

EMC

TEST REPORT

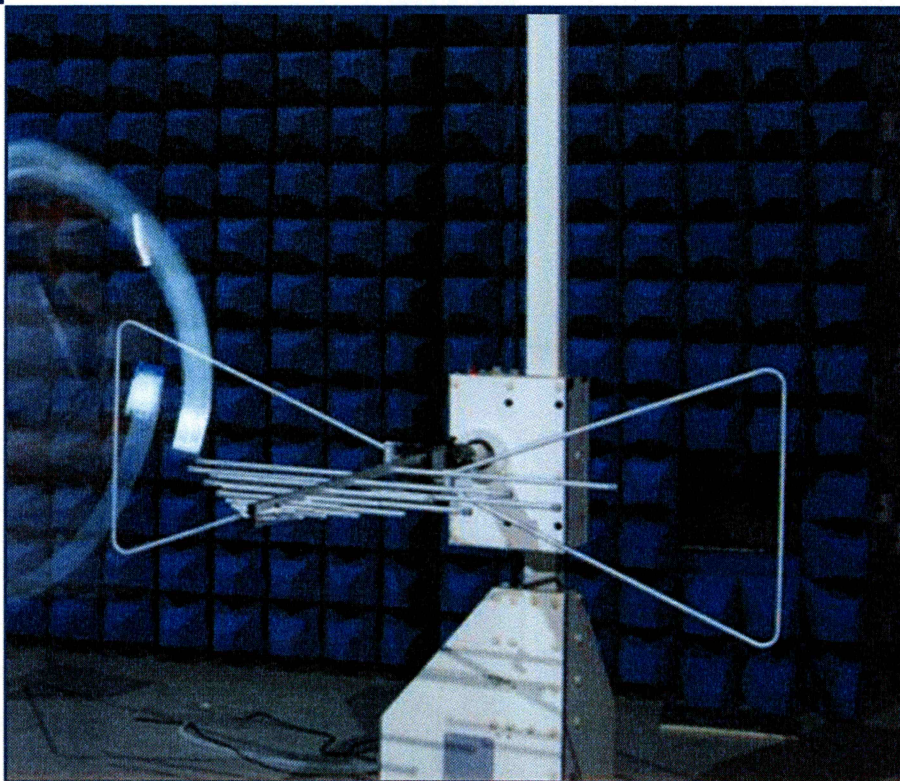
ISSUED BY
Shenzhen BALUN Technology Co., Ltd.



FOR
Punkt. MP 02 4G Feature phone

ISSUED TO
Punkt Tronics AG

Via Losanna 4, Lugano 6900, Switzerland



Tested by: Liu Zhenxiang

Liu Zhenxiang

Date Oct. 09, 2021

Approved by: Liao Jianming

Liao Jianming
(Technical Director)

Date Oct. 09, 2021

Report No.: BL-SZ2181089-401

EUT Name: Punkt. MP 02 4G Feature phone

Model Name: MP02A

Brand Name: Punkt.

Test Standard: 47 CFR Part 15 Subpart B
ICES-003 (Issue 7, October 15, 2020)

FCC ID: Z3PMP02A

Test Conclusion: Pass

Test Date: Sep. 13, 2021 ~ Sep. 17, 2021

Date of Issue: Oct. 09, 2021

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Revision History

Version	Issue Date	Revisions Content
<u>Rev. 01</u>	<u>Oct. 09, 2021</u>	<u>Initial Issue</u>

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1 GENERAL INFORMATION

1.1 Identification of the Testing Laboratory

Company Name	Shenzhen BALUN Technology Co.,Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100
Fax Number	+86 755 6182 4271

1.2 Identification of the Responsible Testing Location

Test Location	Shenzhen BALUN Technology Co.,Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 11524A-1. The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196.
Description	All measurement facilities used to collect the measurement data are located at Block B, FL 1, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China 518055

1.3 Laboratory Condition

Ambient Temperature	20°C to 25°C
Ambient Relative Humidity	30% to 60%
Ambient Pressure	100 kPa to 102 kPa

1.4 Announce

- (1) The test report refer to the BALUN report mode v3.4.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.
- (5) This document may not be altered or revised in any way unless done so by BALUN and all revisions are duly noted in the revisions section.
- (6) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
- (7) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Punkt Tronics AG
Address	Via Losanna 4, Lugano 6900, Switzerland

2.2 Manufacturer Information

Manufacturer	Shenzhen Unicair Communication Technology Co., Ltd.
Address	8-9/F, Block1, Wutong Island, Shunchang Rd., Xixiang, Bao'an District, Shenzhen China.

2.3 Factory Information

Factory	Dongguan Unicair Communication Tech Co., Ltd
Address	No.49 Yinhu Road, Yinhu Industrial Zone, Qiaotou Town, Dongguan City, Guangdong Province, China

2.4 General Description for Equipment under Test (EUT)

EUT Name	Punkt. MP 02 4G Feature phone
Model Name Under Test	MP02A
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	MP02_Main_Rev.B
Software Version	03.00.0301
Dimensions (Approx.)	117*51.3*14.3 mm
Weight (Approx.)	100g (with battery)

2.5 Ancillary Equipment

Ancillary Equipment 1	Battery	
	Brand Name	Punkt.
	Model No.	MP02
	Serial No.	N/A
	Capacity	1280 mAh
	Rated Voltage	3.8 V
	Limit Charge Voltage	4.35 V
Ancillary Equipment 2	USB Cable	
	Model No.	N/A
	Length (Approx.)	0.8 m

2.6 Technical Information

The Highest Speed of Processor	1.1 GHz
Network and Wireless connectivity	2G Network GSM/GPRS/EDGE 850/1900 MHz 3G Network WCDMA/HSDPA/HSUPA/DC-HSDPA Band 2/4/5 4G Network LTE FDD Band 2/4/5/7/12/17 Bluetooth (BR+EDR+BLE) 2.4G WIFI 802.11b, 802.11g, 802.11n(HT20/40) GPS, GLONASS, BDS

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 15 Subpart B (10-1-19 Edition)	Unintentional Radiators
2	ICES-003 (Issue 7, October 15, 2020)	Information Technology Equipment (Including Digital Apparatus)
3	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

3.2 Verdict

No.	Description	FCC Rule	ISED Rule	Test Verdict	Result
1	Radiated Emission	15.109	ICES-003, 3.2.2	Pass	Annex A .1
2	Conducted Emission, AC Ports	15.107	ICES-003, 3.2.1	Pass	Annex A .2

3.3 Test Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement	Value
Conducted emissions (9 kHz-30 MHz)	2.96 dB
Radiated emissions (30 MHz-1 GHz)	3.67 dB
Radiated emissions (1 GHz-18 GHz)	3.57 dB
Radiated emissions (18 GHz-40 GHz)	5.16 dB

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

Environment Parameter	Selected Values During Tests			
	Temperature	Voltage	Relative Humidity	Ambient Pressure
Normal Temperature, Normal Voltage (NTNV)	20°C to 25°C	AC 120 V/60 Hz	30% to 60%	100 kPa to 102 kPa

4.2 Test Equipment List

Radiated Emission Test For Frequency Below 1 GHz (10 m)						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	ROHDE&SCHWA RZ	ESRP	101036	2021.06.01	2022.05.31	☐
Test Antenna- Bi-Log	SCHWARZBECK	VULB 9168	9168-0883	2020.05.11	2022.05.10	☐
Anechoic Chamber	EMC Electronic Co., Ltd	20.10*11.60 *7.35m	N/A	2019.08.08	2022.08.07	☐
Test Software	BALUN	BL410_E	V19.918	--	--	☐

Radiated Emission Test For Frequency Below 1 GHz (3 m)						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	KEYSIGHT	N9038A	MY53220118	2020.09.18	2021.09.17	☒
Test Antenna- Bi-Log	SCHWARZBECK	VULB 9163	9163-624	2019.07.02	2022.07.01	☒
Anechoic Chamber	YIHENG	9m*6m*6m	N/A	2021.07.12	2024.07.11	☒
Test Software	BALUN	BL410_E	V19.918	--	--	☒

Radiated Emission Test For Frequency Above 1 GHz						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	KEYSIGHT	N9038A	MY53220118	2020.09.18	2021.09.17	☒
Test Antenna- Horn	SCHWARZBECK	BBHA 9120D	9120D-1917	2019.07.02	2022.07.01	☒
Anechoic Chamber	YIHENG	9m*6m*6m	N/A	2021.07.12	2024.07.11	☒
Test Software	BALUN	BL410_E	V19.918	--	--	☒

Conducted disturbance Test						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	KEYSIGHT	N9010B	MY5711030 9	2021.06.01	2022.05.31	☒
LISN	SCHWARZBECK	NSLK 8127	8127-687	2021.06.08	2022.06.07	☒
Shielded Enclosure	YiHeng Electronic Co., Ltd	3.4m*3.1m*2 .8m	N/A	2019.08.16	2022.08.15	☒
Test Software	BALUN	BL410_E	V19.918	--	--	☒

