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TEST REPORT

FCC Standards : FCC 47 CFR part 15 subpart C
Industry Canada Standards :RSS-247 Issue 2 & RSS-GEN Issue 4

Test Report No.	:	CTK-2017-00805
Date of Issue	:	2017-05-01
FCC ID	:	AK8WIC400
Certification Number IC	:	409B-WIC400
Model/Type No.	:	WI-C400
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	:	Kazunaga Kinjo / Product safety manager
Telephone	:	+81-50-3750-7634
Received Date	:	2017-04-07
Test period	:	Start : 2017-04-17 End : 2017-04-27
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: 2017-05-01

Reviewed by

Young-Joon, Park
Technical Manager
Date: 2017-05-01

REPORT REVISION HISTORY

Date	Revision	Page No
2017-05-01	Issued (CTK-2017-00805)	All

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1.0 General Product Description

Basic Model/Type No.	WI-C400
Serial number	Prototype
EUT condition	Pre-production, not damaged
Antenna type	Chip antenna Gain 1.7 dBi
Frequency Range	2402 MHz - 2480 MHz
RF power	1.113 dBm Peak Conducted (GFSK) 4.499 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 (Battery)
Hardware Rev	Ver1.0
Software Rev	Ver0017
Firmware Rev	Ver0017

1.1 Tested Frequency

	LOW	MID	HIGH
Frequency (MHz)	2 402	2 441	2 480

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

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

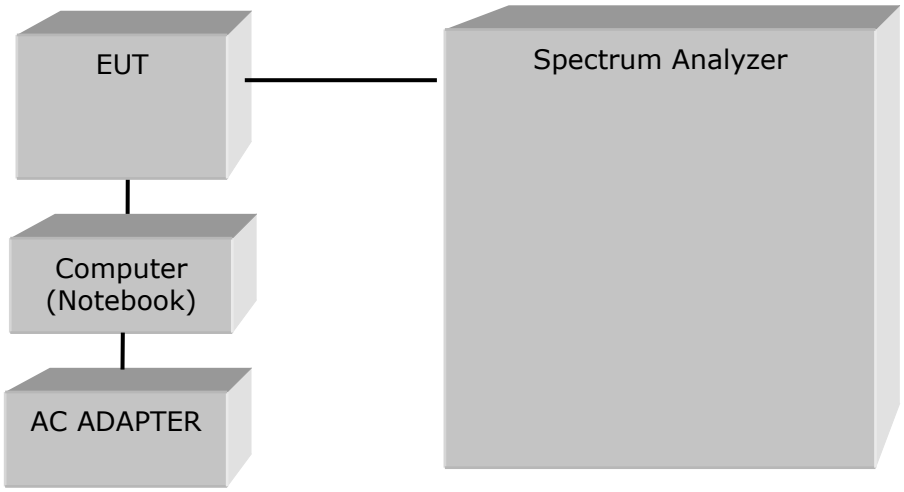
The following modifications was applied by the applicant:

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



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	
CANADA	**IC**	IC EMI (3/10m test site)	8737A-2	
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	

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 2 5.1(b)	Carrier Frequency Separation	Conducted	C
15.247(a)	RSS-247 Issue 2 5.1(d)	Number of Hopping Frequencies		C
15.247(a)	RSS-247 Issue 2 5.1	20 dB Bandwidth		C
15.247	RSS-247 Issue 2 5.1(d)	Dwell Time		C
15.247(b)	RSS-247 Issue 2 5.4(b)	Transmitter Output Power		C
15.247(d)	RSS-247 Issue 2 5.5	Conducted Spurious emission		C
15.247(d)	RSS-247 Issue 2 5.5	Band Edge		C
15.209	RSS-247 Issue 2 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 2

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

2.1 Requirements

2.1.1 Carrier Frequency Separation

Test Procedures(ANSI C63.10-2013 7.8.2)

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.

Test Settings :

a) Span = 5 MHz (wide enough to capture the peaks of two adjacent channels)
b) RBW = 30 kHz (Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel)
c) VBW = 30 kHz (≥ RBW)
d) Sweep = auto
e) Detector function = peak
f) Trace = max hold

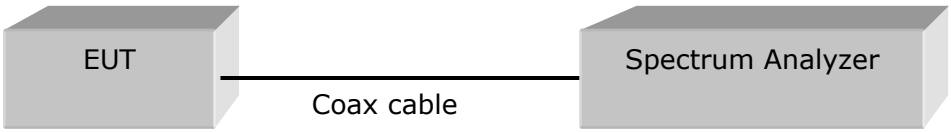


Figure 1 : Measurement setup for the carrier frequency separation

Minimum Standard :

Carrier Frequency Separation > 25kHz

Test Data :

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	995	621.7	25	Complies

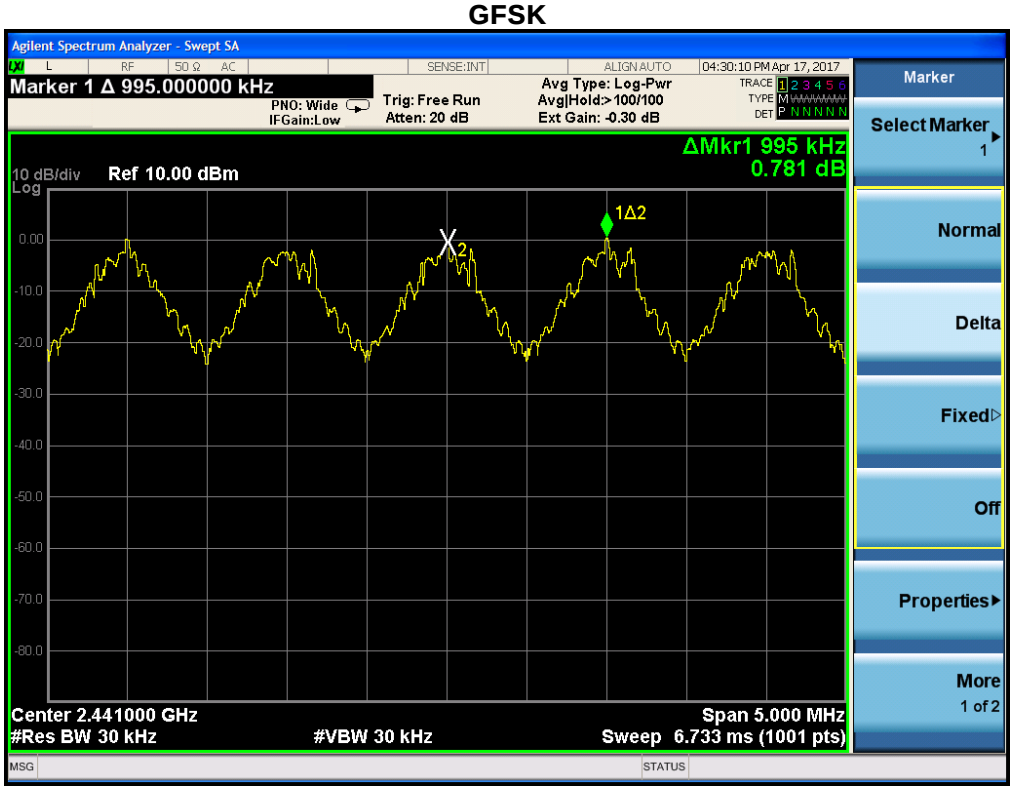
Test mode : 8-DPSK, CFG PKT Packet Type : 31 Packet Size : 1021(3DH5)

Channel	Adjacent Hopping Channel Separation (kHz)	Two-third of 20dB bandwidth (kHz)	Minimum Bandwidth (kHz)	Result
2441MHz	995	846.7	25	Complies

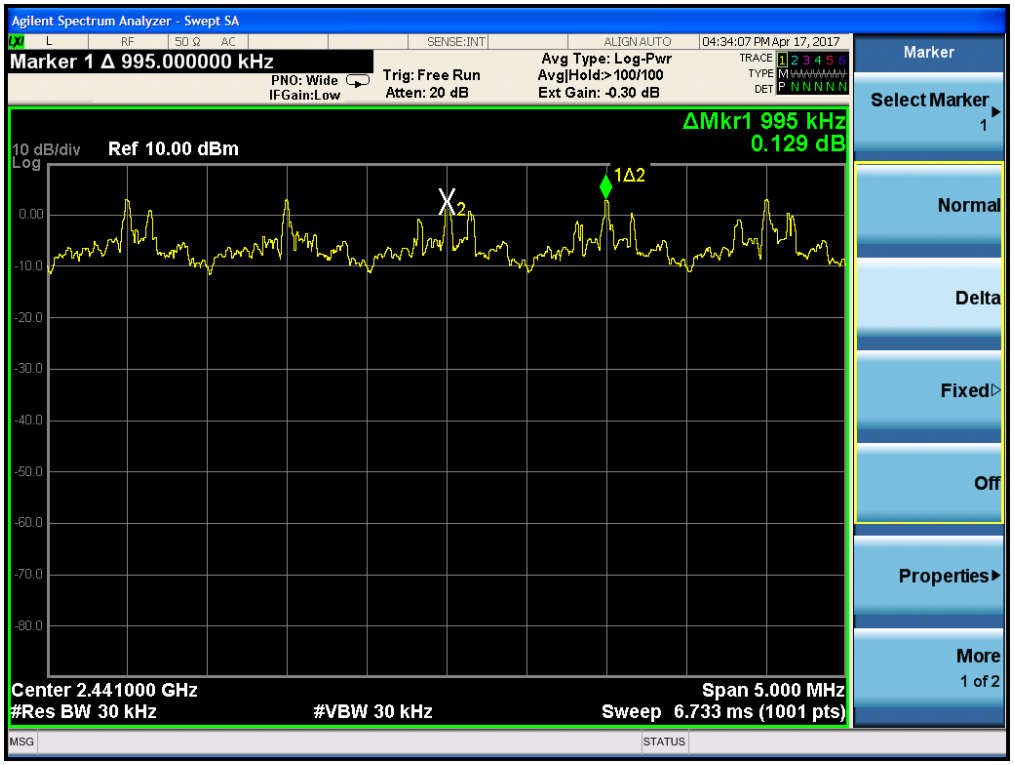
See next pages for actual measured spectrum plots.

Carrier Frequency Separation

GFSK



8-DPSK



2.1.2 Number of Hopping Frequencies

Test Procedures(ANSI C63.10-2013 7.8.3)

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

Test Settings:

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

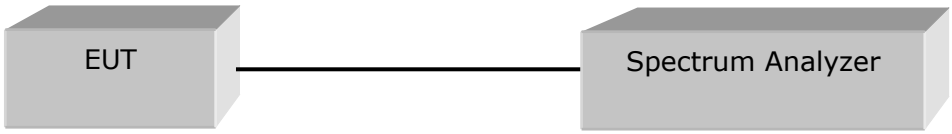
b) RBW = 300 kHz (To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller)

c) VBW = 300 kHz (≥ RBW)

d) Sweep = auto

e) Detector function = peak

f) Trace = max hold



Minimum Standard :

Number of Hopping Frequencies > 15

Test Data :

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

Total number of Hopping Channels	Result
79	Complies

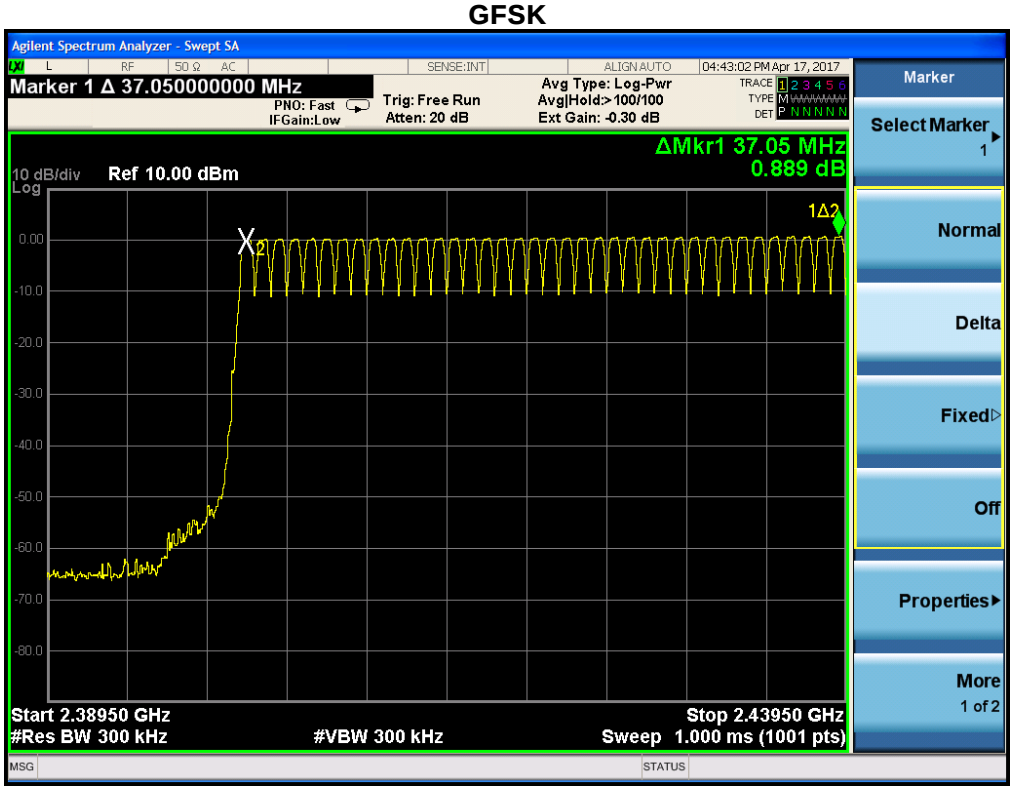
Test mode : 8-DPSK, CFG PKT Packet Type : 31 Packet Size : 1021(3DH5)

Total number of Hopping Channels	Result
79	Complies

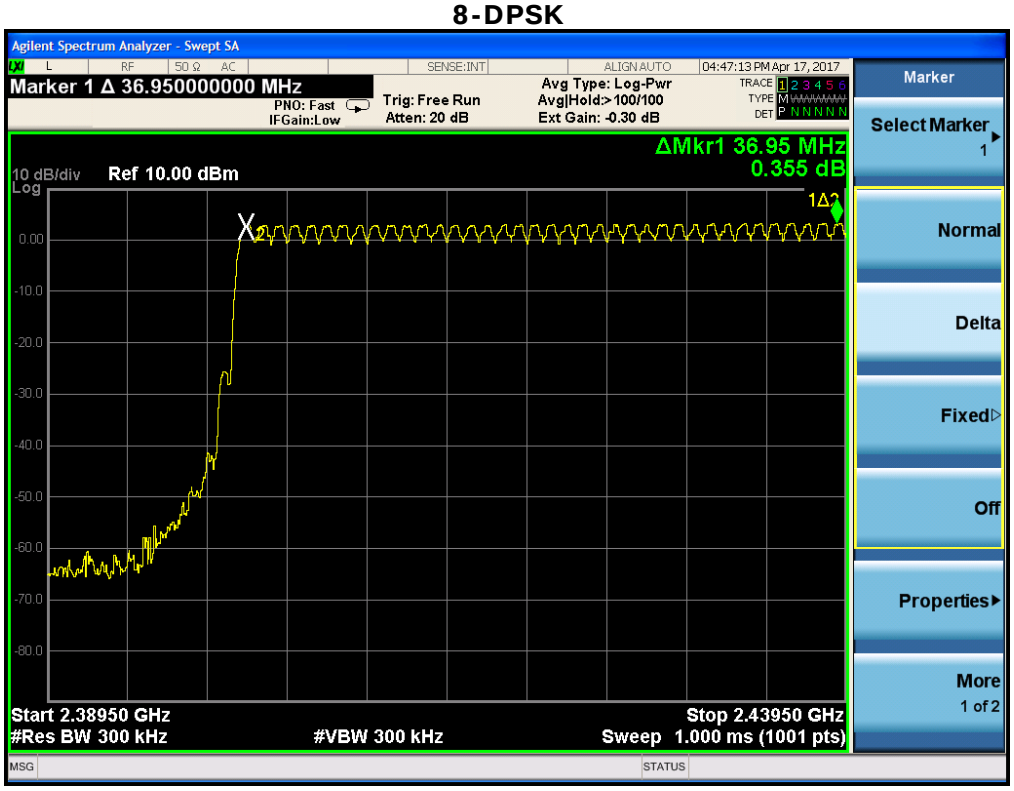
See next pages for actual measured spectrum plots.

