

# TEST REPORT

**Applicant:** OnePlus Technology (Shenzhen) Co., Ltd.  
**Address:** 18C02, 18C03, 18C04 and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen  
**Equipment Type:** Smart Phone  
**Model Name:** CPH2469  
**Brand Name:** Oneplus  
**FCC ID:** 2ABZ2-AA521  
**Test Standard:** 47 CFR Part 15 Subpart B  
**Test Date:** May 18, 2022 - May 19, 2022  
**Date of Issue:** Jun. 01, 2022

**ISSUED BY:**

Shenzhen BALUN Technology Co., Ltd.

**Tested by:** Zhang Guoxi

**Checked by:** Xia Long

**Approved by:** Liao Jianming  
(Technical Director)

*Zhang Guoxi*

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### Revision History

Version	Issue Date	Revisions Content
<u>Rev. 01</u>	<u>Jun. 01, 2022</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, 1/F, Baisha Science and Technology Park, Shahe West Road, Nanshan District, ShenZhen, GuangDong Province, 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, 1/F, Baisha Science and Technology Park, Shahe West Road, Nanshan District, ShenZhen, GuangDong Province, China
Accreditation Certificate	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, 1/F, Baisha Science and Technology Park, Shahe West Road, Nanshan District, ShenZhen, GuangDong Province, China

## 2 PRODUCT INFORMATION

### 2.1 Applicant Information

Applicant	OnePlus Technology (Shenzhen) Co., Ltd.
Address	18C02, 18C03, 18C04 and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen

### 2.2 Manufacturer Information

Manufacturer	OnePlus Technology (Shenzhen) Co., Ltd.
Address	18C02, 18C03, 18C04 and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen

### 2.3 Factory Information

Factory	OnePlus Technology (Shenzhen) Co., Ltd.
Address	18C02, 18C03, 18C04 and 18C05, Shum Yip Terra Building, Binhe Avenue North, Futian District, Shenzhen

### 2.4 General Description for Equipment under Test (EUT)

EUT Name	Smart Phone
Model Name Under Test	CPH2469
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	11
Software Version	OxygenOS 12.1
Dimensions (Approx.)	163.74x75.03x7.99mm
Weight (Approx.)	N/A

## 2.5 Ancillary Equipment

Ancillary Equipment 1	Li-Polymer Battery 1	
	Brand Name	SUPERVOOC
	Model No.	BLP923
	Serial No.	N/A
	Capacitance	Rated: 4880mAh/18.88Wh Typical: 5000mAh/19.35Wh
	Rated Voltage	3.87 V
	Limited Voltage	4.45 V
	Manufacturer	Dongguan NVT Technology Co., Ltd
Ancillary Equipment 2	Li-Polymer Battery 2	
	Brand Name	SUPERVOOC
	Model No.	BLP923
	Serial No.	N/A
	Capacitance	Rated: 4880mAh/18.88Wh Typical: 5000mAh/19.35Wh
	Rated Voltage	3.87V
	Limited Voltage	4.45 V
	Manufacturer	Chongqing CosMX Battery Co., Ltd.
Ancillary Equipment 3	Power Supply Unit 1	
	Brand Name	SUPERVOOC
	Model No.	VCB3HDYH (UK Plug)
	Serial No.	Huntkey
	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A 10W or 5-11VDC 3.0A Max
Ancillary Equipment 4	Power Supply Unit 2	
	Brand Name	SUPERVOOC
	Model No.	VCB3HDEH (EU Plug)
	Serial No.	Huntkey
	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A 10W or 5-11VDC 3.0A Max
Ancillary Equipment 5	Power Supply Unit 3	
	Brand Name	SUPERVOOC
	Model No.	VCB3HDEH (EU Plug)
	Serial No.	GOLDEN LAKE
	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A 10W or 5-11VDC 3.0A Max
Ancillary Equipment 6	Power Supply Unit 4	
	Brand Name	SUPERVOOC
	Model No.	VCB3HDEH (EU Plug)
	Serial No.	Yohoo

	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A 10W or 5-11VDC 3.0A Max
Ancillary Equipment 7	Power Supply Unit 5	
	Brand Name	SUPERVOOC
	Model No.	VCB3HDUH (USA Plug)
	Serial No.	Huntkey
	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A or 5-11VDC 3.0A Max
Ancillary Equipment 8	Power Supply Unit 6	
	Brand Name	SUPERVOOC
	Model No.	VCB3HDUH (USA Plug)
	Serial No.	GOLDEN LAKE
	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A or 5-11VDC 3.0A Max
Ancillary Equipment 9	Power Supply Unit 7	
	Brand Name	SUPERVOOC
	Model No.	VCB3HDUH (USA Plug)
	Serial No.	Yohoo
	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A 10W or 5-11VDC 3.0A Max
Ancillary Equipment 10	Power Supply Unit 8	
	Brand Name	SUPERVOOC
	Model No.	VCB3HDAH (AU Plug)
	Serial No.	Huntkey
	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A 10W or 5-11VDC 3.0A Max
Ancillary Equipment 11	Power Supply Unit 9	
	Brand Name	SUPERVOOC
	Model No.	VCB3ACPH (EU Plug)
	Serial No.	Yohoo
	Rated Input	100-240VAC 50/60Hz 1.2A
	Rated Output	5VDC 2A 10W or 5-11VDC 3.0A Max
Ancillary Equipment 12	USB Cable	
	Model No.	DL144
	Length (Approx.)	1.0 m
<p>Note 1: Letter in () means plug type.</p> <p>Note 2: All adapters are tested, only the worst data of VCB3HDUH-Yohoo (USA Plug) shown in this report.</p> <p>Note 3: All batteries are tested, only the worst data of BLP923 (Dongguan NVT Technology Co., Ltd) shown in this report.</p>		

## 2.6 Technical Information

Network and Wireless connectivity	2G Network GSM/GPRS/EGPRS 850/ 1900 MHz 3G Network WCDMA/HSDPA/HSUPA Band 2/ 4/ 5 4G Network FDD LTE Band 2/ 4/ 5/ 7/ 12/ 13/ 17/ 26/ 66 TDD LTE Band 38/ 41 Bluetooth (BR+EDR+BLE) 2.4G WIFI 802.11b, 802.11g, 802.11n(20/40) and VHT20/40 5G WIFI 802.11a, 802.11n(20/40) and 802.11ac(VHT20/40) U-NII-1/2A/2C/3
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The requirement for the following technical information of the EUT was tested in this report:

The Highest Speed of Processor	2.3 GHz
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### 3 SUMMARY OF TEST RESULTS

#### 3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 15 Subpart B	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: Compared with the EUT of test report BL-SZ2220363-401, the EUT of this report replace the:

- 1.Change the model name into CPH2469.
- 2.Change the company name into OnePlus Technology (Shenzhen) Co., Ltd.
- 3.Change the battery cover's silk into Oneplus logo.
- 4.Change the color of USB Cable into red, change the model of USB Cable into DL144, the USB Cable's specification is same to original models.
- 5.Delete the headset.
- 6.Delete the PT and TWS batteries, whose manufacturers are respectively PT, Battery Technology Indonesia and TWS Technology (Guangzhou) Limited.
- 7.Delete the two plastic covers, whose manufacturers are respectively Zhejiang Zhaoyi Technology., LTD. and Guangdong Artes Technology Co., Ltd.
- 8.Delete the two LCD, whose manufacturers are respectively Boe Hyundai Lcd Inc. And Fujian Holitech Technology Co., Ltd.
- 9.Delete the speaker, whose manufacturers are respectively Zhejiang Haosheng Electronic Technology Co., Ltd.
- 10.Change the software version into OxygenOS 12.1.
- 11.Change the rear camera specification into 50M+2M.

Therefore, all items were retested in this report, but only the worst data was shown in this report.

