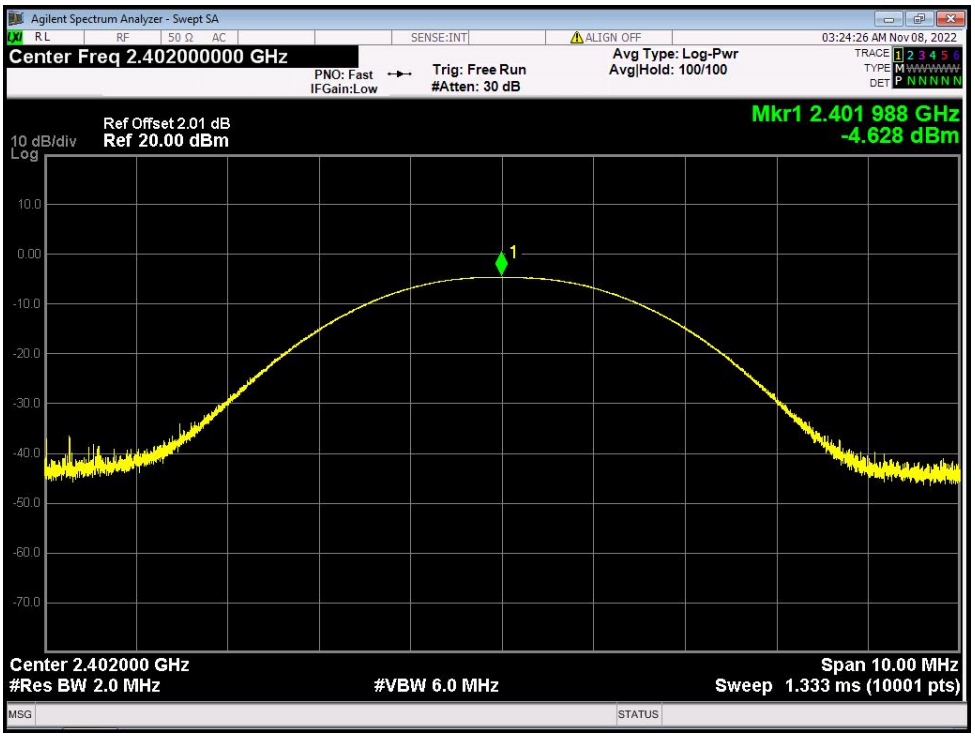
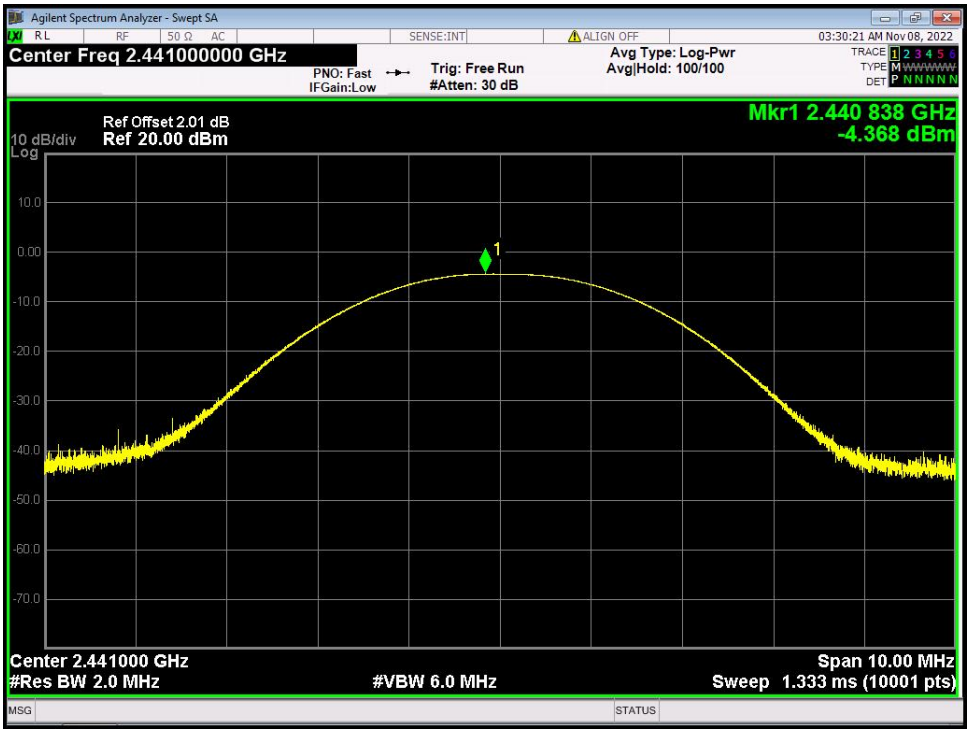
For Bluetooth

Normal mode(DH5):

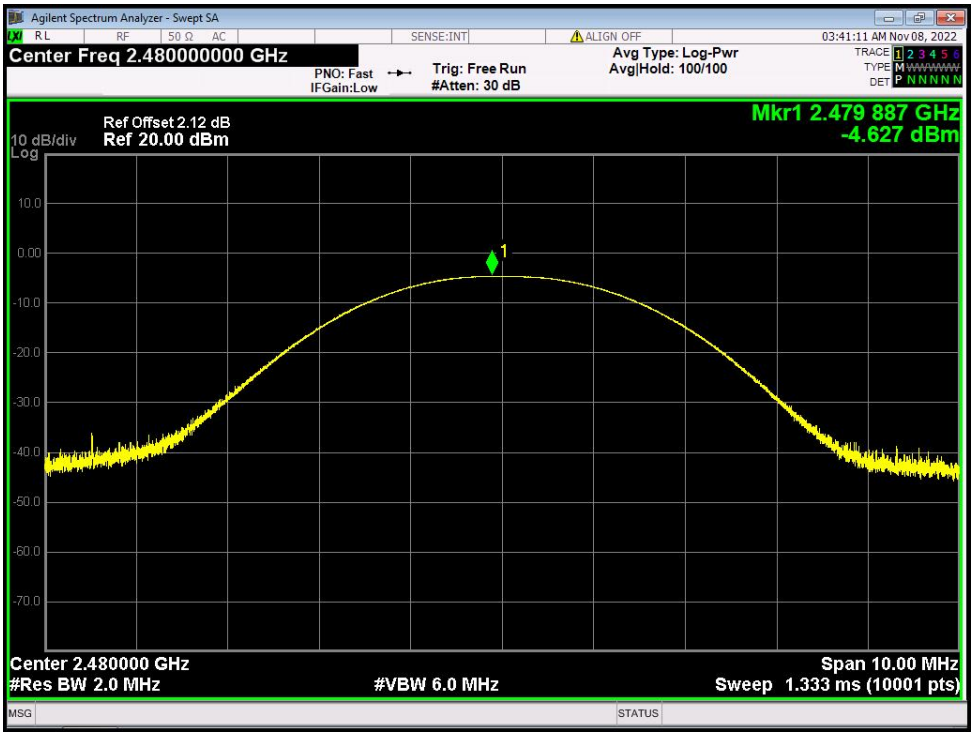
Lowest Channel:



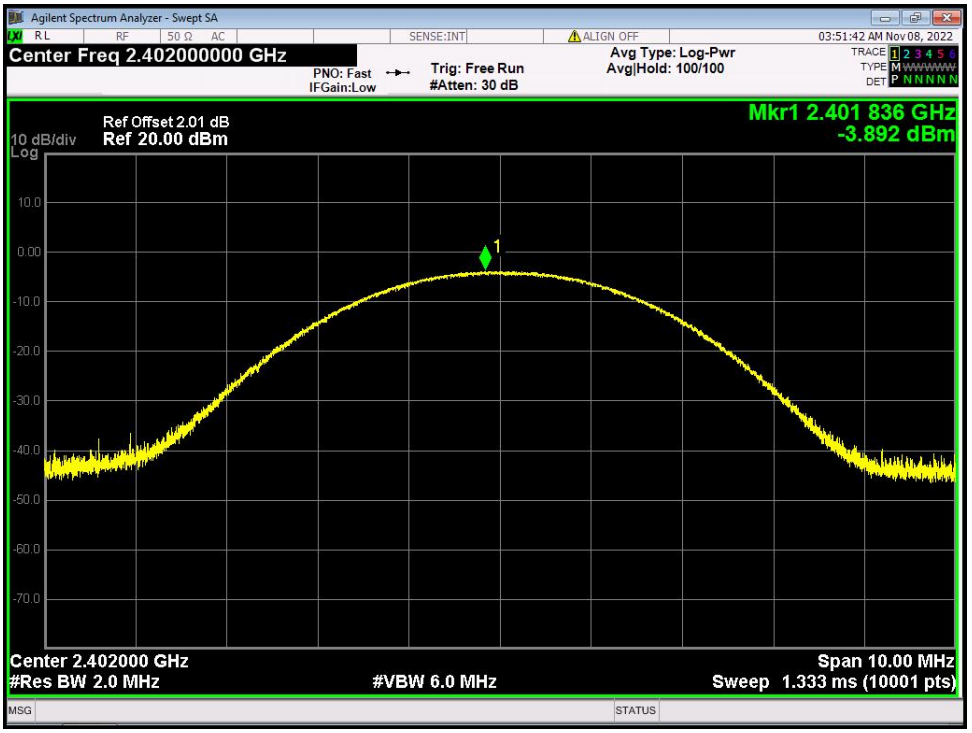
Middle Channel:



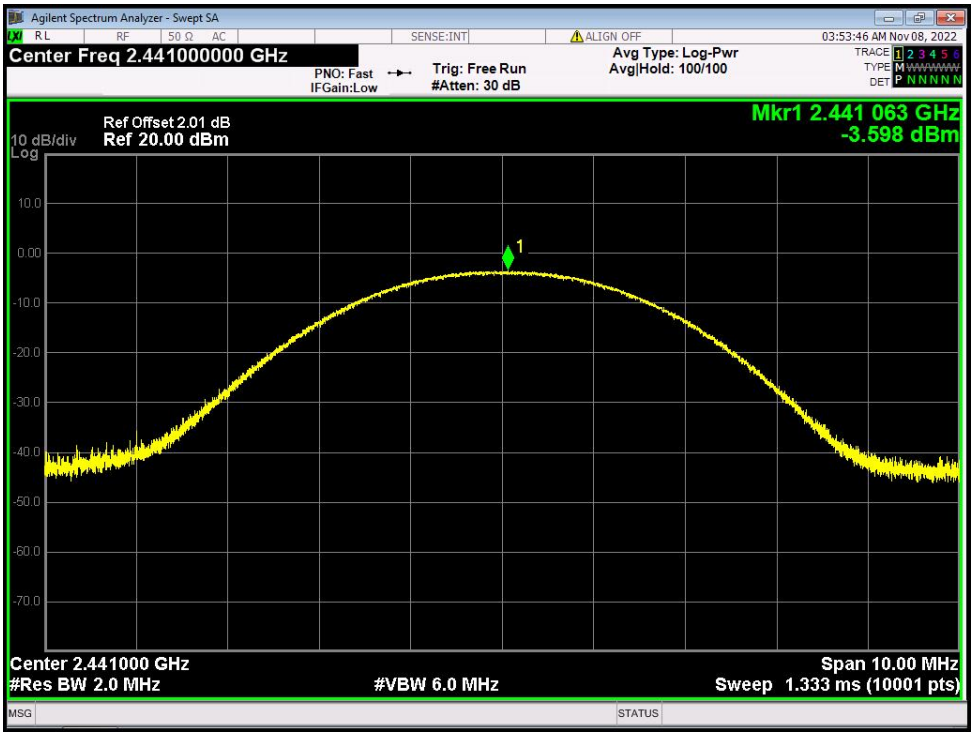
Highest Channel:



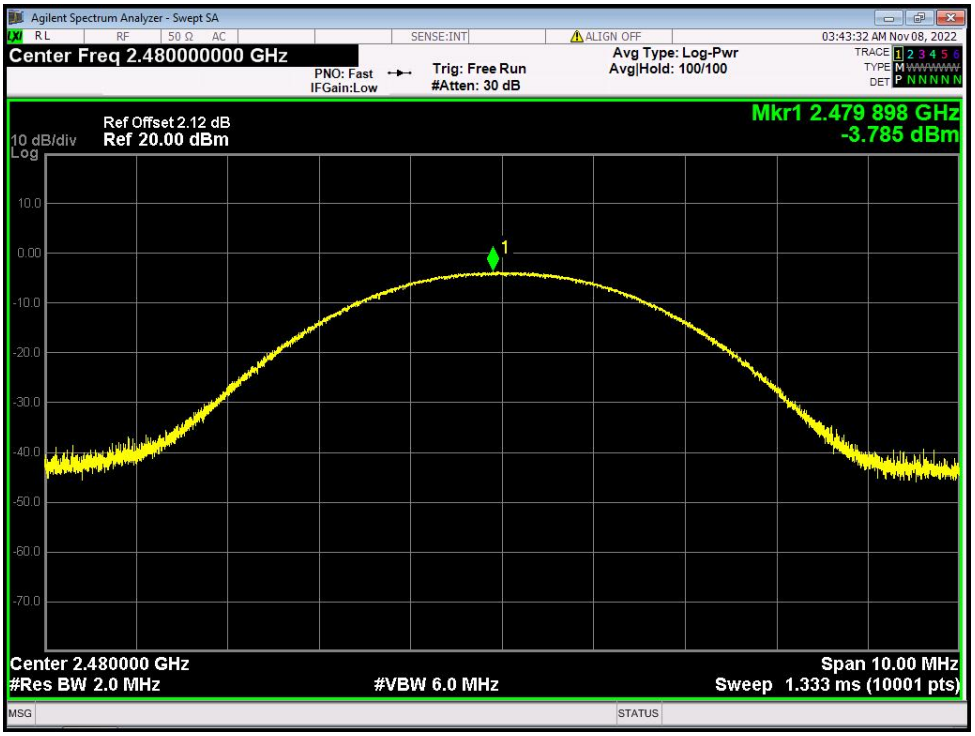
EDR mode (2DH5): Lowest Channel:



Middle Channel:



Highest Channel:



5.8 Conducted Spurious Emissions

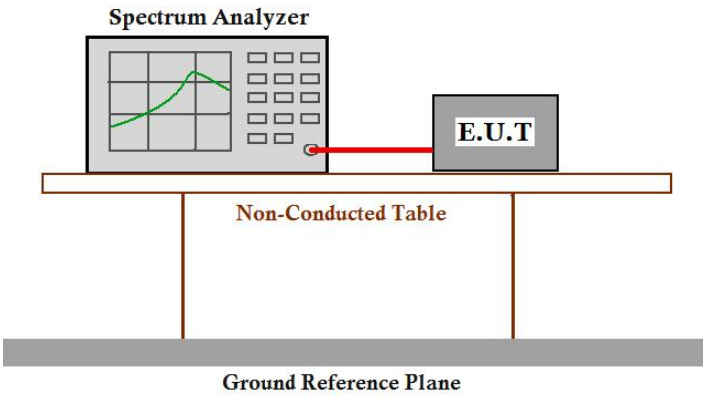
Test Requirement: FCC Part15 C section 15.247

(d) 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. Provided the transmitter demonstrates compliance with the peak conducted power limits.

