TESTREPORT

No. I15N00284-3G-RF

for

Huawei Technologies Co., Ltd.

Smart Phone

Model Name: HUAWEI ALE-L02, ALE-L02

FCC ID: QISALE-L02

with

Hardware Version: HL3ALICEM

Software Version: ALE-L02 V100R001C900B045

Issued Date: 2015-04-10

Test Laboratory:

FCC 2.948 Listed: No.342690

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

Test Laboratory:

CTTL, Telecommunication Technology Labs, Academy of Telecommunication Research, MIIT

No.52, HuayuanNorth Road, Haidian District, Beijing, P. R. China 100191.

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REPORT HISTORY

Report Number	Revision	Description	Issue Date
I15N00284-3G-RF	Rev.0	1st edition	2015-04-10

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1. Test Laboratory

1.1. Testing Location

Address of Shenzhen:

Company Name:	CTTL ShenZhen,Telecommunication Technology Labs, Academy of Telecommunication Research, MIIT
Address:	No. 12 Building, Shangsha Innovation and Technology Park, Futian District
Postal Code:	518048
Telephone:	+86(0)755-33322000
Fax:	+86(0)755-33322001

Address of Beijing:

Company Name:	CTTL Telecommunication Technology Labs, Academy of Telecommunication Research, MIIT
Address:	Building Shouxiang, No.51, Xueyuan Road, Haidian District, Beijing, China
Postal Code:	100191
Telephone:	+86(0)10-62304633
Fax:	+86(0)10-62304633

1.2. Testing Environment

Normal Temperature:	15-35℃
Relative Humidity:	20-75%

1.3. Project data

Testing Start Date:	2015-04-08
Testing End Date:	2015-04-10

1.4. Signature

Lai Minghua

(Prepared this test report)

Shen Shaoming

(Reviewed this test report)

Ma Zhiguo

Deputy Director of the laboratory

(Approved this test report)

2. Client Information

2.1. Applicant Information

Company Name:	Huawei Technologies Co., Ltd.
Address /Post:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
City:	ShenZhen
Postal Code:	518129
Country:	China
Telephone:	+86 029-89282965

2.2. Manufacturer Information

Company Name:	Huawei Technologies Co., Ltd.
Address /Post:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
City:	ShenZhen
Postal Code:	518129
Country:	China
Telephone:	+86 029-89282965

3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description	Smart Phone
Model Name	HUAWEI ALE-L02, ALE-L02
Marketing Name	/
FCC ID	QISALE-L02
Frequency	GSM850; PCS1900; WCDMA Band V;LTE Band V;LTE Band VII
Extreme vol. Limits	3.6VDC to 4.35VDC (nominal: 3.8VDC)
Extreme temp. Tolerance	-30°C to +50°C

3.2. Internal Identification of EUT used during the test

EUT ID*	SN or IMEI	HW Version	SW Version
N01	/	HL3ALICEM	ALE-L02 V100R001C900B045

*EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	SN
AE1	Battery	/

AE1

Model	HB3742A0EZC+
Capacity	2200mAh
Manufacturer	1.SCUD (FUJIAN) Electronics Co., Ltd. 2.Sunwoda Electronic Co., LTD.

*AE ID: is used to identify the test sample in the lab internally.

3.4. EUT set-ups

EUT set-up No.	Combination of EUT and AE	Remarks
Set.1	EUT1+ AE1	Charging mode

4. Reference Documents

4.1. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version
FCC Part 22	PUBLIC MOBILE SERVICES	2014
ANSI/TIA-603-D	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards	2010
KDB971168 D01	Procedures for Compliance Measurement of the Fundamental Emission Power of Licensed Wideband (> 1 MHz) Digital Transmission Systems	2014
FCC Part 2	Frequency Allocations and Radio Treaty Matters;General Rules and Regulations	2014

5. LABORATORY ENVIRONMENT

Semi-anechoic chamber (11.20 meters×6.10meters×5.60meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 30 ℃
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	>2MΩ
Ground system resistance	<0.5Ω
Normalised site attenuation (NSA)	<±3.5 dB, 3 m distance, from 30 to 1000 MHz
Uniformity of field strength	Between 0 and 6 dB, from 80 to 3000 MHz

Control room did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 35℃
Relative humidity	Min. =20 %, Max. = 80 %
Shielding effectiveness	> 110 dB
Electrical insulation	>2MΩ
Ground system resistance	<0.5Ω

Conducted chamber did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 30 ℃
Relative humidity	Min. =35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	>2MΩ
Ground system resistance	<0.5Ω

Fully-anechoic chamber (11.20 meters×6.10 meters×6.60 meters) did not exceed following limits along the EMC testing:

Temperature	Min. = 15 ℃, Max. = 30 ℃
Relative humidity	Min. = 35 %, Max. = 60 %
Shielding effectiveness	> 110 dB
Electrical insulation	>2MΩ
Ground system resistance	<0.5Ω
VoltageStandingWaveRatio （VSWR）	≤ 6 dB, from 1 to 6GHz， 3 m distance

6. SUMMARY OF TEST RESULTS

Abbreviations used in this clause:	
P	Pass
NA	Not applicable
F	Fail

Items	List	Clause in FCC rules	Verdict
1	Output Power	22.913(a)	P
2	Emission Limit	2.1051/22.917	P
3	Conducted Emission	15.107/15.207	P
4	Frequency Stability	2.1055	P
5	Occupied Bandwidth	2.1049(h)(i)	P
6	Emission Bandwidth	22.917(b)	P
7	Band Edge Compliance	22.917(b)	P
8	Conducted SpuriousEmission	2.1057/22.917	P
9	PEAK-TO-AVERAGE POWER RATIO	KDB971168	P

Note: a.Items of conducted are tested in the address of Shenzhen; items of radiated are tested in the address of Beijing; b.All of items are same to the HUAWEI ALE-L23, ALE-L23.

7. Test Equipments Utilized

NO.	Description	TYPE	SERIES NUMBER	MANUFACTURE	CAL DUE DATE
1	Test Receiver	ESU26	100235	R&S	2016.03.02
2	Universal Radio Communication Tester	E5515C	MY48361083	Agilent	2016.02.27
3	Spectrum Analyzer	E4440A	MY48250642	Agilent	2016.03.02
4	Signal Generator	N5183A	MY49060052	Agilent	2016.03.02
5	Universal Radio Communication Tester	CMU200	Rohde&Schwarz	123210	2016.01.03
6	Spectrum Analyzer	FSU	Rohde&Schwarz	101506	2016.01.03
7	Temperature Chamber	SH-241	ESPEC	92007516	2016.01.08
8	DC Power Supply	U3606A	Agilent Technologies	MY50450012	2015.11.11
9	RF Switch Matrix	OSP130	Rohde&Schwarz	100086	2016.01.03
10	Vector Signal Generator	SMU200A	Rohde&Schwarz	104800	2016.01.03
11	Signal Generator	SMF100A	Rohde&Schwarz	102406	2016.01.03

ANNEX A: MEASUREMENT RESULTS

A.1 OUTPUT POWER

A.1.1 Summary

During the process of testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication tester (CMU-200) to ensure max power transmission and proper modulation.
This result contains peak output power and EIRP measurements for the EUT.In all cases, output power is within the specified limits.

A.1.2 Conducted

A.1.2.1 Method of Measurements

The EUT was set up for the max output power with pseudo random data modulation.
The power was measured with Rhode & Schwarz Spectrum Analyzer FSP (peak)
These measurements were done at 3 frequencies, 826.4MHz, 836.6MHz and 846.6MHz for WCDMA Band V (bottom, middle and top of operational frequency range).

Limit

According to FCC§2.1046.

A.1.2.2 Test Condition

RBW	VBW	Sweep Time	Span
10MHz	10MHz	800ms	50MHz

WCDMA Band V

Measurement result

	CH	Frequency(MHz)	output power(dBm)
WCDMA (Band V)	4132	826.4	23.40
	4183	836.6	23.46
	4233	846.6	23.24

HSUPA

WCDMA Band V

Measurement result

	CH	Frequency(MHz)	output power(dBm)
WCDMA (Band V)	4132	826.4	22.83
	4183	836.6	22.82
	4233	846.6	22.73

HSDPA

WCDMA Band V

Measurement result

	CH	Frequency(MHz)	output power(dBm)
WCDMA (Band V)	4132	826.4	22.88
	4183	836.6	23.01
	4233	846.6	22.79

A.1.3 Radiated

A.1.3.1 Description

This is the test for the maximum radiated power from the EUT.

