

# TEST REPORT FOR WCDMA TESTING

Report No.: SRTC2020-9004(F)-20091506(B)

Product Name: LTE Ufi

Product Model: A004ZT

Applicant: ZTE Corporation

Manufacturer: ZTE Corporation

Specification: FCC Part 24E, Part 22H, Part 2, Part 27 (2019)

FCC ID: SRQ-A004ZT

The State Radio\_monitoring\_center Testing Center (SRTC)

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Beijing, P.R.China

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## 1. GENERAL INFORMATION

### 1.1 Notes of the test report

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### 1.2 Information about the testing laboratory

Company:	The State Radio_monitoring_center Testing Center (SRTC)
Address:	15th Building, No.30 Shixing Street, Shijingshan District, P.R.China
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### 1.3 Applicant's details

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### 1.4 Manufacturer's details

Company:	ZTE Corporation
Address:	ZTE Plaza, Keji Road South, Hi-Tech, Industrial Park, Nanshan District, Shenzhen, Guangdong, 518057, P.R.China
City:	Shenzhen
Country or Region:	P.R.China
Contacted person:	Zhao Yang
Tel:	86-029-83637990
Fax:	---
Email:	zhao.yangxa@zte.com.cn

## 1.5 Test Environment

Date of Receipt of test sample at SRTC:	2020-09-16
Testing Start Date:	2020-09-16
Testing End Date:	2020-10-22

Environmental Data:	Temperature (°C)	Humidity (%)
Ambient	25	47
Maximum Extreme	55	---
Minimum Extreme	-10	---

Normal Supply Voltage (V d.c.):	3.8
Maximum Extreme Supply Voltage (V d.c.):	4.4
Minimum Extreme Supply Voltage (V d.c.):	3.6

## 2 DESCRIPTION OF THE DEVICE UNDER TEST

### 2.1 Final Equipment Build Status

Frequency Range	WCDMA Band II: Tx:1852.4~1907.6MHz Rx:1932.4~1987.6MHz WCDMA Band IV: Tx:1712.4~1752.6MHz Rx:2112.4~2152.6MHz
Mode	HSDPA/HSUPA/HSPA+/DC-HSDPA
Emission Designator	4M50F9W
Duplex Mode	FDD
Duplex Spacing	WCDMA Band II:80MHz WCDMA Band IV:400MHz
Antenna Type	Fixed Internal Antenna
Antenna Gain	W2: 1.6dBi/W4: 1.5dBi
Power Supply	Battery/Charger
Hardware Version	H01
Software Version	S01
IMEI	861046050003350

## 2.2 Support Equipment

The following support equipment was used to exercise the DUT during testing:

Equipment	Battery 1
Manufacturer	ZHUHAI COSMX BATTERY CO.,LTD.
Model Number	Li3945T44P4h815174
Equipment	USB Cable1
Manufacturer	Kingpower Co.,Ltd
Model Number	USB-TC30-W-100-M
Equipment	USB Cable2
Manufacturer	Shenz luxshare-ict co.ltd
Model Number	USB-TC30-W-100-M

## 2.3 Summary table.

FCC Rule Part	Frequency Range(MHz)	ERP/ EIRP (dBm)	ERP/ EIRP (W)	Frequency Tolerance (ppm)	Emission Designator
24E	1852.4-1907.6	25.23	0.333	-0.100	4M16F9W
27	1712.4-1752.6	25.14	0.327	-0.099	4M18F9W

### **3 REFERENCE SPECIFICATION**

Specification	Version	Title
FCC Part2	2019	Frequency allocations and radio treaty matters; general rules and regulations
FCC Part22	2019	Public mobile services
FCC Part24	2019	Personal communications services
FCC Part27	2019	Miscellaneous wireless communications services
ANSI C63.26	2015	American national standard for compliance testing of transmitters used in licensed radio services
KDB 971168 D01	April 9, 2018	Measurement guidance for certification of licensed digital transmitters
TIA-603-E-2016	March 2016	Land Mobile FM or PM Communications Equipment Measurement and Performance Standards

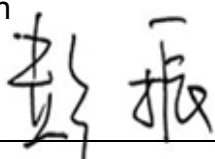

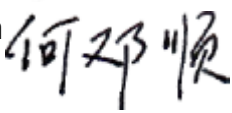
### **4 KEY TO NOTES AND RESULT CODES**

The following are the definition of the test result.

Code	Meaning
PASS	Test result shows that the requirements of the relevant specification have been met.
FAIL	Test result shows that the requirements of the relevant specification have not been met.
NT	Normal Temperature
NV	Nominal voltage
HV	High voltage
LV	Low voltage

## 5 RESULT SUMMARY

No.	Test case	FCC reference	Verdict
1	RF Power Output	2.1046	Pass
2	Effective Radiated Power and Effective Isotropic Radiated Power	22.913(a),24.232(c),27.50(d)( 4)	Pass
3	Occupied Bandwidth	2.1049	Pass
4	Emission Bandwidth	2.1049	Pass
5	Spurious Emissions at antenna terminal	2.1051,22.917(a),24.238(a),27.53(h)	Pass
6	Band Edges Compliance	2.1051,22.917(a),24.238(b),27.53(h)	Pass
7	Frequency Stability	2.1055,22.355,24.235,27.54	Pass
8	Radiated Spurious Emissions	2.1053,22.917(a),24.238(a),27.53(h)	Pass
9	Peak-Average Ratio	24.232(d),27.50(d) (5)	Pass

This Test Report Is Issued by: Mr. Peng Zhen 	Checked by: Mr. Li Bin 
Tested by: Mr. He Dengshun 	Issued date:  20201022



## 6 TEST RESULT

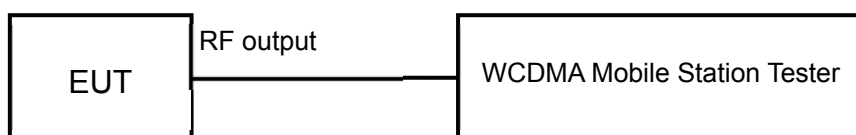
### 6.1 RF Power Output

Rule Part(s):  
2.1046

Ambient condition:

Temperature	Relative humidity	Pressure
25°C	47%	101.9kPa

Test Setup:



Test procedure:

After a radio link has been established between EUT and Tester, the output power of the cell signal of the testing equipment will be decreased until the output power of the EUT reach a maximum value. Then the test data can be read at the tester screen. The loss between RF output port of the EUT and the input port of the tester will be taken into consideration. The measurement will be conducted at three channels (Low, middle and High channels).

Limits: Limits: No specific conduct power requirements in part 2.1046.

Test result:

The test results are shown in Appendix A.

## 6.2 Effective Radiated Power and Effective Isotropic Radiated Power

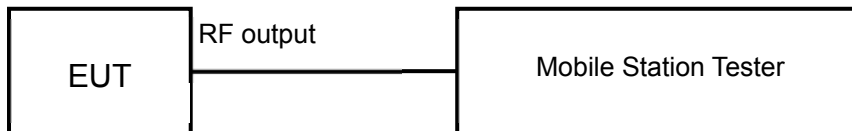
Rule Part(s):

FCC: 22.913(a) (5), 24.232(c), 27.50(d) (4)

Ambient condition:

Temperature	Relative humidity	Pressure
25°C	47%	101.9kPa

Test setup:



Test procedure:

KDB 971168 D01 v03r01 – Section 5.2.1

Test Settings

Subclause 5.2.5.5 of ANSI C63.26-2015 is applicable, along with the following provisions. For personal/portable radios utilizing an integral antenna, the factor LC is typically negligible. However, in a fixed station transmit system that utilizes a long cable run between the transmitter and the transmitting antenna, this factor can be significant. The minimum cable loss should be used in this equation.

The relevant equation for determining the ERP or EIRP from the conducted RF output power measured is:

$$\text{ERP/EIRP} = \text{PMeas} - \text{LC} + \text{GT}$$

Where:

ERP/EIRP = effective or equivalent radiated power, respectively (expressed in the same units as PMeas, typically dBW or dBm)

PMeas = measured transmitter output power or PSD, in dBW or dBm

LC = signal attenuation in the connecting cable between the transmitter and antenna in dB

GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

### ERP/EIRP LIMIT

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

22.913(a) (5)

The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.

24.232(c)

Mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

27.50(d) (4)

Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP. Fixed stations operating in the 1710-1755 MHz band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in these bands must employ a means for limiting power to the minimum necessary for successful communications

Test result:

The test results are shown in Appendix B.

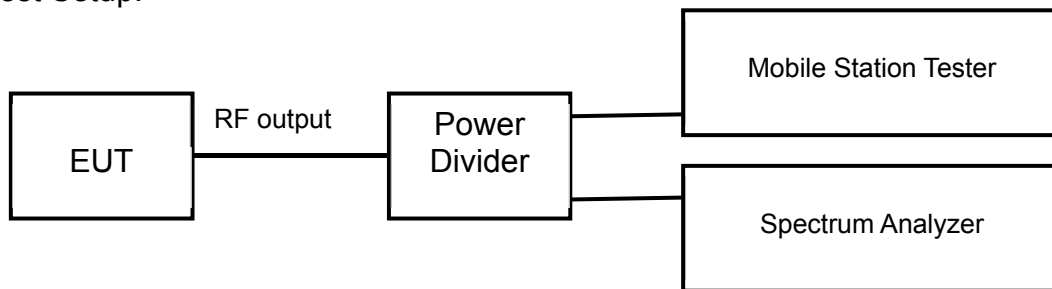
### 6.3 Occupied Bandwidth

Rule Part(s):  
FCC: 2.1049

Ambient condition:

Temperature	Relative humidity	Pressure
25°C	47%	101.9kPa

Test Setup:



Test procedure:  
KDB 971168 D01 v03r01 – Section 4.2

#### Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99% occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5% of the expected OBW
3. VBW  $\geq$  3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the 99% occupied bandwidth observed in Step 7

Limits: No specific occupied bandwidth requirements in part 2.1049

Test result:  
The test results are shown in Appendix A.

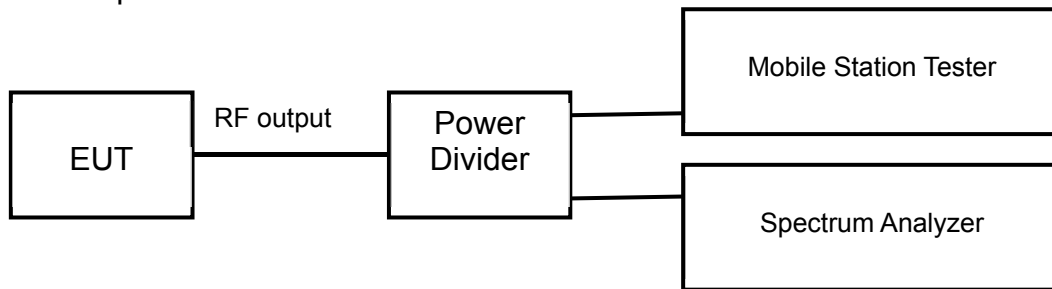
## 6.4 Emission Bandwidth

Rule Part(s):  
FCC: 2.1049

Ambient condition:

Temperature	Relative humidity	Pressure
25°C	47%	101.9kPa

Test Setup:



Test procedure:  
KDB 971168 D01 v03r01 – Section 4.2

Test Settings

1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 26dB occupied bandwidth and the 26dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 – 5% of the expected OBW
3. VBW  $\geq$  3 x RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. The trace was allowed to stabilize
8. If necessary, steps 2 – 7 were repeated after changing the RBW such that it would be within 1 – 5% of the emission bandwidth observed in Step 7

Limits: No specific occupied bandwidth requirements in part 2.1049

Test result:

The test results are shown in Appendix A.

