FCC TEST REPORT

FCC ID: 2BM38-M5K2

Report No.	:	SSP24120094-1E
Prepared For	:	Dongguan Ziwuniu Intelligent Technology Co., Ltd
Product Name	:	Magnetic Mobile Power Bank
Model Name	:	M5K2
FCC Rule	:	FCC Part 15 Subpart C
Date of Issue	:	2024-12-25
Prepared By	:	Shenzhen CCUT Quality Technology Co., Ltd.

Shenzhen CCUT Quality Technology Co., Ltd.
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This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen CCUT Quality Technology Co., Ltd.

Test Report Basic Information

Applicant.....:	Dongguan Ziwuniu Intelligent Technology Co., Ltd
Address of Applicant.....:	Room 201, Building 2, No. 112, Bihu Avenue, Fenggang Town, Dongguan City, Guangdong Province, China
Manufacturer.....:	Dongguan Ziwuniu Intelligent Technology Co., Ltd
Address of Manufacturer.....:	Room 201, Building 2, No. 112, Bihu Avenue, Fenggang Town, DongguanCity, Guangdong Province, China
Product Name.....:	Magnetic Mobile Power Bank
Brand Name.....:	-
Main Model.....:	M5K2
Series Models.....:	i5 ultra, MO Ultra, Wi-P034, Wi-P046, ST-2, PW-580, DE-03, DE-04, MOU
Test Standard.....:	FCC Part 15 Subpart C ANSI C63.10-2013
Date of Test .....:	2024-12-12 to 2024-12-18
Test Result.....:	PASSED
Tested Engineer .....:	Colin Chen (Colin Chen)
Project Manager.....:	Lieber Ouyang (Lieber Ouyang)
Authorized Signatory.....:	Lahm Peng (Lahm Peng)

Shenzhen CCUT Quality Technology Co., Ltd. APPROVED

Note : This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by Shenzhen CCUT Quality Technology Co., Ltd.. All test data presented in this test report is only applicable to presented test sample.

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Revision History

Revision	Issue Date	Description	Revised By
V1.0	2024-12-25	Initial Release	Lahm Peng

1. General Information

1.1 Product Information

Product Name:	Magnetic Mobile Power Bank
Trade Name:	-
Main Model:	M5K2
Series Models:	i5 ultra, MO Ultra, Wi-P034, Wi-P046, ST-2, PW-580, DE-03, DE-04, MOU
Rated Voltage:	Type-C Input: 5V⎓3A, 9V⎓2A (18W Max) Type-C Output: 5V⎓3A, 9V⎓2.22A, 12V⎓1.67A (20W Max) Wireless charging: 3W, 5W, 7.5W, 10W, 15W
Power Adapter:	N/A
Battery:	DC 3.92V, 5000mAh, 19.6Wh
Hardware Version:	V1.0
Software Version:	V1.0
Note 1: The test data is gathered from a production sample, provided by the manufacturer. Note 2: The color of appearance and model name of series models listed are different from the main model, but the circuit and the electronic construction are the same, declared by the manufacturer.	

Wireless Specification	
Wireless Standard:	Wireless charging
Operating Frequency:	Wireless charging Output (Phone/Earphone):110.5kHz-205kHz, Wireless charging Output (Watch): 310kHz-340kHz
Modulation:	ASK
Antenna Gain:	0dBi
Type of Antenna:	Coil Antenna
Type of Device:	☒ Portable Device ☐ Mobile Device ☐ Modular Device

1.2 Test Setup Information

List of Test Modes		
Test Mode	Description	Remark
TM1	Wireless charging 15W	-
TM2	Wireless charging 10W	-
TM3	Wireless charging 7.5W	-
TM4	Wireless charging 5W	-
TM5	Wireless charging 3W	-
TM6	Wireless charging 5W+Chargiing	-
TM7	Wireless charging 3W+Chargiing	-
Note: All modes have been tested and only the worst mode Wireless charging 15W and Wireless charging 5W+Chargiing, Wireless charging 3W and Wireless charging 3W+Chargiing data is represented in the report.		

List and Details of Auxiliary Cable			
Description	Length (cm)	Shielded/Unshielded	With/Without Ferrite
USB Cable	100	Unshielded	Without Ferrite
-	-	-	-

List and Details of Auxiliary Equipment			
Description	Manufacturer	Model	Serial Number
Dummy load	YBZ	YBZ-001	N/A
Dummy load	YBZ	YBZ-002	N/A
Adapter	UGREEN	CD289	90324

1.3 Compliance Standards

Compliance Standards	
FCC Part 15 Subpart C	FEDERAL COMMUNICATIONS COMMISSION, RADIO FREQUENCY DEVICES, Intentional Radiators
All measurements contained in this report were conducted with all above standards	
According to standards for test methodology	
FCC Part 15 Subpart C	FEDERAL COMMUNICATIONS COMMISSION, RADIO FREQUENCY DEVICES, Intentional Radiators
ANSI C63.4-2014	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.
ANSI C63.10-2013	American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
Maintenance of compliance is the responsibility of the manufacturer or applicant. Any modification of the product, which result is lowering the emission, should be checked to ensure compliance has been maintained.	

1.4 Test Facilities

Laboratory Name:	**Shenzhen CCUT Quality Technology Co., Ltd.** 1F, Building 35, Changxing Technology Industrial Park, Yutang Street, Guangming District, Shenzhen, Guangdong, China
CNAS Laboratory No.:	L18863
A2LA Certificate No.:	6893.01
FCC Registration No:	583813
ISED Registration No.:	CN0164
All measurement facilities used to collect the measurement data are located at 1F, Building 35, Changxing Technology Industrial Park, Yutang Street, Guangming District, Shenzhen, Guangdong, China.	

1.5 List of Measurement Instruments

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Conducted Emissions					
AMN	ROHDE&SCHWARZ	ENV216	101097	2024-08-07	2025-08-06
EMI Test Receiver	ROHDE&SCHWARZ	ESPI	100242	2024-08-07	2025-08-06
Radiated Emissions					
EMI Test Receiver	ROHDE&SCHWARZ	ESPI	100154	2024-08-07	2025-08-06
Spectrum Analyzer	KEYSIGHT	N9020A	MY48030972	2024-08-07	2025-08-06
Spectrum Analyzer	ROHDE&SCHWARZ	FSV40-N	101692	2024-08-07	2025-08-06
Amplifier	SCHWARZBECK	BBV 9743B	00251	2024-08-07	2025-08-06
Amplifier	HUABO	YXL0518-2.5-45	--	2024-08-07	2025-08-06
Amplifier	COM-MW	DLAN-18G-4G-02	10229104	2024-08-07	2025-08-06
Loop Antenna	DAZE	ZN30900C	21104	2024-08-03	2025-08-02
Broadband Antenna	SCHWARZBECK	VULB 9168	01320	2024-08-03	2025-08-02
Horn Antenna	SCHWARZBECK	BBHA 9120D	02553	2024-08-03	2025-08-02
Horn Antenna	COM-MW	ZLB7-18-40G-950	12221225	2024-08-03	2025-08-02
Conducted RF Testing					
RF Test System	MWRFTest	MW100-RFCB	220418SQS-37	2024-08-07	2025-08-06
Spectrum Analyzer	KEYSIGHT	N9020A	ATO-90521	2024-08-07	2025-08-06

1.6 Measurement Uncertainty

Test Item	Conditions	Uncertainty
Conducted Emissions	9kHz ~ 30MHz	±1.64 dB
Radiated Emissions	9kHz ~ 30MHz	±2.88 dB
	30MHz ~ 1GHz	±3.32 dB
	1GHz ~ 18GHz	±3.50 dB
	18GHz ~ 40GHz	±3.66 dB
Occupied Bandwidth	9kHz ~ 26GHz	±4.0 %

2. Summary of Test Results

FCC Rule	Description of Test Item	Result
FCC Part 15.203	Antenna Requirement	Passed
FCC Part 15.207	Conducted Emissions	Passed
FCC Part 15.209	Radiated Emissions	Passed
FCC Part 15.215(c)	Occupied Bandwidth	Passed
Passed: The EUT complies with the essential requirements in the standard Failed: The EUT does not comply with the essential requirements in the standard N/A: Not applicable		

3. Antenna Requirement

3.1 Standard and Limit

According to FCC 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.

3.2 Test Result

This product has an Coil antenna, fulfill the requirement of this section.

4. Conducted Emissions

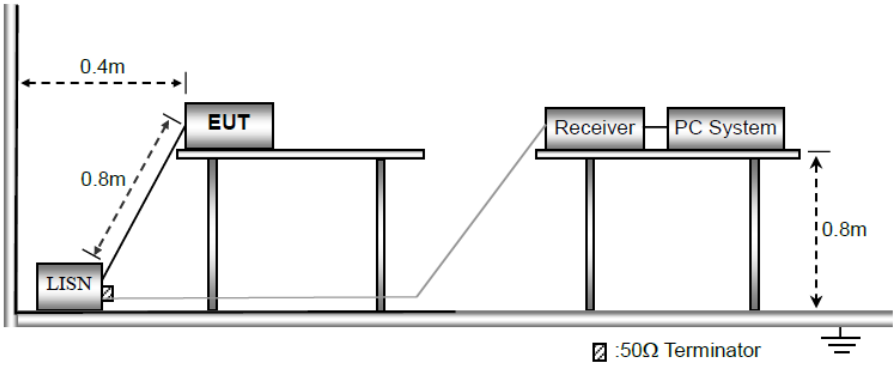
4.1 Standard and Limit

According to the rule FCC Part 15.207, Conducted emissions limit, the limit for a wireless device as below:

Frequency of Emission (MHz)	Conducted emissions (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50
Note 1: Decreases with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz Note 2: The lower limit applies at the band edges		

4.2 Test Procedure

Test is conducting under the description of ANSI C63.10 - 2013 section 6.2.



Test Setup Block Diagram

a) The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

b) The following is the setting of the receiver
Attenuation: 10dB
Start Frequency: 0.15MHz
Stop Frequency: 30MHz
IF Bandwidth: 9kHz

c) The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

d) Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
e) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

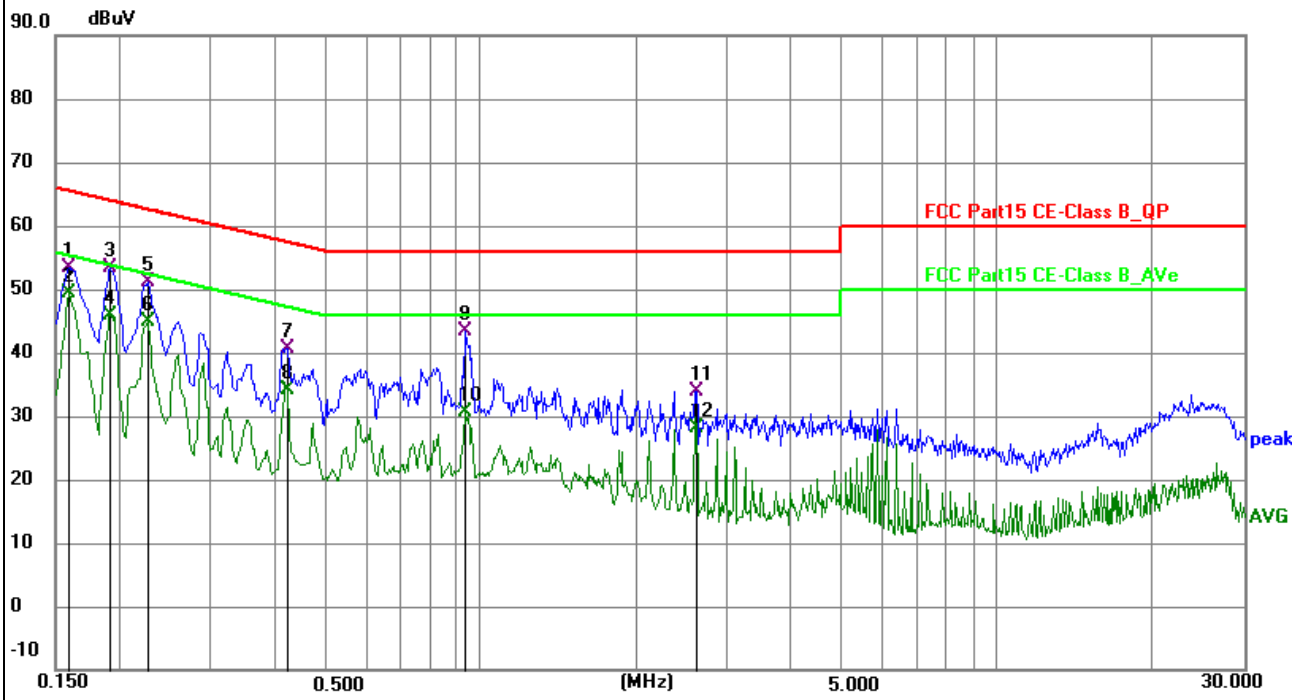
f) LISN is at least 80 cm from nearest part of EUT chassis.

g) For the actual test configuration, please refer to the related Item - photographs of the test setup.

