

Test Model Maximum PeakConducted Output Power
Transmitting
Channel 0: 2402MHz 8DPSK



Test Model Maximum PeakConducted Output Power
Transmitting
Channel 39: 2441MHz 8DPSK



Test Model Maximum Peak Conducted Output Power
 Transmitting
 Channel 78: 2480MHz 8DPSK



9.6 CONDUCTED SUPRIIOUS EMISSION

9.6.1 Applicable Standard

According to FCC Part 15.247(d) and KDB 558074 D01 15.247 meas guidance v05r02

9.6.2 Conformance Limit

According to FCC Part 15.247(d):

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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, provided the transmitter demonstrates compliance with the peak conducted power limits.

9.6.3 Test Configuration

Test according to clause 7.1 radio frequency test setup 1

9.6.4 Test Procedure

The transmitter output (antenna port) was connected to the spectrum analyzer

■ Reference level measurement

Establish a reference level by using the following procedure:

Set instrument center frequency to DSS channel center frequency.

Set Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel.

Set the RBW = 100 kHz. Set the VBW $\geq 3 \times$ RBW.

Set Detector = peak. Set Sweep time = auto couple.

Set Trace mode = max hold. Allow trace to fully stabilize.

Use the peak marker function to determine the maximum Maximum conduceted level.

Note that the channel found to contain the maximum conduceted level can be used to establish the reference level.

■ Band-edge Compliance of RF Conducted Emissions

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the emission operating on the channel closest to the band-edge, as well as any modulation products which fall outside of the authorized band of operation

Set RBW $\geq 1\%$ of the span=100kHz Set VBW \geq RBW

Set Sweep = auto Set Detector function = peak Set Trace = max hold

Allow the trace to stabilize. Set the marker on the emission at the bandedge, or on the highest modulation product outside of the band, if this level is greater than that at the bandedge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission. The marker-delta value now displayed must comply with the limit specified in this Section.

Now, using the same instrument settings, enable the hopping function of the EUT. Allow the trace to stabilize. Follow the same procedure listed above to determine if any spurious emissions caused by the hopping function also comply with the specified limit.

■ Conduceted Spurious RF Conducted Emission

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic.(30MHz to 25GHz). Set RBW = 100 kHz Set VBW \geq RBW

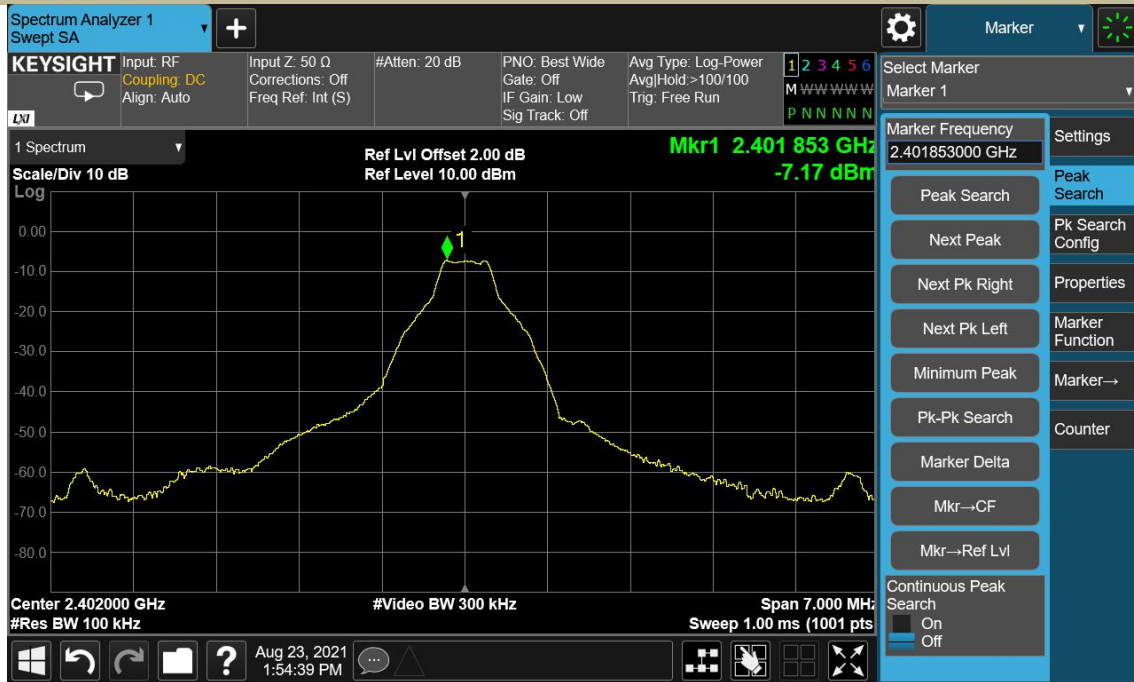
Set Sweep = auto Set Detector function = peak Set Trace = max hold

Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this Section.

9.6.5 Test Results

Bluetooth (GFSK, pi/4-DQPSK, 8DPSK) mode have been tested, and the worst result(GFSK)was report as below:

Maximum Conduced Level RBW=100kHz
 Test Model Transmitting
 Channel 0: 2402MHz GFSK



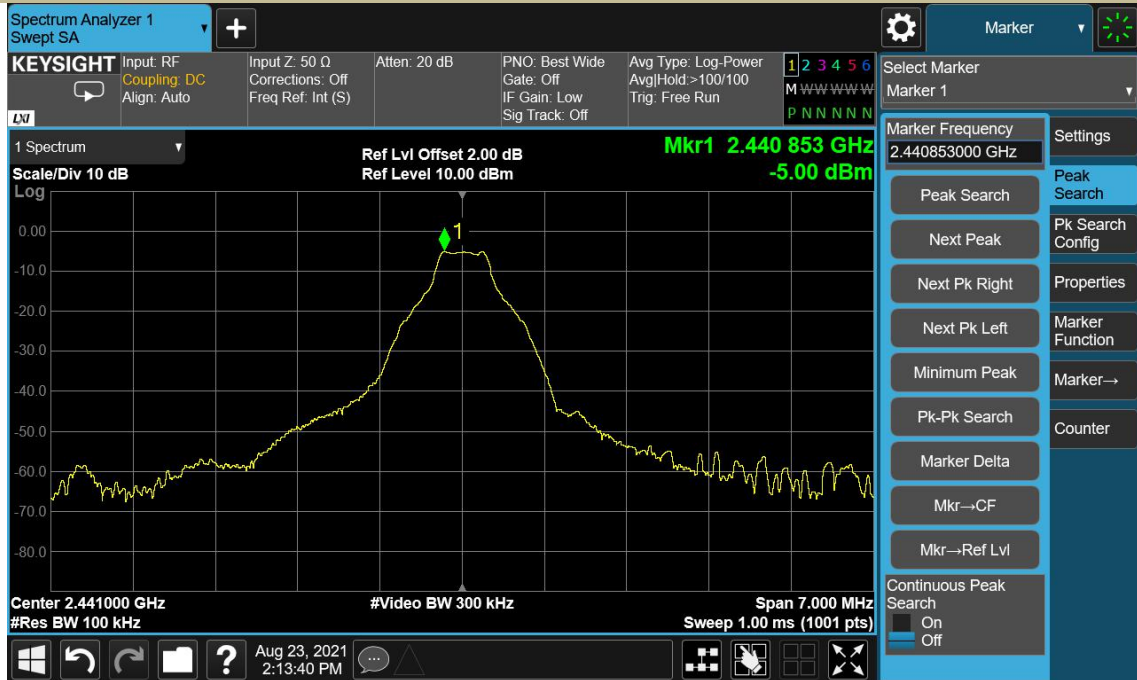
Conduced Spurious RF Conducted Emission
 Test Model Transmitting
 Channel 0: 2402MHz GFSK



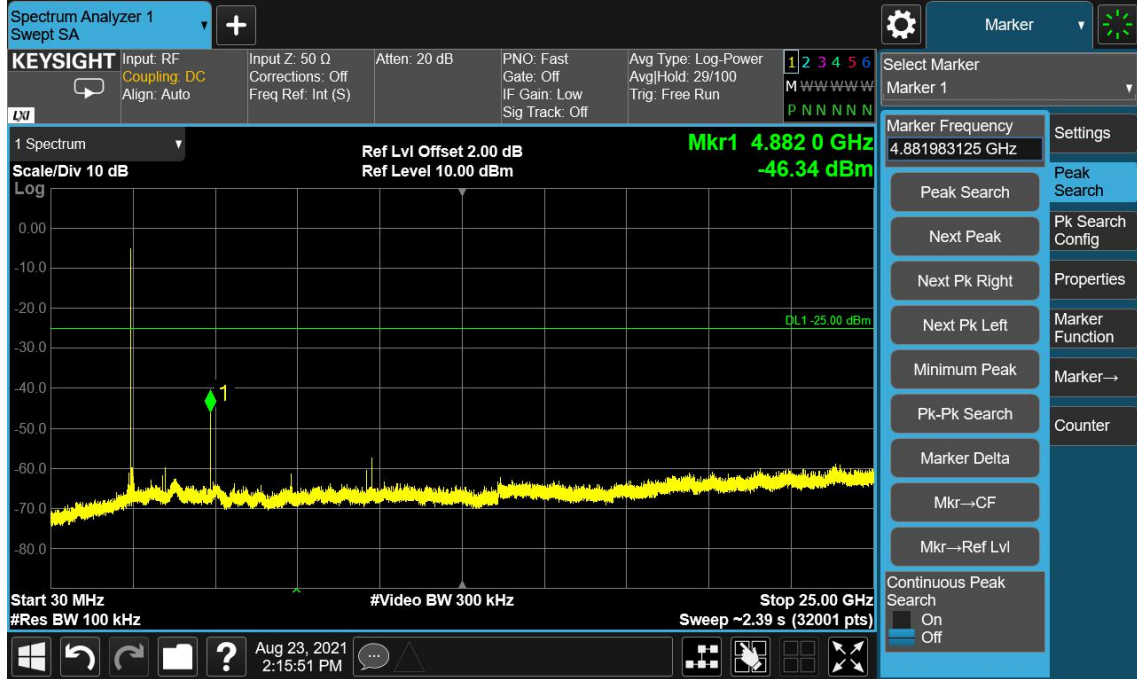
Test Model Band-edge Conducted Emissions
Transmitting
Channel 0: 2402MHz GFSK



