



FCC RF Test Report

APPLICANT : Motorola Mobility LLC
EQUIPMENT : Mobile Cellular Phone
BRAND NAME : Motorola
MODEL NAME : XT2453-7, XT2453-9
FCC ID : IHDT56AQ8
STANDARD : FCC Part 15 Subpart C §15.209
CLASSIFICATION : (DCD) Part 15 Low Power Transmitter Below 1705 kHz
TEST DATE(S) : Mar. 25, 2024 ~ Apr. 18, 2024

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (Kunshan), the test report shall not be reproduced except in full.

Jason Jia



Approved by: Jason Jia

Sporton International Inc. (Kunshan)

**No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China**



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Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	2.1049	20dB Bandwidth	Reporting Only	-
3.1	2.1049	99% Occupied Bandwidth	Reporting Only	-
3.2	15.209	Radiated Emission	Pass	Under limit 12.86 dB at 71.71 MHz
-	15.207	AC Conducted Emission	Not Required	Note 1
3.3	15.203	Antenna Requirements	Pass	-

Note 1: AC adapter mode and WPT mode cannot coexist.

Conformity Assessment Condition:
1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section "Measurement Uncertainty"
Disclaimer:
The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.



1 General Description

1.1 Applicant

Motorola Mobility LLC
222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

1.2 Manufacturer

Motorola Mobility LLC
222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

1.3 Product Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2453-7, XT2453-9
FCC ID	IHDT56AQ8
IMEI Code	Conducted: 356537710004418/356537710004426 Radiation: 356537710004459/356537710004467
HW Version	DVT2
SW Version	U3UC34.16
WPT Frequency Range	110 kHz ~ 148 kHz
WPT Type of Modulation	ASK
WPT Antenna Type	Copper Coil Antenna
EUT Stage	Identical Prototype

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. The two model names are only for market segment.

1.4 Modification of EUT

No modifications are made to the EUT during all test items.



1.5 Test Location

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	03CH07-KS TH01-KS	CN1257	314309

1.6 Test Software

Item	Site	Manufacture	Name	Version
1.	03CH07-KS	AUDIX	E3	6.2009-8-24al

1.7 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ FCC Part 15 Subpart C §15.209, §15.207
- ♦ FCC KDB 414788 D01 Radiated Test Site v01r01.
- ♦ ANSI C63.10-2013

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

1.8 Specification of Accessory

Specification of Accessory				
Battery 1	Brand Name	Motorola	Model Name	QR11
Battery 2	Brand Name	Motorola	Model Name	QR31

