FCC EMC TEST REPORT

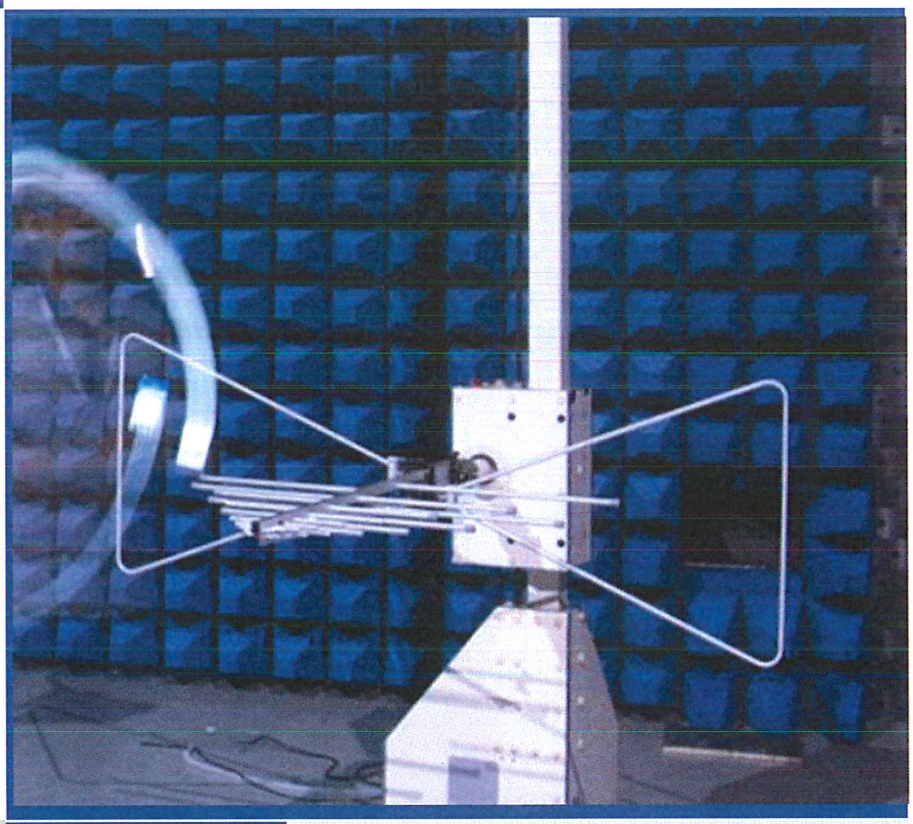
ISSUED BY
Shenzhen BALUN Technology Co., Ltd.

FOR

Mobile Phone

ISSUED TO
Guangdong OPPO Mobile Telecommunications Corp., Ltd.

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



Tested by: Liu Zhen Xiang
Liu Zhenxiang
Date Dec. 23, 2020

Approved by:
Wei Yanquan
(Chief Engineer)
Date Dec. 23, 2020

Report No.:	BL-SZ20A0098-401
EUT Name:	Mobile Phone
Model Name:	CPH2145
Brand Name:	OPPO
Test Standard:	47 CFR Part 15 Subpart B
FCC ID:	R9C-CPH2145
Test Conclusion:	Pass
Test Date:	Nov. 20, 2020 ~ Nov. 26, 2020
Date of Issue:	Dec. 23, 2020

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	Dec. 09, 2020	Initial Issue
Rev. 01	Dec. 23, 2020	Add the FCC ID

TABLE OF CONTENTS

1 GENERAL INFORMATION 4

1.1 Identification of the Testing Laboratory 4

1.2 Identification of the Responsible Testing Location 4

1.3 Laboratory Condition 4

1.4 Announce 5

2 PRODUCT INFORMATION 6

2.1 Applicant Information 6

2.2 Manufacturer Information 6

2.3 Factory Information 6

2.4 General Description for Equipment under Test (EUT) 6

2.5 Ancillary Equipment 7

2.6 Technical Information 8

3 SUMMARY OF TEST RESULTS 9

3.1 Test Standards 9

3.2 Verdict 9

3.3 Test Uncertainty 9

4 GENERAL TEST CONFIGURATIONS 10

4.1 Test Environments 10

4.2 Test Equipment List 10

4.3 Test Enclosure list 12

4.4 Test Configurations 13

4.5 Test Setups 14

4.6 Test Conditions 16

5 TEST ITEMS 17

5.1 Emission Tests 17

ANNEX A TEST RESULTS 19

A.1 Radiated Emission 19
A.2 Conducted Emission 27
ANNEX B TEST SETUP PHOTOS 31
ANNEX C EUT EXTERNAL PHOTOS 31
ANNEX D EUT INTERNAL PHOTOS 31

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 organizatin accredited by FCC as a accredited testing laboratory. The designation number is CN1196. The laboratory is a testing organization accredited by American Association for Laboratory Accreditation(A2LA) according to ISO/IEC 17025.The accreditation certificate is 4344.01. The laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L6791.
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	CPH2145
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	11
Software Version	ColorOS V11.1
Dimensions (Approx.)	159.1x73.4x7.9mm
Weight (Approx.)	Plastic battery cover: about 172g(with battery) Glass battery cover: about 180g(with battery)

2.5 Ancillary Equipment

Ancillary Equipment 1	Li-Polymer Battery 1	
	Brand Name	OPPO
	Model No.	BLP811
	Serial No.	N/A
	Capacitance	Rated: 2100mAh/16.25Wh Typical: 2150mAh/16.64Wh
	Rated Voltage	7.74 V
	Limited Voltage	8.90 V
	Manufacturer	Sunwoda Electronic CO.,LTD.
Ancillary Equipment 2	Li-Polymer Battery (alternative) 2	
	Brand Name	OPPO
	Model No.	BLP811
	Serial No.	N/A
	Capacitance	Rated: 2100mAh/16.25Wh Typical: 2150mAh/16.64Wh
	Rated Voltage	7.74 V
	Limited Voltage	8.90 V
	Manufacturer	Dongguan NVT Technology Co., Ltd.
Ancillary Equipment 3	Power Supply Unit 1	
	Brand Name	OPPO
	Model No.	VCA7JAUH
	Serial No.	N/A
	Rated Input 1	100-130VAC 50/60Hz 1.8A
	Rated Output 1	5VDC 2A or 10VDC 5A Max
	Rated Input 2	200-240VAC 50/60Hz 1.8A
	Rated Output 2	5VDC 2A or 10VDC 6.5A Max (US Plug)
Ancillary Equipment 4	Power Supply Unit(alternative) 2	
	Brand Name	OPPO
	Model No.	VCA7JDUH
	Serial No.	N/A
	Rated Input 1	100-130VAC 50/60Hz 1.8A
	Rated Output 1	5VDC 2A or 10VDC 5A Max
	Rated Input 2	200-240VAC 50/60Hz 1.8A
	Rated Output 2	5VDC 2A or 10VDC 6.5A Max (US Plug)
Ancillary Equipment 5	Power Supply Unit(alternative) 3	
	Brand Name	OPPO
	Model No.	VCA7HAUH
	Serial No.	N/A
	Rated Input 1	100-130VAC 50/60Hz 1.8A
	Rated Output 1	5VDC 2A or 10VDC 5A Max
	Rated Input 2	200-240VAC 50/60Hz 1.8A
	Rated Output 2	5VDC 2A or 10VDC 6.5A Max (US Plug)

Ancillary Equipment 6	USB Cable	
	Model No.	DL129
	Length (Approx.)	1.0 m
Ancillary Equipment 7	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 VCA7JAUH (US Plug) shown in this report. Note 3: All batteries are tested, only the worst data of BLP811 (Dongguan NVT Technology Co., Ltd.) shown in this report.		

