

## 9.6 CONDUCTED SUPRIIOUS EMISSION

### 9.6.1 Applicable Standard

According to FCC Part 15.247(d) and 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 Maximumconducedtedlevel.

Note that the channel found to contain the maximum conducedted 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=100kHzSet VBW  $\geq$  RBW

Set Sweep = autoSetDetector function = peakSetTrace = 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.

#### ■ ConducedtedSpurious RF Conducted Emission

Use the following spectrum analyzer settings:

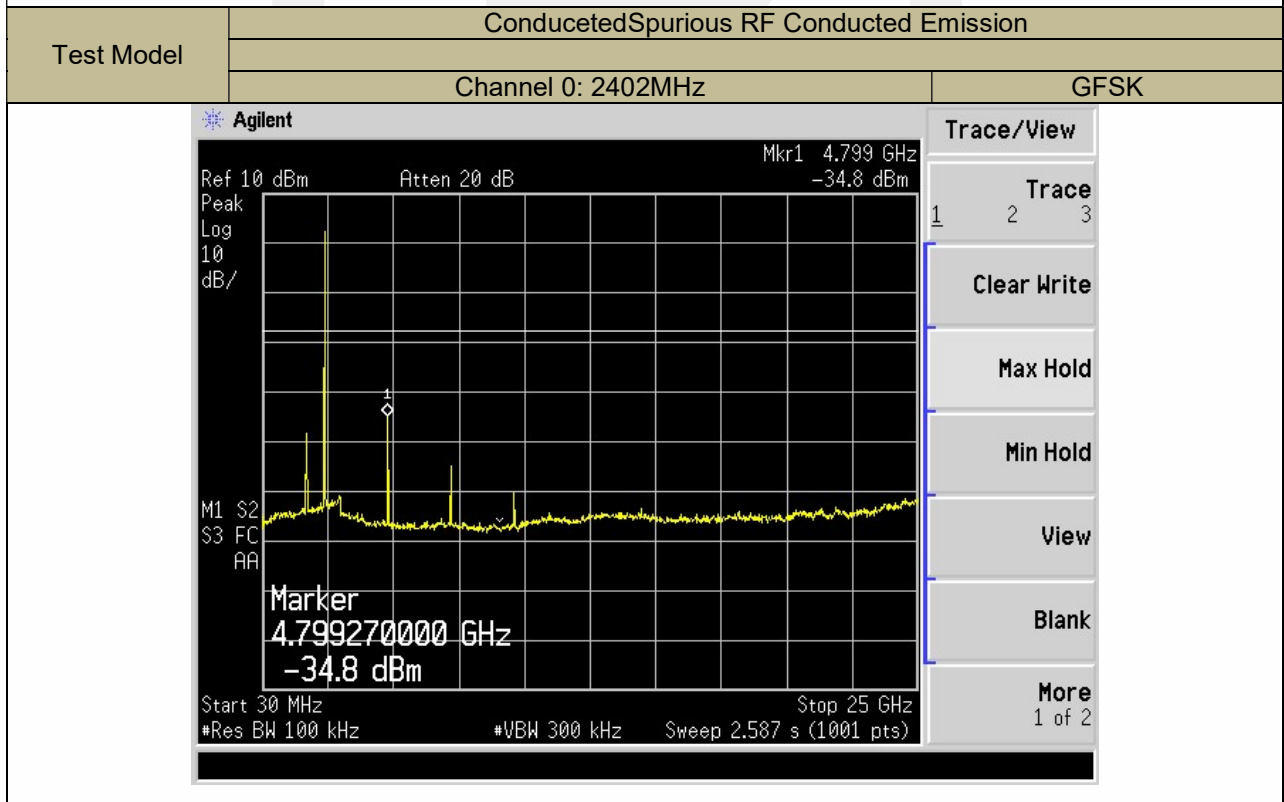
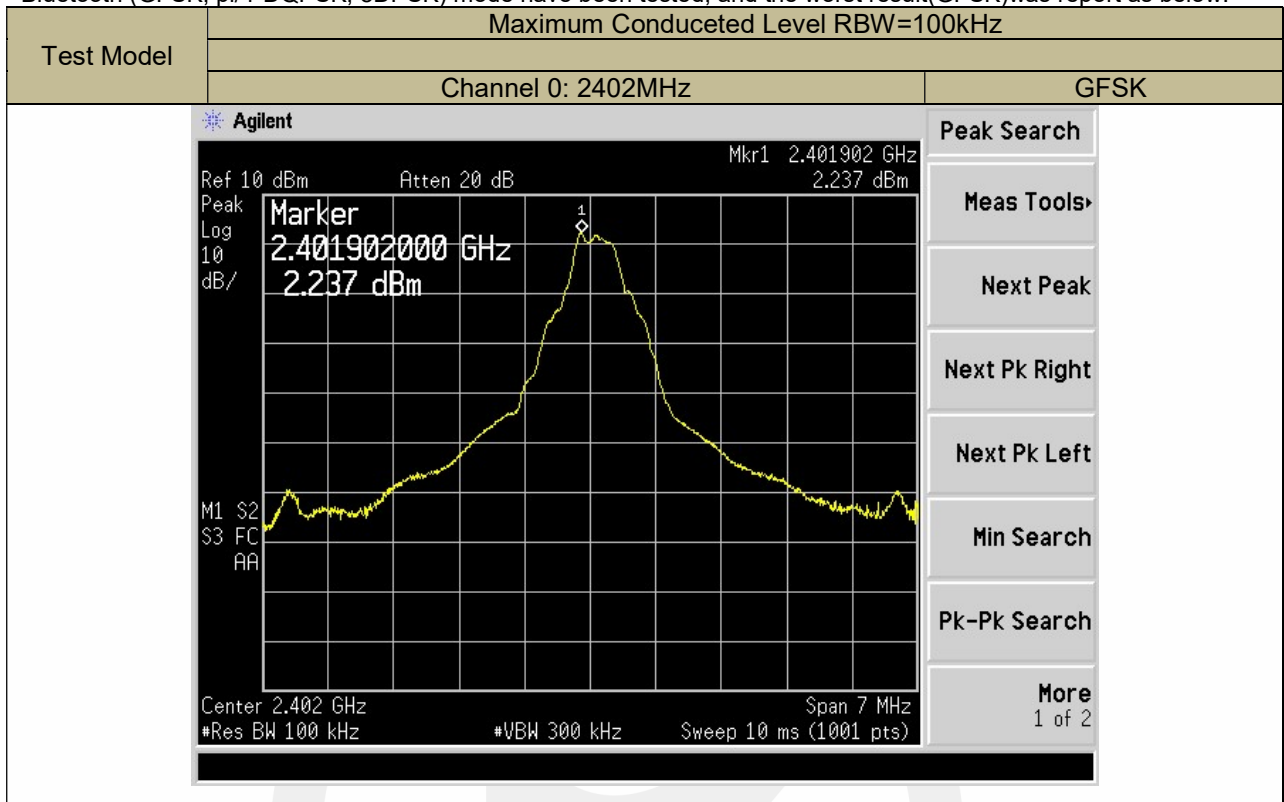
Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic.(30MHz to 25GHz).Set RBW = 100 kHzSetVBW $\geq$  RBW

Set Sweep = autoSetDetector function = peakSetTrace = max hold

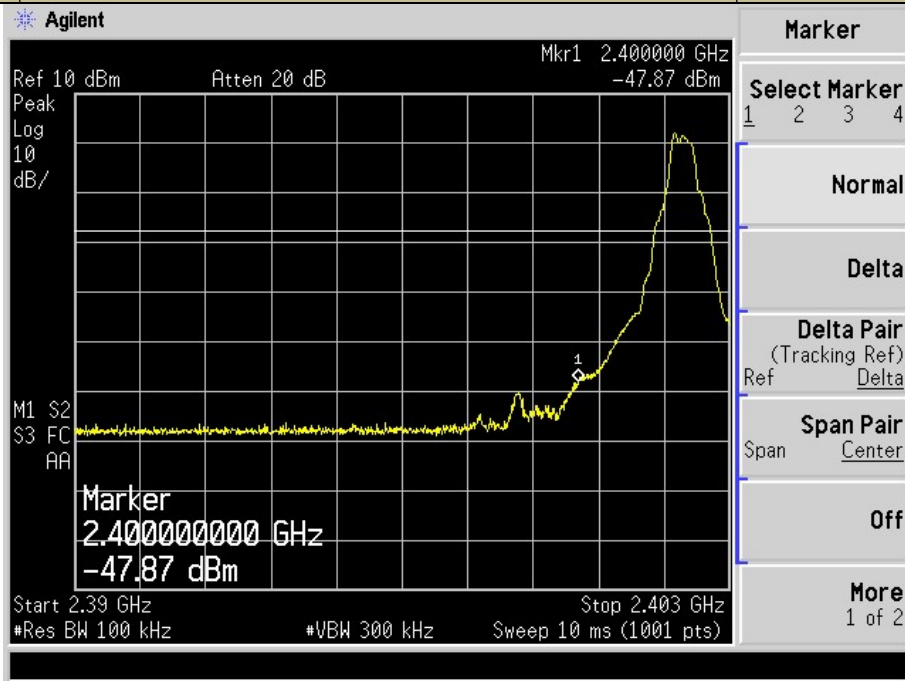
Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this Section.