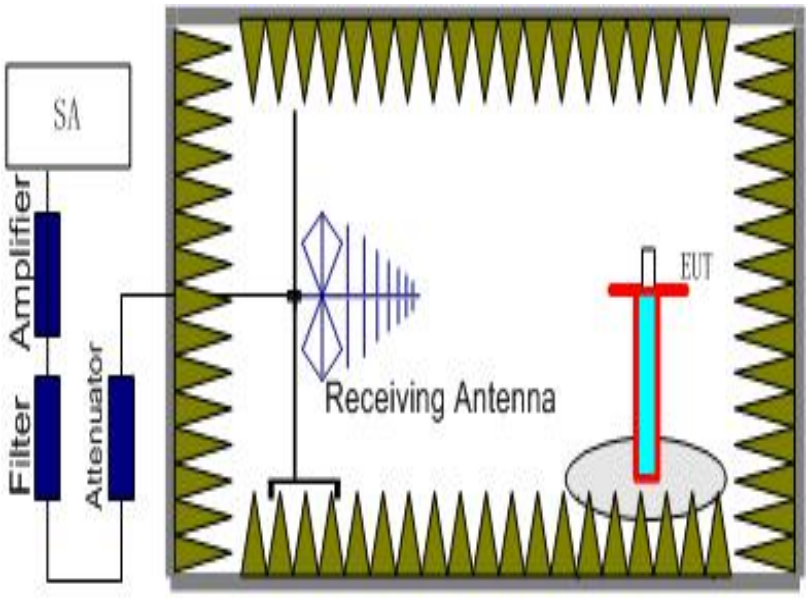
Rule Part 24.232(c) specifies, "Mobile/portable stations are limited to 2 watts e.i.r.p. Peak power" and 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage."

Rule Part 22.913(a) specifies " The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts."

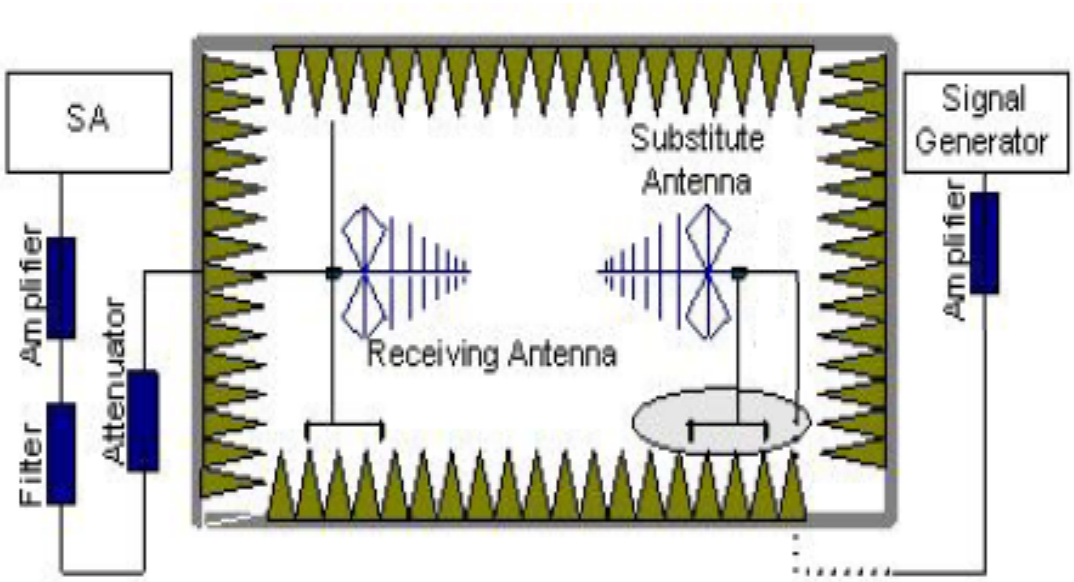
A.1.3.2 Method of Measurement

The measurements procedures in TIA-603D-2010 are used.

1. EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.5m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUTthrough 360°and adjusting the receiving antenna polarization. The radiated emission measurements of all transmit frequenciesin three channels (High, Middle, Low) were measured with peak detector.



2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (Pr).
3. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.



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 (P_{Mea}) is applied to the input of the substitution antenna, and adjust the level of thesignal generator output until the value of the receiver reach thepreviously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

4. 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 (P_{cl}) ,the Substitution Antenna Gain (G_a) and the Amplifier Gain (P_{Ag}) should be recorded after test.
   The measurement results are obtained as described below:
   Power(EIRP)=P_{Mea}-P_{Ag} - P_{cl} - G_a
5. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
6. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dBi.

Note: the results contains vertical part and Horizontal part

WCDMA Band V-ERP

Limits

	Burst Peak EIRP (dBm)
WCDMA Band V	≤38.45dBm

Measurement result

Frequency(MHz)	P_{Mea}(dBm)	P_{cl}(dB)	P_{Ag}(dB)	G_a Antenna Gain(dB)	Correction (dB)	ERP(dBm)	Polarization
826.4	-21.28	2.25	-45.76	-0.93	2.15	21.01	H
836.6	-21.05	2.26	-45.66	-0.82	2.15	21.02	H
846.6	-21.11	2.26	-45.56	-0.81	2.15	20.85	V

ANALYZER SETTINGS: RBW = VBW = 5MHz

A.2 EMISSION LIMIT

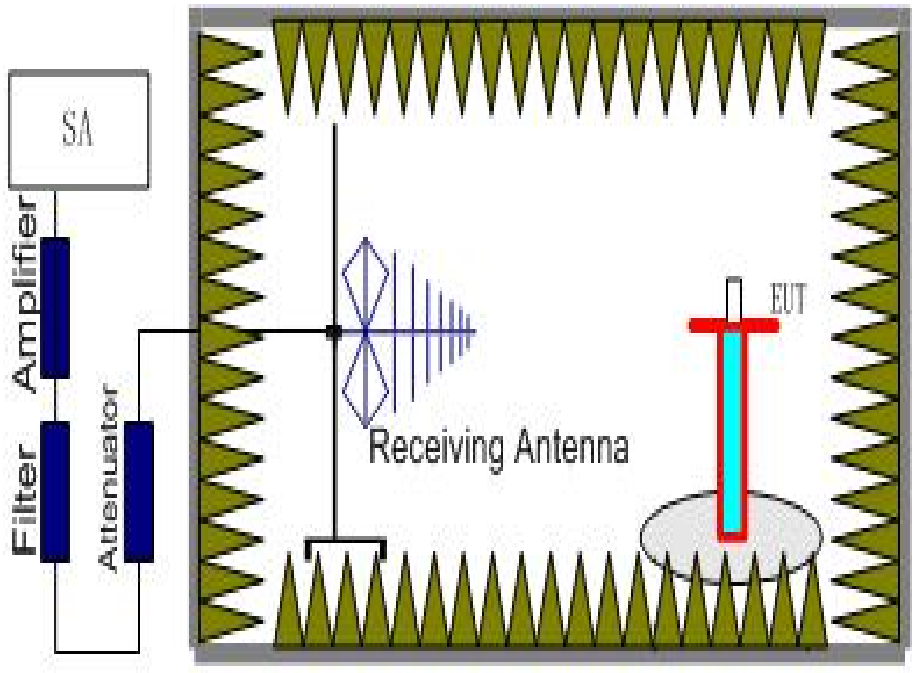
A.2.1 Measurement Method

The measurements procedures in TIA-603D-2010 are used.

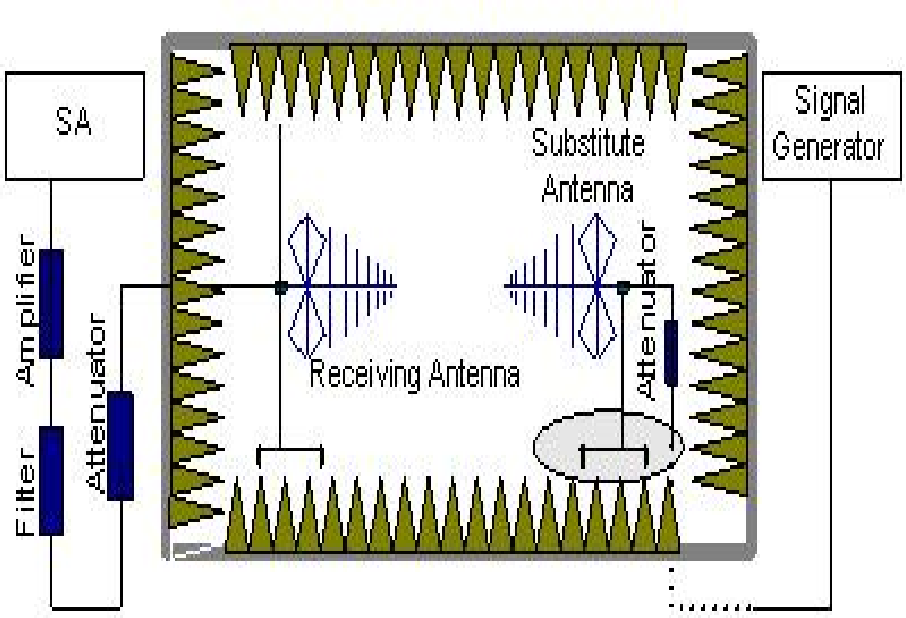
The spectrum was scanned from 30 MHz to the 10th harmonic of the highest frequency generated within the equipment. The resolution bandwidth is set as outlined in Part 24.238 and Part 24.917. The spectrum is scanned with the mobile station transmitting at carrier frequencies that pertain to low, mid and high channels of WCDMA Band V.