Test Model Maximum Conducted Level RBW=100kHz
Transmitting
Channel 39: 2441MHz GFSK



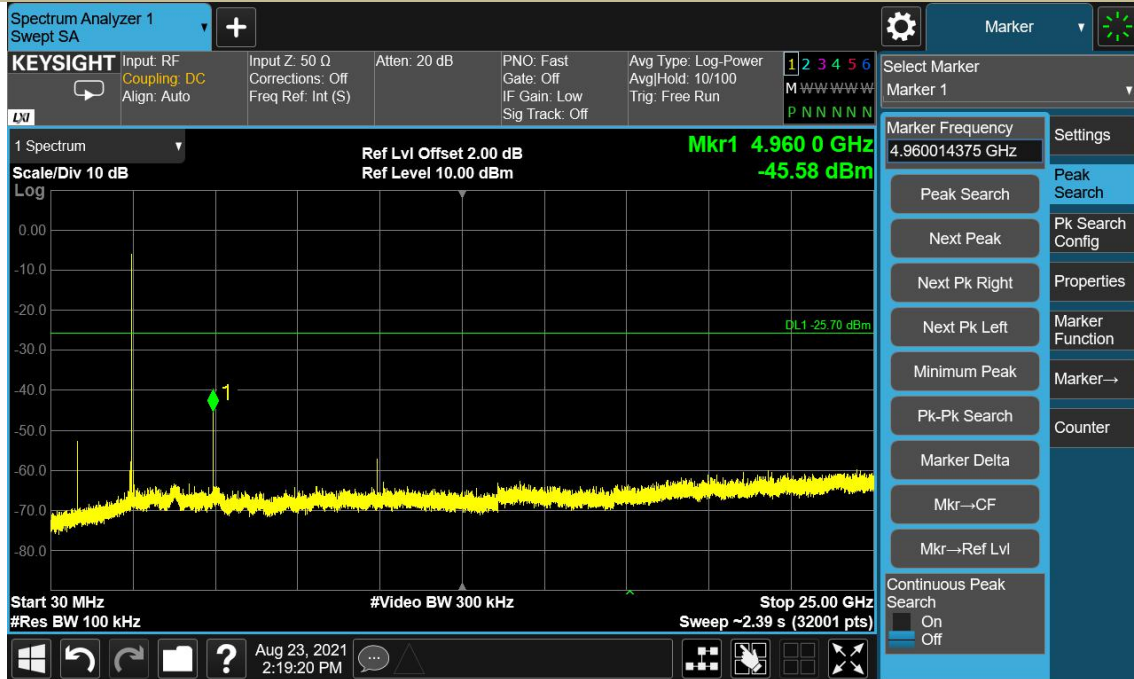
Test Model **Conduceted Spurious RF Conducted Emission**
Transmitting
Channel 39: 2441MHz **GFSK**



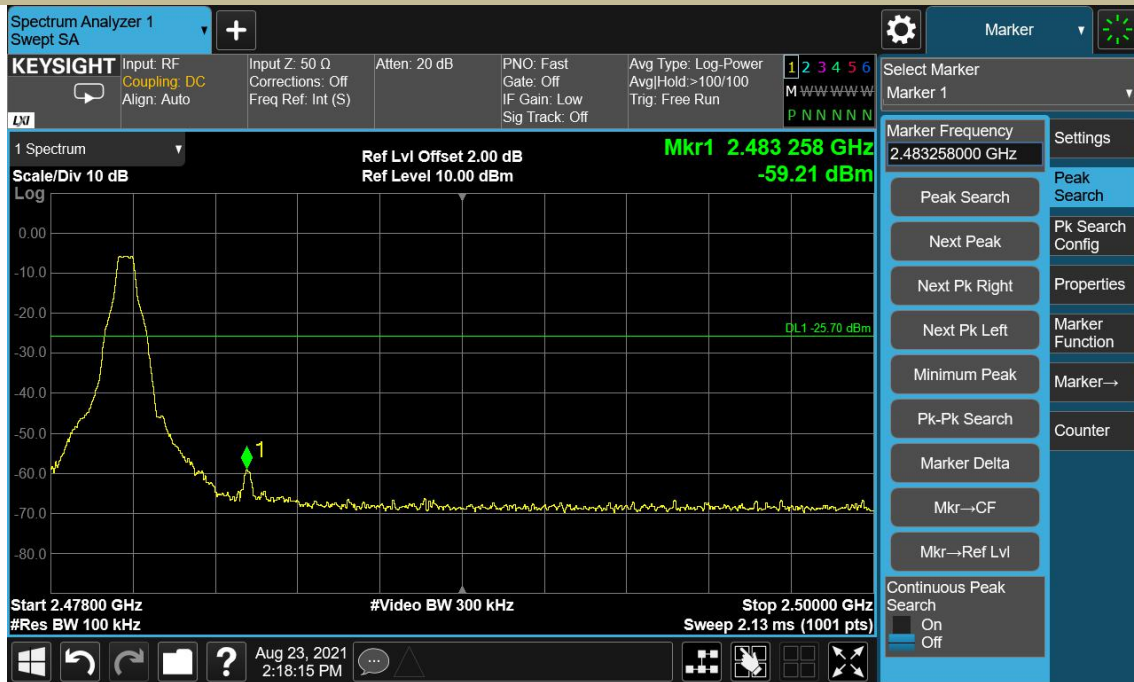
Test Model **Maximum Conduceted Level RBW=100kHz**
Transmitting
Channel 78: 2480MHz **GFSK**



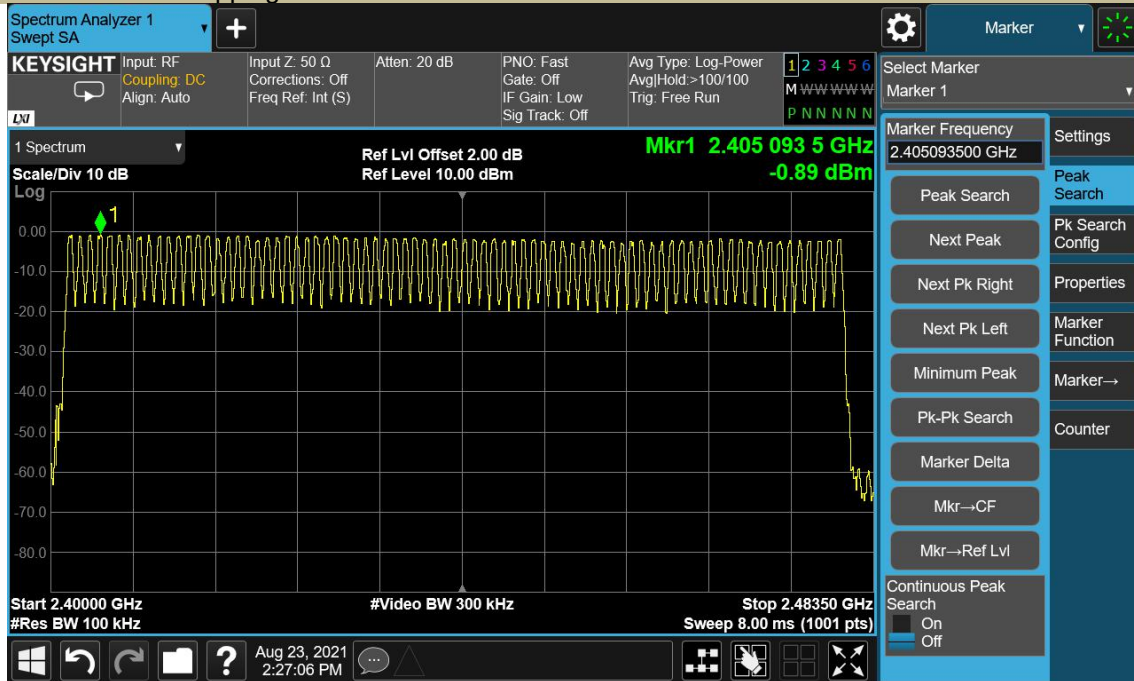
Test Model **Conducted Spurious RF Conducted Emission**
Transmitting
Channel 78: 2480MHz **GFSK**