### 9.6.5 Test Results

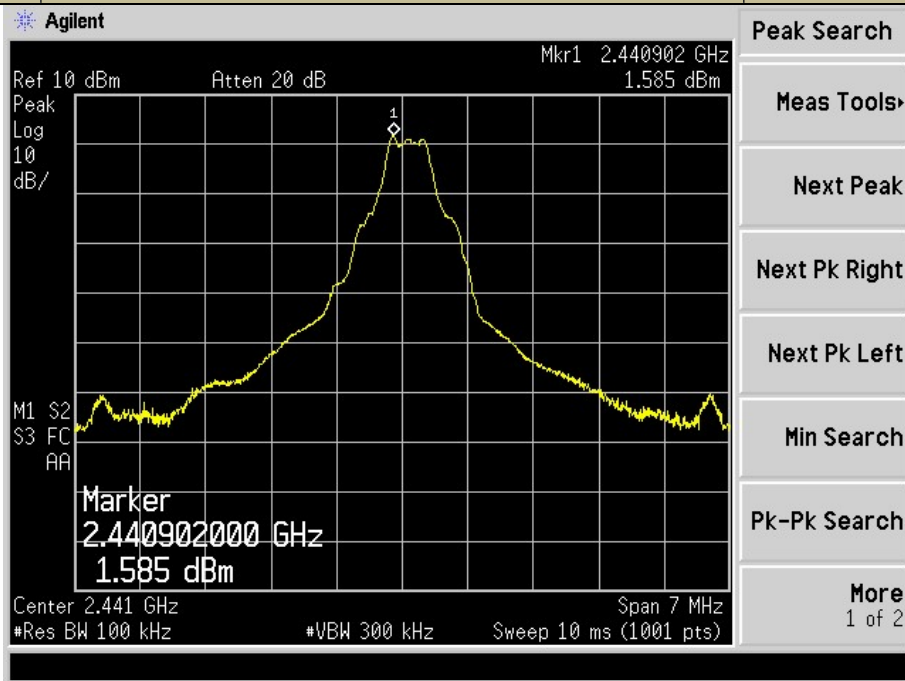
Bluetooth (GFSK, pi/4-DQPSK, 8DPSK) mode have been tested, and the worst result(GFSK)was report as below:



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

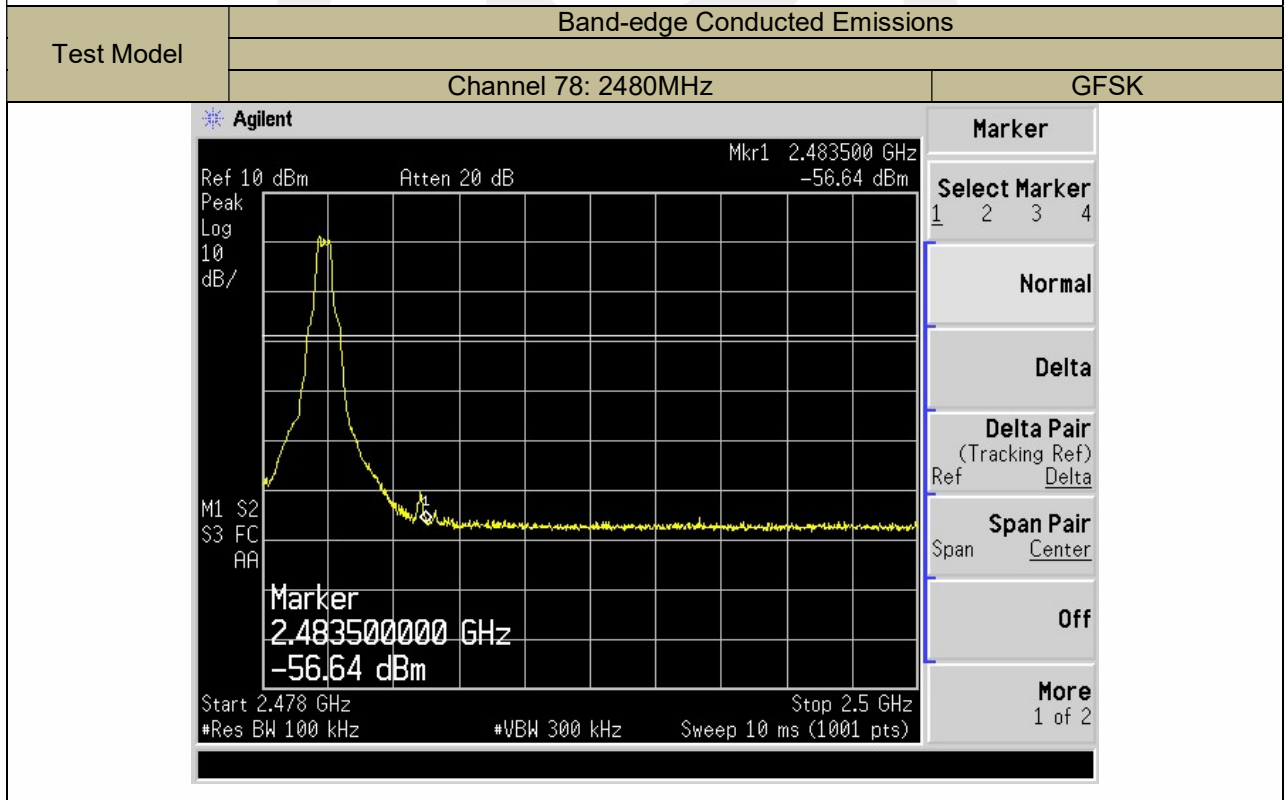
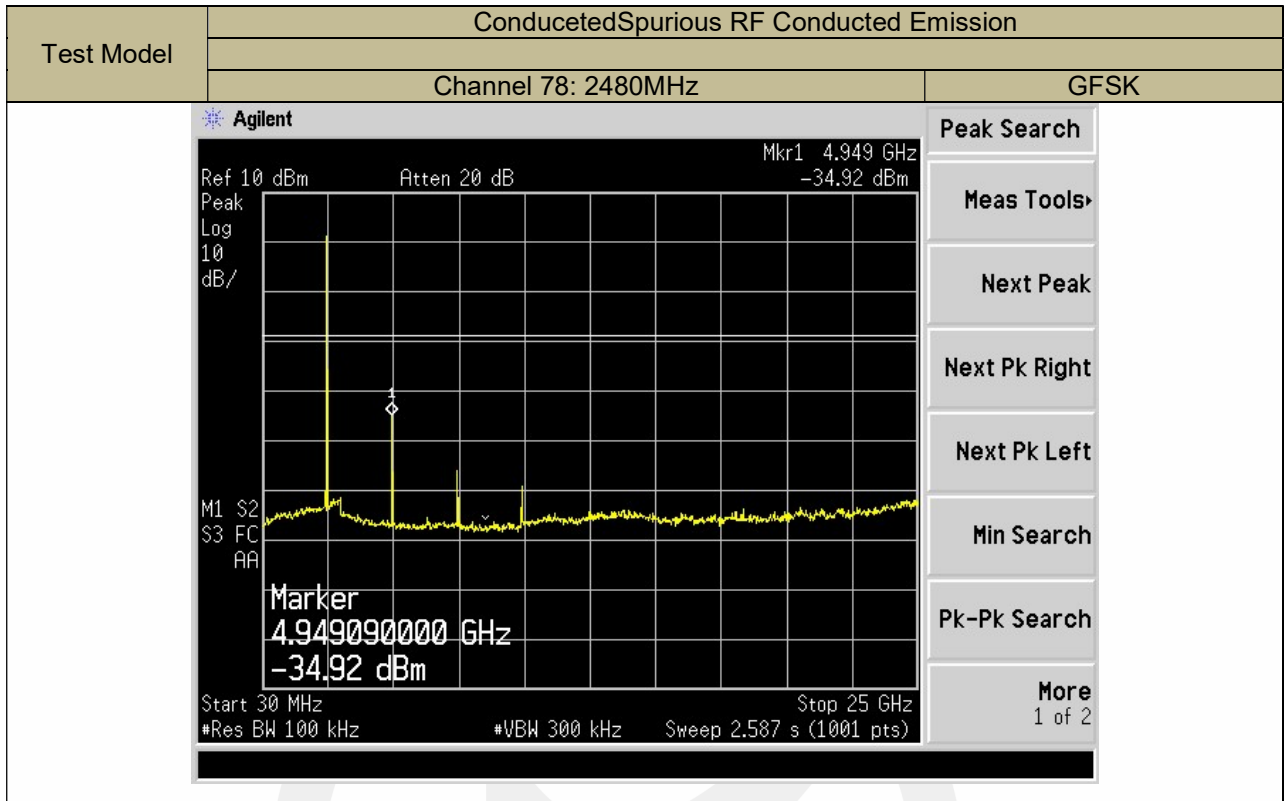


