



# RF TEST REPORT

**Applicant**      Huawei Technologies Co., Ltd.

**FCC ID**      QISJKM-LX3

**Product**      Smart Phone

**Model**      JKM-LX3

**Report No.**      R1807H0096-R3

**Issue Date**      August 30, 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.

*Jiangpeng Lan*

Performed by: Jiangpeng Lan

*Kai Xu*

Approved by: Kai Xu

## TA Technology (Shanghai) Co., Ltd.

No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China

TEL: +86-021-50791141/2/3

FAX: +86-021-50791141/2/3-8000



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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: August 2, 2018 ~ August 12, 2018			
Note: PASS: The EUT complies with the essential requirements in the standard. FAIL: The EUT does not comply 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  
Country: P. R. China  
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](mailto: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	JKM-LX3		
IMEI	SIM 1:866861040004689 SIM 2:866861040004960		
Hardware Version	HL3JKMM		
Software Version	JKM-LX3 5.0.1.33(C900)		
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	24		
HSUPA UE Category	6		
DC-HSDPA UE Category	24		
LTE Category	4		
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
Adapter 1	Manufacturer: SALCOMP(GUIGANG)CO.,LTD Model: HW-050200U02 SN: K95501J3N00047		
Adapter 2	Manufacturer: HUIZHOU BYD ELECTRONIC CO., LTD. Model: HW-050200U02 SN: B95532J5T00027		
Adapter 3	Manufacturer: SHENZHEN HUNTPKEY ELECTRIC CO., LTD. Model: HW-050200U02 SN: H955KAJ4M00140		



Adapter 4	Manufacturer: Donguan Phitek Electronics Co., Ltd. Model: HW-050200U02 SN: P95521J6200050
Adapter 5	Manufacturer: HUIZHOU BYD ELECTRONIC CO., LTD. Model: HW-050200U01 SN: 878697J4J02221
Adapter 6	Manufacturer: SHENZHEN HUNTKEY ELECTRIC CO., LTD. Model: HW-050200U01 SN: H786K9J4V01335
Adapter 7	Manufacturer: Donguan Phitek Electronics Co., Ltd. Model: HW-050200U01 SN: P78621J4278849
Battery 1	Manufacturer: HuaweiTechnologies Co., Ltd. (Manufacturer: SCUD) Model: HB406689ECW SN: 2791ACI708900020
Battery 2	Manufacturer: HuaweiTechnologies Co., Ltd. (Manufacturer: Desay) Model: HB406689ECW SN: 2791AYI717X00018
Earphone 1	Manufacturer: GoerTek Inc Model: HA1-3W
Earphone 2	Manufacturer: Jiangxi Lianchuang Hongsheng Electronic Co.,LTD Model: MEMD1532B528A00
Earphone 3	Manufacturer: BOLUO COUNTY QUANCHENG ELECTRONIC CO.,LTD Model: 1293-3283-3.5mm-300
Earphone 4	Manufacturer: FOXCONN INTERCONNECT TECHNOLOGY LIMITED Model: EPAB542-2WH03-DH
Earphone 5	Manufacturer: Jiangxi Lianchuang Hongsheng Electronic Co. ,LTD Model: MEND1532B528A02
Earphone 6	Manufacturer: Boluo County Quancheng Electronic Co.,ltd Model: 11293-3283-3.5mm-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: 1. The information of the EUT is declared by the manufacturer. 2. There is more than one Adapter/ SIM /USB cable/ Battery/Earphone, each one should be applied throughout the compliance test respectively, and however, only the worst case (Adapter 1/SIM 1/USB cable 4/ Battery 2/Earphone 2) will be recorded in this report.	

## More details information with earphone

HUAWEI code	22040300	22040322
Manufactory	1.Lianchuang 2.QUANCHENG 3.FOXCONN 4.GoerTek	1.Lianchuang 2.QUANCHENG
model	1. MEMD1532B528A00 2. 1293-3283-3.5mm-300 3.EPAB542-2WH03-DH 4. HA1-3W	1. MEND1532B528A02 2. 1293-3283-3.5mm-322
PCB	The PCB of the same Manufactory is the same	The PCB of the same Manufactory is the same
Appearance		 1.change the plastic of earphone head 2.remove the CE label



### 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, vertical 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 detailin 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:  
Power(EIRP)=PMea- PAg - Pcl + Ga