2.6 Technical Information

Network and Wireless connectivity	2G Network GSM/GPRS/EDGE 850/900/1800/1900 MHz 3G Network WCDMA/HSDPA/HSUPA/HSPA+/DC-HSDPA Band 1/2/4/5/6/8/19 4G Network LTE FDD Band 1/2/3/4/5/7/8/12/17/18/19/20/26/28/66 LTE TDD Band 38/39/40/41 LTE CA Uplink (UL): 3C, 7C, 38C, 40C, 41C 5G Network SA: NR n1/n3/n7/n28/n41/n78 NSA(EN-DC): DC_1A_n3A, DC_1A_n28A, DC_1A_n40A, DC_1A_n77A, DC_1A_n78A, DC_3A_n5A, DC_3A_n7A, DC_3A_n8A, DC_3A_n20A, DC_3A_n28A, DC_3A_n38A, DC_3A_n40A, DC_3A_n41A, DC_3A_n77A, DC_3A_n78A, DC_5A_n78A, DC_7A_n5A, DC_7A_n28A, DC_7A_n78A, DC_8A_n41A, DC_8A_n78A, DC_20A_n28A, DC_20A_n78A, DC_28A_n78A, DC_38A_n78A Bluetooth 5.1 (BR+EDR+BLE) 2.4G WIFI 802.11b, 802.11g, 802.11n(HT20), 802.11ac(VHT20) 5G WIFI 802.11a, 802.11n(HT20/40), 802.11ac(VHT20/40/80) U-NII-1/2A/2C/3, GPS, GLONASS, BDS, Galileo, 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
Note 1: EUT has two body materials, plastic cover and glass cover. The main test model is the prototype of plastic material cover, and the prototype of glass material cover verifies the worst-case Radiated Emission. This report only reflects the data of the main test model. Note 2: There are two forms of this product: it supports dual cards in some regions or operators; while in other regions or operators supports single cards. When supports dual cards, SIM1 and SIM2 are based on the same radio frequency module, and the working mechanism is dual-standby with single-pass, which means SIM1 and SIM2 cannot work at the same time in the communication mode. When only supports a single card, other software and hardware are consistent with the status that supports dual cards.				

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	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	2019.10.29	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	--	--	☒

Radiated Emission Test For Frequency Above 18 GHz						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	ROHDE & SCHWARZ	FSV40	101544	2020.02.19	2021.02.18	☒
Test Antenna-Horn	A-INFOMW	LB-180400KF	J211060273	2019.01.05	2021.01.04	☒
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	2020.06.09	2021.06.08	☒
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

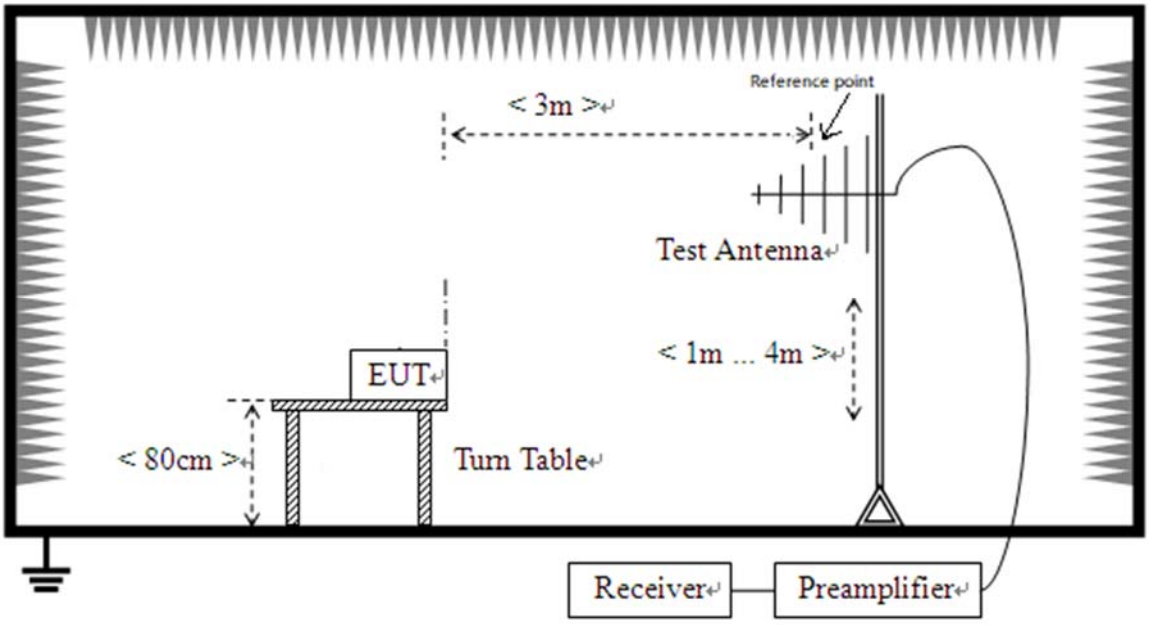
Description	Manufacturer	Model	Serial No.	Length	Description	Use
PC	Dell	015K3N	N/A	N/A	Special Handled	☐
Laptop	Apple	A1465	N/A	N/A	N/A	☒
Printer	HP	DESKJET 1000	N/A	N/A	N/A	☐
Keyboard	Logitech	Y-BP62a	N/A	N/A	N/A	☐
Mouse	Logitech	M100	N/A	N/A	N/A	☐
USB disk	Kingston	N/A	N/A	N/A	N/A	☐
TF Card	Kingston	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	Cal. Due 2021.06.08	☐
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	600014010687210006	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
Traffic Test Mode	
TC01	The Video Play Test Mode EUT + Adapter + USB Cable + Battery + Headset
TC02	The Camera Test Mode EUT + Adapter + USB Cable + Battery + Headset
TC03	The USB Test Mode EUT + USB Cable + Battery + Headset + Laptop

