FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Car Radio

Model: New Radio Ultra Low SBB

Brand: Volkswagen, DESAY SV AUTOMOTIVE

Test Report Number:

C180806Z03-RP1

Issued for

Huizhou Desay SV Automotive Co., Ltd.
103, Hechang 5th Road West, Zhongkai National Hi-tech Industrial Development Zone, Huizhou City, Guangdong Province 516006, P. R. China

Issued by:

COMPLIANCE CERTIFICATION SERVICES (SHENZHEN) INC.
No.10-1, Mingkeda Logistics Park, No.18, Huanguan South Rd., Guan Lan Town, Baoan District, Shenzhen China
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FAX: 86-755-28055221
E-Mail: service@ccssz.com

Issued Date: August 16, 2018

Certificate Number: 2861.01

Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	August 16, 2018	Initial Issue	ALL	Sabrina Wang

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1 TEST RESULT CERTIFICATION

Product	Car Radio
Model	New Radio Ultra Low SBB
Brand	Volkswagen, DESAY SV AUTOMOTIVE
Tested	August 6~16, 2018
Applicant	**Huizhou Desay SV Automotive Co., Ltd.** 103, Hechang 5th Road West, Zhongkai National Hi-tech Industrial Development Zone, Huizhou City, Guangdong Province 516006, P. R. China
Manufacturer	**Huizhou Desay SV Automotive Co., Ltd.** 103, Hechang 5th Road West, Zhongkai National Hi-tech Industrial Development Zone, Huizhou City, Guangdong Province 516006, P. R. China

APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR Part 15 Subpart C	No non-compliance noted

We hereby certify that:

The above equipment was tested by Compliance Certification Services (Shenzhen) Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in **ANSI C63.10: 2013** and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.
The test results of this report relate only to the tested sample EUT identified in this report.

Approved by:

Eve. Wang

Eve Wang
Supervisor of EMC Dept.
Compliance Certification Services (Shenzhen) Inc.

Reviewed by:

Nancy Fu

Nancy Fu
Supervisor of Report Dept.
Compliance Certification Services (Shenzhen) Inc.

2 TEST RESULT SUMMARY

APPLICABLE STANDARDS			
Standard	**Test Type**	**Result**	**Remark**
15.247(a)(1)	20dB Bandwidth Measurement	Pass	Meet the requirement of limit.
15.247(b)(3) 15.247(b)(4)	Peak Power Measurement	Pass	Meet the requirement of limit.
15.247(a)(1)	Frequency Separation	Pass	Meet the requirement of limit.
15.247(a)(1)(ii)	Number Of Hopping Fre3quency	Pass	Meet the requirement of limit.
15.247(a)(1)(iii)	Time Of Occupancy (Dwell Time)	Pass	Meet the requirement of limit.
15.247(d)	Band Edges Measurement	Pass	Meet the requirement of limit.
15.247(d)	● Spurious Emissions ● Conducted Measurement ● Radiated Emissions	Pass	Meet the requirement of limit.
15.207(a)	Power line Conducted Emissions	N/A	Not applicable, since the EUT powered by the DC power source.

Note:
1. The statements of test result on the above are decided by the request of test standard only; the measurement uncertainties are not factored into this compliance determination.
2. The information of measurement uncertainty is available upon the customer's request.

3 EUT DESCRIPTION

Product	Car Radio
Model Number	New Radio Ultra Low SBB
Brand	Volkswagen, DESAY SV AUTOMOTIVE
Model Discrepancy	N/A
Identify Number	C180806Z03-RP1
Received Date	August 6, 2018
Power Supply	DC12V supply by the DC power source
Frequency Range	2402 ~ 2480 MHz
Transmit Power	GFSK: 6.55dBm π/4-DQPSK: 4.75dBm 8DPSK: 5.25dBm
Modulation Technique	FHSS (GFSK for 1Mbps, π/4-DQPSK for 2Mbps, 8DPSK for 3Mbps)
Number of Channels	79 Channels
Antenna Specification	PCB antenna with 0.4dBi gain (Max)
Temperature Range	-40°C ~ +70°C
Hardware Version	X06
Software Version	X015

Note: *This submittal(s) (test report) is intended for FCC ID: 2AEQT-TR7219-71 filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.*

4 TEST METHODOLOGY

4.1. DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

Use "CSR Bluetooth 3" to control the EUT for staying in continuous transmitting and receiving mode.

Conducted emissions	
Test Mode	Description
1	N/A
Not applicable, since the EUT powered by the DC power source.	

Radiated Emission	
Test Mode	Description
1	Continuously Transmitting
The worst test results were recorded in the report.	

Note:

1. Channel Low (2402MHz), Mid (2441MHz) and High (2480MHz) were chosen for pre-testing for GFSK, π/4-DQPSK and 8DPSK, GFSK and 8DPSK were the worse case and print in the report.

2. Radiated band edges were tested with both fixed and hopping mode; the fixed mode was the worse case and recorded in the report.

3. For π/4 QPSK its same modulation type with 8-DPSK, and based exploratory test, there is no significant difference of that two types test result, so except output power, all other items final test were only performed with the worst case 8-DPSK and GFSK.

5 SETUP OF EQUIPMENT UNDER TEST

5.1. SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

5.2. SUPPORT EQUIPMENT

No.	Equipment	Model No.	Serial No.	FCC ID	Brand	Data Cable	Power Cord
1	Notebook	Thinkpad S2	SL 10K92342	N/A	Lenovo	N/A	Unshielded 1.00m (AC Cable) Unshielded 1.80m (DC Cable)

Note: Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use

5.3. TEST INSTRUMENTS

Conducted Emission Test Site					
Name of Equipment	**Manufacturer**	**Model Number**	**Serial Number**	**Last Calibration**	**Due Calibration**
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI	100783	01/27/2018	01/26/2019
LISN(EUT)	ROHDE&SCHWARZ	ENV216	101543-WX	01/27/2018	01/26/2019
LISN	EMCO	3825/2	8901-1459	01/27/2018	01/26/2019
Temp. / Humidity Meter	VICTOR	HTC-1	N/A	01/29/2018	01/28/2019
Test S/W	FARAD	EZ-EMC/ CCS-3A1-CE			

Radiated Emission Test Site 966 (2)					
Name of Equipment	**Manufacturer**	**Model Number**	**Serial Number**	**Last Calibration**	**Due Calibration**
Spectrum Analyzer	Agilent	N9010A	MY52221469	01/27/2018	01/26/2019
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI	100783	01/27/2018	01/26/2019
Amplifier	EMEC	EM330	060661	01/27/2018	01/26/2019
High Noise Amplifier	Agilent	8449B	3008A01838	01/27/2018	01/26/2019
Loop Antenna	COM-POWER	AL-130	121044	01/30/2018	01/29/2019
Bilog Antenna	SCHAFFNER	CBL6143	5082	02/21/2018	02/20/2019
Horn Antenna	SCHWARZBECK	BBHA9120	D286	01/27/2018	01/26/2019
Board-Band Horn Antenna	Schwarzbeck	BBHA 9170	9170-497	01/24/2018	01/23/2019
Turn Table	N/A	N/A	N/A	N.C.R	N.C.R
Antenna Tower	SUNOL	TLT2	N/A	N.C.R	N.C.R
Controller	Sunol Sciences	SC104V	022310-1	N.C.R	N.C.R
Controller	CT	N/A	N/A	N.C.R	N.C.R
Temp. / Humidity Meter	Anymetre	JR913	N/A	01/29/2018	01/28/2019
Test S/W	FARAD	LZ-RF / CCS-SZ-3A2			

20dB Bandwidth					
Name of Equipment	**Manufacturer**	**Model Number**	**Serial Number**	**Last Calibration**	**Due Calibration**
Spectrum Analyzer	Agilent	N9010A	MY52221469	01/27/2018	01/26/2019

Antenna Gain					
Name of Equipment	**Manufacturer**	**Model Number**	**Serial Number**	**Last Calibration**	**Due Calibration**
Spectrum Analyzer	Agilent	N9010A	MY52221469	01/27/2018	01/26/2019

Peak Output Power					
Name of Equipment	**Manufacturer**	**Model Number**	**Serial Number**	**Last Calibration**	**Due Calibration**
Power Meter	Anritsu	ML2495A	1204003	01/27/2018	01/26/2019
Power Sensor	Anritsu	MA2411B	1126150	01/27/2018	01/26/2019

Frequency Separation					
Name of Equipment	**Manufacturer**	**Model Number**	**Serial Number**	**Last Calibration**	**Due Calibration**
Spectrum Analyzer	Agilent	N9010A	MY52221469	01/27/2018	01/26/2019

Number Of Hopping Frequency					
Name of Equipment	**Manufacturer**	**Model Number**	**Serial Number**	**Last Calibration**	**Due Calibration**
Spectrum Analyzer	Agilent	N9010A	MY52221469	01/27/2018	01/26/2019

Time Of Occupancy (Dwell Time)					
Name of Equipment	**Manufacturer**	**Model Number**	**Serial Number**	**Last Calibration**	**Due Calibration**
Spectrum Analyzer	Agilent	N9010A	MY52221469	01/27/2018	01/26/2019

Band edges					
Name of Equipment	**Manufacturer**	**Model Number**	**Serial Number**	**Last Calibration**	**Due Calibration**
Spectrum Analyzer	Agilent	N9010A	MY52221469	01/27/2018	01/26/2019

Antenna Conducted Spurious Emission					
Name of Equipment	**Manufacturer**	**Model Number**	**Serial Number**	**Last Calibration**	**Due Calibration**
Spectrum Analyzer	Agilent	N9010A	MY52221469	01/27/2018	01/26/2019

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. N.C.R = No Calibration Request.

6 FACILITIES AND ACCREDITATIONS

6.1. FACILITIES

All measurement facilities used to collect the measurement data are located at

☒ **No.10-1, Mingkeda Logistics Park, No.18, Huanguan South Rd., Guan Lan Town, Baoan District, Shenzhen, China**

The sites are constructed in conformance with the requirements of ANSI C63.10:2013, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

6.2. ACCREDITATIONS

Our laboratories are accredited and approved by the following accreditation body according to ISO/IEC 17025.

USA	A2LA
China	CNAS

The measuring facility of laboratories has been authorized or registered by the following approval agencies.

USA	FCC
Japan	VCCI(C-4815, R-4320, T-2317, G-10624)
Canada	INDUSTRY CANADA

Copies of granted accreditation certificates are available for downloading from our web site, http://www.ccssz.com

6.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Parameter	*Uncertainty*
Radiated Emission, 30 to 200 MHz Test Site : 966(2)	+/-3.9211dB
Radiated Emission, 200 to 1000 MHz Test Site : 966(2)	+/-3.9037dB
Radiated Emission, 1 to 8 GHz	+/-5.3516dB
Radiated Emission, 8 to 18 GHz	+/-5.3894dB
Conducted Emissions	+/-4.1742dB
Band Width	178kHz
Peak Output Power MU	+/-1.906dB
Band Edge MU	+/-0.182dB
Channel Separation MU	416.178Hz
Duty Cycle MU	0.054ms
Frequency Stability MU	226Hz

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

The measured result is above (below) the specification limit by a margin less than the measurement uncertainty; it is therefore not possible to state compliance based on the 95% level of confidence. However, the result indicates that compliance (non-compliance) is more probable than non-compliance) with the specification limit.

7 FCC PART 15.247 REQUIREMENTS

7.1. POWERLINE CONDUCTED EMISSIONS

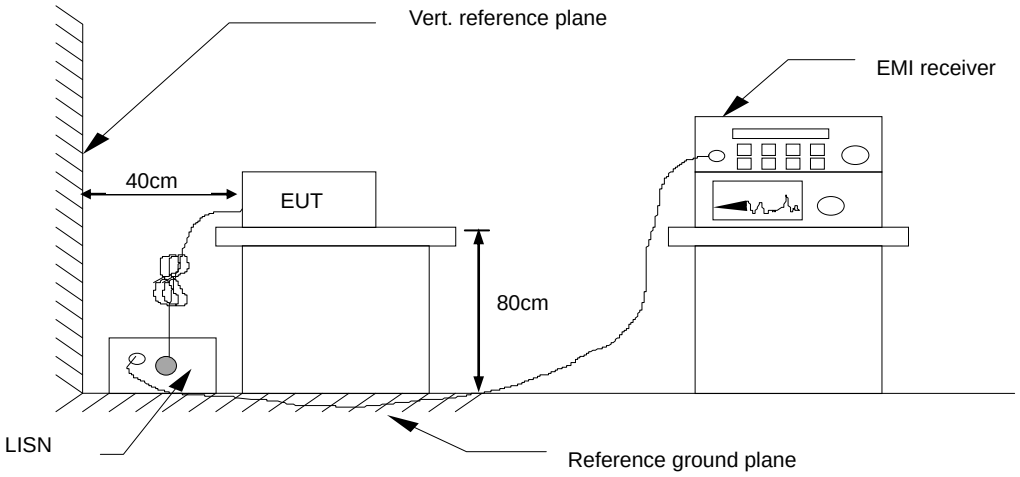
7.1.1. LIMIT

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

7.1.2. TEST CONFIGURATION



See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

7.1.3. TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

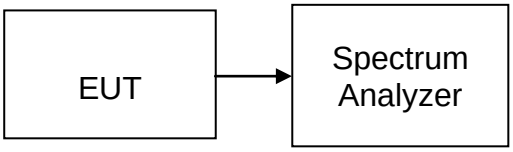
7.1.4. TEST RESULTS

Not applicable, since the EUT powered by the DC power source.

7.2. 20DB BANDWIDTH

No limits

7.2.1. TEST CONFIGURATION



7.2.2. TEST PROCEDURE

- Place the EUT on the table and set it in the transmitting mode.
- Remove the antenna from the EUT, and then connect a low loss RF cable from antenna port to the spectrum analyzer.
- Set the spectrum analyzer as RBW=30 kHz, VBW=100 kHz, Span=3MHz, Sweep = auto.
- Mark the peak frequency and 20dB (upper and lower) frequency.
- Repeat until all the test channels are investigated.

7.2.3. TEST RESULTS

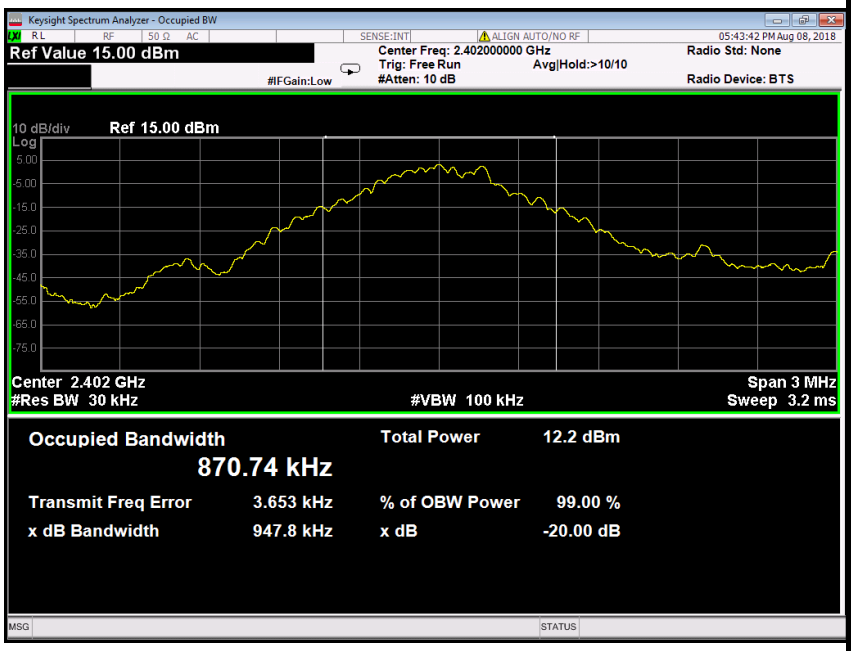
No non-compliance noted

Test Data

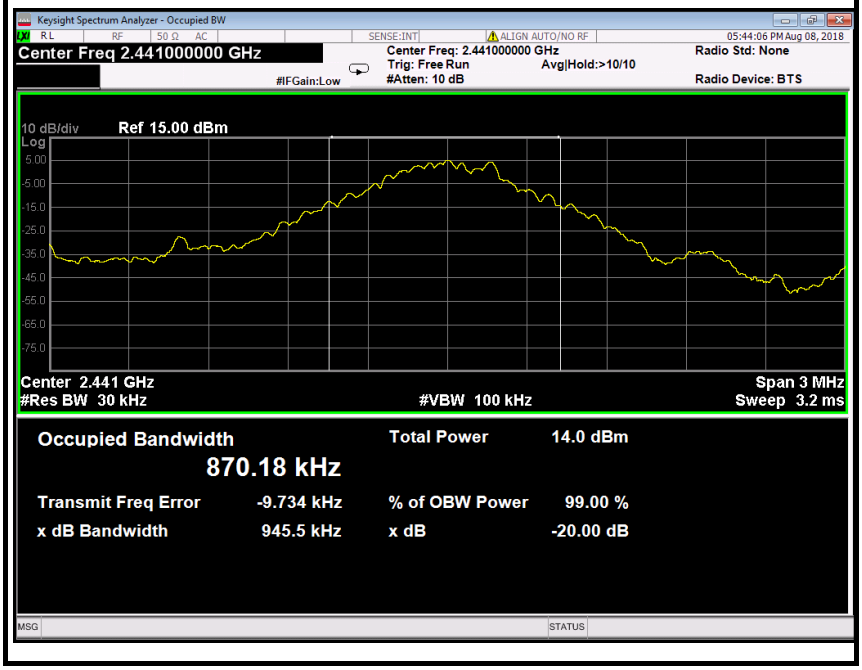
Test mode	Channel	Frequency (MHz)	20 dB Bandwidth (kHz)
GFSK	Low	2402	947.8
	Mid	2441	945.5
	High	2480	946.7
8DPSK	Low	2402	1258
	Mid	2441	1257
	High	2480	1258

