



Test Report No.: W7L-P23030003RF06



# FCC TEST REPORT (PART 27)

Applicant:	Xiaomi Communications Co., Ltd.
Address:	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

Manufacturer or Supplier:	Xiaomi Communications Co., Ltd.
Address:	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085
Product:	Mobile Phone
Brand Name:	Redmi
Model Name:	23053RN02L
FCC ID:	2AFZZRN02L
Date of tests:	Mar. 06, 2023 ~ Mar. 29, 2023

The tests have been carried out according to the requirements of the following standard:

- FCC Part 27     ANSI/TIA/EIA-603-D
- FCC Part 2     ANSI/TIA/EIA-603-E     ANSI C63.26-2015

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Simon Wang Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
Date: Mar. 29, 2023	Date: Mar. 29, 2023

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



# TABLE OF CONTENTS

<b>RELEASE CONTROL RECORD</b> .....	<b>4</b>
<b>1 SUMMARY OF TEST RESULTS</b> .....	<b>5</b>
1.1 MEASUREMENT UNCERTAINTY .....	7
1.2 TEST SITE AND INSTRUMENTS .....	8
<b>2 GENERAL INFORMATION</b> .....	<b>10</b>
2.1 GENERAL DESCRIPTION OF EUT .....	10
2.2 CONFIGURATION OF SYSTEM UNDER TEST .....	14
2.3 DESCRIPTION OF SUPPORT UNITS .....	15
2.4 TEST ITEM AND TEST CONFIGURATION .....	15
2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS .....	21
<b>3 TEST TYPES AND RESULTS</b> .....	<b>22</b>
3.1 OUTPUT POWER MEASUREMENT .....	22
3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT .....	22
3.1.2 TEST PROCEDURES .....	22
3.1.3 TEST SETUP .....	23
3.1.4 TEST RESULTS .....	24
3.2 FREQUENCY STABILITY MEASUREMENT .....	72
3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT .....	72
3.2.2 TEST PROCEDURE .....	72
3.2.3 TEST SETUP .....	72
3.2.4 TEST RESULTS .....	73
3.3 OCCUPIED BANDWIDTH MEASUREMENT .....	74
3.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT .....	74
3.3.2 TEST SETUP .....	74
3.3.3 TEST PROCEDURES .....	74
3.3.4 TEST RESULTS .....	75
3.4 BAND EDGE MEASUREMENT .....	76
3.4.1 LIMITS OF BAND EDGE MEASUREMENT .....	76
3.4.2 TEST SETUP .....	77
3.4.3 TEST PROCEDURES .....	78
3.4.4 TEST RESULTS .....	79
3.5 CONDUCTED SPURIOUS EMISSIONS .....	80
3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT .....	80
3.5.2 TEST PROCEDURE .....	80
3.5.3 TEST SETUP .....	80
3.5.4 TEST RESULTS .....	80
3.6 RADIATED EMISSION MEASUREMENT .....	82
3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT .....	82
3.6.2 TEST PROCEDURES .....	82
3.6.3 DEVIATION FROM TEST STANDARD .....	82
3.6.4 TEST SETUP .....	83
3.6.5 TEST RESULTS .....	85
3.7 PEAK TO AVERAGE RATIO .....	125
3.7.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT .....	125
3.7.2 TEST SETUP .....	125
3.7.3 TEST PROCEDURES .....	125
3.7.4 TEST RESULTS .....	126
<b>4 INFORMATION ON THE TESTING LABORATORIES</b> .....	<b>127</b>



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VERITAS**

**Test Report No.: W7L-P23030003RF06**

**5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB. 128**

**6 APPENDIX ..... 129**

WCDMA BAND4 ..... 129

LTE BAND7 ..... 140

LTE BAND12 (INCLUDING B17)..... 192

LTE BAND13 ..... 244



Test Report No.: W7L-P23030003RF06

## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-P23030003RF06	Original release	Mar. 29, 2023

# 1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 27 & PART 2			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	TEST LAB*
§2.1046	Conducted Output Power	Compliance	A
§27.50(b)(10) §27.50(c)(10)	Effective Radiated Power (Band 12) (Band 13) (Band 17)	Compliance	A
§27.50(d)(4) §27.50(h)(2)	Equivalent Isotropically Radiated Power (WCMDA Band 4)(Band 7)	Compliance	A
§2.1055 §27.54	Frequency Stability	Compliance	A
§2.1049	Occupied Bandwidth	Compliance	A
§2.1051 §27.53(c)(2)(4) §27.53(g) §27.53(h) §27.53(m)(4)(6)	Conducted Band Edge Measurements (WCMDA Band 4) (Band 7) (Band 12) (Band 13) (Band 17)	Compliance	A
§2.1051 §27.53(c)(2)(4) §27.53(g) §27.53(h) §27.53(m)(4)(6)	Conducted Spurious Emissions (WCMDA Band 4)(Band 7) (Band 12) (Band 13) (Band 17)	Compliance	A
§2.1053 §27.53(c)(2)(4) §27.53(f) §27.53(g) §27.53(h) §27.53(m)(4)(6)	Radiated Spurious Emissions (WCMDA Band 4)(Band 7) (Band 12) (Band 13) (Band 17)	Compliance	B
NA	Peak to average ratio	Compliance	A



**Test Report No.: W7L-P23030003RF06**

**\*Test Lab Information Reference**

**Lab A:**

BV 7Layers Communications Technology (Shenzhen) Co., Ltd

**Lab Address:**

No.B102, Dazu Chuangxin Mansion, North of Beihuan Avenue, North Area, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, China

**Accredited Test Lab Cert 3939.01**

**The FCC Site Registration No. : 525120; Designation No. : CN1171;**

**Lab B:**

Huarui 7Layers High Technology (Suzhou) Co., Ltd.

