



EMC TEST REPORT

Applicant Huawei Technologies Co., Ltd.
FCC ID QISPOT-LX3
Product Smart Phone
Model POT-LX3
Report No. R1810H0133-E1
Issue Date November 12, 2018

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC Code CFR47 Part15B (2018)/ ANSI C63.4 (2014)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Wei Liu

Guangchang Fan

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Summary of measurement results

Number	Test Case	Clause in FCC Rules	Conclusion
1	Radiated Emission	15.109, ANSI C63.4-2014	PASS
2	Conducted Emission	15.107, ANSI C63.4-2014	PASS
Test Date: October 12, 2018 ~ October 13, 2018			

1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA technology (shanghai) co., Ltd.** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein .Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2 Test facility

CNAS (accreditation number: L2264)

TA Technology (Shanghai) Co., Ltd. has obtained the accreditation of China National Accreditation Service for Conformity Assessment (CNAS).

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

IC (recognition number is 8510A)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Canada to perform electromagnetic emission measurement.

VCCI (recognition number is C-4595, T-2154, R-4113, G-10766)

TA Technology (Shanghai) Co., Ltd. has been listed by industry Japan to perform electromagnetic emission measurement.

A2LA (Certificate Number: 3857.01)

TA Technology (Shanghai) Co., Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.



1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.
Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China
City: Shanghai
Post code: 201201
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Contact: Xu Kai
Telephone: +86-021-50791141/2/3
Fax: +86-021-50791141/2/3-8000
Website: <http://www.ta-shanghai.com>
E-mail: xukai@ta-shanghai.com

2 General Description of Equipment under Test

2.1 Client Information

Applicant	Huawei Technologies Co., Ltd.
Applicant address	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.China.
Manufacturer	Huawei Technologies Co., Ltd.
Manufacturer address	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.China.

2.2 General information

EUT Description			
Device Type:	Portable Device		
Model Number:	POT-LX3		
IMEI:	IMEI1: 868219040015296 IMEI2: 868219040018191		
HW Version:	HL3POTM		
SW Version:	5.0.1.50M(SP3C900E61R1P9log)		
Antenna Type:	Internal Antenna		
Frequency:	Band	Tx (MHz)	Rx (MHz)
	GSM 850	824 ~ 849	869 ~ 894
	GSM 1900	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
	LTE Band 4	1710 ~ 1755	2110 ~ 2155
	LTE Band 5	824 ~ 849	869 ~ 894
	LTE Band 7	2500 ~ 2570	2620 ~ 2690
	Bluetooth:	2402 ~ 2480	2402 ~ 2480
	WIFI 2.4G:	2412 ~ 2462	2412 ~ 2462
Modulation:	GSM: GMSK GPRS: GMSK EGPRS: GMSK/8PSK WCDMA RMC: QPSK HSDPA: QPSK		



	HSUPA: QPSK DC-HSDPA:64QAM LTE: QPSK / 16QAM Bluetooth: GFSK, $\pi/4$ -DQPSK, 8-DPSK Bluetooth v4.2 LE: GFSK WLAN 802.11b: DSSS WLAN 802.11g/n: OFDM
EUT Accessory	
Adapter 1	Manufacturer: Huawei Technologies Co., Ltd. (SALCOMP(GUIGANG)CO., LTD. Model: HW-050200U2
Adapter 2	Manufacturer: Huawei Technologies Co., Ltd. (HUIZHOU BYD ELECTRONIC CO., LTD.) Model: HW-050200U2
Adapter 3	Manufacturer: Huawei Technologies Co., Ltd. (SHENZHEN HUNTKEY ELECTRIC CO., LTD.) Model: HW-050200U2
Adapter 4	Manufacturer: Huawei Technologies Co., Ltd. (Dongguan Phitek Electronics Co., Ltd.) Model: HW-050200U2
Adapter 5	Manufacturer: Huawei Technologies Co., Ltd. (HUIZHOU BYD ELECTRONIC CO., LTD.) Model: HW-050200U1
Adapter 6	Manufacturer: Huawei Technologies Co., Ltd. (SHENZHEN HUNTKEY ELECTRIC CO., LTD.) Model: HW-050200U1
Adapter 7	Manufacturer: Huawei Technologies Co., Ltd. (Dongguan Phitek Electronics Co., Ltd.) Model: HW-050200U1
Battery 1	Manufacturer: Huawei Technologies Co., Ltd. (SCUD (FUJIAN) Electronics Co., Ltd.) Model: HB396286ECW
Battery 2	Manufacturer: Huawei Technologies Co., Ltd. (Huizhou Desay Battery Co., Ltd.) Model: HB396286ECW
Battery 3	Manufacturer: Huawei Technologies Co., Ltd. (Sunwoda Electronic Co., Ltd.) Model: HB396286ECW
Battery 4	Manufacturer: Huawei Technologies Co., Ltd. (Dongguan NVT Technology Co., Ltd) Model: HB396286ECW
Earphone 1	Manufacturer: Jiangxi Lianchuang Hongsheng Electronic Co., LTD Model: MEND1532B528A02