4.3 Test Enclosure list

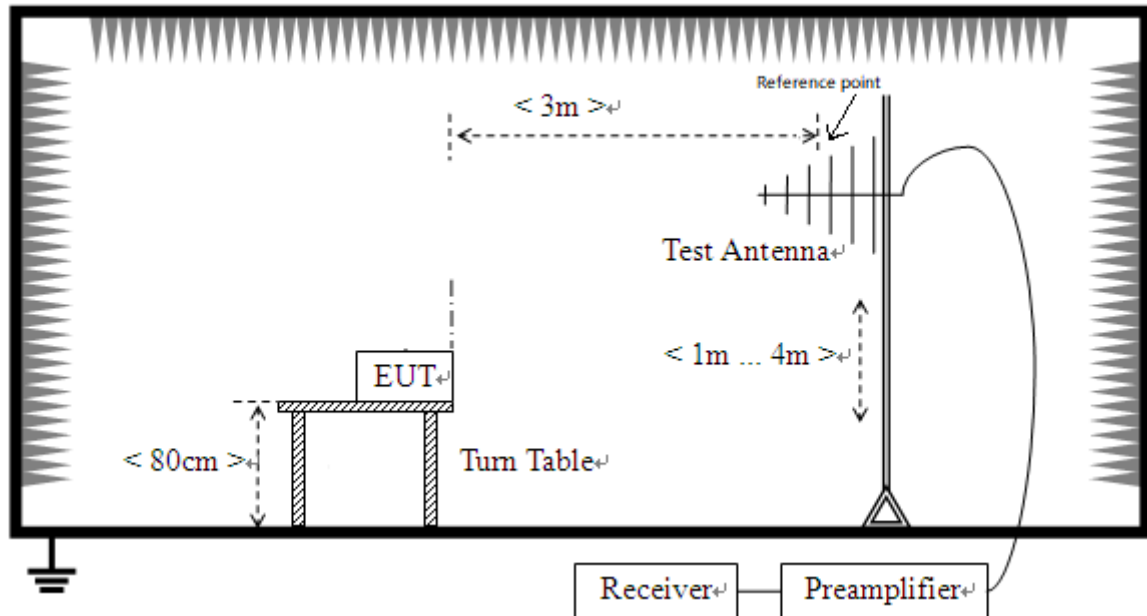
Description	Manufacturer	Model	Serial No.	Length	Description	Use
PC	N/A	N/A	N/A	N/A	Special Handled	☐
Laptop	Apple	A1465	N/A	N/A	N/A	☒
Adapter	N/A	N/A	N/A	N/A	N/A	☒
Keyboard	Logitech	Y-BP62a	N/A	N/A	N/A	☐
Mouse	Logitech	M100	N/A	N/A	N/A	☐
USB disk	Kingston	N/A	N/A	N/A	N/A	☐
TF Card	Kingston	N/A	N/A	N/A	N/A	☐
VGA Cable	N/A	N/A	N/A	1.5 m	Shielded with core	☐
HDMI Cable	N/A	N/A	N/A	1.5 m	Shielded with core	☐
DVI Cable	N/A	N/A	N/A	1.5 m	Shielded with core	☐
Coaxial video cable	N/A	N/A	N/A	2.0 m	Shielded with core	☐
Audio Cable	N/A	N/A	N/A	0.5 m	Shielded with core	☐
iPhone	Apple	A1586	N/A	N/A	N/A	☐
Bluetooth Earphone	SAMSUNG	Gear Circle	N/A	N/A	N/A	☐
Wireless Communications Test Set	R&S	CMW500	142028	N/A	Cal. Due 2019.06.14	☐
WIFI Router	TP-LINK	TL-WDR7500	N/A	N/A	N/A	☐
Earphone	N/A	OPPO	N/A	1.1 m	N/A	☐
Car Battery	Camel	55530	N/A	N/A	12 V/55 Ah	☐
Artificial load	N/A	N/A	N/A	N/A	2.5 Ω /100 W	☐
Artificial load	N/A	N/A	N/A	N/A	5 Ω /100 W	☐
Electronic Load	ITECH	IT8511	N/A	N/A	N/A	☐
USB Cable	N/A	N/A	N/A	1.5 m	Shielded with core	☐
DC Power Supply	ITECH	IT6863A	60001401068 7210006	N/A	N/A	☐
LCD Monitor	SAMSUNG	UA32C4000P	N/A	N/A	N/A	☐
RJ45 Cable	N/A	N/A	N/A	1.5 m	Shielded with core	☐

4.4 Test Configurations

Test Configurations (TC) No.	Description
TC01	<u>The GSM 850 MHz RX Test Mode</u> GSM 850 MHz RX + EUT +Adapter + USB Cable + Battery
TC02	<u>The EGPRS 850 MHz RX Test Mode</u> EGPRS 850 MHz RX + EUT +Adapter + USB Cable + Battery
TC03	<u>The WCDMA Band 5 RX Test Mode</u> WCDMA Band 5 RX + EUT +Adapter + USB Cable + Battery
TC04	<u>The LTE Band 5 RX Test Mode</u> LTE Band 5 RX + EUT +Adapter + USB Cable + Battery
TC05	<u>The LTE Band 12 RX Test Mode</u> LTE Band 12 RX + EUT +Adapter + USB Cable + Battery
TC06	<u>The LTE Band 17 RX Test Mode</u> LTE Band 17 RX + EUT +Adapter + USB Cable + Battery
TC07	<u>The Charging Test Mode</u> EUT + Battery + Adapter + USB Cable
TC08	<u>The USB Test Mode</u> EUT + USB Cable + Battery + Laptop

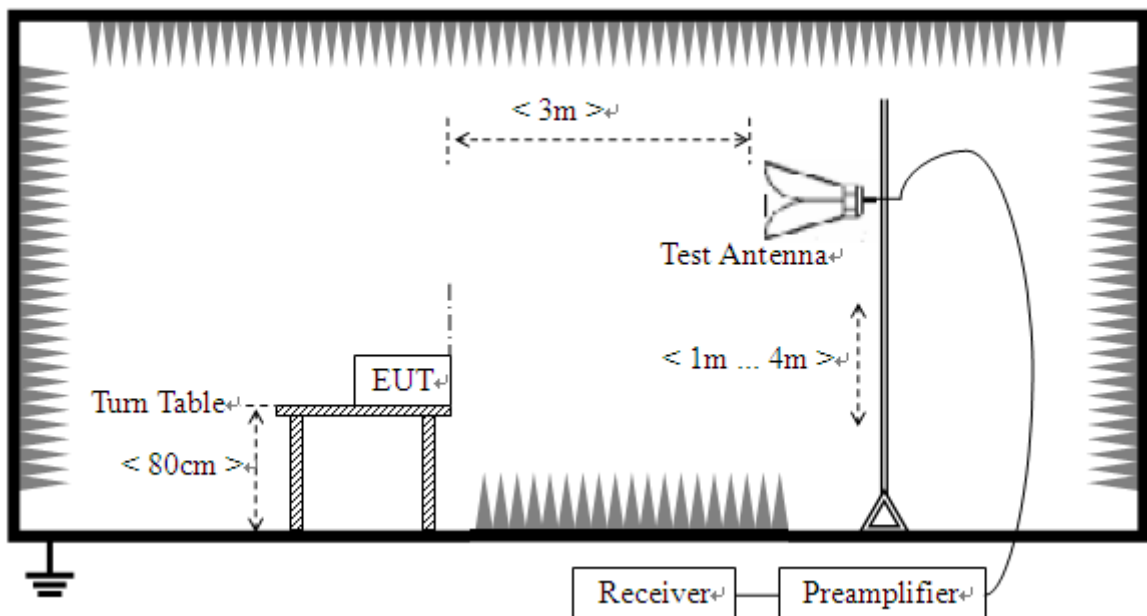
4.5 Test Setups

Test Setup 1



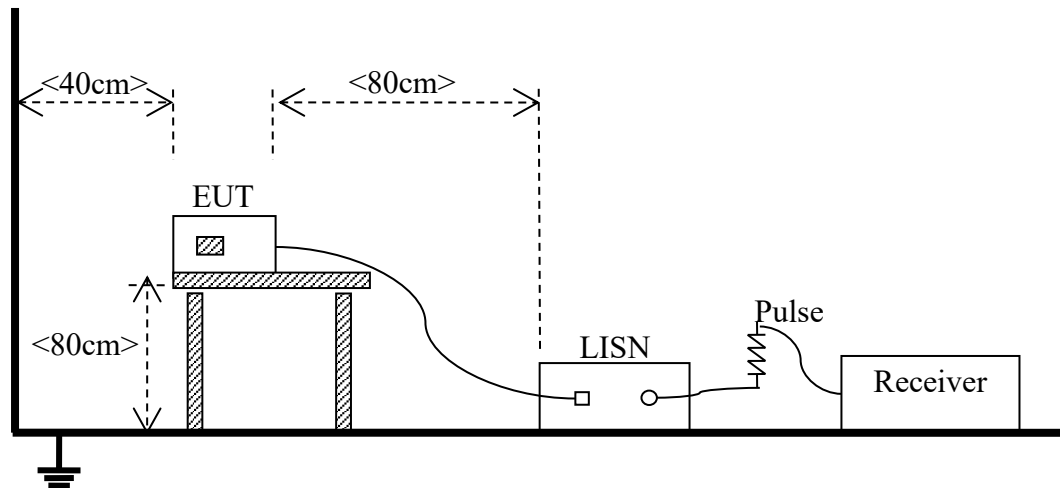
(For Radiated Emission Test (30 MHz-1 GHz))

