

# FCC EMC Test Report

## FCC ID: 2AYGCCHL-LX3

**Project No.** : 2012C016  
**Equipment** : Smart Phone  
**Brand Name** : HONOR  
**Test Model** : CHL-LX3  
**Series Model** : N/A  
**Applicant** : Honor Device Co., Ltd.  
**Address** : Suite 3401, Unit A, Building 6, Shum Yip Sky Park, No. 8089, Hongli West Road, Xiangmihu Street, Futian District, Shenzhen, Guangdong 518040, People's Republic of China  
**Manufacturer** : Honor Device Co., Ltd.  
**Address** : Suite 3401, Unit A, Building 6, Shum Yip Sky Park, No. 8089, Hongli West Road, Xiangmihu Street, Futian District, Shenzhen, Guangdong 518040, People's Republic of China  
**Date of Receipt** : Dec. 04, 2020  
**Date of Test** : Dec. 09, 2020 ~ Feb. 22, 2021  
**Issued Date** : Feb. 23, 2021  
**Report Version** : R00  
**Test Sample** : Engineering Sample No.: DG2020120472  
**Standard(s)** : FCC CFR Title 47, Part 15, Subpart B

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

*Dave Hong*  
Prepared by : Dave Hong

*Kevin Li*  
Approved by : Kevin Li



Certificate #5123.02

Add: No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.

Tel: +86-769-8318-3000

Web: [www.newbtl.com](http://www.newbtl.com)

**Declaration**

**BTL** represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

**BTL's** reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

The report must not be used by the client to claim product certification, approval, or endorsement by NIST, A2LA, or any agency of the U.S. Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and ourselves, the test report shall not be reproduced, except in full, without our written approval.

**BTL's** laboratory quality assurance procedures are in compliance with the **ISO/IEC 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

**BTL** is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

**Limitation**

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Please note that the measurement uncertainty is provided for informational purpose only and are not use in determining the Pass/Fail results.

<b>Table of Contents</b>	<b>Page</b>
<b>REPORT ISSUED HISTORY</b>	<b>4</b>
<b>1 . SUMMARY OF TEST RESULTS</b>	<b>5</b>
1.1 TEST FACILITY	6
1.2 MEASUREMENT UNCERTAINTY	6
1.3 TEST ENVIRONMENT CONDITIONS	6
<b>2 . GENERAL INFORMATION</b>	<b>7</b>
2.1 GENERAL DESCRIPTION OF EUT	7
2.2 DESCRIPTION OF TEST MODES	10
2.3 EUT OPERATING CONDITIONS	12
2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	12
2.5 DESCRIPTION OF SUPPORT UNITS	14
<b>3 . EMC EMISSION TEST</b>	<b>15</b>
3.1 AC POWER LINE CONDUCTED EMISSIONS TEST	15
3.1.1 LIMIT	15
3.1.2 MEASUREMENT INSTRUMENTS LIST	15
3.1.3 TEST PROCEDURE	15
3.1.4 DEVIATION FROM TEST STANDARD	16
3.1.5 TEST SETUP	16
3.1.6 TEST RESULTS	16
3.2 RADIATED EMISSIONS 30 MHZ TO 1 GHZ	19
3.2.1 LIMIT	19
3.2.2 MEASUREMENT INSTRUMENTS LIST	19
3.2.3 TEST PROCEDURE	19
3.2.4 DEVIATION FROM TEST STANDARD	20
3.2.5 TEST SETUP	20
3.2.6 TEST RESULTS	20
3.3 RADIATED EMISSIONS ABOVE 1 GHZ	23
3.3.1 LIMIT	23
3.3.2 MEASUREMENT INSTRUMENTS LIST	24
3.3.3 TEST PROCEDURE	24
3.3.4 DEVIATION FROM TEST STANDARD	24
3.3.5 TEST SETUP	25
3.3.6 TEST RESULTS	26

**REPORT ISSUED HISTORY**

Report Version	Description	Issued Date
R00	Original Issue.	Feb. 23, 2021

## 1. SUMMARY OF TEST RESULTS

Emission		
Standard(s)	Test Item	Result
FCC CFR Title 47,Part 15,Subpart B ANSI C63.4-2014	AC Power Line Conducted Emissions	PASS
	Radiated Emissions 30 MHz to 1 GHz	PASS
	Radiated Emissions Above 1 GHz	PASS

## 1.1 TEST FACILITY

The test facilities used to collect the test data in this report at the location of No.3, Jinshagang 1st Road, Shixia, Dalang Town, Dongguan, Guangdong, China.

BTL's Test Firm Registration Number for FCC: 357015

BTL's Designation Number for FCC: CN1240

## 1.2 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor ( $k=2$ ))

The BTL measurement uncertainty as below table:

A. AC power line conducted emissions test:

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-C01	CISPR	150kHz ~ 30MHz	3.18

B. Radiated emissions test:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U,(dB)
DG-CB02 (3m)	CISPR	30MHz ~ 200MHz	V	4.80
		30MHz ~ 200MHz	H	3.84
		200MHz ~ 1,000MHz	V	4.06
		200MHz ~ 1,000MHz	H	3.56

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB02 (3m)	CISPR	1GHz ~ 6GHz	4.06
		6GHz ~ 18GHz	5.20

Test Site	Method	Measurement Frequency Range	U,(dB)
DG-CB02 (1m)	CISPR	18 ~ 26.5 GHz	3.62
		26.5 ~ 40 GHz	4.00

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

## 1.3 TEST ENVIRONMENT CONDITIONS

Test Item	Temperature	Humidity	Tested By
AC Power Line Conducted Emissions	25°C	53%	Heng Lao
Radiated emissions 30 MHz to 1 GHz	24°C	60%	Jayce Yao
Radiated emissions above 1 GHz	24°C	60%	Jayce Yao

## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

Equipment	Smart Phone
Brand Name	HONOR
Test Model	CHL-LX3
Series Model	N/A
Model Difference(s)	N/A
Hardware Version	HL3CHLM
Software Version	5.0.0.80(C900E76R1P4)
Power Source	1# DC voltage supplied from AC adapter. 2# Supplied from battery. 3# Supplied from USB port.
Power Rating	1# I/P: 100-240V ~50/60Hz, 1.2A O/P: 5V === 2A OR 9V === 2V OR 10V === 4A I/P: 100-240V ~50/60Hz, 0.75A O/P: 5V === 2A OR 9V === 2V OR 10V === 2.25A 2# DC 3.87V, 3900mAh 3# DC 5V
Connecting I/O Port(s)	1* DC port 1* Earphone port 1* USB port 1* SIM Card
Classification of EUT	Class B
Work Frequency	Please refer to note 2.

Note:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

## 2. Work Frequency:

Mode		Work Frequency		
		Transmitt Frequency(MHz)	Receive Frequency(MHz)	Bandwidths (including WiFi channels)
GNSS	BDS	/	1559-1610	/
	GLONASS	/	1559-1610	
	GPS	/	1559-1610	
Bluetooth		2402-2480	2402-2480	/
2.4G WIFI		2412-2462	2412-2462	IEEE 802.11b IEEE 802.11g IEEE 802.11n(HT20) IEEE 802.11n(HT40)
5G WIFI		5150-5250	5150-5250	IEEE 802.11a IEEE 802.11n(HT20) IEEE 802.11n(HT40) IEEE 802.11ac(VHT20) IEEE 802.11ac(VHT40) IEEE 802.11ac(VHT80)
		5250-5350	5250-5350	
		5470-5725	5470-5725	
		5725-5850	5725-5850	
GSM850		824-849	869-894	/
PCS1900		1850-1910	1930-1990	
WCDMA Band II		1850-1910	1930-1990	
WCDMA Band IV		1710-1755	2110-2155	/
WCDMA Band V		824-849	869-894	
LTE Band 2		1850-1910	1930-1990	1.4M/3M/5M/10M/15M/20M
LTE Band 4		1710-1755	2110-2155	1.4M/3M/5M/10M/15M/20M
LTE Band 5		824-849	869-894	1.4M/3M/5M/10M
LTE Band 7		2500-2570	2620-2690	5M/10M/15M/20M
LTE Band 12		699-716	729-746	1.4M/3M/5M/10M
LTE Band 26		814-849	859-894	1.4M/3M/5M/10M/15M
LTE Band 66		1710-1780	2110-2200	1.4M/3M/5M/10M/15M/20M

\*The above work frequency is exemption frequency.



## 3. The EUT contains following accessory devices:

Items	Trademark / Manufacturer / Factory	Model Name	Description
Adapter	Honor Device Co., Ltd.	HW-100400E01 HW-100400U01 HW-100400B01 HW-100400A01	I/P: 100-240V ~50/60Hz, 1.2A O/P: 5V $\equiv$ 2A OR 9V $\equiv$ 2V OR 10V $\equiv$ 4A
		HW-100400E02 HW-100400U02 HW-100400B02 HW-100400A02	
	Honor Device Co., Ltd. (Manufacturer: BYD / Huntkey / Phitek)	HW-100225E00	I/P: 100-240V ~50/60Hz, 0.75A O/P: 5V $\equiv$ 2A OR 9V $\equiv$ 2V OR 10V $\equiv$ 2.25A
	Honor Device Co., Ltd. (Manufacturer: BYD / Huntkey)	HW-100225U00 HW-100225B00 HW-100225A00	
Rechargeable Li-ion Battery	Honor Device Co., Ltd. (Manufacturer: Sunwoda / Desay / SCUD)	HB446589EFW	DC 3.87V, 3900mAh
	Honor Device Co., Ltd. (Manufacturer: Sunwoda / Desay / SCUD / NVT)	HB446588EFW	
Earphone/ Headset	Jiangxi Lianchuang Hongsheng Electronic Co., LTD.	MEND1532B528A11	/
	BOLUO COUNTY QUANCHENG ELECTRONIC CO.,LTD.	1293-3283-3.5mm-339	
	FOXCONN INTERCONNECT TECHNOLOGY LIMITED	EPAB542-2WH05-DH	
Data Cable	NingBo Broad Telecommunication Co., Ltd.	WA0046	/
	Freeport Resources Enterprises Corp.	AU2-CHO006HF	
	MING JI ELECTRONICS CO., LTD.	213-00989-0	
	LUXSHARE PRECISION INDUSTRY CO., LTD.	L99UC138-CS-H	
	Freeport Resources Enterprises(JIANGXI) CO., LTD	18-93C2CHO-001HF	
	NingBo Broad Telecommunication Co., Ltd.	WA0020	
	LUXSHARE PRECISION INDUSTRY CO., LTD.	L99UC131-CS-H	
	MING JI ELECTRONICS CO., LTD.	203-1572-0	
	FUYU ELECTRONICAL TECHNOLOGY(HUAIAN)CO., LTD.	CUDU01B-HC295-EH	

\*Adapter HW-100400E01, HW-100400U01, HW-100400B01 and HW-100400A01 have same board.  
Adapter HW-100400E02, HW-100400U02, HW-100400B02 and HW-100400A02 have same board.