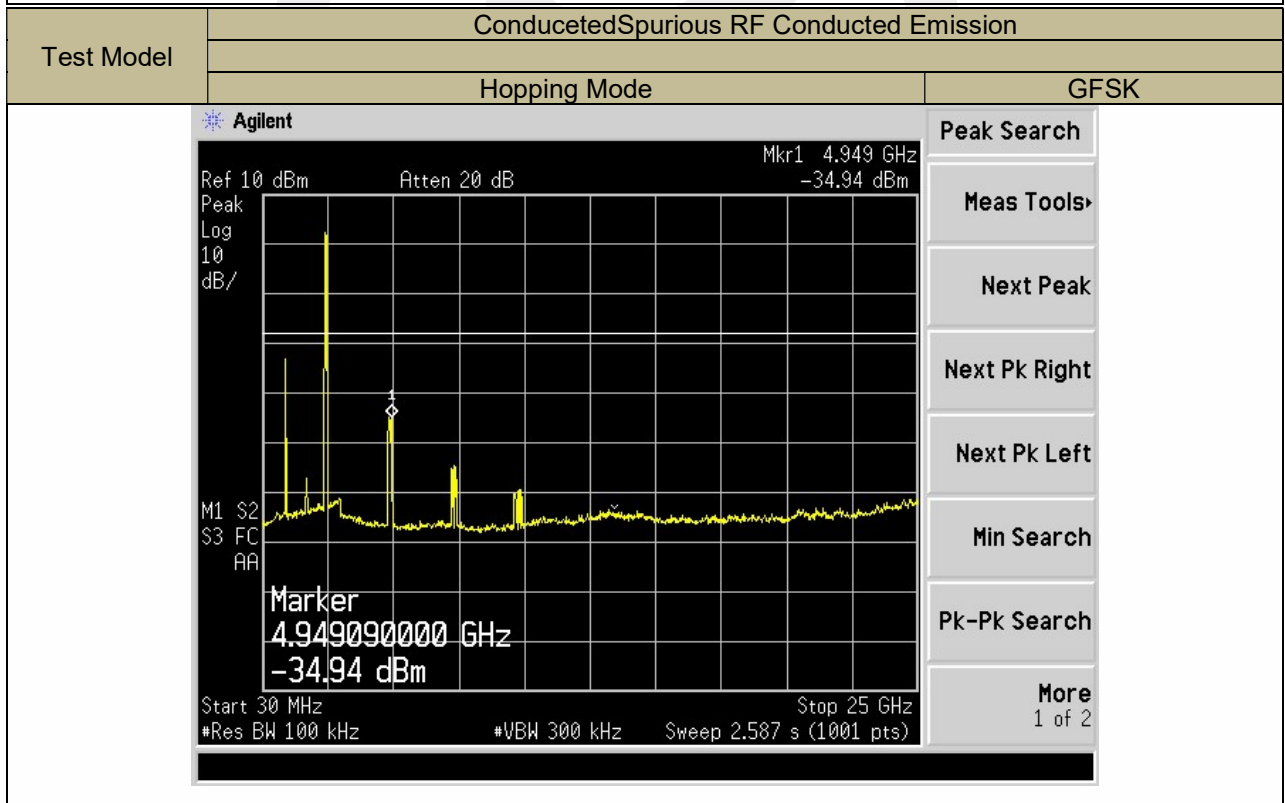
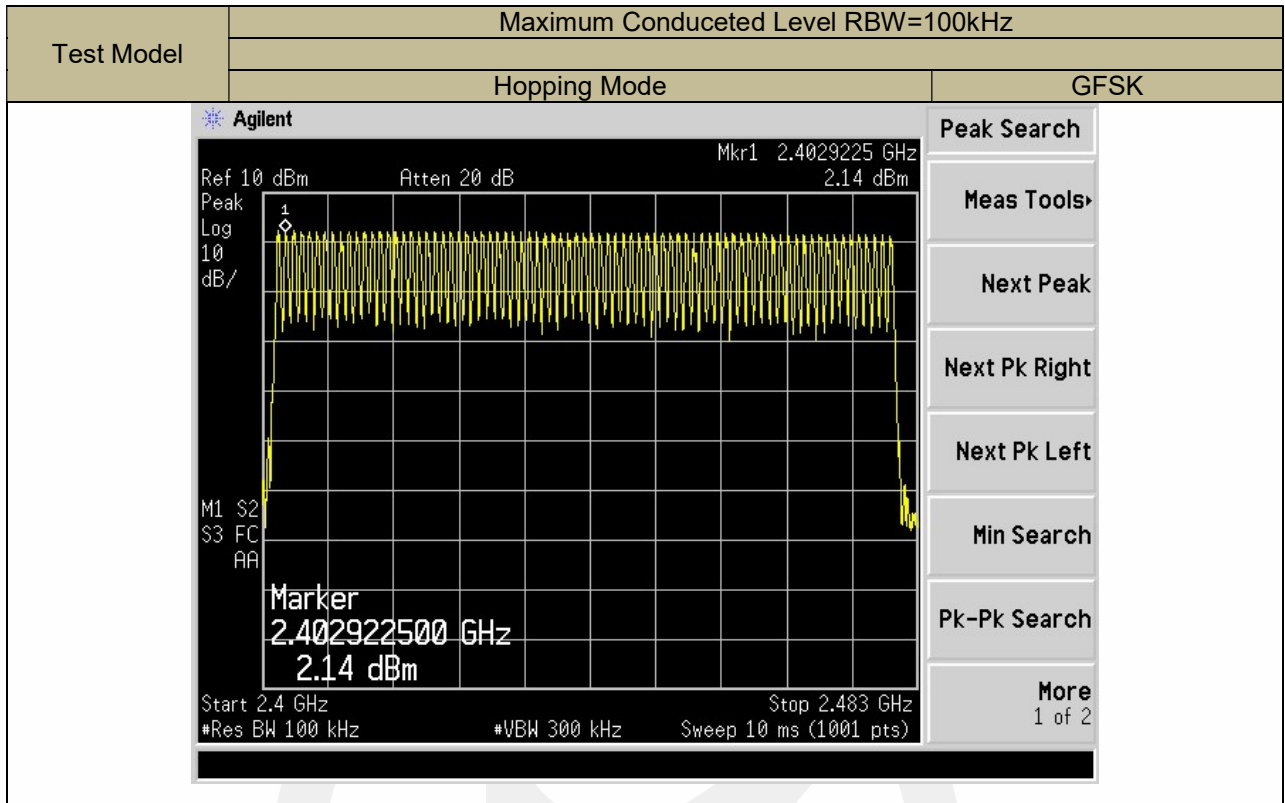
Test Model	Maximum Conduceted Level RBW=100kHz	
	Channel 39: 2441MHz	GFSK