Test Setup 2



(For Radiated Emission Test (above 1 GHz))

Test Setup 3



(For Conducted Emission, AC Ports Test)

4.6 Test Conditions

Test Case	Test Conditions	
Radiated Emission	Test Env.	NTNV
	Test Setup	Test Setup 1&2
	Test Configuration	TC01~TC08 ^{Note}
Conducted Emission, AC Ports	Test Env.	NTNV
	Test Setup	Test Setup 3
	Test Configuration	TC01~TC08 ^{Note}
Note: Based on client request, all normal using modes of the normal function were tested but only the worst test data of the worst mode is reported by this report. The Charging Test Mode is the worst mode in this report.		

5 TEST ITEMS

5.1 Emission Tests

5.1.1 Radiated Emission

5.1.1.1 Limit

FCC:

Frequency range (MHz)	Class B (at 3 m)		Class B (at 10 m)	Class A (at 10 m)	
	Field Strength ($\mu\text{V/m}$)	Field Strength (dB $\mu\text{V/m}$)	Field Strength (dB $\mu\text{V/m}$)	Field Strength ($\mu\text{V/m}$)	Field Strength (dB $\mu\text{V/m}$)
30 - 88	100	40	30	90	39
88 - 216	150	43.5	33.5	150	43.5
216 - 960	200	46	36	210	46.4
Above 960	500	54	44	300	49.5

NOTE:

- 1) Field Strength (dB $\mu\text{V/m}$) = $20 \cdot \log [\text{Field Strength } (\mu\text{V/m})]$.
- 2) In the emission tables above, the tighter limit applies at the band edges.
- 3) The limits using ANSI C63.4.

IC:

Frequency range (MHz)	Class A (3 m) Quasi-peak (dB $\mu\text{V/m}$)	Class A (10 m) Quasi-peak (dB $\mu\text{V/m}$)	Class B (3 m) Quasi-peak (dB $\mu\text{V/m}$)	Class B (10m) Quasi-peak (dB $\mu\text{V/m}$)
30 - 88	50.0	40.0	40	30.0
88 - 216	54.0	43.5	43.5	33.1
216 - 230	56.9	46.4	46.0	35.6
230 - 960	57.0	47.0	47.0	37.0
960 - 1000	60.0	49.5	54.0	43.5

Note: The more stringent limit applies at transition frequencies.

Frequency range (GHz)	Class A (3 m) Average (dB $\mu\text{V/m}$)	Class A (3 m) Peak (dB $\mu\text{V/m}$)	Class B (3 m) Average (dB $\mu\text{V/m}$)	Class B (3 m) Peak (dB $\mu\text{V/m}$)
1 - F_M	60	80	54	74

Note:

1. The highest measurement frequency, F_M , in GHz, shall be determined as next Table.
2. The measurement bandwidth shall be 1 MHz or greater.
3. These limit levels apply for a measurement distance of 3 m. If using a different measurement distance, the measured levels shall be extrapolated to the 3 m limit distance using a factor of 20 dB per decade of distance. The measurement distance shall place the measurement antenna in the far field of the ITE or digital apparatus under test.
4. The test site shall have been validated at the distance used for radiated emission measurements on

Frequency range (GHz)	Class A (3 m) Average (dBμV/m)	Class A (3 m) Peak (dBμV/m)	Class B (3 m) Average (dBμV/m)	Class B (3 m) Peak (dBμV/m)
the ITE or digital apparatus under test				

Highest internal frequency (F_x)	Highest measurement frequency (F_m)
$F_x \leq 108 \text{ MHz}$	1GHz
$108 \text{ MHz} \leq F_x \leq 500 \text{ MHz}$	2GHz
$500 \text{ MHz} \leq F_x \leq 1 \text{ GHz}$	5GHz
$F_x \geq 1 \text{ GHz}$	$5 * F_x$ up to a maximum of 40 GHz
Note: F_x is the highest fundamental frequency generated and/or used in the ITE or digital apparatus under test.	

5.1.1.2 Test Setup

Refer to 4.5 section (test setup 1 to test setup 2) for radiated emission test, the photo of test setup please refer to ANNEX B.

5.1.1.3 Test Procedure

The test employing the methods of measurement described in the publication referenced in Section 3(b) (ANSI C63.4);

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

An initial pre-scan was performed in the chamber using the EMI Receiver in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by Bi-Log antenna with 2 orthogonal polarities.

5.1.1.4 Test Result

Please refer to ANNEX A.1.

NOTE:

1. Results (dBuV/m) = Reading (dBuV) + Factor (dB/m)

The reading level is calculated by software which is not shown in the sheet

2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Amplifier Gain (dB)

3. Over limit = Results – Limit.

5.1.2 Conducted Emission

5.1.2.1 Test Limit

Frequency range (MHz)	Class A	
	Quasi-peak (dBμV)	Average (dBμV)
0.15 - 0.50	79	66
0.50 - 30	73	60

Frequency range (MHz)	Class B	
	Quasi-peak (dBμV)	Average (dBμV)
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
5 - 30	60	50

NOTE:

- 1) The lower limit shall apply at the band edges.
- 2) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50 MHz.
- 3) The limit using ANSI C63.4.

5.1.2.2 Test Setup

Refer to 4.5 section test (test setup 3) for conducted emission, the photo of test setup please refer to ANNEX B.

5.1.2.3 Test Procedure

The test employing the methods of measurement described in the publication referenced in Section 3(b) (ANSI C63.4);

The EUT is connected to the power mains through a LISN which provides 50 Ω/50 μH of coupling impedance for the measuring instrument. The test frequency range is from 150 kHz to 30 MHz. The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels that are more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed.

Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. A device rated for 50/60 Hz operation need not be tested at both frequencies provided the radiated and line conducted emissions are the same at both frequencies.

5.1.2.4 Test Result

Please refer to ANNEX A.2.

NOTE:

1. Results (dBuV/m) = Reading (dBuV) + Factor (dB/m)

The reading level is calculated by software which is not shown in the sheet

2. Factor = Insertion loss + Cable loss

3. Over limit = Results – Limit.

ANNEX A TEST RESULTS

A.1 Radiated Emission

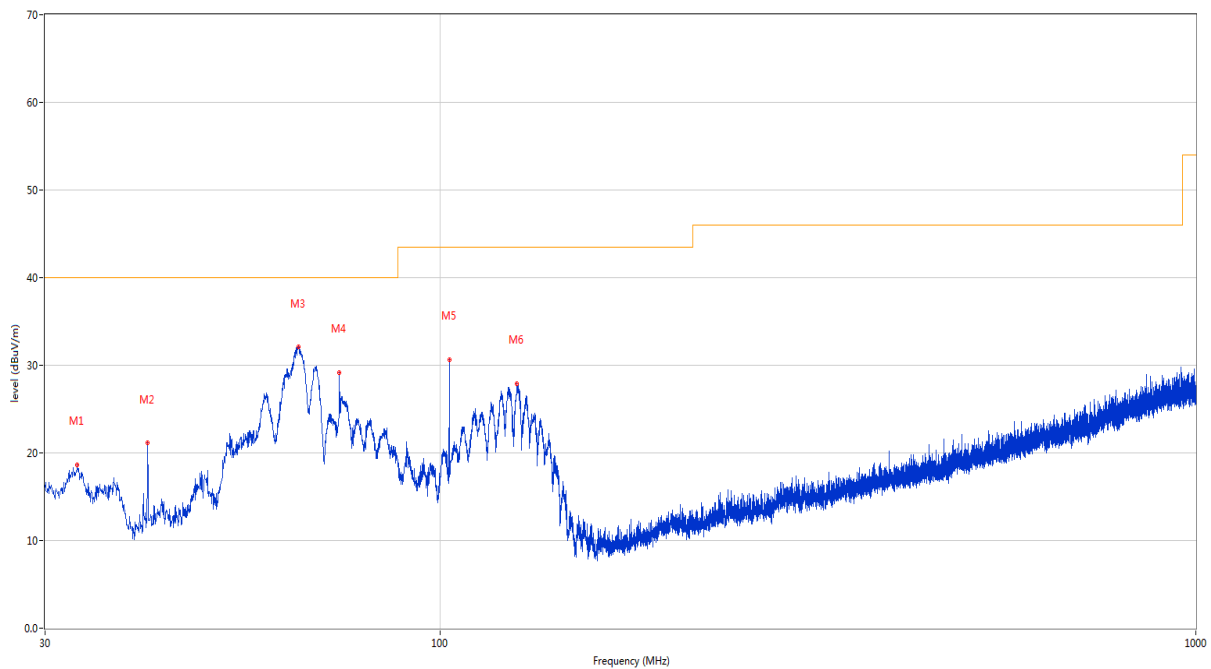
Note 1: The symbol of “--” in the table which means not application.