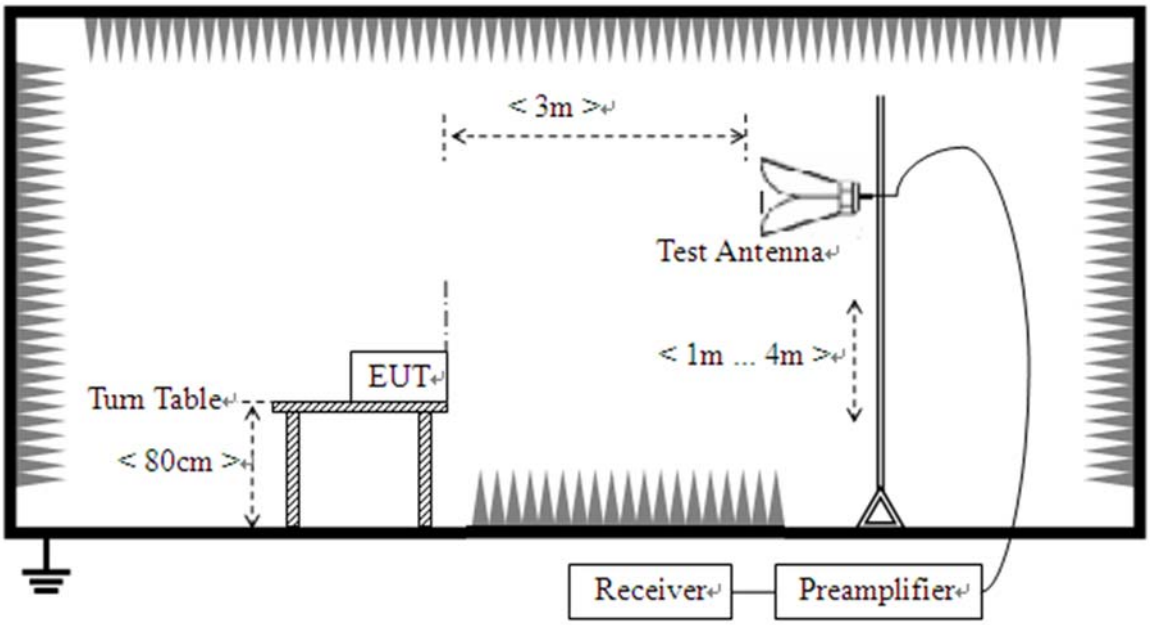
4.5 Test Setups

Test Setup 1



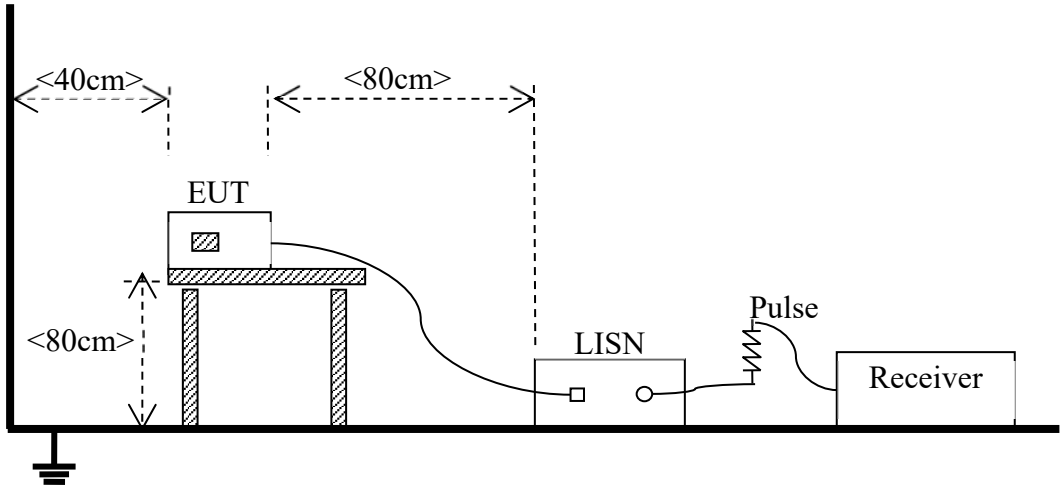
(For Radiated Emission Test (30 MHz-1 GHz))

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~TC03 Note
Conducted Emission, AC Ports	Test Env.	NTNV
	Test Setup	Test Setup 3
	Test Configuration	TC01~TC03 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.

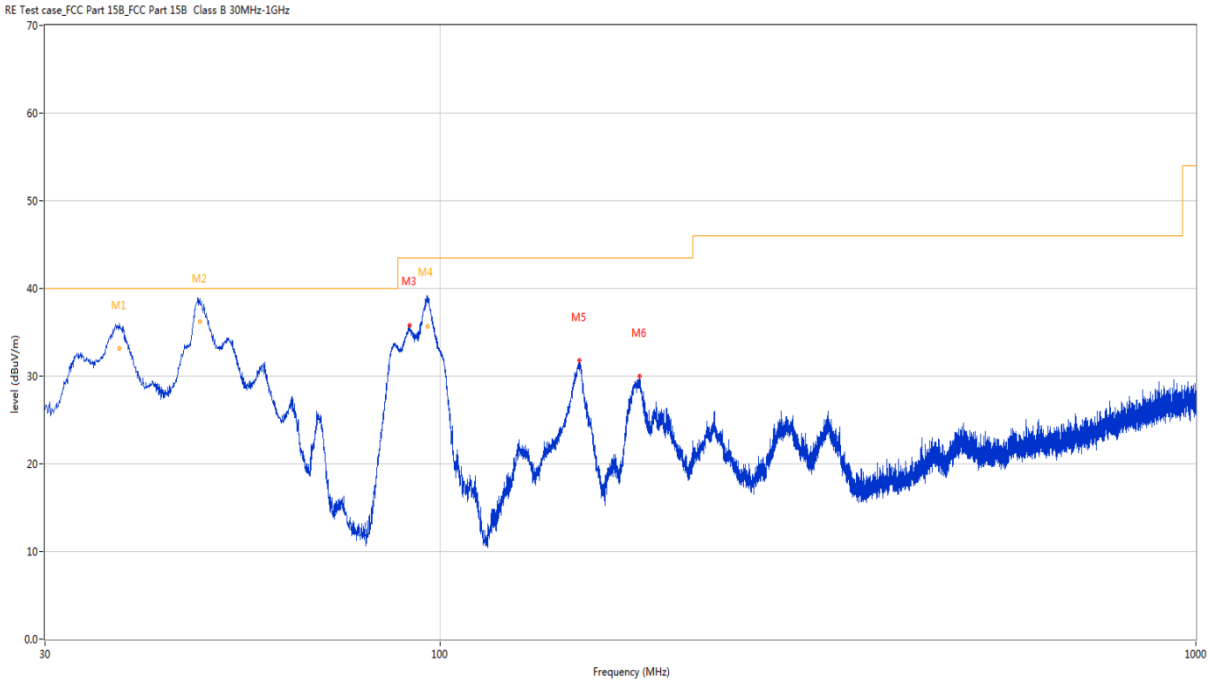
Note 2: For the test data above 1 GHz, according the ANSI C63.4-2014, where limits are specified for both average and peak (or quasi-peak) detector functions, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement.

