FCC EMC TEST REPORT

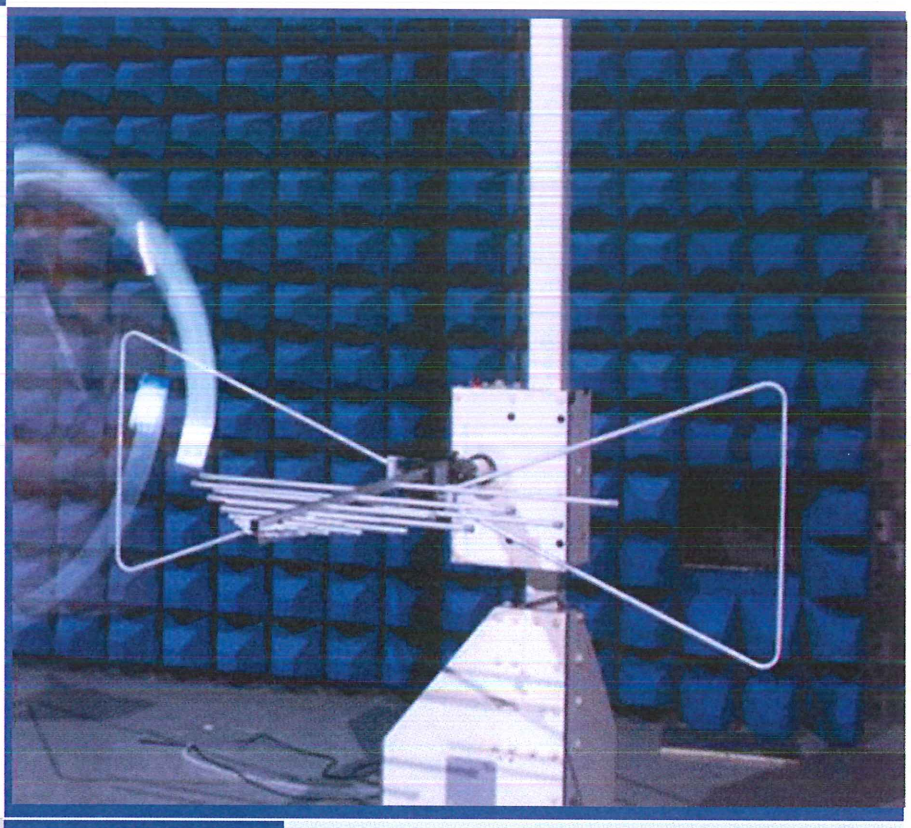
ISSUED BY
Shenzhen BALUN Technology Co., Ltd.

FOR

Mobile Phone

ISSUED TO
Guangdong OPPO Mobile Telecommunications Corp., Ltd.

NO.18 Haibin Road, Wusha Village, Chang'an Town, Dongguan City, Guangdong, China



Report No.:	BL-SZ20B0945-401
EUT Name:	Mobile Phone
Model Name:	CPH2211
Brand Name:	OPPO
Test Standard:	47 CFR Part 15 Subpart B
FCC ID:	R9C-CPH2211
Test Conclusion:	Pass
Test Date:	Dec. 09, 2020 ~ Dec. 16, 2020
Date of Issue:	Feb. 24, 2021

Tested by: Liu zhen Xiang
Liu Zhenxiang
Date Feb. 24, 2021

Approved by:
Wei Yanquan
(Chief Engineer)
Date Feb. 24, 2021

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Block B, 1st FL,Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong, P. R. China 518055
TEL: +86-755-66850100, FAX: +86-755-61824271
Email: qc@baluntek.com
www.baluntek.com

Revision History

Version	Issue Date	Revisions Content
Rev. 01	Jan. 27, 2021	Initial Issue
Rev. 02	Feb. 24, 2021	Updated the sections 4.3, 4.4 and 4.6

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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
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℃ to 25℃
Ambient Relative Humidity	45% to 55%
Ambient Pressure	100 kPa to 102 kPa

1.4 Announce

(1) The test report refer to the BALUN report mode v6.9.

(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	Guangdong OPPO Mobile Telecommunications Corp., Ltd.
Address	NO.18 Haibin Road, Wusha Village, Chang'an Town, Dongguan City, Guangdong, China

2.2 Manufacturer Information

Manufacturer	Guangdong OPPO Mobile Telecommunications Corp., Ltd.
Address	NO.18 Haibin Road, Wusha Village, Chang'an Town, Dongguan City, Guangdong, China

2.3 Factory Information

Factory	Guangdong OPPO Mobile Telecommunications Corp., Ltd.
Address	NO.18 Haibin Road, Wusha Village, Chang'an Town, Dongguan City, Guangdong, China

2.4 General Description for Equipment under Test (EUT)

EUT Name	Mobile Phone
Model Name Under Test	CPH2211
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	11
Software Version	ColorOS V5.2
Dimensions (Approx.)	160.1*73.4*7.8 mm
Weight (Approx.)	175g (with battery)

2.5 Ancillary Equipment

Ancillary Equipment 1	Li-Polymer Battery 1	
	Brand Name	OPPO
	Model No.	BLP839
	Serial No.	N/A
	Capacitance	Rated: 4220mAh/16.33Wh Typical: 43100mAh/16.67Wh
	Rated Voltage	3.87 V
	Limited Voltage	4.45 V
	Manufacturer	Sunwoda Electronic CO.,LTD.
Ancillary Equipment 2	Li-Polymer Battery (alternative) 2	
	Brand Name	OPPO
	Model No.	BLP839
	Serial No.	N/A
	Capacitance	Rated: 4220mAh/16.33Wh Typical: 43100mAh/16.67Wh
	Rated Voltage	3.87 V
	Limited Voltage	4.45 V
	Manufacturer	TWS TECHNOLOGY (GUANGZHOU) LIMITED
Ancillary Equipment 3	Power Supply Unit 1	
	Brand Name	OPPO
	Model No.	VC56JAYH
	Serial No.	N/A
	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A or 5VDC 6A Max (UK Plug)
Ancillary Equipment 4	Power Supply Unit(alternative) 2	
	Brand Name	OPPO
	Model No.	VC56JBYH
	Serial No.	N/A
	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A or 5VDC 6A Max (UK Plug)
Ancillary Equipment 5	Power Supply Unit(alternative) 3	
	Brand Name	OPPO
	Model No.	VC56JAUH
	Serial No.	N/A
	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A or 5VDC 6A Max (US Plug)
Ancillary Equipment 6	Power Supply Unit(alternative) 4	
	Brand Name	OPPO
	Model No.	VC56JBUH
	Serial No.	N/A
	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A or 5VDC 6A Max (US Plug)

Ancillary Equipment 7	Power Supply Unit(alternative) 5	
	Brand Name	OPPO
	Model No.	VC56JAEH
	Serial No.	N/A
	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A or 5VDC 6A Max (EU Plug)
Ancillary Equipment 8	Power Supply Unit(alternative) 6	
	Brand Name	OPPO
	Model No.	VC56JBEH
	Serial No.	N/A
	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A or 5VDC 6A Max (EU Plug)
Ancillary Equipment 9	Power Supply Unit(alternative) 7	
	Brand Name	OPPO
	Model No.	VC56JAAH
	Serial No.	N/A
	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A or 5VDC 6A Max (AU Plug)
Ancillary Equipment 10	Power Supply Unit(alternative) 8	
	Brand Name	OPPO
	Model No.	VC56JBAH
	Serial No.	N/A
	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A or 5VDC 6A Max (AU Plug)
Ancillary Equipment 11	Power Supply Unit(alternative) 9	
	Brand Name	OPPO
	Model No.	VC56HBYH
	Serial No.	N/A
	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A or 5VDC 6A Max (UK Plug)
Ancillary Equipment 12	Power Supply Unit(alternative) 10	
	Brand Name	OPPO
	Model No.	VC56HAYH
	Serial No.	N/A
	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A or 5VDC 6A Max (UK Plug)
Ancillary Equipment 13	Power Supply Unit(alternative) 11	
	Brand Name	OPPO
	Model No.	VC56HBUH
	Serial No.	N/A
	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A or 5VDC 6A Max (US Plug)
Ancillary Equipment 14	Power Supply Unit(alternative) 12	
	Brand Name	OPPO