Test Method: ANSI C63.10:2013

Test Status: Pre-test the EUT in continuous transmitting mode at the lowest, middle and highest channel with different data packet. Compliance test in continuous transmitting mode with normal (DH5) and EDR mode (2DH5) as the worst case was found.

Test Configuration:



Test Procedure:

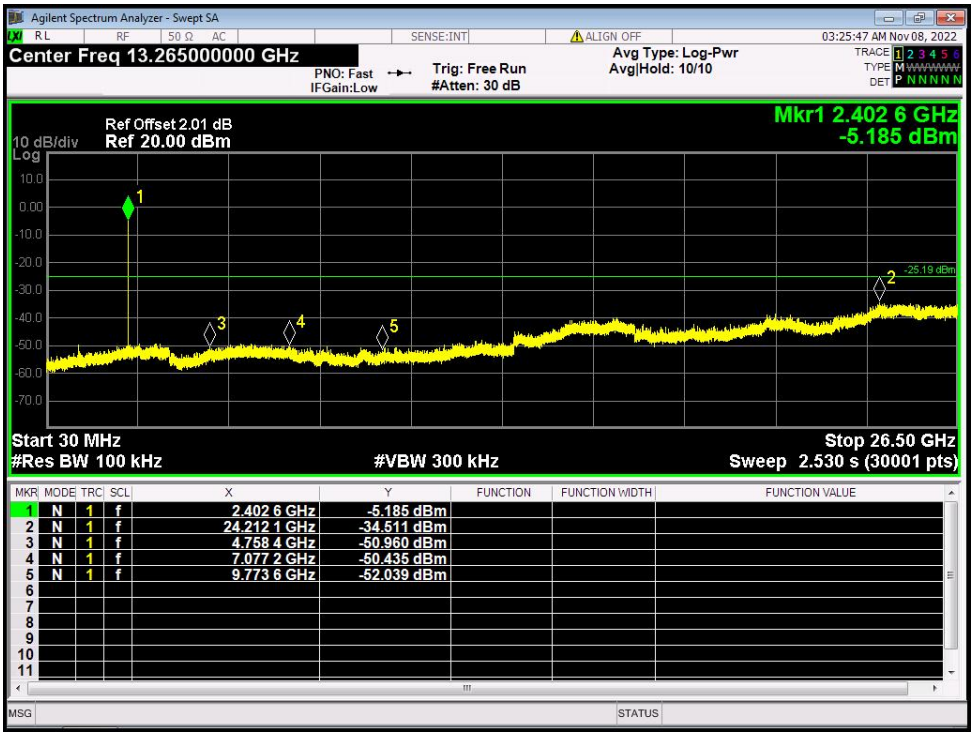
1. Remove the antenna from the EUT and then connect a low attenuation RF cable from the antenna port to the spectrum.

2. Set the spectrum analyzer: RBW = 100 kHz. VBW >= RBW. Sweep = auto; Detector Function = Peak (Max. hold).

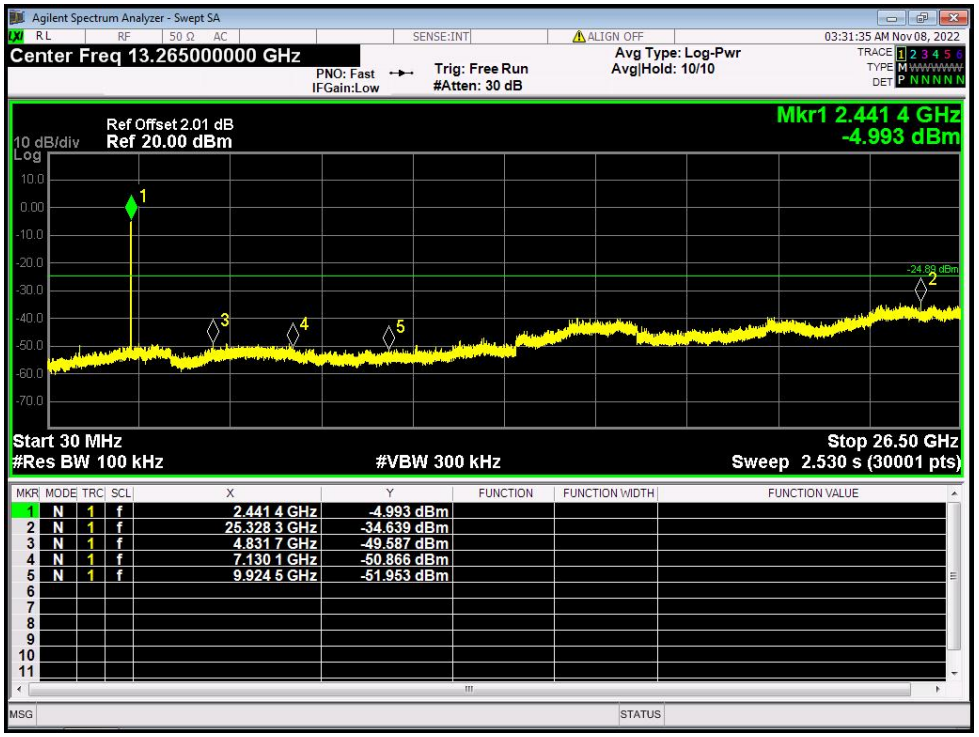
For Bluetooth

Test result plot as follows (Normal mode DH5):

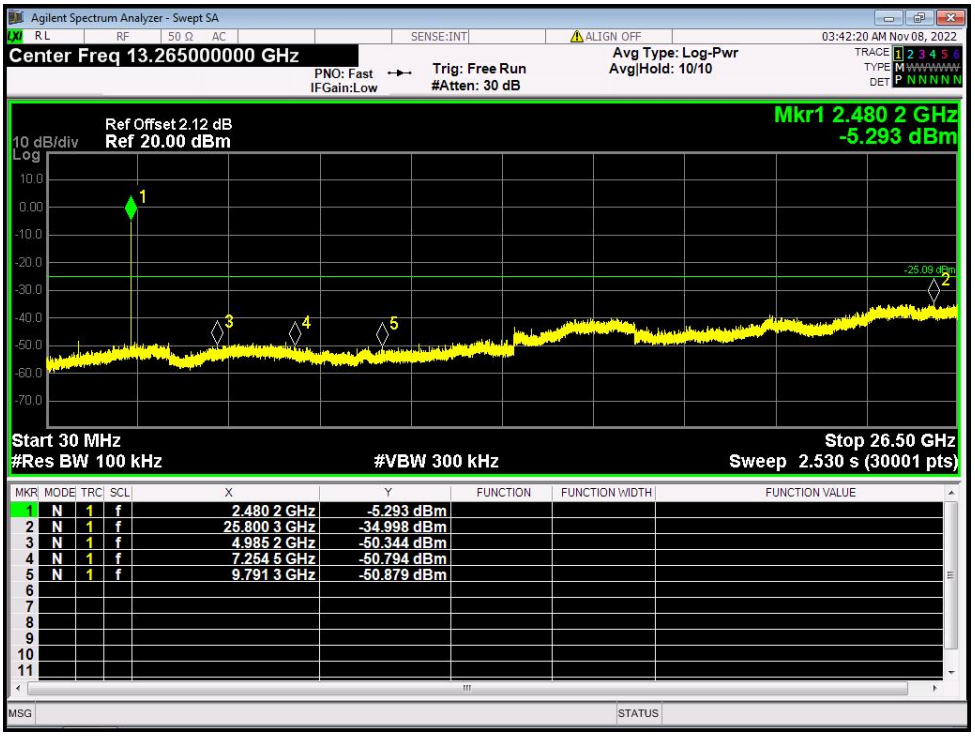
Lowest Channel:



Middle Channel

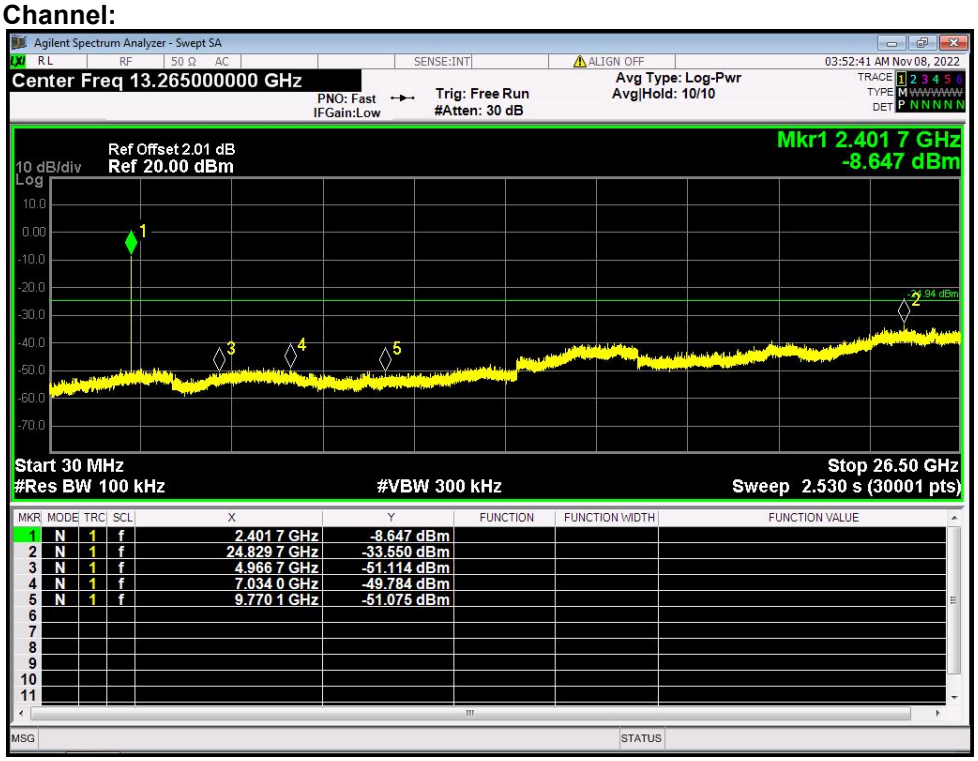


Highest channel

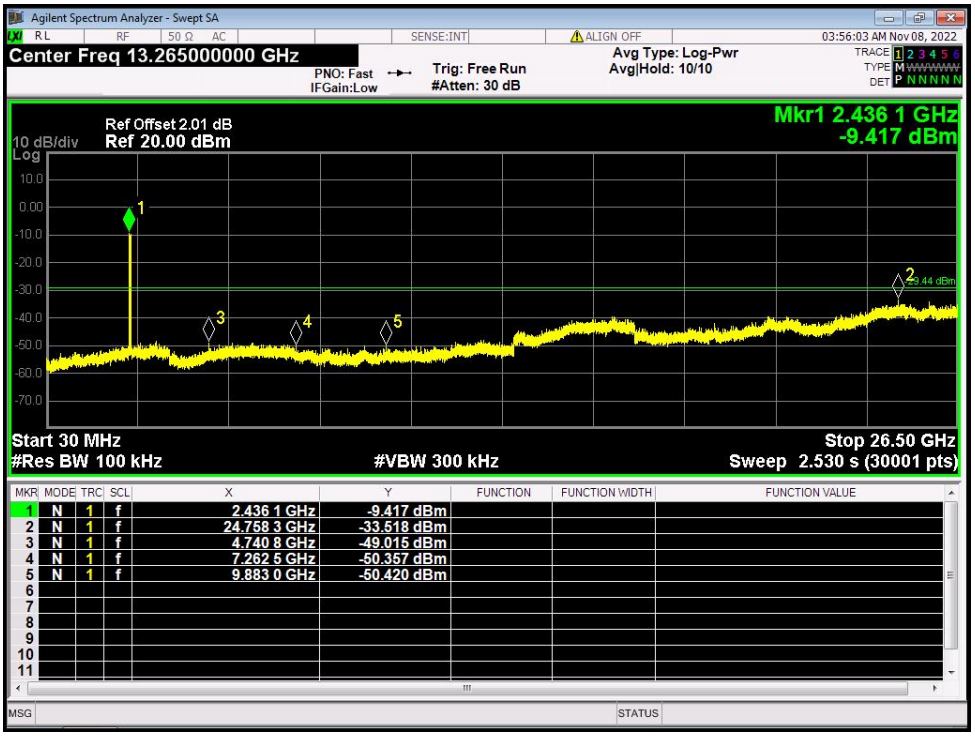


Test result plot as follows (EDR mode-2DH5):

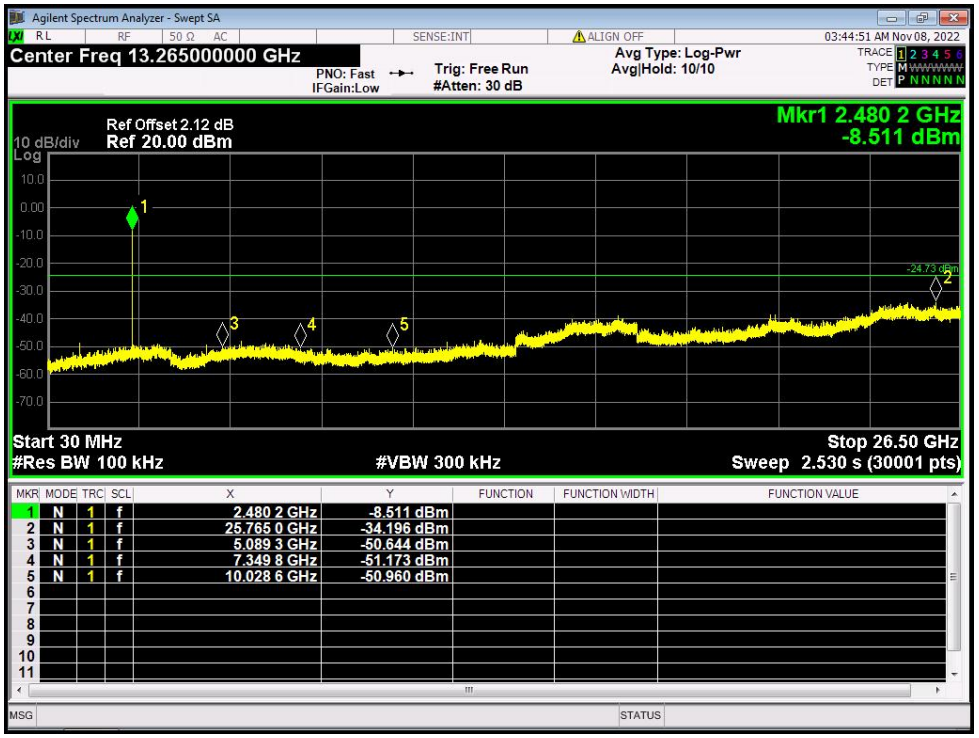
Lowest Channel:



Middle Channel



Highest channel



5.9 Radiated Spurious Emissions

Test Requirement: FCC Part15 C section 15.247

(d) 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, and provided the transmitter demonstrates compliance with the peak conducted power limits.