GFSK

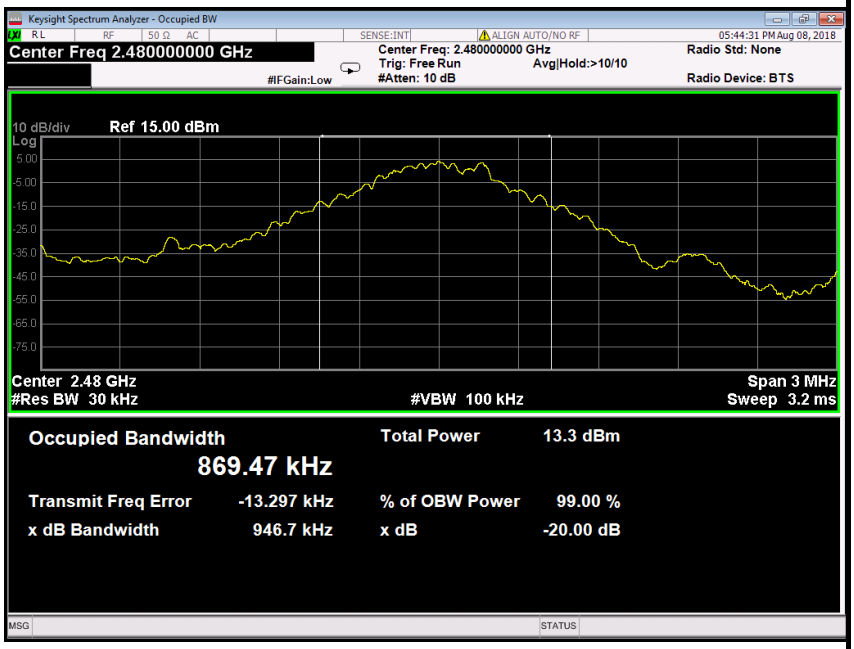
20dB Bandwidth(CH Low)



20dB Bandwidth (CH Mid)

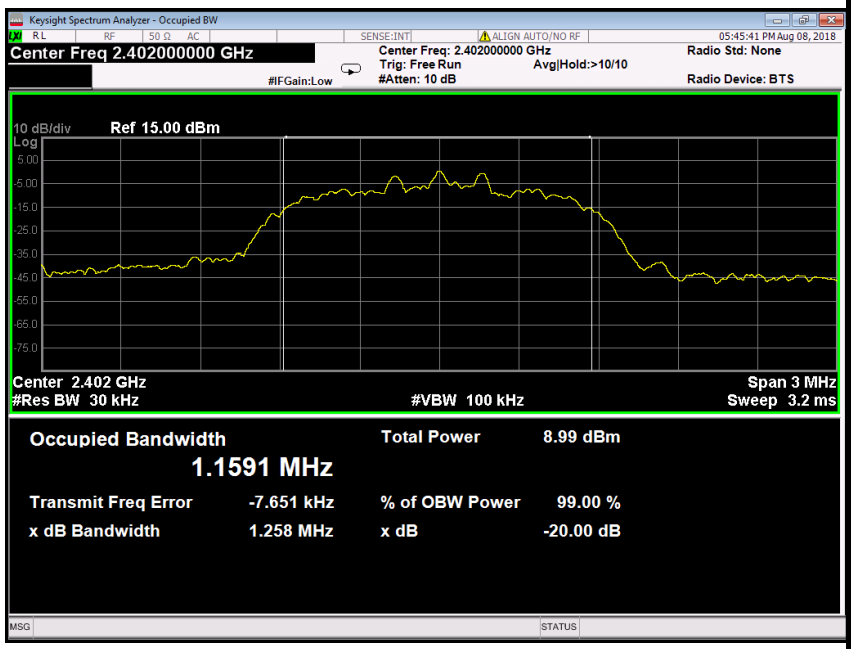


20dB Bandwidth (CH High)

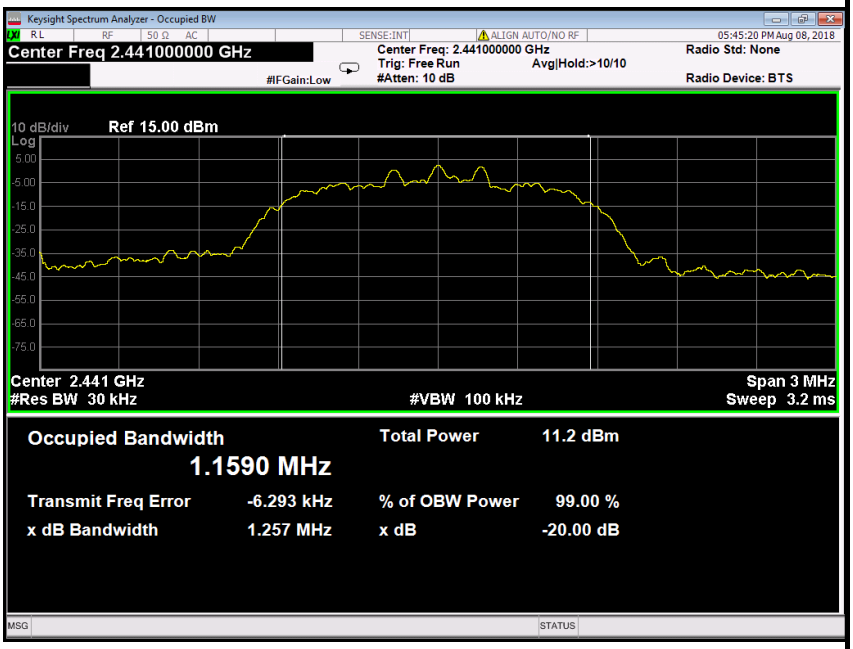


8DPSK

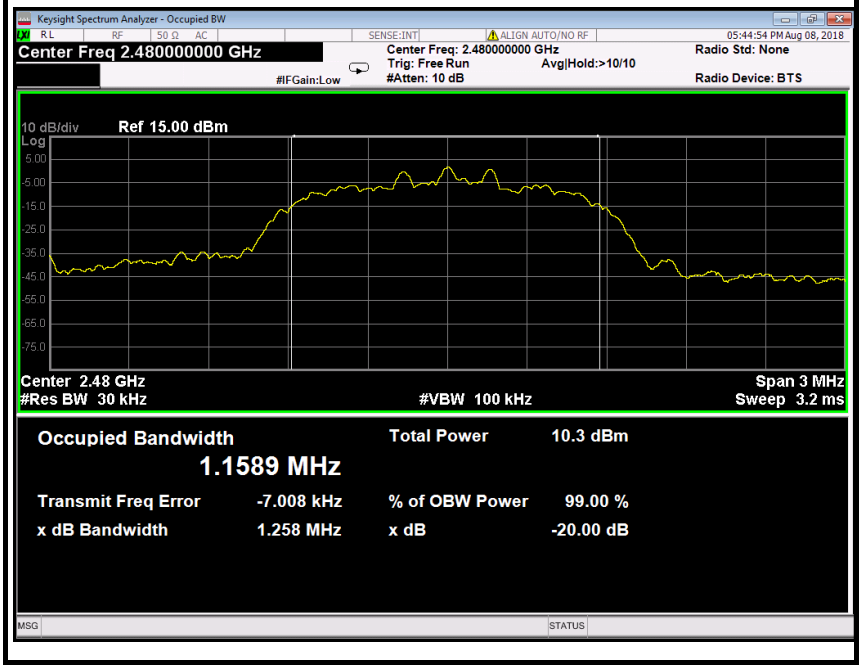
20dB Bandwidth (CH Low)



20dB Bandwidth (CH Mid)



20dB Bandwidth (CH High)



7.3. ANTENNA GAIN

7.3.1. MEASUREMENT

The antenna gain of the complete system is calculated by the difference of radiated power in EIRP and the conducted power of the module. For normal BT devices, the GFSK mode is used.

7.3.2. MEASUREMENT PARAMETERS

Measurement parameter	
Detector	Peak
Sweep time	Auto
Resolution bandwidth	3 MHz
Video bandwidth	3 MHz
Trace-Mode	Max hold

7.3.3. LIMITS

FCC	IC
Antenna Gain	
6 dBi	

7.3.4. TEST RESULTS

GFSK				
T_{nom}	V_{nom}	Lowest channel 2402MHz	Middle channel 2441MHz	Highest channel 2480MHz
Conducted power [dBm] Measured with GFSK modulation		4.89	6.55	6.24
Radiated power [dBm] Measured with GFSK modulation		5.16	6.89	6.52
Gain [dBi] Calculated		0.27	0.34	0.28
Measurement uncertainty		± 1.5 dB (cond.) / ± 3 dB (rad.)		
8DPSK				
T_{nom}	V_{nom}	Lowest channel 2402MHz	Middle channel 2441MHz	Highest channel 2480MHz
Conducted power [dBm] Measured with GFSK modulation		3.23	5.25	4.62
Radiated power [dBm] Measured with GFSK modulation		3.51	5.57	4.98
Gain [dBi] Calculated		0.28	0.32	0.36
Measurement uncertainty		± 1.5 dB (cond.) / ± 3 dB (rad.)		

7.4. PEAK POWER

7.4.1. LIMIT

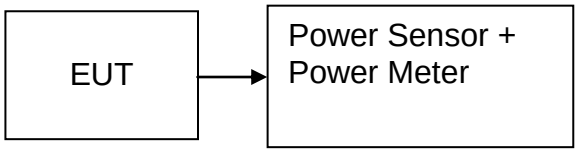
The maximum peak output power of the intentional radiator shall not exceed the following:

1. For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

2. Except as shown in paragraphs (b)(3) (i), (ii) and (iii) of this section, if transmitting antennas of directional gain greater than 6dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6dBi.

3. The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

7.4.2. TEST CONFIGURATION



7.4.3. TEST PROCEDURE

The transmitter output is connected to the RF Power Meter. The RF Power Meter is set to the peak power detection.

7.4.4. TEST RESULTS

No non-compliance noted

Test Data

GFSK

Channel	Frequency (MHz)	Reading Power (dBm)	Cable loss (dB)	Output Power (dBm)	Output Power (W)	Limit (W)	Peak /AVG	Result
Low	2402	1.39	3.50	4.89	0.00308	0.125	peak	PASS
Mid	2441	3.05	3.50	6.55	0.00452			PASS
High	2480	2.74	3.50	6.24	0.00421			PASS
Low	2402	-0.28	3.50	3.22	0.00210	0.125	AVG	PASS
Mid	2441	1.46	3.50	4.96	0.00313			PASS
High	2480	1.21	3.50	4.71	0.00296			PASS

π/4-DQPSK

Channel	Frequency (MHz)	Reading Power (dBm)	Cable loss (dB)	Output Power (dBm)	Output Power (W)	Limit (W)	Peak /AVG	Result
Low	2402	-0.82	3.50	2.68	0.00185	0.125	peak	PASS
Mid	2441	1.25	3.50	4.75	0.00299			PASS
High	2480	0.64	3.50	4.14	0.00259			PASS
Low	2402	-4.65	3.50	-1.15	0.00077	0.125	AVG	PASS
Mid	2441	-2.50	3.50	1.00	0.00126			PASS
High	2480	-3.21	3.50	0.29	0.00107			PASS

8DPSK

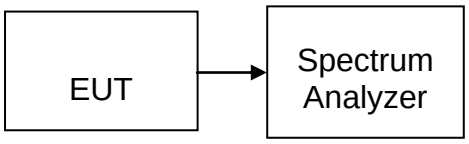
Channel	Frequency (MHz)	Reading Power (dBm)	Cable loss (dB)	Output Power (dBm)	Output Power (W)	Limit (W)	Peak /AVG	Result
Low	2402	-0.27	3.50	3.23	0.00210	0.125	peak	PASS
Mid	2441	1.75	3.50	5.25	0.00335			PASS
High	2480	1.12	3.50	4.62	0.00290			PASS
Low	2402	-4.64	3.50	-1.14	0.00077	0.125	AVG	PASS
Mid	2441	-2.68	3.50	0.82	0.00121			PASS
High	2480	-3.20	3.50	0.30	0.00107			PASS

7.5. FREQUENCY SEPARATION

7.5.1. LIMIT

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

7.5.2. TEST CONFIGURATION



7.5.3. TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set center frequency of spectrum analyzer = middle of hopping channel.
4. Set the spectrum analyzer as RBW=30kHz, VBW=30kHz, Adjust Span to 4 MHz, Sweep = auto.
5. Max hold. Mark 3 Peaks of hopping channel and record the 3 peaks frequency.

7.5.4. TEST RESULTS

No non-compliance noted

Test Data

GFSK

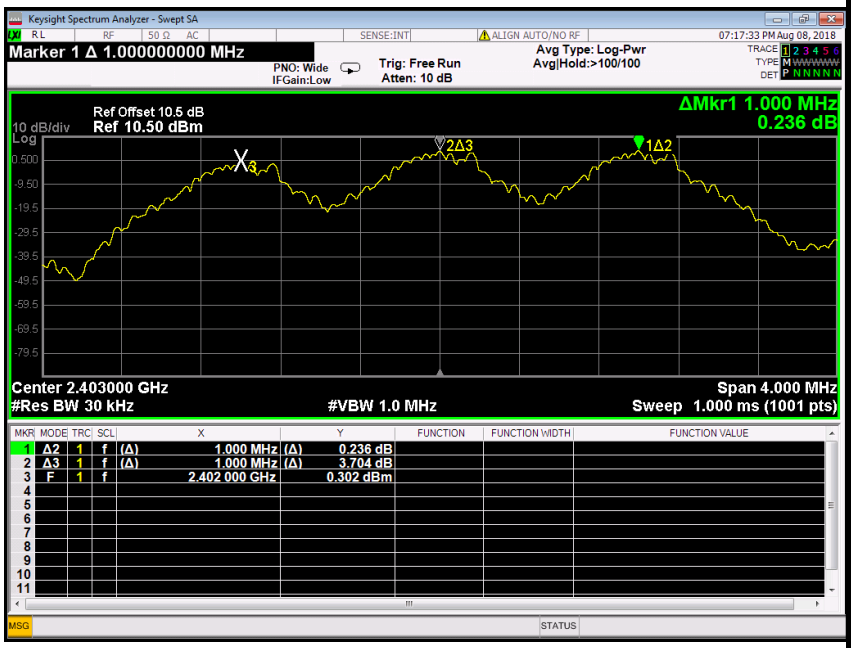
Channel Separation (MHz)	Two-thirds of the 20 dB Bandwidth (kHz)	Channel Separation Limit	Result
1.000	631.867	> Two-thirds of the 20 dB Bandwidth	Pass

8DPSK

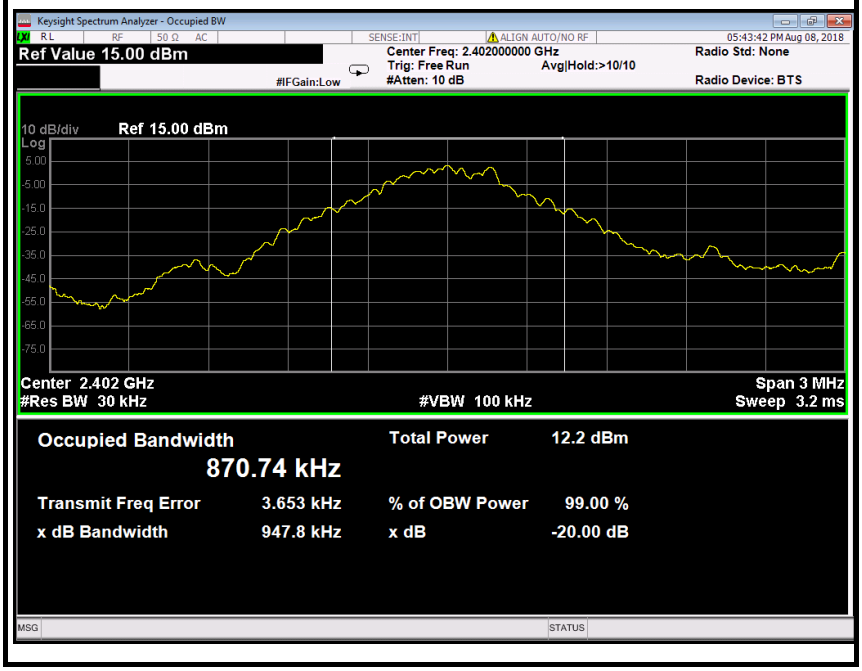
Channel Separation (MHz)	Two-thirds of the 20 dB Bandwidth (kHz)	Channel Separation Limit	Result
1.000	838.667	> Two-thirds of the 20 dB Bandwidth	Pass

GFSK

Measurement of Channel Separation

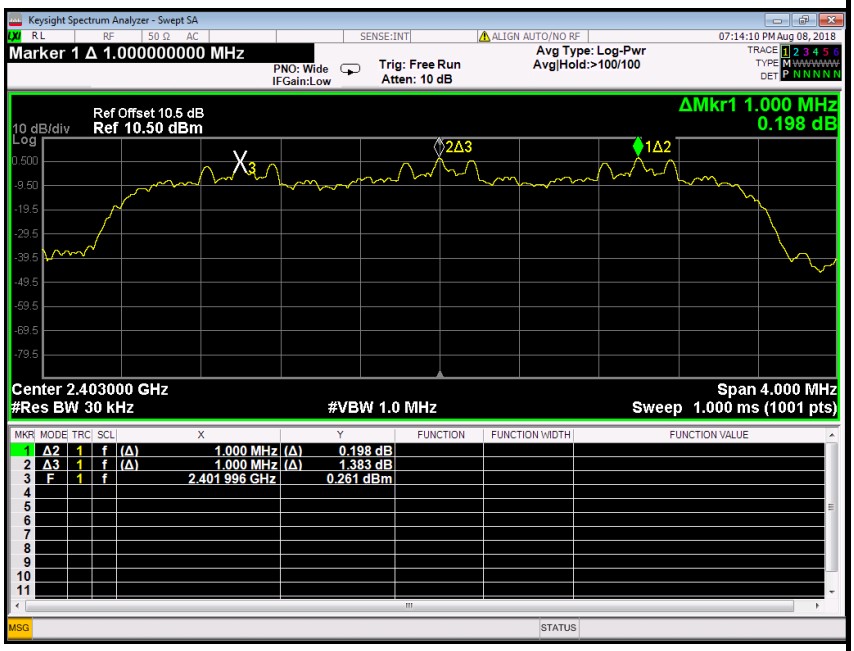


20 dB bandwidth(CH Low)

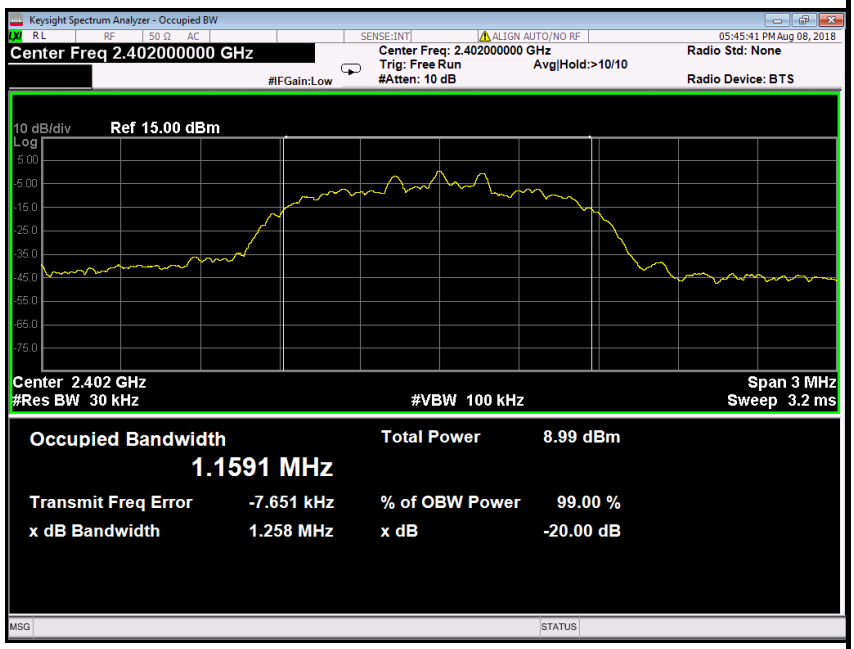


8DPSK

Measurement of Channel Separation



20 dB bandwidth(CH Low

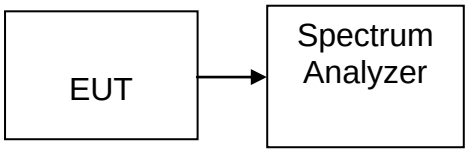


7.6. NUMBER OF HOPPING FREQUENCY

7.6.1. LIMIT

According to §15.247(a)(1)(ii), Frequency hopping systems operating in the 2400MHz-2483.5 MHz bands shall use at least 15 hopping frequencies.