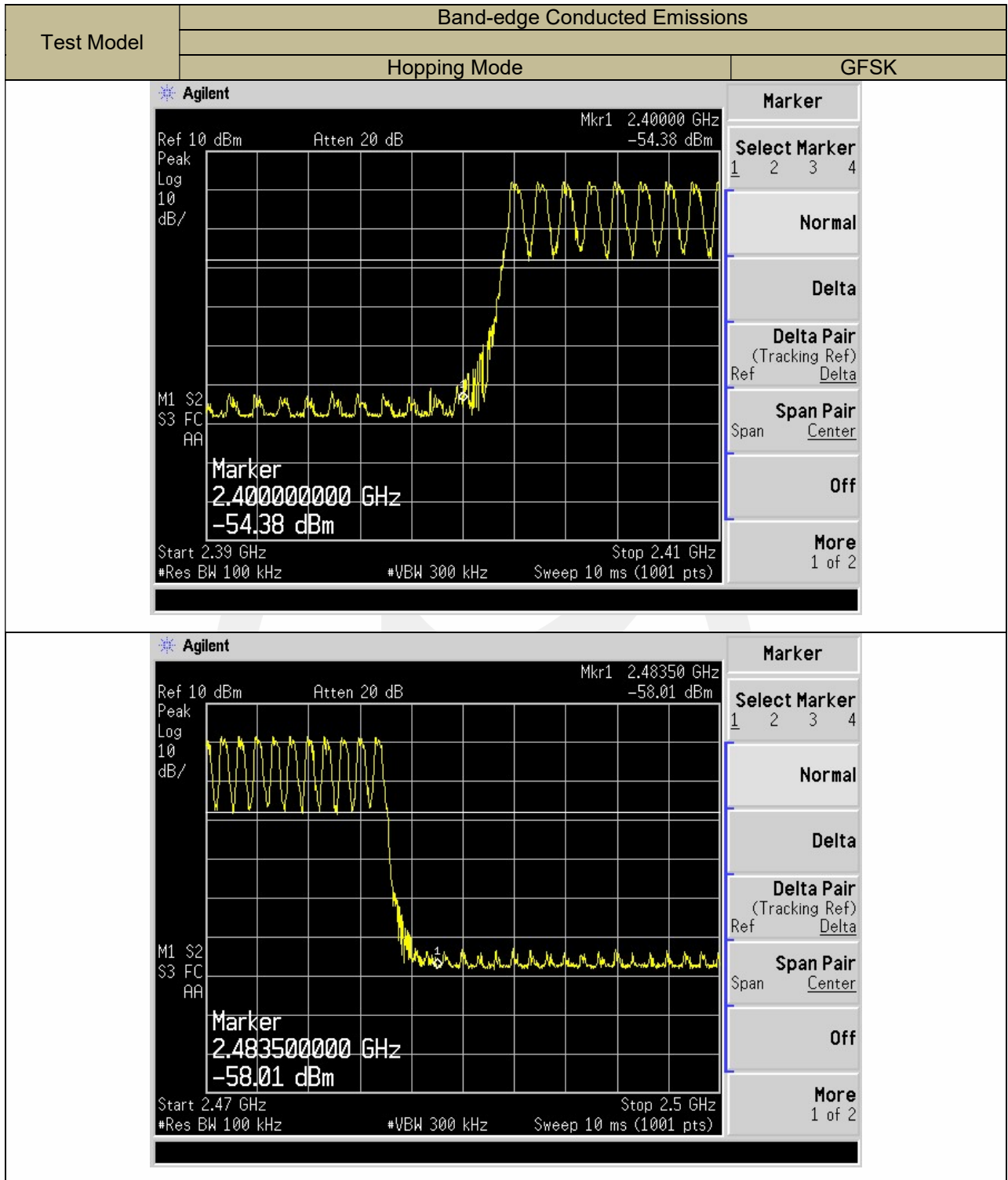


Test Model	ConducetedSpurious RF Conducted Emission	
	Channel 39: 2441MHz	GFSK
		<ul style="list-style-type: none"> <li>Peak Search</li> <li>Meas Tools▶</li> <li>Next Peak</li> <li>Next Pk Right</li> <li>Next Pk Left</li> <li>Min Search</li> <li>Pk-Pk Search</li> <li>More 1 of 2</li> </ul>
Test Model	Maximum Conduceted Level RBW=100kHz	
	Channel 78: 2480MHz	GFSK
		<ul style="list-style-type: none"> <li>Peak Search</li> <li>Meas Tools▶</li> <li>Next Peak</li> <li>Next Pk Right</li> <li>Next Pk Left</li> <li>Min Search</li> <li>Pk-Pk Search</li> <li>More 1 of 2</li> </ul>









## 9.7 RADIATED SPURIOUS EMISSION

### 9.7.1 Applicable Standard

According to FCC Part 15.247(d) and 15.209 and 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 15.209, 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 ( $\mu\text{V}/\text{m}$ )	Field Strength ( $\text{dB}\mu\text{V}/\text{m}$ )	Measurement Distance
0.009-0.490	2400/F(KHz)	20 log ( $\mu\text{V}/\text{m}$ )	300
0.490-1.705	24000/F(KHz)	20 log ( $\mu\text{V}/\text{m}$ )	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:

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 = 1 MHz for  $f \geq 1$  GHz(1GHz to 25GHz), 100 kHz for  $f < 1$  GHz(30MHz to 1GHz)

VBW  $\geq$  RBW

Sweep = auto

Detector function = peak

Trace = max hold

Follow the guidelines in ANSI C63.10-2013 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

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

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

Temperature: 18°C                                  Test Date: May 13, 2020  
 Humidity: 42 %                                      Test By: KK  
 Test mode: TX Mode

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

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

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

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

Temperature: 18°C                                  Test Date: May 13, 2020  
 Humidity: 42 %                                      Test By: KK  
 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
7142.10	V	48.78	33.70	74.00	54.00	-25.22	-20.30
11725.30	V	52.46	37.60	74.00	54.00	-21.54	-16.40
12673.90	V	52.59	37.50	74.00	54.00	-21.41	-16.50
13942.95	V	53.12	38.22	74.00	54.00	-20.88	-15.78
15031.80	V	54.34	39.60	74.00	54.00	-19.66	-14.40
17920.95	V	55.06	37.50	74.00	54.00	-18.94	-16.50
5833.95	H	49.62	34.60	74.00	54.00	-24.38	-19.40
8251.35	H	49.30	34.30	74.00	54.00	-24.70	-19.70
10656.85	H	52.36	38.30	74.00	54.00	-21.64	-15.70
12628.00	H	53.16	38.20	74.00	54.00	-20.84	-15.80
13492.45	H	53.40	38.90	74.00	54.00	-20.60	-15.10
15950.65	H	55.02	37.20	74.00	54.00	-18.98	-16.80

Temperature: 18°C  
 Humidity: 42 %  
 Test mode: GFSK

 Test Date: May 13, 2020  
 Test By: KK  
 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
5455.70	V	47.24	32.20	74.00	54.00	-26.76	-21.80
7460.00	V	48.81	34.00	74.00	54.00	-25.19	-20.00
9976.00	V	51.84	36.80	74.00	54.00	-22.16	-17.20
11632.65	V	53.19	38.20	74.00	54.00	-20.81	-15.80
13391.30	V	52.90	39.50	74.00	54.00	-21.10	-14.50
15025.85	V	53.51	37.90	74.00	54.00	-20.49	-16.10
10681.50	H	53.02	38.00	74.00	54.00	-20.98	-16.00
11698.10	H	53.29	38.20	74.00	54.00	-20.71	-15.80
13455.05	H	53.04	38.10	74.00	54.00	-20.96	-15.90
14690.10	H	52.12	37.50	74.00	54.00	-21.88	-16.50
15812.10	H	53.58	38.60	74.00	54.00	-20.42	-15.40
17087.95	H	53.52	38.40	74.00	54.00	-20.48	-15.60