## 2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generated from EUT, the test system was pre-scanning tested based on the consideration of following EUT operation mode or test configuration mode which possibly have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	Adapter+Idle+Playing+earphone
Mode 2	Adapter+Idle+Playing+Speaker
Mode 3	Adapter+Idle+5G WIFI+BT+GPS+Camera on(Front)
Mode 4	Adapter+Idle+2.4G WIFI+BT+GPS+Camera on(Rear)
Mode 5	Adapter+Traffic(GSM)
Mode 6	Adapter+Traffic(WCDMA)
Mode 7	Adapter+Traffic(LTE)
Mode 8	Adapter+FM 88MHz+earphone
Mode 9	Adapter+FM 98MHz+earphone
Mode 10	Adapter+FM 108MHz+earphone
Mode 11	USB Copy+Idle

AC Power Line Conducted Emissions test	
Final Test Mode	Description
Mode 1	Adapter+Idle+Playing+earphone

Radiated Emissions 30 MHz to 1 GHz test	
Final Test Mode	Description
Mode 4	Adapter+Idle+2.4G WIFI+BT+GPS+Camera on(Rear)

Radiated emissions above 1 GHz test	
Final Test Mode	Description
Mode 4	Adapter+Idle+2.4G WIFI+BT+GPS+Camera on(Rear)

Items	Model Name	Trademark / Manufacturer	Config1	Config2	Config3	Config4	Config5	Config6	Config7	Config8	Config9
Adapter	HW-100400U02	Honor Device Co., Ltd.	V								
	HW-100400U01	Honor Device Co., Ltd.		V						V	V
	HW-100225E00	Honor Device Co., Ltd.(BYD)			V						
	HW-100225U00	Honor Device Co., Ltd.(BYD)				V					
	HW-100225E00	Honor Device Co., Ltd.(Phitek)					V				
	HW-100225E00	Honor Device Co., Ltd.(Huntkey)						V			
	HW-100225U00	Honor Device Co., Ltd.(Huntkey)							V		
Battery	HB446589EFW	Honor Device Co., Ltd. (Manufacturer: Sunwoda)	V								
		Honor Device Co., Ltd.(Manufacturer: Desay)		V						V	V
		Honor Device Co., Ltd.(Manufacturer: SCUD)			V						
	HB446588EFW	Honor Device Co., Ltd. (Manufacturer: Sunwoda)				V					
		Honor Device Co., Ltd.(Manufacturer: Desay)					V				
		Honor Device Co., Ltd.(Manufacturer: SCUD)						V			
		Honor Device Co., Ltd.(Manufacturer: NVT)							V		
Earphone/Headset	MEND1532B528A11	Jiangxi Lianchuang Hongsheng Electronic Co., LTD.	V								
	1293-3283-3.5mm-339	BOLUO COUNTY QUANCHENG ELECTRONIC CO.,LTD.		V		V	V	V	V	V	V
	EPAB542-2WH05-DH	FOXCONN INTERCONNECT TECHNOLOGY LIMITED			V						
Cable	WA0046	NingBo Broad Telecommunication Co., Ltd.	V								
	AU2-CHO006HF	Freeport Resources Enterprises Corp.		V							
	213-00989-0	MING JI ELECTRONICS CO., LTD.			V						
	L99UC138-CS-H	LUXSHARE PRECISION INDUSTRY CO., LTD.				V					
	18-93C2CHO-001HF	Freeport Resources Enterprises (JIANGXI) CO., LTD					V				
	WA0020	NingBo Broad Telecommunication Co., Ltd.						V			
	L99UC131-CS-H	LUXSHARE PRECISION INDUSTRY CO., LTD.							V		
	203-1572-0	MING JI ELECTRONICS CO., LTD.								V	
	CUDU01B-HC295-EH	FUYU ELECTRONICAL TECHNOLOGY(HUAJIAN)CO., LTD.									V

**Note:**

1. Mode 1 tested config 1-9, the worst case is config 2 and tested mode 2-10; Mode 11 tested config 1-9. Mode 1(Config 2) for AC Power Line Conducted Emissions test and Mode 4(Config 2) for Radiated emissions test is the worst case and recorded in this report.
2. Radiated emission above 1GHz tested with 2.4G&5G filter.

### 2.3 EUT OPERATING CONDITIONS

The EUT exercise program used during radiated and/or conducted emission measurement was designed to exercise the various system components in a manner similar to a typical use. The standard test signals and output signal as following:

#### Mode 1-Mode 10:

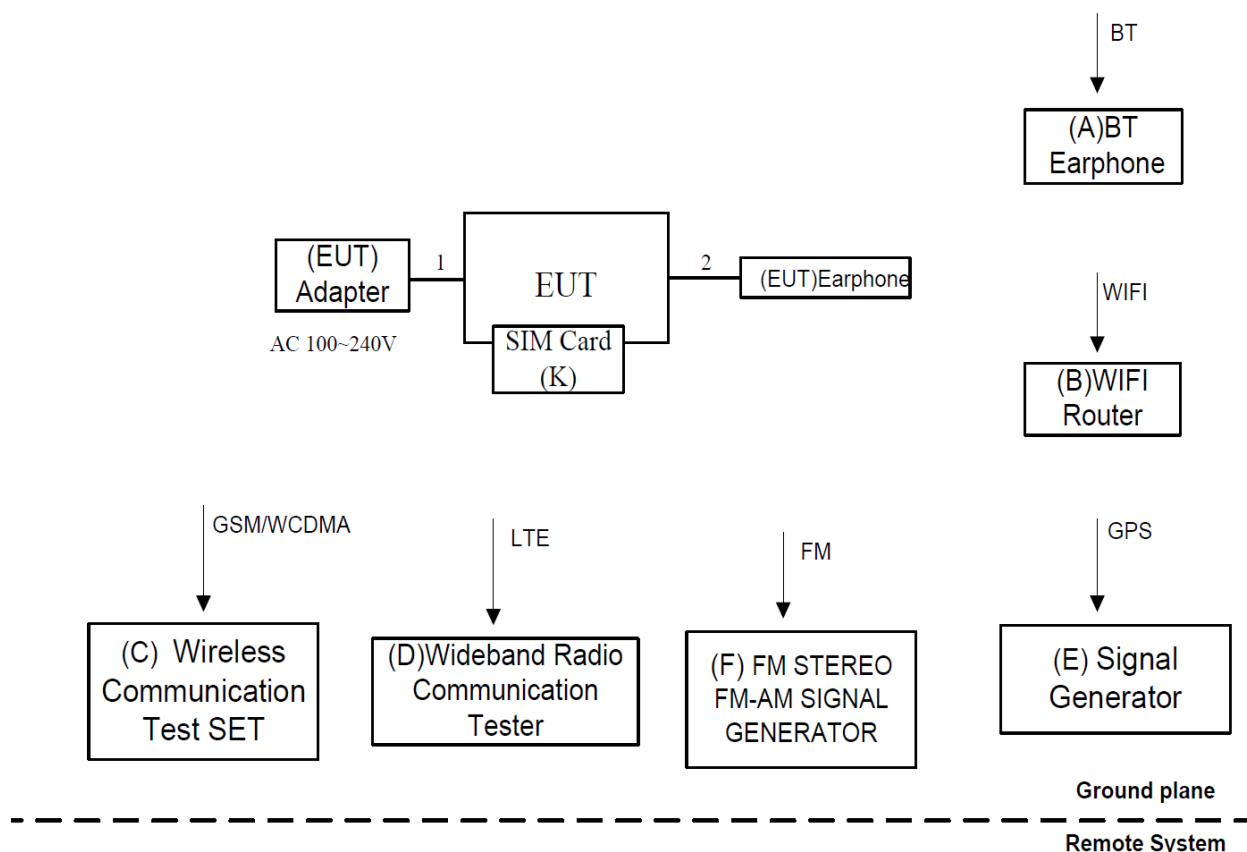
1. EUT connected to Adapter via USB Cable.
2. The SIM Card is plugged into EUT.
3. EUT connected to Earphone via Earphone Cable.
4. EUT connected to BT Earphone via BT Function.
5. EUT connected to WIFI Router via WIFI Function.
6. EUT connected to Wireless Communication Test SET via GSM/WCDMA Function.
7. EUT connected to Wideband Radio Communication Tester via LTE Function.
8. EUT connected to FM STEREO FM-AM SIGNAL GENERATOR via FM Function.
9. EUT connected to Signal Generator via GPS Function.

#### Mode 11:

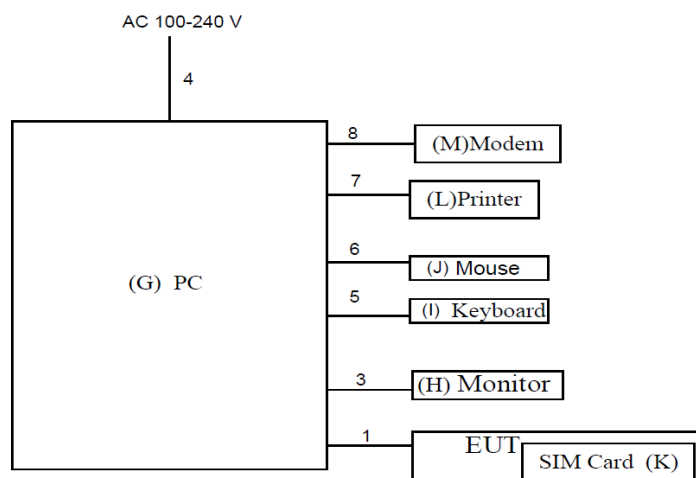
1. EUT connected to PC via USB Cable.
2. The SIM Card is plugged into EUT.
3. PC connected to Monitor via HDMI Cable.
4. PC connected to Keyboard via USB Cable.
5. PC connected to Mouse via USB Cable.
6. PC connected to Printer via Parallel Cable.
7. PC connected to Modem via RS232 Cable.

### 2.4 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

#### Mode 1-Mode 10



### Mode 11



----- Ground plane  
Remote System

## 2.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.
A	BT Earphone	MICROKIA	M9	N/A
B	WIFI Router	ASUS	RT-AC66U	E8ICGG000138
C	Wireless Communication Test SET	Agilent	E5515C	MY48364183
D	Wideband Radio Communication Tester	RS	CMW500	122125
E	Signal Generator	Agilent	E4438C	MY49071316
F	FM STEREO FM-AM SIGNAL GENERATOR	KENWOOD	SG-5110	HR1010099
G	PC	DELL	8920-D15N8	GZQD1L2
H	Monitor	PHILIPS	241P6V	UHBA1633026326
I	Keyboard	DELL	L100	CNORH6596589071T08NE
J	Mouse	DELL	MO56UOA	FQJ000BS
K	SIM Card	R&S	N/A	N/A
L	Printer	SII	DPU-414	3018507 B
M	Modem	ACEEX	DM-1414V	603002131

Item	Cable Type	Shielded Type	Ferrite Core	Length
1	USB Cable	YES	NO	1m
2	Earphone Cable	NO	NO	1.2m
3	HDMI Cable	YES	NO	1.8m
4	AC Cable	NO	NO	1.8m
5	USB Cable	YES	NO	1.8m
6	USB Cable	YES	NO	1.8m
7	Parallel Cable	YES	NO	1.8m
8	RS232 Cable	YES	NO	1.8m

### 3. EMC EMISSION TEST

#### 3.1 AC POWER LINE CONDUCTED EMISSIONS TEST

##### 3.1.1 LIMIT

Frequency of Emission (MHz)	Class B (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56 *	56 - 46 *
0.5 - 5.0	56.00	46.00
5.0 - 30.0	60.00	50.00

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " \* " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.
- (3) The test result calculated as following:  
 Measurement Value = Reading Level + Correct Factor  
 Correct Factor = Insertion Loss + Cable Loss + Attenuator Factor(if use)  
 Margin Level = Measurement Value - Limit Value

##### 3.1.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	50Ω Terminator	SHX	TF2-3G-A	8122901	Feb. 28, 2021
2	TWO-LINE V-NETWORK	R&S	ENV216	100526	Mar. 01, 2021
3	EMI Test Receiver	R&S	ESR3	101862	Jul. 25, 2021
4	Artificial-Mains Network	SCHWARZBECK	NSLK 8127	8127685	Mar. 01, 2021
5	Cable	N/A	RG400	N/A(12m)	Mar. 10, 2021
6	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A

Remark: "N/A" denotes no model name, serial no. or calibration specified.

