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TEST REPORT

FCC Standards : FCC 47 CFR part 15 subpart C
Industry Canada Standards :RSS-247 Issue 1 & RSS-GEN Issue 4

Test Report No.	:	CTK-2016-00594
Date of Issue	:	2016-05-20
FCC ID	:	AK8MDRXB50BS
Certification Number IC	:	409B-MDRXB50BS
Model/Type No.	:	MDR-XB50BS
Kind of Product	:	WIRELESS STEREO HEADSET
Applicant	:	Sony Corporation
Applicant Address	:	1-7-1 Konan, Minato-ku, Tokyo 108-0075, Japan
Manufacturer	:	Sony Corporation
Manufacturer Address	:	1-7-1 Konan, Minato-ku, Tokyo 108-0075, Japan
Contact Person	:	Takeshi Kobayashi / Product safety manager
Telephone	:	+81-50-3750-1419
Received Date	:	2016-04-25
Test period	:	Start : 2016-05-02 End : 2016-05-19
Test Results	:	☒ In Compliance ☐ Not in Compliance

The test results presented in this report relate only to the object tested.

Tested by

Won-Jae, Hwang
Test Engineer
Date: 2016-05-20

Reviewed by

Young-Joon, Park
Technical Manager
Date: 2016-05-20

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REPORT REVISION HISTORY

Date	Revision	Page No
2016-05-20	Issued (CTK-2016-00594)	All

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1.0 General Product Description

Basic Model/Type No.	MDR-XB50BS
Serial number	Prototype
EUT condition	Pre-production, not damaged
Antenna type	PCB antenna Gain -0.9 dBi
Frequency Range	2402 MHz - 2480 MHz
RF power	-3.26 dBm Peak Conducted (GFSK) -1.67 dBm Peak Conducted (8-DPSK)
Number of channels	79
Channel Spacing	1 MHz
Channel Access Protocol	Frequency Hopping
Type of Modulation	GFSK(1 Mbps), DQPSK(2 Mbps), 8-DPSK(3 Mbps)
Power Source	DC 3.7 V
Hardware Rev	V1.0
Software Rev	V1000
Firmware Rev	V1000

1.1 Tested Frequency

	LOW	MID	HIGH
Frequency (MHz)	2402	2441	2480

1.2 Tested Mode

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports.

- Following channel(s) was (were) selected for the final test as listed below.

Tested Ch	Modulation Technology	Modulation Type	Packet Type
Low, Mid, High	FHSS	GFSK	DH 5
Low, Mid, High	FHSS	8-DPSK	3DH 5

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1.3 EUT Operation Test Setup

For Bluetooth function, the engineering test program was provided and enabled to make EUT continuous transmit/receive.

1.4 EUT Exercise of Software

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. The software is using the android system to internal memory.

1.5 Device Modifications

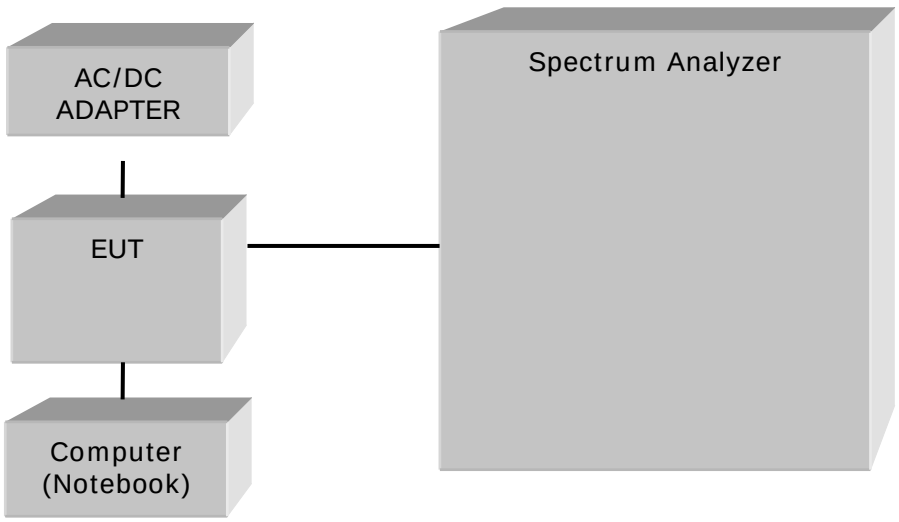
The following modifications was applied by the applicant:

Not applicable

1.6 Peripheral Devices

Device	Manufacturer	Model No.	Serial No.
Note Computer	HP	ProBook 650 G1	5CG5114KD2
AC ADAPTER	HP	PPP012D-S	-

1.7 Configuration of System under Test



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1.8 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

1.9 Test Facility

The measurement facility is located at (Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea. The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

1.10 Laboratory Accreditations and Listings

Country	Agency	Scope of Accreditation	Registration Number	Logo
USA	**FCC**	FCC Part 15 & 18 EMI (Electromagnetic Interference / Emission)	805871	
JAPAN	**VCCI**	VCCI V-3 EMI (Electromagnetic Interference / Emission)	C-986 T-1843 R-3627 G-387	
KOREA	**MSIP**	EMI (Electromagnetic Interference / Emission) EMS (Electromagnetic Susceptibility / Immunity)	KR0025	

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2.0 Summary of tests

FCC Part Section(s)	IC Part Section(s)	Parameter	Test Condition	Status (note 1)
15.247(a)	RSS-247 Issue 1 5.1(2)	Carrier Frequency Separation	Conducted	C
15.247(a)	RSS-247 Issue 1 5.1(4)	Number of Hopping Frequencies		C
15.247(a)	RSS-247 Issue 1 5.1	20 dB Bandwidth		C
15.247	RSS-247 Issue 1 5.1(4)	Dwell Time		C
15.247(b)	RSS-247 Issue 1 5.4(2)	Transmitter Output Power		C
15.247(d)	RSS-247 Issue 1 5.5	Conducted Spurious emission		C
15.247(d)	RSS-247 Issue 1 5.5	Band Edge		C
15.209	RSS-247 Issue 1 5.5	Field Strength of Harmonics	Radiated	C
15.207	RSS-GEN Issue 4 8.8	AC Conducted Emissions	Line Conducted	C

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

Note 2: The data in this test report are traceable to the national or international standards.

The sample was tested according to the following specification:

- FCC Part 15.247, IC RSS-247 Issue 1

The tests were performed according to the method of measurements prescribed in DA 00-705 and ANSI C63.10 -2013.

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2.1 Transmitter Requirements

2.1.1 Carrier Frequency Separation

Test Location
RF Test Room

Test Procedures

The carrier frequency separation was measured with a spectrum analyzer connected to the antenna terminal, while EUT has its hopping function enabled.
After the trace being stable, the reading value between the peaks of the adjacent channels using the marker-delta function was recorded as the measurement results.

The spectrum analyzer is set to:
Span = 5 MHz (wide enough to capture the peaks of two adjacent channels)
RBW = 300 kHz (≥ 1% of the span) Sweep = auto
VBW = 300 kHz (≥ RBW) Detector function = peak
Trace = max hold

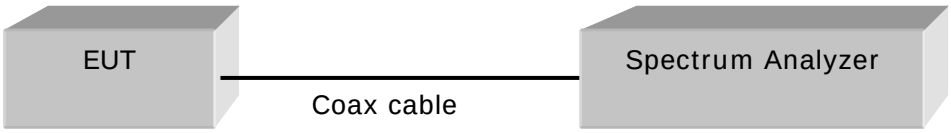

Figure 1 : Measurement setup for the carrier frequency separation

Limit
§15.247(a)(1) Frequency hopping system operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-third of 20dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Test Results

Test mode : GFSK, CFG PKT Packet Type : 15 Packet Size : 339(DH5)

Channel	Adjacent Hopping Channel Separation (kHz)	Two-third of 20dB bandwidth (kHz)	Minimum Bandwidth (kHz)	Result
2441MHz	1000	596	25	Complies

Test mode : 8-DPSK, CFG PKT Packet Type : 31 Packet Size : 1021(3DH5)

Channel	Adjacent Hopping Channel Separation (kHz)	Two-third of 20dB bandwidth (kHz)	Minimum Bandwidth (kHz)	Result
2441MHz	1010	840	25	Complies

See next pages for actual measured spectrum plots.

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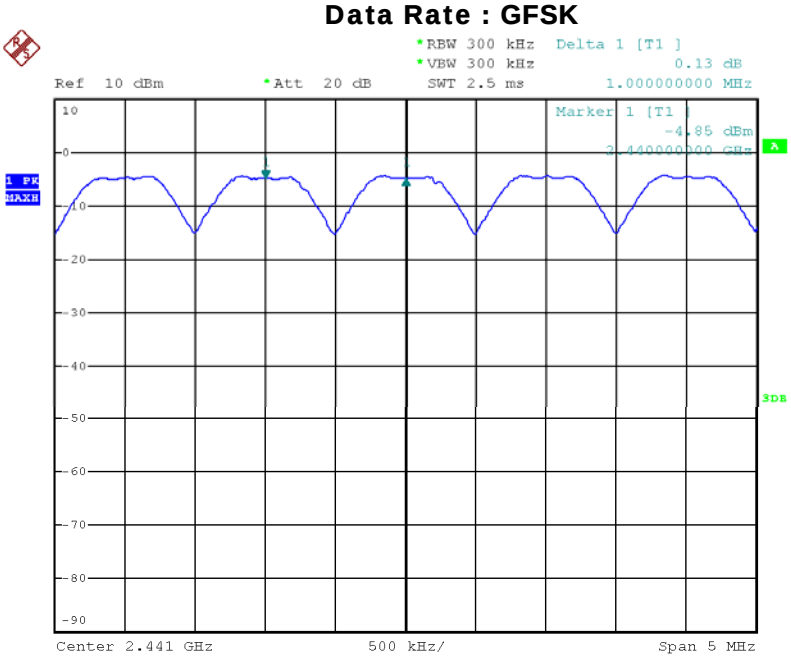
Carrier Frequency Separation

Data Rate : GFSK



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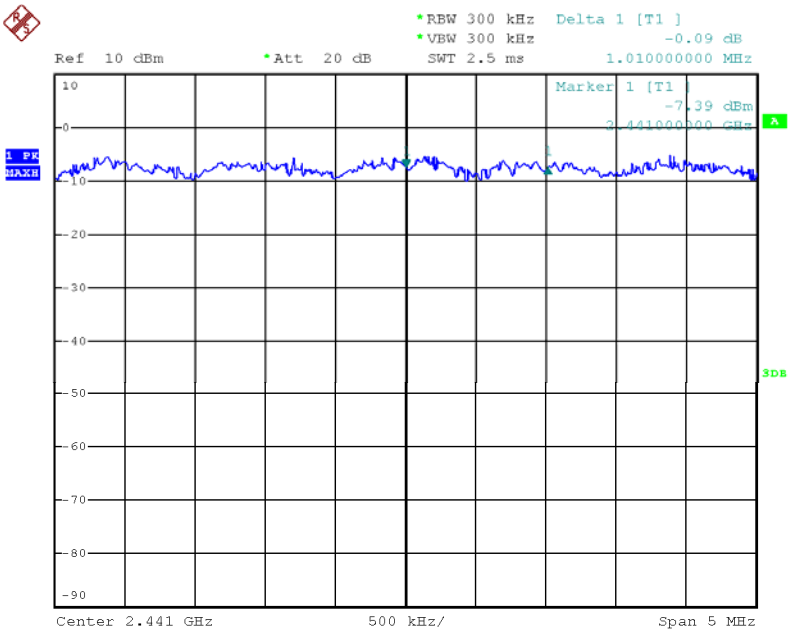
Data Rate : 8-DPSK



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2.1.2 Number of Hopping Frequencies

Test Location

RF Test Room

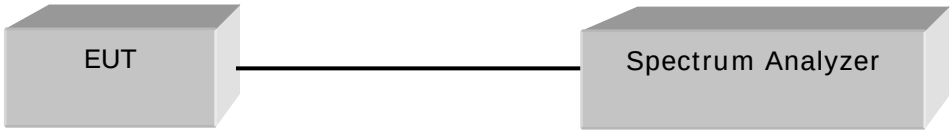
Test Procedures

The number of hopping frequencies was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function enabled.

The spectrum analyzer is set to:

Frequency range 1: Start = 2389.5 MHz, Stop = 2439.5 MHz
2: Start = 2439.5 MHz, Stop = 2489.5 MHz

Span = 50 MHz
RBW = 300 kHz (≥ 1% of the span)
VBW = 300 kHz (≥ RBW)
Trace = max hold
Sweep = auto
Detector function = peak



Limit

§15.247(a)(1)(iii) For frequency hopping system operating in the 2400-2483.5 MHz band shall use at least 15 hopping frequencies.

Test Results

Test mode : GFSK, CFG PKT Packet Type : 15 Packet Size : 339(DH5)

Total number of Hopping Channels	Result
79	Complies

Test mode : 8-DPSK, CFG PKT Packet Type : 31 Packet Size : 1021(3DH5)

Total number of Hopping Channels	Result
79	Complies

See next pages for actual measured spectrum plots.

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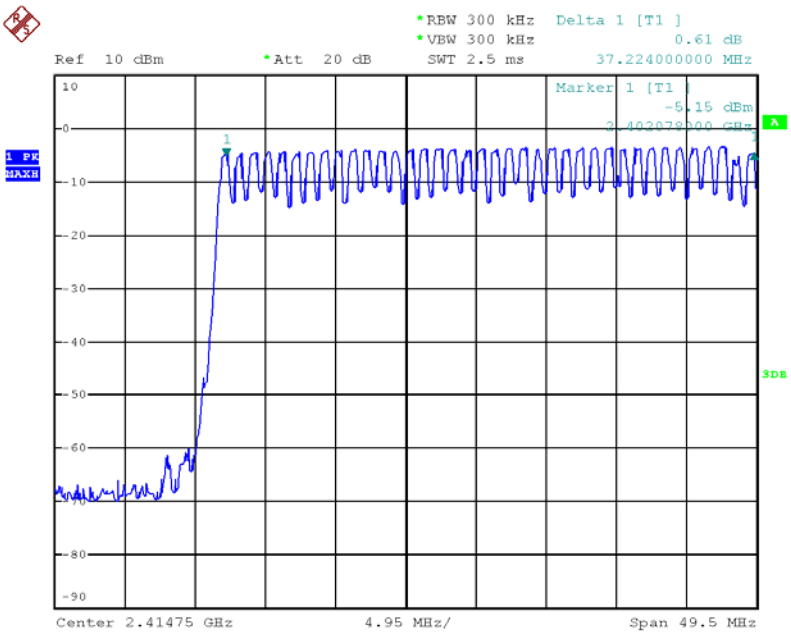
Number of Hopping Frequencies(GFSK)



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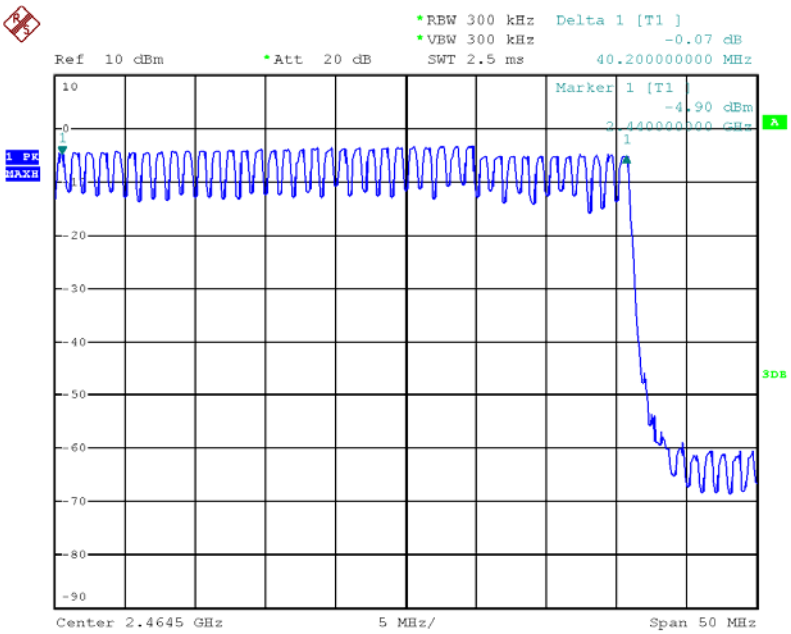