2 Test Configuration of Equipment Under Test

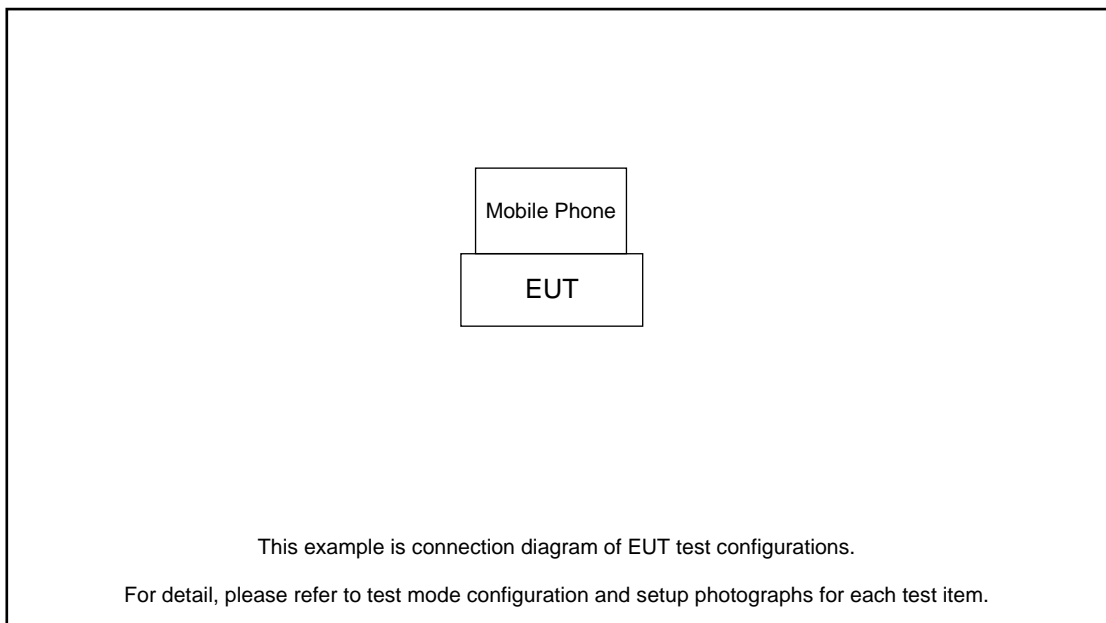
2.1 Test Mode

The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: adiation emission (9 kHz to the 1000 MHz).

Test Items	Function Type
Radiated Emission	Mode 1 : Wireless Charging (Reverse charging for other phone)

2.2 Connection Diagram of Test System

For Radiated Emission



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Mobile Phone	Moto	N/A	N/A	N/A	N/A
2.	Adapter	N/A	N/A	N/A	N/A	N/A
3.	USB Cable	N/A	N/A	N/A	N/A	N/A

3 Test Result

3.1 20dB and 99% Occupied Bandwidth Measurement

3.1.1 Limit of 20dB and 99% Occupied Bandwidth

Reporting only, 99% OBW shall not located within 15.205 restricted bands.

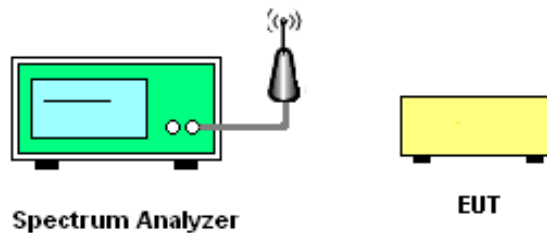
3.1.2 Measuring Instruments

See list of measuring equipment of this test report.

3.1.3 Test Procedures

1. The 20dB bandwidth is measured with a spectrum analyzer connected via a receiver antenna placed near the EUT while wirelessly charging a charging board.
2. Use the following spectrum analyzer settings for 99 % Bandwidth measurement.
3. Measure and record the results in the test report.