The procedure of radiated spurious emissions is as follows:

1. EUT was placed on a 1.5 meter high non-conductive stand at a 3 meter test distance from the receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT for emission measurements. The height of receiving antenna is 1.5m. The test setup refers to figure below. Detected emissions were maximized at each frequency by rotating the EUTthrough 360°and adjusting the receiving antenna polarization. The radiated emission measurements of all non-harmonic and harmonics of the transmit frequency through the 10th harmonic were measured with peak detector.



2. The EUT is then put into continuously transmitting mode at its maximum power level during the test. And the maximum value of the receiver should be recorded as (Pr).
3. The EUT shall be replaced by a substitution antenna. The test setup refers to figure below.



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 (P_{Mea}) is applied to the input of the substitution antenna, and adjust the level of thesignal generator output until the value of the receiver reach thepreviously recorded (P_r). The power of signal source (P_{Mea}) is recorded. The test should be performed by rotating the test item and adjusting the receiving antenna polarization.

4. The Path loss (P_{pl}) between the Signal Source with the Substitution Antenna and the Substitution Antenna Gain (G_a) should be recorded after test.
   A amplifier should be connected in for the test.
   The Path loss (P_{pl}) is the summation of the cable loss and the gain of the amplifier.
   The measurement results are obtained as described below:
   Power(EIRP)=P_{Mea}- P_{pl}- G_a
5. Use the power meter to measure the result of power in substitute antenna. Record the result of power meter(P_{pm}).
   The measurement results are obtained as described below:
   Power(EIRP)= P_{pm}- G_a
6. This value is EIRP since the measurement is calibrated using an antenna of known gain (2.15 dBi) and known input power.
7. ERP can be calculated from EIRP by subtracting the gain of the dipole, ERP = EIRP -2.15dBi.

A.2.2 Measurement Limit

Part 24.238 and Part 22.917 specify that the powerof any emission outside of the authorized operating frequency ranges mustbe attenuated below the transmittingpower (P) by a factor of at least 43 + 10log(P) dB.

The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

A.2.3 Measurement Results

Radiated emissions measurements were made only at the upper, middle, and lower carrier frequencies of the WCDMA Band V (826.4MHz, 836.6MHz and 846.6MHz). It was decided that measurements at these three carrier frequencies would be sufficient to demonstrate compliance with emissions limits because it was seen that all the significant spurs occur well outside the band and no radiation was seen from a carrier in one block of the WCDMA Band V into any of the other blocks. The equipment must still, however, meet emissions requirements with the carrier at all frequencies over which it is capable of operating and it is the manufacturer's responsibility to verify this.

A.2.4 Measurement Results Table

Frequency	Channel	Frequency Range	Result
WCDMA Band V	Low	30MHz-10GHz	Pass
	Middle	30MHz-10GHz	Pass
	High	30MHz-10GHz	Pass

A.2.5 Sweep Table

Working Frequency	Subrange (GHz)	RBW	VBW	Sweep time (s)
WCDMA Band V	0.03~1	100KHz	300KHz	10
	1-2	1 MHz	3 MHz	2
	2~5	1 MHz	3 MHz	3
	5~8	1 MHz	3 MHz	3
	8~10	1 MHz	3 MHz	3

Note: the results contains vertical part and Horizontal part

WCDMA BAND V Mode Channel 4132/826.4MHz

Frequency(MHz)	P_{pm}(dBm)	Antenna Gain	Correction (dB)	Peak ERP(dBm)	Limit （dBm）	Polarization
1654.47	-34.78	-5.22	2.15	-35.13	-13.00	V
2482.58	-48.75	-6.05	2.15	-49.31	-13.00	V
3303.25	-58.91	-7.73	2.15	-58.68	-13.00	H
4127.71	-56.24	-9.03	2.15	-55.15	-13.00	H
4966.83	-51.62	-9.87	2.15	-50.24	-13.00	H
5790.09	-57.59	-10.54	2.15	-55.97	-13.00	V

WCDMA BAND V Mode Channel 4183/836.6MHz

Frequency(MHz)	P_{pm}(dBm)	Antenna Gain	Correction (dB)	Peak ERP(dBm)	Limit （dBm）	Polarization
2509.95	-48.09	-6.12	2.15	-48.6	-13.00	V
3350.8	-59.52	-7.84	2.15	-59.08	-13.00	V
4186.77	-58.54	-9.09	2.15	-57.47	-13.00	H
5019.5	-58.87	-9.93	2.15	-57.3	-13.00	V
5861.51	-57.75	-10.53	2.15	-56.08	-13.00	H
6689.02	-57.03	-11.23	2.15	-55.2	-13.00	H

WCDMA BAND V Mode Channel 4233/846.6MHz

Frequency(MHz)	P_{pm}(dBm)	Antenna Gain	Correction (dB)	Peak ERP(dBm)	Limit （dBm）	Polarization
1691.77	-55.91	-5.15	2.15	-56.37	-13.00	H
2536.54	-49.44	-6.17	2.15	-49.91	-13.00	V
3389.73	-56.4	-7.94	2.15	-56.03	-13.00	H
4239.6	-58.71	-9.14	2.15	-57.79	-13.00	V
5085.09	-57.36	-10.02	2.15	-55.92	-13.00	H
5929.69	-56.82	-10.51	2.15	-55.34	-13.00	H

A.3 FREQUENCY STABILITY

A.3.1 Method of Measurement

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a “call mode”. This is accomplished with the use of R&S CMU200 DIGITAL RADIO COMMUNICATION TESTER.

1. Measure the carrier frequency at room temperature.
2. Subject the EUT to overnight soak at -30℃.
3. With the EUT, powered via nominal voltage, connected to the CMU200 and in a simulated call on mid channel of WCDMA Band V, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
4. Repeat the above measurements at 10℃ increments from -30℃ to +50℃. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.
5. Remeasure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments remeasuring carrier frequency at each voltage. Pause at nominal voltage for 1 1/2 hours unpowered, to allow any self-heating to stabilize, before continuing.
6. Subject the EUT to overnight soak at +50℃.
7. With the EUT, powered via nominal voltage, connected to the CMU200 and in a simulated call on the centre channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
8. Repeat the above measurements at 10 C increments from +50℃ to -30℃. Allow at least 1 1/2 hours at each temperature, unpowered, before making measurements.
9. At all temperature levels hold the temperature to +/- 0.5℃ during the measurement procedure.

A.3.2 Measurement Limit

A.3.2.1 For Hand carried battery powered equipment

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. As this transceiver is considered "Hand carried, battery powered equipment" Section 2.1055(d)(2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of between 3.5VDC and 4.2VDC, with a nominal voltage of 3.9VDC. Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress. These voltages represent a tolerance of -10 % and +12.5 %. For the purposes of measuring frequency stability these voltage limits are to be used.

A.3.2.2 For equipment powered by primary supply voltage

According to the JTC standard the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. For this EUT section

2.1055(d)(1) applies. This requires varying primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.

A.3.3 Measurement results

WCDMA Band V

Frequency Error vs Voltage

Voltage(V)	Frequency error(Hz)	Frequency error(ppm)
3.6	-6	0.007
3.8	1	0.001
4.35	5	0.006

Frequency Error vs Temperature

temperature(℃)	Frequency error(Hz)	Frequency error(ppm)
-30	15	0.018
-20	18	0.022
-10	11	0.013
0	3	0.004
10	6	0.007
20	-2	0.002
30	-4	0.005
40	-5	0.006
50	-8	0.010

A.4 OCCUPIED BANDWIDTH

A.4.1 Occupied Bandwidth Results

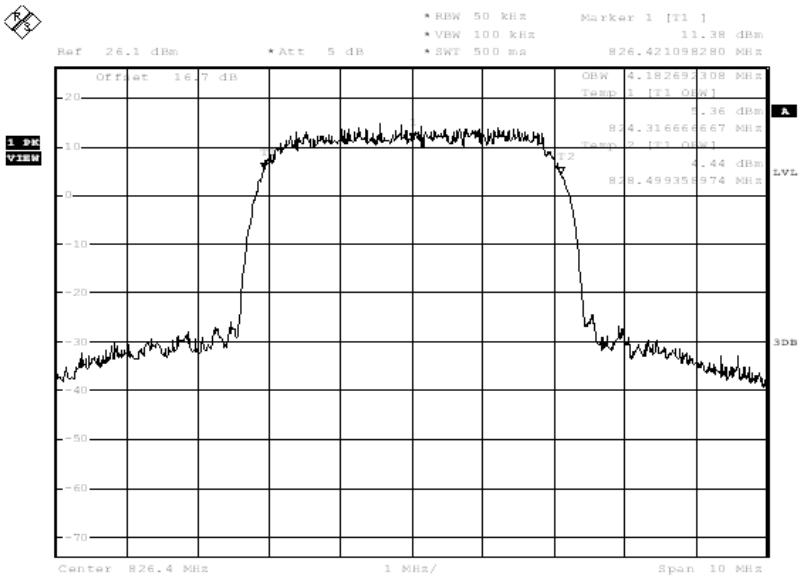
Similar to conducted emissions; occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of WCDMA Band V. The table below lists the measured -20dBc BW. Spectrum analyzer plots are included on the following pages.