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

Test Data and Plots

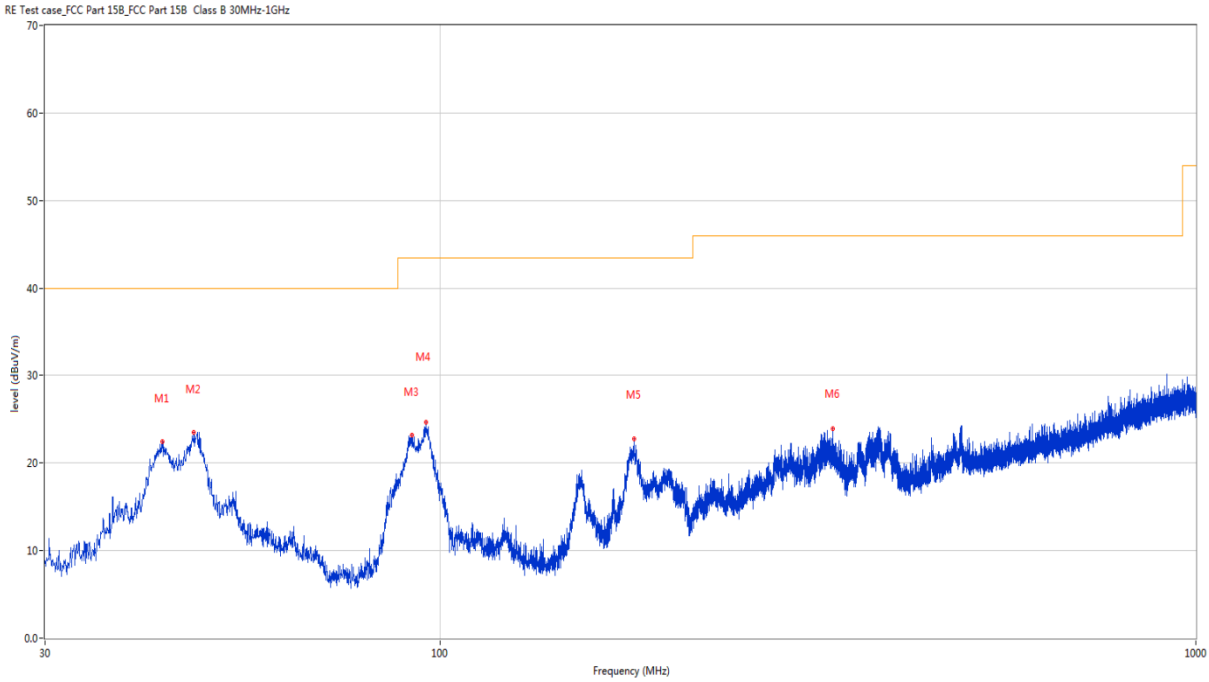
The Camera Test Mode

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



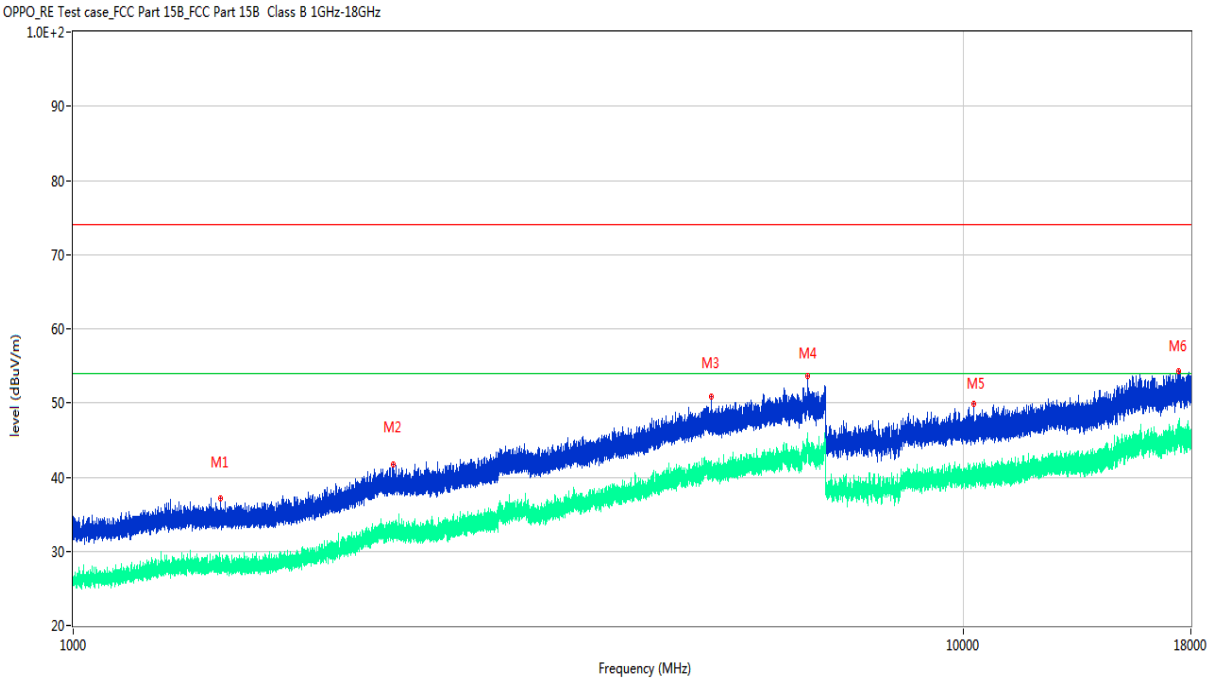
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	37.652	35.04	-24.54	40.0	-4.96	Peak	1.00	100	Vertical	N/A
1*	37.652	33.14	-24.54	40.0	-6.86	QP	1.00	100	Vertical	Pass
2	48.068	38.62	-22.69	40.0	-1.38	Peak	232.40	100	Vertical	N/A
2*	48.068	36.17	-22.69	40.0	-3.83	QP	232.40	100	Vertical	Pass
3	91.062	35.84	-25.85	43.5	-7.66	Peak	143.50	100	Vertical	Pass
4	96.251	41.09	-24.75	43.5	-2.41	Peak	244.90	123	Vertical	N/A
4*	96.251	35.66	-24.75	43.5	-7.84	QP	244.90	123	Vertical	Pass
5	152.656	31.82	-27.71	43.5	-11.68	Peak	27.50	100	Vertical	Pass
6	183.794	29.96	-25.31	43.5	-13.54	Peak	164.80	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	42.901	22.40	-23.39	40.0	-17.60	Peak	170.40	200	Horizontal	Pass
2	47.218	23.42	-22.83	40.0	-16.58	Peak	162.30	200	Horizontal	Pass
3	91.789	23.12	-25.68	43.5	-20.38	Peak	220.60	200	Horizontal	Pass
4	95.766	24.68	-24.77	43.5	-18.82	Peak	279.90	200	Horizontal	Pass
5	180.641	22.74	-25.97	43.5	-20.76	Peak	86.40	100	Horizontal	Pass
6	330.749	23.90	-20.87	46.0	-22.10	Peak	191.10	200	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	1463.500	37.18	-17.51	74.0	-36.82	Peak	244.00	150	Vertical	Pass
1**	1463.500	28.62	-17.51	54.0	-25.38	AV	244.00	150	Vertical	Pass
2	2286.300	41.72	-12.81	74.0	-32.28	Peak	121.00	150	Vertical	Pass
2**	2286.300	32.95	-12.81	54.0	-21.05	AV	121.00	150	Vertical	Pass
3	5208.400	50.82	-2.60	74.0	-23.18	Peak	360.00	150	Vertical	Pass
3**	5208.400	40.86	-2.60	54.0	-13.14	AV	360.00	150	Vertical	Pass
4	6684.200	53.57	-0.30	74.0	-20.43	Peak	10.00	150	Vertical	Pass
4**	6684.200	43.26	-0.30	54.0	-10.74	AV	10.00	150	Vertical	Pass
5	10260.825	49.90	0.57	74.0	-24.10	Peak	360.00	150	Vertical	Pass
5**	10260.825	41.83	0.57	54.0	-12.17	AV	360.00	150	Vertical	Pass
6	17427.489	54.33	3.54	74.0	-19.67	Peak	77.00	150	Vertical	Pass
6**	17427.489	46.40	3.54	54.0	-7.60	AV	77.00	150	Vertical	Pass