**Lab Address:**

Tower N, Innovation Center, 88 Zhuyi Road, High-tech District, Suzhou City, Anhui Province

**Accredited Test Lab Cert 6613.01**

**The FCC Site Registration No. is 434559; The Designation No. is CN1325.**

## 1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	UNCERTAINTY
Frequency Stability	±76.97Hz
Radiated emissions (9KHz~30MHz)	±2.68dB
Radiated emissions & Radiated Power (30MHz~1GHz)	±4.98dB
Radiated emissions & Radiated Power (1GHz ~6GHz)	±4.70dB
Radiated emissions (6GHz ~18GHz)	±4.60dB
Radiated emissions (18GHz ~40GHz)	±4.12dB
Conducted emissions	±4.01dB
Occupied Channel Bandwidth	±43.58KHz
Conducted Output power	±2.06dB
Band Edge Measurements	±4.70dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



Test Report No.: W7L-P23030003RF06

## 1.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Feb. 17,23	Feb. 16,24
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	May.14,22	May.13,23
Loop Antenna	Schwarzbeck	FMZB 1519B	00173	Sep.03,22	Sep.02,23
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Mar. 05,23	Mar. 04,24
Horn Antenna	ETS-LINDGREN	3117	00168692	Mar. 05,23	Mar. 04,24
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40- K-SG/QMS-003 61	15433	Sep.04, 22	Sep.03, 23
Radio Communication Analyzer	ANRITSU	MT8820C	6201465426	Feb. 14,23	Feb. 13,24
Signal Pre-Amplifier	EMSI	EMC 9135	980249	May.12,22	May.11,23
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	May.12,22	May.11,23
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Feb. 17,23	Feb.16,24
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn- CT0001143-121 6	May. 19,20	May. 18,23
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	JS1120	3.1.36	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	N/A	May. 12,22	May. 11,23
Power Meter	Anritsu	ML2495A	1506002	Feb. 14,23	Feb. 13,24
Power Sensor	Anritsu	MA2411B	1339352	Feb. 14,23	Feb. 13,24
Temperature Chamber	ESPEC	SH-242	93000855	May. 12,22	May. 11,23
MXG Analog Microwave Signal Generator	KEYSIGHT	N5183A	MY50143024	Feb. 14,23	Feb. 13,24
Base station R&S CMW500	Rohde&Schwarz	CMW500	153085	May.12,22	May.11,23
DC Source	Kikusui/JP	PMX18-5A	N/A	Aug. 12,22	Aug. 11,23

- NOTE:**
1. The calibration interval of the above test instruments is 12 months or 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
  2. The test was performed in 3m Semi-anechoic Chamber and RF Oven Room.
  3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
  4. The FCC Site Registration No. is 525120; The Designation No. is CN1171.





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**Test Report No.: W7L-P23030003RF06**

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Pre-Amplifier	R&S	SCU18F1	100815	Aug.30,22	Aug.29,24
Pre-Amplifier	R&S	SCU08F1	101028	Sep.16,22	Sep.15,24
Vector Signal Generator	R&S	SMBV100B	102176	Feb.16,22	Feb.15,24
Signal Generator	R&S	SMB100A	182185	Feb.16,22	Feb.15,24
3m Fully-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-01Chamber	Nov.25,22	Nov.24,25
3m Semi-anechoic Chamber	TDK	9m*6m*6m	HRSW-SZ-EMC-02Chamber	Nov.25,22	Nov.24,25
EMI TEST Receiver	R&S	ESR26	101734	Feb.25,22	Feb.24,24
EMI TEST Receiver	R&S	ESW44	101973	Feb.25,22	Feb.24,24
Bilog Antenna	SCHWARZBECK	VULB 9163	1264	Feb.28,22	Feb.27,24
Horn Antenna	ETS-LINDGREN	3117	227836	Aug.22,22	Aug.21,24
Horn Antenna (18GHz-40GHz)	Steatite Q-par Antennas	QMS 00880	23486	Feb.23,22	Feb.22,24
Horn Antenna	Steatite Q-par Antennas	QMS 00208	23485	Aug.22,22	Aug.21,24
Loop Antenna	SCHWARZ	HFH2-Z2/Z2E	100976	Feb.23,22	Feb.22,24
WIDEBANDRADIO COMMUNICATION TESTER	R&S	CMW500	169399	Jun.27,22	Jun.26,24
Test Software	EMC32	EMC32	N/A	N/A	N/A
Test Software	ELEKTRA	ELEKTRA4.32	N/A	N/A	N/A
Open Switch and Control Unit	R&S	OSP220	101964	Oct.01,22	Sep.30,24
DC Source	HYELEC	HY3010B	551016	Aug.31,22	Aug.30,24
Hygrothermograph	DELI	20210528	SZ014	Sep.06,22	Sep.05,24
PC	LENOVO	E14	HRSW0024	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-7.00M	N/A	N/A	N/A
TMC-AMI18843A(CABLE)	R&S	HF290-NMNM-4.00M	N/A	N/A	N/A
CABLE	R&S	W13.02	N/A	Oct.31,22	Apr.29,23
CABLE	R&S	W12.14	N/A	Oct.31,22	Apr.29,23
CABLE	R&S	J12J103539-00-1	SEP-03-20-069	Oct.31,22	Apr.29,23
CABLE	R&S	J12J103539-00-1	SEP-03-20-070	Oct.31,22	Apr.29,23
Temperature Chamber	votsch	VT4002	58566078100050	May.31,22	May.30,24

- NOTE:**
1. The calibration interval of the above test instruments is 12 months or 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
  2. The test was performed in 3m Semi-anechoic Chamber and RF Oven Room.
  3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
  4. The FCC Site Registration No. is 434559; The Designation No. is CN1325.