Number of Hopping Frequencies

GFSK



8-DPSK



2.1.3 20 dB bandwidth

Test Procedures(ANSI C63.10-2013 6.9.2)

Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by20 dB relative to the maximum level measured in the fundamental emission.

Test Procedures(ANSI C63.10-2013 6.9.3)

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.
Use the 99% power bandwidth function of the instrument and report the measured bandwidth.

Test Settings :

Center frequency = the highest, middle and the lowest channels

a) Span = 3 MHz (between 2 times and 5 times the OBW)

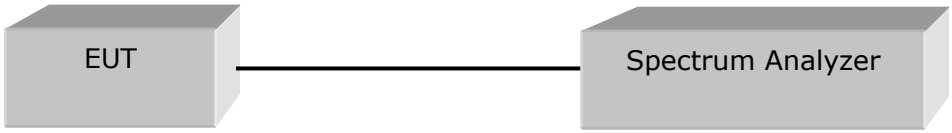
b) RBW = 30 kHz (1% to 5% of the OBW)

c) VBW = 100 kHz (approximately 3 times RBW)

d) Sweep = auto

e) Detector function = peak

f) Trace = max hold



Limit :

N/A

Test Data (20 dB bandwidth)

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

Frequency (MHz)	Channel Number.	Measured Bandwidth (MHz)	Result
2 402	0	0.934	Complies
2 441	39	0.933	Complies
2 480	78	0.934	Complies

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

Frequency (MHz)	Channel Number.	Measured Bandwidth (MHz)	Result
2 402	0	1.266	Complies
2 441	39	1.270	Complies
2 480	78	1.270	Complies

Test Data (Occupied Bandwidth)

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

Frequency (MHz)	Channel Number.	Measured Bandwidth (MHz)	Result
2 402	0	0.882	Complies
2 441	39	0.881	Complies
2 480	78	0.881	Complies

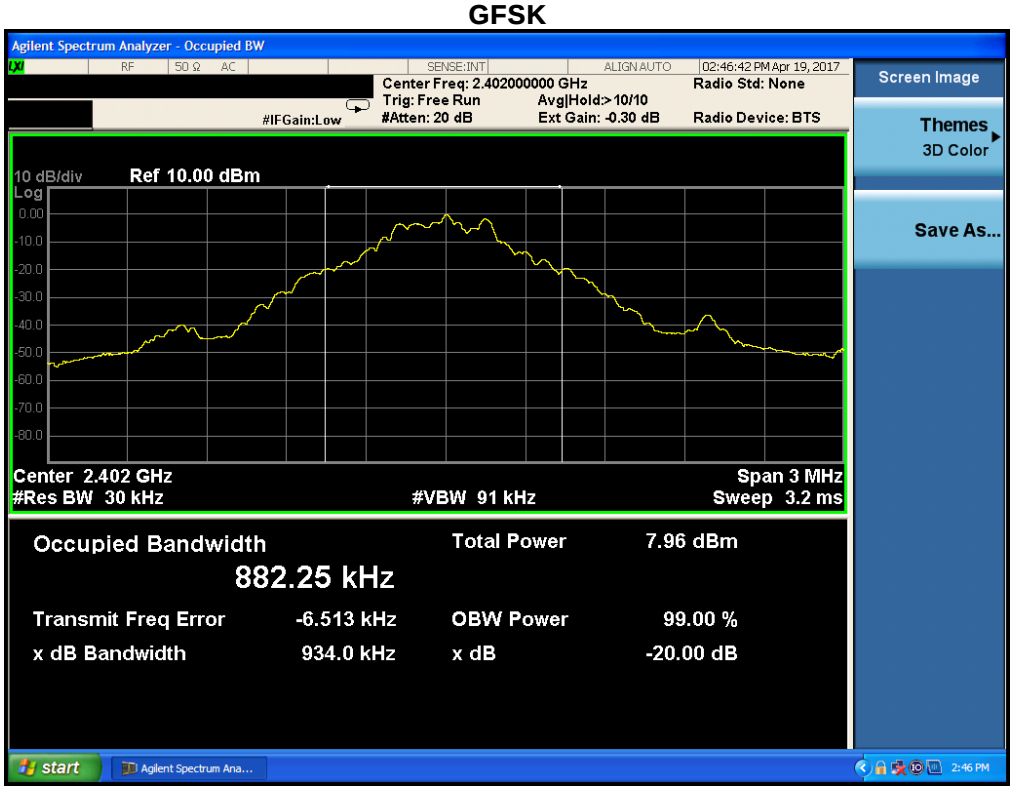
Test mode : 8-DPSK, CFG PKT Packet Type : 31 Packet Size : 1021(3DH5)

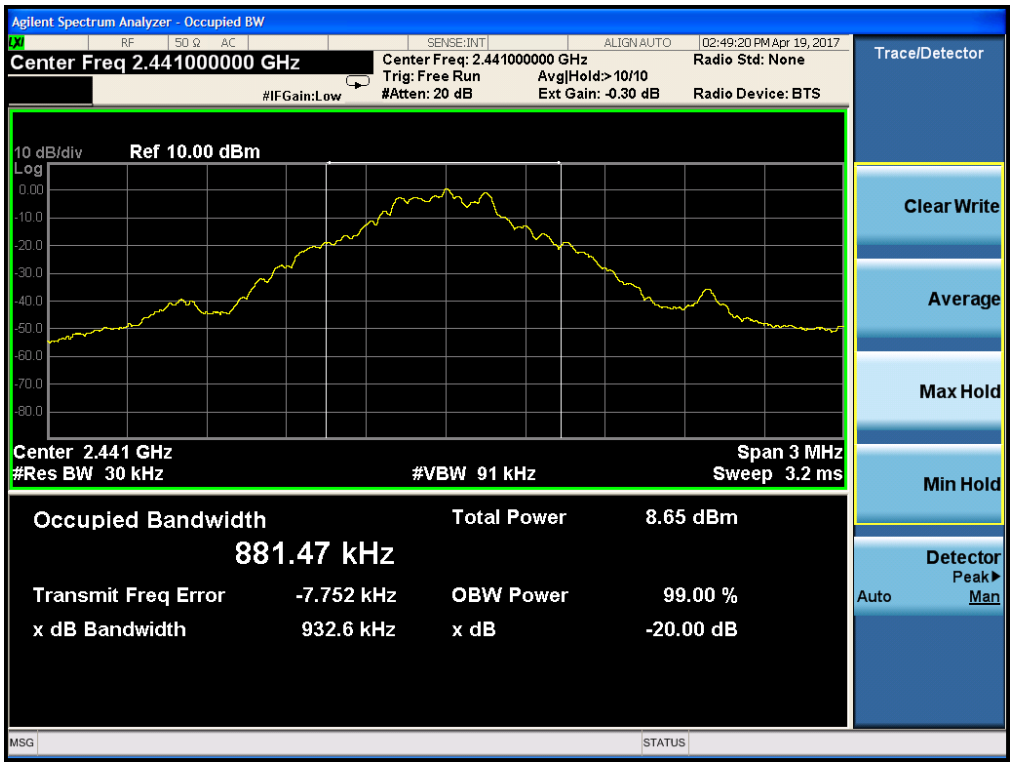
Frequency (MHz)	Channel Number.	Measured Bandwidth (MHz)	Result
2 402	0	1.170	Complies
2 441	39	1.174	Complies
2 480	78	1.179	Complies

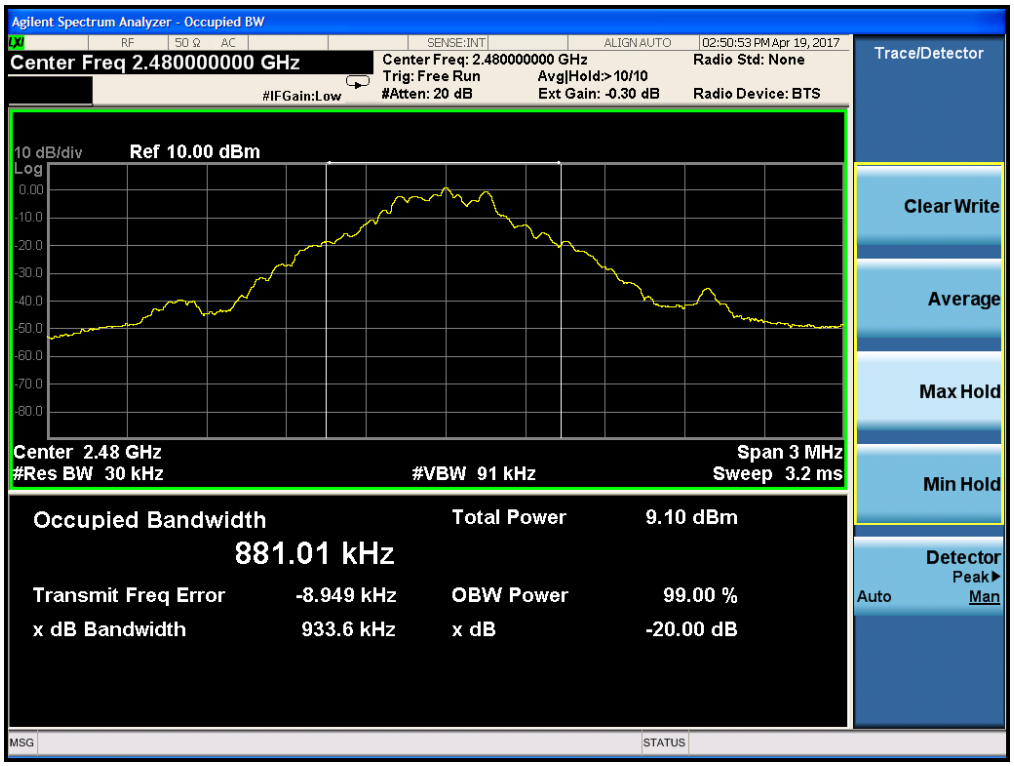
See next pages for actual measured spectrum plots.

20 dB Bandwidth, Occupied Bandwidth

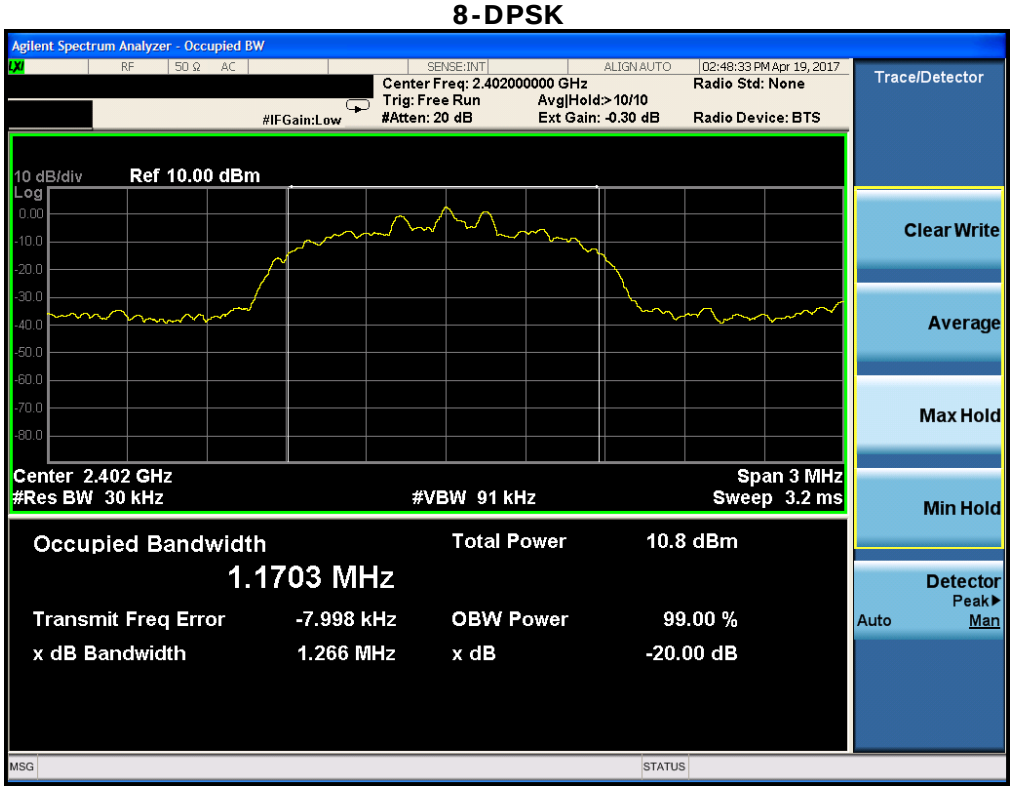
GFSK

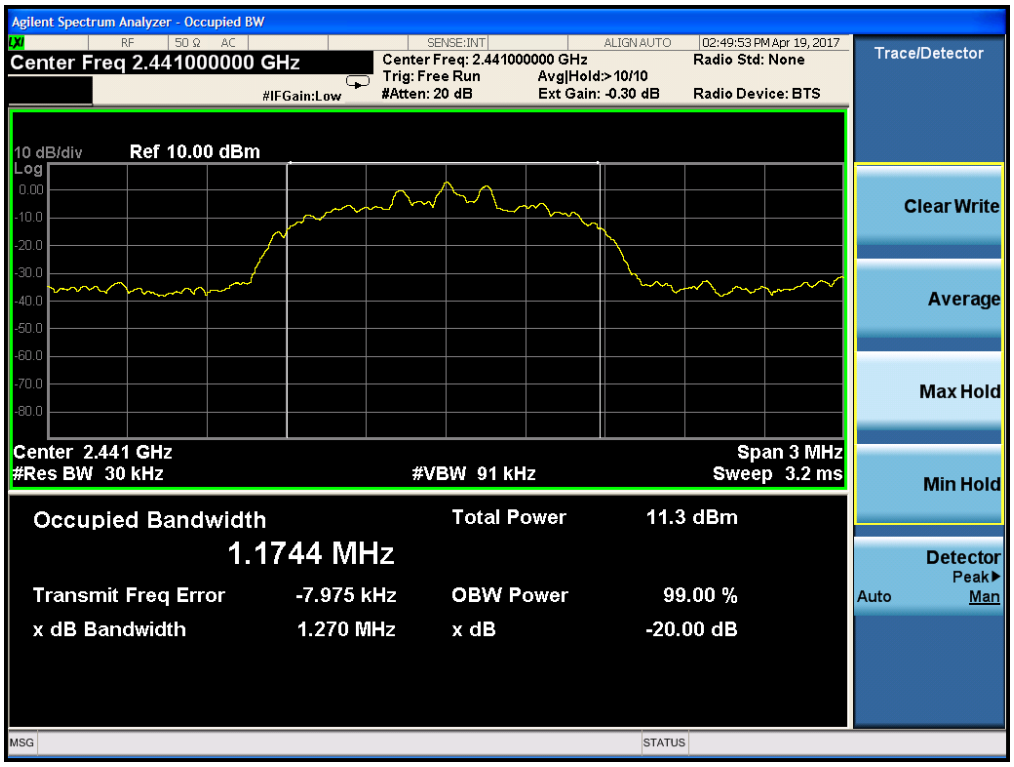


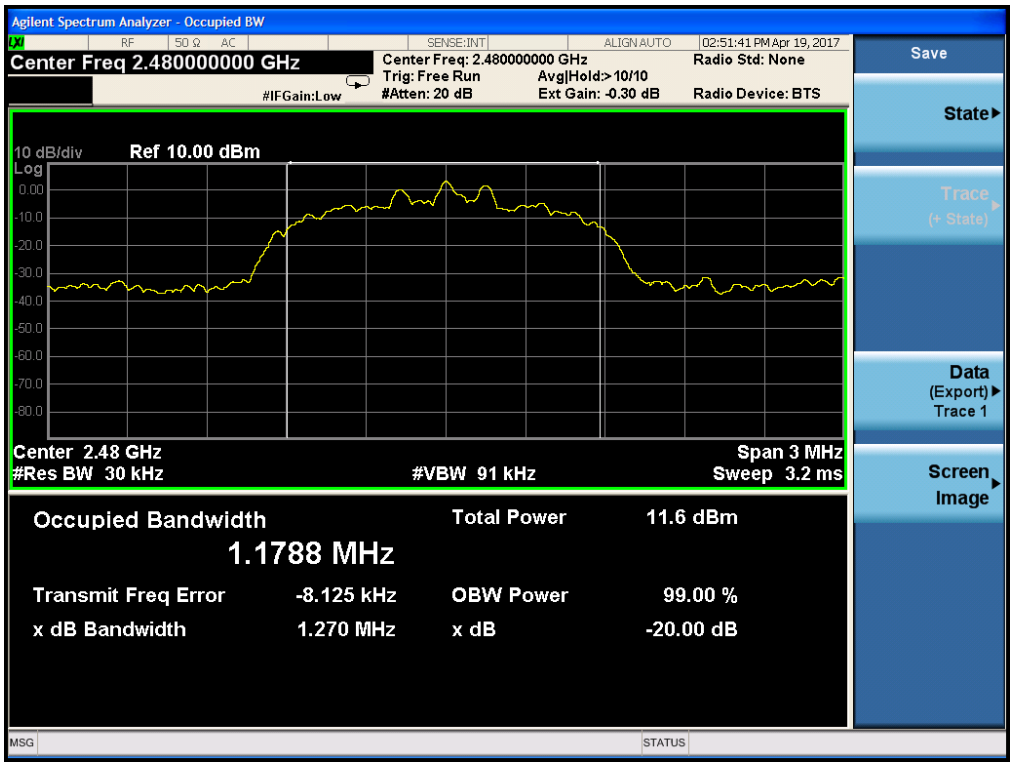




8-DPSK







2.1.4 Time of Occupancy (Dwell Time)

Test Procedures(ANSI C63.10-2013 7.8.4)

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 WI-C400 has 3 type of payload, DH1, DH3, DH5. The hopping rate is 1600 per second.