All calibration period of equipment list is one year.

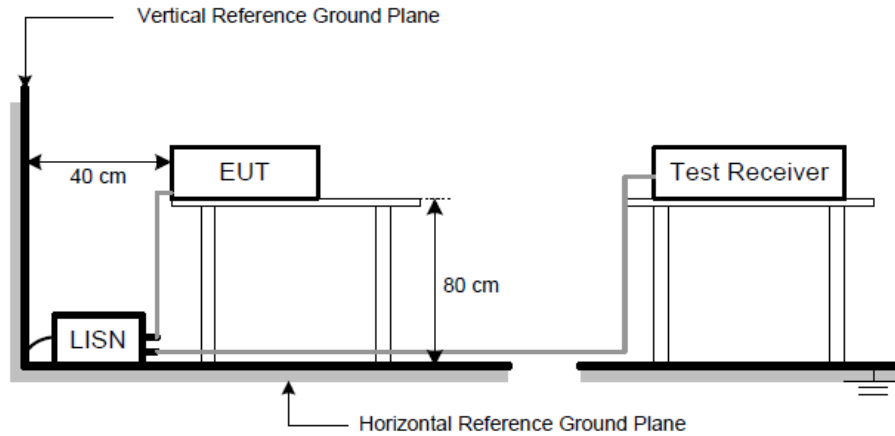
##### 3.1.3 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.
- f. Measuring frequency range from 150KHz to 30MHz.

### 3.1.4 DEVIATION FROM TEST STANDARD

No deviation

### 3.1.5 TEST SETUP



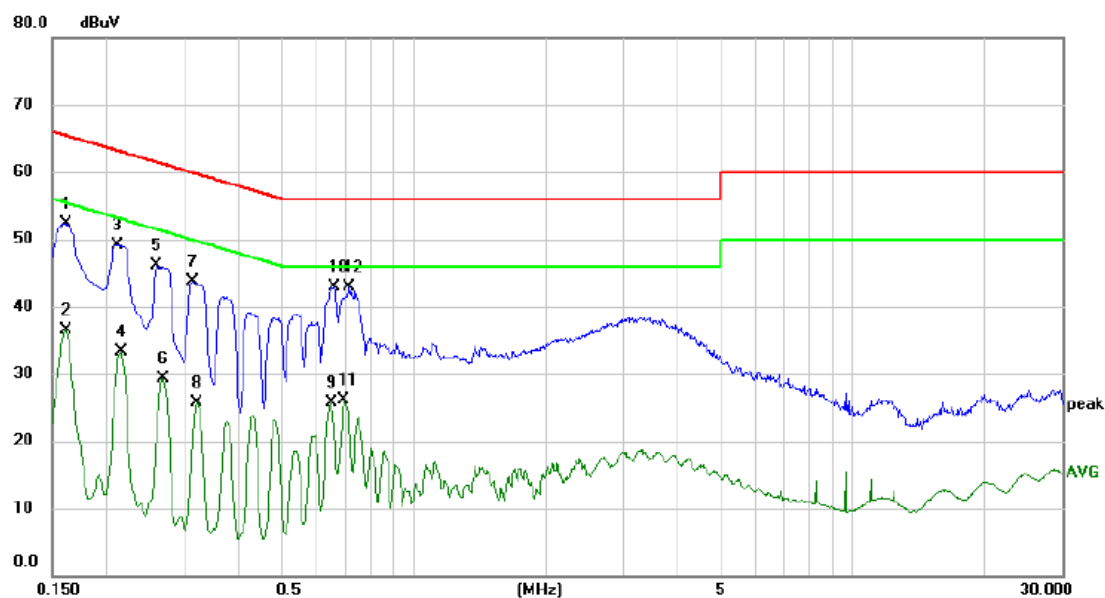
### 3.1.6 TEST RESULTS

Remark:

- (1) Reading in which marked as QP means measurements by using are Quasi-Peak Mode with Detector BW=9 kHz; SPA setting in RBW=10 kHz, VBW =10 kHz, Swp. Time = 0.3 sec./MHz. Reading in which marked as AV means measurements by using are Average Mode with instrument setting in RBW=10 kHz, VBW=10 kHz, Swp. Time =0.3 sec./MHz.
- (2) All readings are QP Mode value unless otherwise stated AVG in column of 『Note』 . If the QP Mode Measured value compliance with the QP Limits and lower than AVG Limits, the EUT shall be deemed to meet both QP & AVG Limits and then only QP Mode was measured, but AVG Mode didn't perform. In this case, a “\*” marked in AVG Mode column of Interference Voltage Measured.

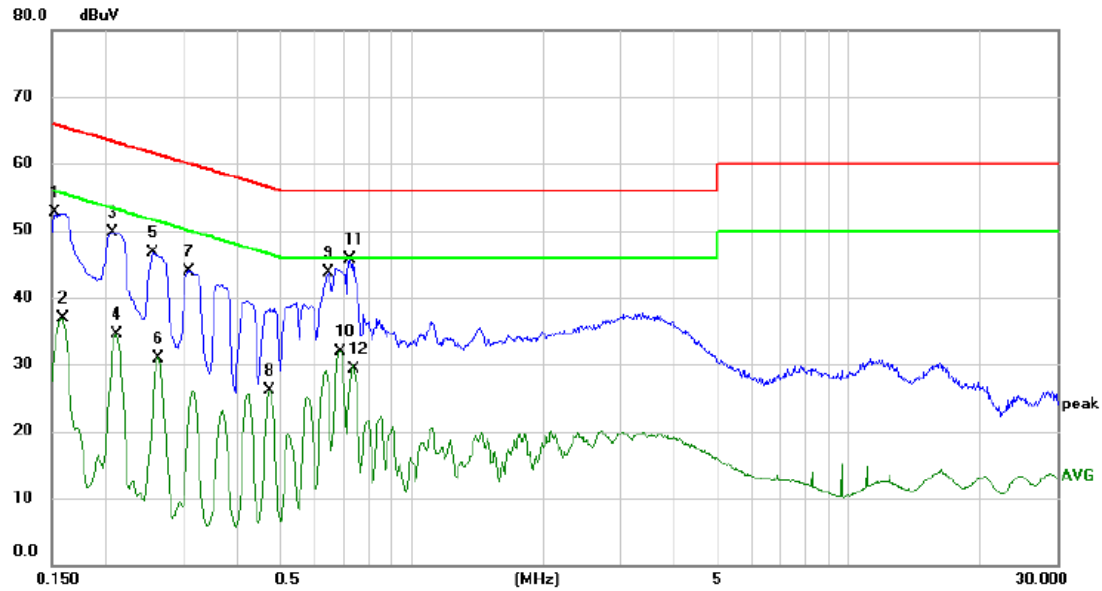


Test Voltage	AC 120V/60Hz	Phase	Line
Test Mode	Mode 1		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1612	42.63	9.65	52.28	65.40	-13.12	QP	
2		0.1612	26.92	9.65	36.57	55.40	-18.83	AVG	
3		0.2107	39.52	9.65	49.17	63.18	-14.01	QP	
4		0.2152	23.56	9.65	33.21	53.00	-19.79	AVG	
5		0.2602	36.37	9.66	46.03	61.43	-15.40	QP	
6		0.2692	19.72	9.66	29.38	51.14	-21.76	AVG	
7		0.3141	34.06	9.66	43.72	59.86	-16.14	QP	
8		0.3210	16.04	9.67	25.71	49.68	-23.97	AVG	
9		0.6493	15.95	9.69	25.64	46.00	-20.36	AVG	
10	*	0.6584	33.26	9.70	42.96	56.00	-13.04	QP	
11		0.6944	16.33	9.70	26.03	46.00	-19.97	AVG	
12		0.7124	33.15	9.70	42.85	56.00	-13.15	QP	

Test Voltage	AC 120V/60Hz	Phase	Neutral
Test Mode	Mode 1		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV	Limit dBuV	Margin dB	Detector	Comment
1		0.1522	43.03	9.66	52.69	65.88	-13.19	QP	
2		0.1590	27.29	9.66	36.95	55.52	-18.57	AVG	
3		0.2062	40.06	9.65	49.71	63.36	-13.65	QP	
4		0.2107	24.92	9.65	34.57	53.18	-18.61	AVG	
5		0.2556	37.00	9.66	46.66	61.57	-14.91	QP	
6		0.2624	21.34	9.66	31.00	51.36	-20.36	AVG	
7		0.3097	34.34	9.66	44.00	59.98	-15.98	QP	
8		0.4740	16.49	9.68	26.17	46.44	-20.27	AVG	
9		0.6450	34.02	9.70	43.72	56.00	-12.28	QP	
10		0.6877	22.11	9.70	31.81	46.00	-14.19	AVG	
11	*	0.7214	36.01	9.70	45.71	56.00	-10.29	QP	
12		0.7372	19.54	9.70	29.24	46.00	-16.76	AVG	

## 3.2 RADIATED EMISSIONS 30 MHZ TO 1 GHZ

### 3.2.1 LIMIT

Frequency (MHz)	Class B (at 3m)	
	(uV/m) Field strength	(dBuV/m) Field strength
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

**NOTE:**

- (1) The tighter limit applies at the band edges.
- (2) Emission level (dBuV/m) = 20log Emission level (uV/m).  
3m Emission level = 10m Emission level + 20log(10m/3m).
- (3) The test result calculated as following:  
Measurement Value = Reading Level + Correct Factor  
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)  
Margin Level = Measurement Value - Limit Value

### 3.2.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Amplifier	HP	8447D	1937A02847	Feb. 28, 2021
2	Cable	emci	LMR-400(30MHz-1GHz)(10m+2.5m)	N/A	Jun. 03, 2021
3	Controller	MF	MF-7802BS	N/A	N/A
4	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
5	EMI Test Receiver	Keysight	N9038A	MY56400060	Feb. 28, 2021
6	Trilog-Broadband Antenna	Schwarzbeck	VULB9168	586	Nov. 27, 2021

Remark: "N/A" denotes no model name, no serial no. or no calibration specified.

All calibration period of equipment list is one year.