## 6.5 Spurious Emissions at antenna terminal

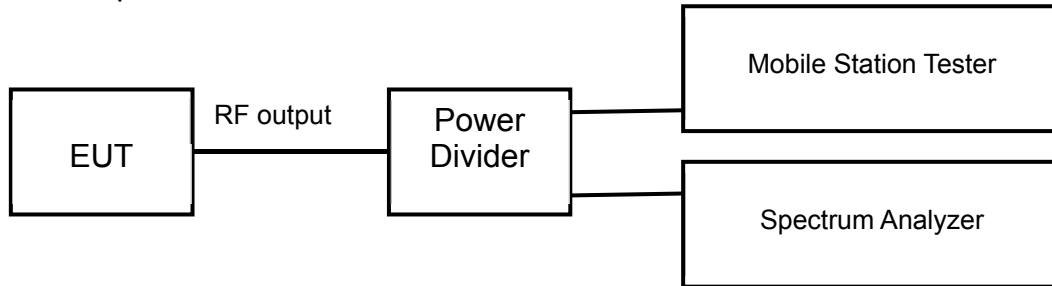
Rule Part(s):

FCC: 2.1051, 22.917(a), 24.238(a), 27.53(h)

Ambient condition:

Temperature	Relative humidity	Pressure
25°C	47%	101.9kPa

Test Setup:



Test procedure:

KDB 971168 D01 v03r01 – Section 6.0

Test Settings

1. Start frequency was set to 30MHz and stop frequency was set to 10GHz for Cell, 20GHz for PCS
2. RBW=100 kHz (For below 1GHz), 1MHz (For above 1GHz)
3. VBW  $\geq 3 \times$  RBW
4. Detector = RMS
5. Trace mode = trace average for continuous emissions, max hold for pulse emissions
6. Sweep time = auto couple
7. The trace was allowed to stabilize

Limits:

The minimum permissible attenuation level of any spurious emission is  $43 + \log_{10}(P_{[Watts]})$ , where P is the transmitter power in Watts.

Test result:

The test results are shown in Appendix A.

## 6.6 Band Edges Compliance

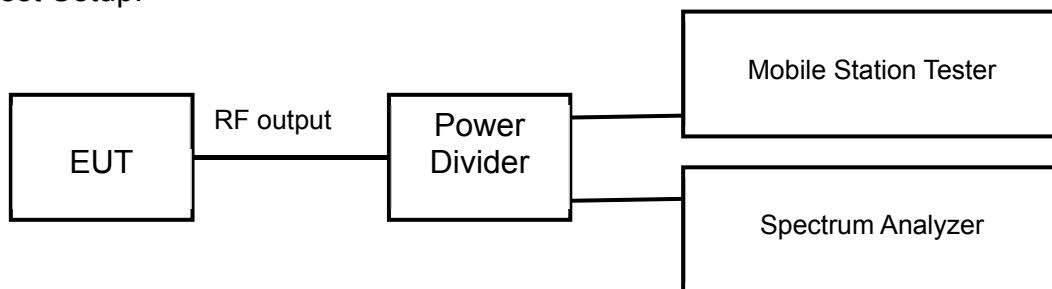
Rule Part(s)

FCC: 2.1051, 22.917(a), 24.238(a), 27.53(c)

Ambient condition:

Temperature	Relative humidity	Pressure
25°C	47%	101.9kPa

Test Setup:



Test procedure:

KDB 971168 D01 v03r01 – Section 6.0

Test Settings

1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span=2MHz
3. RBW > 1% of the emission bandwidth
4. VBW > 3 x RBW
5. Detector = RMS
6. Number of sweep points  $\geq 2 \times \text{Span}/\text{RBW}$
7. Trace mode = trace average for continuous emissions, max hold for pulse emissions
8. Sweep time = auto couple
9. The trace was allowed to stabilize

Limit: The minimum permissible attenuation level of any spurious emission is  $43 + \log_{10}(P)$  (P [Watts]), where P is the transmitter power in Watts.

Test result:

The test results are shown in Appendix A.

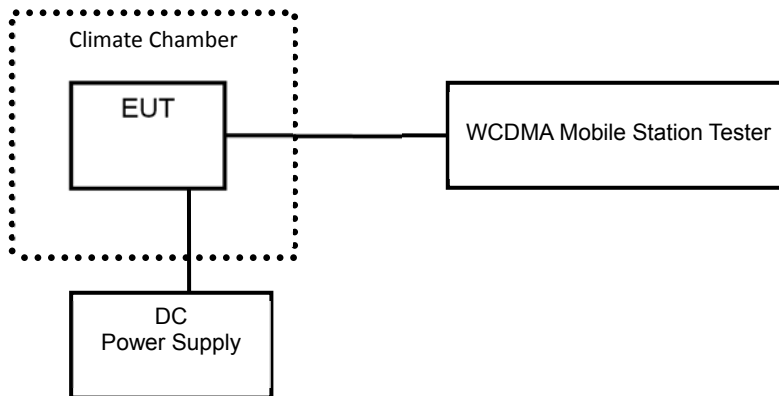
## 6.7 Frequency Stability

Rule Part(s)  
FCC: 2.1055, 22.355, 24.235, 27.54

Ambient condition:

Temperature	Relative humidity	Pressure
25°C	47%	101.9kPa

Test setup:



Test Procedure:  
ANSI/TIA-603-E-2016

### Test Settings

1. The carrier frequency of the transmitter is measured at room temperature (20°C to provide a reference).
2. The equipment is turned on in a “standby” condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
3. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C (The temperature range can be declared by the manufacturer). A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

Limits: For Part 22, the frequency stability of the transmitter shall be maintained within  $\pm 0.00025\%$  ( $\pm 2.5$  ppm) of the center frequency. For Part 24, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test result:  
The test results are shown in Appendix A.

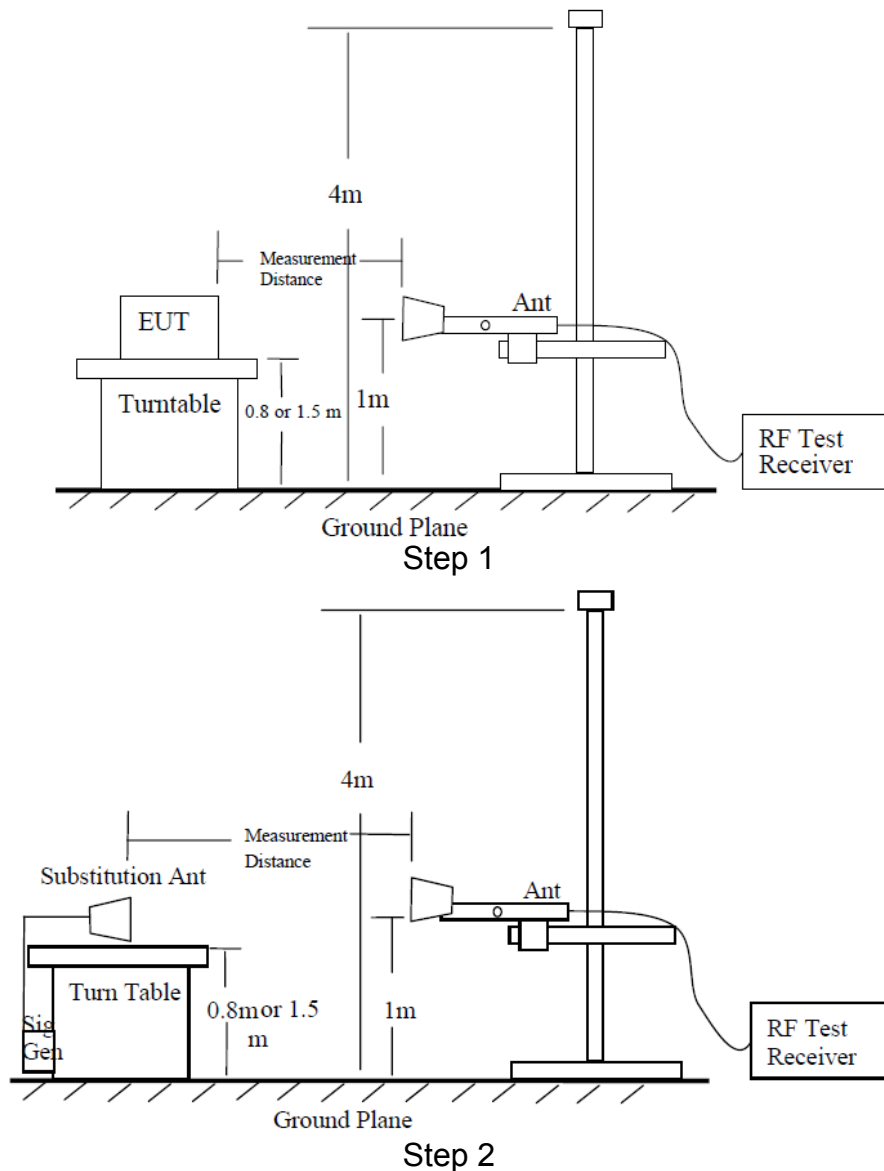
## 6.8 Radiated Spurious Emissions

Rule Part(s)  
FCC: 2.1053, 22.917(a), 24.238(a), 27.53(h)

Ambient condition:

Temperature	Relative humidity	Pressure
25°C	47%	101.9kPa

Test Setup:





**Test procedure:**

The measurements procedures in TIA-603-E-2016 are used.

The spectrum was scanned from 30MHz to the 10th harmonic of the highest frequency generated within the equipment.

**Step 1:**

The measurement is carried out in the chamber. EUT was placed on a 0.8m ( $f < 1\text{GHz}$ )/1.5m ( $f > 1\text{GHz}$ ) high non-conductive table at a 3 meters test distance from the test receive antenna. A receiving antenna was placed on the antenna mast 3 meters from the EUT. The height of receiving antenna from 1m to 4m and varies in certain range to find the maximum power value. A radio link shall be established between EUT and Tester. The output power of the cell signal of the tester will be decreased until the output power of the EUT reach a maximum value. A peak detector is used and RBW is set to 100 kHz ( $f < 1\text{GHz}$ )/1MHz ( $f > 1\text{GHz}$ ). 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 power value on spectrum analyzer or receiver. The spectrum analyzer scans from 30MHz to 10th harmonic of the carrier. A notch filter is necessary in the band near to the carrier frequency. A high pass filter is needed to avoid the distortion of the testing equipment in the band above the carrier frequency.

**Step 2:**

A log-periodic antenna or double-ridged waveguide 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.

A power ( $P_{mea}$ ) is applied to the input of the substitution antenna, and adjusts the level of the signal generator output until the value of the receiver reach the previously 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.

A "reference path loss" should be calculated after test. The attenuation of "reference path loss" is the cable loss between the Signal Source with the Substitution Antenna ( $P_{ca}$ ) and the Substitution Antenna Gain ( $G_a$ ).