4.3 Test Data and Results

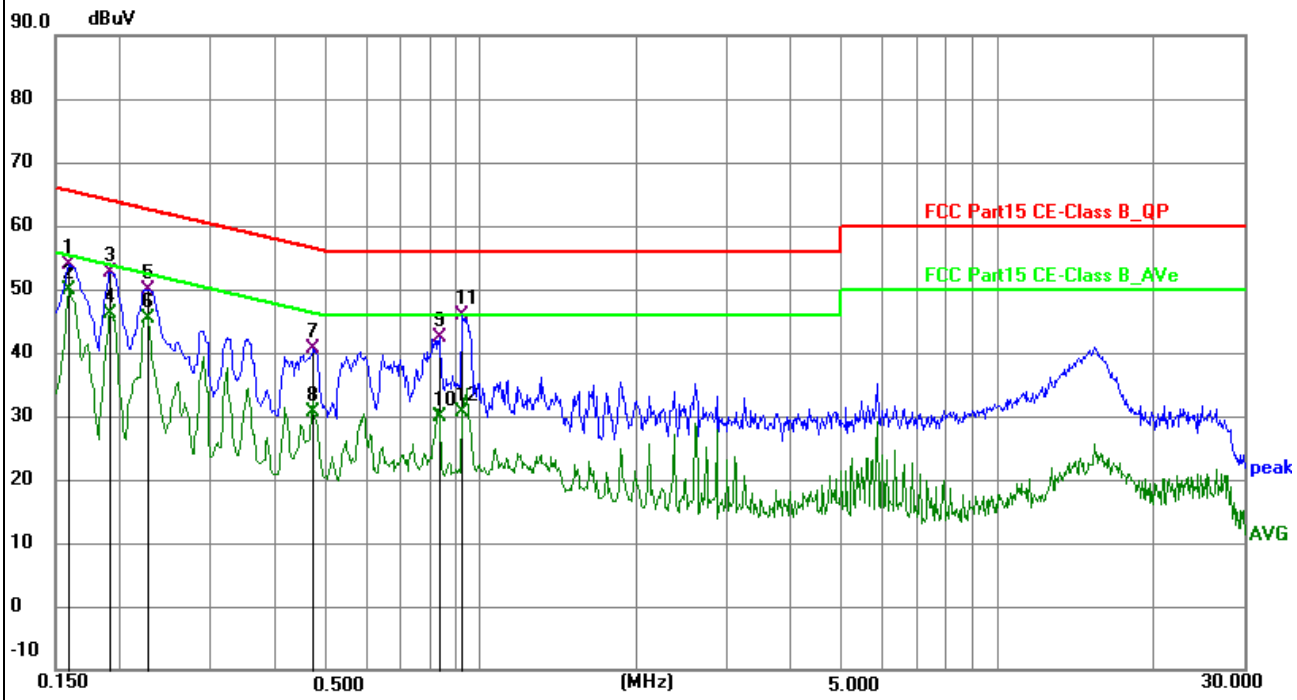
Based on all tested mode data, the EUT complied with the FCC Part 15.207 standard limit for a wireless device, and with the worst case TM6 and TM7 as below:
Remark: Level = Reading + Factor, Margin = Level - Limit

Test Plots and Data of Conducted Emissions	
Tested Mode:	TM6
Test Voltage:	AC 120V/60Hz
Test Power Line:	Neutral
Remark:	



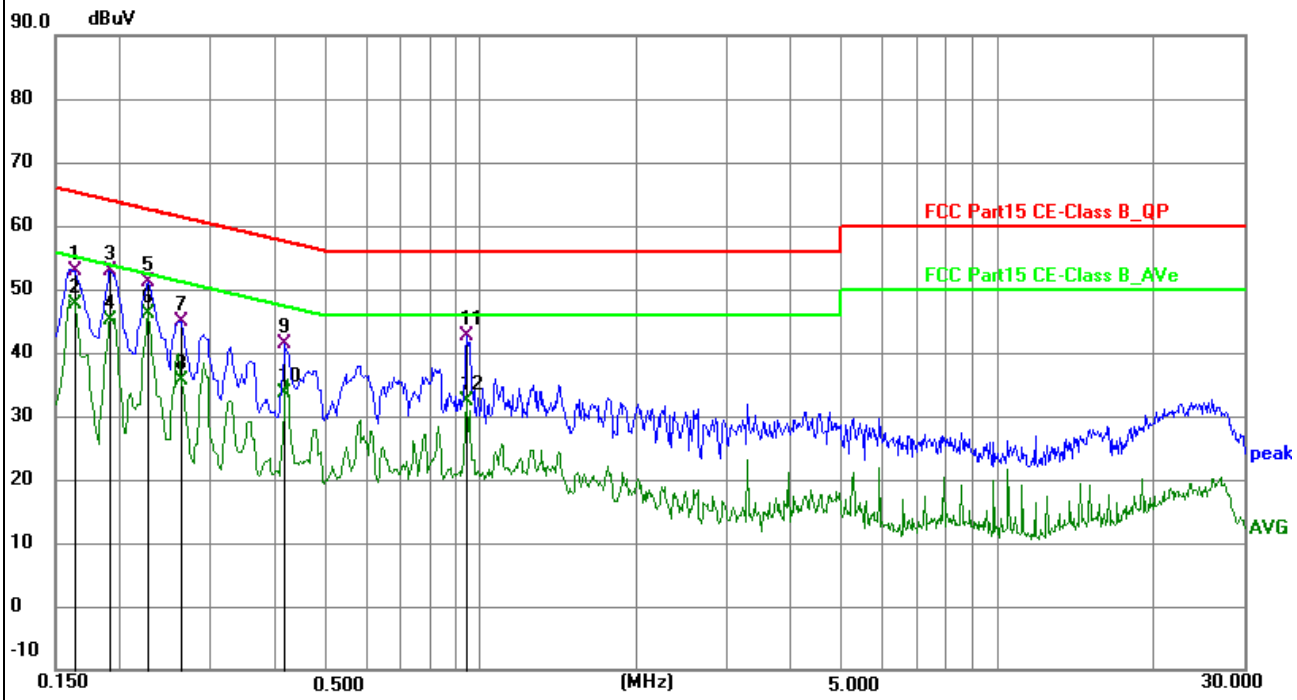
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1590	44.14	9.24	53.38	65.52	-12.14	QP	P	
2 *	0.1590	40.17	9.24	49.41	55.52	-6.11	AVG	P	
3	0.1905	44.13	9.21	53.34	64.01	-10.67	QP	P	
4	0.1905	36.76	9.21	45.97	54.01	-8.04	AVG	P	
5	0.2265	41.82	9.25	51.07	62.58	-11.51	QP	P	
6	0.2265	35.63	9.25	44.88	52.58	-7.70	AVG	P	
7	0.4200	31.28	9.38	40.66	57.45	-16.79	QP	P	
8	0.4200	24.66	9.38	34.04	47.45	-13.41	AVG	P	
9	0.9375	33.90	9.39	43.29	56.00	-12.71	QP	P	
10	0.9375	21.21	9.39	30.60	46.00	-15.40	AVG	P	
11	2.6115	24.42	9.48	33.90	56.00	-22.10	QP	P	
12	2.6115	18.76	9.48	28.24	46.00	-17.76	AVG	P	

Test Plots and Data of Conducted Emissions	
Tested Mode:	TM6
Test Voltage:	AC 120V/60Hz
Test Power Line:	Live
Remark:	



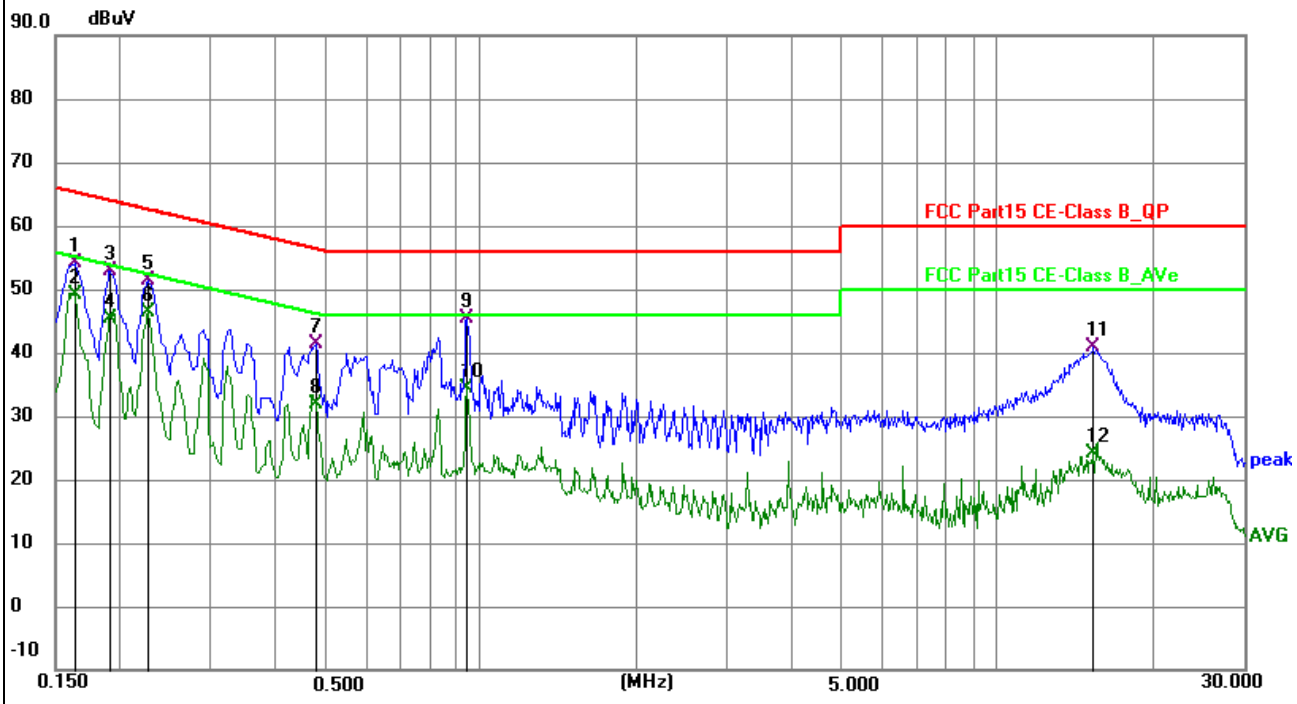
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1590	44.46	9.41	53.87	65.52	-11.65	QP	P	
2 *	0.1590	40.54	9.41	49.95	55.52	-5.57	AVG	P	
3	0.1905	43.31	9.39	52.70	64.01	-11.31	QP	P	
4	0.1905	36.78	9.39	46.17	54.01	-7.84	AVG	P	
5	0.2265	40.51	9.44	49.95	62.58	-12.63	QP	P	
6	0.2265	35.94	9.44	45.38	52.58	-7.20	AVG	P	
7	0.4740	31.17	9.58	40.75	56.44	-15.69	QP	P	
8	0.4740	21.16	9.58	30.74	46.44	-15.70	AVG	P	
9	0.8340	32.68	9.59	42.27	56.00	-13.73	QP	P	
10	0.8340	20.36	9.59	29.95	46.00	-16.05	AVG	P	
11	0.9195	36.42	9.57	45.99	56.00	-10.01	QP	P	
12	0.9195	21.04	9.57	30.61	46.00	-15.39	AVG	P	