### 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)	3.22 dB
Radiated emissions (30 MHz-1 GHz)-10m	4.80 dB
Radiated emissions (30 MHz-1 GHz)-3m	4.76 dB
Radiated emissions (1 GHz-18 GHz)-3m	4.88 dB

## 4 GENERAL TEST CONFIGURATIONS

### 4.1 Test Environments, Test Date and Test Engineer

Test items	Voltage	Temperature	Relative Humidity	Ambient Pressure	Test Date	Test Engineer
Radiated Emission	AC 120V/60Hz DC 3.87V(battery)	24.1℃	54%	101kPa	Mar. 18, 2022	Wu Yunan
Conducted Emission	AC 230V/50Hz AC 120V/60Hz DC 3.87V(battery)	23.8℃	51%		Mar. 19, 2022	Ye Guangqi

## 4.2 Test Equipment List

Radiated Emission Test For Frequency Below 1 GHz (3m)						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	KEYSIGHT	N9038A	MY55330120	2021.10.20	2022.10.19	<input checked="" type="checkbox"/>
Amplifier (30-1GHz)	COM-MV	ZT30-1000M	B2017119081	2021.10.20	2022.10.19	<input checked="" type="checkbox"/>
Test Antenna- Bi-Log	SCHWARZBECK	VULB 9163	9163-624	2019.07.02	2022.07.01	<input checked="" type="checkbox"/>
Anechoic Chamber	YIHENG	9m*6m*6m	N/A	2021.09.04	2024.09.03	<input checked="" type="checkbox"/>
Description	Manufacturer	Name		Version		Use
Test Software	BALUN	BL410-E		V19.918		<input checked="" type="checkbox"/>

Radiated Emission Test For Frequency Above 1 GHz (3m)						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	Agilent	N9038A	MY55330120	2021.10.20	2022.10.19	<input checked="" type="checkbox"/>
Spectrum Analyzer	ROHDE & SCHWARZ	FSV40	101544	2022.01.04	2023.01.03	<input checked="" type="checkbox"/>
Amplifier (1-12GHz)	Advanced Microwave	WLA652A	1740103	2021.10.20	2022.10.19	<input checked="" type="checkbox"/>
Amplifier (0.8-21GHz)	Mini-Circuits	ZVA-213-S+	225321316	2021.10.20	2022.10.19	<input checked="" type="checkbox"/>
Amplifier (18-40GHz)	COM-MV	KA_LNA18- 40G-01	18050001	2021.10.20	2022.10.19	<input checked="" type="checkbox"/>
Test Antenna- Horn	SCHWARZBECK	BBHA 9120D	1917	2019.07.02	2022.07.01	<input checked="" type="checkbox"/>
Test Antenna- Horn	A-INFOMW	LB- 180400KF	J211060273	2021.07.02	2024.07.01	<input checked="" type="checkbox"/>
Anechoic Chamber	YIHENG	9m*6m*6m	N/A	2021.09.04	2024.09.03	<input checked="" type="checkbox"/>
Description	Manufacturer	Name		Version		Use
Test Software	BALUN	BL410-E		V19.918		<input checked="" type="checkbox"/>

Conducted disturbance Test						
Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due	Use
EMI Receiver	KEYSIGHT	N9010B	MY57110309	2021.10.10	2022.10.09	<input checked="" type="checkbox"/>
LISN	SCHWARZBECK	NSLK 8127	8127-687	2021.06.08	2022.06.07	<input checked="" type="checkbox"/>
Shielded Enclosure	YiHeng Electronic Co., Ltd	3.5m*3.1m*2. 8m	N/A	2022.02.19	2025.02.18	<input checked="" type="checkbox"/>
Description	Manufacturer	Name		Version		Use
Test Software	BALUN	BL410-E		V19.918		<input checked="" type="checkbox"/>

### 4.3 Test Enclosure list

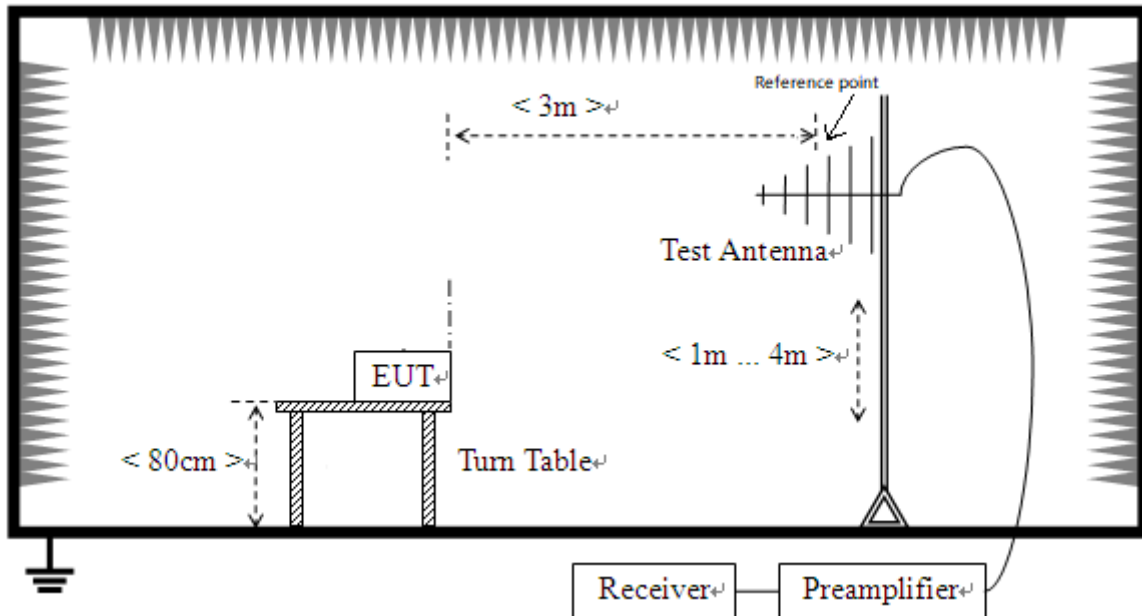
Description	Manufacturer	Model	Serial No.	Length	Description	Use
Wireless Communications Test Set	R&S	CMW500	127801	N/A	Cal. Due 2023.01.03	<input checked="" type="checkbox"/>
Laptop	HONOR	N/A	N/A	N/A	N/A	<input checked="" type="checkbox"/>
TF Card	Kingston	N/A	N/A	N/A	N/A	<input checked="" type="checkbox"/>
Headset	N/A	N/A	N/A	N/A	N/A	<input checked="" type="checkbox"/>

## 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 + TF Card + Headset
TC02	<u>The EGPRS 850 MHz RX Test Mode</u> EGPRS 850 MHz RX + EUT +Adapter + USB Cable + Battery + TF Card + Headset
TC03	<u>The WCDMA Band 5 RX Test Mode</u> WCDMA Band 5 RX + EUT +Adapter + USB Cable + Battery + TF Card + Headset
TC04	<u>The FDD LTE Band 5 RX Test Mode</u> LTE Band 5 RX + EUT +Adapter + USB Cable + Battery + TF Card + Headset
TC05	<u>The FDD LTE Band 12 RX Test Mode</u> LTE Band 12 RX + EUT +Adapter + USB Cable + Battery + TF Card + Headset
TC06	<u>The FDD LTE Band 17 RX Test Mode</u> LTE Band 17 RX + EUT +Adapter + USB Cable + Battery + TF Card + Headset
TC07	<u>The FDD LTE Band 26 RX Test Mode</u> LTE Band 26 RX + EUT +Adapter + USB Cable + Battery + TF Card + Headset
TC08	<u>The Camera Test Mode</u> EUT + Adapter + USB Cable + Battery + TF Card + Headset
TC09	<u>The Video Play Test Mode</u> EUT + Adapter + USB Cable + Battery + TF Card + Headset
TC10	<u>The USB Test Mode</u> EUT + USB Cable + Battery + Laptop + TF Card + Headset

