

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

Submission Title: [Comments on EVM and Required Study]

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Source: [M.A Rahman, C.S Sum, T. Baykas, J. Wang, R. Funada, Z. Lan, C.W Pyo, F. Kojima, H. Harada, S. Kato]

Company [NICT]

Address [3-4, Hikarino-oka, Yokosuka, 239-0847, Japan]

Voice: [+81-46-847-5092], FAX: [+81-46-847-5440], E-Mail: [aziz@nict.go.jp]

Re: []

Abstract: [Comments on EVM and Required Study]

Purpose: [This document provides a list of the editing staff that will be working on 802.15.3c.]

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Comments on EVM and required study

- Need to work on
 - SC, OFDM EVM and Test capabilities separately

802.15.3c D00

MCS	EVM (dB) (in spec)	Equivalent EVM (%) = $10^{(dB/20)}$
Class 1	-7	44.3%
Class 2	-14	19.95%
Class 3	-21	8.91% ?? Too stringent 12 to 13 better
Class 4 OOK	-7	44.3%
Class 4 DAMI	-14	19.95%

Summary of EVM Measurement Spec

Reference data

- **802.11** , **802.11b** as well as **802.15** mentions that the EVM should be measured over 1000 symbols
- **802.16(d)_2004** (WiMax) mentions that “*EVM shall be measured over the continuous portion of a burst occupying at least $\frac{1}{4}$ of the total transmission frame at maximum power setting.*”
- **802.11a/g** mentions that
 - A random data transmitted shall be sampled at 20 Msamples/s
 - Over at least 20 frames
 - The packets under test shall be at least 16 OFDM symbols long

802.11 and 11b

- **EVM < 0.35 or 35% or -9.11 dB**

802.11a/g

Data rate (Mbps)	EVM (dB) (in spec)	Equivalent EVM (%) = $10.^{dB/20}$
6	-5	56%
9	-8	40%
12	-10	31%
18	-13	22%
24	-16	15.85%
36	-19	11.22%
48	-22	7.94%
54	-25	5.6%

802.16(d)_2004 [WiMax]

MCS	Equivalent EVM (dB) = $20\log_{10}(\%EVM)$	EVM (%) In spec
4QAM (No Equalization)	-18.4	12%
16QAM (No Equalization)	-24.43	6%
4QAM (With Equalization)	-20	10%
16QAM (With Equalization)	-30.45	3%
64QAM (With Equalization)	-36.47	1.5%

- More data will be available for discussion