Test Plots and Data of Conducted Emissions	
Tested Mode:	TM7
Test Voltage:	AC 120V/60Hz
Test Power Line:	Neutral
Remark:	



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1635	43.62	9.24	52.86	65.28	-12.42	QP	P	
2	0.1635	38.33	9.24	47.57	55.28	-7.71	AVG	P	
3	0.1905	43.77	9.21	52.98	64.01	-11.03	QP	P	
4	0.1905	35.83	9.21	45.04	54.01	-8.97	AVG	P	
5	0.2265	41.87	9.25	51.12	62.58	-11.46	QP	P	
6 *	0.2265	36.88	9.25	46.13	52.58	-6.45	AVG	P	
7	0.2625	35.45	9.33	44.78	61.35	-16.57	QP	P	
8	0.2625	26.39	9.33	35.72	51.35	-15.63	AVG	P	
9	0.4155	31.99	9.38	41.37	57.54	-16.17	QP	P	
10	0.4155	24.33	9.38	33.71	47.54	-13.83	AVG	P	
11	0.9420	33.25	9.40	42.65	56.00	-13.35	QP	P	
12	0.9420	22.98	9.40	32.38	46.00	-13.62	AVG	P	

Test Plots and Data of Conducted Emissions	
Tested Mode:	TM7
Test Voltage:	AC 120V/60Hz
Test Power Line:	Live
Remark:	



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1635	44.60	9.41	54.01	65.28	-11.27	QP	P	
2	0.1635	39.66	9.41	49.07	55.28	-6.21	AVG	P	
3	0.1905	43.50	9.39	52.89	64.01	-11.12	QP	P	
4	0.1905	36.11	9.39	45.50	54.01	-8.51	AVG	P	
5	0.2265	41.85	9.44	51.29	62.58	-11.29	QP	P	
6 *	0.2265	36.99	9.44	46.43	52.58	-6.15	AVG	P	
7	0.4785	31.91	9.58	41.49	56.37	-14.88	QP	P	
8	0.4785	22.32	9.58	31.90	46.37	-14.47	AVG	P	
9	0.9420	35.84	9.59	45.43	56.00	-10.57	QP	P	
10	0.9420	24.71	9.59	34.30	46.00	-11.70	AVG	P	
11	15.3825	31.05	9.75	40.80	60.00	-19.20	QP	P	
12	15.3825	14.34	9.75	24.09	50.00	-25.91	AVG	P	

5. Radiated Emissions

5.1 Standard and Limit

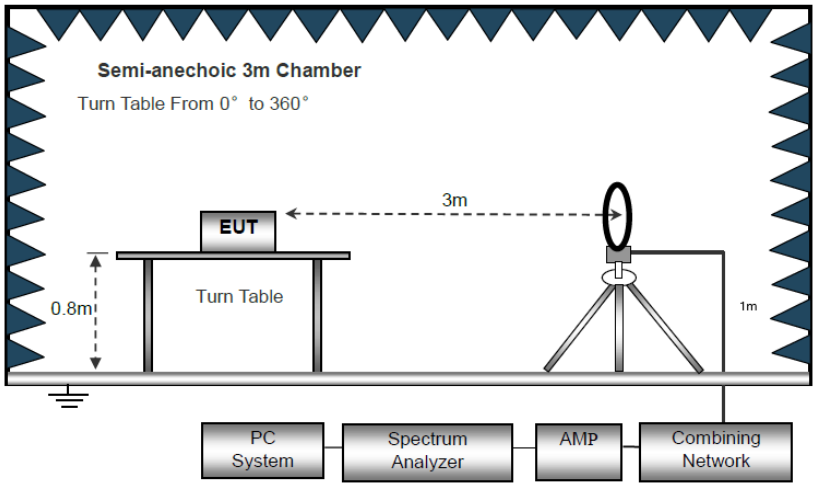
According to the rule FCC Part 15.209, Radiated emission limit for a wireless device as below:

Frequency of Emission (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(kHz)	300
0.490~1.705	24000/F(kHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3
Note: The more stringent limit applies at transition frequencies.		

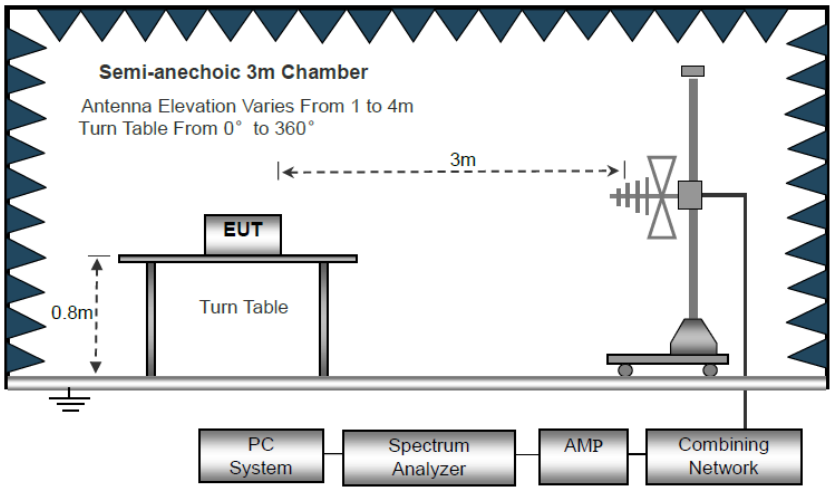
Note: Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

5.2 Test Procedure

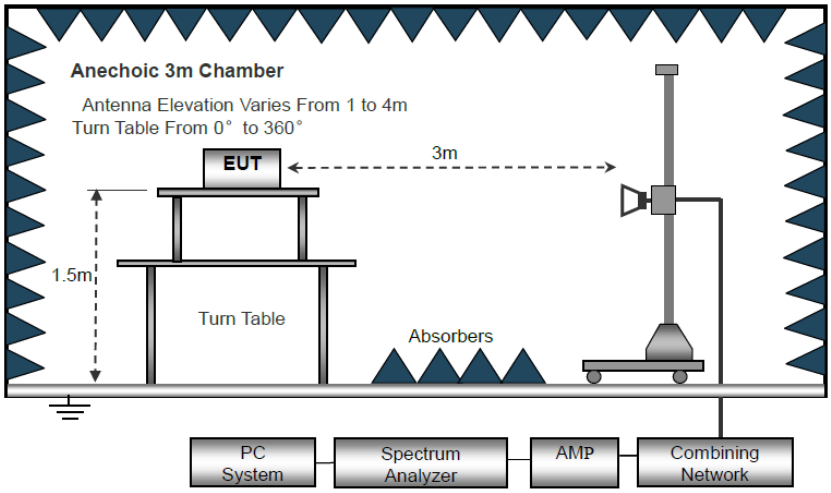
Test is conducting under the description of ANSI C63.10 - 2013 section 6.3 to 6.6.



Block Diagram of Radiated Emission Below 30MHz



Block Diagram of Radiated Emission From 30MHz to 1GHz



Block Diagram of Radiated Emission Above 1GHz

a) The EUT is placed on a turntable, which is 0.8m above ground plane for test frequency range below 1GHz, and 1.5m above ground plane for test frequency range above 1GHz.

b) EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.

c) Use the following spectrum analyzer settings:
Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1GHz, 100 kHz for f < 1 GHz, 10kHz for f < 30MHz
VBW ≥ RBW, Sweep = auto
Detector function = peak
Trace = max hold

d) Follow the guidelines in ANSI C63.4-2014 with respect to maximizing the emission by rotating the EUT, adjusting the measurement antenna height and polarization, etc. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, submit this data. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

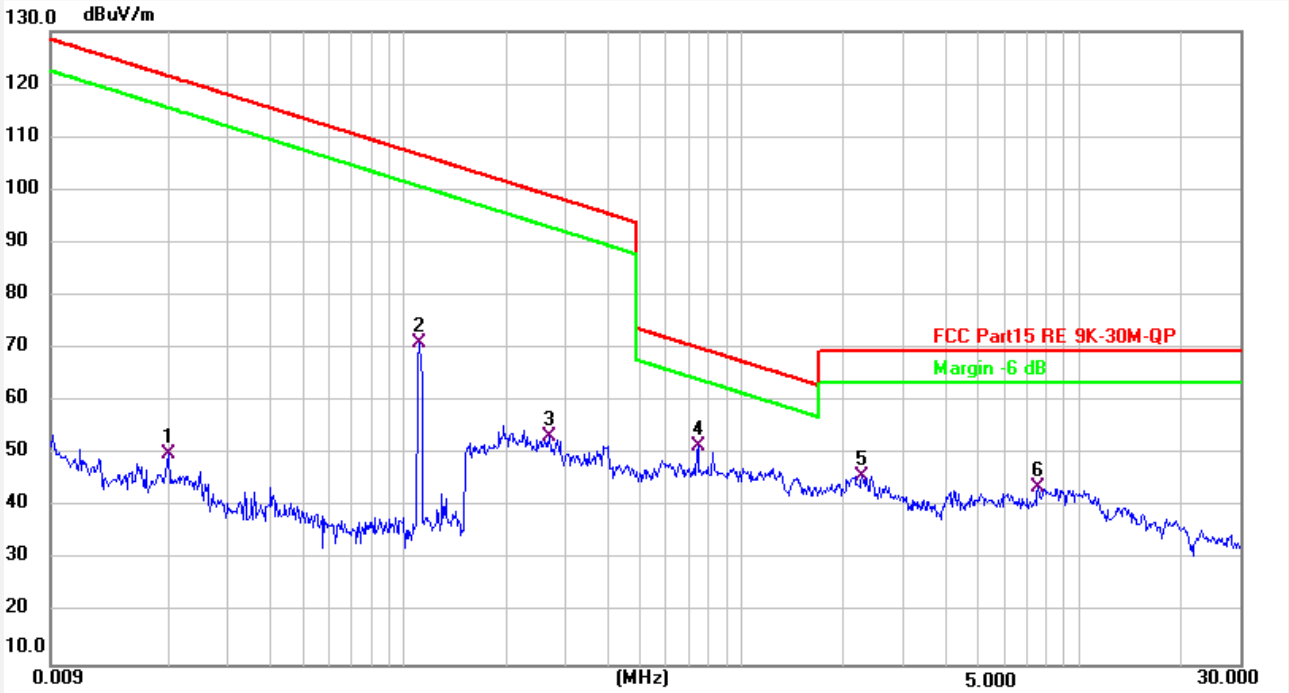
e) The peak level, once corrected, must comply with the limit specified in Section 15.209. Set the RBW = 1MHz, VBW = 10Hz, Detector = PK for AV value, while maintaining all of the other instrument settings.

f) For the actual test configuration, please refer to the related item - EUT test photos.

