Temperature:	25℃	Test Date:	February 7, 2024
Humidity:	60 %	Test By:	KK
Test mode:	GFSK	Frequency:	Channel 0: 2402MHz

Freq. [MHz]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Polarity	Pass/Fail
12431.25	60.22	74	13.78	PK	Vertical	Pass
14724.375	62.7	74	11.3	PK	Vertical	Pass
17632.5	67.08	74	6.92	PK	Vertical	Pass
12431.25	49.87	54	4.13	AV	Vertical	Pass
14724.375	44.9	54	9.1	AV	Vertical	Pass
17632.5	46.35	54	7.65	AV	Vertical	Pass
11529.375	59.76	74	14.24	PK	Horizontal	Pass
14613.75	62.86	74	11.14	PK	Horizontal	Pass
17610	67.6	74	6.4	PK	Horizontal	Pass
11529.375	47.18	54	6.82	AV	Horizontal	Pass
14613.75	46.9	54	7.1	AV	Horizontal	Pass
17610	47.23	54	6.77	AV	Horizontal	Pass

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) Margin = Limit - Emission Level
(5)The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

Temperature:	25℃	Test Date:	February 7, 2024
Humidity:	60 %	Test By:	KK
Test mode:	GFSK	Frequency:	Channel 39: 2441MHz

Freq. [MHz]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Polarity	Pass/Fail
11510.625	60.66	74	13.34	PK	Vertical	Pass
14694.375	62.6	74	11.4	PK	Vertical	Pass
17610	67.71	74	6.29	PK	Vertical	Pass
11510.625	47.46	54	6.54	AV	Vertical	Pass
14694.375	44.98	54	9.02	AV	Vertical	Pass
17610	47.3	54	6.7	AV	Vertical	Pass
11501.25	60.3	74	13.7	PK	Horizontal	Pass
14651.25	62.89	74	11.11	PK	Horizontal	Pass
17615.625	67.17	74	6.83	PK	Horizontal	Pass
11501.25	47.54	54	6.46	AV	Horizontal	Pass
14651.25	46.09	54	7.91	AV	Horizontal	Pass
17615.625	47.26	54	6.74	AV	Horizontal	Pass

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) Margin = Limit - Emission Level
(5)The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

Temperature:	25℃	Test Date:	February 7, 2024
Humidity:	60 %	Test By:	KK
Test mode:	GFSK	Frequency:	Channel 78: 2480MHz

Freq. [MHz]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Detector	Polarity	Pass/Fail
11497.5	60.83	74	13.17	PK	Vertical	Pass
14628.75	62.95	74	11.05	PK	Vertical	Pass
17583.75	67.02	74	6.98	PK	Vertical	Pass
11497.5	47.5	54	6.5	AV	Vertical	Pass
14628.75	46.66	54	7.34	AV	Vertical	Pass
17583.75	47.06	54	6.94	AV	Vertical	Pass
11523.75	59.51	74	14.49	PK	Horizontal	Pass
14643.75	62.91	74	11.09	PK	Horizontal	Pass
17610	66.63	74	7.37	PK	Horizontal	Pass
11523.75	47.07	54	6.93	AV	Horizontal	Pass
14643.75	46.13	54	7.87	AV	Horizontal	Pass
17610	47.31	54	6.69	AV	Horizontal	Pass

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) Margin = Limit - Emission Level
(5)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(AC 120V/60Hz) was report as below:

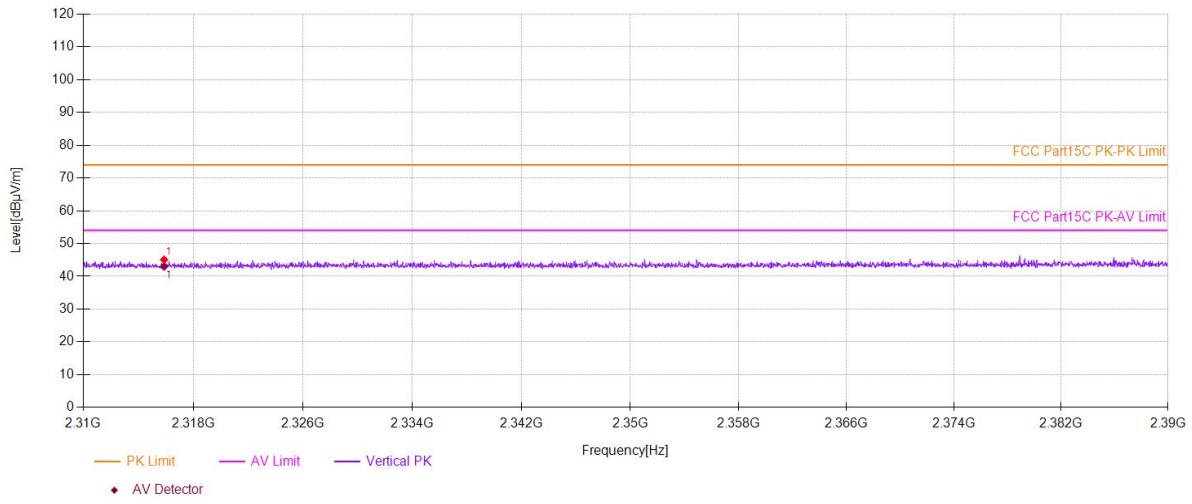
Test mode:	GFSK	Frequency:	Channel 0: 2402MHz		
Frequency (MHz)	Polarity	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
2371.83	H	46.37	74.00	43.49	54.00
2315.86	V	45.08	74.00	42.99	54.00