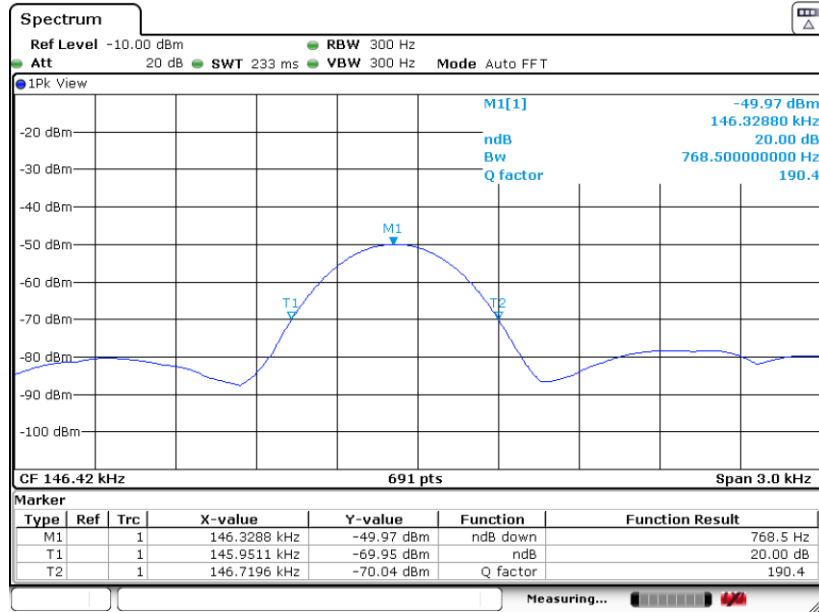
3.1.4 Test Setup





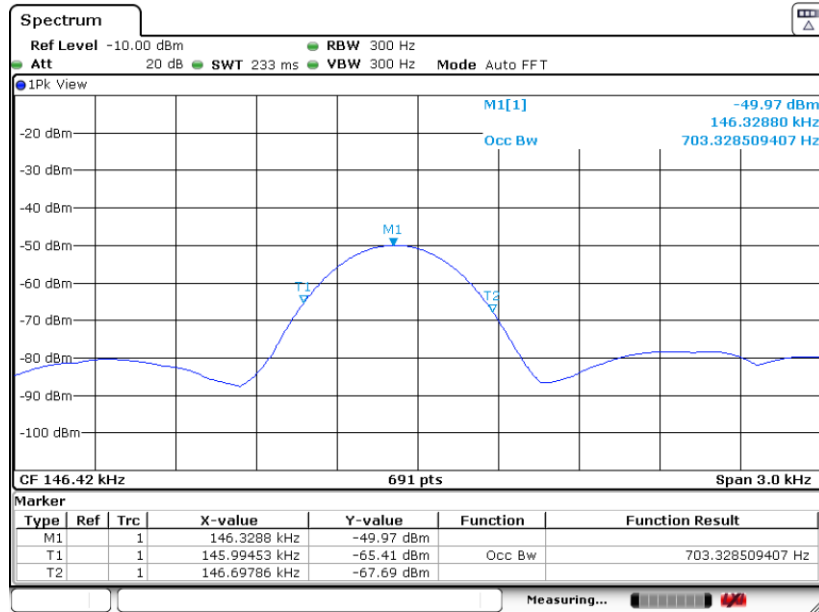
3.1.5 Test Result of 20dB and 99% Bandwidth

20 dB Bandwidth Plot



Date: 25.MAR.2024 13:38:25

99% Occupied Bandwidth Plot



Date: 25.MAR.2024 13:38:12



3.2 Radiated Emission Measurement

3.2.1 Limit of Radiated Emission

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/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

Receiver Parameter	Setting
Frequency Range: 9kHz~150kHz	RBW 200Hz for QP
Frequency Range: 150kHz~30MHz	RBW 9kHz for QP
Frequency Range: 30MHz~1000MHz	RBW 120kHz for Peak

Note: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz. Radiated emission limits in these two bands are based on measurements employing an average detector.

For radiated emissions from 9kHz to 1GHz test distance is 3m

For 9kHz ~ 30MHz

1. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
2. Distance extrapolation factor = 40 log (specific distance / test distance) (dB);
3. specific line (dBµV/m) = 20 log Emission level (µV/m)
4. Limit line = specific limits (dBµV/m) + distance extrapolation factor.

3.2.2 Measuring Instruments

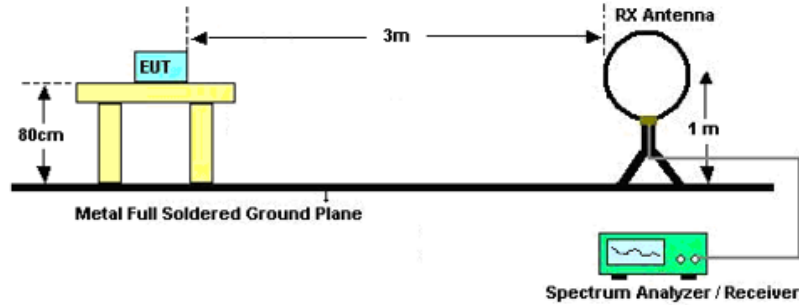
See list of measuring equipment of this test report.

3.2.3 Measuring Instrument Setting

Follow the guidelines in ANSI C63.10-2013 with respect to maximizing the emission by rotating the EUT, measuring the emission for three EUT orthogonal planes, and adjusting the measurement antenna height and polarization. A pre-amp and a high pass filter are used for this test in order to get the good signal level.