5.3 Test Data and Results

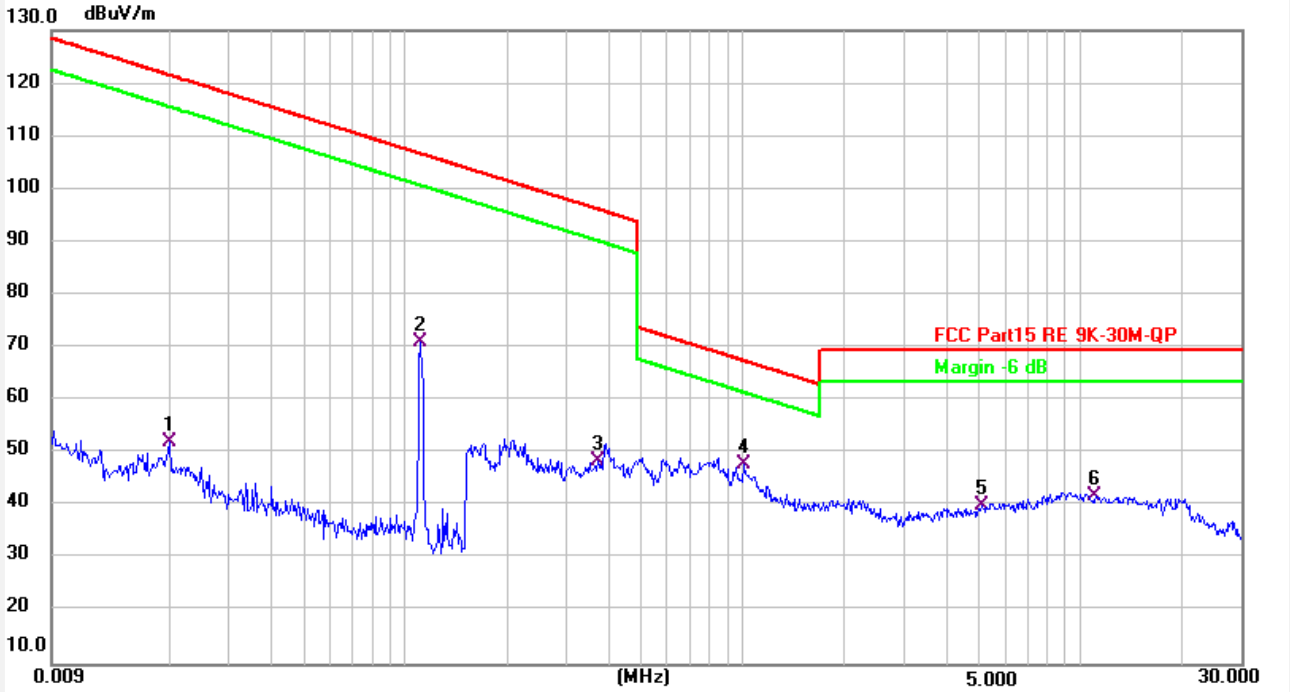
Based on all mode tested data, the EUT complied with the FCC Part 15.209 standard limit for a wireless device, and with the worst case TM1 and TM6 and TM5 and TM7 as below:

Test Data of Radiated Emissions from9kHz to 30MHz			
Test Mode:	TM6	Phase:	Coplaner
Test Voltage:	Wireless charging 5W+Chargiing		
Remark:			



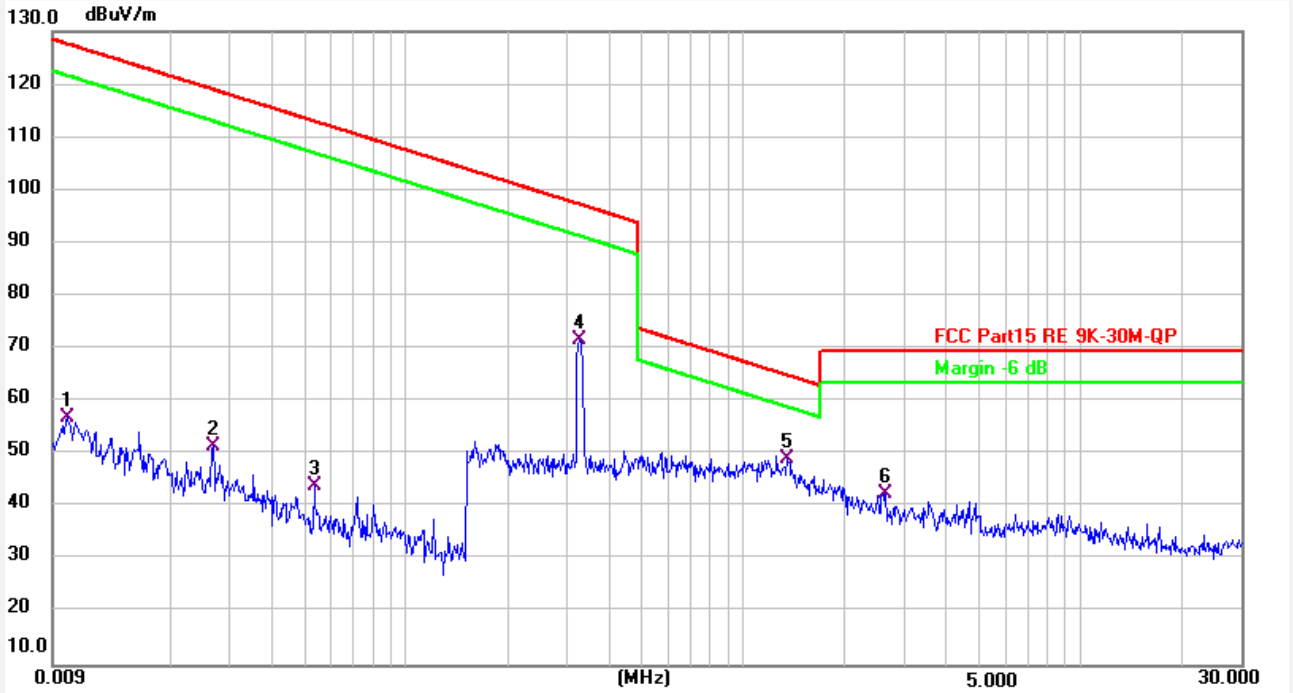
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	0.0200	19.85	30.33	50.18	121.57	-71.39	QP	100	3	P	
2	0.1111	46.00	25.04	71.04	106.68	-35.64	QP	100	157	P	
3	0.2686	28.52	24.79	53.31	99.02	-45.71	QP	100	260	P	
4 *	0.7390	26.94	24.52	51.46	70.23	-18.77	QP	100	268	P	
5	2.2604	21.15	24.80	45.95	69.50	-23.55	QP	100	254	P	
6	7.5255	19.24	24.58	43.82	69.50	-25.68	QP	100	321	P	

Test Mode:	TM6	Phase:	Coaxial
Test Voltage:	Wireless charging 5W+Chargiing		
Remark:			



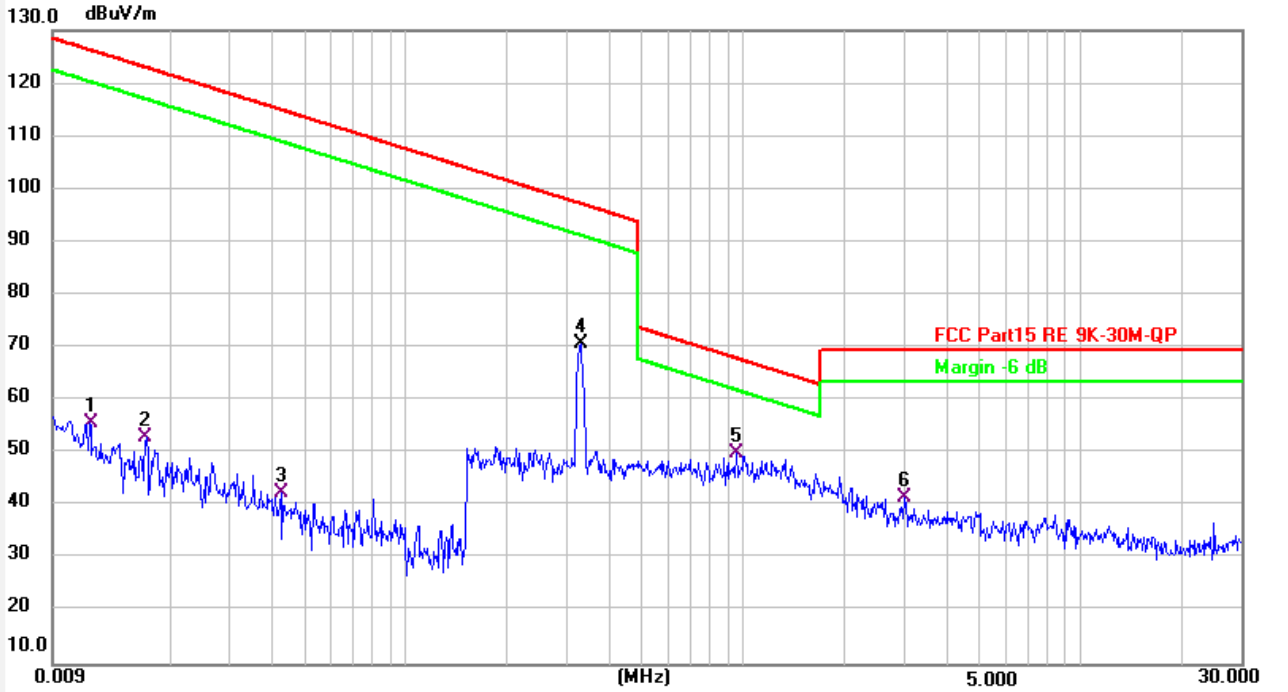
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	0.0200	21.85	30.33	52.18	121.57	-69.39	QP	100	52	P	
2	0.1111	46.00	25.04	71.04	106.68	-35.64	QP	100	22	P	
3	0.3710	23.80	24.75	48.55	96.22	-47.67	QP	100	214	P	
4 *	1.0050	23.19	24.69	47.88	67.56	-19.68	QP	100	264	P	
5	5.1116	15.62	24.52	40.14	69.50	-29.36	QP	100	321	P	
6	11.0791	17.36	24.66	42.02	69.50	-27.48	QP	100	205	P	

Test Data of Radiated Emissions from9kHz to 30MHz			
Test Mode:	TM7	Phase:	Coplaner
Test Voltage:	Wireless charging 3W+Chargiing		
Remark:			



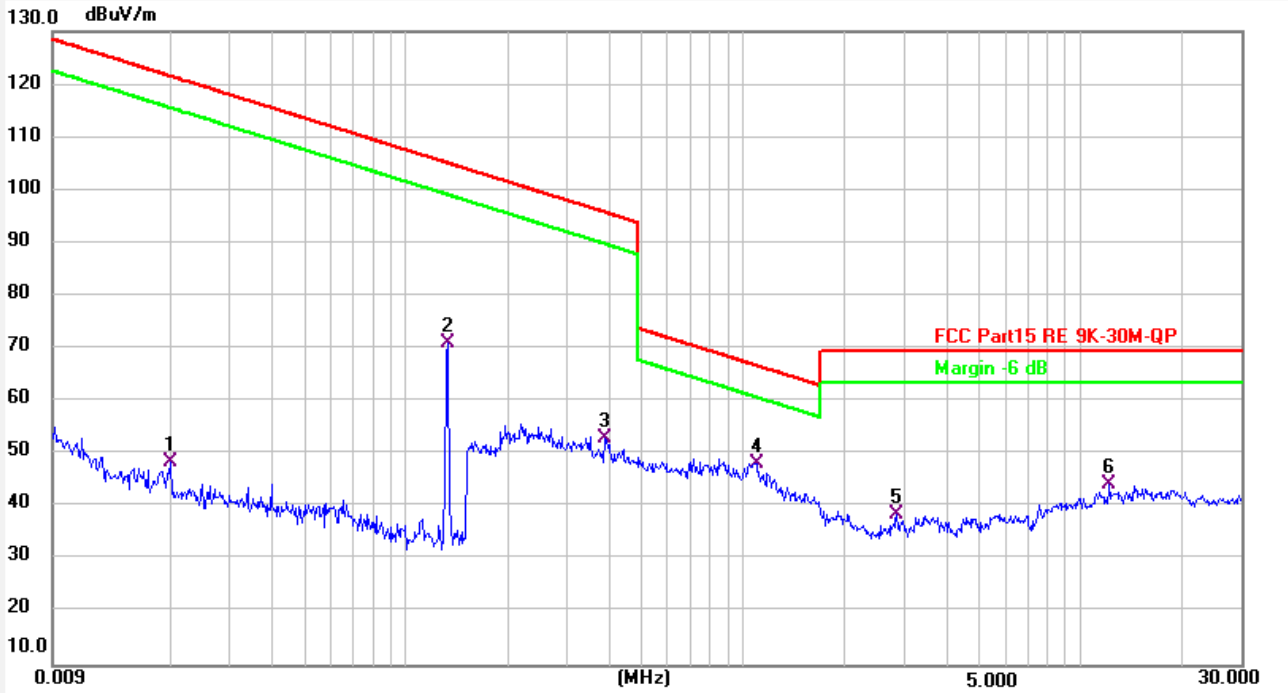
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	0.0100	21.07	35.94	57.01	127.59	-70.58	QP	100	0	P	
2	0.0267	17.27	34.21	51.48	119.06	-67.58	QP	100	0	P	
3	0.0534	16.24	27.85	44.09	113.04	-68.95	QP	100	0	P	
4	0.3267	45.76	25.81	71.57	97.32	-25.75	QP	100	0	P	
5 *	1.3521	23.32	25.98	49.30	64.98	-15.68	QP	100	0	P	
6	2.6360	16.41	26.21	42.62	69.50	-26.88	QP	100	0	P	