WCDMA Band V(-20dBc)

Frequency(MHz)	Occupied Bandwidth (MHz)
826.4	4.18
836.6	4.18
846.6	4.18

WCDMA Band V

Channel 4132-Occupied Bandwidth



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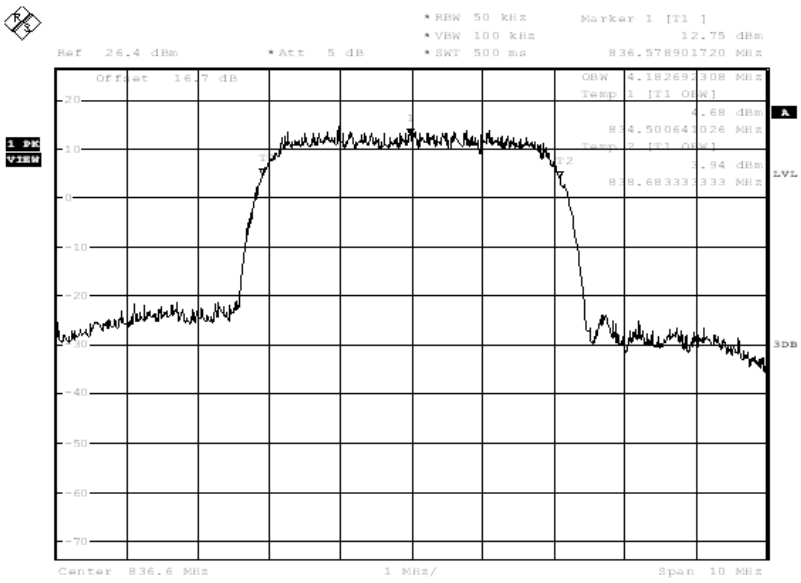
Channel 4183-Occupied Bandwidth



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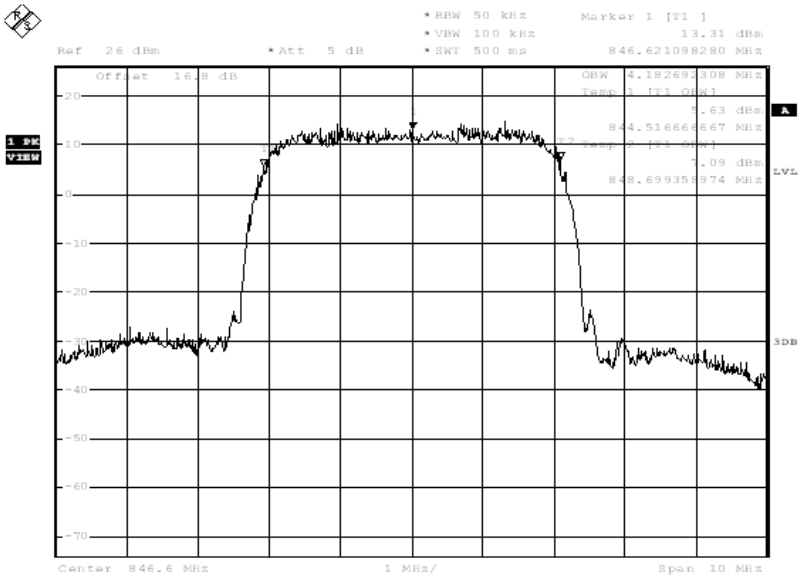
Channel 4233-Occupied Bandwidth



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A.5 EMISSION BANDWIDTH

A.5.1Emission Bandwidth Results

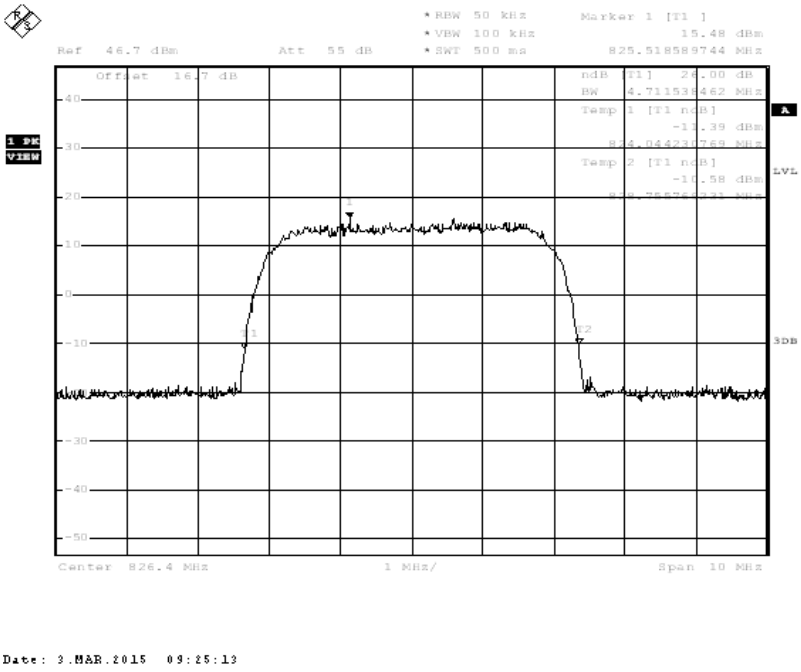
Similar to conducted emissions; Emission bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of WCDMA Band V. Table below lists the measured -26dBc BW. Spectrum analyzer plots are included on the following pages.

WCDMA Band V(-26dBc)

Frequency(MHz)	Occupied Bandwidth (–26dBc BW)(MHz)
826.40	4.71
836.60	4.73
846.60	4.68

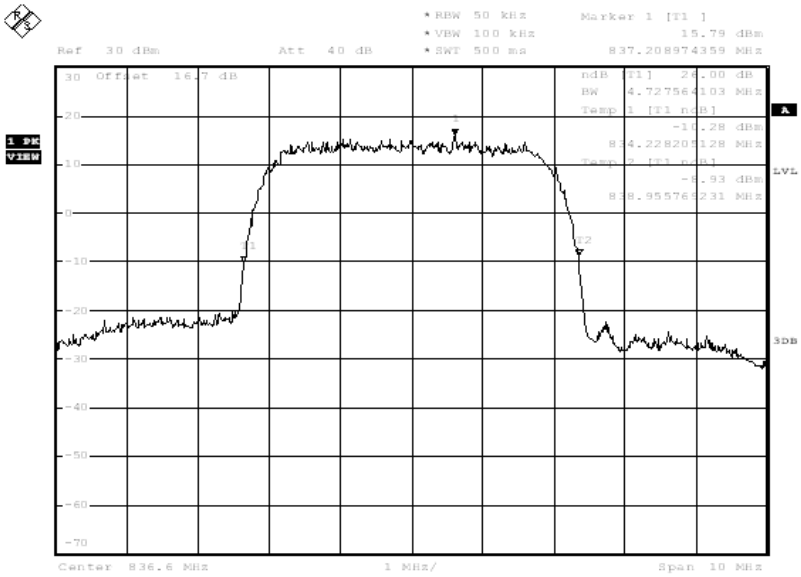
WCDMA Band V

Channel 4132-Occupied Bandwidth (-26dBc BW)