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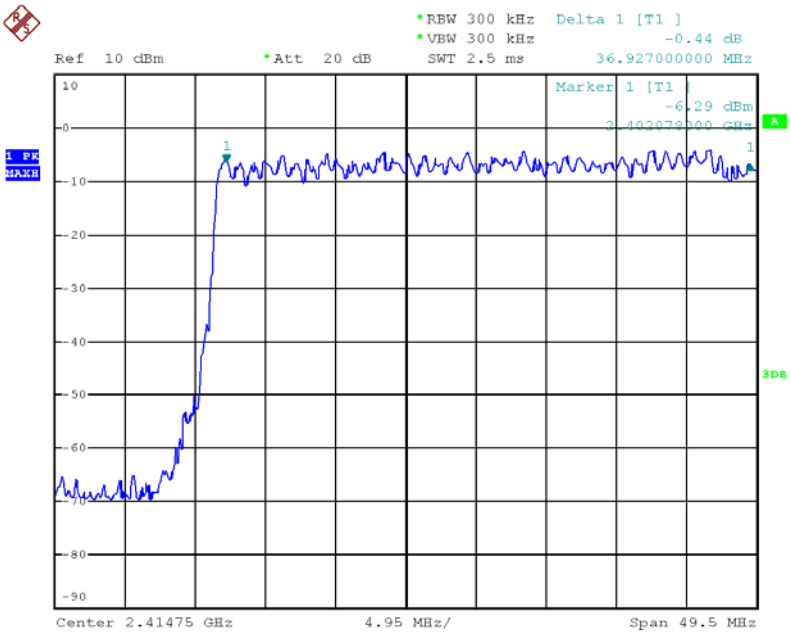
Number of Hopping Frequencies(8-DPSK)



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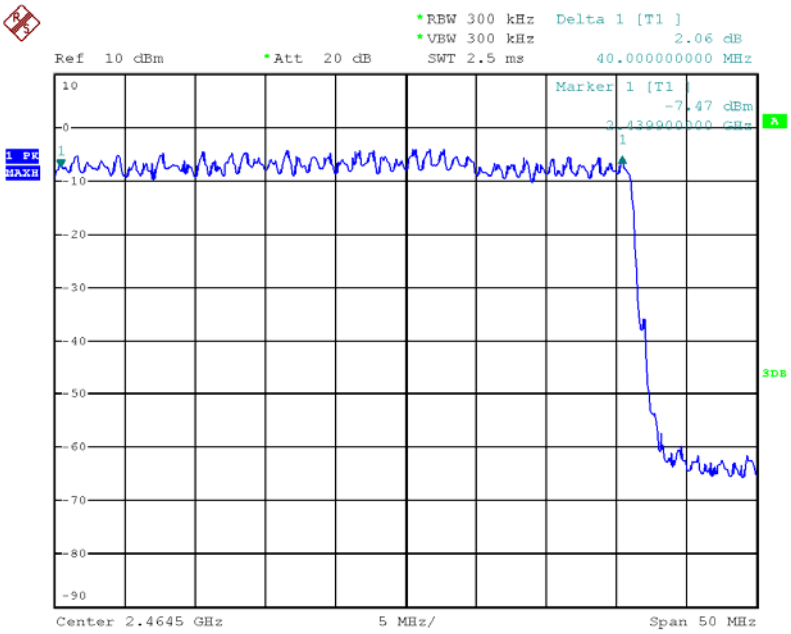

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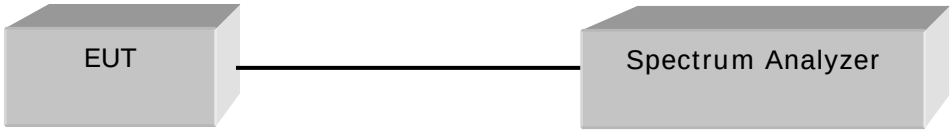
2.1.3 20 dB bandwidth

Test Location
RF Test Room

Test Procedures

The bandwidth at 20 dB below the highest inband spectral density was measured with a spectrum analyzer connected to the antenna terminal, while EUT had its hopping function disabled at the highest, middle and the lowest available channels.
After the trace being stable, Use the marker-to peak function to set the marker to the peak of the emission. Use the marker-delta function to measure 20 dB down one side of the emission. Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level. The marker-delta reading at this point is the 20 dB bandwidth of the emission.

The spectrum analyzer is set to:
Center frequency = the highest, middle and the lowest channels
Span = 3 MHz (approximately 2 or 3 times of the 20 dB bandwidth)
RBW = 30 kHz (≥ 1% of the span) Sweep = auto
VBW = 100 kHz (≥ RBW) Detector function = peak
Trace = max hold



Limit

Limit : N/A

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Test Results (20 dB bandwidth)

Test mode : GFSK, CFG PKT Packet Type : 15 Packet Size : 339(DH5)

Frequency (MHz)	Channel Number.	Measured Bandwidth (MHz)	Result
2402	0	0.840	Complies
2441	39	0.882	Complies
2480	78	0.894	Complies

Test mode : 8-DPSK, CFG PKT Packet Type : 31 Packet Size : 1021(3DH5)

Frequency (MHz)	Channel Number.	Measured Bandwidth (MHz)	Result
2402	0	1.260	Complies
2441	39	1.254	Complies
2480	78	1.254	Complies

Test Results (Occupied Bandwidth)

Test mode : GFSK, CFG PKT Packet Type : 15 Packet Size : 339(DH5)

Frequency (MHz)	Channel Number.	Measured Bandwidth (MHz)	Result
2402	0	0.876	Complies
2441	39	0.870	Complies
2480	78	0.864	Complies

Test mode : 8-DPSK, CFG PKT Packet Type : 31 Packet Size : 1021(3DH5)

Frequency (MHz)	Channel Number.	Measured Bandwidth (MHz)	Result
2402	0	1.176	Complies
2441	39	1.176	Complies
2480	78	1.164	Complies

See next pages for actual measured spectrum plots.

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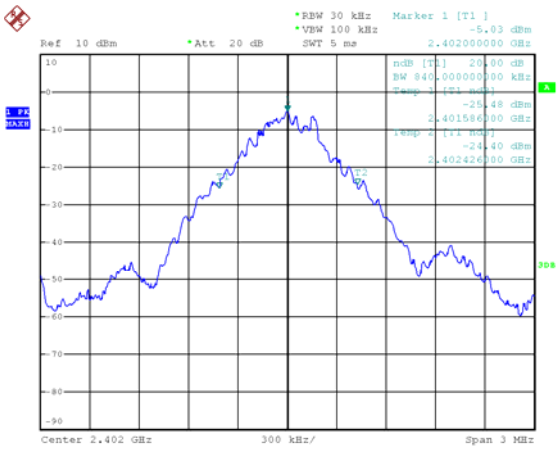
20 dB Bandwidth, Occupied Bandwidth (GFSK)

20 dB Bandwidth



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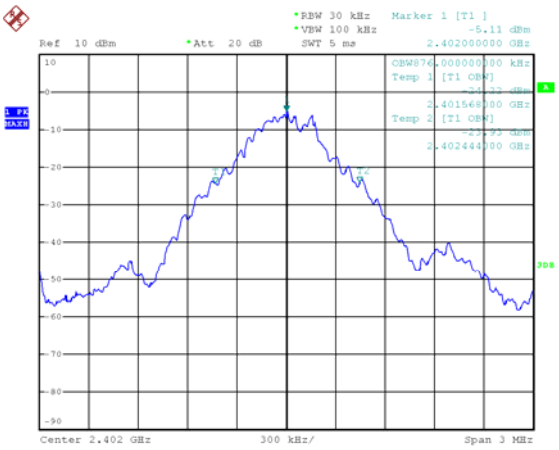
Occupied Bandwidth



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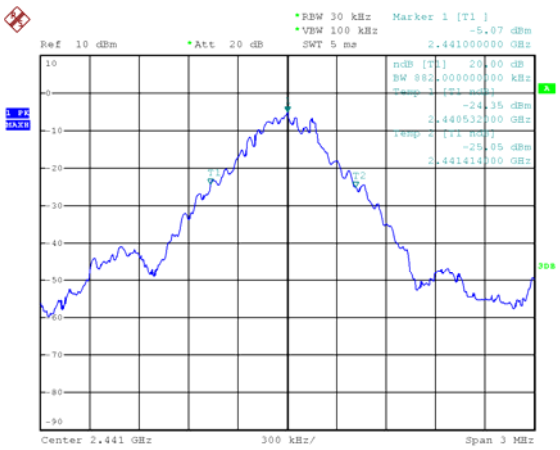

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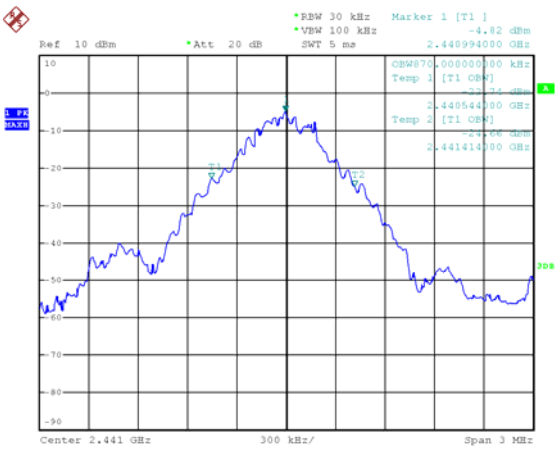

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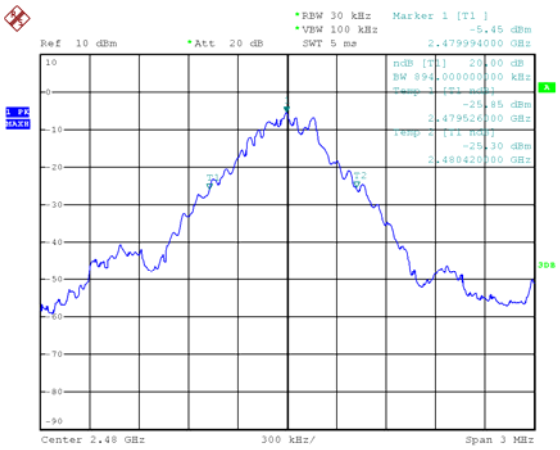

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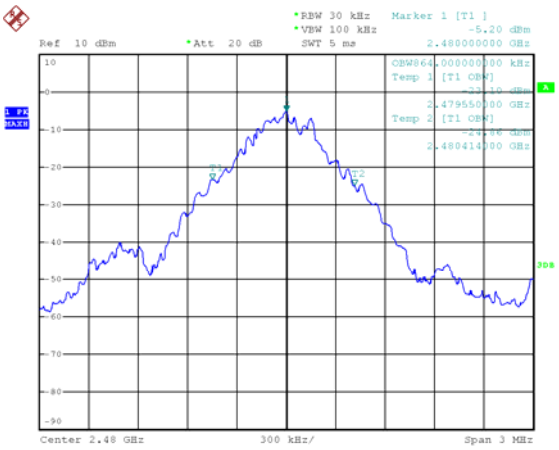

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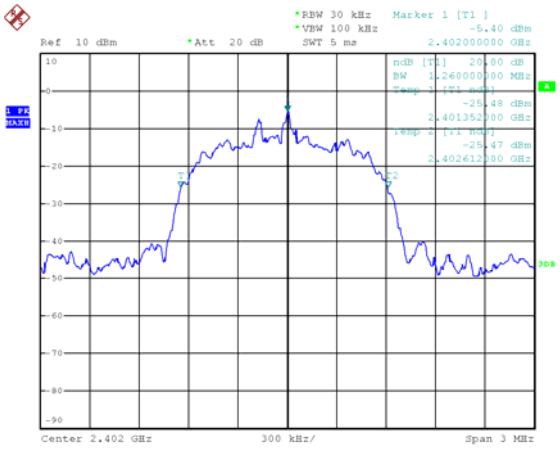
20 dB Bandwidth, Occupied Bandwidth (8-DPSK)

20 dB Bandwidth



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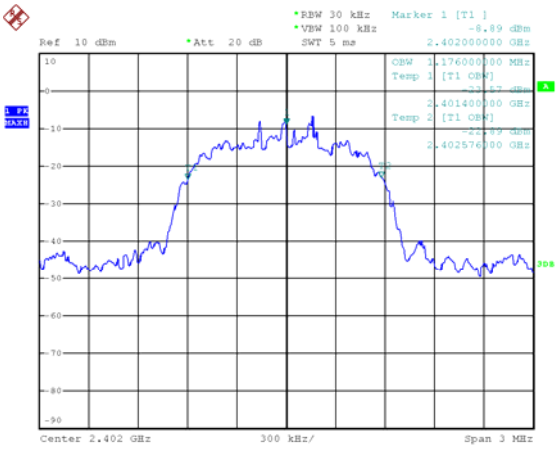
Occupied Bandwidth



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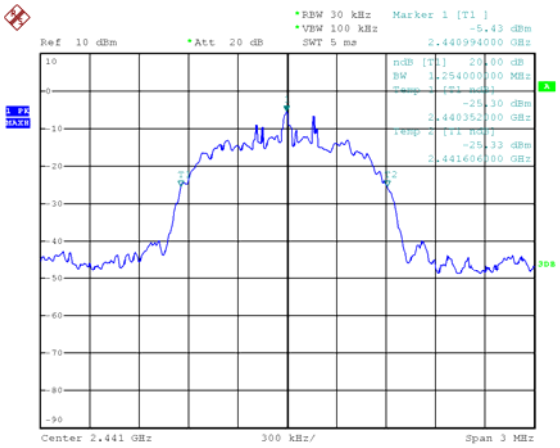

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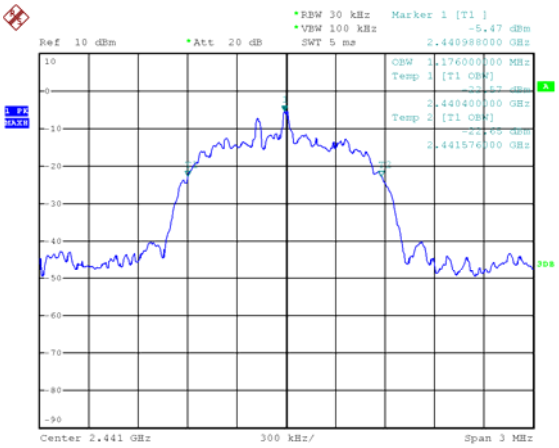

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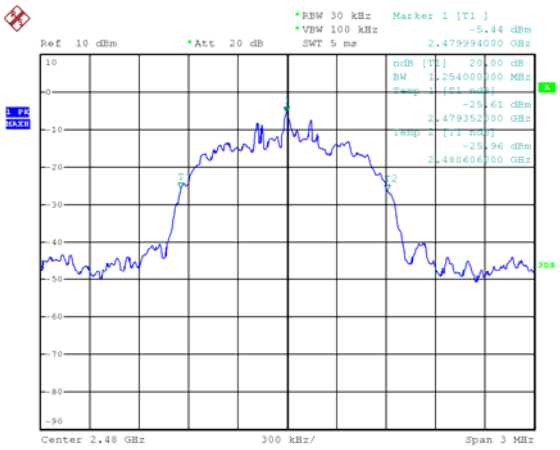

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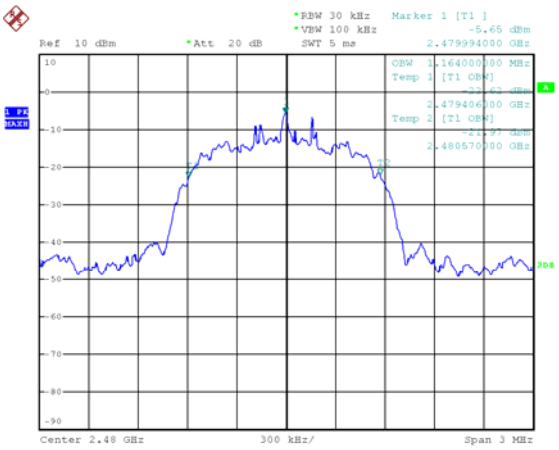

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2.1.4 Time of Occupancy (Dwell Time)

Test Location

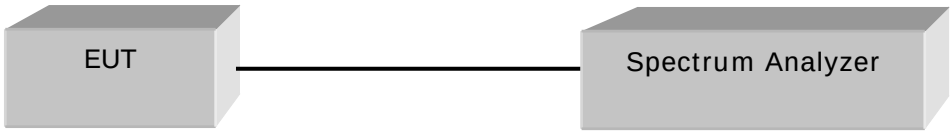
RF Test Room

Test Procedures

The dwell time was measured with a spectrum analyzer connected to the antenna terminal, while EUT has its hopping function enabled.