3.2.4 Test Setup of Radiated Emission

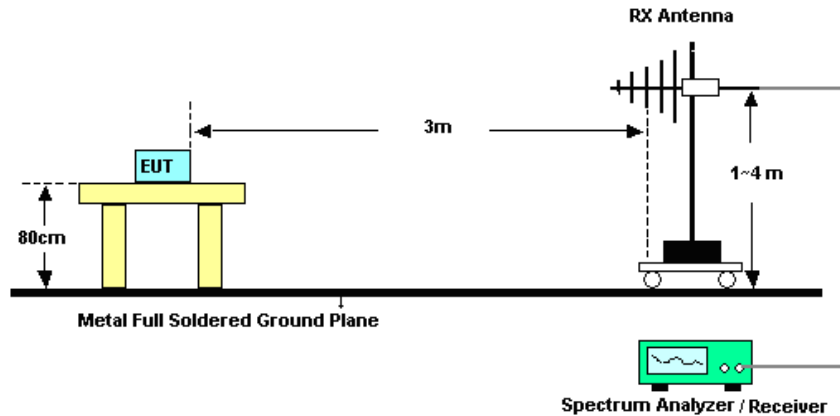
For radiated emissions below 30MHz



Note:

1. There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result came out very similar.
2. Tested for radiated below 30 MHz using a loop antenna in accordance with C63.10, the antenna was positioned in three antenna orientations: horizontal, vertical, and ground-parallel three polarization's, the worst case is horizontal & vertical polarization, test data of two mode was reported.

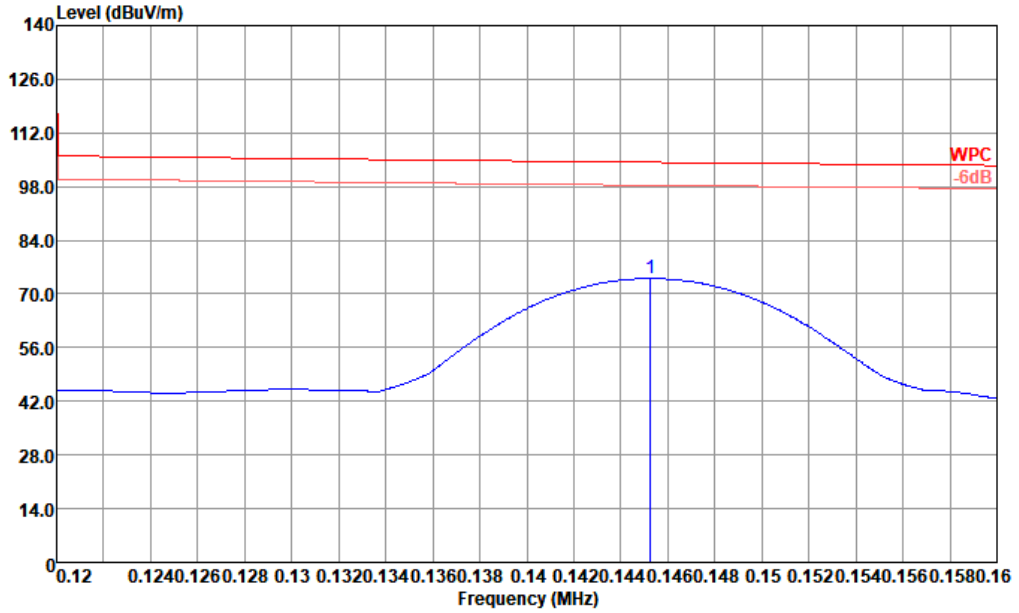
For radiated emissions above 30MHz





3.2.5 Test Result of Fundamental Emission

Test Engineer :	Moon	Temperature :	21~22°C
Polarization :	Horizontal	Relative Humidity :	41~42%