Test Method: ANSI C63.10:2013

Test Status: Pre-test the EUT in continuous transmitting mode at the lowest, middle and highest channel with different data packet. Compliance test in continuous transmitting mode with normal mode (DH5) as the worst case was found.

Detector: For PK value:

RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz, 9kHz for <30MHz

VBW ≥ RBW Sweep = auto

Detector function = peak

Trace = max hold

For AV value:

RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz, 9kHz for <30MHz

VBW =10 Hz

Sweep = auto

Detector function = peak

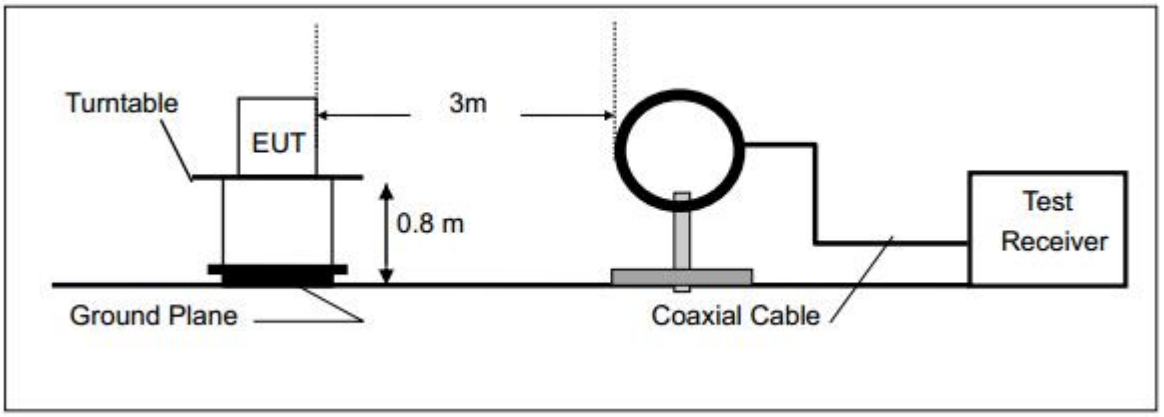
Trace = max hold

15.209 Limit:

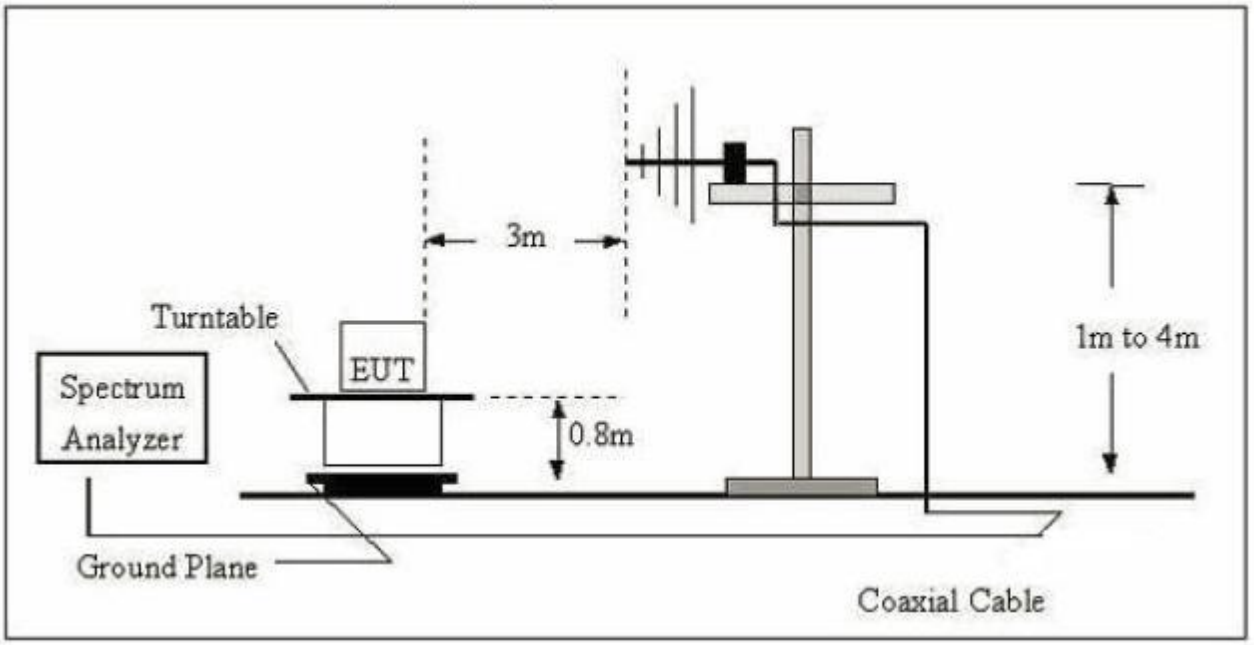
Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

Test Configuration:

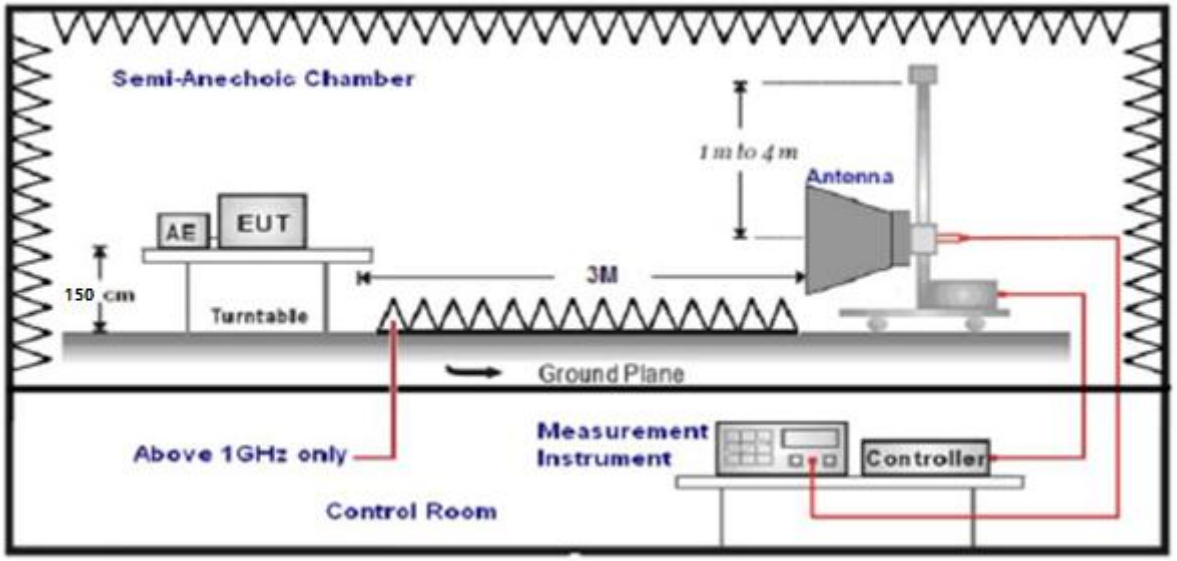
1) 9kHz to 30MHz emissions:



2) 30 MHz to 1 GHz emissions:



3) 1 GHz to 40 GHz emissions:



Test Procedure: The receiver was scanned from 9kHz to 25GHz. When an emission was found, the table was rotated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. After pre-test, it was found that the worse radiation emission was get at the X position. So the data shown was the X position only. The worst case emissions were reported.

Now set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a "duty cycle correction factor", derived from 20log (dwell time/100 ms), in an effort to demonstrate compliance with the 15.209 limit. Submit this data.

For the radiated emission test above 1GHz:

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

5.9.1 Harmonic and other spurious emissions

Worst case mode DH5

Test at low Channel in transmitting status

9kHz~30MHz Test result

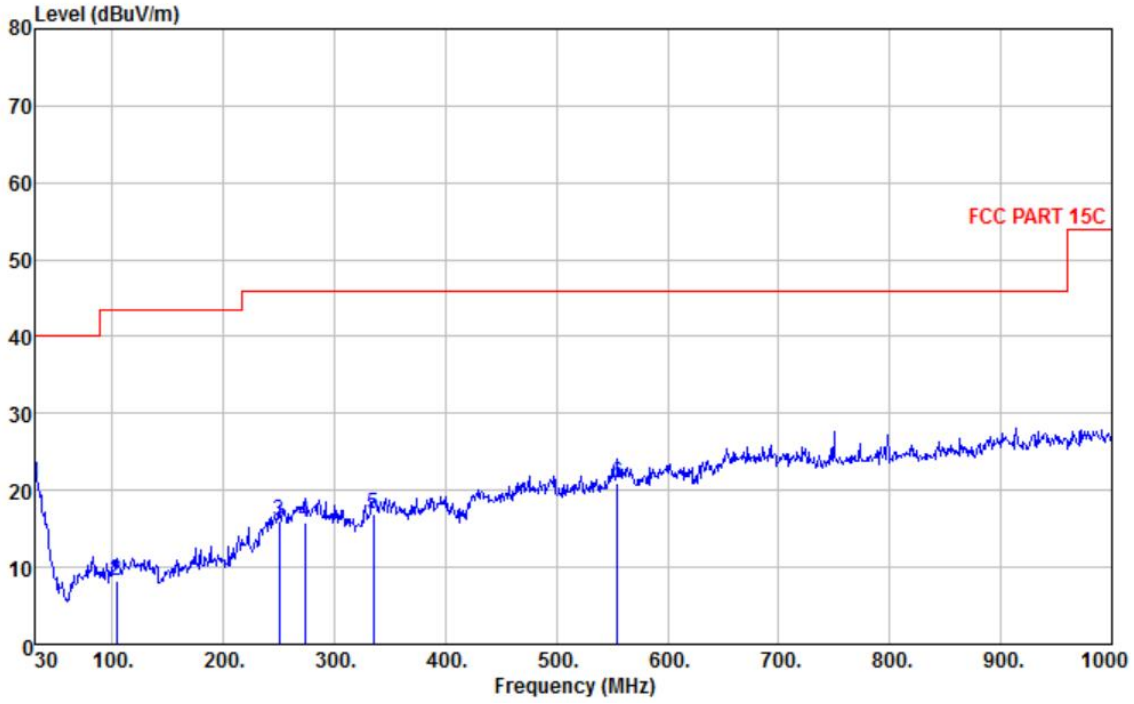
The Low frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not report

30 MHz~1 GHz Spurious Emissions .Quasi-Peak Measurement

Horizontal:

Peak scan

Level (dBμV/m)



Quasi-peak measurement

No.	Freq MHz	Read Level dBuV	Antenna Factor dB	Cable Loss dB	Preamp Factor dB	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Pol/Phase	Remark
1	30.000	25.98	22.90	0.63	28.50	21.01	40.00	-18.99	HORIZONTAL	QP
2	103.720	27.13	8.57	1.19	28.72	8.17	43.50	-35.33	HORIZONTAL	QP
3	250.190	28.22	13.10	1.93	27.31	15.94	46.00	-30.06	HORIZONTAL	QP
4	273.470	28.01	13.19	2.02	27.38	15.84	46.00	-30.16	HORIZONTAL	QP
5	334.580	28.03	14.10	2.23	27.42	16.94	46.00	-29.06	HORIZONTAL	QP
6	554.770	28.85	18.04	2.93	28.86	20.96	46.00	-25.04	HORIZONTAL	QP

Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

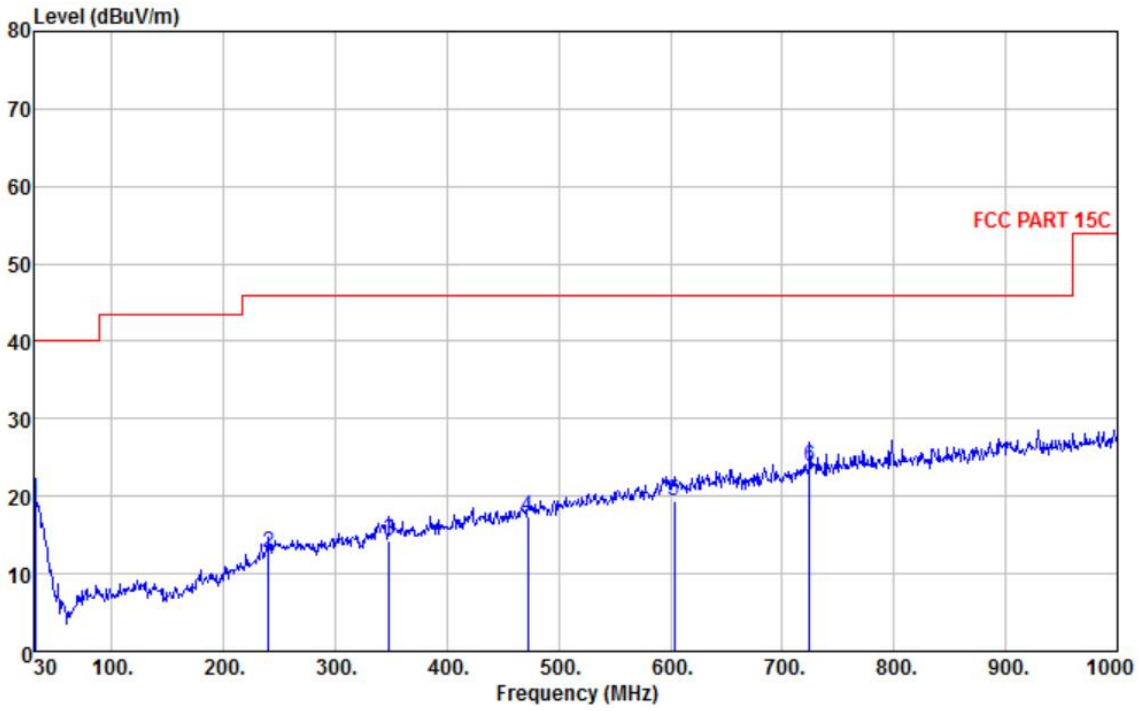
Test at low Channel in transmitting status