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT as shown in test setup without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Adjust the center frequency of spectrum analyzer on any frequency be measured and set spectrum analyzer to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
4. Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
5. Repeat above procedures until all frequencies measured were complete.
6. The MDR-XB50BS has 3 type of payload, DH1, DH3, DH5. The hopping rate is 1600 per second.

The spectrum analyzer is set to:
Center frequency = the highest, middle, and the lowest channels
Span = zero
RBW = 1 MHz Trace = max hold
VBW = 1 MHz (≥ RBW) Detector function = peak
Sweep = as necessary to capture the entire dwell time per hopping channel



Limit

§15.247(a)(1)(iii) For frequency hopping system operating in 2400-2483.5 MHz band, the average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

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Test Results

Time of occupancy on the TX channel in 31.6 sec = time domain slot length × hop rate ÷ number of hop per channel × 31.6

Test mode : GFSK

Channel Frequency (MHz)	Packet Type	Dwell Time (ms)	Test Results	
			Time of occupancy on the TX channel in 31.6sec (ms)	Result
2441	DH 1	0.428	137.0	Complies
	DH 3	1.698	271.7	Complies
	DH 5	2.978	317.7	Complies

DH1 Dwell time = 0.428 ms × (1600÷2) ÷ 79 × 31.6 = 137.0 ms
DH3 Dwell time = 1.698 ms × (1600÷4) ÷ 79 × 31.6 = 271.7 ms
DH5 Dwell time = 2.978 ms × (1600÷6) ÷ 79 × 31.6 = 317.7 ms

Test mode : 8-DPSK

Channel Frequency (MHz)	Packet Type	Dwell Time (ms)	Test Results	
			Time of occupancy on the TX channel in 31.6sec (ms)	Result
2441	3DH 1	0.444	142.1	Complies
	3DH 3	1.724	275.8	Complies
	3DH 5	3.004	320.4	Complies

3DH1 Dwell time = 0.444 ms × (1600÷2) ÷ 79 × 31.6 = 142.1 ms
3DH3 Dwell time = 1.724 ms × (1600÷4) ÷ 79 × 31.6 = 275.8 ms
3DH5 Dwell time = 3.004 ms × (1600÷6) ÷ 79 × 31.6 = 320.4 ms

See next pages for actual measured spectrum plots.

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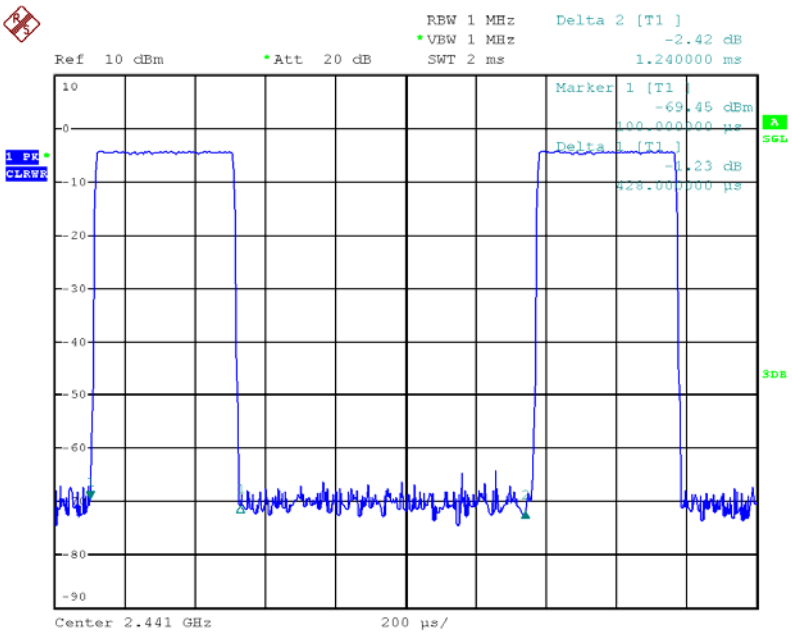
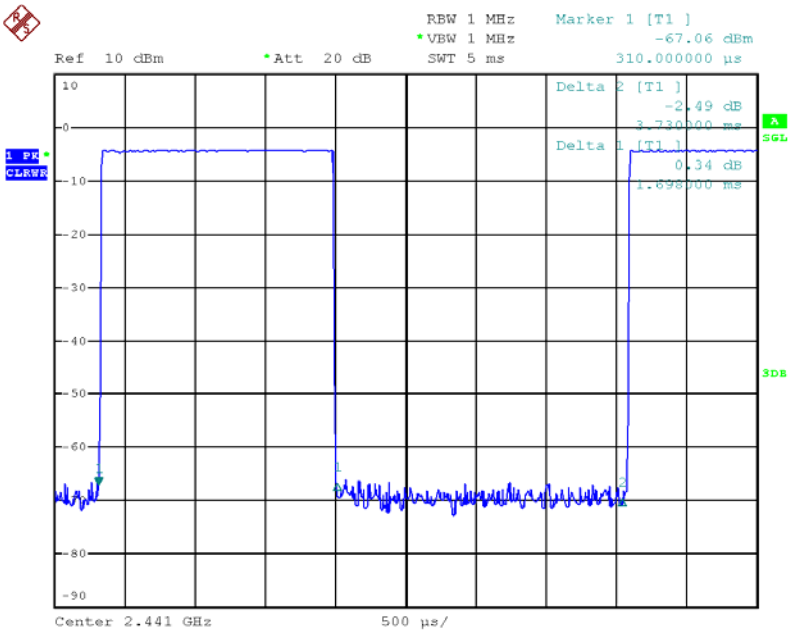
Time of Occupancy for PACKET Type DH1(GFSK)



Date: 2.MAY.2016 15:31:53

Time of Occupancy for PACKET Type DH3(GFSK)



Date: 2.MAY.2016 15:32:49

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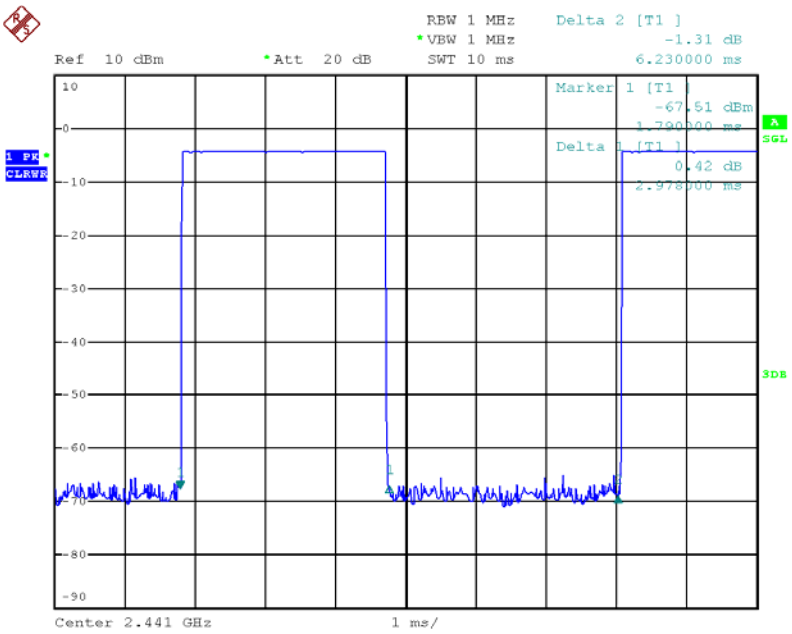
Time of Occupancy for PACKET Type DH5(GFSK)



Date: 2.MAY.2016 15:33:52

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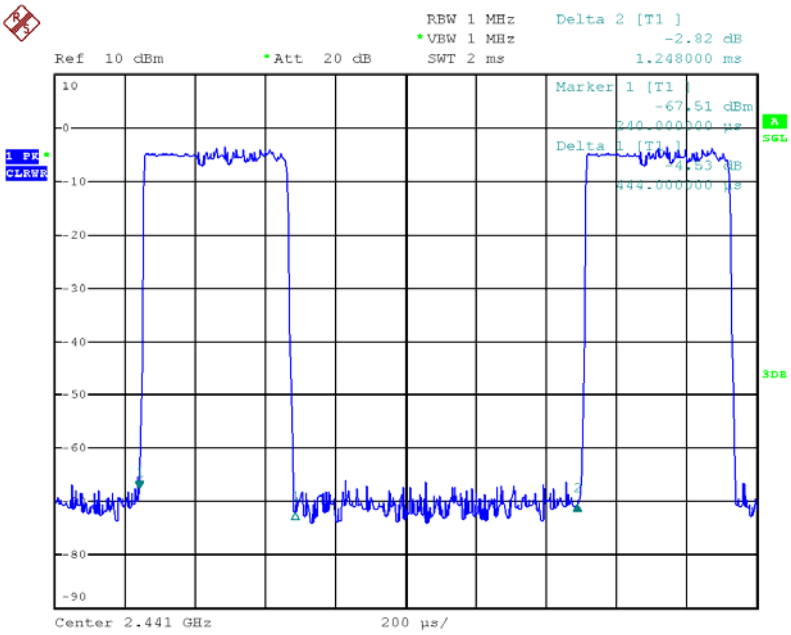
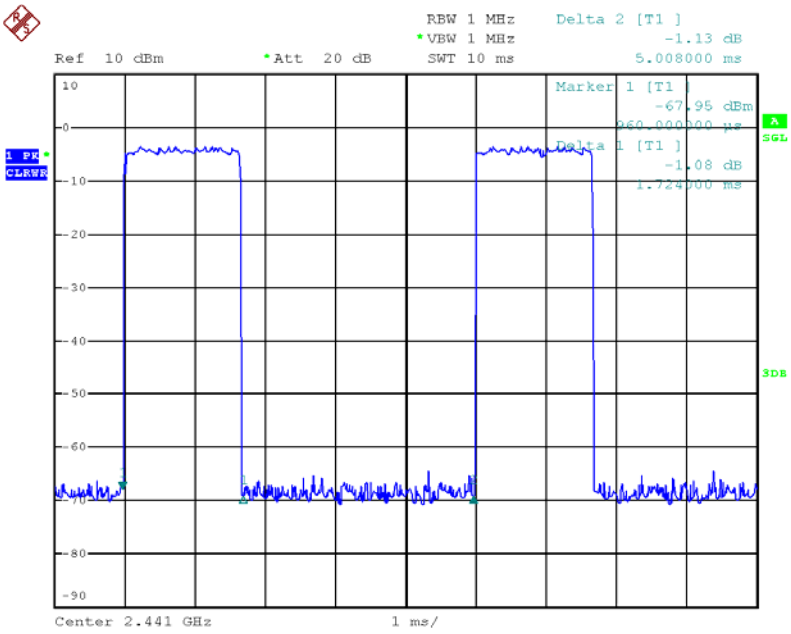
Time of Occupancy for PACKET Type 3DH1(8-DPSK)



Date: 2.MAY.2016 15:45:36

Time of Occupancy for PACKET Type 3DH3(8-DPSK)



Date: 2.MAY.2016 15:46:32

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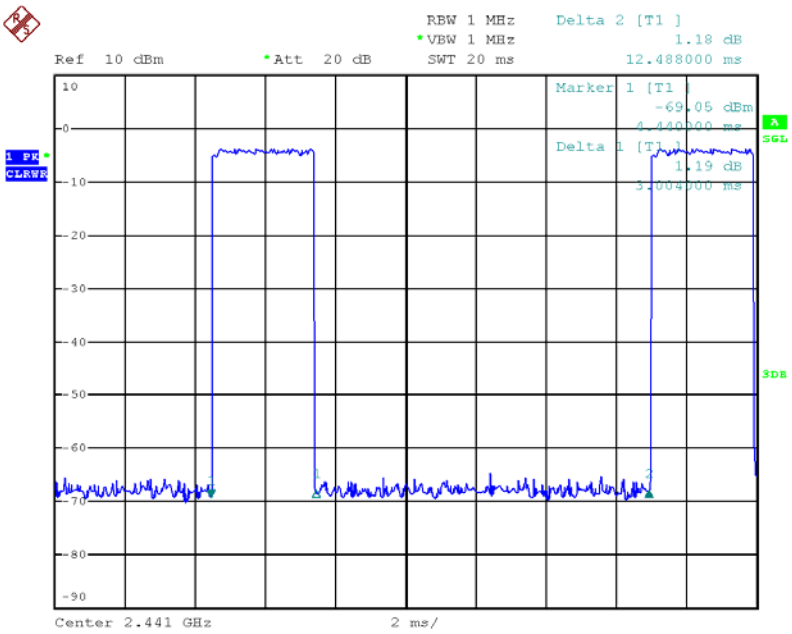
Time of Occupancy for PACKET Type 3DH5(8-DPSK)



Date: 2.MAY.2016 15:47:19

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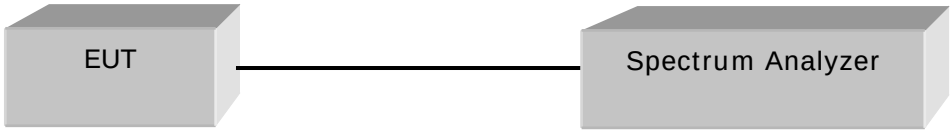
2.1.5 Maximum peak Conducted Output Power

Test Location
RF Test Room

Test Procedures

The maximum peak conducted output power was measured with a spectrum analyzer connected to the antenna terminal, while EUT has its hopping function disabled at the highest, middle and the lowest available channels.

The spectrum analyzer is set to:
Center frequency = the highest, middle, and the lowest channels
Span = 5 MHz (approximately 5 times of the 20 dB bandwidth)
RBW = 3 MHz (greater than the 20 dB bandwidth of the emission being measured)
VBW = 3 MHz (≥ RBW) Detector function = peak
Trace = max hold Sweep = auto



Limit

§5.247(b)(1) The Maximum Peak Output Power Measurement is 0.125 Watts for frequency hopping system operating in 2400-2483.5 MHz employing at least 15 Hopping channels.