**Calculation procedure:**

The data of cable loss and antenna gain has been calibrated in full testing frequency range before the testing.

The power of the Radiated Spurious Emissions is calculated by adding the cable loss and antenna gain. The basic equation with a sample calculation is as followed:

$$\text{Power (EIRP)} = P_{mea} + P_{ca} + G_a$$

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

Assumed the power of signal source record is -20dBm. A cable loss of -30dB, and an antenna gain of 11dB are added.

$$P = P_{mea} + P_{ca} + G_a = (-20\text{dBm}) + (-30\text{dB}) + (11\text{dB}) = -39\text{dBm}$$

**Test result:**

The test results are shown in Appendix B.

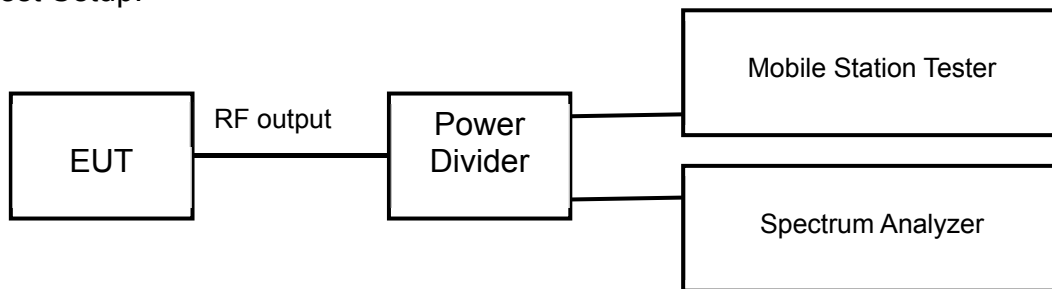
## 6.9 Peak-Average Ratio

Rule Part(s)  
FCC: 24.232(d), 27.50(d) (5)

Ambient condition:

Temperature	Relative humidity	Pressure
25°C	47%	101.9kPa

Test Setup:



Test procedure:  
KDB 971168 D01 v03r01 – Section 5.7.1

Test settings:

1. The signal analyzer's CCDF measurement profile is enabled
2. Frequency = carrier center frequency
3. Measurement BW > Emission bandwidth of signal
4. The signal analyzer was set to collect one million samples to generate the CCDF curve
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal "RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the "on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power

Limits: the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

Test result:

The test results are shown in Appendix A

## 7 MEASUREMENT UNCERTAINTIES

Items	Uncertainty	
RF Power Output	U=0.6 dB	
Occupied Bandwidth	3kHz	
Spurious Emissions	9kHz~2GHz	U=1.2dB
	2G~3.6GHz	U=1.4dB
	3.6G~8GHz	U=2.2dB
	8G~12.75GHz	U=2.7dB
Band Edges Compliance	1.2dB	
Frequency Stability	U=48 Hz	

## **8 TEST EQUIPMENTS**

No.	Name/Model	Manufacturer	S/N	Calibration Date	Calibration Due Date
1	E5515C(8960) Mobile Station Tester	Agilent	MY50266302	2020.08.20	2021.08.19
2	N9020A Spectrum Analyzer	Agilent	MY48010771	2020.08.20	2021.08.19
3	FSV40 Spectrum Analyzer	R&S	101065	2020.08.20	2021.08.19
4	6007 Power Divider	Weinschel	6007-GJ-1	2020.08.20	2021.08.19
5	DC Power Supply E3645A	Agilent	MY40000741	2020.03.01	2021.02.28
6	Temperature chamber SH241	ESPEC	92013758	2020.08.20	2021.08.19
7	12.65m×8.03m×7.50m Fully-Anechoic Chamber	FRANKONIA	----	----	----
8	23.18m×16.88m×9.60m Semi-Anechoic Chamber	FRANKONIA	---	----	----
9	Turn table Diameter:1m	FRANKONIA	----	----	----
10	Turn table Diameter:5m	FRANKONIA	----	----	----
11	Antenna master FAC(MA4.0)	MATURO	----	----	----
12	Antenna master SAC(MA4.0)	MATURO	----	----	----
13	9.080m×5.255m×3.525m Shielding room	FRANKONIA	----	----	----
14	HF 907 Double-Ridged Waveguide Horn Antenna	R&S	100512	2020.08.20	2021.08.19
15	HF 907 Double-Ridged Waveguide Horn Antenna	R&S	100513	2020.08.20	2021.08.19
16	HL562 Ultra log antenna	R&S	100016	2020.08.20	2021.08.19
17	3160-09 Receive antenna	SCHWARZ-BECK	002058-002	2020.08.20	2021.08.19
18	ESI 40 EMI test receiver	R&S	100015	2020.08.20	2021.08.19
19	ESCS30 EMI test receiver	R&S	100029	2020.08.20	2021.08.19
20	HL562 Receive antenna	R&S	100167	2020.08.20	2021.08.19
21	ENV216 AMN	R&S	3560.6550.12	2020.08.20	2021.08.19

## **APPENDIX A – TEST DATA OF CONDUCTED EMISSION**

### **RF Power Output**

#### **WCDMA band II**

Mode		Carrier frequency (MHz)	Channel No.	RF Power Output (dBm)
Release 99	RMC,12.2kbps	1852.4	9262	23.63
		1880.0	9400	23.56
		1907.6	9538	23.43
HSDPA	Subtest 1	1852.4	9262	21.73
		1880.0	9400	21.61
		1907.6	9538	21.49
	Subtest 2	1852.4	9262	21.66
		1880.0	9400	21.66
		1907.6	9538	21.49
	Subtest 3	1852.4	9262	21.68
		1880.0	9400	21.57
		1907.6	9538	21.52
	Subtest 4	1852.4	9262	21.72
		1880.0	9400	21.60
		1907.6	9538	21.44
HSUPA	Subtest 1	1852.4	9262	21.68
		1880.0	9400	21.58
		1907.6	9538	21.45
	Subtest 2	1852.4	9262	21.74
		1880.0	9400	21.65
		1907.6	9538	21.44
	Subtest 3	1852.4	9262	21.68
		1880.0	9400	21.57
		1907.6	9538	21.44
	Subtest 4	1852.4	9262	21.67
		1880.0	9400	21.59
		1907.6	9538	21.48
	Subtest 5	1852.4	9262	22.11
		1880.0	9400	22.03
		1907.6	9538	21.84
HSPA+	QPSK	1852.4	9262	21.72
		1880.0	9400	21.58
		1907.6	9538	21.49
	16QAM	1852.4	9262	21.71
		1880.0	9400	21.60
		1907.6	9538	21.45

Mode		Carrier frequency (MHz)	Channel No.	RF Power Output (dBm)
DC-HSDPA	Subtest 1	1852.4	9262	21.69
		1880.0	9400	21.58
		1907.6	9538	21.51
	Subtest 2	1852.4	9262	21.70
		1880.0	9400	21.60
		1907.6	9538	21.46
	Subtest 3	1852.4	9262	21.73
		1880.0	9400	21.59
		1907.6	9538	21.49
	Subtest 4	1852.4	9262	21.74
		1880.0	9400	21.64
		1907.6	9538	21.49

WCDMA band IV

Mode		Carrier frequency (MHz)	Channel No.	RF Power Output (dBm)
Release 99	RMC,12.2kbps	1712.4	1312	23.27
		1732.4	1412	23.48
		1752.6	1513	23.64
HSDPA	Subtest 1	1712.4	1312	21.31
		1732.4	1412	21.51
		1752.6	1513	21.70
	Subtest 2	1712.4	1312	21.33
		1732.4	1412	21.59
		1752.6	1513	21.69
	Subtest 3	1712.4	1312	21.29
		1732.4	1412	21.50
		1752.6	1513	21.68
	Subtest 4	1712.4	1312	21.38
		1732.4	1412	21.53
		1752.6	1513	21.68
HSUPA	Subtest 1	1712.4	1312	21.30
		1732.4	1412	21.49
		1752.6	1513	21.66
	Subtest 2	1712.4	1312	21.30
		1732.4	1412	21.53
		1752.6	1513	21.69
	Subtest 3	1712.4	1312	21.28
		1732.4	1412	21.55
		1752.6	1513	21.71
	Subtest 4	1712.4	1312	21.32
		1732.4	1412	21.53
		1752.6	1513	21.66
	Subtest 5	1712.4	1312	21.74
		1732.4	1412	21.99
		1752.6	1513	22.11
HSPA+	QPSK	1712.4	1312	21.28
		1732.4	1412	21.50
		1752.6	1513	21.70
	16QAM	1712.4	1312	21.34
		1732.4	1412	21.50
		1752.6	1513	21.66

Mode		Carrier frequency (MHz)	Channel No.	RF Power Output (dBm)
DC-HSDPA	Subtest 1	1712.4	1312	21.28
		1732.4	1412	21.58
		1752.6	1513	21.66
	Subtest 2	1712.4	1312	21.28
		1732.4	1412	21.53
		1752.6	1513	21.68
	Subtest 3	1712.4	1312	21.28
		1732.4	1412	21.59
		1752.6	1513	21.69
	Subtest 4	1712.4	1312	21.33
		1732.4	1412	21.55
		1752.6	1513	21.66



### Occupied Bandwidth

WCDMA band II

REL99 Mode:

Carrier frequency (MHz)	Channel No.	Bandwidth of 99% Power (MHz)
1852.4	9262	4.1537
1880.0	9400	4.1397
1907.6	9538	4.1229

HSUPA Mode:

Carrier frequency (MHz)	Channel No.	Bandwidth of 99% Power (MHz)
1852.4	9262	4.1603
1880.0	9400	4.1432
1907.6	9538	4.1551

WCDMA band IV

REL99 Mode:

Carrier frequency (MHz)	Channel No.	Bandwidth of 99% Power (MHz)
1712.4	1312	4.1590
1732.4	1412	4.1766
1752.6	1513	4.1667

HSUPA Mode:

Carrier frequency (MHz)	Channel No.	Bandwidth of 99% Power (MHz)
1712.4	1312	4.1434
1732.4	1412	4.1488
1752.6	1513	4.1350

## Emission Bandwidth

WCDMA band II

REL99 Mode:

Carrier frequency (MHz)	Channel No.	Bandwidth of -26dBc Power (MHz)
1852.4	9262	4.691
1880.0	9400	4.693
1907.6	9538	4.688

HSUPA Mode:

Carrier frequency (MHz)	Channel No.	Bandwidth of -26dBc Power (MHz)
1852.4	9262	4.722
1880.0	9400	4.704
1907.6	9538	4.695

WCDMA band IV

REL99 Mode:

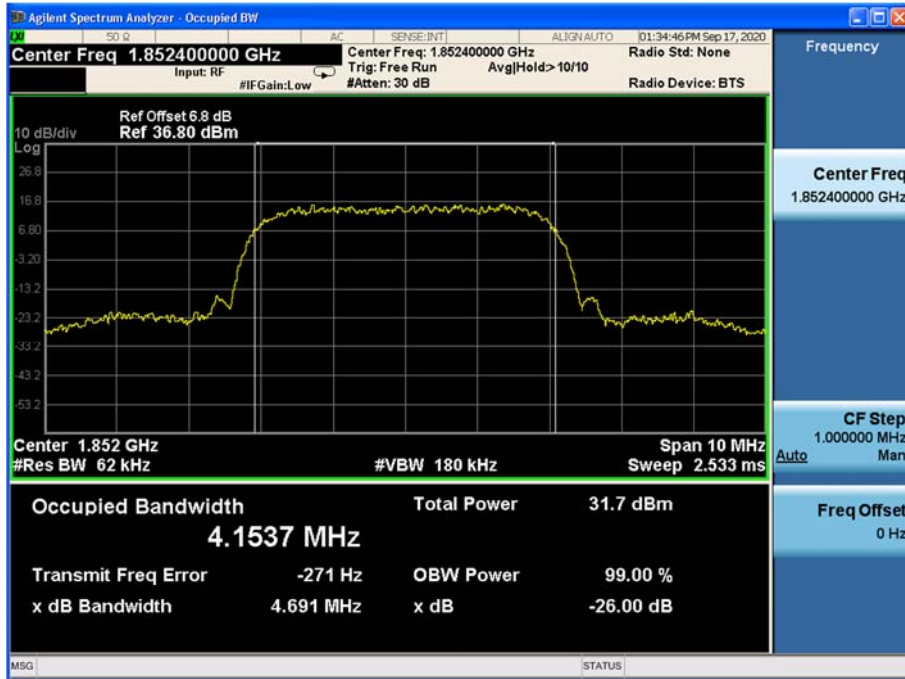
Carrier frequency (MHz)	Channel No.	Bandwidth of -26dBc Power (MHz)
1712.4	1312	4.670
1732.4	1412	4.706
1752.6	1513	4.693

HSUPA Mode:

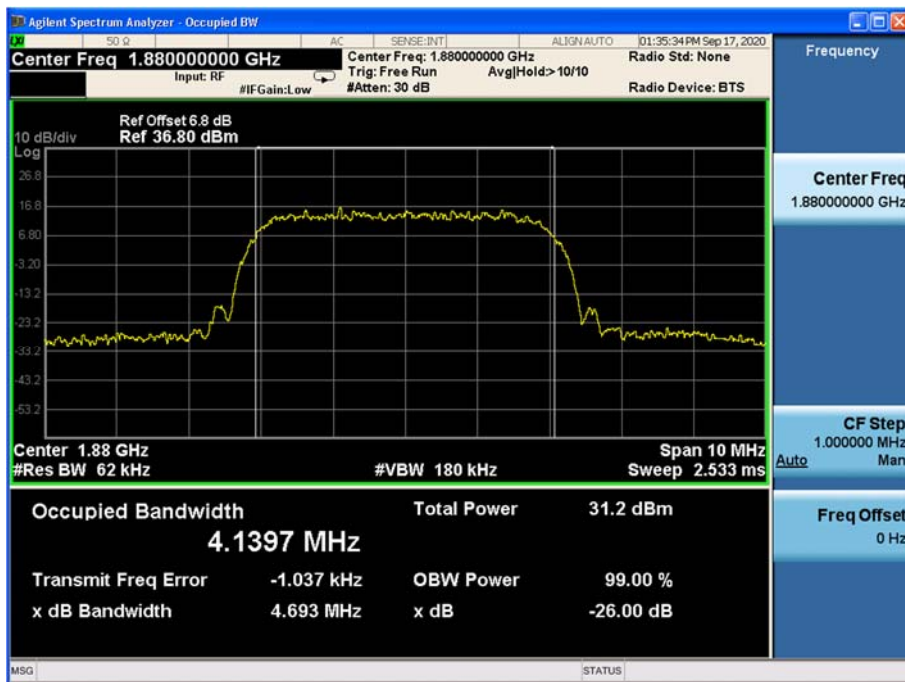
Carrier frequency (MHz)	Channel No.	Bandwidth of -26dBc Power (MHz)
1712.4	1312	4.678
1732.4	1412	4.681
1752.6	1513	4.667

WCDMA band II

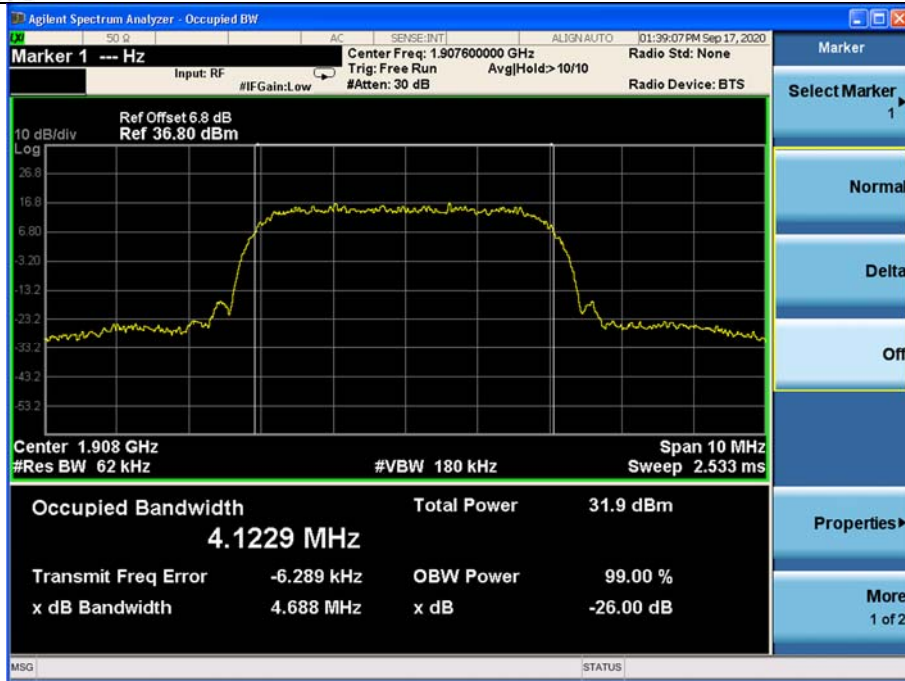
REL99 Mode:



Channel 9262

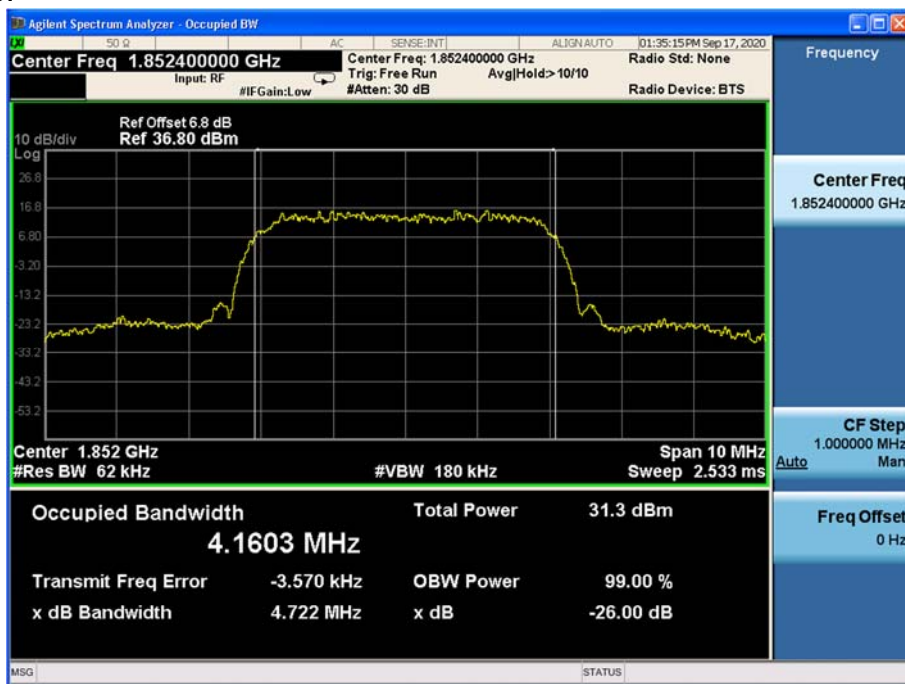


Channel 9400

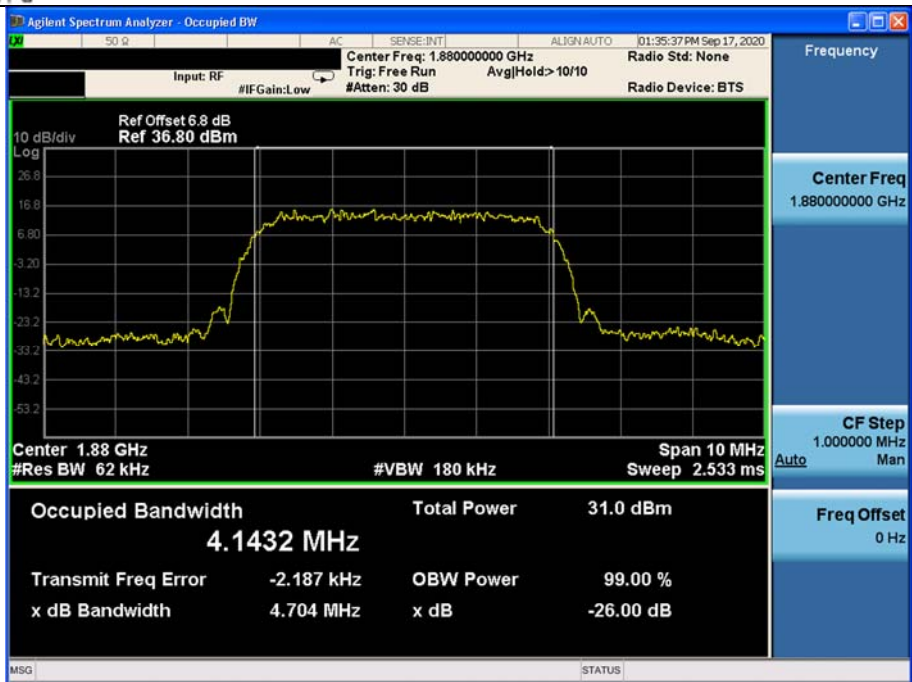


Channel 9538

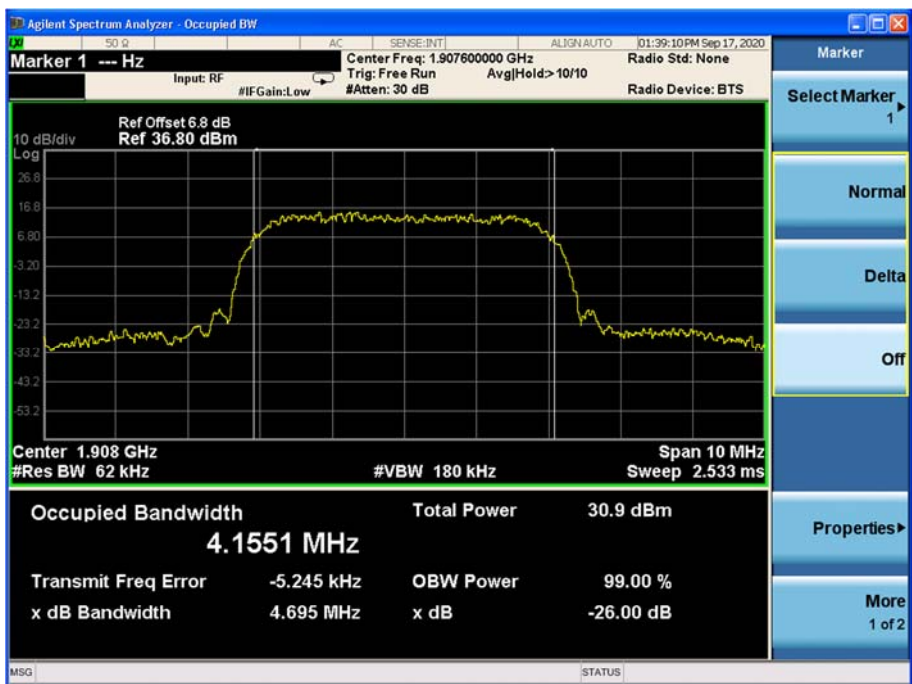
HSUPA Mode:



Channel 9262



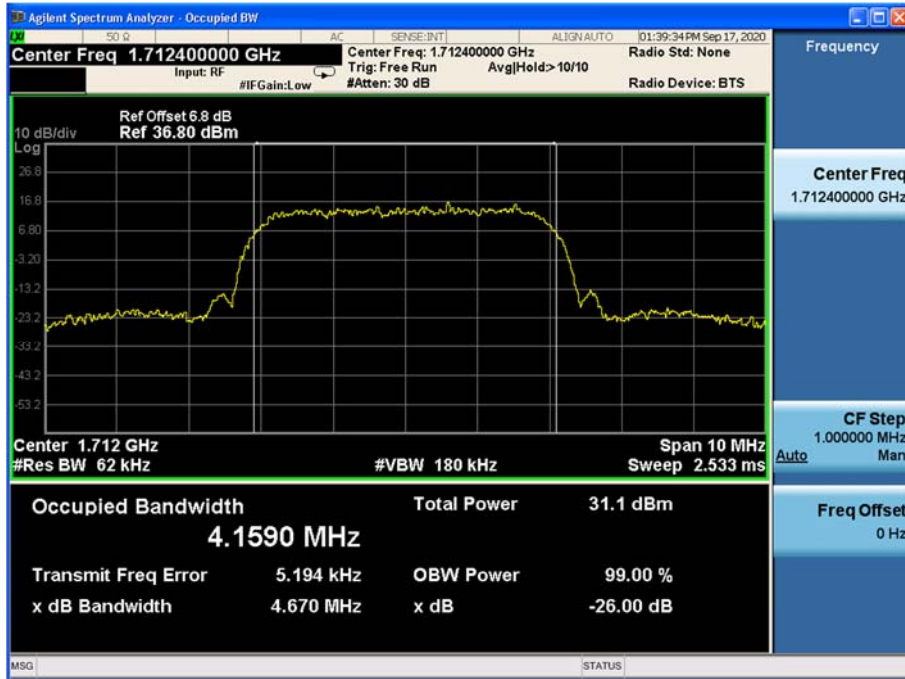
Channel 9400



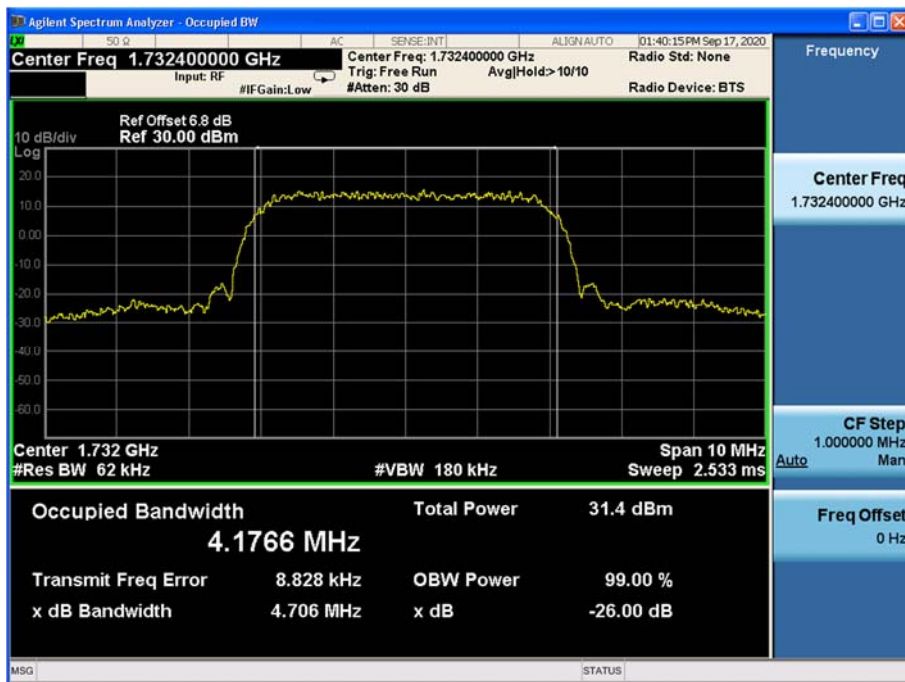
Channel 9538

WCDMA band IV

REL99 Mode:



Channel 1312

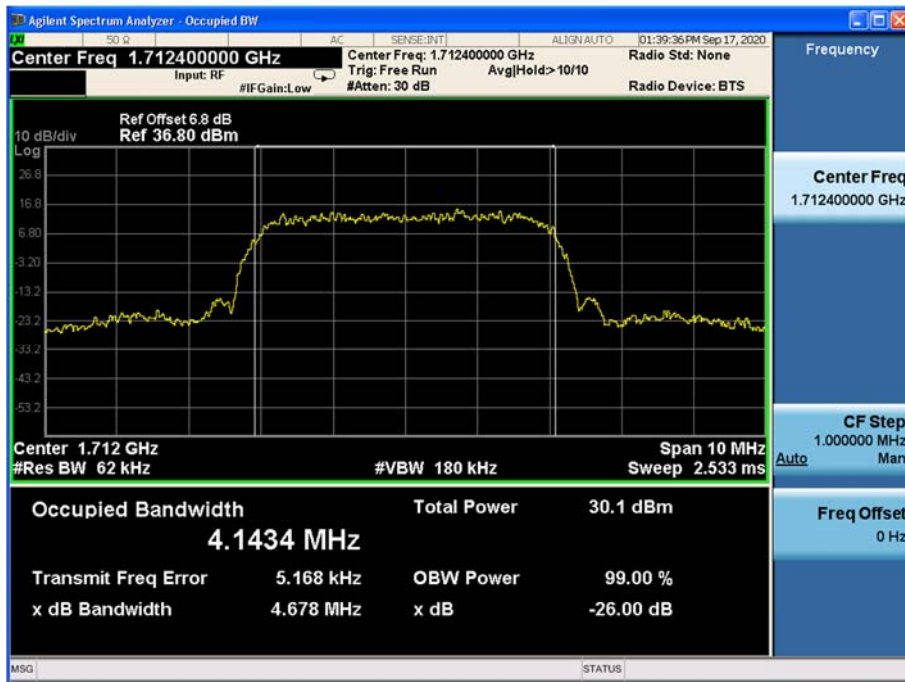


Channel 1412

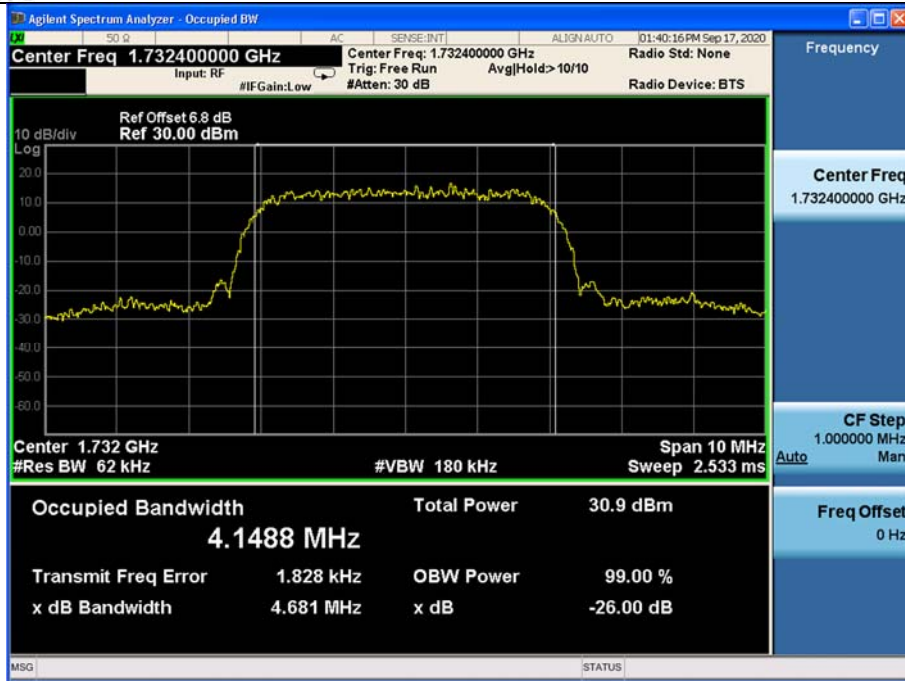


Channel 1513

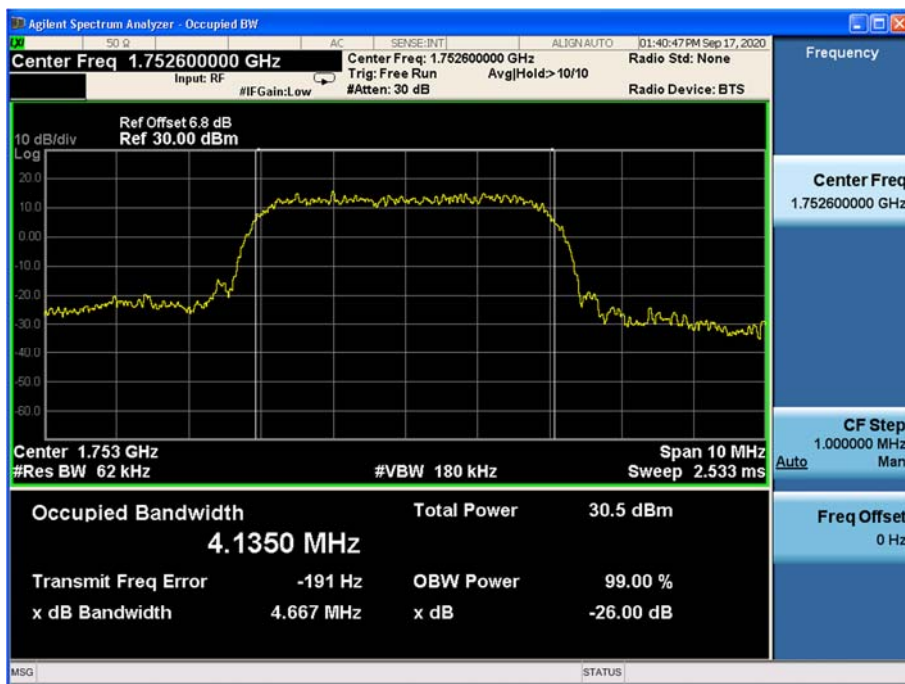
HSUPA Mode:



Ch7annel 1312



Channel 1412

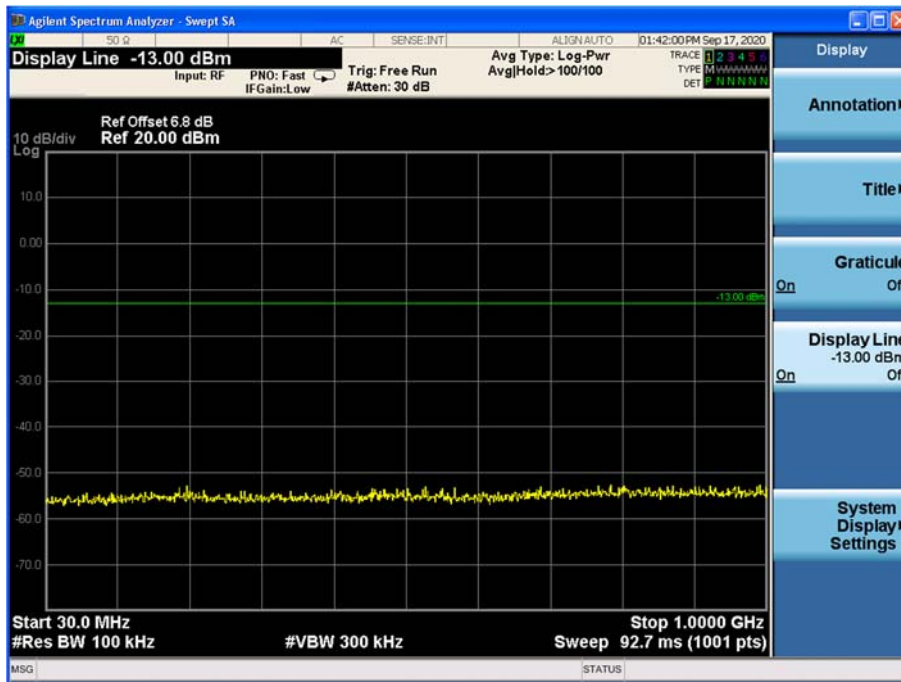


Channel 1513

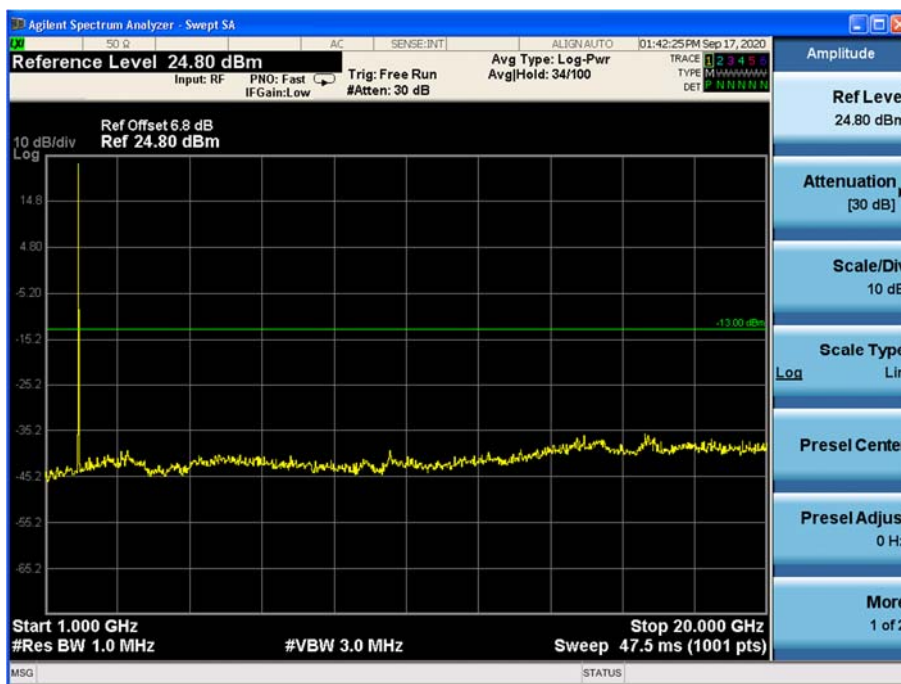


**Spurious Emissions at antenna terminal**  
WCDMA band II

REL99 Mode:



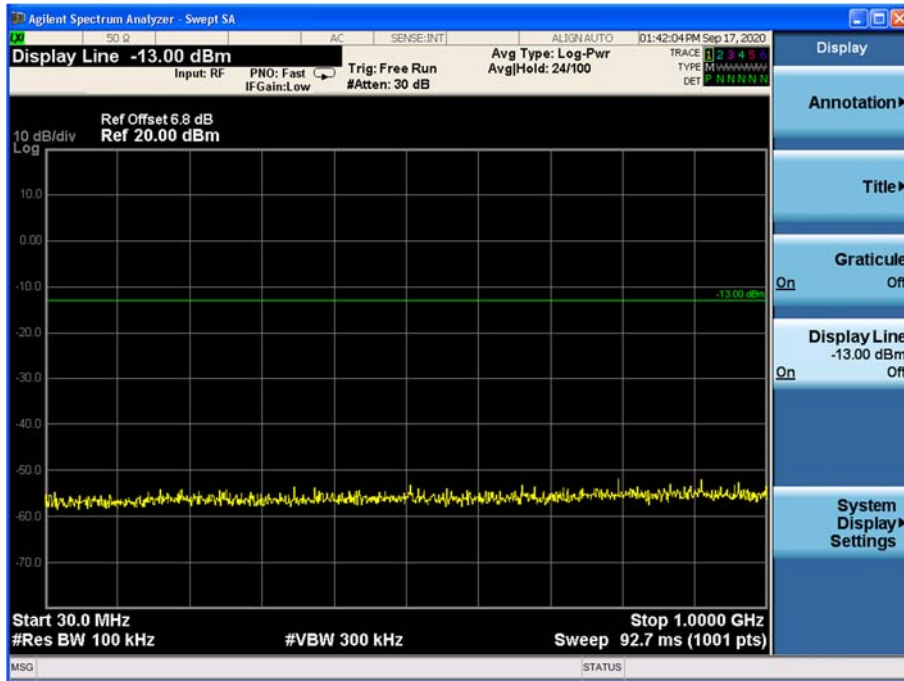
Channel 9400, 30MHz~1GHz



Channel 9400, 1GHz~20GHz

Note: The signal beyond the limit is the signal transmitted by EUT.

HSUPA Mode:



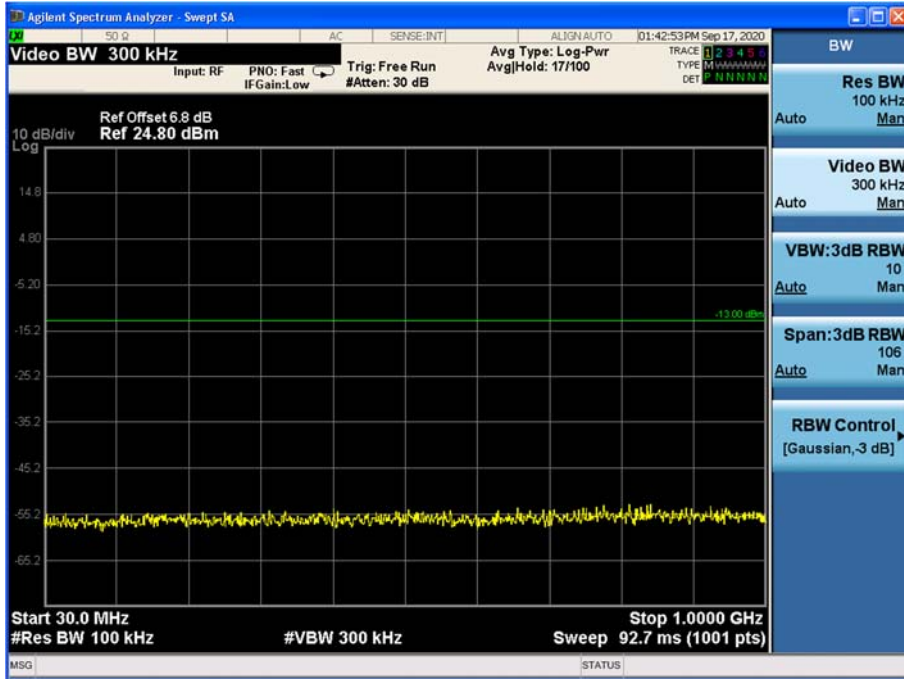
Channel 9400, 30MHz~1GHz



Channel 9400, 1GHz~20GHz

Note: The signal beyond the limit is the signal transmitted by EUT.

WCDMA band IV  
REL99 Mode:



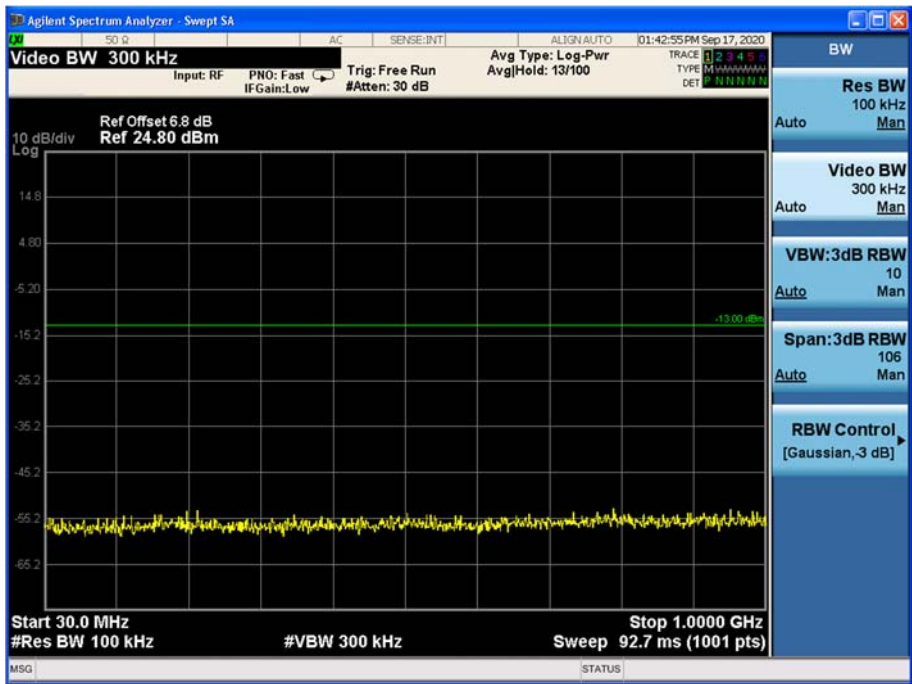
Channel 1412, 30MHz~1GHz



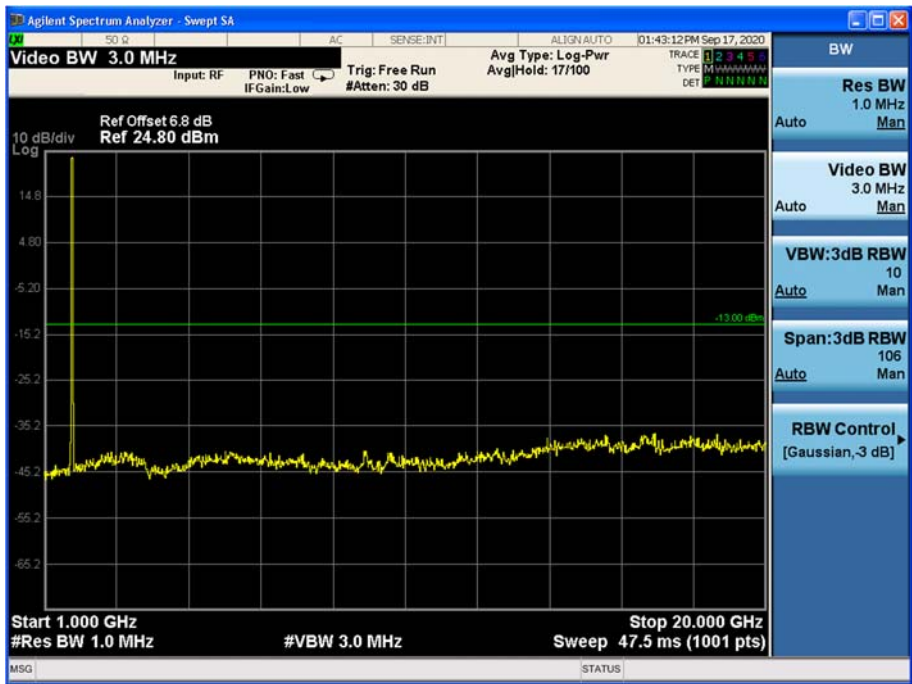
Channel 1412, 1GHz~20GHz

Note: The signal beyond the limit is the signal transmitted by EUT.