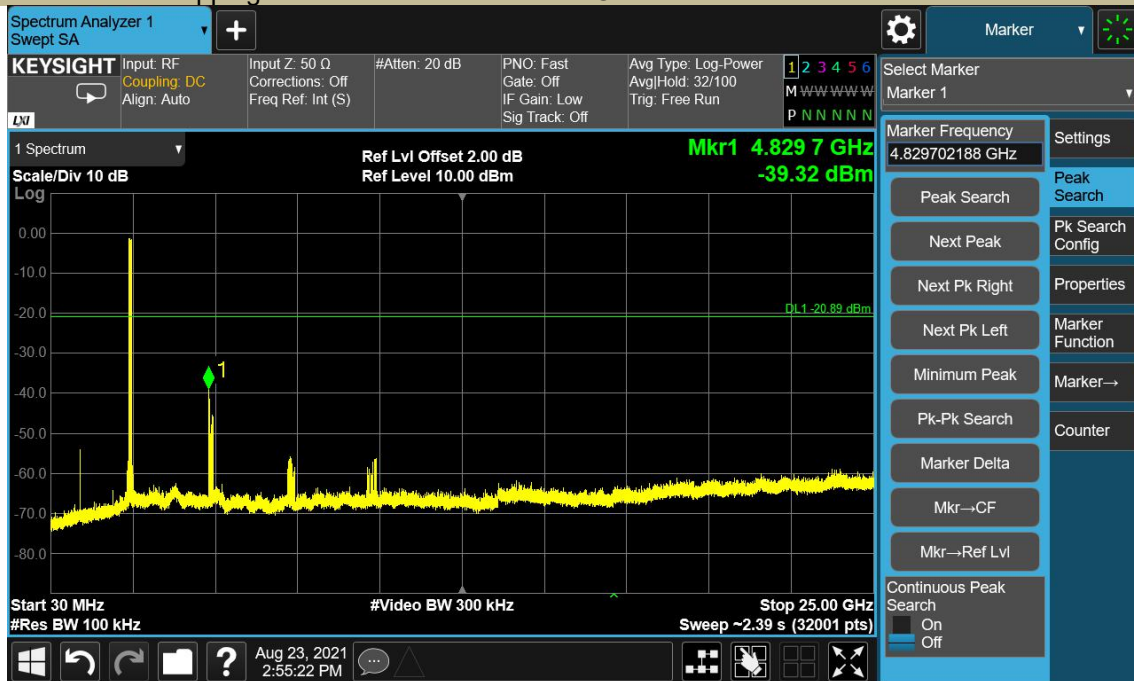
Test Model **Band-edge Conducted Emissions**
Transmitting
Channel 78: 2480MHz **GFSK**



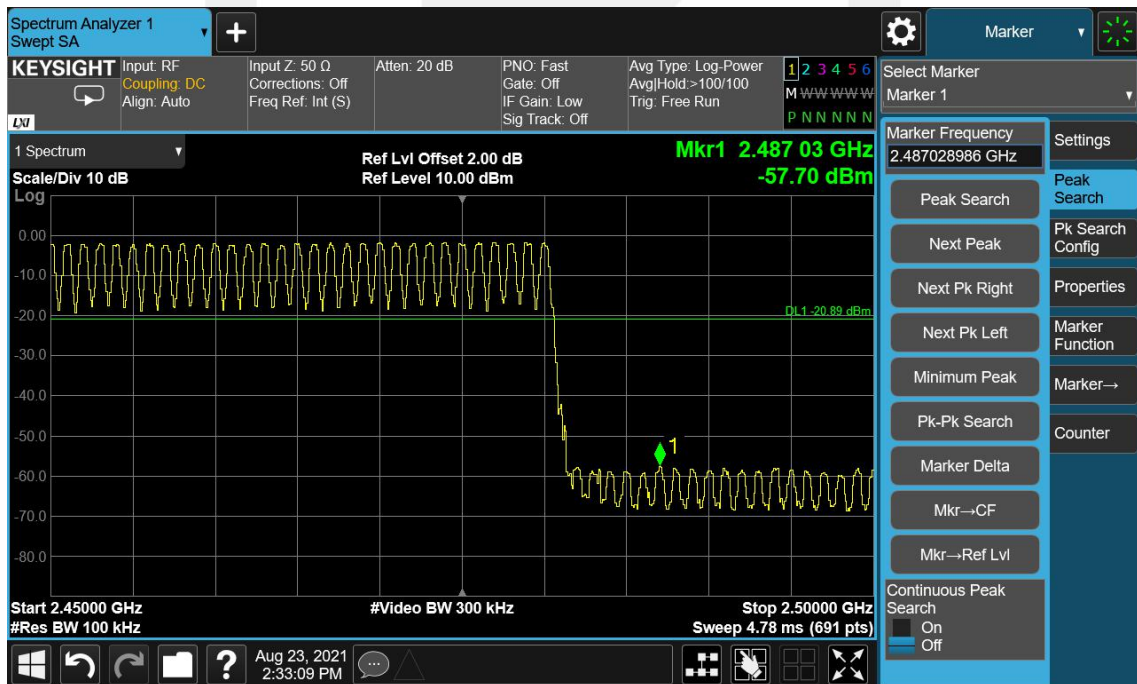
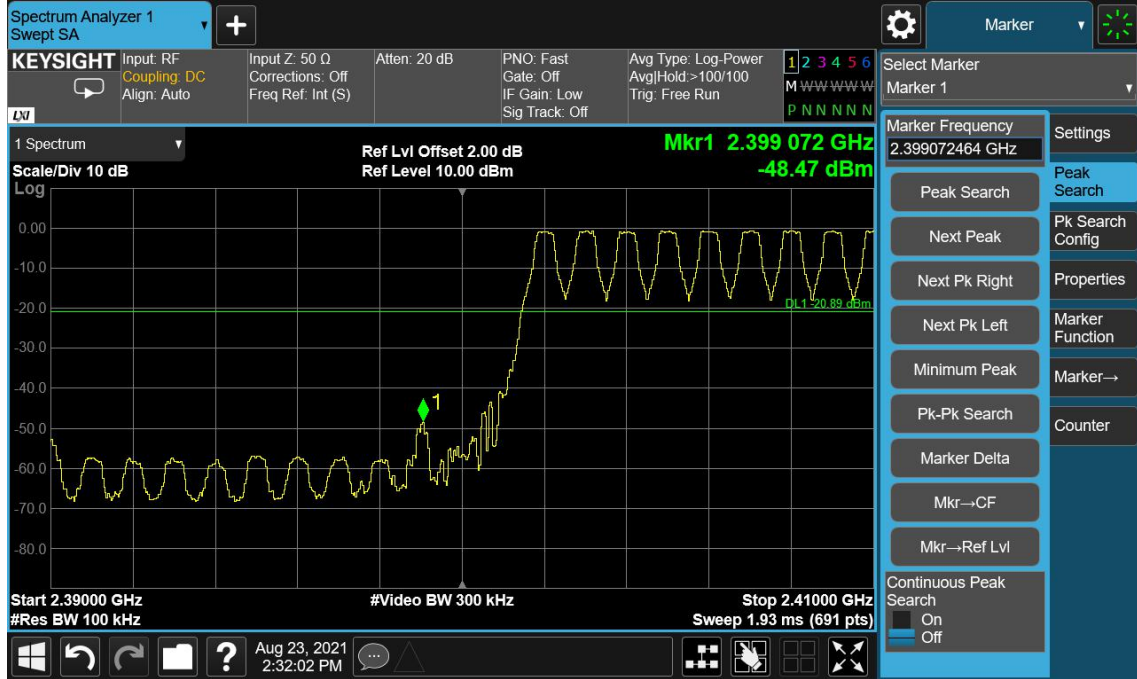
Test Model Maximum Conducted Level RBW=100kHz
Transmitting
Hopping GFSK



Test Model Conducted Spurious RF Conducted Emission
Transmitting
Hopping GFSK



Test Model **Band-edge Conducted Emissions**
 Transmitting Hopping **GFSK**



9.7 RADIATED SPURIOUS EMISSION

9.7.1 Applicable Standard

According to FCC Part 15.247(d) and 15.209 and KDB 558074 D01 15.247 meas guidance v05r02

9.7.2 Conformance Limit

According to FCC Part 15.247(d): radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

According to FCC Part 15.205, Restricted bands

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

According to FCC Part 15.205, the level of any transmitter spurious emission in Restricted bands shall not exceed the level of the emission specified in the following table

Restricted Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance
0.009-0.490	2400/F(KHz)	20 log (uV/m)	300
0.490-1.705	24000/F(KHz)	20 log (uV/m)	30
1.705-30	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

9.7.3 Test Configuration

Test according to clause 7.2 radio frequency test setup 2

9.7.4 Test Procedure

This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:

For Above 1GHz:

The EUT was placed on a turn table which is 1.5m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

For Below 1GHz:

The EUT was placed on a turn table which is 0.8m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Span = wide enough to fully capture the emission being measured

RBW = 100 kHz for

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

For Below 30MHz:

The EUT was placed on a turn table which is 0.8m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Span = wide enough to fully capture the emission being measured

RBW = 9kHz

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

For Below 150KHz:

The EUT was placed on a turn table which is 0.8m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Span = wide enough to fully capture the emission being measured

RBW = 200Hz

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Follow the guidelines in ANSI C63.10-2013 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit specified in Section 15.35(b). Submit this data.

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 $20\log(\text{dwell time}/100 \text{ ms})$, in an effort to demonstrate compliance with the 15.209 limit. Submit this data.

Repeat above procedures until all frequency measured was complete.