Test Results

Test mode : GFSK, CFG PKT Packet Type : 15 Packet Size : 339(DH5)

Frequency (MHz)	Channel No.	Peak output power(dBm)	Peak output power(mW)	Result
2402	0	-3.26	0.472	Complies
2441	39	-3.26	0.472	Complies
2480	78	-3.63	0.434	Complies

Test mode : 8-DPSK, CFG PKT Packet Type : 31 Packet Size : 1021(3DH5)

Frequency (MHz)	Channel No.	Peak output power(dBm)	Peak output power(mW)	Result
2402	0	-1.67	0.681	Complies
2441	39	-1.92	0.643	Complies
2480	78	-2.00	0.631	Complies

See next pages for actual measured spectrum plots.

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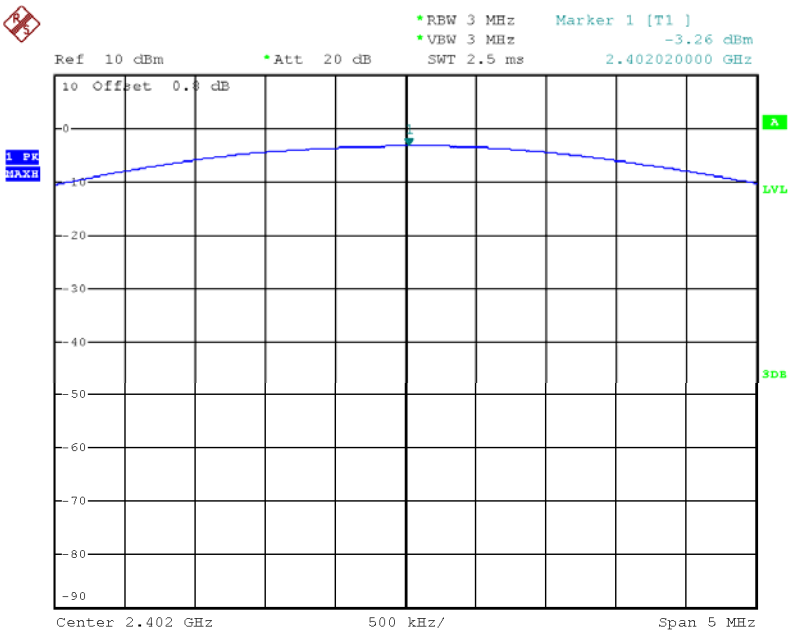
Maximum peak Conducted Output Power - GFSK



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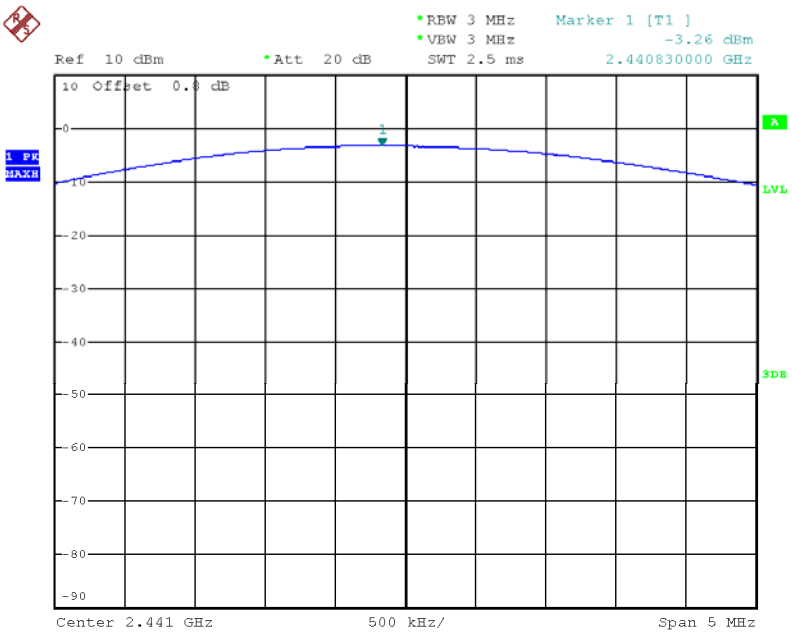

Date: 2.MAY.2016 15:30:48

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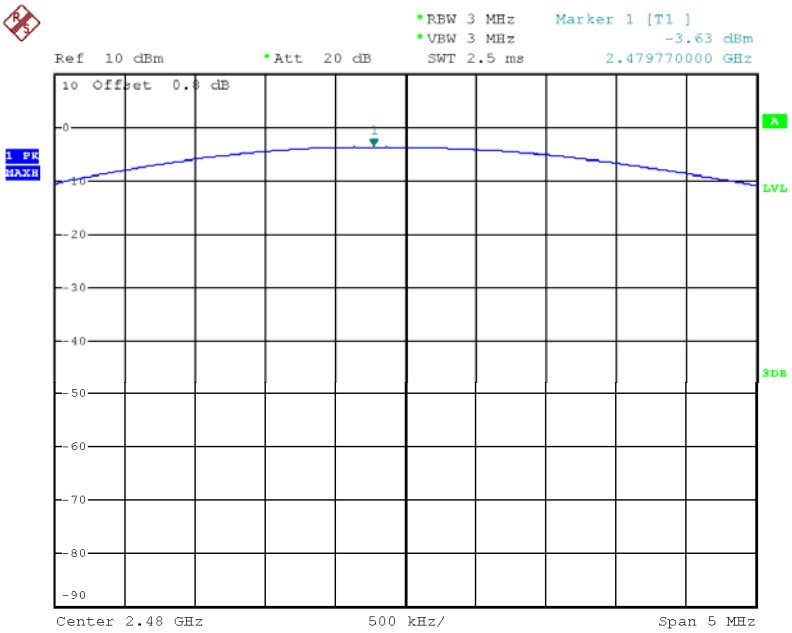

Date: 2.MAY.2016 15:35:02

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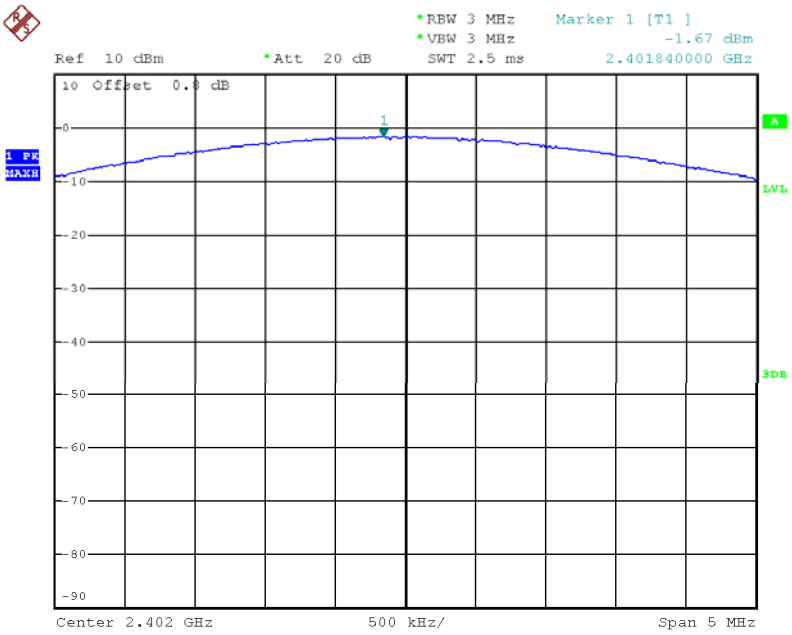
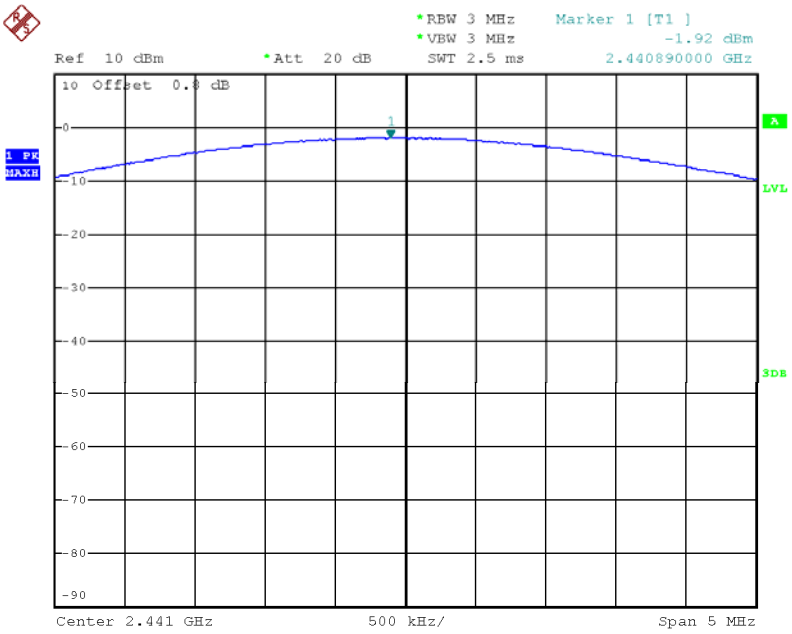
Maximum peak Conducted Output Power – 8-DPSK



Date: 2.MAY.2016 15:41:36



Date: 2.MAY.2016 15:43:50

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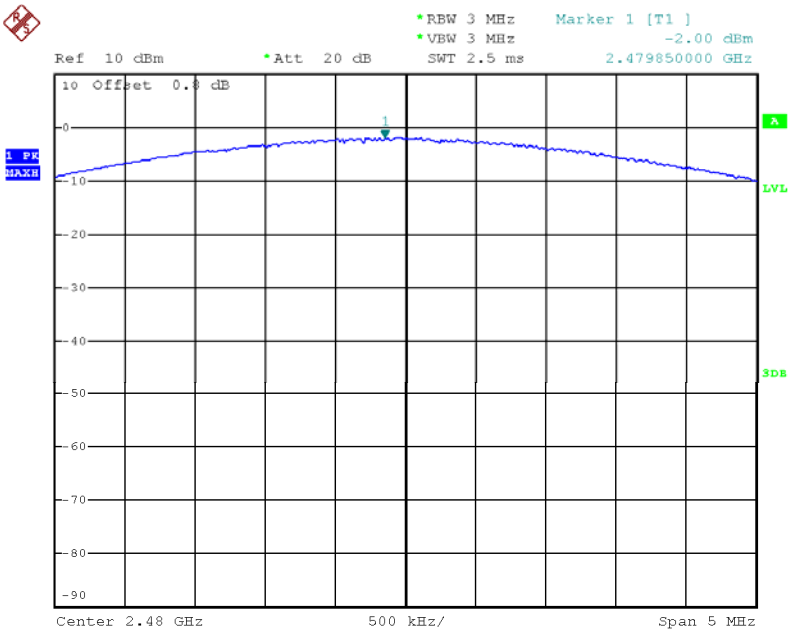

Date: 2.MAY.2016 15:48:35

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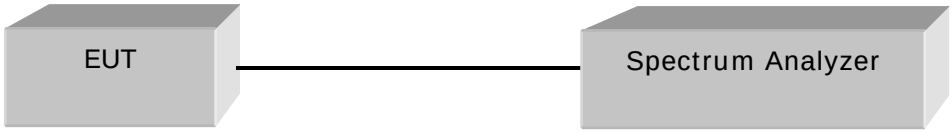
2.1.6 Band-edge

Test Location
RF Test Room

Test Procedures

The bandwidth at 20 dB down from the highest inband spectral density was measured with a spectrum analyzer connected to the antenna terminal, while EUT has its hopping function disabled at the highest, middle and the lowest available channels.

The spectrum analyzer is set to:
Center frequency = the highest, middle, and the lowest channels
RBW = 100 kHz
VBW = 300 kHz (≥ RBW)
Span = 10 MHz
Trace = max hold
Detector function = peak
Sweep = auto



Limit

> 20 dBc

Test Results

All conducted emission in any 100 kHz bandwidth outside of the spectrum band was at least 20 dB lower than the highest level of the inband spectral density.
Therefore the applying equipment meets the requirement.

See next pages for actual measured spectrum plots.

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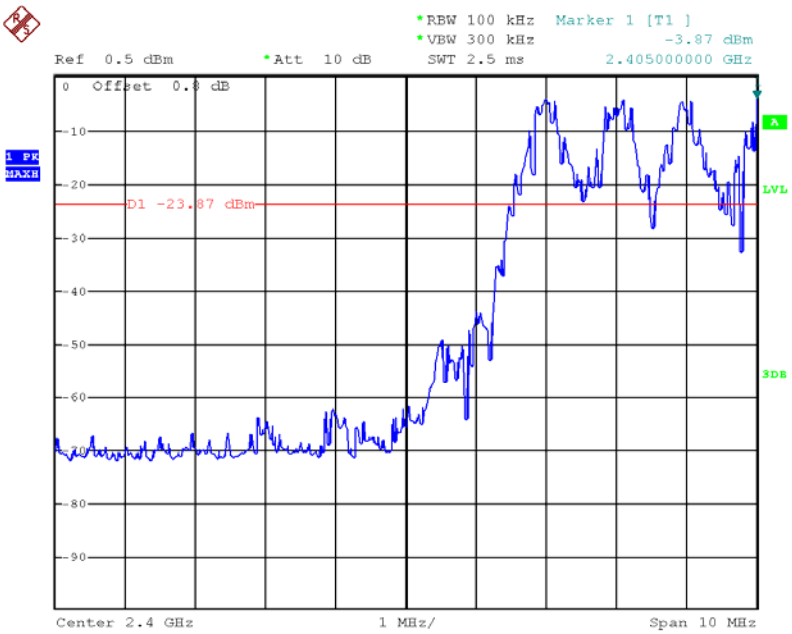
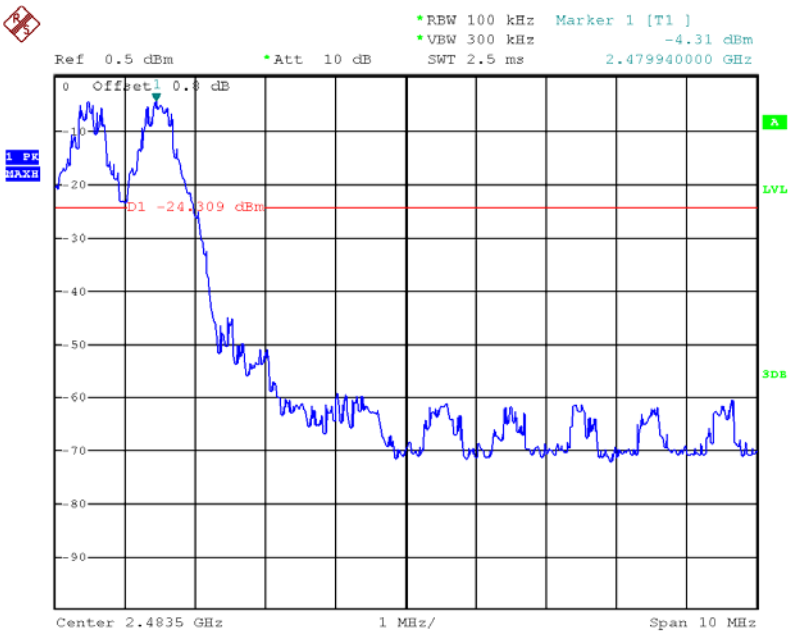
Band – edge (with Hopping) - GFSK