Test mode:	GFSK	Frequency:	Channel 39: 2480MHz		
Frequency (MHz)	Polarity	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
2491.33	H	45.83	74.00	43.52	54.00
2492.10	V	45.26	74.00	43.54	54.00

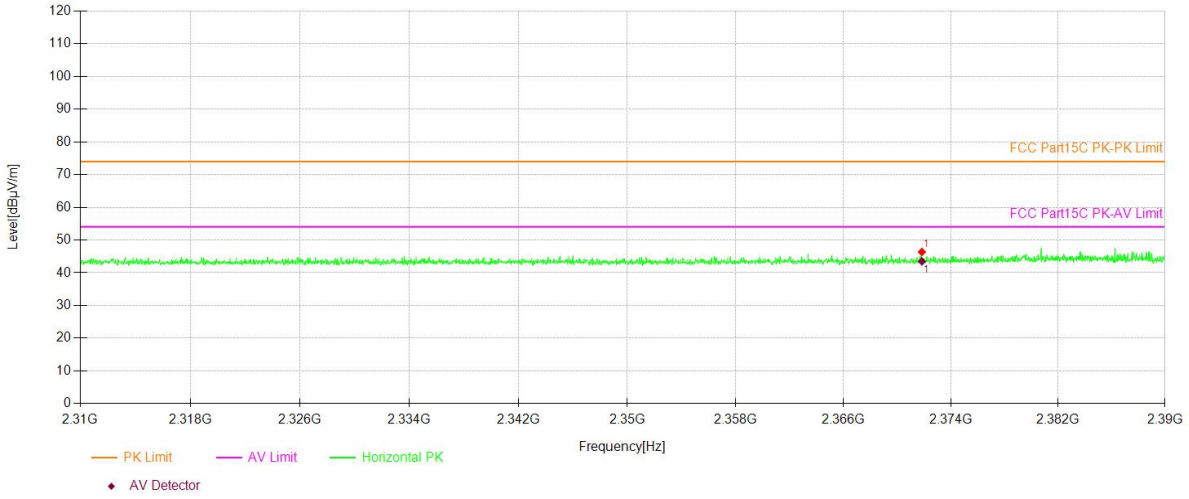
Test mode:	GFSK	Frequency:	Hopping		
Frequency (MHz)	Polarity H/V	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
2400.00	H	46.93	74.00	43.23	54.00
2483.50	H	49.46	74.00	43.70	54.00
2400.00	V	44.25	74.00	43.38	54.00
2483.50	V	46.05	74.00	43.37	54.00

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.

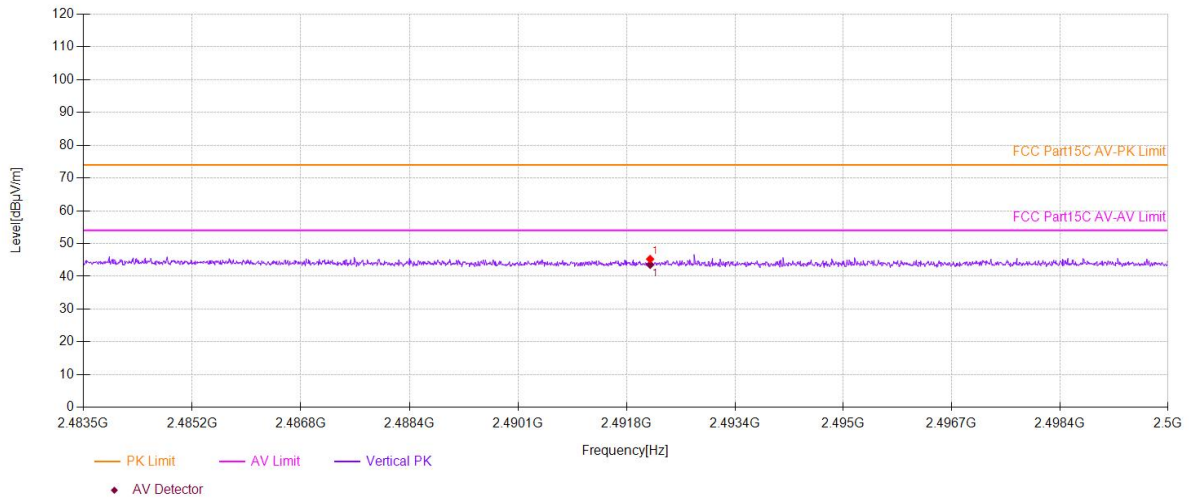
Test Model	Spurious Emission in Restricted Band 2310-2390MHz		
	Channel 0: 2402MHz	GFSK	V