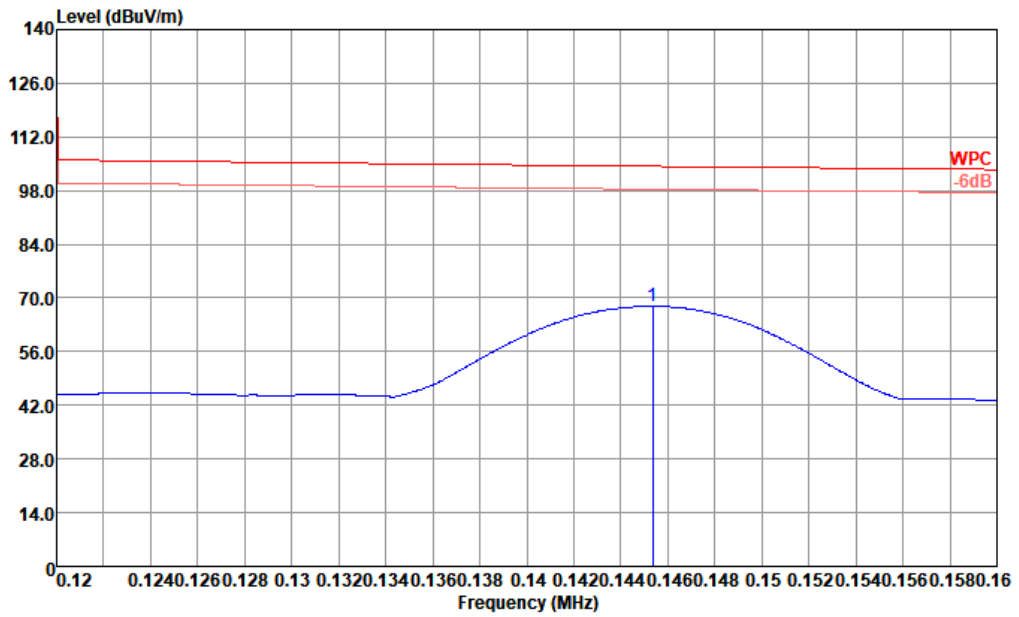


Site : 03CH07-KS
 Condition : WPC 3m NFC NEW HORIZONTAL

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	cm	deg
1 a	0.1453	74.03	-30.32	104.35	53.57	20.37	0.09	---	--- Average



Test Engineer :	Moon	Temperature :	21~22°C
Polarization :	Vertical	Relative Humidity :	41~42%



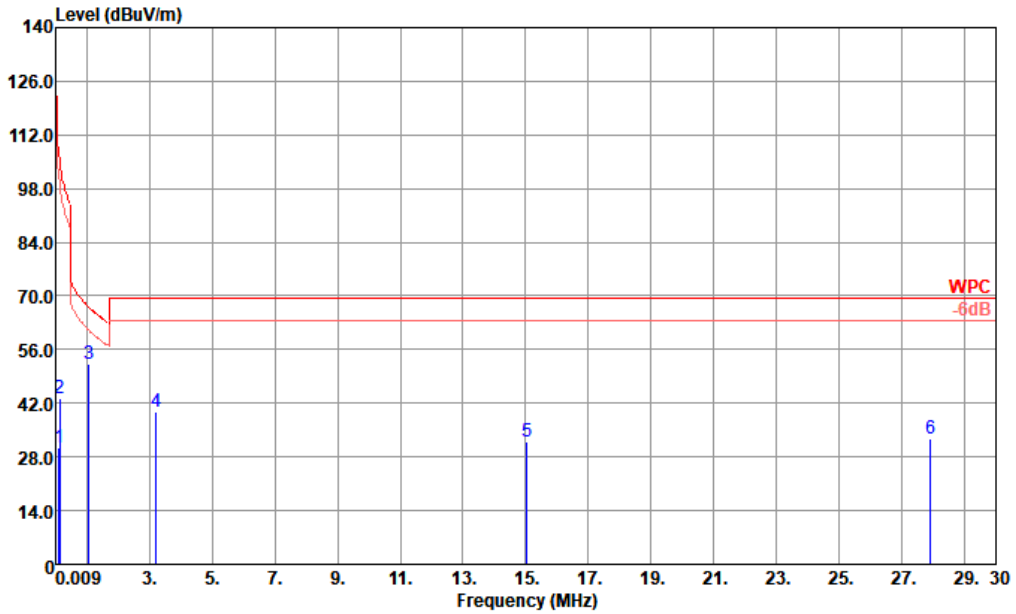
Site : 03CH07-KS
 Condition : WPC 3m NFC NEW VERTICAL