Test Settings:

Center frequency = the highest, middle and the lowest channels

a) Span = zero

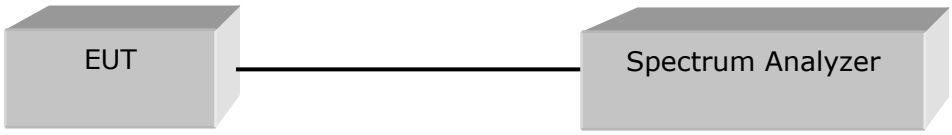
b) RBW = 1 MHz (≤ channel spacing)

c) VBW = 1 MHz (≥ RBW)

d) Trace = max hold

e) Detector = peak

g) Sweep = as necessary to capture the entire dwell time per hopping channel



Limit :

Time of Occupancy < 0.4

Test Data

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	Length of Transmission Time (ms)	Test Results	
			Time of occupancy on the TX channel in 31.6sec (ms)	Result
2 441	DH 1	0.419	134.1	Complies
	DH 3	1.675	268.0	Complies
	DH 5	2.920	311.5	Complies

DH1 Dwell time = 0.419 ms × (1600÷2) ÷ 79 × 31.6 = 134.1ms
DH3 Dwell time = 1.675 ms × (1600÷4) ÷ 79 × 31.6 = 268.0 ms
DH5 Dwell time = 2.920 ms × (1600÷6) ÷ 79 × 31.6 = 311.5 ms

Test mode : 8-DPSK

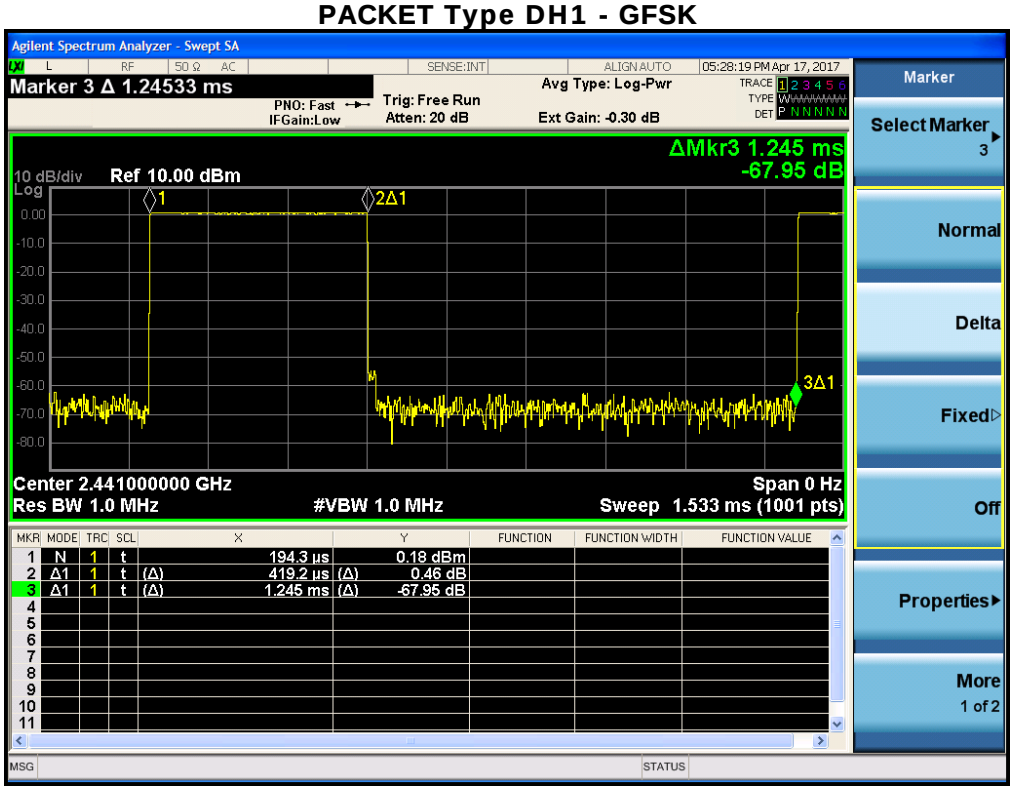
Channel Frequency (MHz)	Packet Type	Length of Transmission Time (ms)	Test Results	
			Time of occupancy on the TX channel in 31.6sec (ms)	Result
2 441	3DH 1	0.432	138.2	Complies
	3DH 3	1.676	268.2	Complies
	3DH 5	2.931	312.6	Complies

3DH1 Dwell time = 0.432 ms × (1600÷2) ÷ 79 × 31.6 = 138.2 ms
3DH3 Dwell time = 1.676 ms × (1600÷4) ÷ 79 × 31.6 = 268.2 ms
3DH5 Dwell time = 2.931 ms × (1600÷6) ÷ 79 × 31.6 = 312.6 ms

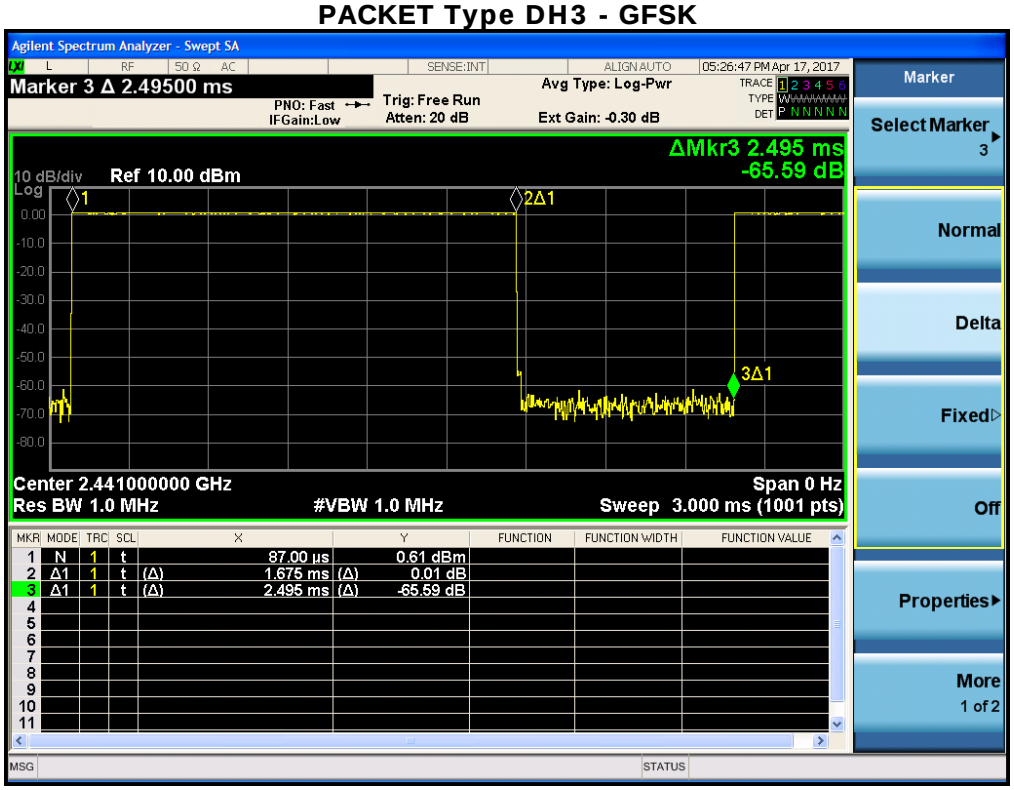
See next pages for actual measured spectrum plots.