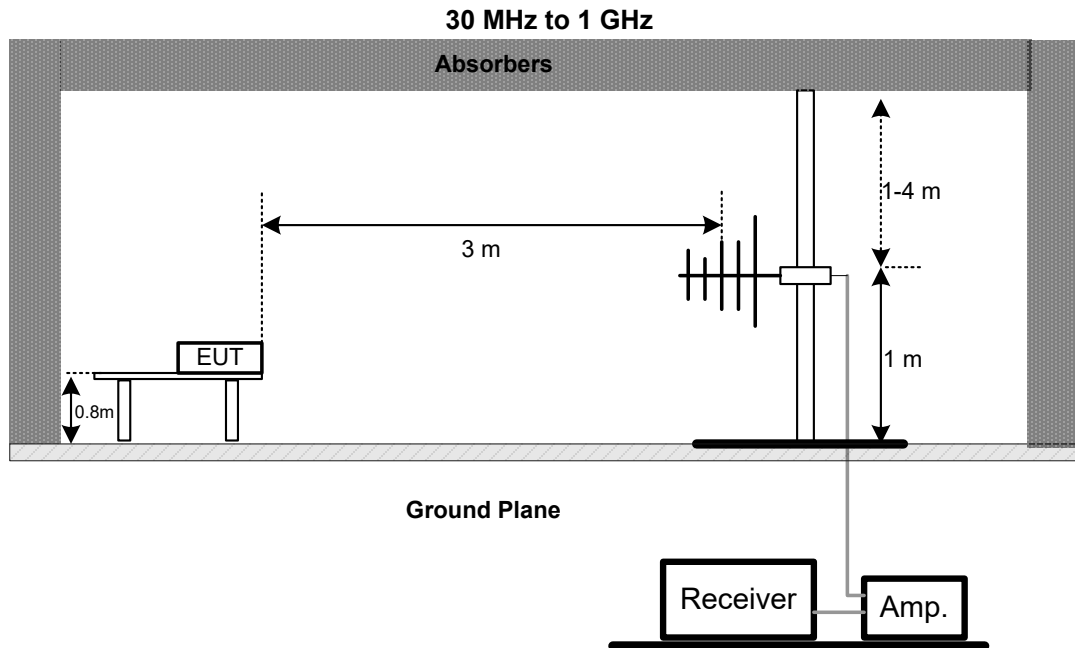
### 3.2.3 TEST PROCEDURE

- a. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The height of the equipment or of the substitution antenna shall be 0.8 m, the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- c. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
- d. The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- e. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn't perform.
- f. For the actual test configuration, please refer to the related Item - EUT Test Photos.

### 3.2.4 DEVIATION FROM TEST STANDARD

No deviation

### 3.2.5 TEST SETUP

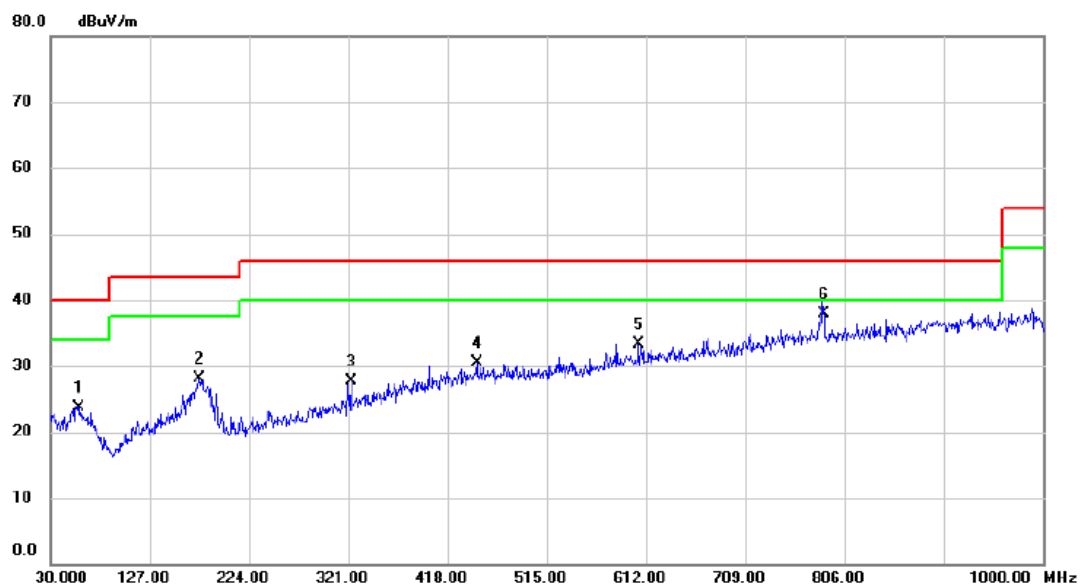


### 3.2.6 TEST RESULTS

Remark:

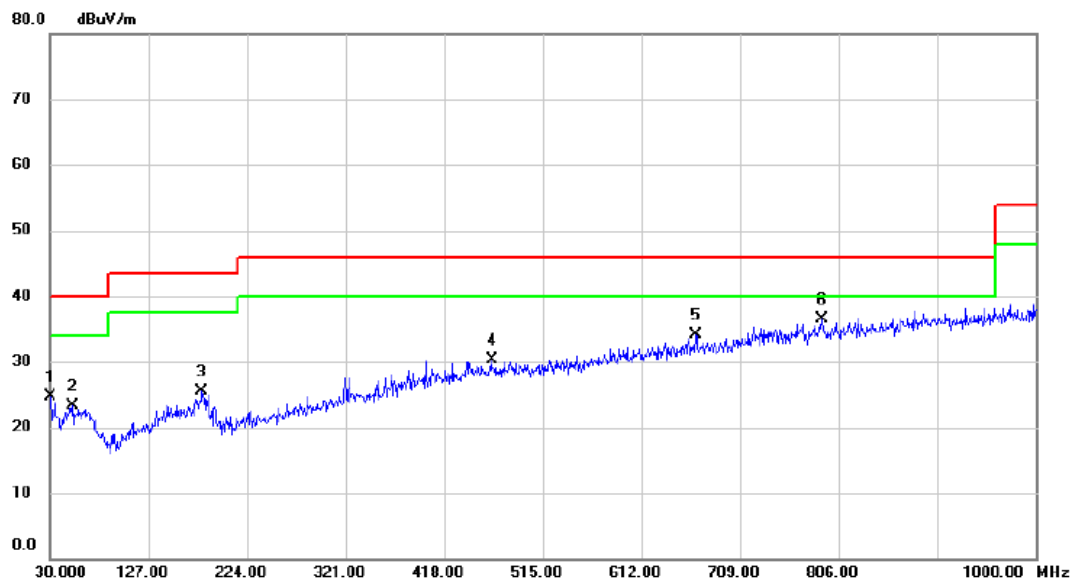
- (1) Measuring frequency range from 30 MHz to 1000 MHz
- (2) If the peak scan value lower limit more than 20 dB, then this signal data does not show in table.

Test Voltage	AC 120V/60Hz	Polarization	Vertical
Test Mode	Mode 4		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		58.1300	29.40	-5.71	23.69	40.00	-16.31	QP	
2		175.5000	34.50	-6.34	28.16	43.50	-15.34	QP	
3		323.9100	31.44	-3.75	27.69	46.00	-18.31	QP	
4		446.6150	29.96	0.59	30.55	46.00	-15.45	QP	
5		605.2100	29.57	3.66	33.23	46.00	-12.77	QP	
6	*	786.1150	30.51	7.31	37.82	46.00	-8.18	QP	

Test Voltage	AC 120V/60Hz	Polarization	Horizontal
Test Mode	Mode 4		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		30.0000	30.23	-5.56	24.67	40.00	-15.33	QP	
2		52.3100	29.27	-6.06	23.21	40.00	-16.79	QP	
3		179.8650	32.21	-6.70	25.51	43.50	-17.99	QP	
4		464.5600	29.58	0.80	30.38	46.00	-15.62	QP	
5		665.3500	29.21	4.80	34.01	46.00	-11.99	QP	
6	*	789.5100	29.12	7.35	36.47	46.00	-9.53	QP	

### 3.3 RADIATED EMISSIONS ABOVE 1 GHZ

#### 3.3.1 LIMIT

Frequency (MHz)	Class B	
	(dBuV/m) (at 3m)	
	Peak	Average
Above 1000	74	54

Frequency (MHz)	Class B	
	(dBuV/m) (at 1m)	
	Peak	Average
Above 18000	83.5	63.5

#### FREQUENCY RANGE OF RADIATED MEASUREMENT (FOR UNINTENTIONAL RADIATORS)

Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 - 108	1000
108 - 500	2000
500 - 1000	5000
Above 1000	5 <sup>th</sup> harmonic of the highest frequency or 40 GHz, whichever is lower

#### NOTE:

- (1) The tighter limit applies at the band edges.
- (2) Emission level (dBuV/m) = 20log Emission level (uV/m).  
1m Emission level = 3m Emission level + 20log(3m/1m).
- (3) The test result calculated as following:  
Measurement Value = Reading Level + Correct Factor  
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)  
Margin Level = Measurement Value - Limit Value

### 3.3.2 MEASUREMENT INSTRUMENTS LIST

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Double Ridged Horn Antenna	ARA	DRG-118A	16554	Apr. 17, 2021
2	Amplifier	Agilent	8449B	3008A02334	Mar. 01, 2021
3	Cable	mitron	RWLP50-4.0A-KJ-SMSM-12M	N/A	Nov. 23, 2021
4	Controller	MF	MF-7802BS	N/A	N/A
5	Measurement Software	Farad	EZ-EMC Ver.NB-03A1-01	N/A	N/A
6	EMI Test Receiver	Keysight	N9038A	MY56400060	Feb. 28, 2021
7	Band Reject Filter	Wairwright Instruments Gmbh	WRCG 2400/2483-2375/2505-50/10SS	16	Feb. 28, 2021
8	Band Reject Filter	Micro-Tronics	BRC50705-01	10	Feb. 28, 2021
9	Band Reject Filter	Micro-Tronics	BRC50704-01	8	Feb. 28, 2021
10	Band Reject Filter	Micro-Tronics	BRC50703-01	7	Feb. 28, 2021

Remark: "N/A" denotes no model name, no serial no. or no calibration specified.

All calibration period of equipment list is one year.

### 3.3.3 TEST PROCEDURE

- The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.  
Note:  
For measurement of frequency 1GHz -18GHz, the EUT was set 3 meters away from the receiver antenna. For 18G – 40GHz, the EUT was set 1 meter.  
Emission level (dBuV/m)=20log Emission level (uV/m).  
The limits above 18GHz shall be extrapolated to the specified distance using an extrapolation factor of 20dB/decade from 3m to 1m  
Distance extrapolation factor = 20 log (3m/1m) dB ;  
Limit line = specific limits (dBuV) + 9.5 dB.
- The height of the equipment or of the substitution antenna shall be 0.8 m, the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights find the maximum reading (used Bore sight function).
- The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then AVG detector mode re-measured.
- The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz.
- All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn't perform.
- For the actual test configuration, please refer to the related Item - EUT Test Photos.