	Model No.	VC56HAUH
	Serial No.	N/A
	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A or 5VDC 6A Max (US Plug)
Ancillary Equipment 15	Power Supply Unit(alternative) 13	
	Brand Name	OPPO
	Model No.	VC56HBEH
	Serial No.	N/A
	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A or 5VDC 6A Max (EU Plug)
Ancillary Equipment 16	Power Supply Unit(alternative) 14	
	Brand Name	OPPO
	Model No.	VC56HAEH
	Serial No.	N/A
	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A or 5VDC 6A Max (EU Plug)
Ancillary Equipment 17	Power Supply Unit(alternative) 15	
	Brand Name	OPPO
	Model No.	VC56GAUH
	Serial No.	N/A
	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A or 5VDC 6A Max (USA Plug)
Ancillary Equipment 18	USB Cable	
	Model No.	DL129
	Length (Approx.)	1.0 m
Ancillary Equipment 19	Headset	
	Model No.	MH156
	Length (Approx.)	1.2 m

Note 1: Letter in () means plug type.
Note 2: All adapters are tested, only the worst data of VC56JAUH (US Plug) shown in this report.
Note 3: All batteries are tested, only the worst data of BLP839 (Sunwoda Electronic CO.,LTD.) shown in this report.

2.6 Technical Information

Network and Wireless connectivity	2G Network GSM/GPRS/EDGE 850/1900 MHz 3G Network WCDMA/HSDPA/HSUPA/HSPA+ Band 2/4/5 4G Network LTE FDD Band 2/4/5/7/12/17/26/66 LTE TDD Band 38/41 LTE CA Uplink (UL): CA_7C, CA_38C, CA_41C 5G Network SA: NR n5/n7/n38/n41/n66 NSA(EN-DC): DC_5A_n66A, DC_7A_n66A, DC_12A_n66A Bluetooth (BR+EDR+BLE) 2.4G WIFI 802.11b, 802.11g, 802.11n(HT20/40) 5G WIFI 802.11a, 802.11n(HT20/40), 802.11ac(VHT20/40/80) U-NII-1/2A/2C/3, GPS, GLONASS, BDS, Galileo, SBAS, FM Recevier, NFC

The requirement for the following technical information of the EUT was tested in this report:

The Highest Speed of Processor	2.4 GHz

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	FCC 47 CFR Part 15 Subpart B (10-1-19 Edition)	Unintentional Radiators
2	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	Test Verdict	Result
1	Radiated Emission	15.109	Pass	Annex A .1
2	Conducted Emission, AC Ports	15.107	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)	23°C to 25°C	AC 120 V/60 Hz or 3.8 V from Battery	50% to 55%	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&SCHWARZ	ESRP	101036	2020.06.09	2021.06.08	☐
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	2018.08.08	2021.08.07	☐
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	2021.07.01	☒
Anechoic Chamber	YIHENG	9m*6m*6m	N/A	2018.07.18	2021.07.27	☒
Test Software	BALUN	BL410_E	V19.918	--	--	☒

Radiated Emission Test For Frequency 1 GHz-18 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	2021.07.01	☒
Anechoic Chamber	YIHENG	9m*6m*6m	N/A	2018.07.18	2021.07.17	☒
Test Software	BALUN	BL410_E	V19.918	--	--	☒

Conducted disturbance Test						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	KEYSIGHT	N9010B	MY57110309	2020.06.08	2021.06.07	☒
LISN	SCHWARZBECK	NSLK 8127	8127-687	2020.06.09	2021.06.08	☒
Shielded Enclosure	YiHeng Electronic Co., Ltd	3.4m*3.1m*2.8m	N/A	2018.08.16	2021.08.15	☒
Test Software	BALUN	BL410_E	V19.918	--	--	☒

4.3 Test Enclosure list

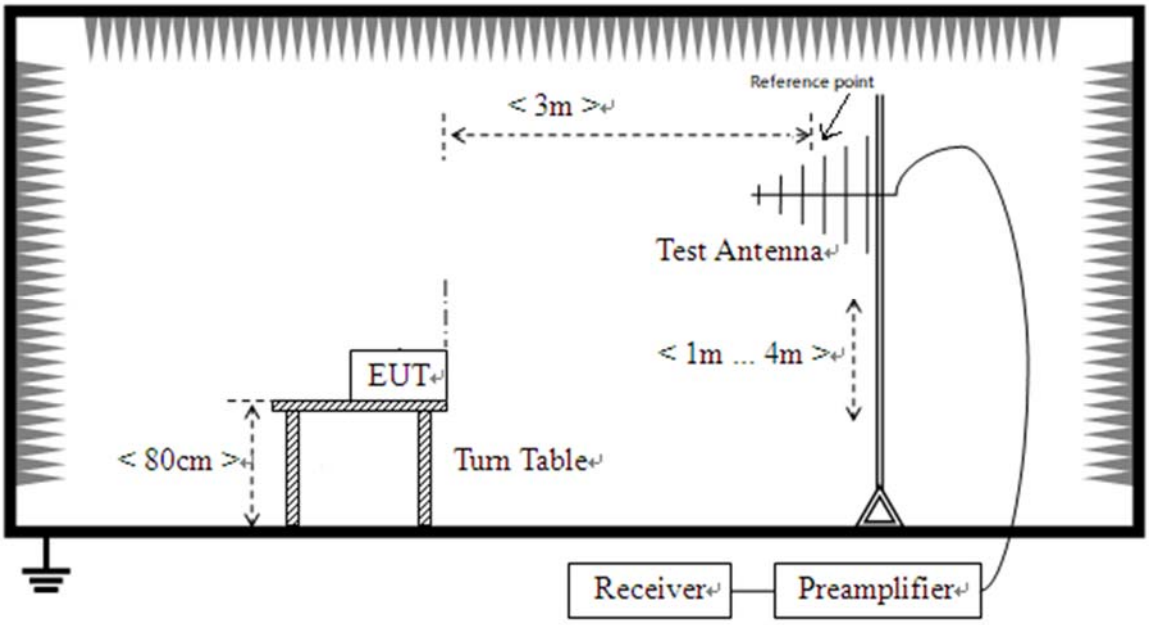
Description	Manufacturer	Model	Serial No.	Length	Description	Use
PC	Dell	015K3N	N/A	N/A	Special Handled	☐
Laptop	Apple	A1465	N/A	N/A	N/A	☒
Printer	HP	DESKJET 1000	N/A	N/A	N/A	☐
Keyboard	Logitech	Y-BP62a	N/A	N/A	N/A	☐
Mouse	Logitech	M100	N/A	N/A	N/A	☐
USB disk	Kingston	N/A	N/A	N/A	N/A	☐
TF Card	Kingston	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	☐
iPhone	Apple	A1586	N/A	N/A	N/A	☐
Phone	MI	M4	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	N/A	☒
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	☐
LCD Monitor	Dell	U241HB	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	The GSM 850 MHz RX Test Mode GSM 850 MHz RX + EUT +Adapter + USB Cable + Battery + Earphone + TF card + GPS RX
TC02	The WCDMA Band 5 RX Test Mode WCDMA Band 5 RX + EUT +Adapter + USB Cable + Battery + Earphone + TF card + GLONASS RX
TC03	The FDD LTE Band 5 RX Test Mode LTE Band 5 RX + EUT +Adapter + USB Cable + Battery + Earphone + TF card + Galileo RX
TC04	The FDD LTE Band 12 RX Test Mode LTE Band 12 RX + EUT +Adapter + USB Cable + Battery + Earphone + TF card + Beidou RX
TC05	The FDD LTE Band 17 RX Test Mode LTE Band 17 RX + EUT +Adapter + USB Cable + Battery + Earphone + TF card + GPS RX
TC06	The FDD LTE Band 26 RX Test Mode LTE Band 26 RX + EUT +Adapter + USB Cable + Battery + Earphone + TF card + GLONASS RX
TC07	The Camera Test Mode EUT + Adapter + USB Cable + Battery + Earphone + TF Card
TC08	The Video Play Test Mode EUT + Adapter + USB Cable + Battery + Earphone + TF Card
TC09	The USB Test Mode EUT + USB Cable + Battery + Laptop+ Earphone + TF Card