Time of Occupancy

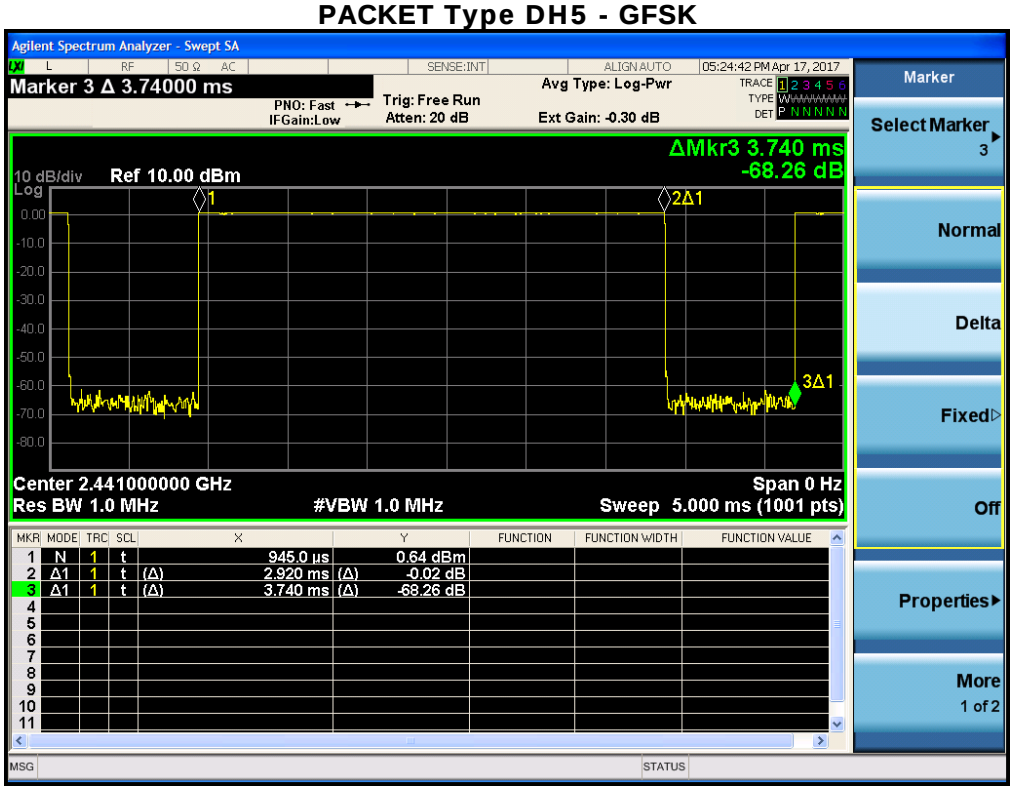
PACKET Type DH1 - GFSK



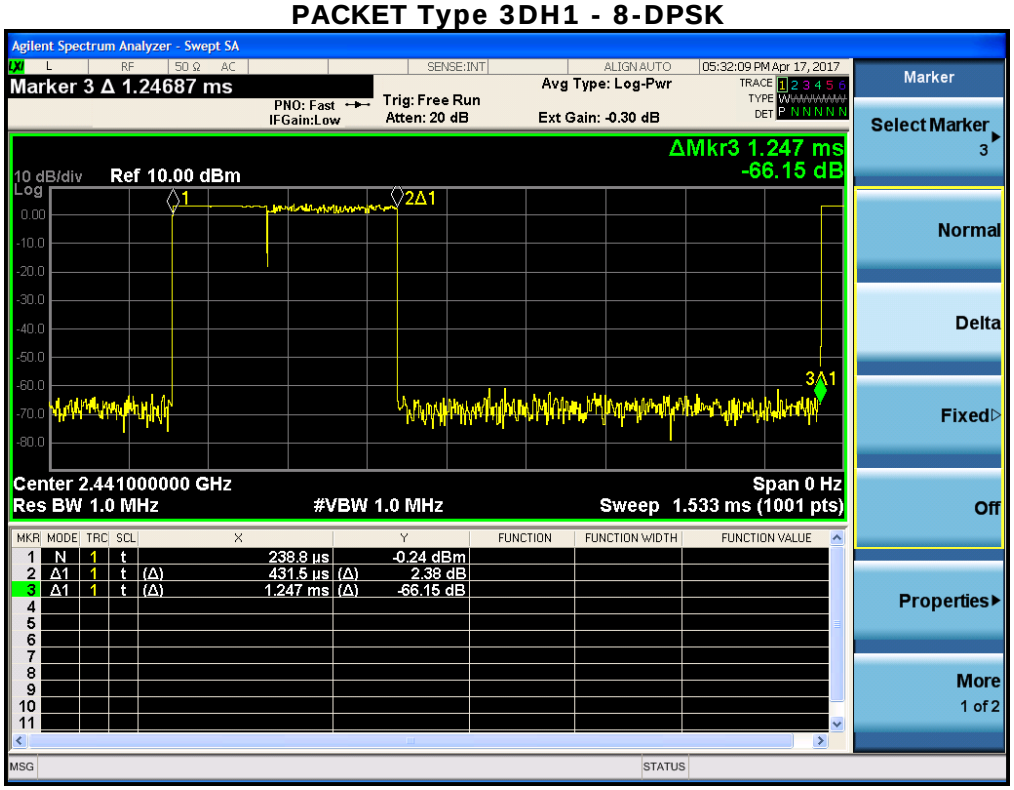
PACKET Type DH3 - GFSK



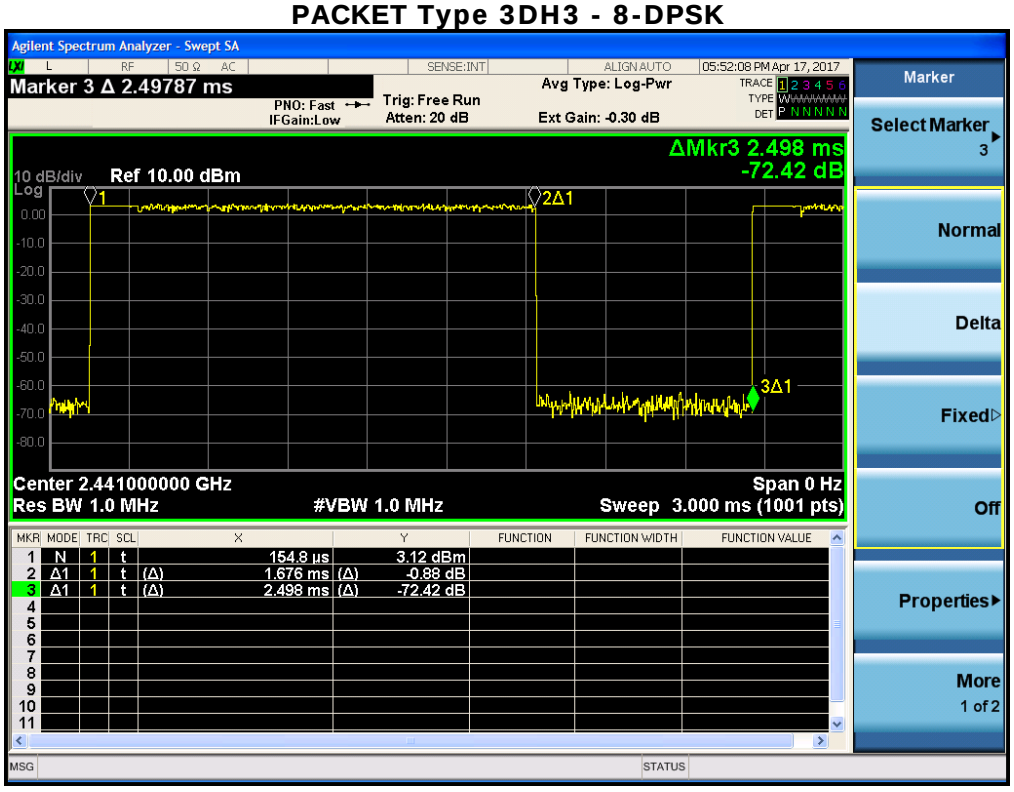
PACKET Type DH5 - GFSK



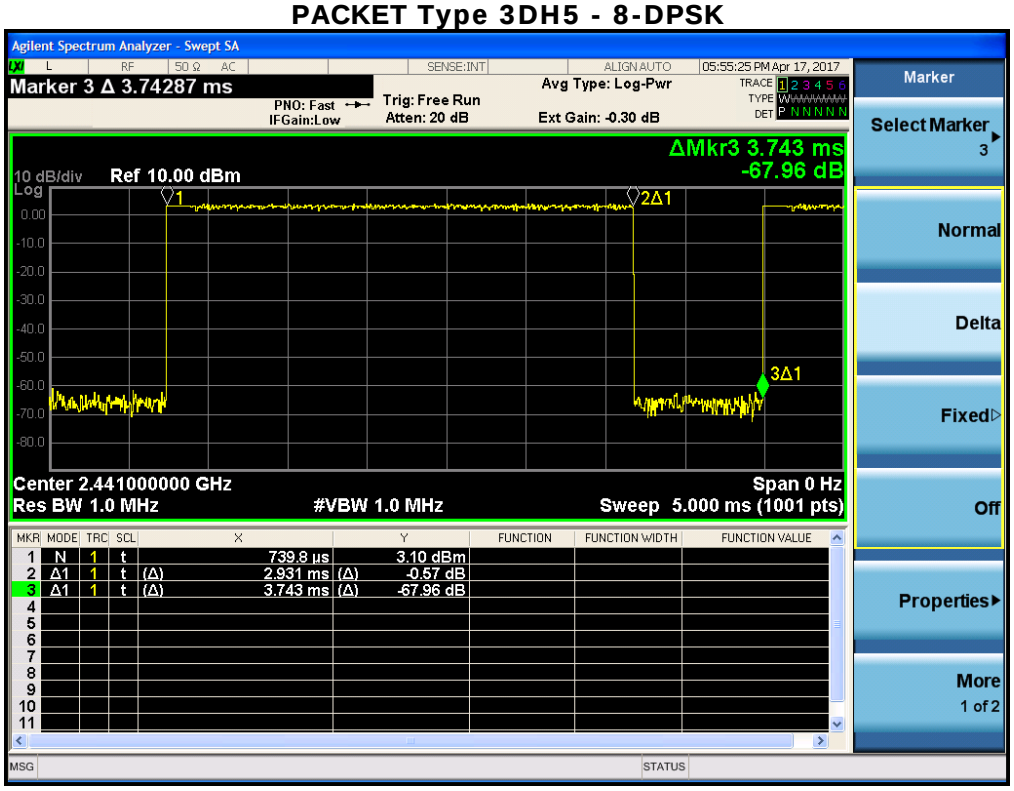
PACKET Type 3DH1 - 8-DPSK



PACKET Type 3DH3 - 8-DPSK



PACKET Type 3DH5 - 8-DPSK



2.1.5 Maximum peak Conducted Output Power

Test Procedures(ANSI C63.10-2013 7.8.5)

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.

Test Settings:

Center frequency = the highest, middle and the lowest channels

a) Span = 5 MHz (approximately 5 times of the 20 dB bandwidth)

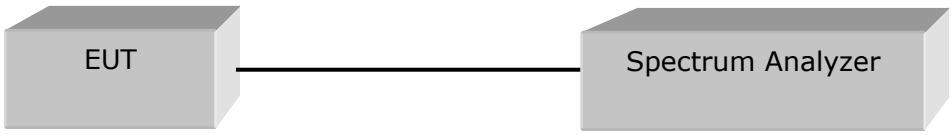
b) RBW = 3 MHz (greater than the 20 dB bandwidth of the emission being measured)

c) VBW = 3 MHz (≥ RBW)

d) Detector = peak

e) Trace = max hold

f) Sweep = auto



Limit :

Maximum peak Conducted Output Power < 1 W

Test Data

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
2 402	0	-0.072	0.98	Complies
2 441	39	0.731	1.18	Complies
2 480	78	1.113	1.29	Complies

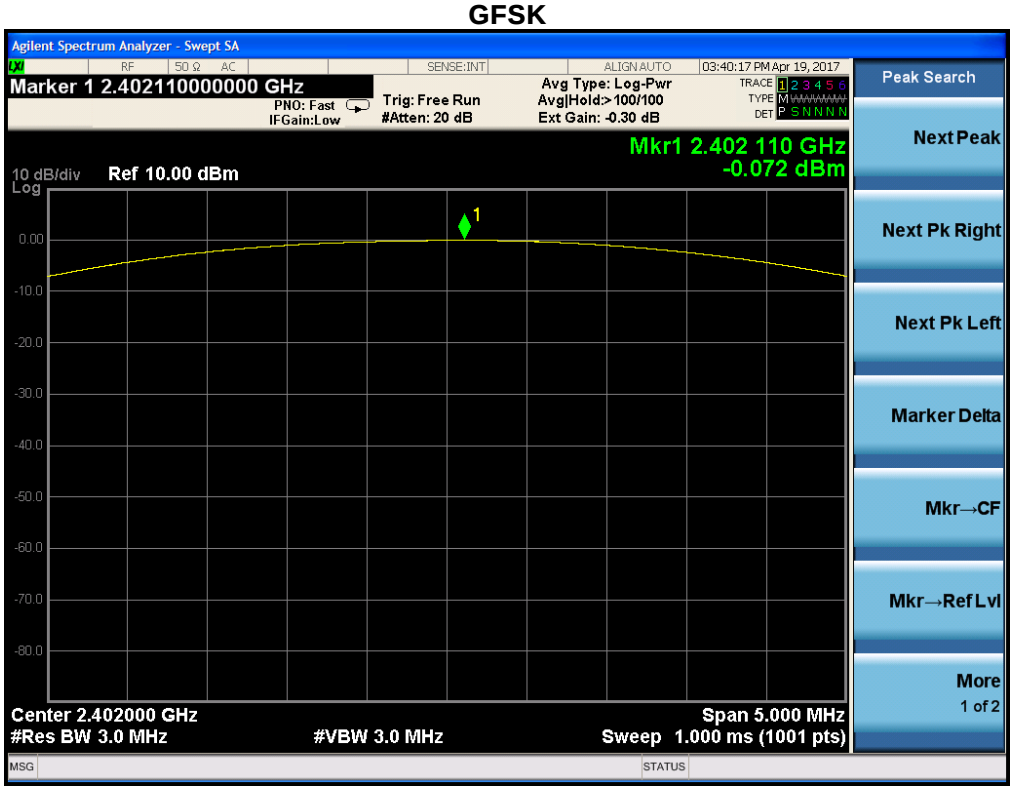
Test mode : 8-DPSK, CFG PKT Packet Type : 31 Packet Size : 1021(3DH5)

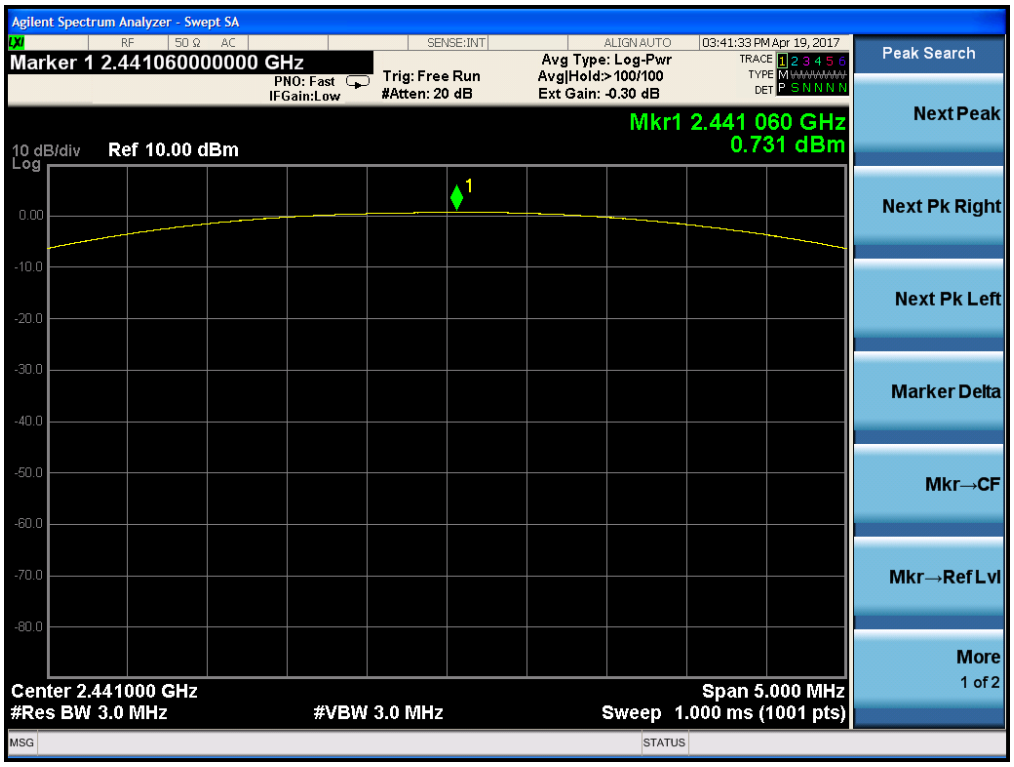
Frequency (MHz)	Channel No.	Peak output power(dBm)	Peak output power(mW)	Result
2 402	0	4.008	2.52	Complies
2 441	39	4.478	2.80	Complies
2 480	78	4.499	2.82	Complies

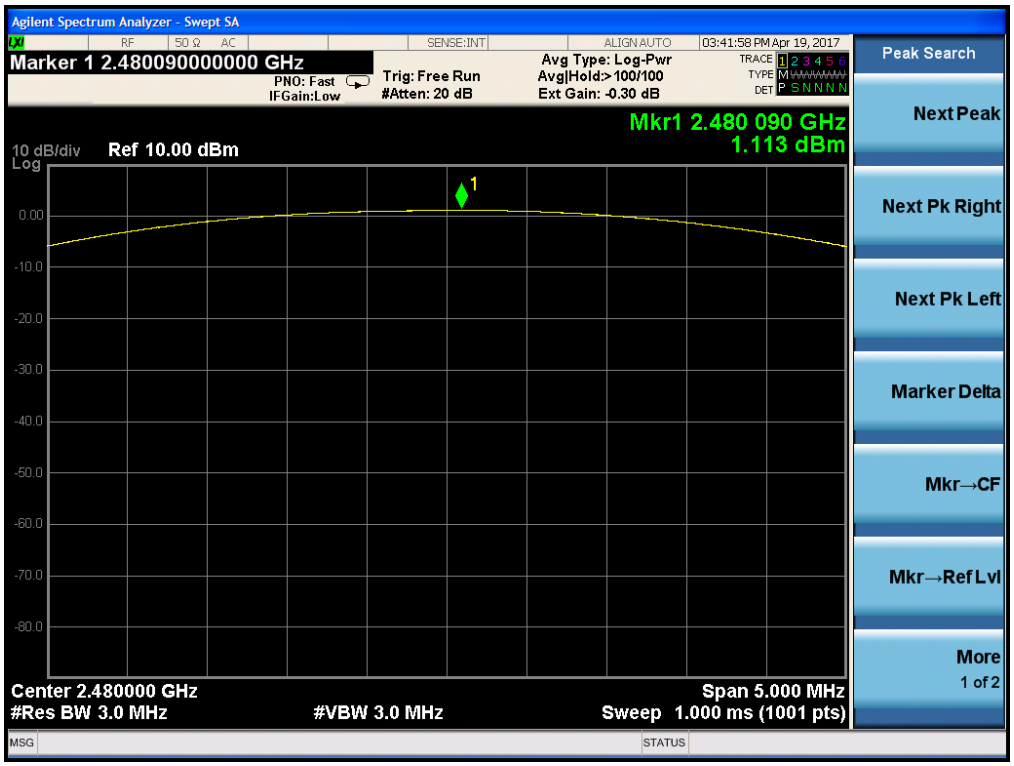
See next pages for actual measured spectrum plots.