9.7.5 Test Results

Temperature:	26° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

■ Spurious Emission below 30MHz (9KHz to 30MHz)

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
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Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Distance extrapolation factor = $40 \log(\text{Specific distance} / \text{test distance})$ (dB);

Limit line = Specific limits (dBuV) + distance extrapolation factor

■ Spurious Emission Above 1GHz (1GHz to 25GHz)

Bluetooth (GFSK, pi/4-DQPSK, 8DPSK) mode have been tested, and the worst result(GFSK)was report as below:

Test mode: GFSK Frequency: Channel 0: 2402MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
4960.023	V	44.40	26.82	74	54	-29.60	-27.18
12718.95	V	55.30	38.59	74	54	-18.70	-15.41
17994.79	V	64.19	46.23	74	54	-9.81	-7.77
4804.11	H	48.49	31.57	74	54	-25.51	-22.43
7206.555	H	50.88	32.51	74	54	-23.12	-21.49
17937.67	H	64.33	46.32	74	54	-9.67	-7.68

Test mode: GFSK Frequency: Channel 39: 2441MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
5411.656	V	45.24	28.66	74	54	-28.76	-25.34
12018.44	V	55.44	39.24	74	54	-18.56	-14.76
17966.21	V	64.40	46.83	74	54	-9.60	-7.17
4881.797	H	46.00	30.09	74	54	-28.00	-23.91
11141.92	H	54.49	36.51	74	54	-19.51	-17.49
17981.8	H	65.40	47.39	74	54	-8.60	-6.61

Test mode: GFSK Frequency: Channel 78: 2480MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
5407.747	V	45.35	29.76	74	54	-28.65	-24.24
11146.75	V	54.44	38.13	74	54	-19.56	-15.87
17922.12	V	64.06	47.42	74	54	-9.94	-6.58
5238.517	H	45.07	28.92	74	54	-28.93	-25.08
11902.63	H	54.48	37.23	74	54	-19.52	-16.77
17994.79	H	64.14	46.85	74	54	-9.86	-7.15

- Note:**
- (1) All Readings are Peak Value (VBW=3MHz) and Average Value (VBW=10Hz).
 - (2) Emission Level= Reading Level+Correct Factor.
 - (3) Correct Factor= Ant_F + Cab_L - Preamp
 - (4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

■ Spurious Emission in Restricted Band 2310-2390MHz and 2483.5-2500MHz

Bluetooth (GFSK, pi/4-DQPSK, 8DPSK, Hopping) mode have been tested, and the worst result (GFSK, Hopping) was report as below:

Test mode: GFSK Frequency: Channel 0: 2402MHz

Frequency (MHz)	Polarity H/V	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
2389.580	H	50.08	74	32.99	54
2385.692	V	49.46	74	32.49	54

Test mode: GFSK Frequency: Channel 78: 2480MHz

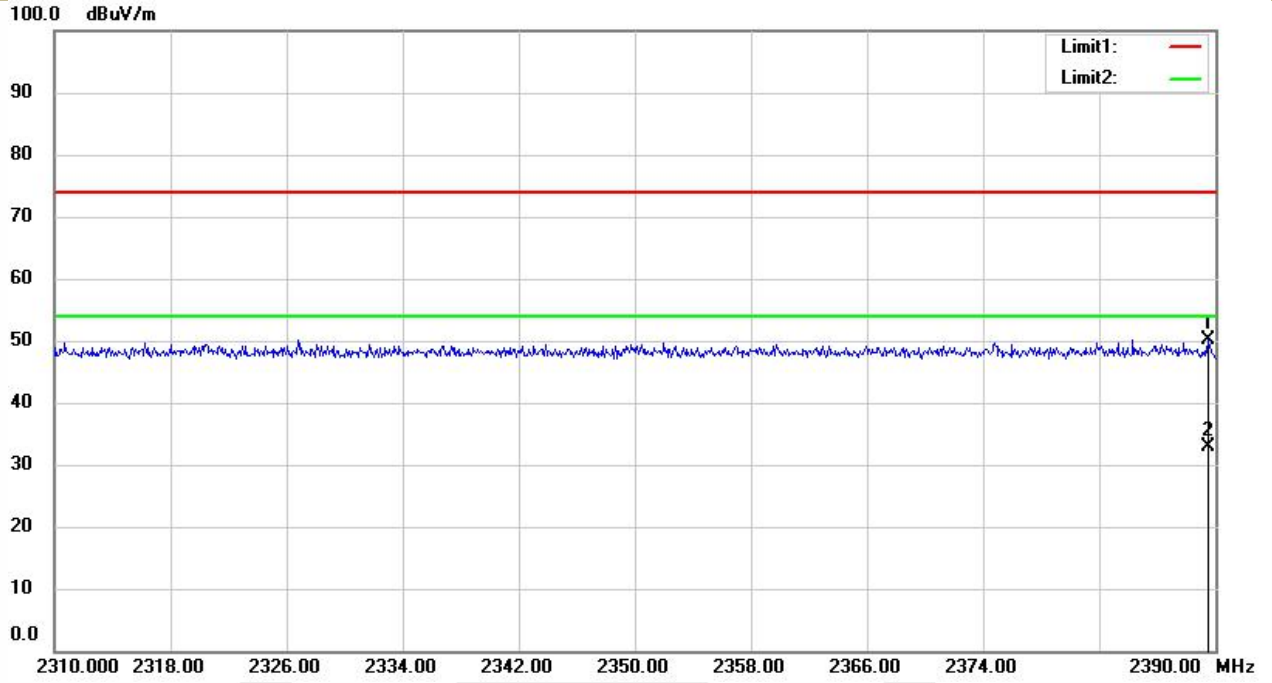
Frequency (MHz)	Polarity H/V	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
2483.974	H	50.05	74	32.69	54
2483.911	V	50.28	74	33.39	54

Test mode: GFSK Frequency: Hopping

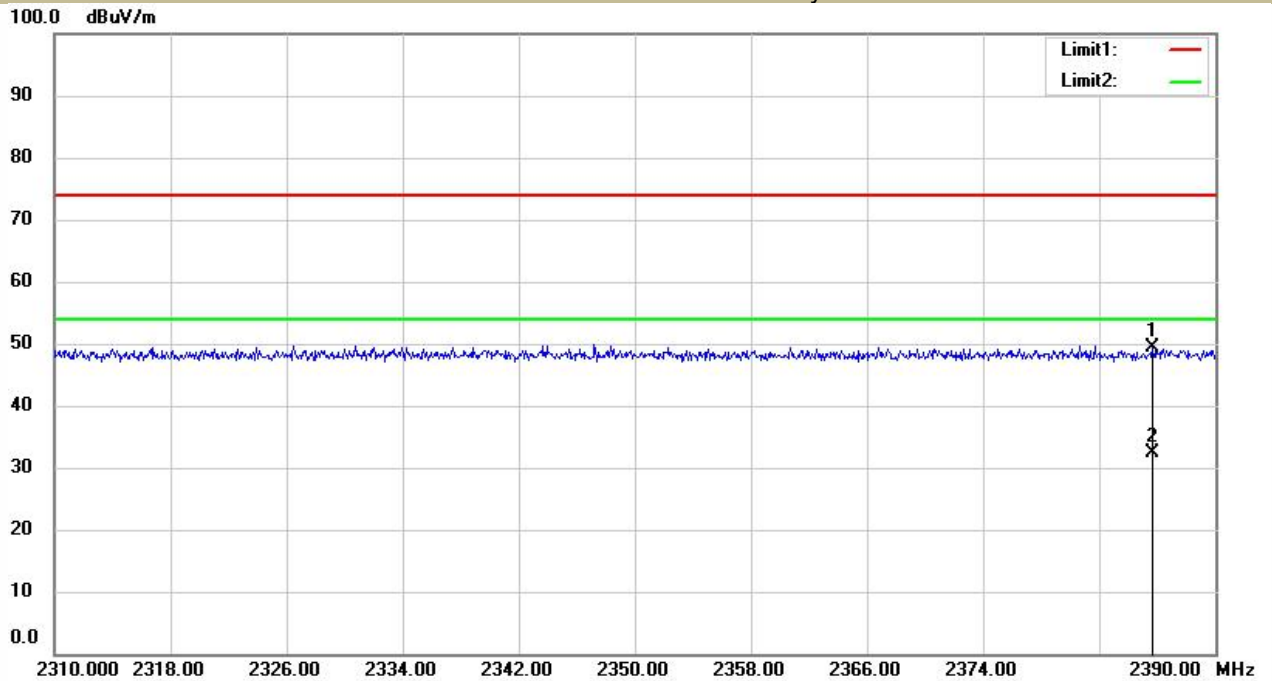
Frequency (MHz)	Polarity H/V	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
2400	H	49.13	74	31.98	54
2483.5	H	49.19	74	32.52	54
2400	V	49.36	74	32.76	54
2483.5	V	48.89	74	31.94	54

- Note:**
- (1) All Readings are Peak Value (VBW=3MHz) and Average Value (VBW=10Hz).
 - (2) Emission Level= Reading Level+Correct Factor.
 - (3) Correct Factor= Ant_F + Cab_L - Preamp
 - (4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