Note 2: For the test data above 1 GHz, according the ANSI C63.4-2014, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

Test Data and Plots

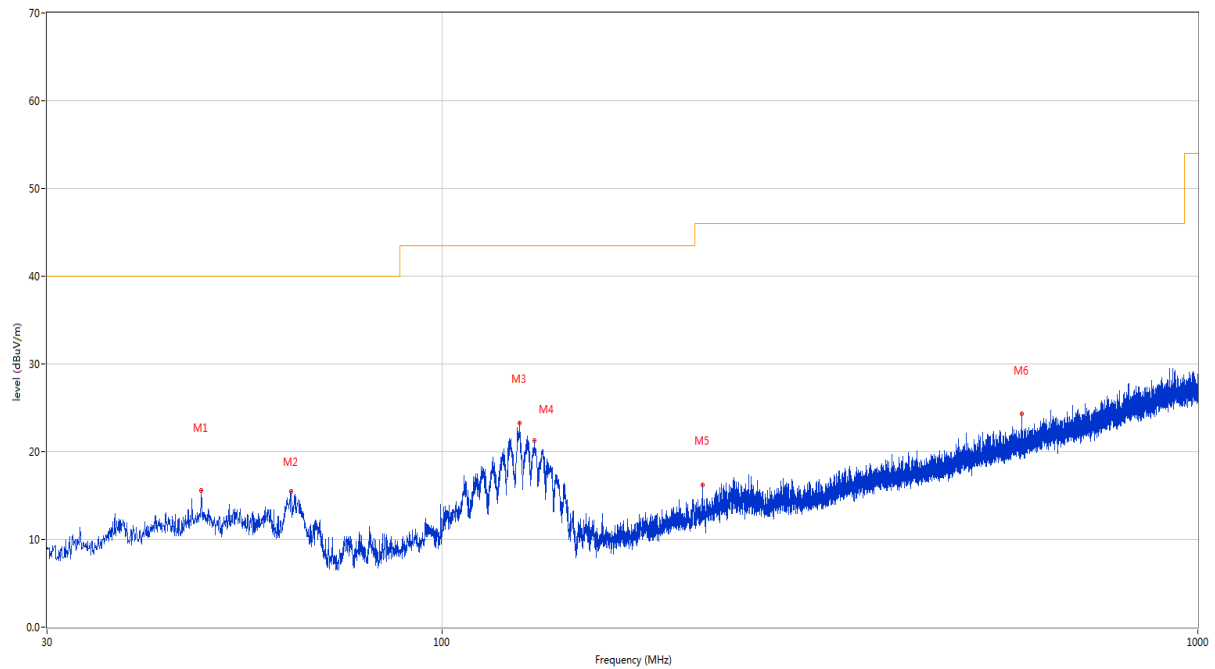
The Charging Test Mode

A.1.1 Test Antenna Vertical, 30 MHz – 1 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	33.104	18.59	-26.34	40.0	-21.41	Peak	306.90	100	Vertical	Pass
2	41.010	21.16	-23.79	40.0	-18.84	Peak	163.40	100	Vertical	Pass
3	65.017	32.06	-25.04	40.0	-7.94	Peak	188.50	100	Vertical	Pass
4	73.553	29.20	-28.49	40.0	-10.80	Peak	74.30	100	Vertical	Pass
5	102.847	30.66	-24.46	43.5	-12.84	Peak	3.70	100	Vertical	Pass
6	126.369	27.91	-26.75	43.5	-15.59	Peak	315.70	100	Vertical	Pass

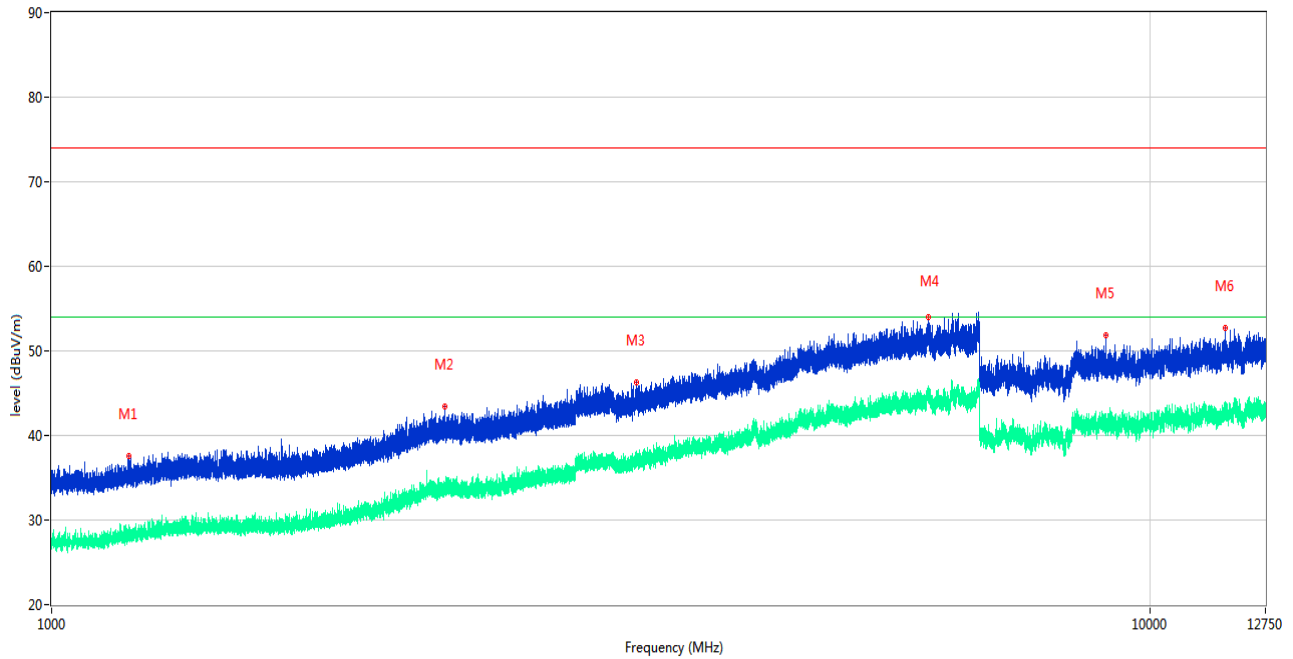
A.1.2 Test Antenna Horizontal, 30 MHz – 1 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	47.993	15.57	-22.64	40.0	-24.43	Peak	120.20	100	Horizontal	Pass
2	63.077	15.50	-24.78	40.0	-24.50	Peak	359.40	100	Horizontal	Pass
3	126.515	23.28	-26.80	43.5	-20.22	Peak	181.60	200	Horizontal	Pass
4	132.432	21.24	-27.28	43.5	-22.26	Peak	177.00	200	Horizontal	Pass
5	221.236	16.23	-23.89	46.0	-29.77	Peak	136.90	100	Horizontal	Pass
6	584.791	24.34	-14.81	46.0	-21.66	Peak	360.00	200	Horizontal	Pass