Test Mode:	TM7	Phase:	Coaxial
Test Voltage:	Wireless charging 3W+Chargiing		
Remark:			



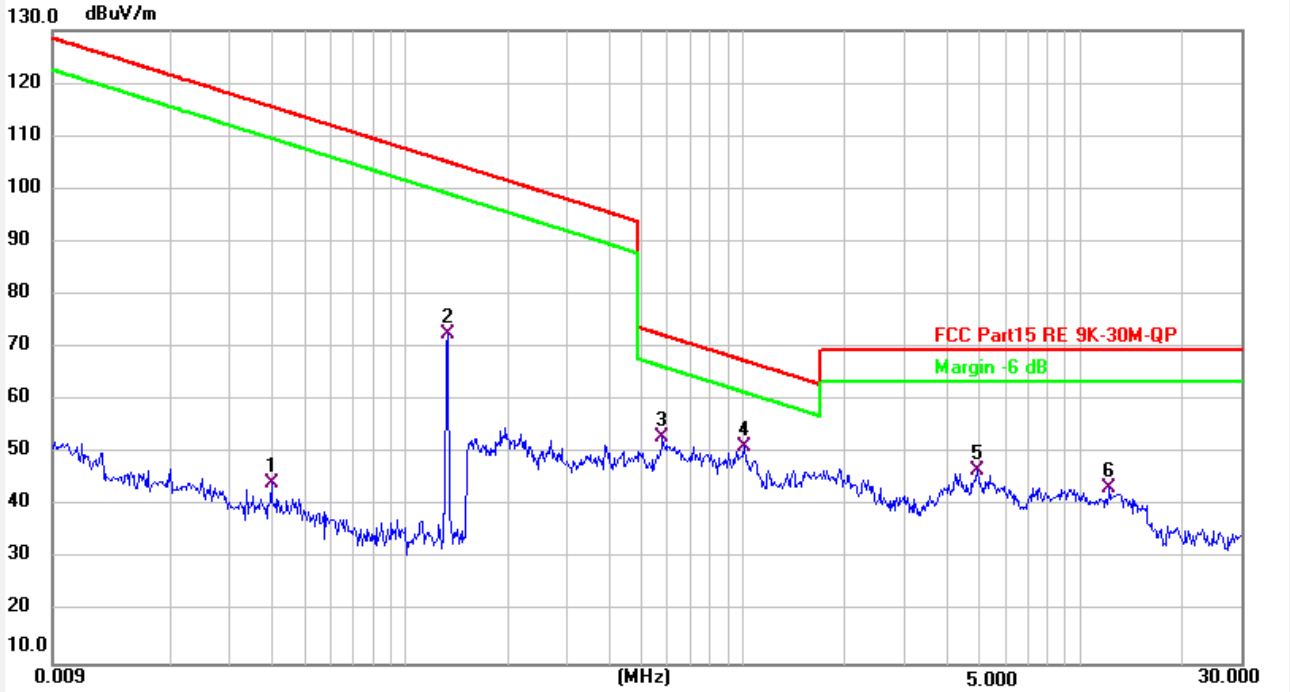
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	0.0115	19.88	35.79	55.67	126.37	-70.70	QP	100	0	P	
2	0.0170	17.87	35.22	53.09	122.98	-69.89	QP	100	0	P	
3	0.0424	12.37	30.32	42.69	115.04	-72.35	QP	100	0	P	
4	0.3285	45.05	25.81	70.86	97.27	-26.41	QP	100	0	P	
5 *	0.9480	24.11	25.91	50.02	68.06	-18.04	QP	100	0	P	
6	2.9934	15.42	26.26	41.68	69.50	-27.82	QP	100	0	P	

Test Data of Radiated Emissions from9kHz to 30MHz			
Test Mode:	TM1	Phase:	Coplaner
Test Voltage:	Wireless charging 15W		
Remark:			



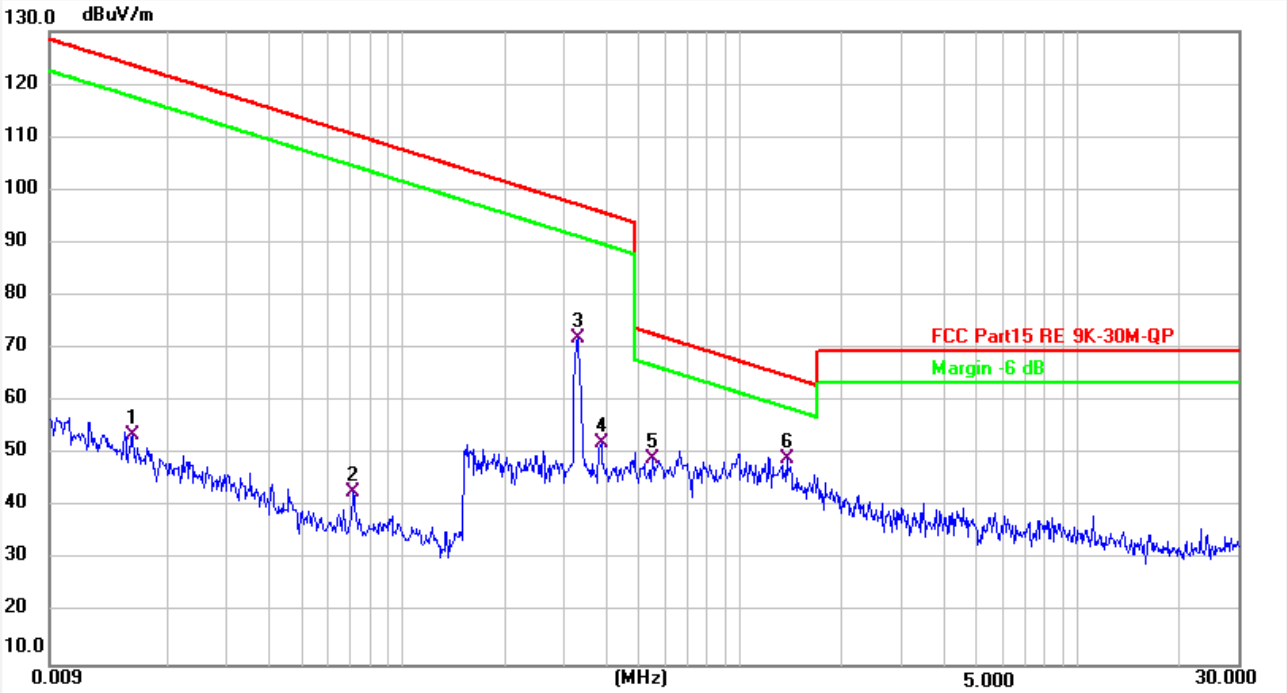
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	0.0200	18.35	30.33	48.68	121.57	-72.89	QP	100	208	P	
2	0.1320	46.12	24.89	71.01	105.19	-34.18	QP	100	354	P	
3	0.3850	28.29	24.75	53.04	95.89	-42.85	QP	100	200	P	
4 *	1.0881	23.45	24.69	48.14	66.86	-18.72	QP	100	214	P	
5	2.8540	13.89	24.81	38.70	69.50	-30.80	QP	100	231	P	
6	12.1240	19.81	24.67	44.48	69.50	-25.02	QP	100	33	P	

Test Mode:	TM1	Phase:	Coaxial
Test Voltage:	Wireless charging 15W		
Remark:			



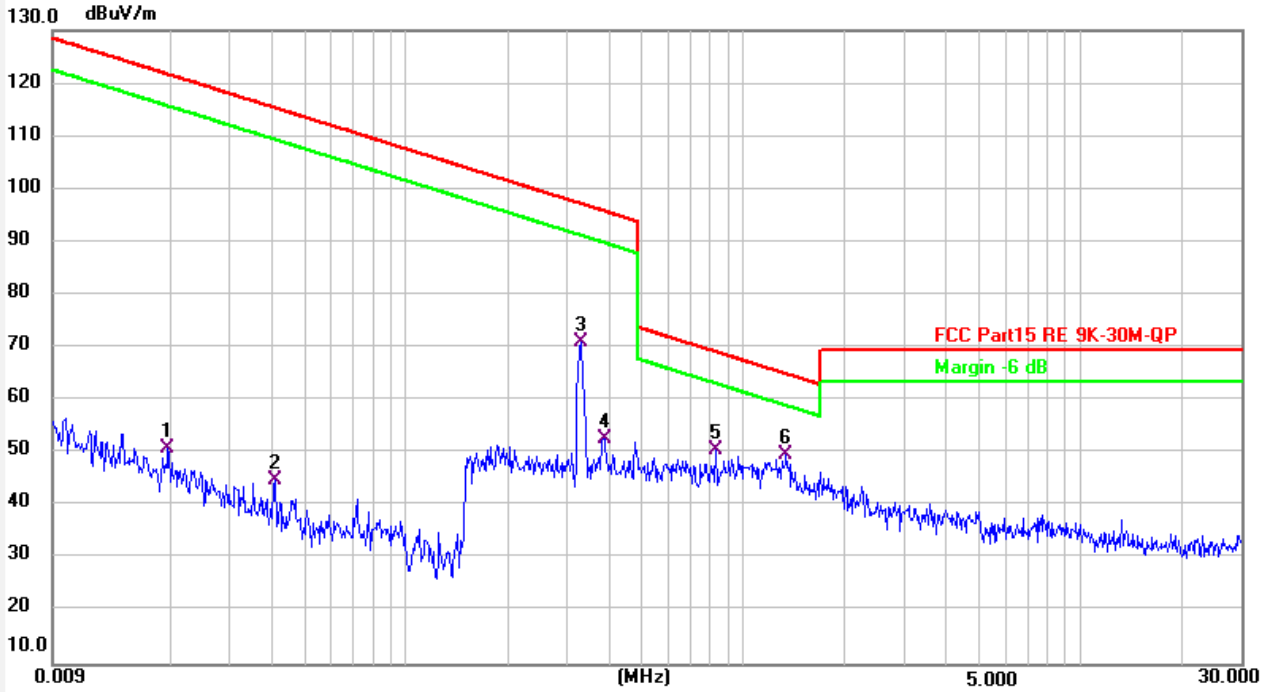
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	0.0398	15.95	28.29	44.24	115.59	-71.35	QP	100	266	P	
2	0.1320	47.62	24.89	72.51	105.19	-32.68	QP	100	124	P	
3	0.5760	28.48	24.56	53.04	72.39	-19.35	QP	100	48	P	
4 *	1.0050	26.69	24.69	51.38	67.56	-16.18	QP	100	44	P	
5	4.9518	22.27	24.53	46.80	69.50	-22.70	QP	100	315	P	
6	12.1240	18.81	24.67	43.48	69.50	-26.02	QP	100	217	P	

Test Data of Radiated Emissions from9kHz to 30MHz			
Test Mode:	TM5	Phase:	Coplaner
Test Voltage:	Wireless charging 3W		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	0.0158	18.29	35.35	53.64	123.61	-69.97	QP	100	0	P	
2	0.0711	16.69	26.23	42.92	110.56	-67.64	QP	100	0	P	
3	0.3285	46.12	25.81	71.93	97.27	-25.34	QP	100	0	P	
4	0.3851	26.41	25.76	52.17	95.89	-43.72	QP	100	0	P	
5	0.5493	23.45	25.65	49.10	72.81	-23.71	QP	100	0	P	
6 *	1.3736	23.08	25.98	49.06	64.84	-15.78	QP	100	0	P	