Earphone 2	Manufacturer: Boluo County Quancheng Electronic Co.,ltd Model: 1293-3283-3.5mm-322
USB Cable 1	Manufacturer: NingBo Broad Telecommunication Co., Ltd. Model: WA0001
USB Cable 2	Manufacturer: HONGLIN TECHNOLOGY CO., LTD. Model: 130-26669
USB Cable 3	Manufacturer: FOXCONN INTERCONNECT TECHNOLOGY LIMITED Model: CUBB01M-HC304-DH
USB Cable 4	Manufacturer: LuXshare Model: L99U2017-CS-H
Auxiliary test equipment	
PC	PC Manufacturer: Microsoft Corporation Model: L20170076 SN: 032324771953
<p>Note: The information of the EUT is declared by the manufacturer.</p> <p>2. There is more than one Earphone, one USB cable and one Battery, each one should be applied throughout the compliance test respectively, and however, only the worst case (Earphone2, USB cable 3, Battery 4) will be recorded in this report.</p>	

Item	Configure 1	Configure 2	Configure 3	Configure 4
Software	The same	The same	The same	The same
Hardware	The same	The same	The same	The same
Memory	32G	32G	64G	64G
SIM card slot	2* SIM card	1* SIM card	2* SIM card	1* SIM card
Other	The same	The same	The same	The same
<p>Note: Customer declaration, four configures is the same, except for memory and SIM card slot. There are more than one Configure, each one should be applied throughout the compliance test respectively, however, only the worst case (Configure 1) will be recorded in this report.</p>				



2.3 Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standards

FCC Code CFR47 Part15B (2018)

ANSI C63.4 (2014)

2.4 Test Mode

Test Mode	
Mode 1:	Adapter + USB cable+ earphone + Camera On + MP3 +Idle
Mode 2:	Adapter + USB cable+ earphone + MP3 +Idle
Mode 3:	Adapter + USB cable+ earphone +Idle
Mode 4:	Adapter + USB cable +Idle
Mode 5:	USB Copy(EUT with PC) + USB cable + earphone + Camera On + MP3 + Idle
Mode 6:	Camera On +earphone +Idle
Mode 7:	Earphone+MP3+Idle
Mode 8:	Earphone +Idle

During the test, the preliminary test was performed in all modes with all frequency bands, mode 5 selected as the worst condition. The test data of the worst-case condition was recorded in this report.

3 Test Case Results

3.1 Radiated Emission

Ambient condition

Temperature	Relative humidity	Pressure
24°C~26°C	45%~50%	102.5kPa

Methods of Measurement

The EUT is placed on a non-metallic table 0.8m above the horizontal metal reference ground plane. The distance between EUT and receive antenna should be 3 meters. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2014. Sweep the whole frequency band through the range from 30MHz to the 5th harmonic of the carrier. During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turn table shall be rotated from 0 to 360 degrees for detecting the maximum of radiated signal level.

The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing. During the test, the EUT is worked at maximum output power.