30 MHz~1 GHz Spurious Emissions .Quasi-Peak Measurement

Vertical:

Peak scan

Level (dBμV/m)



Quasi-peak measurement

No.	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB		
1	30.970	25.26	22.21	0.64	28.52	19.59	40.00	-20.41	VERTICAL	QP
2	240.490	25.50	12.45	1.89	27.20	12.64	46.00	-33.36	VERTICAL	QP
3	348.160	24.97	14.41	2.27	27.31	14.34	46.00	-31.66	VERTICAL	QP
4	472.320	26.46	16.61	2.69	28.42	17.34	46.00	-28.66	VERTICAL	QP
5	603.270	25.68	18.93	3.07	28.25	19.43	46.00	-26.57	VERTICAL	QP
6	724.520	28.00	20.12	3.38	27.62	23.88	46.00	-22.12	VERTICAL	QP

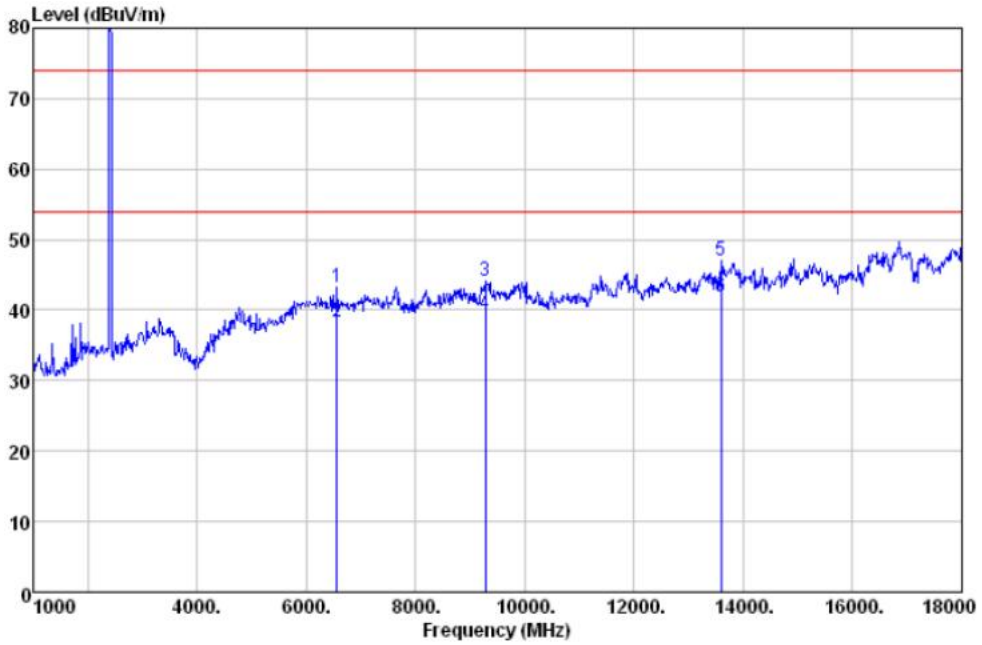
Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

Spurious emissions above 1GHz

Horizontal:

Peak scan

Level (dBμV/m)



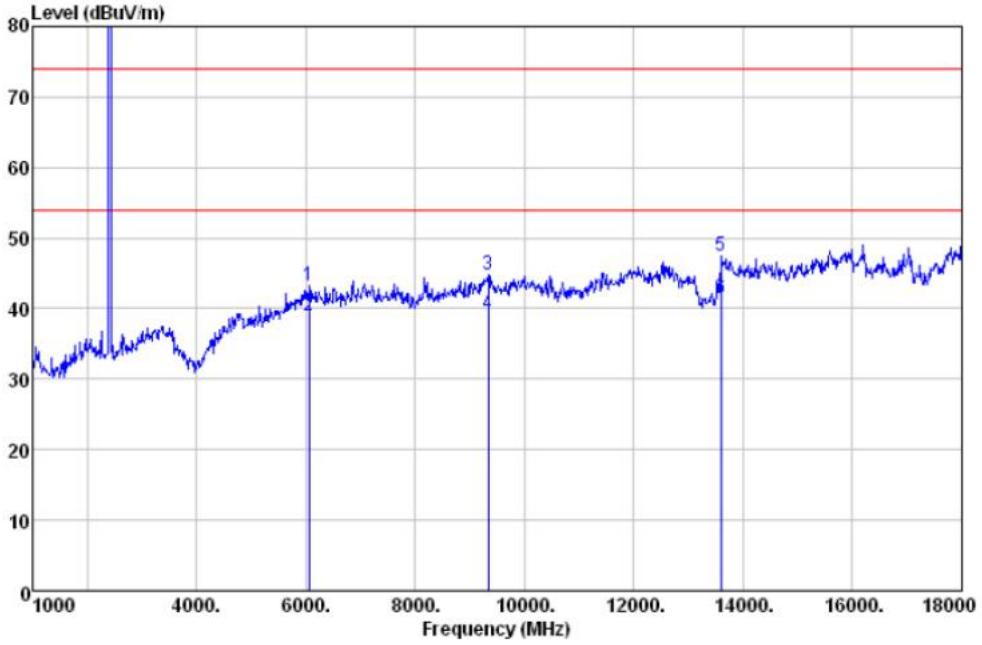
Freq	Read Level	Antenna Factor	Preamp Factor	Level	Limit Line	Over Limit	Pol/ Phase	Remark
MHz	dBuV	dB	dB	dBuV/m	dBuV/m	dB		
6559.000	35.03	35.61	27.37	43.27	74.00	-30.73	HORIZONTAL	Peak
6559.000	30.15	35.61	27.37	38.39	54.00	-15.61	HORIZONTAL	Average
9279.000	32.57	38.80	27.18	44.19	74.00	-29.81	HORIZONTAL	Peak
9279.000	27.85	38.80	27.18	39.47	54.00	-14.53	HORIZONTAL	Average
13597.000	33.45	39.84	26.30	46.99	74.00	-27.01	HORIZONTAL	Peak
13597.000	28.36	39.84	26.30	41.90	54.00	-12.10	HORIZONTAL	Average

Note: The emission above limit is fundamental emission, which is not subject to the limit.

Vertical:

Peak scan

Level (dBμV/m)



Freq	Read Level	Antenna Factor	Preamp Factor	Level	Limit Line	Over Limit	Pol/ Phase	Remark
MHz	dBuV	dB	dB	dBuV/m	dBuV/m	dB		
6049.000	34.76	35.95	27.42	43.29	74.00	-30.71	VERTICAL	Peak
6049.000	30.37	35.95	27.42	38.90	54.00	-15.10	VERTICAL	Average
9330.000	33.22	38.80	27.17	44.85	74.00	-29.15	VERTICAL	Peak
9330.000	27.58	38.80	27.17	39.21	54.00	-14.79	VERTICAL	Average
13597.000	33.87	39.84	26.30	47.41	74.00	-26.59	VERTICAL	Peak
13597.000	27.82	39.84	26.30	41.36	54.00	-12.64	VERTICAL	Average

Note: The emission above limit is fundamental emission, which is not subject to the limit.

Test at Middle Channel in transmitting status

Worst case mode DH5

9kHz~30MHz Test result

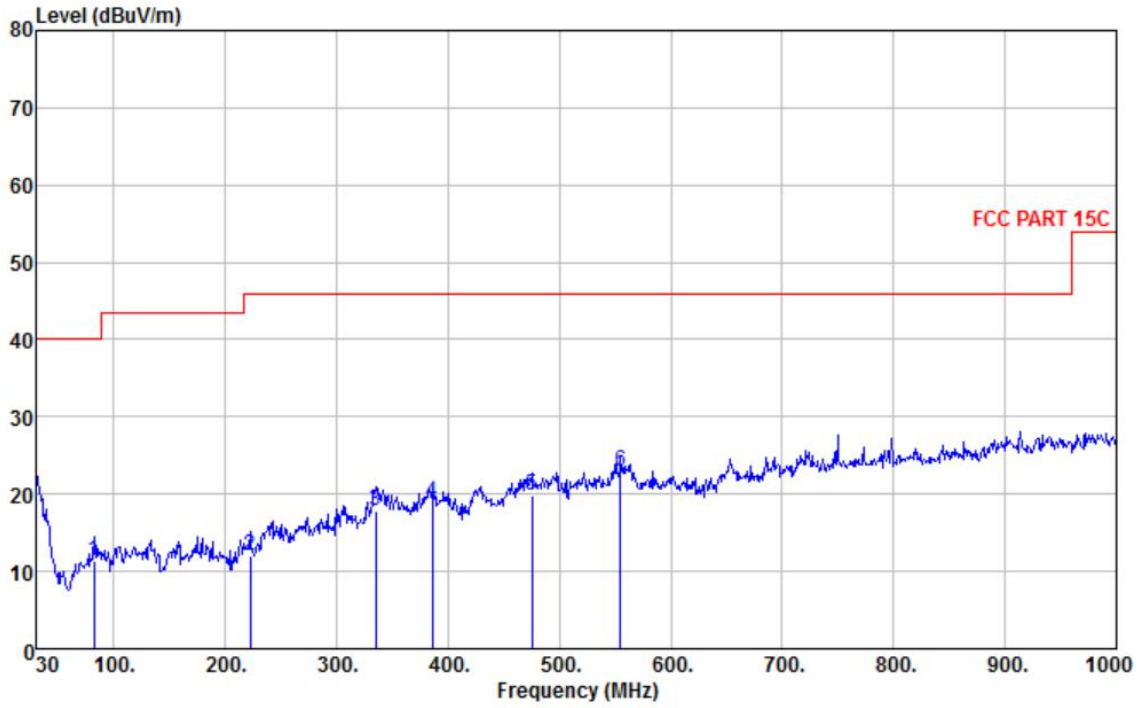
The Low frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not report

30 MHz~1 GHz Spurious Emissions .Quasi-Peak Measurement

Horizontal:

Peak scan

Level (dBμV/m)



Quasi-peak measurement

No.	Freq MHz	Read Level dBuV	Antenna Factor dB	Cable Loss dB	Preamp Factor dB	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Pol/Phase	Remark
1	82.380	30.71	7.80	1.06	28.17	11.40	40.00	-28.60	HORIZONTAL	QP
2	222.060	26.82	11.20	1.80	27.74	12.08	46.00	-33.92	HORIZONTAL	QP
3	334.580	29.03	14.10	2.23	27.42	17.94	46.00	-28.06	HORIZONTAL	QP
4	385.990	29.60	15.28	2.40	28.31	18.97	46.00	-27.03	HORIZONTAL	QP
5	475.230	28.79	16.65	2.70	28.40	19.74	46.00	-26.26	HORIZONTAL	QP
6	554.770	30.85	18.04	2.93	28.86	22.96	46.00	-23.04	HORIZONTAL	QP

Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

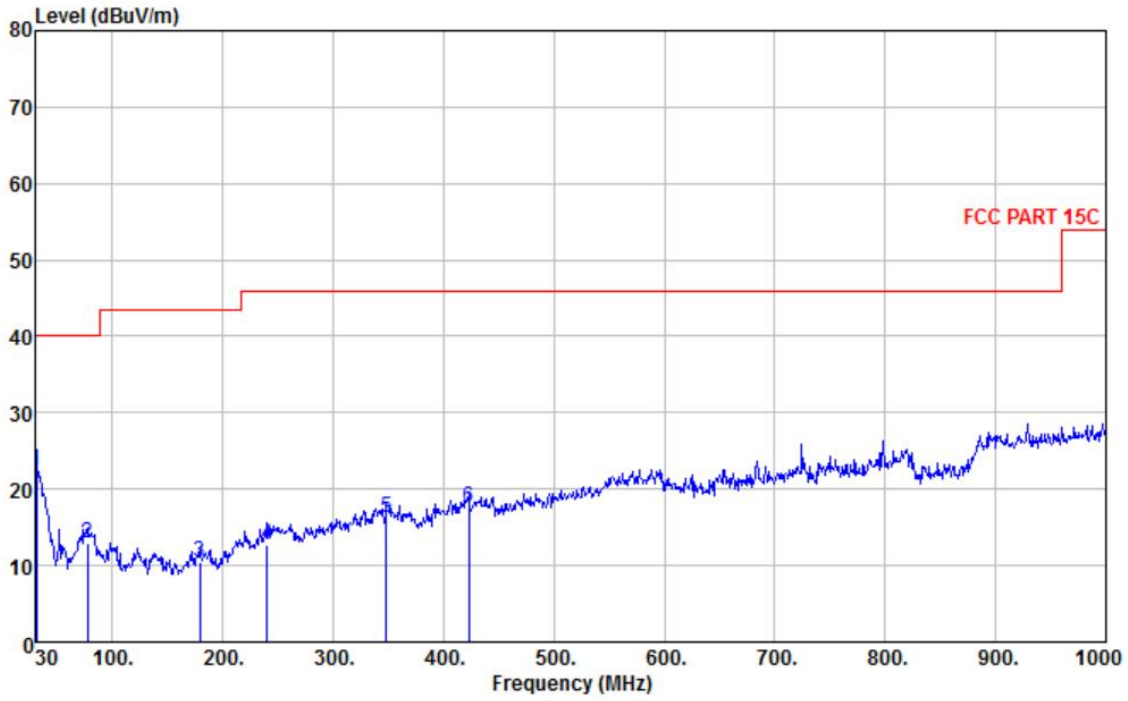
Test at Middle Channel in transmitting status