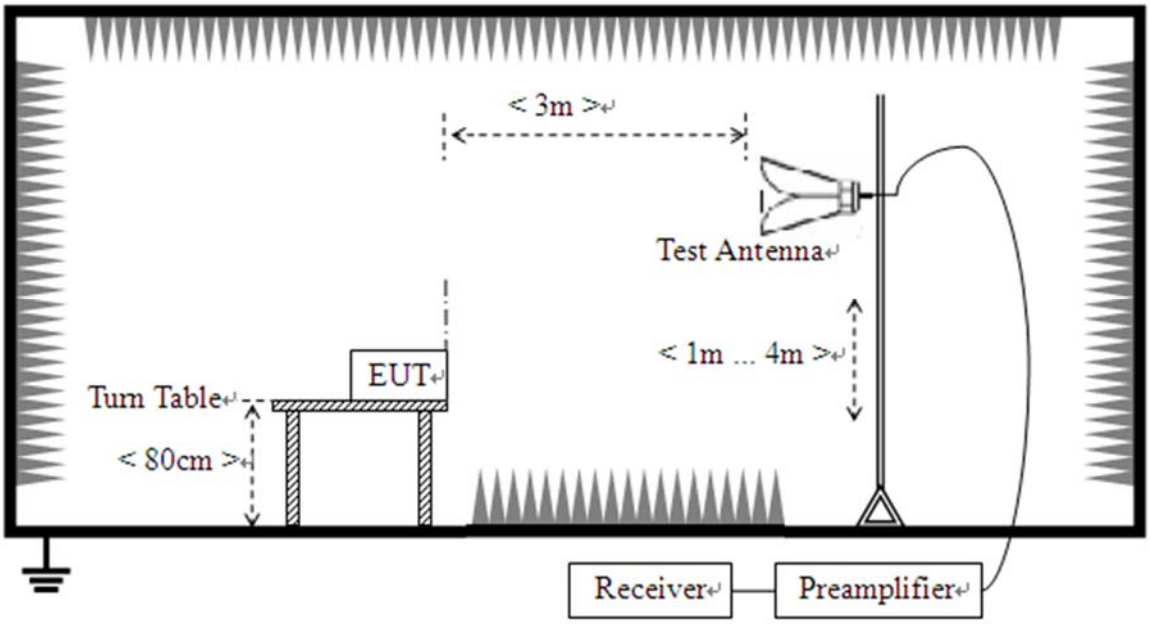
4.5 Test Setups

Test Setup 1



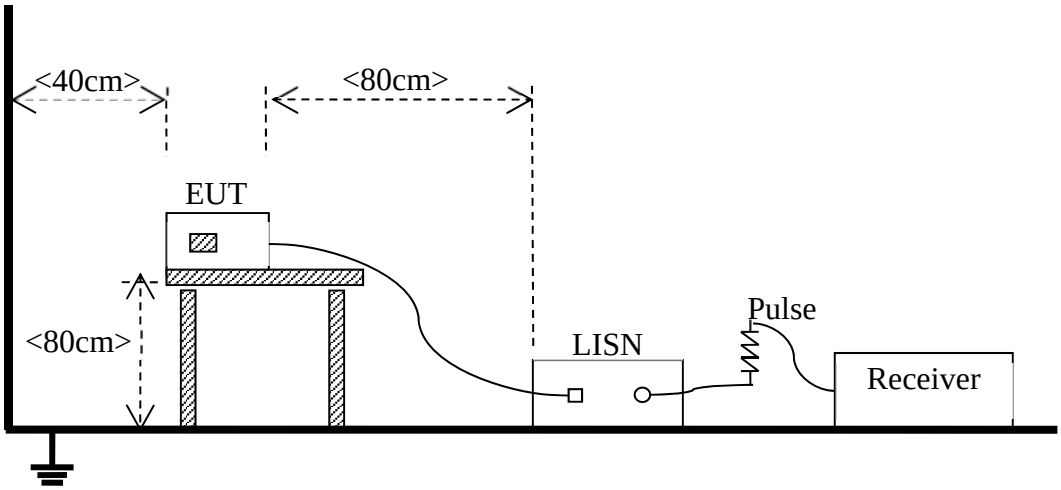
(For Radiated Emission Test (30 MHz-1 GHz))

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~TC09 Note
Conducted Emission, AC Ports	Test Env.	NTNV
	Test Setup	Test Setup 3
	Test Configuration	TC01~TC09 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 Camera 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

Frequency range (MHz)	Class B (at 3 m)		Class B (at 10 m)	Class A (at 10 m)	
	Field Strength (μV/m)	Field Strength (dBμV/m)	Field Strength (dBμV/m)	Field Strength (μV/m)	Field Strength (dBμV/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 (dBμV/m) = 20*log [Field Strength (μV/m)].
2) In the emission tables above, the tighter limit applies at the band edges.

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

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.

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 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.

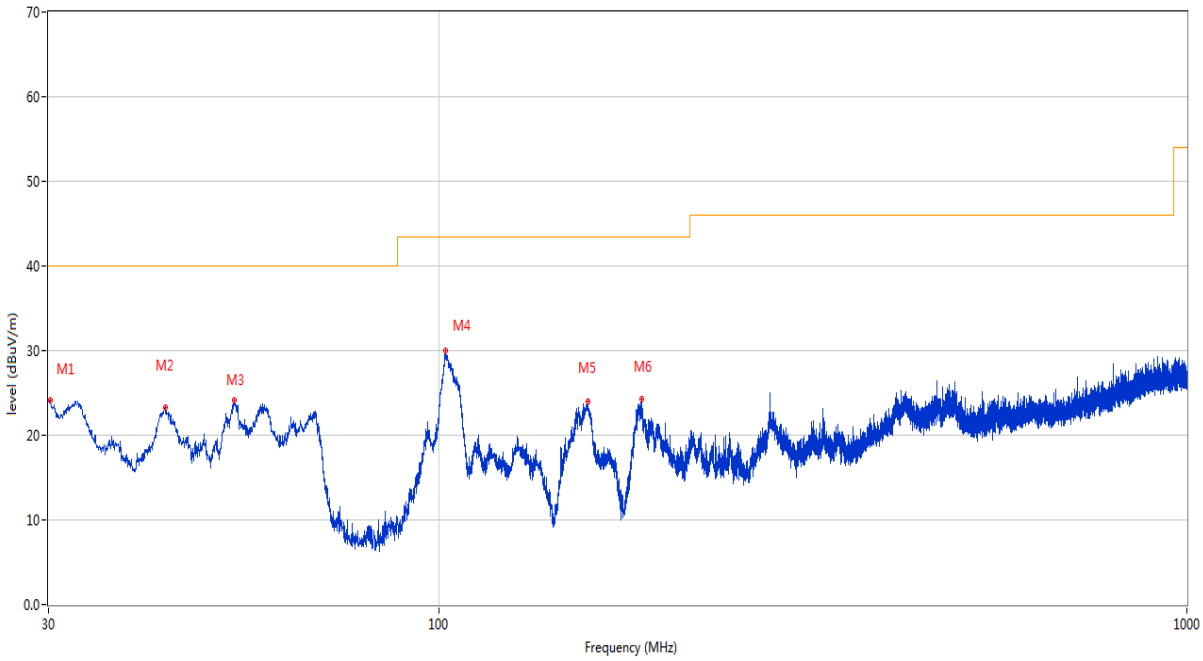
Note 3: The Radiated Emission from 18G-40G is noise only, do not show on the report.

