

FCC TEST REPORT

FCC ID: 2BM8K-TMAX10K

Report No. : SSP25020248-1E

Prepared For : AMAZINGTHING (DONGGUAN)CO..LTD

Product Name : Amazingthing Thunder Max 10000mAh (Power Bank)

Model Name : TMAX10K

FCC Rule : FCC Part 15 Subpart C

Date of Issue : 2025-03-27

Prepared By : Shenzhen CCUT Quality Technology Co., Ltd.



Shenzhen CCUT Quality Technology Co., Ltd.

1F, Building 35, Changxing Technology Industrial Park, Yutang Street, Guangming District, Shenzhen,
Guangdong, China; (Tel.:+86-755-23406590 website: www.ccuttest.com)

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:	AMAZINGTHING (DONGGUAN)CO..LTD Room 701, Unit 3, Building 1, Anhe innovationTechnology Park, No.16, Bihu Address of Applicant.....: Road, Fenggang Town Dongguan China
Manufacturer:	Shenzhen Haopin Technology Co., LTD North of the 11th floor, A2 building, Xinghua Xiong, Baihua Community, Address of Manufacturer.....: Guangming Street, Guangming District, Shenzhen
Product Name:	Amazingthing Thunder Max 10000mAh (Power Bank)
Brand Name:	Amazingthing
Main Model:	TMAX10K
Series Models:	TMAX10KBK, TMAX10KBU, TMAX10KGY
Test Standard:	FCC Part 15 Subpart C ANSI C63.4-2014 ANSI C63.10-2013
Date of Test	2025-03-12 to 2025-03-21
Test Result:	PASSED
Tested Engineer	<u>Colin Chen</u> (Colin Chen)
Project Manager:	<u>Lieber Ouyang</u> (Lieber Ouyang)
Authorized Signatory:	<u>Lahm Peng</u> (Lahm Peng)
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.	



CONTENTS

1. General Information.....	5
1.1 Product Information	5
1.2 Test Setup Information.....	6
1.3 Compliance Standards.....	7
1.4 Test Facilities.....	7
1.5 List of Measurement Instruments	8
1.6 Measurement Uncertainty	8
2. Summary of Test Results	9
3. Antenna Requirement.....	10
3.1 Standard and Limit.....	10
3.2 Test Result.....	10
4. Conducted Emissions	11
4.1 Standard and Limit.....	11
4.2 Test Procedure.....	11
4.3 Test Data and Results	12
5. Radiated Emissions	17
5.1 Standard and Limit.....	17
5.2 Test Procedure.....	17
5.3 Test Data and Results	19
6. Occupied Bandwidth	36
6.1 Standard and Limit.....	36
6.2 Test Procedure.....	36
6.3 Test Data and Results	36

Revision History

Revision	Issue Date	Description	Revised By
V1.0	2025-03-27	Initial Release	Lahm Peng

1. General Information

1.1 Product Information

Product Name:	Amazingthing Thunder Max 10000mAh (Power Bank)
Trade Name:	Amazingthing
Main Model:	TMAX10K
Series Models:	TMAX10KBK, TMAX10KBU, TMAX10KGY
Rated Voltage:	Type-C Input: 5V=3A, 9V=2A, 12V=1.5A (18W Max) Type-C1 Cable Input: 5V=3A, 9V=2A, 12V=1.5A (18W Max) Type-C Output: 5V=3A, 5V=4.5A, 9V=2.22A, 10V=2.25A, 12V=1.67A (22.5W Max) Type-C1 Cable Output: 5V=3A, 5V=4.5A, 9V=2.22A, 10V=2.25A, 12V=1.67A (22.5W Max) Type-C2 Cable Output: 5V=2.4A (12W Max) Watch Wireless Output: 2W (Max) Wireless Output: 5W, 7.5W, 10W, 15W (Max)
Power Adapter:	-
Battery:	DC 3.85V, 10000mAh, 38.5Wh
Test Sample No:	SSP25020248-1
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):110.5kHz-205kHz, Wireless charging Output (Watch): 300kHz-360kHz
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 2W		-
TM6	Wireless charging 5W+Chargiing		-
TM7	Wireless charging 2W+Chargiing		-
Note: All modes have been tested and only the worst mode Wireless charging 15W and Wireless charging 5W+Chargiing, Wireless charging 2W and Wireless charging 2W+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
FCC Designation No.:	CN1373
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
Test Cable	N/A	Cable 5	N/A	2024-08-07	2025-08-06
EMI Test Software	FARA	EZ-EMC	EMEC-3A1+	N/A	N/A
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
Amplifier	SCHWARZBECK	BBV 9743B	00251	2024-08-07	2025-08-06
Amplifier	HUABO	YXL0518-2.5-45	--	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
Attenuator	QUANJUDA	6dB	220731	2024-08-07	2025-08-06
Test Cable	N/A	Cable 1	N/A	2024-08-07	2025-08-06
Test Cable	N/A	Cable 2	N/A	2024-08-07	2025-08-06
Test Cable	N/A	Cable 3	N/A	2024-08-07	2025-08-06
Test Cable	N/A	Cable 4	N/A	2024-08-07	2025-08-06
EMI Test Software	FARA	EZ-EMC	FA-03A2 RE+	N/A	N/A
Conducted RF Testing					
RF Test System	MWRFTTest	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

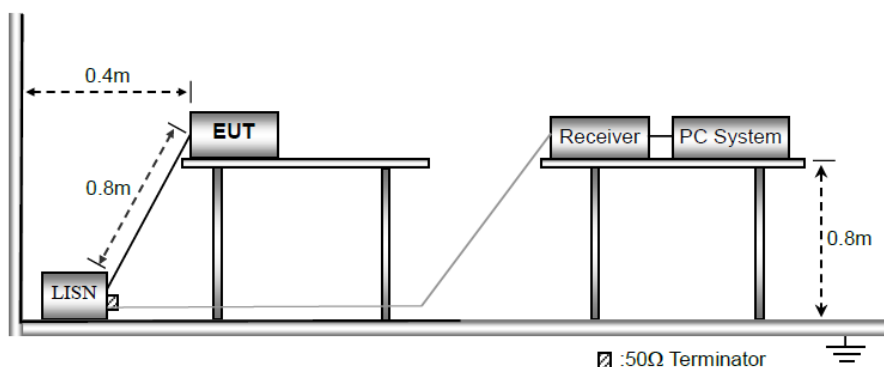
According to the rule FCC Part 15.207, Conducted emissions limit, the limit for a wireless device as below:

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.

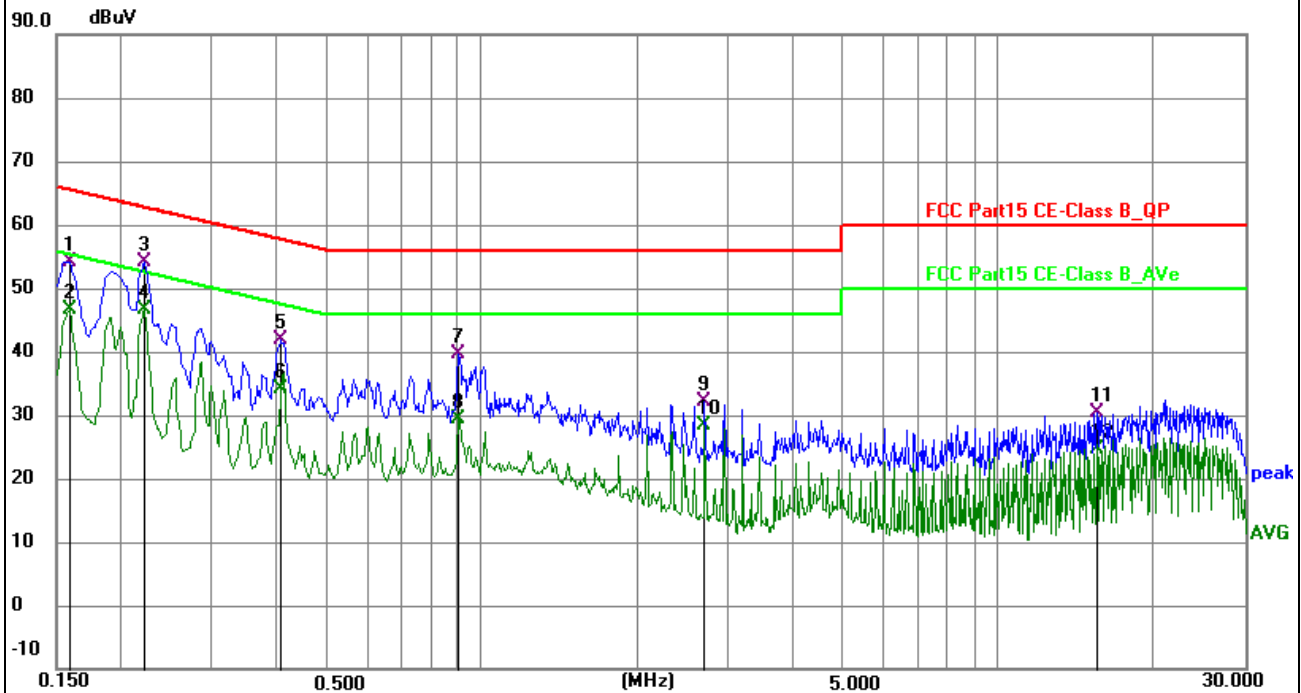
4.3 Test Data and Results

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

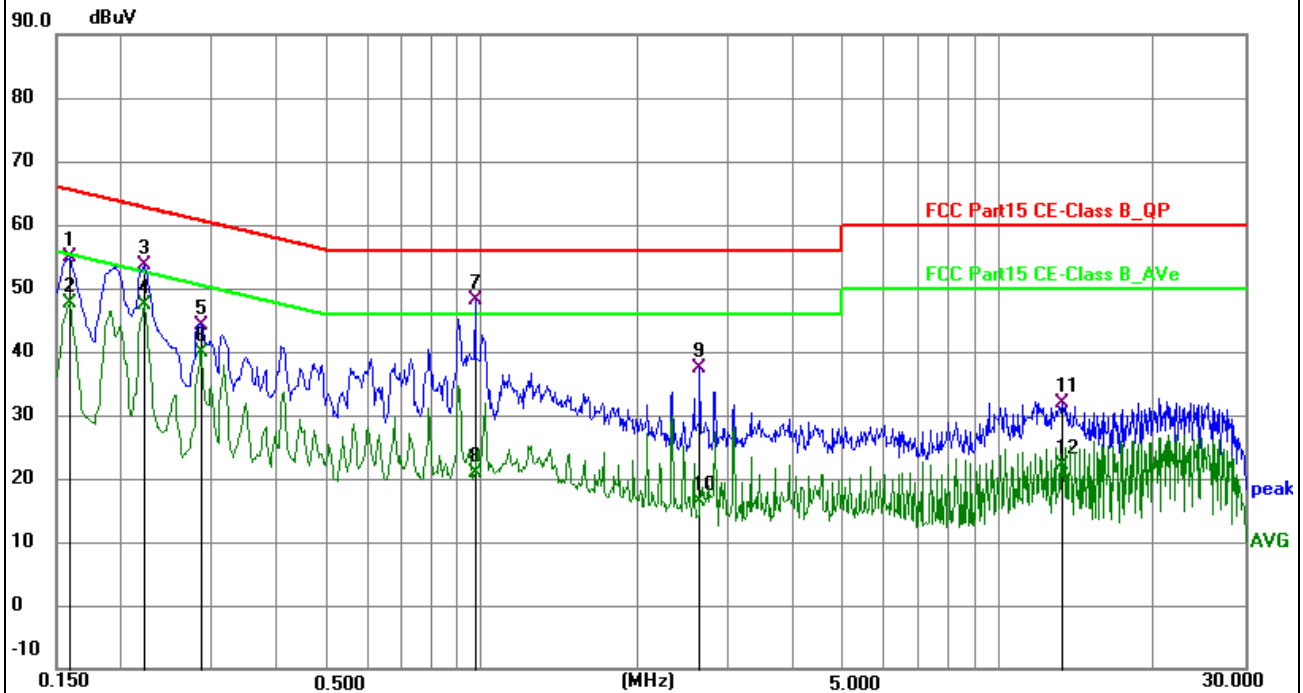
Tested Mode:	TM6
Test Voltage:	AC 120V/60Hz
Test Power Line:	Neutral
Remark:	