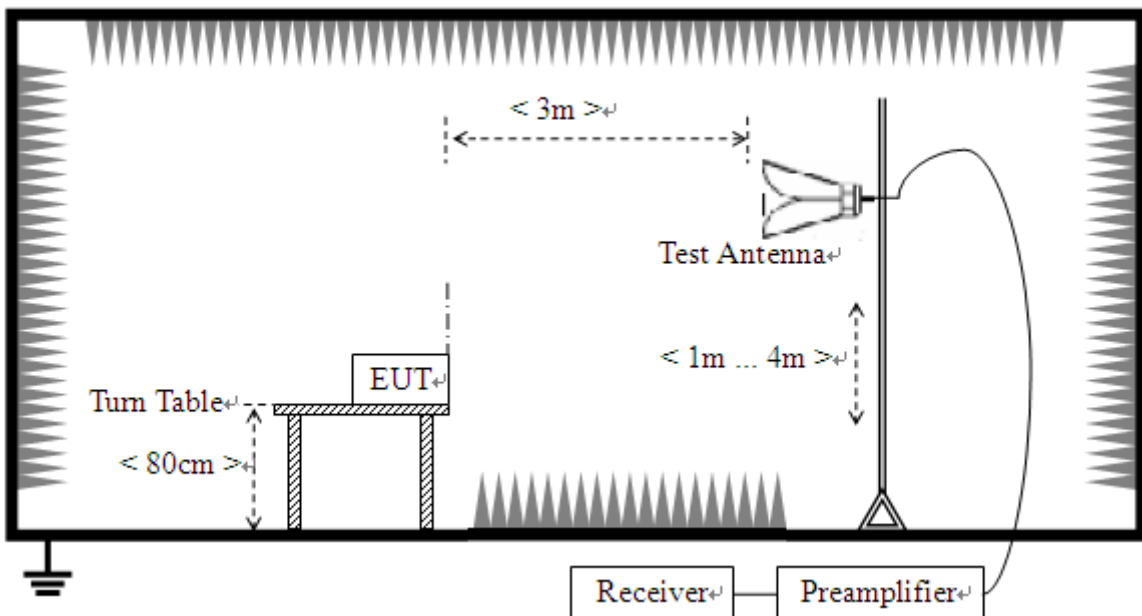
## 4.5 Test Setups

### Test Setup 1



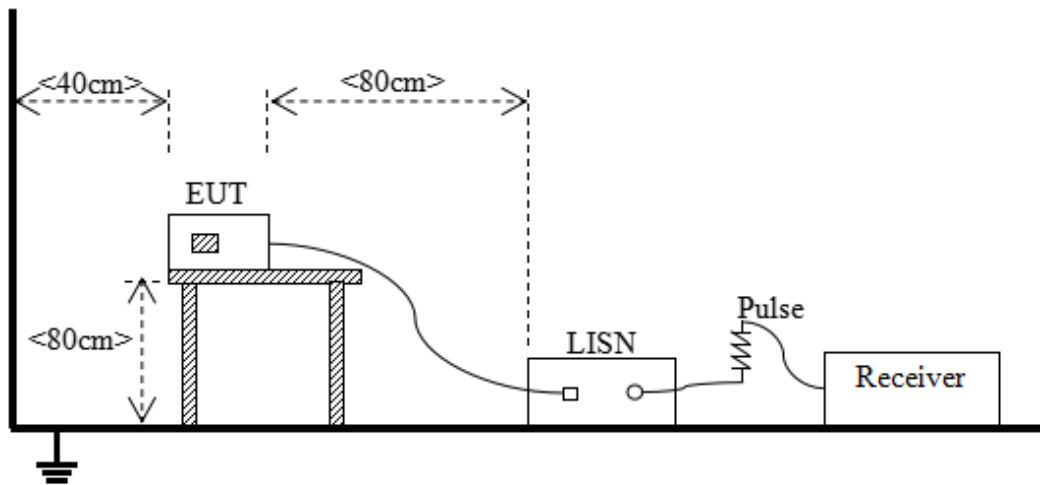
(For Radiated Emission Test (30 MHz-1 GHz))

### 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 Setup	Test Setup 1&2
	Test Configuration	TC01~TC10 <sup>Note</sup>
Conducted Emission, AC Ports	Test Setup	Test Setup 3
	Test Configuration	TC01~TC10 <sup>Note</sup>
<p>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.</p>		

## 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 ( $\mu\text{V/m}$ )	Field Strength ( $\text{dB}\mu\text{V/m}$ )	Field Strength ( $\text{dB}\mu\text{V/m}$ )	Field Strength ( $\mu\text{V/m}$ )	Field Strength ( $\text{dB}\mu\text{V/m}$ )
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 ( $\text{dB}\mu\text{V/m}$ ) =  $20 \cdot \log$  [Field Strength ( $\mu\text{V/m}$ )].
- 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.

The measurement frequency range is from 30 MHz to the 5th harmonic of the maximum frequency of the EUT internal source. The Turn Table is actuated to turn from  $0^\circ$  to  $360^\circ$ , and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented.

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for  $f \geq 1$  GHz, 100 kHz for  $f < 1$  GHz

VBW  $\geq$  RBW

Sweep = auto

Detector function = peak for  $f < 1$  GHz, peak & RMS Average for  $f \geq 1$  GHz

Trace = max hold

#### 5.1.1.4 Test Result

Please refer to ANNEX A.1.

#### NOTE:

1. Results (dBuV/m) = Reading (dBuV/m) + 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 (dB $\mu$ V)	Average (dB $\mu$ V)
0.15 - 0.50	79	66
0.50 - 30	73	60

Frequency range (MHz)	Class B	
	Quasi-peak (dB $\mu$ V)	Average (dB $\mu$ V)
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  $\Omega$ /50  $\mu$ H 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.

Use the following spectrum analyzer settings:

RBW = 9 KHz

VBW  $\geq$  RBW

Sweep = 10ms

Detector function = peak & Average

Trace = max hold

#### 5.1.2.4 Test Result

Please refer to ANNEX A.2.

NOTE:

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

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.

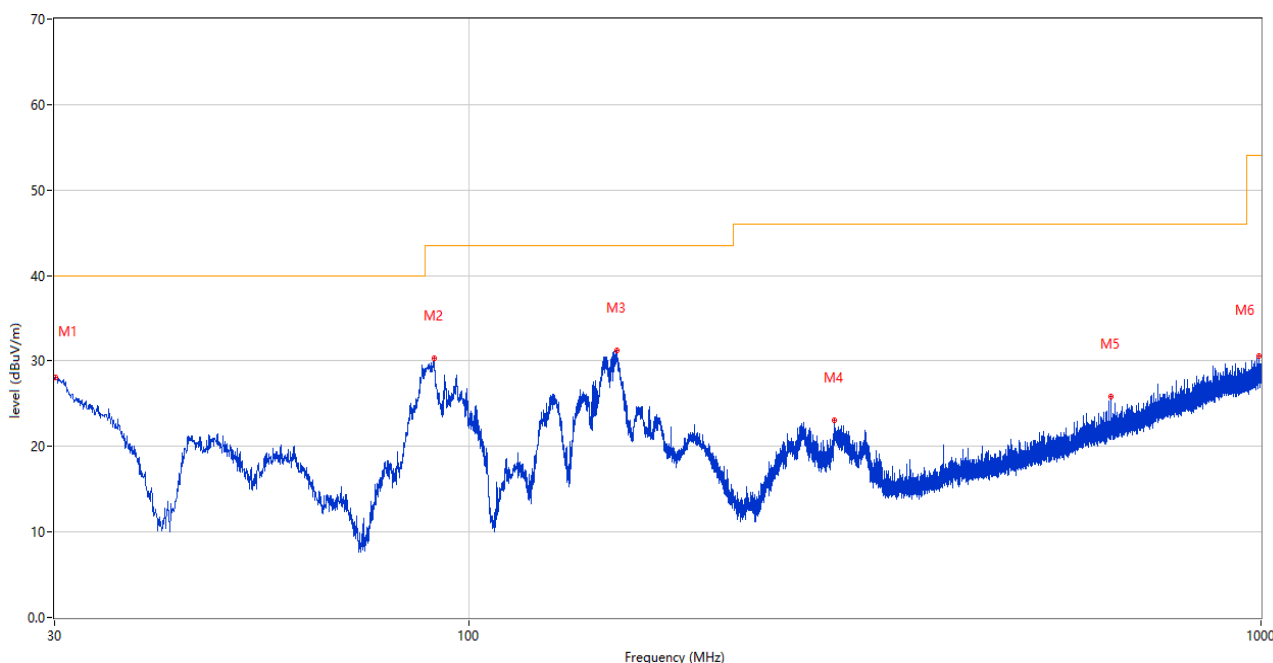
Note 3: The Radiated Emission from 18G-40G is noise only, do not show on the report.

Note 4: All the configurations were pre tested, only the worst configuration has been reported in this report.