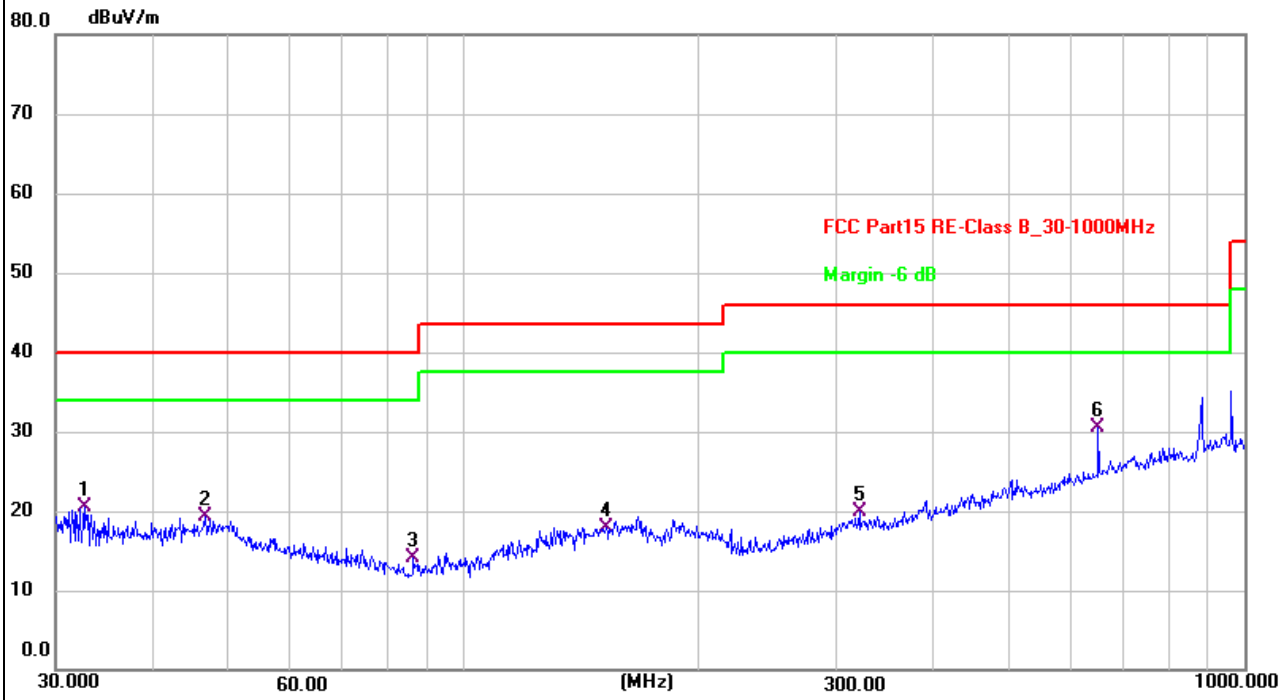
Test Mode:	TM5	Phase:	Coaxial
Test Voltage:	Wireless charging 3W		
Remark:			



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	0.0197	15.90	34.95	50.85	121.70	-70.85	QP	100	0	P	
2	0.0407	14.23	30.80	45.03	115.40	-70.37	QP	100	0	P	
3	0.3285	45.09	25.81	70.90	97.27	-26.37	QP	100	0	P	
4	0.3851	27.09	25.76	52.85	95.89	-43.04	QP	100	0	P	
5	0.8260	24.82	25.84	50.66	69.26	-18.60	QP	100	0	P	
6 *	1.3378	23.74	25.98	49.72	65.07	-15.35	QP	100	0	P	

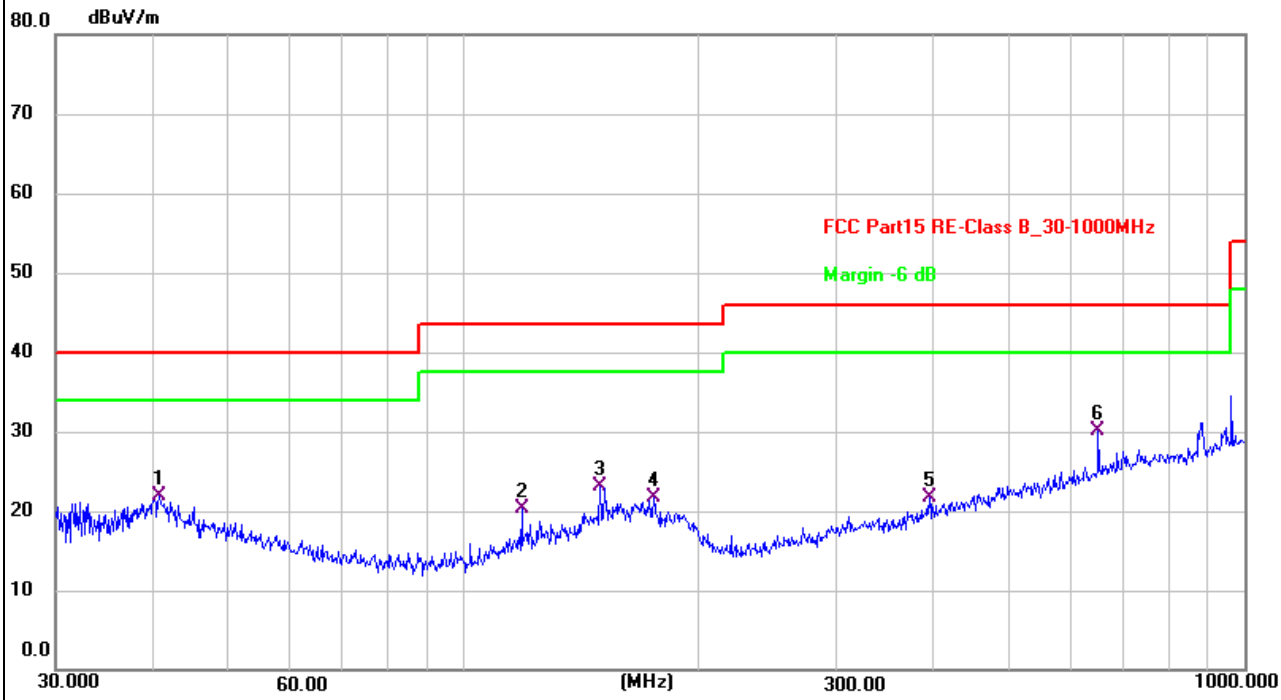
Note:
Pre-scan in the all of mode, the worst case in of was recorded.
Limit dBuV/m @3m = Limit dBuV/m @300m+ 80
Limit dBuV/m @3m = Limit dBuV/m @30m + 40
Margin = Reading - Limit.

Test Plots and Data of Radiated Emissions from30MHz to 1GHz	
Tested Mode:	TM1
Test Antenna Polarization:	Horizontal
Remark:	



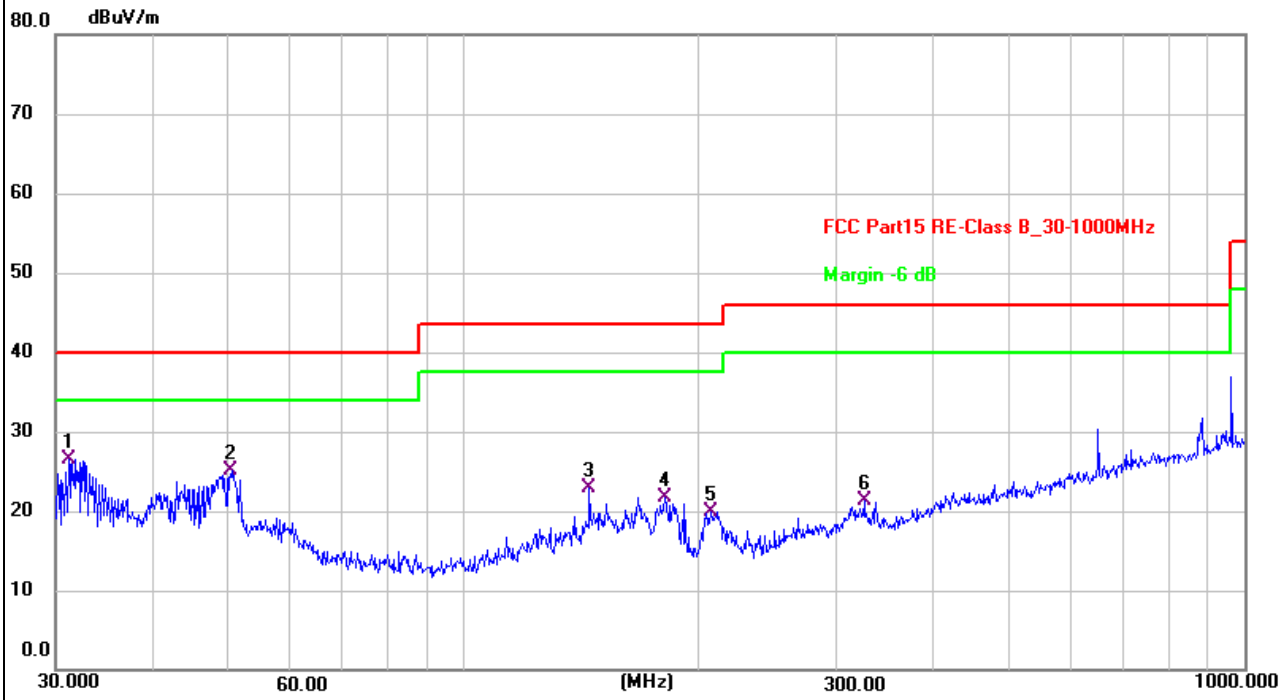
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	32.6340	29.54	-9.00	20.54	40.00	-19.46	QP	100	359	P	
2	46.6664	27.63	-8.30	19.33	40.00	-20.67	QP	100	360	P	
3	86.2001	26.99	-12.98	14.01	40.00	-25.99	QP	100	319	P	
4	152.1297	25.75	-7.75	18.00	43.50	-25.50	QP	100	73	P	
5	321.0608	27.05	-7.22	19.83	46.00	-26.17	QP	100	114	P	
6 *	649.6597	31.31	-0.85	30.46	46.00	-15.54	QP	100	21	P	

Test Plots and Data of Radiated Emissions from30MHz to 1GHz	
Tested Mode:	TM1
Test Antenna Polarization:	Vertical
Remark:	