Note 4: 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)

Test Data and Plots

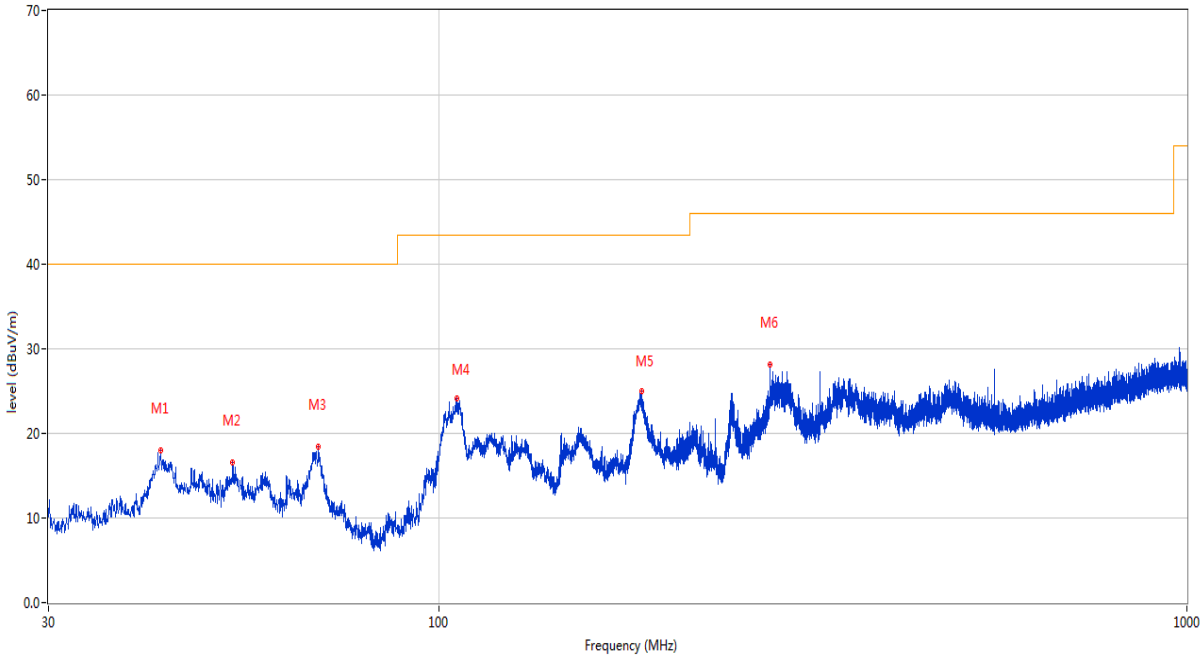
The Camera Test Mode

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



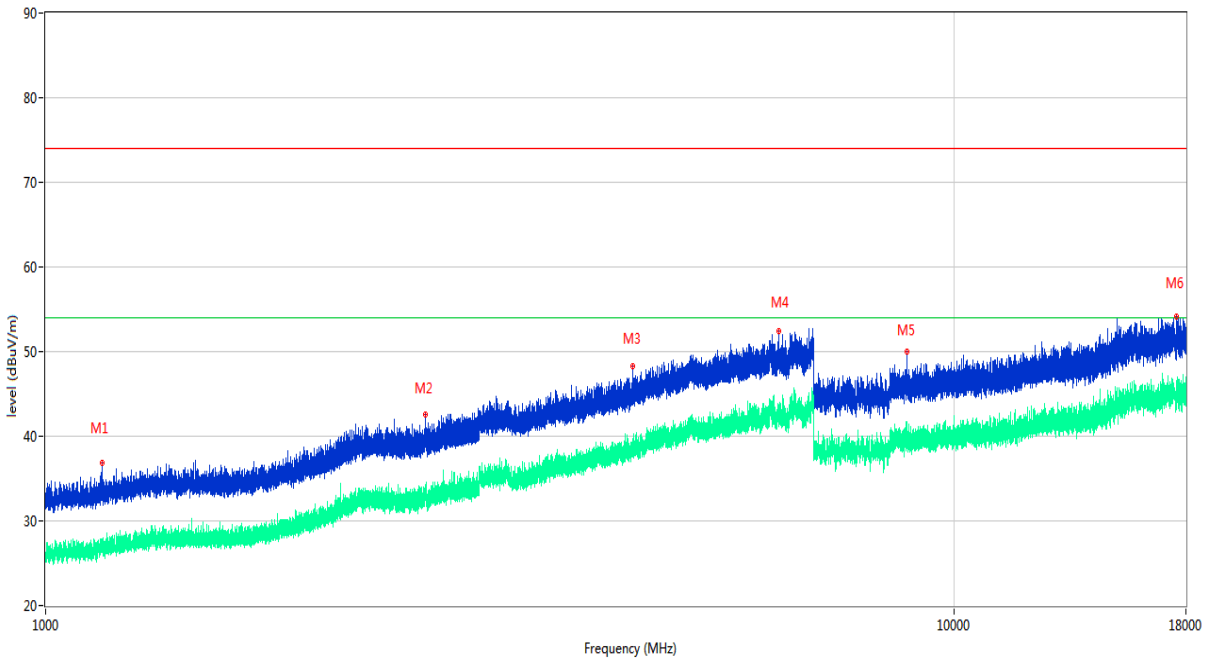
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	30.194	24.07	-26.00	40.0	-15.93	Peak	137.00	100	Vertical	Pass
2	42.950	23.22	-23.38	40.0	-16.78	Peak	228.20	100	Vertical	Pass
3	53.231	24.21	-22.96	40.0	-15.79	Peak	170.00	100	Vertical	Pass
4	101.828	29.97	-24.56	43.5	-13.53	Peak	145.10	100	Vertical	Pass
5	157.943	24.04	-27.59	43.5	-19.46	Peak	338.90	100	Vertical	Pass
6	186.267	24.30	-25.42	43.5	-19.20	Peak	35.90	100	Vertical	Pass

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



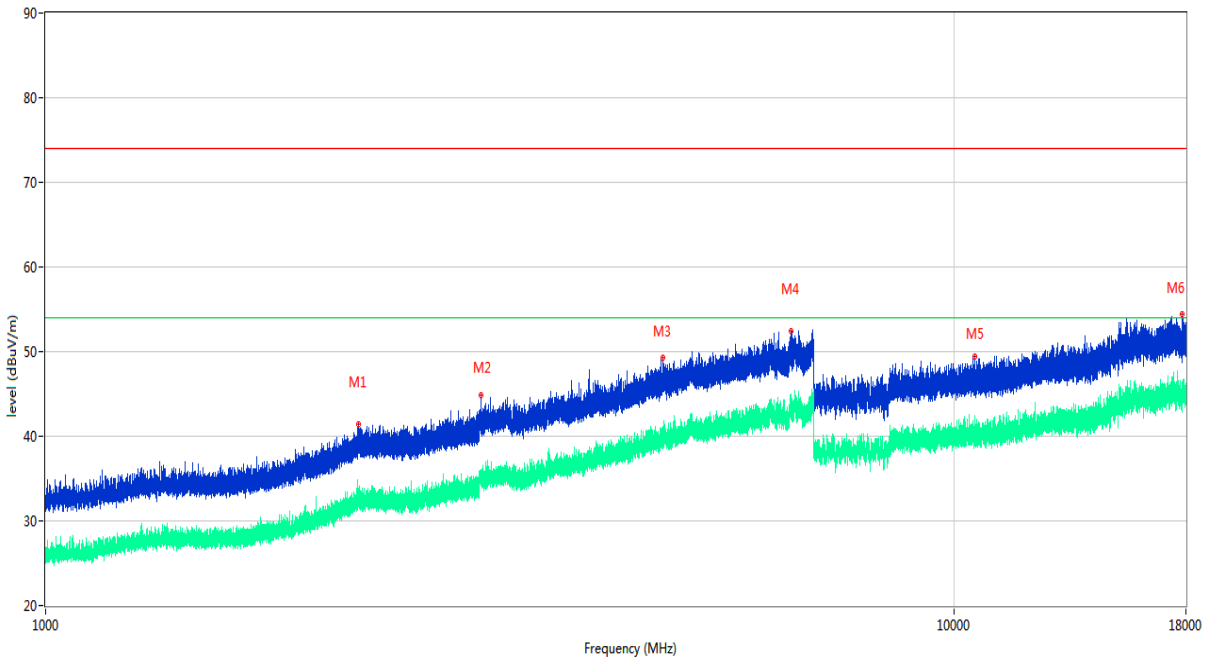
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	42.367	18.04	-23.43	40.0	-21.96	Peak	221.40	100	Horizontal	Pass
2	52.892	16.53	-23.02	40.0	-23.47	Peak	119.30	200	Horizontal	Pass
3	68.897	18.40	-26.43	40.0	-21.60	Peak	350.50	200	Horizontal	Pass
4	105.660	24.08	-24.21	43.5	-19.42	Peak	241.10	200	Horizontal	Pass
5	186.510	24.95	-25.43	43.5	-18.55	Peak	103.90	100	Horizontal	Pass
6	276.768	28.19	-21.95	46.0	-17.81	Peak	108.00	100	Horizontal	Pass