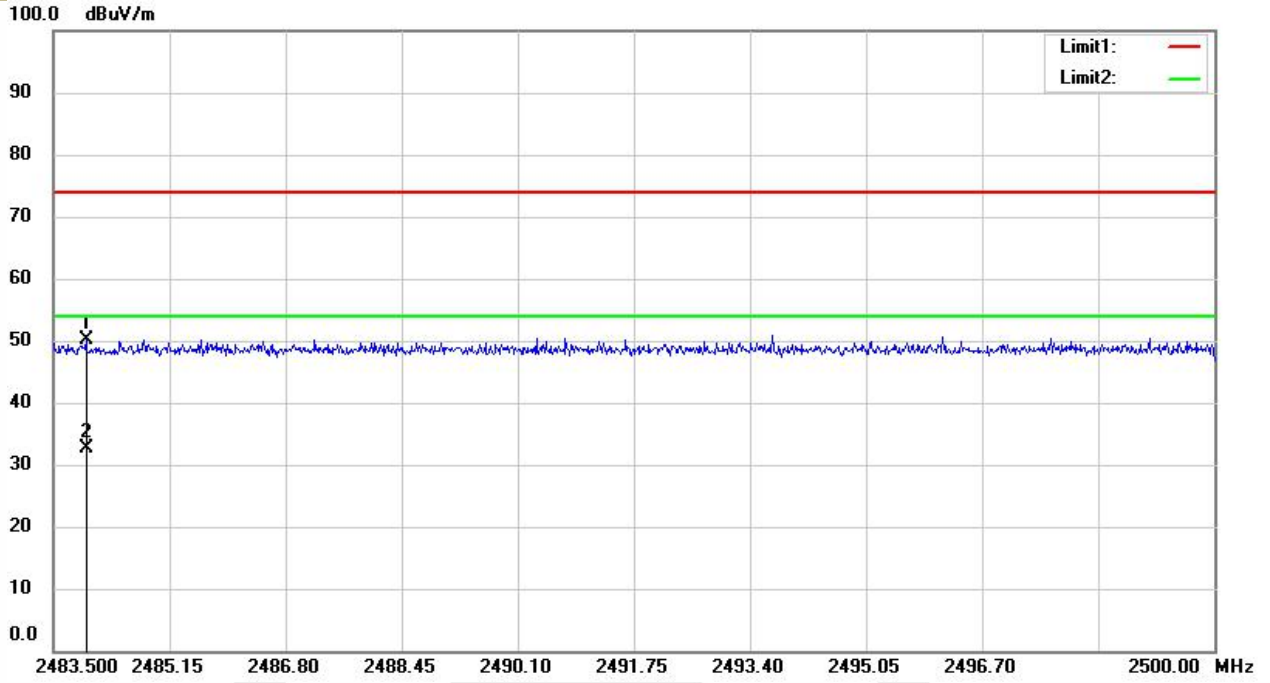
Test Model	Spurious Emission in Restricted Band 2310-2390MHz	GFSK	H
	Bluetooth		
	Channel 0: 2402MHz	Test By:Tom	



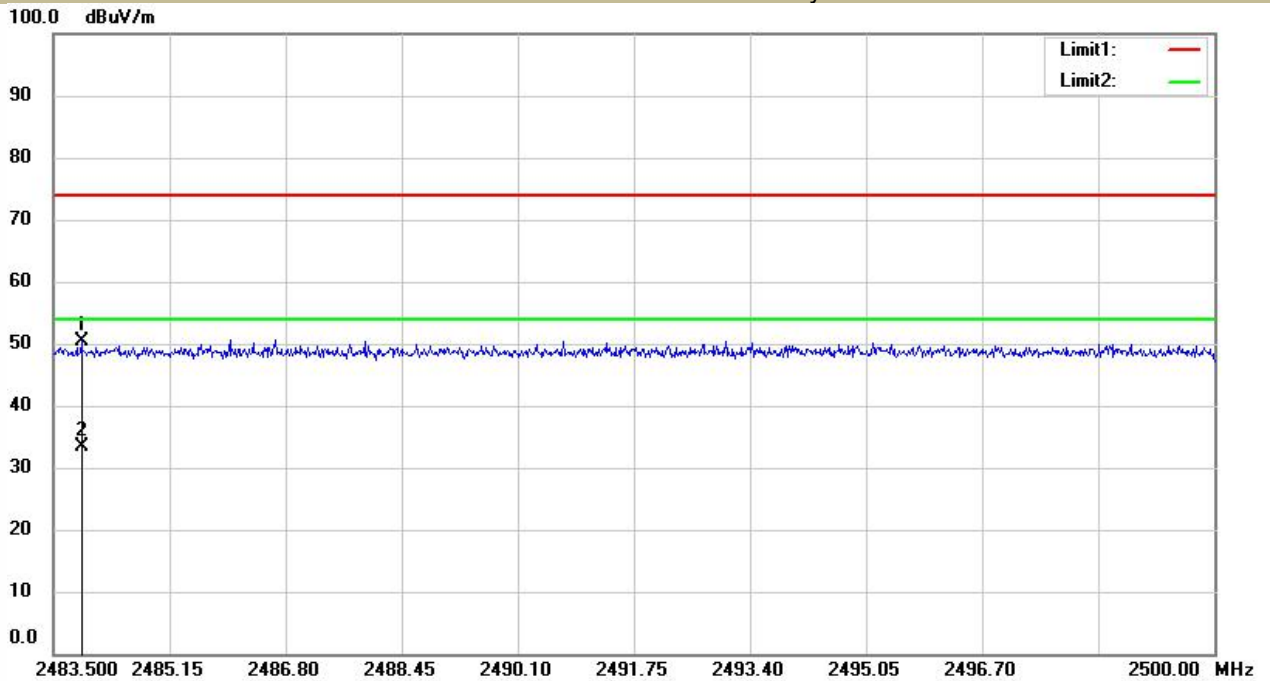
Test Model	Spurious Emission in Restricted Band 2310-2390MHz	GFSK	V
	Bluetooth		
	Channel 0: 2402MHz	Test By:Tom	



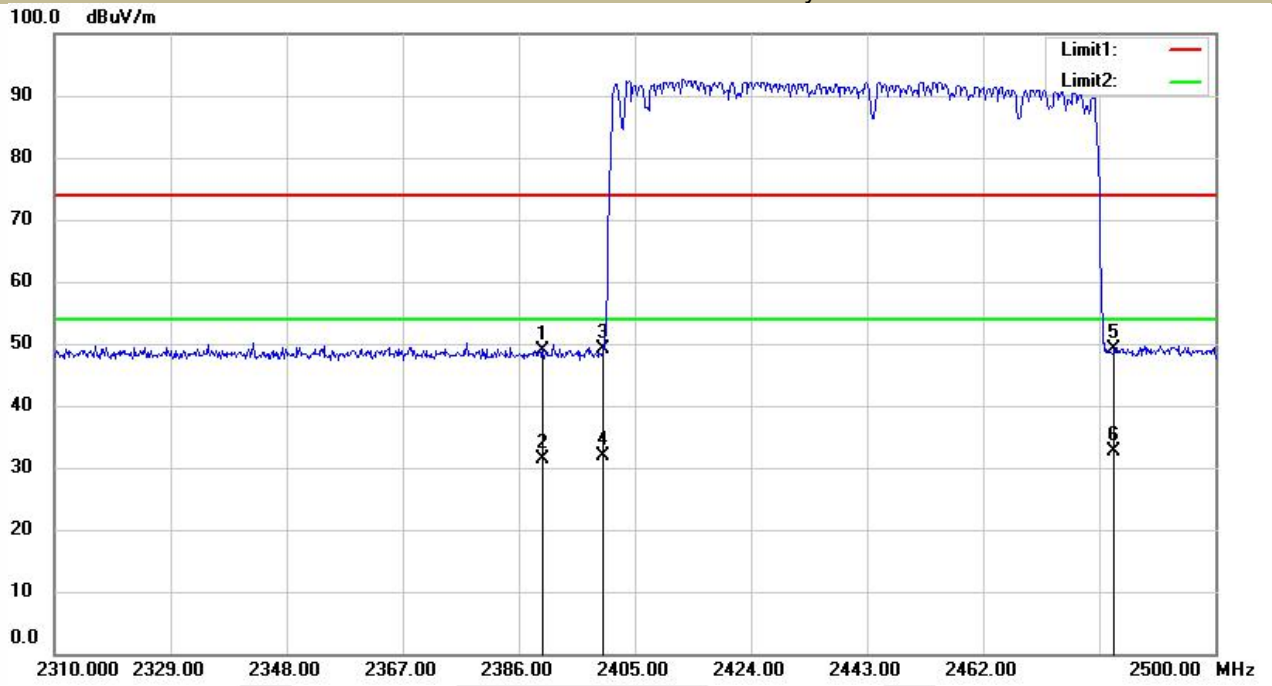
Test Model	Spurious Emission in Restricted Band 2483.5-2500MHz Bluetooth Channel 78: 2480MHz	GFSK	H
		Test By: Tom	



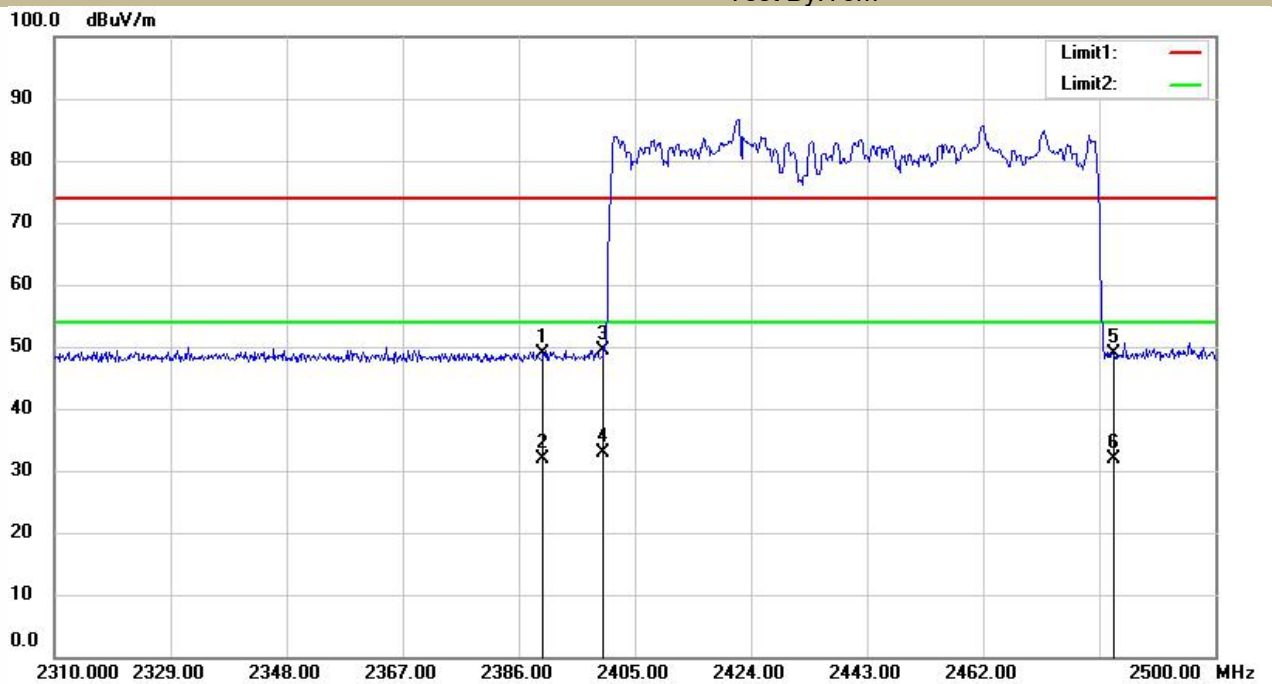
Test Model	Spurious Emission in Restricted Band 2483.5-2500MHz Bluetooth Channel 78: 2480MHz	GFSK	V
		Test By: Tom	