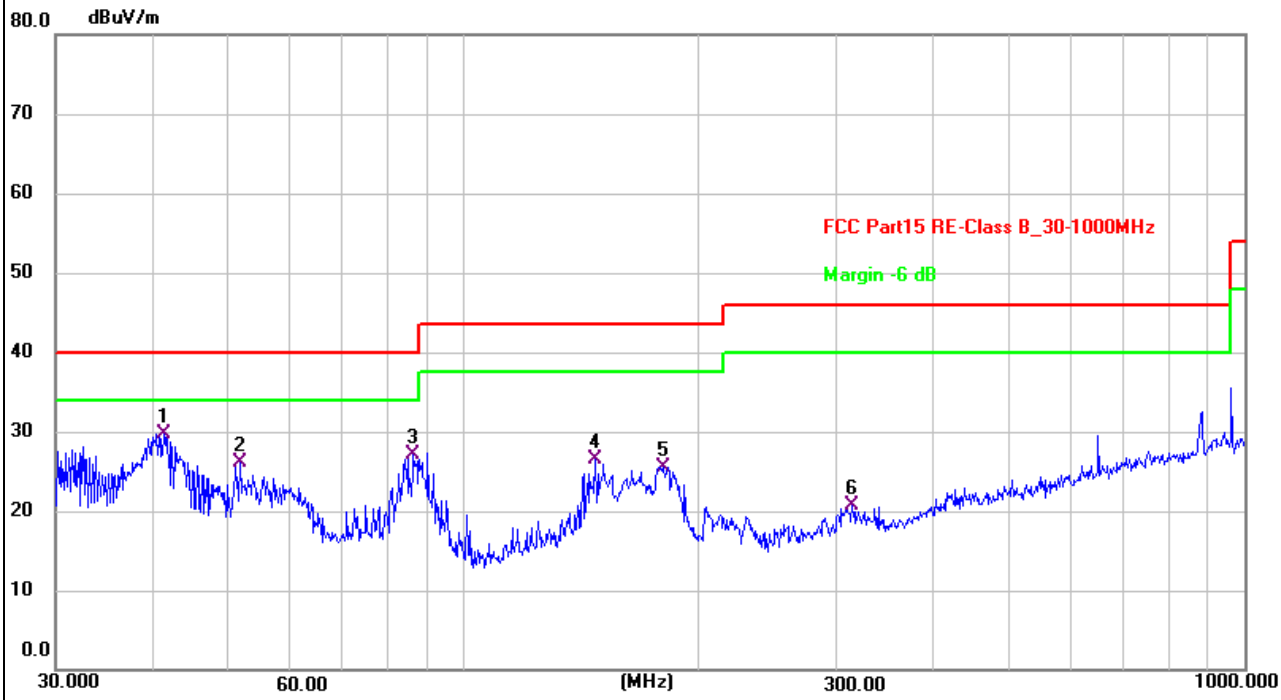
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	40.7016	30.22	-8.30	21.92	40.00	-18.08	QP	100	348	P	
2	118.6014	30.19	-9.91	20.28	43.50	-23.22	QP	100	329	P	
3	149.4857	30.89	-7.75	23.14	43.50	-20.36	QP	100	348	P	
4	175.0368	31.32	-9.67	21.65	43.50	-21.85	QP	100	102	P	
5	394.8545	27.47	-5.74	21.73	46.00	-24.27	QP	100	143	P	
6 *	649.6597	30.90	-0.85	30.05	46.00	-15.95	QP	100	267	P	

Test Plots and Data of Radiated Emissions from30MHz to 1GHz	
Tested Mode:	TM6
Test Antenna Polarization:	Horizontal
Remark:	



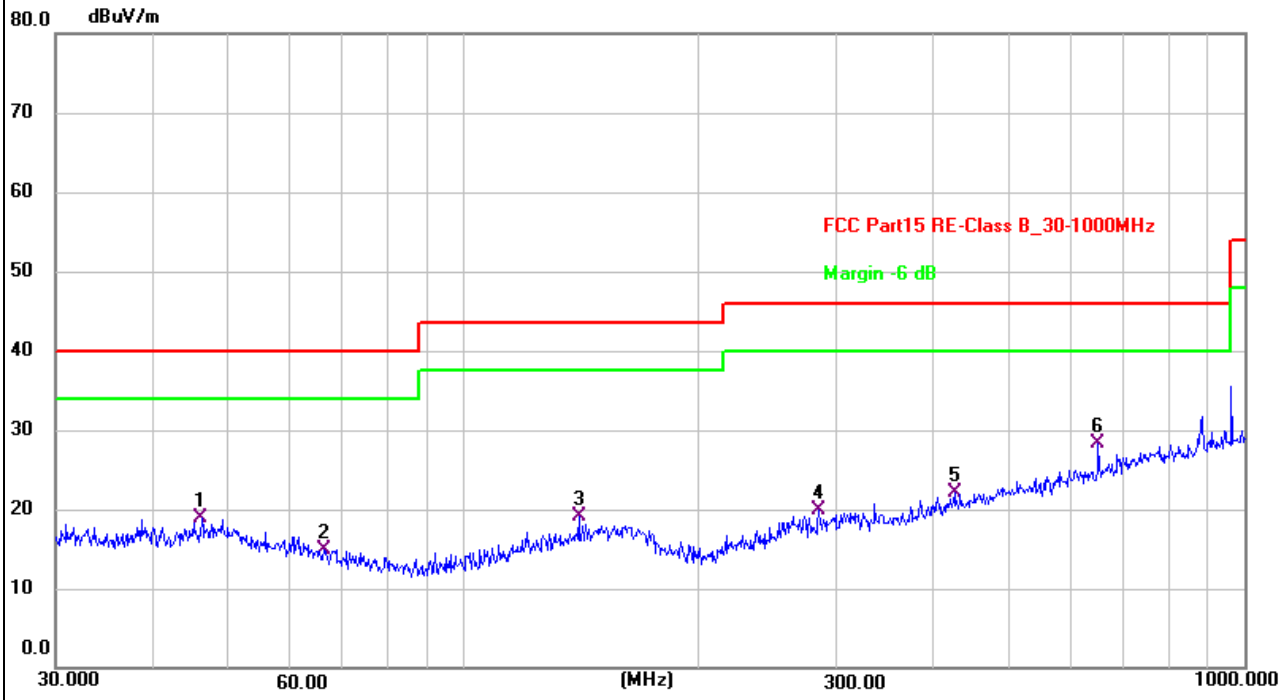
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 *	31.1798	35.48	-8.94	26.54	40.00	-13.46	QP	100	93	P	
2	50.4089	33.63	-8.46	25.17	40.00	-14.83	QP	100	143	P	
3	144.8418	30.85	-7.99	22.86	43.50	-20.64	QP	100	354	P	
4	180.6488	32.31	-10.59	21.72	43.50	-21.78	QP	100	11	P	
5	207.1226	31.90	-11.97	19.93	43.50	-23.57	QP	100	52	P	
6	325.5958	28.43	-7.09	21.34	46.00	-24.66	QP	100	93	P	

Test Plots and Data of Radiated Emissions from30MHz to 1GHz	
Tested Mode:	TM6
Test Antenna Polarization:	Vertical
Remark:	



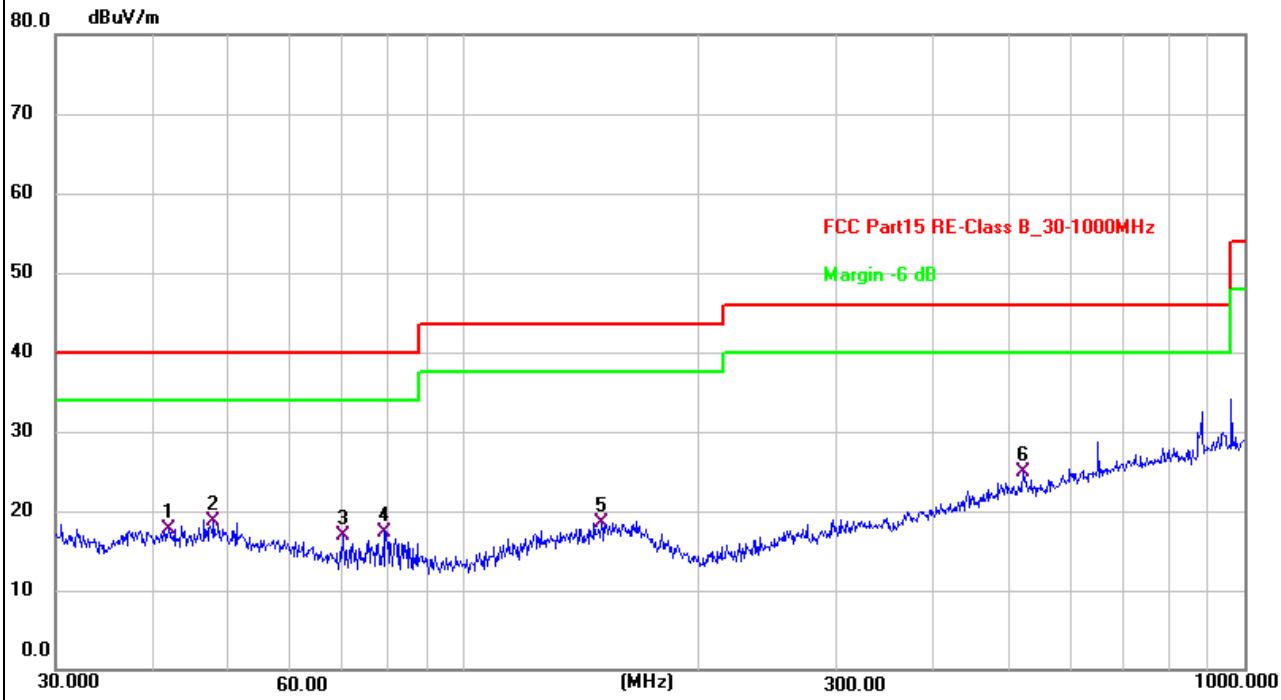
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 *	41.2765	38.04	-8.30	29.74	40.00	-10.26	QP	100	92	P	
2	51.6616	34.78	-8.65	26.13	40.00	-13.87	QP	100	81	P	
3	86.2001	40.09	-12.98	27.11	40.00	-12.89	QP	100	165	P	
4	147.4036	34.29	-7.86	26.43	43.50	-17.07	QP	100	174	P	
5	180.0165	36.10	-10.55	25.55	43.50	-17.95	QP	100	5	P	
6	314.3765	28.23	-7.48	20.75	46.00	-25.25	QP	100	329	P	

Test Plots and Data of Radiated Emissions from30MHz to 1GHz	
Tested Mode:	TM5
Test Antenna Polarization:	Horizontal
Remark:	



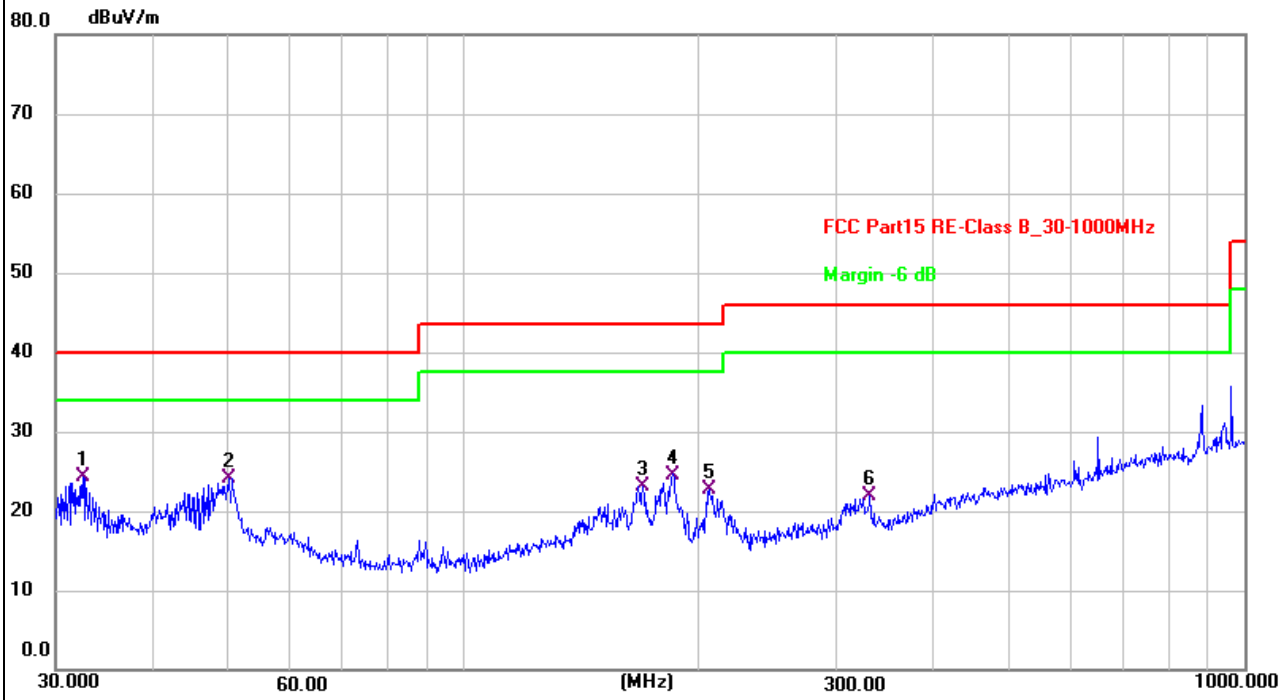
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	46.1779	27.16	-8.28	18.88	40.00	-21.12	QP	100	354	P	
2	66.2662	25.98	-11.05	14.93	40.00	-25.07	QP	100	354	P	
3	140.3421	27.22	-8.21	19.01	43.50	-24.49	QP	100	11	P	
4	284.9767	28.70	-8.81	19.89	46.00	-26.11	QP	100	318	P	
5	425.0280	27.08	-5.06	22.02	46.00	-23.98	QP	100	318	P	
6 *	649.6597	29.10	-0.85	28.25	46.00	-17.75	QP	100	309	P	