A.1.3 Test Antenna Vertical, 1 GHz – 18 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1153.100	36.92	-18.00	74.0	-37.08	Peak	360.00	150	Vertical	Pass
1**	1153.100	27.36	-18.00	54.0	-26.64	AV	360.00	150	Vertical	Pass
2	2617.000	42.51	-11.61	74.0	-31.49	Peak	266.00	150	Vertical	Pass
2**	2617.000	32.69	-11.61	54.0	-21.31	AV	266.00	150	Vertical	Pass
3	4426.400	48.31	-4.89	74.0	-25.69	Peak	169.00	150	Vertical	Pass
3**	4426.400	39.38	-4.89	54.0	-14.62	AV	169.00	150	Vertical	Pass
4	6417.200	52.37	-0.76	74.0	-21.63	Peak	19.00	150	Vertical	Pass
4**	6417.200	42.85	-0.76	54.0	-11.15	AV	19.00	150	Vertical	Pass
5	8875.938	50.06	-0.83	74.0	-23.94	Peak	245.00	150	Vertical	Pass
5**	8875.938	39.61	-0.83	54.0	-14.39	AV	245.00	150	Vertical	Pass
6	17595.488	54.10	2.17	74.0	-19.90	Peak	0.00	150	Vertical	Pass
6**	17595.488	45.71	2.17	54.0	-8.29	AV	0.00	150	Vertical	Pass

A.1.4 Test Antenna Horizontal, 1 GHz – 18 GHz

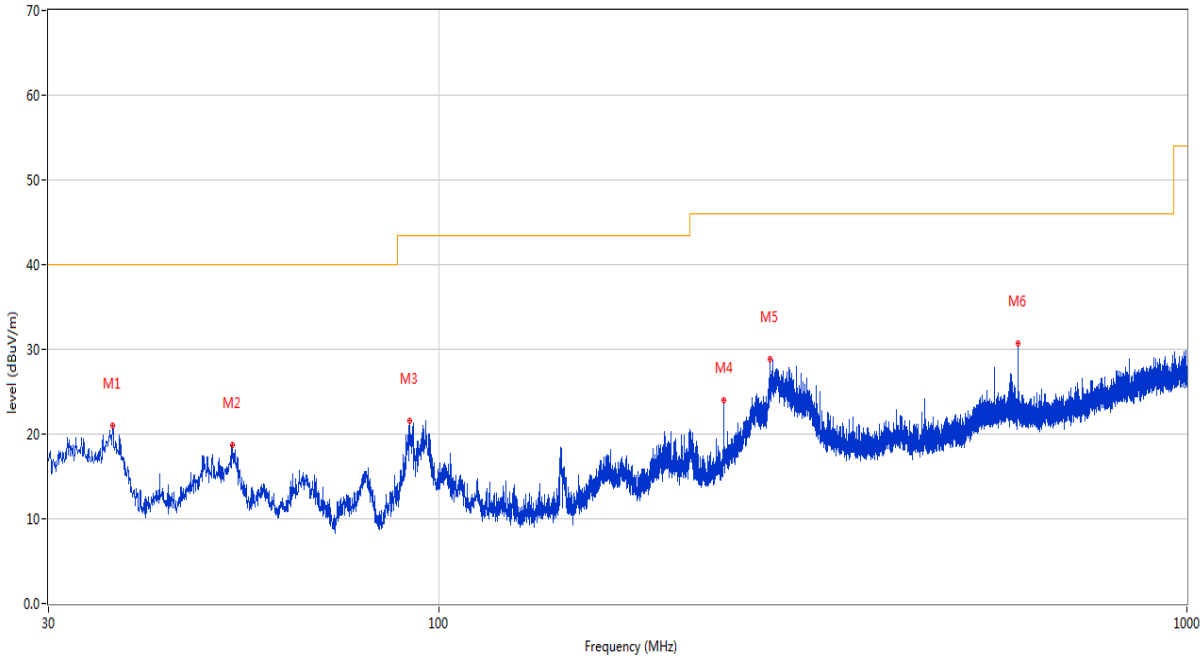


No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	2208.600	41.43	-12.97	74.0	-32.57	Peak	174.00	150	Horizontal	Pass
1**	2208.600	32.11	-12.97	54.0	-21.89	AV	174.00	150	Horizontal	Pass
2	3015.000	44.92	-8.40	74.0	-29.08	Peak	52.00	150	Horizontal	Pass
2**	3015.000	35.78	-8.40	54.0	-18.22	AV	52.00	150	Horizontal	Pass
3	4780.800	49.25	-2.88	74.0	-24.75	Peak	128.00	150	Horizontal	Pass
3**	4780.800	40.10	-2.88	54.0	-13.90	AV	128.00	150	Horizontal	Pass
4	6609.600	52.39	0.15	74.0	-21.61	Peak	301.00	150	Horizontal	Pass
4**	6609.600	43.66	0.15	54.0	-10.34	AV	301.00	150	Horizontal	Pass
5	10538.838	49.40	-0.65	74.0	-24.60	Peak	360.00	150	Horizontal	Pass
5**	10538.838	41.11	-0.65	54.0	-12.89	AV	360.00	150	Horizontal	Pass
6	17845.912	54.44	2.95	74.0	-19.56	Peak	162.00	150	Horizontal	Pass
6**	17845.912	45.60	2.95	54.0	-8.40	AV	162.00	150	Horizontal	Pass