### Test Data and Plots

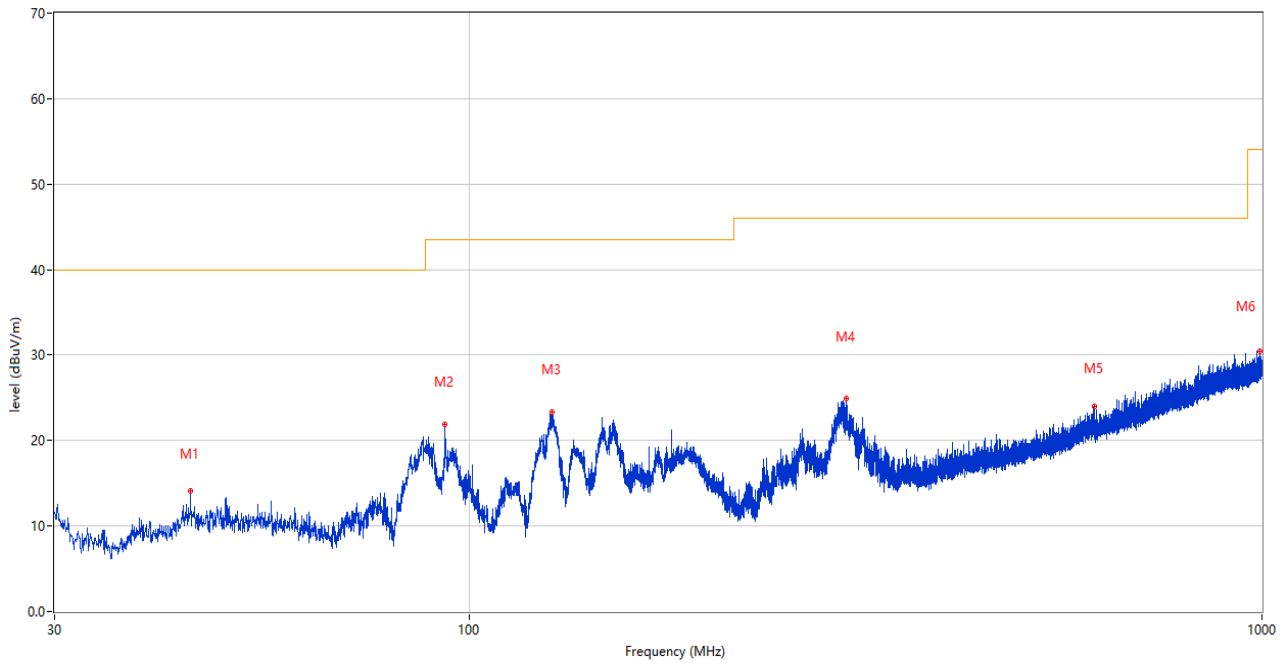
#### The Camera Test Mode

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



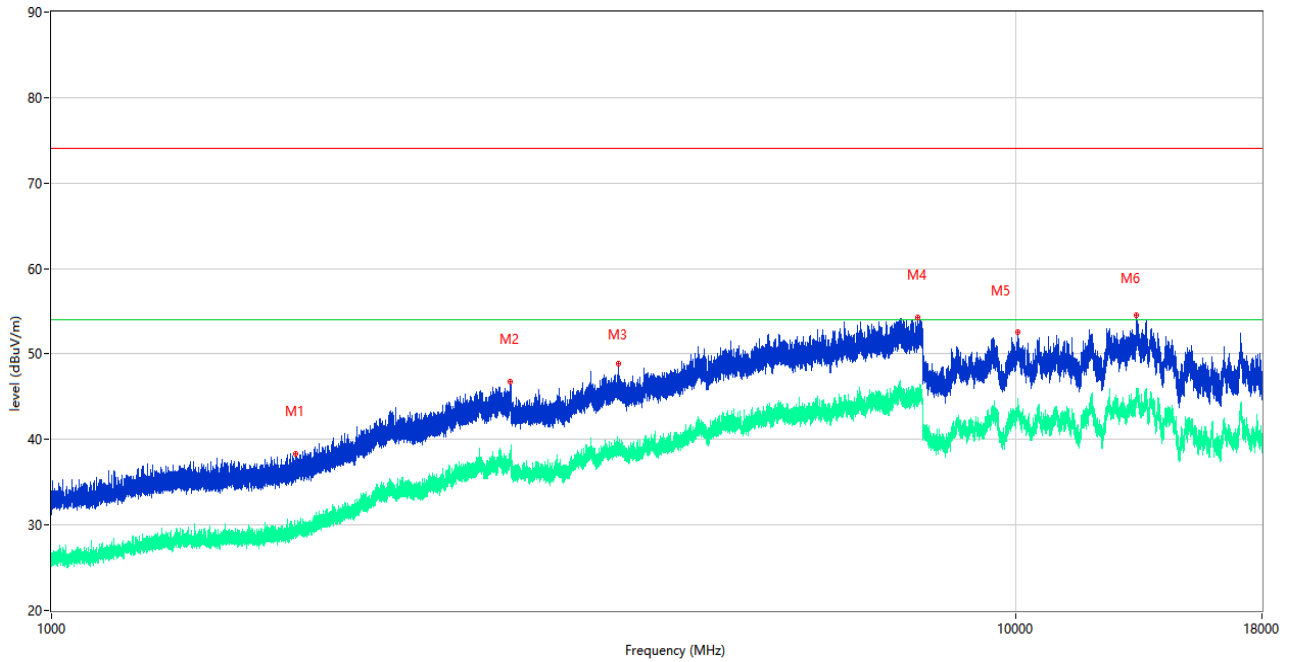
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	30.049	28.10	-28.84	40.0	-11.90	Peak	325.00	100	Vertical	Pass
2	90.334	30.34	-28.43	43.5	-13.16	Peak	356.00	100	Vertical	Pass
3	153.820	31.23	-29.90	43.5	-12.27	Peak	333.00	100	Vertical	Pass
4	289.135	23.12	-23.92	46.0	-22.88	Peak	356.00	100	Vertical	Pass
5	646.969	25.83	-15.04	46.0	-20.17	Peak	360.00	200	Vertical	Pass
6	995.344	30.57	-8.42	54.0	-23.43	Peak	63.00	200	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	44.502	14.16	-25.68	40.0	-25.84	Peak	261.00	200	Horizontal	Pass
2	93.196	21.84	-27.83	43.5	-21.66	Peak	265.00	200	Horizontal	Pass
3	127.291	23.29	-29.57	43.5	-20.21	Peak	360.00	200	Horizontal	Pass
4	298.690	24.85	-23.78	46.0	-21.15	Peak	220.00	100	Horizontal	Pass
5	614.231	23.95	-15.63	46.0	-22.05	Peak	360.00	200	Horizontal	Pass
6	994.762	30.47	-8.44	54.0	-23.53	Peak	52.00	100	Horizontal	Pass

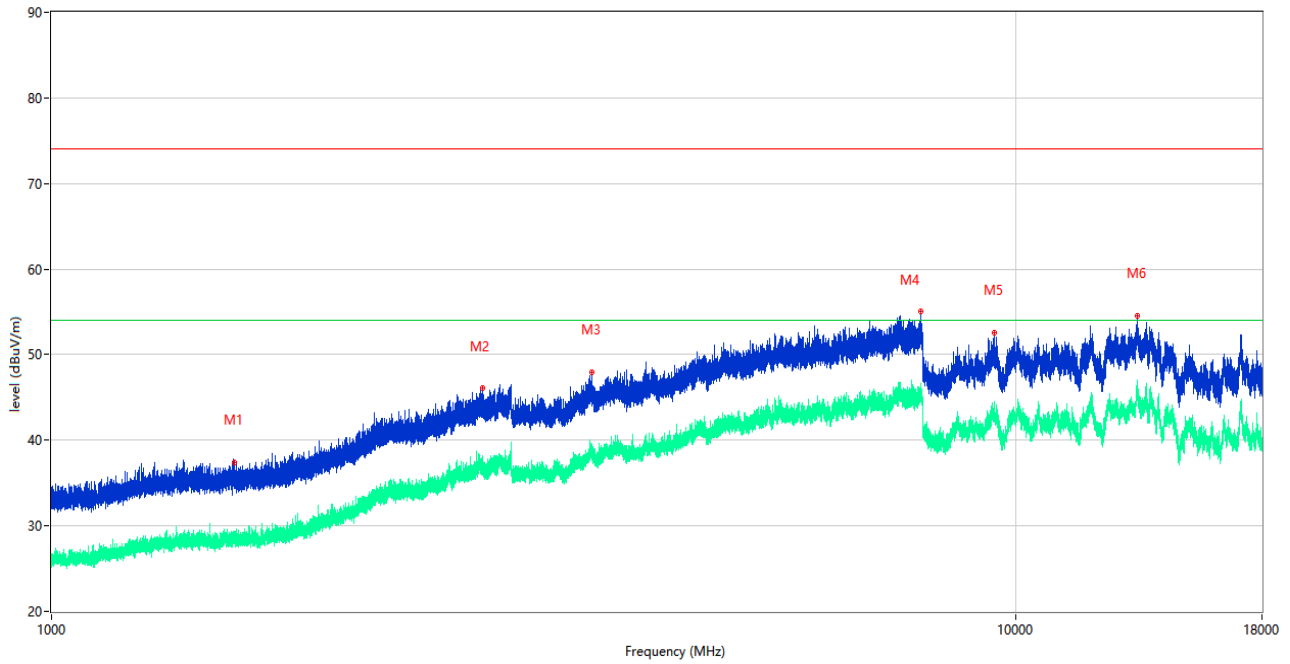
A.1.3 Test Antenna Vertical, 1 GHz – 18 GHz