Maximum peak Conducted Output Power

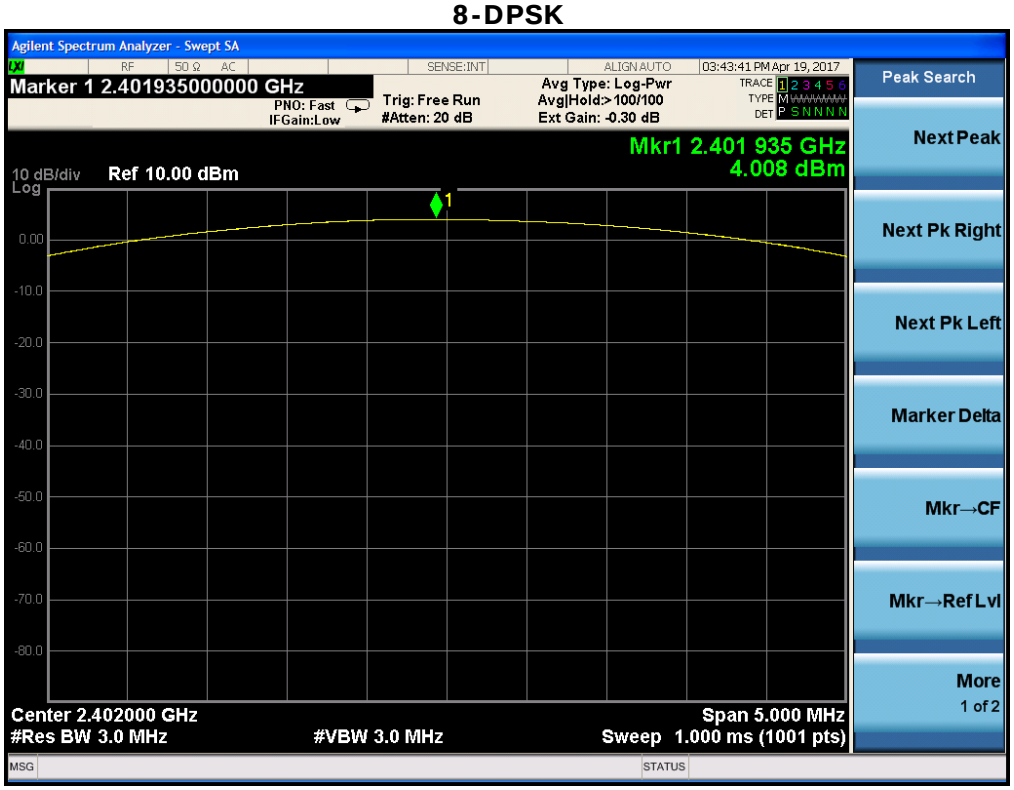
GFSK

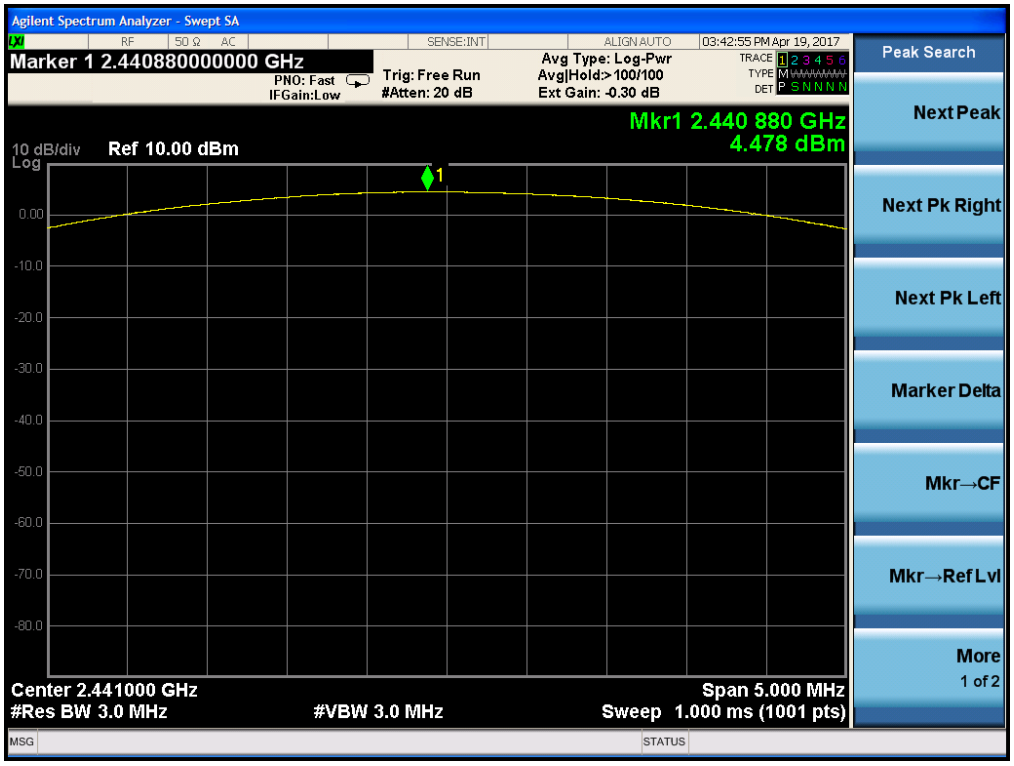


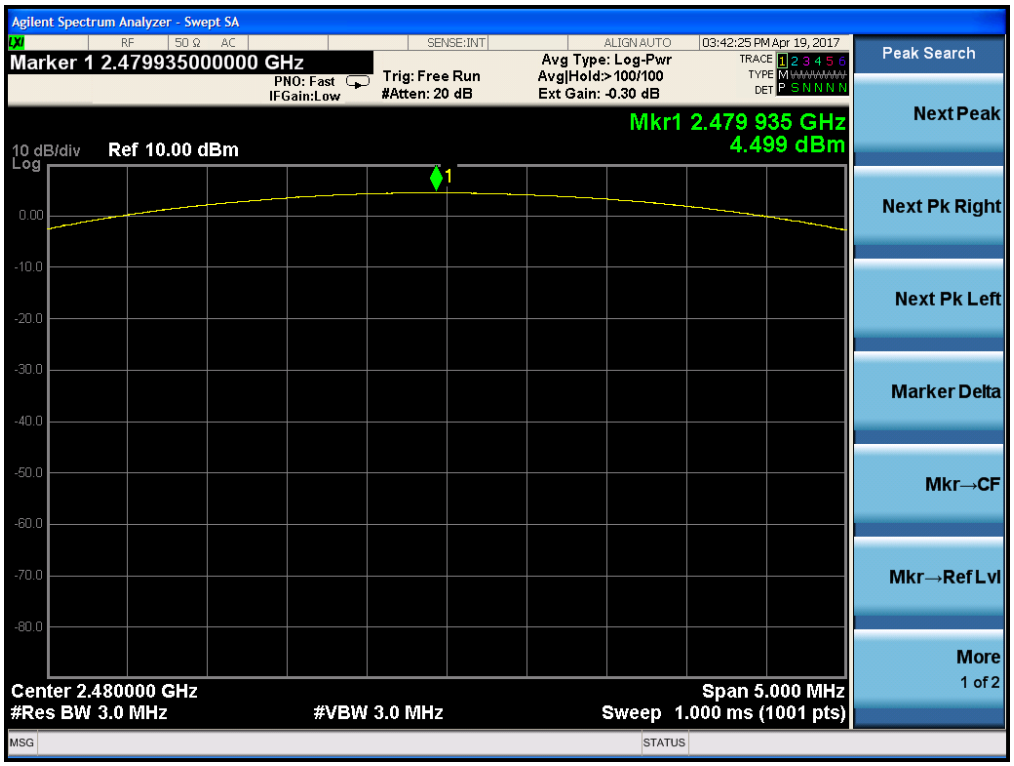




8-DPSK







2.1.6 Band-edge

Test Procedures(ANSI C63.10-2013 7.8.6 / ANSI C63.10-2013 7.8.8)

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.

Test Settings:

Center frequency = the highest, middle and the lowest channels

a) RBW = 100 kHz

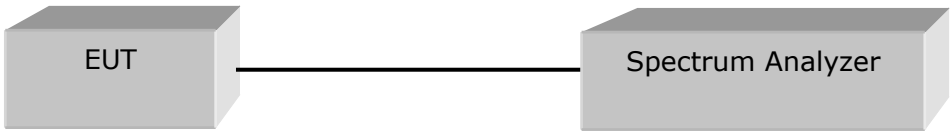
b) VBW = 300 kHz (≥ RBW)

c) Span = 10 MHz

d) Detector = peak

e) Trace = max hold

f) Sweep = auto



Limit :

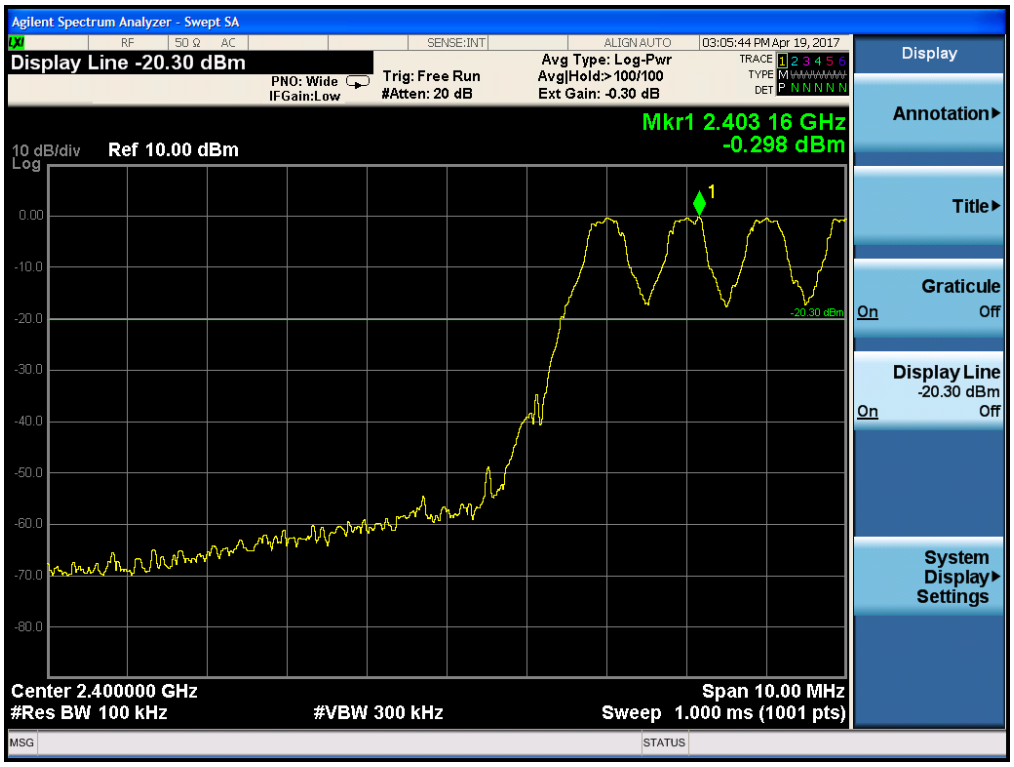
Band-edge > 20 dBc

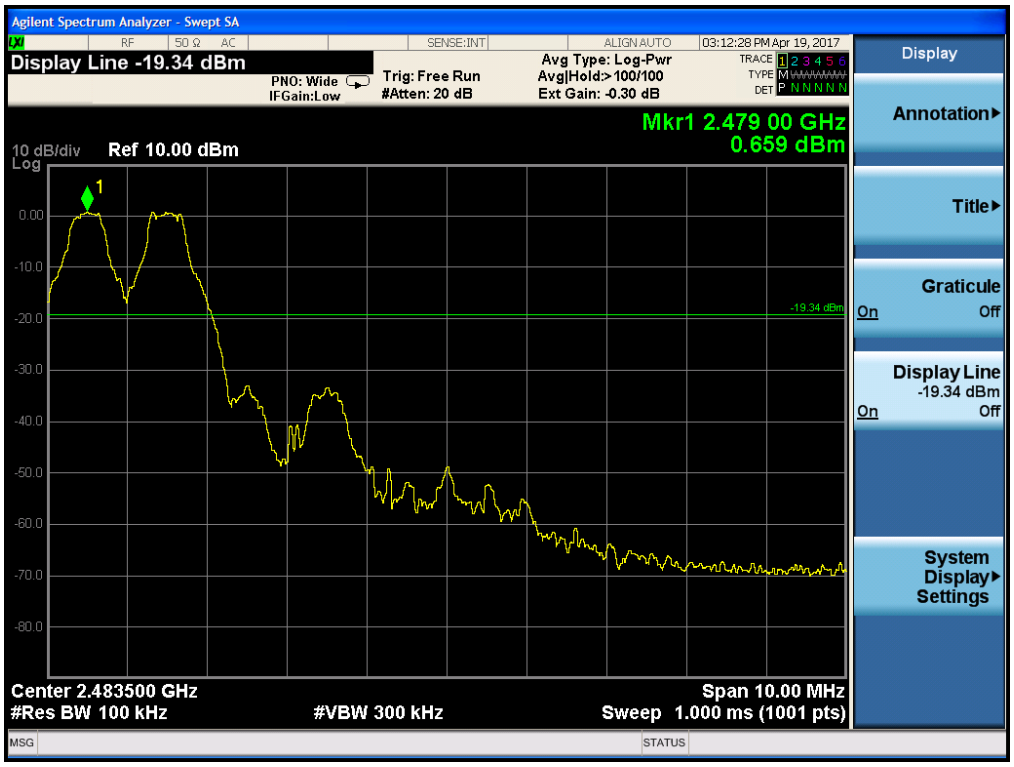
Test Results

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.

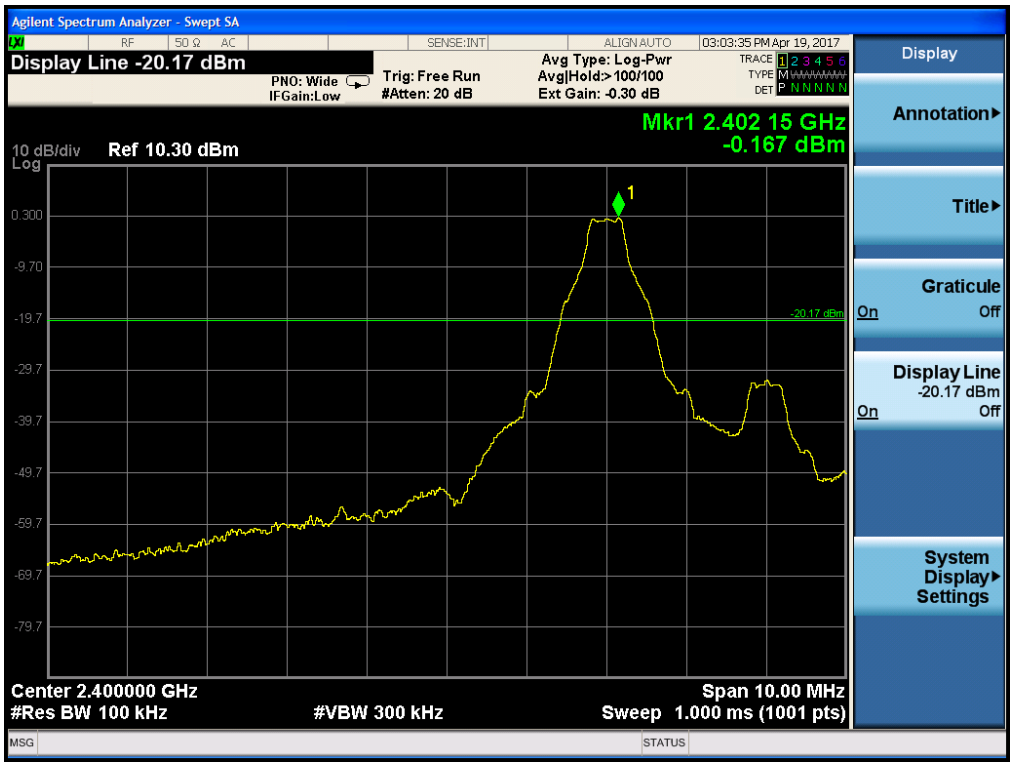
See next pages for actual measured spectrum plots.