Test Data and Plots

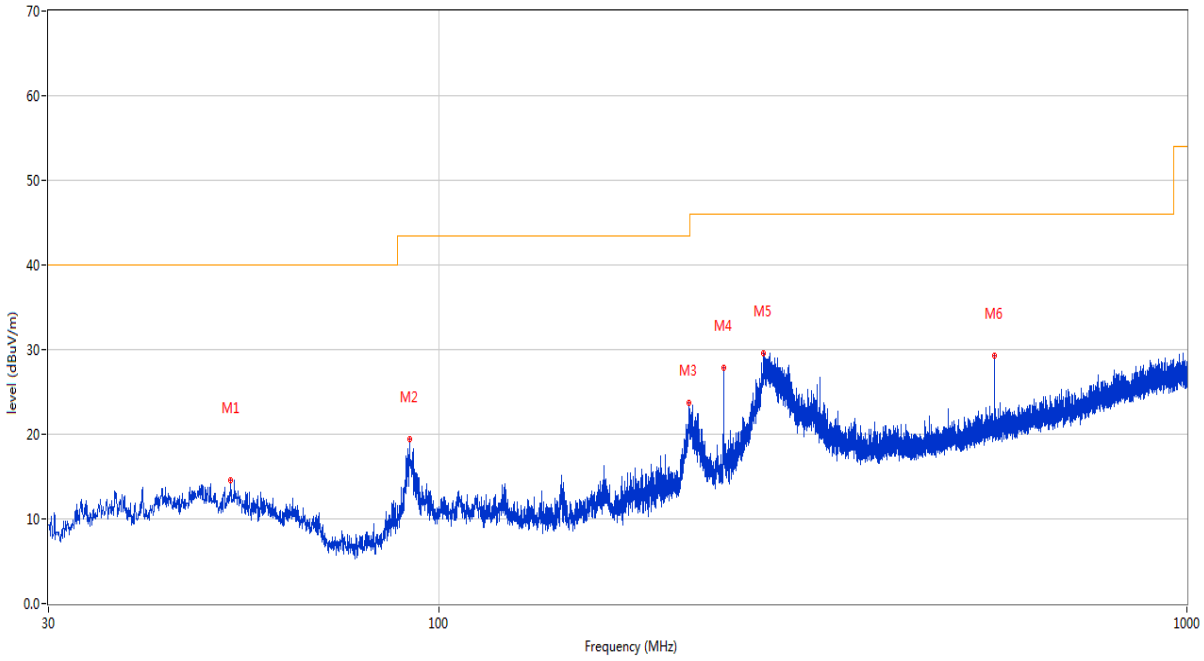
The USB Test Mode

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



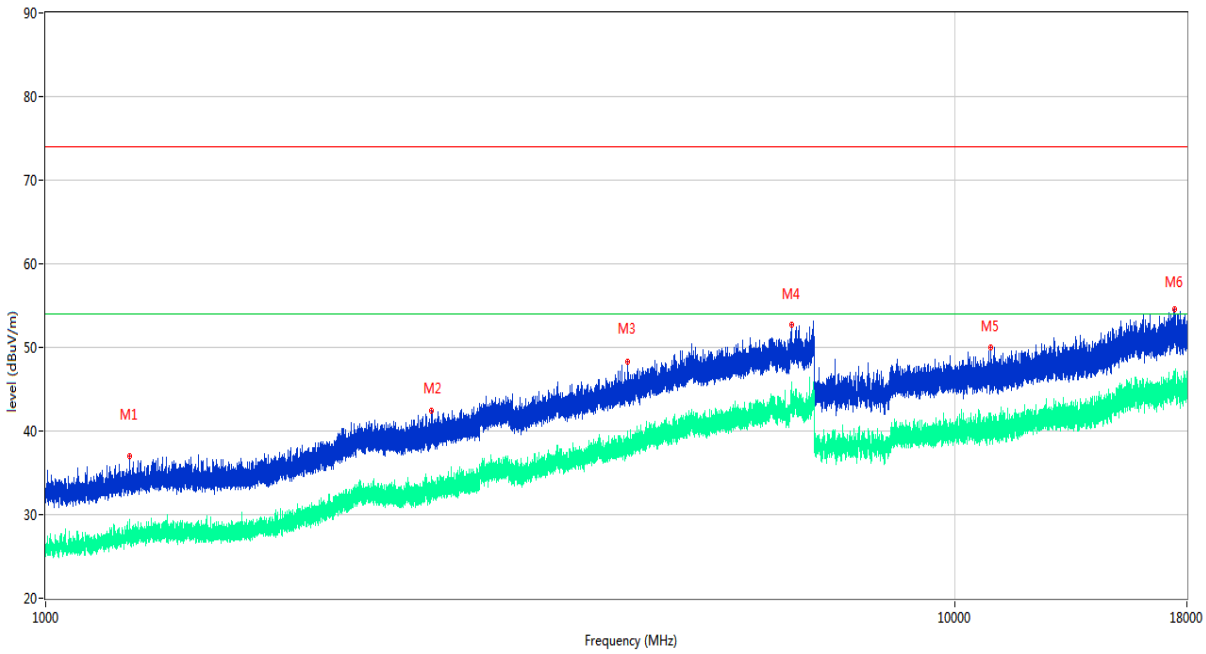
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	36.547	21.00	-24.70	40.0	-19.00	Peak	252.70	100	Vertical	Pass
2	52.795	18.71	-23.04	40.0	-21.29	Peak	360.00	200	Vertical	Pass
3	91.159	21.56	-25.83	43.5	-21.94	Peak	303.60	100	Vertical	Pass
4	239.956	23.97	-23.06	46.0	-22.03	Peak	16.20	200	Vertical	Pass
5	276.574	28.79	-21.96	46.0	-17.21	Peak	1.00	200	Vertical	Pass
6	593.958	30.77	-14.68	46.0	-15.23	Peak	138.50	100	Vertical	Pass

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



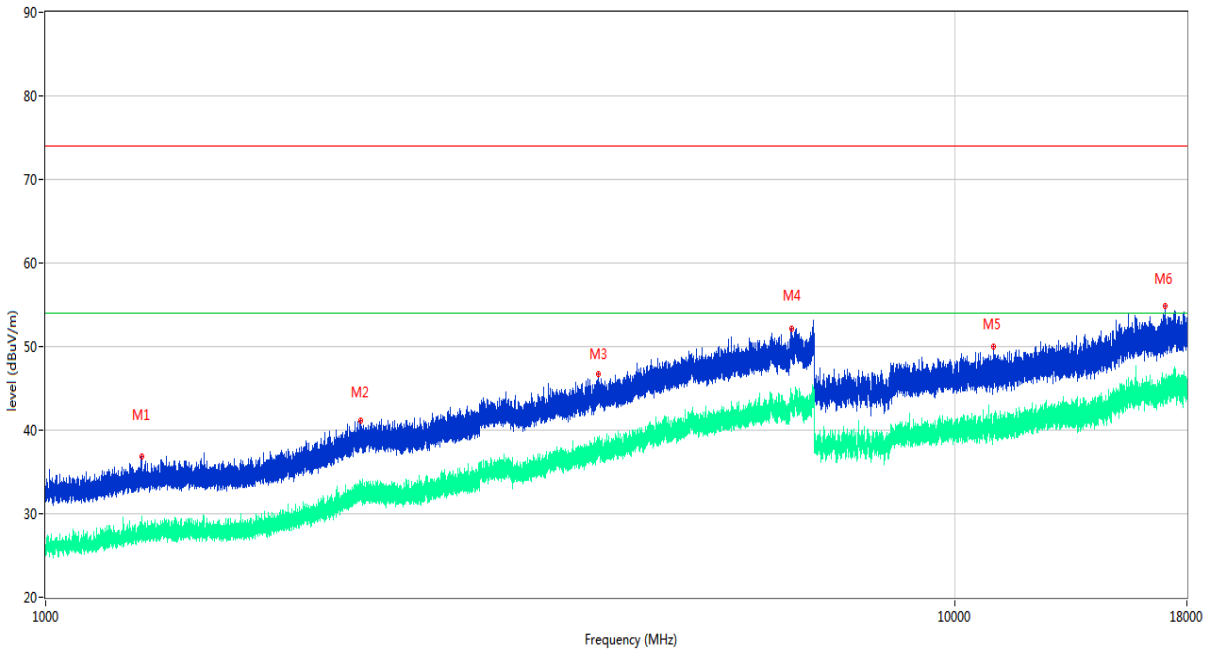
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	52.601	14.58	-23.07	40.0	-25.42	Peak	360.00	200	Horizontal	Pass
2	91.207	19.36	-25.82	43.5	-24.14	Peak	52.60	200	Horizontal	Pass
3	215.512	23.68	-23.84	43.5	-19.82	Peak	32.20	100	Horizontal	Pass
4	239.956	27.84	-23.06	46.0	-18.16	Peak	49.20	100	Horizontal	Pass
5	271.578	29.53	-22.15	46.0	-16.47	Peak	298.20	100	Horizontal	Pass
6	553.509	29.23	-15.61	46.0	-16.77	Peak	152.60	100	Horizontal	Pass

A.1.7 Test Antenna Vertical, 1 GHz – 18 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1237.300	36.94	-17.78	74.0	-37.06	Peak	315.00	150	Vertical	Pass
1**	1237.300	27.44	-17.78	54.0	-26.56	AV	315.00	150	Vertical	Pass
2	2653.900	42.43	-11.16	74.0	-31.57	Peak	232.00	150	Vertical	Pass
2**	2653.900	33.34	-11.16	54.0	-20.66	AV	232.00	150	Vertical	Pass
3	4361.200	48.34	-3.77	74.0	-25.66	Peak	26.00	150	Vertical	Pass
3**	4361.200	38.99	-3.77	54.0	-15.01	AV	26.00	150	Vertical	Pass
4	6614.000	52.74	0.18	74.0	-21.26	Peak	300.00	150	Vertical	Pass
4**	6614.000	43.39	0.18	54.0	-10.61	AV	300.00	150	Vertical	Pass
5	10948.237	50.00	-0.21	74.0	-24.00	Peak	196.00	150	Vertical	Pass
5**	10948.237	41.12	-0.21	54.0	-12.88	AV	196.00	150	Vertical	Pass
6	17432.738	54.57	3.35	74.0	-19.43	Peak	263.00	150	Vertical	Pass
6**	17432.738	45.99	3.35	54.0	-8.01	AV	263.00	150	Vertical	Pass