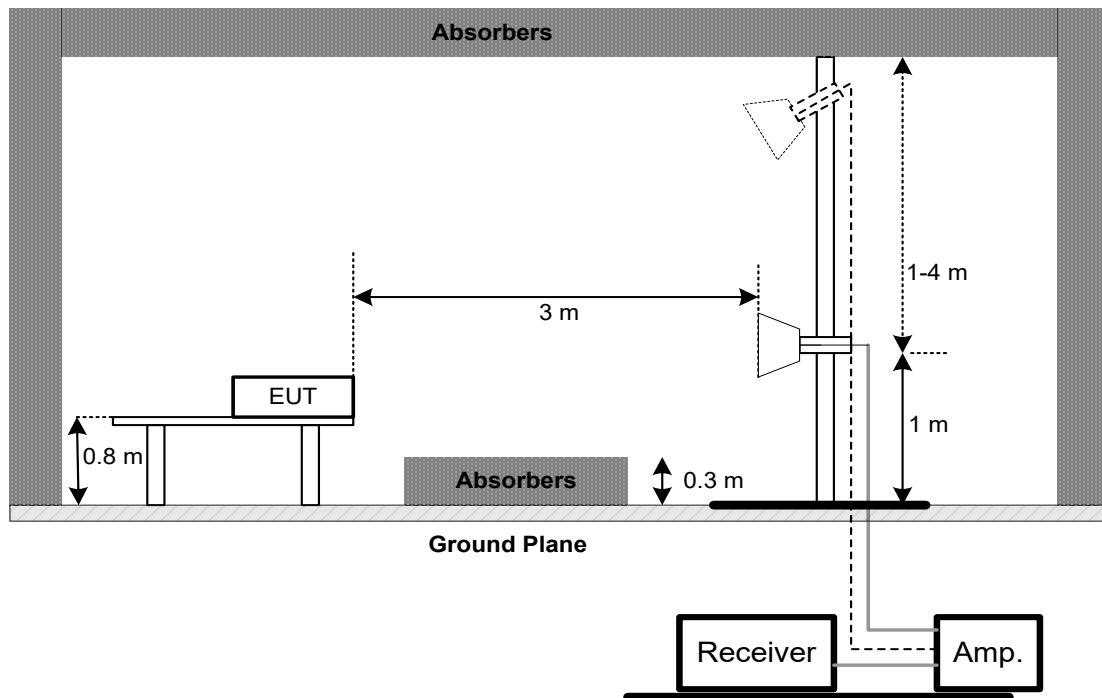
### 3.3.4 DEVIATION FROM TEST STANDARD

No deviation

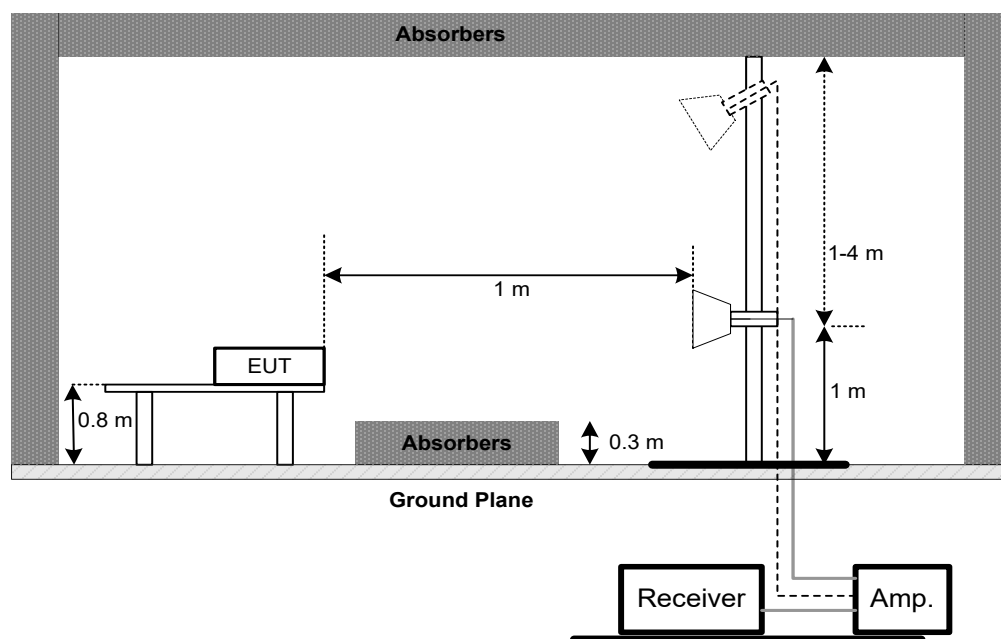


### 3.3.5 TEST SETUP

1 GHz-18 GHz



18 GHz-40 GHz

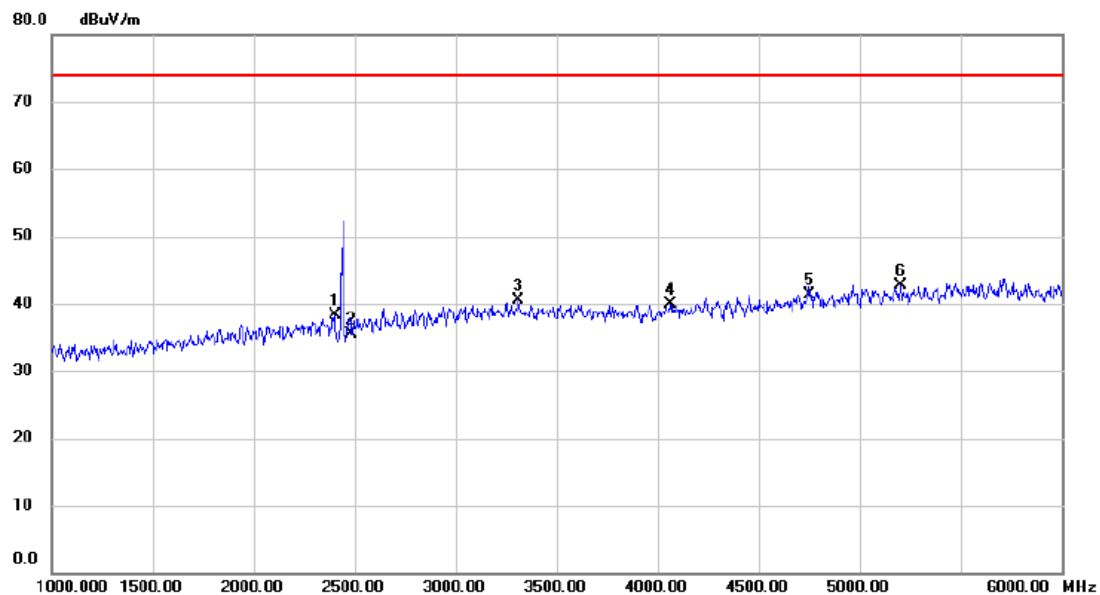


### 3.3.6 TEST RESULTS

Remark:

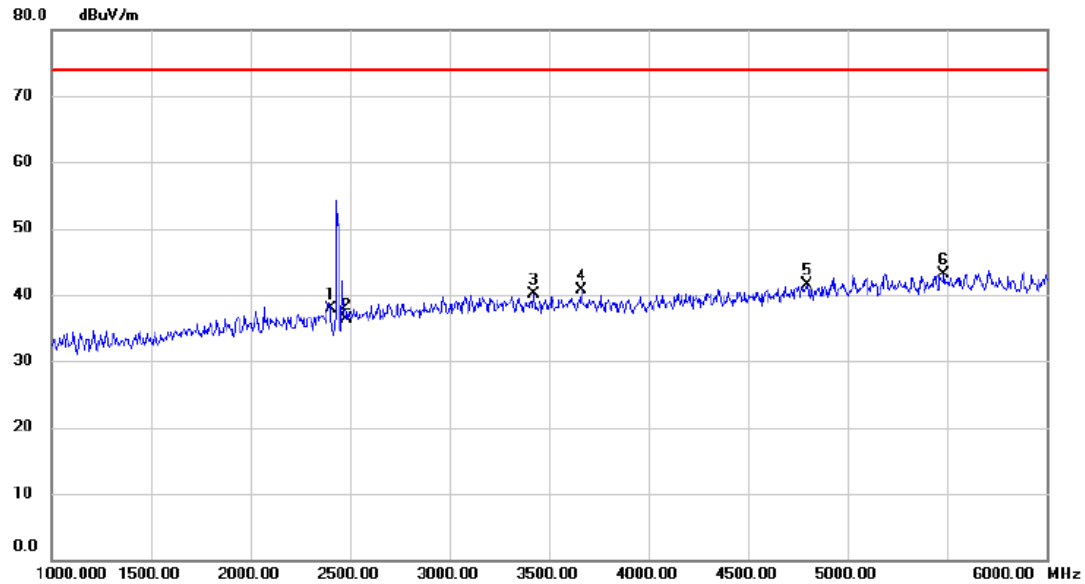
- (1) Radiated emissions measured in frequency range above 1000 MHz were made with an instrument using Peak detector mode and AV detector mode of the emission.
- (2) Data of measurement within this frequency range shown “ \* ” in the table above means the reading of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
- (3) A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

Test Voltage	AC 120V/60Hz	Polarization	Vertical (Peak)
Test Mode	Mode 4		



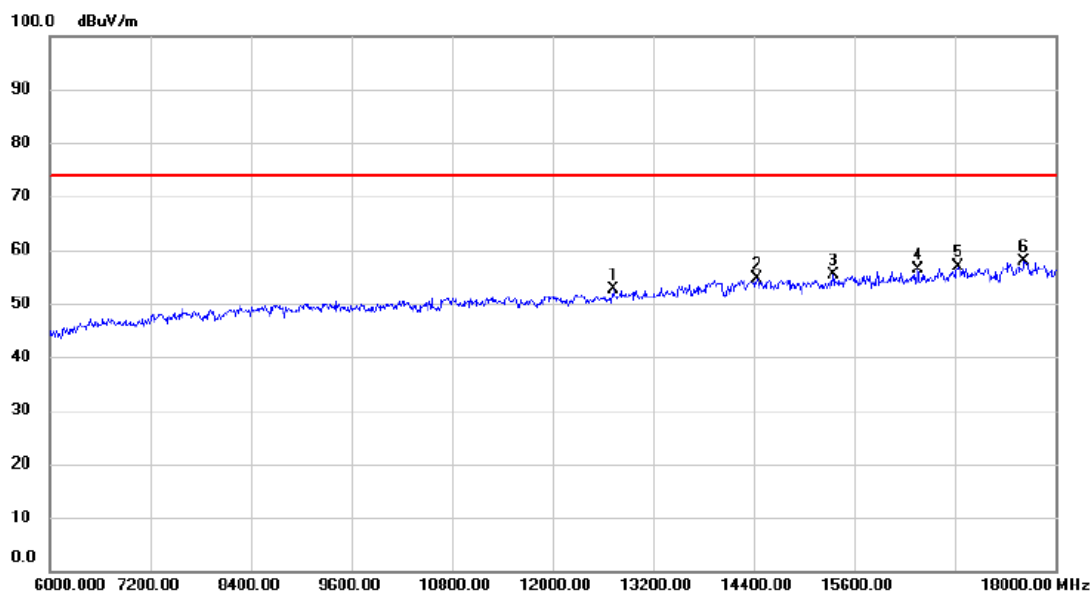
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		2400.000	37.61	0.65	38.26	74.00	-35.74	peak	
2		2483.500	34.56	0.90	35.46	74.00	-38.54	peak	
3		3310.000	36.89	3.52	40.41	74.00	-33.59	peak	
4		4062.500	34.88	5.07	39.95	74.00	-34.05	peak	
5		4747.500	33.82	7.56	41.38	74.00	-32.62	peak	
6	*	5200.000	33.57	9.08	42.65	74.00	-31.35	peak	