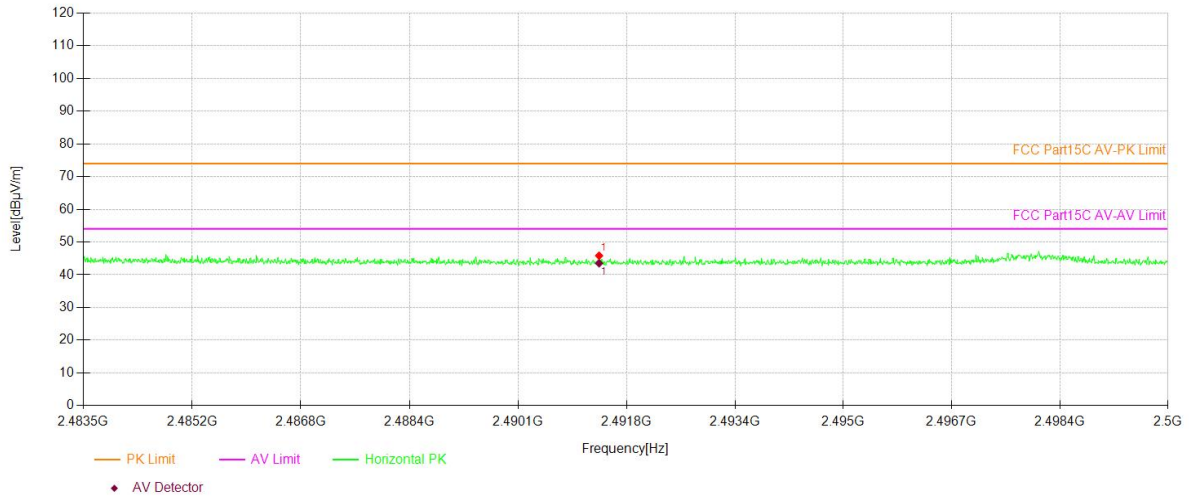
Test Model	Spurious Emission in Restricted Band 2310-2390MHz		
	Channel 0: 2402MHz	GFSK	H



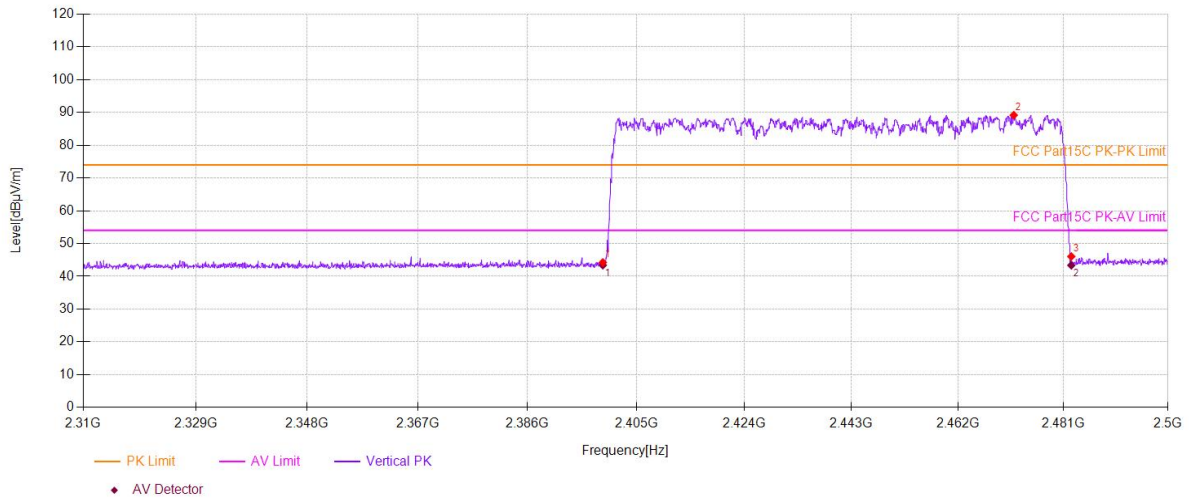
Test Model	Spurious Emission in Restricted Band 2483.5-2500MHz		
	Channel 78: 2480MHz	GFSK	V



