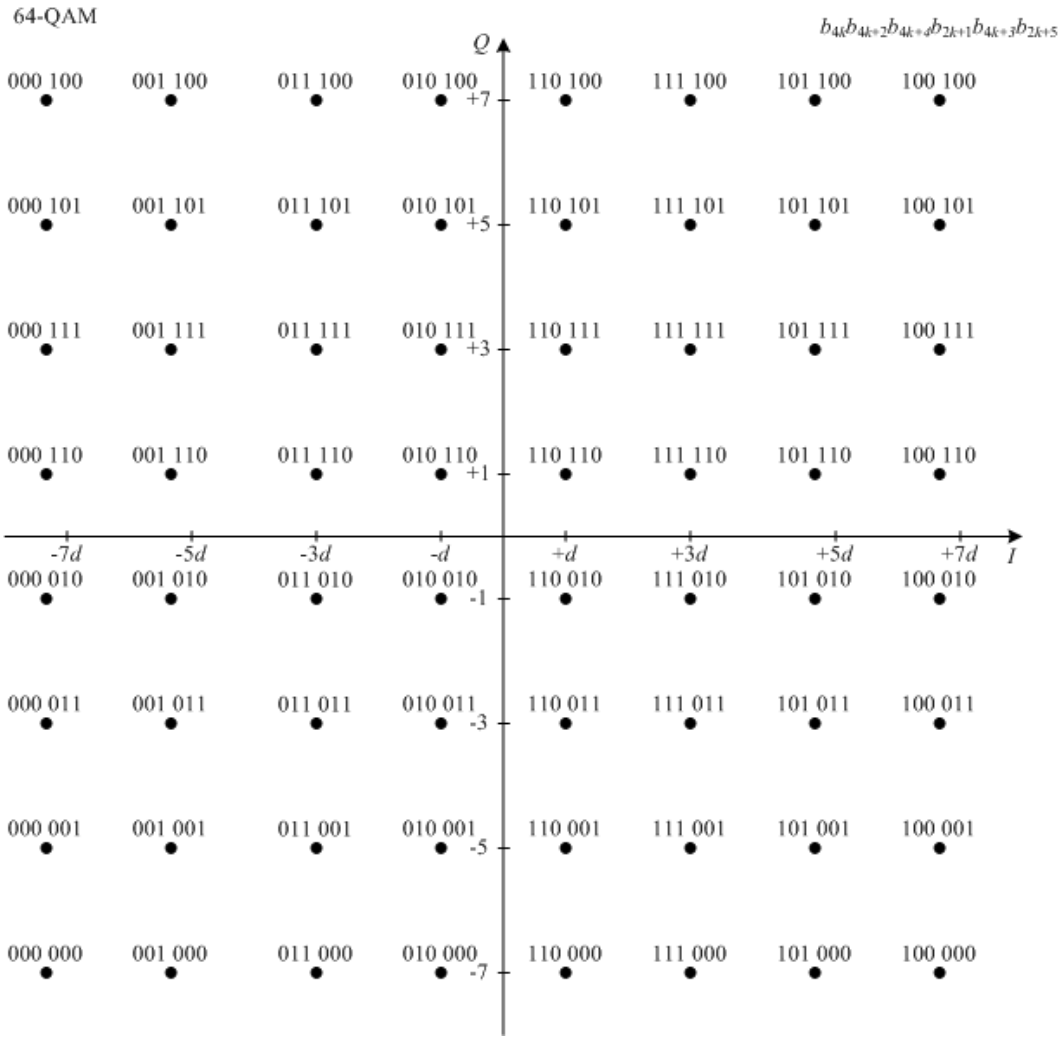
MCS	Data Rate	Modulation	Coding Mode	Spreading
7	5670 Mbps	64-QAM	5/8	1

N_{SCBPS}	N_{CBPS}	N_{IBPS}
2016	2016	1260

Add the following EVM requirement in Table 140

Data rate	Relative constellation RMS error
2.1Gbps to 5.3 Gbps	-21 dB
Above 5.4 Gbps	-23 dB

- Add the following constellation in 12.3.2.4



- **Comment 235**: Simplify SC CES structure and sequences in the preamble (12.2.3, P.92)
- **Suggested Resolution: (see next slide)**

- CMS preamble:

CES/SFD	SFD	SYNC
$-\mathbf{b}_{128}\ \mathbf{u}_{512}$ (repeated 6 times)	$\mathbf{u}_{512}\ \mathbf{u}_{512}\ -\mathbf{u}_{512}\ \mathbf{u}_{512}$	$\mathbf{a}_{128}$ (repeated 128 times)

- Long preamble

Header with SF = 2

CES	SFD	SYNC
$-\mathbf{b}_{128}\ \mathbf{u}_{512}$	$\mathbf{u}_{512}$	$\mathbf{a}_{128}$ (repeated 32 times)

Header with SF =8

CES	SFD	SYNC
$\mathbf{b}_{128}\ \mathbf{v}_{512}$	$\mathbf{v}_{512}$	$\mathbf{a}_{128}$ (repeated 32 times)

- Short preamble

CES/SFD	SYNC
$-\mathbf{b}_{128}\ \mathbf{u}_{512}$	$\mathbf{a}_{128}$ (repeated 8 times)

Transmission direction ←

- $\mathbf{u}_{512} = [+\mathbf{a}_{256} + \mathbf{b}_{256}]$, $\mathbf{v}_{512} = [-\mathbf{a}_{256} + \mathbf{b}_{256}]$,
- $\mathbf{b}_{256} = [-\mathbf{a}_{128} - \mathbf{b}_{128}]$, $\mathbf{a}_{256} = [\mathbf{a}_{128} - \mathbf{b}_{128}]$,
- PCES = [CES $\mathbf{a}_{128}$]

- **Comment 254**: Guard time in beamforming
- **Suggested Resolution:**

  Rename guard time during sector level as:

  BSIFS : Beamforming Sector level IFS

  Rename guard time during beam level as:

  BBIFS: Beamforming Beam level IFS

BSIFS	1μs	(equivalent to 1728 SC chips)
BBIFS	74.074 ns	(equivalent to 128 SC chips)