Test Plots and Data of Radiated Emissions from30MHz to 1GHz	
Tested Mode:	TM5
Test Antenna Polarization:	Vertical
Remark:	



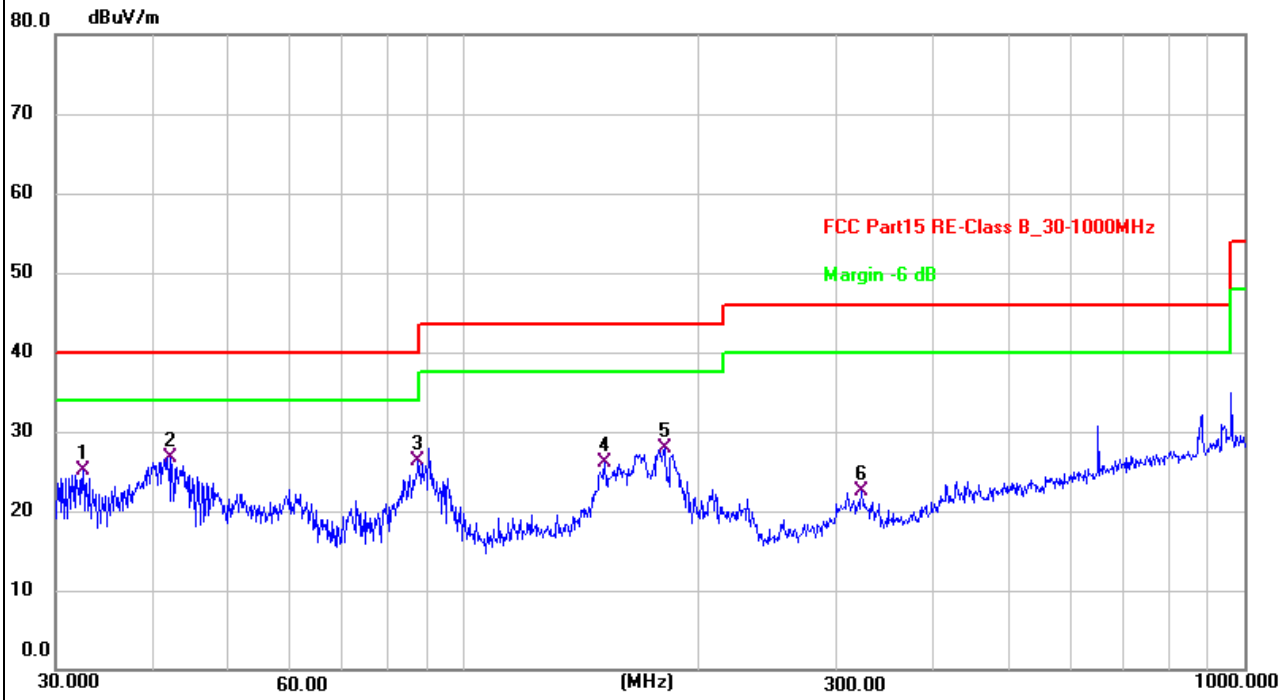
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	41.8596	25.92	-8.29	17.63	40.00	-22.37	QP	100	61	P	
2	47.8260	26.98	-8.33	18.65	40.00	-21.35	QP	100	235	P	
3	70.0903	28.62	-11.72	16.90	40.00	-23.10	QP	100	297	P	
4	79.5209	30.16	-12.79	17.37	40.00	-22.63	QP	100	267	P	
5	150.0108	26.25	-7.72	18.53	43.50	-24.97	QP	100	328	P	
6 *	520.8882	27.98	-3.04	24.94	46.00	-21.06	QP	100	297	P	

Test Plots and Data of Radiated Emissions from30MHz to 1GHz	
Tested Mode:	TM7
Test Antenna Polarization:	Horizontal
Remark:	



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1 *	32.5198	33.32	-9.00	24.32	40.00	-15.68	QP	100	41	P	
2	50.0566	32.59	-8.41	24.18	40.00	-15.82	QP	100	206	P	
3	169.5990	31.92	-8.73	23.19	43.50	-20.31	QP	100	226	P	
4	185.1379	35.48	-10.88	24.60	43.50	-18.90	QP	100	11	P	
5	206.3976	34.68	-11.98	22.70	43.50	-20.80	QP	100	63	P	
6	331.3546	29.15	-7.15	22.00	46.00	-24.00	QP	100	52	P	

Test Plots and Data of Radiated Emissions from30MHz to 1GHz	
Tested Mode:	TM7
Test Antenna Polarization:	Vertical
Remark:	



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	32.5198	34.01	-9.00	25.01	40.00	-14.99	QP	100	93	P	
2 *	42.0066	34.93	-8.28	26.65	40.00	-13.35	QP	100	124	P	
3	87.4177	39.27	-13.00	26.27	40.00	-13.73	QP	100	349	P	
4	151.5972	33.79	-7.75	26.04	43.50	-17.46	QP	100	349	P	
5	180.6488	38.59	-10.59	28.00	43.50	-15.50	QP	100	21	P	
6	323.3204	29.54	-7.13	22.41	46.00	-23.59	QP	100	6	P	

Note 1: this EUT was tested in 3 orthogonal positions and the worst case position data was reported.

Note 2: Testing is carried out with frequency rang 9kHz to the tenth harmonics. The measurements greater than 20dB below the limit from 9kHz to 30MHz.

Note 3: For 9kHz-30MHz, Distance extrapolation factor =40 log (specific distance/test distance)(dB);

Limit line = specific limits (dBuV) + distance extrapolation factor.

Note 4: Level = Reading + Factor, Margin = Level – Limit.

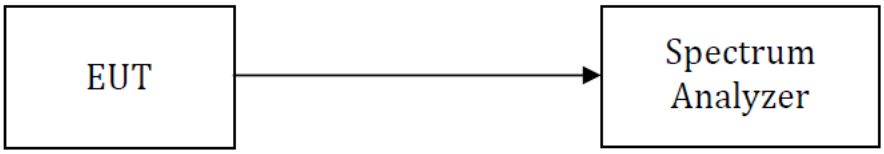
6. Occupied Bandwidth

6.1 Standard and Limit

According to 15.215 (c), intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated. The requirement to contain the designated bandwidth of the emission within the specified frequency band includes the effects from frequency sweeping, frequency hopping and other modulation techniques that may be employed as well as the frequency stability of the transmitter over expected variations in temperature and supply voltage. If a frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within at least the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

6.2 Test Procedure

According to the ANSI 63.10-2013, section 6.9, the emission bandwidth test method as follows.
1) Remove the antenna from the EUT and connect to the spectrum analyzer via a low loss RF cable.
2) Set the spectrum analyzer to any one measured frequency within its operating range.
3) Set RBW = 1% of the 20 dB bandwidth, VBW = RBW.
4) Set Sweep = Auto, Detector function = peak, Trace = max hold.
5) Set a reference level on the measuring instrument equal to the highest peak value.
6) Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
All the trace to stabilize, use the marker-to-peak function to set the marker to the peak of the emission, use the marker-delta function to measure and record the 20dB down and 99% bandwidth of the emission.



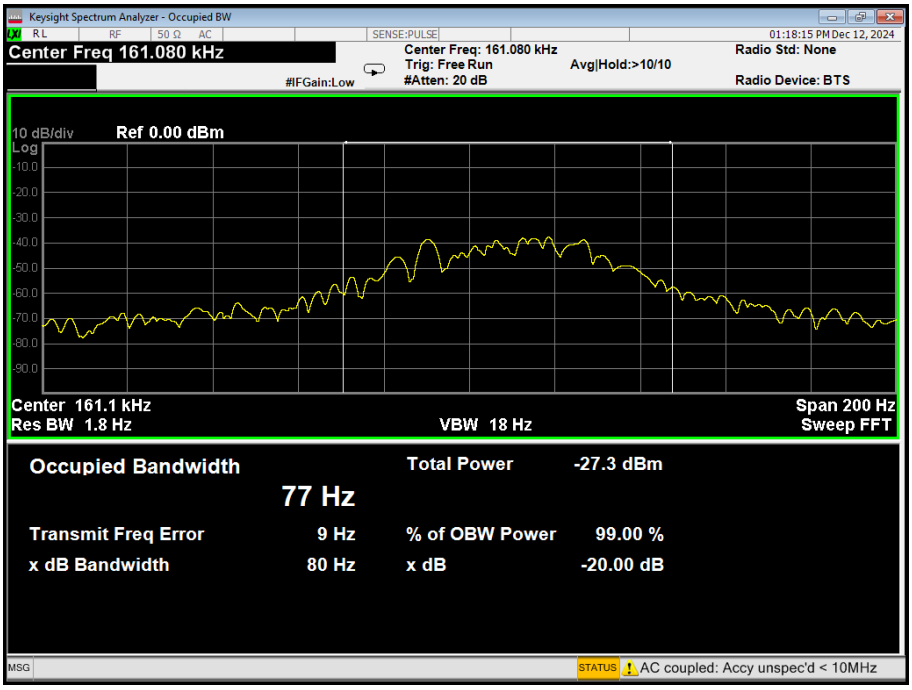
Test Setup Block Diagram

6.3 Test Data and Results

Phone/ Earphone

Test Frequency	20dB Bandwidth	99% Bandwidth
161.1Hz	80Hz	77Hz

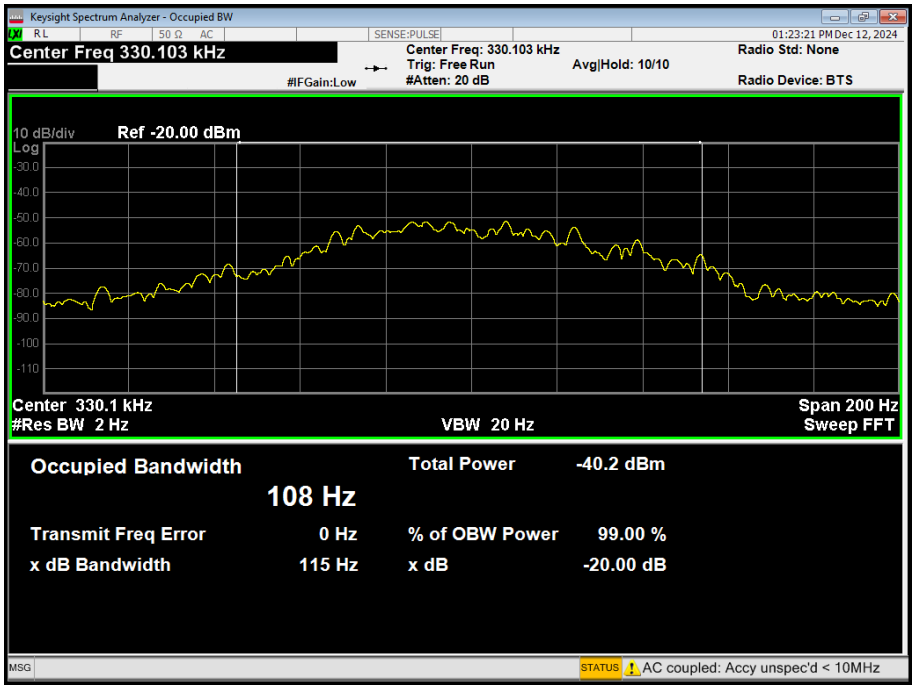
Test Plots of Occupied Bandwidth



Watch

Test Frequency	20dB Bandwidth	99% Bandwidth
330.1kHz	115Hz	108Hz

Test Plots of Occupied Bandwidth



******* END OF REPORT *******