 Temperature: 18°C  
 Humidity: 42 %  
 Test mode: GFSK

 Test Date: May 13, 2020  
 Test By: KK  
 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
8462.15	V	52.74	37.70	74.00	54.00	-21.26	-16.30
10364.45	V	53.17	38.20	74.00	54.00	-20.83	-15.80
11857.90	V	53.36	38.40	74.00	54.00	-20.64	-15.60
14882.20	V	54.36	39.20	74.00	54.00	-19.64	-14.80
15421.10	V	53.91	38.60	74.00	54.00	-20.09	-15.40
16576.25	V	54.33	39.30	74.00	54.00	-19.67	-14.70
1654.50	H	46.08	31.00	74.00	54.00	-27.92	-23.00
6546.25	H	47.88	32.90	74.00	54.00	-26.12	-21.10
10004.05	H	51.96	36.30	74.00	54.00	-22.04	-17.70
13751.70	H	54.29	39.20	74.00	54.00	-19.71	-14.80
16162.30	H	54.91	39.90	74.00	54.00	-19.09	-14.10
17923.50	H	54.77	39.70	74.00	54.00	-19.23	-14.30

- Note:**
- (1) All Readings are Peak Value (VBW=3MHz) and Average Value (VBW=10Hz).
  - (2) Emission Level= Reading Level+Probe Factor +Cable Loss.
  - (3) 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) mode have been tested, and the worst result(GFSK, Hopping) was report as below:

Temperature: 24°C                      Test Date: April 26, 2020  
 Humidity: 55%                         Test By: XW  
 Test mode: GFSK                        Frequency: Channel 0: 2402MHz

Frequency (MHz)	Polarity H/V	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	Over(dB)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)	Over (dB)
2375.926	H	52.05	74	-21.95	42.30	54	-11.70
2376.229	V	51.76	74	-22.24	42.60	54	-11.40

Temperature: 24°C                      Test Date: April 26, 2020  
 Humidity: 55%                         Test By: XW  
 Test mode: GFSK                        Frequency: Channel 78: 2480MHz

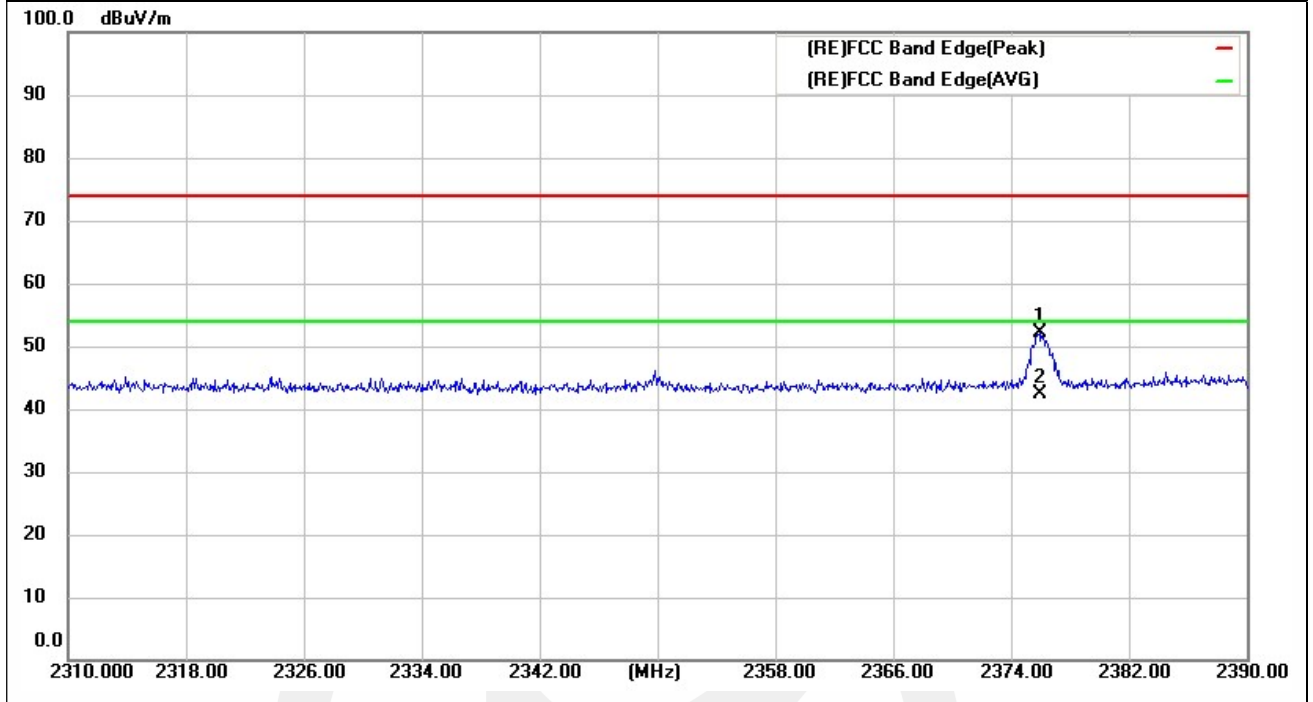
Frequency (MHz)	Polarity H/V	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	Over(dB)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)	Over (dB)
2483.530	H	57.23	74	-16.77	52.30	54	-1.70
2483.500	V	55.23	74	-18.77	46.90	54	-7.10

Temperature: 24°C                      Test Date: April 26, 2020  
 Humidity: 55%                         Test By: XW  
 Test mode: GFSK                        Frequency: Hopping

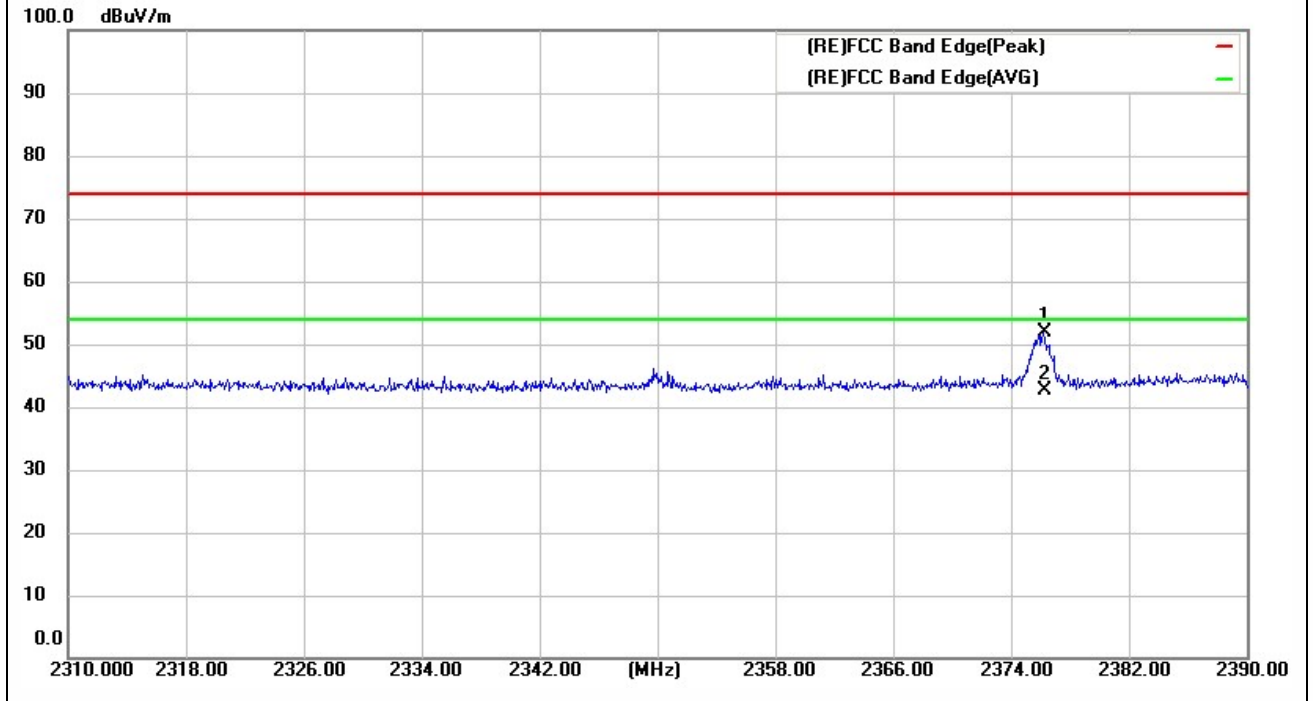
Frequency (MHz)	Polarity H/V	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	Over(dB)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)	Over (dB)
2390.000	H	50.09	74.00	-23.91	49.60	54.00	-4.40
2483.500	H	54.99	74.00	-19.01	44.90	54.00	-9.10
2390.000	V	50.66	74.00	-23.34	40.80	54.00	-13.20
2483.500	V	54.58	74.00	-19.43	44.50	54.00	-9.50