Test Voltage	AC 120V/60Hz	Polarization	Horizontal (Peak)
Test Mode	Mode 4		



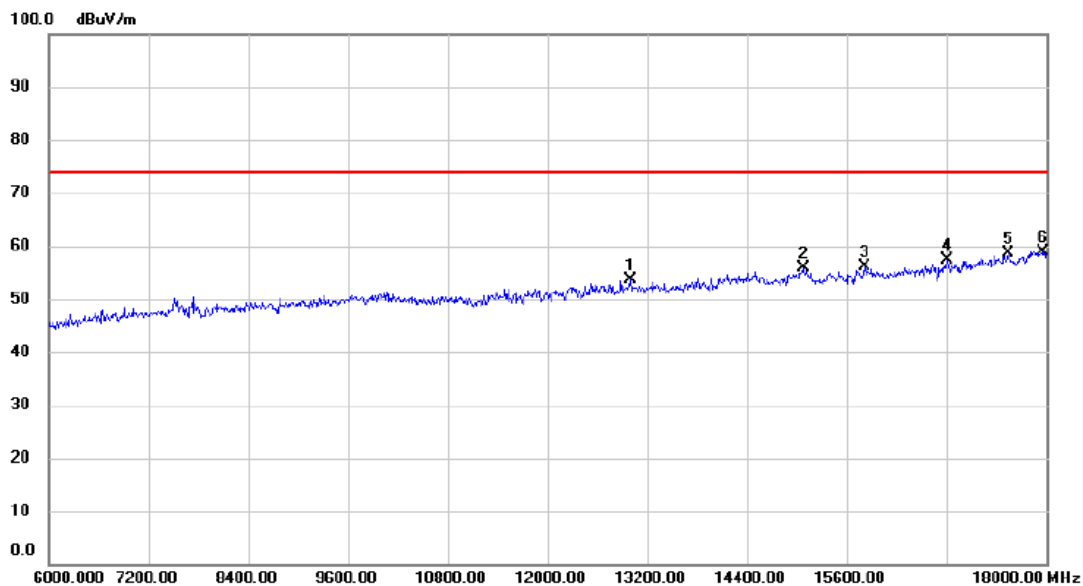
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		2400.000	37.31	0.65	37.96	74.00	-36.04	peak	
2		2483.500	35.47	0.90	36.37	74.00	-37.63	peak	
3		3422.500	36.43	3.74	40.17	74.00	-33.83	peak	
4		3662.500	36.46	4.20	40.66	74.00	-33.34	peak	
5		4797.500	33.71	7.76	41.47	74.00	-32.53	peak	
6	*	5485.000	33.34	9.82	43.16	74.00	-30.84	peak	

Test Voltage	AC 120V/60Hz	Polarization	Vertical (Peak)
Test Mode	Mode 4		



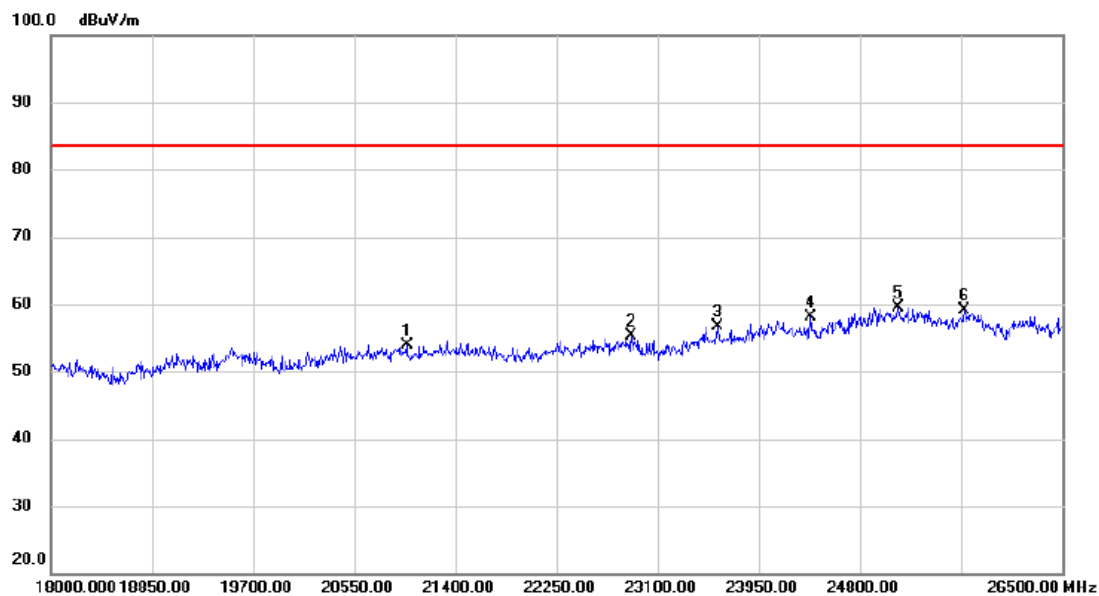
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		12732.00	36.72	15.86	52.58	74.00	-21.42	peak	
2		14436.00	35.56	19.12	54.68	74.00	-19.32	peak	
3		15348.00	38.08	17.19	55.27	74.00	-18.73	peak	
4		16356.00	37.90	18.36	56.26	74.00	-17.74	peak	
5		16836.00	37.17	19.76	56.93	74.00	-17.07	peak	
6	*	17628.00	35.85	22.08	57.93	74.00	-16.07	peak	

Test Voltage	AC 120V/60Hz	Polarization	Horizontal (Peak)
Test Mode	Mode 4		



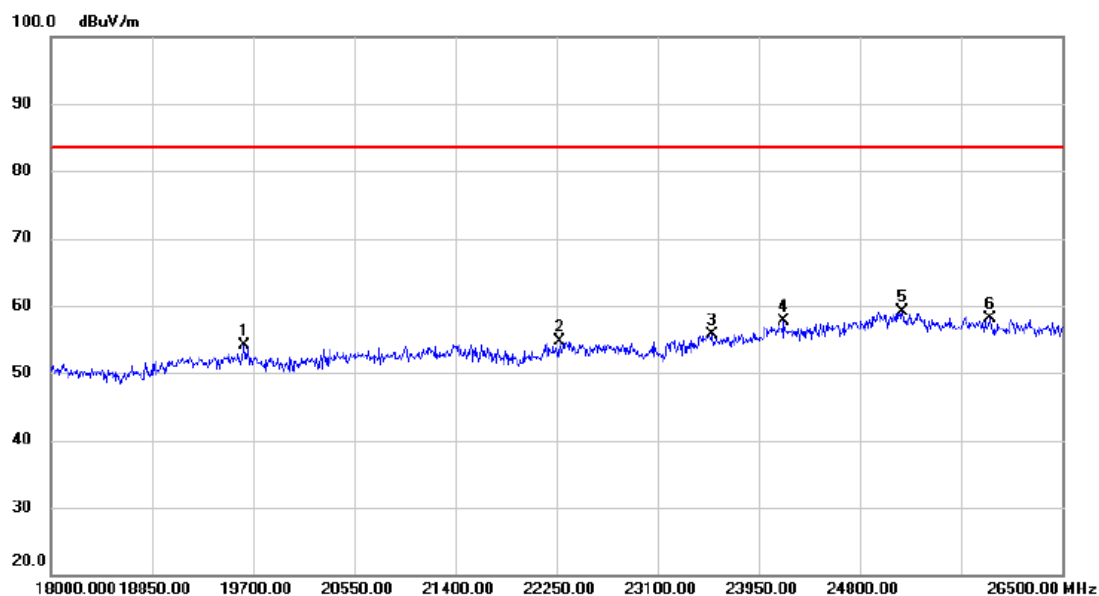
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		12996.00	36.99	16.66	53.65	74.00	-20.35	peak	
2		15072.00	38.29	17.54	55.83	74.00	-18.17	peak	
3		15816.00	38.57	17.46	56.03	74.00	-17.97	peak	
4		16800.00	37.81	19.64	57.45	74.00	-16.55	peak	
5		17544.00	36.53	22.02	58.55	74.00	-15.45	peak	
6	*	17952.00	36.68	22.28	58.96	74.00	-15.04	peak	

Test Voltage	AC 120V/60Hz	Polarization	Vertical (Peak)
Test Mode	Mode 4		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		20992.00	36.87	17.12	53.99	83.50	-29.51	peak	
2		22879.00	37.20	18.17	55.37	83.50	-28.13	peak	
3		23601.50	36.54	20.18	56.72	83.50	-26.78	peak	
4		24383.50	37.16	21.02	58.18	83.50	-25.32	peak	
5	*	25123.00	36.91	22.60	59.51	83.50	-23.99	peak	
6		25675.50	37.51	21.55	59.06	83.50	-24.44	peak	

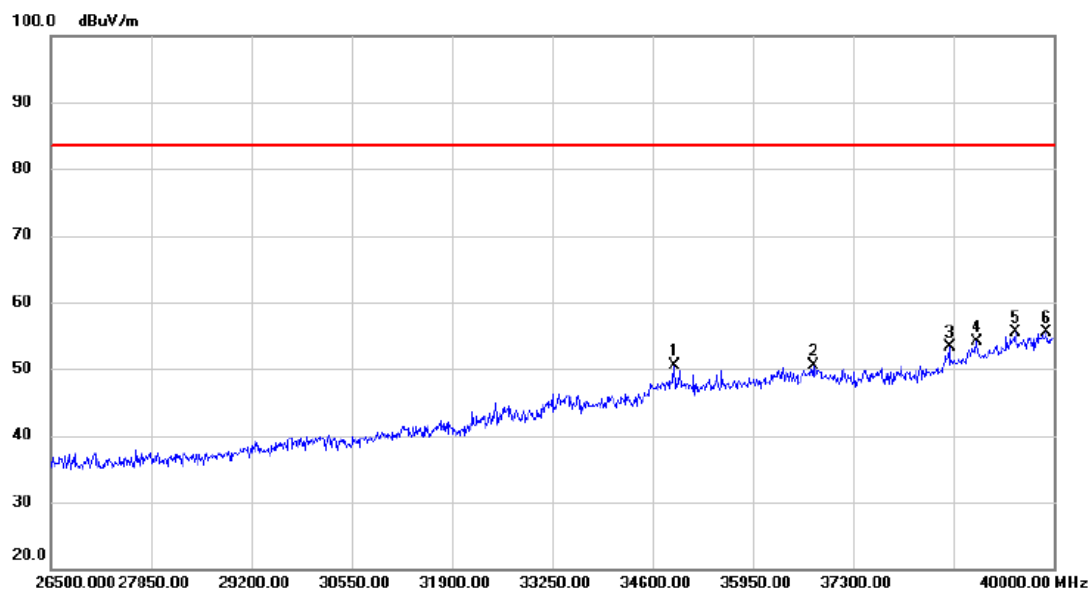
Test Voltage	AC 120V/60Hz	Polarization	Horizontal (Peak)
Test Mode	Mode 4		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		19623.50	36.86	17.24	54.10	83.50	-29.40	peak	
2		22275.50	36.88	17.90	54.78	83.50	-28.72	peak	
3		23559.00	35.63	20.05	55.68	83.50	-27.82	peak	
4		24162.50	36.41	21.29	57.70	83.50	-25.80	peak	
5	*	25157.00	36.51	22.57	59.08	83.50	-24.42	peak	
6		25896.50	37.72	20.48	58.20	83.50	-25.30	peak	