A.1.8 Test Antenna Horizontal, 1 GHz – 18 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1276.500	36.90	-17.39	74.0	-37.10	Peak	36.00	150	Horizontal	Pass
1**	1276.500	28.10	-17.39	54.0	-25.90	AV	36.00	150	Horizontal	Pass
2	2222.800	41.07	-12.86	74.0	-32.93	Peak	163.00	150	Horizontal	Pass
2**	2222.800	32.27	-12.86	54.0	-21.73	AV	163.00	150	Horizontal	Pass
3	4055.800	46.69	-4.88	74.0	-27.31	Peak	177.00	150	Horizontal	Pass
3**	4055.800	37.78	-4.88	54.0	-16.22	AV	177.00	150	Horizontal	Pass
4	6622.800	52.13	-0.29	74.0	-21.87	Peak	64.00	150	Horizontal	Pass
4**	6622.800	43.29	-0.29	54.0	-10.71	AV	64.00	150	Horizontal	Pass
5	11032.188	49.96	-0.60	74.0	-24.04	Peak	123.00	150	Horizontal	Pass
5**	11032.188	40.62	-0.60	54.0	-13.38	AV	123.00	150	Horizontal	Pass
6	17019.824	54.88	1.53	74.0	-19.12	Peak	262.00	150	Horizontal	Pass
6**	17019.824	44.25	1.53	54.0	-9.75	AV	262.00	150	Horizontal	Pass

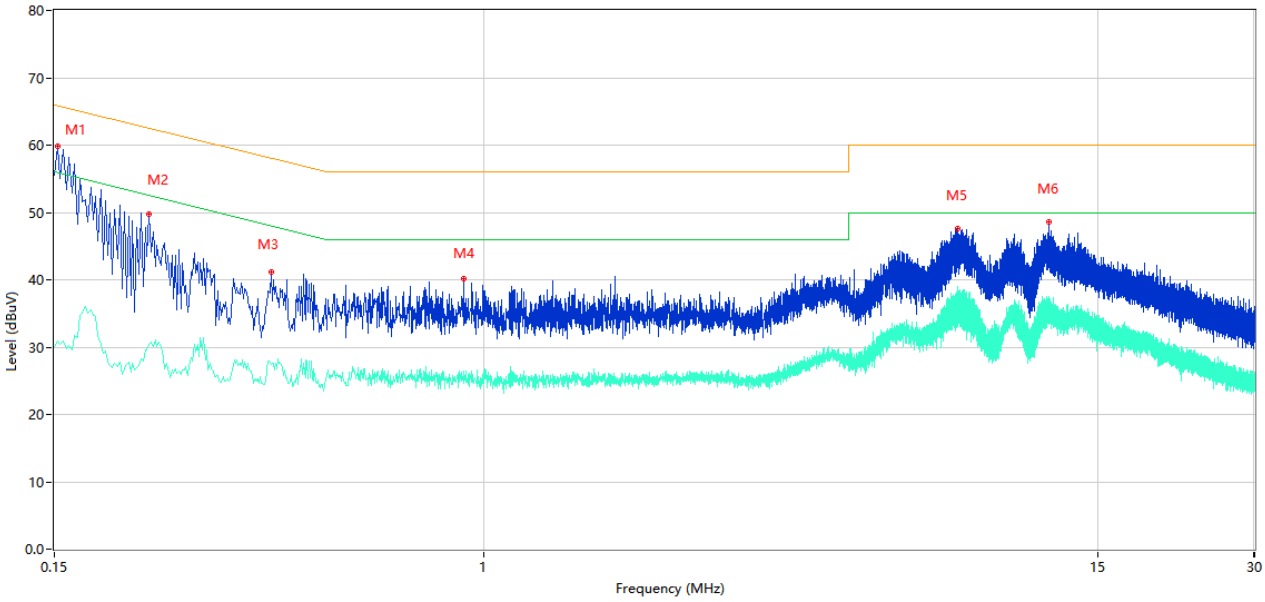
A.2 Conducted Emission

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

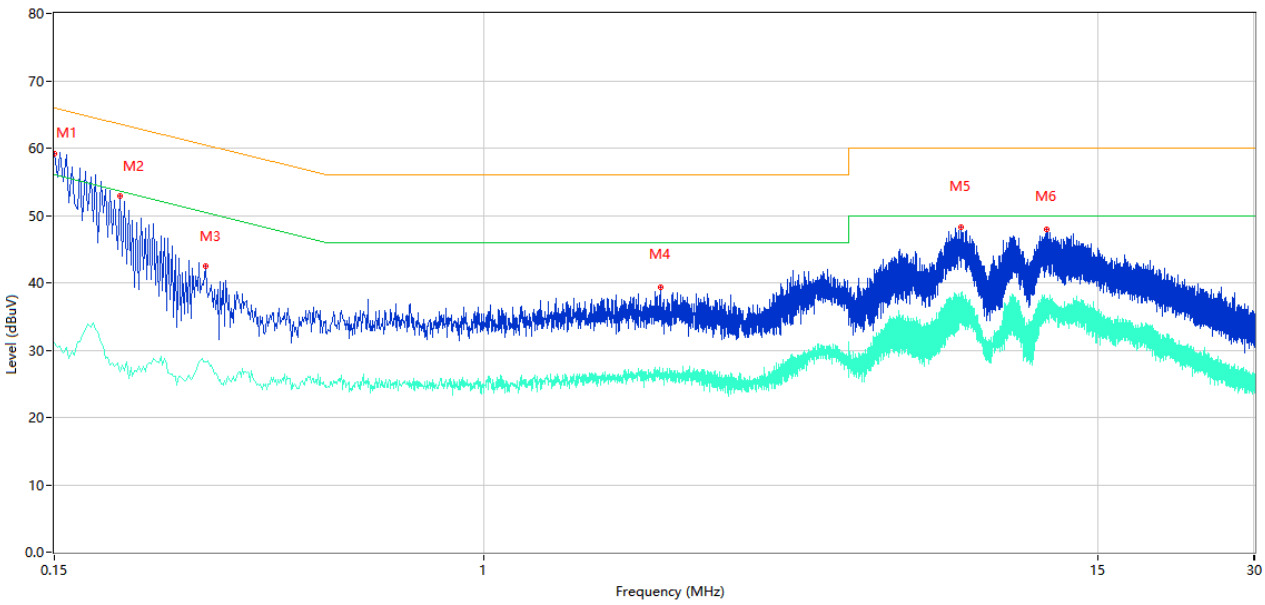
The Camera Test Mode

A.2.1 L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.152	59.82	10.41	65.89	-6.07	Peak	L	Pass
1**	0.152	30.83	10.41	55.89	-25.06	AV	L	Pass
2	0.228	49.76	10.36	62.52	-12.76	Peak	L	Pass
2**	0.228	30.34	10.36	52.52	-22.18	AV	L	Pass
3	0.390	41.18	10.30	58.06	-16.88	Peak	L	Pass
3**	0.390	27.46	10.30	48.06	-20.60	AV	L	Pass
4	0.914	40.19	10.24	56.00	-15.81	Peak	L	Pass
4**	0.914	26.43	10.24	46.00	-19.57	AV	L	Pass
5	8.070	47.56	10.36	60.00	-12.44	Peak	L	Pass
5**	8.070	39.06	10.36	50.00	-10.94	AV	L	Pass
6	12.094	48.66	10.38	60.00	-11.34	Peak	L	Pass
6**	12.094	34.87	10.38	50.00	-15.13	AV	L	Pass