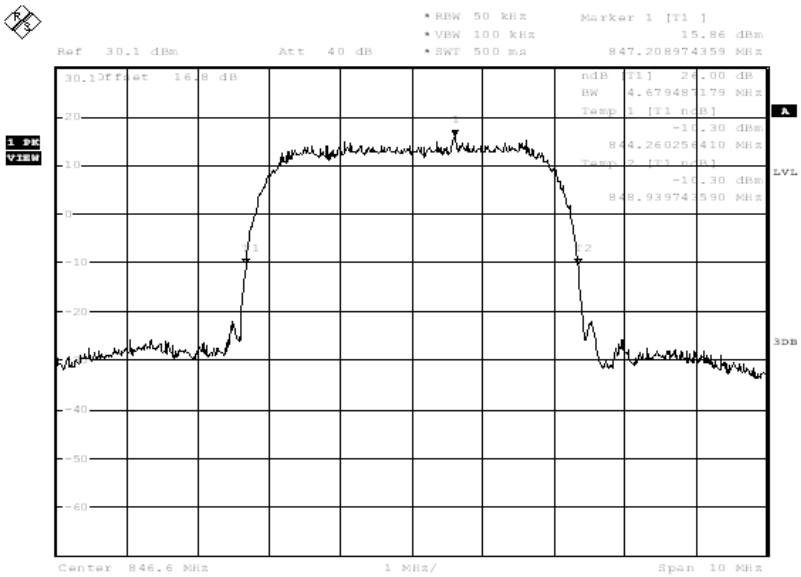
Date: 3.MAR.2015 09:25:13

Channel 4183-Occupied Bandwidth (-26dBc BW)



Date: 3.MAR.2015 09:25:46

Channel 4233-Occupied Bandwidth (-26dBc BW)

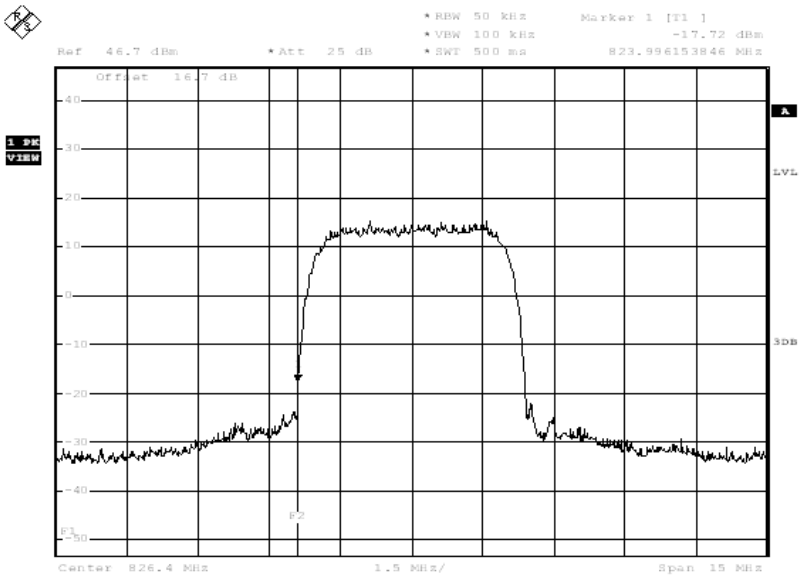


Date: 3.MAR.2015 09:26:19

A.6 BAND EDGE COMPLIANCE

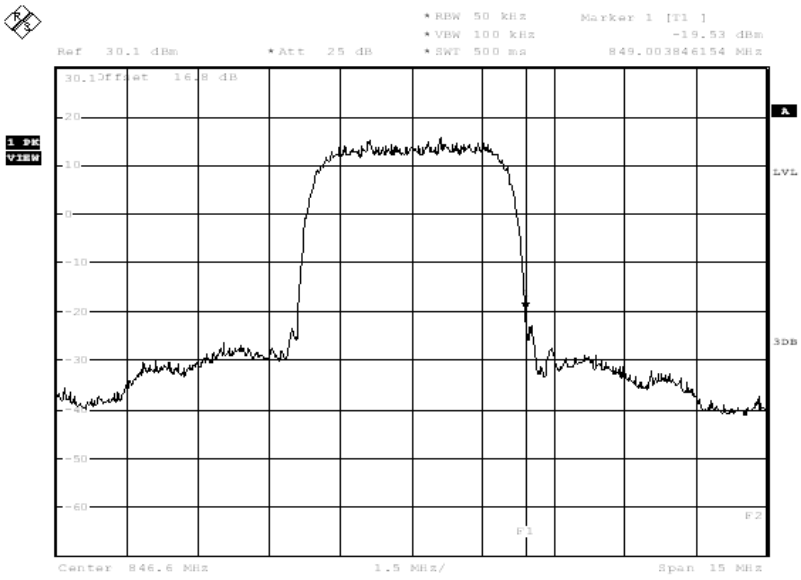
WCDMA Band V

LOW BAND EDGE BLOCK-A (WCDMA Band V)-Channel 4132



Date: 3.MAR.2015 09:27:19

HIGH BAND EDGE BLOCK-C (WCDMA Band V) –Channel 4233



Date: 3.MAR.2015 09:27:43

A.7 CONDUCTED SPURIOUS EMISSION

A.7.1 Measurement Method

The following steps outline the procedure used to measure the conducted emissions from the EUT.

1. Determine frequency range for measurements: From CFR 2.1057 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency. For the equipment of WCDMA Band V, data taken from 30 MHz to 10GHz.
2. The sweep time is set automatically by instrument itself. That should be the optimal sweep time for the span and the RBW. If the sweep time is too short, that is sweep is too fast, the sweep result is not accurate; If the sweep time is too long, that is sweep is too low, some frequency components may be lost. The instrument will give a optimal sweep time according the selected span and RBW.
3. The procedure to get the conducted spurious emission is as follows:
   The trace mode is set to MaxHold to get the highest signal at each frequency;
   Wait 25 seconds;
   Get the result.
4. Determine EUT transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.

WCDMA Band V Transmitter

Channel	Frequency (MHz)
4132	826.40
4183	836.60
4233	846.60

A. 7.2 Measurement Limit

Part 24.238 and Part 22.917 specify that the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

The specification that emissions shall be attenuated below the transmitter power (P) by at least 43 + 10 log (P) dB, translates in the relevant power range (1 to 0.001 W) to -13 dBm. At 1 W the specified minimum attenuation becomes 43 dB and relative to a 30 dBm (1 W) carrier becomes a limit of -13 dBm. At 0.001 W (0 dBm) the minimum attenuation is 13 dB, which again yields a limit of -13 dBm. In this way a translation of the specification from relative to absolute terms is carried out.

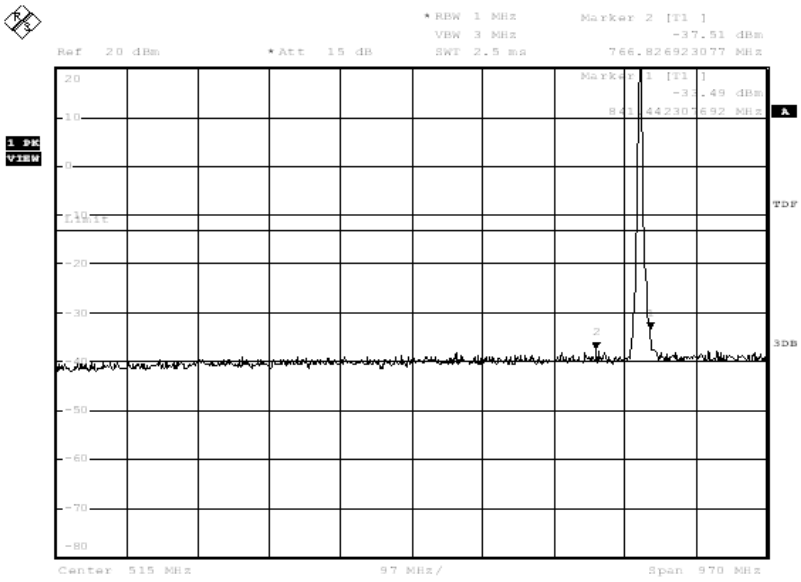
A.7.3 Measurement result

WCDMA Band V

A. 7.3.1 Channel 4132: 30MHz –1GHz

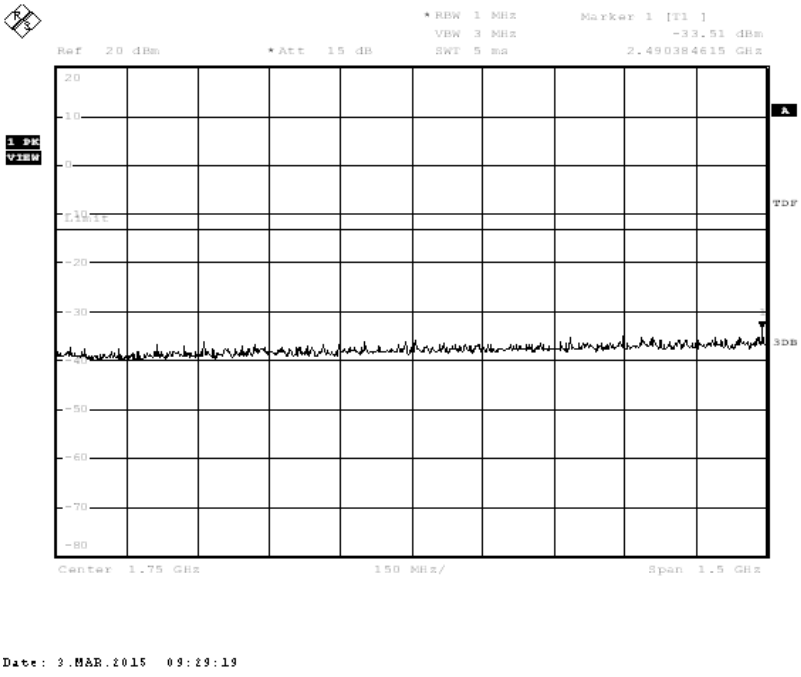
Spurious emission limit –13dBm.