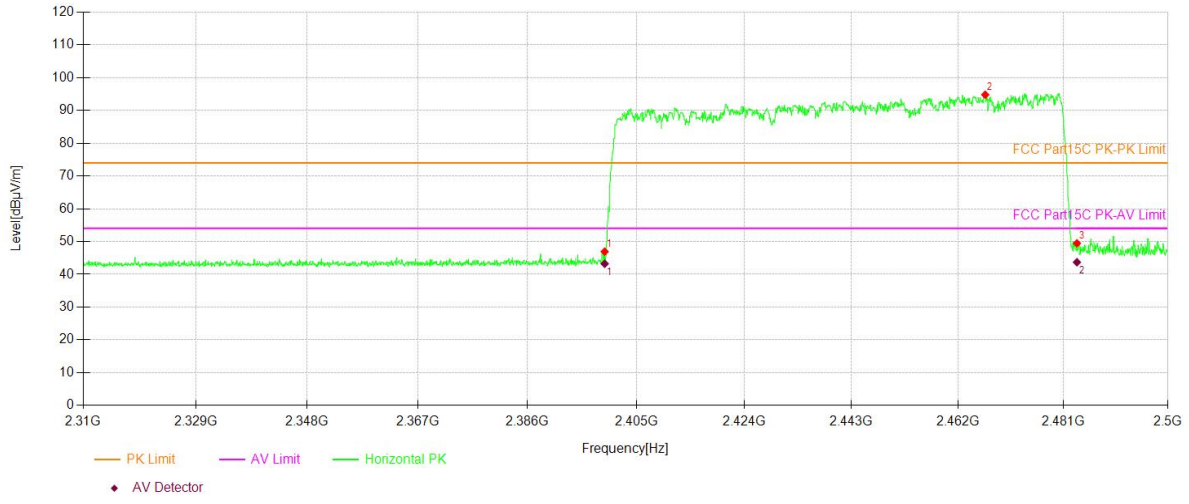
Test Model	Spurious Emission in Restricted Band 2483.5-2500MHz		
	Channel 78: 2480MHz	GFSK	H



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



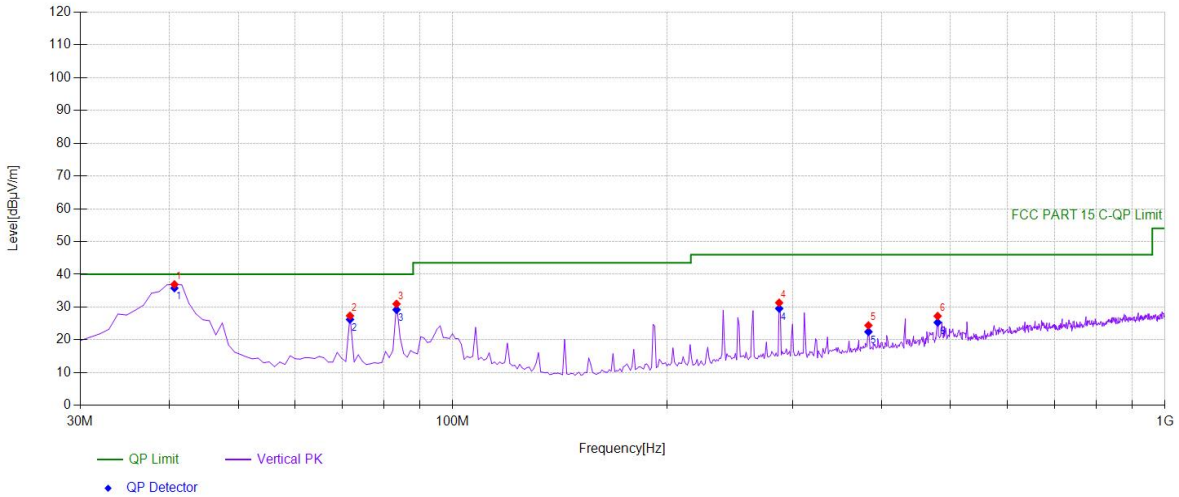
Test Model	Spurious Emission in Restricted Band2310-2390&2483.5-2500MHz		
	Hopping	GFSK	H