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1590	44.94	9.24	54.18	65.52	-11.34	QP	P	
2	0.1590	37.38	9.24	46.62	55.52	-8.90	AVG	P	
3	0.2220	44.79	9.25	54.04	62.74	-8.70	QP	P	
4 *	0.2220	37.33	9.25	46.58	52.74	-6.16	AVG	P	
5	0.4063	32.42	9.38	41.80	57.72	-15.92	QP	P	
6	0.4063	24.73	9.38	34.11	47.72	-13.61	AVG	P	
7	0.9014	30.22	9.37	39.59	56.00	-16.41	QP	P	
8	0.9014	19.92	9.37	29.29	46.00	-16.71	AVG	P	
9	2.7060	22.58	9.48	32.06	56.00	-23.94	QP	P	
10	2.7060	18.94	9.48	28.42	46.00	-17.58	AVG	P	
11	15.4860	20.76	9.57	30.33	60.00	-29.67	QP	P	
12	15.4860	14.98	9.57	24.55	50.00	-25.45	AVG	P	

Test Plots and Data of Conducted Emissions

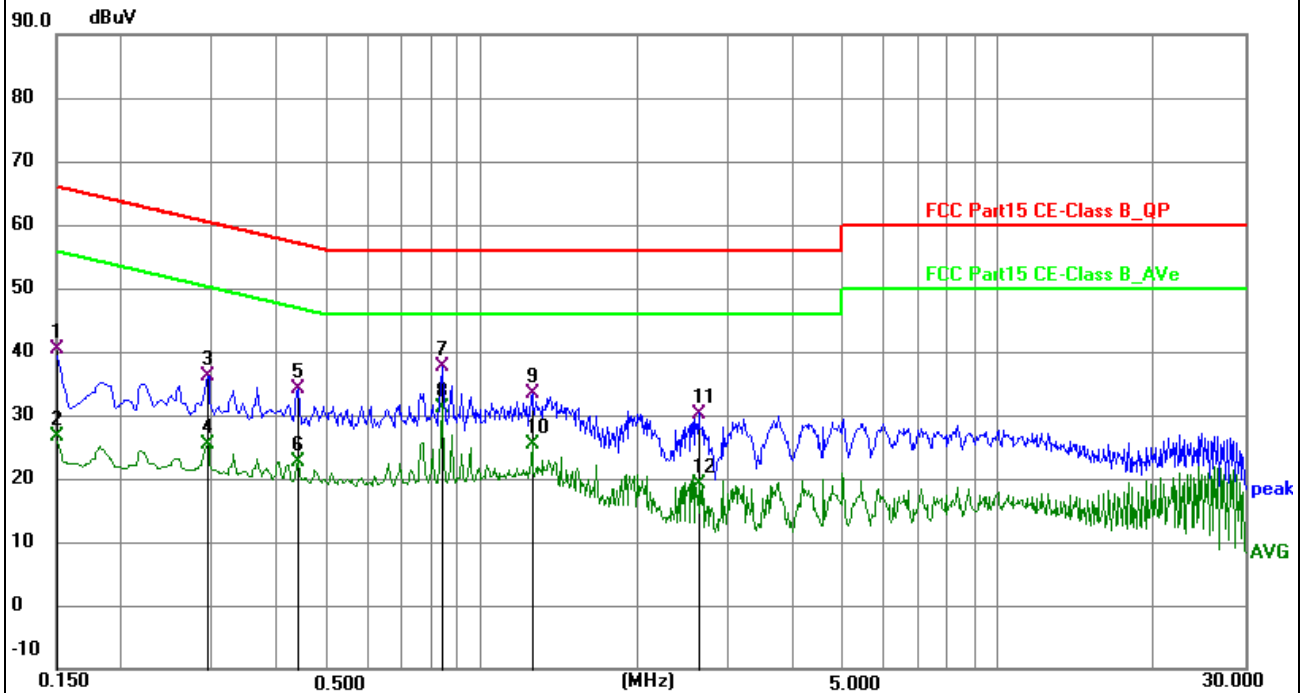
Tested Mode:	TM6
Test Voltage:	AC 120V/60Hz
Test Power Line:	Live
Remark:	



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1590	45.56	9.41	54.97	65.52	-10.55	QP	P	
2	0.1590	38.14	9.41	47.55	55.52	-7.97	AVG	P	
3	0.2220	44.17	9.43	53.60	62.74	-9.14	QP	P	
4 *	0.2220	37.91	9.43	47.34	52.74	-5.40	AVG	P	
5	0.2850	34.69	9.56	44.25	60.67	-16.42	QP	P	
6	0.2850	30.43	9.56	39.99	50.67	-10.68	AVG	P	
7	0.9735	38.56	9.60	48.16	56.00	-7.84	QP	P	
8	0.9735	11.39	9.60	20.99	46.00	-25.01	AVG	P	
9	2.6385	27.58	9.68	37.26	56.00	-18.74	QP	P	
10	2.6385	6.66	9.68	16.34	46.00	-29.66	AVG	P	
11	13.2765	22.07	9.73	31.80	60.00	-28.20	QP	P	
12	13.2765	12.35	9.73	22.08	50.00	-27.92	AVG	P	

Test Plots and Data of Conducted Emissions

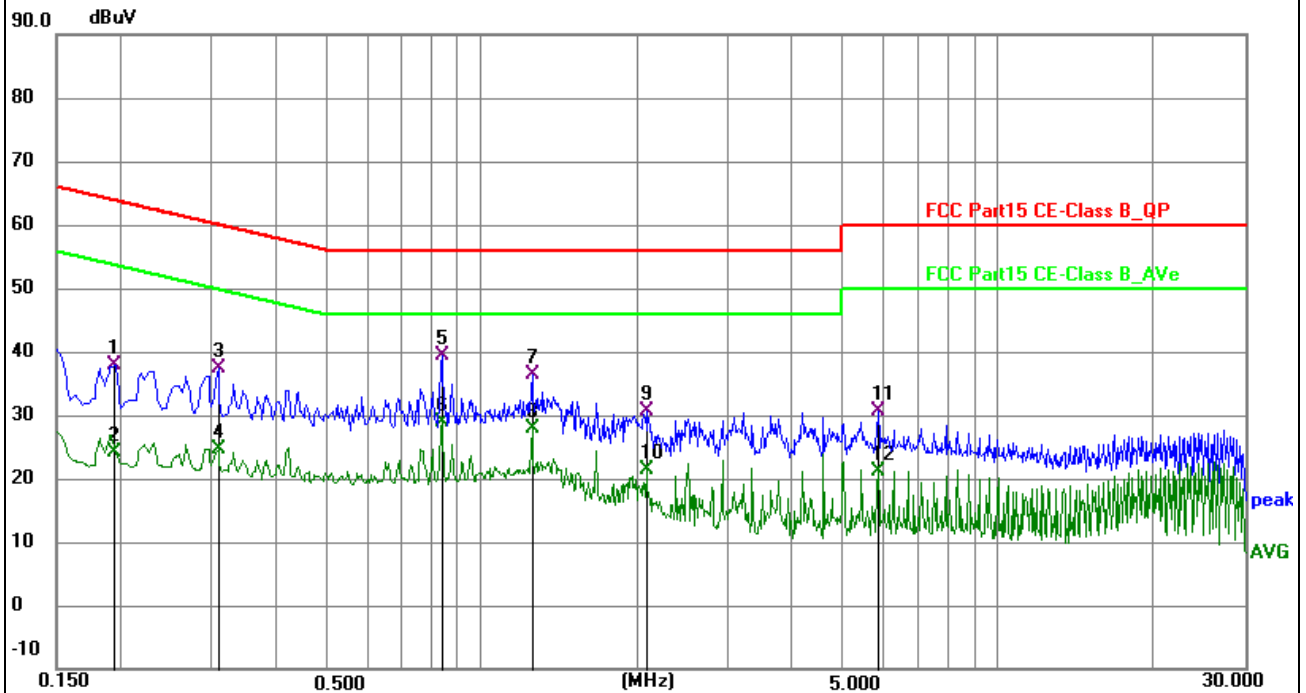
Tested Mode:	TM7
Test Voltage:	AC 120V/60Hz
Test Power Line:	Neutral
Remark:	



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1500	31.14	9.25	40.39	66.00	-25.61	QP	P	
2	0.1500	17.26	9.25	26.51	56.00	-29.49	AVG	P	
3	0.2940	26.69	9.39	36.08	60.41	-24.33	QP	P	
4	0.2940	16.01	9.39	25.40	50.41	-25.01	AVG	P	
5	0.4380	24.74	9.38	34.12	57.10	-22.98	QP	P	
6	0.4380	13.20	9.38	22.58	47.10	-24.52	AVG	P	
7	0.8385	28.16	9.40	37.56	56.00	-18.44	QP	P	
8 *	0.8385	21.77	9.40	31.17	46.00	-14.83	AVG	P	
9	1.2525	23.97	9.44	33.41	56.00	-22.59	QP	P	
10	1.2525	16.00	9.44	25.44	46.00	-20.56	AVG	P	
11	2.6250	20.77	9.48	30.25	56.00	-25.75	QP	P	
12	2.6250	9.56	9.48	19.04	46.00	-26.96	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	0.1949	28.45	9.39	37.84	63.83	-25.99	QP	P	
2	0.1949	14.79	9.39	24.18	53.83	-29.65	AVG	P	
3	0.3074	27.70	9.59	37.29	60.04	-22.75	QP	P	
4	0.3074	15.00	9.59	24.59	50.04	-25.45	AVG	P	
5 *	0.8385	29.77	9.59	39.36	56.00	-16.64	QP	P	
6	0.8385	19.28	9.59	28.87	46.00	-17.13	AVG	P	
7	1.2524	26.73	9.63	36.36	56.00	-19.64	QP	P	
8	1.2524	18.14	9.63	27.77	46.00	-18.23	AVG	P	
9	2.0850	20.87	9.66	30.53	56.00	-25.47	QP	P	
10	2.0850	11.71	9.66	21.37	46.00	-24.63	AVG	P	
11	5.8380	20.95	9.76	30.71	60.00	-29.29	QP	P	
12	5.8380	11.44	9.76	21.20	50.00	-28.80	AVG	P	

5. Radiated Emissions

5.1 Standard and Limit

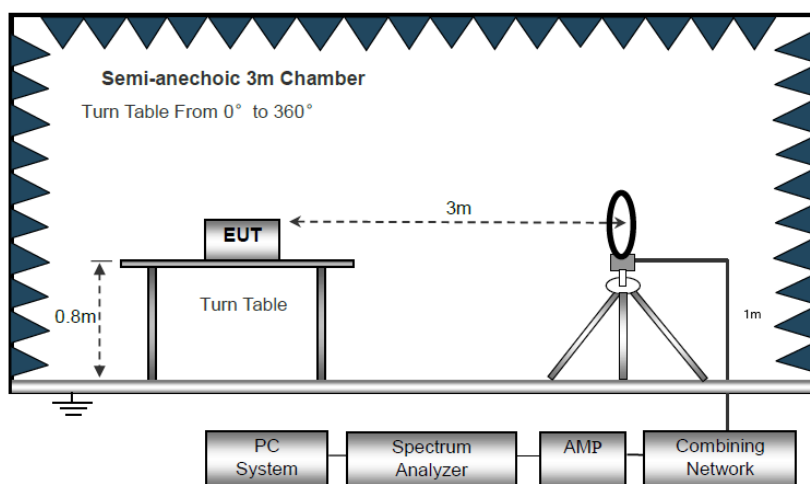
According to the rule FCC Part 15.209, Radiated emission limit for a wireless device as below:

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.		