## 2 GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	Mobile Phone	
<b>BRAND NAME</b>	Redmi	
<b>MODEL NAME</b>	23053RN02L	
<b>NOMINAL VOLTAGE</b>	5V/9V/10V/12Vdc(adapter or host equipment) 3.8Vdc (Li-ion, battery)	
<b>MODULATION TECHNOLOGY</b>	<b>WCDMA IV</b>	BPSK, QPSK
	<b>LTE</b>	QPSK, 16QAM, 64QAM
<b>FREQUENCY RANGE</b>	<b>WCDMA IV</b>	1712.4MHz ~ 1752.6MHz
	<b>LTE Band 7 Channel Bandwidth: 5MHz</b>	2502.5MHz ~ 2567.5MHz
	<b>LTE Band 7 Channel Bandwidth: 10MHz</b>	2505MHz ~ 2565MHz
	<b>LTE Band 7 Channel Bandwidth: 15MHz</b>	2507.5MHz ~ 2562.5MHz
	<b>LTE Band 7 Channel Bandwidth: 20MHz</b>	2510MHz ~ 2560MHz
	<b>LTE Band 12 Channel Bandwidth: 1.4MHz</b>	699.7MHz ~ 715.3MHz
	<b>LTE Band 12 Channel Bandwidth: 3MHz</b>	700.5MHz ~ 714.5MHz
	<b>LTE Band 12 Channel Bandwidth: 5MHz</b>	701.5MHz ~ 713.5MHz
	<b>LTE Band 12 Channel Bandwidth: 10MHz</b>	704MHz ~ 711MHz
	<b>LTE Band 13 Channel Bandwidth: 5MHz</b>	779.5MHz ~ 784.5MHz
	<b>LTE Band 13 Channel Bandwidth: 10MHz</b>	782MHz
	<b>LTE Band 17 Channel Bandwidth: 5MHz</b>	706.5MHz ~ 713.5MHz
	<b>LTE Band 17 Channel Bandwidth: 10MHz</b>	709MHz ~ 711 MHz
	<b>MAX. EIRP POWER</b>	<b>WCDMA IV</b>
<b>LTE Band 7 Channel Bandwidth: 5MHz</b>		282.49mW
<b>LTE Band 7 Channel Bandwidth: 10MHz</b>		285.1mW
<b>LTE Band 7 Channel Bandwidth: 15MHz</b>		281.84mW

<b>MAX. EIRP POWER</b>	<b>LTE Band 7 Channel Bandwidth: 20MHz</b>	288.4mW
	<b>LTE Band 12 Channel Bandwidth: 1.4MHz</b>	40.27mW
	<b>LTE Band 12 Channel Bandwidth: 3MHz</b>	39.26mW
	<b>LTE Band 12 Channel Bandwidth: 5MHz</b>	39.26mW
	<b>LTE Band 12 Channel Bandwidth: 10MHz</b>	39.45mW
	<b>LTE Band 13 Channel Bandwidth: 5MHz</b>	39.45mW
	<b>LTE Band 13 Channel Bandwidth: 10MHz</b>	39.54mW
	<b>LTE Band 17 Channel Bandwidth: 5MHz</b>	47.75mW
	<b>LTE Band 17 Channel Bandwidth: 10MHz</b>	47.97mW
<b>EMISSION DESIGNATOR</b>	<b>WCDMA IV</b>	4M19F9W
	<b>LTE Band 7 Channel Bandwidth: 5MHz</b>	QPSK: 4M50G7D
		16QAM: 4M51W7D
		64QAM: 4M50W7D
	<b>LTE Band 7 Channel Bandwidth: 10MHz</b>	QPSK: 8M99G7D
		16QAM: 8M99W7D
		64QAM: 8M99W7D
	<b>LTE Band 7 Channel Bandwidth: 15MHz</b>	QPSK: 13M5G7D
		16QAM: 13M5W7D
		64QAM: 13M5W7D
	<b>LTE Band 7 Channel Bandwidth: 20MHz</b>	QPSK: 17M9G7D
		16QAM: 17M9W7D
		64QAM: 17M9W7D
	<b>LTE Band 12 Channel Bandwidth: 1.4MHz</b>	QPSK: 1M09G7D
		16QAM: 1M09W7D
64QAM: 1M09W7D		
<b>LTE Band 12 Channel Bandwidth: 3MHz</b>	QPSK: 2M70G7D	
	16QAM: 2M69W7D	
	64QAM: 2M69W7D	



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Test Report No.: W7L-P23030003RF06

<b>EMISSION DESIGNATOR</b>	<b>LTE Band 12 Channel Bandwidth: 5MHz</b>	QPSK: 4M50G7D
		16QAM: 4M51W7D
		64QAM: 4M51W7D
	<b>LTE Band 12 Channel Bandwidth: 10MHz</b>	QPSK: 9M00G7D
		16QAM: 9M00W7D
		64QAM: 9M01W7D
	<b>LTE Band 13 Channel Bandwidth: 5MHz</b>	QPSK: 4M50G7D
		16QAM: 4M51W7D
		64QAM: 4M50W7D
	<b>LTE Band 13 Channel Bandwidth: 10MHz</b>	QPSK: 8M99G7D
		16QAM: 8M98W7D
		64QAM: 8M98W7D
<b>ANTENNA TYPE</b>	<p>ANT 0: IFA Antenna with -1.04dBi gain for WCDMA IV IFA Antenna with 0.45dBi gain for LTE7 IFA Antenna with -6.02dBi gain for LTE12 IFA Antenna with -6.02dBi gain for LTE13 IFA Antenna with -5.16dBi gain for LTE17</p> <p>ANT 4: IFA Antenna with -2.26dBi gain for WCDMA IV IFA Antenna with 0.28dBi gain for LTE7 IFA Antenna with -9.01dBi gain for LTE12 IFA Antenna with -5.89dBi gain for LTE13 IFA Antenna with -7.33dBi gain for LTE17</p>	
<b>HW VERSION</b>	P1.1	
<b>SW VERSION</b>	MIUI14	
<b>IMEI</b>	867866060030240 867866060047483 867866060047491	
<b>I/O PORTS</b>	Refer to user's manual	
<b>CABLE SUPPLIED</b>	USB cable1: non-shielded cable, with w/o ferrite core, 1.0 meter USB cable2: non-shielded cable, with w/o ferrite core, 1.0 meter	
<b>EXTREME TEMPERATURE</b>	0-40 °C	
<b>EXTREME VOLTAGE</b>	3.5V - 4.2V	