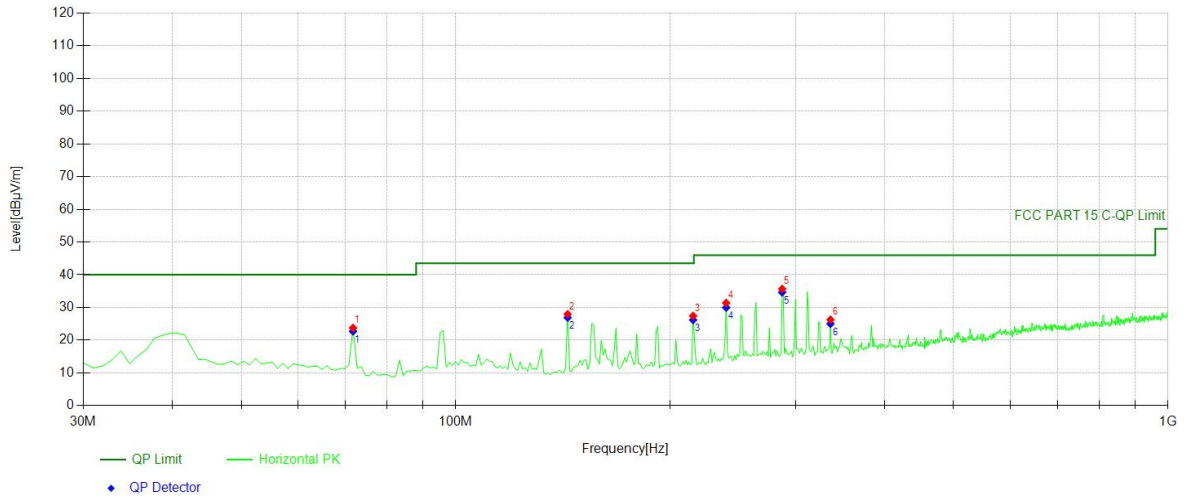
■ Spurious Emission below 1GHz(30MHz to 1GHz)

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

2402

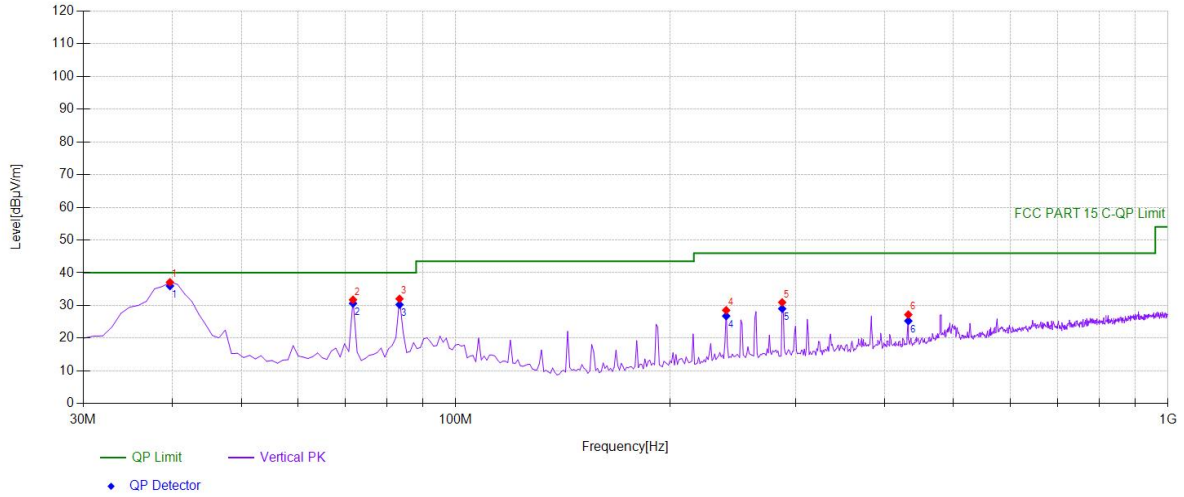


Suspected Data List								
NO.	Freq. [MHz]	Reading [dBμV]	Factor [dB/m]	Level [dBμV/m]	Detector	Limit [dBμV/m]	Margin [dB]	Polarity
1	40.6807	54.78	-17.86	36.92	PK	40.00	3.08	Vertical
2	71.7518	47.59	-20.23	27.36	PK	40.00	12.64	Vertical
3	83.4034	51.68	-20.70	30.98	PK	40.00	9.02	Vertical
4	287.3070	45.51	-14.17	31.34	PK	46.00	14.66	Vertical
5	383.4334	36.25	-11.83	24.42	PK	46.00	21.58	Vertical
6	479.5590	37.08	-9.81	27.27	PK	46.00	18.73	Vertical