7.6.2. TEST CONFIGURATION



7.6.3. TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set spectrum analyzer Start=2400MHz, Stop = 2483.5MHz, Sweep = 1ms.
4. Set the spectrum analyzer as RBW, VBW=300kHz,
5. Max hold, view and count how many channel in the band.

7.6.4. TEST RESULTS

No non-compliance noted

Test Data

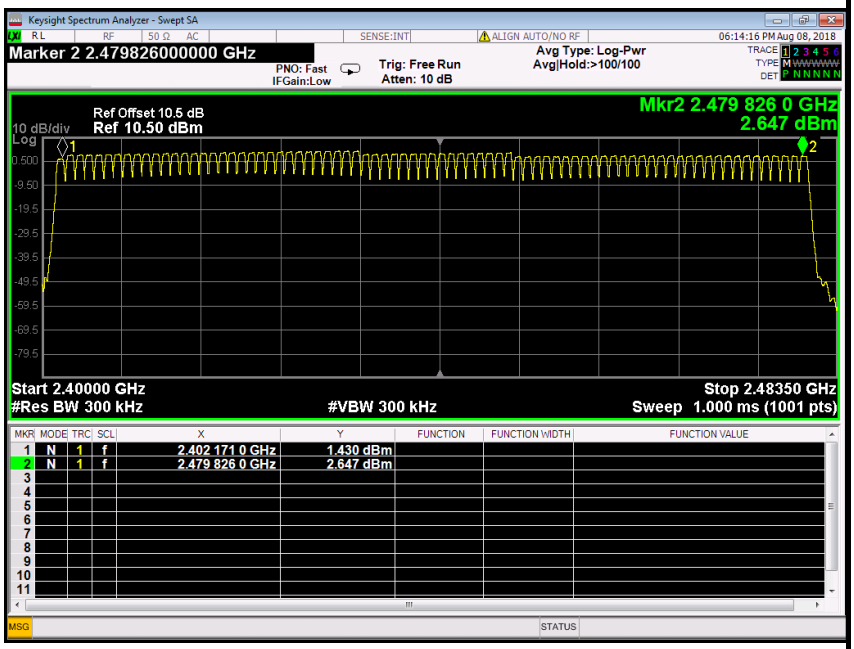
GFSK / 8DPSK

Result (No. of CH)	Limit (No. of CH)	Result
79	>15	PASS

Channel Number

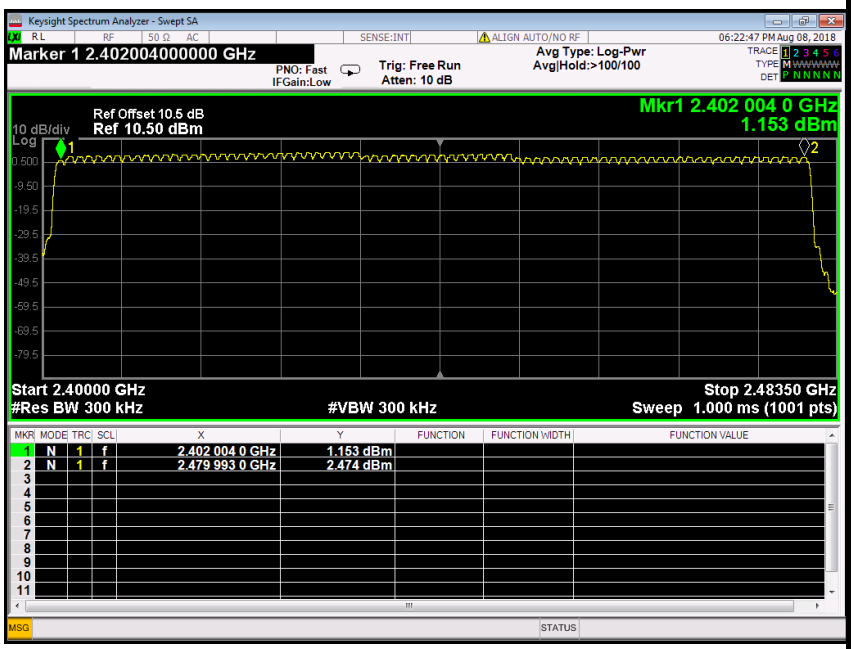
GFSK

2.400 GHz – 2.4835 GHz



8DPSK

2.400 GHz – 2.4835 GHz

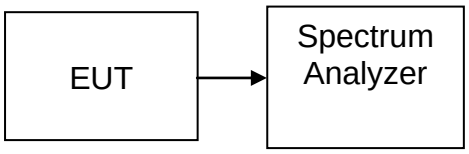


7.7. TIME OF OCCUPANCY (DWELL TIME)

7.7.1. LIMIT

According to §15.247(a)(1)(iii), Frequency hopping systems operating in the 2400MHz-2483.5 MHz bands. The average time of occupancy on any channels shall not greater than 0.4 s within a period 0.4s multiplied by the number of hopping channels employed.

7.7.2. TEST CONFIGURATION



7.7.3. TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set center frequency of spectrum analyzer = operating frequency.
4. Set the spectrum analyzer as RBW, VBW=1MHz, Span = 0Hz, Sweep = auto.
5. Repeat above procedures until all frequency measured were complete.

7.7.4. TEST RESULTS

No non-compliance noted

Test Data

GFSK

DH 1					
CH Mid: 0.432* (1600/2)/79 * 31.6 = 138.24 (ms)					
CH	**Pulse Time (ms)**	**Total of Dwell (ms)**	**Period Time (s)**	**Limit (ms)**	**Result**
Mid	0.432	138.24	31.60	400.00	PASS
DH 3					
CH Mid: 1.690* (1600/4)/79 * 31.6 = 270.40 (ms)					
CH	**Pulse Time (ms)**	**Total of Dwell (ms)**	**Period Time (s)**	**Limit (ms)**	**Result**
Mid	1.690	270.40	31.60	400.00	PASS
DH 5					
CH Mid: 2.948* (1600/6)/79 * 31.6 = 314.45(ms)					
CH	**Pulse Time (ms)**	**Total of Dwell (ms)**	**Period Time (s)**	**Limit (ms)**	**Result**
Mid	2.948	314.45	31.60	400.00	PASS

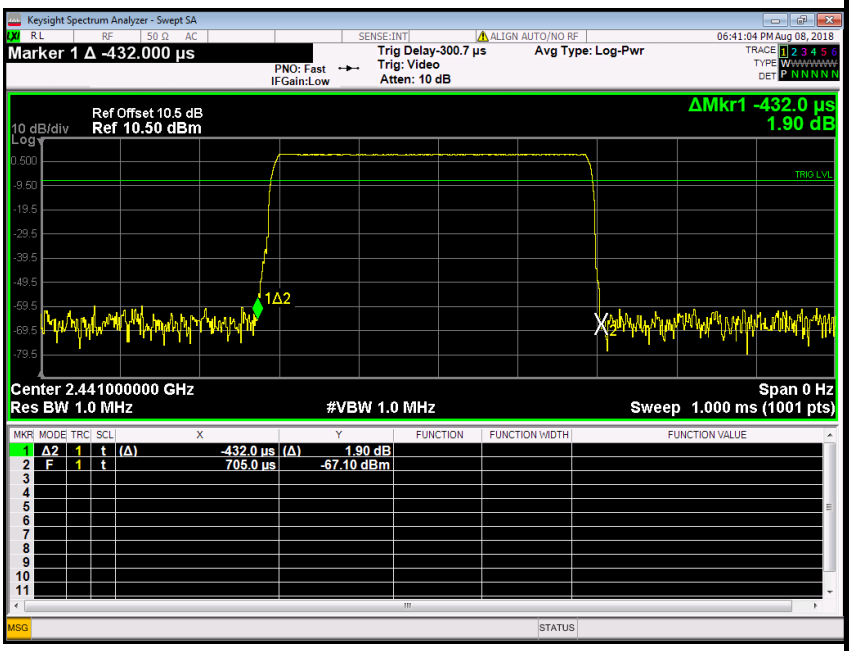
8DPSK

3DH 1					
CH Mid: 0.446* (1600/2)/79 * 31.6 = 142.72 (ms)					
CH	**Pulse Time (ms)**	**Total of Dwell (ms)**	**Period Time (s)**	**Limit (ms)**	**Result**
Mid	0.446	142.72	31.60	400.00	PASS
3DH 3					
CH Mid: 1.700* (1600/4)/79 * 31.6 = 272.00 (ms)					
CH	**Pulse Time (ms)**	**Total of Dwell (ms)**	**Period Time (s)**	**Limit (ms)**	**Result**
Mid	1.700	272.00	31.60	400.00	PASS
3DH 5					
CH Mid: 2.956* (1600/6)/79 * 31.6 = 315.31 (ms)					
CH	**Pulse Time (ms)**	**Total of Dwell (ms)**	**Period Time (s)**	**Limit (ms)**	**Result**
Mid	2.956	315.31	31.60	400.00	PASS