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1789.200	38.37	-3.78	74.0	-35.63	Peak	301.00	100	Vertical	Pass
1**	1789.200	28.97	-3.78	54.0	-25.03	AV	301.00	100	Vertical	Pass
2	2992.700	46.81	6.26	74.0	-27.19	Peak	6.00	100	Vertical	Pass
2**	2992.700	37.48	6.26	54.0	-16.52	AV	6.00	100	Vertical	Pass
3	3875.750	48.86	-3.55	74.0	-25.14	Peak	330.00	100	Vertical	Pass
3**	3875.750	38.63	-3.55	54.0	-15.37	AV	330.00	100	Vertical	Pass
4	7903.750	54.21	1.15	74.0	-19.79	Peak	138.00	100	Vertical	Pass
4**	7903.750	44.79	1.15	54.0	-9.21	AV	138.00	100	Vertical	Pass
5	10052.000	52.62	-0.49	74.0	-21.38	Peak	251.00	100	Vertical	Pass
5**	10052.000	43.17	-0.49	54.0	-10.83	AV	251.00	100	Vertical	Pass
6	13349.500	54.59	1.70	74.0	-19.41	Peak	44.00	100	Vertical	Pass
6**	13349.500	45.46	1.70	54.0	-8.54	AV	44.00	100	Vertical	Pass



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

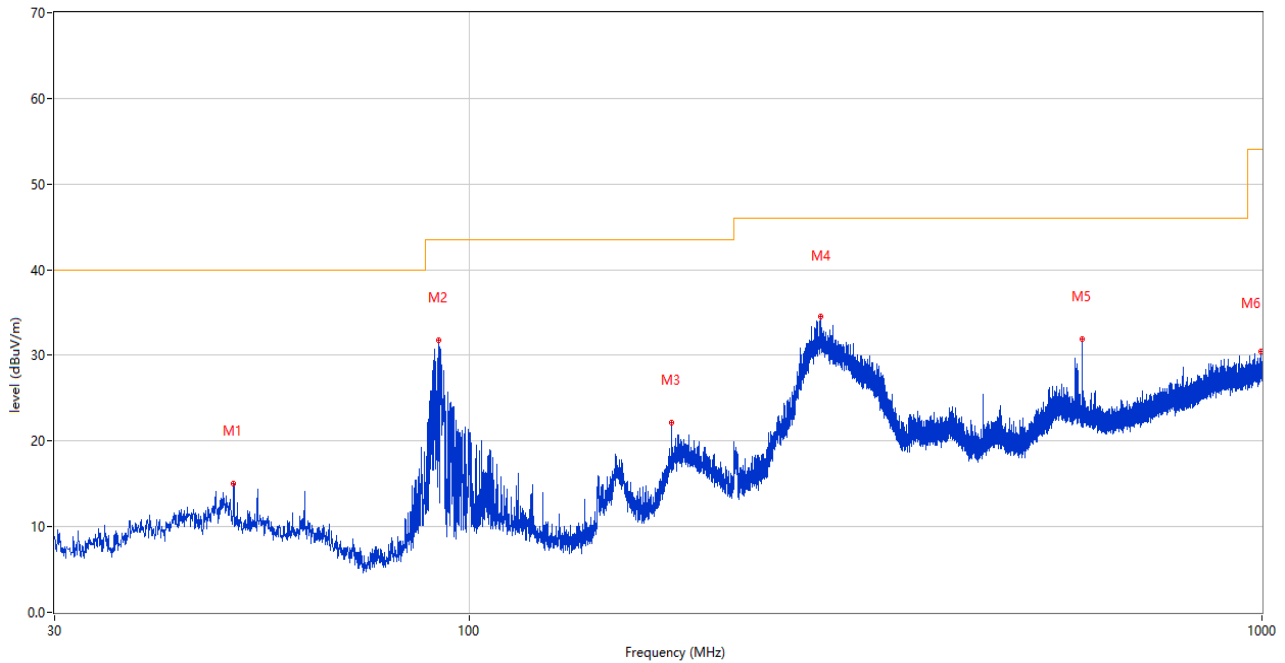


No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	1546.000	37.41	-5.55	74.0	-36.59	Peak	0.00	100	Horizontal	Pass
1**	1546.000	29.00	-5.55	54.0	-25.00	AV	0.00	100	Horizontal	Pass
2	2797.500	46.04	4.62	74.0	-27.96	Peak	206.00	100	Horizontal	Pass
2**	2797.500	37.08	4.62	54.0	-16.92	AV	206.00	100	Horizontal	Pass
3	3636.750	47.94	-4.83	74.0	-26.06	Peak	316.00	100	Horizontal	Pass
3**	3636.750	38.74	-4.83	54.0	-15.26	AV	316.00	100	Horizontal	Pass
4	7965.000	55.06	1.66	74.0	-18.94	Peak	112.00	100	Horizontal	Pass
4**	7965.000	45.23	1.66	54.0	-8.77	AV	112.00	100	Horizontal	Pass
5	9500.000	52.52	-2.09	74.0	-21.48	Peak	233.00	100	Horizontal	Pass
5**	9500.000	42.68	-2.09	54.0	-11.32	AV	233.00	100	Horizontal	Pass
6	13355.500	54.54	1.68	74.0	-19.46	Peak	0.00	100	Horizontal	Pass
6**	13355.500	45.13	1.68	54.0	-8.87	AV	0.00	100	Horizontal	Pass