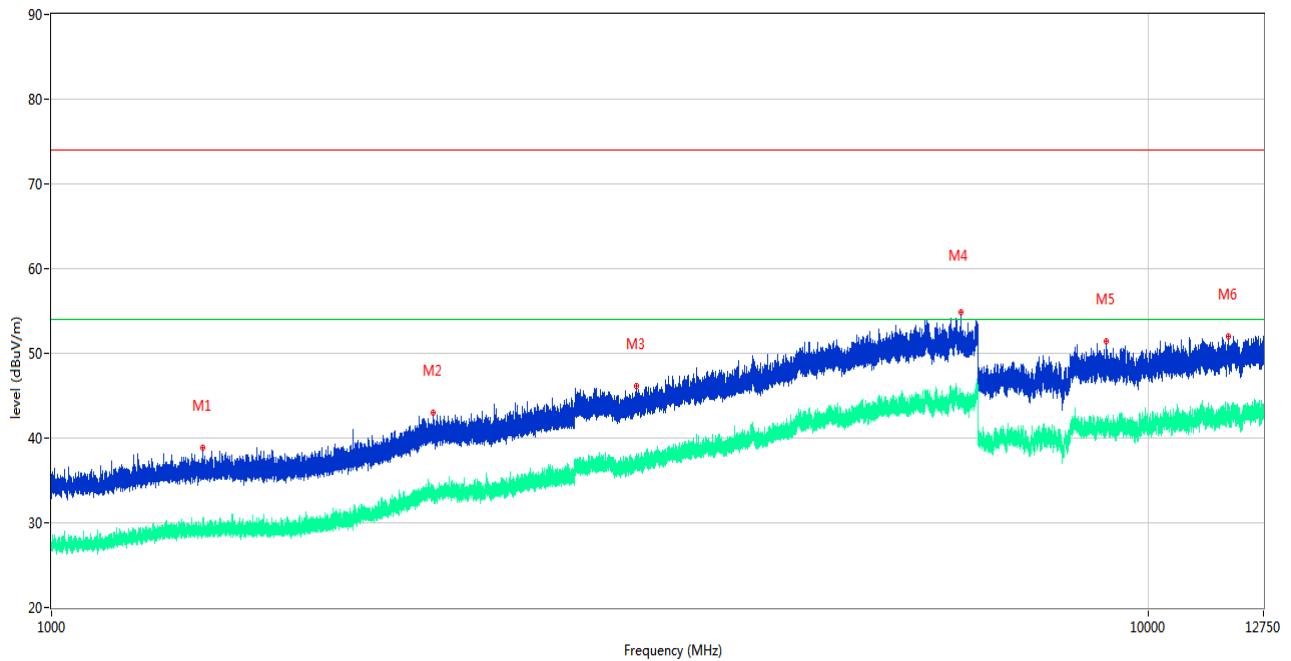
Test Data and Plots (Above 1 GHz)

A.1.3 Test Antenna Vertical, 1 GHz – 12.75 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1175.600	37.62	-18.02	74.0	-36.38	Peak	24.00	100	Vertical	Pass
1**	1175.600	27.87	-18.02	54.0	-26.13	AV	24.00	100	Vertical	Pass
2	2280.800	43.42	-12.88	74.0	-30.58	Peak	355.00	100	Vertical	Pass
2**	2280.800	33.61	-12.88	54.0	-20.39	AV	355.00	100	Vertical	Pass
3	3408.400	46.27	-6.90	74.0	-27.73	Peak	191.00	100	Vertical	Pass
3**	3408.400	37.21	-6.90	54.0	-16.79	AV	191.00	100	Vertical	Pass
4	6283.200	53.96	-0.22	74.0	-20.04	Peak	165.00	100	Vertical	Pass
4**	6283.200	44.57	-0.22	54.0	-9.43	AV	165.00	100	Vertical	Pass
5	9118.875	51.82	-1.36	74.0	-22.18	Peak	360.00	100	Vertical	Pass
5**	9118.875	41.34	-1.36	54.0	-12.66	AV	360.00	100	Vertical	Pass
6	11733.112	52.65	0.83	74.0	-21.35	Peak	54.00	100	Vertical	Pass
6**	11733.112	42.53	0.83	54.0	-11.47	AV	54.00	100	Vertical	Pass

A.1.4 Test Antenna Horizontal, 1 GHz – 12.75 GHz

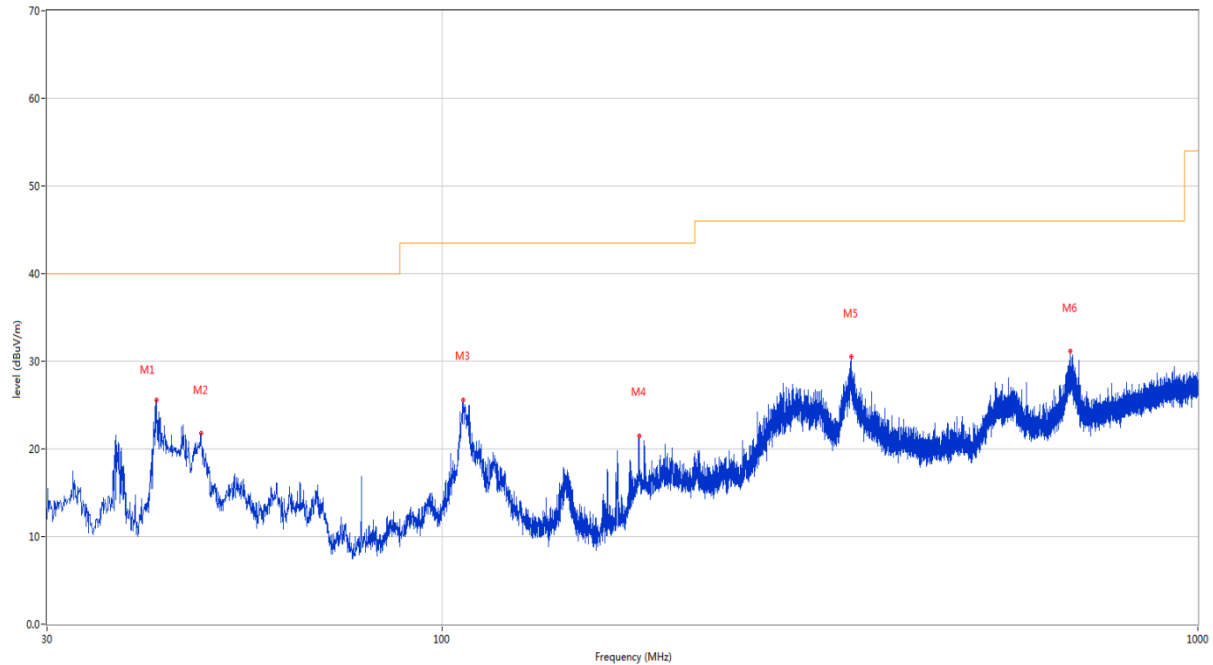


No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1375.000	38.92	-17.35	74.0	-35.08	Peak	283.00	100	Horizontal	Pass
1**	1375.000	28.76	-17.35	54.0	-25.24	AV	283.00	100	Horizontal	Pass
2	2227.100	42.97	-12.84	74.0	-31.03	Peak	20.00	100	Horizontal	Pass
2**	2227.100	33.74	-12.84	54.0	-20.26	AV	20.00	100	Horizontal	Pass
3	3418.200	46.08	-7.23	74.0	-27.92	Peak	121.00	100	Horizontal	Pass
3**	3418.200	37.39	-7.23	54.0	-16.61	AV	121.00	100	Horizontal	Pass
4	6752.800	54.80	-0.80	74.0	-19.20	Peak	82.00	100	Horizontal	Pass
4**	6752.800	44.61	-0.80	54.0	-9.39	AV	82.00	100	Horizontal	Pass
5	9162.575	51.36	-1.63	74.0	-22.64	Peak	294.00	100	Horizontal	Pass
5**	9162.575	41.48	-1.63	54.0	-12.52	AV	294.00	100	Horizontal	Pass
6	11846.100	52.00	1.15	74.0	-22.00	Peak	46.00	100	Horizontal	Pass
6**	11846.100	42.75	1.15	54.0	-11.25	AV	46.00	100	Horizontal	Pass