30 MHz~1 GHz Spurious Emissions .Quasi-Peak Measurement

Vertical:

Peak scan

Level (dBμV/m)



Quasi-peak measurement

No.	Freq MHz	Read Level dBuV	Antenna Factor dB	Cable Loss dB	Preamp Factor dB	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Pol/Phase	Remark
1	30.970	28.26	22.21	0.64	28.52	22.59	40.00	-17.41	VERTICAL	QP
2	77.530	32.47	7.60	1.03	28.15	12.95	40.00	-27.05	VERTICAL	QP
3	179.380	27.13	9.55	1.61	27.84	10.45	43.50	-33.05	VERTICAL	QP
4	240.490	25.50	12.45	1.89	27.20	12.64	46.00	-33.36	VERTICAL	QP
5	348.160	26.97	14.41	2.27	27.31	16.34	46.00	-29.66	VERTICAL	QP
6	422.850	27.22	15.92	2.53	28.11	17.56	46.00	-28.44	VERTICAL	QP

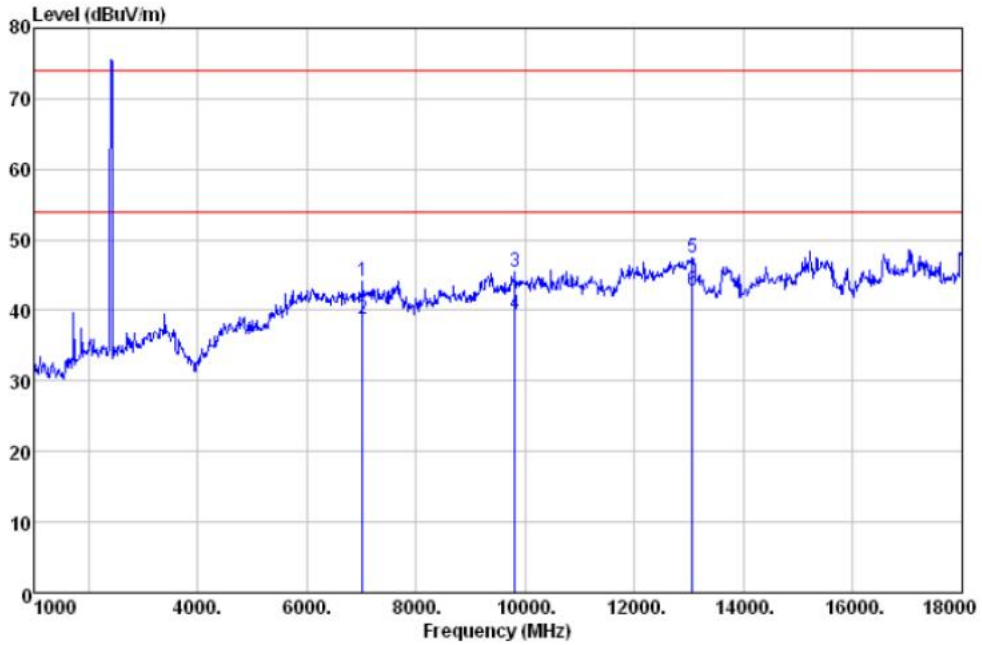
Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

Spurious emissions above 1GHz

Horizontal:

Peak scan

Level (dBμV/m)



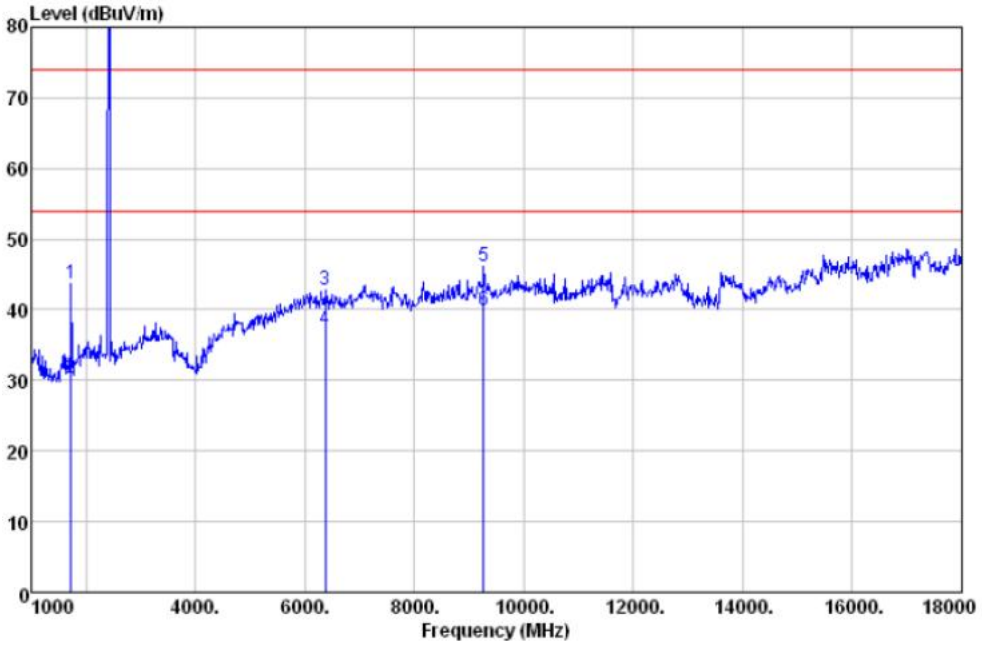
Freq	Read Level	Antenna Factor	Preamp Factor	Level	Limit Line	Over Limit	Pol/ Phase	Remark
MHz	dBuV	dB	dB	dBuV/m	dBuV/m	dB		
7018.000	35.03	36.43	27.34	44.12	74.00	-29.88	HORIZONTAL	Peak
7018.000	29.66	36.43	27.34	38.75	54.00	-15.25	HORIZONTAL	Average
9806.000	33.71	38.92	27.12	45.51	74.00	-28.49	HORIZONTAL	Peak
9806.000	27.62	38.92	27.12	39.42	54.00	-14.58	HORIZONTAL	Average
13053.000	33.30	40.63	26.46	47.47	74.00	-26.53	HORIZONTAL	Peak
13053.000	28.57	40.63	26.46	42.74	54.00	-11.26	HORIZONTAL	Average

Note: The emission above limit is fundamental emission, which is not subject to the limit.

Vertical:

Peak scan

Level (dBμV/m)



Freq	Read Level	Antenna Factor	Preamp Factor	Level	Limit Line	Over Limit	Pol/ Phase	Remark
MHz	dBuV	dB	dB	dBuV/m	dBuV/m	dB		
1731.000	45.02	26.16	27.57	43.61	74.00	-30.39	VERTICAL	Peak
1731.000	31.64	26.16	27.57	30.23	54.00	-23.77	VERTICAL	Average
6372.000	34.57	35.63	27.38	42.82	74.00	-31.18	VERTICAL	Peak
6372.000	28.87	35.63	27.38	37.12	54.00	-16.88	VERTICAL	Average
9262.000	34.55	38.80	27.18	46.17	74.00	-27.83	VERTICAL	Peak
9262.000	28.33	38.80	27.18	39.95	54.00	-14.05	VERTICAL	Average

Note: The emission above limit is fundamental emission, which is not subject to the limit.

Test at high Channel in transmitting status

Worst case mode DH5

9kHz~30MHz Test result

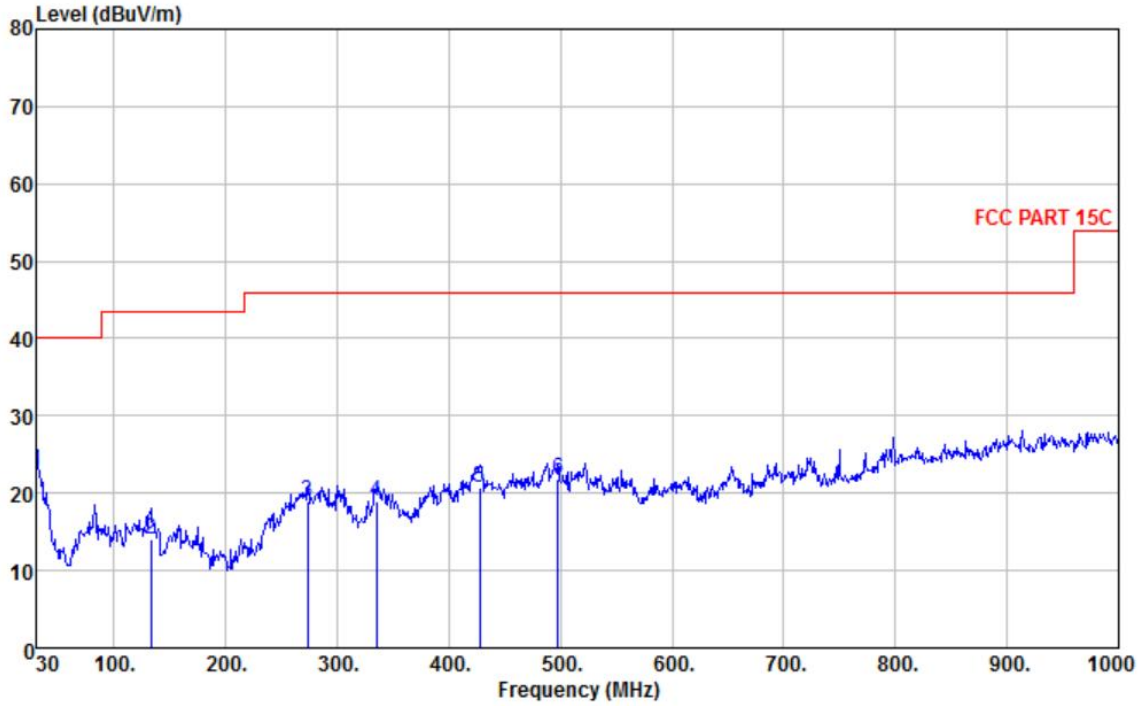
The Low frequency, which started from 9kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not report

30 MHz~1 GHz Spurious Emissions .Quasi-Peak Measurement

Horizontal:

Peak scan

Level (dBμV/m)



Quasi-peak measurement

No.	Freq MHz	Read Level dBuV	Antenna Factor dB	Cable Loss dB	Preamp Factor dB	Level dBuV/m	Limit Line dBuV/m	Over Limit dB	Pol/Phase	Remark
1	30.000	27.98	22.90	0.63	28.50	23.01	40.00	-16.99	HORIZONTAL	QP
2	132.820	32.43	8.53	1.37	28.34	13.99	43.50	-29.51	HORIZONTAL	QP
3	273.470	31.01	13.19	2.02	27.38	18.84	46.00	-27.16	HORIZONTAL	QP
4	334.580	30.03	14.10	2.23	27.42	18.94	46.00	-27.06	HORIZONTAL	QP
5	427.700	30.28	15.99	2.55	28.16	20.66	46.00	-25.34	HORIZONTAL	QP
6	497.540	30.83	16.97	2.77	28.76	21.81	46.00	-24.19	HORIZONTAL	QP

Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

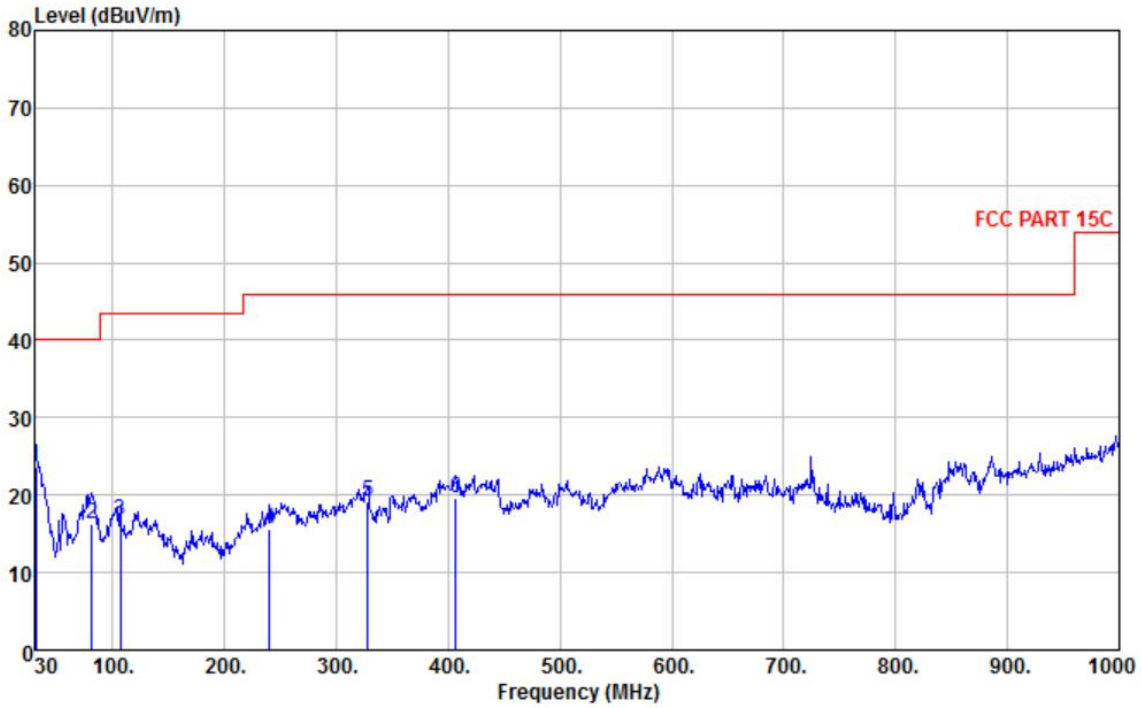
Test at High Channel in transmitting status

30 MHz~1 GHz Spurious Emissions .Quasi-Peak Measurement

Vertical:

Peak scan

Level (dBμV/m)



