



RF TEST REPORT

Applicant Huawei Technologies Co., Ltd.
FCC ID QISPOT-LX3
Product Smart Phone
Model POT-LX3
Report No. R1810H0133-R3
Issue Date November 12, 2018

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC CFR47 Part 2 (2018)/ FCC CFR47 Part 27C (2018)**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Jiang peng Lan

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Summary of Measurement Results

Number	Test Case	Clause in FCC rules	Verdict
1	Radiates Spurious Emission	2.1053 /27.53(h) /27.53(m)	PASS
Date of Testing: October 12, 2018 ~ October 13, 2018			
Note: PASS: The EUT complies with the essential requirements in the standard.			

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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Website: <http://www.ta-shanghai.com>
E-mail: xukai@ta-shanghai.com

2 General Description of Equipment under Test

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.

General information

EUT Description			
Model	POT-LX3		
IMEI	IMEI1: 868219040015296 IMEI2: 868219040018191		
Hardware Version	HL3POTM		
Software Version	5.0.1.50M(SP3C900E61R1P9log)		
Power Supply	Battery/AC adapter		
Antenna Type	Internal Antenna		
Test Mode(s)	WCDMA Band IV; LTE Band 4; LTE Band 7;		
Test Modulation	(WCDMA)QPSK; (LTE)QPSK 16QAM;		
HSDPA UE Category	10		
HSUPA UE Category	6		
DC-HSDPA UE Category	24		
HSPA+ UE Category	14		
LTE Category	4		
Rated Power Supply Voltage:	3.82V		
Extreme Voltage	Minimum: 3.6V Maximum: 4.4V		
Extreme Temperature	Lowest: -10°C Highest: +55°C		
Operating Frequency Range(s)	Mode	Tx (MHz)	Rx (MHz)
	WCDMA Band IV	1710 ~ 1755	2110 ~ 2155
	LTE Band 4	1710 ~ 1755	2110 ~ 2155
	LTE Band 7	2500 ~ 2570	2620 ~ 2690
EUT Accessory			
Adapter 1	Manufacturer: Huawei Technologies Co., Ltd. (SALCOMP(GUIGANG)CO., LTD. Model: HW-050200U02		
Adapter 2	Manufacturer: Huawei Technologies Co., Ltd. (HUIZHOU BYD ELECTRONIC CO., LTD.)		

	Model: HW-050200U02
Adapter 3	Manufacturer: Huawei Technologies Co., Ltd. (SHENZHEN HUNTKEY ELECTRIC CO., LTD.) Model: HW-050200U02
Adapter 4	Manufacturer: Huawei Technologies Co., Ltd. (Dongguan Phitek Electronics Co., Ltd.) Model: HW-050200U02
Adapter 5	Manufacturer: Huawei Technologies Co., Ltd. (HUIZHOU BYD ELECTRONIC CO., LTD.) Model: HW-050200U01
Adapter 6	Manufacturer: Huawei Technologies Co., Ltd. (SHENZHEN HUNTKEY ELECTRIC CO., LTD.) Model: HW-050200U01
Adapter 7	Manufacturer: Huawei Technologies Co., Ltd. (Dongguan Phitek Electronics Co., Ltd.) Model: HW-050200U01
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

Note: The information of the EUT is declared by the manufacturer.

2. There is more than one Adapter, one Earphone, one USB cable and one Battery, each one



should be applied throughout the compliance test respectively, and however, only the worst case (Adapter 3, Earphone2, USB cable 3, Battery 4) will be recorded in this report.

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

Note: Customer declaration, four configurations is the same, except for memory and SIM card slot. There are more than one Configuration, each one should be applied throughout the compliance test respectively, however, only the worst case (Configure 1) will be recorded in this report.