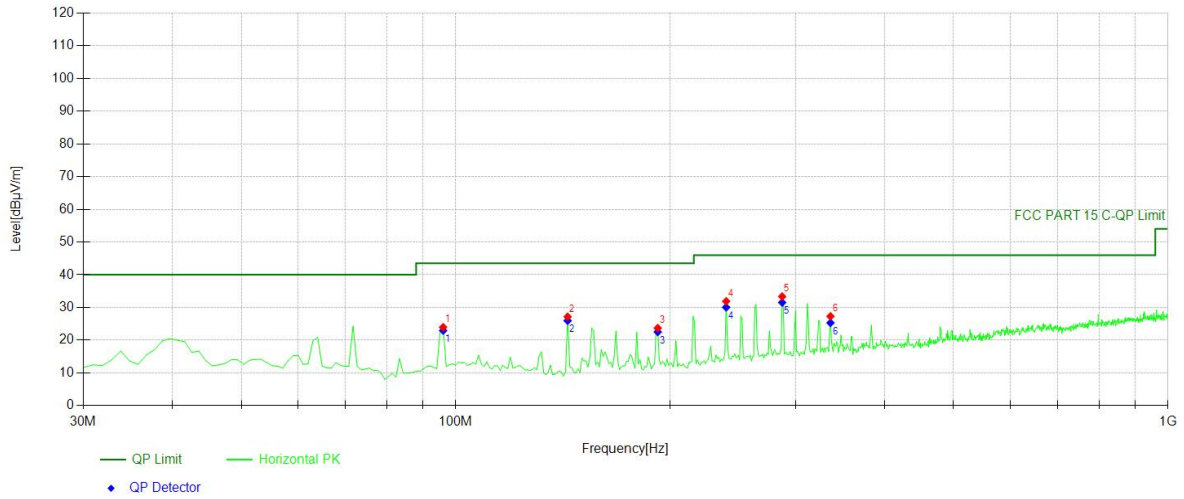


Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	71.7518	44.00	-20.23	23.77	PK	40.00	16.23	Horizontal
2	143.6030	47.88	-19.92	27.96	PK	43.50	15.54	Horizontal
3	215.4550	44.54	-17.11	27.43	PK	43.50	16.07	Horizontal
4	239.7290	46.60	-15.21	31.39	PK	46.00	14.61	Horizontal
5	287.3070	49.86	-14.17	35.69	PK	46.00	10.31	Horizontal
6	335.8550	39.84	-13.57	26.27	PK	46.00	19.73	Horizontal

2441

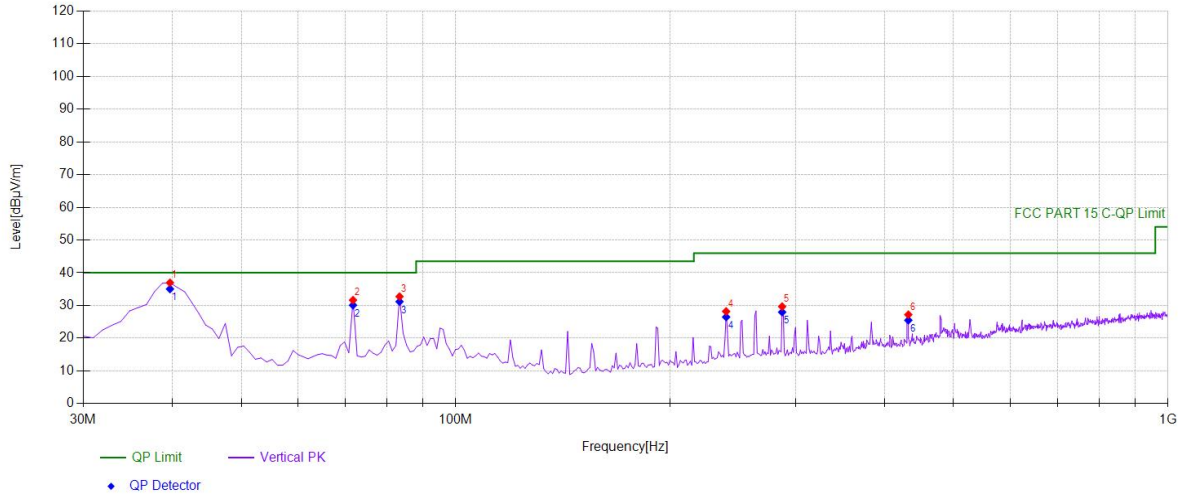


Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	39.7097	55.02	-17.93	37.09	PK	40.00	2.91	Vertical
2	71.7518	51.98	-20.23	31.75	PK	40.00	8.25	Vertical
3	83.4034	52.74	-20.70	32.04	PK	40.00	7.96	Vertical
4	239.7297	43.76	-15.21	28.55	PK	46.00	17.45	Vertical
5	287.3070	45.12	-14.17	30.95	PK	46.00	15.05	Vertical
6	431.982	38.61	-11.40	27.21	PK	46.00	18.79	Vertical