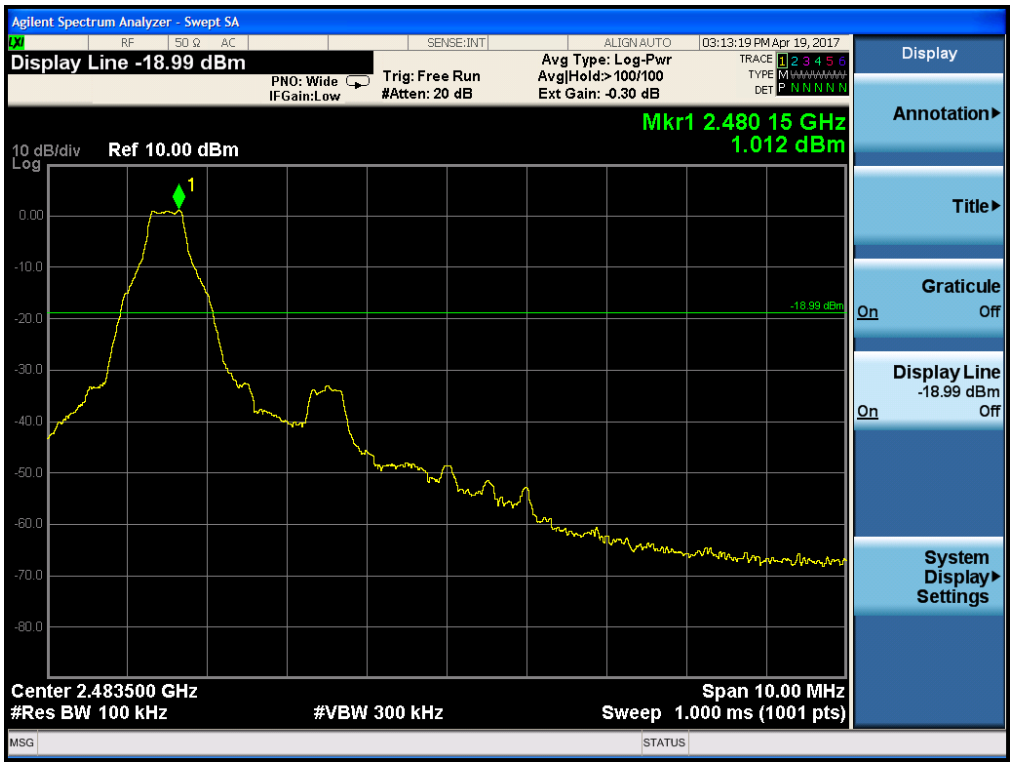
Band – edge (with Hopping) - GFSK



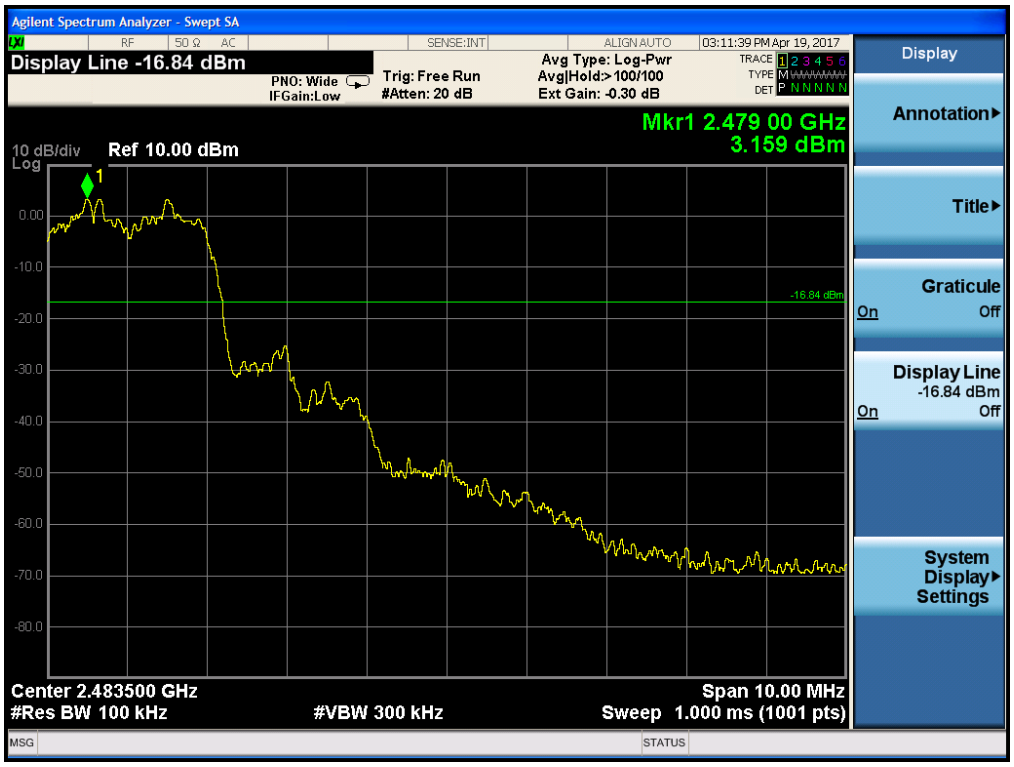


Band – edge (without Hopping) - GFSK



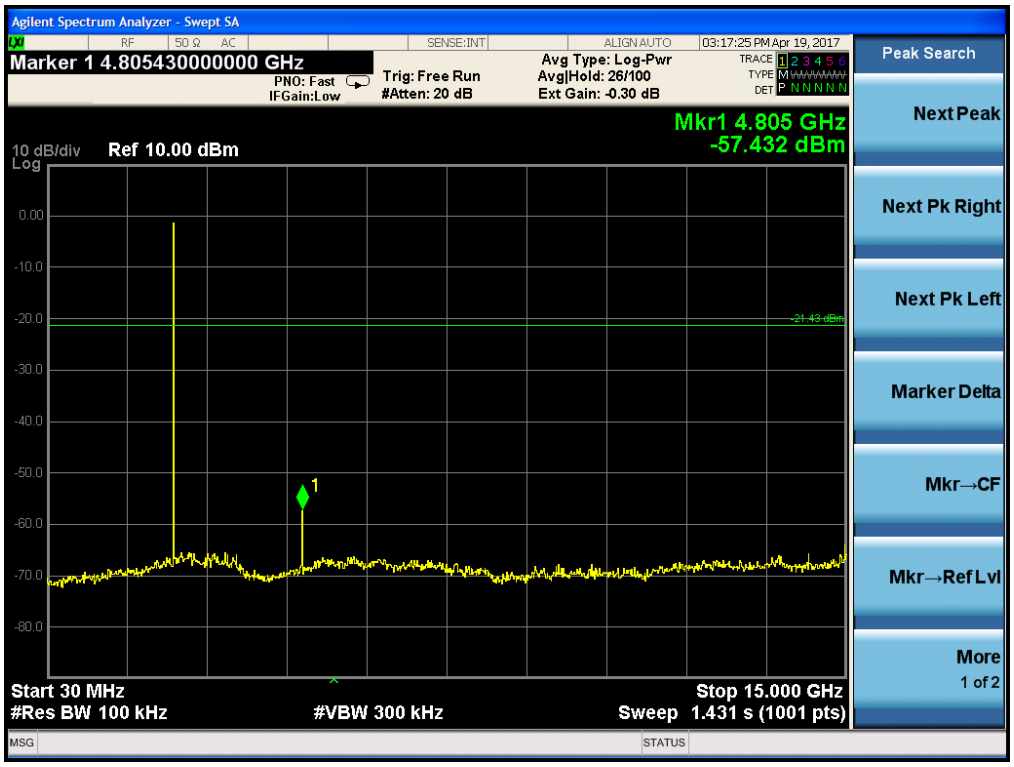


Band – edge (with Hopping) – 8-DPSK

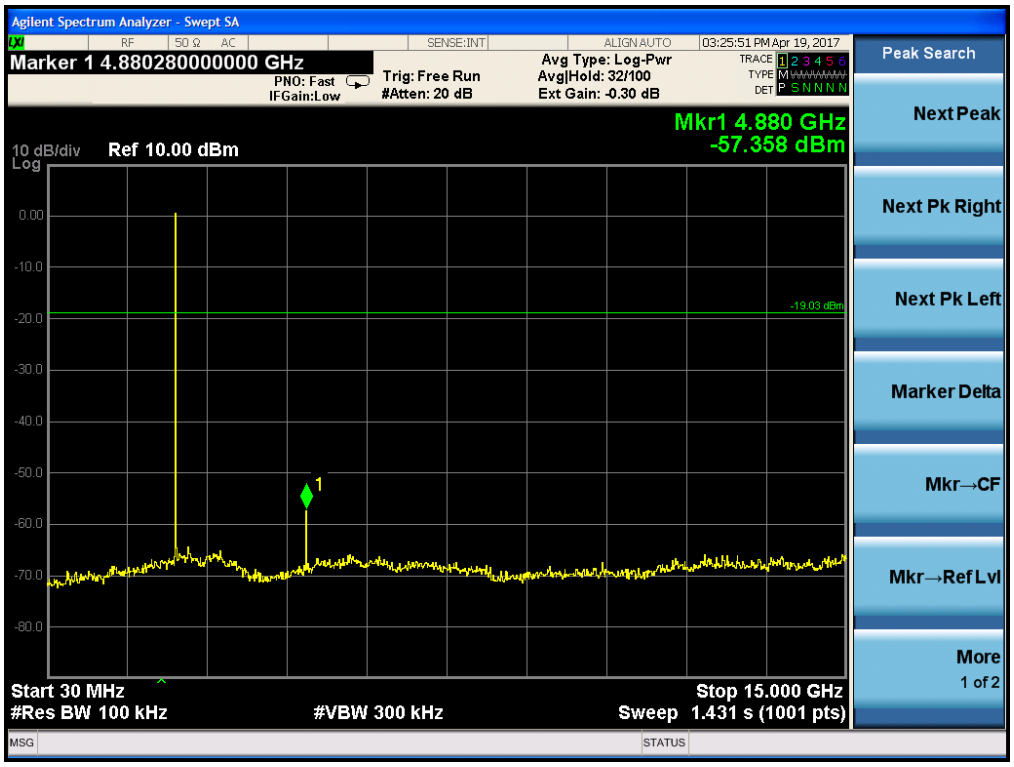


Band – edge (without Hopping) – 8-DPSK

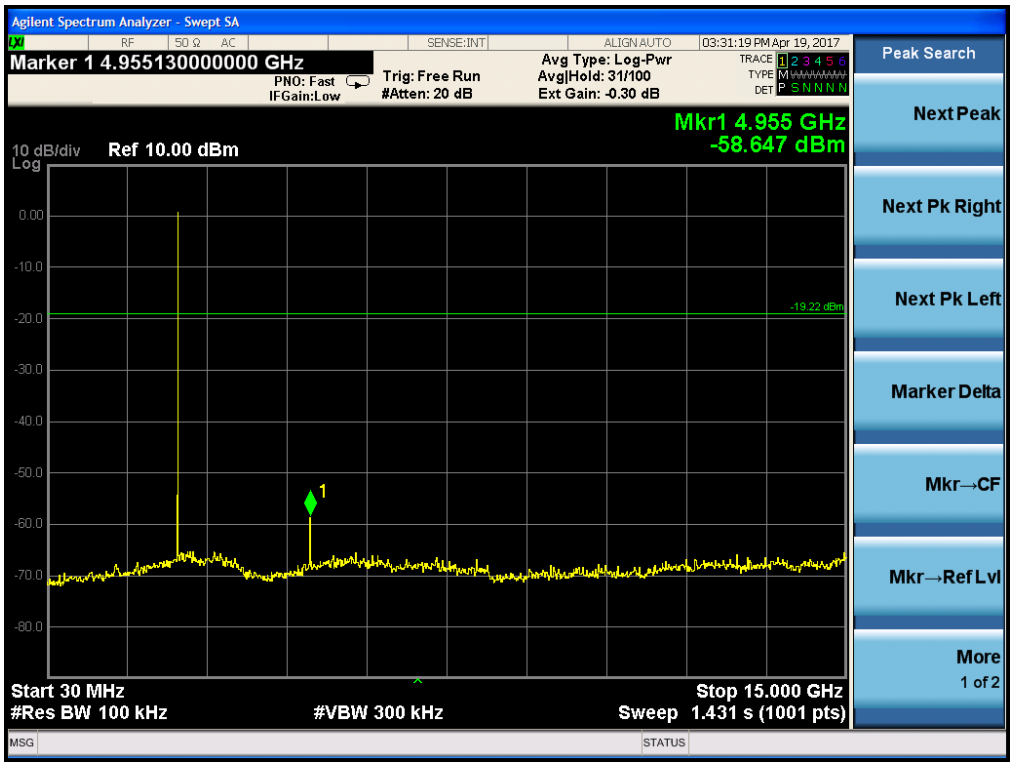
Band – edge (at 20 dB blow) – Low channel
Frequency Range = 30 MHz ~ 10th harmonic
(GFSK : Worst-Case)



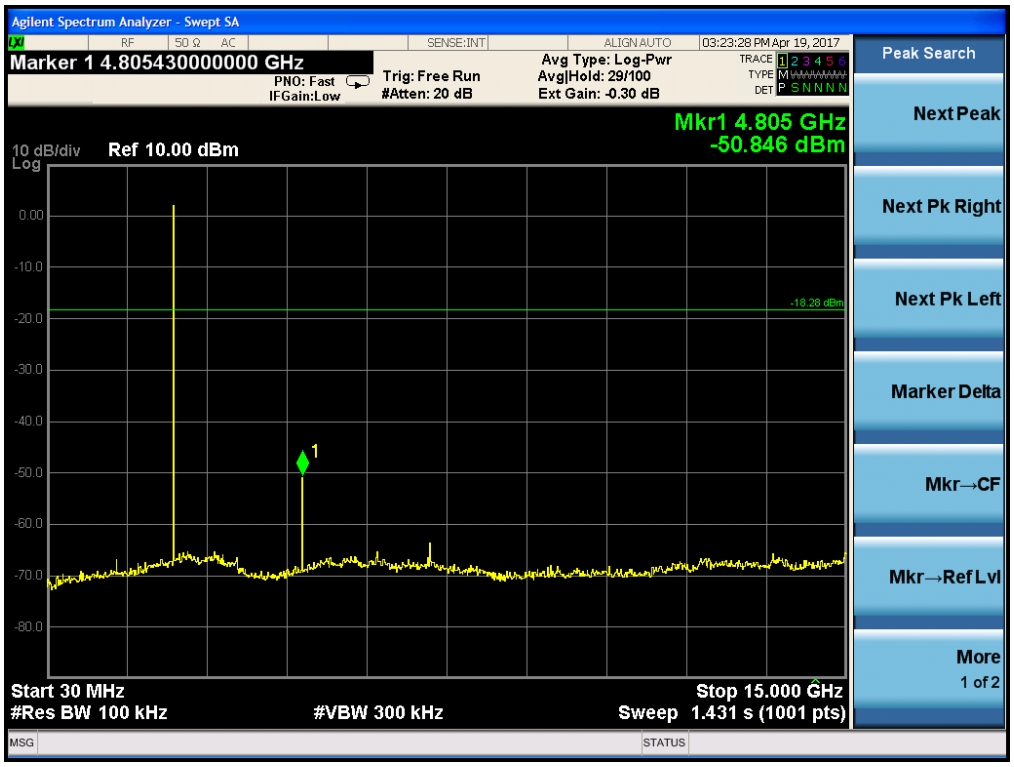
Band – edge (at 20 dB blow) – Mid channel
Frequency Range = 30 MHz ~ 10th harmonic
(GFSK : Worst-Case)



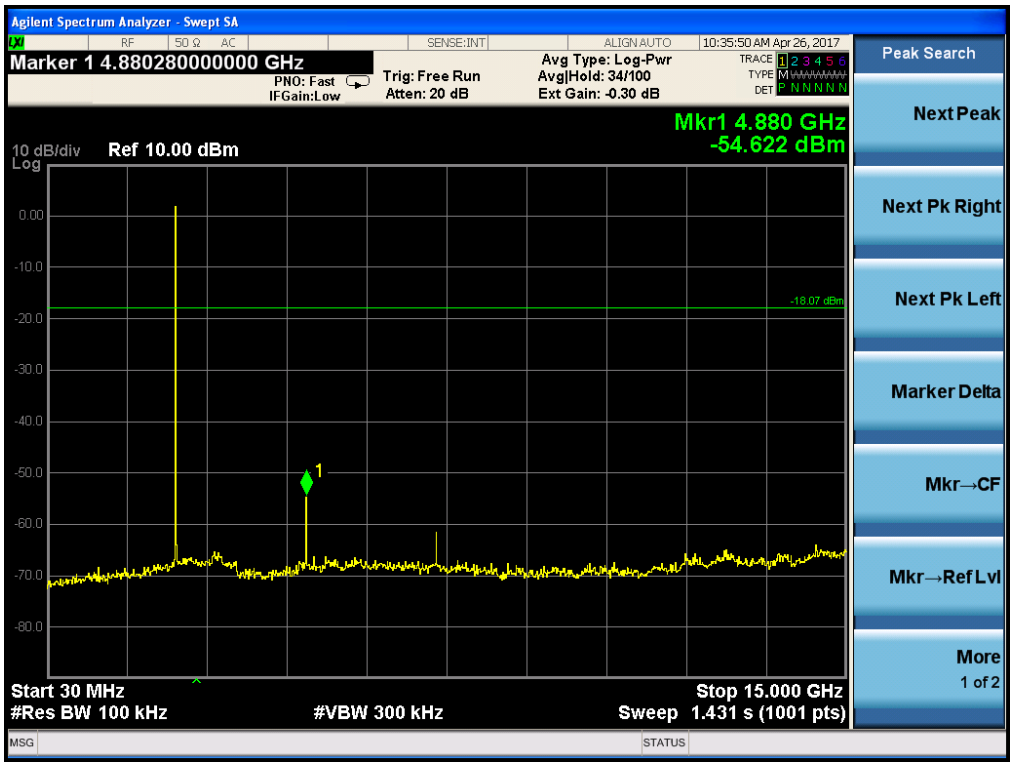
Band – edge (at 20 dB blow) – High channel
Frequency Range = 30 MHz ~ 10th harmonic
(GFSK : Worst-Case)



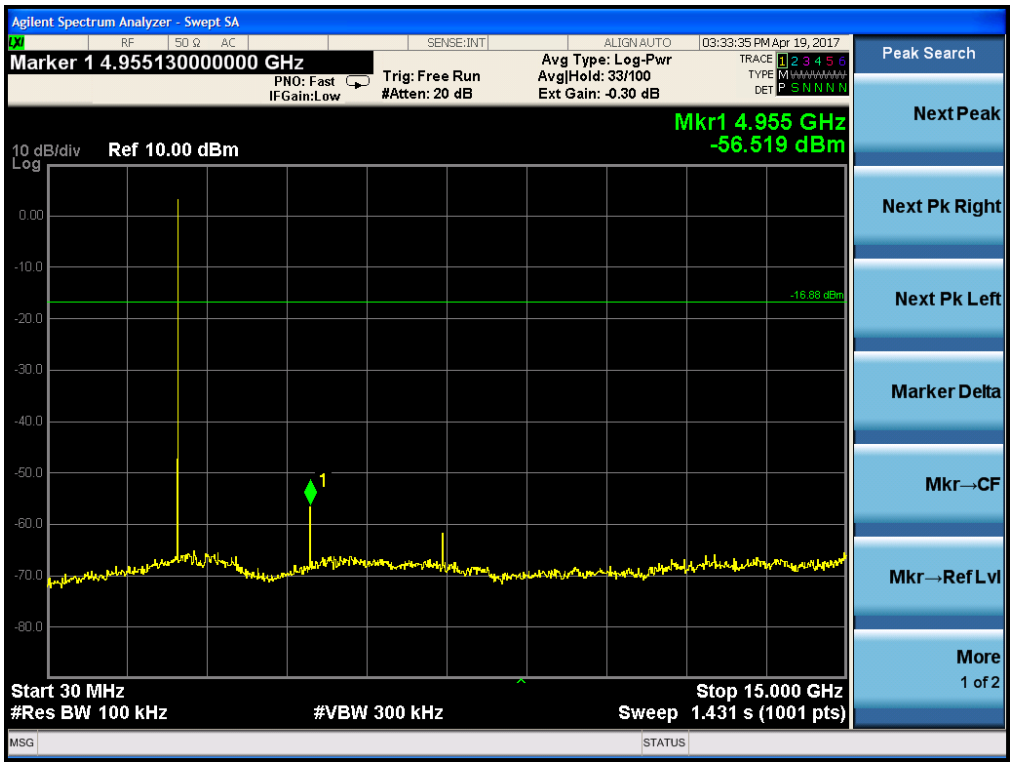
Band – edge (at 20 dB blow) – Low channel
Frequency Range = 30 MHz ~ 10th harmonic
(8-DPSK : Worst-Case)



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



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



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.