3 Applied Standards

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

Test standards

FCC CFR47 Part 2 (2018)

FCC CFR47 Part 27C (2018)

ANSI C63.26 (2015)

KDB 971168 D01 Power Meas License Digital Systems v03r01

4 Test Configuration

Radiated measurements are performed by rotating the EUT in three different orthogonal test planes. EUT stand-up position (Z axis), lie-down position (X, Y axis). Receiver antenna polarization (horizontal and vertical), the worst emission was found in position (X axis, horizontal polarization) and the worst case was recorded.

All mode and data rates and positions and RB size and modulations were investigated. Subsequently, only the worst case emissions are reported.

The following testing in WCDMA/LTE is set based on the maximum RF Output Power.

The following testing in different Bandwidth is set to detail in the following table:

Test modes are chosen to be reported as the worst case configuration below for WCDMA Band IV:

Test items	Modes/Modulation
	WCDMA Band IV
Radiates Spurious Emission	RMC

Test modes are chosen to be reported as the worst case configuration below for LTE Band 4/7:

Test items	Modes	Bandwidth (MHz)						Modulation		RB			Test Channel		
		1.4	3	5	10	15	20	QPSK	16QAM	1	50%	100%	L	M	H
Radiates Spurious Emission	LTE 4	O	-	O	-	-	O	O	-	O	-	-	-	O	-
	LTE 7	-	-	O	-	-	O	O	-	O	-	-	-	O	-
Note	1. The mark "O" means that this configuration is chosen for testing. 2. The mark "-" means that this configuration is not testing.														

5 Test Case Results

5.1 Radiates Spurious Emission

Ambient condition

Temperature	Relative humidity	Pressure
23°C ~25°C	45%~50%	101.5kPa

Method of Measurement

1. The testing follows FCC KDB 971168 D01 v03r01 Section 5.8 and ANSI C63.26 (2015).
2. Above 30MHz: The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H). Above 1GHz: (Note: the FCC's permission to use 1.5m as an alternative per TCBC Conf call of Dec. 2, 2014.) The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).
3. A log-periodic antenna or horn antenna shall be substituted in place of the EUT. The log-periodic antenna will be driven by a signal generator and the level will be adjusted till the same power value on the spectrum analyzer or receiver. The level of the spurious emissions can be calculated through the level of the signal generator, cable loss, the gain of the substitution antenna and the reading of the spectrum analyzer or receiver.
4. The EUT is then put into continuously transmitting mode at its maximum power level during the test. Set Test Receiver or Spectrum RBW=1MHz, VBW=3MHz for above 1GHz and RBW=100kHz, VBW=300kHz for 30MHz to 1GHz,, And the maximum value of the receiver should be recorded as (Pr).
5. The EUT shall be replaced by a substitution antenna. In the chamber, an substitution antenna for the frequency band of interest is placed at the reference point of the chamber. An RF Signal source for the frequency band of interest is connected to the substitution antenna with a cable that has been constructed to not interfere with the radiation pattern of the antenna. A power (PMea) is applied to the input of the substitution antenna, and adjust the level of the signal generator output until the value of the receiver reach the previously recorded (Pr). The power of signal source (PMea) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.
6. A amplifier should be connected to the Signal Source output port. And the cable should be connect between the Amplifier and the Substitution Antenna. The cable loss (Pcl) ,the Substitution Antenna Gain (Ga) and the Amplifier Gain (PAg) should be recorded after test.
7. The measurement results are obtained as described below:

$$\text{Power(EIRP)} = \text{PMea} - \text{PAg} - \text{Pcl} + \text{Ga}$$

The measurement results are amend as described below:

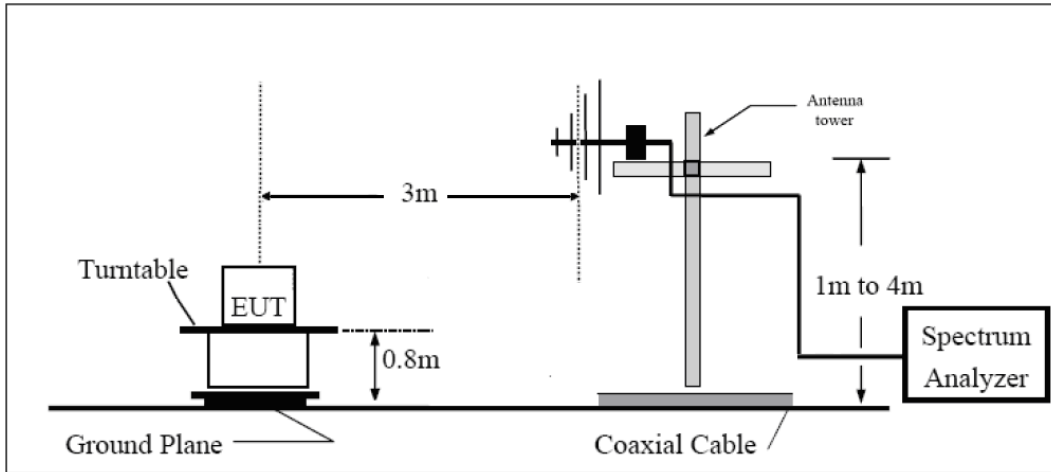
$$\text{Power(EIRP)} = P_{\text{Mea}} - P_{\text{Cl}} + G_a$$

8. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole, $\text{ERP} = \text{EIRP} - 2.15\text{dBi}$.

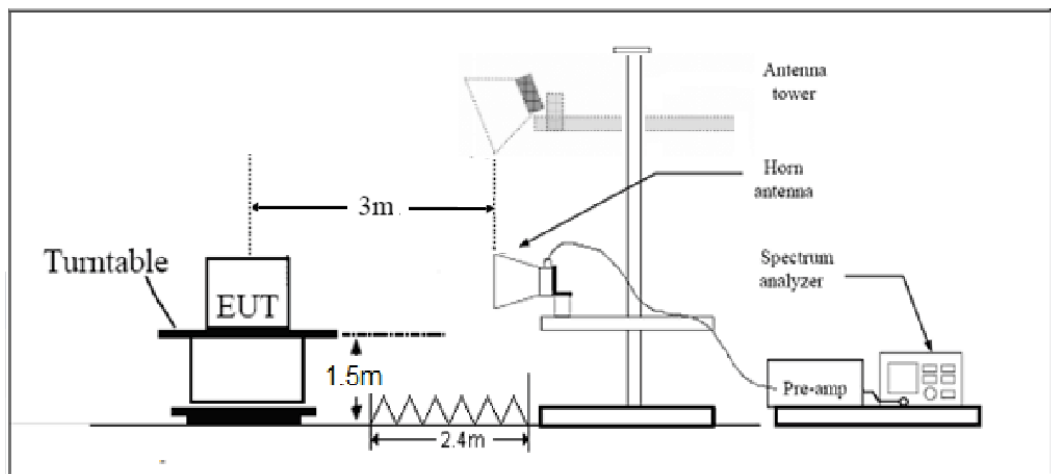
The modulation mode and RB allocation refer to section 5.1, using the maximum output power configuration.

Test setup

30MHz~~~ 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m



Limits

Rule Part 27.53(h) specifies that “for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}(P)$ dB..”

Rule Part 27.53(m) $55 + 10 \log(P)$ dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(4) of this section.

Part 27.53(a)/(h)/(g) Limit	-13 dBm
Part 27.53(m) Limit	-25 dBm

Measurement Uncertainty

The assessed measurement uncertainty to ensure 95% confidence level for the normal distribution is with the coverage factor $k = \pm 1.96$, $U = \pm 3.55$ dB.

Test Result

Sweep the whole frequency band through the range from 9kHz to the 10th harmonic of the carrier, the emissions more than 20 dB below the limit are not reported.