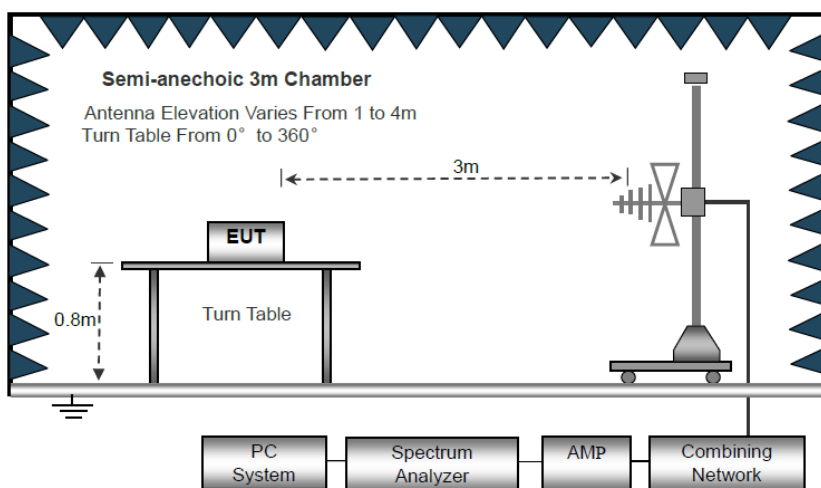
Note: Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

5.2 Test Procedure

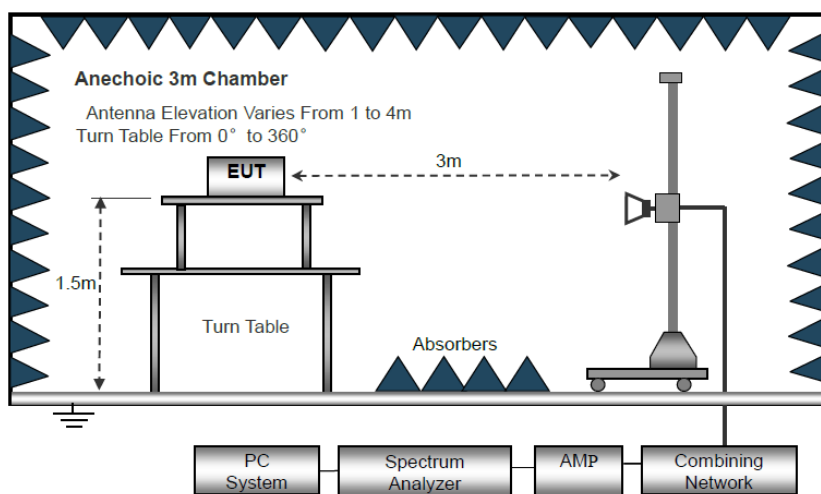
Test is conducting under the description of ANSI C63.10 - 2013 section 6.3 to 6.6.



Block Diagram of Radiated Emission Below 30MHz



Block Diagram of Radiated Emission From 30MHz to 1GHz



Block Diagram of Radiated Emission Above 1GHz

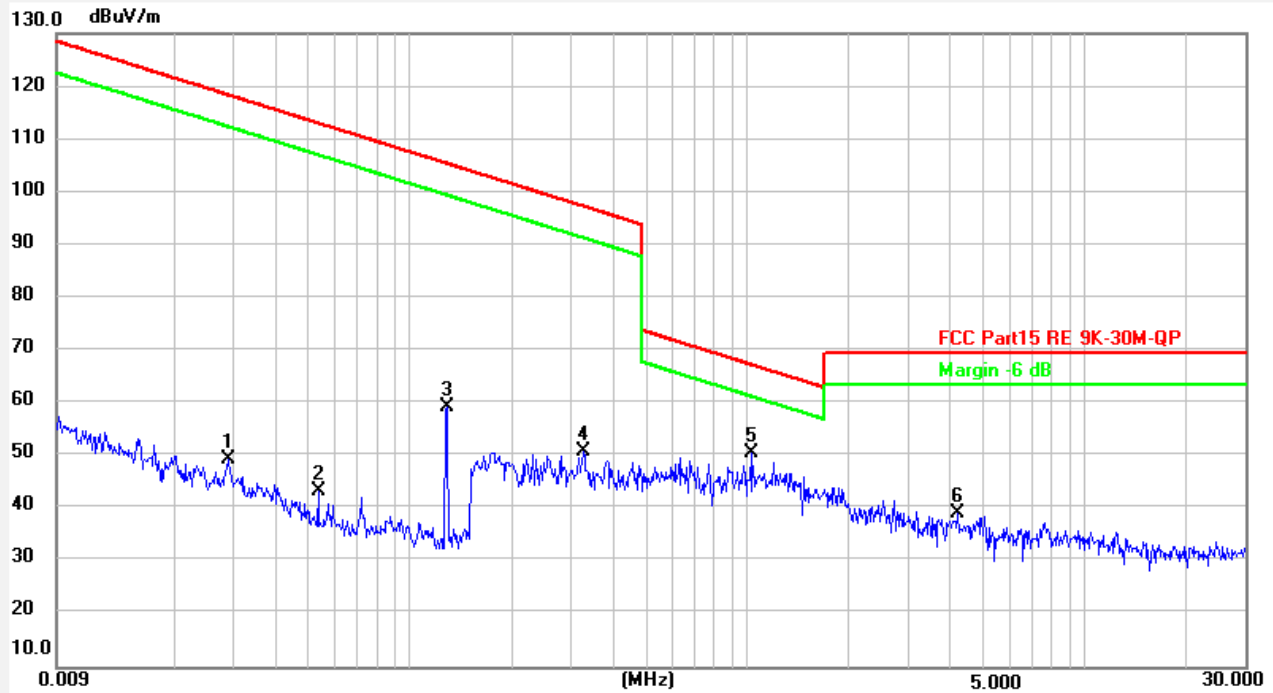
- a) The EUT is placed on a turntable, which is 0.8m above ground plane for test frequency range below 1GHz, and 1.5m above ground plane for test frequency range above 1GHz.
- b) EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
- c) Use the following spectrum analyzer settings:
Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for $f \geq 1\text{GHz}$, 100 kHz for $f < 1\text{GHz}$, 10kHz for $f < 30\text{MHz}$
VBW $\geq$ 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

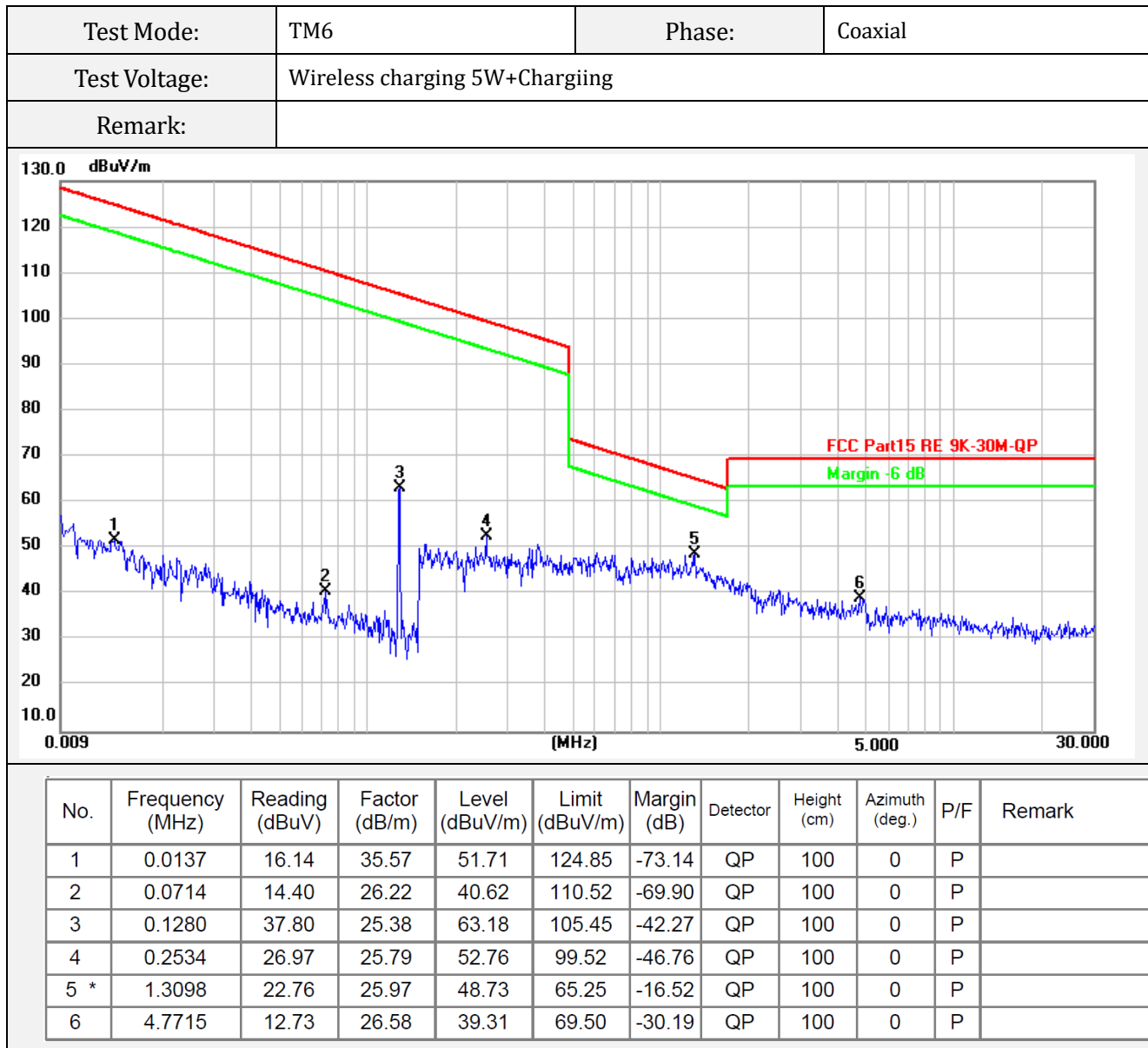
Based on all mode tested data, the EUT complied with the FCC Part 15.209 standard limit for a wireless device, and with the worst case TM1 and TM6 and TM5 and TM7 as below:

Test Data of Radiated Emissions from 9kHz to 30MHz

Test Mode:	TM6	Phase:	Coplaner
Test Voltage:	Wireless charging 5W+Charging		
Remark:			