Test Report No.: W7L-P23030003RF06

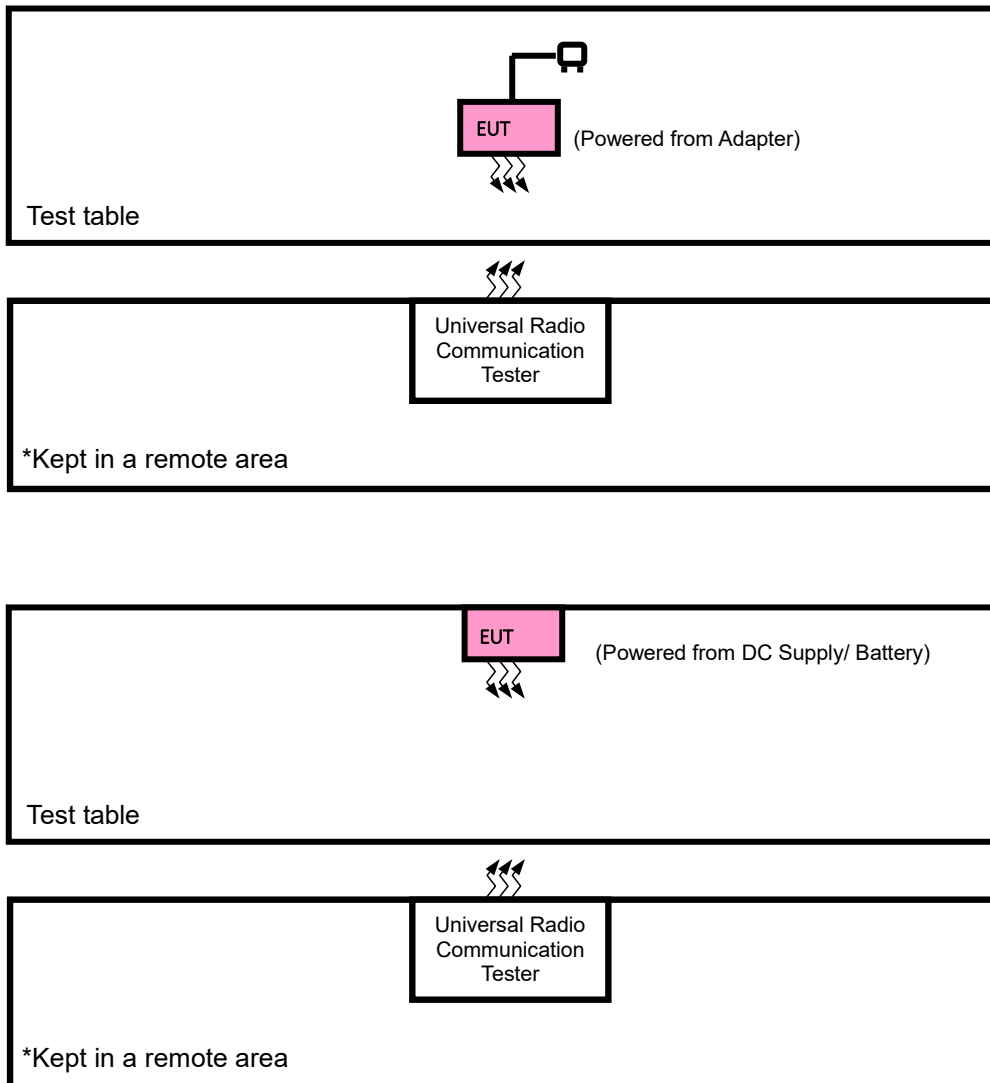
**NOTE:**

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. The EUT incorporates a SISO function. Physically, the EUT provides two completed transmitter and one receiver.

MODULATION MODE	TX FUNCTION
WCDMA	2TX/2RX
LTE	2TX/2RX

3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

## 2.2 CONFIGURATION OF SYSTEM UNDER TEST FOR RADIATION EMISSION TEST



## 2.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	DC source	LONG WEI	PS-6403D	010934269	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	DC Line: Unshielded, Detachable 1.8m

## 2.4 TEST ITEM AND TEST CONFIGURATION

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports. The worst case was found when positioned on Y-plane for EIRP and X-axis for radiated emission. Following channel(s) was (were) selected for the final test as listed below:

EUT CONFIGURE MODE	DESCRIPTION
A	EUT + Adapter + USB Cable with WCDMA or LTE link
B	EUT + DC source with GSM or WCDMA or LTE link

### WCDMA MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
A	EIRP	1312 to 1513	1312, 1413, 1513	WCDMA
B	FREQUENCY STABILITY	1312 to 1513	1312, 1413, 1513	WCDMA
A	OCCUPIED BANDWIDTH	1312 to 1513	1312, 1413, 1513	WCDMA
A	BAND EDGE	1312 to 1513	1312, 1513	WCDMA
A	PEAK TO AVERAGE RATIO	1312 to 1513	1312, 1413, 1513	WCDMA
A	CONDUCTED EMISSION	1312 to 1513	1312, 1413, 1513	WCDMA
A	RADIATED EMISSION	1312 to 1513	1312, 1413, 1513	WCDMA