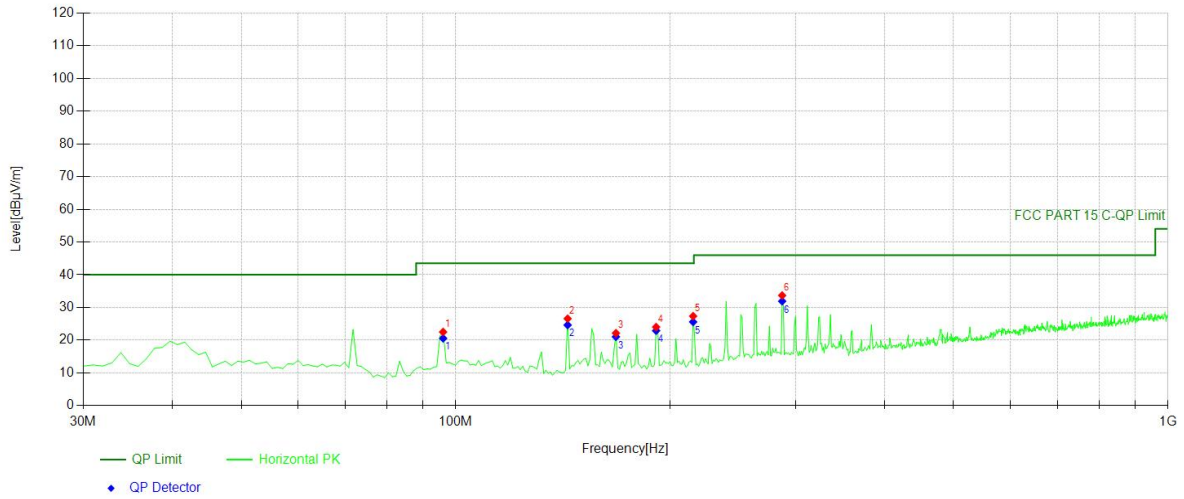


Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	96.026	41.69	-17.73	23.96	PK	43.50	19.54	Horizontal
2	143.603	47.09	-19.92	27.17	PK	43.50	16.33	Horizontal
3	192.152	41.33	-17.61	23.72	PK	43.50	19.78	Horizontal
4	239.729	47.10	-15.21	31.89	PK	46.00	14.11	Horizontal
5	287.307	47.53	-14.17	33.36	PK	46.00	12.64	Horizontal
6	335.855	40.88	-13.57	27.31	PK	46.00	18.69	Horizontal

2480



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	39.7097	54.89	-17.93	36.96	PK	40.00	3.04	Vertical
2	71.7518	51.88	-20.23	31.65	PK	40.00	8.35	Vertical
3	83.4034	53.43	-20.70	32.73	PK	40.00	7.27	Vertical
4	239.7297	43.40	-15.21	28.19	PK	46.00	17.81	Vertical
5	287.3070	43.85	-14.17	29.68	PK	46.00	16.32	Vertical
6	431.982	38.60	-11.40	27.20	PK	46.00	18.80	Vertical



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	96.026	40.25	-17.73	22.52	PK	43.50	20.98	Horizontal
2	143.603	46.51	-19.92	26.59	PK	43.50	16.91	Horizontal
3	167.877	41.27	-19.10	22.17	PK	43.50	21.33	Horizontal
4	191.181	41.71	-17.68	24.03	PK	43.50	19.47	Horizontal
5	215.455	44.47	-17.11	27.36	PK	43.50	16.14	Horizontal
6	287.307	47.85	-14.17	33.68	PK	46.00	12.32	Horizontal

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

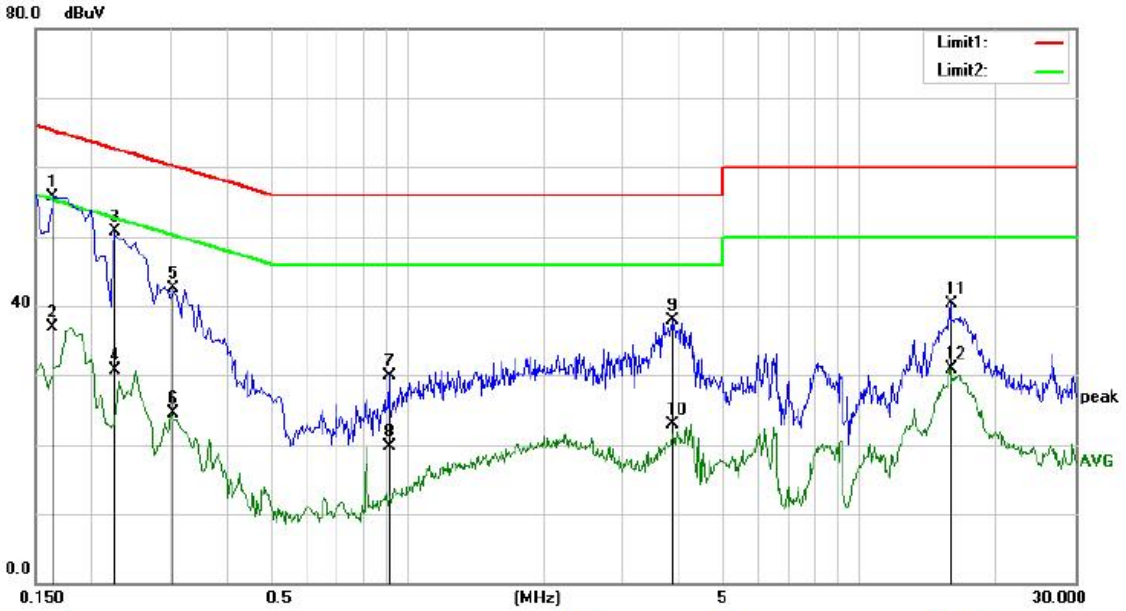
Test according to clause 7.3 conducted emission test setup