Test Settings:

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

Limit

- **15.209(a)**

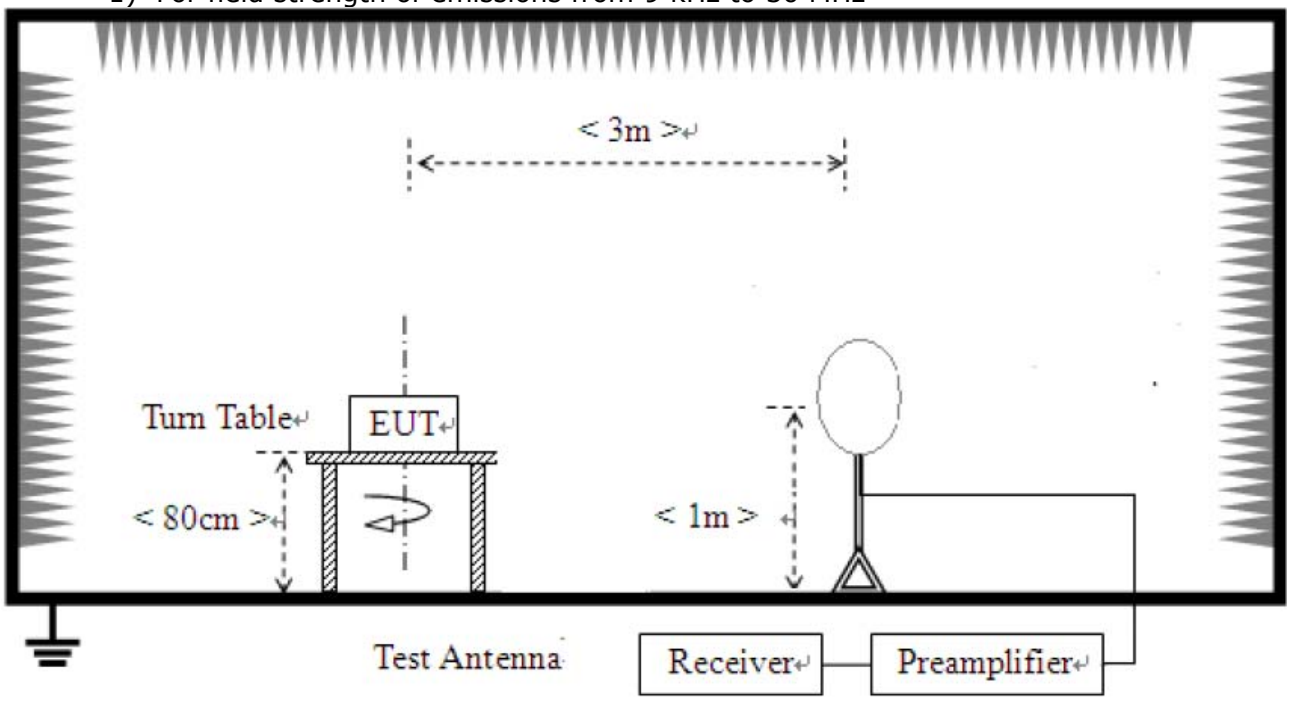
Frequency(MHz)	Field Strength uV/m@3m	Field Strength dBuV/m@3m	Deasurement Distance (meters)
0.009-0.490	2400/F(kHz)	-	300
0.490-1.705	24000/F(kHz)	-	30
1.705-30	30	-	30
30-88	100**	40	3
88-216	150**	43.5	3
216-960	200**	46	3
Above 960	500	54	3

** 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.

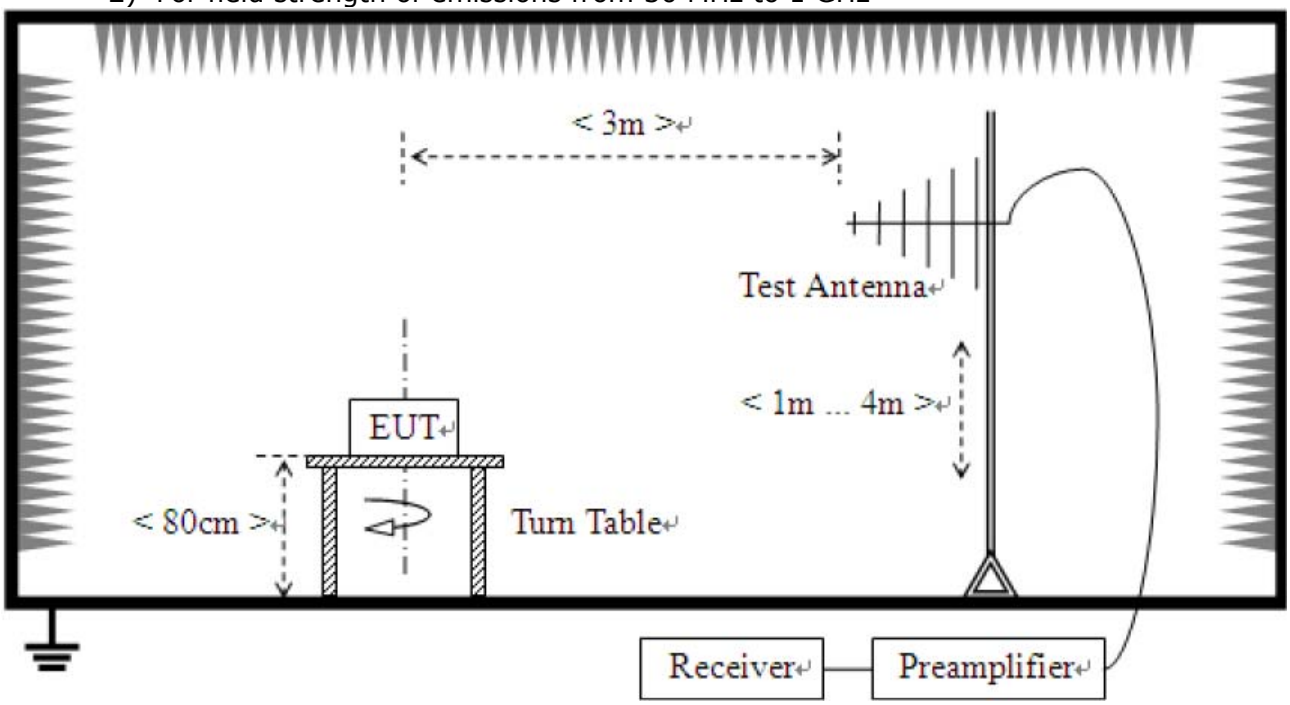
Note :
1) For above 1 GHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.
2) For above 1 GHz, limit field strength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

Test Setup:

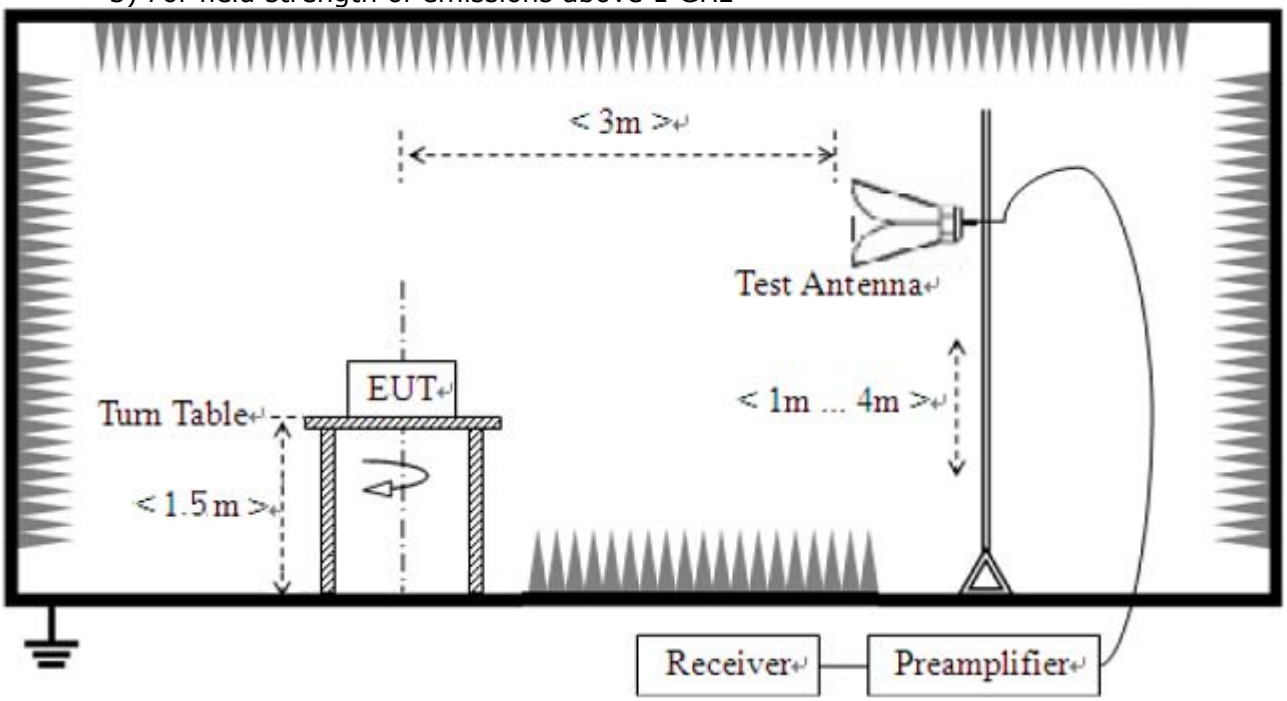
1) For field strength of emissions from 9 kHz to 30 MHz



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



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	WI-C400	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)

2) 30 MHz to 1 GHz

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

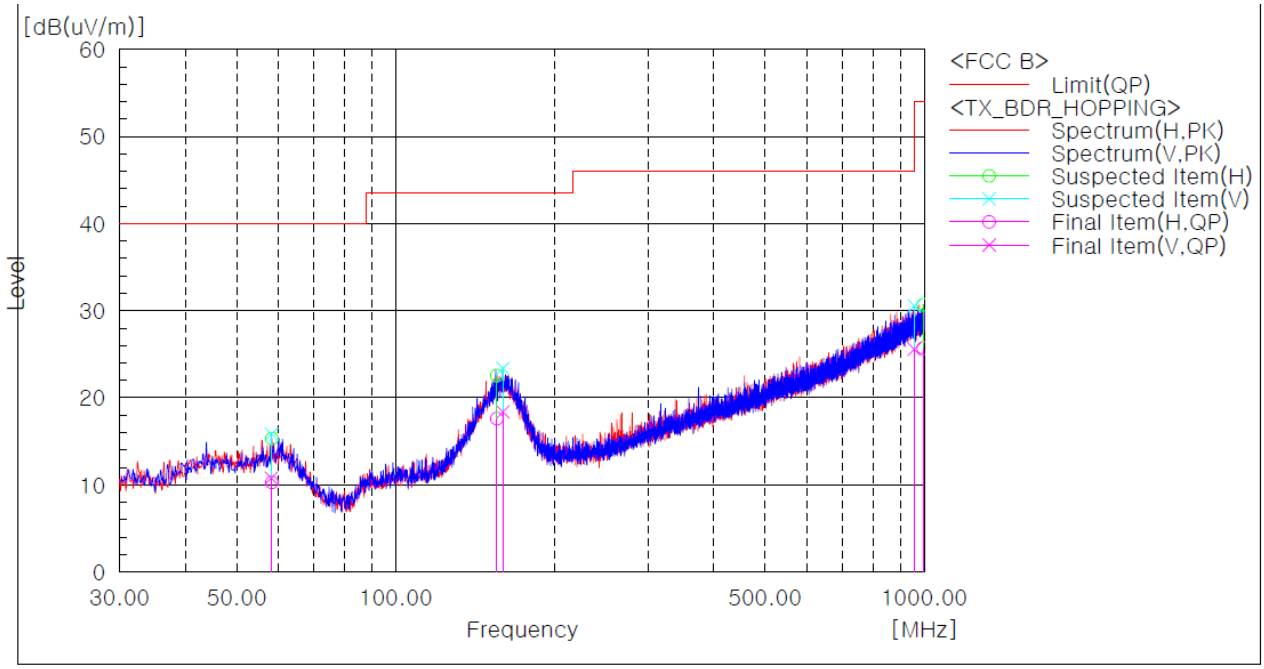
EUT	Wireless Stereo Headset	Measurement Detail	
Model	WI-C400	Frequency Range	Below 1000MHz
Test mode	GFSK Hopping(Worst Case)	Detector function	Quasi-Peak / Peak

The requirements are:

☒ Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
956.708	25.6	20.4	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	58.134	V	25.6	-14.8	10.8	40.0	29.2	196.6
2	58.255	H	25.1	-14.8	10.3	40.0	29.7	356.6
3	155.267	H	24.5	-6.9	17.6	43.5	25.9	162.8
4	159.390	V	24.9	-6.5	18.4	43.5	25.1	13.8
5	956.708	V	26.1	-0.5	25.6	46.0	20.4	265.0
6	995.271	H	25.5	0.2	25.7	54.0	28.3	310.3

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.

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

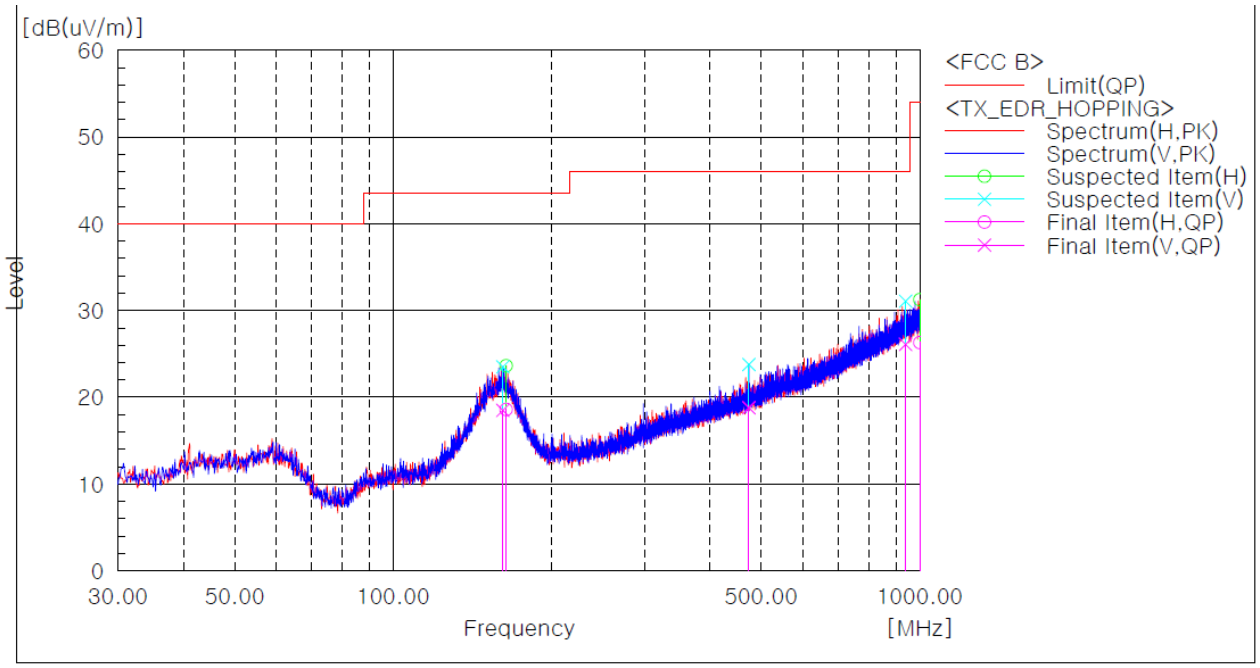
EUT	Wireless Stereo Headset	Measurement Detail	
Model	WI-C400	Frequency Range	Below 1000MHz
Test mode	8-DPSK Hopping(Worst Case)	Detector function	Quasi-Peak / Peak

The requirements are:

☒ Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
939.610	26.1	19.9	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	161.330	V	25.0	-6.5	18.5	43.5	25.0	355.8
2	163.755	H	25.4	-6.8	18.6	43.5	24.9	275.1
3	473.467	V	27.6	-8.8	18.8	46.0	27.2	0.6
4	939.610	V	26.8	-0.7	26.1	46.0	19.9	198.4
5	999.515	H	26.0	0.3	26.3	54.0	27.7	358.9

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.