Date: 2.MAY.2016 15:36:21



Date: 2.MAY.2016 15:36:35

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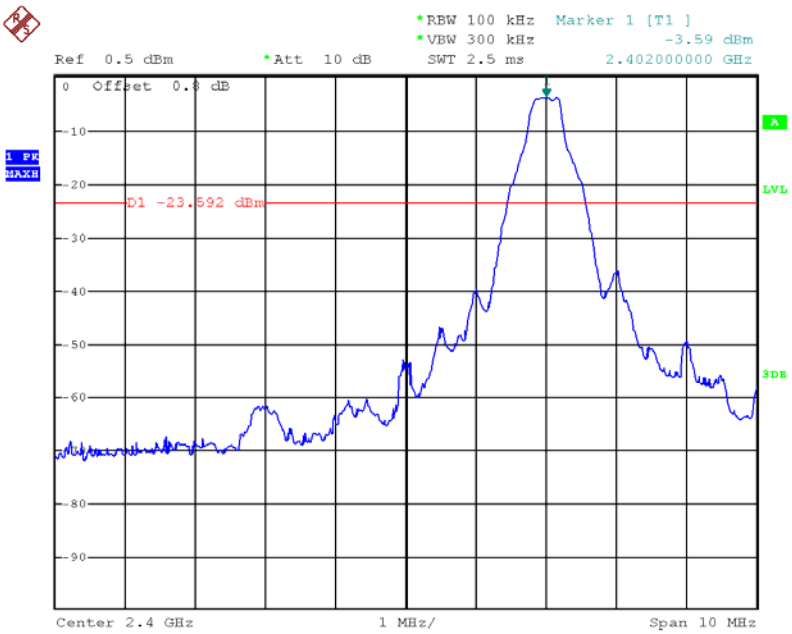
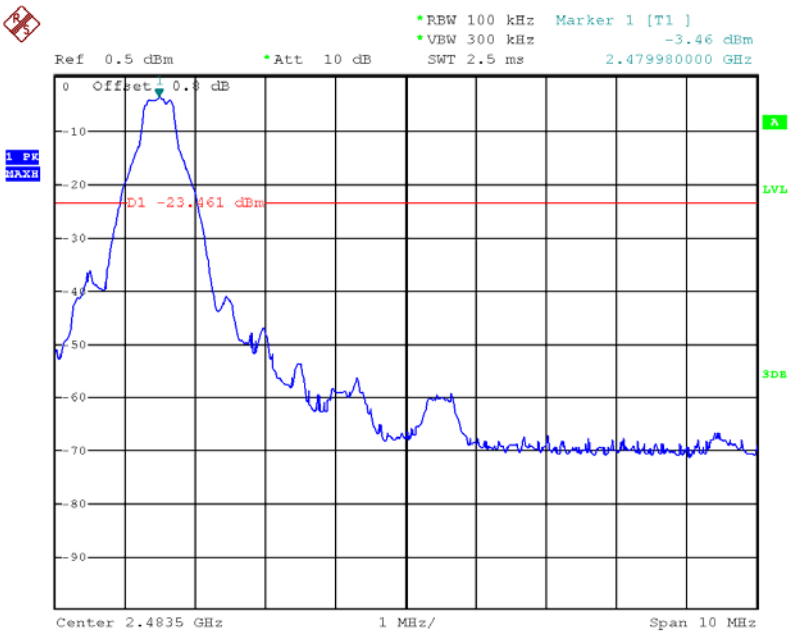
Band – edge (without Hopping) - GFSK



Date: 2.MAY.2016 15:29:52



Date: 2.MAY.2016 15:35:31

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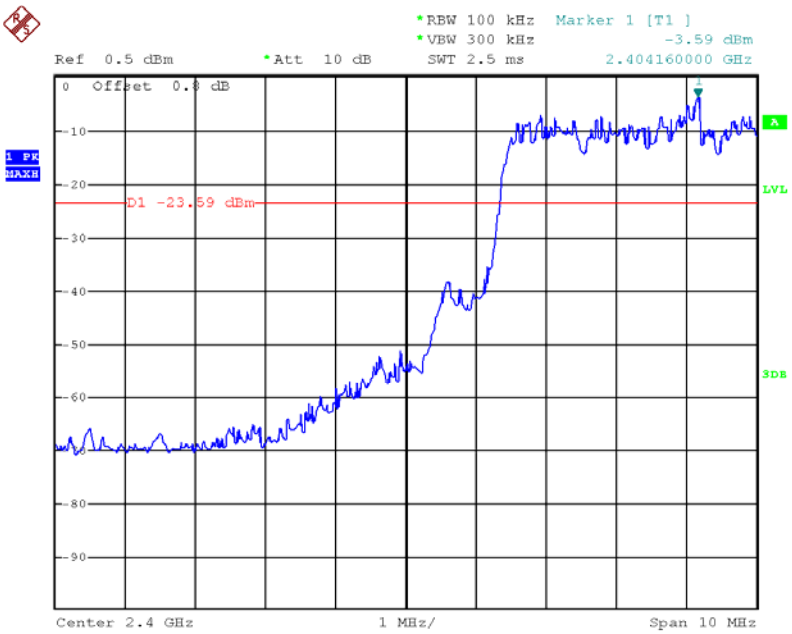
Band – edge (with Hopping) – 8-DPSK



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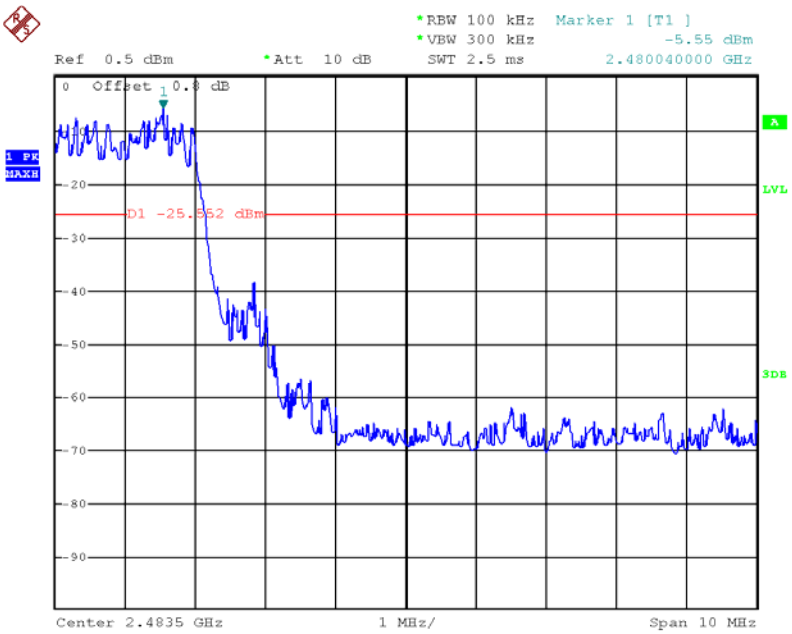

Date: 2.MAY.2016 15:53:31

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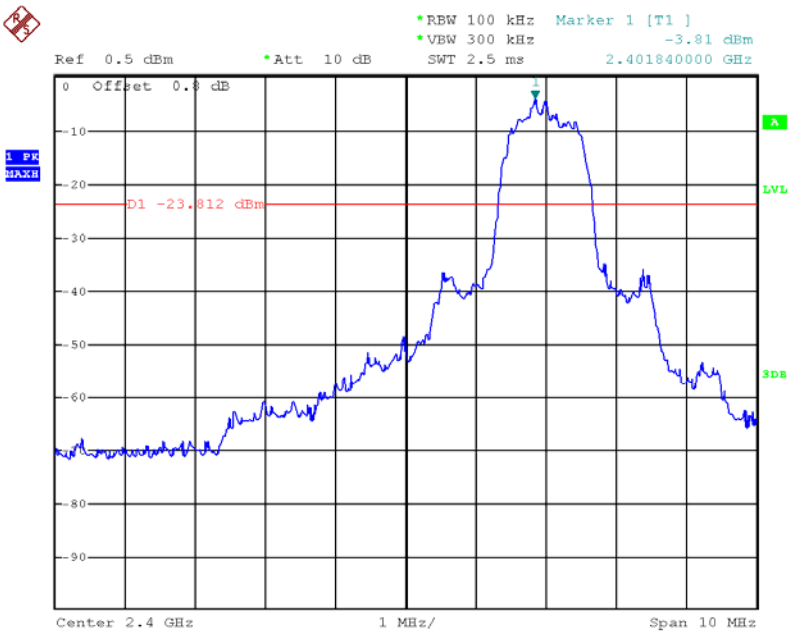
Band – edge (without Hopping) – 8-DPSK



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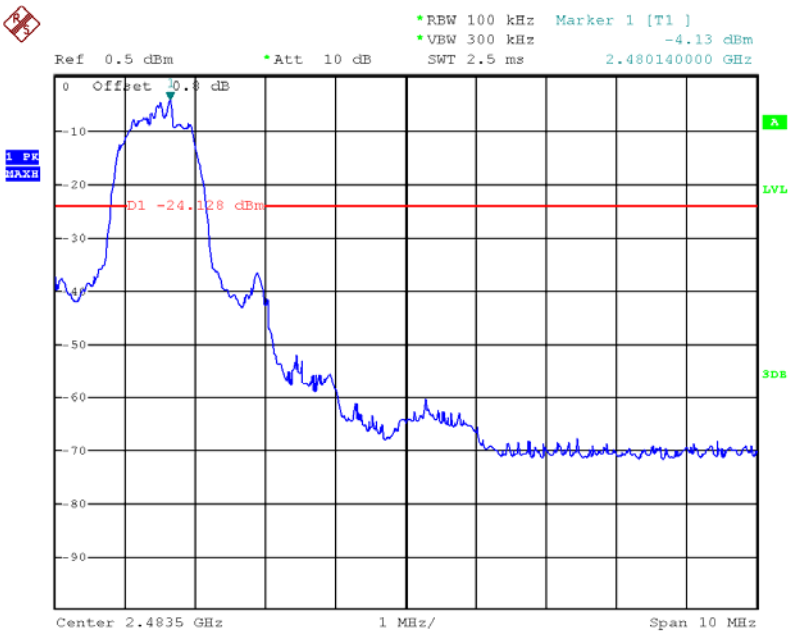

Date: 2.MAY.2016 15:49:35

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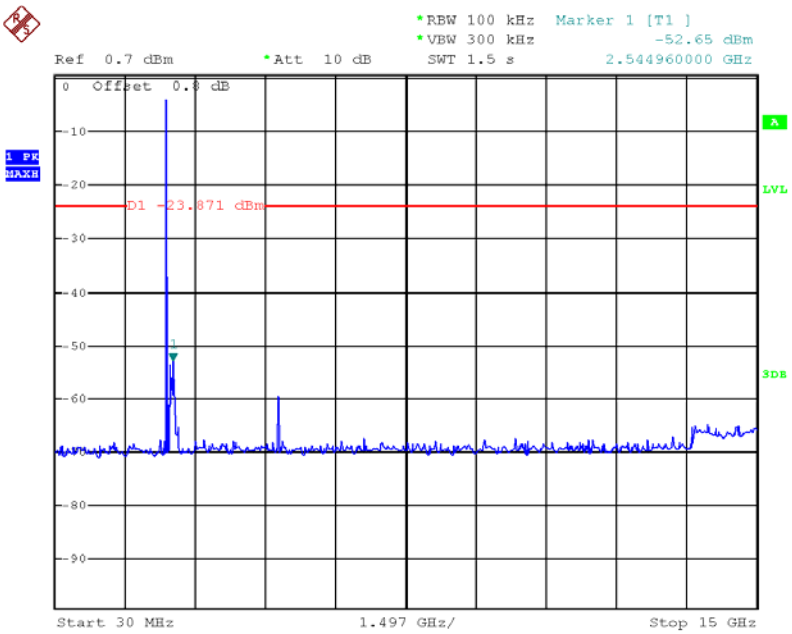
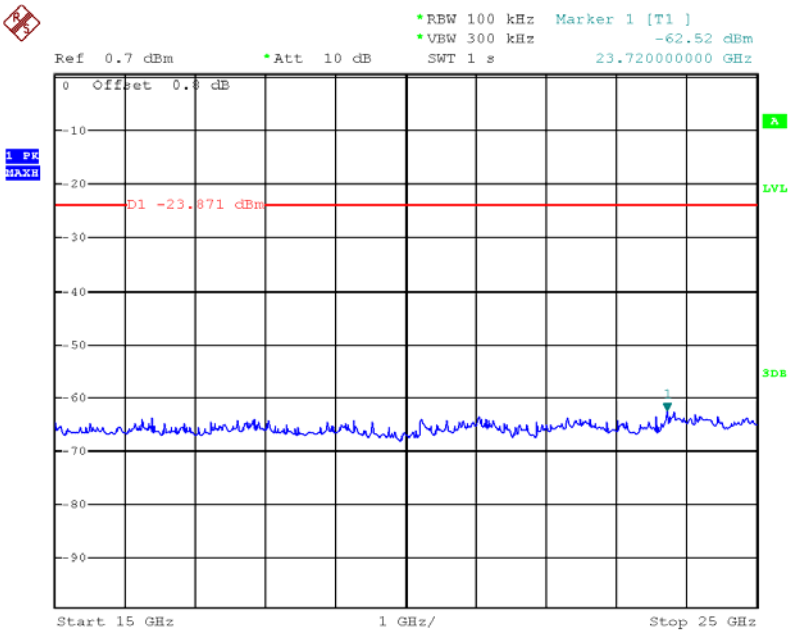
Band – edge (at 20 dB blow) – Low channel
Frequency Range = 30 MHz ~ 10th harmonic
(GFSK : Worst-Case)



Date: 2.MAY.2016 15:30:07



Date: 2.MAY.2016 15:30:20

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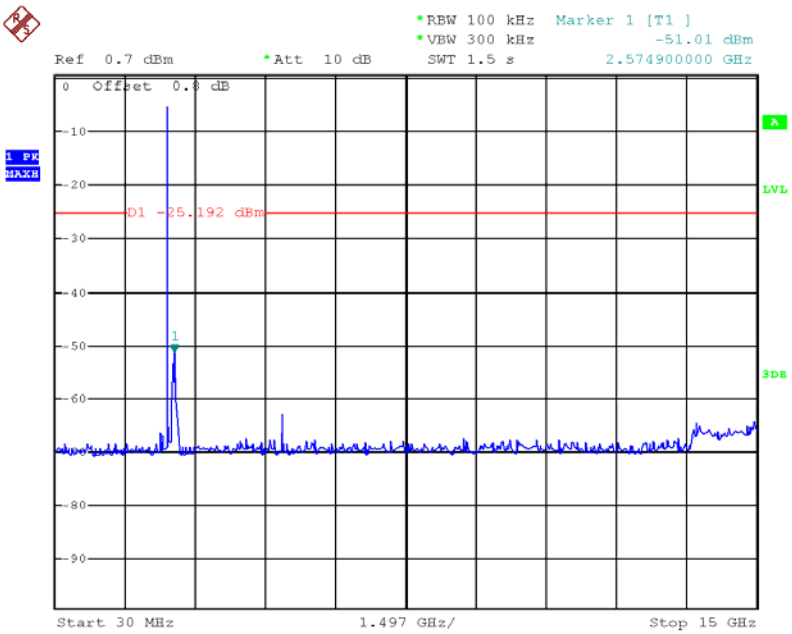
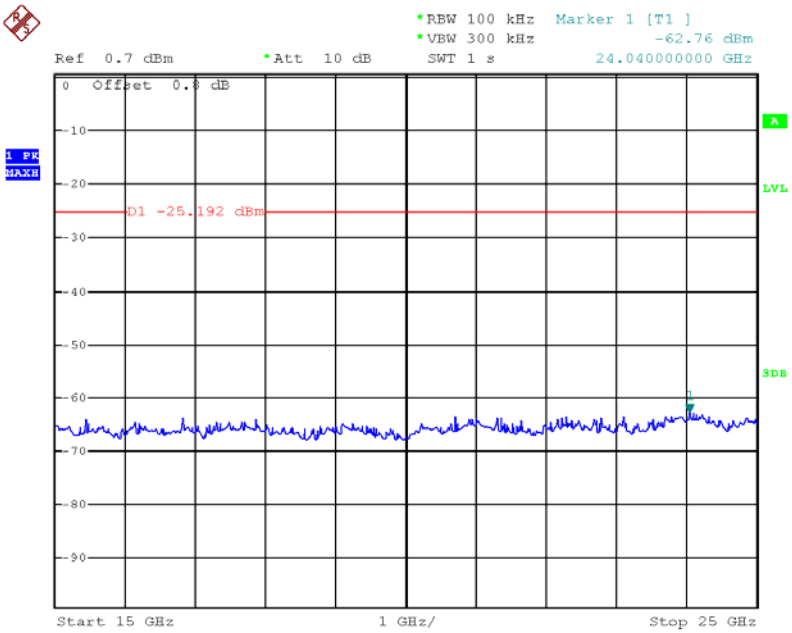
Band – edge (at 20 dB blow) – Mid channel
Frequency Range = 30 MHz ~ 10th harmonic
(GFSK : Worst-Case)