HSUPA Mode:



Channel 1412, 30MHz~1GHz



Channel 1412, 1GHz~20GHz

Note: The signal beyond the limit is the signal transmitted by EUT.

## Band Edges Compliance

WCDMA band II

REL99 Mode:



Channel 9262



Channel 9538

HSUPA Mode:



Channel 9262



Channel 9538

WCDMA band IV

REL99 Mode:



Channel 1312



Channel 1513

HSUPA Mode:



Channel 1312



Channel 1513



## Frequency Stability

WCDMA band II  
REL99 Mode:

Temperature(°C)	Test Result (ppm)@NV		
	Channel 9262	Channel 9400	Channel 9538
-10	-0.099	-0.089	0.077
0	0.029	0.025	0.039
+10	-0.100	-0.044	-0.031
+20	0.000	0.000	0.000
+30	0.030	-0.020	-0.038
+40	0.063	-0.041	0.071
+50	-0.047	0.047	0.087
+55	-0.054	-0.016	0.069
Voltage	Test Result (ppm)@NT		
	Channel 9262	Channel 9400	Channel 9538
LV	0.033	0.060	0.044
HV	-0.057	-0.078	-0.092

HSUPA Mode:

Temperature(°C)	Test Result (ppm)@NV		
	Channel 9262	Channel 9400	Channel 9538
-10	0.079	-0.079	0.024
0	0.007	-0.005	-0.098
+10	0.087	0.089	0.049
+20	0.000	0.000	0.000
+30	-0.093	0.032	0.076
+40	-0.007	-0.044	-0.080
+50	0.091	0.078	0.042
+55	0.078	-0.065	-0.012
Voltage	Test Result (ppm)NT		
	Channel 9262	Channel 9400	Channel 9538
LV	0.029	-0.072	0.068
HV	0.051	-0.008	0.012

WCDMA band IV  
REL99 Mode:

Temperature(°C)	Test Result (ppm)@NV		
	Channel 1312	Channel 1412	Channel 1513
-10	0.053	0.017	-0.065
0	-0.002	-0.012	0.064
+10	0.032	0.097	0.050
+20	0.000	0.000	0.000
+30	0.060	-0.040	-0.004
+40	0.053	-0.069	-0.028
+50	0.076	-0.050	-0.097
+55	-0.040	0.056	-0.096
Voltage	Test Result (ppm)@NT		
	Channel 1312	Channel 1412	Channel 1513
LV	-0.090	0.026	0.022
HV	0.078	0.042	0.071

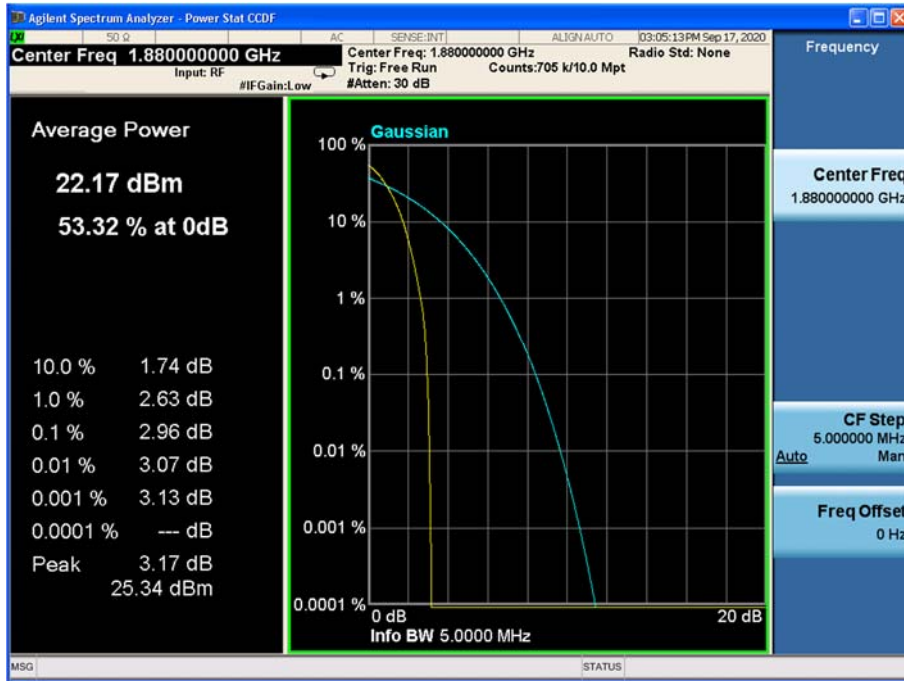
HSUPA Mode:

Temperature(°C)	Test Result (ppm)@NV		
	Channel 1312	Channel 1412	Channel 1513
-10	0.047	0.068	-0.016
0	0.055	0.068	-0.015
+10	0.043	-0.020	0.012
+20	0.000	0.000	0.000
+30	0.088	0.031	0.056
+40	0.096	0.089	-0.062
+50	-0.058	-0.055	-0.009
+55	0.012	-0.034	-0.097
Voltage	Test Result (ppm)@NT		
	Channel 1312	Channel 1412	Channel 1513
LV	-0.045	-0.099	-0.031
HV	0.017	-0.091	0.040

## Peak-Average Ratio

WCDMA band II

REL99 Mode:



HSUPA Mode:

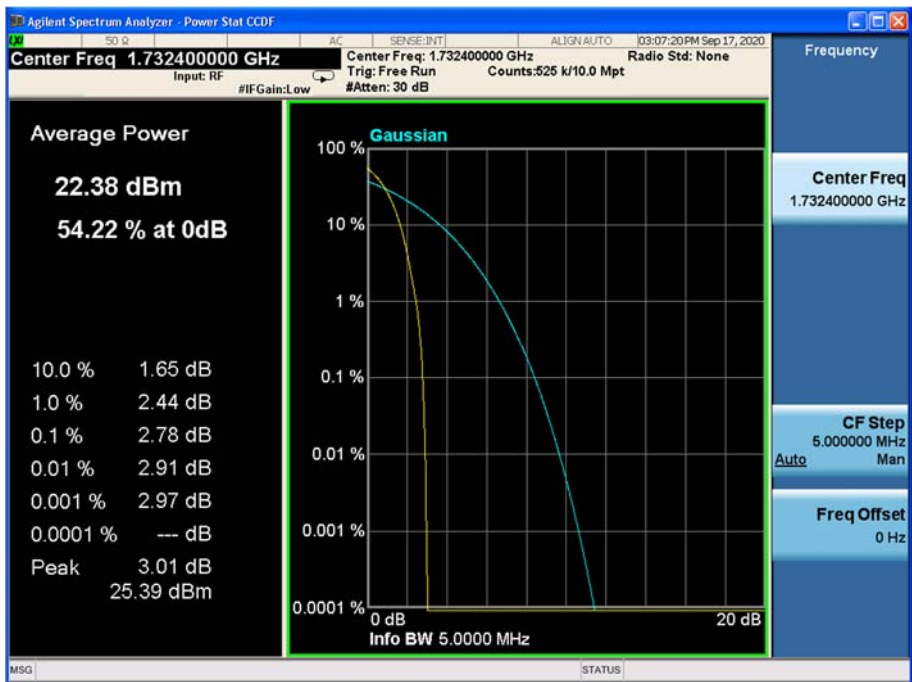


WCDMA band IV

REL99 Mode:



HSUPA Mode:



## APPENDIX B – TEST DATA OF RADIATED EMISSION

Effective Radiated Power and Effective Isotropic Radiated Power  
WCDMA band II

Mode		Carrier frequency (MHz)	Channel No.	Conducted Power (dBm)	EIRP/ ERP (dBm)	EIRP/ ERP (W)
Release 99	RMC, 12.2kbps	1852.4	9262	23.63	25.23	0.333
		1880.0	9400	23.56	25.16	0.328
		1907.6	9538	23.43	25.03	0.318
HSDPA	Subtest 1	1852.4	9262	21.73	23.33	0.215
		1880.0	9400	21.61	23.21	0.209
		1907.6	9538	21.49	23.09	0.204
	Subtest 2	1852.4	9262	21.66	23.26	0.212
		1880.0	9400	21.66	23.26	0.212
		1907.6	9538	21.49	23.09	0.204
	Subtest 3	1852.4	9262	21.68	23.28	0.213
		1880.0	9400	21.57	23.17	0.207
		1907.6	9538	21.52	23.12	0.205
	Subtest 4	1852.4	9262	21.72	23.32	0.215
		1880.0	9400	21.60	23.20	0.209
		1907.6	9538	21.44	23.04	0.201
HSUPA	Subtest 1	1852.4	9262	21.68	23.28	0.213
		1880.0	9400	21.58	23.18	0.208
		1907.6	9538	21.45	23.05	0.202
	Subtest 2	1852.4	9262	21.74	23.34	0.216
		1880.0	9400	21.65	23.25	0.211
		1907.6	9538	21.44	23.04	0.201
	Subtest 3	1852.4	9262	21.68	23.28	0.213
		1880.0	9400	21.57	23.17	0.207
		1907.6	9538	21.44	23.04	0.201
	Subtest 4	1852.4	9262	21.67	23.27	0.212
		1880.0	9400	21.59	23.19	0.208
		1907.6	9538	21.48	23.08	0.203
	Subtest 5	1852.4	9262	22.11	23.71	0.235
		1880.0	9400	22.03	23.63	0.231
		1907.6	9538	21.84	23.44	0.221
HSPA+	QPSK	1852.4	9262	21.72	23.32	0.215
		1880.0	9400	21.58	23.18	0.208
		1907.6	9538	21.49	23.09	0.204
	16QAM	1852.4	9262	21.71	23.31	0.214
		1880.0	9400	21.60	23.20	0.209
		1907.6	9538	21.45	23.05	0.202