NOTE: peak above the limit line is the carrier frequency.



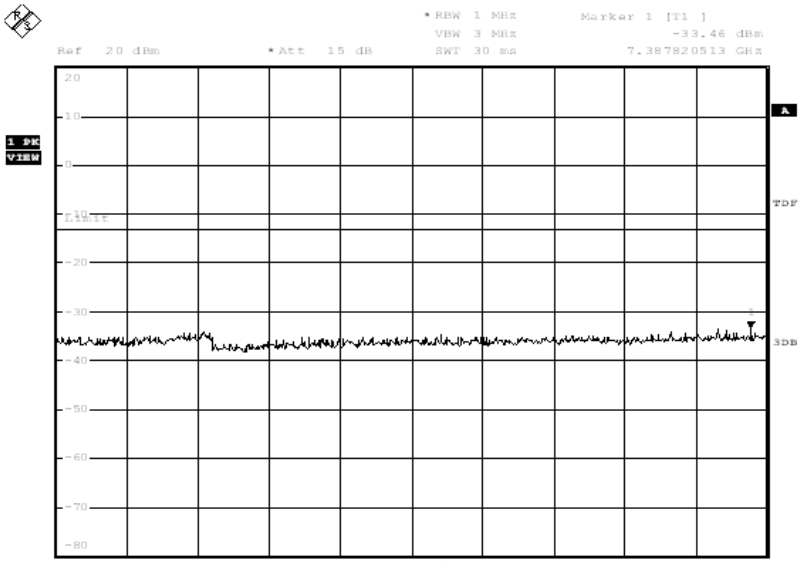
A. 7.3.2 Channel 4132: 1GHz – 2.5GHz

Spurious emission limit –13dBm.



A. 7.3.3 Channel 4132: 2.5GHz –7.5GHz

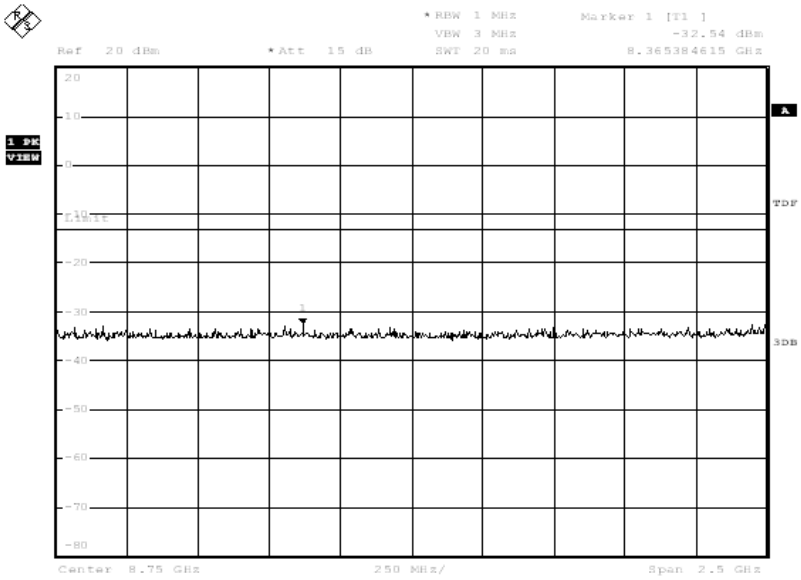
Spurious emission limit –13dBm.



Date: 3.MAR.2015 09:29:47

A. 7.3.4 Channel 4132: 7.5GHz – 10GHz

Spurious emission limit –13dBm.

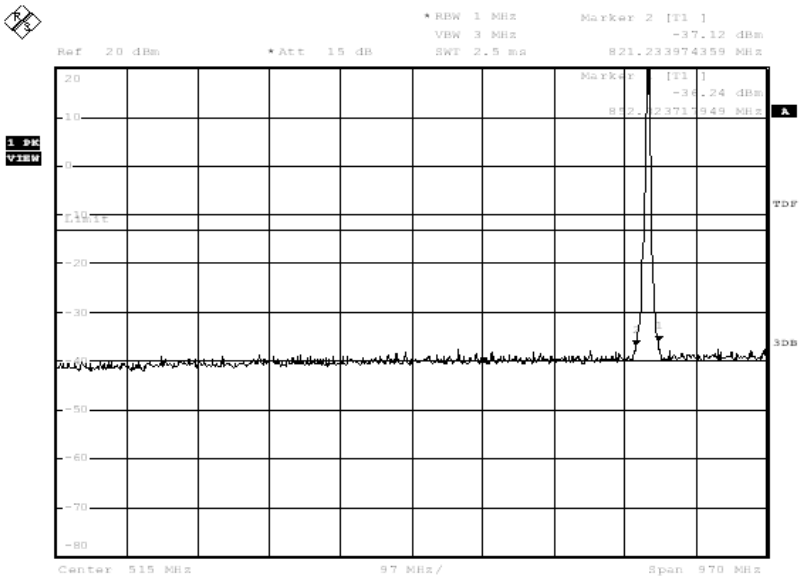


Date: 3.MAR.2015 09:30:15

A. 7.3.5 Channel 4183: 30MHz –1GHz

Spurious emission limit –13dBm.

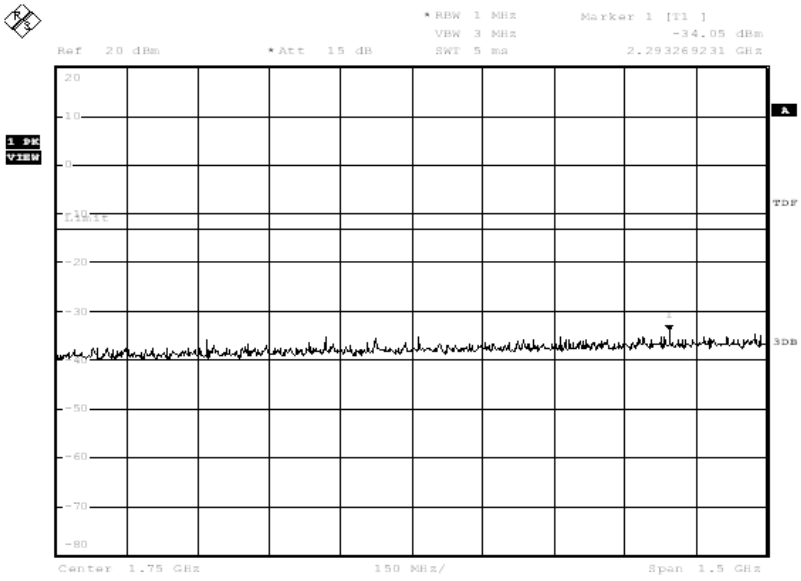
NOTE: peak above the limit line is the carrier frequency.



Date: 3.MAR.2015 09:30:58

A.7.3.6 Channel 4183: 1GHz – 2.5GHz

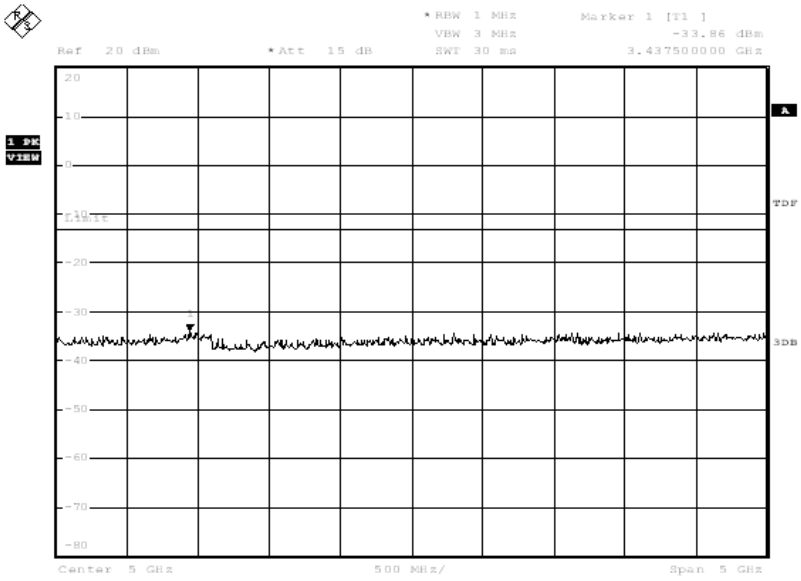
Spurious emission limit –13dBm.