Test Data and Plots

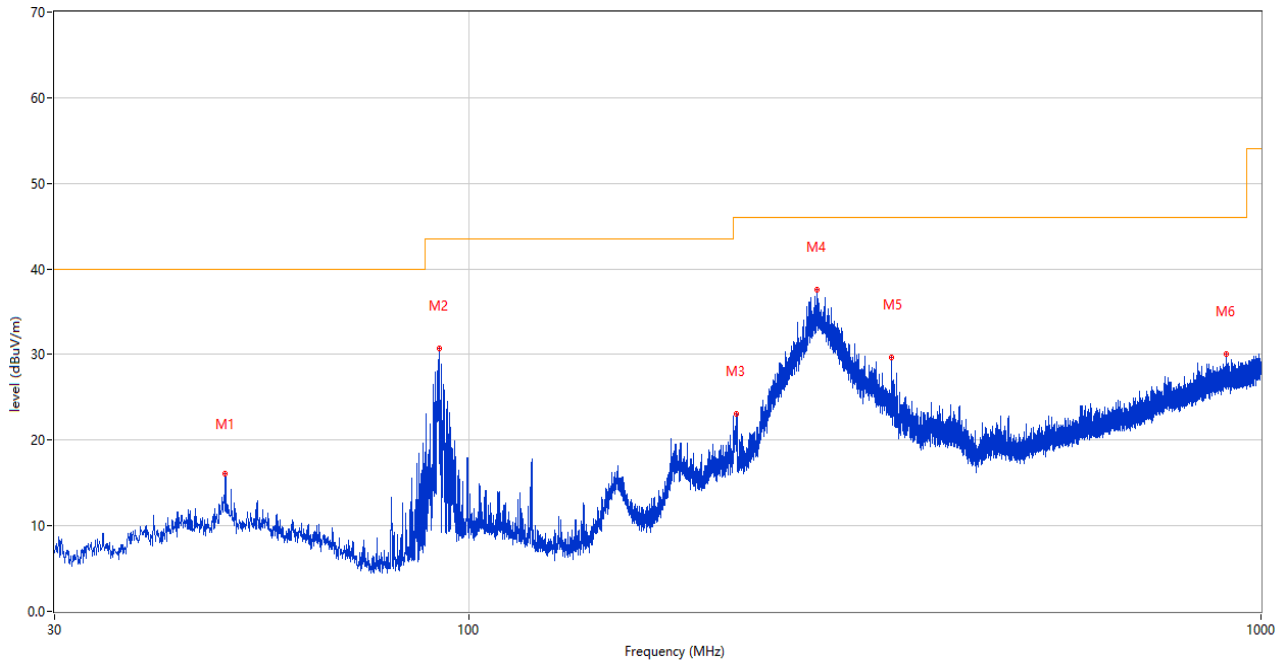
The USB Test Mode

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



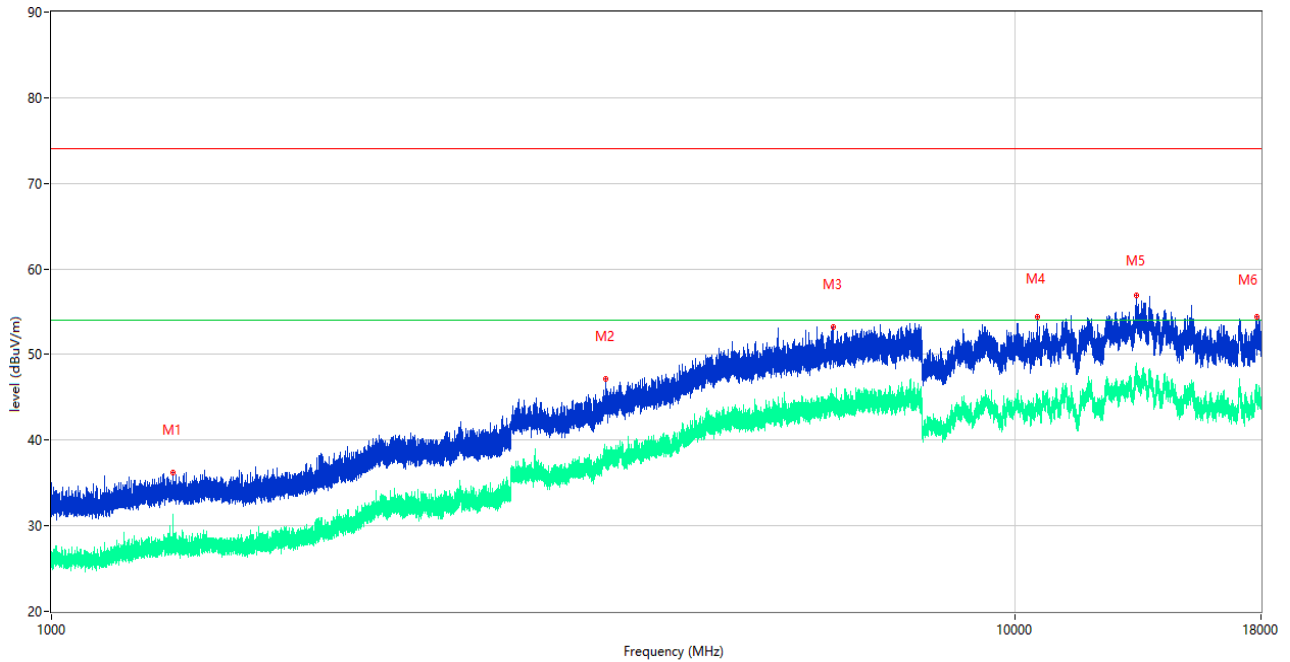
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	50.467	14.97	-25.56	40.0	-25.03	Peak	112.00	100	Vertical	Pass
2	91.450	31.80	-28.21	43.5	-11.70	Peak	0.00	200	Vertical	Pass
3	180.010	22.12	-28.51	43.5	-21.38	Peak	292.00	100	Vertical	Pass
4	277.738	34.54	-24.26	46.0	-11.46	Peak	25.00	200	Vertical	Pass
5	594.006	31.86	-16.07	46.0	-14.14	Peak	337.00	100	Vertical	Pass
6	997.526	30.49	-8.41	54.0	-23.51	Peak	284.00	200	Vertical	Pass

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



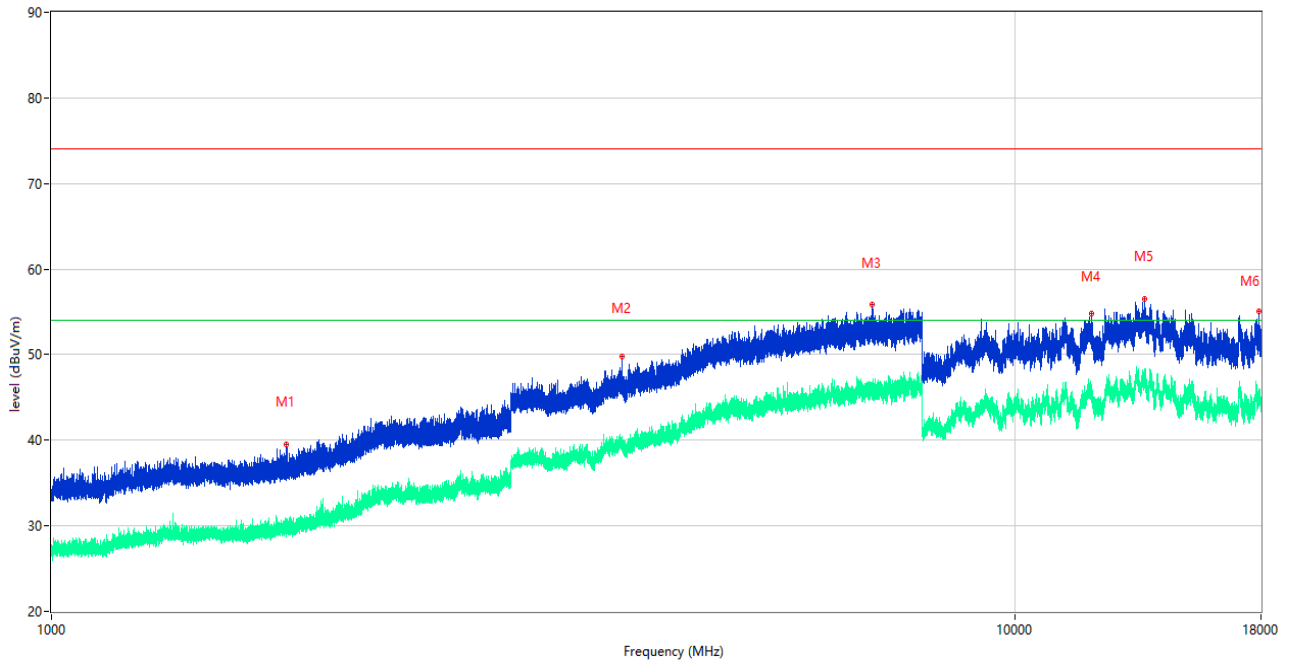
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	49.303	16.13	-25.48	40.0	-23.87	Peak	177.00	200	Horizontal	Pass
2	91.789	30.77	-28.13	43.5	-12.73	Peak	218.00	200	Horizontal	Pass
3	217.938	23.01	-26.33	46.0	-22.99	Peak	232.00	100	Horizontal	Pass
4	274.925	37.64	-24.40	46.0	-8.36	Peak	80.00	100	Horizontal	Pass
5	341.370	29.70	-22.27	46.0	-16.30	Peak	80.00	100	Horizontal	Pass
6	903.727	30.11	-9.74	46.0	-15.89	Peak	0.00	200	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	1336.800	36.17	-16.69	74.0	-37.83	Peak	153.00	100	Vertical	Pass
1**	1336.800	28.26	-16.69	54.0	-25.74	AV	153.00	100	Vertical	Pass
2	3762.500	47.16	-3.17	74.0	-26.84	Peak	4.00	100	Vertical	Pass
2**	3762.500	37.33	-3.17	54.0	-16.67	AV	4.00	100	Vertical	Pass
3	6480.500	53.28	1.31	74.0	-20.72	Peak	304.00	100	Vertical	Pass
3**	6480.500	44.18	1.31	54.0	-9.82	AV	304.00	100	Vertical	Pass
4	10552.500	54.35	1.91	74.0	-19.65	Peak	243.00	100	Vertical	Pass
4**	10552.500	43.57	1.91	54.0	-10.43	AV	243.00	100	Vertical	Pass
5	13357.500	56.87	5.18	74.0	-17.13	Peak	14.00	100	Vertical	Pass
5**	13357.500	47.82	5.18	54.0	-6.18	AV	14.00	100	Vertical	Pass
6	17813.500	54.42	2.44	74.0	-19.58	Peak	32.00	100	Vertical	Pass
6**	17813.500	45.15	2.44	54.0	-8.85	AV	32.00	100	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	1750.700	39.53	-16.14	74.0	-34.47	Peak	121.00	100	Horizontal	Pass
1**	1750.700	30.31	-16.14	54.0	-23.69	AV	121.00	100	Horizontal	Pass
2	3905.500	49.86	-2.57	74.0	-24.14	Peak	238.00	100	Horizontal	Pass
2**	3905.500	40.15	-2.57	54.0	-13.85	AV	238.00	100	Horizontal	Pass
3	7105.250	55.80	2.17	74.0	-18.20	Peak	179.00	100	Horizontal	Pass
3**	7105.250	45.54	2.17	54.0	-8.46	AV	179.00	100	Horizontal	Pass
4	12000.500	54.81	2.62	74.0	-19.19	Peak	275.00	100	Horizontal	Pass
4**	12000.500	46.41	2.62	54.0	-7.59	AV	275.00	100	Horizontal	Pass
5	13647.000	56.45	5.11	74.0	-17.55	Peak	100.00	100	Horizontal	Pass
5**	13647.000	46.99	5.11	54.0	-7.01	AV	100.00	100	Horizontal	Pass
6	17927.500	55.04	2.15	74.0	-18.96	Peak	135.00	100	Horizontal	Pass
6**	17927.500	45.96	2.15	54.0	-8.04	AV	135.00	100	Horizontal	Pass