- Note:** (1) All Readings are Peak Value (VBW=3MHz) and Average Value (VBW=10Hz).  
 (2) Emission Level= Reading Level+Probe Factor +Cable Loss.  
 (3) 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		
	Channel 0: 2402MHz	GFSK	H

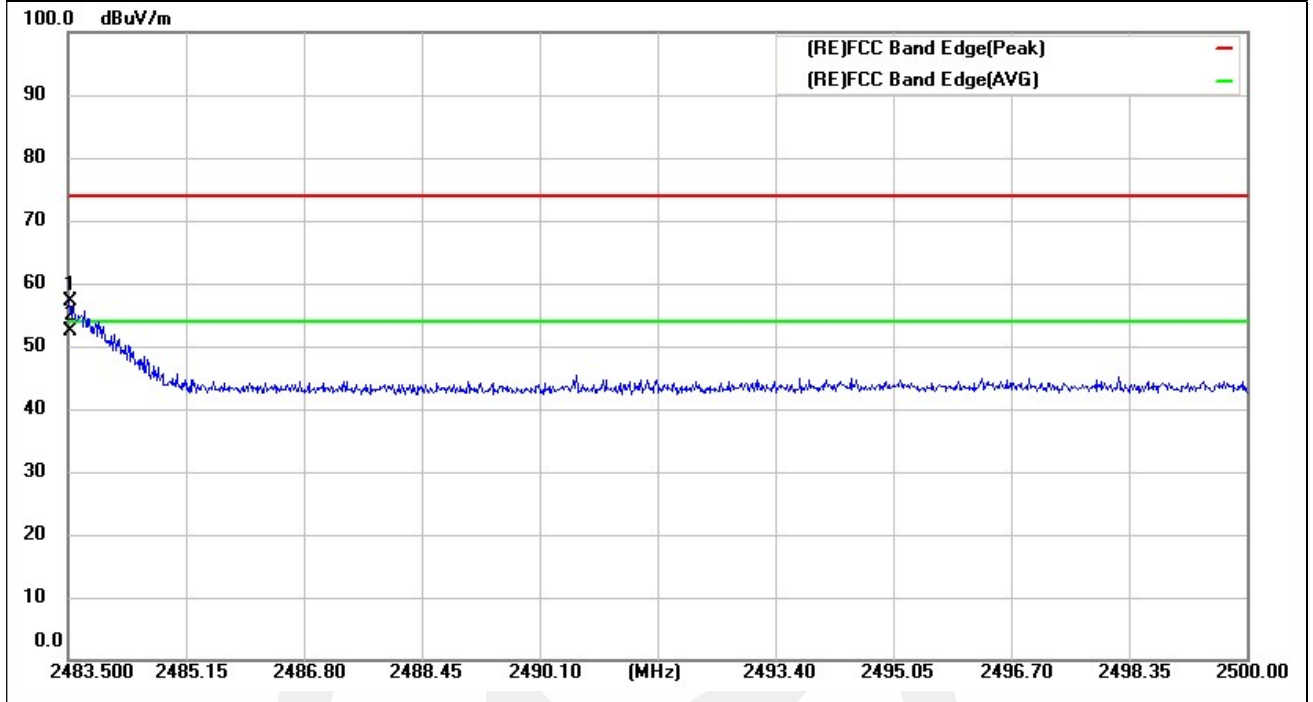


Test Model	Spurious Emission in Restricted Band 2310-2390MHz		
	Channel 0: 2402MHz	GFSK	V