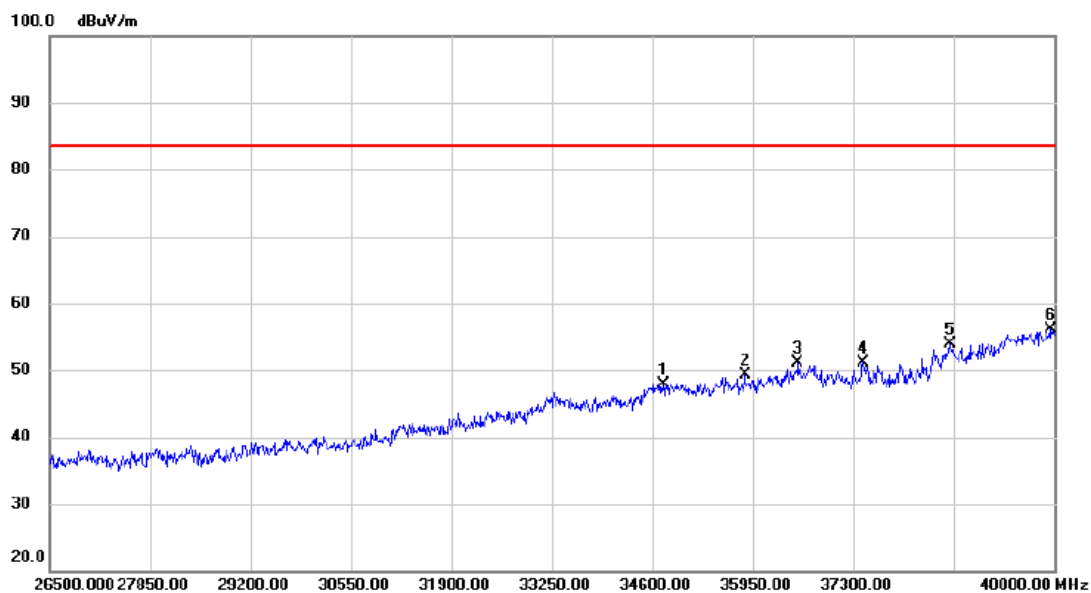


Test Voltage	AC 120V/60Hz	Polarization	Vertical (Peak)
Test Mode	Mode 4		



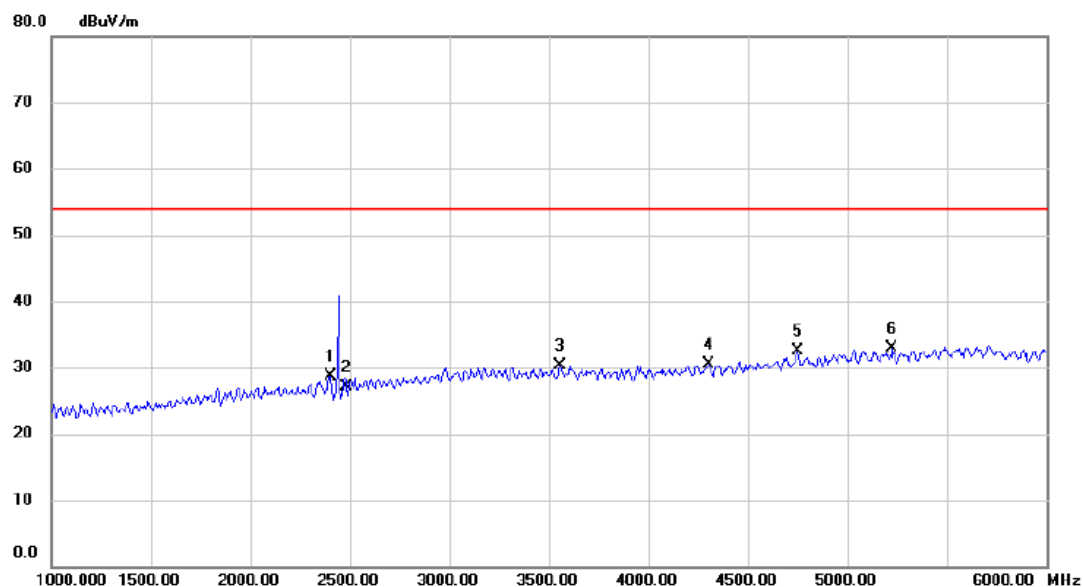
No. Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1	34897.00	35.82	14.60	50.42	83.50	-33.08	peak	
2	36760.00	35.50	15.00	50.50	83.50	-33.00	peak	
3	38596.00	36.34	16.93	53.27	83.50	-30.23	peak	
4	38960.50	35.80	18.32	54.12	83.50	-29.38	peak	
5	39487.00	34.91	20.65	55.56	83.50	-27.94	peak	
6 *	39905.50	34.33	21.25	55.58	83.50	-27.92	peak	

Test Voltage	AC 120V/60Hz	Polarization	Horizontal (Peak)
Test Mode	Mode 4		



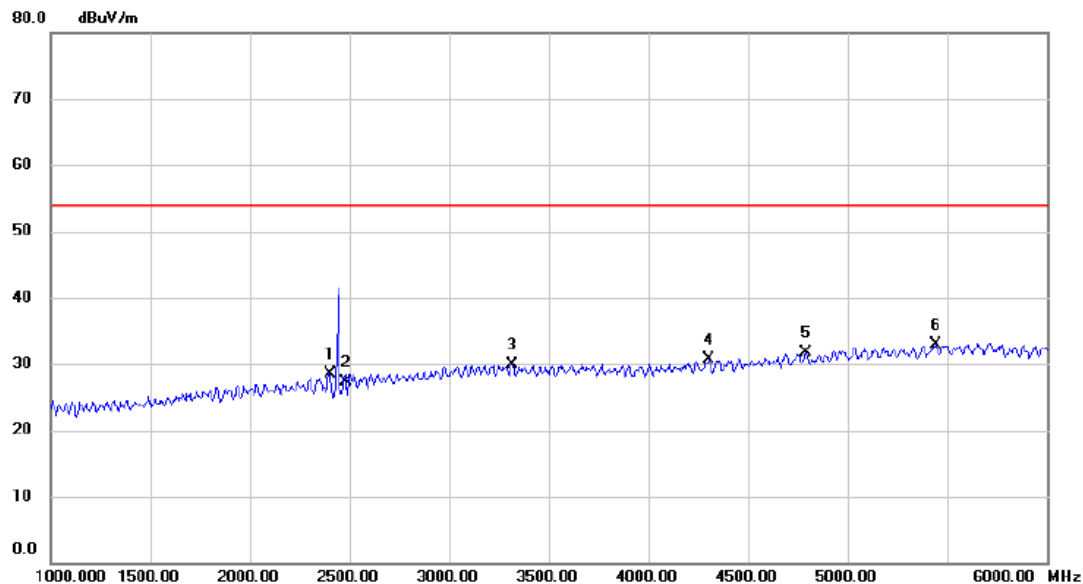
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		34748.50	33.43	14.57	48.00	83.50	-35.50	peak	
2		35842.00	34.19	15.07	49.26	83.50	-34.24	peak	
3		36557.50	35.60	15.43	51.03	83.50	-32.47	peak	
4		37435.00	36.63	14.57	51.20	83.50	-32.30	peak	
5		38596.00	36.99	16.93	53.92	83.50	-29.58	peak	
6	*	39946.00	34.82	21.30	56.12	83.50	-27.38	peak	

Test Voltage	AC 120V/60Hz	Polarization	Vertical (Average)
Test Mode	Mode 4		



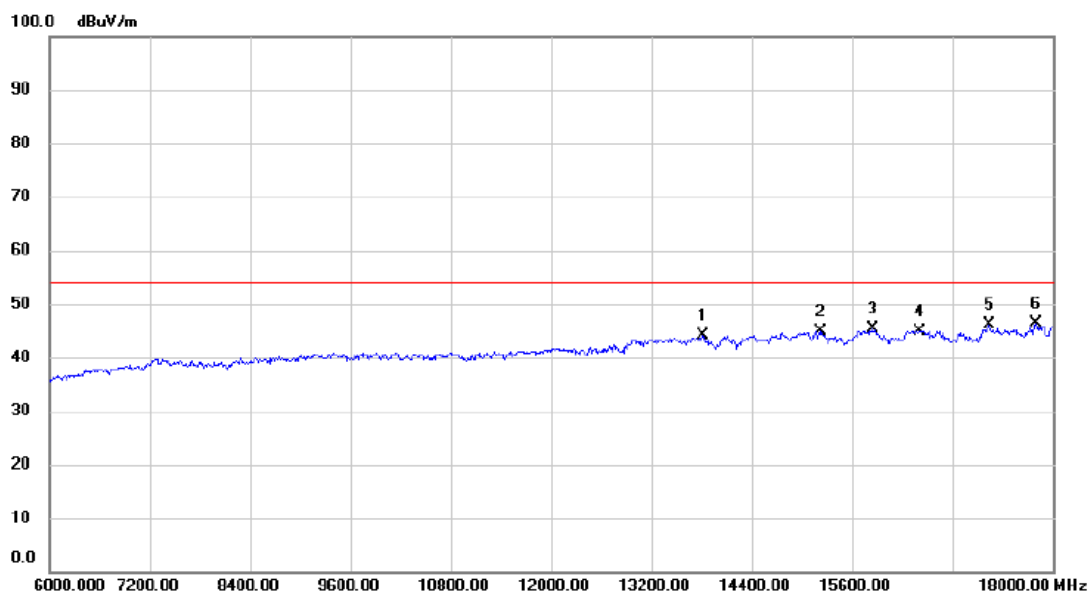
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		2400.000	27.98	0.65	28.63	54.00	-25.37	AVG	
2		2483.500	26.20	0.90	27.10	54.00	-26.90	AVG	
3		3555.000	26.23	3.99	30.22	54.00	-23.78	AVG	
4		4302.500	24.57	5.89	30.46	54.00	-23.54	AVG	
5		4750.000	24.84	7.57	32.41	54.00	-21.59	AVG	
6	*	5225.000	23.73	9.15	32.88	54.00	-21.12	AVG	

Test Voltage	AC 120V/60Hz	Polarization	Horizontal (Average)
Test Mode	Mode 4		



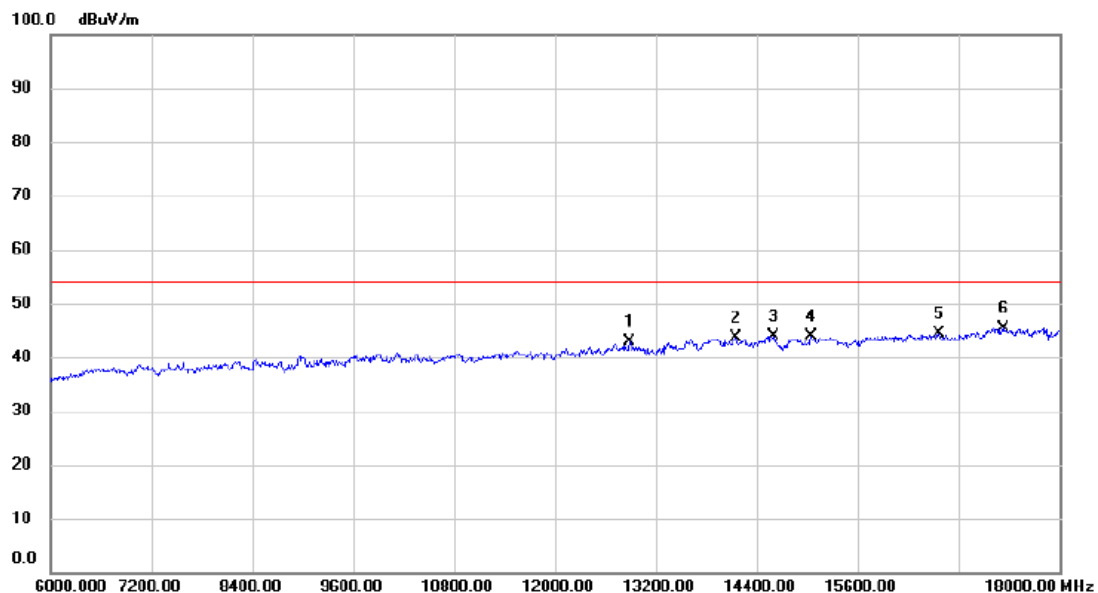
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		2400.000	27.82	0.65	28.47	54.00	-25.53	AVG	
2		2483.500	26.36	0.90	27.26	54.00	-26.74	AVG	
3		3317.500	26.33	3.53	29.86	54.00	-24.14	AVG	
4		4302.500	24.76	5.89	30.65	54.00	-23.35	AVG	
5		4792.500	24.04	7.73	31.77	54.00	-22.23	AVG	
6	*	5442.500	23.26	9.70	32.96	54.00	-21.04	AVG	