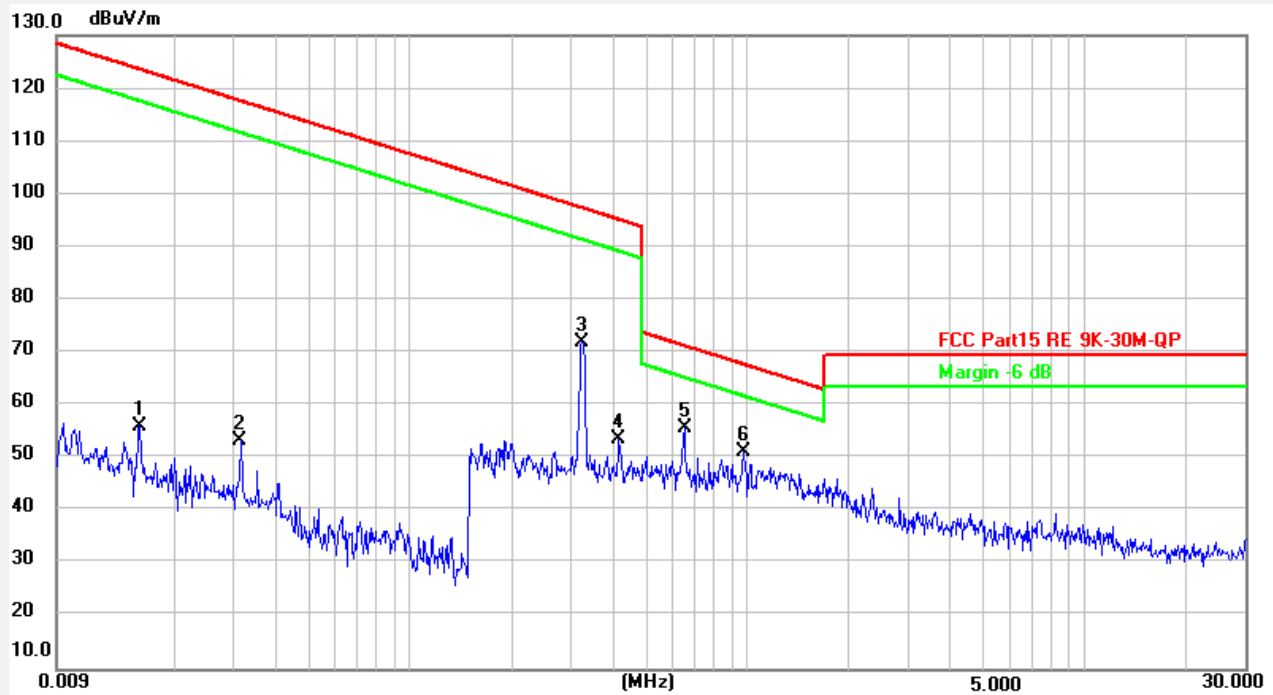


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	0.0288	15.53	34.01	49.54	118.40	-68.86	QP	100	0	P	
2	0.0535	15.69	27.84	43.53	113.03	-69.50	QP	100	0	P	
3	0.1281	34.04	25.38	59.42	105.45	-46.03	QP	100	0	P	
4	0.3251	25.16	25.81	50.97	97.36	-46.39	QP	100	0	P	
5 *	1.0265	24.62	25.92	50.54	67.37	-16.83	QP	100	0	P	
6	4.1796	12.80	26.48	39.28	69.50	-30.22	QP	100	0	P	



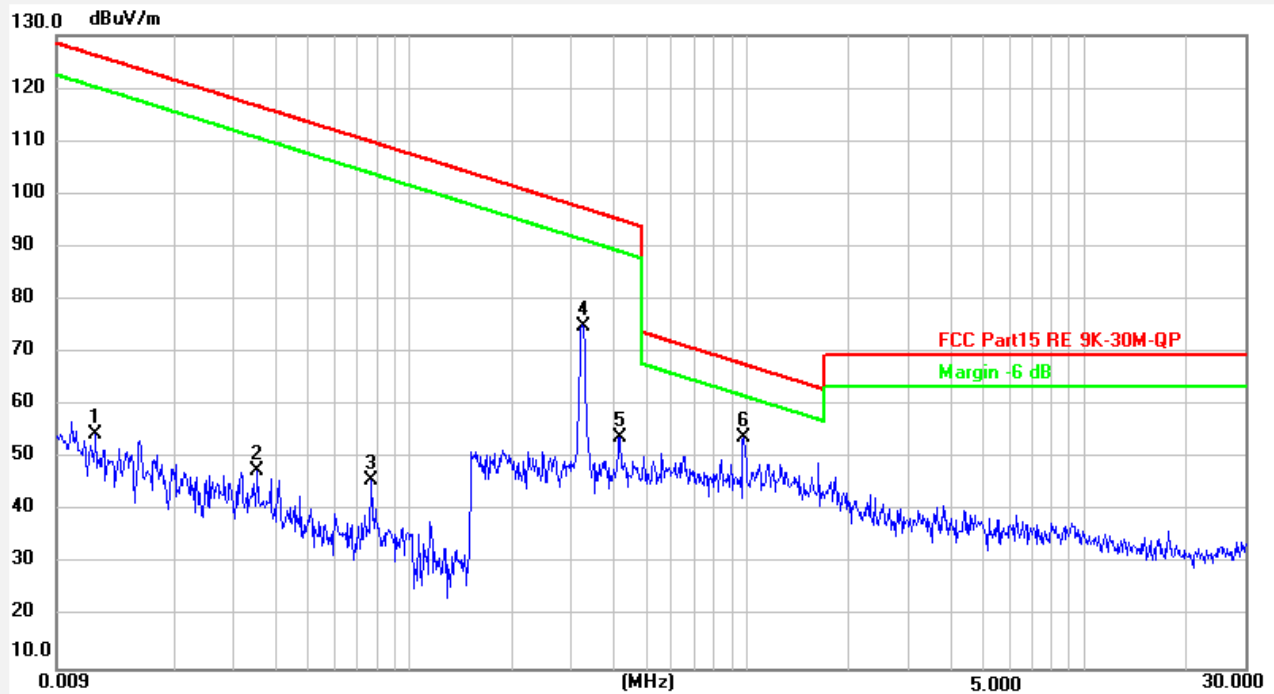
Test Data of Radiated Emissions from 9kHz to 30MHz

Test Mode:	TM7	Phase:	Coplaner
Test Voltage:	Wireless charging 2W+Charging		
Remark:			