Set the spectrum analyzer in the following:

Below 1GHz:

RBW=100 kHz / VBW=300 kHz / Sweep=AUTO

Above 1GHz:

(a) PEAK: RBW=1MHz / VBW=3MHz/ Sweep=AUTO

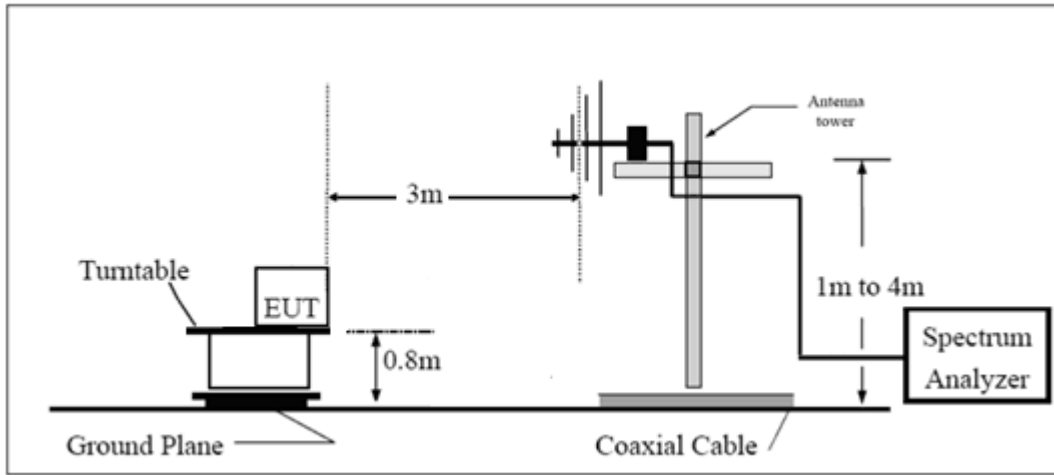
(b) AVERAGE: RBW=1MHz / VBW=1Hz / Sweep=AUTO

The radiated emission was measured in the following position: EUT stand-up position (Z axis), lie-down position (X, Y axis). The worst emission was found in lie-down position (X axis) and the worst case was recorded.

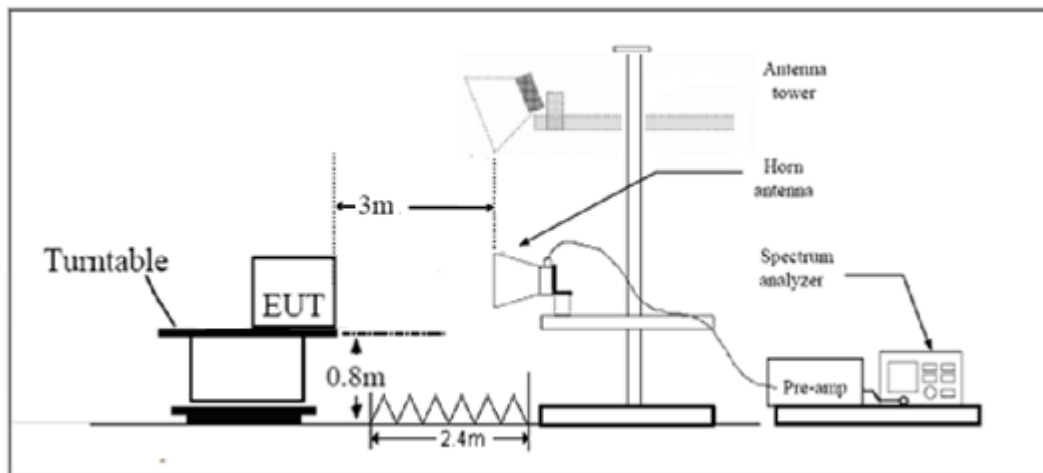
During the test, EUT is connected to a laptop via a USB cable in the case of Transfer Data mode. The EUT is used as the peripheral equipment of the PC. The data is transferred from EUT to PC;

Test Setup

Below 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

Antenna Tower meets ANSI C63.4 requirements for measurements above 1 GHz by keeping the antenna aimed at the EUT during the antenna's ascent/ descent along the antenna mast.