Test mode : Receiver(GFSK)

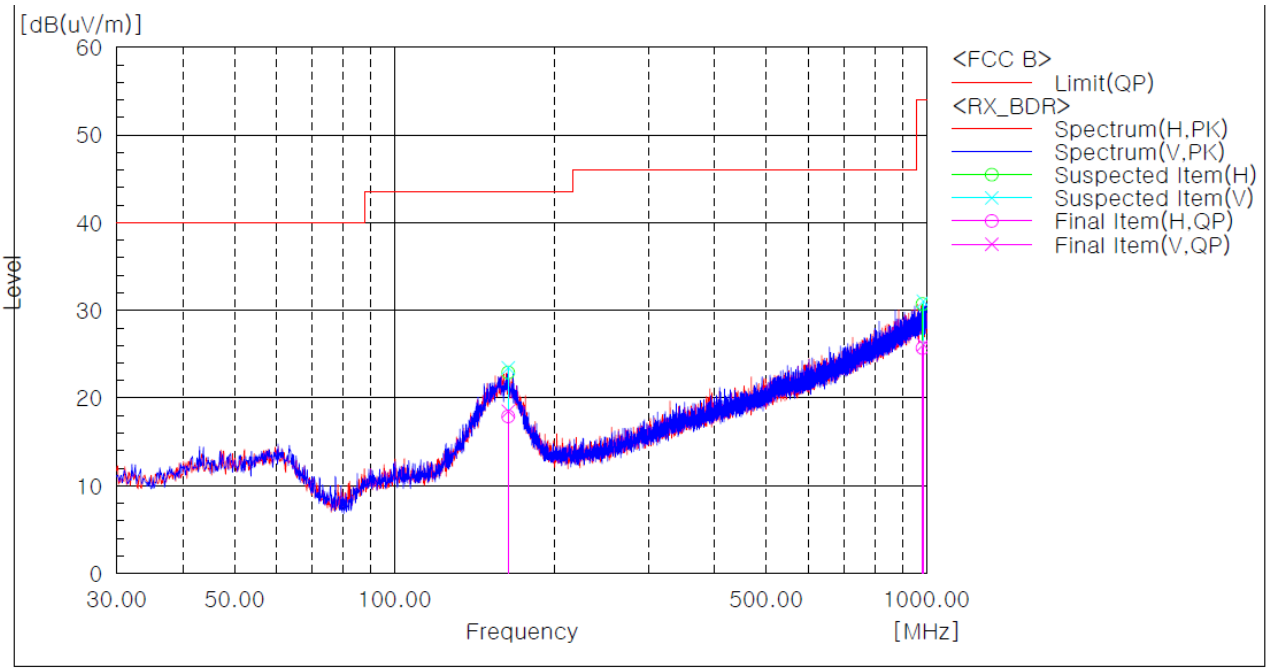
EUT	Wireless Stereo Headset	Measurement Detail	
Model	WI-C400	Frequency Range	Below 1000MHz
Test mode	Receiver(GFSK_Worst Case)	Detector function	Quasi-Peak / Peak

The requirements are:

☒ Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
163.513	18.5	25.0	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	163.513	V	25.3	-6.8	18.5	43.5	25.0	214.7
2	163.513	H	24.7	-6.8	17.9	43.5	25.6	0.2
3	983.508	H	25.7	0.0	25.7	54.0	28.3	240.0
4	986.782	V	26.1	0.0	26.1	54.0	27.9	271.0

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.

Test mode : Receiver(8-DPSK)

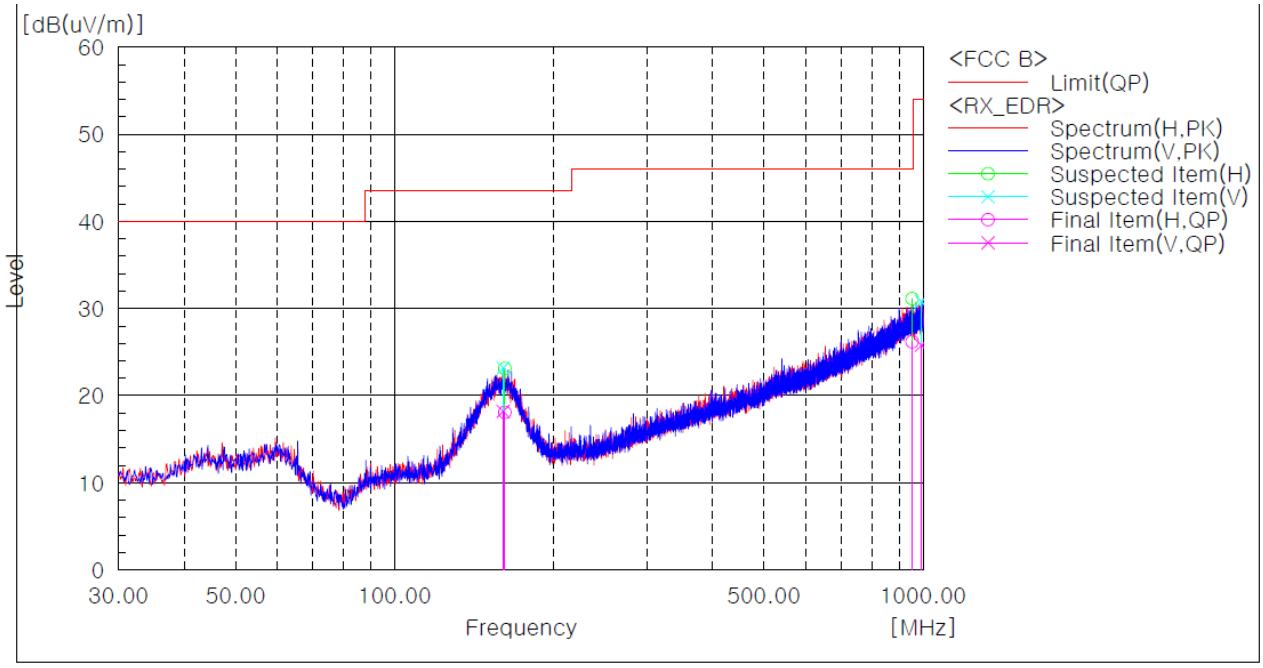
EUT	Wireless Stereo Headset	Measurement Detail	
Model	WI-C400	Frequency Range	Below 1000MHz
Test mode	Receiver(8-DPSK_Worst Case)	Detector function	Quasi-Peak / Peak

The requirements are:

☒ Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
952.828	26.2	19.8	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	160.360	V	24.7	-6.5	18.2	43.5	25.3	63.3
2	161.573	H	24.7	-6.6	18.1	43.5	25.4	353.8
3	952.828	H	26.7	-0.5	26.2	46.0	19.8	356.3
4	991.875	V	25.7	0.1	25.8	54.0	28.2	314.6

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.

3) above 1 GHz

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

EUT	Wireless Stereo Headset	Measurement Detail	
Model	WI-C400	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
4882.00	43.62	10.38	Average

Test Data

Ch.0(Low Channel)

Frequency [MHz]	(P)	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	H	54.00	74.00	39.82	47.37	14.18	26.63
4804.00	V	54.00	74.00	33.81	44.34	20.19	29.66

Ch.39(Mid Channel)

Frequency [MHz]	(P)	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	H	54.00	74.00	43.62	46.43	10.38	27.57
4882.00	V	54.00	74.00	32.65	43.99	21.35	30.01

Ch.78(High Channel)

Frequency [MHz]	(P)	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	H	54.00	74.00	40.75	46.63	13.25	27.37
4960.00	V	54.00	74.00	32.93	42.38	21.07	31.62

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

EUT	Wireless Stereo Headset	Measurement Detail	
Model	WI-C400	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
4882.00	44.99	9.01	Average

Test Data

Ch.0(Low Channel)

Frequency [MHz]	(P)	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	H	54.00	74.00	42.19	50.68	11.81	23.32
4804.00	V	54.00	74.00	36.10	45.36	17.90	28.64

Ch.39(Mid Channel)

Frequency [MHz]	(P)	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	H	54.00	74.00	44.99	53.25	9.01	20.75
4882.00	V	54.00	74.00	34.80	46.74	19.20	27.26

Ch.78(High Channel)

Frequency [MHz]	(P)	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	H	54.00	74.00	44.70	52.44	9.30	21.56
4960.00	V	54.00	74.00	32.54	44.94	21.46	29.06

Test mode : Receiver

EUT	Wireless Stereo Headset	Measurement Detail	
Model	WI-C400	Frequency Range	1-25GHz
		Detector function	Average / Peak

Remarks

We have tested three mode (X, Y, Z). The worst mode (Z 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.

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:

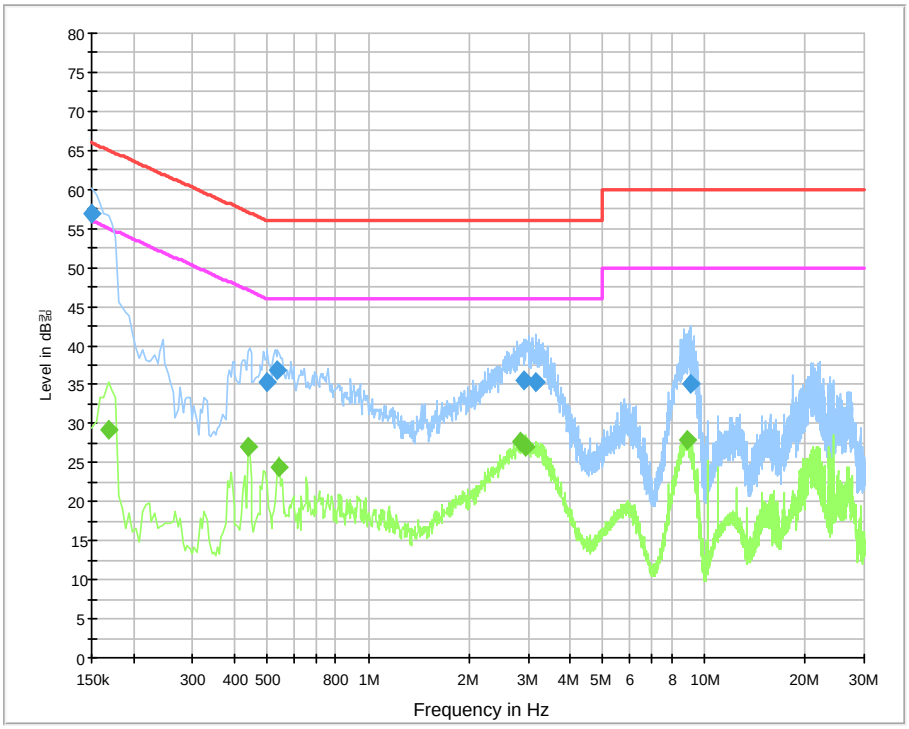
☒ Complies

Frequency (MHz)	Measured Data (dBuV/m)	Margin (dB)	Remark
0.150 000	56.9	9.1	Quasi-peak

Test Data

[LINE]

Class B_L1



Final Result 1

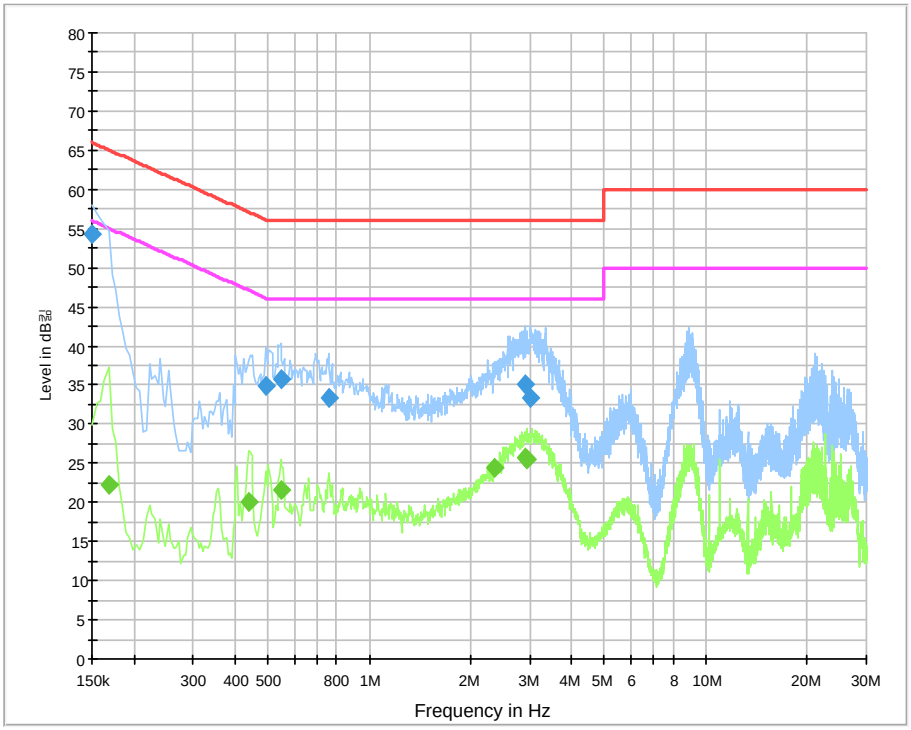
Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	56.9	1000.0	9.000	On	L1	9.7	9.1	66.0
0.501000	35.3	1000.0	9.000	On	L1	9.9	20.7	56.0
0.537000	36.9	1000.0	9.000	On	L1	9.9	19.1	56.0
2.895000	35.5	1000.0	9.000	On	L1	9.8	20.5	56.0
3.165000	35.4	1000.0	9.000	On	L1	9.8	20.6	56.0
9.078000	35.2	1000.0	9.000	On	L1	9.9	24.8	60.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.168000	29.2	1000.0	9.000	On	L1	9.8	25.8	55.1
0.438000	27.1	1000.0	9.000	On	L1	9.9	20.0	47.1
0.541500	24.5	1000.0	9.000	On	L1	9.9	21.5	46.0
2.850000	27.6	1000.0	9.000	On	L1	9.8	18.4	46.0
2.949000	27.0	1000.0	9.000	On	L1	9.8	19.0	46.0
8.947500	27.9	1000.0	9.000	On	L1	9.9	22.1	50.0

[NEUTRAL]

Class B_N



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.150000	54.3	1000.0	9.000	On	N	9.8	11.7	66.0
0.492000	34.8	1000.0	9.000	On	N	9.9	21.3	56.1
0.546000	35.8	1000.0	9.000	On	N	9.9	20.2	56.0
0.757500	33.3	1000.0	9.000	On	N	9.8	22.7	56.0
2.895000	35.0	1000.0	9.000	On	N	9.8	21.0	56.0
3.012000	33.3	1000.0	9.000	On	N	9.8	22.7	56.0

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.168000	22.3	1000.0	9.000	On	N	9.8	32.7	55.1
0.438000	20.0	1000.0	9.000	On	N	9.9	27.1	47.1
0.546000	21.6	1000.0	9.000	On	N	9.9	24.4	46.0
2.346000	24.4	1000.0	9.000	On	N	9.8	21.6	46.0
2.899500	25.7	1000.0	9.000	On	N	9.8	20.3	46.0
2.931000	25.5	1000.0	9.000	On	N	9.8	20.5	46.0

APPENDIX A – Test Equipment Used For Tests

	Name of Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1	Signal Analyzer	Agilent	N9020A	MY48011598	2016-11-01	2017-11-01
2	Signal Generator	Rohde & Schwarz	SMB100A	175528	2016-11-01	2017-11-01
3	LISN	Rohde & Schwarz	ENV216	101760	2017-02-03	2018-02-03
4	EMI Test Receiver	Rohde & Schwarz	ESCI7	100814	2016-11-01	2017-11-01
5	Bilog Antenna	Schaffner	CBL6111C	2551	2016-05-13	2018-05-13
6	Active Loop Antenna	SCHWARZBECK	FMZB 1513	1513-126	2016-05-25	2018-05-25
7	6dB Attenuator	R&S	DNF	272.4110.50-2	2016-11-01	2017-11-01
8	6dB Attenuator	R&S	DNF	272.4110.50-1	2017-02-03	2018-02-03
9	AMPLIFIER	SONOMA	310	291721	2017-02-02	2018-02-02
10	EMI Test Receiver	Rohde & Schwarz	ESU40	100336	2015-05-14	2017-05-14
11	Preamplifier	Agilent	8449B	3008A02011	2016-12-01	2017-12-01
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	3117	00154525	2015-09-02	2017-09-02
15	Band Reject Filter	Micro Tronics	BRM50702	G233	2017-02-03	2018-02-03