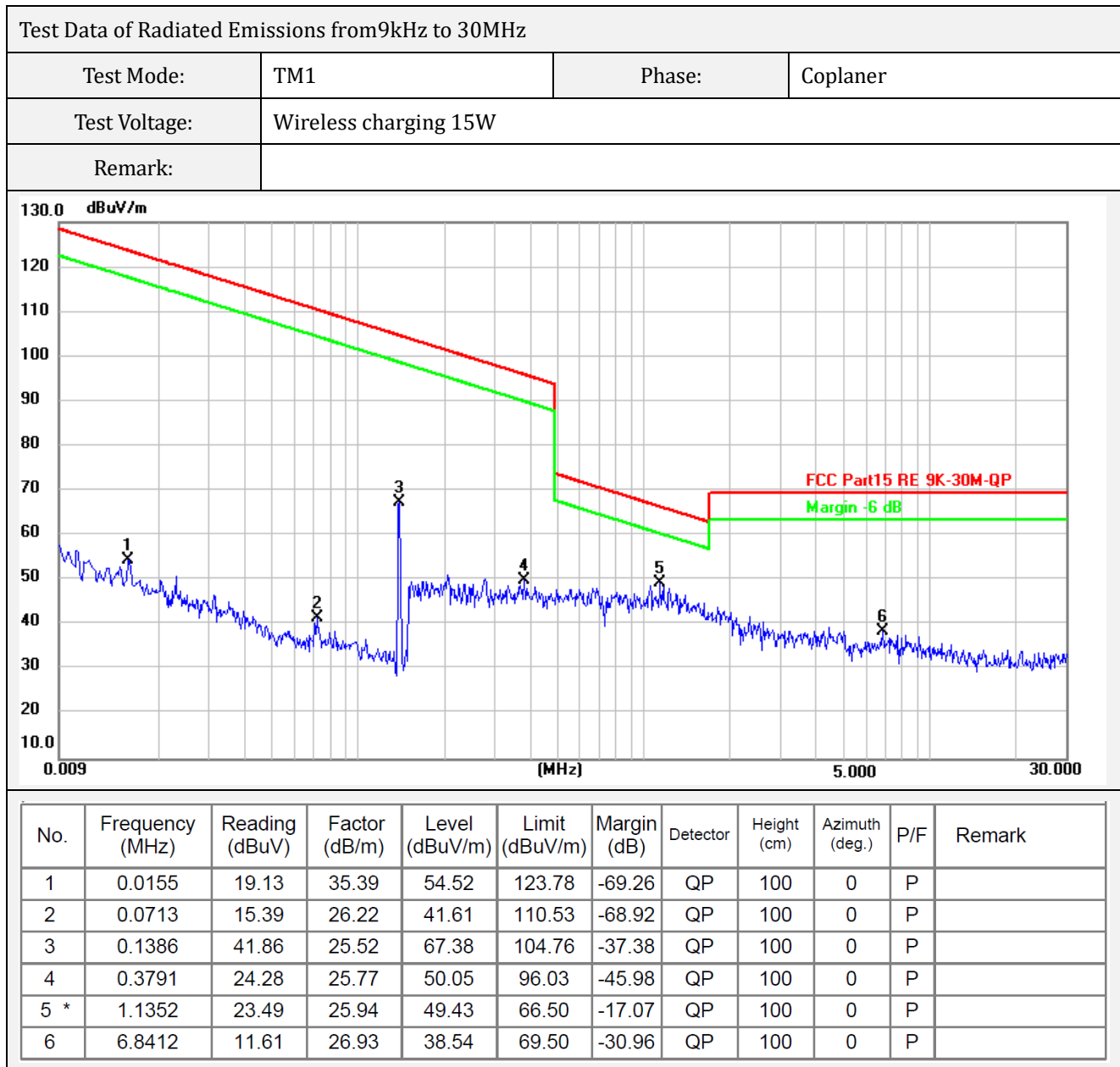


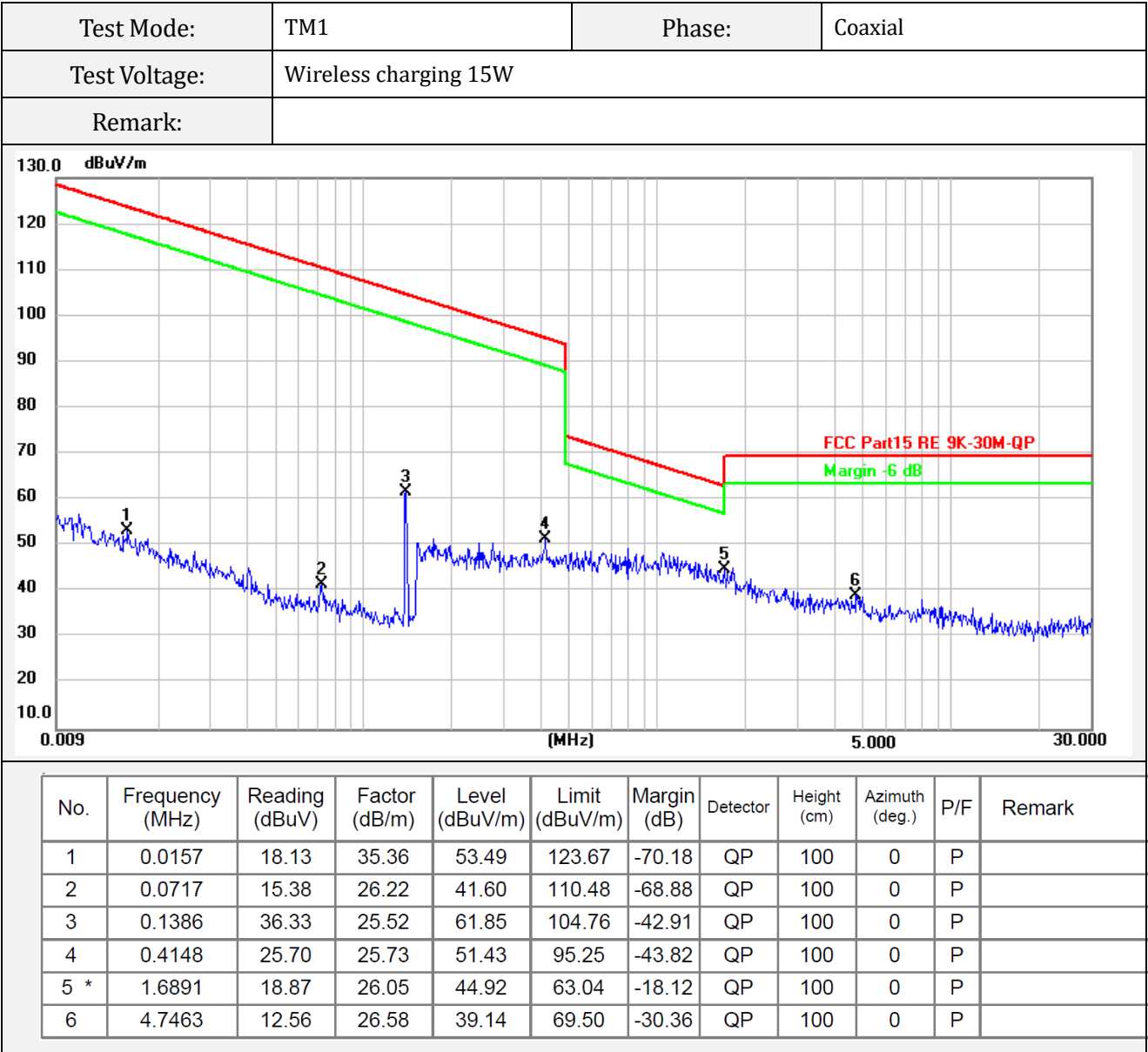
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	0.0158	20.75	35.36	56.11	123.61	-67.50	QP	100	0	P	
2	0.0314	20.00	33.46	53.46	117.65	-64.19	QP	100	0	P	
3	0.3234	46.26	25.80	72.06	97.41	-25.35	QP	100	0	P	
4	0.4170	28.08	25.72	53.80	95.20	-41.40	QP	100	0	P	
5 *	0.6474	29.95	25.69	55.64	71.38	-15.74	QP	100	0	P	
6	0.9735	25.41	25.91	51.32	67.83	-16.51	QP	100	0	P	

Test Mode:	TM7	Phase:	Coaxial
Test Voltage:	Wireless charging 2W+Chargiing		
Remark:			



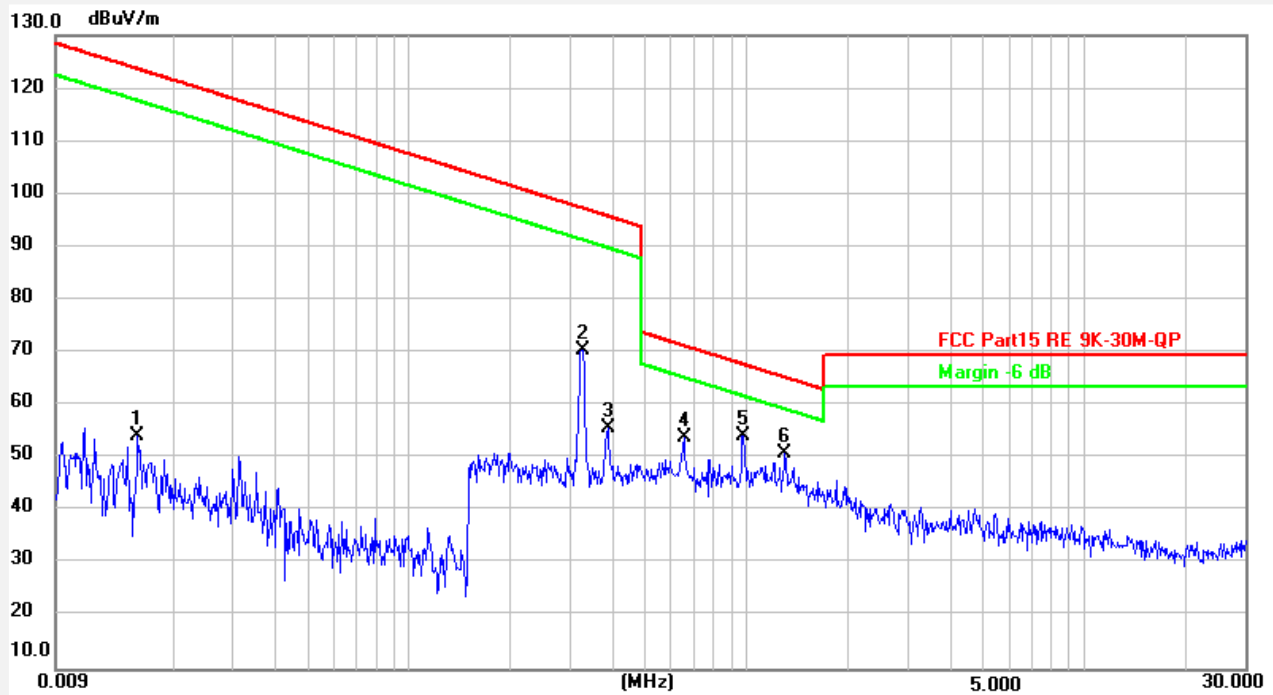
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	0.0117	18.89	35.78	54.67	126.22	-71.55	QP	100	0	P	
2	0.0352	15.22	32.39	47.61	116.66	-69.05	QP	100	0	P	
3	0.0767	19.72	26.11	45.83	109.90	-64.07	QP	100	0	P	
4	0.3251	49.22	25.81	75.03	97.36	-22.33	QP	100	0	P	
5	0.4192	28.10	25.72	53.82	95.15	-41.33	QP	100	0	P	
6 *	0.9735	28.07	25.91	53.98	67.83	-13.85	QP	100	0	P	



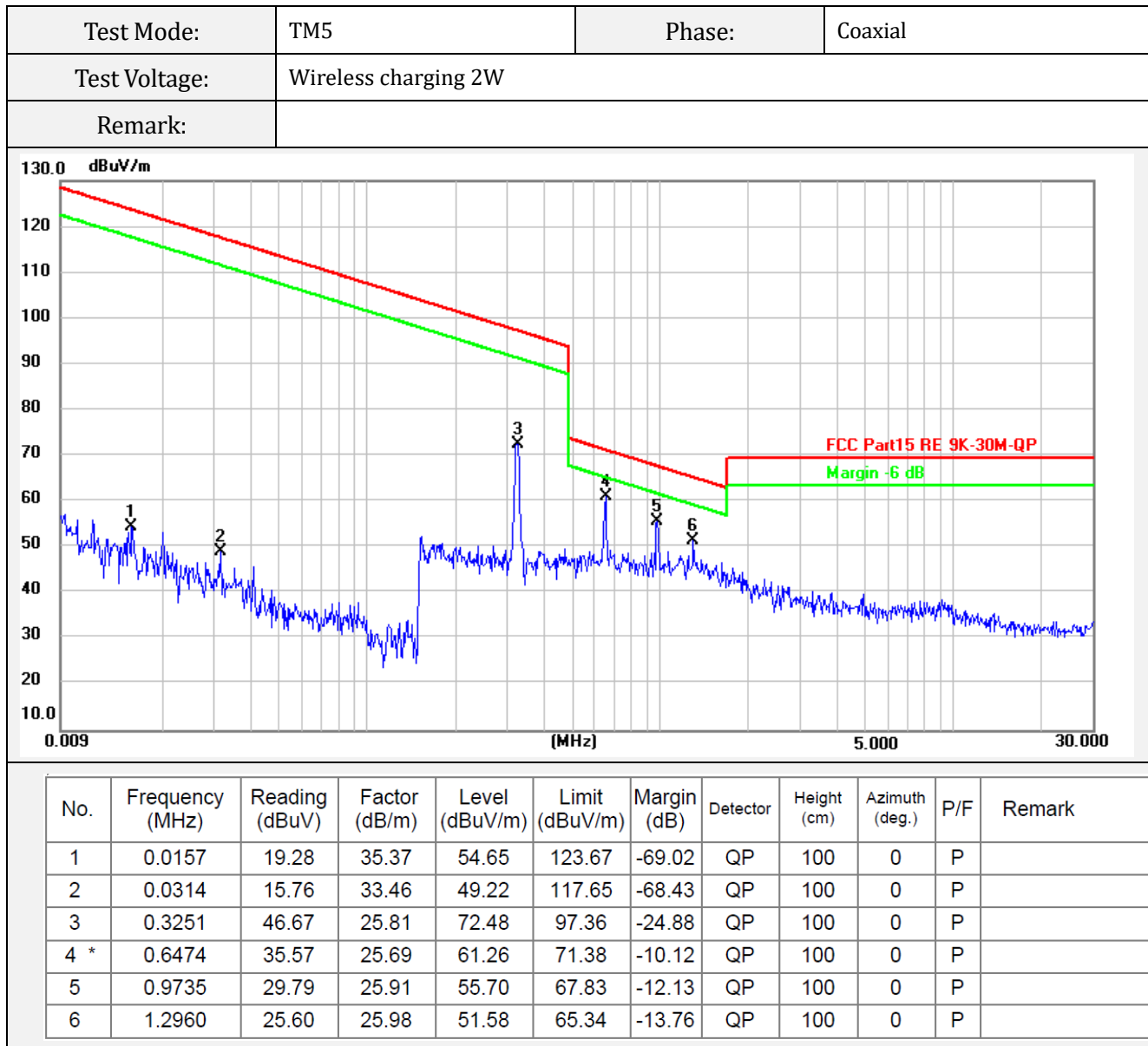


Test Data of Radiated Emissions from 9kHz to 30MHz

Test Mode:	TM5	Phase:	Coplaner
Test Voltage:	Wireless charging 2W		
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	0.0157	18.83	35.37	54.20	123.67	-69.47	QP	100	0	P	
2	0.3251	44.61	25.81	70.42	97.36	-26.94	QP	100	0	P	
3	0.3871	30.05	25.76	55.81	95.85	-40.04	QP	100	0	P	
4	0.6508	28.18	25.69	53.87	71.33	-17.46	QP	100	0	P	
5 *	0.9735	28.29	25.91	54.20	67.83	-13.63	QP	100	0	P	
6	1.2960	25.07	25.98	51.05	65.34	-14.29	QP	100	0	P	



Note:

Pre-scan in the all of mode, the worst case in of was recorded.

