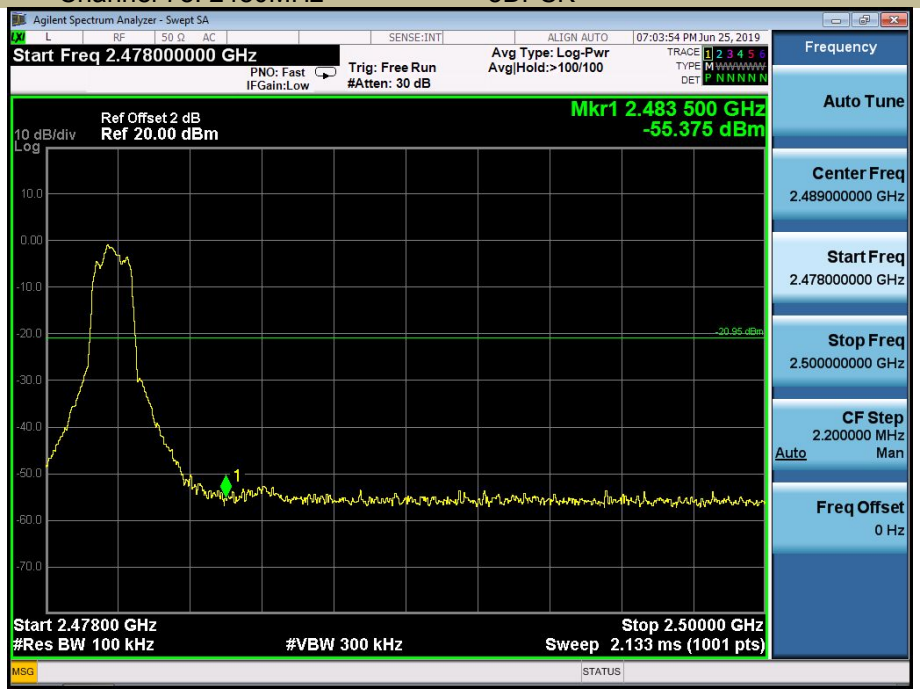
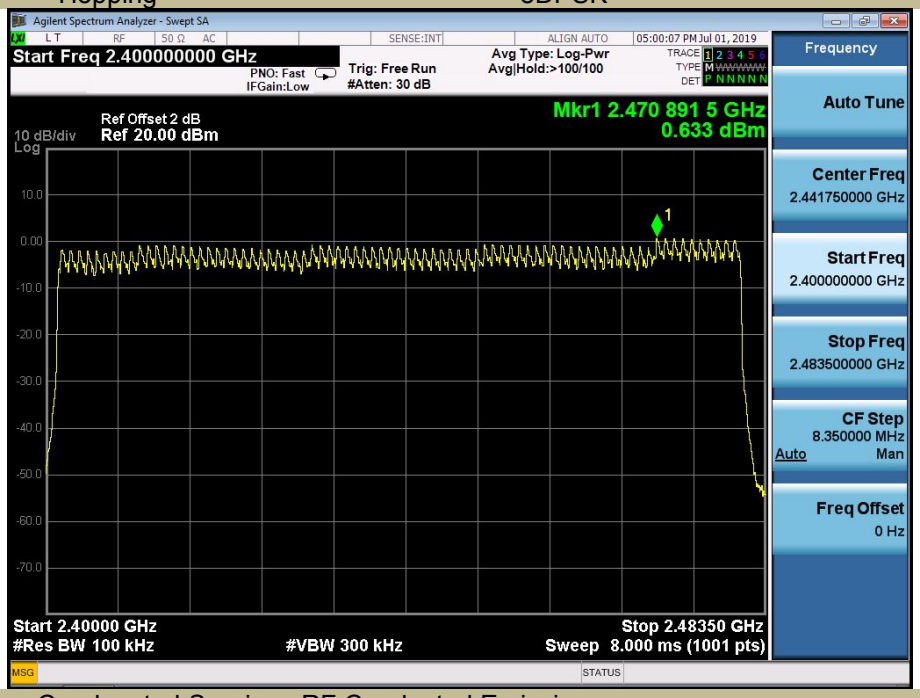
Test Model	Conduceted Spurious RF Conducted Emission Channel 78: 2480MHz 8DPSK

Test Model	Band-edge Conducted Emissions Channel 78: 2480MHz 8DPSK

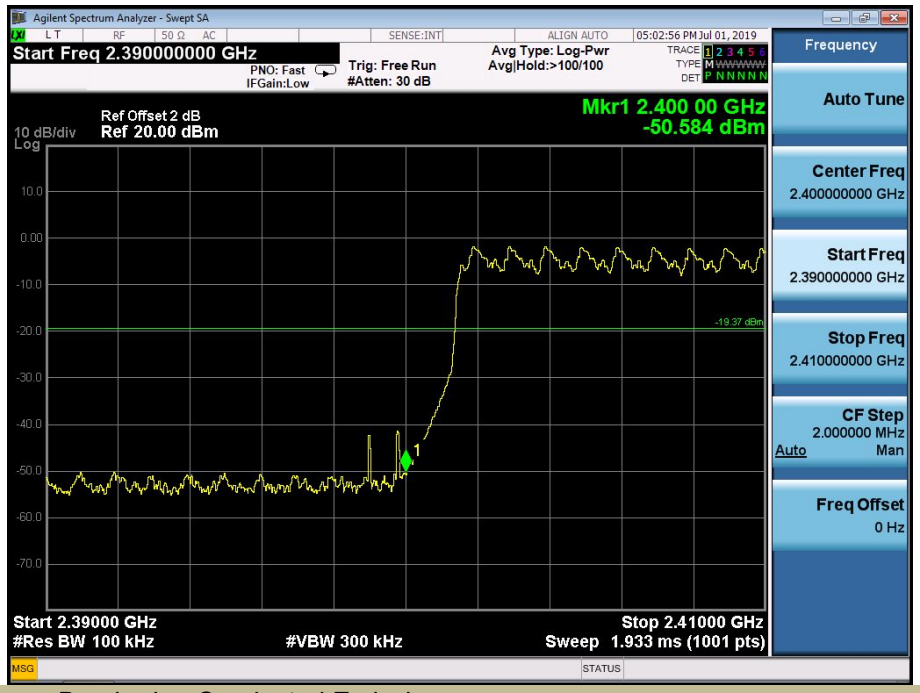


Test Model	Maximum Conduceted Level RBW=100kHz Hopping 8DPSK

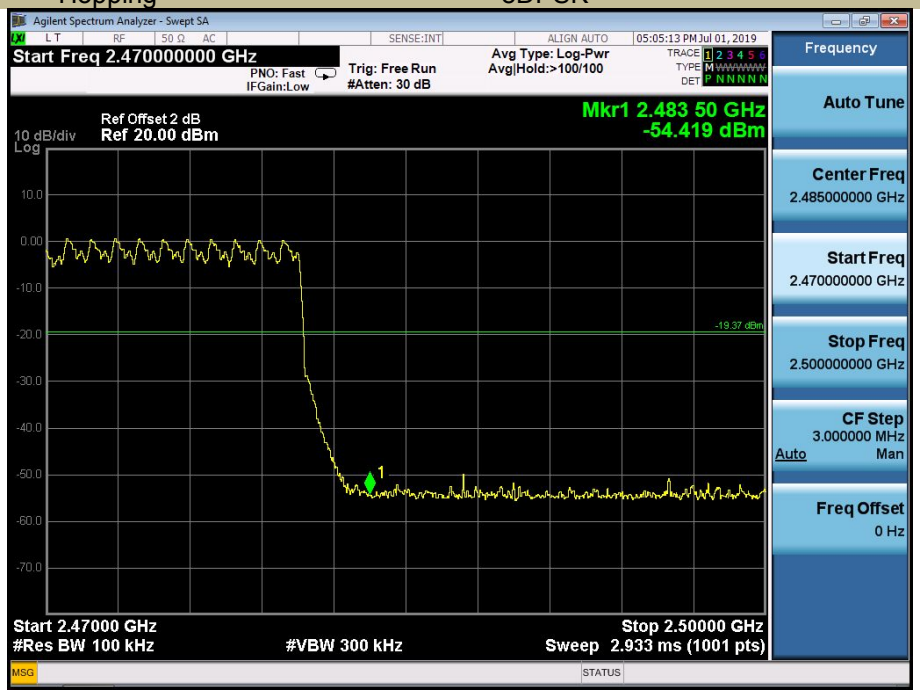


Test Model	Conduceted Spurious RF Conducted Emission Hopping 8DPSK

Test Model	Band-edge Conducted Emissions Hopping 8DPSK



Test Model	Band-edge Conducted Emissions Hopping 8DPSK



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 Part15.205, 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 Part15.205, 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 20log(dwell time/100 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

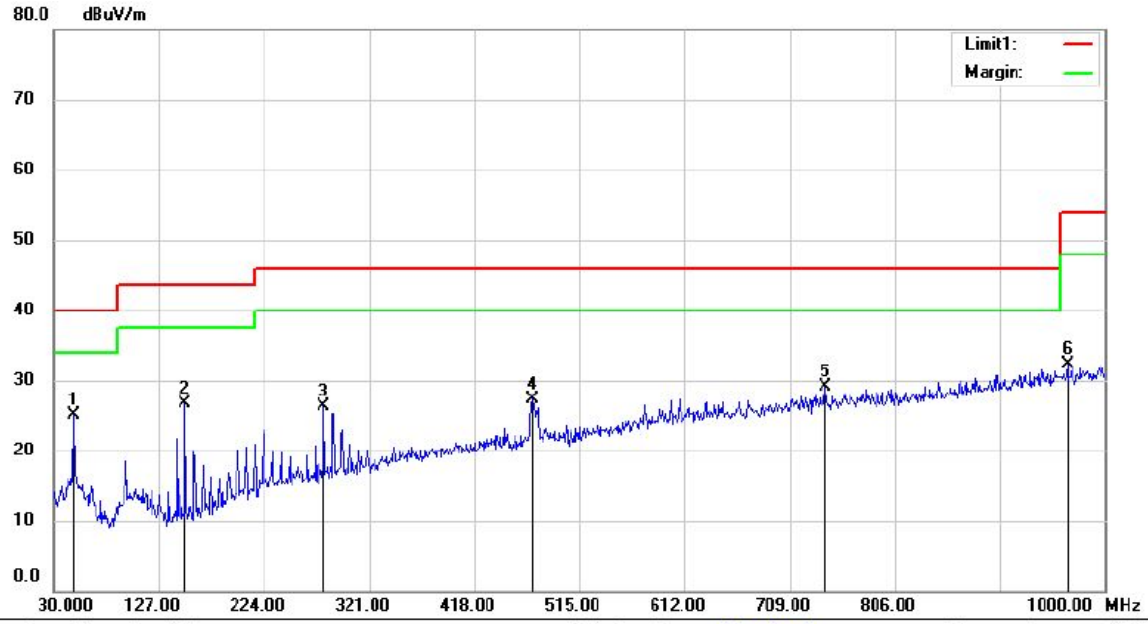
■ Spurious Emission below 30MHz (9KHz to 30MHz)

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

Freq. (MHz)	Ant.Pol.	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
	H/V	PK	AV	PK	AV	PK	AV
--	--	--	--	--	--	--	--

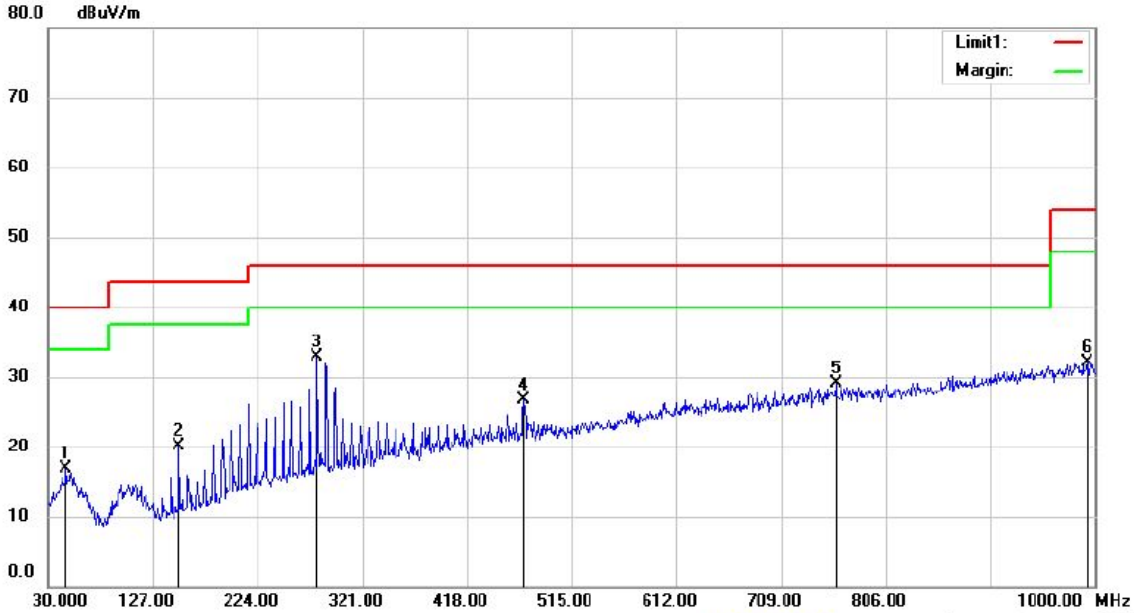
Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.
Distance extrapolation factor =40log(Specific distance/ test distance)(dB);
Limit line=Specific limits(dBuV) + distance extrapolation factor