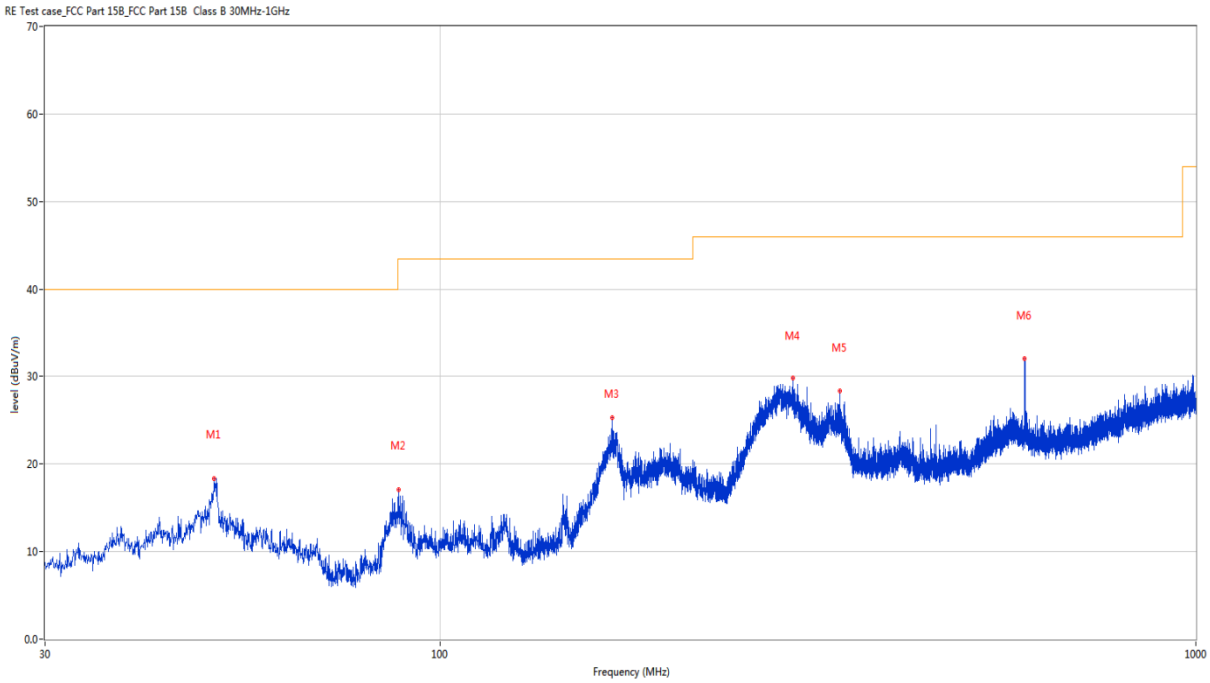
Test Antenna Horizontal, 1 GHz – 18 GHz

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1277.400	36.59	-17.43	74.0	-37.41	Peak	73.00	150	Horizontal	Pass
1**	1277.400	27.25	-17.43	54.0	-26.75	AV	73.00	150	Horizontal	Pass
2	2169.100	41.88	-13.49	74.0	-32.12	Peak	317.00	150	Horizontal	Pass
2**	2169.100	31.67	-13.49	54.0	-22.33	AV	317.00	150	Horizontal	Pass
3	4538.600	47.84	-4.37	74.0	-26.16	Peak	331.00	150	Horizontal	Pass
3**	4538.600	38.69	-4.37	54.0	-15.31	AV	331.00	150	Horizontal	Pass
4	6978.000	52.69	0.90	74.0	-21.31	Peak	0.00	150	Horizontal	Pass
4**	6978.000	44.27	0.90	54.0	-9.73	AV	0.00	150	Horizontal	Pass
5	11323.425	50.32	0.52	74.0	-23.68	Peak	220.00	150	Horizontal	Pass
5**	11323.425	40.72	0.52	54.0	-13.28	AV	220.00	150	Horizontal	Pass
6	17463.714	54.43	2.88	74.0	-19.57	Peak	287.00	150	Horizontal	Pass
6**	17463.714	46.45	2.88	54.0	-7.55	AV	287.00	150	Horizontal	Pass