GFSK

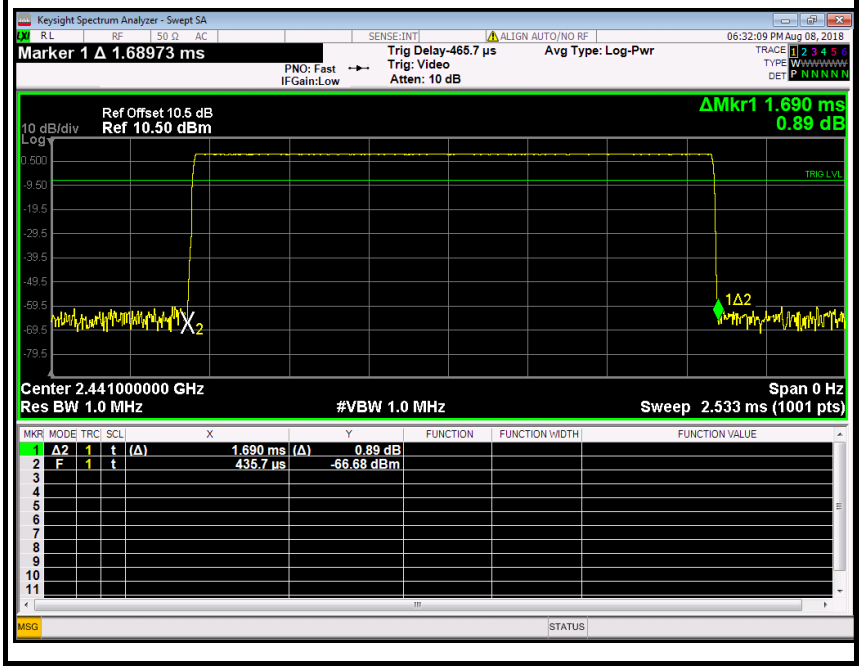
DH 1

CH Mid



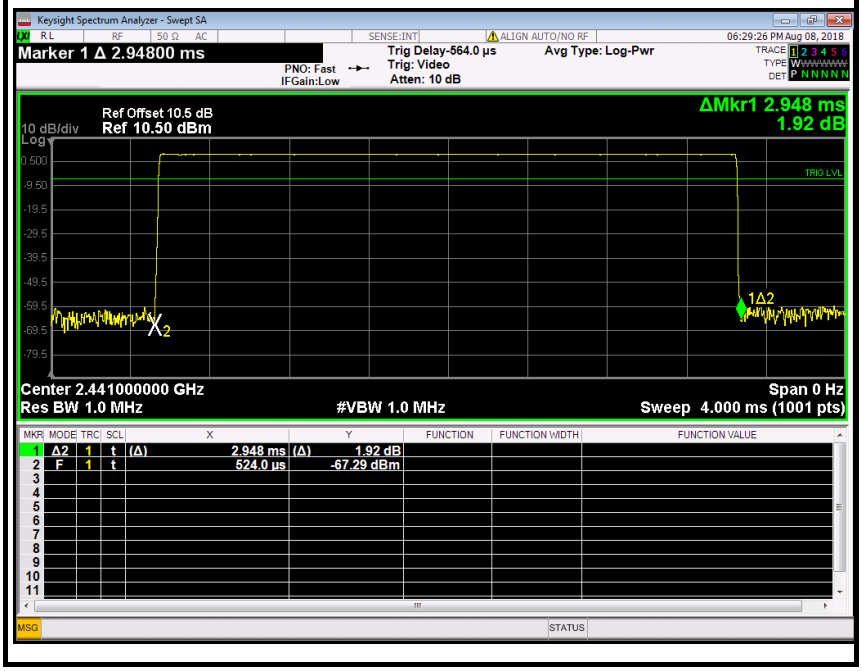
DH 3

CH Mid



DH 5

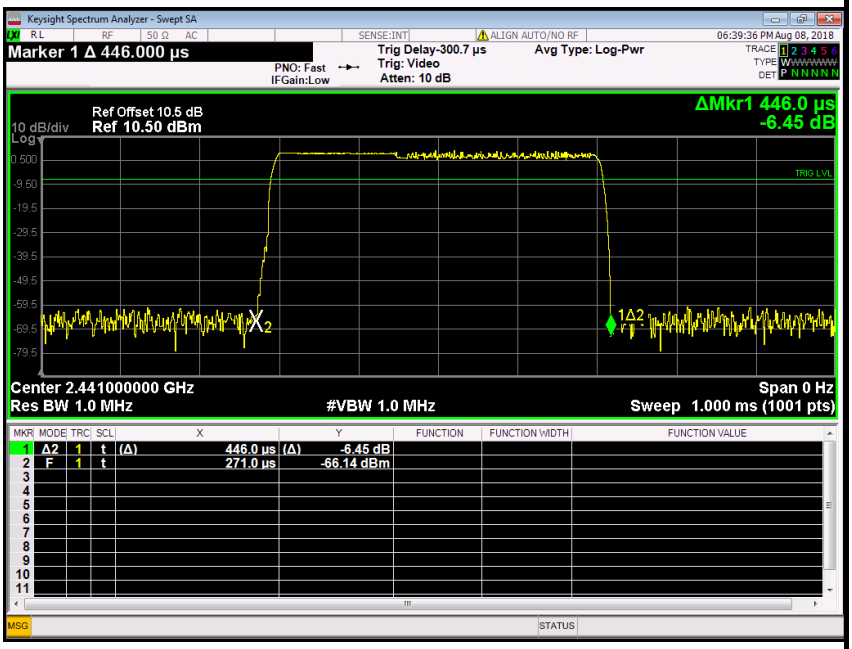
CH Mid



8DPSK

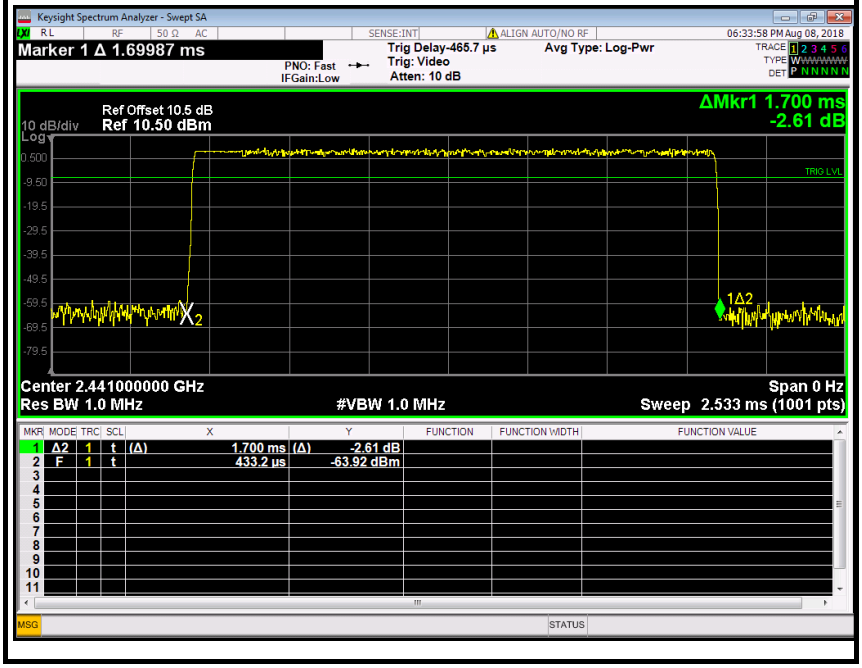
3DH 1

CH Mid

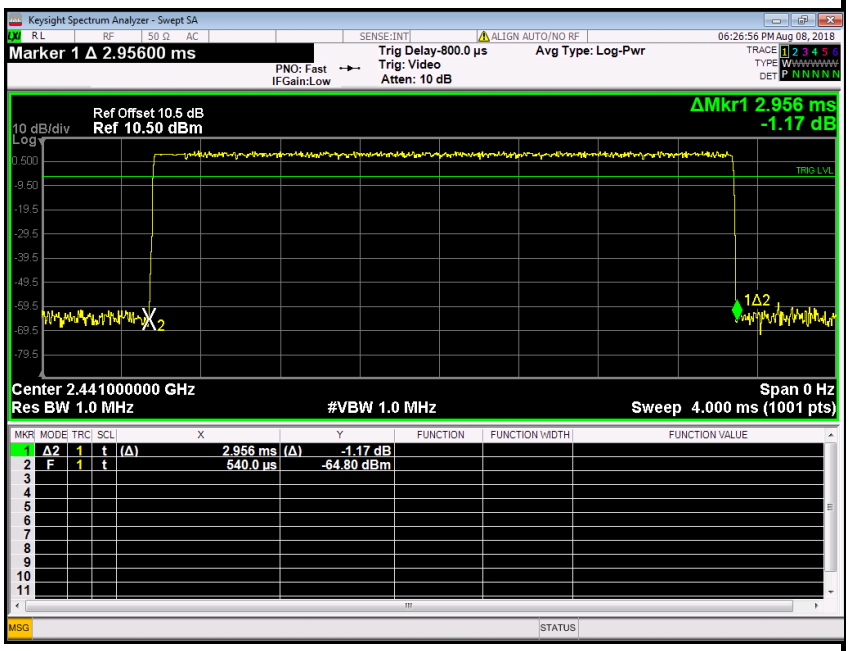


3DH 3

CH Mid



3DH 5
CH Mid

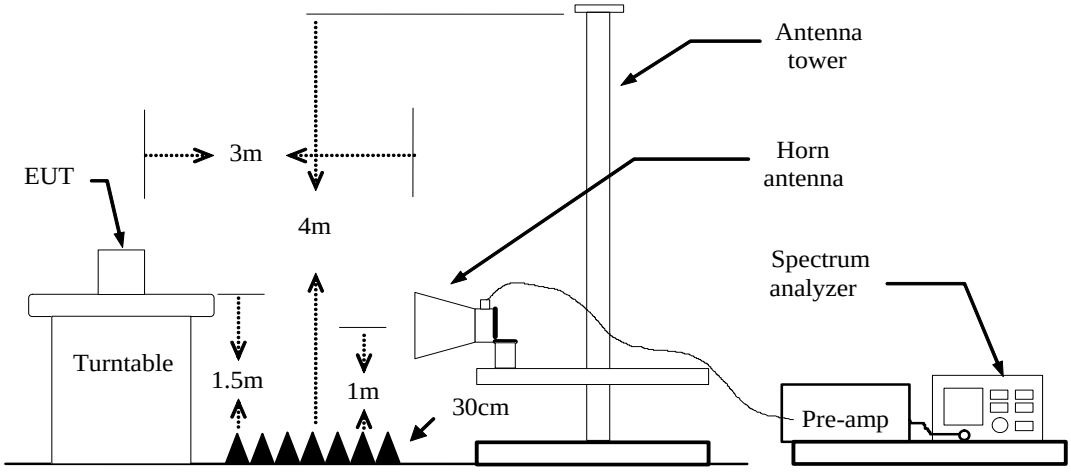


7.8. BAND EDGES MEASUREMENT

7.8.1. LIMIT

According to §15.247(d), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in15.209(a).

7.8.2. TEST CONFIGURATION



7.8.3. TEST PROCEDURE

1. The EUT is placed on a turntable, which is 1.5m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
   (a) PEAK: RBW=1MHz / VBW=1MHz / Sweep=AUTO
   (b) AVERAGE: RBW=1MHz / VBW=1/T / Sweep=AUTO
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

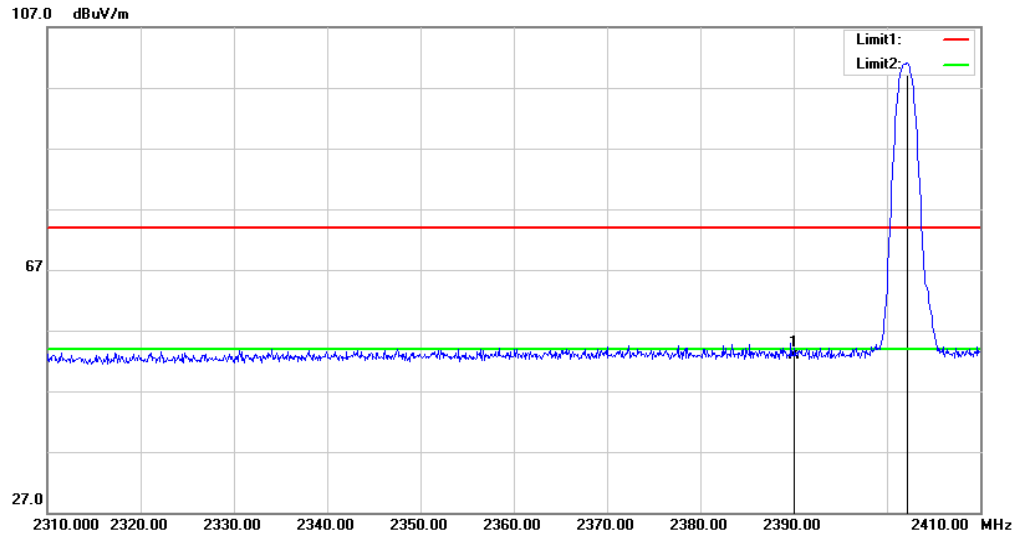
7.8.4. TEST RESULTS

Refer to attach spectrum analyzer data chart.

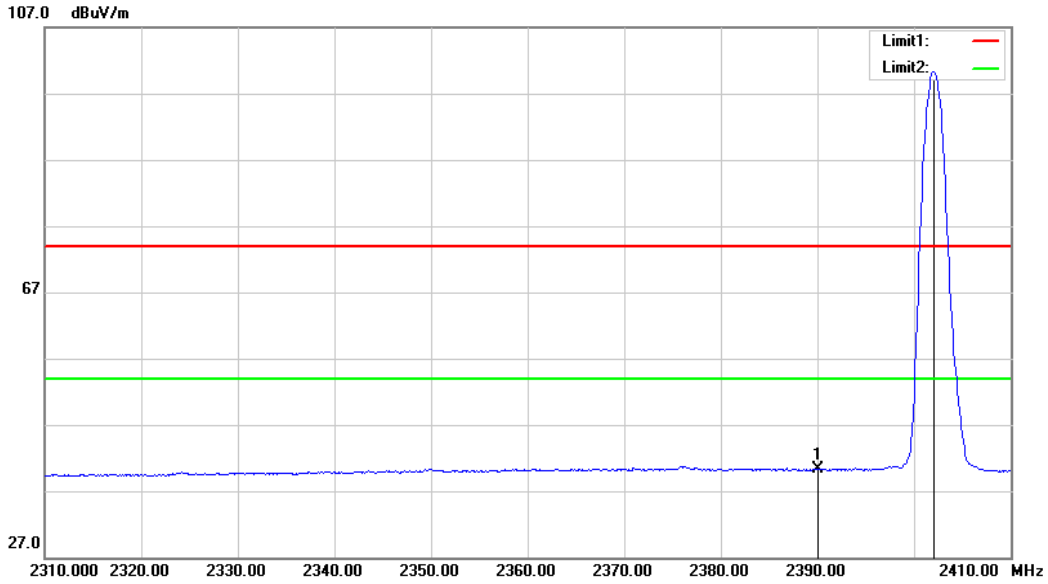
GFSK mode

Band Edges (CH Low)

Detector mode: Peak **Polarity: Vertical**

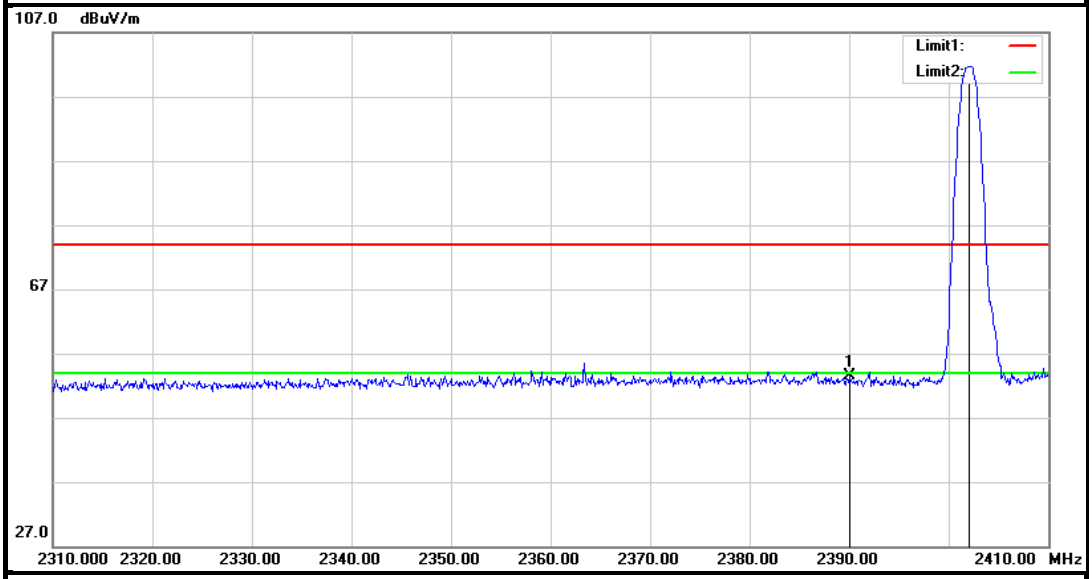


Detector mode: Average **Polarity: Vertical**

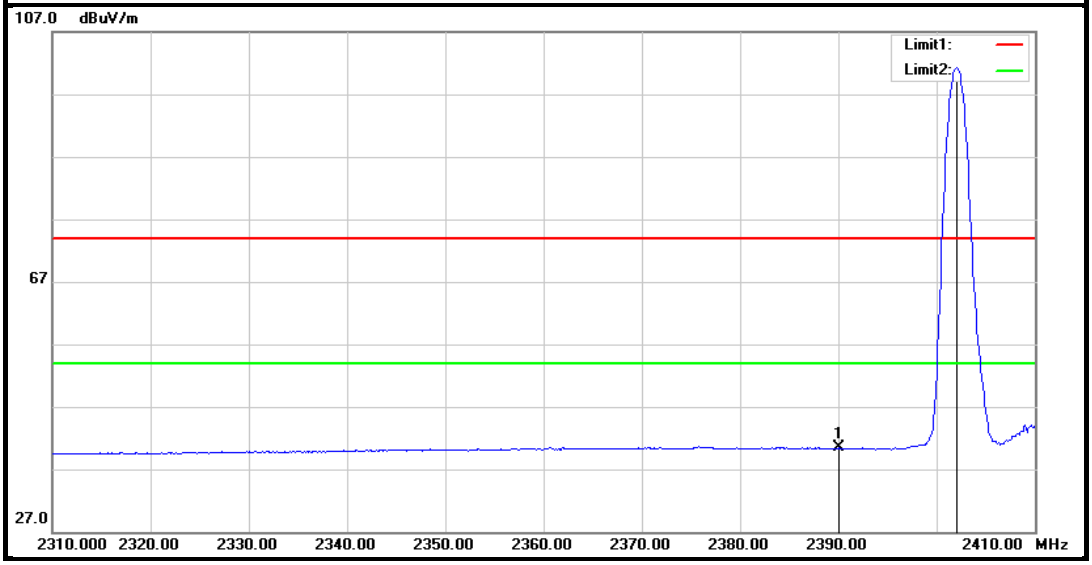


No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1.	2390.000	55.72	-2.86	52.86	74.00	-21.14	Peak	Vertical
2.	2402.200	103.85	-2.80	101.05	---	---	Peak	Vertical
1.	2390.000	43.17	-2.86	40.31	54.00	-13.69	Average	Vertical
2.	2402.000	103.14	-2.80	100.34	---	---	Average	Vertical

Detector mode: Peak **Polarity: Horizontal**



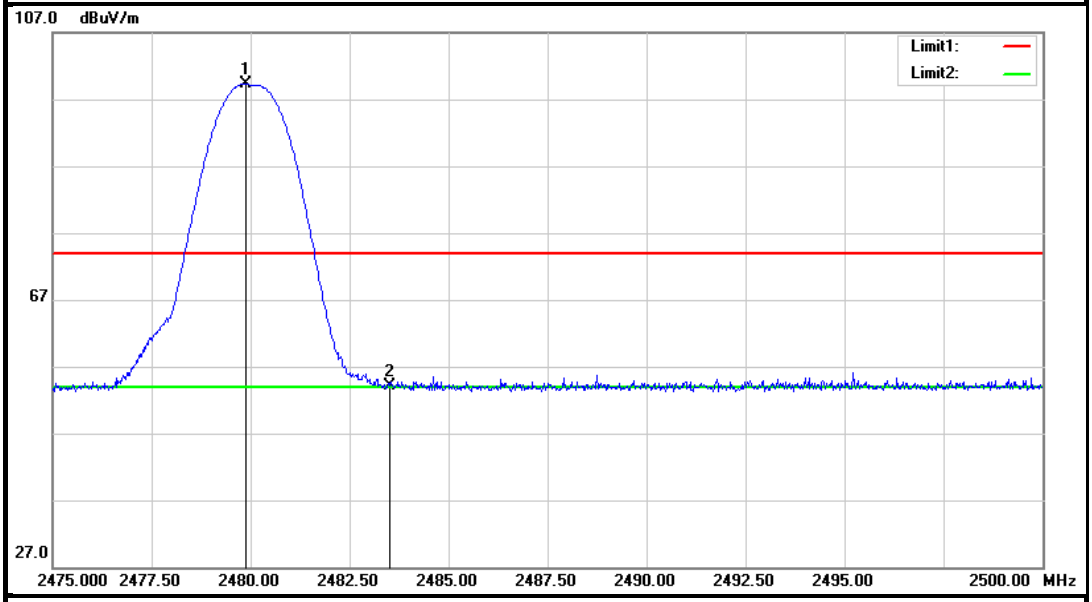
Detector mode: Average **Polarity: Horizontal**



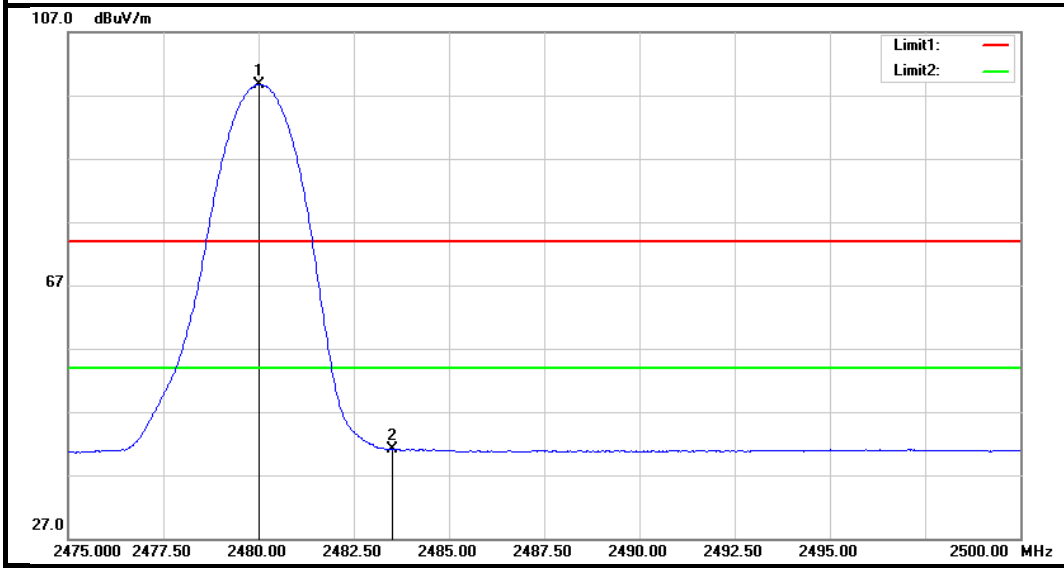
No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1.	2390.000	56.45	-2.86	53.59	74.00	-20.41	Peak	Horizontal
2.	2402.100	104.60	-2.80	101.80	---	---	Peak	Horizontal
1.	2390.000	43.27	-2.86	40.41	54.00	-13.59	Average	Horizontal
2.	2402.000	104.02	-2.80	101.22	---	---	Average	Horizontal

Band Edges (CH High)