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



Site 3m Chamber #1 Polarization: *Vertical* Temperature: 29.5 C
Limit: FCC PART 15C Power: AC 120V/60Hz Humidity: 48 %
Mode: BT DH1 2402MHz
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	49.1574	36.24	-11.23	25.01	40.00	-14.99	QP			
2		151.9773	41.89	-15.22	26.67	43.50	-16.83	QP			
3		279.7750	35.13	-8.91	26.22	46.00	-19.78	QP			
4		472.1986	32.47	-5.15	27.32	46.00	-18.68	QP			
5		742.2223	29.48	-0.33	29.15	46.00	-16.85	QP			
6		965.8075	29.13	3.23	32.36	54.00	-21.64	QP			



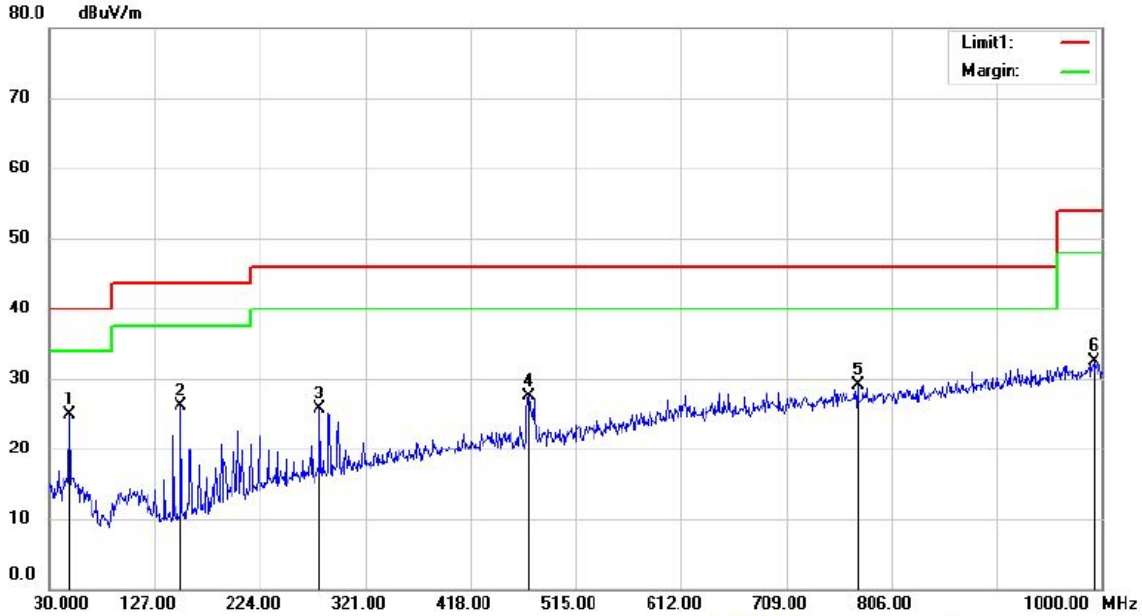
Site 3m Chamber #1 Polarization: ***Horizontal*** Temperature: 29.5 C

Limit: FCC PART 15C Power: AC 120V/60Hz Humidity: 48 %

Mode: BT DH1 2402MHz

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		47.3387	28.21	-11.21	17.00	40.00	-23.00	QP			
2		151.8562	35.36	-15.23	20.13	43.50	-23.37	QP			
3	*	279.8962	41.88	-8.90	32.98	46.00	-13.02	QP			
4		470.3800	31.90	-5.17	26.73	46.00	-19.27	QP			
5		759.6825	29.19	-0.04	29.15	46.00	-16.85	QP			
6		992.9673	28.38	3.82	32.20	54.00	-21.80	QP			



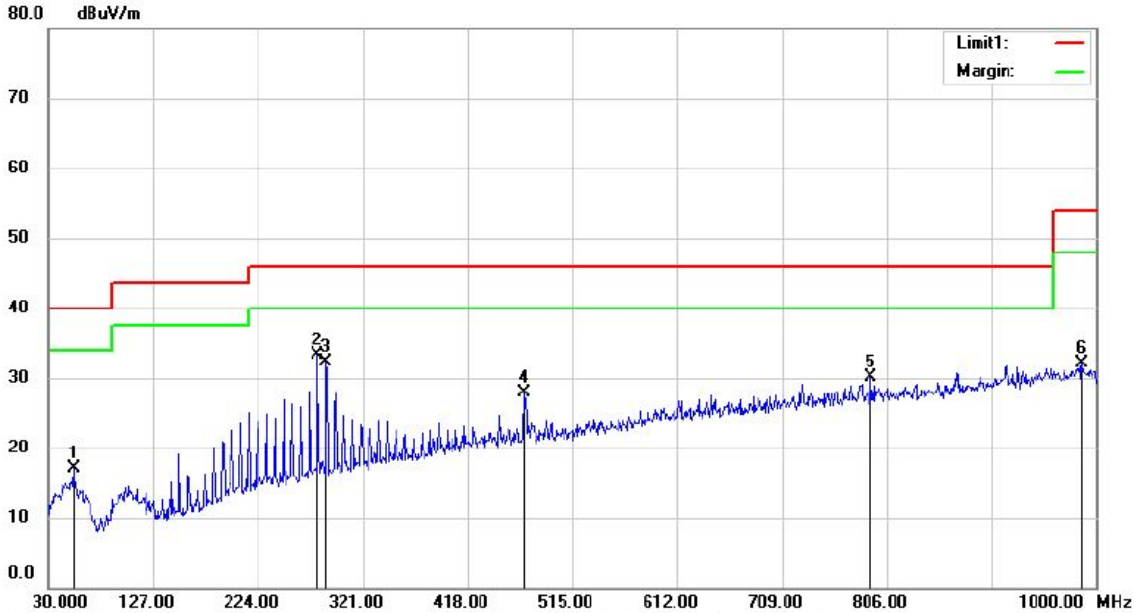
Site 3m Chamber #1 Polarization: ***Vertical*** Temperature: 29.5 C

Limit: FCC PART 15C Power: AC 110V/60Hz Humidity: 48 %

Mode: BT DH1 2441MHz

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	49.1574	36.19	-11.23	24.96	40.00	-15.04	QP			
2		151.8562	41.36	-15.23	26.13	43.50	-17.37	QP			
3		279.8962	34.51	-8.90	25.61	46.00	-20.39	QP			
4		472.1986	32.59	-5.15	27.44	46.00	-18.56	QP			
5		775.0811	29.13	0.07	29.20	46.00	-16.80	QP			
6		992.7250	28.67	3.82	32.49	54.00	-21.51	QP			



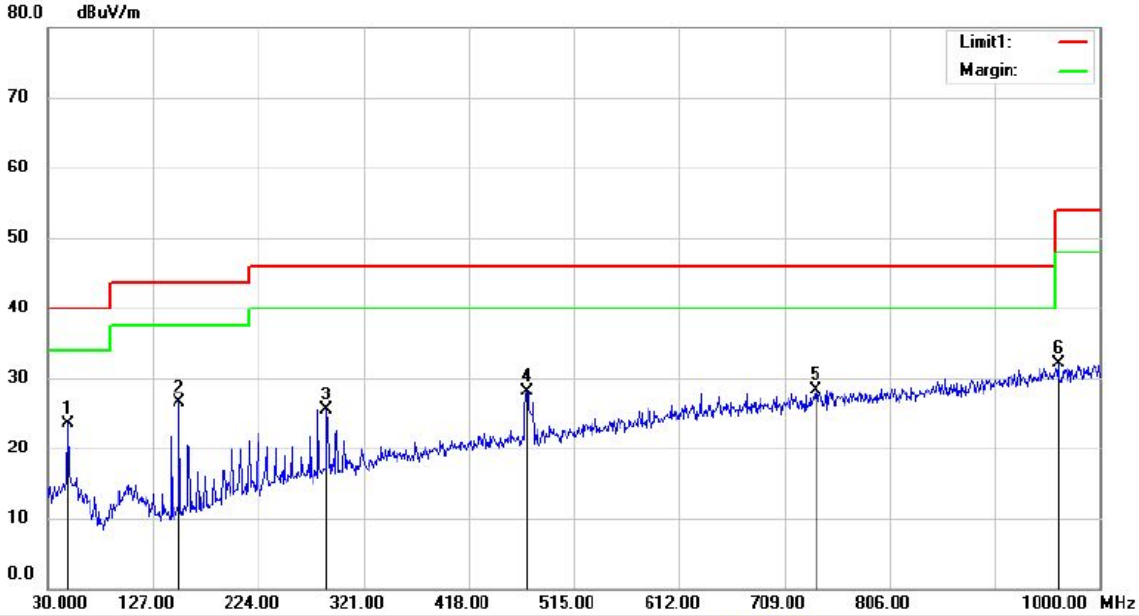
Site 3m Chamber #1 Polarization: ***Horizontal*** Temperature: 29.5 C

Limit: FCC PART 15C Power: AC 120V/60Hz Humidity: 48 %

Mode: BT DH1 2441MHz

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		53.6437	28.49	-11.35	17.14	40.00	-22.86	QP			
2	*	279.7750	42.14	-8.91	33.23	46.00	-12.77	QP			
3		287.7774	40.87	-8.66	32.21	46.00	-13.79	QP			
4		471.2287	33.01	-5.16	27.85	46.00	-18.15	QP			
5		791.6924	30.01	0.18	30.19	46.00	-15.81	QP			
6		986.6625	28.36	3.69	32.05	54.00	-21.95	QP			



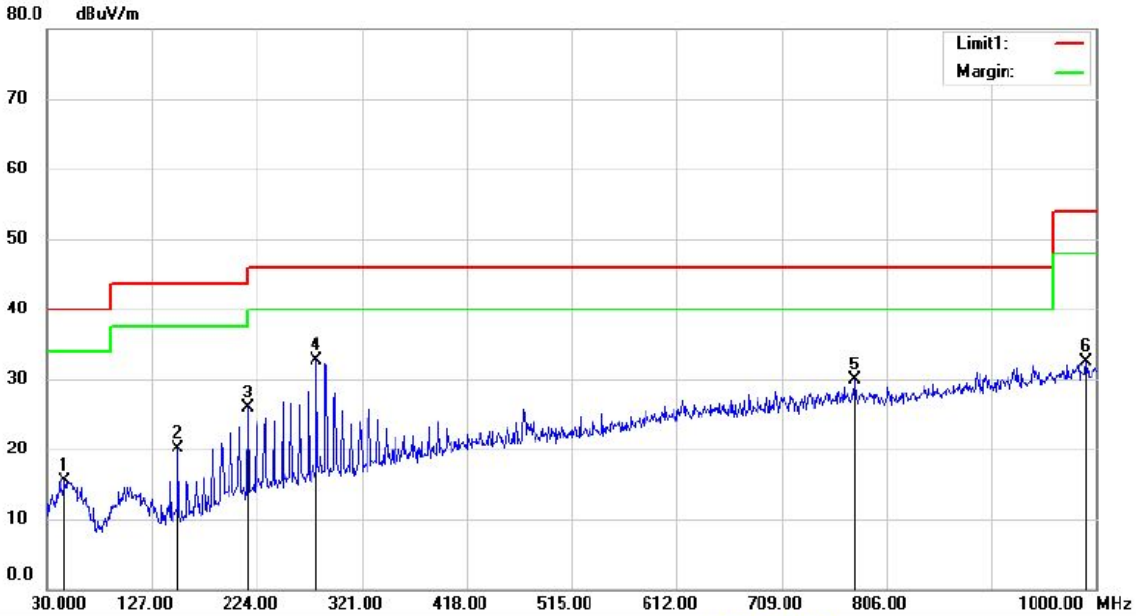
Site 3m Chamber #1 Polarization: ***Vertical*** Temperature: 29.5 C

Limit: FCC PART 15C Power: AC 120V/60Hz Humidity: 48 %

Mode: BT DH1 2480MHz

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	49.1574	34.66	-11.23	23.43	40.00	-16.57	QP			
2		151.8562	41.70	-15.23	26.47	43.50	-17.03	QP			
3		287.7774	34.18	-8.66	25.52	46.00	-20.48	QP			
4		471.9562	33.21	-5.15	28.06	46.00	-17.94	QP			
5		738.2212	28.67	-0.39	28.28	46.00	-17.72	QP			
6		962.0487	28.86	3.22	32.08	54.00	-21.92	QP			



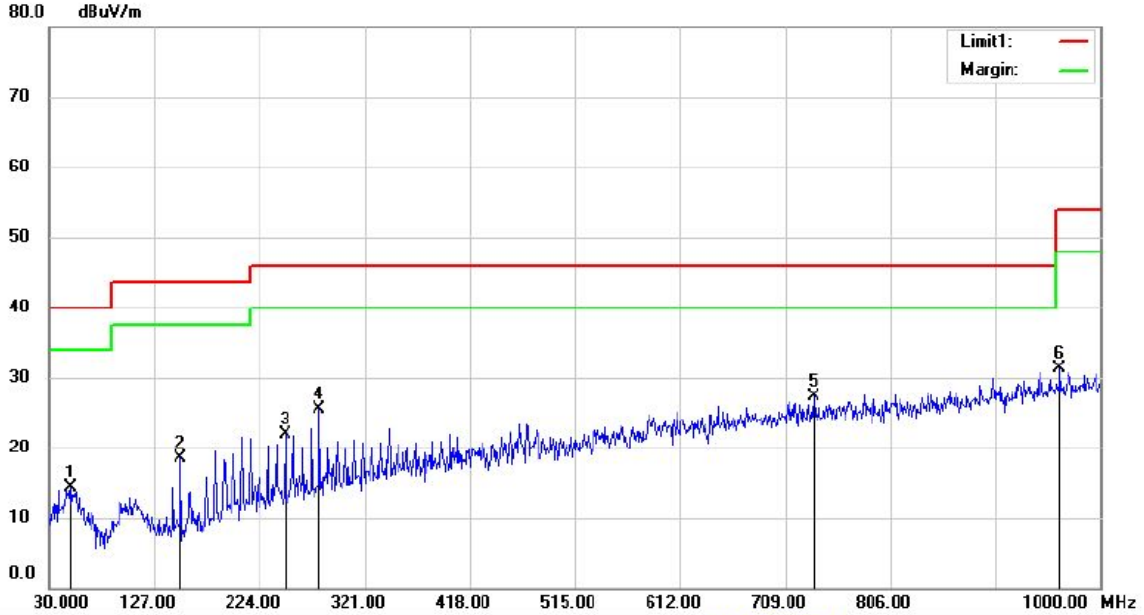
Site 3m Chamber #1 Polarization: ***Horizontal*** Temperature: 29.5 C