Test Data and Plots

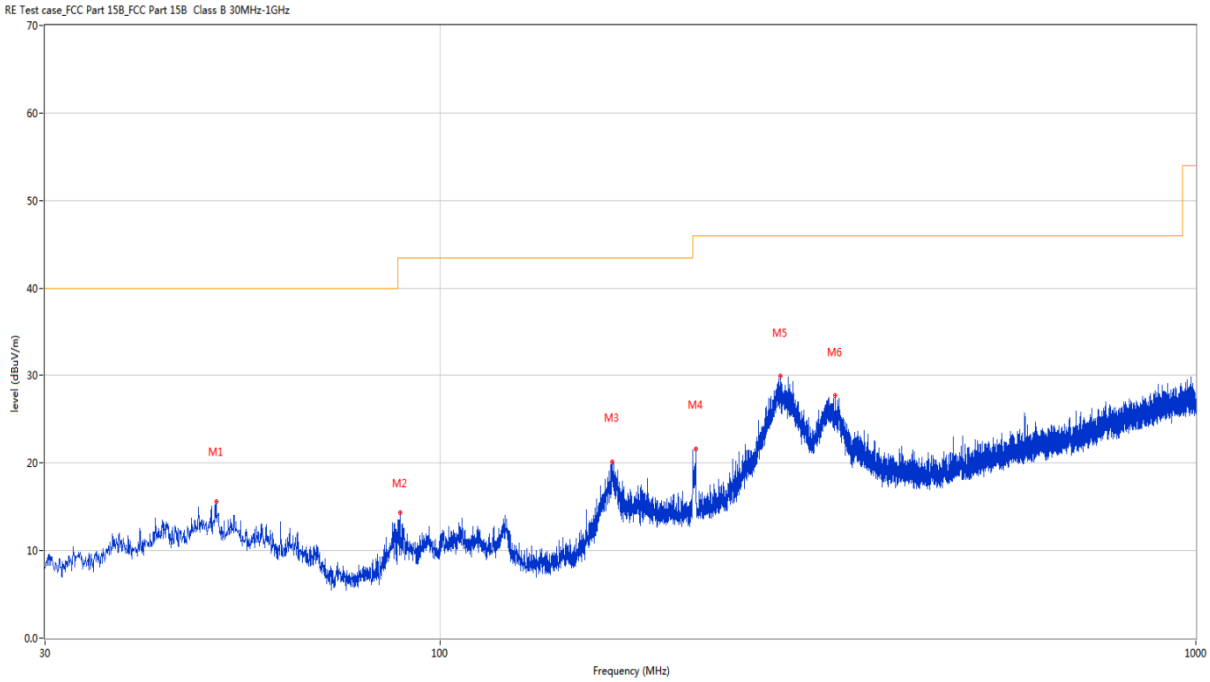
The USB Test Mode

A.1.4 Test Antenna Vertical, 30 MHz – 1 GHz



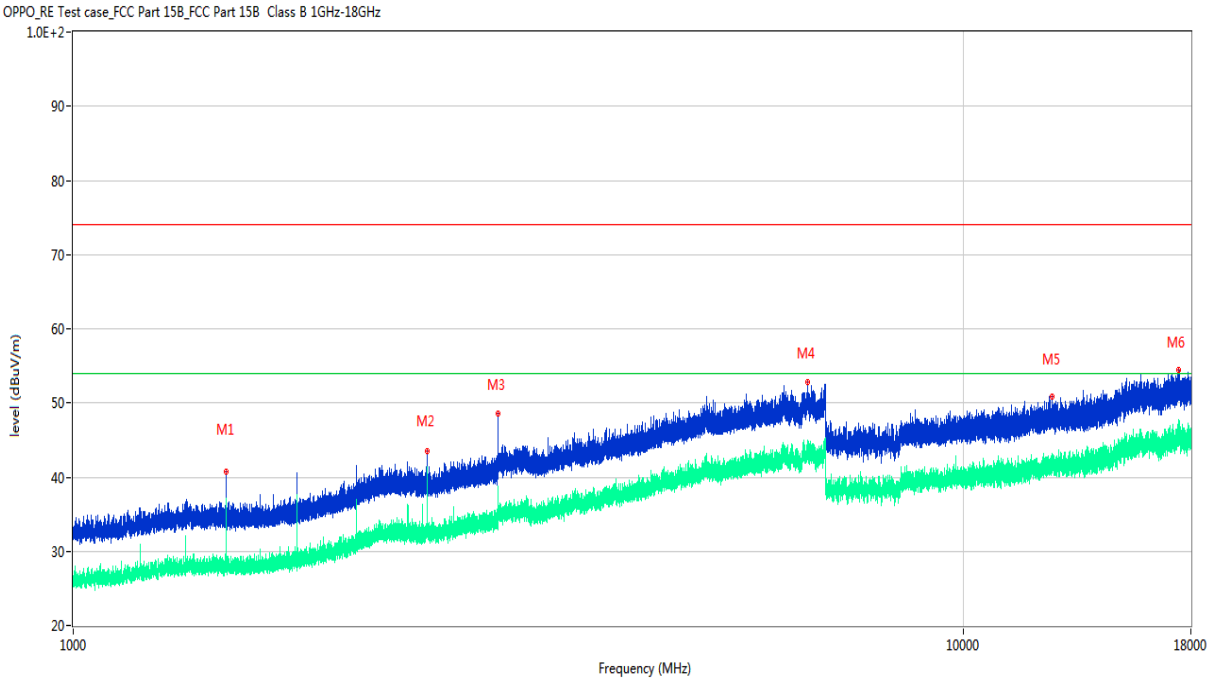
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	50.224	18.33	-22.88	40.0	-21.67	Peak	91.00	100	Vertical	Pass
2	88.054	17.00	-26.47	43.5	-26.50	Peak	0.00	200	Vertical	Pass
3	168.952	25.26	-27.02	43.5	-18.24	Peak	251.80	100	Vertical	Pass
4	293.112	29.80	-21.75	46.0	-16.20	Peak	61.10	200	Vertical	Pass
5	337.733	28.28	-20.13	46.0	-17.72	Peak	0.00	200	Vertical	Pass
6	594.006	32.00	-14.68	46.0	-14.00	Peak	247.60	100	Vertical	Pass

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



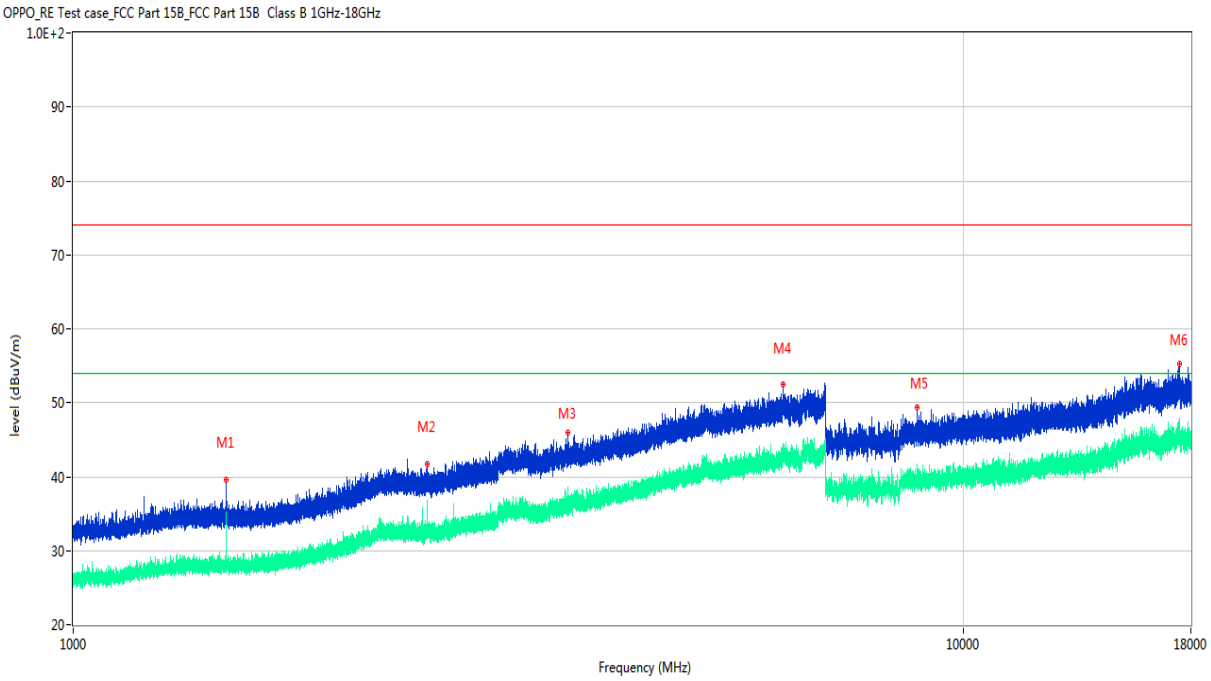
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	50.564	15.60	-23.02	40.0	-24.40	Peak	349.90	200	Horizontal	Pass
2	88.491	14.37	-26.41	43.5	-29.13	Peak	68.30	200	Horizontal	Pass
3	168.807	20.12	-27.06	43.5	-23.38	Peak	258.90	200	Horizontal	Pass
4	217.938	21.60	-24.12	46.0	-24.40	Peak	109.80	200	Horizontal	Pass
5	281.861	29.91	-21.77	46.0	-16.09	Peak	90.90	100	Horizontal	Pass
6	333.077	27.65	-20.45	46.0	-18.35	Peak	0.00	200	Horizontal	Pass

A.1.6 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	1484.600	40.75	-17.55	74.0	-33.25	Peak	190.00	150	Vertical	Pass
1**	1484.600	34.66	-17.55	54.0	-19.34	AV	190.00	150	Vertical	Pass
2	2500.200	43.55	-12.04	74.0	-30.45	Peak	167.00	150	Vertical	Pass
2**	2500.200	40.65	-12.04	54.0	-13.35	AV	167.00	150	Vertical	Pass
3	3000.000	48.55	-9.77	74.0	-25.45	Peak	151.00	150	Vertical	Pass
3**	3000.000	38.30	-9.77	54.0	-15.70	AV	151.00	150	Vertical	Pass
4	6679.200	52.88	-0.54	74.0	-21.12	Peak	133.00	150	Vertical	Pass
4**	6679.200	44.26	-0.54	54.0	-9.74	AV	133.00	150	Vertical	Pass
5	12563.125	50.81	1.70	74.0	-23.19	Peak	0.00	150	Vertical	Pass
5**	12563.125	42.87	1.70	54.0	-11.13	AV	0.00	150	Vertical	Pass
6	17425.125	54.38	3.62	74.0	-19.62	Peak	301.00	150	Vertical	Pass
6**	17425.125	47.31	3.62	54.0	-6.69	AV	301.00	150	Vertical	Pass

A.1.7 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	1484.900	39.54	-17.57	74.0	-34.46	Peak	107.00	150	Horizontal	Pass
1**	1484.900	35.02	-17.57	54.0	-18.98	AV	107.00	150	Horizontal	Pass
2	2499.700	41.64	-12.05	74.0	-32.36	Peak	124.00	150	Horizontal	Pass
2**	2499.700	33.34	-12.05	54.0	-20.66	AV	124.00	150	Horizontal	Pass
3	3595.800	45.99	-7.39	74.0	-28.01	Peak	117.00	150	Horizontal	Pass
3**	3595.800	35.70	-7.39	54.0	-18.30	AV	117.00	150	Horizontal	Pass
4	6269.000	52.48	-0.36	74.0	-21.52	Peak	60.00	150	Horizontal	Pass
4**	6269.000	43.81	-0.36	54.0	-10.19	AV	60.00	150	Horizontal	Pass
5	8873.638	49.33	-0.83	74.0	-24.67	Peak	172.00	150	Horizontal	Pass
5**	8873.638	40.27	-0.83	54.0	-13.73	AV	172.00	150	Horizontal	Pass
6	17471.324	55.26	2.88	74.0	-18.74	Peak	239.00	150	Horizontal	Pass
6**	17471.324	47.16	2.88	54.0	-6.84	AV	239.00	150	Horizontal	Pass