Detector mode: Peak **Polarity: Vertical**

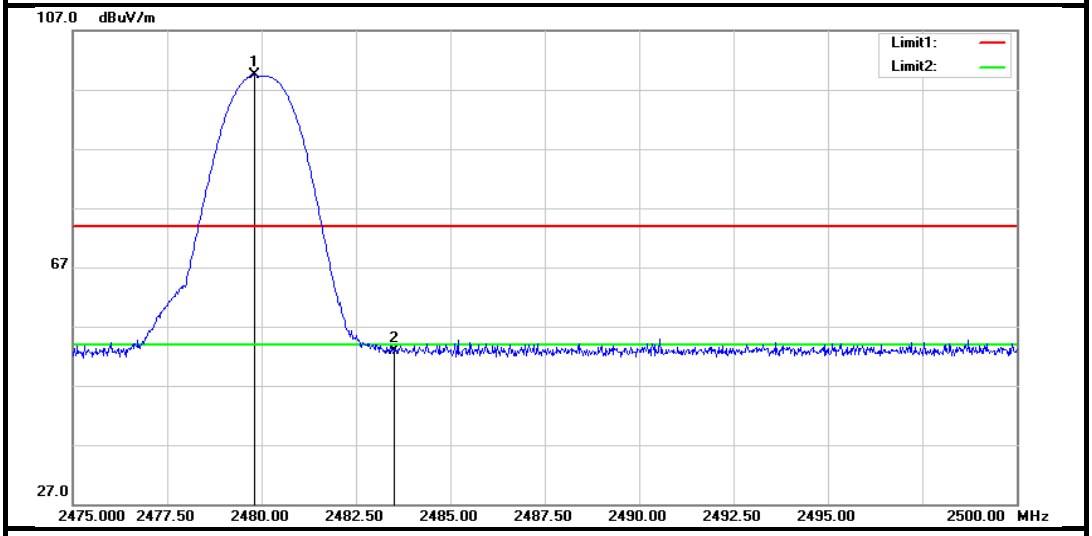


Detector mode: Average **Polarity: Vertical**

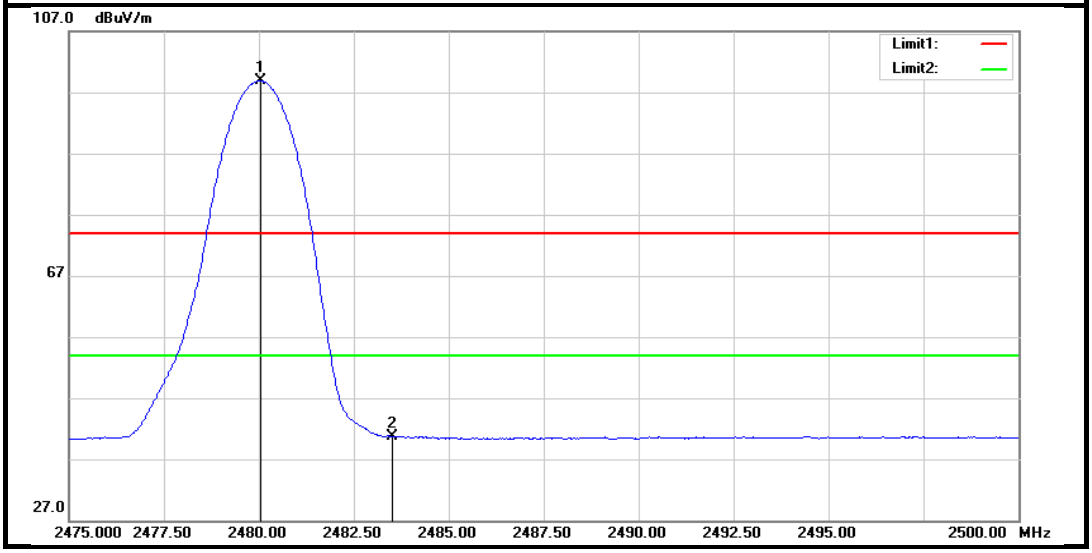


No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1.	2479.875	101.67	-2.37	99.30	---	---	Peak	Vertical
2.	2483.500	56.47	-2.35	54.12	74.00	-19.88	Peak	Vertical
1.	2480.025	101.10	-2.37	98.73	---	---	Average	Vertical
2.	2483.500	43.38	-2.35	41.03	54.00	-12.97	Average	Vertical

Detector mode: Peak **Polarity: Horizontal**



Detector mode: Average **Polarity: Horizontal**

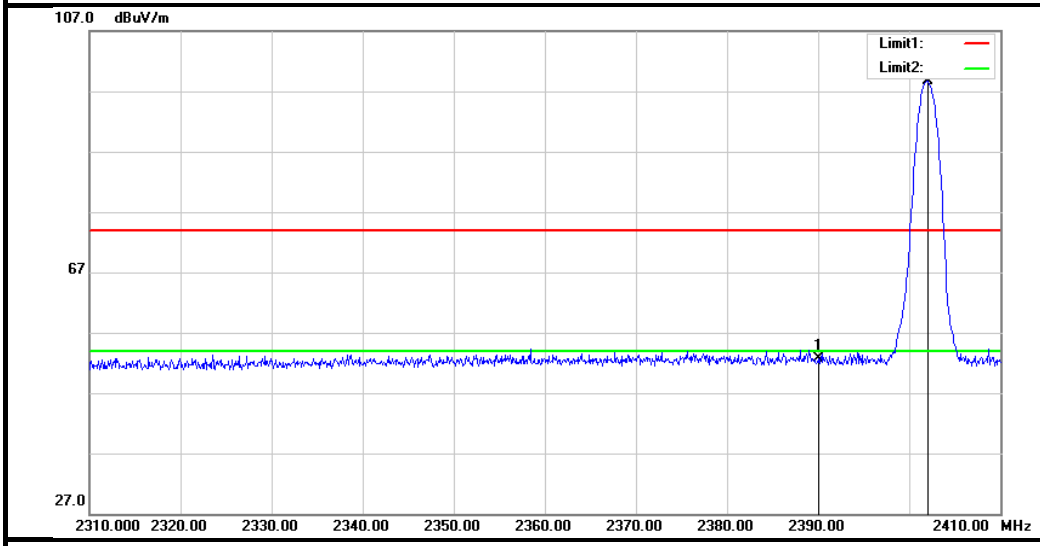


No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1.	2479.825	101.78	-2.37	99.41	---	---	Peak	Horizontal
2.	2483.500	55.32	-2.35	52.97	74.00	-21.03	Peak	Horizontal
1.	2480.050	101.24	-2.37	98.87	---	---	Average	Horizontal
2.	2483.500	43.01	-2.35	40.66	54.00	-13.34	Average	Horizontal

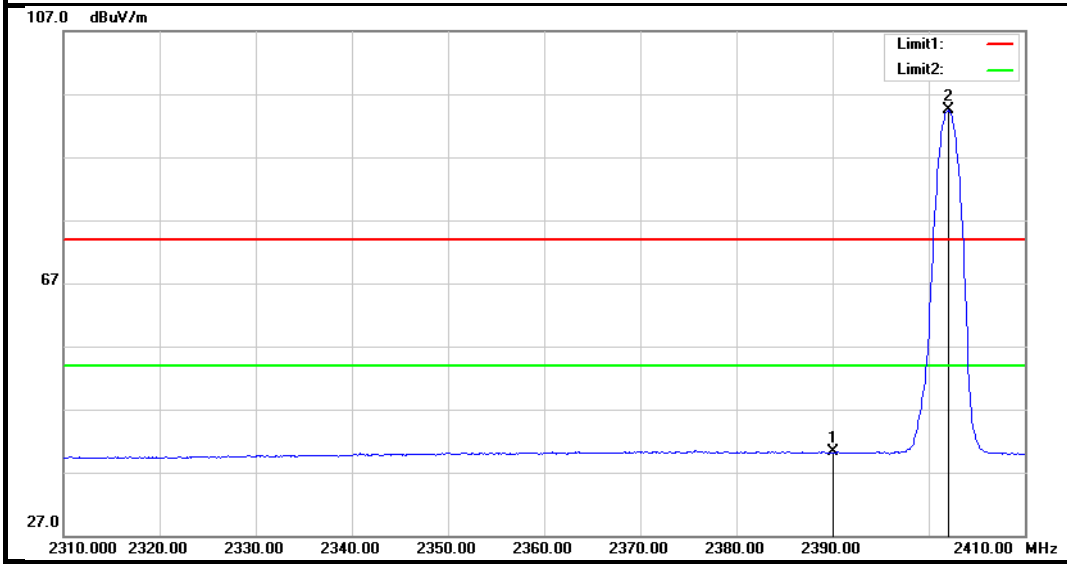
8DPSK mode

Band Edges (CH Low)

Detector mode: Peak **Polarity: Vertical**

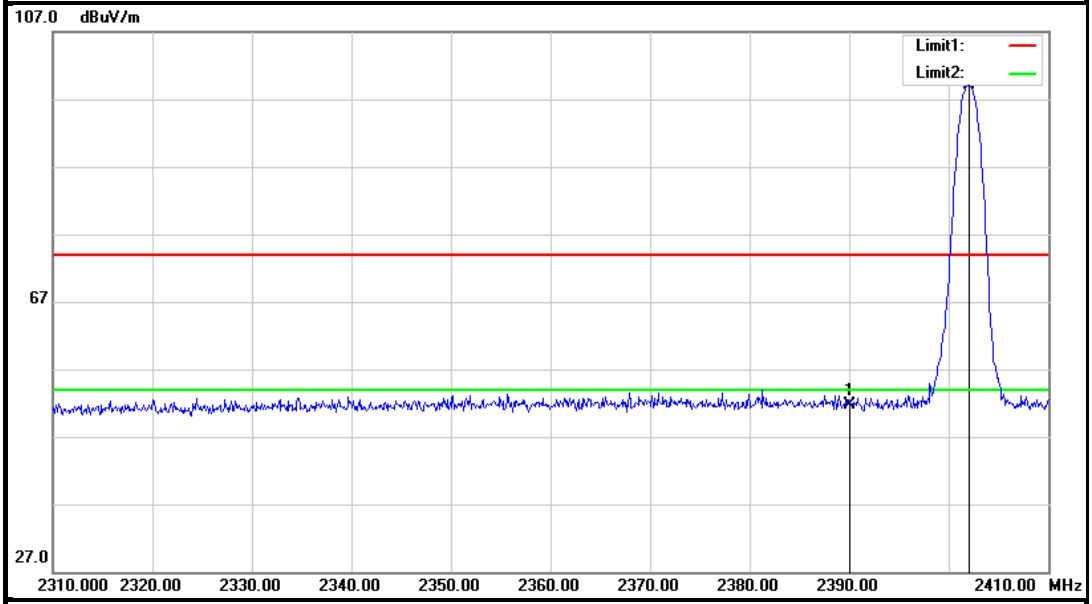


Detector mode: Average **Polarity: Vertical**

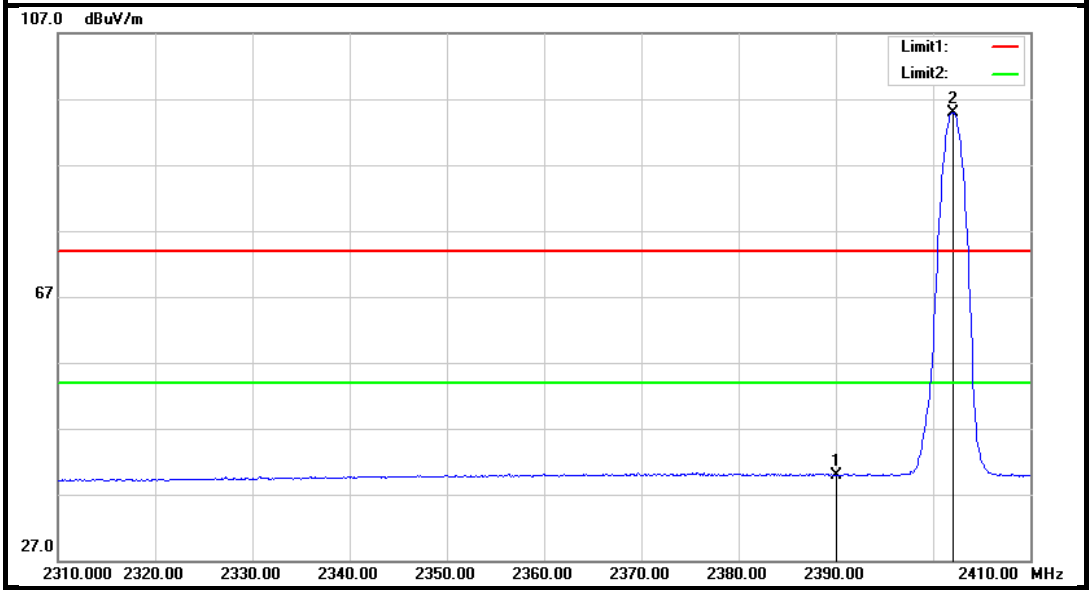


No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
3.	2390.000	55.55	-2.86	52.69	74.00	-21.31	Peak	Vertical
4.	2402.000	101.46	-2.80	98.66	---	---	Peak	Vertical
3.	2390.000	43.06	-2.86	40.20	54.00	-13.80	Average	Vertical
4.	2402.000	97.22	-2.80	94.42	---	---	Average	Vertical

Detector mode: Peak **Polarity: Horizontal**



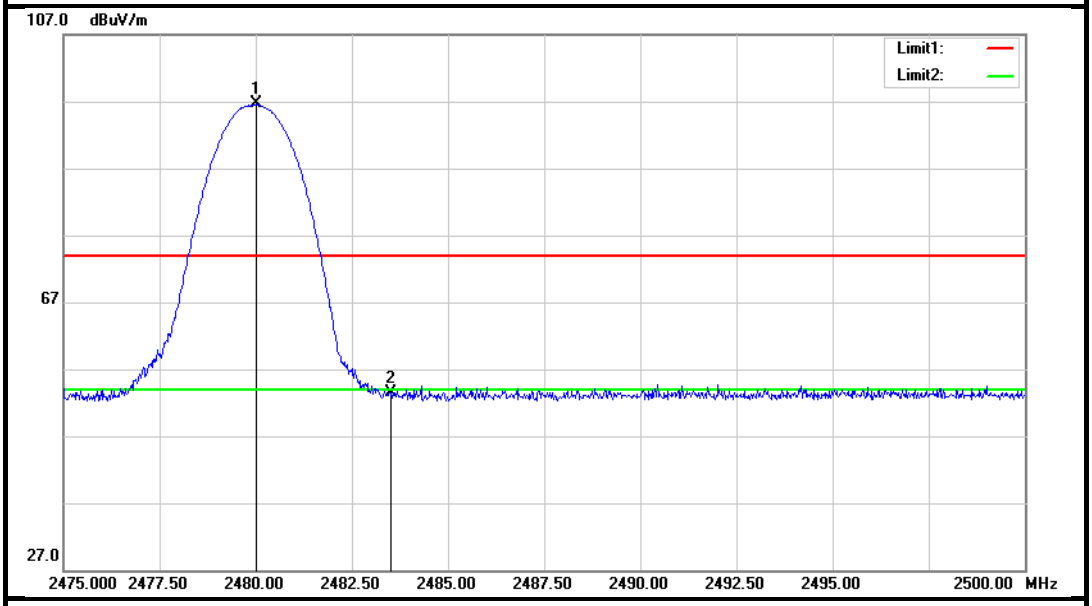
Detector mode: Average **Polarity: Horizontal**



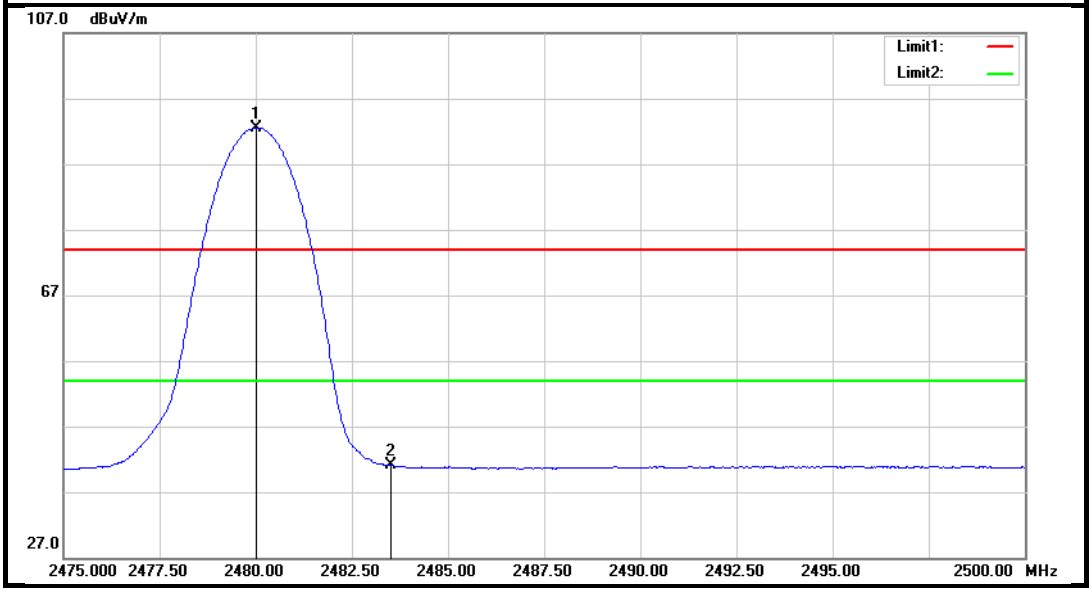
No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
3.	2390.000	54.58	-2.86	51.72	74.00	-22.28	Peak	Horizontal
4.	2402.000	101.96	-2.80	99.16	---	---	Peak	Horizontal
1.	2390.000	42.81	-2.86	39.95	54.00	-14.05	Average	Horizontal
2.	2402.000	97.78	-2.80	94.98	---	---	Average	Horizontal

Band Edges (CH High)