Limit: FCC PART 15C Power: AC 120V/60Hz Humidity: 48 %

Mode: BT DH1 2480MHz

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		46.8537	26.72	-11.24	15.48	40.00	-24.52	QP			
2		151.8562	35.29	-15.23	20.06	43.50	-23.44	QP			
3		215.8762	37.37	-11.46	25.91	43.50	-17.59	QP			
4	*	279.8962	41.66	-8.90	32.76	46.00	-13.24	QP			
5		777.1425	29.91	0.09	30.00	46.00	-16.00	QP			
6		990.7850	28.65	3.79	32.44	54.00	-21.56	QP			



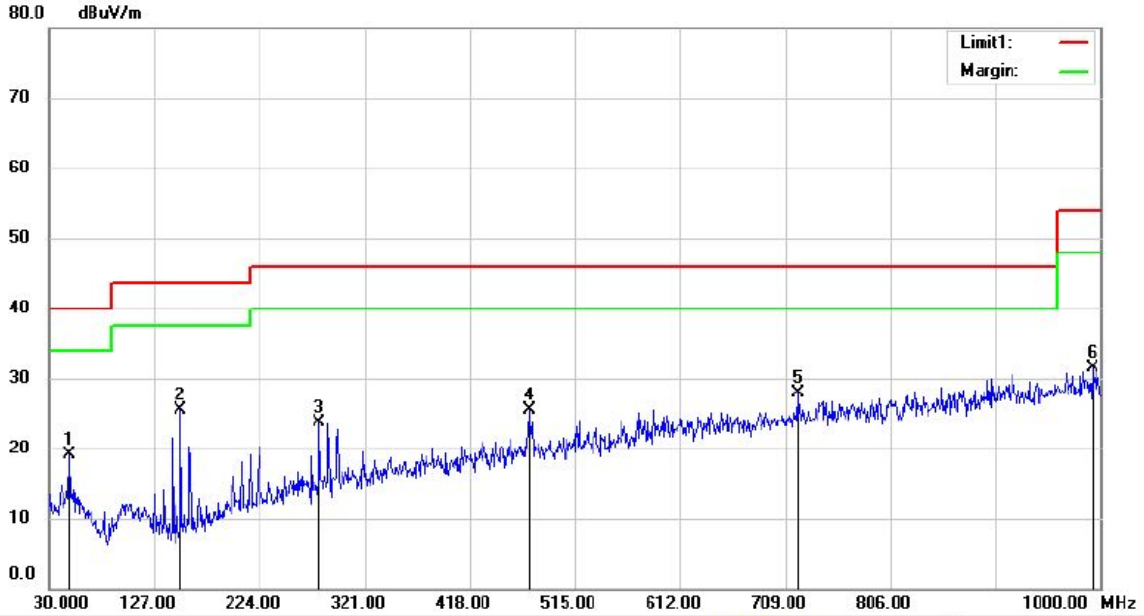
Site 3m Chamber #1 Polarization: ***Horizontal*** Temperature: 29.5 C

Limit: FCC PART 15C Power: AC 120V/60Hz Humidity: 48 %

Mode: BT 2DH1 2402MHz

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		51.2186	25.50	-11.18	14.32	40.00	-25.68	QP			
2		151.8562	33.77	-15.23	18.54	43.50	-24.96	QP			
3		247.8862	31.95	-9.95	22.00	46.00	-24.00	QP			
4		279.7750	34.43	-8.91	25.52	46.00	-20.48	QP			
5	*	735.4325	27.70	-0.44	27.26	46.00	-18.74	QP			
6		962.4125	28.13	3.22	31.35	54.00	-22.65	QP			



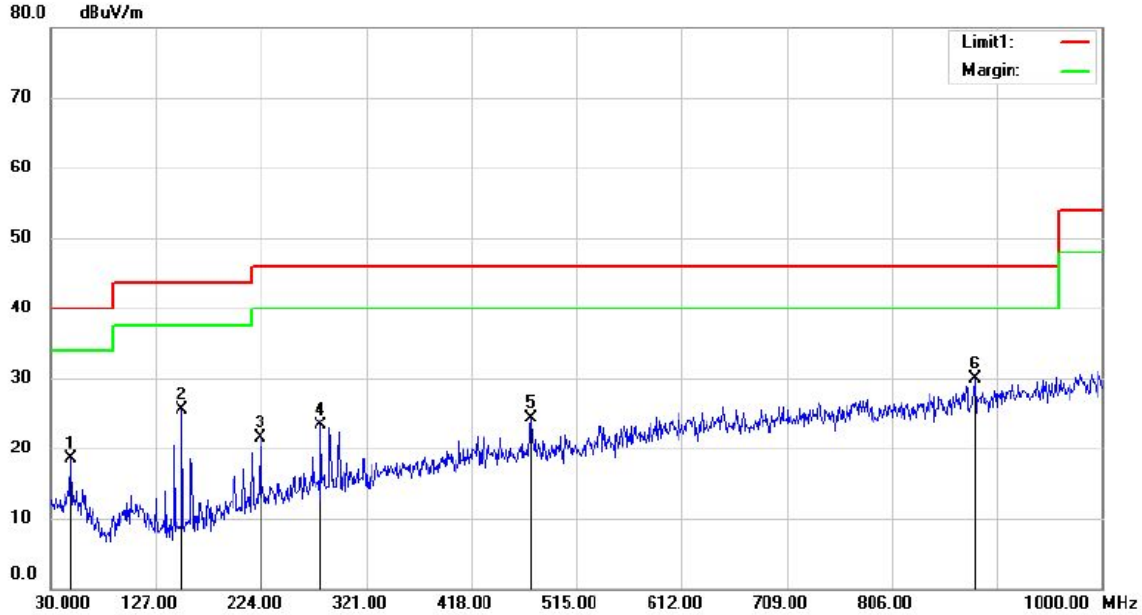
Site 3m Chamber #1 Polarization: ***Vertical*** Temperature: 29.5 C

Limit: FCC PART 15C Power: AC 120V/60Hz Humidity: 48 %

Mode:BT 2DH1 2402MHz

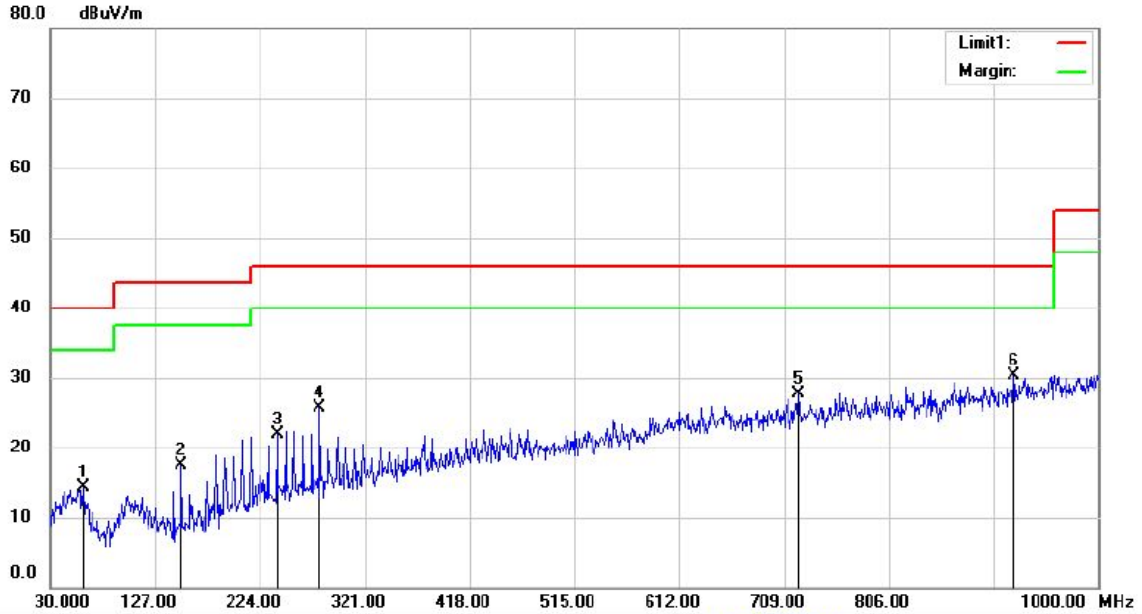
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		49.1574	30.41	-11.23	19.18	40.00	-20.82	QP			
2		151.8562	40.68	-15.23	25.45	43.50	-18.05	QP			
3		279.7750	32.60	-8.91	23.69	46.00	-22.31	QP			
4		472.4412	30.62	-5.14	25.48	46.00	-20.52	QP			
5	*	721.1250	28.73	-0.73	28.00	46.00	-18.00	QP			
6		992.7250	27.73	3.82	31.55	54.00	-22.45	QP			



Site 3m Chamber #1 Polarization: *Vertical* Temperature: 29.5 C
Limit: FCC PART 15C Power: AC 120V/60Hz Humidity: 48 %
Mode: BT 2DH1 2441MHz
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		49.1574	29.82	-11.23	18.59	40.00	-21.41	QP			
2		151.8562	40.78	-15.23	25.55	43.50	-17.95	QP			
3		223.8787	32.47	-10.91	21.56	46.00	-24.44	QP			
4		279.8962	32.20	-8.90	23.30	46.00	-22.70	QP			
5		472.6837	29.51	-5.14	24.37	46.00	-21.63	QP			
6	*	883.1150	28.20	1.68	29.88	46.00	-16.12	QP			



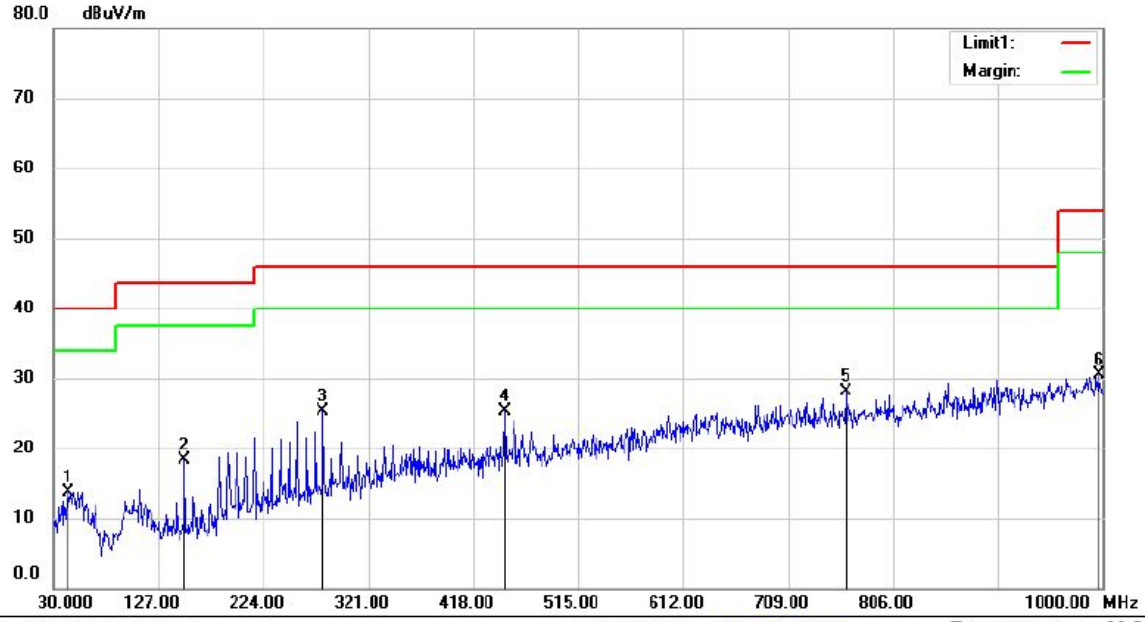
Site 3m Chamber #1 Polarization: ***Horizontal*** Temperature: 29.5 C

Limit: FCC PART 15C Power: AC 120V/60Hz Humidity: 48 %

Mode: BT 2DH1 2441MHz

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		60.1912	27.09	-12.83	14.26	40.00	-25.74	QP			
2		151.9774	32.68	-15.22	17.46	43.50	-26.04	QP			
3		239.8837	32.00	-10.16	21.84	46.00	-24.16	QP			
4		279.7750	34.65	-8.91	25.74	46.00	-20.26	QP			
5		722.8224	28.37	-0.69	27.68	46.00	-18.32	QP			
6	*	922.0362	27.69	2.58	30.27	46.00	-15.73	QP			