Limits

Frequency (MHz)	Field Strength (dB μ V/m)	Detector
30 -88	40.0	Quasi-peak
88-216	43.5	Quasi-peak
216 – 960	46.0	Quasi-peak
960-1000	54.0	Quasi-peak
1000-5 th harmonic of the highest frequency or 40GHz, which is lower	54 74	Average Peak

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$.

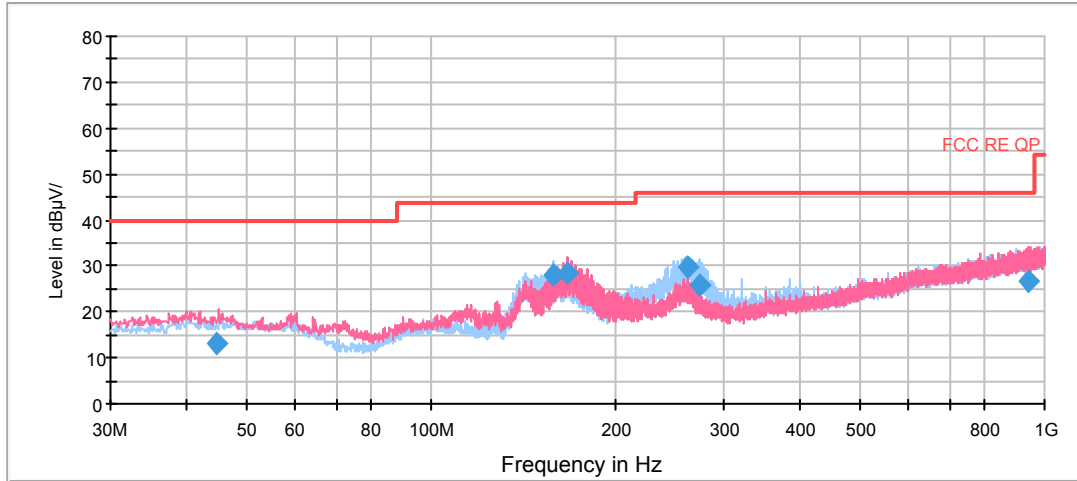
Frequency	Uncertainty
30MHz~200MHz	4.016 dB
200MHz~1000MHz	3.28dB
1GHz~18GHz	3.70 dB
18GHz~26.5GHz	5.78 dB
26.5GHz~40GHz	5.82 dB

Test Results

The following graphs display the maximum values of horizontal and vertical by software.
 For above 1GHz, Blue trace uses the peak detection, Green trace uses the average detection.