**LTE BAND 7 MODE**

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE		
A	EIRP	20775 to 21425	20775, 21100, 21425	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset		
		20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0RB Offset		
		20825 to 21375	20825, 21100, 21375	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset		
		20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset		
B	FREQUENCY STABILITY	20850 to 21350	20850, 21100, 21350	20MHz	QPSK	100 RB / 0 RB Offset		
A	OCCUPIED BANDWIDTH	20775 to 21425	20775, 21100, 21425	5MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset		
		20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset		
		20825 to 21375	20825, 21100, 21375	15MHz	QPSK, 16QAM, 64QAM	75 RB / 0 RB Offset		
		20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM, 64QAM	100 RB / 0 RB Offset		
A	PEAK TO AVERAGE RATIO	20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 100 RB / 0 RB Offset		
A	BAND EDGE	20775 to 21425	20775	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 25 RB / 0 RB Offset		
			21425	5MHz	QPSK, 16QAM, 64QAM	1 RB / 24 RB Offset 25 RB / 0 RB Offset		
		20800 to 21400	20800	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset		
			21400	10MHz	QPSK, 16QAM, 64QAM	1 RB / 49 RB Offset 50 RB / 0 RB Offset		
		20825 to 21375	20825	15MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 75 RB / 0 RB Offset		
			21375	15MHz	QPSK, 16QAM, 64QAM	1 RB / 74 RB Offset 75 RB / 0 RB Offset		
		20850 to 21350	20850	20MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 100 RB / 0 RB Offset		
			21350	20MHz	QPSK, 16QAM, 64QAM	1 RB / 99 RB Offset 100 RB / 0 RB Offset		
		A	CONDUCTED EMISSION	20775 to 21425	20775, 21100, 21425	5MHz	QPSK	1 RB / 0 RB Offset
				20800 to 21400	20800, 21100, 21400	10MHz	QPSK	1 RB / 0RB Offset
				20825 to 21375	20825, 21100, 21375	15MHz	QPSK	1 RB / 0 RB Offset
				20850 to 21350	20850, 21100, 21350	20MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	20775 to 21425	21100	5MHz	QPSK	1 RB / 0 RB Offset		
		20800 to 21400	20800, 21100, 21400	10MHz	QPSK	1 RB / 0 RB Offset		
		20825 to 21375	21100	15MHz	QPSK	1 RB / 0 RB Offset		
		20850 to 21350	21100	20MHz	QPSK	1 RB / 0 RB Offset		

**Note:** This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.



**LTE BAND 12 MODE**

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE		
A	ERP	23017 to 23173	23017, 23095 , 23173	1.4MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset		
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset		
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset		
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset		
B	FREQUENCY STABILITY	23060 to 23130	23060, 23095 ,23130	10MHz	QPSK	50 RB / 0 RB Offset		
A	OCCUPIED BANDWIDTH	23017 to 23173	23017, 23095 , 23173	1.4MHz	QPSK, 16QAM, 64QAM	6 RB / 0 RB Offset		
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK, 16QAM, 64QAM	15 RB / 0 RB Offset		
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK, 16QAM, 64QAM	25 RB / 0 RB Offset		
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK, 16QAM, 64QAM	50 RB / 0 RB Offset		
A	PEAK TO AVERAGE RATIO	23060 to 23130	23060, 23095 ,23130	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset		
A	BAND EDGE	23017 to 23173	23017	1.4MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 6 RB / 0 RB Offset		
			23173	1.4MHz	QPSK, 16QAM, 64QAM	1 RB / 5 RB Offset 6 RB / 0 RB Offset		
			23025 to 23165	23025	3MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 15 RB / 0 RB Offset	
				23165	3MHz	QPSK, 16QAM, 64QAM	1 RB / 14 RB Offset 15 RB / 0 RB Offset	
		23035 to 23155	23035	5MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 25 RB / 0 RB Offset		
			23155	5MHz	QPSK, 16QAM, 64QAM	1 RB / 24 RB Offset 25 RB / 0 RB Offset		
		23060 to 23130	23060	10MHz	QPSK, 16QAM, 64QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset		
			23130	10MHz	QPSK, 16QAM, 64QAM	1 RB / 49 RB Offset 50 RB / 0 RB Offset		
		A	CONDCUDED EMISSION	23017 to 23173	23017, 23095 , 23173	1.4MHz	QPSK	1 RB / 0 RB Offset
				23025 to 23165	23025, 23095 ,23165	3MHz	QPSK	1 RB / 0 RB Offset
				23035 to 23155	23035, 23095 ,23155	5MHz	QPSK	1 RB / 0 RB Offset
				23060 to 23130	23060, 23095 ,23130	10MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	23017 to 23173	23095	1.4MHz	QPSK	1 RB / 0 RB Offset		
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK	1 RB / 0 RB Offset		
		23035 to 23155	23095	5MHz	QPSK	1 RB / 0 RB Offset		
		23060 to 23130	23095	10MHz	QPSK	1 RB / 0 RB Offset		

**Note:** This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.



Test Report No.: W7L-P23030003RF06

LTE BAND 13 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	ERP	23205 to 23255	23205, 20175, 23255	5MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
		23230	23230	10MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
B	FREQUENCY STABILITY	23230	23230	10MHz	QPSK,	50 RB / 0 RB Offset
A	OCCUPIED BANDWIDTH	23205 to 23255	23205, 20175, 23255	5MHz	QPSK,16QAM,64QAM	25 RB / 0 RB Offset
		23230	23230	10MHz	QPSK,16QAM,64QAM	50 RB / 0 RB Offset
A	PEAK TO AVERAGE RATIO	23230	23230	10MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset 50 RB / 0 RB Offset
A	BAND EDGE	23205 to 23255	23205	5MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset 25 RB / 0 RB Offset
			23255	5MHz	QPSK,16QAM, 64QAM	1 RB / 24 RB Offset 25 RB / 0 RB Offset
		23230	23230	10MHz	QPSK,16QAM, 64QAM	1 RB / 0 RB Offset 1 RB / 49 RB Offset
						50 RB / 0 RB Offset
A	CONDCUDED EMISSION	23205 to 23255	23205, 20175, 23255	5MHz	QPSK	1 RB / 0 RB Offset
		23230	23230	10MHz	QPSK	1 RB / 0 RB Offset
A	RADIATED EMISSION	23205 to 23255	23205, 20175, 23255	5MHz	QPSK	1 RB / 0 RB Offset
		23230	23230	10MHz	QPSK	1 RB / 0 RB Offset

**Note:** This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.



Test Report No.: W7L-P23030003RF06

### LTE BAND 17 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	ERP	23755 to 23825	23755, 23790, 23825	5MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset
		23780 to 23800	23780, 23790, 23800	10MHz	QPSK,16QAM,64QAM	1 RB / 0 RB Offset

**Note:** 1.This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

2. LTE Band 17 are covered by LTE Band 12, Because it is a subset of LTE Band 12 with the same output power and supported bandwidths, So the conducted test data and RSE test data please refer to LTE Band 12