Date: 3.MAR.2015 09:31:26

A. 7.3.7 Channel 4183: 2.5GHz –7.5GHz

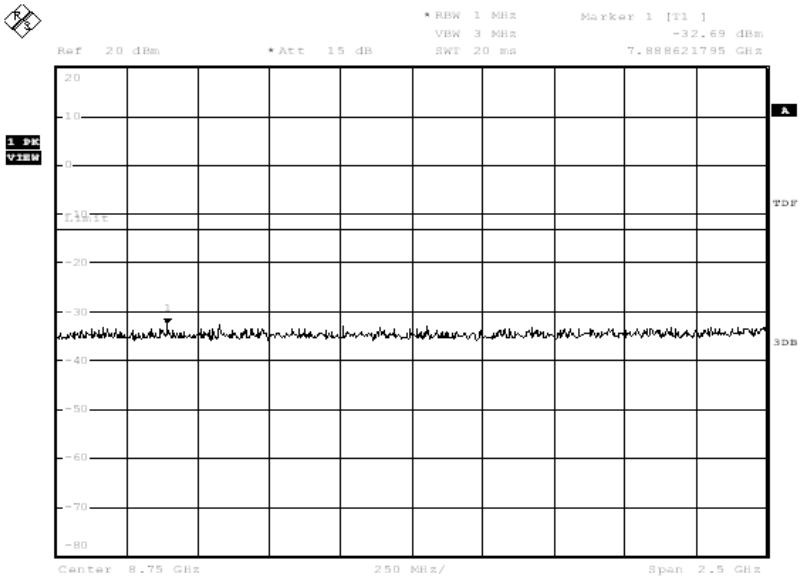
Spurious emission limit –13dBm.



Date: 3.MAR.2015 09:31:53

A. 7.3.8 Channel 4183: 7.5GHz – 10GHz

Spurious emission limit –13dBm.

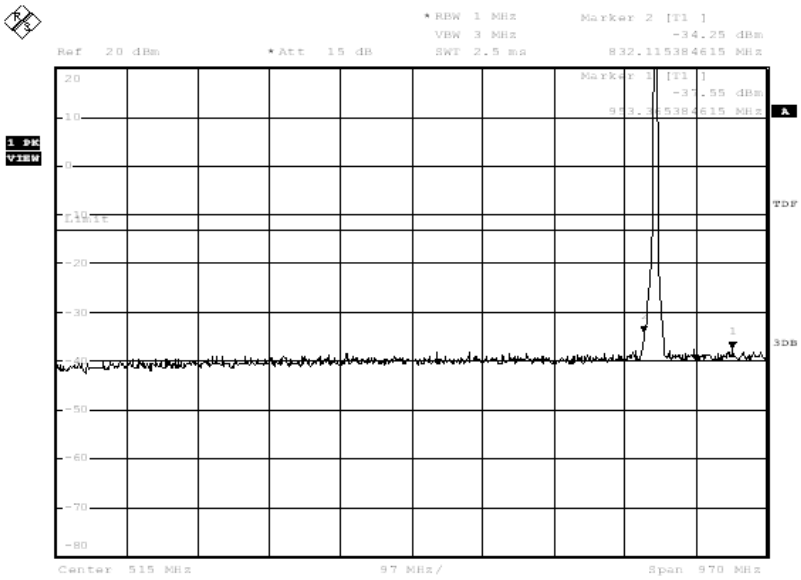


Date: 3.MAR.2015 09:32:21

A. 7.3.9 Channel 4233: 30MHz –1GHz

Spurious emission limit –13dBm.

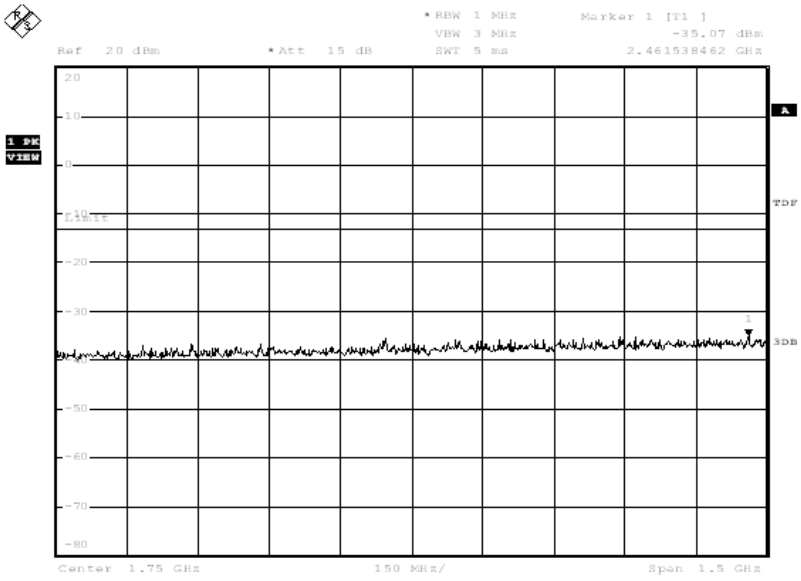
NOTE: peak above the limit line is the carrier frequency.



Date: 3.MAR.2015 09:33:04

A. 7.3.10 Channel 4233: 1GHz – 2.5GHz

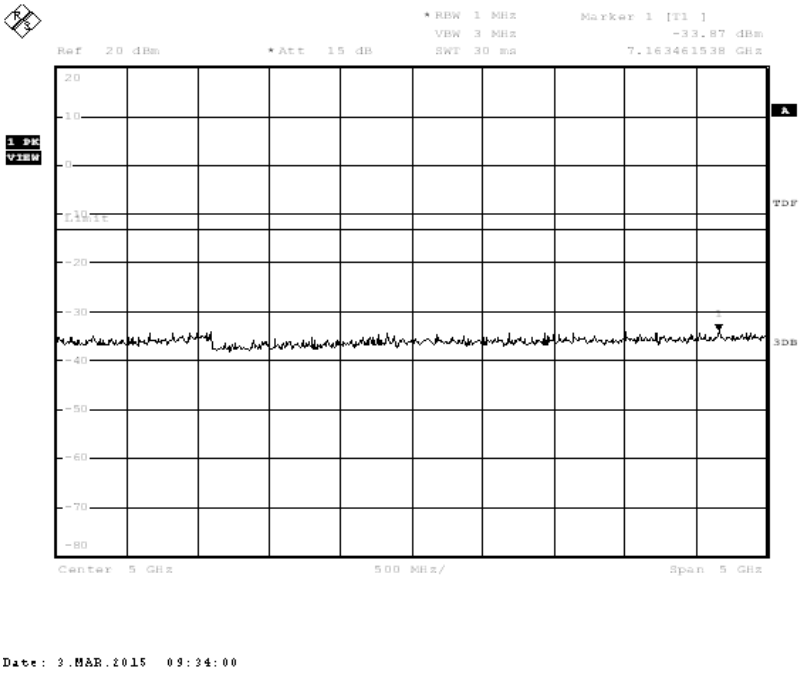
Spurious emission limit –13dBm.



Date: 3.MAR.2015 09:33:32

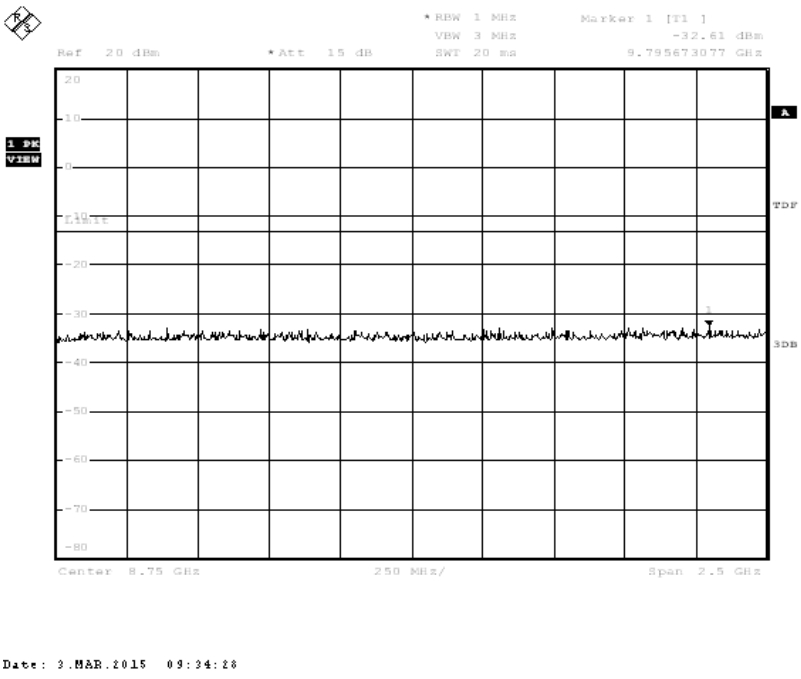
A. 7.3.11 Channel 4233: 2.5GHz –7.5GHz

Spurious emission limit –13dBm.