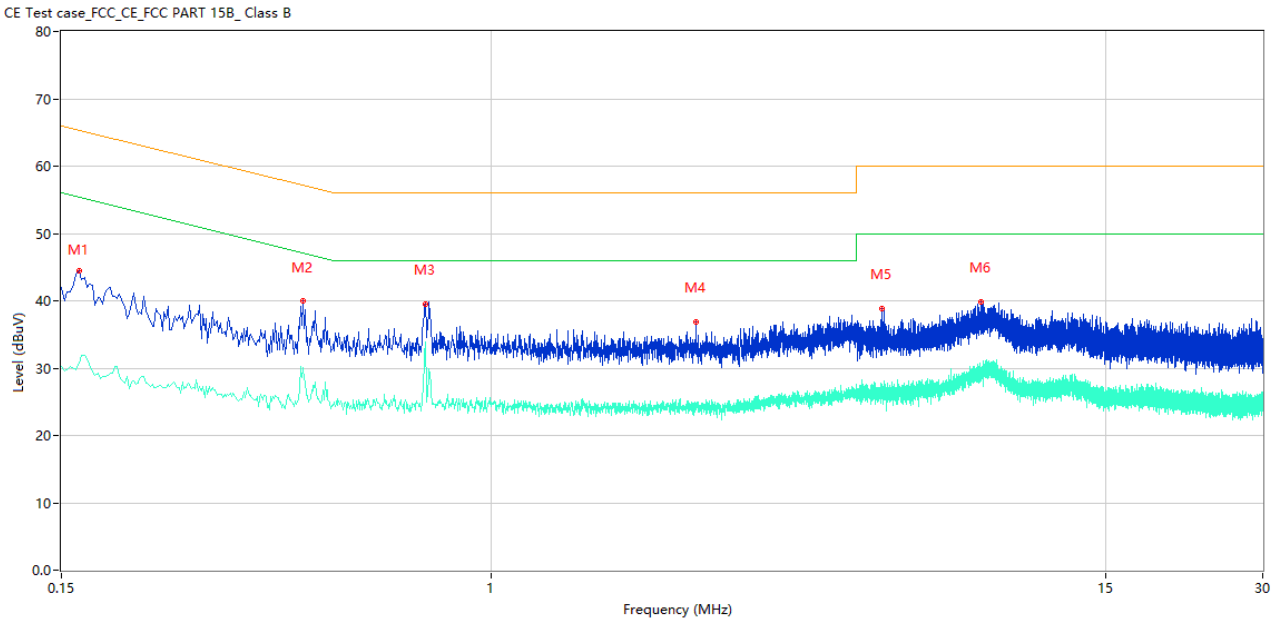
A.2 Conducted Emission

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

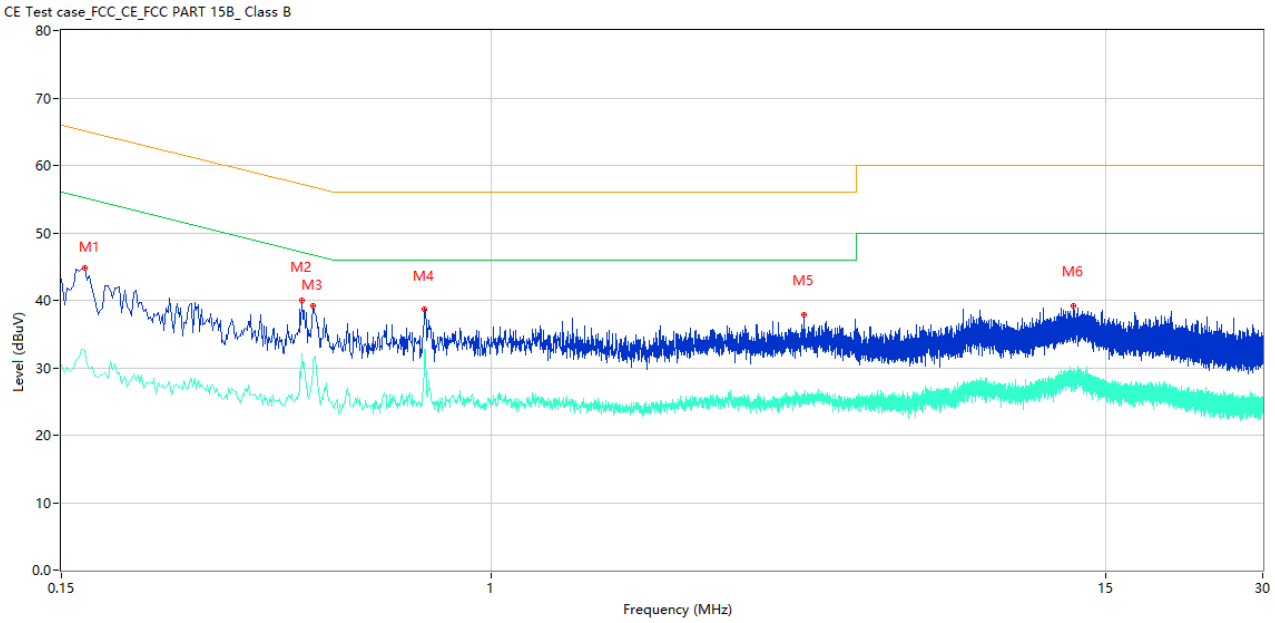
The Camera Test Mode

A.2.1 L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.162	44.51	10.40	65.36	-20.85	Peak	L	Pass
1**	0.162	30.79	10.40	55.36	-24.57	AV	L	Pass
2	0.436	40.01	10.31	57.14	-17.13	Peak	L	Pass
2**	0.436	30.02	10.31	47.14	-17.12	AV	L	Pass
3	0.746	39.58	10.26	56.00	-16.42	Peak	L	Pass
3**	0.746	33.93	10.26	46.00	-12.07	AV	L	Pass
4	2.462	36.85	10.27	56.00	-19.15	Peak	L	Pass
4**	2.462	24.58	10.27	46.00	-21.42	AV	L	Pass
5	5.598	38.89	10.31	60.00	-21.11	Peak	L	Pass
5**	5.598	26.93	10.31	50.00	-23.07	AV	L	Pass
6	8.656	39.84	10.36	60.00	-20.16	Peak	L	Pass
6**	8.656	29.28	10.36	50.00	-20.72	AV	L	Pass