Quasi-peak measurement

No.	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB	dB	dB	dBuV/m	dBuV/m	dB		
1	30.970	29.26	22.21	0.64	28.52	23.59	40.00	-16.41	VERTICAL	QP
2	81.410	35.63	7.76	1.05	28.14	16.30	40.00	-23.70	VERTICAL	QP
3	106.630	35.44	8.70	1.21	28.67	16.68	43.50	-26.82	VERTICAL	QP
4	240.490	28.50	12.45	1.89	27.20	15.64	46.00	-30.36	VERTICAL	QP
5	327.790	30.43	13.94	2.21	27.48	19.10	46.00	-26.90	VERTICAL	QP
6	406.360	29.61	15.69	2.47	28.17	19.60	46.00	-26.40	VERTICAL	QP

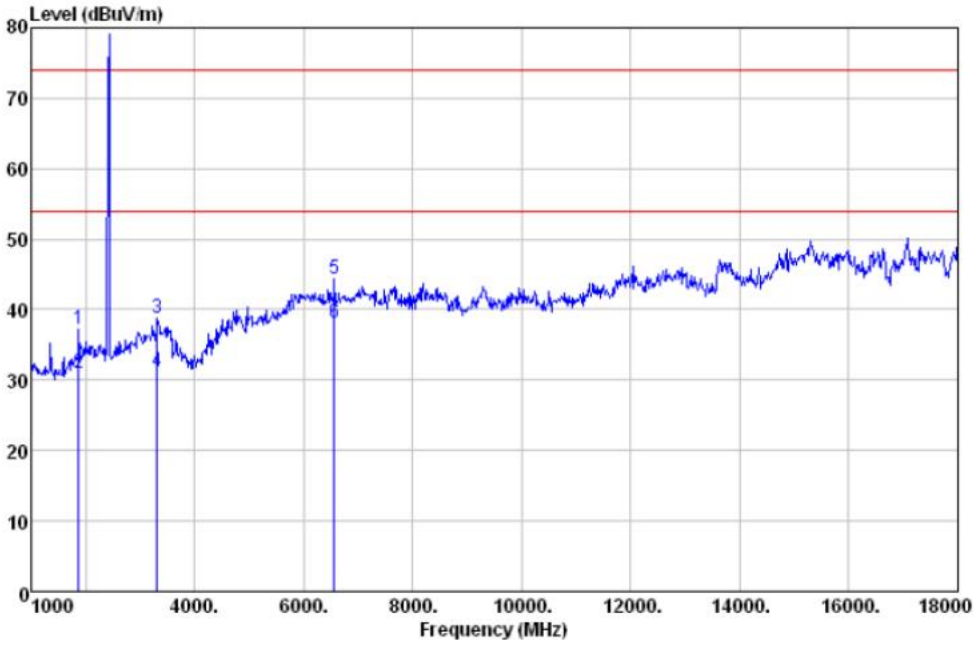
Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

Spurious emissions above 1GHz

Horizontal:

Peak scan

Level (dBμV/m)



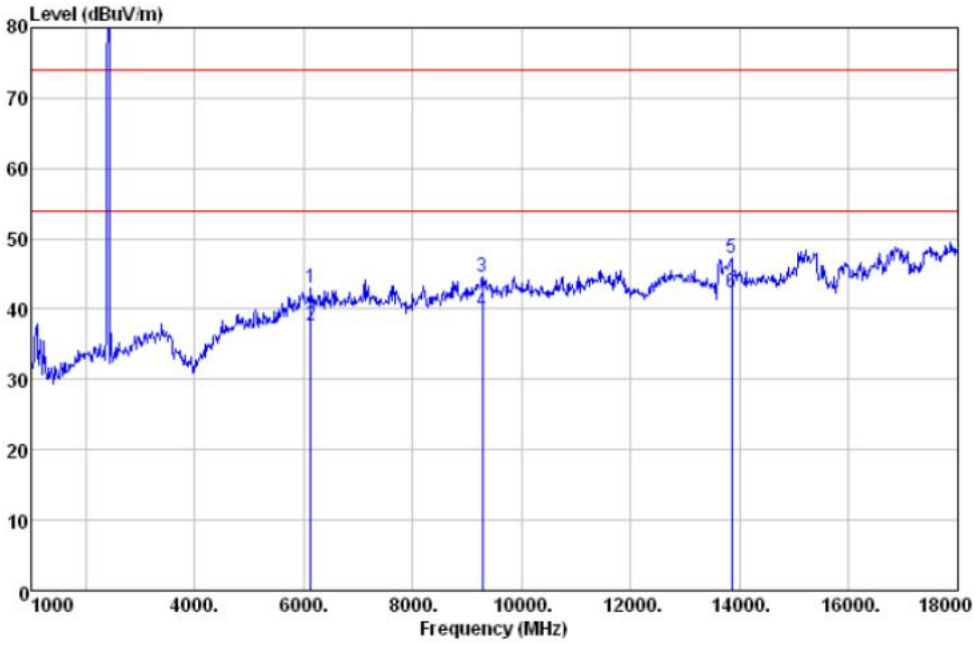
Freq	Read Level	Antenna Factor	Preamp Factor	Level	Limit Line	Over Limit	Pol/ Phase	Remark
MHz	dBuV	dB	dB	dBuV/m	dBuV/m	dB		
1867.000	37.62	27.14	27.64	37.12	74.00	-36.88	HORIZONTAL	Peak
1867.000	31.38	27.14	27.64	30.88	54.00	-23.12	HORIZONTAL	Average
3312.000	35.75	30.76	27.83	38.68	74.00	-35.32	HORIZONTAL	Peak
3312.000	28.25	30.76	27.83	31.18	54.00	-22.82	HORIZONTAL	Average
6559.000	36.03	35.61	27.37	44.27	74.00	-29.73	HORIZONTAL	Peak
6559.000	29.94	35.61	27.37	38.18	54.00	-15.82	HORIZONTAL	Average

Note: The emission above limit is fundamental emission, which is not subject to the limit.

Vertical:

Peak scan

Level (dBμV/m)



Freq	Read Level	Antenna Factor	Preamp Factor	Level	Limit Line	Over Limit	Pol/ Phase	Remark
MHz	dBuV	dB	dB	dBuV/m	dBuV/m	dB		
6134.000	34.45	35.87	27.41	42.91	74.00	-31.09	VERTICAL	Peak
6134.000	29.17	35.87	27.41	37.63	54.00	-16.37	VERTICAL	Average
9279.000	32.97	38.80	27.18	44.59	74.00	-29.41	VERTICAL	Peak
9279.000	27.98	38.80	27.18	39.60	54.00	-14.40	VERTICAL	Average
13852.000	34.11	39.44	26.25	47.30	74.00	-26.70	VERTICAL	Peak
13852.000	29.25	39.44	26.25	42.44	54.00	-11.56	VERTICAL	Average

Note: The emission above limit is fundamental emission, which is not subject to the limit.

Note: The emission above limit is fundamental emission, which is not subject to the limit.

Remark:

1). The field strength is calculated by adding the Antenna Factor. Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level =Receiver Reading + Antenna Factor + Cable Loss –Preamplifier Factor.

2). As shown in Section, for frequencies above 1000 MHz. the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

3). The test only perform the EUT in transmitting status since the test frequencies were over 1GHz only required transmitting status.

Test result: The unit does meet the FCC requirements.

5.10 Radiated Emissions which fall in the restricted bands

Test Requirement: FCC Part15 C Section 15.247

(d) 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)).

Test Method: ANSI C63.10:2013 Clause 6.4, 6.5 and 6.6

Test Status: Pre-test the EUT in continuous transmitting mode at the lowest (2402MHz), middle (2441 MHz) and highest (2480 MHz) channel with different data packet. Compliance test in continuous transmitting mode with normal mode (DH5) as the worst case was found.

Measurement Distance: 3m (Semi-Anechoic Chamber)

Limit: Section 15.209(a)

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
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

Detector: For PK value:

RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz

VBW ≥ RBW Sweep = auto

Detector function = peak

Trace = max hold

For AV value:

RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz

VBW =10 Hz

Sweep = auto

Detector function = peak

Trace = max hold

Test Result:

For Bluetooth

Pre-test was performed in all modes to find the worst case; compliance test was conducted in DH5 mode as the worst case.

Test mode: DH5

Frequency (MHz)	Reading Level (dBμV/m)	Correct (dB/m)	Emission Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Antenna polarization	Detector
Low Channel							
2310.000	33.85	6.54	37.28	74.00	-36.72	H	PK
2310.000	19.34	6.54	24.33	54.00	-29.67	H	AV
2390.000	32.74	6.61	39.10	74.00	-34.90	V	PK
2390.000	20.75	6.61	27.35	54.00	-26.65	V	AV
High Channel							
2483.500	32.63	6.70	36.42	74.00	-37.58	H	PK
2483.500	21.15	6.70	21.40	54.00	-32.60	H	AV
2500.000	31.74	6.72	35.41	74.00	-38.59	V	PK
2500.000	20.22	6.72	24.19	54.00	-29.81	V	AV

Remark: No any other emission which falls in restricted bands can be detected and be reported.

Test result: The unit does meet the FCC requirements.

5.11 Band Edges Requirement

Test Requirement: FCC Part15 C section 15.247

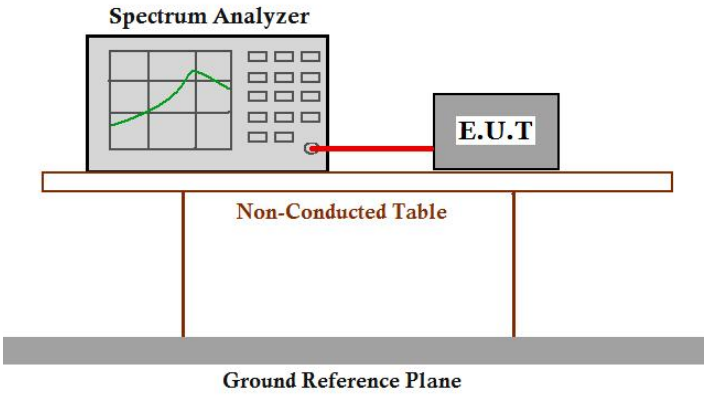
(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. 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)).

Frequency Band: 2400 MHz to 2483.5 MHz

Test Method: ANSI C63.10:2013 Clause 6.9

Test Status: Pre-test the EUT in continuous transmitting mode at the lowest (2402 MHz), and highest (2480 MHz) channel and hopping mode with different data packet. Compliance test in continuous transmitting mode with normal (DH5) and EDR mode (2DH5)as the worst case was found.

Test Configuration:



Test Procedure: Set RBW of spectrum analyzer to 100 kHz and VBW of spectrum analyzer to 300 kHz with suitable frequency span including 10MHz bandwidth from band edge.

The band edges was measured and recorded Result:

The Lower Edges attenuated more than 20dB.

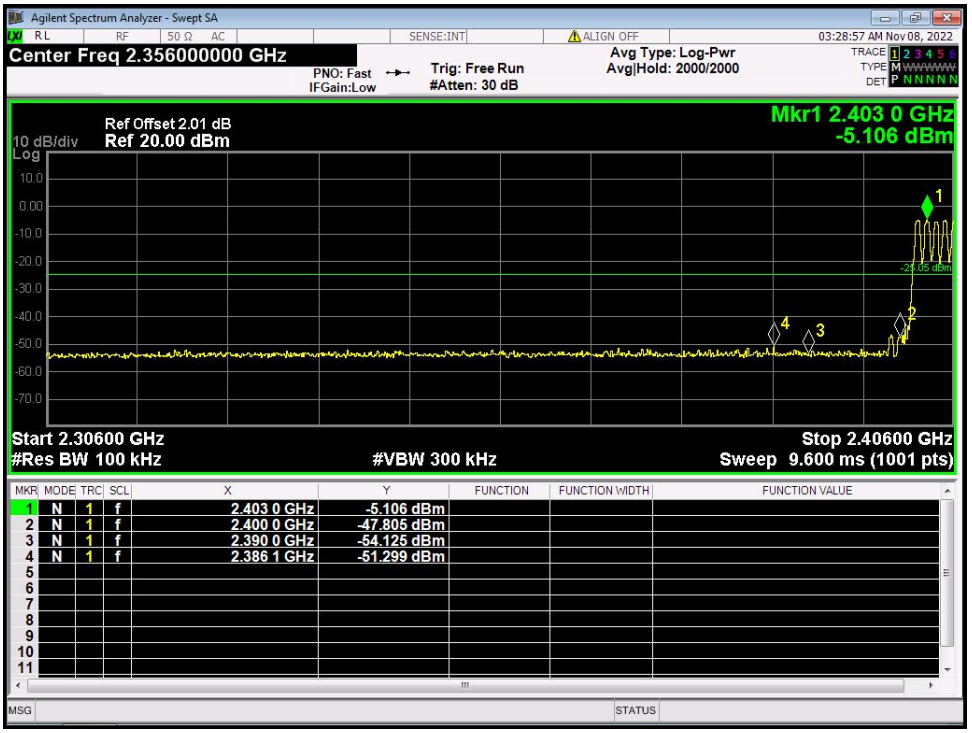
The Upper Edges attenuated more than 20dB.

The graph as below. Represents the emissions take for this device.