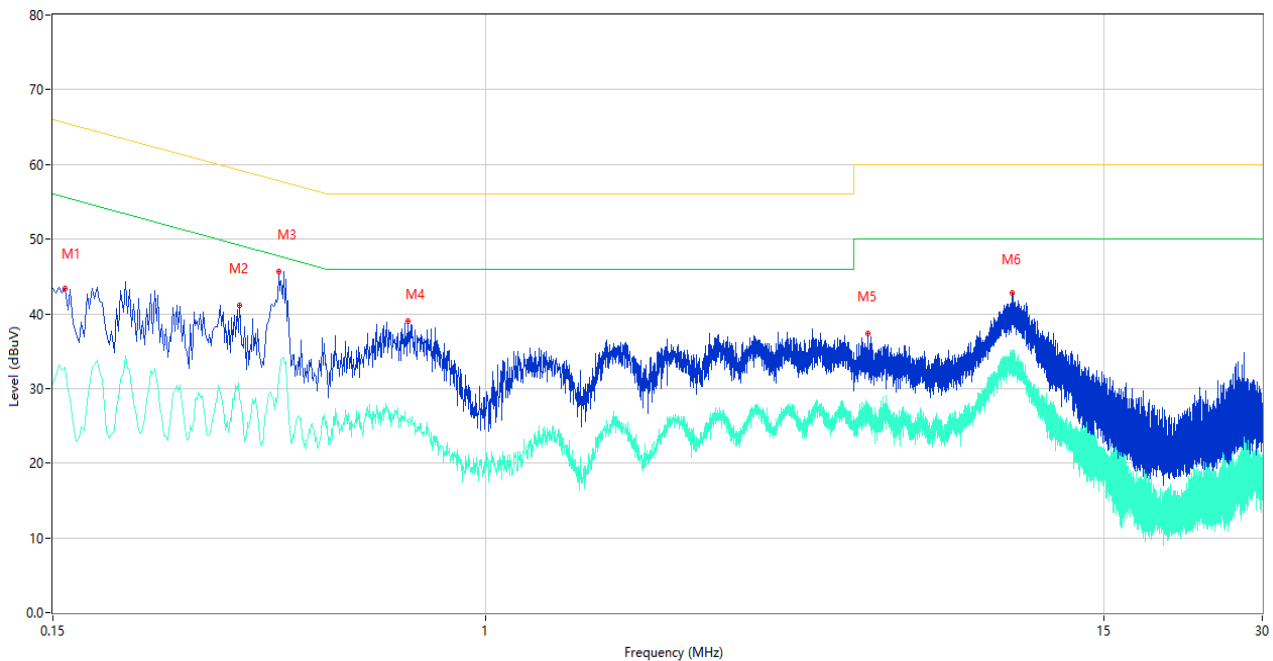
## A.2 Conducted Emission

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

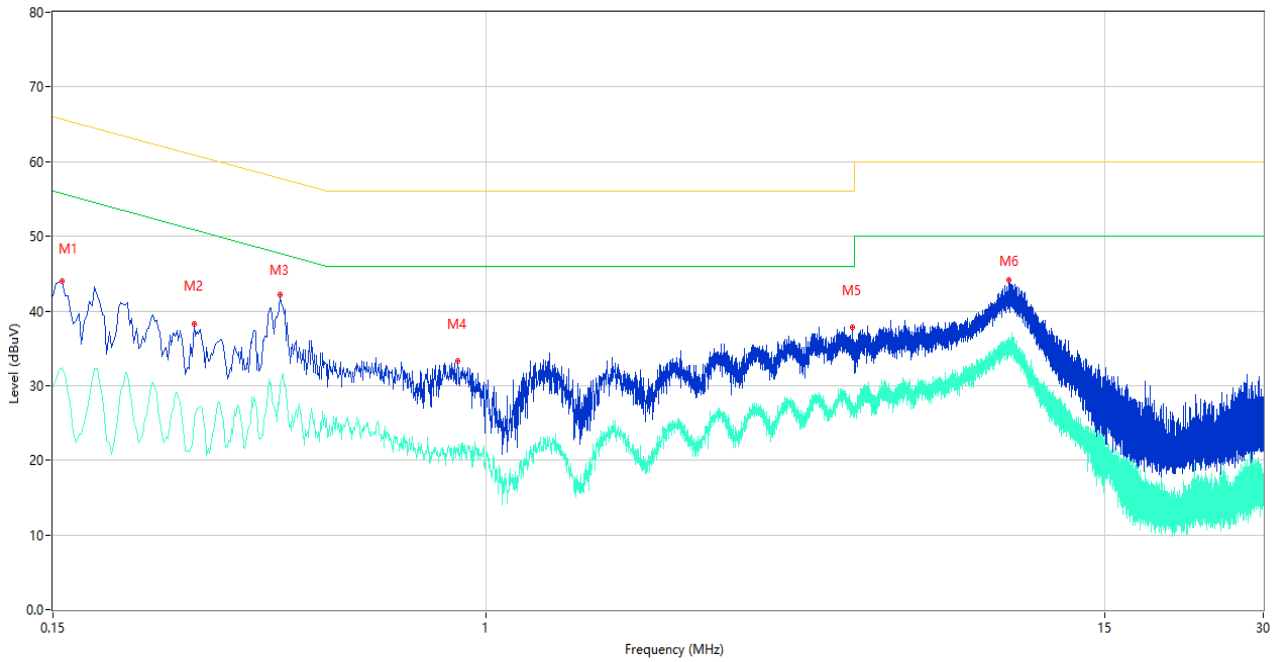
#### The Camera Test Mode

##### A.2.1 L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.158	43.43	10.18	65.57	-22.14	Peak	L	Pass
1**	0.158	32.85	10.18	55.57	-22.72	AV	L	Pass
2	0.340	41.06	10.08	59.20	-18.14	Peak	L	Pass
2**	0.340	28.56	10.08	49.20	-20.64	AV	L	Pass
3	0.404	45.69	10.09	57.77	-12.08	Peak	L	Pass
3**	0.404	31.96	10.09	47.77	-15.81	AV	L	Pass
4	0.712	39.04	10.08	56.00	-16.96	Peak	L	Pass
4**	0.712	25.97	10.08	46.00	-20.03	AV	L	Pass
5	5.338	37.33	9.98	60.00	-22.67	Peak	L	Pass
5**	5.338	27.04	9.98	50.00	-22.96	AV	L	Pass
6	10.018	42.75	10.10	60.00	-17.25	Peak	L	Pass
6**	10.018	33.60	10.10	50.00	-16.40	AV	L	Pass