Test Data and Plots

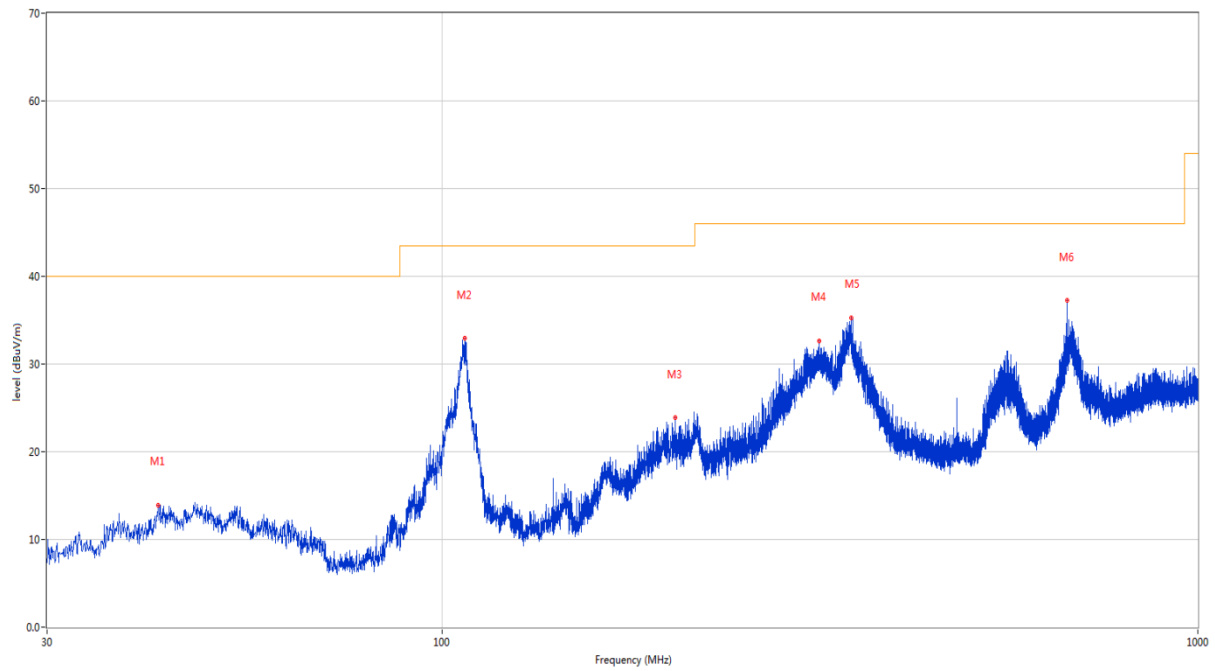
The USB Test Mode

A.1.5 Test Antenna Vertical, 30 MHz – 1 GHz



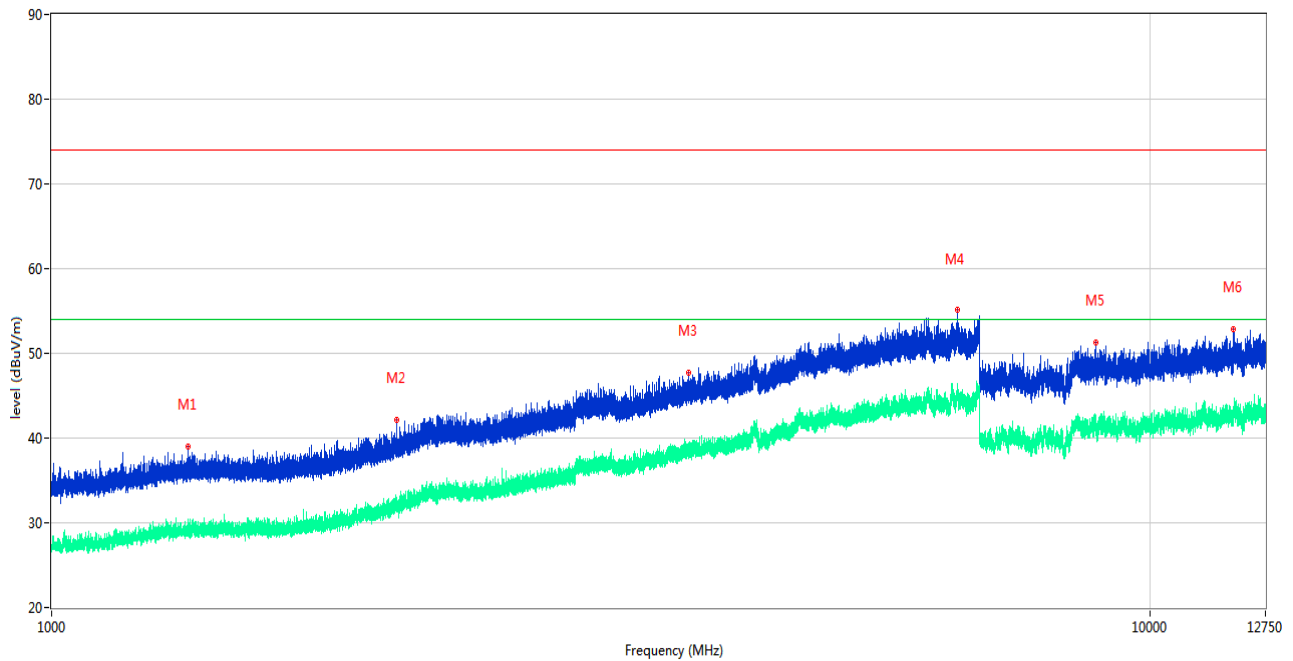
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	41.931	25.58	-23.48	40.0	-14.42	Peak	356.80	100	Vertical	Pass
2	47.945	21.77	-22.65	40.0	-18.23	Peak	208.90	100	Vertical	Pass
3	106.533	25.57	-24.11	43.5	-17.93	Peak	114.40	100	Vertical	Pass
4	182.242	21.50	-25.52	43.5	-22.00	Peak	341.80	100	Vertical	Pass
5	347.724	30.55	-19.81	46.0	-15.45	Peak	0.00	200	Vertical	Pass
6	677.426	31.18	-13.27	46.0	-14.82	Peak	320.60	100	Vertical	Pass

A.1.6 Test Antenna Horizontal, 30 MHz – 1 GHz



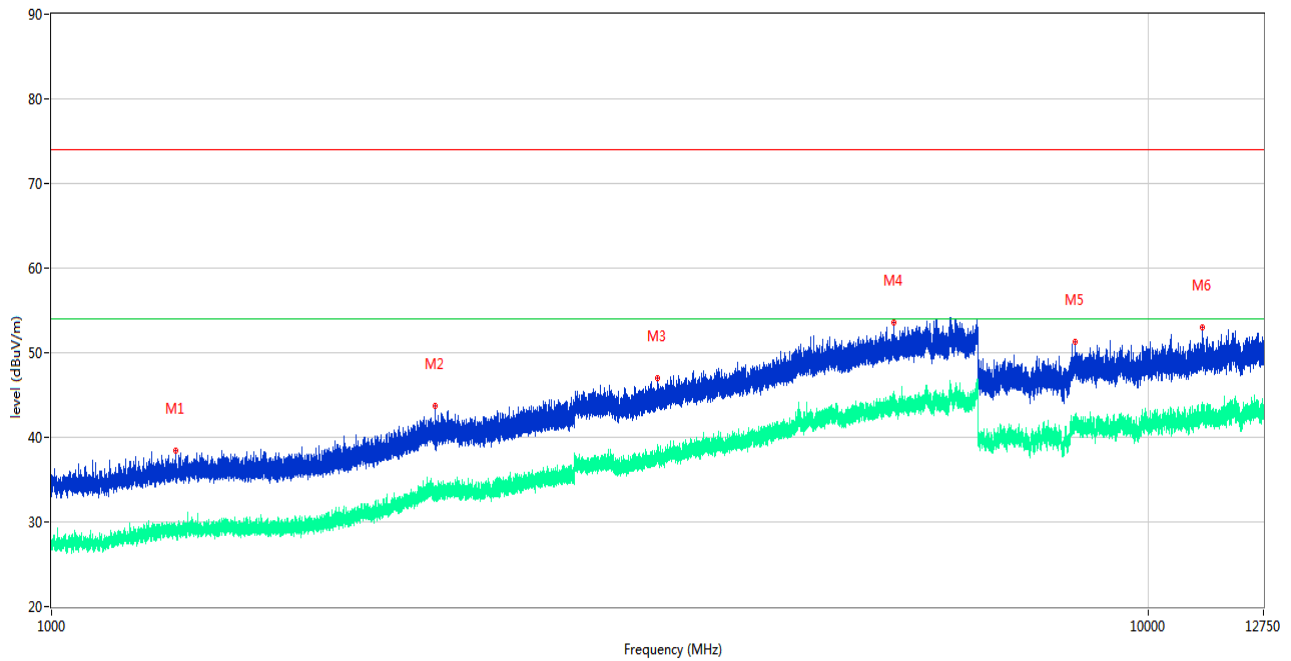
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	42.125	13.89	-23.45	40.0	-26.11	Peak	187.70	200	Horizontal	Pass
2	107.018	32.97	-24.18	43.5	-10.53	Peak	360.00	200	Horizontal	Pass
3	203.339	23.85	-23.75	43.5	-19.65	Peak	61.20	100	Horizontal	Pass
4	315.665	32.62	-21.02	46.0	-13.38	Peak	40.30	100	Horizontal	Pass
5	347.481	35.27	-19.76	46.0	-10.73	Peak	360.00	100	Horizontal	Pass
6	671.946	37.30	-13.49	46.0	-8.70	Peak	200.80	100	Horizontal	Pass