Test Report No.: W7L-P23030003RF06

**TEST CONDITION:**

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP&EIRP	23deg. C, 70%RH	DC 5V/9V/10V/12V By Adapter	Jace Hu
FREQUENCY STABILITY	23deg. C, 70%RH	DC 3.5/3.8/4.2 By DC Source	James Fu
OCCUPIED BANDWIDTH	23deg. C, 70%RH	DC 5V/9V/10V/12V By Adapter	James Fu
BAND EDGE	23deg. C, 70%RH	DC 5V/9V/10V/12V By Adapter	James Fu
CONDCUDED EMISSION	23deg. C, 70%RH	DC 5V/9V/10V/12V By Adapter	James Fu
RADIATED EMISSION	23deg. C, 70%RH	DC 5V/9V/10V/12V By Adapter	Jace Hu
PEAK TO AVERAGE RATIO	23deg. C, 70%RH	DC 5V/9V/10V/12V By Adapter	James Fu



Test Report No.: W7L-P23030003RF06

## 2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC 47 CFR Part 2**

**FCC 47 CFR Part 27**

**KDB 971168 D01 Power Meas License Digital Systems v03r01**

**ANSI/TIA/EIA-603-D**

**ANSI/TIA/EIA-603-E**

**ANSI C63.26-2015**

**NOTE:** All test items have been performed and recorded as per the above standards.



### 3 TEST TYPES AND RESULTS

#### 3.1 OUTPUT POWER MEASUREMENT

##### 3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

The radiated peak output power shall be according to the specific rule Part 27.50(h)(2) that “User stations are limited to 2 watts” and 27.50(i) specific that “Peak transmit power must be measure over any interval of continuous transmission using instrumentation calibration in terms of rms-equivalent voltage.”

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

According to the specific rule Part 27.50(b)(10) and 27.50(c)(10) Fixed, mobile, and Portable stations (hand-held devices) transmitting in the 698-746 MHz, 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP

##### 3.1.2 TEST PROCEDURES

###### EIRP MEASUREMENT:

Per KDB 971168 D01 Power Meas License Digital Systems v03r01 or subclause 5.2.5.5 of ANSI C63.26-2015, the relevant equation for determining the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_{\text{T}} - L_{\text{C}}$$

Where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively  
(expressed in the same units as  $P_{\text{Meas}}$ , typically dBW or dBm);

$P_{\text{Meas}}$  = measured transmitter output power or PSD, in dBm or dBW;

$G_{\text{T}}$  = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

$L_{\text{C}}$  = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

###### CONDUCTED POWER MEASUREMENT:

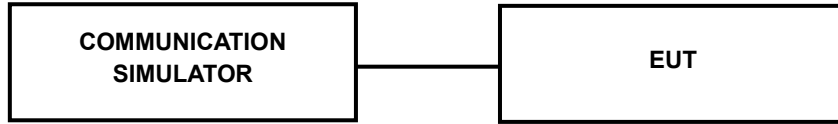
- a. The EUT was set up for the maximum power with LTE link data modulation and link up with simulator.
- b. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.



Test Report No.: W7L-P23030003RF06

### 3.1.3 TEST SETUP

#### CONDUCTED POWER MEASUREMENT:



For the actual test configuration, please refer to the attached file (Test Setup Photo).



### 3.1.4 TEST RESULTS

#### AVERAGE CONDUCTED OUTPUT POWER (dBm)

ANT0

Band	WCDMA IV		
	1312	1413	1513
Channel	1712.4	1732.6	1752.6
Frequency (MHz)	1712.4	1732.6	1752.6
RMC 12.2K	24.11	24.09	24.08
HSDPA Subtest-1	23.25	23.11	23.03
HSDPA Subtest-2	23.22	23.13	23.10
HSDPA Subtest-3	22.26	22.15	22.06
HSDPA Subtest-4	22.21	22.09	22.04
DC-HSDPA Subtest-1	23.23	23.08	23.03
DC-HSDPA Subtest-2	23.14	23.02	23.03
DC-HSDPA Subtest-3	22.25	22.16	22.05
DC-HSDPA Subtest-4	22.22	22.12	22.03
HSUPA Subtest-1	21.05	21.03	21.03
HSUPA Subtest-2	21.09	21.05	20.86
HSUPA Subtest-3	22.08	22.05	22.01
HSUPA Subtest-4	20.55	20.49	20.52
HSUPA Subtest-5	22.07	22.03	22.00



LTE Band 7

Band/BW	Modulation	RB Size	RB Offset	Low CH 20775	Mid CH 21100	High CH 21425
				Frequency 2502.5 MHz	Frequency 2535 MHz	Frequency 2567.5 MHz
7/5	QPSK	1	0	23.95	23.92	23.88
		1	12	24.01	24.06	24.06
		1	24	23.97	23.92	24.02
		12	0	23.29	23.27	23.28
		12	6	23.06	23.05	23.16
		12	13	23.06	23.05	23.11
		25	0	23.03	23.00	23.07
	16QAM	1	0	22.88	22.83	22.90
		1	12	23.01	23.08	23.05
		1	24	22.93	22.91	23.00
		12	0	22.02	21.95	22.01
		12	6	22.01	22.00	22.11
		12	13	22.03	22.07	21.99
		25	0	21.98	22.01	22.04
	64QAM	1	0	22.10	22.03	22.06
		1	12	22.17	22.18	22.21
		1	24	22.08	22.04	22.09
		12	0	21.02	21.04	20.99
		12	6	21.01	21.06	21.09
		12	13	21.05	21.04	21.00
		25	0	21.02	20.99	21.07