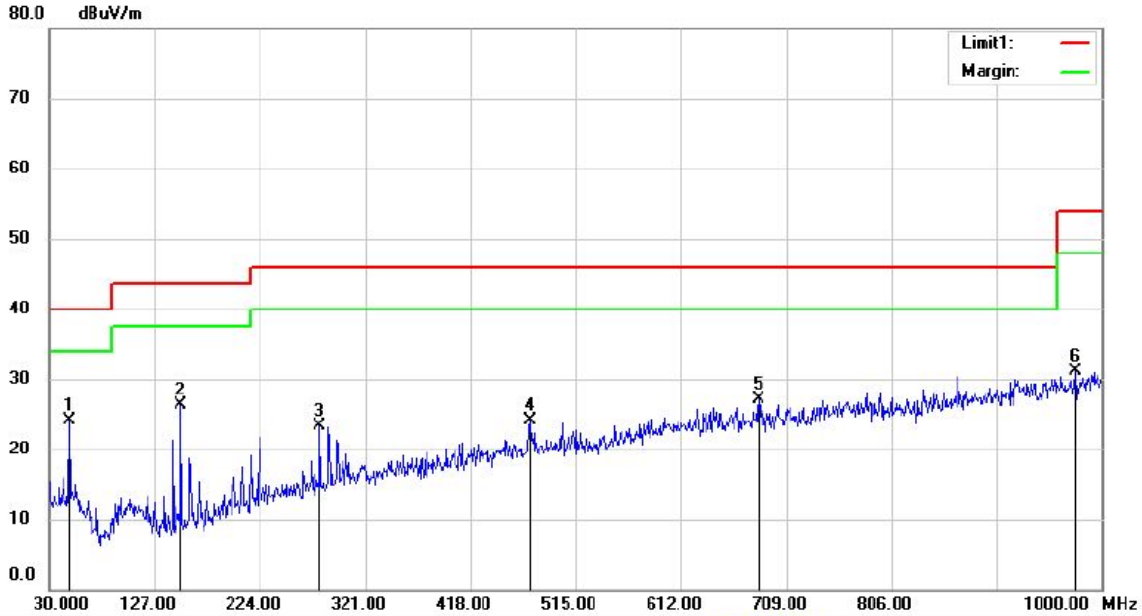
Site 3m Chamber #1 Polarization: ***Horizontal*** Temperature: 29.5 C

Limit: FCC PART 15C Power: AC 120V/60Hz Humidity: 48 %

Mode: BT 2DH1 2480MHz

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		43.7012	25.23	-11.43	13.80	40.00	-26.20	QP			
2		151.8562	33.45	-15.23	18.22	43.50	-25.28	QP			
3		279.7750	34.30	-8.91	25.39	46.00	-20.61	QP			
4		447.7062	30.57	-5.36	25.21	46.00	-20.79	QP			
5	*	763.0774	28.05	-0.02	28.03	46.00	-17.97	QP			
6		996.2412	26.61	3.87	30.48	54.00	-23.52	QP			



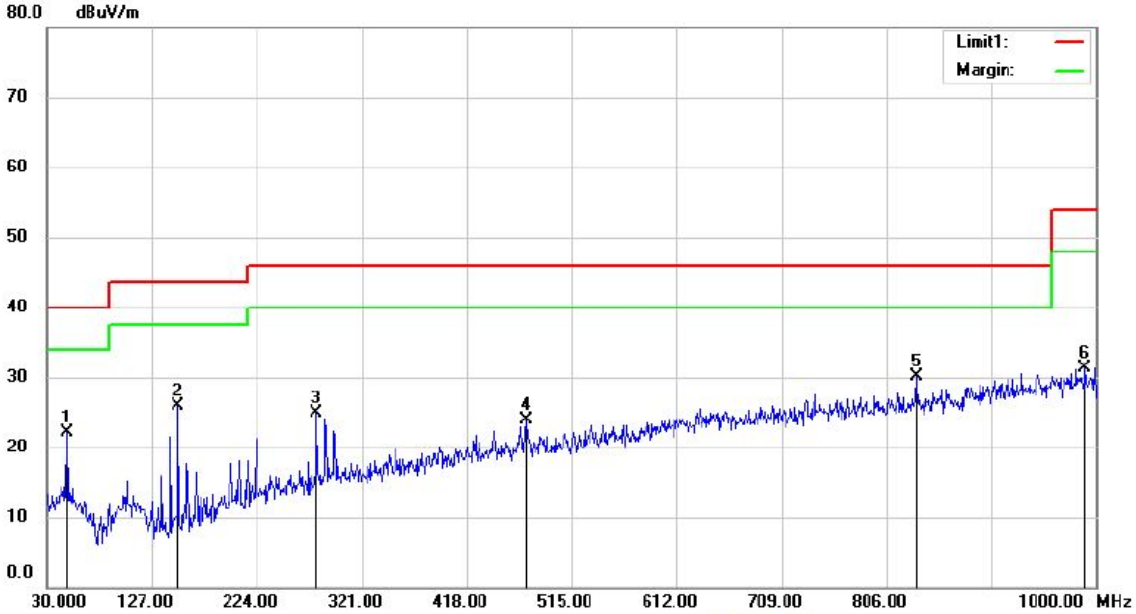
Site 3m Chamber # Polarization: *Vertical* Temperature: 29.5 C

Limit: FCC PART 15C Power: AC 120V/60Hz Humidity: 48 %

Mode: BT 2DH1 2480MHz

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	49.1574	35.39	-11.23	24.16	40.00	-15.84	QP			
2		151.8562	41.46	-15.23	26.23	43.50	-17.27	QP			
3		279.7750	32.18	-8.91	23.27	46.00	-22.73	QP			
4		472.3200	29.16	-5.14	24.02	46.00	-21.98	QP			
5		684.1437	28.30	-1.23	27.07	46.00	-18.93	QP			
6		975.8712	27.60	3.41	31.01	54.00	-22.99	QP			



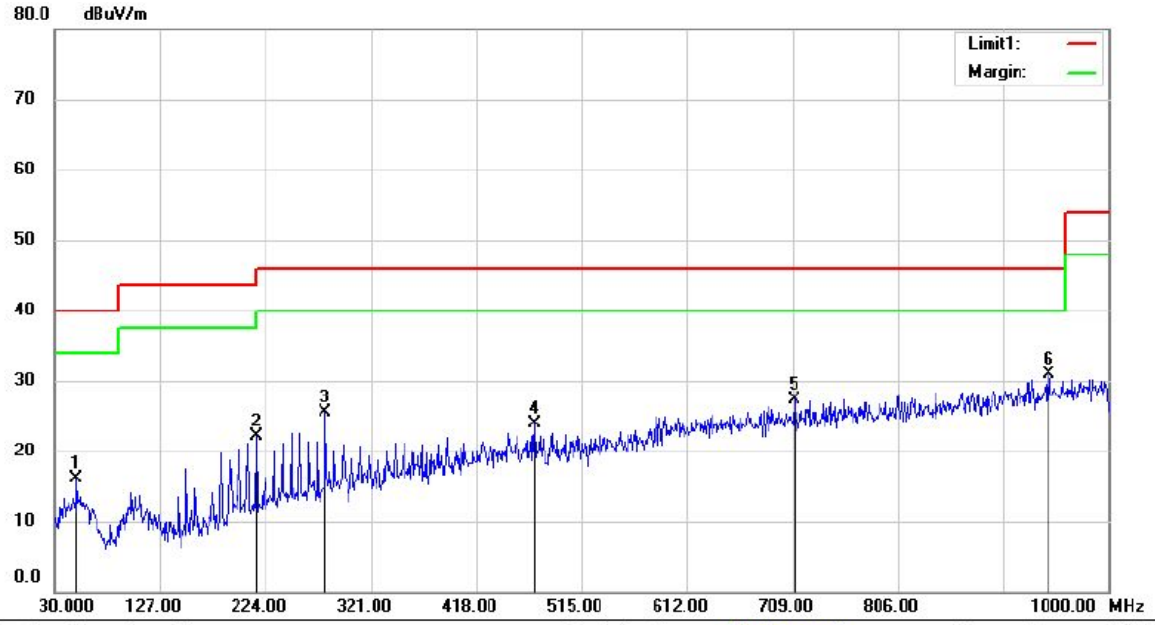
Site 3m Chamber #1 Polarization: ***Vertical*** Temperature: 29.5 C

Limit: FCC PART 15C Power: AC 120V/60Hz Humidity: 48 %

Mode:BT 3DH1 2402MHz

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		49.0362	33.37	-11.22	22.15	40.00	-17.85	QP			
2		151.9774	41.06	-15.22	25.84	43.50	-17.66	QP			
3		279.7750	33.83	-8.91	24.92	46.00	-21.08	QP			
4		473.6537	29.13	-5.13	24.00	46.00	-22.00	QP			
5	*	834.0087	29.34	0.67	30.01	46.00	-15.99	QP			
6		989.4512	27.47	3.76	31.23	54.00	-22.77	QP			



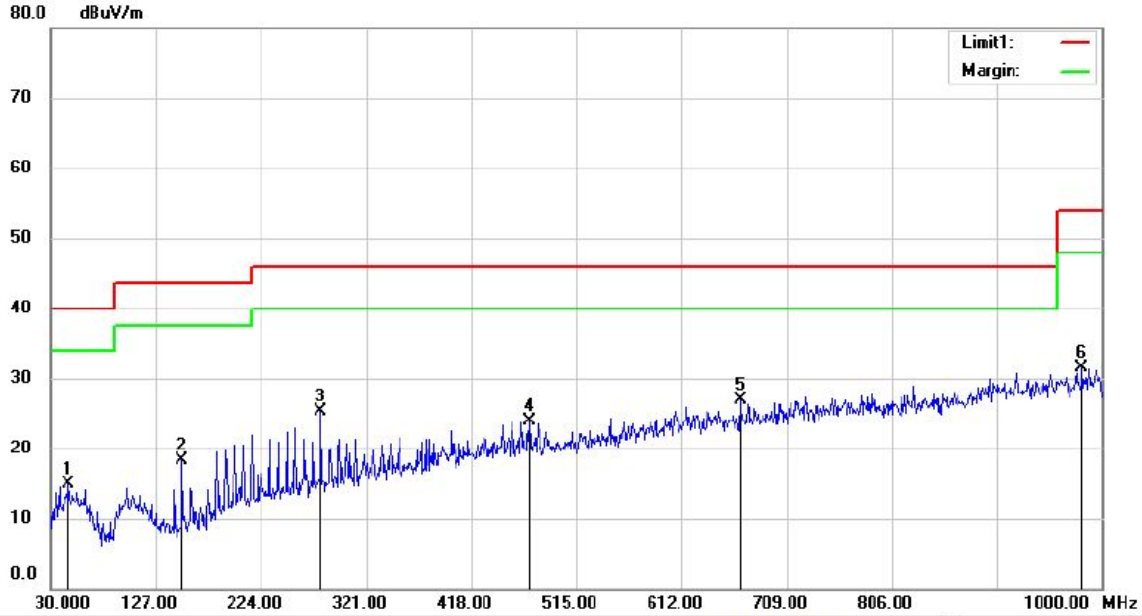
Site 3m Chamber #1 Polarization: ***Horizontal*** Temperature: 29.5 C

Limit: FCC PART 15C Power: AC 120V/60Hz Humidity: 48 %

Mode:BT 3DH1 2402MHz

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		51.2186	27.26	-11.18	16.08	40.00	-23.92	QP			
2		215.8762	33.50	-11.46	22.04	43.50	-21.46	QP			
3		279.7750	34.39	-8.91	25.48	46.00	-20.52	QP			
4		471.8350	29.08	-5.14	23.94	46.00	-22.06	QP			
5		711.7887	28.10	-0.83	27.27	46.00	-18.73	QP			
6	*	945.3162	27.96	2.86	30.82	46.00	-15.18	QP			



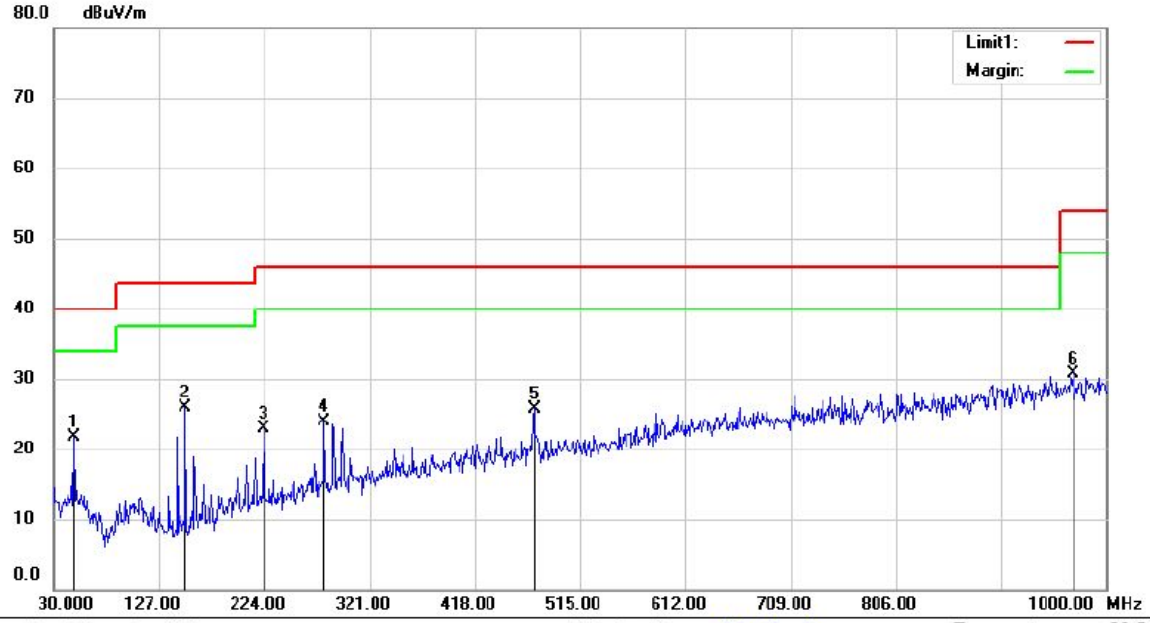
Site 3m Chamber #1 Polarization: ***Horizontal*** Temperature: 29.5 C