Date: 2.MAY.2016 15:34:08



Date: 2.MAY.2016 15:34:21

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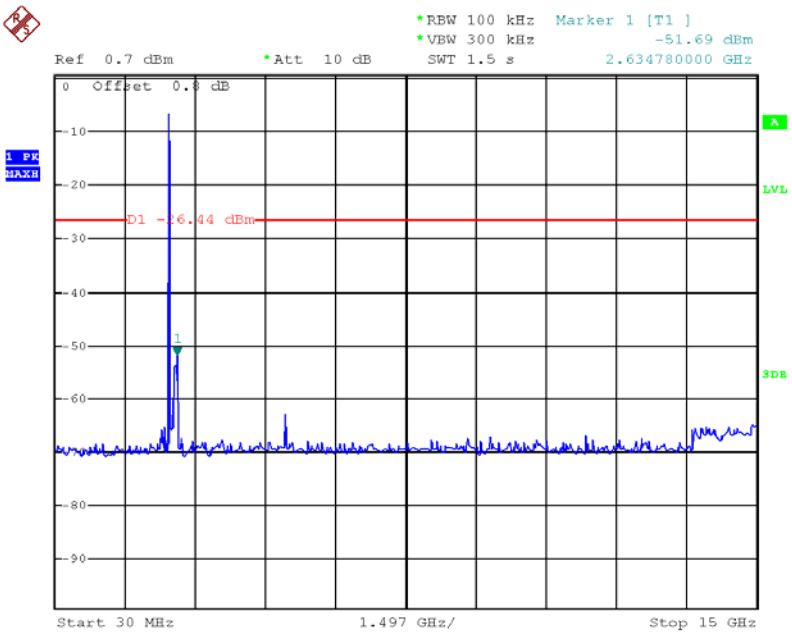
Band – edge (at 20 dB blow) – High channel
Frequency Range = 30 MHz ~ 10th harmonic
(GFSK : Worst-Case)



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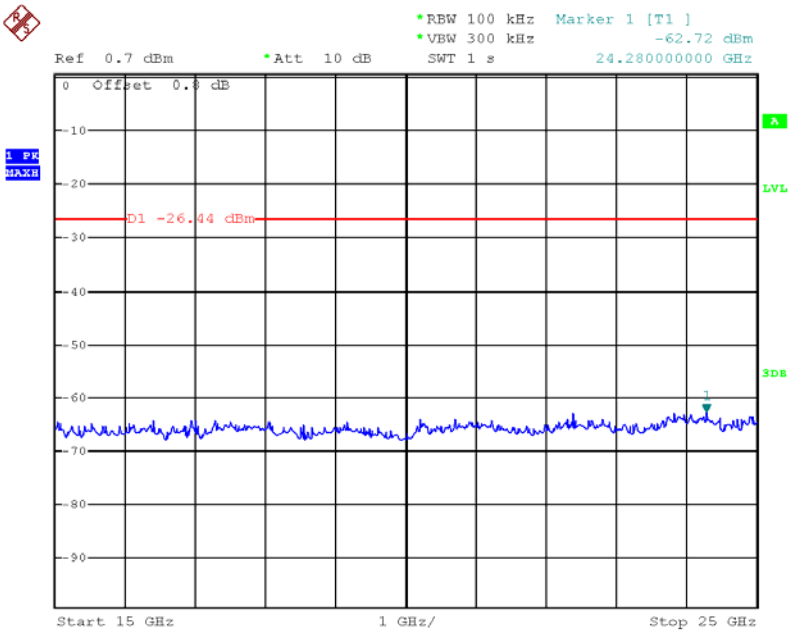

Date: 2.MAY.2016 15:36:00

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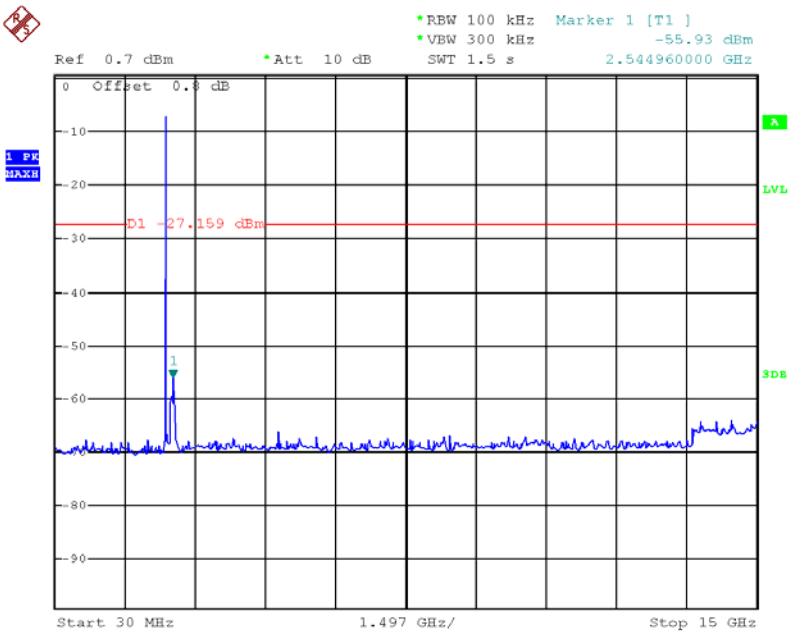
Band – edge (at 20 dB blow) – Low channel
Frequency Range = 30 MHz ~ 10th harmonic
(8-DPSK : Worst-Case)



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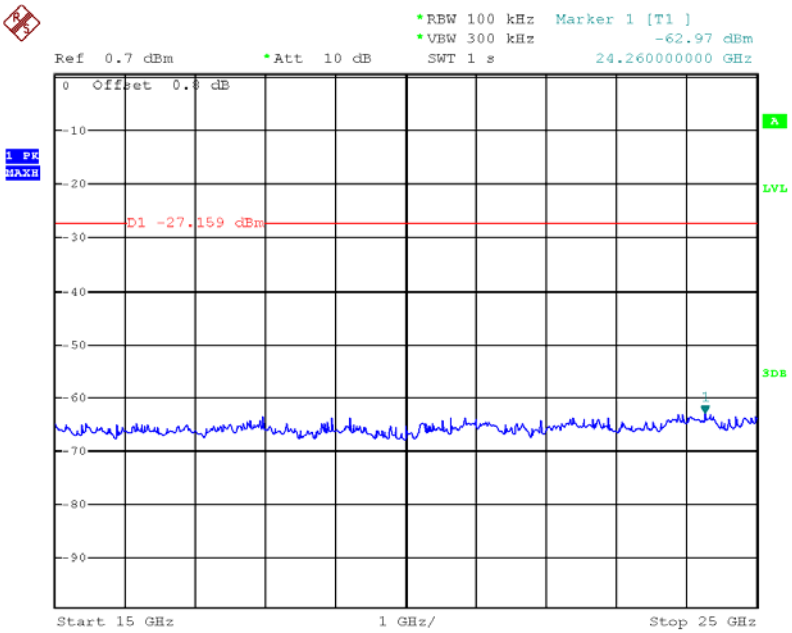

Date: 2.MAY.2016 15:43:26

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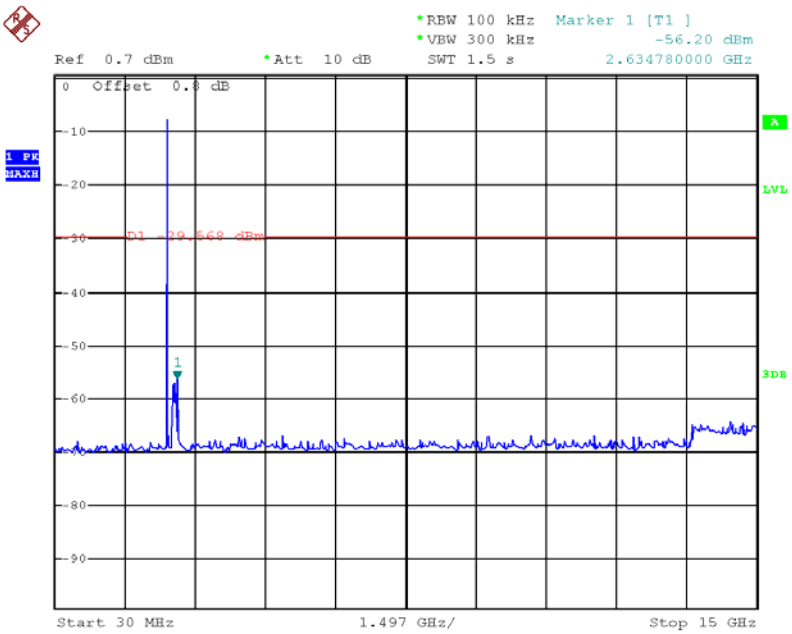
Band – edge (at 20 dB blow) – Mid channel
Frequency Range = 30 MHz ~ 10th harmonic
(8-DPSK : Worst-Case)



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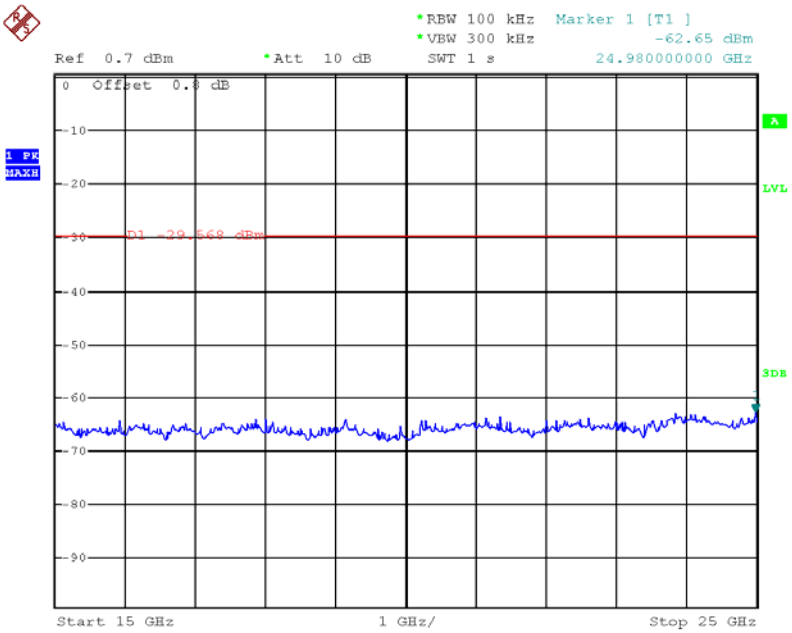

Date: 2.MAY.2016 15:48:08

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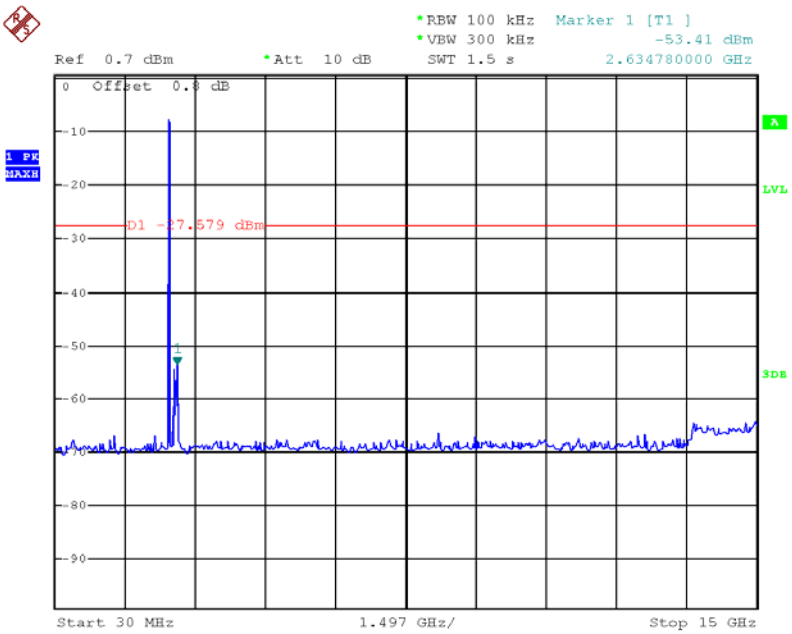
Form No.: CTK-RF-EF-Part15 SubpartC(Rev.2)

Band – edge (at 20 dB blow) – High channel
Frequency Range = 30 MHz ~ 10th harmonic
(8-DPSK : Worst-Case)



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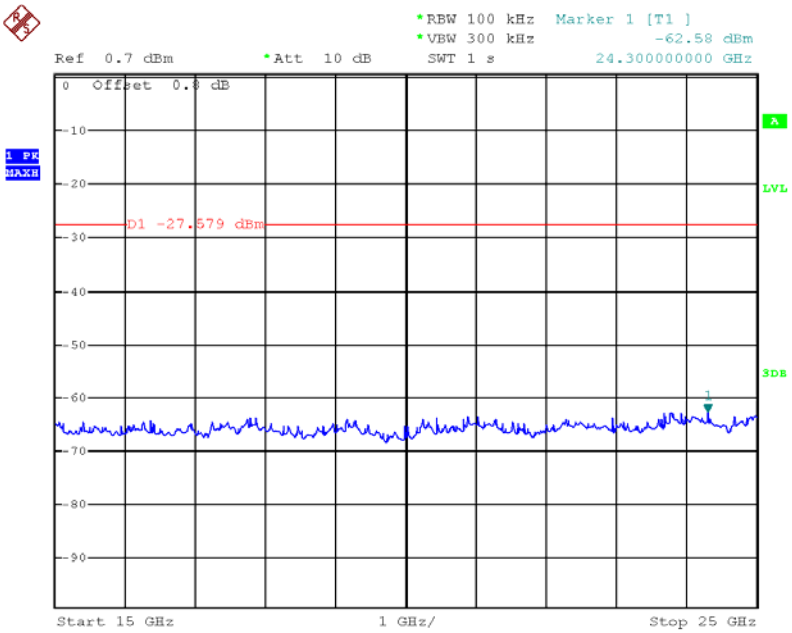

Date: 2.MAY.2016 15:50:20

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2.1.7 Field Strength of Emissions

Test Location

☒ 10 m SAC (test distance : ☐ 10 m, ☒ 3 m)
☒ 3 m SAC (test distance : 3 m)

Test Procedures

1) In the frequency range of 9 kHz to 30 MHz, magnetic field is measured with Loop Antenna. The Test Antenna is positioned with its plane vertical at 1m distance from the EUT. The center of the Loop Test Antenna is 1m above the ground. During the measurement the Loop Test Antenna rotates about its vertical axis for maximum response at each azimuth about the EUT.
2) In the frequency rage above 30 MHz, Bi-Log Test Antenna(30 MHz to 1 GHz) and Horn Test Antenna(above 1 GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is carried from 1m to 4m above the ground to determine the maximum value of the field strength. The emissions levels at both horizontal and vertical polarizations should be tested.