Test Report No.: W7L-P23030003RF06

Band/BW	Modulation	RB Size	RB Offset	Low CH 20800	Mid CH 21100	High CH 21400
				Frequency 2505 MHz	Frequency 2535 MHz	Frequency 2565 MHz
7/ 10	QPSK	1	0	23.93	23.89	23.91
		1	24	24.07	23.99	24.10
		1	49	23.93	23.93	23.98
		25	0	23.33	23.21	23.32
		25	12	23.05	23.06	23.13
		25	25	23.11	23.01	23.14
		50	0	23.03	23.01	23.04
	16QAM	1	0	22.90	22.81	22.96
		1	24	23.06	23.08	23.03
		1	49	22.95	22.88	22.96
		25	0	22.07	21.96	22.04
		25	12	22.06	21.97	22.12
		25	25	22.03	22.05	22.00
		50	0	22.04	21.94	22.05
	64QAM	1	0	22.06	22.04	22.09
		1	24	22.22	22.13	22.21
		1	49	22.10	22.02	22.12
		25	0	21.02	20.98	21.00
		25	12	21.08	21.05	21.03
		25	25	21.04	21.01	21.02
		50	0	21.07	20.95	21.08



Test Report No.: W7L-P23030003RF06

Band/BW	Modulation	RB Size	RB Offset	Low CH 20825	Mid CH 21100	High CH 21375
				Frequency 2507.5 MHz	Frequency 2535 MHz	Frequency 2562.5 MHz
7/ 15	QPSK	1	0	23.98	23.95	23.85
		1	37	24.02	23.99	24.05
		1	74	23.98	23.91	24.01
		36	0	23.33	23.22	23.28
		36	19	23.07	23.02	23.16
		36	39	23.12	22.99	23.15
		75	0	22.97	23.04	23.04
	16QAM	1	0	22.94	22.81	22.97
		1	37	22.99	23.06	23.06
		1	74	22.97	22.90	23.00
		36	0	22.06	21.95	22.01
		36	19	22.02	21.97	22.11
		36	39	22.10	22.07	21.97
		75	0	22.01	21.94	22.00
	64QAM	1	0	22.13	22.02	22.12
		1	37	22.23	22.12	22.18
		1	74	22.06	22.01	22.15
		36	0	21.07	21.04	20.94
		36	19	21.02	20.99	21.05
		36	39	21.07	21.08	21.04
		75	0	21.06	20.93	21.09

Band/BW	Modulation	RB Size	RB Offset	Low CH 20850	Mid CH 21100	High CH 21350
				Frequency 2510 MHz	Frequency 2535 MHz	Frequency 2560 MHz
7/ 20	QPSK	1	0	23.99	23.97	23.93
		1	50	24.09	24.07	<b>24.11</b>
		1	99	24.01	23.97	24.03
		50	0	23.35	23.29	23.33
		50	25	23.13	23.10	23.18
		50	50	23.14	23.07	23.16
		100	0	23.05	23.08	23.09
	16QAM	1	0	22.96	22.89	22.98
		1	50	23.07	23.10	23.11
		1	99	23.00	22.96	23.02
		50	0	22.08	22.02	22.06
		50	25	22.08	22.05	22.13
		50	50	22.11	22.09	22.05
		100	0	22.06	22.02	22.06
	64QAM	1	0	22.14	22.08	22.14
		1	50	22.25	22.19	22.23
		1	99	22.12	22.09	22.17
		50	0	21.08	21.06	21.02
		50	25	21.09	21.07	21.11
		50	50	21.09	21.09	21.08
		100	0	21.08	21.01	21.10



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**Test Report No.: W7L-P23030003RF06**

**LTE Band 12**

Band/BW	Modulation	RB Size	RB Offset	Low CH 23017	Mid CH 23095	High CH 23173
				Frequency 699.7 MHz	Frequency 707.5 MHz	Frequency 715.3 MHz
12/ 1.4	QPSK	1	0	23.88	23.94	23.92
		1	2	24.09	24.04	24.11
		1	5	24.01	23.97	24.03
		3	0	24.01	24.02	24.05
		3	1	24.06	24.16	24.03
		3	3	24.19	24.19	24.22
		6	0	23.11	23.14	23.12
	16QAM	1	0	22.92	22.96	22.98
		1	2	23.09	23.13	23.13
		1	5	23.04	22.99	23.09
		3	0	23.04	23.09	23.04
		3	1	23.07	23.22	23.11
		3	3	23.23	23.28	23.32
		6	0	22.11	22.18	22.14
	64QAM	1	0	22.15	22.23	22.26
		1	2	22.23	22.39	22.29
		1	5	22.19	22.24	22.26
		3	0	22.03	22.08	22.00
		3	1	22.08	22.23	22.15
		3	3	22.26	22.26	22.27
		6	0	21.18	21.25	21.21



Test Report No.: W7L-P23030003RF06

Band/BW	Modulation	RB Size	RB Offset	Low CH 23025	Mid CH 23095	High CH 23165
				Frequency 700.5 MHz	Frequency 707.5 MHz	Frequency 714.5 MHz
12/ 3	QPSK	1	0	23.90	23.96	23.91
		1	7	24.05	24.05	24.11
		1	14	23.97	23.97	24.03
		8	0	23.00	23.05	23.05
		8	3	22.99	23.16	23.05
		8	7	23.16	23.26	23.26
		15	0	23.08	23.15	23.06
	16QAM	1	0	22.89	23.02	23.01
		1	7	23.06	23.16	23.11
		1	14	23.07	22.99	23.09
		8	0	22.00	22.10	22.04
		8	3	22.12	22.17	22.14
		8	7	22.25	22.26	22.28
		15	0	22.11	22.12	22.17
	64QAM	1	0	22.21	22.26	22.20
		1	7	22.26	22.33	22.28
		1	14	22.20	22.26	22.26
		8	0	21.06	21.12	21.01
		8	3	21.12	21.17	21.20
		8	7	21.23	21.30	21.23
		15	0	21.20	21.22	21.25