	Freq	Level	Over Limit	Limit Line	ReadAntenna Level	Cable Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	cm	deg
1 a	0.1454	67.83	-36.51	104.34	47.37	20.37	0.09	---	--- Average



3.2.6 Test Result of Radiated Emission (9kHz ~ 30MHz)

Test Engineer :	Moon	Temperature :	21~22°C
Polarization :	Horizontal	Relative Humidity :	41~42%

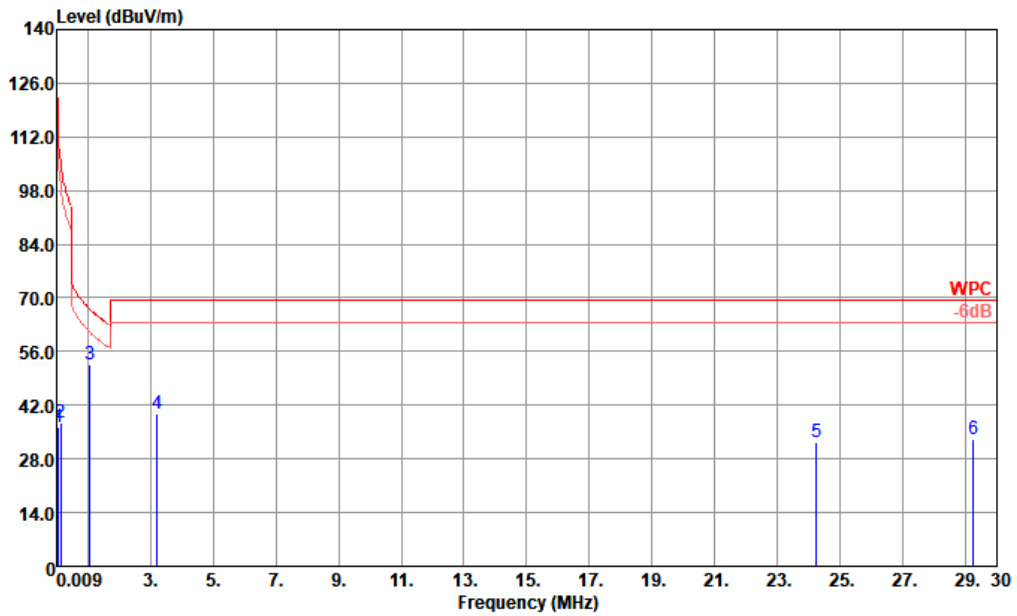


Site : 03CH07-KS
 Condition : WPC 3m NFC NEW HORIZONTAL

	Freq	Level	Over	Limit	ReadAntenna	Cable	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	cm	deg
1	0.1155	30.42	-75.92	106.34	9.94	20.39	0.09	---	Average
2 a	0.1473	43.28	-60.94	104.22	22.82	20.37	0.09	---	Average
3 q	1.0750	52.25	-14.71	66.96	31.86	20.29	0.10	---	QP
4	3.2180	39.90	-29.64	69.54	19.49	20.28	0.13	---	QP
5	15.0380	31.83	-37.71	69.54	11.08	20.45	0.30	---	QP
6	27.9150	32.75	-36.79	69.54	11.03	21.21	0.51	---	QP



Test Engineer :	Moon	Temperature :	21~22°C
Polarization :	Vertical	Relative Humidity :	41~42%