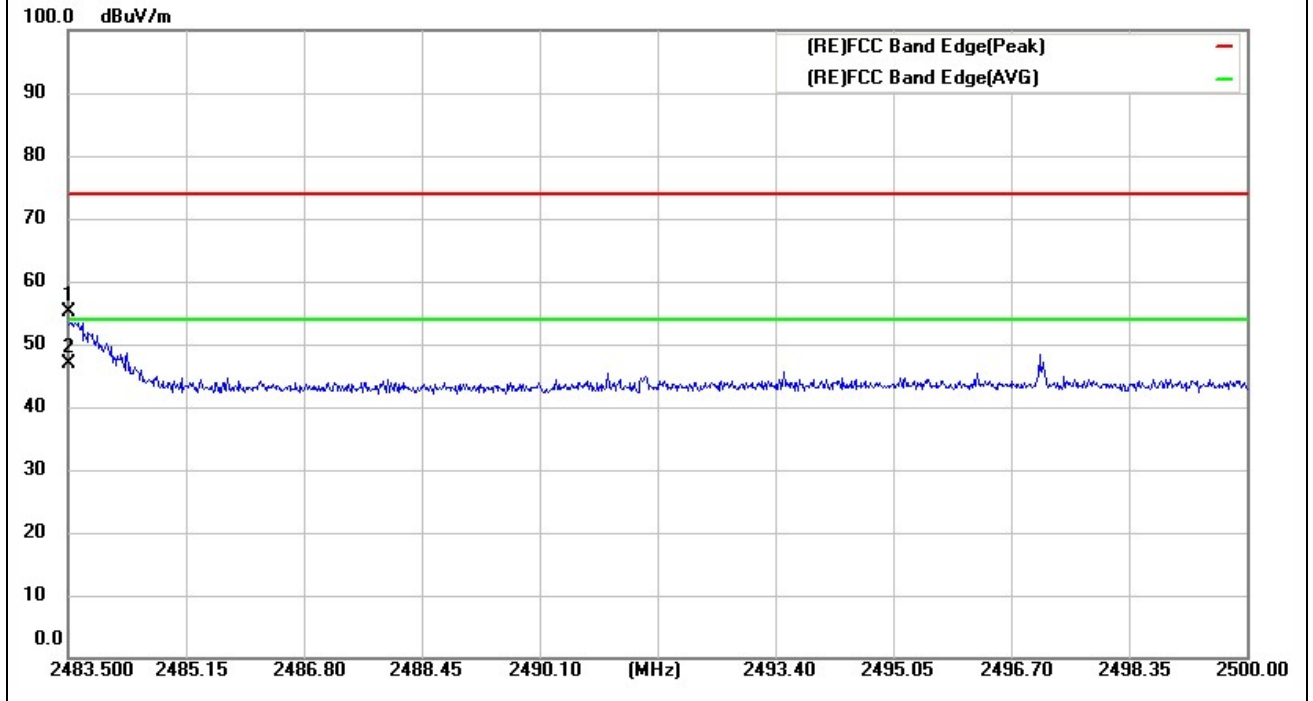




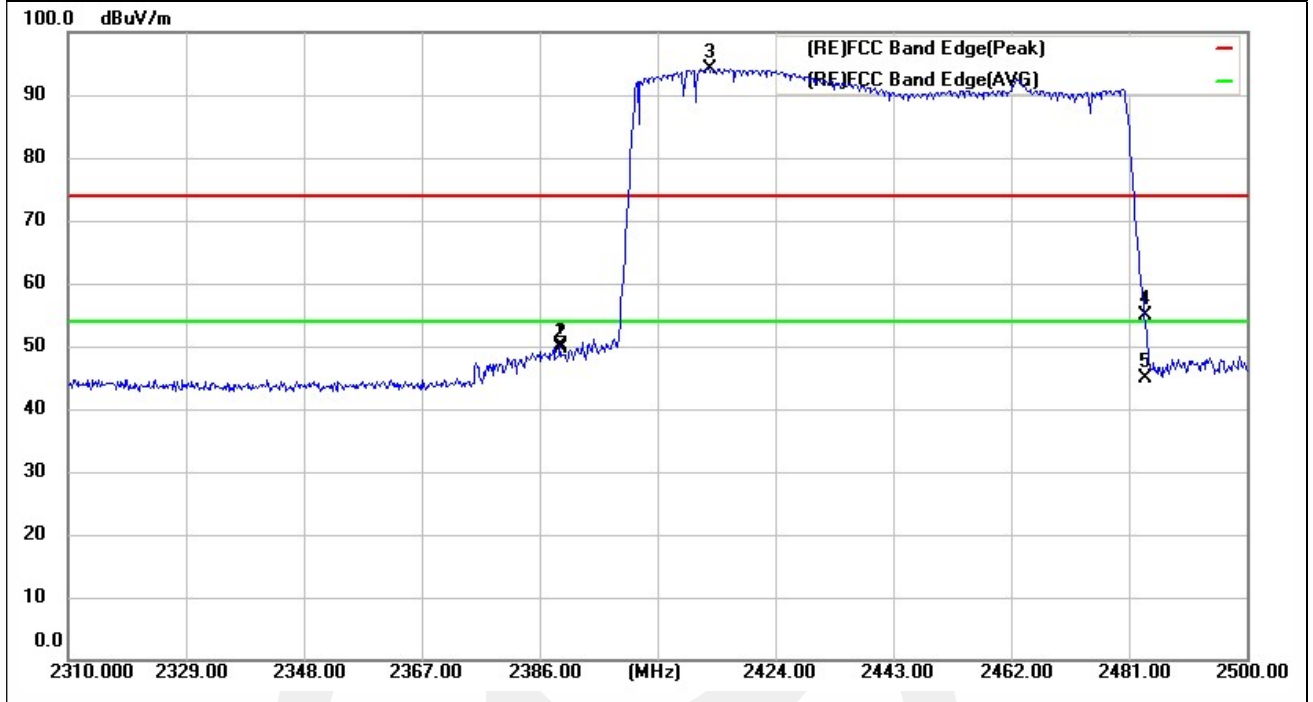
Test Model	Spurious Emission in Restricted Band 2483.5-2500MHz		
	Channel 78: 2480MHz	GFSK	H



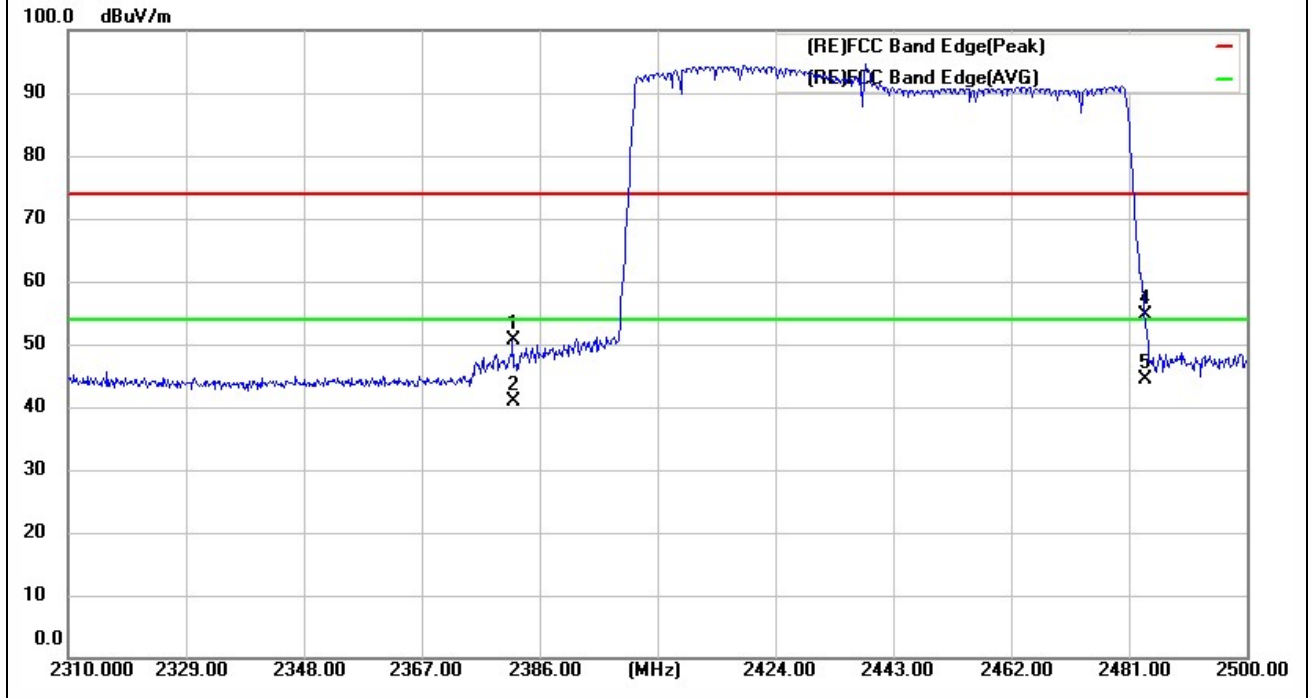
Test Model	Spurious Emission in Restricted Band 2483.5-2500MHz		
	Channel 78: 2480MHz	GFSK	V



Test Model	Spurious Emission in Restricted Band 2310-2390&2483.5-2500MHz		
	Hopping	GFSK	H



Test Model	Spurious Emission in Restricted Band 2310-2390&2483.5-2500MHz		
	Hopping	GFSK	V



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

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



Site Radiated Emission 3m #1      Polarization: **Vertical**      Temperature: 24  
 Limit: FCC Part 15.209      Power: AC 120V/60Hz      Humidity: 55 %  
 Mode:DH1 2402TX  
 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	*	30.1052	61.27	-25.67	35.60	40.00	-4.40	QP			
2		110.5686	55.33	-23.43	31.90	43.50	-11.60	QP			
3		116.5400	55.82	-24.42	31.40	43.50	-12.10	QP			
4		122.8339	58.21	-25.31	32.90	43.50	-10.60	QP			
5		130.3789	63.18	-26.68	36.50	43.50	-7.00	QP			
6	!	139.8508	65.97	-27.67	38.30	43.50	-5.20	QP			



Site Radiated Emission 3m #1      Polarization: **Horizontal**      Temperature: 24  
 Limit: FCC Part 15.209      Power: AC 120V/60Hz      Humidity: 55 %  
 Mode:DH1 2402TX  
 Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		128.5629	53.90	-26.30	27.60	43.50	-15.90	QP		
2	*	137.4202	63.93	-27.43	36.50	43.50	-7.00	QP		
3		147.9214	56.58	-26.78	29.80	43.50	-13.70	QP		
4		157.5588	55.40	-27.00	28.40	43.50	-15.10	QP		
5		263.8190	53.48	-21.88	31.60	46.00	-14.40	QP		
6		287.9904	52.47	-20.57	31.90	46.00	-14.10	QP		



Site Radiated Emission 3m #1      Polarization: **Vertical**      Temperature: 24  
 Limit: FCC Part 15.209      Power: AC 120V/60Hz      Humidity: 55 %  
 Mode:DH1 2441TX  
 Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree	Comment
1		30.1051	58.37	-25.67	32.70	40.00	-7.30	QP		
2		110.5686	55.53	-23.43	32.10	43.50	-11.40	QP		
3	!	122.8336	63.71	-25.31	38.40	43.50	-5.10	QP		
4	*	130.3788	66.98	-26.68	40.30	43.50	-3.20	QP		
5		139.8505	64.97	-27.67	37.30	43.50	-6.20	QP		
6		228.4901	56.21	-22.81	33.40	46.00	-12.60	QP		



Site Radiated Emission 3m #1      Polarization: **Horizontal**      Temperature: 24  
 Limit: FCC Part 15.209      Power: AC 120V/60Hz      Humidity: 55 %  
 Mode:DH1 2441TX  
 Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Antenna Height	Table Degree
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	cm	degree
1		109.7959	51.42	-23.32	28.10	43.50	-15.40	QP	
2	*	137.4200	67.23	-27.43	39.80	43.50	-3.70	QP	
3		147.9214	60.58	-26.78	33.80	43.50	-9.70	QP	
4		215.2675	53.92	-23.92	30.00	43.50	-13.50	QP	
5		263.8190	58.38	-21.88	36.50	46.00	-9.50	QP	
6		287.9904	58.37	-20.57	37.80	46.00	-8.20	QP	