Configure 1
Antenna 1

WCDMA Band IV CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.2	-66.75	2.6	10.75	Horizontal	-58.60	-13.00	45.60	225
3	5197.8	-62.25	2.4	11.05	Horizontal	-53.60	-13.00	40.60	90
4	6930.4	-58.05	4.5	11.15	Horizontal	-51.40	-13.00	38.40	135
5	8663.0	-54.90	5.1	11.35	Horizontal	-48.65	-13.00	35.65	45
6	10395.6	-52.28	5.3	11.95	Horizontal	-45.63	-13.00	32.63	45
7	12128.2	-52.73	5.5	13.55	Horizontal	-44.68	-13.00	31.68	180
8	13860.8	-52.31	6.3	13.75	Horizontal	-44.86	-13.00	31.86	90
9	15593.4	-54.80	6.7	13.85	Horizontal	-47.65	-13.00	34.65	135
10	17326.0	-51.66	6.8	14.25	Horizontal	-44.21	-13.00	31.21	135

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

LTE Band 4 QPSK 1.4MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3464.3	-64.57	2.6	10.75	Horizontal	-56.42	-13.00	43.42	270
3	5197.5	-61.45	2.4	11.05	Horizontal	-52.80	-13.00	39.80	45
4	6930.0	-56.14	4.5	11.15	Horizontal	-49.49	-13.00	36.49	90
5	8662.5	-54.51	5.1	11.35	Horizontal	-48.26	-13.00	35.26	45
6	10395.0	-55.71	5.3	11.95	Horizontal	-49.06	-13.00	36.06	225
7	12127.5	-53.22	5.5	13.55	Horizontal	-45.17	-13.00	32.17	225
8	13860.0	-51.97	6.3	13.75	Horizontal	-44.52	-13.00	31.52	315
9	15592.5	-52.15	6.7	13.85	Horizontal	-45.00	-13.00	32.00	45
10	17325.0	-50.91	6.8	14.25	Horizontal	-43.46	-13.00	30.46	225

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

LTE Band 4 QPSK 5MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3460.5	-63.56	2.6	10.75	Horizontal	-55.41	-13.00	42.41	45
3	5191.5	-62.05	2.4	11.05	Horizontal	-53.40	-13.00	40.40	225
4	6930.0	-56.33	4.5	11.15	Horizontal	-49.68	-13.00	36.68	0
5	8662.5	-54.36	5.1	11.35	Horizontal	-48.11	-13.00	35.11	270
6	10395.0	-52.98	5.3	11.95	Horizontal	-46.33	-13.00	33.33	315
7	12127.5	-53.20	5.5	13.55	Horizontal	-45.15	-13.00	32.15	90
8	13860.0	-51.57	6.3	13.75	Horizontal	-44.12	-13.00	31.12	45
9	15592.5	-50.48	6.7	13.85	Horizontal	-43.33	-13.00	30.33	225
10	17325.0	-51.17	6.8	14.25	Horizontal	-43.72	-13.00	30.72	225

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

LTE Band 4 QPSK 20MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.0	-65.57	2.6	10.75	Horizontal	-57.42	-13.00	44.42	225
3	5170.9	-61.99	2.4	11.05	Horizontal	-53.34	-13.00	40.34	0
4	6930.0	-56.86	4.5	11.15	Horizontal	-50.21	-13.00	37.21	315
5	8662.5	-55.67	5.1	11.35	Horizontal	-49.42	-13.00	36.42	45
6	10395.0	-52.94	5.3	11.95	Horizontal	-46.29	-13.00	33.29	45
7	12127.5	-54.17	5.5	13.55	Horizontal	-46.12	-13.00	33.12	225
8	13860.0	-51.48	6.3	13.75	Horizontal	-44.03	-13.00	31.03	90
9	15592.5	-53.24	6.7	13.85	Horizontal	-46.09	-13.00	33.09	225
10	17325.0	-50.62	6.8	14.25	Horizontal	-43.17	-13.00	30.17	45

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.
2. The worst emission was found in the antenna is Horizontal position.