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

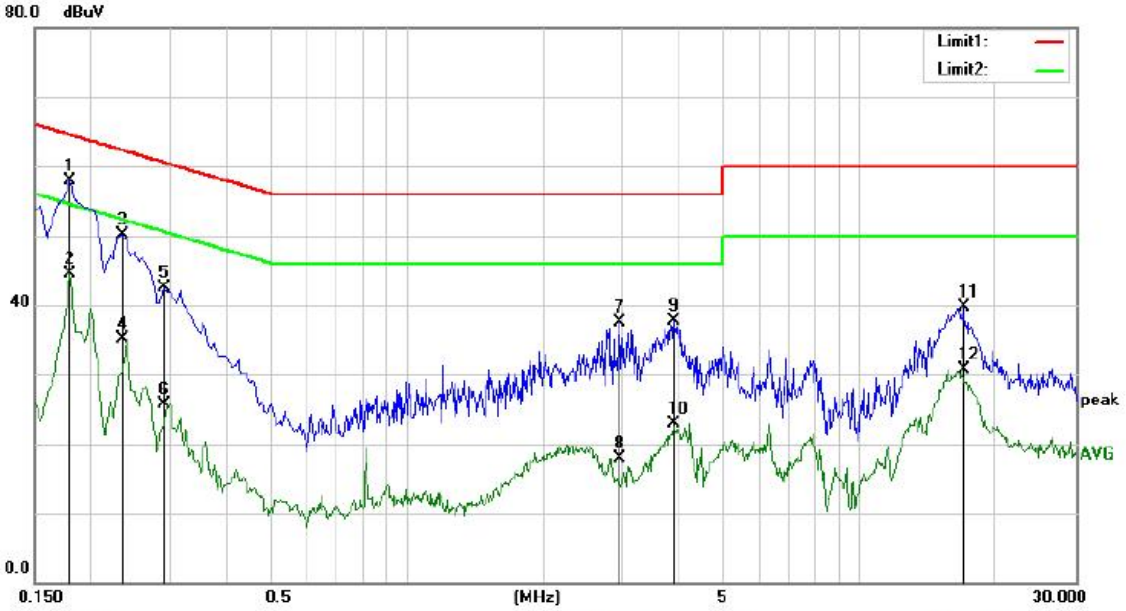
The 120V & 240V voltage have been tested, and the worst result recorded as below:



Site Conduction #1 Phase: *L1* Temperature: 20.8

Limit: (CE)FCC PART 15 class B_QP Power: DC 5V FROM PC Humidity: 61 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1650	45.98	9.69	55.67	65.21	-9.54	QP	
2		0.1650	27.31	9.69	37.00	55.21	-18.21	AVG	
3		0.2250	40.65	10.08	50.73	62.63	-11.90	QP	
4		0.2250	20.71	10.08	30.79	52.63	-21.84	AVG	
5		0.3050	32.41	10.02	42.43	60.11	-17.68	QP	
6		0.3050	14.55	10.02	24.57	50.11	-25.54	AVG	
7		0.9100	20.15	9.79	29.94	56.00	-26.06	QP	
8		0.9100	9.93	9.79	19.72	46.00	-26.28	AVG	
9		3.8600	28.16	9.81	37.97	56.00	-18.03	QP	
10		3.8600	13.06	9.81	22.87	46.00	-23.13	AVG	
11		15.9050	30.29	10.00	40.29	60.00	-19.71	QP	
12		15.9050	20.83	10.00	30.83	50.00	-19.17	AVG	



Site Conduction #1 Phase: N Temperature: 20.8

Limit: (CE)FCC PART 15 class B_QP Power: DC 5V FROM PC Humidity: 61 %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1800	48.12	9.86	57.98	64.49	-6.51	QP	
2		0.1800	34.60	9.86	44.46	54.49	-10.03	AVG	
3		0.2350	40.07	10.08	50.15	62.27	-12.12	QP	
4		0.2350	25.10	10.08	35.18	52.27	-17.09	AVG	
5		0.2900	32.39	10.04	42.43	60.52	-18.09	QP	
6		0.2900	15.65	10.04	25.69	50.52	-24.83	AVG	
7		2.9550	27.66	9.77	37.43	56.00	-18.57	QP	
8		2.9550	8.05	9.77	17.82	46.00	-28.18	AVG	
9		3.9000	27.85	9.82	37.67	56.00	-18.33	QP	
10		3.9000	13.00	9.82	22.82	46.00	-23.18	AVG	
11		16.9800	29.63	10.09	39.72	60.00	-20.28	QP	
12		16.9800	20.62	10.09	30.71	50.00	-19.29	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 intentionalradiators 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 PCB antenna. The antenna's gain is -0.58 dBi, and the antenna can't be replaced by the userwhich in accordance to section 15.203, please refer to the photos.

----------The end----------