A.2.2 N Phase

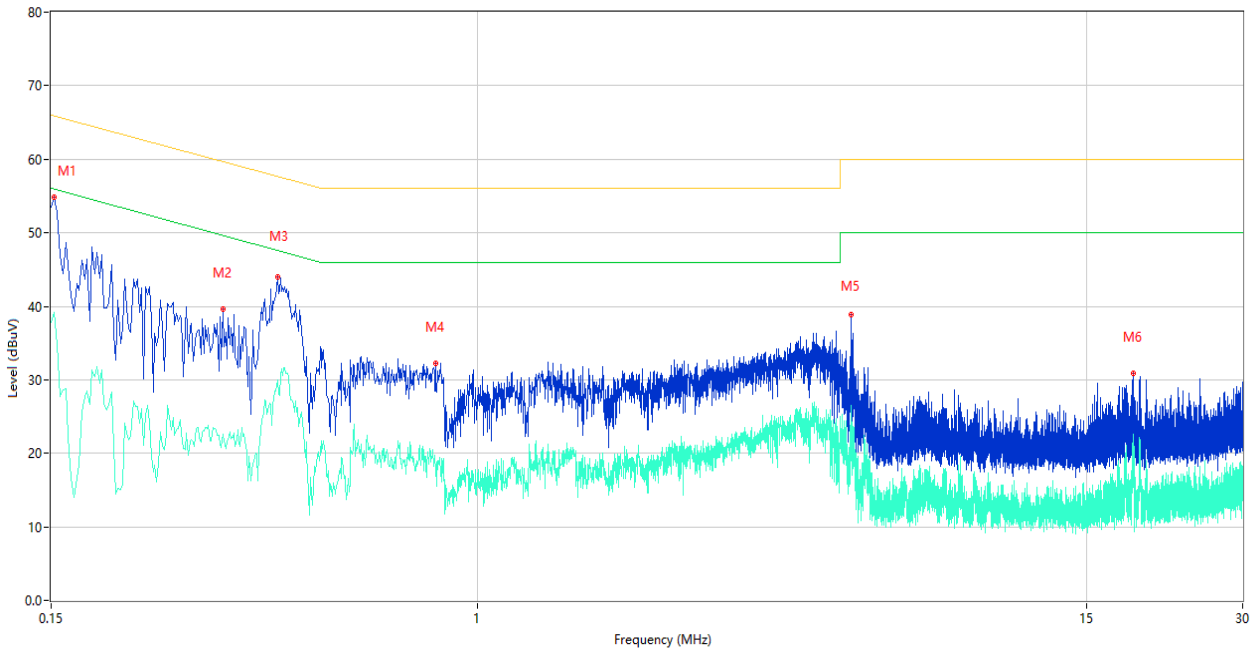


No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.156	43.94	10.18	65.67	-21.73	Peak	N	Pass
1**	0.156	32.32	10.18	55.67	-23.35	AV	N	Pass
2	0.278	38.33	10.07	60.88	-22.55	Peak	N	Pass
2**	0.278	25.32	10.07	50.88	-25.56	AV	N	Pass
3	0.406	42.18	10.09	57.73	-15.55	Peak	N	Pass
3**	0.406	30.21	10.09	47.73	-17.52	AV	N	Pass
4	0.884	33.23	10.05	56.00	-22.77	Peak	N	Pass
4**	0.884	21.01	10.05	46.00	-24.99	AV	N	Pass
5	4.956	37.78	9.94	56.00	-18.22	Peak	N	Pass
5**	4.956	26.95	9.94	46.00	-19.05	AV	N	Pass
6	9.836	44.08	10.10	60.00	-15.92	Peak	N	Pass
6**	9.836	35.87	10.10	50.00	-14.13	AV	N	Pass

Test Data and Plots

The USB Test Mode

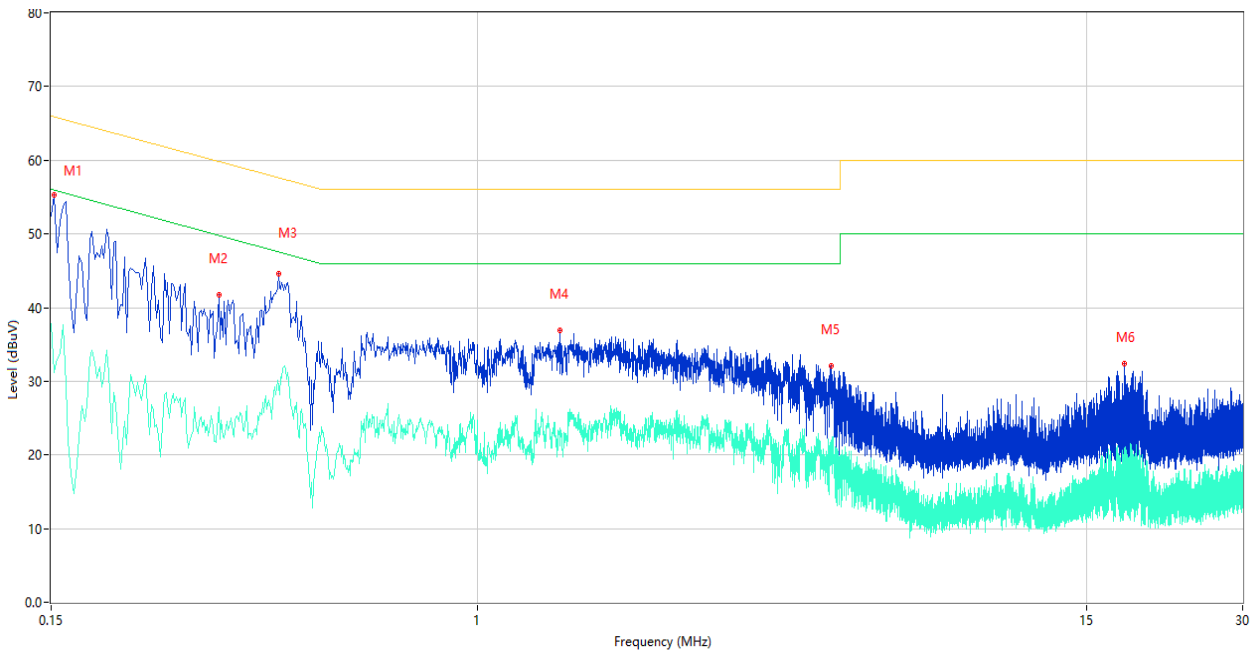
A.2.3 L Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.152	54.77	10.19	65.89	-11.12	Peak	L	Pass
1**	0.152	39.17	10.19	55.89	-16.72	AV	L	Pass
2	0.322	39.64	10.07	59.66	-20.02	Peak	L	Pass
2**	0.322	22.60	10.07	49.66	-27.06	AV	L	Pass
3	0.410	43.94	10.09	57.65	-13.71	Peak	L	Pass
3**	0.410	30.02	10.09	47.65	-17.63	AV	L	Pass
4	0.828	32.19	10.06	56.00	-23.81	Peak	L	Pass
4**	0.828	18.52	10.06	46.00	-27.48	AV	L	Pass
5	5.266	38.81	9.97	60.00	-21.19	Peak	L	Pass
5**	5.266	26.51	9.97	50.00	-23.49	AV	L	Pass
6	18.420	30.85	10.20	60.00	-29.15	Peak	L	Pass
6**	18.420	22.55	10.20	50.00	-27.45	AV	L	Pass



A.2.4 N Phase



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.152	55.29	10.19	65.89	-10.60	Peak	N	Pass
1**	0.152	31.18	10.19	55.89	-24.71	AV	N	Pass
2	0.316	41.70	10.07	59.81	-18.11	Peak	N	Pass
2**	0.316	26.53	10.07	49.81	-23.28	AV	N	Pass
3	0.412	44.59	10.09	57.61	-13.02	Peak	N	Pass
3**	0.412	29.41	10.09	47.61	-18.20	AV	N	Pass
4	1.438	36.88	9.96	56.00	-19.12	Peak	N	Pass
4**	1.438	23.45	9.96	46.00	-22.55	AV	N	Pass
5	4.818	32.04	9.96	56.00	-23.96	Peak	N	Pass
5**	4.818	20.18	9.96	46.00	-25.82	AV	N	Pass
6	17.722	32.37	10.19	60.00	-27.63	Peak	N	Pass
6**	17.722	20.07	10.19	50.00	-29.93	AV	N	Pass

## **ANNEX B TEST SETUP PHOTOS**

Please refer the document “BL-SZ2250325-AE.PDF”.

## **ANNEX C EUT EXTERNAL PHOTOS**

Please refer the document “BL-SZ2250325-AW.PDF”.

## **ANNEX D EUT INTERNAL PHOTOS**

Please refer the document “BL-SZ2250325-AI.PDF”.

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--END OF REPORT--