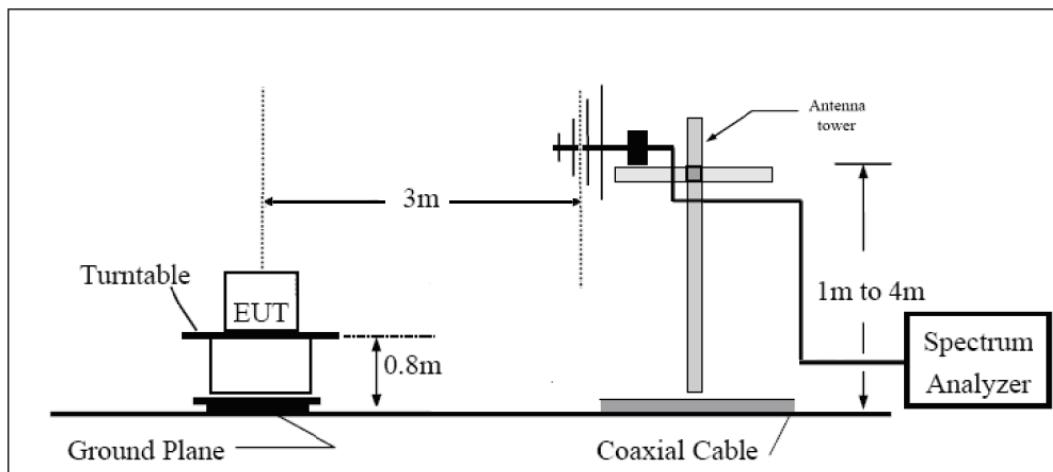
The measurement results are amend as described below:

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

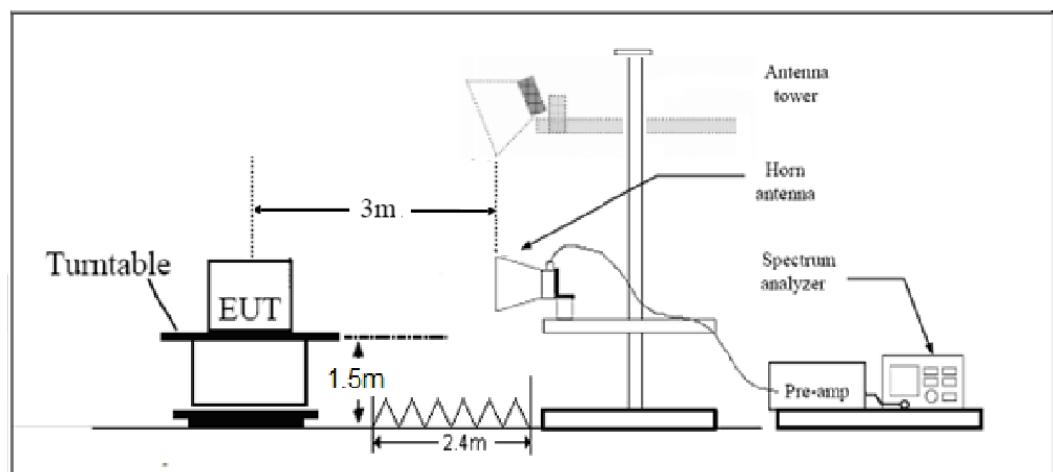
8. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP-2.15dBi.

### Test setup

30MHz~~~ 1GHz



Above 1GHz



Note: Area side:2.4mX3.6m

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.



## 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 27.5(h) 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 30MHz to the 10th harmonic of the carrier, the emissions below the noise floor will not be recorded in the report.

**Main-Antenna**

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	-56.55	2.00	10.15	Vertical	-48.4	-13.0	35.4	270
3	5197.8	-60.45	2.50	11.35	Vertical	-51.6	-13.0	38.6	90
4	6930.4	-56.75	4.20	12.05	Vertical	-48.9	-13.0	35.9	45
5	8663.0	-56.35	5.20	14.85	Vertical	-46.7	-13.0	33.7	45
6	10395.6	-50.23	5.50	13.23	Vertical	-42.5	-13.0	29.5	0
7	12128.2	-48.35	5.70	12.15	Vertical	-41.9	-13.0	28.9	0
2	13860.8	-48.05	2.00	10.15	Vertical	-39.9	-13.0	26.9	315
3	15593.4	-51.45	2.50	11.35	Vertical	-42.6	-13.0	29.6	270
4	17326.0	-47.25	4.20	12.05	Vertical	-39.4	-13.0	26.4	315

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	-54.15	2.6	10.75	Vertical	-46.0	-13.0	33.0	0
3	5197.5	-53.65	2.4	11.05	Vertical	-45.0	-13.0	32.0	315
4	6930.0	-55.15	4.5	11.15	Vertical	-48.5	-13.0	35.5	270
5	8662.5	-51.95	5.1	11.35	Vertical	-45.7	-13.0	32.7	270
6	10395.0	-49.35	5.3	11.95	Vertical	-42.7	-13.0	29.7	90
7	12127.5	-51.55	5.5	13.55	Vertical	-43.5	-13.0	30.5	45
8	13860.0	-48.25	6.3	13.75	Vertical	-40.8	-13.0	27.8	0
9	15592.5	-48.55	6.7	13.85	Vertical	-41.4	-13.0	28.4	315
10	17325.0	-47.05	6.8	14.25	Vertical	-39.6	-13.0	26.6	270