Configure 1

RE 0.03-1GHz QP Class B

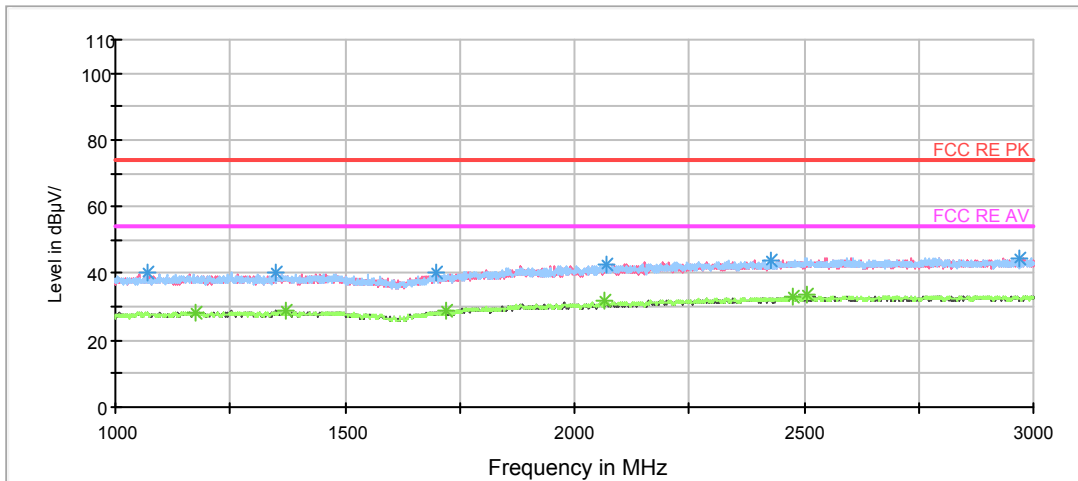


Radiated Emission from 30MHz to 1GHz

Frequency (MHz)	Quasi-Peak (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
44.635000	13.0	-0.2	100.0	V	81.0	13.2	27.0	40.0
157.998750	28.2	18.5	200.0	H	263.0	9.7	15.3	43.5
167.293750	28.5	18.3	100.0	V	173.0	10.2	15.0	43.5
261.472500	29.6	15.0	100.0	H	88.0	14.6	16.4	46.0
273.186250	25.7	10.7	100.0	H	308.0	15.0	20.3	46.0
943.693750	26.8	-0.4	200.0	V	20.0	27.2	19.2	46.0

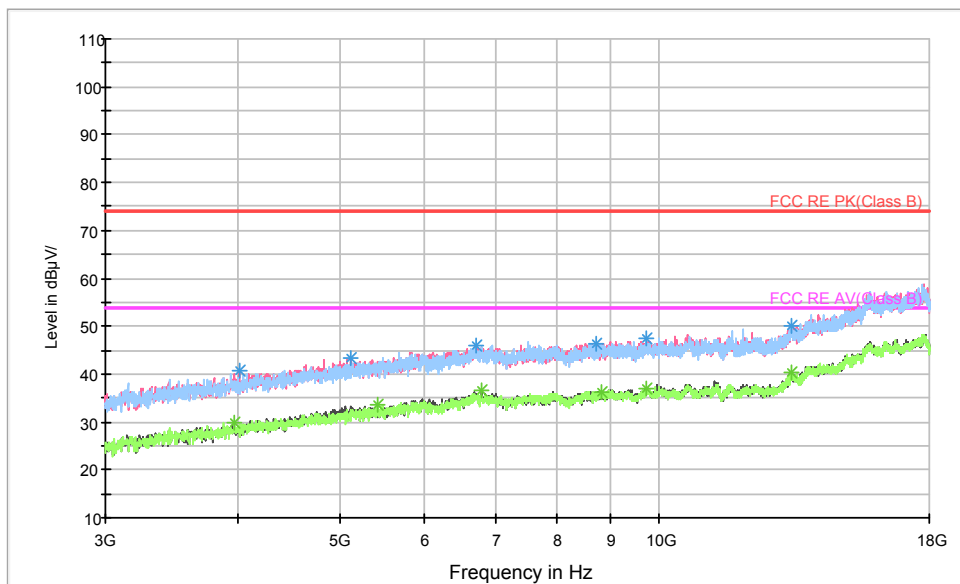
- Remark:**
1. Quasi-Peak = Reading value + Correction factor
 2. Correction Factor = Antenna factor+ Insertion loss(cable loss+amplifier gain)
 3. Margin = Limit – Quasi-Peak