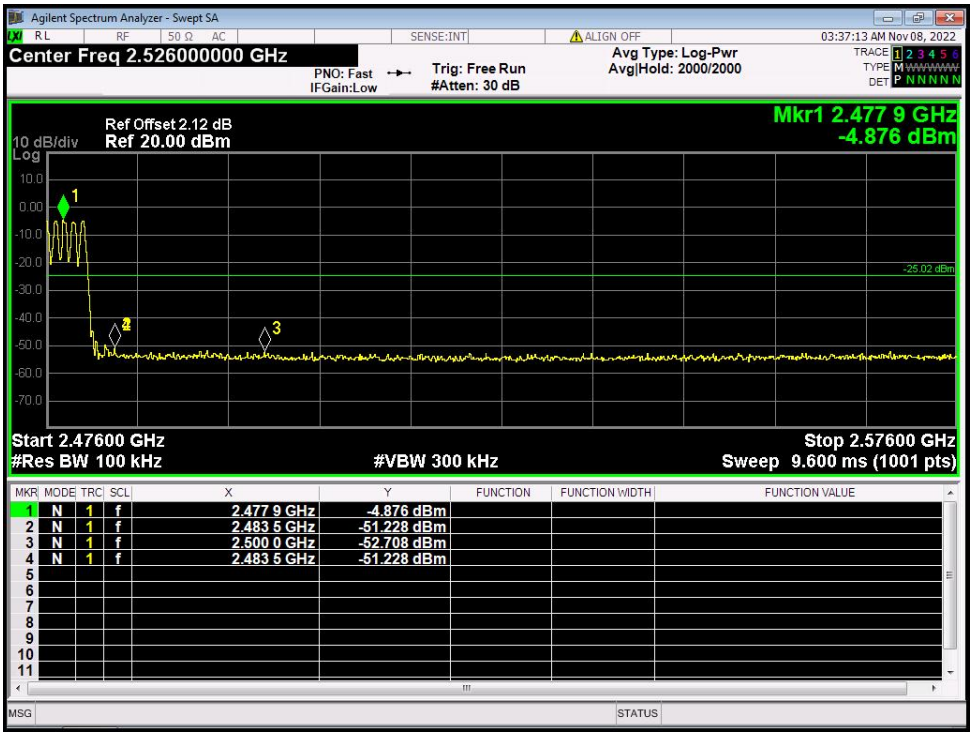
For Bluetooth

DH5:

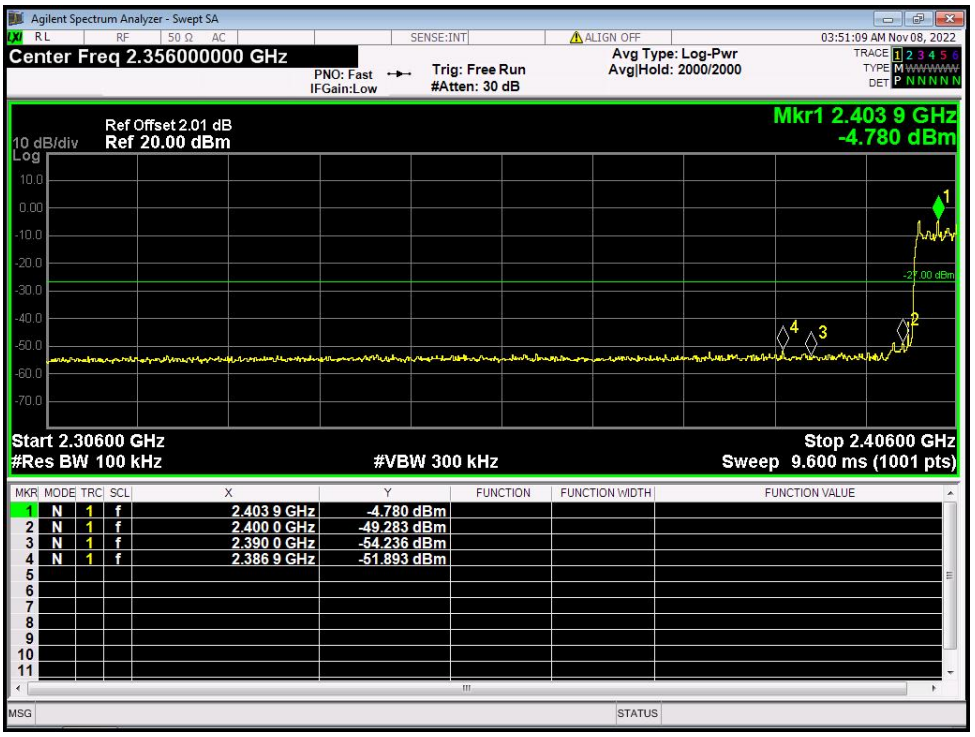
Low channel:



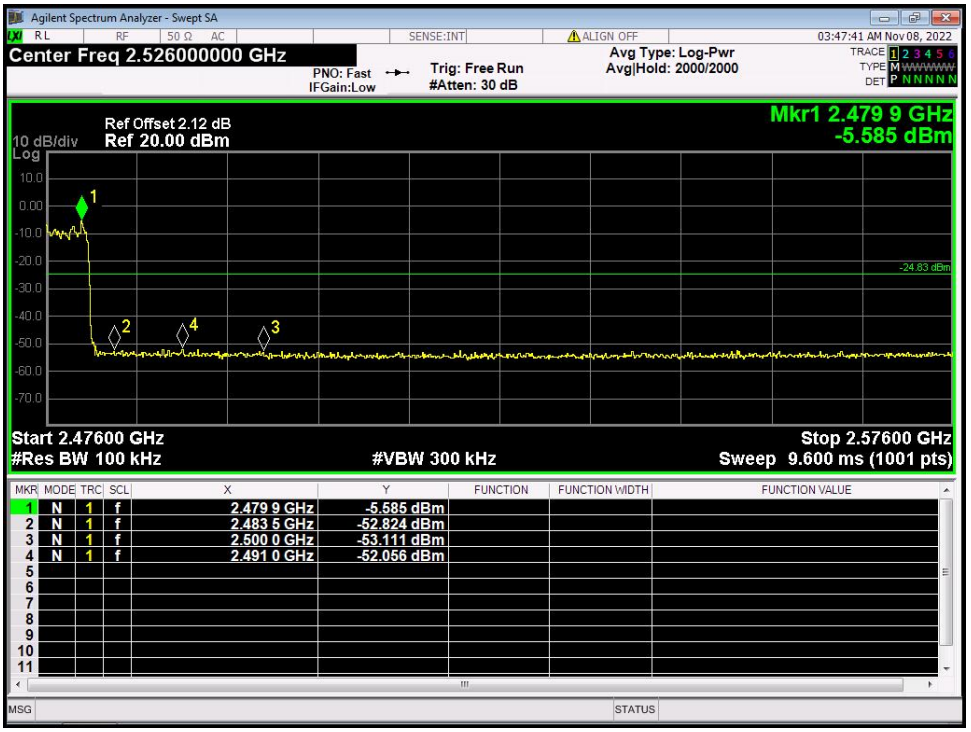
High channel:



2DH5:
Low channel:

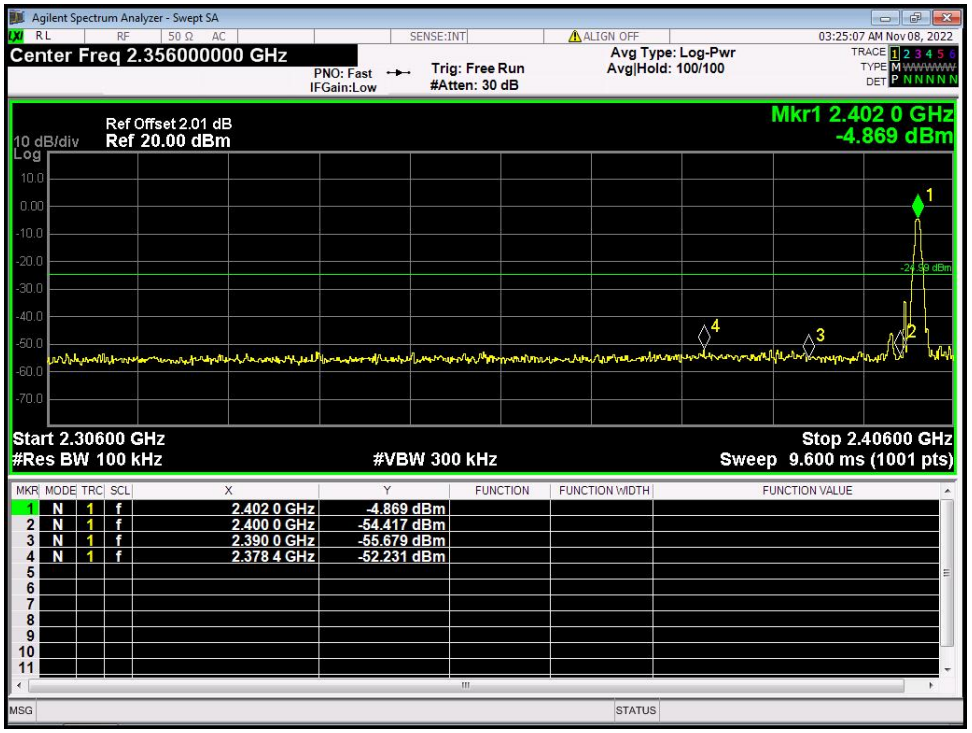


High channel:

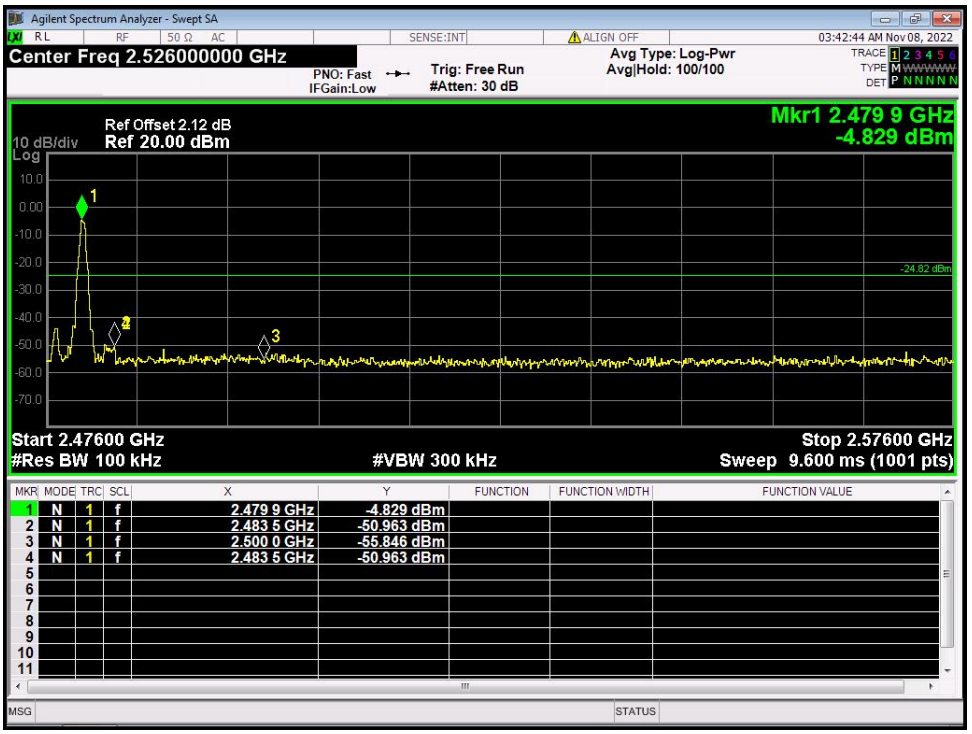


DH5:

Low channel:

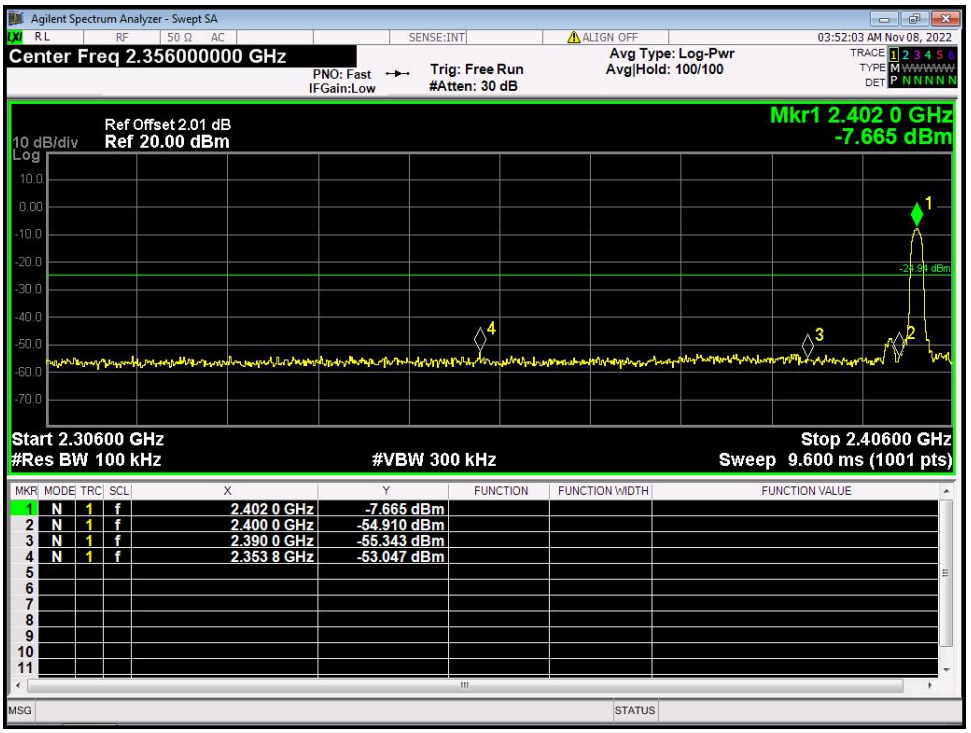


High channel:

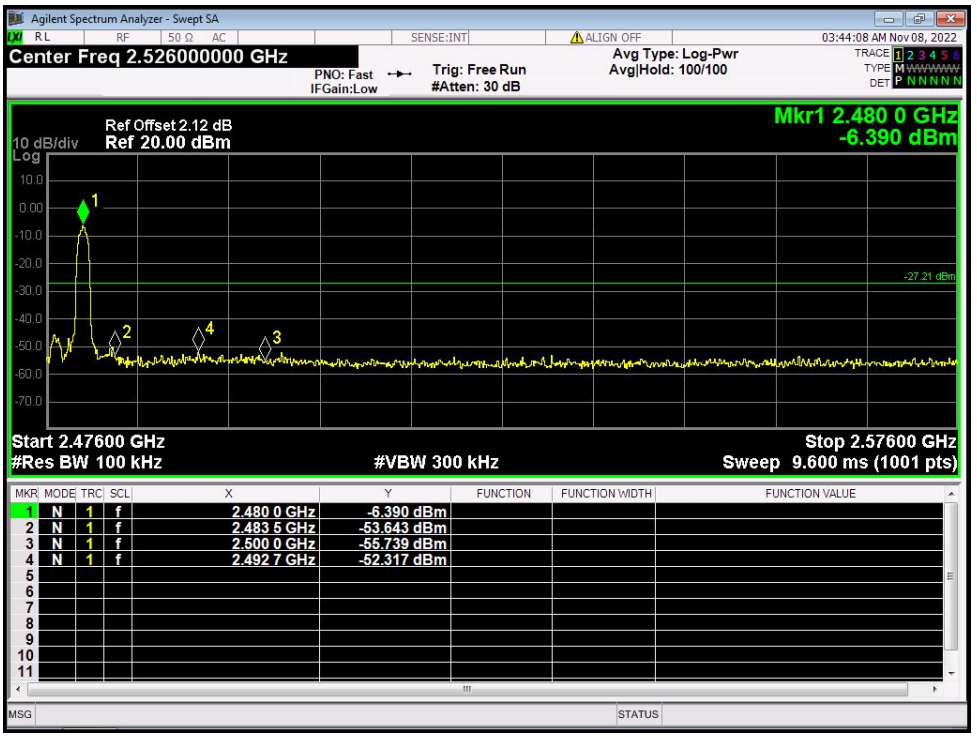


2DH5:

Low channel:



High channel:



Test result: The unit does meet the FCC requirements.