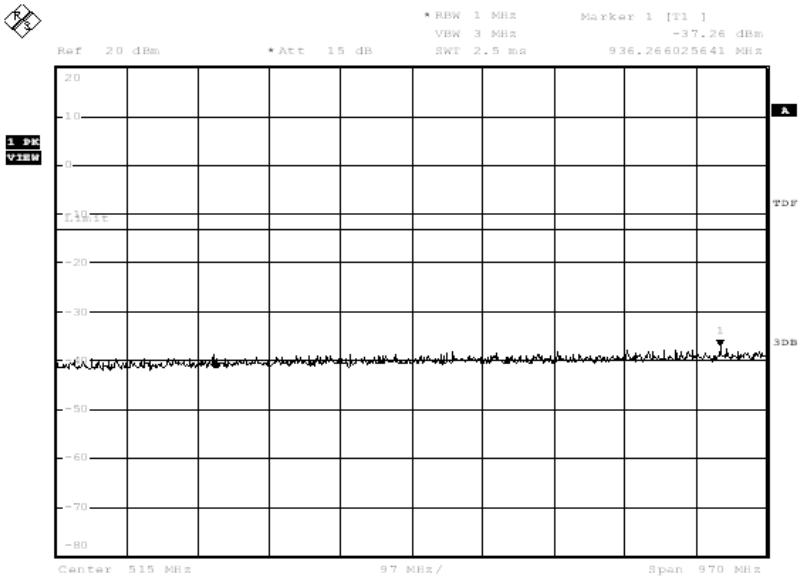
A. 7.3.12 Channel 4233: 7.5GHz – 10GHz

Spurious emission limit –13dBm.



A. 7.3.13 Idle mode: 30MHz – 1GHz

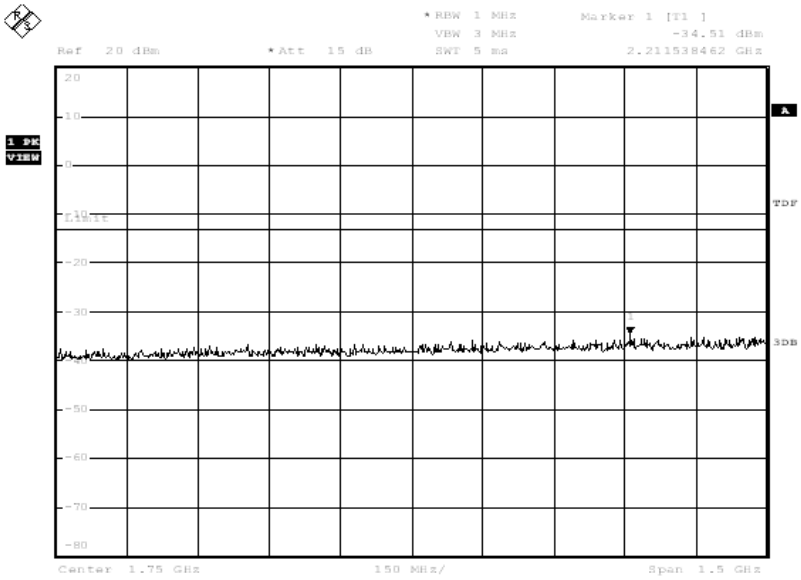
Spurious emission limit -13dBm.



Date: 3.MAR.2015 10:11:08

A.7.3.14 Idle mode: 1GHz – 2.5GHz

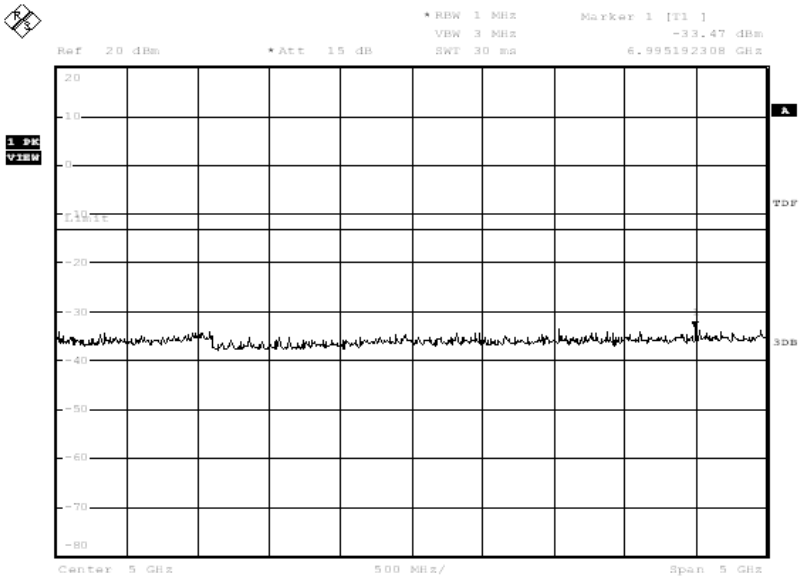
Spurious emission limit -13dBm.



Date: 3.MAR.2015 10:11:36

A.7.3.15 Idle mode: 2.5GHz – 7.5GHz

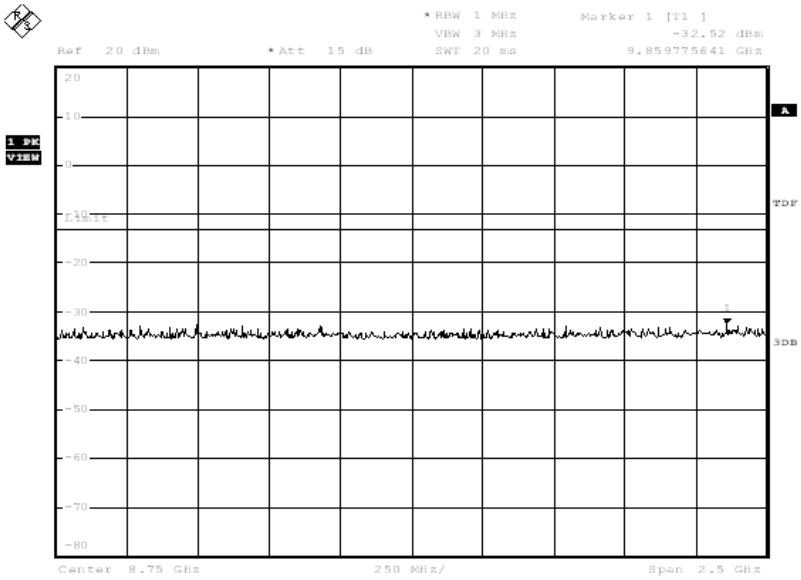
Spurious emission limit -13dBm.



Date: 3.MAR.2015 10:12:04

A.7.3.16 Idle mode: 7.5GHz – 10GHz

Spurious emission limit -13dBm.



Date: 3.MAR.2015 10:12:32

A.8 PEAK-TO-AVERAGEPOWERRATIO

A.8.1 Measurement description

According to KDB971168, the transmitter's peak-to-average power ratio (PAPR) shall not exceed 13 dB for more than 0.1% of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

The parameter of spectrum analyzer: RBW = 10MHz, detector = sample, No. of sample = 500,000

A.8.2 Measurement results

Frequency Error vs Temperature

	Frequency(MHz)	PAPR(dB)
BAND V	836.60	1.64

ANNEX B: Differences between ALE-L23 and ALE-L02

Model	HUAWEI ALE-L23, ALE-L23	HUAWEI ALE-L02, ALE-L02
FCC ID	QISALE-L23	QISALE-L02
Frequency	GSM:850/1900 UMTS:B2/B5/B4 LTE:B2/B4/B7	GSM:850/1900 UMTS:B5 LTE:B5/7 Frequency disabled by software.
Hardware Version	HL3ALICEM	HL3ALICEM
Software Version	ALE-L23 V100R001C900B045	ALE-L02 V100R001C900B045
Dimensions	The same	The same
Appearance	The same	The same
main antenna	The same	The same
Div antenna (Only RX)	The same	The same
BT/Wi-Fi antenna	The same	The same
Others	The same	The same

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