Limit: FCC PART 15C Power: AC 120V/60Hz Humidity: 48 %

Mode:BT 3DH1 2441MHz

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		47.3387	26.17	-11.21	14.96	40.00	-25.04	QP			
2		151.9774	33.54	-15.22	18.32	43.50	-25.18	QP			
3		279.7750	34.14	-8.91	25.23	46.00	-20.77	QP			
4		471.7137	29.05	-5.15	23.90	46.00	-22.10	QP			
5	*	667.1687	28.38	-1.51	26.87	46.00	-19.13	QP			
6		981.6912	27.88	3.55	31.43	54.00	-22.57	QP			



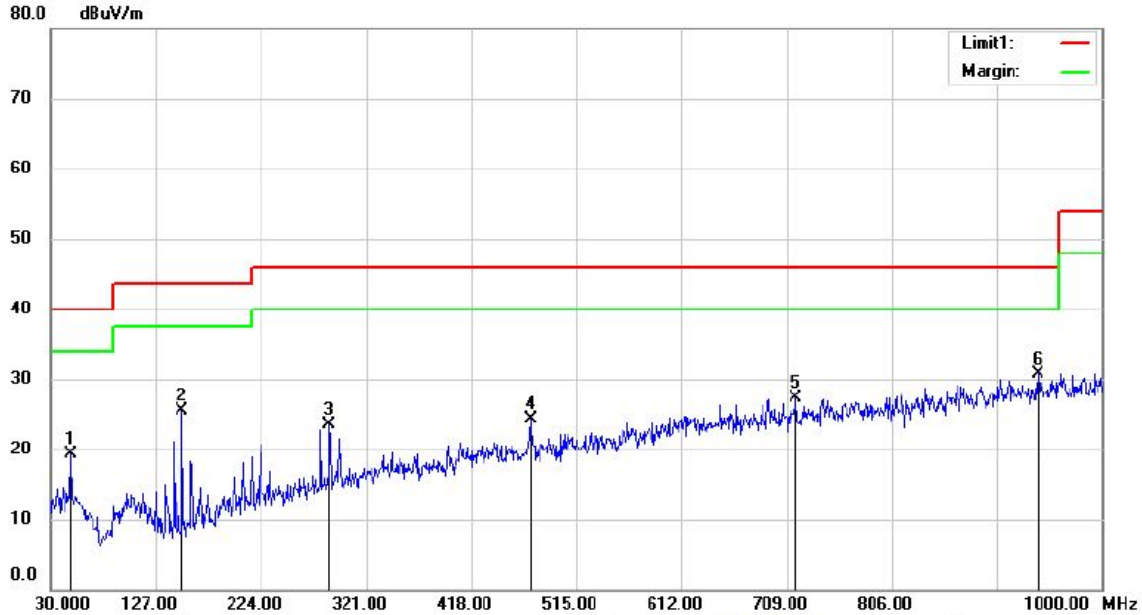
Site 3m Chamber #1 Polarization: ***Vertical*** Temperature: 29.5 C

Limit: FCC PART 15C Power: AC 120V/60Hz Humidity: 48 %

Mode:BT 3DH1 2441MHz

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		49.1574	32.95	-11.23	21.72	40.00	-18.28	QP			
2	*	151.8562	41.14	-15.23	25.91	43.50	-17.59	QP			
3		223.8787	33.84	-10.91	22.93	46.00	-23.07	QP			
4		279.7750	32.74	-8.91	23.83	46.00	-22.17	QP			
5		472.8050	30.93	-5.13	25.80	46.00	-20.20	QP			
6		969.2024	27.55	3.25	30.80	54.00	-23.20	QP			



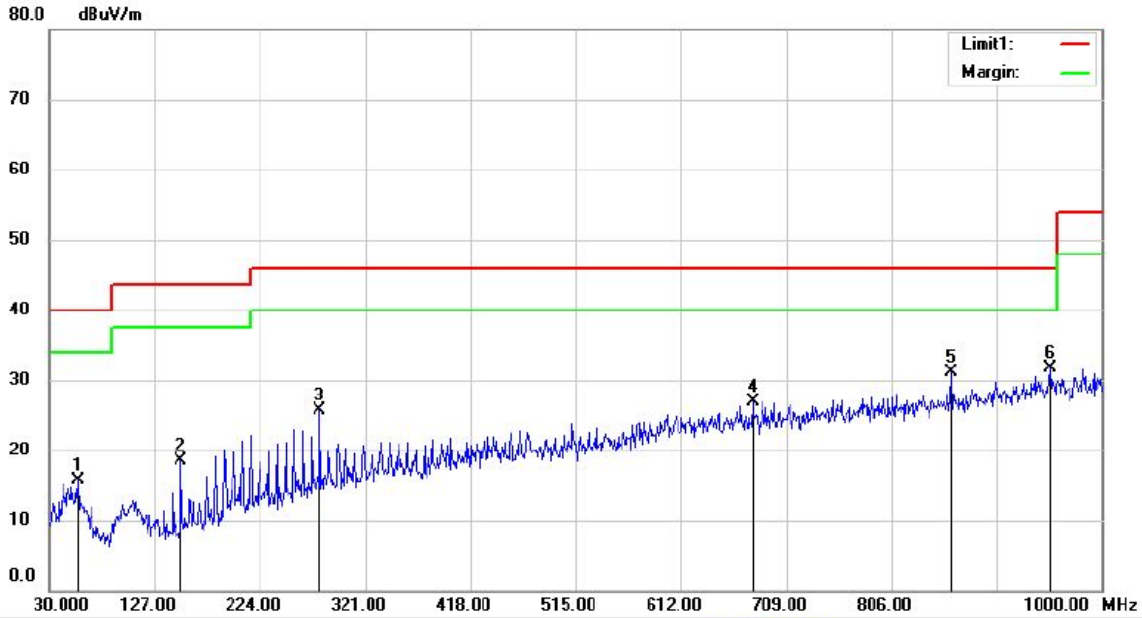
Site 3m Chamber #1 Polarization: ***Vertical*** Temperature: 29.5 C

Limit: FCC PART 15C Power: AC 120V/60Hz Humidity: 48 %

Mode: BT 3DH1 2480MHz

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		49.1574	30.48	-11.23	19.25	40.00	-20.75	QP			
2		151.8562	40.78	-15.23	25.55	43.50	-17.95	QP			
3		287.7774	32.14	-8.66	23.48	46.00	-22.52	QP			
4		472.8050	29.36	-5.13	24.23	46.00	-21.77	QP			
5		718.4573	28.07	-0.77	27.30	46.00	-18.70	QP			
6	*	941.1937	28.00	2.80	30.80	46.00	-15.20	QP			



Site 3m Chamber #1 Polarization: ***Horizontal*** Temperature: 29.5 C

Limit: FCC PART 15C Power: AC 120V/60Hz Humidity: 48 %

Mode:BT 3DH1 2480MHz

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		56.5537	27.67	-12.05	15.62	40.00	-24.38	QP			
2		151.8562	33.69	-15.23	18.46	43.50	-25.04	QP			
3		279.7750	34.64	-8.91	25.73	46.00	-20.27	QP			
4		678.0812	28.19	-1.32	26.87	46.00	-19.13	QP			
5		861.1687	29.84	1.20	31.04	46.00	-14.96	QP			
6	*	953.3187	28.65	3.03	31.68	46.00	-14.32	QP			

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

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
1616.250	V	46.40	33.57	74	54	-27.60	-20.43
4804.600	V	52.76	45.08	74	54	-21.24	-8.92
14141.00	V	57.98	41.20	74	54	-16.02	-12.80
1676.600	H	46.57	33.58	74	54	-27.43	-20.42
4804.000	H	46.83	40.25	74	54	-27.17	-13.75
13953.15	H	57.04	41.22	74	54	-16.96	-12.78

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
1702.950	V	44.76	31.42	74	54	-29.24	-22.58
10011.70	V	55.23	38.62	74	54	-18.77	-15.38
14534.55	V	58.22	42.02	74	54	-15.78	-11.98
1702.100	H	45.83	32.03	74	54	-28.17	-21.97
4881.950	H	49.15	40.26	74	54	-24.85	-13.74
16835.50	H	57.27	41.62	74	54	-16.73	-12.38

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
1697.000	V	45.69	32.64	74	54	-28.31	-21.36
4960.150	V	54.57	50.23	74	54	-19.43	-3.77
17705.05	V	57.26	42.37	74	54	-16.74	-11.63
1680.850	H	46.26	33.64	74	54	-27.74	-20.36
15126.15	H	56.75	41.54	74	54	-17.25	-12.46
17981.30	H	57.20	41.62	74	54	-16.80	-12.38

Test mode: π/4DQPSK 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
1514.250	V	45.76	32.14	74	54	-28.24	-21.86
4804.600	V	51.74	41.02	74	54	-22.26	-12.98
17957.50	V	56.73	41.55	74	54	-17.27	-12.45
1542.300	H	45.75	32.03	74	54	-28.25	-21.97
13343.70	H	56.56	41.54	74	54	-17.44	-12.46
17733.95	H	57.03	41.23	74	54	-16.97	-12.77

Test mode: π/4DQPSK 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
1611.150	V	45.65	32.41	74	54	-28.35	-21.59
13591.05	V	56.59	41.64	74	54	-17.41	-12.36
17977.05	V	56.98	41.09	74	54	-17.02	-12.91
1666.400	H	45.03	31.47	74	54	-28.97	-22.53
4881.950	H	47.75	40.16	74	54	-26.25	-13.84
13506.05	H	57.24	42.01	74	54	-16.76	-11.99

Test mode: π/4DQPSK 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
1485.350	V	46.20	32.41	74	54	-27.80	-21.59
4960.150	V	53.91	49.25	74	54	-20.09	-4.75
14843.95	V	55.53	41.05	74	54	-18.47	-12.95
1687.650	H	45.47	31.67	74	54	-28.53	-22.33
12341.55	H	57.16	40.26	74	54	-16.84	-13.74
15456.80	H	57.03	42.61	74	54	-16.97	-11.39

Test mode:	8DPSK	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
1690.200	V	45.29	32.65	74	54	-28.71	-21.35
4803.750	V	51.49	42.06	74	54	-22.51	-11.94
17962.60	V	56.56	41.82	74	54	-17.44	-12.18
1483.650	H	44.79	32.44	74	54	-29.21	-21.56
14384.10	H	56.73	41.35	74	54	-17.27	-12.65
17988.95	H	57.39	41.72	74	54	-16.61	-12.28

Test mode:	8DPSK	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
1634.100	V	46.58	33.08	74	54	-27.42	-20.92
9483.000	V	54.61	40.26	74	54	-19.39	-13.74
17965.15	V	57.41	42.08	74	54	-16.59	-11.92
1514.250	H	45.27	32.46	74	54	-28.73	-21.54
4881.950	H	48.82	39.26	74	54	-25.18	-14.74
17975.35	H	56.87	41.12	74	54	-17.13	-12.88

Test mode:	8DPSK	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
1628.150	V	45.25	31.54	74	54	-28.75	-22.46
4960.150	V	53.35	49.24	74	54	-20.65	-4.76
17977.05	V	57.21	41.56	74	54	-16.79	-12.44
1712.300	H	45.91	32.41	74	54	-28.09	-21.59
11617.35	H	56.40	41.02	74	54	-17.60	-12.98
17951.55	H	57.49	41.67	74	54	-16.51	-12.33

Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3) Data of measurement within this frequency range shown " -- " in the table above means 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

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)
2366.472	H	51.16	74	35.76	54
2389.964	V	51.56	74	34.29	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)
2486.057	H	52.41	74	35.46	54
2490.421	V	53.28	74	36.53	54

Test mode:	π/4DQPSK	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)
2382.724	H	51.79	74	34.61	54
2389.964	V	52.06	74	35.17	54

Test mode:	π/4DQPSK	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)
2483.789	H	52.94	74	34.62	54
2484.795	V	53.19	74	36.22	54