A.1.7 Test Antenna Vertical, 1 GHz – 12.75 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1330.900	38.99	-17.40	74.0	-35.01	Peak	150.00	100	Vertical	Pass
1**	1330.900	28.81	-17.40	54.0	-25.19	AV	150.00	100	Vertical	Pass
2	2063.600	42.20	-14.77	74.0	-31.80	Peak	40.00	100	Vertical	Pass
2**	2063.600	32.71	-14.77	54.0	-21.29	AV	40.00	100	Vertical	Pass
3	3802.000	47.72	-5.50	74.0	-26.28	Peak	233.00	100	Vertical	Pass
3**	3802.000	37.91	-5.50	54.0	-16.09	AV	233.00	100	Vertical	Pass
4	6684.000	55.21	-0.32	74.0	-18.79	Peak	29.00	100	Vertical	Pass
4**	6684.000	44.95	-0.32	54.0	-9.05	AV	29.00	100	Vertical	Pass
5	8926.825	51.35	-0.38	74.0	-22.65	Peak	246.00	100	Vertical	Pass
5**	8926.825	42.32	-0.38	54.0	-11.68	AV	246.00	100	Vertical	Pass
6	11928.325	52.81	1.55	74.0	-21.19	Peak	203.00	100	Vertical	Pass
6**	11928.325	42.46	1.55	54.0	-11.54	AV	203.00	100	Vertical	Pass

A.1.8 Test Antenna Horizontal, 1 GHz – 12.75 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1298.200	38.38	-17.46	74.0	-35.62	Peak	72.00	99	Horizontal	Pass
1**	1298.200	29.63	-17.46	54.0	-24.37	AV	72.00	99	Horizontal	Pass
2	2240.400	43.69	-13.02	74.0	-30.31	Peak	31.00	99	Horizontal	Pass
2**	2240.400	33.37	-13.02	54.0	-20.63	AV	31.00	99	Horizontal	Pass
3	3569.600	46.96	-6.48	74.0	-27.04	Peak	200.00	99	Horizontal	Pass
3**	3569.600	37.12	-6.48	54.0	-16.88	AV	200.00	99	Horizontal	Pass
4	5871.200	53.54	-1.76	74.0	-20.46	Peak	103.00	99	Horizontal	Pass
4**	5871.200	43.13	-1.76	54.0	-10.87	AV	103.00	99	Horizontal	Pass
5	8583.263	51.27	-2.09	74.0	-22.73	Peak	0.00	99	Horizontal	Pass
5**	8583.263	41.46	-2.09	54.0	-12.54	AV	0.00	99	Horizontal	Pass
6	11223.950	52.96	-0.22	74.0	-21.04	Peak	302.00	99	Horizontal	Pass
6**	11223.950	42.52	-0.22	54.0	-11.48	AV	302.00	99	Horizontal	Pass

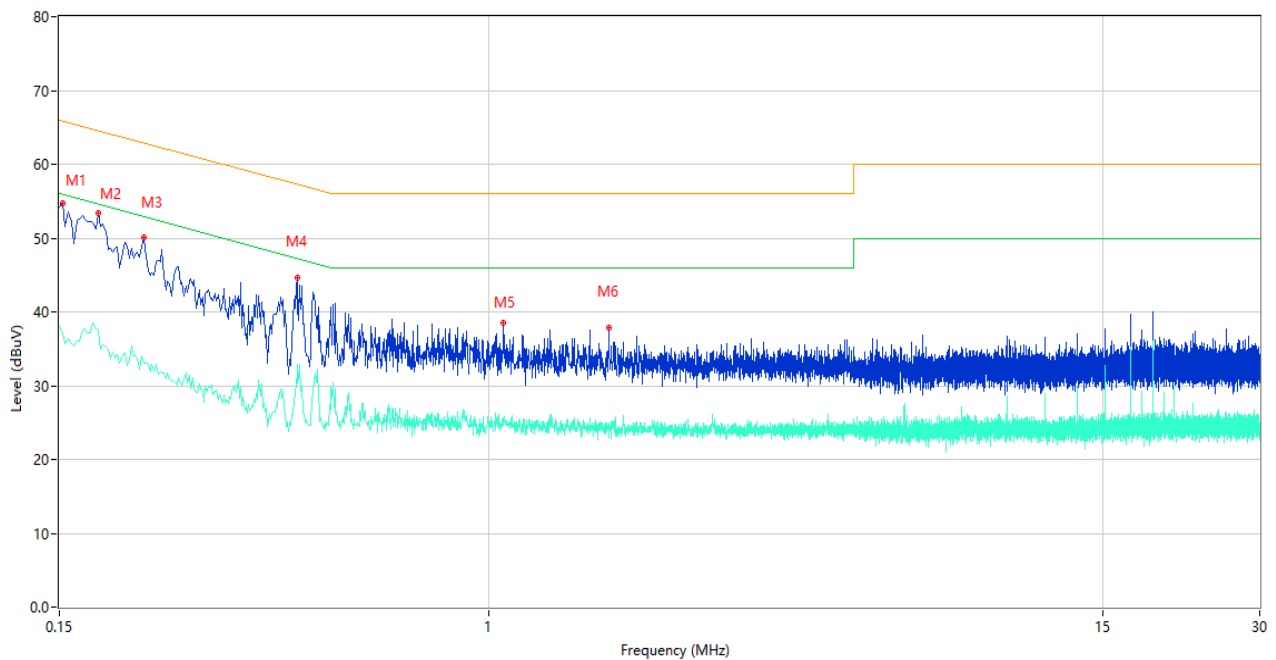
A.2 Conducted Emission

Note: Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. So, The configuration 120 VAC, 60 Hz and 240 VAC, 50 Hz were tested respectively, but only the worst configuration (120 VAC, 60 Hz) shown here.

Test Data and Plots

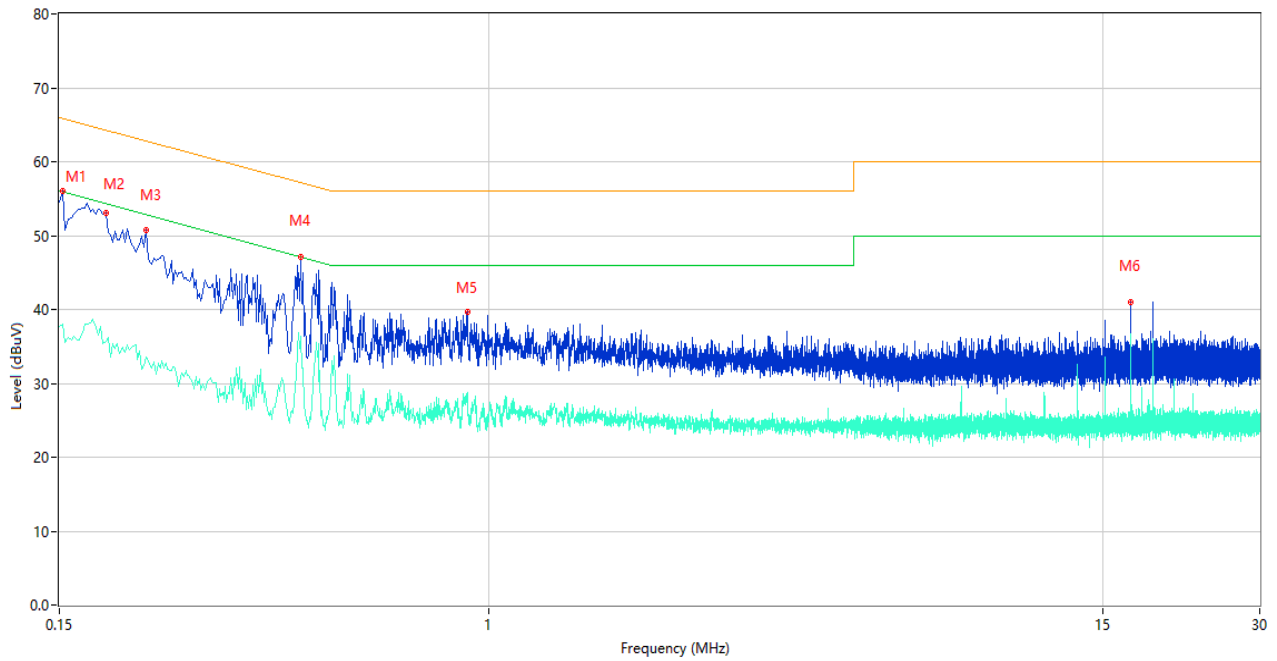
The Charging Test Mode

A.2.1 L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.152	54.67	10.41	65.89	-11.22	Peak	L	Pass
1**	0.152	37.24	10.41	55.89	-18.65	AV	L	Pass
2	0.178	53.33	10.39	64.58	-11.25	Peak	L	Pass
2**	0.178	37.50	10.39	54.58	-17.08	AV	L	Pass
3	0.218	50.14	10.37	62.89	-12.75	Peak	L	Pass
3**	0.218	33.05	10.37	52.89	-19.84	AV	L	Pass
4	0.430	44.55	10.31	57.25	-12.70	Peak	L	Pass
4**	0.430	32.93	10.31	47.25	-14.32	AV	L	Pass
5	1.066	38.49	10.23	56.00	-17.51	Peak	L	Pass
5**	1.066	25.44	10.23	46.00	-20.56	AV	L	Pass
6	1.698	37.92	10.26	56.00	-18.08	Peak	L	Pass
6**	1.698	24.98	10.26	46.00	-21.02	AV	L	Pass