FCC RE 1G-3GHz PK+AV Class B



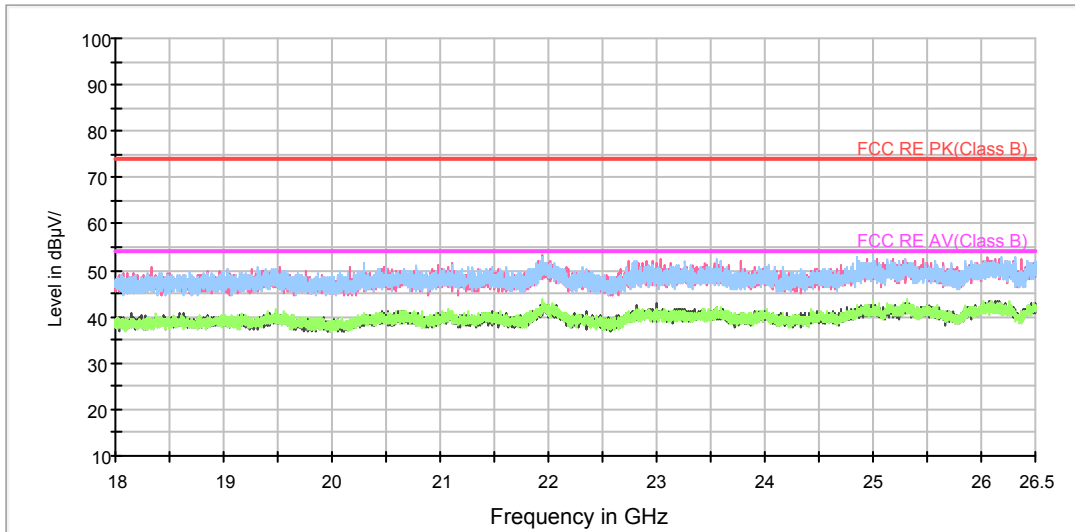
Radiated Emission from 1GHz to 3GHz

RE 3-18GHz PK+AV



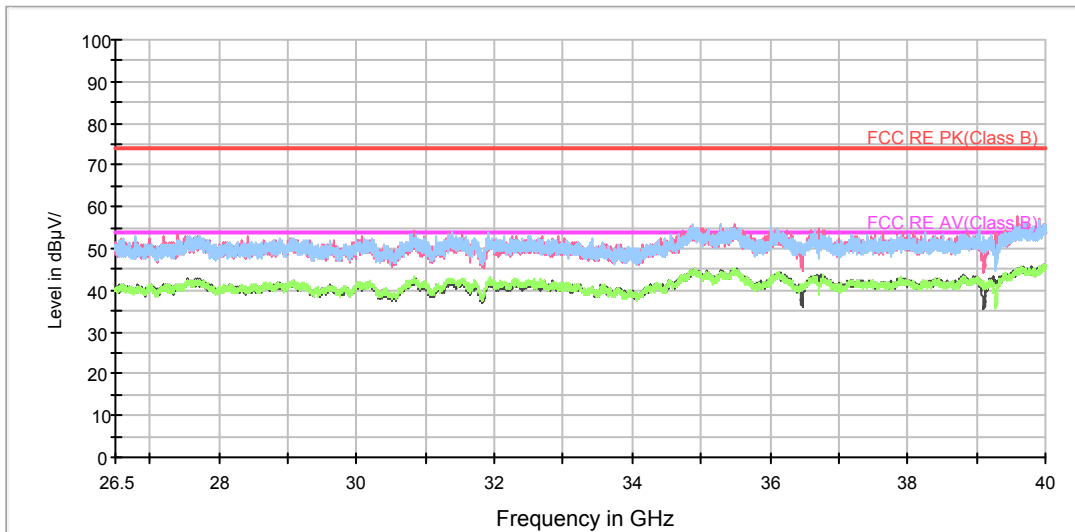
Radiated Emission from 3GHz to 18GHz

RE 18-26.5GHz PK+AV



Radiated Emission from 18GHz to 26.5GHz

RE 26.5-40GHz PK+AV



Radiated Emission from 26.5GHz to 40GHz



Frequency (MHz)	Peak (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1068.000000	40.0	51.7	200.0	H	47.0	-11.7	34.0	74
1348.500000	40.6	51.2	200.0	V	123.0	-10.6	33.4	74
1697.500000	40.0	48.7	200.0	V	114.0	-8.7	34.0	74
2070.000000	42.9	49.7	100.0	H	276.0	-6.8	31.1	74
2426.500000	44.0	49.2	200.0	H	241.0	-5.2	30.0	74
2970.000000	44.7	48.9	100.0	H	2.0	-4.2	29.3	74

Frequency (MHz)	Average (dBuV/m)	Reading value (dBuV/m)	Height (cm)	Polarization	Azimuth (deg)	Correct Factor (dB)	Margin (dB)	Limit (dBuV/m)
1176.000000	28.5	39.8	200.0	V	210.0	-11.3	25.5	54
1370.000000	28.9	39.2	200.0	H	359.0	-10.3	25.1	54
1719.000000	28.7	37.7	200.0	H	340.0	-9.0	25.3	54
2066.500000	31.6	38.4	100.0	H	67.0	-6.8	22.4	54
2476.500000	33.3	38.0	100.0	H	13.0	-4.7	20.7	54
2507.000000	33.4	38.1	200.0	H	0.0	-4.7	20.6	54