Test Model	Spurious Emission in Restricted Band 2310-2390MHz and 2400-2483.5MHz Bluetooth Hopping	GFSK	H
Test By: Tom			

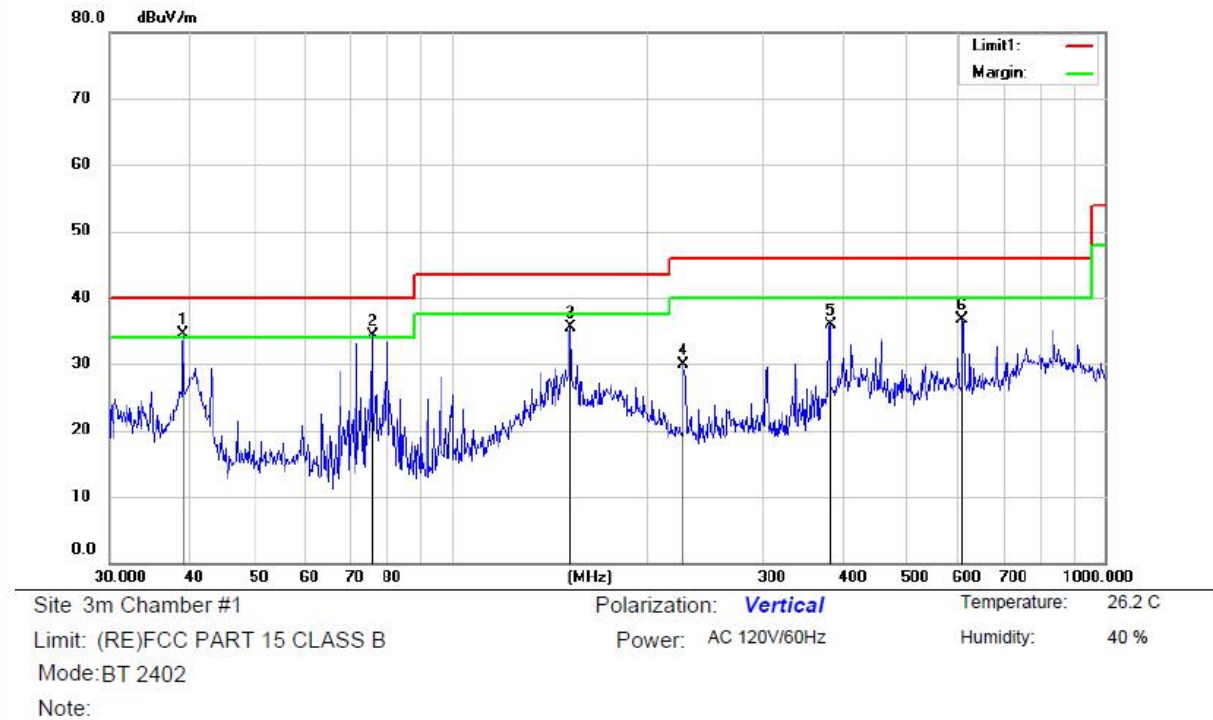


Test Model	Spurious Emission in Restricted Band 2310-2390MHz and 2400-2483.5MHz Bluetooth Hopping	GFSK	V
Test By: Tom			

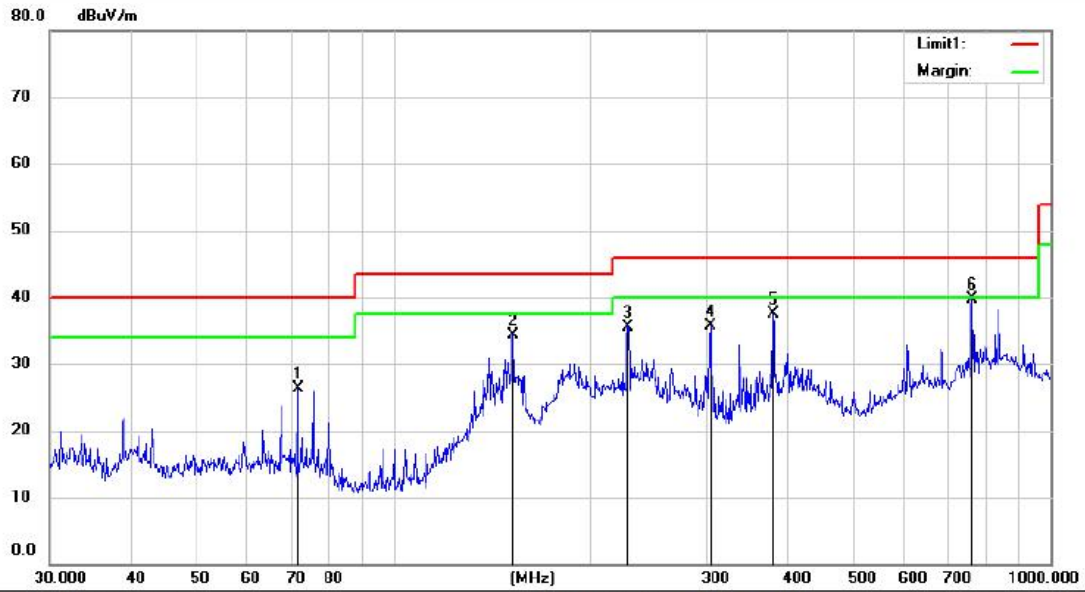


■ Spurious Emission below 1GHz(30MHz to 1GHz)

Bluetooth (GFSK, pi/4-DQPSK, 8DPSK) mode have been tested, and the worst result(GFSK)was report as below:

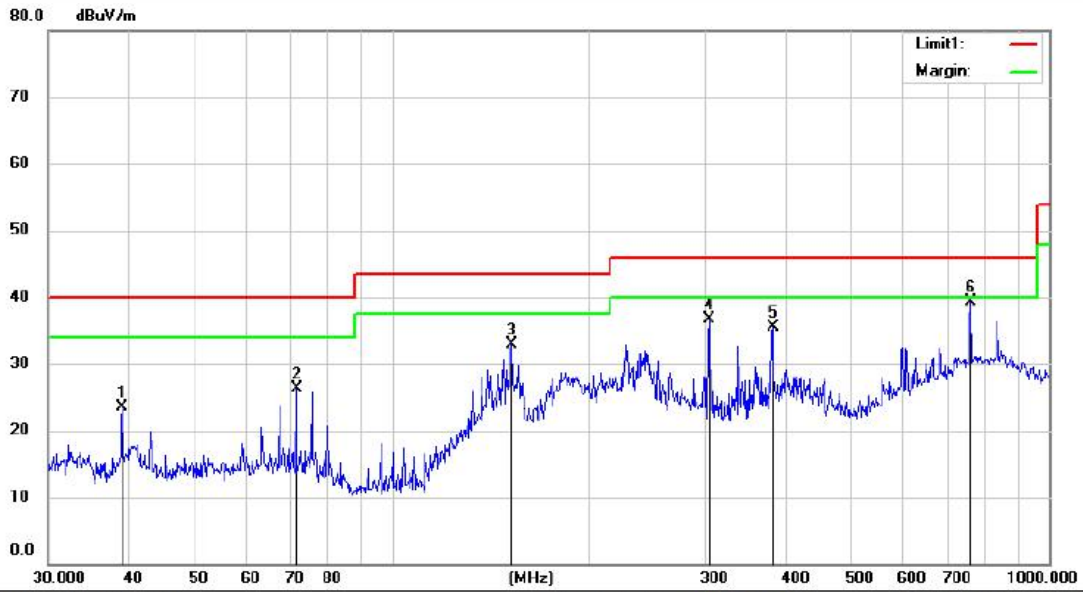


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree degree	Comment
1	*	38.9050	47.62	-13.12	34.50	40.00	-5.50	QP			
2	!	75.7778	48.54	-14.30	34.24	40.00	-5.76	QP			
3		152.3300	49.24	-13.83	35.41	43.50	-8.09	QP			
4		227.5910	42.56	-12.69	29.87	46.00	-16.13	QP			
5		380.9146	43.03	-7.08	35.95	46.00	-10.05	QP			
6		606.9880	39.45	-2.75	36.70	46.00	-9.30	QP			