The spectrum analyzer is set to:

Frequency Range = 9 kHz ~ 25 GHz (2.4 GHz 10^{th} harmonic)
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz, 9 kHz for f < 30 MHz
VBW ≥ RBW
Sweep = auto

Limit

- **15.209(a)**

Frequency(MHz)	Field Strength uV/m@3m	Field Strength dBuV/m@3m	Deasurement Distance (meters)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	30
1.705-30	30	-	30
30-88	100**	40	3
88-216	150**	43.5	3
216-960	200**	46	3
Above 960	500	54	3

** Except as provided in 15.209(g).fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72MHz, 76-88MHz, 174-216MHz, 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g.15.231 and 15.241.

Note :
1) For above 1 GHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.
2) For above 1 GHz, limit field strength of harmonics : 54 dBuV/m@3m (AV) and 74 dBuV/m@3m (PK)

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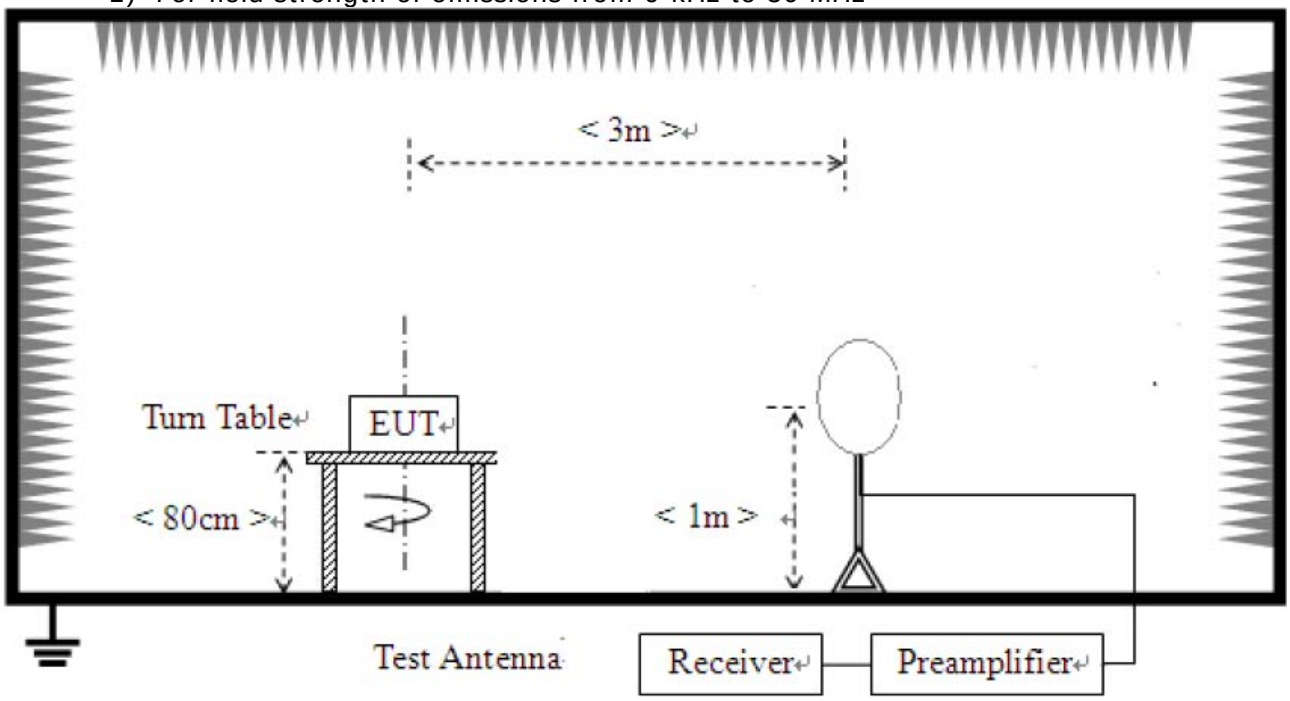
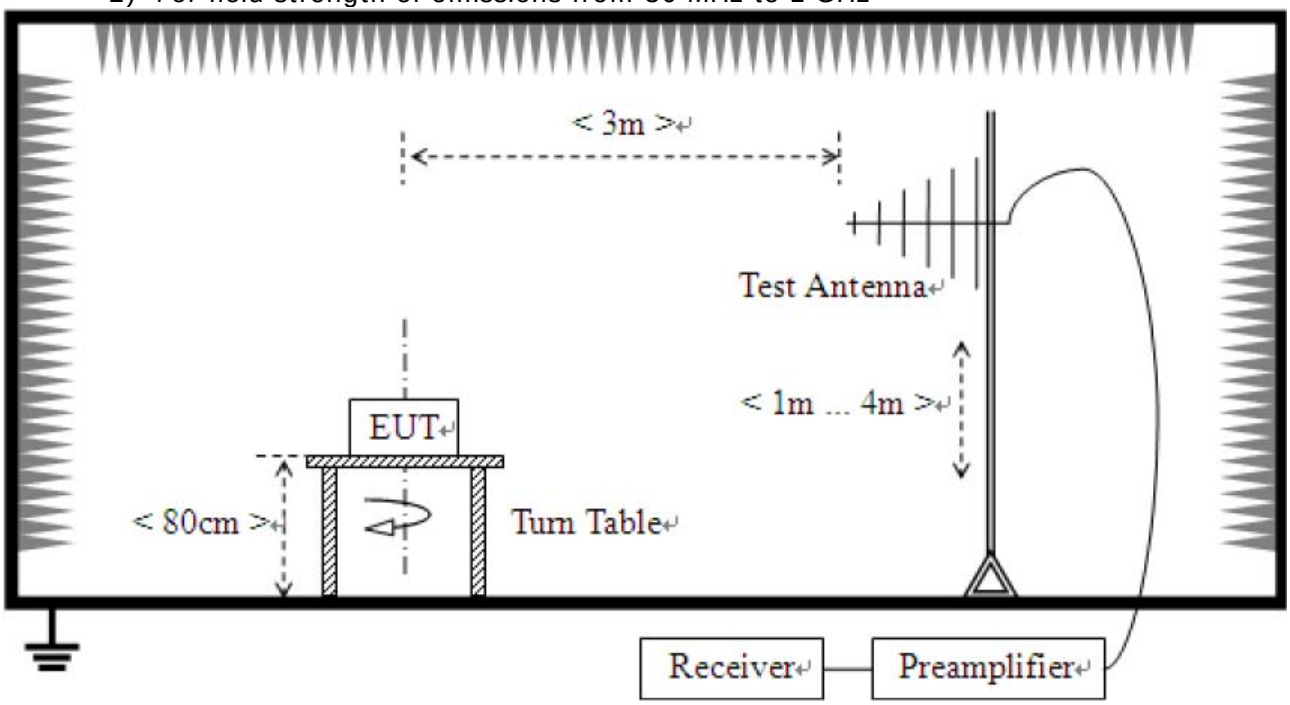
Test Setup:

1) For field strength of emissions from 9 kHz to 30 MHz



2) For field strength of emissions from 30 MHz to 1 GHz



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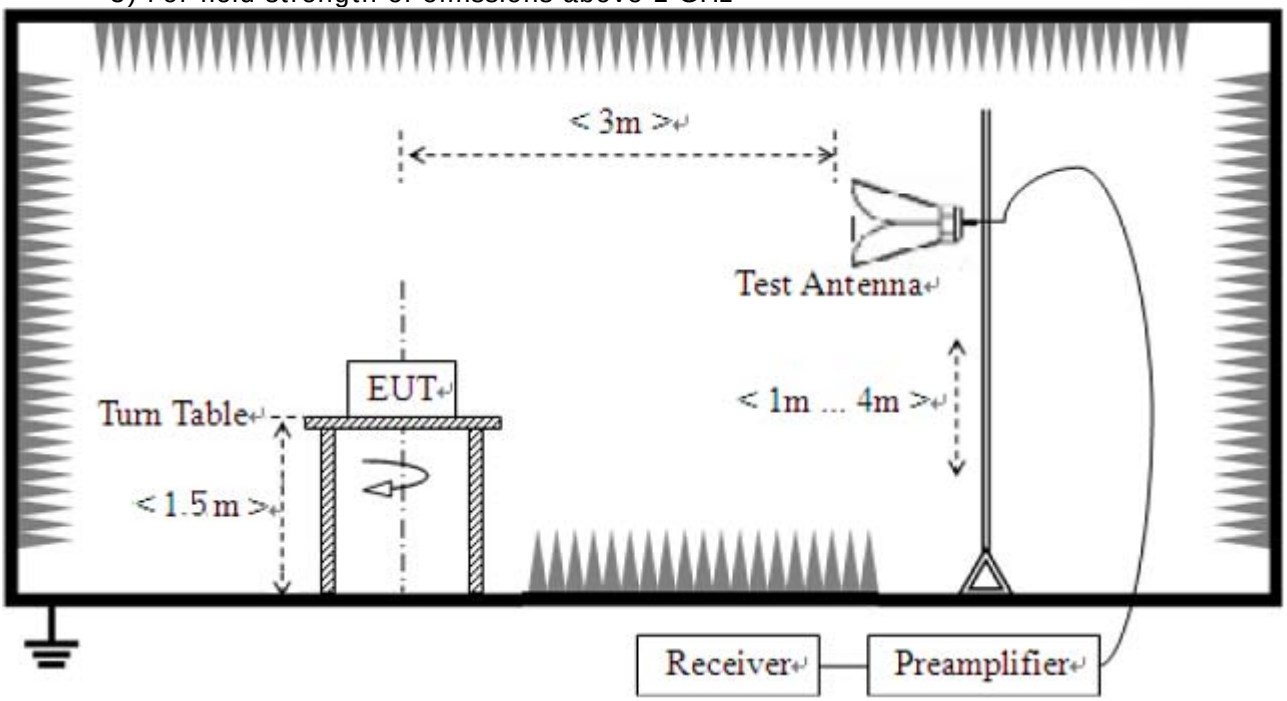
3) For field strength of emissions above 1 GHz



Test Results

1) 9 kHz to 30 MHz

Test mode : GFSK, CFG PKT Packet Type : 15 Packet Size : 339(DH5)
Test mode : 8-DPSK, CFG PKT Packet Type : 31 Packet Size : 1021(3DH5)

EUT	WIRELESS STEREO HEADSET	Measurement Detail	
Model	MDR-XB50BS	Frequency Range	9 kHz – 30 MHz
Test mode	GFSK, 8-DPSK	Detector function	Quasi-Peak

The requirements are:

☒ Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
-	-	-	See note

Note :
The amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.
Distance extrapolation factor = 40 log (specific distance / test distance) (dB)

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2) 30 MHz to 1 GHz

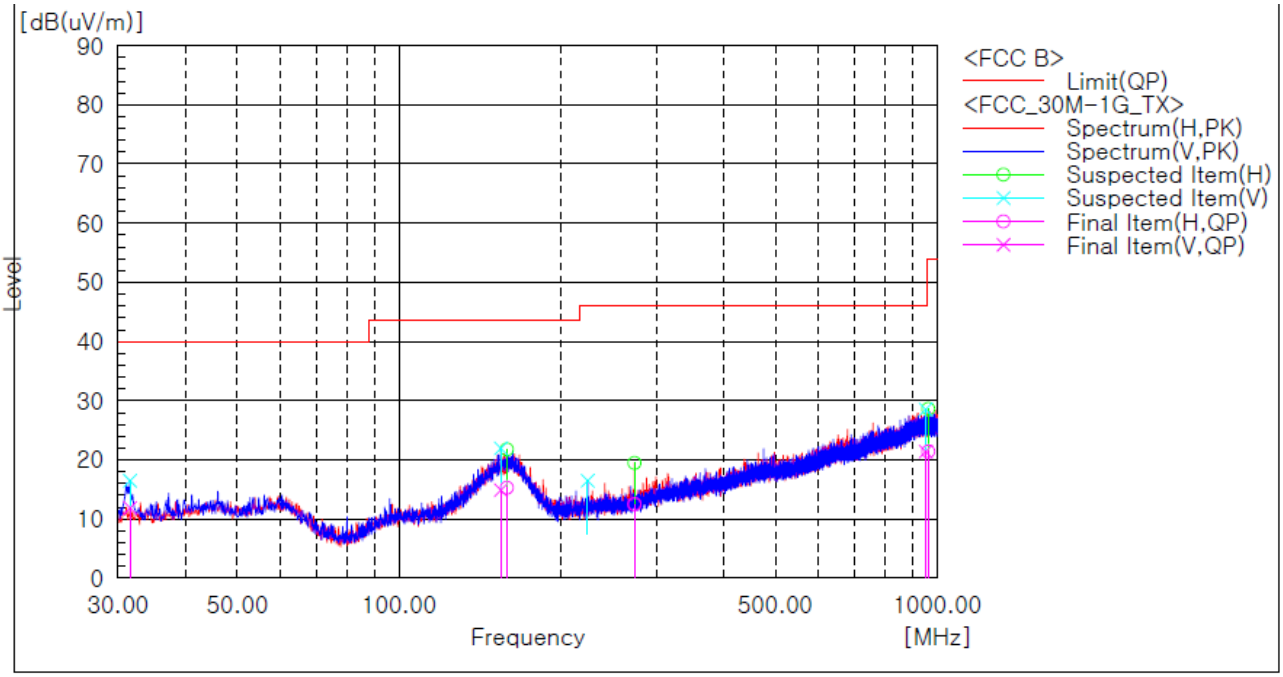
EUT	WIRELESS STEREO HEADSET	Measurement Detail	
Model	MDR-XB50BS	Frequency Range	Below 1000MHz
Test mode	8-DPSK Hopping	Detector function	Quasi-Peak / Peak

The requirements are:

☒ Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
951.136	21.4	24.6	Quasi-Peak

Test Data



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Angle [deg]
1	31.576	V	28.1	-16.2	11.9	40.0	28.1	37.2
2	154.403	V	22.0	-7.1	14.9	43.5	28.6	37.2
3	158.525	H	22.0	-6.7	15.3	43.5	28.2	210.5
4	273.591	H	25.7	-13.2	12.5	46.0	33.5	185.6
5	951.136	V	22.8	-1.4	21.4	46.0	24.6	357.9
6	962.412	H	22.7	-1.3	21.4	54.0	32.6	36.2

Remark :

1. The field strength of spurious emission was measured in the following position: EUT stand-up position(Z axis), lie-down position(X,Y axis). The worst emission was found in lie-down position(X axis) and the worst case was recorded.

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3) above 1 GHz

Test mode : GFSK, CFG PKT Packet Type : 15 Packet Size : 339(DH5)

EUT	WIRELESS STEREO HEADSET	Measurement Detail	
Model	MDR-XB50BS	Frequency Range	1-25GHz
		Detector function	Average / Peak

Remarks

We have tested three mode (X, Y, Z). The worst mode (X axis) for final test.

The requirements are:

☒ Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
4804.00	40.60	13.40	Average

Test Data

Ch.0(Low Channel)

Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]
4804.00	V	36.51	49.53	3.72	54.00	74.00	40.23	53.25	13.77	20.75
4804.00	H	36.88	49.28	3.72	54.00	74.00	40.60	53.00	13.40	21.00

Ch.39(Mid Channel)

Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]
4882.00	V	35.05	48.56	3.72	54.00	74.00	38.77	52.28	15.23	21.72
4882.00	H	35.30	48.17	3.72	54.00	74.00	39.02	51.89	14.98	22.11

Ch.78(High Channel)

Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]
4960.00	V	34.74	47.50	3.85	54.00	74.00	38.59	51.35	15.41	22.65
4960.00	H	35.02	47.95	3.85	54.00	74.00	38.87	51.80	15.13	22.20

Restricted band edge test data

Measured frequency range : 2310-2390 MHz, 2483.5-2500 MHz

Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]
2483.50	V	30.12	49.62	-2.52	54.00	74.00	27.60	47.10	26.40	26.90
2483.50	H	40.80	57.06	-2.52	54.00	74.00	38.28	54.54	15.72	19.46

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Test mode : 8-DPSK, CFG PKT Packet Type : 31 Packet Size : 1021(3DH5)

EUT	WIRELESS STEREO HEADSET	Measurement Detail	
Model	MDR-XB50BS	Frequency Range	1-25GHz
		Detector function	Average / Peak

Remarks

We have tested three mode (X, Y, Z). The worst mode (X axis) for final test.