Test mode:	8DPSK	Frequency:	Channel 0: 2402MHz

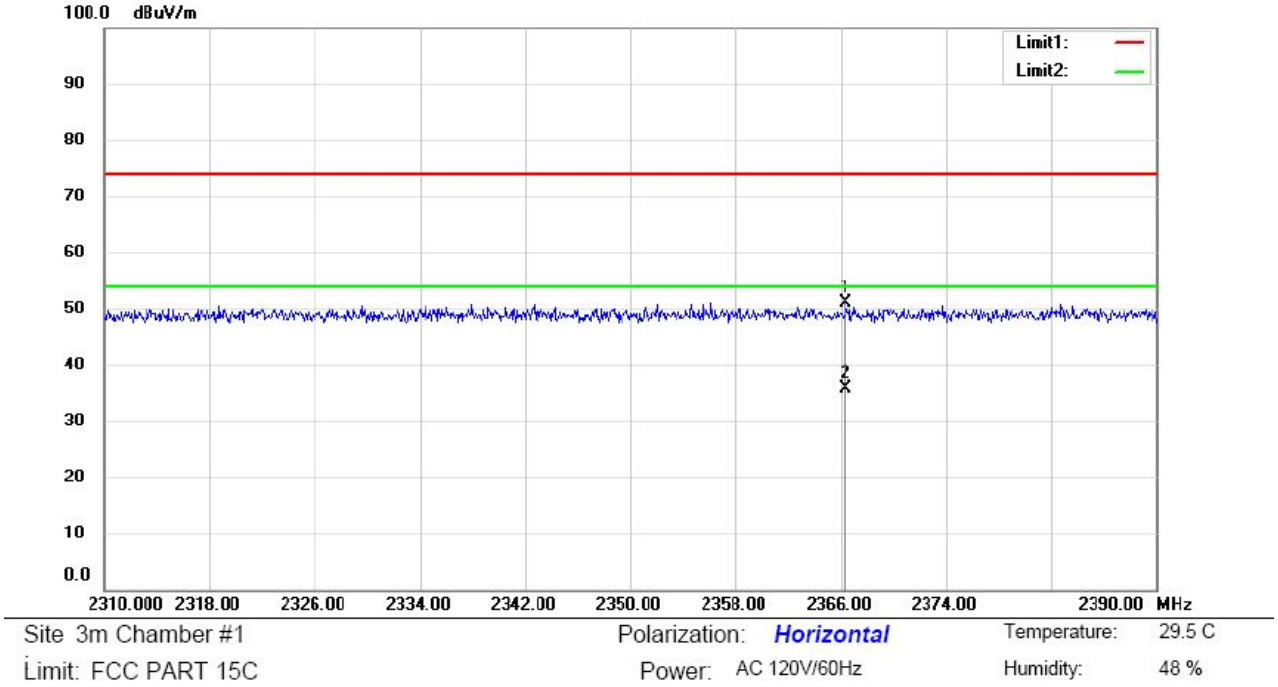
Frequency (MHz)	Polarity H/V	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
2382.724	H	51.29	74	35.41	54
2389.964	V	52.56	74	35.17	54

Test mode:	8DPSK	Frequency:	Channel 78: 2480MHz

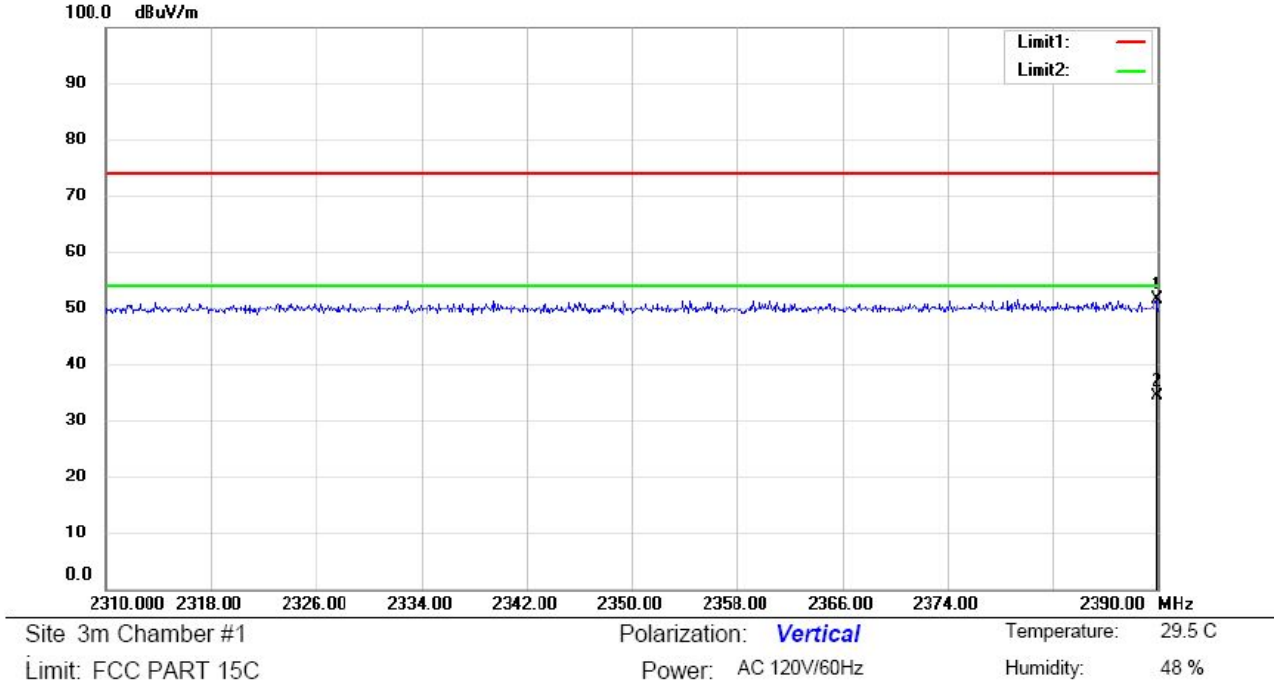
Frequency (MHz)	Polarity H/V	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
2484.583	H	52.76	74	34.67	54
2484.406	V	52.78	74	35.16	54

Note: (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
(2) Emission Level= Reading Level+Probe Factor +Cable Loss.
(3) Data of measurement within this frequency range shown " -- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

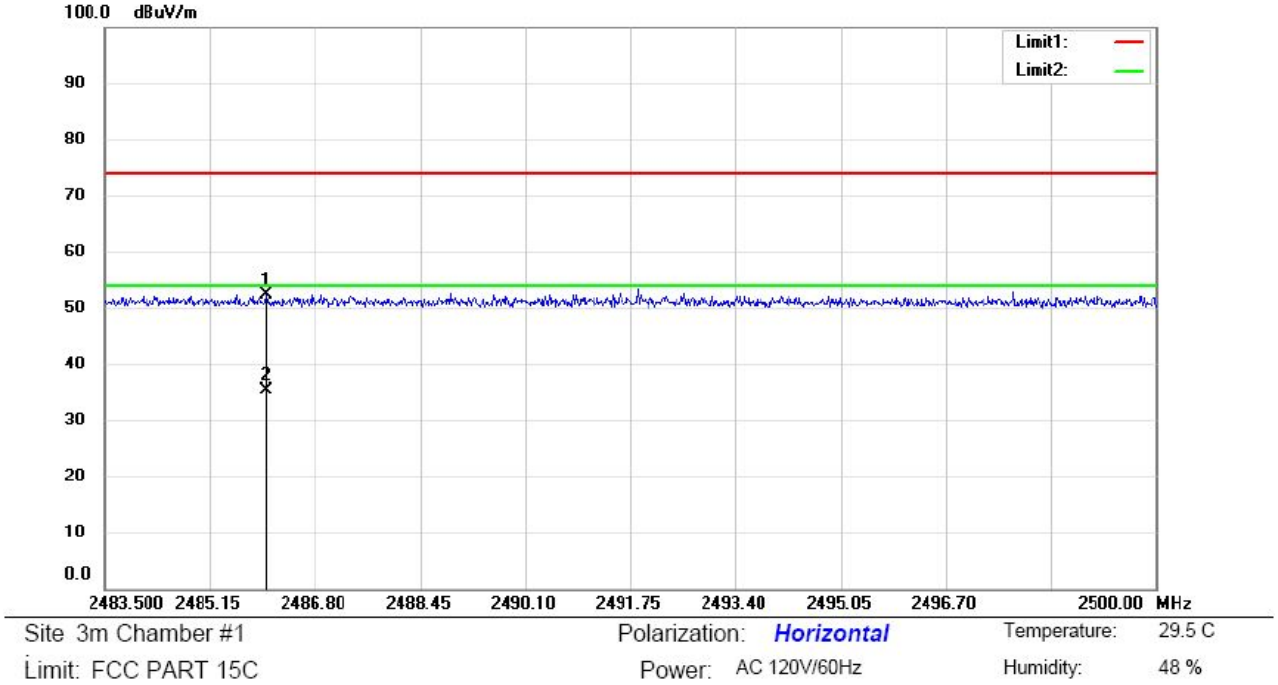
Test Model	Spurious Emission in Restricted Band 2310-2390MHz		
	Channel 0: 2402MHz	GFSK	H



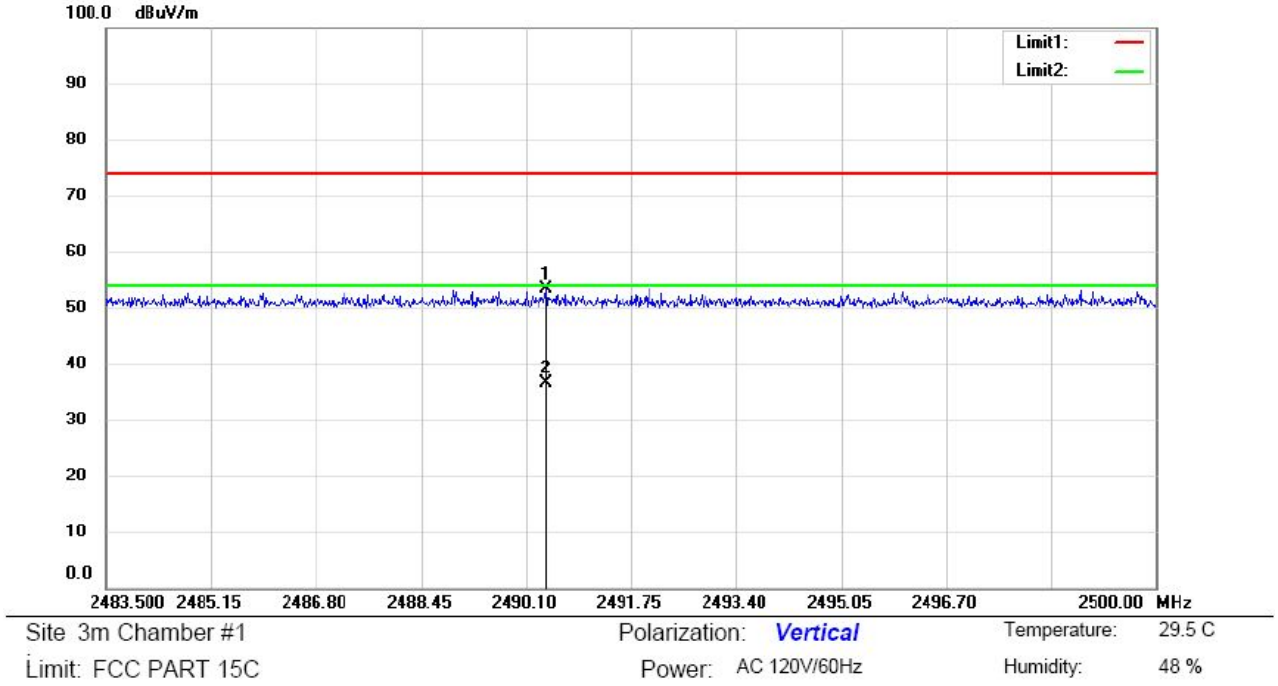
Test Model	Spurious Emission in Restricted Band 2310-2390MHz		
	Channel 0: 2402MHz	GFSK	V



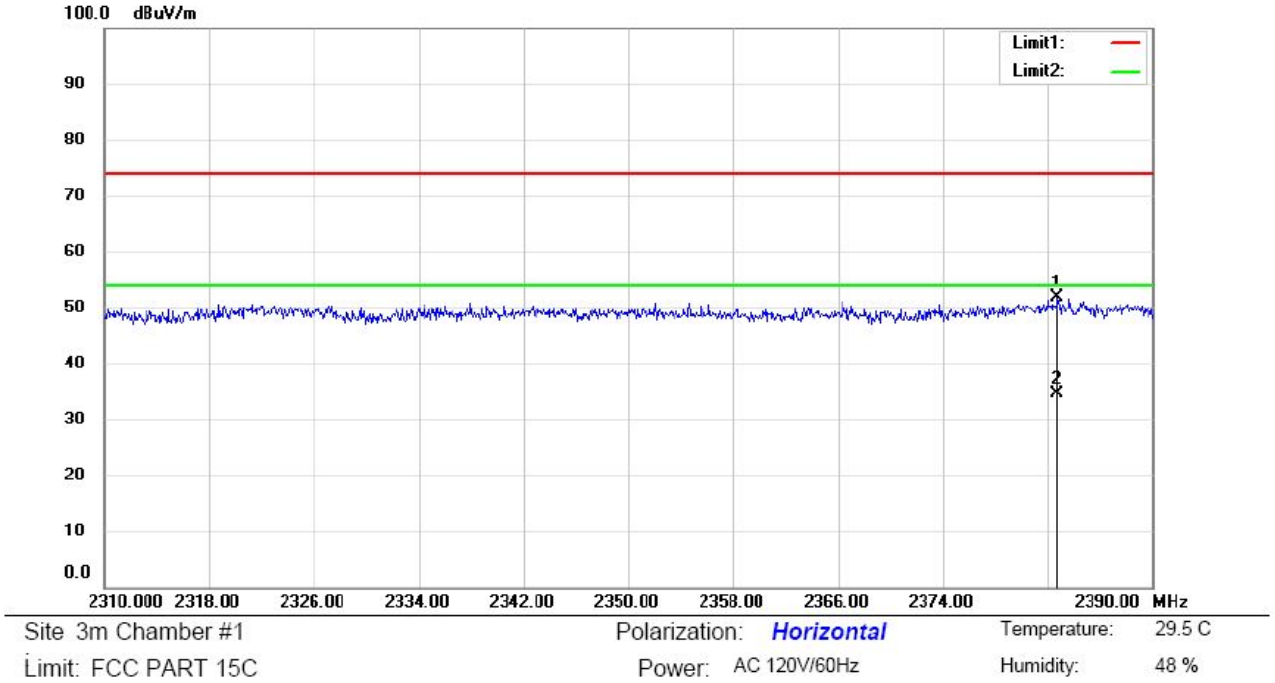
Test Model	Spurious Emission in Restricted Band 2483.5-2500MHz		
	Channel 78: 2480MHz	GFSK	H