Detector mode: Peak **Polarity: Vertical**

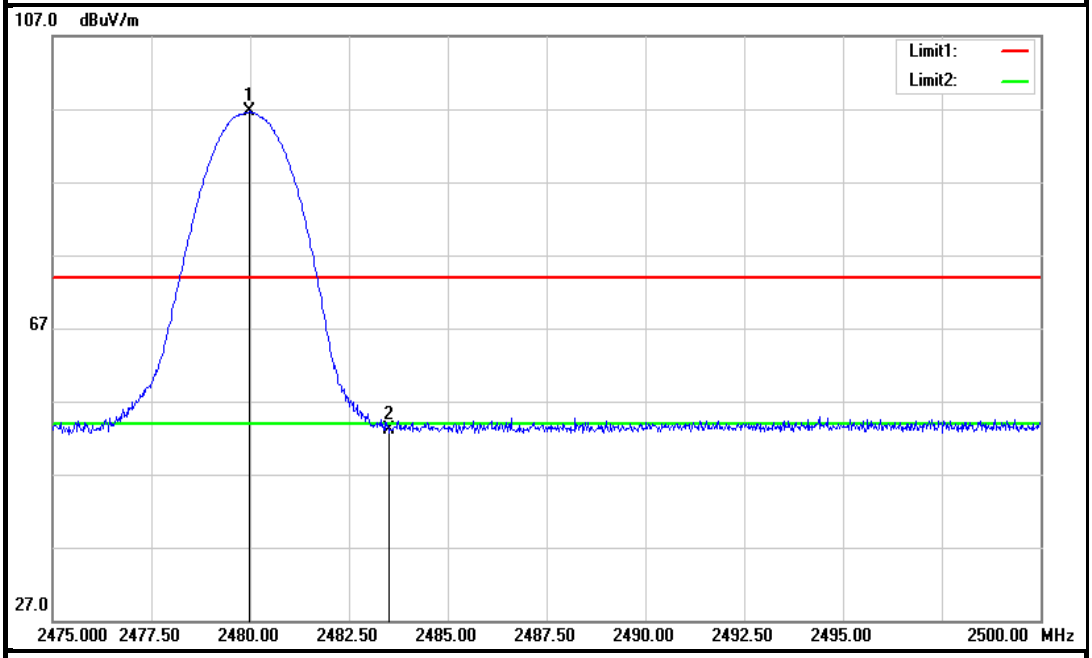


Detector mode: Average **Polarity: Vertical**

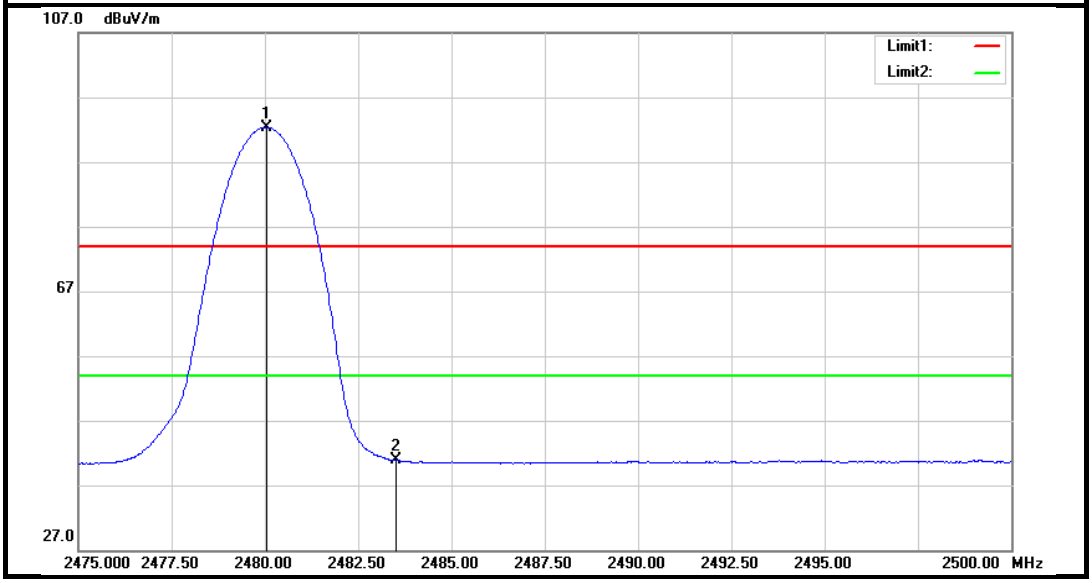


No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
1.	2480.000	98.99	-2.37	96.62	---	---	Peak	Vertical
2.	2483.500	55.89	-2.35	53.54	74.00	-20.46	Peak	Vertical
1.	2480.025	94.96	-2.37	92.59	---	---	Average	Vertical
2.	2483.500	43.46	-2.35	41.11	54.00	-12.89	Average	Vertical

Detector mode: Peak **Polarity: Horizontal**



Detector mode: Average **Polarity: Horizontal**



No.	Frequency (MHz)	Reading (dB)	Factor (dB/m)	Result (dB/m)	Limit (dB/m)	Margin (dB)	Remark	Antenna Polar
3.	2479.975	99.00	-2.37	96.63	---	---	Peak	Horizontal
4.	2483.500	55.46	-2.35	53.11	74.00	-20.89	Peak	Horizontal
3.	2480.050	94.76	-2.37	92.39	---	---	Average	Horizontal
4.	2483.500	43.22	-2.35	40.87	54.00	-13.13	Average	Horizontal

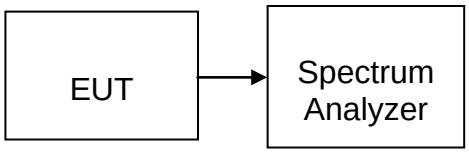
7.9. SPURIOUS EMISSIONS

7.9.1. CONDUCTED MEASUREMENT

7.9.1.1. LIMIT

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

7.9.1.2. TEST CONFIGURATION



7.9.1.3. TEST PROCEDURE

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 100 kHz.

Measurements are made over the 9 kHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels, and highest channels. No emission found between lowest internal used/generated frequency to 10MHz，it is only recorded 10MHz to 26GHz.

7.9.1.4. TEST RESULTS

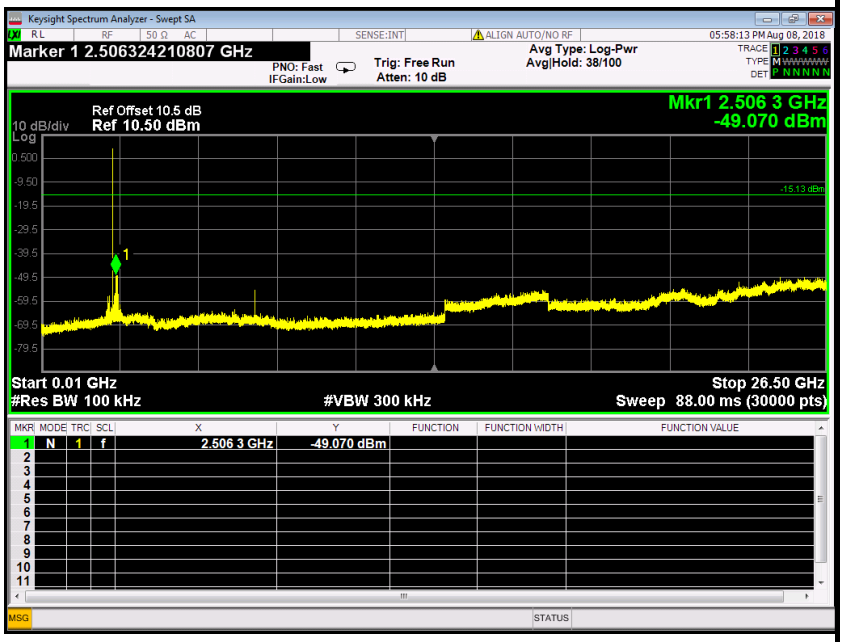
No non-compliance noted

Remark: *The hopping on mode and hopping off mode were chosen for pre-test and the hopping off mode was the worse case and print in the report.*

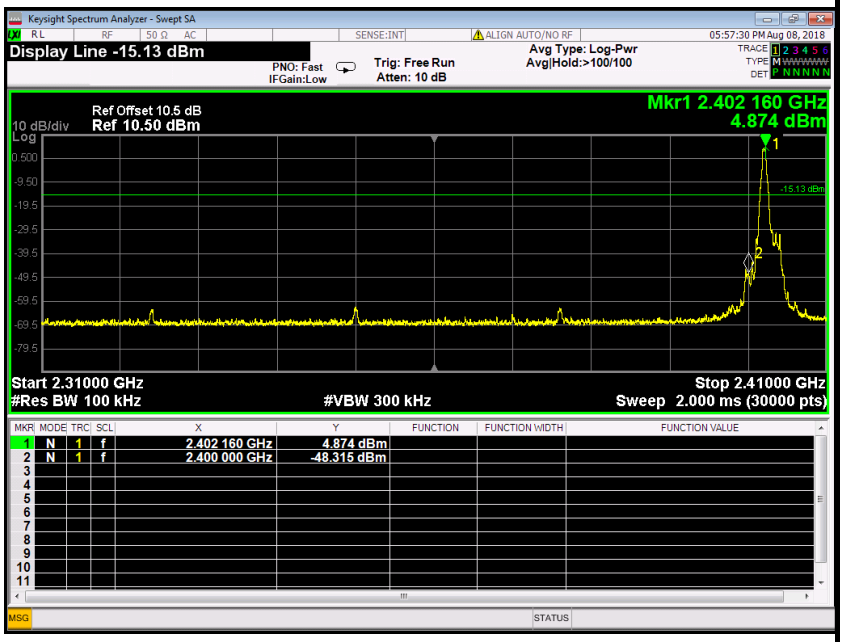
Hopping Off

GFSK mode

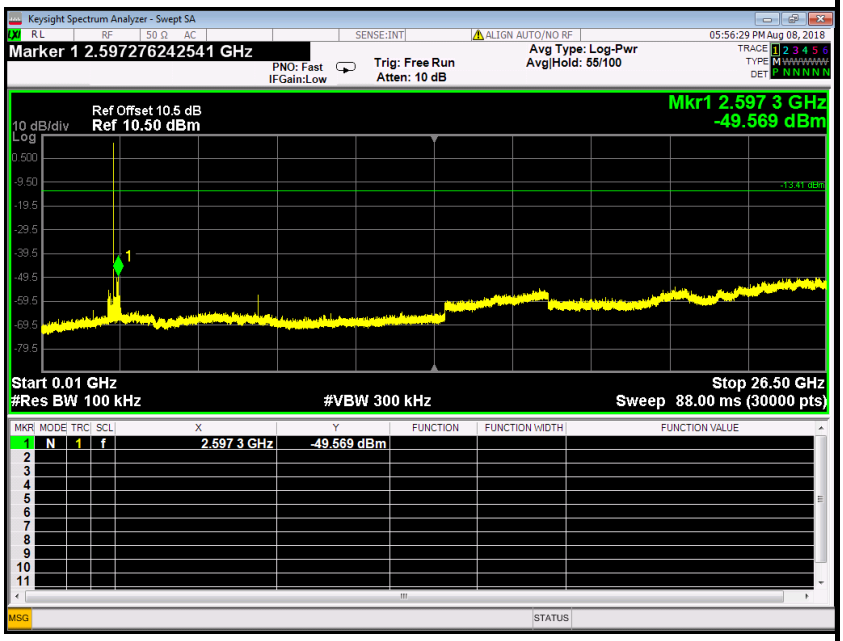
CH Low (10MHz ~26.5GHz)



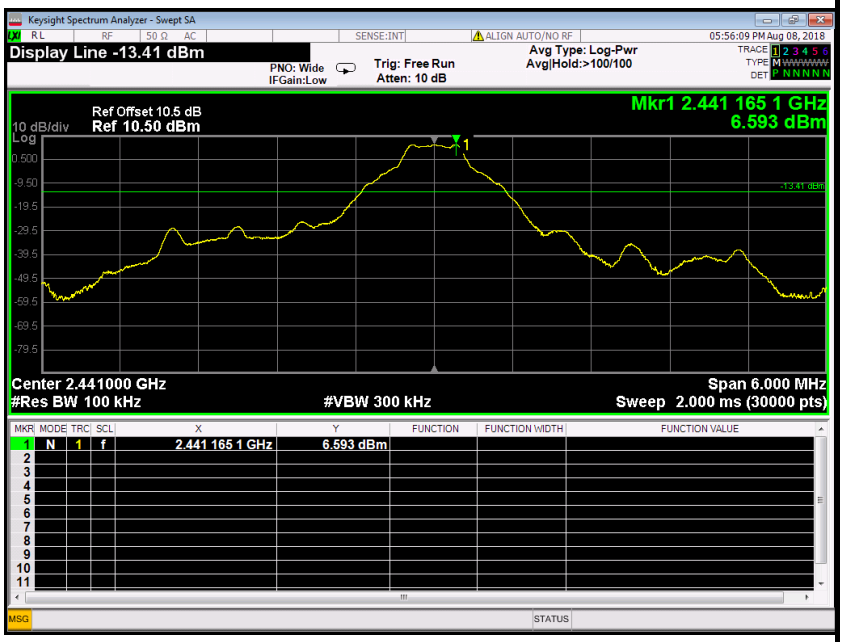
CH Low (2.31GHz ~2.43GHz)



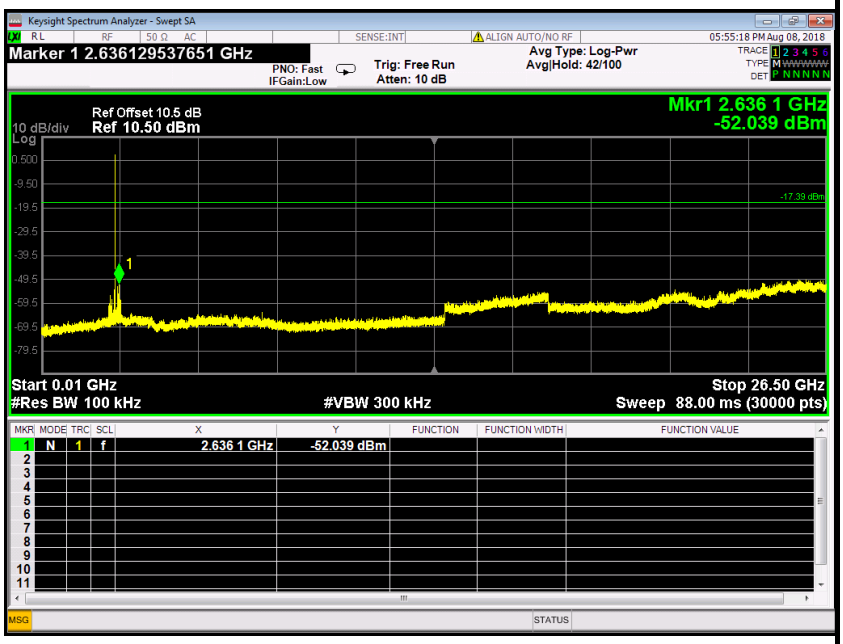
CH Mid (10MHz ~26.5GHz)



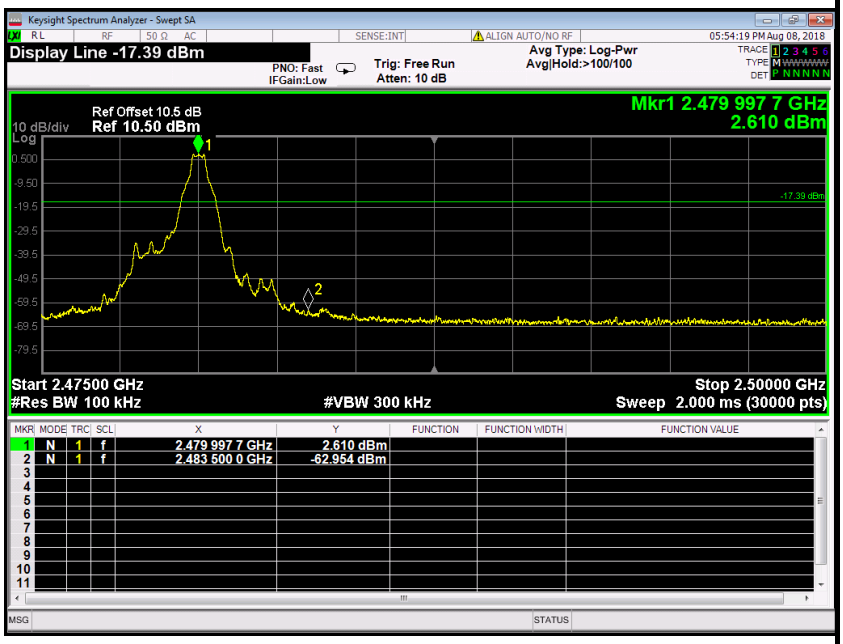
CH Mid



CH High (10MHz ~26.5GHz)

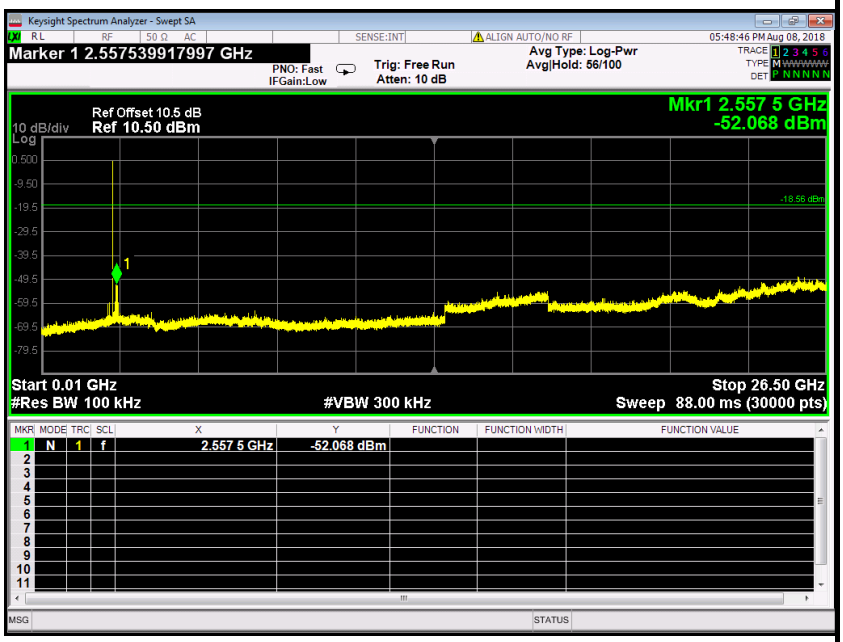


CH High (2.45GHz ~2.5GHz)