5.12 Conducted Emissions at Mains Terminals 150 kHz to 30 MHz

Test Requirement: FCC Part 15 C section 15.207

Test Method: ANSI C63.10:2013 Clause 6.2

Test Voltage: 120Vac 60Hz

Frequency Range: 150 kHz to 30 MHz

Detector: Peak for pre-scan (9 kHz Resolution Bandwidth)

Test Limit

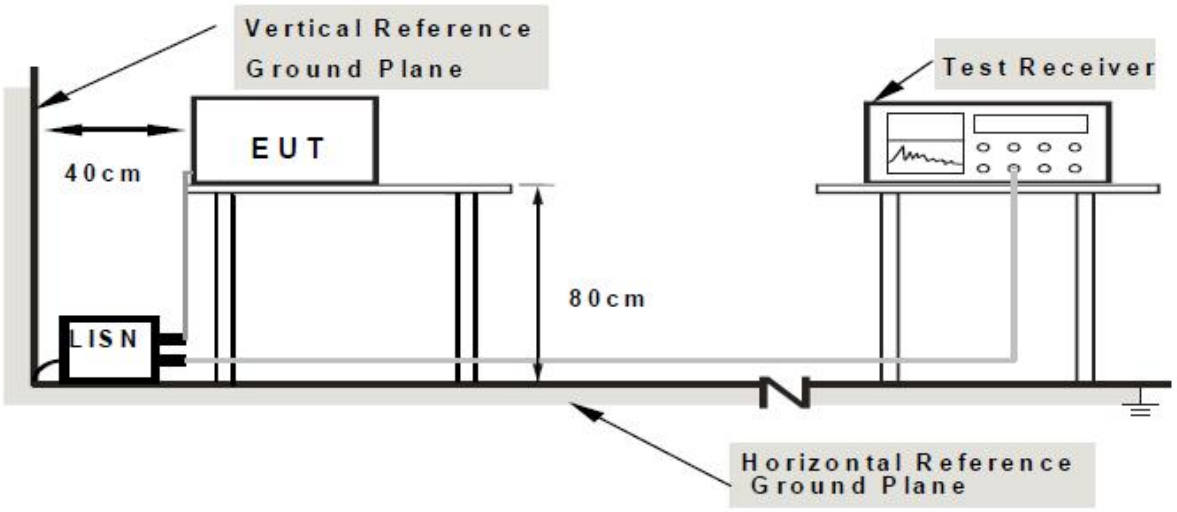
Limits for conducted disturbance at the mains ports of class B

Frequency Range	Class B Limit dB(μV)	
	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
NOTE 1 The limit decreases linearly with the logarithm of the frequency in the range 0,15 MHz to 0,50 MHz.		

EUT Operation: Test in normal operating mode. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage.

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

Test Configuration:



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

Test procedure:

1. The mains terminal disturbance voltage test was conducted in a shielded room.

2. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.

5.12.1 Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

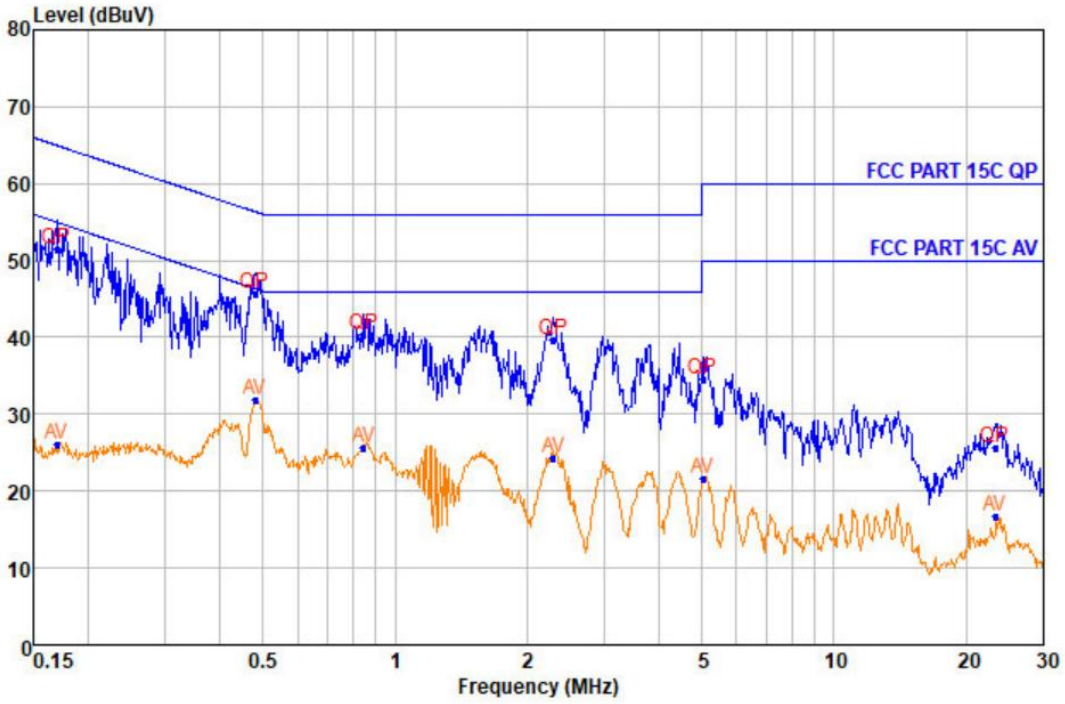
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected. For EUT the communicating was worst case mode.

The following Quasi-Peak and Average measurements were performed on the EUT

Live line

Peak Scan:

Level (dBμV)



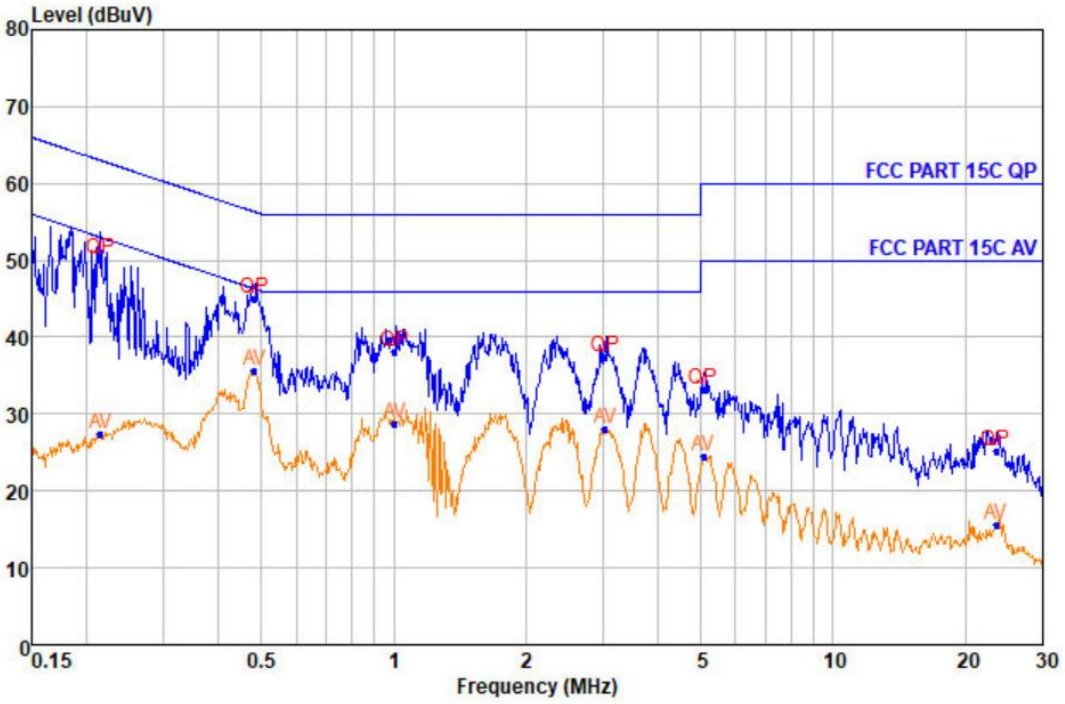
Quasi-peak and Average measurement

NO.	Freq MHz	Level dBuV	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuV	Over Limit dB
1	0.169	51.57	QP	9.69	0.21	64.99	-13.42
2	0.169	26.02	Average	9.69	0.21	54.99	-28.97
3	0.480	45.77	QP	9.65	0.27	56.33	-10.56
4	0.480	31.76	Average	9.65	0.27	46.33	-14.57
5	0.847	40.33	QP	9.69	0.30	56.00	-15.67
6	0.847	25.69	Average	9.69	0.30	46.00	-20.31
7	2.293	39.70	QP	9.64	0.35	56.00	-16.30
8	2.293	24.28	Average	9.64	0.35	46.00	-21.72
9	5.022	34.55	QP	9.60	0.40	60.00	-25.45
10	5.022	21.58	Average	9.60	0.40	50.00	-28.42
11	23.326	25.67	QP	9.67	0.49	60.00	-34.33
12	23.326	16.76	Average	9.67	0.49	50.00	-33.24

Neutral Line

Peak Scan:

Level (dBμV)



Quasi-peak and Average measurement

NO.	Freq MHz	Level dBuV	Remark	LISN Factor dB	Cable Loss dB	Limit Line dBuV	Over Limit dB
1	0.215	50.12	QP	9.63	0.22	63.01	-12.89
2	0.215	27.51	Average	9.63	0.22	53.01	-25.50
3	0.483	44.98	QP	9.67	0.27	56.29	-11.31
4	0.483	35.71	Average	9.67	0.27	46.29	-10.58
5	1.008	38.21	QP	9.63	0.31	56.00	-17.79
6	1.008	28.83	Average	9.63	0.31	46.00	-17.17
7	3.035	37.53	QP	9.62	0.37	56.00	-18.47
8	3.035	28.00	Average	9.62	0.37	46.00	-18.00
9	5.072	33.20	QP	9.62	0.40	60.00	-26.80
10	5.072	24.47	Average	9.62	0.40	50.00	-25.53
11	23.456	25.15	QP	9.63	0.49	60.00	-34.85
12	23.456	15.62	Average	9.63	0.49	50.00	-34.38

5.13 Other requirements Frequency Hopping Spread Spectrum System

Test Requirement: 47 CFR Part 15C Section 15.247 (a)(1), (h) requirement

The system shall hop to channel frequencies that are selected at the system hopping rate from a Pseudorandom ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

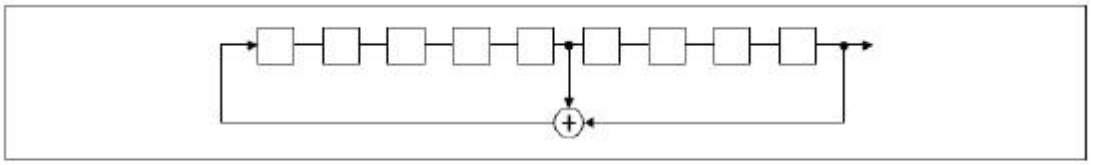
Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. However, the system, consisting of both the transmitter and the receiver, must be designed to comply with all of the regulations in this section should the transmitter be presented with a continuous data (or information) stream. In addition, a system employing short transmission bursts must comply with the definition of a frequency hopping system and must distribute its transmissions over the minimum number of hopping channels specified in this section.

The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hopsets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.

Compliance for section 15.247(a)(1)

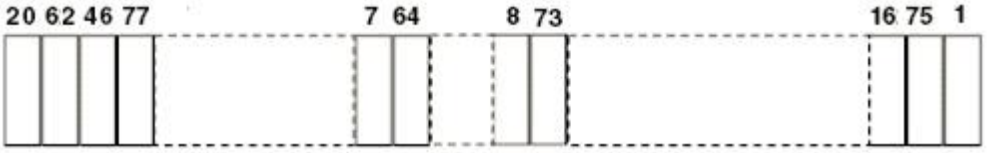
According to Bluetooth Core Specification, the pseudorandom sequence may be generated in a nine stage shift register whose 5th and 9th stage
outputs are added in a modulo-two addition stage. And the result is fed back to the input of the first stage. The sequence begins with the first ONE of 9 consecutive ONEs; i.e. the shift register is initialized with nine ones.

- Number of shift register stages: 9
- Length of pseudo-random sequence: 2^9 -1 = 511 bits
- Longest sequence of zeros: 8 (non-inverted signal)



Linear Feedback Shift Register for Generation of the PRBS sequence

An example of Pseudorandom Frequency Hopping Sequence as follow:



Each frequency used equally on the average by each transmitter.
According to Bluetooth Core Specification, Bluetooth receivers are designed to have input and IF bandwidths that match the hopping channel bandwidths of any Bluetooth transmitters and shift frequencies in synchronization with the transmitted signals.

Compliance for section 15.247(g)

According to Bluetooth Core Specification, the Bluetooth system transmits the packet with the pseudorandom hopping frequency with a continuous data and the short burst transmission from the Bluetooth system is also transmitted under the frequency hopping system with the pseudorandom

hopping frequency system.

Compliance for section 15.247(h)
According to Bluetooth Core specification, the Bluetooth system incorporates with an adaptive system to detect other user within the spectrum band so that it individually and independently to avoid hopping on the occupied channels.
According to the Bluetooth Core specification, the Bluetooth system is designed not have the ability to coordinated with other FHSS System in an effort to avoid the simultaneous occupancy of individual hopping frequencies by multiple transmitter.

--End of Report--