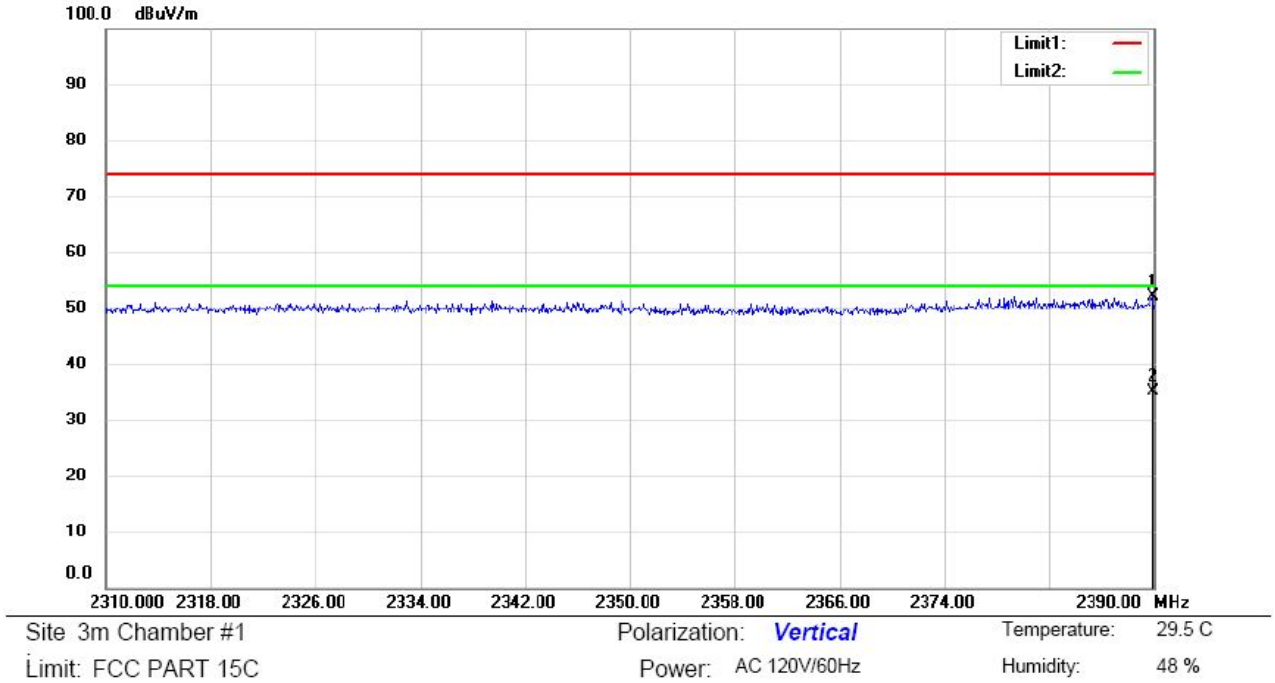
Test Model	Spurious Emission in Restricted Band 2483.5-2500MHz		
	Channel 78: 2480MHz	GFSK	V



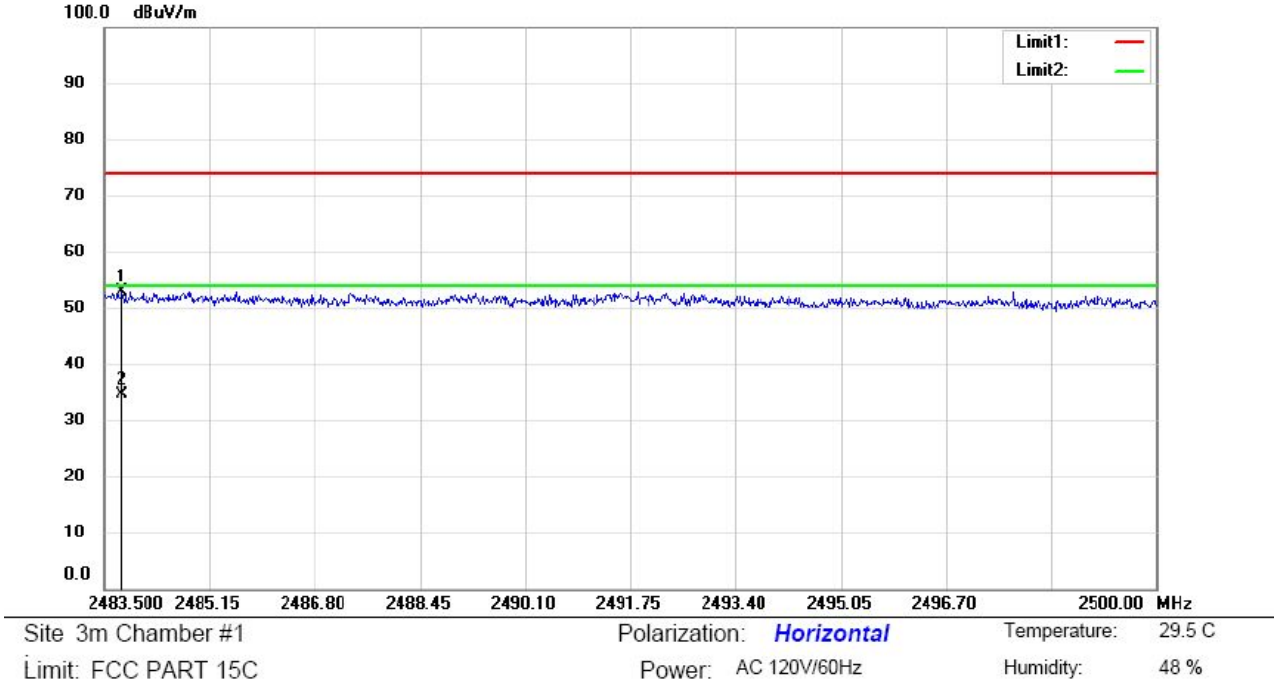
Test Model	Spurious Emission in Restricted Band 2310-2390MHz Channel 0: 2402MHz	π /4DQPSK	H



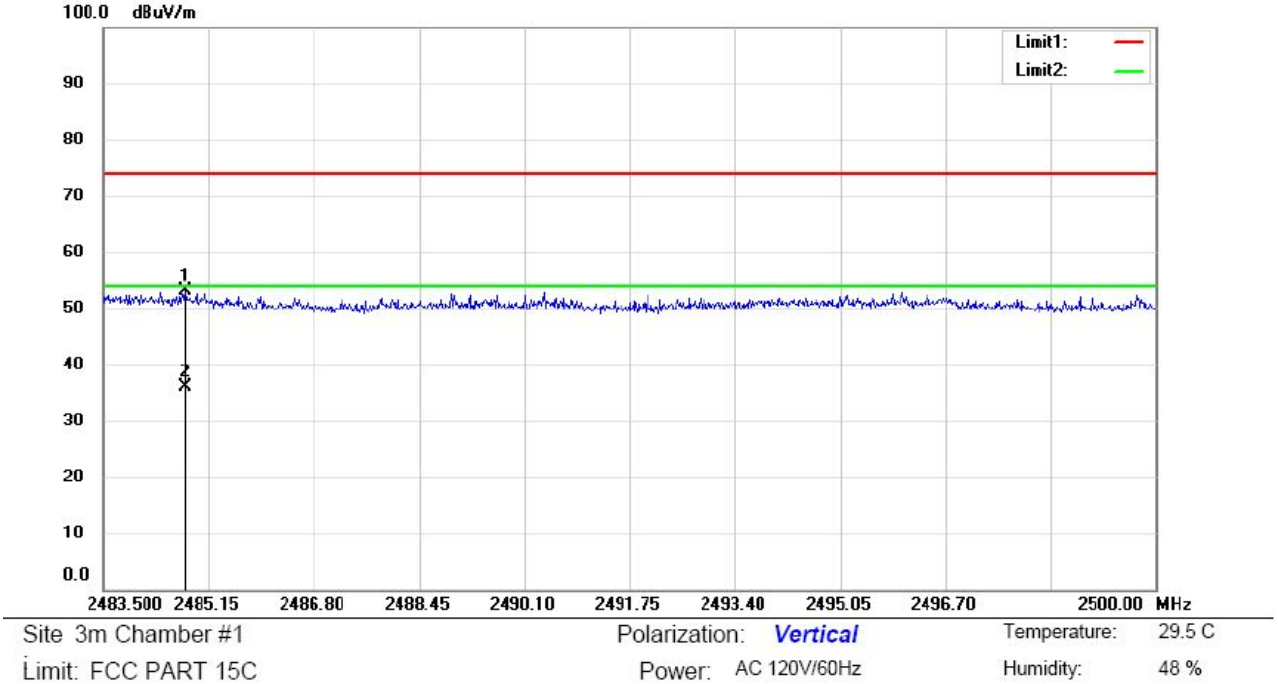
Test Model	Spurious Emission in Restricted Band 2310-2390MHz Channel 0: 2402MHz	π /4DQPSK	V



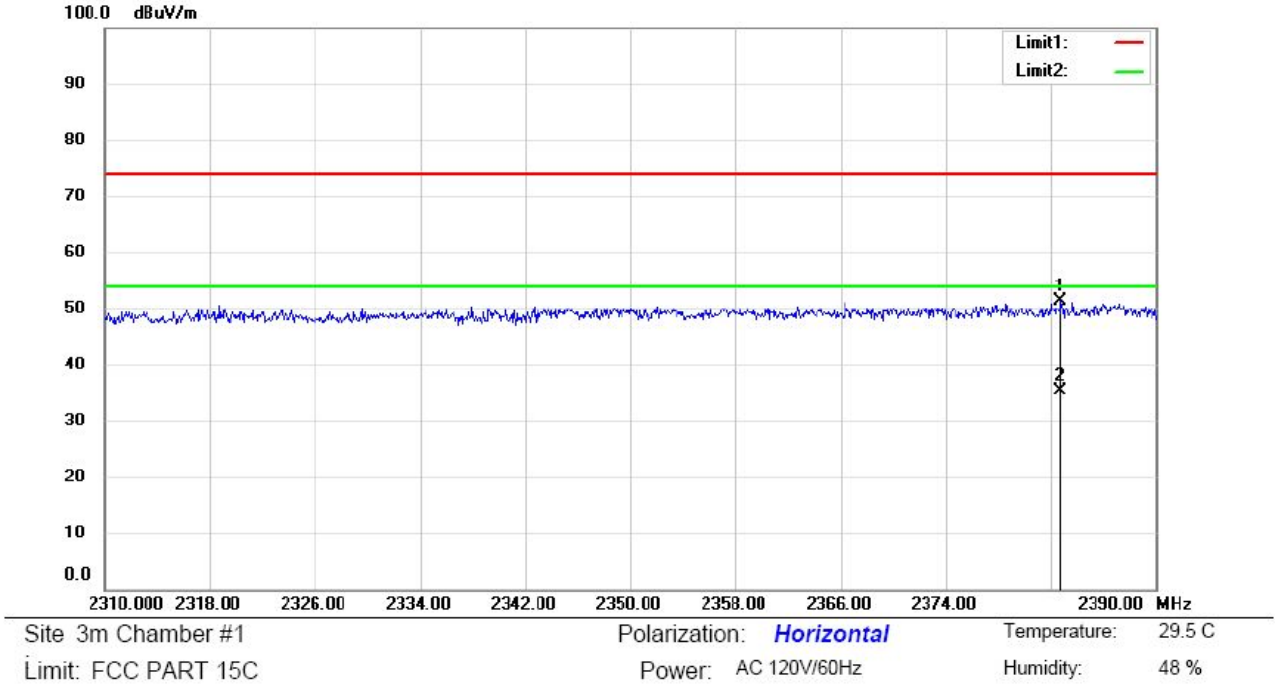
Test Model	Spurious Emission in Restricted Band 2483.5-2500MHz Channel 78: 2480MHz	π /4DQPSK	H



Test Model	Spurious Emission in Restricted Band 2483.5-2500MHz Channel 78: 2480MHz	π /4DQPSK	V

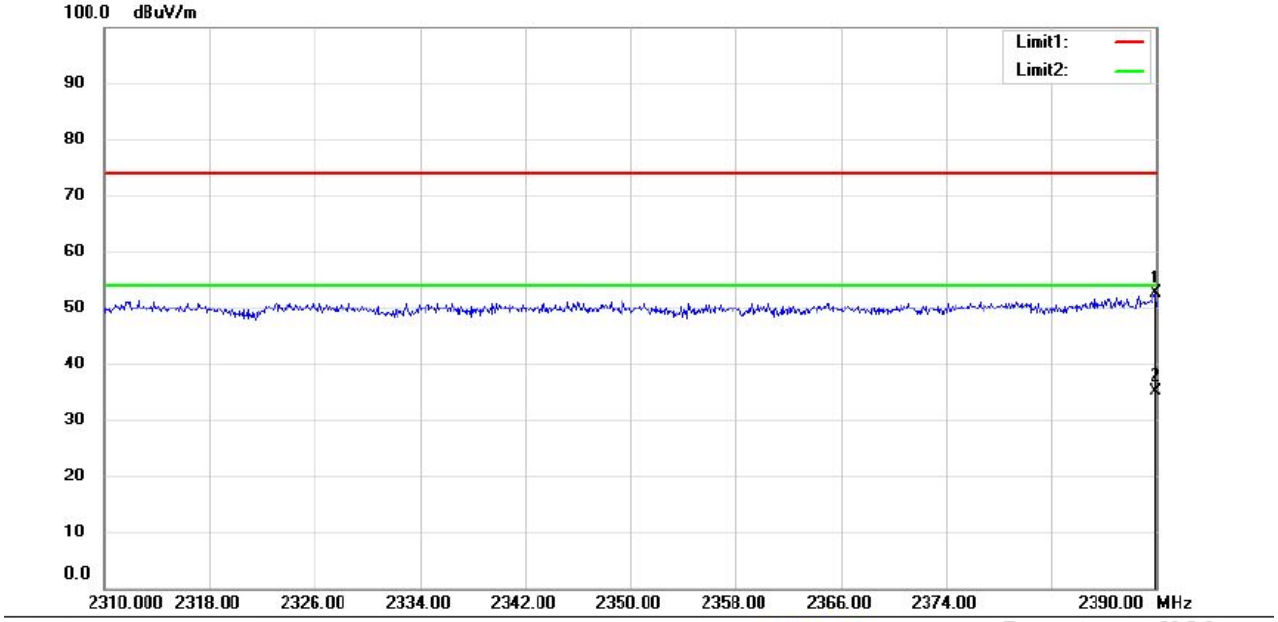


Test Model	Spurious Emission in Restricted Band 2310-2390MHz		
	Channel 0: 2402MHz	8DPSK	H