LTE Band 7 QPSK 5MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5065.8	-60.72	2.00	9.15	Horizontal	-53.57	-25.00	28.57	45
3	7598.6	-59.45	2.50	11.35	Horizontal	-50.60	-25.00	25.60	135
4	10130.6	-53.05	4.20	12.05	Horizontal	-45.20	-25.00	20.20	315
5	12675.0	-51.97	5.20	12.85	Horizontal	-44.32	-25.00	19.32	45
6	15210.0	-54.70	5.50	14.23	Horizontal	-45.97	-25.00	20.97	225
7	17745.0	-53.42	5.70	14.15	Horizontal	-44.97	-25.00	19.97	90
8	20280.0	--	--	--	--	--	--	--	--
9	22815.0	--	--	--	--	--	--	--	--
10	25350.0	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Horizontal position.

LTE Band 7 QPSK 20MHz CH-Middle, RB 1

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	5052.4	-61.81	2.00	10.15	Horizontal	-53.66	-25.00	28.66	225
3	7605.0	-58.43	2.50	11.35	Horizontal	-49.58	-25.00	24.58	315
4	10140.0	-54.93	4.20	12.05	Horizontal	-47.08	-25.00	22.08	45
5	12675.0	-55.25	5.20	14.85	Horizontal	-45.60	-25.00	20.60	225
6	15210.0	-53.83	5.50	13.23	Horizontal	-46.10	-25.00	21.10	225
7	17745.0	-53.27	5.70	12.15	Horizontal	-46.82	-25.00	21.82	45
8	20280.0	--	--	--	--	--	--	--	--
9	22815.0	--	--	--	--	--	--	--	--
10	25350.0	--	--	--	--	--	--	--	--

Note: 1.The other Spurious RF Radiated emissions level is no more than noise floor.

2. The worst emission was found in the antenna is Horizontal position.

Antenna 2

WCDMA Band IV CH-Middle

Harmonic	Frequency (MHz)	SG (dBm)	Cable Loss (dB)	Gain (dBi)	Antenna Polarization	EIRP Level (dBm)	Limit (dBm)	Margin (dB)	Azimuth (deg)
2	3465.2	-64.86	2.6	10.75	Horizontal	-56.71	-13.0	43.71	225
3	5197.8	-62.65	2.4	11.05	Horizontal	-54.00	-13.0	41.00	90
4	6930.4	-56.88	4.5	11.15	Horizontal	-50.23	-13.0	37.23	135
5	8663.0	-54.51	5.1	11.35	Horizontal	-48.26	-13.0	35.26	45
6	10395.6	-52.95	5.3	11.95	Horizontal	-46.30	-13.0	33.30	45
7	12128.2	-53.96	5.5	13.55	Horizontal	-45.91	-13.0	32.91	180
8	13860.8	-52.09	6.3	13.75	Horizontal	-44.64	-13.0	31.64	90
9	15593.4	-53.30	6.7	13.85	Horizontal	-46.15	-13.0	33.15	135
10	17326.0	-51.75	6.8	14.25	Horizontal	-44.30	-13.0	31.30	135

Note: 1. The other Spurious RF Radiated emissions level is no more than noise floor.
 2. The worst emission was found in the antenna is Horizontal position.

6 Main Test Instruments

Name	Manufacturer	Type	Serial Number	Calibration Date	Expiration Date
Base Station Simulator	R&S	CMW500	113824	2018-05-20	2019-05-19
Power Splitter	Hua Xiang	SHX-GF2-2-13	10120101	/	/
Spectrum Analyzer	Key sight	N9010A	MY50210259	2018-05-20	2019-05-19
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
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2017-09-26	2019-09-25
Trilog Antenna	SCHWARZBECK	VUBL 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
Signal generator	R&S	SMB 100A	102594	2018-05-20	2019-05-19
Climatic Chamber	ESPEC	SU-242	93000506	2017-12-17	2020-12-16
Preamplifier	R&S	SCU18	102327	2018-05-20	2019-05-19
MOB COMMS DC SUPPLY	Keysight	66319D	MY43004105	2018-05-21	2019-05-20
RF Cable	Agilent	SMA 15cm	0001	/	/
Software	R&S	EMC32	9.26.0	/	/

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