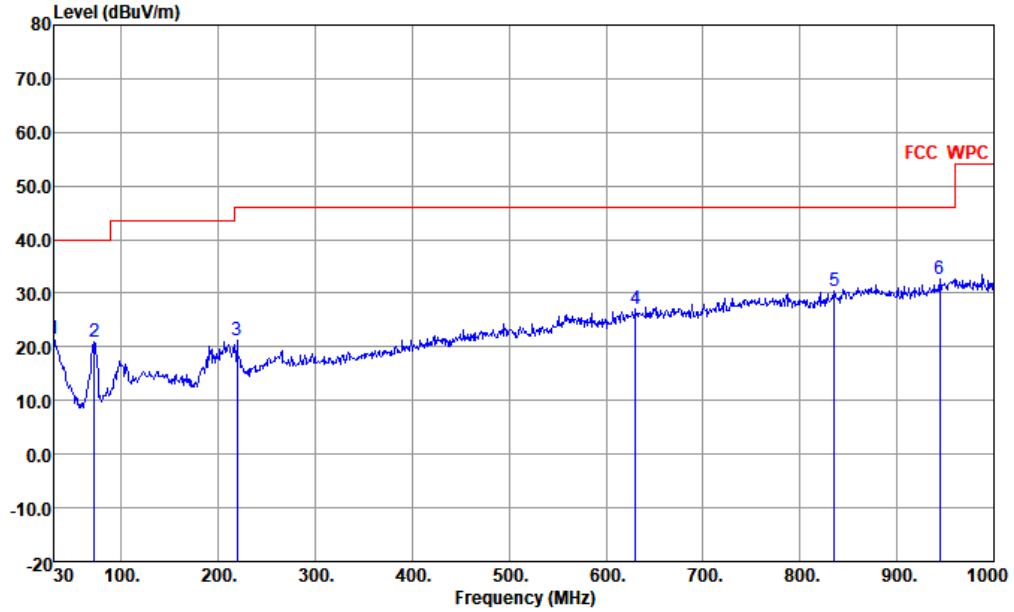
Site : 03CH07-KS
 Condition : WPC 3m NFC NEW VERTICAL

	Freq	Level	Over	Limit	ReadAntenna	Cable	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	cm	deg
1	0.0647	36.37	-75.01	111.38	15.76	20.52	0.09	---	Average
2 a	0.1472	37.24	-66.99	104.23	16.78	20.37	0.09	---	Average
3 q	1.0750	52.64	-14.32	66.96	32.25	20.29	0.10	---	QP
4	3.2240	39.79	-29.75	69.54	19.38	20.28	0.13	---	QP
5	24.2520	32.42	-37.12	69.54	11.10	20.87	0.45	---	QP
6	29.2600	33.15	-36.39	69.54	11.26	21.36	0.53	---	QP



3.2.7 Test Result of Radiated Emission (30MHz ~ 1000MHz)

Test Engineer :	Moon	Temperature :	21~22°C
Polarization :	Horizontal	Relative Humidity :	41~42%