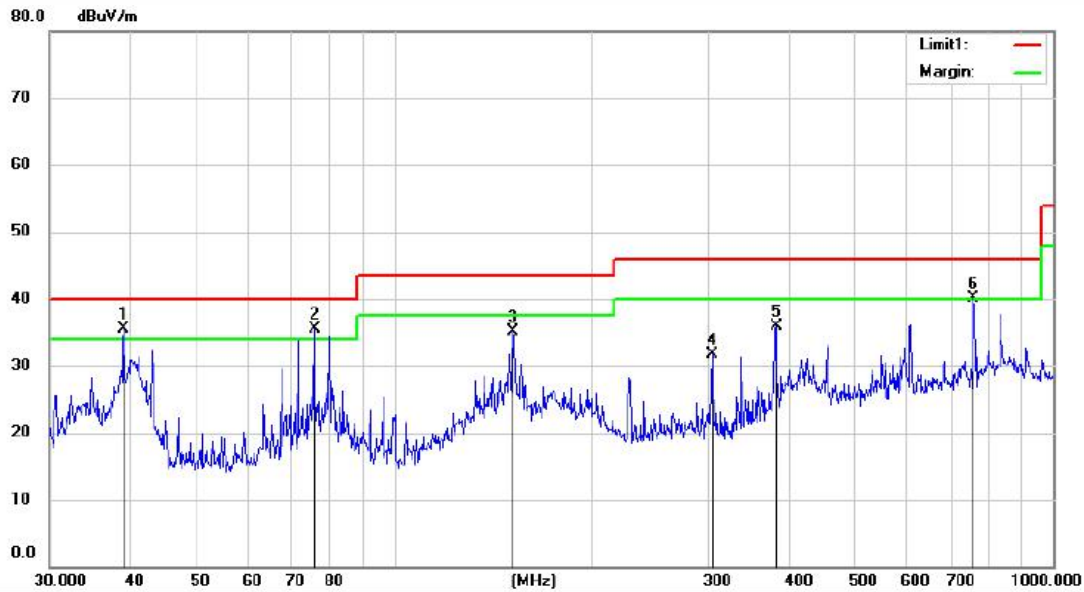
Site: 3m Chamber #1 Polarization: **Horizontal** Temperature: 26.2 C
 Limit: (RE)FCC PART 15 CLASS B Power: AC 120V/60Hz Humidity: 40 %
 Mode: BT 2402
 Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree	Comment
1		71.6747	39.82	-13.50	26.32	40.00	-13.68	QP		
2		152.3300	48.08	-13.83	34.25	43.50	-9.25	QP		
3		227.9902	48.28	-12.68	35.60	46.00	-10.40	QP		
4		303.5437	44.79	-9.04	35.75	46.00	-10.25	QP		
5		379.4150	44.71	-7.13	37.58	46.00	-8.42	QP		
6	*	761.7045	39.05	0.59	39.64	46.00	-6.36	QP		



Site 3m Chamber #1 Polarization: **Horizontal** Temperature: 26.2 C
 Limit: (RE)FCC PART 15 CLASS B Power: AC 120V/60Hz Humidity: 40 %
 Mode:BT 2441
 Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree	Comment
1		38.8878	36.72	-13.12	23.60	40.00	-16.40	QP		
2		71.6747	39.89	-13.50	26.39	40.00	-13.61	QP		
3		152.2632	46.76	-13.83	32.93	43.50	-10.57	QP		
4		303.5437	45.84	-9.04	36.80	46.00	-9.20	QP		
5		379.9141	42.64	-7.12	35.52	46.00	-10.48	QP		
6	*	761.7045	38.68	0.59	39.27	46.00	-6.73	QP		



Site 3m Chamber #1 Polarization: **Vertical** Temperature: 26.2 C

Limit: (RE)FCC PART 15 CLASS B

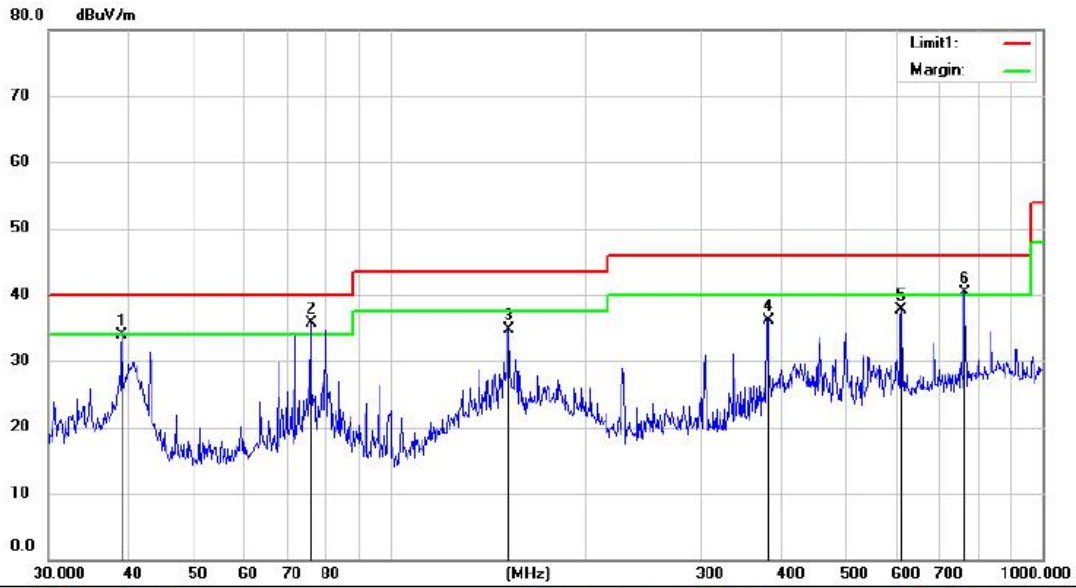
Power: AC 120V/60Hz

Humidity: 40 %

Mode: BT 2441

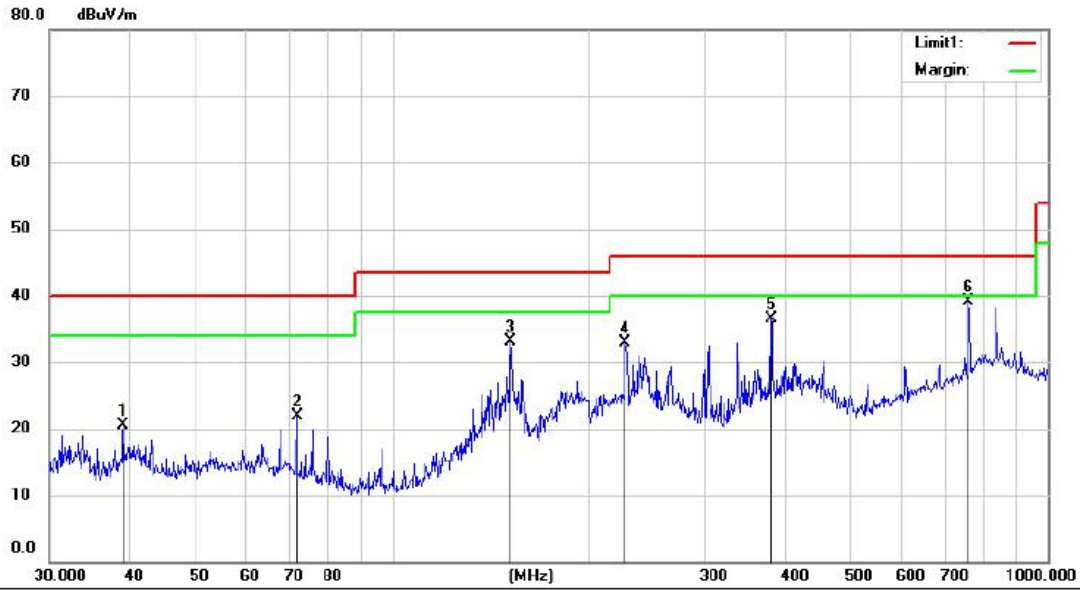
Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Antenna Height cm	Table Degree	Detector	Comment
1	*	38.9220	48.61	-13.12	35.49	40.00	-4.51			QP	
2	!	75.7778	49.76	-14.30	35.46	40.00	-4.54			QP	
3		151.7967	48.88	-13.82	35.06	43.50	-8.44			QP	
4		303.5437	40.75	-9.04	31.71	46.00	-14.29			QP	
5		380.7477	43.03	-7.09	35.94	46.00	-10.06			QP	
6	!	758.7056	39.66	0.48	40.14	46.00	-5.86			QP	



Site: 3m Chamber #1 Polarization: **Vertical** Temperature: 26.2 C
 Limit: (RE)FCC PART 15 CLASS B Power: AC 120V/60Hz Humidity: 40 %
 Mode: BT 2480
 Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1		38.9050	47.10	-13.12	33.98	40.00	-6.02	QP			
2	*	75.7446	50.00	-14.30	35.70	40.00	-4.30	QP			
3		152.2632	48.60	-13.83	34.77	43.50	-8.73	QP			
4		380.7477	43.26	-7.09	36.17	46.00	-9.83	QP			
5		609.3873	40.37	-2.73	37.64	46.00	-8.36	QP			
6	!	761.7045	39.75	0.59	40.34	46.00	-5.66	QP			