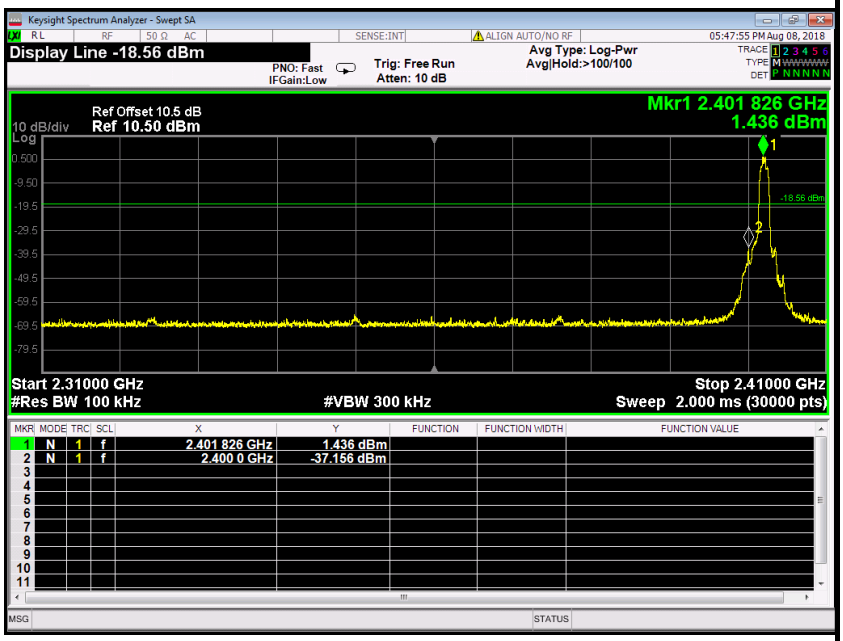


8DPSK mode

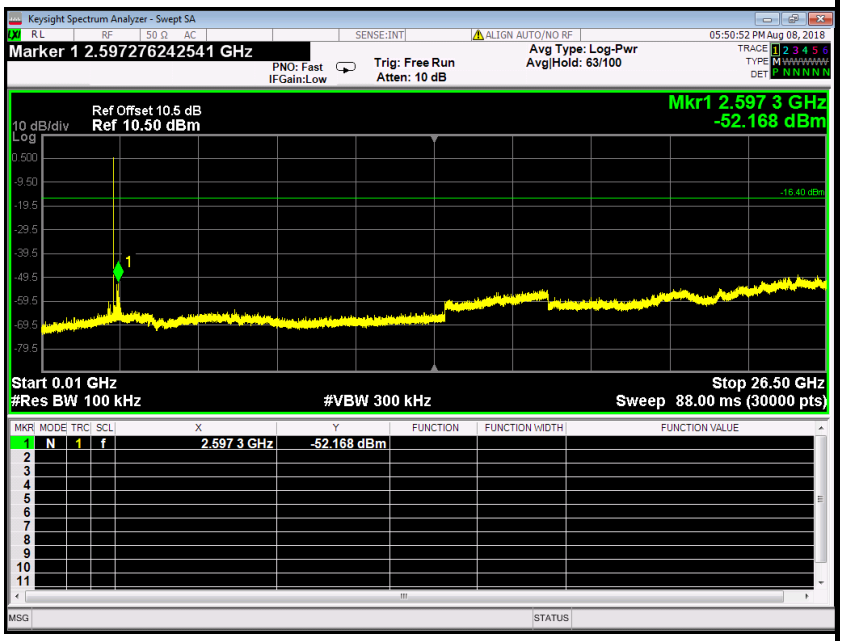
CH Low (10MHz ~26.5GHz)



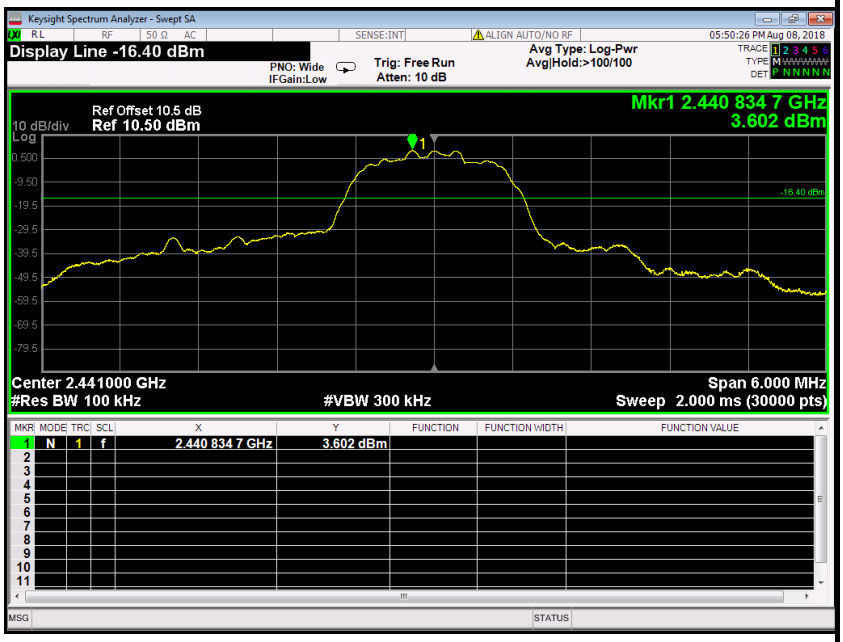
CH Low (2.31GHz ~2.43GHz)



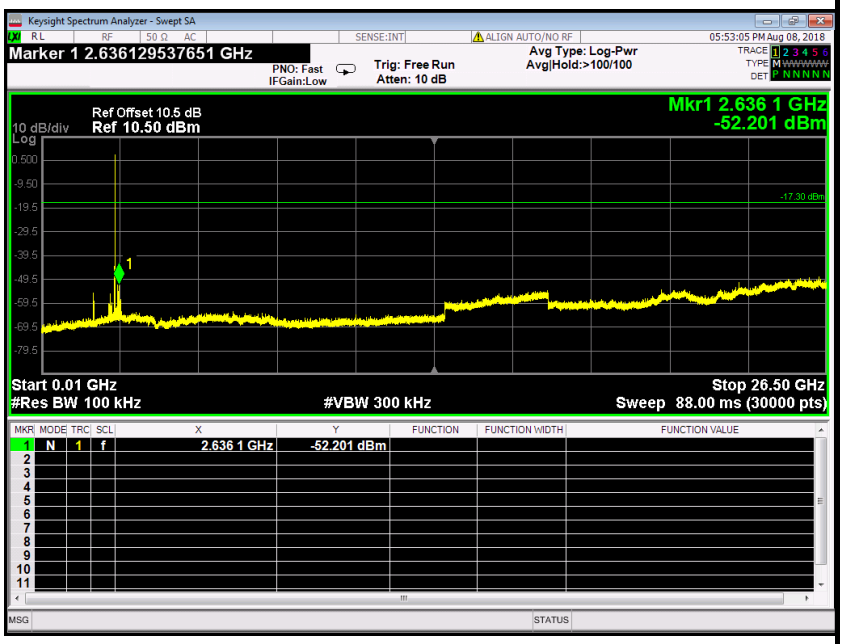
CH Mid (10MHz ~26.5GHz)



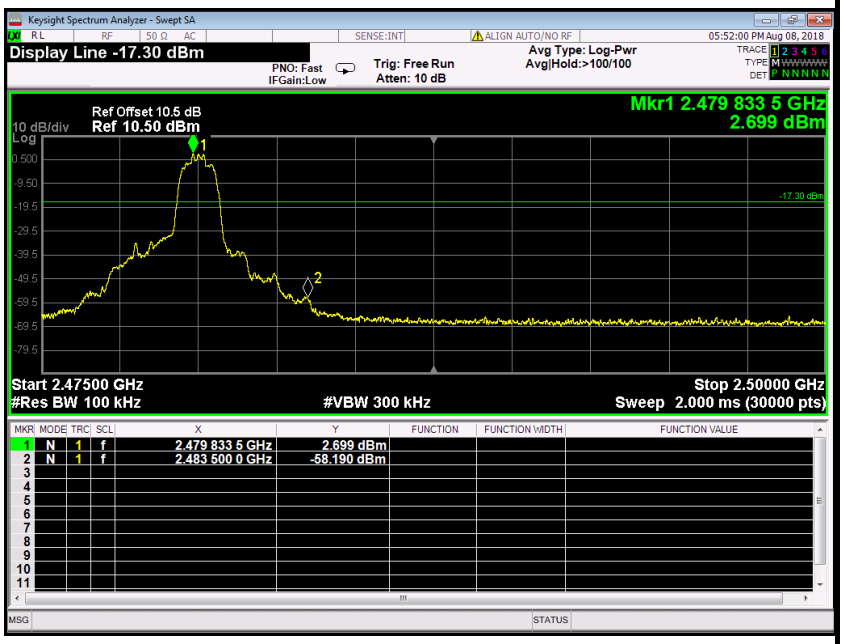
CH Mid



CH High (10MHz ~26.5GHz)



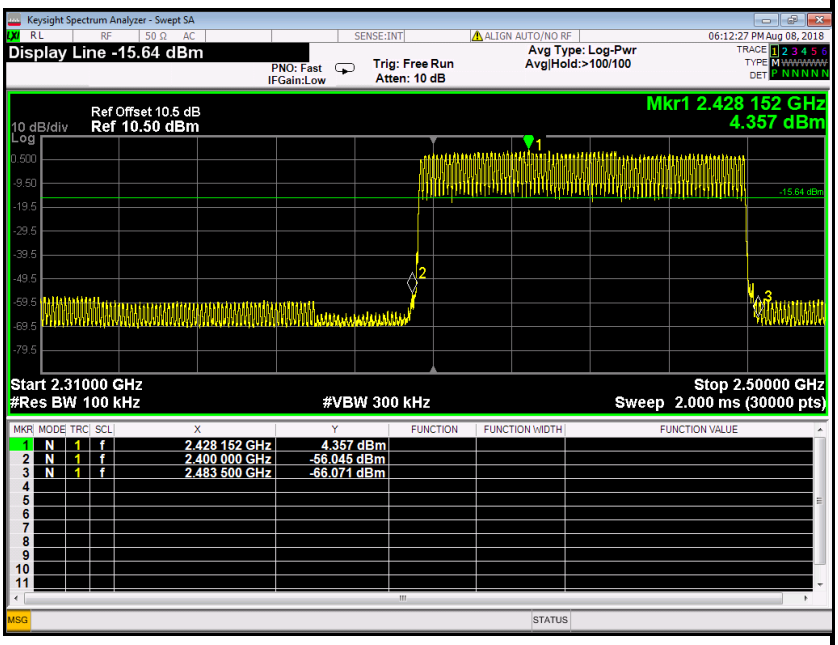
CH High (2.45GHz ~2.5GHz)



Hopping On

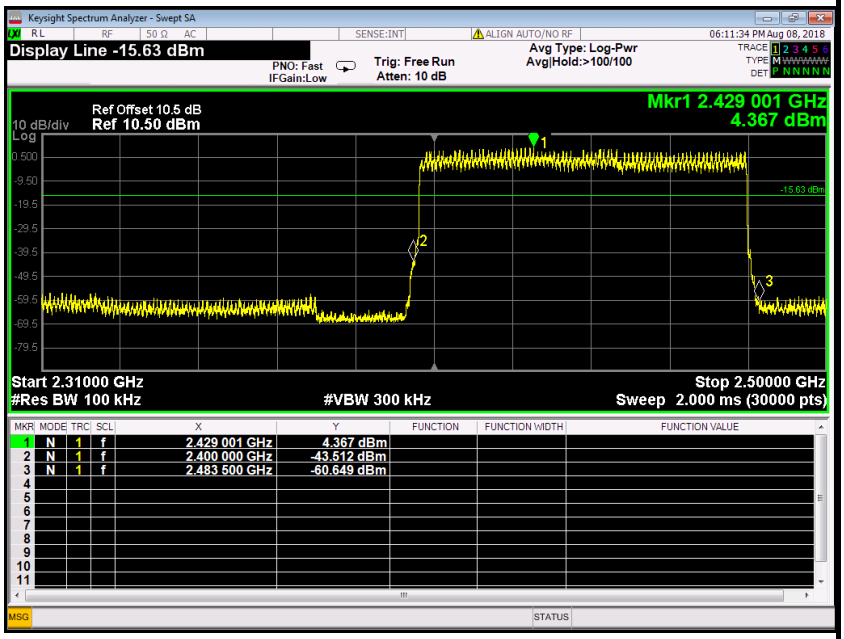
GFSK

CH Low (2.31GHz ~2.5GHz)



8DPSK

CH Low (2.31GHz ~2.5GHz)



7.9.2. RADIATED EMISSIONS

7.9.2.1. LIMIT

1. Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (mV/m)	Measurement Distance (m)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100*	3
88-216	150*	3
216-960	200*	3
Above 960	500	3

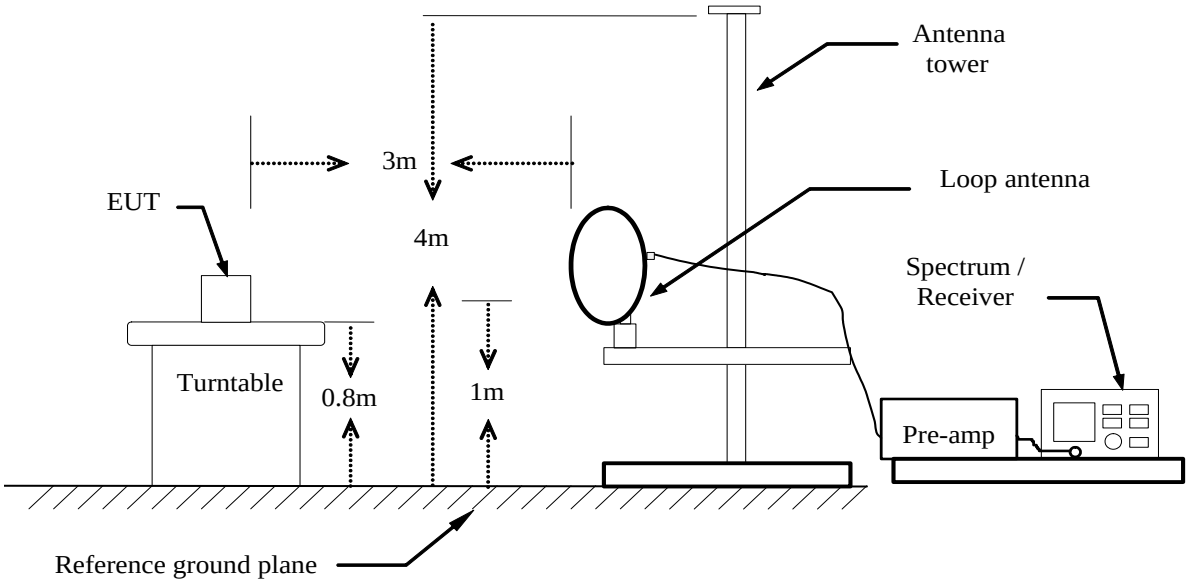
Note: *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of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

2. In the above emission table, the tighter limit applies at the band edges.

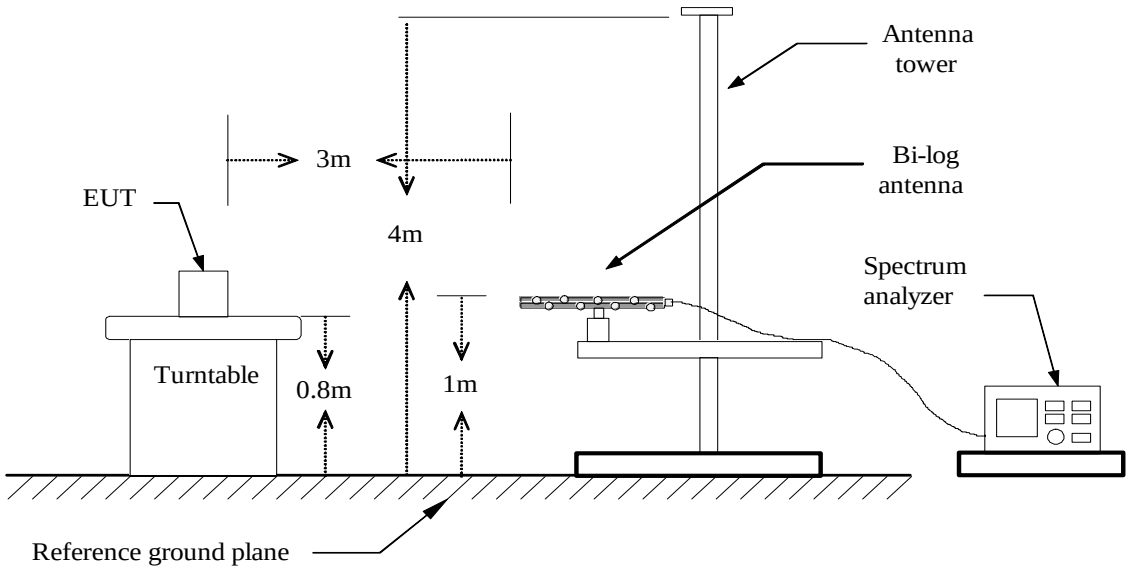
Frequency (Hz)	Field Strength (μV/m at 3-meter)	Field Strength (dBμV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

7.9.2.2. TEST CONFIGURATION

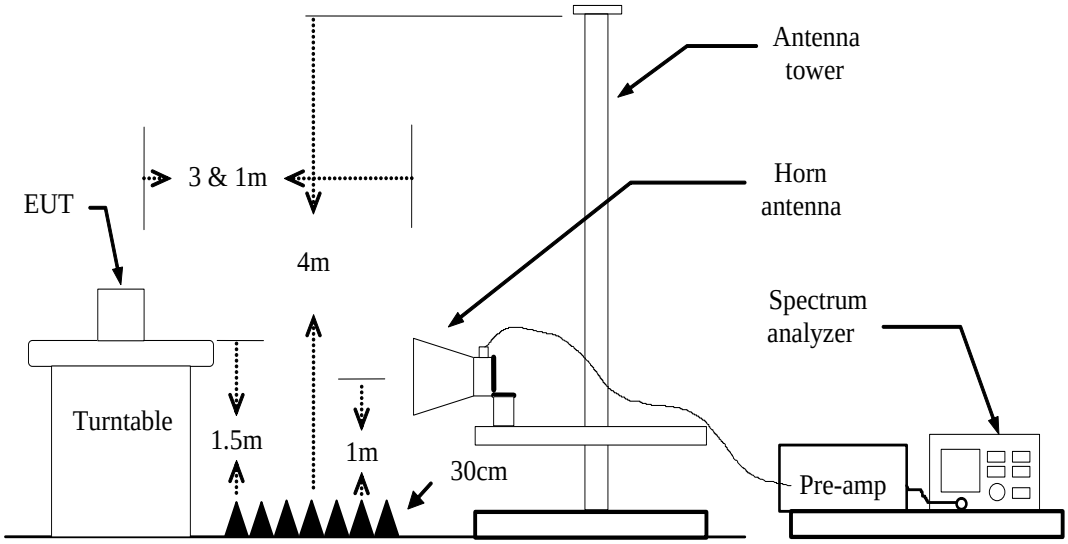
Below 30MHz



Below 1 GHz



Above 1 GHz



7.9.2.3. MEASURING SETTING

The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/T for Average
RB / VB (Emission in non-restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/T for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP/AVG
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP/AVG
Start ~ Stop Frequency	30MHz~1000MHz / RB 100kHz for QP

7.9.2.4. TEST PROCEDURE

1) Sequence of testing 9 kHz to 30 MHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions.