Site Radiated Emission 3m #1      Polarization: **Vertical**      Temperature: 24  
 Limit: FCC Part 15.209      Power: AC 120V/60Hz      Humidity: 55 %  
 Mode:DH1 2480TX  
 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 degree	Comment
1	*	30.1051	62.37	-25.67	36.70	40.00	-3.30	QP			
2		110.5686	57.53	-23.43	34.10	43.50	-9.40	QP			
3		121.9753	60.94	-25.24	35.70	43.50	-7.80	QP			
4	!	130.3788	65.68	-26.68	39.00	43.50	-4.50	QP			
5	!	139.8505	67.87	-27.67	40.20	43.50	-3.30	QP			
6		228.4901	59.73	-22.81	36.92	46.00	-9.08	QP			





Site Radiated Emission 3m #1      Polarization: **Horizontal**      Temperature: 24  
 Limit: FCC Part 15.209      Power: AC 120V/60Hz      Humidity: 55 %  
 Mode:DH1 2480TX  
 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		109.7959	57.92	-23.32	34.60	43.50	-8.90	QP			
2	*	137.4200	67.23	-27.43	39.80	43.50	-3.70	QP			
3		147.9214	60.58	-26.78	33.80	43.50	-9.70	QP			
4		215.2675	56.42	-23.92	32.50	43.50	-11.00	QP			
5		263.8190	58.38	-21.88	36.50	46.00	-9.50	QP			
6		287.9904	58.37	-20.57	37.80	46.00	-8.20	QP			





## 9.8 CONDUCTED EMISSION TEST

### 9.8.1 Applicable Standard

According to FCC Part 15.207(a)

### 9.8.2 Conformance Limit

Frequency(MHz)	Conducted Emission Limit	
	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

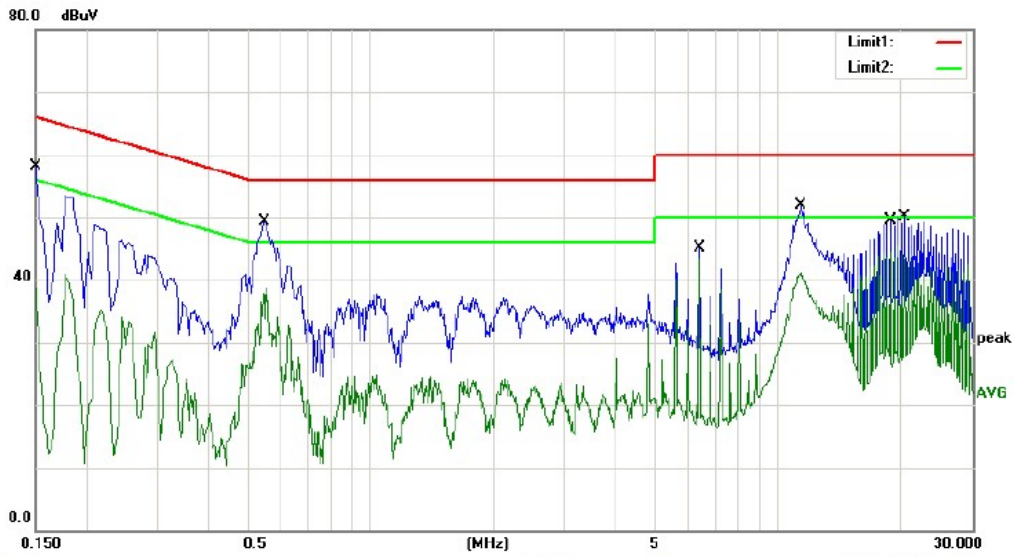
### 9.8.4 Test Procedure

The EUT was placed on a table which is 0.1m 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.

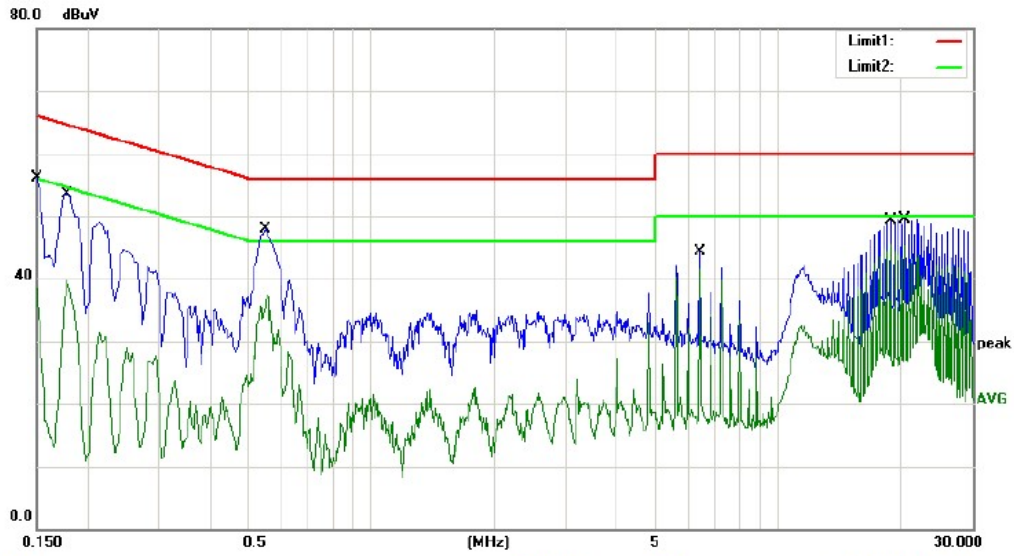
The 120V & 240V voltage have been tested, and the worst result recorded was report as below:



Site: site #1  
 Limit: (CE)FCC PART 15 class B\_QP  
 Mode: Bluetooth Input  
 Note:

Phase: **N**      Temperature: 24  
 Power: AC 120V/60Hz      Humidity: 50 %

No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Over dB	Detector	Comment
1		0.1500	44.80	10.07	54.87	66.00	-11.13	QP	
2		0.1500	29.10	10.07	39.17	56.00	-16.83	AVG	
3		0.5500	39.30	10.08	49.38	56.00	-6.62	QP	
4		0.5500	23.90	10.08	33.98	46.00	-12.02	AVG	
5		6.4200	34.60	10.37	44.97	60.00	-15.03	QP	
6		6.4200	32.80	10.37	43.17	50.00	-6.83	AVG	
7		11.4160	41.30	10.57	51.87	60.00	-8.13	QP	
8		11.4160	30.50	10.57	41.07	50.00	-8.93	AVG	
9		18.8600	38.80	10.65	49.45	60.00	-10.55	QP	
10	*	18.8600	33.90	10.65	44.55	50.00	-5.45	AVG	
11		20.4640	37.30	10.65	47.95	60.00	-12.05	QP	
12		20.4640	32.70	10.65	43.35	50.00	-6.65	AVG	



Site site #1 Phase: **L1** Temperature: 24  
 Limit: (CE)FCC PART 15 class B\_QP Power: AC 120V/60Hz Humidity: 50 %  
 Mode: Bluetooth Input  
 Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	Detector	Comment
		MHz	dBuV	dB	dBuV	dBuV	dB		
1		0.1500	45.90	10.10	56.00	66.00	-10.00	QP	
2		0.1500	28.30	10.10	38.40	56.00	-17.60	AVG	
3		0.1780	43.50	10.09	53.59	64.58	-10.99	QP	
4		0.1780	29.30	10.09	39.39	54.58	-15.19	AVG	
5		0.5500	37.70	10.06	47.76	56.00	-8.24	QP	
6		0.5500	26.60	10.06	36.66	46.00	-9.34	AVG	
7		6.4200	33.90	10.39	44.29	60.00	-15.71	QP	
8		6.4200	31.10	10.39	41.49	50.00	-8.51	AVG	
9		18.8680	37.20	10.60	47.80	60.00	-12.20	QP	
10		18.8680	33.40	10.60	44.00	50.00	-6.00	AVG	
11		20.4600	38.80	10.62	49.42	60.00	-10.58	QP	
12	*	20.4600	34.70	10.62	45.32	50.00	-4.68	AVG	

## 9.9 ANTENNA APPLICATION

### 9.9.1 Antenna Requirement

Standard	Requirement
FCC CRF Part15.203	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

The EUT'S antenna is PIFA antenna. The antenna's gain is -0.68dBi, and the antenna can't be replaced by the user which in accordance to section 15.203, please refer to the photos.

\*\*\* End of Report \*\*\*

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