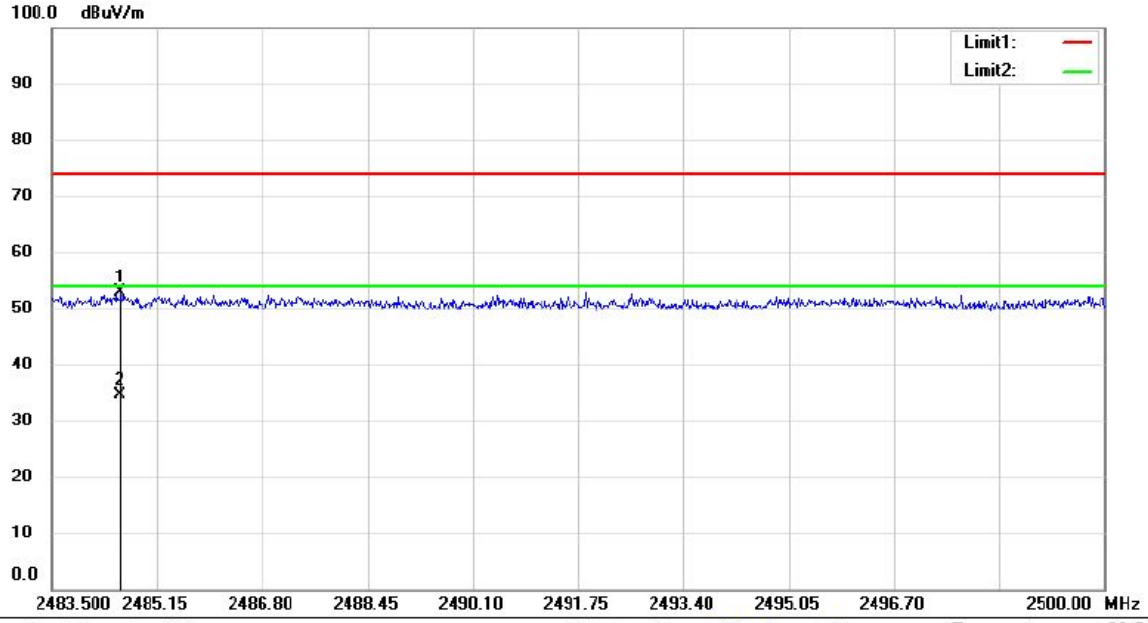
Site 3m Chamber #1 Polarization: ***Horizontal*** Temperature: 29.5 C
Limit: FCC PART 15C Power: AC 120V/60Hz Humidity: 48 %

Test Model	Spurious Emission in Restricted Band 2310-2390MHz		
	Channel 0: 2402MHz	8DPSK	V



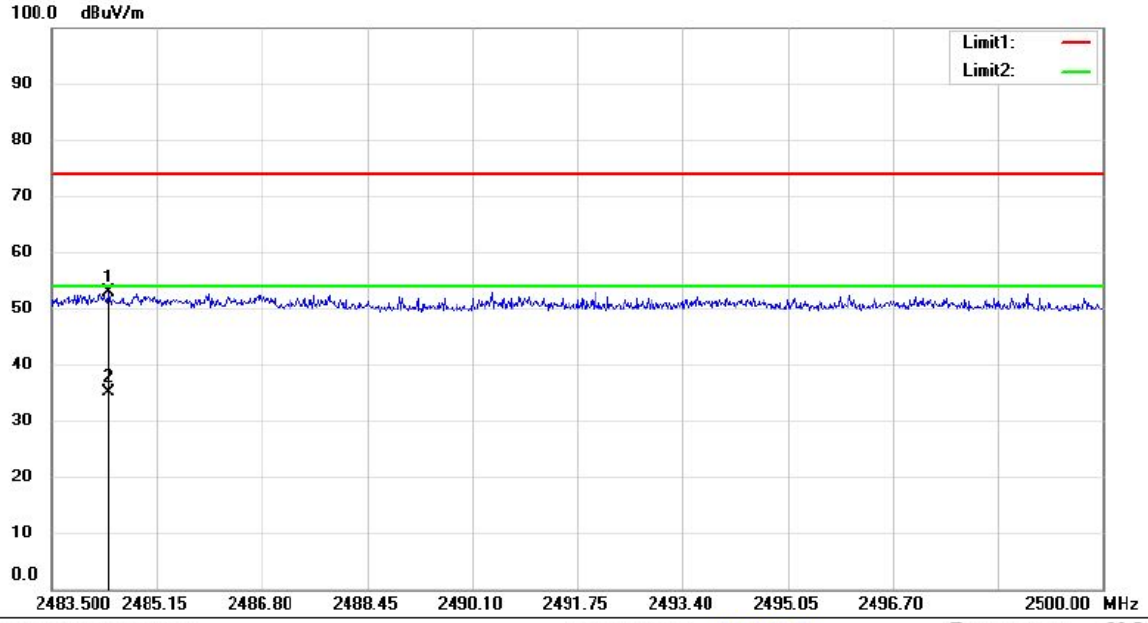
Site 3m Chamber #1 Polarization: ***Vertical*** Temperature: 29.5 C
Limit: FCC PART 15C Power: AC 120V/60Hz Humidity: 48 %

Test Model	Spurious Emission in Restricted Band 2483.5-2500MHz		
	Channel 78: 2480MHz	8DPSK	H



Site 3m Chamber #1 Polarization: ***Horizontal*** Temperature: 29.5 C
Limit: FCC PART 15C Power: AC 120V/60Hz Humidity: 48 %

Test Model	Spurious Emission in Restricted Band 2483.5-2500MHz		
	Channel 78: 2480MHz	8DPSK	V



Site 3m Chamber #1 Polarization: ***Vertical*** Temperature: 29.5 C
Limit: FCC PART 15C Power: AC 120V/60Hz Humidity: 48 %

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

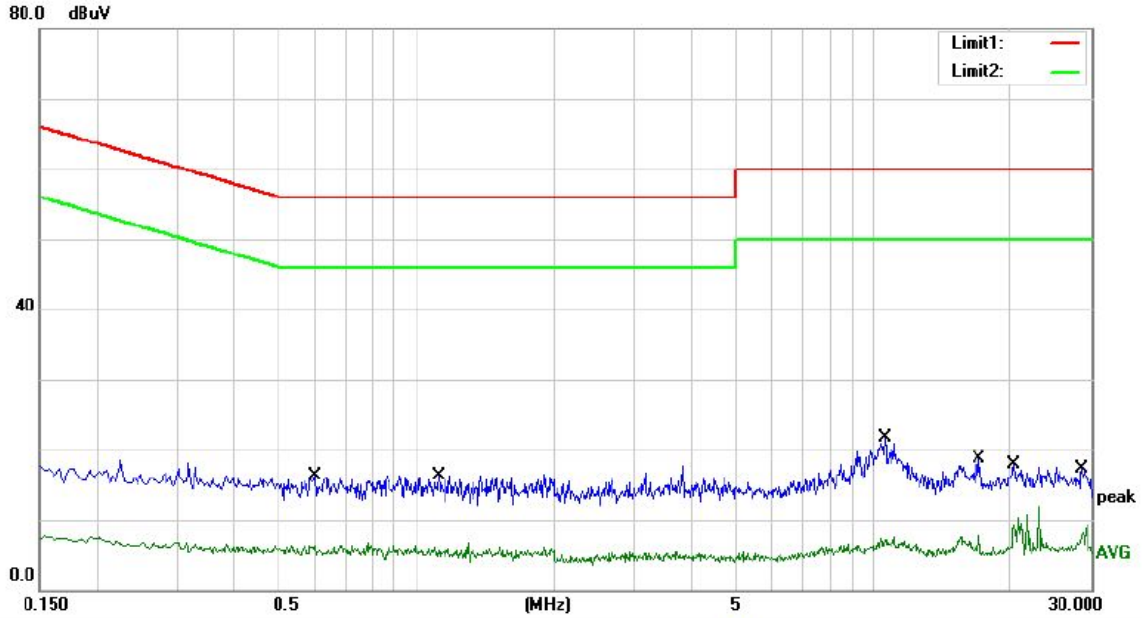
9.8.4 Test Procedure

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

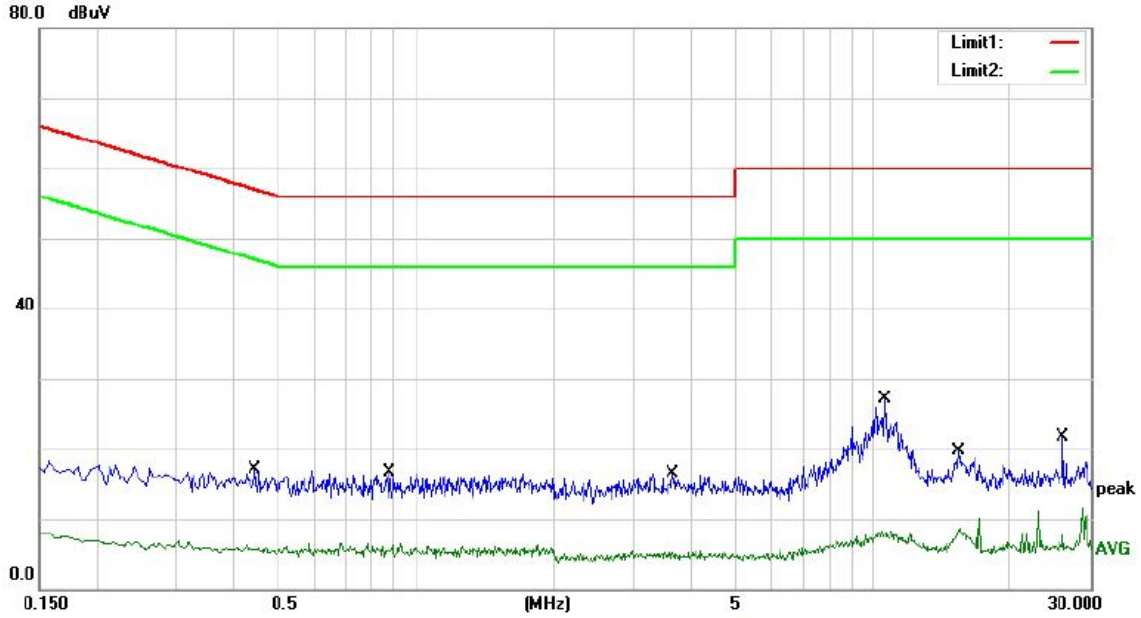
Pass

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



Site Conduction #1 Phase: N Temperature: 24.9
Limit: FCC PART 15C Power: AC 120V/60Hz Humidity: 54 %
Mode: BT Mode
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.6020	6.77	9.57	16.34	56.00	-39.66	QP	
2		0.6020	-3.18	9.57	6.39	46.00	-39.61	AVG	
3		1.1220	6.75	9.59	16.34	56.00	-39.66	QP	
4		1.1220	-3.27	9.59	6.32	46.00	-39.68	AVG	
5	*	10.5820	11.89	9.80	21.69	60.00	-38.31	QP	
6		10.5820	-2.38	9.80	7.42	50.00	-42.58	AVG	
7		16.9380	8.61	10.01	18.62	60.00	-41.38	QP	
8		16.9380	-2.26	10.01	7.75	50.00	-42.25	AVG	
9		20.3220	7.80	10.18	17.98	60.00	-42.02	QP	
10		20.3220	0.03	10.18	10.21	50.00	-39.79	AVG	
11		28.5660	7.16	10.13	17.29	60.00	-42.71	QP	
12		28.5660	-0.77	10.13	9.36	50.00	-40.64	AVG	



Site Conduction #1 Phase: *L1* Temperature: 24.9
Limit: FCC PART 15C Power: AC 120V/60Hz Humidity: 54 %
Mode: BT Mode
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.4460	7.56	9.57	17.13	56.95	-39.82	QP	
2		0.4460	-3.24	9.57	6.33	46.95	-40.62	AVG	
3		0.8780	7.08	9.59	16.67	56.00	-39.33	QP	
4		0.8780	-3.00	9.59	6.59	46.00	-39.41	AVG	
5		3.6460	6.88	9.63	16.51	56.00	-39.49	QP	
6		3.6460	-4.09	9.63	5.54	46.00	-40.46	AVG	
7	*	10.5700	17.32	9.80	27.12	60.00	-32.88	QP	
8		10.5700	-1.50	9.80	8.30	50.00	-41.70	AVG	
9		15.4220	9.69	9.92	19.61	60.00	-40.39	QP	
10		15.4220	0.16	9.92	10.08	50.00	-39.92	AVG	
11		26.1020	11.50	10.15	21.65	60.00	-38.35	QP	
12		26.1020	1.28	10.15	11.43	50.00	-38.57	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 is Integral Antenna, the gain is -0.61dBi.

Note: ☒ Antenna 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 ------