Site: 3m Chamber #1 Polarization: **Horizontal** Temperature: 26.2 C
 Limit: (RE)FCC PART 15 CLASS B Power: AC 120V/60Hz Humidity: 40 %
 Mode: BT 2480
 Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Over dB	Detector	Antenna Height cm	Table Degree	Comment
1		38.9220	33.53	-13.12	20.41	40.00	-19.59	QP			
2		71.6747	35.38	-13.50	21.88	40.00	-18.12	QP			
3		151.7967	46.83	-13.82	33.01	43.50	-10.49	QP			
4		227.5910	45.57	-12.69	32.88	46.00	-13.12	QP			
5		379.4150	43.61	-7.13	36.48	46.00	-9.52	QP			
6	*	760.3701	38.51	0.55	39.06	46.00	-6.94	QP			

9.8 CONDUCTED EMISSION TEST

9.8.1 Applicable Standard

According to FCC Part 15.207(a)

9.8.2 Conformance Limit

Conducted Emission Limit		
Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies
 2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

9.8.3 Test Configuration

Test according to clause 7.3 conducted emission test setup

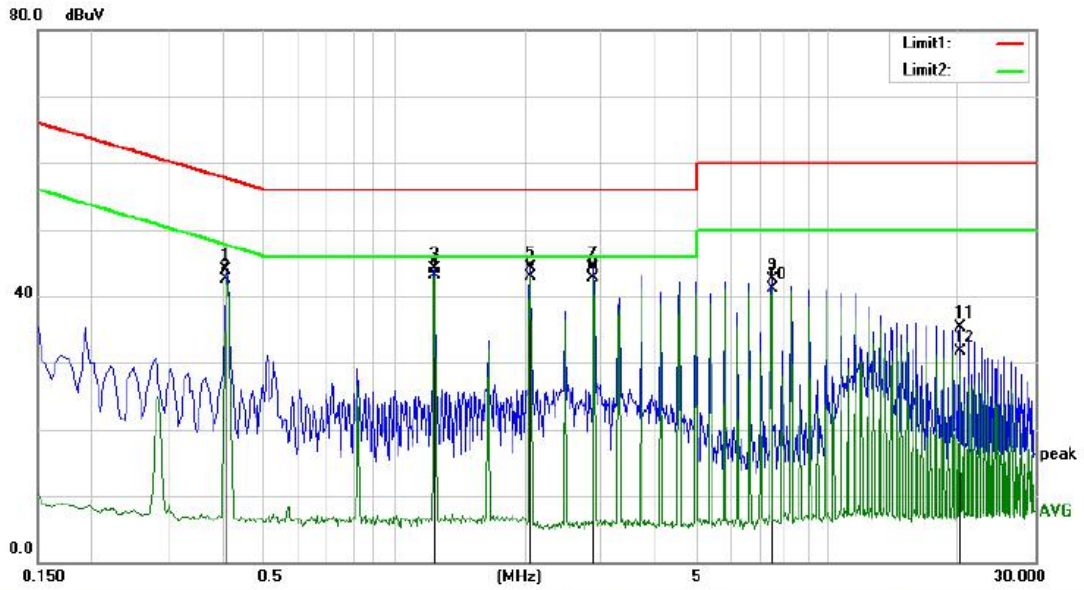
9.8.4 Test Procedure

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

9.8.5 Test Results

Pass

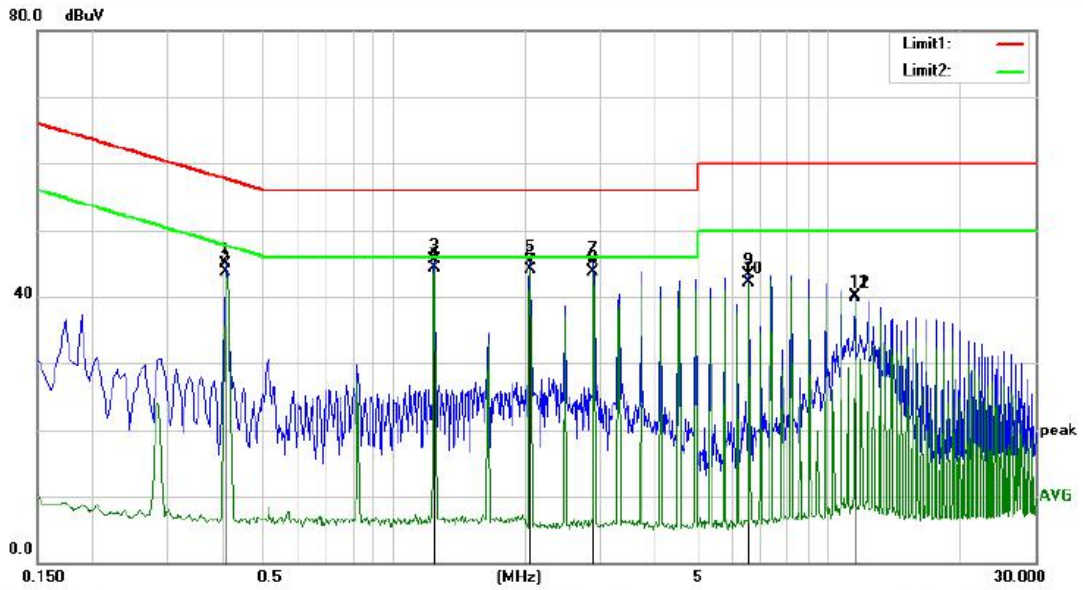
The 120V &240V voltage have been tested, and the worst result recorded was report as below:



Site Conduction #2
 Limit: (CE)FCC PART 15 class B_QP
 Mode: BT+Charging
 Note:

Phase: **N**
 Power: AC 120V/60Hz
 Temperature: 26.9
 Humidity: 44 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measurement dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.4100	33.50	10.37	43.87	57.65	-13.78	QP	
2		0.4100	32.22	10.37	42.59	47.65	-5.06	AVG	
3		1.2380	33.62	10.40	44.02	56.00	-11.98	QP	
4	*	1.2380	32.73	10.40	43.13	46.00	-2.87	AVG	
5		2.0580	34.01	10.33	44.34	56.00	-11.66	QP	
6		2.0580	32.65	10.33	42.98	46.00	-3.02	AVG	
7		2.8820	33.91	10.37	44.28	56.00	-11.72	QP	
8		2.8820	32.43	10.37	42.80	46.00	-3.20	AVG	
9		7.4100	31.91	10.64	42.55	60.00	-17.45	QP	
10		7.4100	30.44	10.64	41.08	50.00	-8.92	AVG	
11		20.1580	24.50	10.76	35.26	60.00	-24.74	QP	
12		20.1580	20.94	10.76	31.70	50.00	-18.30	AVG	



Site Conduction #2

Phase: **L1**

Temperature: 26.9

Limit: (CE)FCC PART 15 class B_QP

Power: AC 120V/60Hz

Humidity: 44 %

Mode: BT+Charging

Note:

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.4100	34.48	10.37	44.85	57.65	-12.80	QP	
2		0.4100	33.34	10.37	43.71	47.65	-3.94	AVG	
3		1.2380	35.10	10.40	45.50	56.00	-10.50	QP	
4	*	1.2380	33.88	10.40	44.28	46.00	-1.72	AVG	
5		2.0580	35.05	10.33	45.38	56.00	-10.62	QP	
6		2.0580	33.72	10.33	44.05	46.00	-1.95	AVG	
7		2.8820	34.68	10.37	45.05	56.00	-10.95	QP	
8		2.8820	33.36	10.37	43.73	46.00	-2.27	AVG	
9		6.5820	32.69	10.59	43.28	60.00	-16.72	QP	
10		6.5820	31.50	10.59	42.09	50.00	-7.91	AVG	
11		11.5220	29.38	10.77	40.15	60.00	-19.85	QP	
12		11.5220	29.21	10.77	39.98	50.00	-10.02	AVG	

9.9 ANTENNA APPLICATION

9.9.1 Antenna Requirement

Standard	Requirement
FCC CRF Part 15.203	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

9.9.2 Result

PASS.

The EUT has 1 antenna: a Internal Antenna for Bluetooth with classic model, the gain is 1.9 dBi;

- Note:
- Antennas use a permanently attached antenna which is not replaceable.
 - Not using a standard antenna jack or electrical connector for antenna replacement
 - The antenna has to be professionally installed (please provide method of installation)

which in accordance to section 15.203, please refer to the internal photos.

Detail of factor for radiated emission

Frequency(MHz)	Ant_F(dB)	Cab_L(dB)	Preamp(dB)	Correct Factor(dB)
0.009	20.6	0.03	\	20.63
0.15	20.7	0.1	\	20.8
1	20.9	0.15	\	21.05
10	20.1	0.28	\	20.38
30	18.8	0.45	\	19.25
30	11.7	0.62	27.9	-15.58
100	12.5	1.02	27.8	-14.28
300	12.9	1.91	27.5	-12.69
600	19.2	2.92	27	-4.88
800	21.1	3.54	26.6	-1.96
1000	22.3	4.17	26.2	0.27
1000	25.6	1.76	41.4	-14.04
3000	28.9	3.27	43.2	-11.03
5000	31.1	4.2	44.6	-9.3
8000	36.2	5.95	44.7	-2.55
10000	38.4	6.3	43.9	0.8
12000	38.5	7.14	42.3	3.34
15000	40.2	8.15	41.4	6.95
18000	45.4	9.02	41.3	13.12
18000	37.9	1.81	47.9	-8.19
21000	37.9	1.95	48.7	-8.85
25000	39.3	2.01	42.8	-1.49
28000	39.6	2.16	46.0	-4.24
31000	41.2	2.24	44.5	-1.06
34000	41.5	2.29	46.6	-2.81
37000	43.8	2.30	46.4	-0.3
40000	43.2	2.50	42.2	3.5

----- END OF REPORT -----