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

Pre measurement:

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna height is 0.8 meter.

--- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

Final measurement:

--- Identified emissions during the pre measurement the software maximizes by rotating the turntable position (0° to 360°) and by rotating the elevation axes (0° to 360°).

--- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QPK detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the pre measurement and the limit will be stored.

2) Sequence of testing 30 MHz to 1 GHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

Pre measurement:

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna is polarized vertical and horizontal.

--- The antenna height changes from 1 to 3 meter.

--- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement:

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (± 45°) and antenna movement between 1 and 4 meter.

--- The final measurement will be done with QP detector with an EMI receiver.

--- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

3) Sequence of testing 1 GHz to 18 GHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

Pre measurement:

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna is polarized vertical and horizontal.

--- The antenna height scan range is 1 meter to 2.5 meter.

--- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

Final measurement:

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (± 45°) and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna

polarizations.

--- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.
--- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the pre measurement with marked maximum final measurements and the limit will be stored.

4) Sequence of testing above 18 GHz
Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 1 meter.

--- The EUT was set into operation.

Pre measurement:

--- The antenna is moved spherical over the EUT in different polarisations of the antenna.

Final measurement:

--- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with Peak and Average detector.
--- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

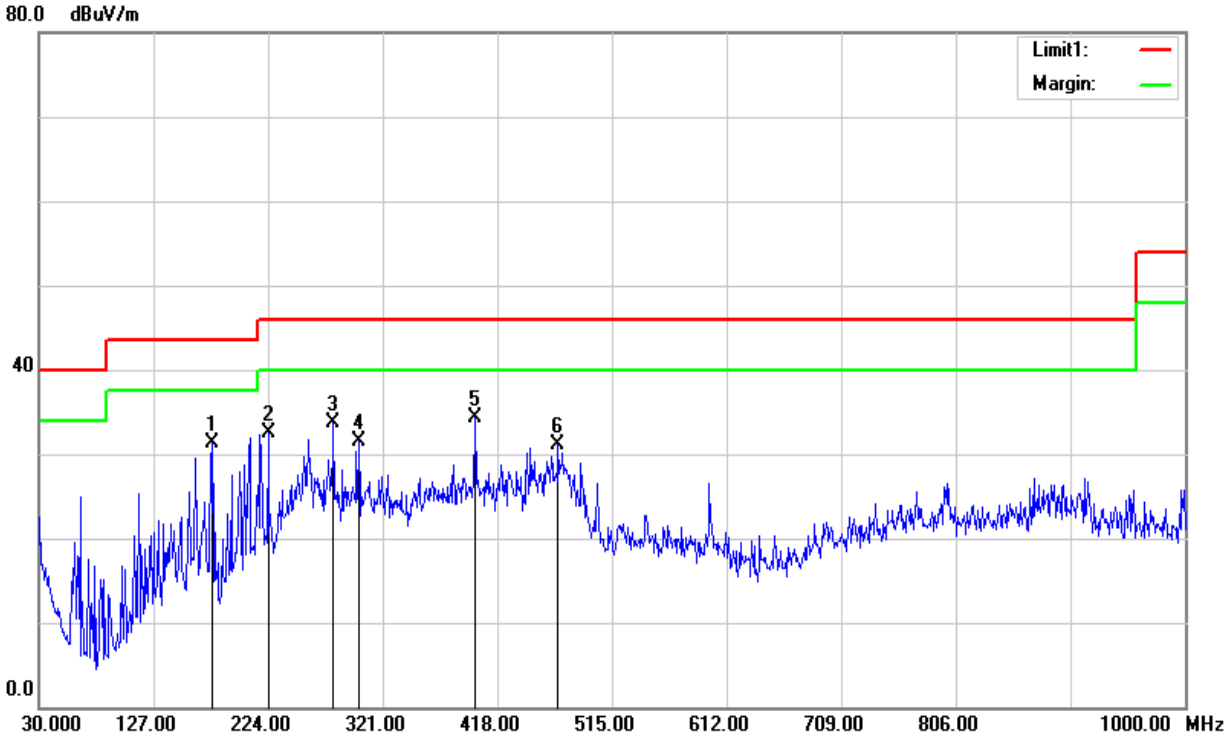
7.9.2.5. TEST RESULTS

Below 1 GHz

Notes:

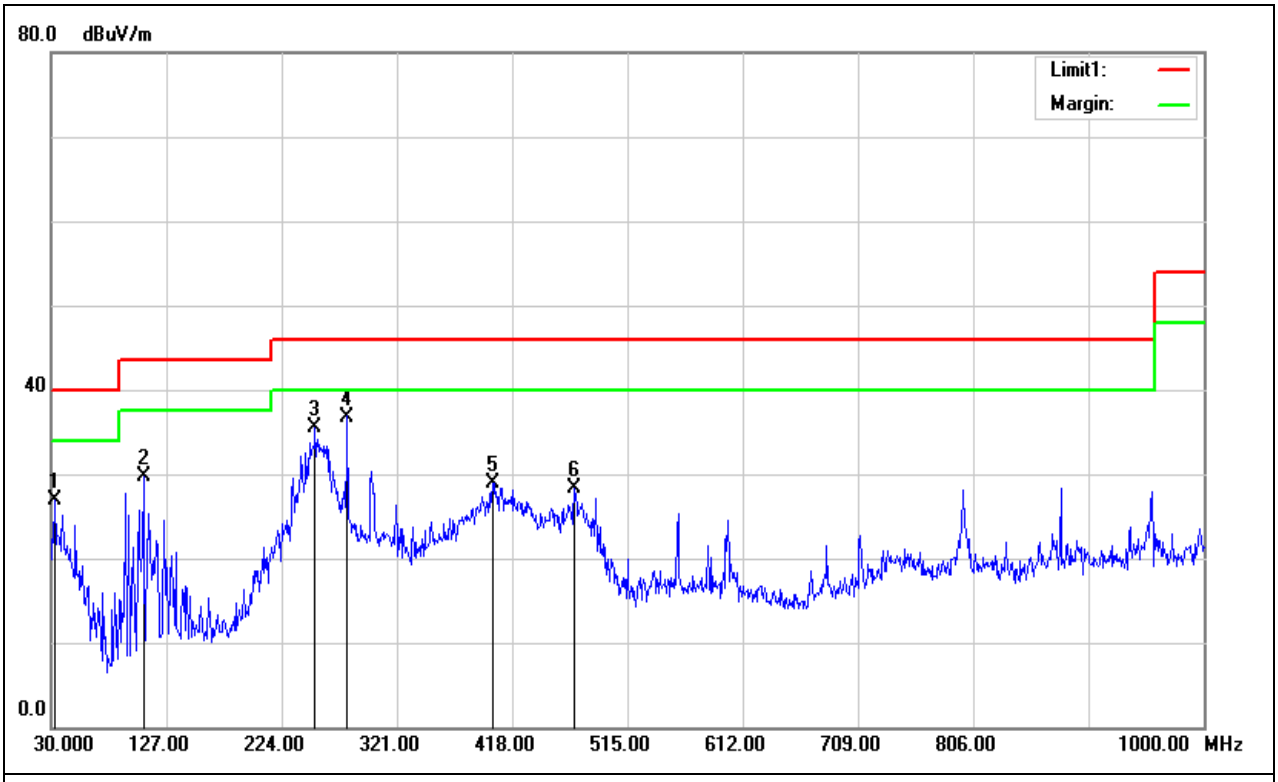
1. No emission found between lowest internal used/generated frequency to 30MHz.
2. Pre-scan all mode and recorded the worst case results in this report (TX-Low Channel(1Mbps)

Temp. & Humidity	24°C, 52%	Test By	Eve Wang
Polarization	Vertical	Test Date	2018/08/09
Test Mode	TX / GFSK / CH Low		



Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
176.4700	54.29	-22.94	31.35	43.50	-12.15	QP
224.0000	53.39	-20.95	32.44	46.00	-13.56	QP
279.2900	54.19	-20.40	33.79	46.00	-12.21	QP
300.6300	51.10	-19.55	31.55	46.00	-14.45	QP
399.5700	50.48	-16.10	34.38	46.00	-11.62	QP
469.4100	45.77	-14.75	31.02	46.00	-14.98	QP

Temp. & Humidity	24°C, 52%	Test By	Eve Wang
Polarization	Horizontal	Test Date	2018/08/09
Test Mode	TX / GFSK / CH Low		



Frequency (MHz)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
32.9100	40.27	-13.43	26.84	40.00	-13.16	QP
107.6000	51.89	-22.27	29.62	43.50	-13.88	QP
252.1300	56.30	-20.83	35.47	46.00	-10.53	QP
279.2900	57.20	-20.40	36.80	46.00	-9.20	QP
401.5100	44.93	-16.02	28.91	46.00	-17.09	QP
470.3800	43.01	-14.71	28.30	46.00	-17.70	QP

Above 1 GHz

Temp. & Humidity	24°C, 52%	Test By	Eve Wang
Polarization	Vertical / Horizontal	Test Date	2018/08/09
Test Mode	TX / GFSK / CH Low		

Frequency	Reading	Correction Factor	Result	Limit	Margin	Antenna Pole	Remark
(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(V/H)	
1342.000	49.26	-7.27	41.99	74.00	-32.01	V	peak
2566.000	45.23	-2.14	43.09	74.00	-30.91	V	peak
3898.000	42.58	1.16	43.74	74.00	-30.26	V	peak
4879.000	53.09	4.59	57.68	74.00	-16.32	V	peak
4879.000	48.59	4.59	53.18	54.00	-0.82	V	AVG
5680.000	42.04	5.95	47.99	74.00	-26.01	V	peak
6382.000	40.72	6.70	47.42	74.00	-26.58	V	peak
1900.000	47.09	-5.63	41.46	74.00	-32.54	H	Peak
2503.000	44.89	-2.25	42.64	74.00	-31.36	H	Peak
3628.000	42.93	0.02	42.95	74.00	-31.05	H	Peak
4879.000	49.56	4.59	54.15	74.00	-19.85	H	Peak
4879.000	45.95	4.59	50.54	54.00	-3.46	H	AVG
5761.000	41.31	5.98	47.29	74.00	-26.71	H	peak
6598.000	41.57	7.05	48.62	74.00	-25.38	H	peak

Temp. & Humidity	24°C, 52%	Test By	Eve Wang
Polarization	Vertical / Horizontal	Test Date	2018/08/09
Test Mode	TX / GFSK / CH Mid		

Frequency	Reading	Correction Factor	Result	Limit	Margin	Antenna Pole	Remark
(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(V/H)	
1900.000	50.60	-5.63	44.97	74.00	-29.03	V	peak
2071.000	49.18	-4.61	44.57	74.00	-29.43	V	peak
2512.000	45.97	-2.24	43.73	74.00	-30.27	V	peak
4960.000	49.12	4.85	53.97	74.00	-20.03	V	peak
4960.000	45.53	4.85	50.38	54.00	-3.62	V	AVG
5761.000	44.20	5.98	50.18	74.00	-23.82	V	peak
6013.000	43.38	6.10	49.48	74.00	-24.52	V	peak
1468.000	49.31	-6.94	42.37	74.00	-31.63	H	Peak
1900.000	48.71	-5.63	43.08	74.00	-30.92	H	Peak
2602.000	45.10	-2.08	43.02	74.00	-30.98	H	Peak
3943.000	42.98	1.35	44.33	74.00	-29.67	H	Peak
4960.000	49.91	4.85	54.76	74.00	-19.24	H	peak
4960.000	47.46	4.85	52.31	54.00	-1.69	H	AVG
5590.000	41.49	5.91	47.40	74.00	-26.60	H	peak

Temp. & Humidity	24°C, 52%	Test By	Eve Wang
Polarization	Vertical / Horizontal	Test Date	2018/08/09
Test Mode	TX / GFSK / CH High		

Frequency	Reading	Correction Factor	Result	Limit	Margin	Antenna Pole	Remark
(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(V/H)	
1900.000	50.60	-5.63	44.97	74.00	-29.03	V	peak
2071.000	49.18	-4.61	44.57	74.00	-29.43	V	peak
2512.000	45.97	-2.24	43.73	74.00	-30.27	V	peak
3889.000	42.96	1.12	44.08	74.00	-29.92	V	peak
4960.000	49.12	4.85	53.97	74.00	-20.03	V	peak
4960.000	45.56	4.85	50.41	54.00	-3.59	V	AVG
5761.000	44.20	5.98	50.18	74.00	-23.82	V	peak
1297.000	47.87	-7.44	40.43	74.00	-33.57	H	Peak
1900.000	47.33	-5.63	41.70	74.00	-32.30	H	Peak
2512.000	45.57	-2.24	43.33	74.00	-30.67	H	Peak
3214.000	44.48	-1.00	43.48	74.00	-30.52	H	Peak
4330.000	42.03	2.75	44.78	74.00	-29.22	H	peak
4960.000	50.19	4.85	55.04	74.00	-18.96	H	peak
4960.000	47.96	4.85	52.81	54.00	-1.19	H	AVG

Temp. & Humidity	24°C, 52%	Test By	Eve Wang
Polarization	Vertical / Horizontal	Test Date	2018/08/09
Test Mode	TX / 8DPSK / CH Low		

Frequency	Reading	Correction Factor	Result	Limit	Margin	Antenna Pole	Remark
(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(V/H)	
1027.000	52.23	-8.45	43.78	74.00	-30.22	V	peak
1594.000	64.99	-6.71	58.28	74.00	-15.72	V	peak
1594.000	40.29	-6.71	33.58	54.00	-20.42	V	AVG
2512.000	44.77	-2.24	42.53	74.00	-31.47	V	peak
3187.000	44.89	-1.05	43.84	74.00	-30.16	V	peak
4807.000	46.92	4.35	51.27	74.00	-22.73	V	peak
5473.000	41.11	5.82	46.93	74.00	-27.07	V	peak
1081.000	52.22	-8.24	43.98	74.00	-30.02	H	Peak
1594.000	61.08	-6.71	54.37	74.00	-19.63	H	Peak
1594.000	38.29	-6.71	31.58	54.00	-22.42	H	AVG
2539.000	44.59	-2.19	42.40	74.00	-31.60	H	Peak
3187.000	47.59	-1.05	46.54	74.00	-27.46	H	Peak
4807.000	47.93	4.35	52.28	74.00	-21.72	H	peak
5464.000	40.49	5.81	46.30	74.00	-27.70	H	peak

Temp. & Humidity	24°C, 52%	Test By	Eve Wang
Polarization	Vertical / Horizontal	Test Date	2018/08/09
Test Mode	TX / 8DPSK / CH Mid		

Frequency	Reading	Correction Factor	Result	Limit	Margin	Antenna Pole	Remark
(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(V/H)	
1072.000	53.08	-8.28	44.80	74.00	-29.20	V	peak
1333.000	51.08	-7.30	43.78	74.00	-30.22	V	peak
1594.000	62.61	-6.71	55.90	74.00	-18.10	V	peak
1594.000	39.38	-6.71	32.67	54.00	-21.33	V	AVG
2539.000	44.63	-2.19	42.44	74.00	-31.56	V	peak
4879.000	47.68	4.59	52.27	74.00	-21.73	V	peak
4879.000	43.56	4.59	48.15	54.00	-5.85	V	AVG
5869.000	41.24	6.02	47.26	74.00	-26.74	V	peak
1324.000	47.73	-7.34	40.39	74.00	-33.61	H	Peak
1594.000	63.43	-6.71	56.72	74.00	-17.28	H	Peak
1594.000	33.53	-6.71	26.82	54.00	-27.18	H	AVG
2521.000	44.32	-2.22	42.10	74.00	-31.90	H	Peak
3979.000	41.55	1.50	43.05	74.00	-30.95	H	Peak
4879.000	48.62	4.59	53.21	74.00	-20.79	H	peak
4879.000	44.86	4.59	49.45	54.00	-4.55	H	AVG
5725.000	40.96	5.96	46.92	74.00	-27.08	H	peak

Temp. & Humidity	24°C, 52%	Test By	Eve Wang
Polarization	Vertical / Horizontal	Test Date	2018/08/09
Test Mode	TX / 8DPSK / CH High		

Frequency	Reading	Correction Factor	Result	Limit	Margin	Antenna Pole	Remark
(MHz)	(dBuV)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	(V/H)	
1441.000	54.36	-6.99	47.37	74.00	-26.63	V	peak
1603.000	58.29	-6.69	51.60	74.00	-22.40	V	peak
2512.000	45.14	-2.24	42.90	74.00	-31.10	V	peak
4186.000	41.87	2.24	44.11	74.00	-29.89	V	peak
4960.000	48.40	4.85	53.25	74.00	-20.75	V	peak
4960.000	43.22	4.85	48.07	54.00	-5.93	V	AVG
5500.000	41.20	5.87	47.07	74.00	-26.93	V	peak
1063.000	59.65	-8.31	51.34	74.00	-22.66	H	Peak
1333.000	54.50	-7.30	47.20	74.00	-26.80	H	Peak
1594.000	58.95	-6.71	52.24	74.00	-21.76	H	Peak
1594.000	40.96	-6.71	34.25	54.00	-19.75	H	AVG
3673.000	42.72	0.21	42.93	74.00	-31.07	H	Peak
4960.000	46.41	4.85	51.26	74.00	-22.74	H	peak
5923.000	40.71	6.05	46.76	74.00	-27.24	H	peak

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
   a. Peak Setting 1GHz - 26GHz, RBW = 1MHz, VBW = 1MHz, Sweep time = auto.
   b. AV Setting 1GH z- 26GHz, RBW = 1MHz, VBW = 10Hz, Sweep time = auto.
5. Frequency (MHz). = Emission frequency in MHz
   Reading (dBμV/m) = Uncorrected Analyzer / Receiver Reading
   Correction Factor (dB) = Antenna factor + Cable loss – Amplifier gain
   Limit (dBμV/m) = Limit stated in standard
   Margin (dB) = Result (dBμV/m)- Limit (dBμV/m)
   Peak =Peak Reading
   AVG. =Average Reading
   Remark = Mark Peak Reading or Average Reading