Test Voltage	AC 120V/60Hz	Polarization	Vertical (Average)
Test Mode	Mode 4		



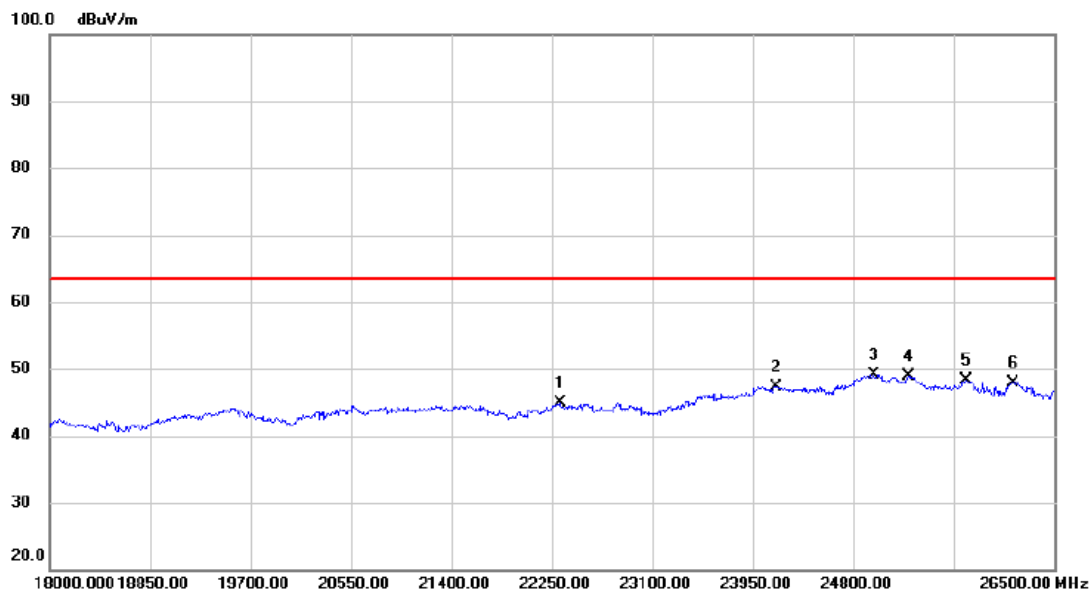
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		13812.00	25.36	18.69	44.05	54.00	-9.95	AVG	
2		15216.00	27.54	17.36	44.90	54.00	-9.10	AVG	
3		15852.00	27.76	17.50	45.26	54.00	-8.74	AVG	
4		16404.00	26.55	18.44	44.99	54.00	-9.01	AVG	
5		17244.00	25.05	21.14	46.19	54.00	-7.81	AVG	
6	*	17796.00	24.17	22.18	46.35	54.00	-7.65	AVG	

Test Voltage	AC 120V/60Hz	Polarization	Horizontal (Average)
Test Mode	Mode 4		



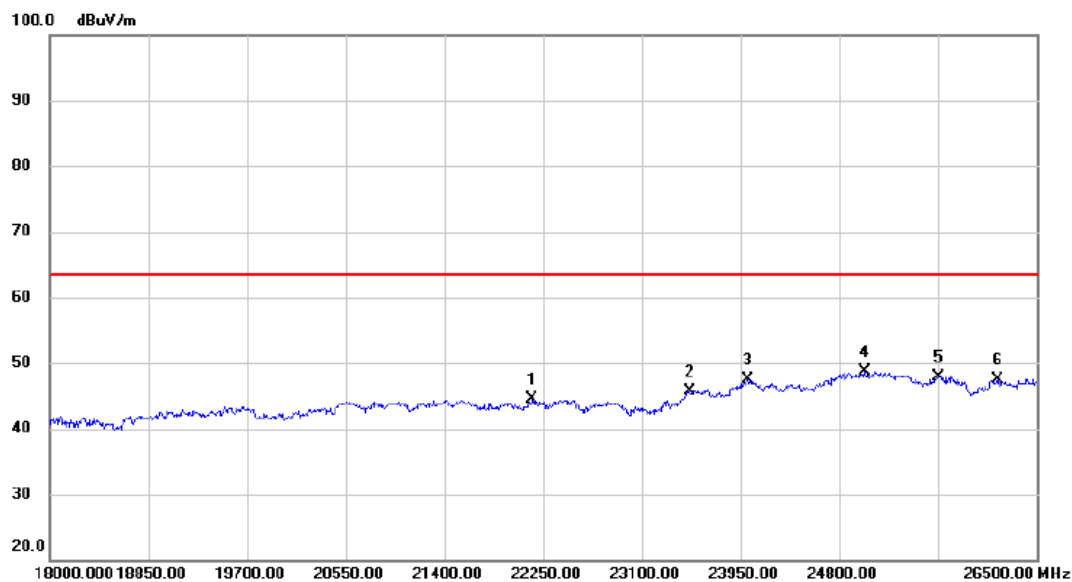
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		12888.00	26.61	16.33	42.94	54.00	-11.06	AVG	
2		14148.00	24.48	19.21	43.69	54.00	-10.31	AVG	
3		14604.00	25.15	18.80	43.95	54.00	-10.05	AVG	
4		15048.00	26.42	17.58	44.00	54.00	-10.00	AVG	
5		16572.00	25.51	18.86	44.37	54.00	-9.63	AVG	
6	*	17328.00	23.92	21.42	45.34	54.00	-8.66	AVG	

Test Voltage	AC 120V/60Hz	Polarization	Vertical (Average)
Test Mode	Mode 4		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		22318.00	26.74	18.07	44.81	63.50	-18.69	AVG	
2		24145.50	26.09	21.31	47.40	63.50	-16.10	AVG	
3	*	24978.50	26.59	22.58	49.17	63.50	-14.33	AVG	
4		25267.50	26.32	22.51	48.83	63.50	-14.67	AVG	
5		25752.00	27.16	21.18	48.34	63.50	-15.16	AVG	
6		26151.50	27.14	20.77	47.91	63.50	-15.59	AVG	

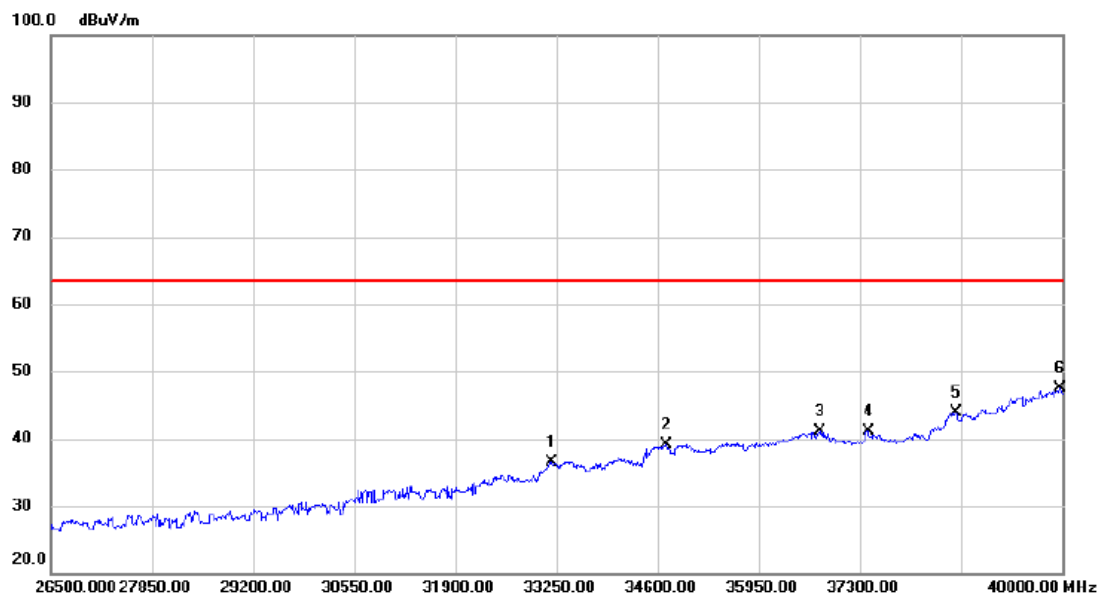
Test Voltage	AC 120V/60Hz	Polarization	Horizontal (Average)
Test Mode	Mode 4		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		22156.50	27.02	17.46	44.48	63.50	-19.02	AVG	
2		23516.50	25.82	19.89	45.71	63.50	-17.79	AVG	
3		24009.50	26.00	21.47	47.47	63.50	-16.03	AVG	
4	*	25021.00	26.01	22.64	48.65	63.50	-14.85	AVG	
5		25650.00	26.31	21.68	47.99	63.50	-15.51	AVG	
6		26160.00	26.74	20.82	47.56	63.50	-15.94	AVG	



Test Voltage	AC 120V/60Hz	Polarization	Vertical (Average)
Test Mode	Mode 4		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		33182.50	23.53	12.93	36.46	63.50	-27.04	AVG	
2		34721.50	24.62	14.56	39.18	63.50	-24.32	AVG	
3		36773.50	26.19	14.97	41.16	63.50	-22.34	AVG	
4		37408.00	26.62	14.56	41.18	63.50	-22.32	AVG	
5		38582.50	27.04	16.87	43.91	63.50	-19.59	AVG	
6	*	39973.00	26.10	21.33	47.43	63.50	-16.07	AVG	

Test Voltage	AC 120V/60Hz	Polarization	Horizontal (Average)
Test Mode	Mode 4		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dBuV/m	Margin dB	Detector	Comment
1		33358.00	23.43	13.38	36.81	63.50	-26.69	AVG	
2		34033.00	24.53	13.83	38.36	63.50	-25.14	AVG	
3		34532.50	24.55	14.52	39.07	63.50	-24.43	AVG	
4		36800.50	26.67	14.91	41.58	63.50	-21.92	AVG	
5		38528.50	26.76	16.68	43.44	63.50	-20.06	AVG	
6	*	39959.50	25.48	21.32	46.80	63.50	-16.70	AVG	

End of Test Report