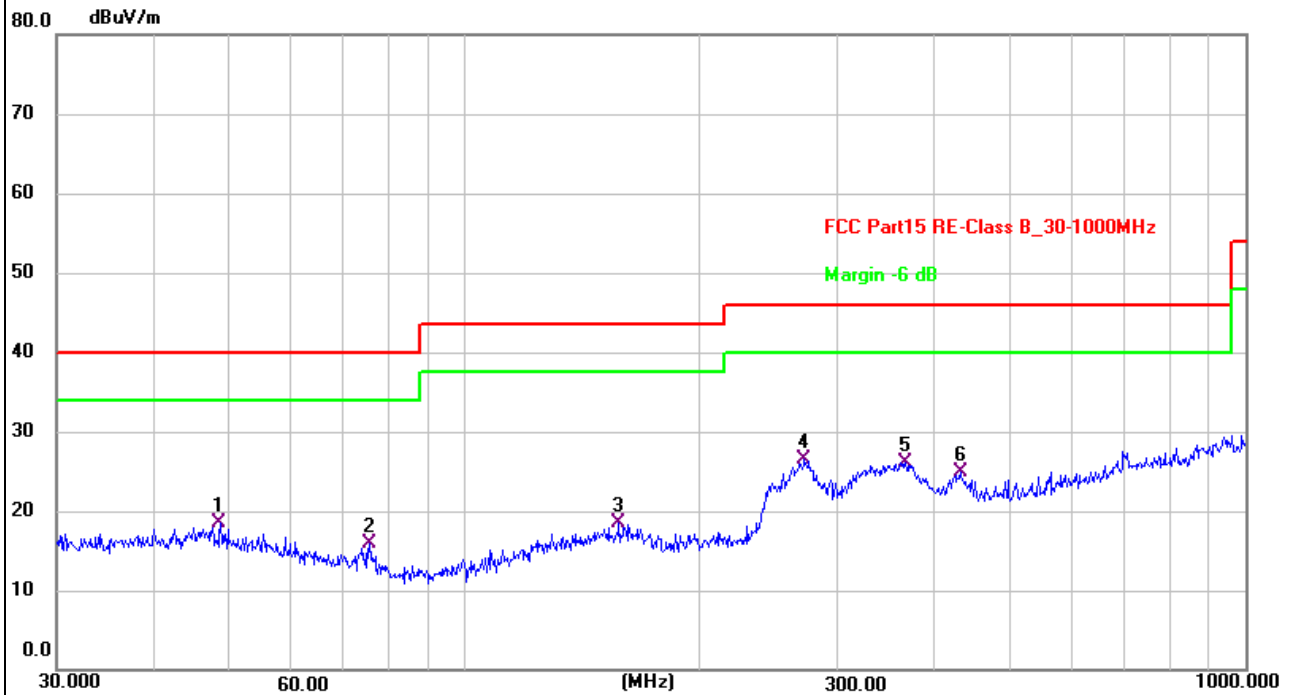
Limit dBuV/m @3m = Limit dBuV/m @300m+ 80

Limit dBuV/m @3m = Limit dBuV/m @30m + 40

Margin = Reading - Limit.

Test Plots and Data of Radiated Emissions from 30MHz to 1GHz

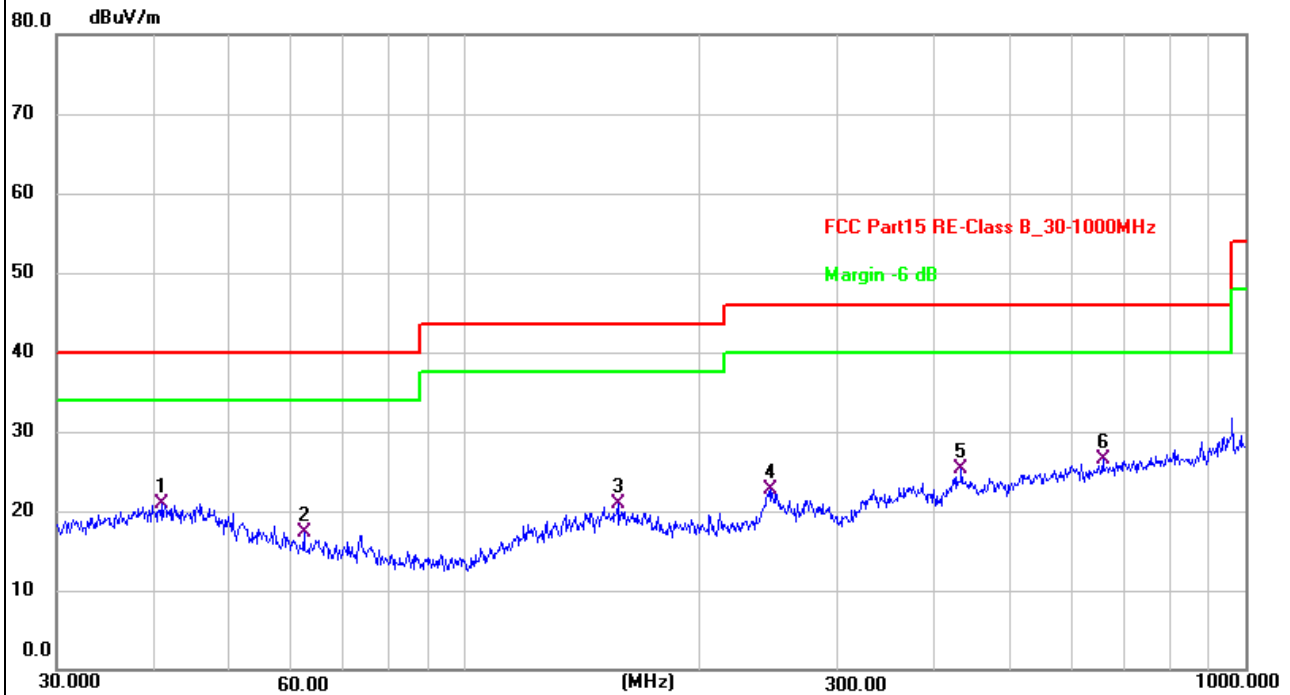
Tested Mode:	TM1
Test Antenna Polarization:	Horizontal
Remark:	



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	48.6719	26.77	-8.36	18.41	40.00	-21.59	QP	100	349	P	
2	75.4464	28.32	-12.32	16.00	40.00	-24.00	QP	100	0	P	
3	157.5588	26.39	-7.84	18.55	43.50	-24.95	QP	100	133	P	
4 *	272.2776	35.72	-9.26	26.46	46.00	-19.54	QP	100	297	P	
5	366.8231	32.92	-6.76	26.16	46.00	-19.84	QP	100	349	P	
6	431.0316	29.80	-4.91	24.89	46.00	-21.11	QP	100	339	P	

Test Plots and Data of Radiated Emissions from 30MHz to 1GHz

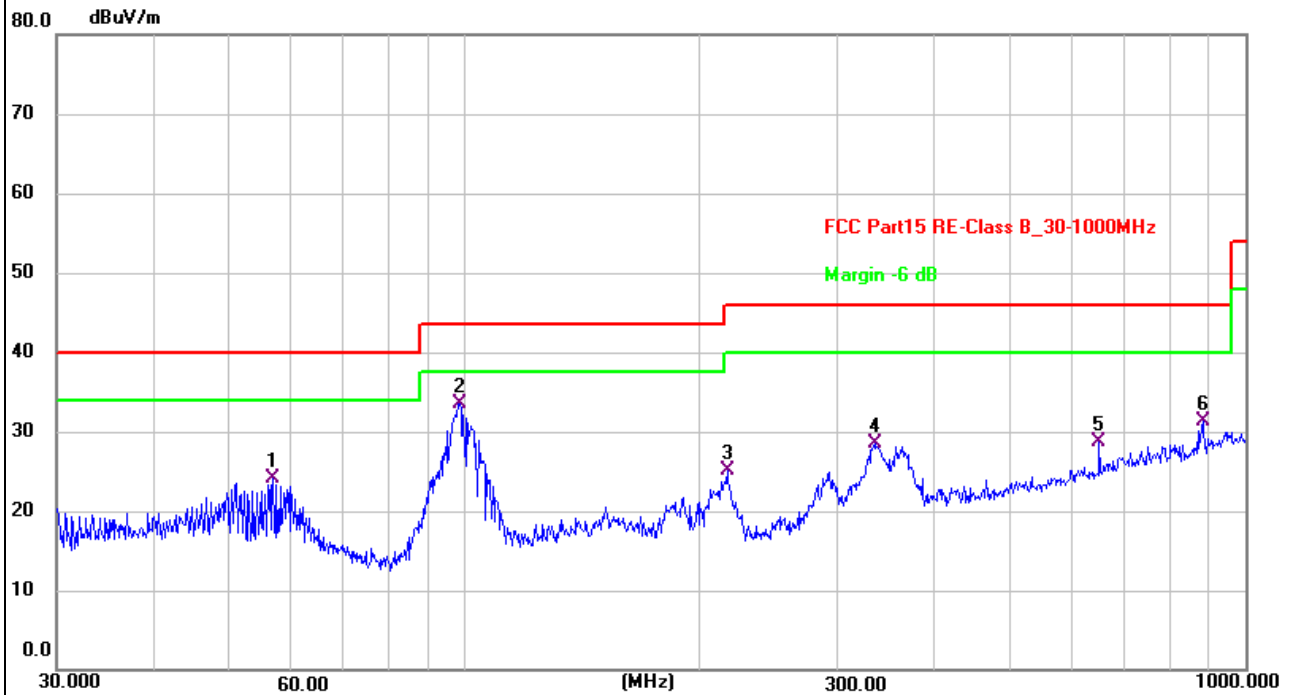
Tested Mode:	TM1
Test Antenna Polarization:	Vertical
Remark:	



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 *	40.8446	29.21	-8.30	20.91	40.00	-19.09	QP	100	11	P	
2	62.2128	27.70	-10.34	17.36	40.00	-22.64	QP	100	103	P	
3	157.0074	28.71	-7.82	20.89	43.50	-22.61	QP	100	11	P	
4	246.8149	32.79	-10.16	22.63	46.00	-23.37	QP	100	237	P	
5	432.5457	30.22	-4.88	25.34	46.00	-20.66	QP	100	11	P	
6	656.5300	27.22	-0.69	26.53	46.00	-19.47	QP	100	258	P	

Test Plots and Data of Radiated Emissions from 30MHz to 1GHz

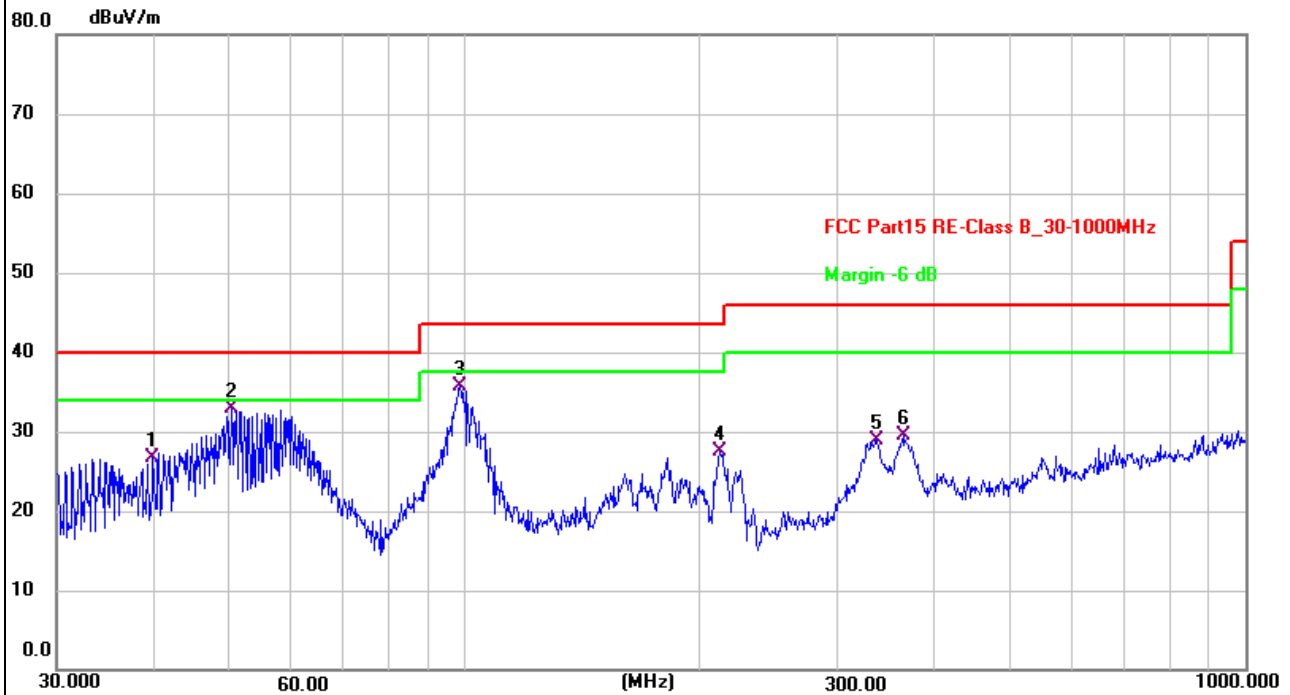
Tested Mode:	TM6
Test Antenna Polarization:	Horizontal
Remark:	