A.2.2 N Phase

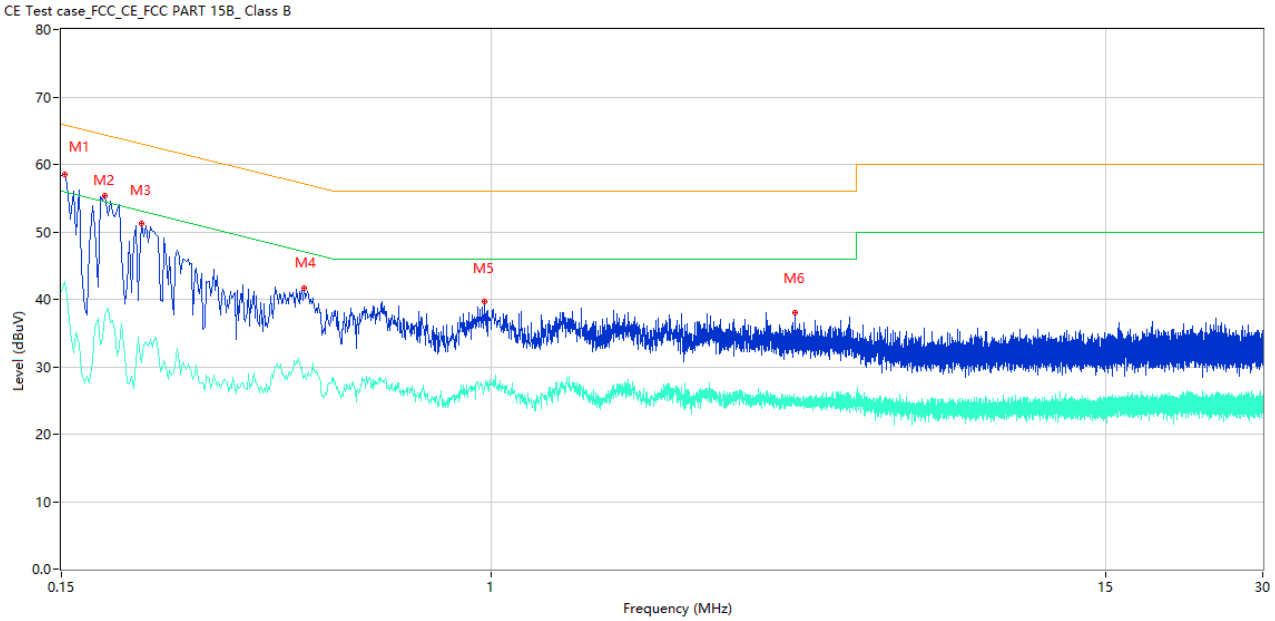


No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.166	44.81	10.40	65.16	-20.35	Peak	N	Pass
1**	0.166	32.57	10.40	55.16	-22.59	AV	N	Pass
2	0.434	39.94	10.31	57.18	-17.24	Peak	N	Pass
2**	0.434	31.99	10.31	47.18	-15.19	AV	N	Pass
3	0.456	39.11	10.30	56.77	-17.66	Peak	N	Pass
3**	0.456	31.07	10.30	46.77	-15.70	AV	N	Pass
4	0.744	38.63	10.26	56.00	-17.37	Peak	N	Pass
4**	0.744	32.67	10.26	46.00	-13.33	AV	N	Pass
5	3.972	37.90	10.29	56.00	-18.10	Peak	N	Pass
5**	3.972	25.32	10.29	46.00	-20.68	AV	N	Pass
6	13.024	39.14	10.39	60.00	-20.86	Peak	N	Pass
6**	13.024	29.73	10.39	50.00	-20.27	AV	N	Pass

Test Data and Plots

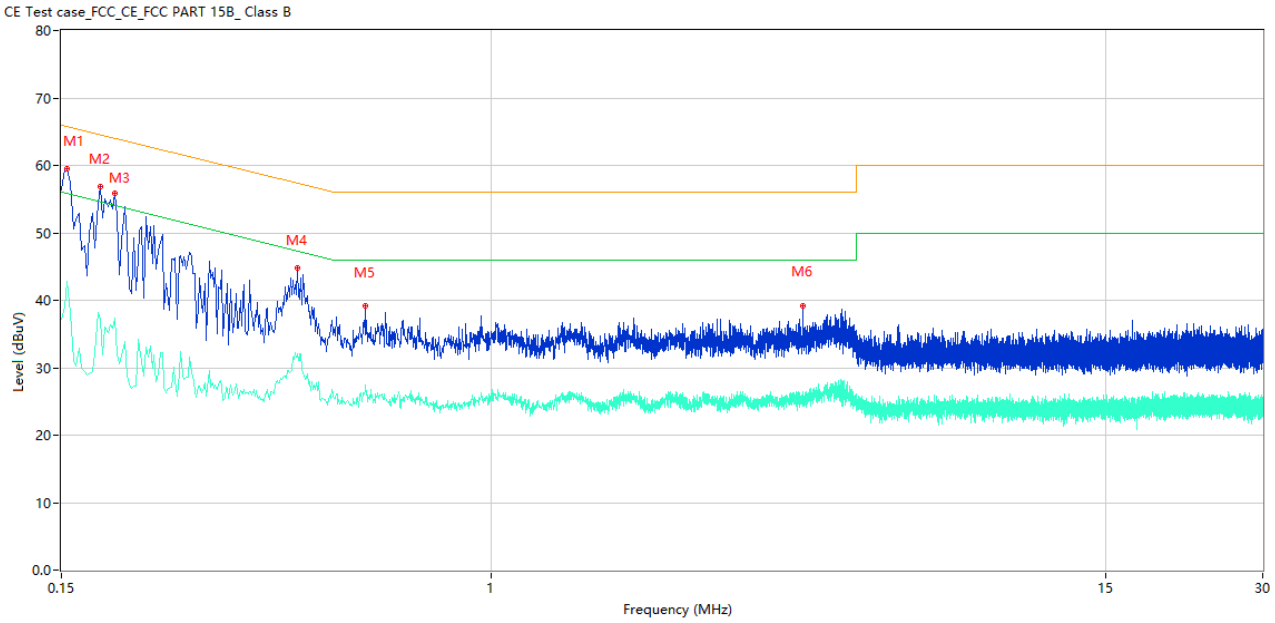
The USB Test Mode

A.2.3 L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.152	58.58	10.41	65.89	-7.31	Peak	L	Pass
1**	0.152	42.57	10.41	55.89	-13.32	AV	L	Pass
2	0.182	55.38	10.39	64.39	-9.01	Peak	L	Pass
2**	0.182	37.72	10.39	54.39	-16.67	AV	L	Pass
3	0.214	51.23	10.38	63.05	-11.82	Peak	L	Pass
3**	0.214	30.55	10.38	53.05	-22.50	AV	L	Pass
4	0.438	41.59	10.31	57.10	-15.51	Peak	L	Pass
4**	0.438	28.50	10.31	47.10	-18.60	AV	L	Pass
5	0.968	39.74	10.23	56.00	-16.26	Peak	L	Pass
5**	0.968	26.74	10.23	46.00	-19.26	AV	L	Pass
6	3.816	38.00	10.29	56.00	-18.00	Peak	L	Pass
6**	3.816	25.03	10.29	46.00	-20.97	AV	L	Pass

A.2.4 N Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.154	59.51	10.41	65.78	-6.27	Peak	N	Pass
1**	0.154	42.85	10.41	55.78	-12.93	AV	N	Pass
2	0.178	56.79	10.39	64.58	-7.79	Peak	N	Pass
2**	0.178	37.25	10.39	54.58	-17.33	AV	N	Pass
3	0.190	55.81	10.38	64.04	-8.23	Peak	N	Pass
3**	0.190	37.39	10.38	54.04	-16.65	AV	N	Pass
4	0.424	44.83	10.31	57.37	-12.54	Peak	N	Pass
4**	0.424	32.14	10.31	47.37	-15.23	AV	N	Pass
5	0.574	39.11	10.27	56.00	-16.89	Peak	N	Pass
5**	0.574	27.37	10.27	46.00	-18.63	AV	N	Pass
6	3.954	39.17	10.29	56.00	-16.83	Peak	N	Pass
6**	3.954	26.24	10.29	46.00	-19.76	AV	N	Pass

ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SZ20A0098-AE-1.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ20A0098-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SZ20A0098-AI.PDF”.

--END OF REPORT--