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	3464.3	-57.25	2.6	10.75	Vertical	-49.1	-13.0	36.1	45
3	5197.5	-60.25	2.4	11.05	Vertical	-51.6	-13.0	38.6	45
4	6930.0	-54.95	4.5	11.15	Vertical	-48.3	-13.0	35.3	0
5	8662.5	-53.05	5.1	11.35	Vertical	-46.8	-13.0	33.8	0
6	10395.0	-49.85	5.3	11.95	Vertical	-43.2	-13.0	30.2	315
7	12127.5	-50.15	5.5	13.55	Vertical	-42.1	-13.0	29.1	270
8	13860.0	-48.35	6.3	13.75	Vertical	-40.9	-13.0	27.9	270
9	15592.5	-48.55	6.7	13.85	Vertical	-41.4	-13.0	28.4	90
10	17325.0	-47.05	6.8	14.25	Vertical	-39.6	-13.0	26.6	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 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	3464.3	-54.65	2.6	10.75	Vertical	-46.5	-13.0	33.5	90
3	5197.5	-52.45	2.4	11.05	Vertical	-43.8	-13.0	30.8	45
4	6930.0	-55.25	4.5	11.15	Vertical	-48.6	-13.0	35.6	45
5	8662.5	-53.25	5.1	11.35	Vertical	-47.0	-13.0	34.0	0
6	10395.0	-49.95	5.3	11.95	Vertical	-43.3	-13.0	30.3	0
7	12127.5	-51.05	5.5	13.55	Vertical	-43.0	-13.0	30.0	315
8	13860.0	-48.65	6.3	13.75	Vertical	-41.2	-13.0	28.2	270
9	15592.5	-47.65	6.7	13.85	Vertical	-40.5	-13.0	27.5	90
10	17325.0	-46.85	6.8	14.25	Vertical	-39.4	-13.0	26.4	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	-56.45	2.00	9.15	Vertical	-49.3	-25.0	24.3	45
3	7598.6	-56.05	2.50	11.35	Vertical	-47.2	-25.0	22.2	270
4	10130.6	-50.95	4.20	12.05	Vertical	-43.1	-25.0	18.1	90
5	12675.0	-49.55	5.20	12.85	Vertical	-41.9	-25.0	16.9	45
6	15210.0	-50.03	5.50	14.23	Vertical	-41.3	-25.0	16.3	270
7	17745.0	-48.15	5.70	14.15	Vertical	-39.7	-25.0	14.7	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	5065.8	-61.35	2.00	10.15	Vertical	-53.2	-25.0	28.2	45
3	7598.6	-55.05	2.50	11.35	Vertical	-46.2	-25.0	21.2	270
4	10130.6	-51.45	4.20	12.05	Vertical	-43.6	-25.0	18.6	90
5	12675.0	-51.35	5.20	14.85	Vertical	-41.7	-25.0	16.7	45
6	15210.0	-48.83	5.50	13.23	Vertical	-41.1	-25.0	16.1	270
7	17745.0	-45.75	5.70	12.15	Vertical	-39.3	-25.0	14.3	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.



## Second -Antenna

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	-62.15	2.00	10.15	Vertical	-54.0	-13.0	41.0	270
3	5197.8	-60.85	2.50	11.35	Vertical	-52.0	-13.0	39.0	90
4	6930.4	-57.25	4.20	12.05	Vertical	-49.4	-13.0	36.4	45
5	8663.0	-57.35	5.20	14.85	Vertical	-47.7	-13.0	34.7	45
6	10395.6	-50.43	5.50	13.23	Vertical	-42.7	-13.0	29.7	0
7	12128.2	-49.75	5.70	12.15	Vertical	-43.3	-13.0	30.3	0
2	13860.8	-48.85	2.00	10.15	Vertical	-40.7	-13.0	27.7	315
3	15593.4	-51.45	2.50	11.35	Vertical	-42.6	-13.0	29.6	270
4	17326.0	-47.75	4.20	12.05	Vertical	-39.9	-13.0	26.9	315

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	113645	2018-05-20	2019-05-19
Loop Antenna	SCHWARZBECK	FMZB1519	1519-047	2014-12-06	2019-12-05
Trilog Antenna	SCHWARZBECK	VUBL 9163	9163-201	2017-11-18	2020-11-17
Horn Antenna	R&S	HF907	100126	2014-12-06	2019-12-05
Horn Antenna	ETS-Lindgren	3160-09	00102643	2015-01-30	2020-01-29
Preamplifier	R&S	SCU18	102327	2018-05-20	2019-05-19
Signal Generator	R&S	SMB100A	102594	2018-05-20	2019-05-19
Software	R&S	EMC32	V9.26.0	/	/

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