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	56.7917	33.64	-9.44	24.20	40.00	-15.80	QP	100	236	P	
2 *	98.4866	45.80	-12.34	33.46	43.50	-10.04	QP	200	354	P	
3	216.7828	36.88	-11.84	25.04	46.00	-20.96	QP	100	50	P	
4	334.8589	35.72	-7.21	28.51	46.00	-17.49	QP	100	82	P	
5	649.6597	29.51	-0.85	28.66	46.00	-17.34	QP	200	358	P	
6	881.4067	29.09	2.23	31.32	46.00	-14.68	QP	100	287	P	

Test Plots and Data of Radiated Emissions from 30MHz to 1GHz

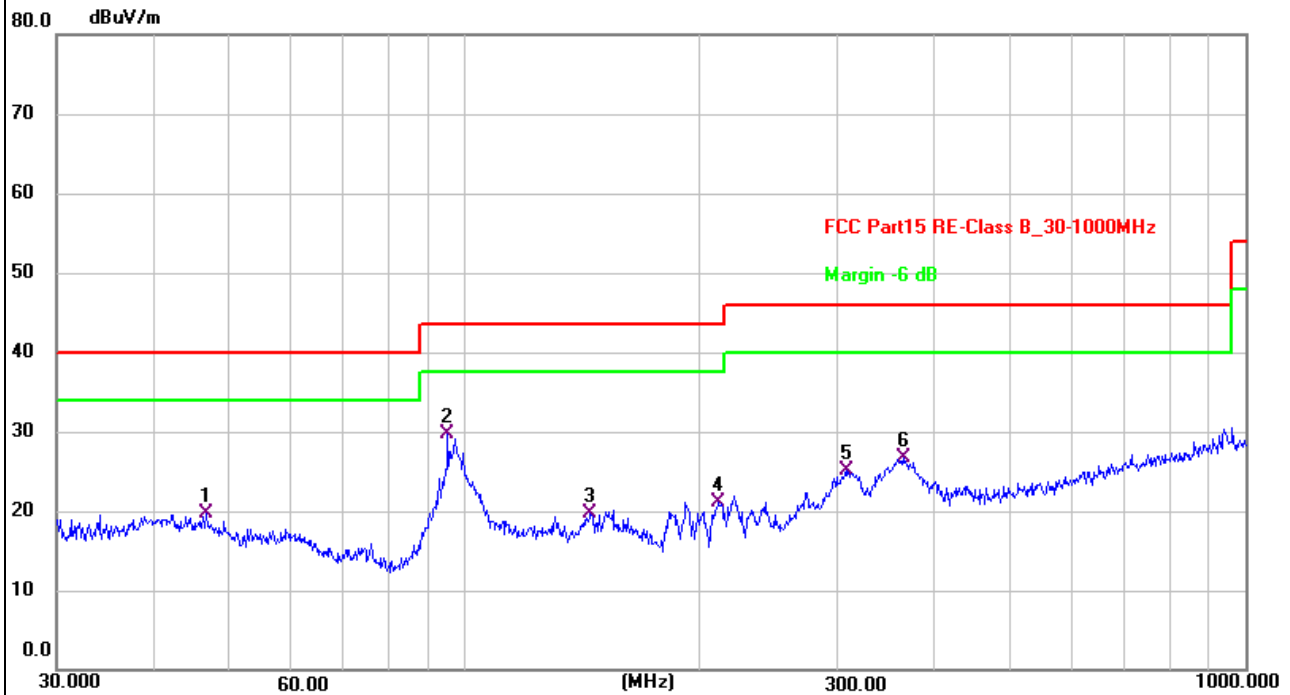
Tested Mode:	TM6
Test Antenna Polarization:	Vertical
Remark:	



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	39.8542	35.06	-8.33	26.73	40.00	-13.27	QP	100	135	P	
2 *	50.2324	41.40	-8.44	32.96	40.00	-7.04	QP	100	360	P	
3	98.4866	48.05	-12.34	35.71	43.50	-7.79	QP	100	32	P	
4	212.2695	39.37	-11.89	27.48	43.50	-16.02	QP	100	11	P	
5	337.2155	36.19	-7.25	28.94	46.00	-17.06	QP	100	11	P	
6	365.5391	36.32	-6.81	29.51	46.00	-16.49	QP	100	11	P	

Test Plots and Data of Radiated Emissions from 30MHz to 1GHz

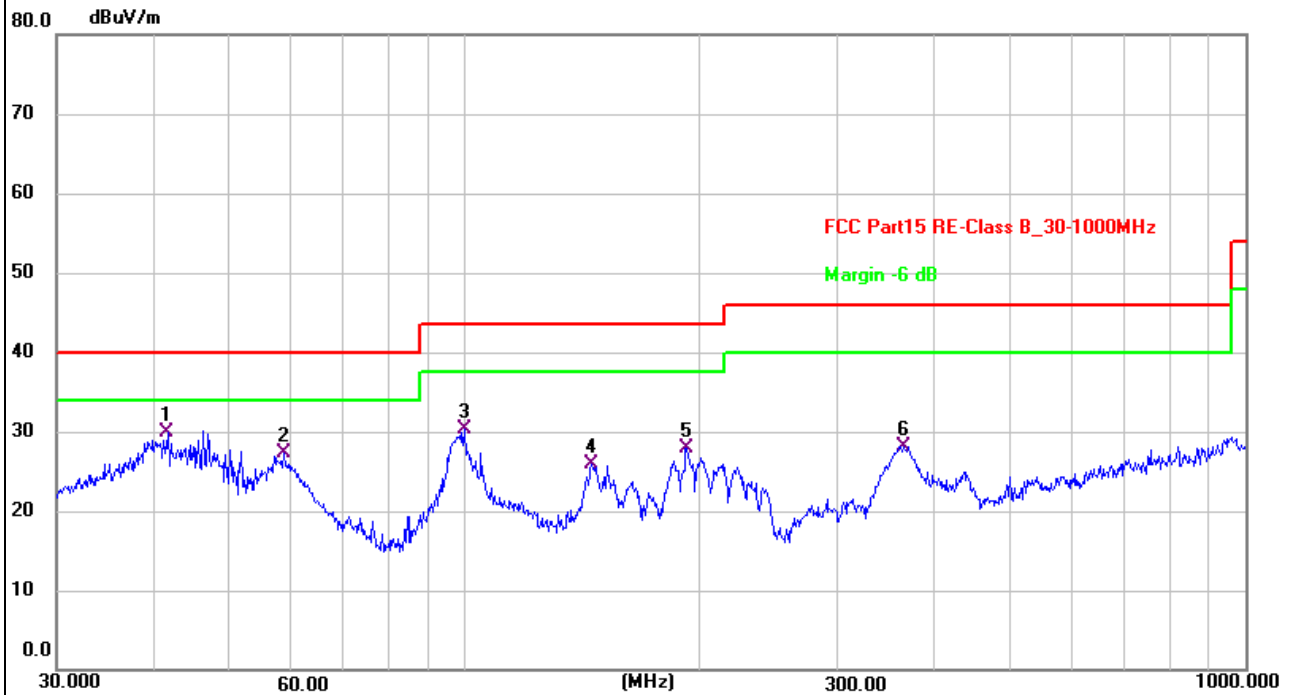
Tested Mode:	TM5
Test Antenna Polarization:	Horizontal
Remark:	



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	46.6664	28.00	-8.30	19.70	40.00	-20.30	QP	100	270	P	
2 *	95.0930	42.23	-12.62	29.61	43.50	-13.89	QP	200	348	P	
3	144.8418	27.71	-7.99	19.72	43.50	-23.78	QP	200	153	P	
4	211.5265	33.09	-11.89	21.20	43.50	-22.30	QP	100	63	P	
5	307.8313	32.75	-7.74	25.01	46.00	-20.99	QP	100	280	P	
6	364.2595	33.55	-6.86	26.69	46.00	-19.31	QP	100	73	P	

Test Plots and Data of Radiated Emissions from 30MHz to 1GHz

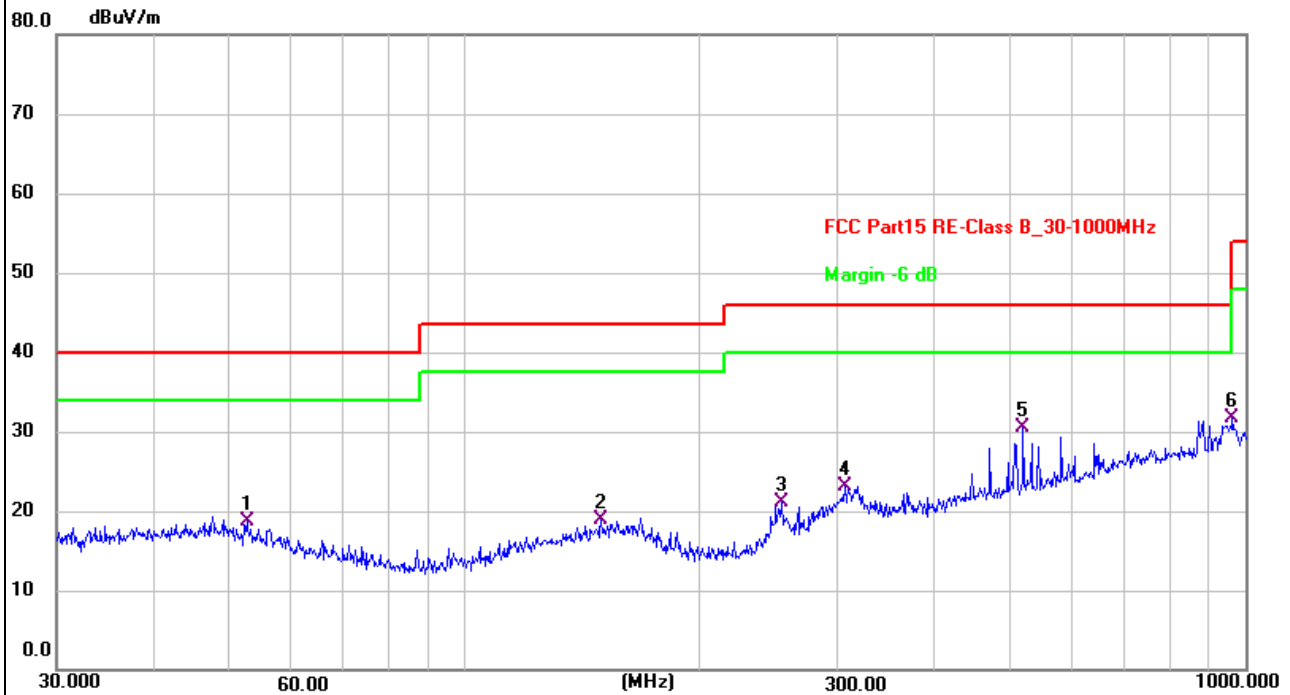
Tested Mode:	TM5
Test Antenna Polarization:	Vertical
Remark:	