3.2 Conducted Emission

Ambient condition

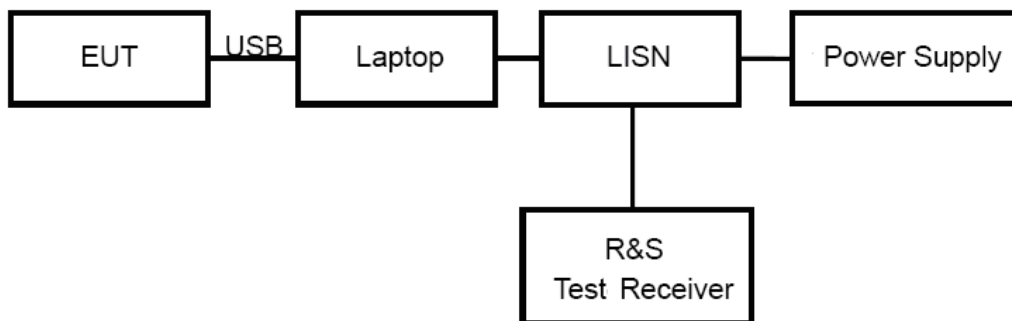
Temperature	Relative humidity	Pressure
24°C ~26°C	50%~55%	102.5kPa

Methods of Measurement

The EUT is placed on a non-metallic table of 80cm height above the horizontal metal reference ground plane. During the test, the EUT was operating in its typical mode. The test method is according to ANSI C63.4-2014. Connect the AC power line of the EUT to the L.I.S.N. Use EMI receiver to detect the average and Quasi-peak value. RBW is set to 9 kHz, VBW is set to 30kHz. The measurement result should include both L line and N line.

During the test, EUT is connected to a laptop via a USB cable in the case of Transfer Data mode. The EUT is used as the peripheral equipment of the PC. The data is transferred from EUT to PC;

Test Setup



Note: Power Supply is AC Power source and it is used to change the voltage 120V/60Hz.

Limits

Frequency (MHz)	Conducted Limits(dBμV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56 *	56 to 46 *
0.5 - 5	56	46
5 - 30	60	50

*: Decreases with the logarithm of the frequency.

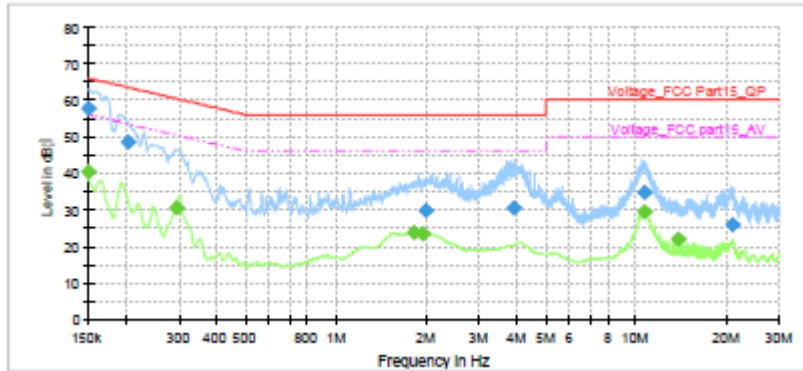
Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = 1.96$. $U = 2.57$ dB.

Test Results

Following plots, Blue trace uses the peak detection; Green trace uses the average detection.