Mode		Carrier frequency (MHz)	Channel No.	Conducted Power (dBm)	EIRP/ ERP (dBm)	EIRP/ ERP (W)
DC-HSDPA	Subtest 1	1852.4	9262	21.69	23.29	0.213
		1880.0	9400	21.58	23.18	0.208
		1907.6	9538	21.51	23.11	0.205
	Subtest 2	1852.4	9262	21.70	23.30	0.214
		1880.0	9400	21.60	23.20	0.209
		1907.6	9538	21.46	23.06	0.202
	Subtest 3	1852.4	9262	21.73	23.33	0.215
		1880.0	9400	21.59	23.19	0.208
		1907.6	9538	21.49	23.09	0.204
	Subtest 4	1852.4	9262	21.74	23.34	0.216
		1880.0	9400	21.64	23.24	0.211
		1907.6	9538	21.49	23.09	0.204

WCDMA band IV

Mode		Carrier frequency (MHz)	Channel No.	Conducted Power (dBm)	EIRP/ ERP (dBm)	EIRP/ ERP (W)
Release 99	RMC, 12.2kbps	1712.4	1312	23.27	24.77	0.300
		1732.4	1412	23.48	24.98	0.315
		1752.6	1513	23.64	25.14	0.327
HSDPA	Subtest 1	1712.4	1312	21.31	22.81	0.191
		1732.4	1412	21.51	23.01	0.200
		1752.6	1513	21.70	23.20	0.209
	Subtest 2	1712.4	1312	21.33	22.83	0.192
		1732.4	1412	21.59	23.09	0.204
		1752.6	1513	21.69	23.19	0.208
	Subtest 3	1712.4	1312	21.29	22.79	0.190
		1732.4	1412	21.50	23.00	0.200
		1752.6	1513	21.68	23.18	0.208
	Subtest 4	1712.4	1312	21.38	22.88	0.194
		1732.4	1412	21.53	23.03	0.201
		1752.6	1513	21.68	23.18	0.208
HSUPA	Subtest 1	1712.4	1312	21.30	22.80	0.191
		1732.4	1412	21.49	22.99	0.199
		1752.6	1513	21.66	23.16	0.207
	Subtest 2	1712.4	1312	21.30	22.80	0.191
		1732.4	1412	21.53	23.03	0.201
		1752.6	1513	21.69	23.19	0.208
	Subtest 3	1712.4	1312	21.28	22.78	0.190
		1732.4	1412	21.55	23.05	0.202
		1752.6	1513	21.71	23.21	0.209
	Subtest 4	1712.4	1312	21.32	22.82	0.191
		1732.4	1412	21.53	23.03	0.201
		1752.6	1513	21.66	23.16	0.207
	Subtest 5	1712.4	1312	21.74	23.24	0.211
		1732.4	1412	21.99	23.49	0.223
		1752.6	1513	22.11	23.61	0.230
HSPA+	QPSK	1712.4	1312	21.28	22.78	0.190
		1732.4	1412	21.50	23.00	0.200
		1752.6	1513	21.70	23.20	0.209
	16QAM	1712.4	1312	21.34	22.84	0.192
		1732.4	1412	21.50	23.00	0.200
		1752.6	1513	21.66	23.16	0.207

Mode		Carrier frequency (MHz)	Channel No.	Conducted Power (dBm)	EIRP/ ERP (dBm)	EIRP/ ERP (W)
DC-HSDPA	Subtest 1	1712.4	1312	21.28	22.78	0.190
		1732.4	1412	21.58	23.08	0.203
		1752.6	1513	21.66	23.16	0.207
	Subtest 2	1712.4	1312	21.28	22.78	0.190
		1732.4	1412	21.53	23.03	0.201
		1752.6	1513	21.68	23.18	0.208
	Subtest 3	1712.4	1312	21.28	22.78	0.190
		1732.4	1412	21.59	23.09	0.204
		1752.6	1513	21.69	23.19	0.208
	Subtest 4	1712.4	1312	21.33	22.83	0.192
		1732.4	1412	21.55	23.05	0.202
		1752.6	1513	21.66	23.16	0.207



Radiated Spurious Emissions

WCDMA band II

Test result:

WCDMA Mode:

Channel 9262

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2459.39	-50.00	-13	Vertical
2778.08	-46.41	-13	Vertical
3725.29	-41.72	-13	Vertical
6677.44	-38.86	-13	Vertical
9958.74	-36.96	-13	Vertical
17819.00	-34.47	-13	Vertical

Channel 9400

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2460.20	-49.45	-13	Vertical
2774.62	-47.76	-13	Vertical
3722.93	-41.61	-13	Vertical
6677.21	-39.09	-13	Vertical
9960.50	-37.13	-13	Vertical
17820.04	-33.34	-13	Vertical

Channel 9538

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2461.12	-48.75	-13	Vertical
2786.21	-47.70	-13	Vertical
3730.83	-41.01	-13	Vertical
6678.28	-40.48	-13	Vertical
9962.07	-36.70	-13	Vertical
17819.04	-34.57	-13	Vertical

HSDPA/HSUPA Mode:  
Channel 9262

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2461.80	-50.10	-13	Vertical
2777.57	-46.85	-13	Vertical
3725.54	-41.07	-13	Vertical
6677.65	-39.88	-13	Vertical
9960.22	-37.93	-13	Vertical
17815.34	-34.53	-13	Vertical

Channel 9400

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2459.45	-49.68	-13	Vertical
2783.71	-45.90	-13	Vertical
3726.62	-41.04	-13	Vertical
6679.32	-39.33	-13	Vertical
9961.81	-37.91	-13	Vertical
17822.48	-33.60	-13	Vertical

Channel 9538

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2458.20	-49.44	-13	Vertical
2780.70	-46.89	-13	Vertical
3723.70	-40.61	-13	Vertical
6672.85	-39.61	-13	Vertical
9960.50	-36.36	-13	Vertical
17817.23	-34.44	-13	Vertical

HSPA+ Mode: (QPSK)  
Channel 9262

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2456.80	-49.97	-13	Vertical
2777.58	-47.90	-13	Vertical
3726.84	-42.52	-13	Vertical
6675.67	-39.28	-13	Vertical
9958.95	-36.39	-13	Vertical
17816.92	-32.60	-13	Vertical

Channel 9400

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2456.32	-49.27	-13	Vertical
2783.86	-46.80	-13	Vertical
3728.43	-39.78	-13	Vertical
6678.97	-39.35	-13	Vertical
9961.41	-37.94	-13	Vertical
17823.14	-34.98	-13	Vertical

Channel 9538

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2457.14	-49.33	-13	Vertical
2779.23	-47.54	-13	Vertical
3729.93	-41.47	-13	Vertical
6680.92	-40.75	-13	Vertical
9955.71	-37.66	-13	Vertical
17817.90	-34.46	-13	Vertical

HSPA+ Mode: (16QAM)  
Channel 9262

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2459.66	-48.96	-13	Vertical
2783.18	-46.66	-13	Vertical
3728.30	-41.51	-13	Vertical
6682.52	-38.69	-13	Vertical
9958.18	-36.47	-13	Vertical
17818.21	-33.42	-13	Vertical

Channel 9400

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2460.07	-49.24	-13	Vertical
2784.12	-47.63	-13	Vertical
3728.44	-40.34	-13	Vertical
6674.28	-39.88	-13	Vertical
9960.44	-37.04	-13	Vertical
17826.05	-33.81	-13	Vertical

Channel 9538

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2461.57	-48.47	-13	Vertical
2781.34	-48.09	-13	Vertical
3730.52	-41.03	-13	Vertical
6675.58	-39.49	-13	Vertical
9960.95	-37.67	-13	Vertical
17818.82	-33.90	-13	Vertical

WCDMA band IV

Test result:

WCDMA Mode:

Channel 1312

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2458.97	-48.80	-13	Vertical
2775.24	-47.10	-13	Vertical
3723.93	-41.09	-13	Horizontal
6678.66	-38.78	-13	Vertical
9964.09	-37.37	-13	Vertical
17819.66	-33.46	-13	Vertical

Channel 1412

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2455.23	-49.18	-13	Vertical
2775.56	-48.23	-13	Vertical
3728.96	-39.89	-13	Vertical
6676.76	-40.91	-13	Vertical
9960.42	-37.79	-13	Vertical
17821.28	-34.51	-13	Vertical

Channel 1513

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2458.39	-49.22	-13	Vertical
2781.44	-47.50	-13	Vertical
3729.00	-41.13	-13	Vertical
6678.59	-39.71	-13	Horizontal
9958.34	-37.17	-13	Vertical
17818.15	-33.48	-13	Vertical

HSDPA/HSUPA Mode:  
Channel 1312

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2463.46	-48.61	-13	Vertical
2782.52	-46.86	-13	Vertical
3724.10	-41.26	-13	Vertical
6677.17	-40.13	-13	Vertical
9961.68	-37.23	-13	Horizontal
17816.95	-33.66	-13	Vertical

Channel 1412

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2457.10	-48.40	-13	Vertical
2780.40	-48.17	-13	Horizontal
3723.10	-41.74	-13	Vertical
6677.83	-40.87	-13	Vertical
9961.32	-36.91	-13	Vertical
17820.94	-32.95	-13	Vertical

Channel 1513

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2460.79	-48.86	-13	Vertical
2777.86	-48.19	-13	Vertical
3728.08	-40.87	-13	Vertical
6674.76	-39.70	-13	Vertical
9960.12	-36.10	-13	Horizontal
17819.03	-33.62	-13	Horizontal

HSPA+ Mode:(QPSK)  
Channel 1312

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2461.01	-49.55	-13	Vertical
2784.37	-47.34	-13	Vertical
3725.55	-40.21	-13	Vertical
6678.74	-39.11	-13	Vertical
9962.19	-36.74	-13	Vertical
17820.12	-34.52	-13	Vertical

Channel 1412

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2458.86	-48.54	-13	Vertical
2782.49	-47.40	-13	Vertical
3728.52	-40.11	-13	Horizontal
6674.38	-40.34	-13	Vertical
9962.02	-37.80	-13	Vertical
17821.40	-33.69	-13	Vertical

Channel 1513

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2463.43	-47.66	-13	Vertical
2782.67	-47.90	-13	Vertical
3724.49	-41.05	-13	Vertical
6675.51	-40.02	-13	Horizontal
9962.15	-36.67	-13	Vertical
17822.96	-34.69	-13	Vertical

HSPA+ Mode:(16QAM)  
Channel 1312

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2462.50	-48.96	-13	Vertical
2783.54	-46.74	-13	Vertical
3725.31	-40.00	-13	Horizontal
6679.92	-39.04	-13	Vertical
9963.84	-36.42	-13	Vertical
17817.96	-34.22	-13	Vertical

Channel 1412

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2457.02	-48.50	-13	Vertical
2781.33	-48.16	-13	Vertical
3727.82	-40.15	-13	Vertical
6671.94	-39.33	-13	Vertical
9963.29	-37.35	-13	Vertical
17824.26	-34.00	-13	Vertical

Channel 1513

Frequency (MHz)	Power (dBm)	Limited (dBm)	Polarization
2459.09	-47.84	-13	Vertical
2779.48	-48.10	-13	Vertical
3723.93	-39.19	-13	Vertical
6672.75	-39.30	-13	Vertical
9959.26	-36.95	-13	Vertical
17822.46	-34.58	-13	Vertical

---The end of the test report---