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 *	41.7129	38.10	-8.29	29.81	40.00	-10.19	QP	100	348	P	
2	58.6126	37.09	-9.74	27.35	40.00	-12.65	QP	100	348	P	
3	99.8777	42.57	-12.22	30.35	43.50	-13.15	QP	100	266	P	
4	145.3506	33.96	-7.96	26.00	43.50	-17.50	QP	100	143	P	
5	192.4186	39.22	-11.38	27.84	43.50	-15.66	QP	100	71	P	
6	365.5391	34.98	-6.81	28.17	46.00	-17.83	QP	100	348	P	

Test Plots and Data of Radiated Emissions from 30MHz to 1GHz

Tested Mode:	TM7
Test Antenna Polarization:	Horizontal
Remark:	



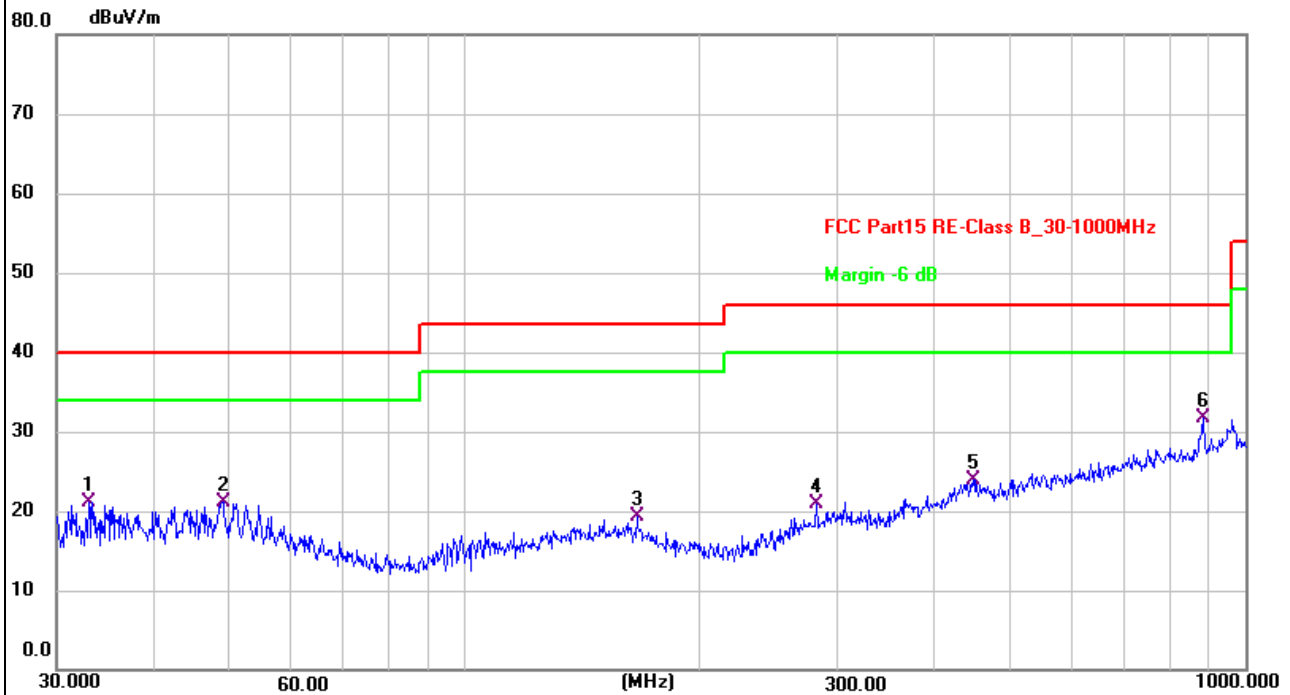
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	52.5753	27.51	-8.82	18.69	40.00	-21.31	QP	100	354	P	
2	149.4857	26.66	-7.74	18.92	43.50	-24.58	QP	200	154	P	
3	254.7284	30.99	-9.80	21.19	46.00	-24.81	QP	100	340	P	
4	306.7537	30.93	-7.79	23.14	46.00	-22.86	QP	100	277	P	
5 *	519.0649	33.63	-3.07	30.56	46.00	-15.44	QP	100	145	P	
6	962.1623	28.58	3.12	31.70	54.00	-22.30	QP	100	288	P	

Test Plots and Data of Radiated Emissions from 30MHz 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	32.9791	30.13	-9.02	21.11	40.00	-18.89	QP	100	153	P	
2	49.0145	29.56	-8.38	21.18	40.00	-18.82	QP	100	50	P	
3	166.0680	27.77	-8.42	19.35	43.50	-24.15	QP	100	266	P	
4	281.9946	29.82	-8.97	20.85	46.00	-25.15	QP	100	91	P	
5	447.9822	28.56	-4.57	23.99	46.00	-22.01	QP	100	12	P	
6 *	881.4067	29.40	2.23	31.63	46.00	-14.37	QP	100	61	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 = $40 \log (\text{specific distance}/\text{test distance})(\text{dB})$;

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.

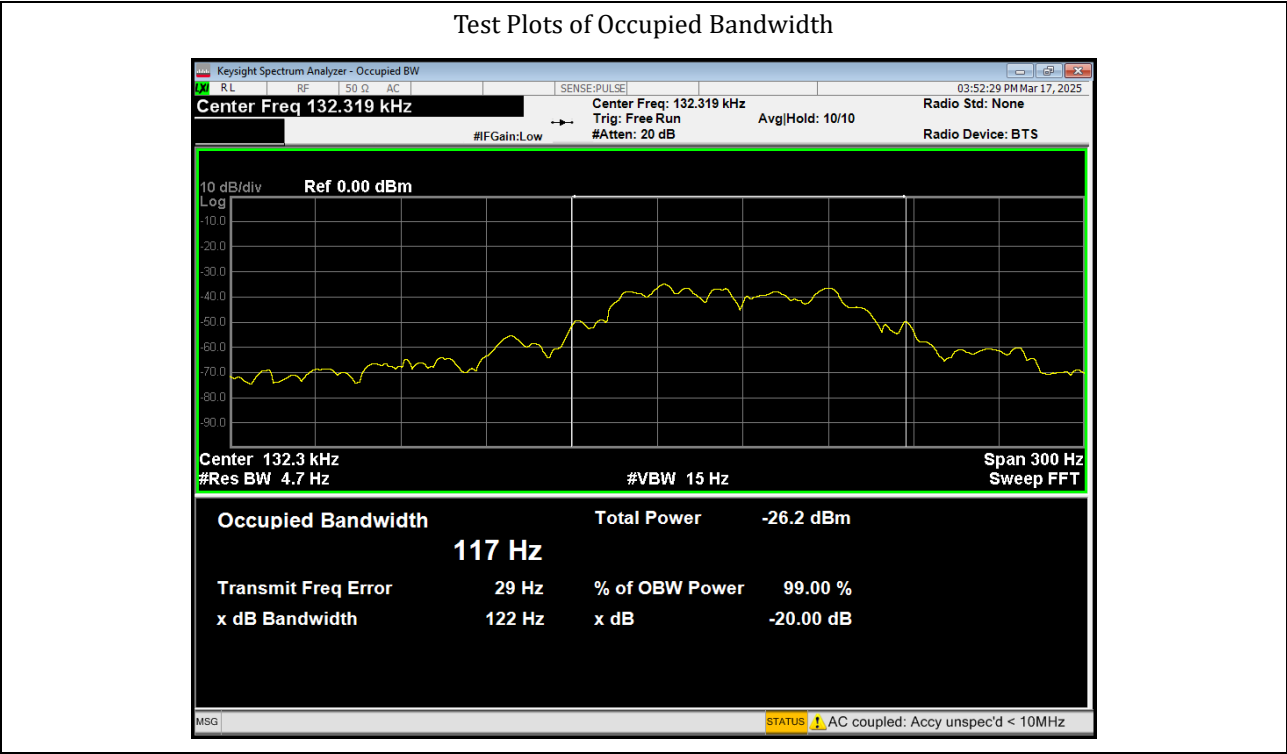


Test Setup Block Diagram

6.3 Test Data and Results

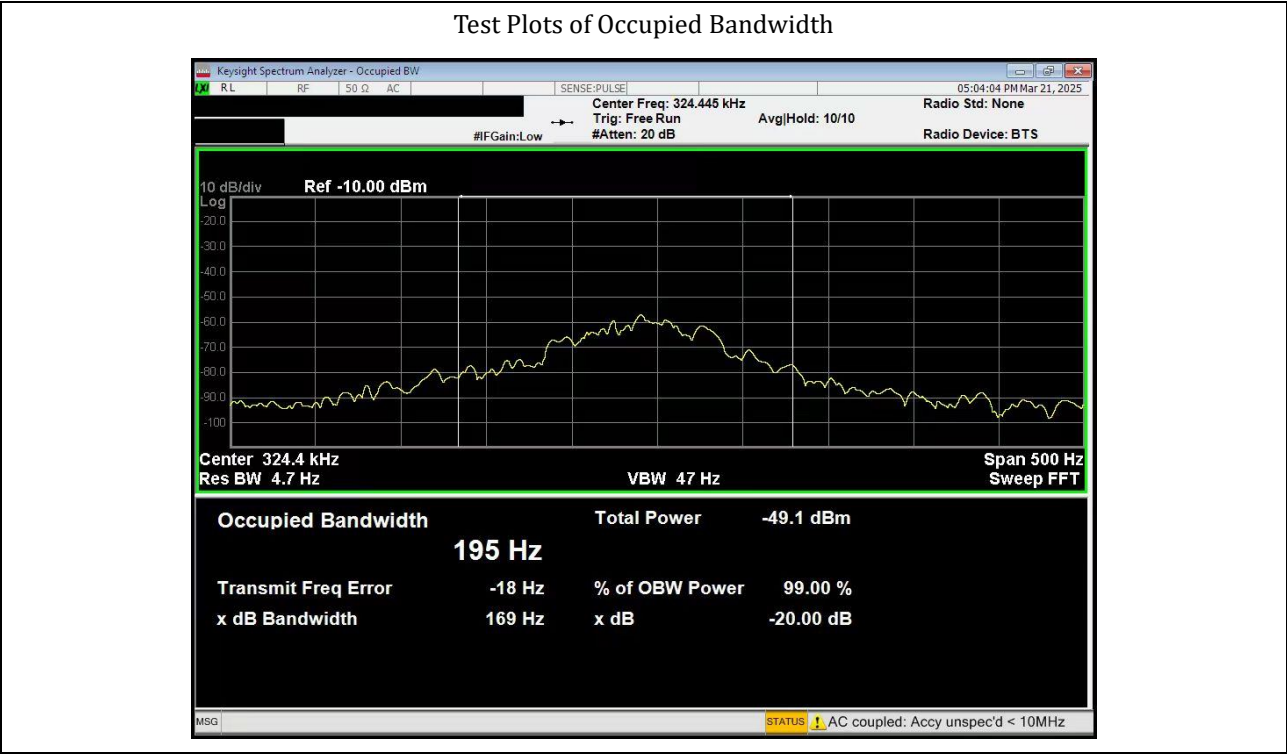
Phone

Test Frequency	20dB Bandwidth	99% Bandwidth
132.3kHz	122Hz	117Hz



Watch

Test Frequency	20dB Bandwidth	99% Bandwidth
324.4kHz	169Hz	195Hz



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