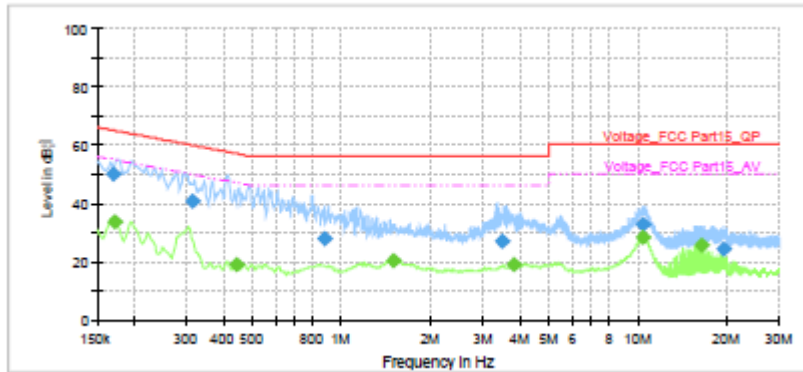
Configure 1



Frequency (MHz)	QuasiPeak (dB V)	Average (dB V)	Limit (dB V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.150000	---	40.22	56.00	15.78	1000.0	9.000	L1	ON	19.1
0.150000	57.53	---	66.00	8.47	1000.0	9.000	L1	ON	19.1
0.204000	48.53	---	63.45	14.85	1000.0	9.000	L1	ON	19.2
0.294000	---	30.29	50.41	20.13	1000.0	9.000	L1	ON	19.2
1.826250	---	23.87	46.00	22.13	1000.0	9.000	L1	ON	19.2
1.956750	---	23.46	46.00	22.54	1000.0	9.000	L1	ON	19.1
1.999500	29.89	---	56.00	26.11	1000.0	9.000	L1	ON	19.1
3.925500	30.36	---	56.00	25.64	1000.0	9.000	L1	ON	19.0
10.612500	34.81	---	60.00	25.19	1000.0	9.000	L1	ON	19.4
10.612500	---	29.40	50.00	20.60	1000.0	9.000	L1	ON	19.4
13.755750	---	21.90	50.00	28.10	1000.0	9.000	L1	ON	19.5
20.863500	25.70	---	60.00	34.30	1000.0	9.000	L1	ON	19.7

L line

Conducted Emission from 150 KHz to 30 MHz



Frequency (MHz)	QuasiPeak (dB V)	Average (dB V)	Limit (dB V)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Filter	Corr. (dB)
0.170000	49.99	---	64.96	14.97	1000.0	9.000	N	ON	19.2
0.172500	---	33.55	54.84	21.29	1000.0	9.000	N	ON	19.2
0.313250	40.84	---	59.88	19.04	1000.0	9.000	N	ON	19.2
0.442749	---	19.03	47.01	27.98	1000.0	9.000	N	ON	19.2
0.880750	28.00	---	56.00	28.00	1000.0	9.000	N	ON	19.2
1.491000	---	20.53	46.00	25.47	1000.0	9.000	N	ON	19.2
3.477500	26.81	---	56.00	29.19	1000.0	9.000	N	ON	19.0
3.795250	---	19.17	46.00	26.83	1000.0	9.000	N	ON	19.0
10.416000	---	28.15	50.00	21.85	1000.0	9.000	N	ON	19.4
10.424222	32.68	---	60.00	27.32	1000.0	9.000	N	ON	19.4
16.410702	---	25.77	50.00	24.23	1000.0	9.000	N	ON	19.4
19.388220	24.14	---	60.00	35.86	1000.0	9.000	N	ON	19.5

N line

Conducted Emission from 150 KHz to 30 MHz

4 Main Test Instrument

Name	Manufacturer	Type	Serial Number	Last Cal.	Cal. Due Date
Signal Analyzer	R&S	FSV40	15195-01-00	2018-05-20	2019-05-19
EMI Test Receiver	R&S	ESCI	100948	2018-05-20	2019-05-19
Trilog Antenna	SCHWARZBECK	VULB 9163	9163-201	2017-11-18	2019-11-17
Horn Antenna	R&S	HF907	100126	2018-07-07	2020-07-06
Horn Antenna	ETS-Lindgren	3160-09	00102643	2018-06-20	2020-06-19
Horn Antenna	STEATITE	QSH-SL-26 -40-K-15	16779	2017-07-20	2010-07-19
EMI Test Receiver	R&S	ESR	101667	2018-05-20	2019-05-19
LISN	R&S	ENV216	101171	2016-12-16	2019-12-15
Bore Sight Antenna mast	ETS	2171B	00058752	/	/
Test software	EMC32	R&S	9.26.0	/	/

*****END OF REPORT *****