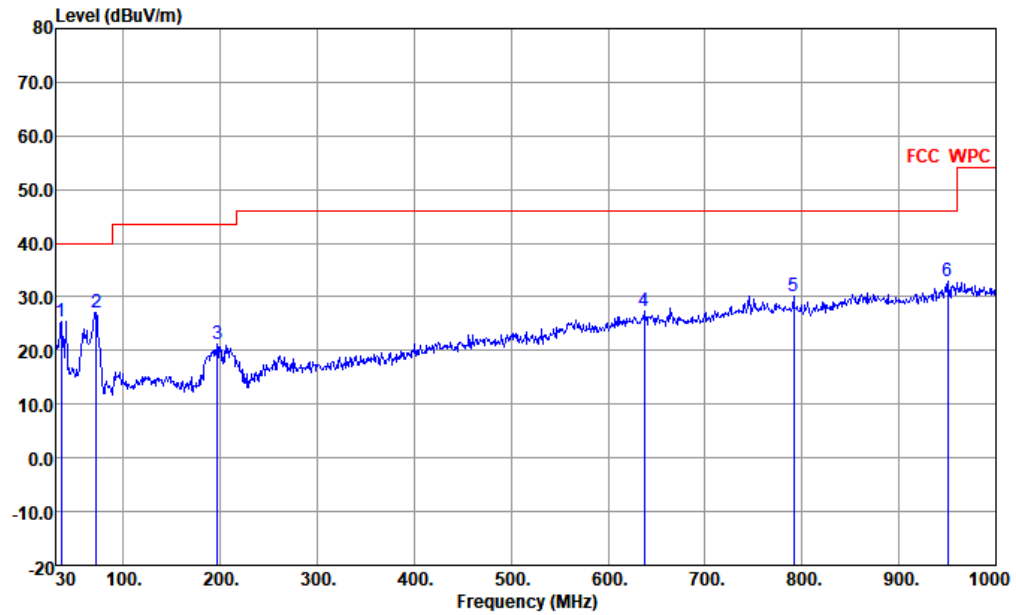


Site : 03CH07-KS
 Condition : FCC WPC 3m CBL6111D-49922 HORIZONTAL

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	30.0000	21.46	-18.54	40.00	27.89	25.18	0.50	32.11	---	---	Peak
2	71.7100	21.08	-18.92	40.00	39.83	12.28	1.07	32.10	---	---	Peak
3	219.1500	21.31	-24.69	46.00	36.24	15.05	2.16	32.14	---	---	Peak
4	630.4300	27.04	-18.96	46.00	29.11	26.57	3.66	32.30	---	---	Peak
5	835.1000	30.39	-15.61	46.00	29.12	28.72	4.20	31.65	---	---	Peak
6 p	943.7401	32.52	-13.48	46.00	28.69	30.36	4.47	31.00	---	---	Peak



Test Engineer :	Moon	Temperature :	21~22°C
Polarization :	Vertical	Relative Humidity :	41~42%



Site : 03CH07-KS
 Condition : FCC WPC 3m CBL6111D-49922 VERTICAL

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	A/Pos	T/Pos	Remark	
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	35.8200	25.41	-14.59	40.00	35.36	21.70	0.57	32.22	---	---	Peak
2 p	71.7100	27.14	-12.86	40.00	45.89	12.28	1.07	32.10	---	---	Peak
3	196.8400	21.11	-22.39	43.50	36.51	14.73	2.05	32.18	---	---	Peak
4	637.2200	27.46	-18.54	46.00	29.31	26.76	3.68	32.29	---	---	Peak
5	791.4500	30.19	-15.81	46.00	29.78	28.25	4.09	31.93	---	---	Peak
6	950.5300	32.94	-13.06	46.00	28.71	30.70	4.48	30.95	---	---	Peak



3.3 Antenna Requirements

3.3.1 Standard Applicable

Except for special regulations, the Low-power Radio-frequency Devices must not be equipped with any jacket for installing an antenna with extension cable. 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 the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited.

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 rule.

3.3.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.



4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV30	101338	10Hz~30GHz	May 16, 2023	Mar. 25, 2024	May 15, 2024	Conducted (TH01-KS)
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz;Max 30dBm	Oct. 10, 2023	Apr. 18, 2024	Oct. 09, 2024	Radiation (03CH07-KS)
Loop Antenna	R&S	HFH2-Z2E	101125	9kHz~30MHz	Oct. 10, 2023	Apr. 18, 2024	Oct. 09, 2024	Radiation (03CH07-KS)
Bilog Antenna	TeseQ	CBL6111D	59913	30MHz-1GHz	Aug. 12, 2023	Apr. 18, 2024	Aug. 11, 2024	Radiation (03CH07-KS)
Amplifier	SONOMA	310N	413740	9KHz-1GHz	Jan. 04, 2024	Apr. 18, 2024	Jan. 03, 2025	Radiation (03CH07-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Apr. 18, 2024	NCR	Radiation (03CH07-KS)
Turn Table	EM	EM 1000-T	N/A	0~360 degree	NCR	Apr. 18, 2024	NCR	Radiation (03CH07-KS)
Antenna Mast	EM	EM 1000-A	N/A	1 m~4 m	NCR	Apr. 18, 2024	NCR	Radiation (03CH07-KS)

NCR: No Calibration Required



5 Measurement Uncertainty

Uncertainty of Conducted Measurement

Occupied Channel Bandwidth	±0.1%
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Uncertainty of Radiated Emission Measurement (9 kHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.30 dB
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Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	6.20 dB
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----- THE END -----