A.2.2 N Phase

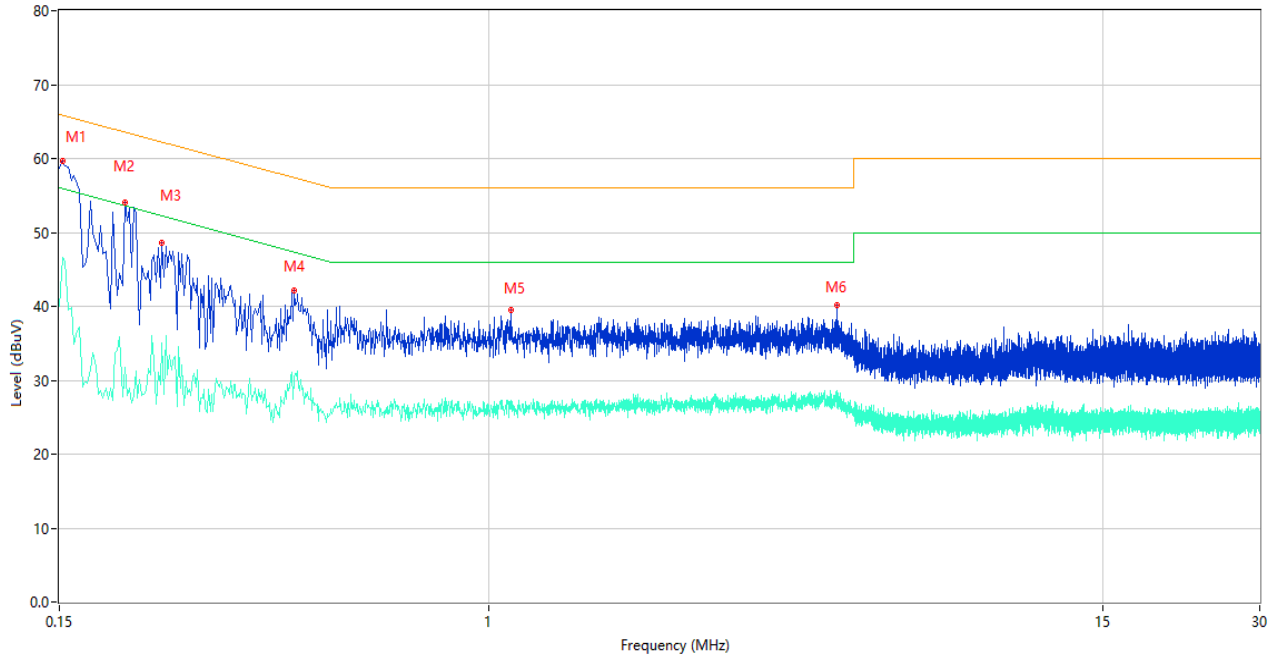


No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.152	55.95	10.41	65.89	-9.94	Peak	N	Pass
1**	0.152	38.03	10.41	55.89	-17.86	AV	N	Pass
2	0.184	53.10	10.39	64.30	-11.20	Peak	N	Pass
2**	0.184	35.67	10.39	54.30	-18.63	AV	N	Pass
3	0.220	50.73	10.37	62.82	-12.09	Peak	N	Pass
3**	0.220	33.55	10.37	52.82	-19.27	AV	N	Pass
4	0.436	47.04	10.31	57.14	-10.10	Peak	N	Pass
4**	0.436	36.40	10.31	47.14	-10.74	AV	N	Pass
5	0.908	39.67	10.24	56.00	-16.33	Peak	N	Pass
5**	0.908	28.75	10.24	46.00	-17.25	AV	N	Pass
6	16.952	41.00	10.46	60.00	-19.00	Peak	N	Pass
6**	16.952	36.62	10.46	50.00	-13.38	AV	N	Pass

Test Data and Plots

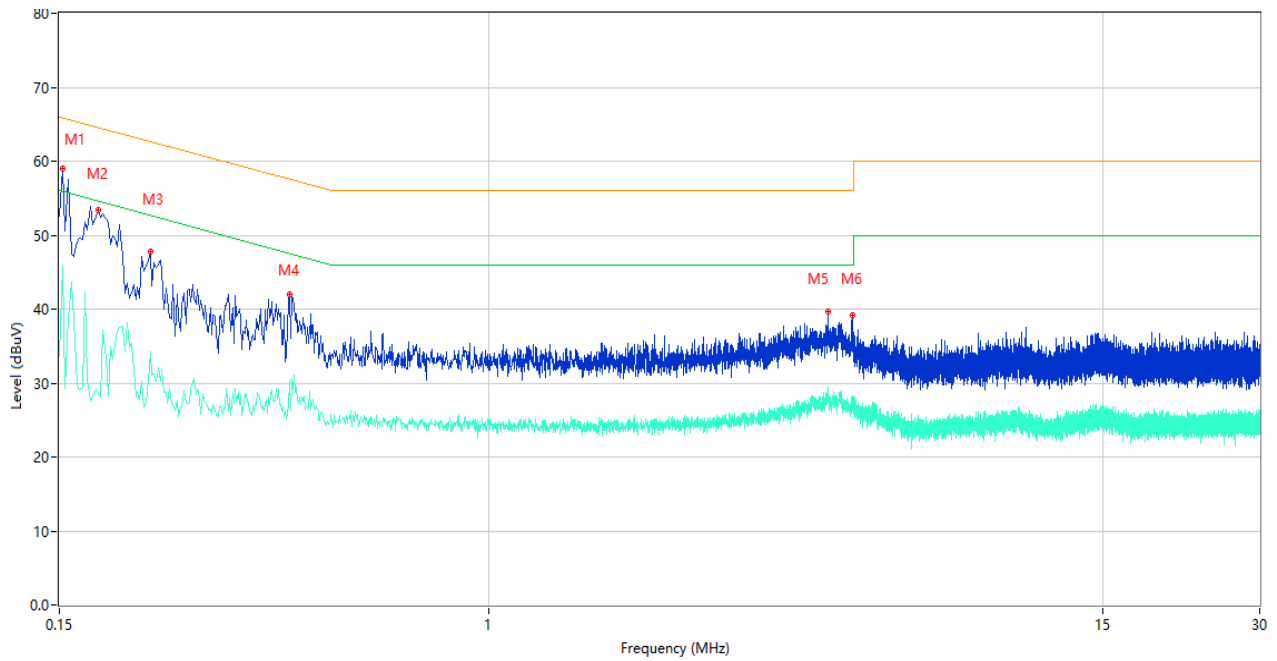
The USB Test Mode

A.2.3 L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.152	59.73	10.41	65.89	-6.16	Peak	L	Pass
1**	0.152	46.53	10.41	55.89	-9.36	AV	L	Pass
2	0.200	54.06	10.38	63.61	-9.55	Peak	L	Pass
2**	0.200	31.67	10.38	53.61	-21.94	AV	L	Pass
3	0.236	48.59	10.35	62.24	-13.65	Peak	L	Pass
3**	0.236	35.09	10.35	52.24	-17.15	AV	L	Pass
4	0.422	42.16	10.31	57.41	-15.25	Peak	L	Pass
4**	0.422	30.19	10.31	47.41	-17.22	AV	L	Pass
5	1.100	39.51	10.23	56.00	-16.49	Peak	L	Pass
5**	1.100	26.19	10.23	46.00	-19.81	AV	L	Pass
6	4.644	40.18	10.31	56.00	-15.82	Peak	L	Pass
6**	4.644	26.98	10.31	46.00	-19.02	AV	L	Pass

A.2.4 N Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.150	52.56	10.41	66.00	-13.44	Peak	N	Pass
1**	0.150	33.76	10.41	56.00	-22.24	AV	N	Pass
2	0.178	53.33	10.39	64.58	-11.25	Peak	N	Pass
2**	0.178	28.48	10.39	54.58	-26.10	AV	N	Pass
3	0.224	47.73	10.37	62.67	-14.94	Peak	N	Pass
3**	0.224	34.17	10.37	52.67	-18.50	AV	N	Pass
4	0.414	42.07	10.31	57.57	-15.50	Peak	N	Pass
4**	0.414	30.35	10.31	47.57	-17.22	AV	N	Pass
5	4.470	39.62	10.31	56.00	-16.38	Peak	N	Pass
5**	4.470	28.04	10.31	46.00	-17.96	AV	N	Pass
6	4.962	39.12	10.32	56.00	-16.88	Peak	N	Pass
6**	4.962	27.29	10.32	46.00	-18.71	AV	N	Pass

ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SZ2181089-AE.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ2181089-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SZ2181089-AI.PDF”.

--END OF REPORT--