The requirements are:

☒ Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
2483.5	55.91	18.09	Peak

Test Data

Ch.0(Low Channel)

Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]
4804.00	V	31.98	48.65	3.72	54.00	74.00	35.70	52.37	18.30	21.63
4804.00	H	31.95	48.57	3.72	54.00	74.00	35.67	52.29	18.33	21.71

Ch.39(Mid Channel)

Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]
4882.00	V	31.63	47.79	3.72	54.00	74.00	35.35	51.51	18.65	22.49
4882.00	H	31.42	47.65	3.72	54.00	74.00	35.14	51.37	18.86	22.63

Ch.78(High Channel)

Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]
4960.00	V	31.02	45.79	3.85	54.00	74.00	34.87	49.64	19.13	24.36
4960.00	H	30.96	46.31	3.85	54.00	74.00	34.81	50.16	19.19	23.84

Restricted band edge test data

Measured frequency range : 2310-2390 MHz, 2483.5-2500 MHz

Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]
2483.50	V	33.37	50.62	-2.52	54.00	74.00	30.85	48.10	23.15	25.90
2483.50	H	35.50	58.43	-2.52	54.00	74.00	32.98	55.91	21.02	18.09

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Test Results

1) 9 kHz to 30 MHz

Test mode : Receiver

EUT	WIRELESS STEREO HEADSET	Measurement Detail	
Model	MDR-XB50BS	Frequency Range	9 kHz – 30 MHz
Test mode	Receiver	Detector function	Quasi-Peak

The requirements are:

☒ Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
-	-	-	See note

Note :
The amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.
Distance extrapolation factor = 40 log (specific distance / test distance) (dB)

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2) 30 MHz to 1 GHz

Test mode : Receiver

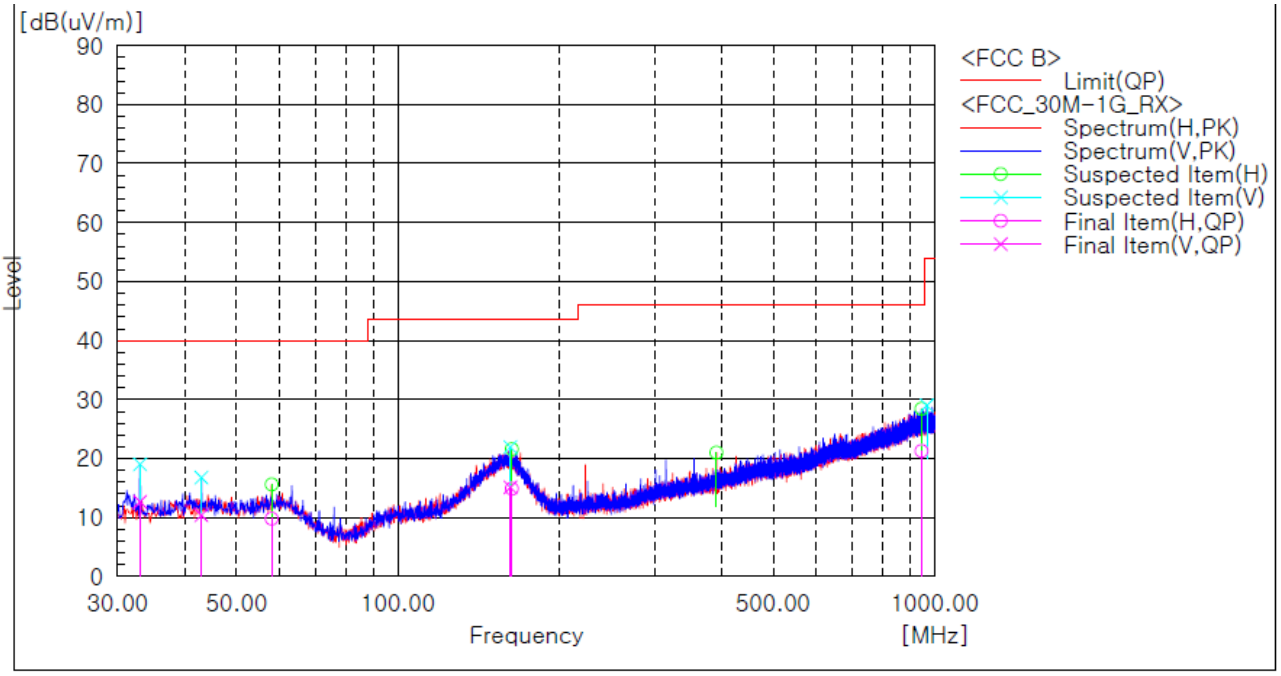
EUT	WIRELESS STEREO HEADSET	Measurement Detail	
Model	MDR-XB50BS	Frequency Range	Below 1000MHz
Test mode	Receiver	Detector function	Quasi-Peak / Peak

The requirements are:

☒ Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
944.104	21.3	24.7	Quasi-Peak

Test Data



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(uV)]	c.f [dB(1/m)]	Result QP [dB(uV/m)]	Limit QP [dB(uV/m)]	Margin QP [dB]	Angle [deg]
1	33.031	V	28.8	-16.1	12.7	40.0	27.3	120.5
2	42.974	V	25.2	-14.8	10.4	40.0	29.6	81.2
3	58.130	H	24.1	-14.3	9.8	40.0	30.2	7.2
4	161.799	V	21.8	-6.7	15.1	43.5	28.4	146.8
5	162.890	H	21.7	-6.8	14.9	43.5	28.6	45.7
6	944.104	H	22.8	-1.5	21.3	46.0	24.7	111.4

Remark :

1. The field strength of spurious emission was measured in the following position: EUT stand-up position(Z axis), lie-down position(X,Y axis). The worst emission was found in lie-down position(X axis) and the worst case was recorded.

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3) above 1 GHz

Test mode : Receiver

EUT	WIRELESS STEREO HEADSET	Measurement Detail	
Model	MDR-XB50BS	Frequency Range	1-25GHz
		Detector function	Average / Peak

Remarks

We have tested three mode (X, Y, Z). The worst mode (X axis) for final test.

The requirements are:

☒ Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
No emissions were detected at a level greater than 20dB below limit.			

Test Data

Ch.0(Low Channel)

Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]

No emissions were detected at a level greater than 20dB below limit.

Ch.39(Mid Channel)

Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]

No emissions were detected at a level greater than 20dB below limit.

Ch.78(High Channel)

Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]

No emissions were detected at a level greater than 20dB below limit.

Restricted band edge test data

Measured frequency range : 2310-2390 MHz, 2483.5-2500 MHz

Frequency [MHz]	(P)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]

No emissions were detected at a level greater than 20dB below limit.

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2.1.8 AC Conducted Emissions

Test Location
Shielded Room

Frequency Range of Measurement
150 kHz to 30 MHz

Instrument Settings
IF Band Width: 9 kHz

Test Procedures

The EUT was placed on a non-metallic table 0.8m above the metallic, grounded floor and 0.4m from the reference ground plane wall. The distance to other metallic surfaces was at least 0.8m.
Amplitude measurements were performed with a quasi-peak detector and an average detector.

Limit

- **15.207(a)**

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56*	56 to 46*
0.5 ~ 5	56	46
5 ~ 30	60	50

* Decreases with the logarithm of the frequency.

Test Results
The requirements are:

☒ Complies

Test mode : USB Charge

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
0.474	33.2	13.2	Average

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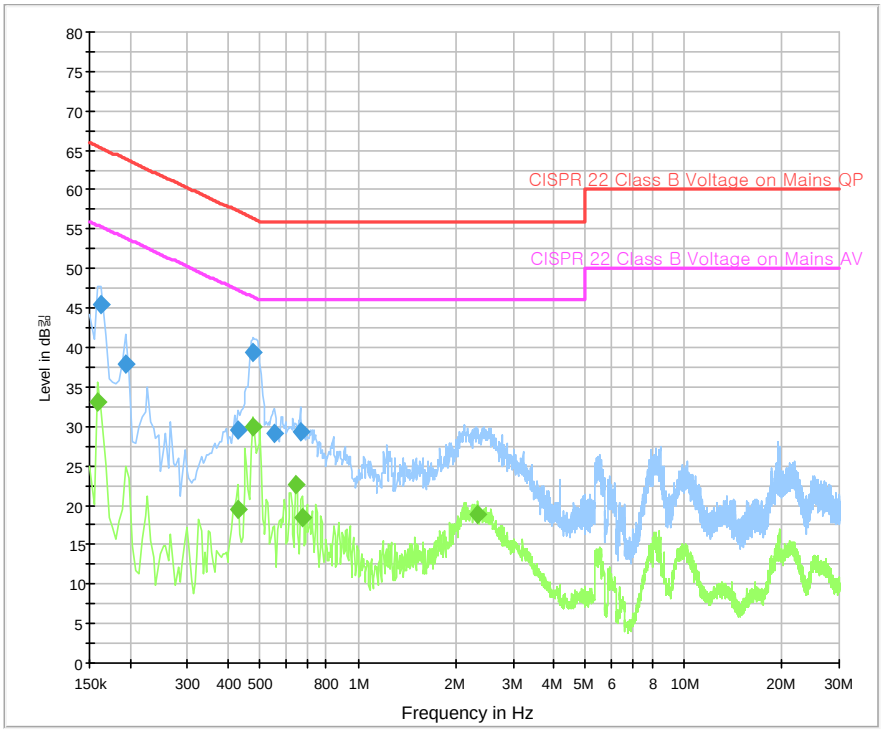
Test Data

[L1]

CISPR 22 Class B_L1



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.163500	45.4	1000.0	9.000	On	L1	9.8	19.9	65.3
0.195000	37.8	1000.0	9.000	On	L1	9.8	26.0	63.8
0.429000	29.6	1000.0	9.000	On	L1	9.9	27.6	57.3
0.478500	39.4	1000.0	9.000	On	L1	9.9	17.0	56.4
0.555000	29.1	1000.0	9.000	On	L1	9.9	26.9	56.0
0.667500	29.3	1000.0	9.000	On	L1	9.9	26.7	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.159000	33.2	1000.0	9.000	On	L1	9.8	22.3	55.5
0.429000	19.5	1000.0	9.000	On	L1	9.9	27.8	47.3
0.478500	29.9	1000.0	9.000	On	L1	9.9	16.4	46.4
0.645000	22.6	1000.0	9.000	On	L1	9.9	23.4	46.0
0.676500	18.5	1000.0	9.000	On	L1	9.9	27.5	46.0
2.341500	18.8	1000.0	9.000	On	L1	9.7	27.2	46.0

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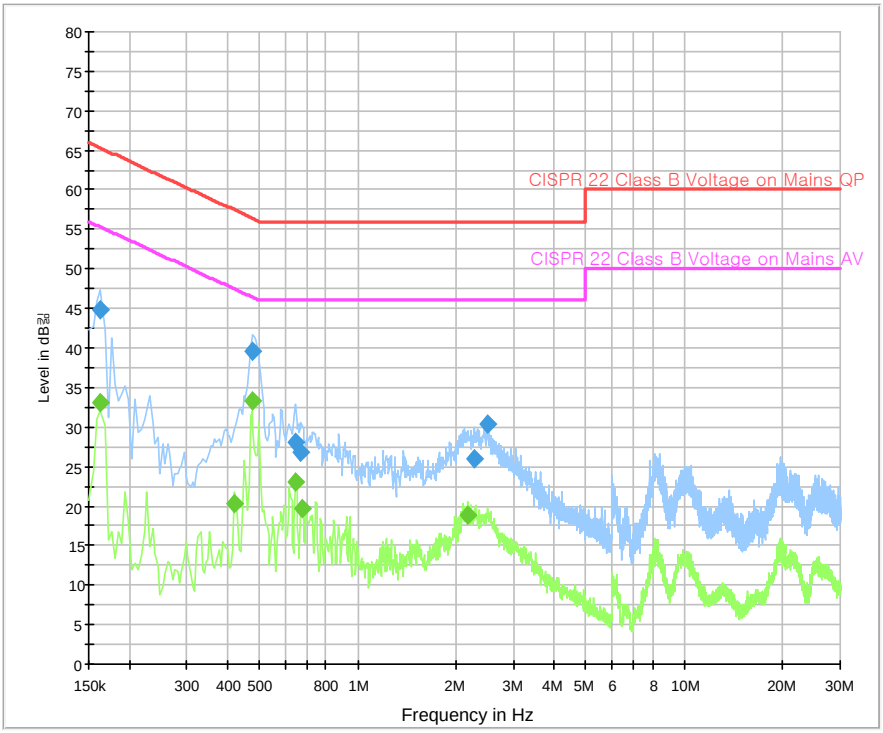
[NEUTRAL]

CISPR 22 Class B_N



µV

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.163500	44.8	1000.0	9.000	On	N	9.8	20.5	65.3
0.478500	39.5	1000.0	9.000	On	N	9.9	16.8	56.4
0.645000	28.2	1000.0	9.000	On	N	9.9	27.8	56.0
0.672000	26.8	1000.0	9.000	On	N	9.9	29.2	56.0
2.283000	25.9	1000.0	9.000	On	N	9.7	30.1	56.0
2.494500	30.4	1000.0	9.000	On	N	9.7	25.6	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.163500	33.2	1000.0	9.000	On	N	9.8	22.1	55.3
0.420000	20.3	1000.0	9.000	On	N	9.9	27.2	47.4
0.474000	33.2	1000.0	9.000	On	N	9.9	13.2	46.4
0.645000	23.0	1000.0	9.000	On	N	9.9	23.0	46.0
0.676500	19.7	1000.0	9.000	On	N	9.9	26.3	46.0
2.179500	18.8	1000.0	9.000	On	N	9.7	27.2	46.0

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APPENDIX A – Test Equipment Used For Tests

	Name of Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Spectrum Analyzer	Rohde & Schwarz	FSP	100994	2016-05-13	2017-05-13
2	Signal Generator	Rohde & Schwarz	SMB100A	175528	2016-01-20	2017-01-20
3	EMI Test Receiver	Rohde & Schwarz	ESCI7	100816	2015-11-02	2016-11-02
4	LISN	Rohde & Schwarz	ENV216	101760	2016-02-05	2017-02-05
5	EMI Test Receiver	Rohde & Schwarz	ESCI7	100814	2015-11-02	2016-11-02
6	Trilog Broadband Antenna	SCHWARZBECK	VULB 9161 SE	9161-4133	2015-06-18	2017-06-18
7	Active Loop Antenna	SCHWARZBECK	FMZB 1513	1513-126	2016-05-16	2018-05-16
8	6dB Attenuator	R&S	DNF	272.4110.50-2	2015-11-03	2016-11-03
9	AMPLIFIER	SONOMA	310	291721	2016-02-02	2017-02-02
10	EMI Test Receiver	Rohde & Schwarz	ESU40	100336	2015-05-14	2017-05-14
11	PREAMPLIFIER	Agilent	8449B	3008A02307	2015-10-01	2016-10-01
12	Horn Antenna	ETS-Lindgren	3115	00078894	2015-09-02	2017-09-02
13	Horn Antenna	ETS-Lindgren	3116	00062504	2015-09-04	2017-09-04
14	Horn Antenna	ETS-Lindgren	3116	00062916	2015-04-30	2017-04-30
15	Horn Antenna	ETS-Lindgren	3117	00154525	2015-09-02	2017-09-02

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