A.2.2 N Phase

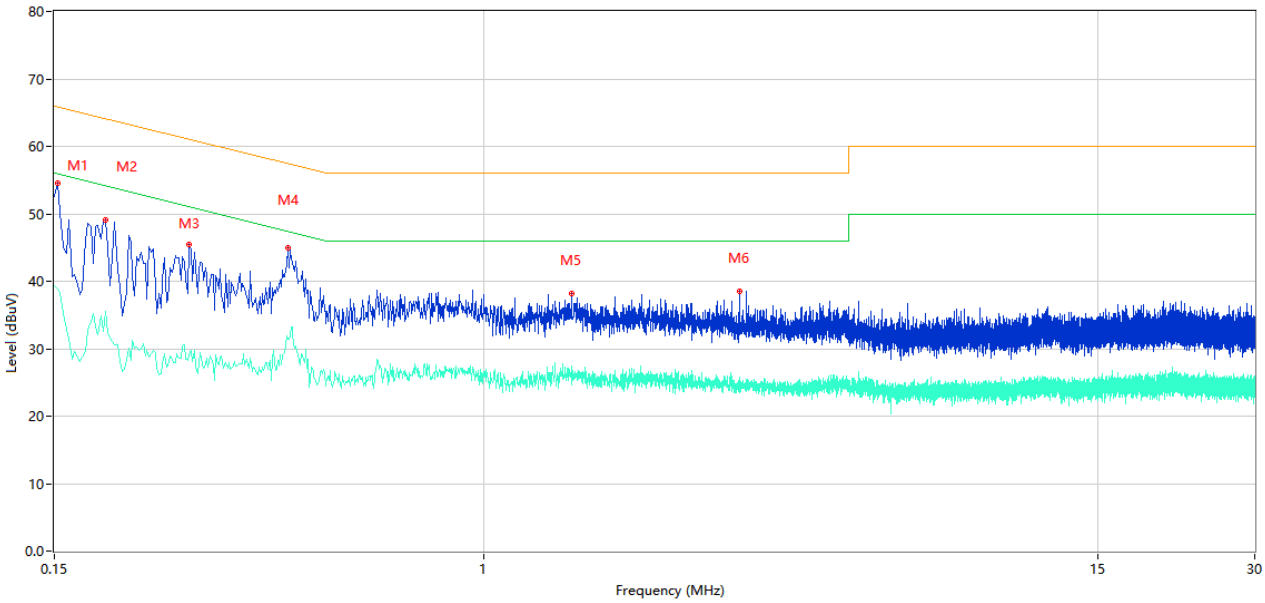


No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.150	59.16	10.41	66.00	-6.84	Peak	N	Pass
1**	0.150	31.01	10.41	56.00	-24.99	AV	N	Pass
2	0.200	52.91	10.38	63.61	-10.70	Peak	N	Pass
2**	0.200	26.78	10.38	53.61	-26.83	AV	N	Pass
3	0.292	42.55	10.34	60.47	-17.92	Peak	N	Pass
3**	0.292	28.26	10.34	50.47	-22.21	AV	N	Pass
4	2.178	39.27	10.27	56.00	-16.73	Peak	N	Pass
4**	2.178	25.98	10.27	46.00	-20.02	AV	N	Pass
5	8.204	48.19	10.34	60.00	-11.81	Peak	N	Pass
5**	8.204	34.13	10.34	50.00	-15.87	AV	N	Pass
6	11.990	47.94	10.39	60.00	-12.06	Peak	N	Pass
6**	11.990	35.75	10.39	50.00	-14.25	AV	N	Pass

Test Data and Plots

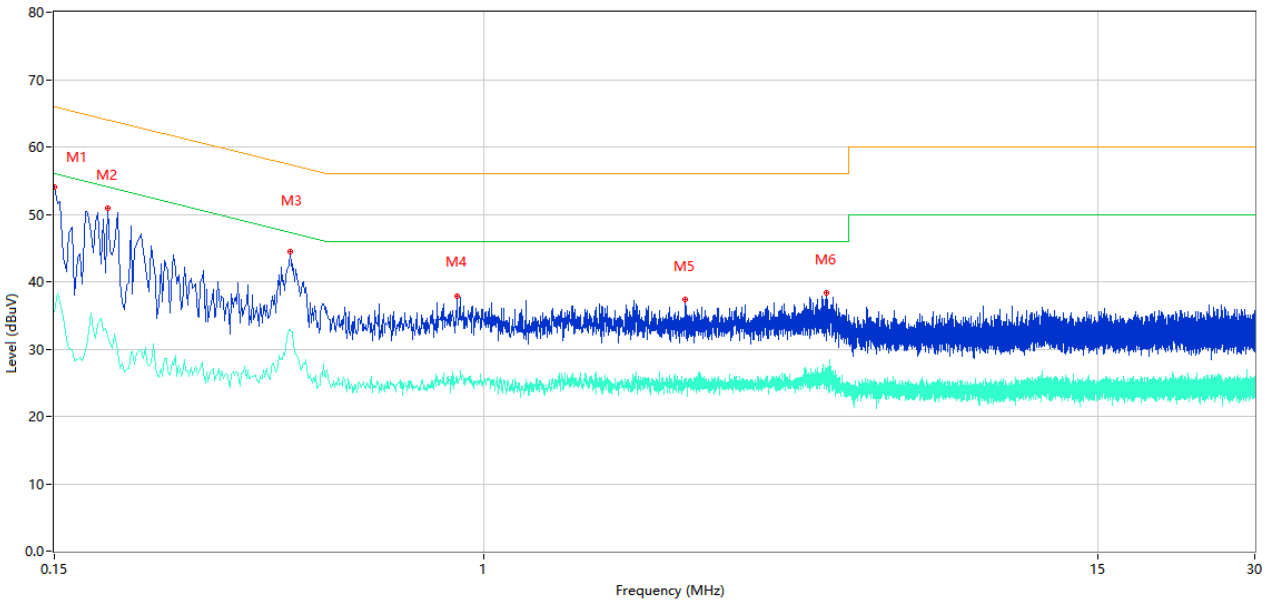
The USB Test Mode

A.2.3 L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.152	54.59	10.41	65.89	-11.30	Peak	L	Pass
1**	0.152	38.82	10.41	55.89	-17.07	AV	L	Pass
2	0.188	49.03	10.38	64.12	-15.09	Peak	L	Pass
2**	0.188	35.59	10.38	54.12	-18.53	AV	L	Pass
3	0.272	45.40	10.34	61.06	-15.66	Peak	L	Pass
3**	0.272	29.10	10.34	51.06	-21.96	AV	L	Pass
4	0.420	44.90	10.31	57.45	-12.55	Peak	L	Pass
4**	0.420	31.37	10.31	47.45	-16.08	AV	L	Pass
5	1.472	38.15	10.25	56.00	-17.85	Peak	L	Pass
5**	1.472	27.46	10.25	46.00	-18.54	AV	L	Pass
6	3.088	38.47	10.29	56.00	-17.53	Peak	L	Pass
6**	3.088	24.13	10.29	46.00	-21.87	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	53.97	10.41	66.00	-12.03	Peak	N	Pass
1**	0.150	35.54	10.41	56.00	-20.46	AV	N	Pass
2	0.190	50.89	10.38	64.04	-13.15	Peak	N	Pass
2**	0.190	31.84	10.38	54.04	-22.20	AV	N	Pass
3	0.424	44.54	10.31	57.37	-12.83	Peak	N	Pass
3**	0.424	32.89	10.31	47.37	-14.48	AV	N	Pass
4	0.886	37.93	10.25	56.00	-18.07	Peak	N	Pass
4**	0.886	25.87	10.25	46.00	-20.13	AV	N	Pass
5	2.432	37.33	10.25	56.00	-18.67	Peak	N	Pass
5**	2.432	25.68	10.25	46.00	-20.32	AV	N	Pass
6	4.522	38.43	10.31	56.00	-17.57	Peak	N	Pass
6**	4.522	26.10	10.31	46.00	-19.90	AV	N	Pass

ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SZ20B0945-AE-1.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ20B0945-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SZ20B0945-AI.PDF”.

--END OF REPORT--