Band/BW	Modulation	RB Size	RB Offset	Low CH 23035	Mid CH 23095	High CH 23155
				Frequency 701.5 MHz	Frequency 707.5 MHz	Frequency 713.5 MHz
12/ 5	QPSK	1	0	23.91	23.91	23.92
		1	12	24.10	24.02	24.11
		1	24	23.98	23.96	24.07
		12	0	23.03	23.05	23.02
		12	6	22.99	23.17	23.06
		12	13	23.20	23.22	23.27
		25	0	23.06	23.18	23.09
	16QAM	1	0	22.90	22.98	23.01
		1	12	23.03	23.19	23.10
		1	24	23.07	22.99	23.08
		12	0	22.00	22.08	22.01
		12	6	22.09	22.21	22.10
		12	13	22.20	22.28	22.31
		25	0	22.11	22.13	22.14
	64QAM	1	0	22.15	22.23	22.26
		1	12	22.23	22.39	22.28
		1	24	22.13	22.31	22.26
		12	0	21.07	21.09	21.00
		12	6	21.06	21.24	21.19
		12	13	21.27	21.29	21.20
		25	0	21.16	21.28	21.23

Band/BW	Modulation	RB Size	RB Offset	Low CH 23060	Mid CH 23095	High CH 23130
				Frequency 704 MHz	Frequency 707.5 MHz	Frequency 711 MHz
12/ 10	QPSK	1	0	23.96	23.98	23.97
		1	24	24.12	24.10	<b>24.13</b>
		1	49	24.03	24.04	24.08
		25	0	23.07	23.10	23.07
		25	12	23.07	23.18	23.11
		25	25	23.24	23.27	23.28
		50	0	23.12	23.20	23.14
	16QAM	1	0	22.97	23.03	23.03
		1	24	23.11	23.21	23.15
		1	49	23.09	23.07	23.10
		25	0	22.08	22.14	22.09
		25	12	22.15	22.23	22.16
		25	25	22.27	22.33	22.33
		50	0	22.17	22.20	22.19
	64QAM	1	0	22.22	22.28	22.28
		1	24	22.31	22.41	22.34
		1	49	22.21	22.32	22.28
		25	0	21.11	21.14	21.08
		25	12	21.14	21.25	21.21
		25	25	21.31	21.34	21.28
		50	0	21.22	21.30	21.26





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**Test Report No.: W7L-P23030003RF06**

**LTE Band 13**

Band/BW	Modulation	RB Size	RB Offset	Low CH 23205	Mid CH 23230	High CH 23255
				Frequency 779.5 MHz	Frequency 782.0 MHz	Frequency 784.5 MHz
13/ 5	QPSK	1	0	23.98	24.02	24.01
		1	12	24.12	24.06	24.13
		1	24	23.94	23.98	23.97
		12	0	23.15	23.12	23.16
		12	6	23.12	23.07	23.09
		12	13	23.13	23.11	23.17
		25	0	23.15	23.14	23.08
	16QAM	1	0	22.95	22.94	22.96
		1	12	23.17	23.14	23.18
		1	24	23.08	23.03	23.05
		12	0	22.08	22.06	22.12
		12	6	22.11	22.05	22.12
		12	13	22.04	22.08	22.07
		25	0	22.09	22.03	22.10
	64QAM	1	0	22.09	22.13	22.12
		1	12	22.24	22.21	22.25
		1	24	22.20	22.15	22.17
		12	0	21.16	21.14	21.20
		12	6	21.20	21.19	21.13
		12	13	21.13	21.10	21.12
		25	0	21.18	21.13	21.17

Band/BW	Modulation	RB Size	RB Offset	/	Mid CH 23230	/
				/	Frequency 782.0 MHz	/
13/ 10	QPSK	1	0	/	24.06	/
		1	24	/	<b>24.14</b>	/
		1	49	/	24.02	/
		25	0	/	23.18	/
		25	12	/	23.14	/
		25	25	/	23.19	/
		50	0	/	23.16	/
	16QAM	1	0	/	23.02	/
		1	24	/	23.20	/
		1	49	/	23.10	/
		25	0	/	22.14	/
		25	12	/	22.13	/
		25	25	/	22.12	/
		50	0	/	22.11	/
	64QAM	1	0	/	22.17	/
		1	24	/	22.27	/
		1	49	/	22.22	/
		25	0	/	21.22	/
		25	12	/	21.21	/
		25	25	/	21.18	/
		50	0	/	21.19	/



**BUREAU  
VERITAS**

**Test Report No.: W7L-P23030003RF06**

**LTE Band 17**

Band/BW	Modulation	RB Size	RB Offset	Low CH 23755	Mid CH 23790	High CH 23825
				Frequency 706.5 MHz	Frequency 710 MHz	Frequency 713.5 MHz
17/5	QPSK	1	0	23.93	23.92	23.97
		1	12	24.01	24.10	24.01
		1	24	23.91	23.96	23.99
		12	0	22.89	23.02	22.93
		12	6	23.10	22.99	23.08
		12	13	22.93	22.98	22.91
		25	0	22.98	23.07	22.96
	16QAM	1	0	22.99	23.04	23.07
		1	12	23.05	23.04	23.05
		1	24	22.89	22.94	22.97
		12	0	21.97	22.10	21.99
		12	6	22.03	22.18	22.13
		12	13	22.04	22.03	21.94
		25	0	21.97	22.12	22.07
	64QAM	1	0	22.31	22.30	22.21
		1	12	22.25	22.34	22.29
		1	24	22.12	22.11	22.12
		12	0	20.99	21.04	21.07
		12	6	21.05	21.18	21.07
		12	13	20.96	21.01	20.94
		25	0	21.05	21.04	20.95

Band/BW	Modulation	RB Size	RB Offset	Low CH 23780	Mid CH 23790	High CH 23800
				Frequency 709 MHz	Frequency 710 MHz	Frequency 711 MHz
17/ 10	QPSK	1	0	23.97	23.97	23.98
		1	24	24.07	<b>24.12</b>	24.06
		1	49	23.98	24.01	24.01
		25	0	22.97	23.04	22.98
		25	12	23.12	23.07	23.10
		25	25	23.01	23.04	22.99
		50	0	23.04	23.09	23.02
	16QAM	1	0	23.06	23.09	23.09
		1	24	23.11	23.11	23.10
		1	49	22.96	22.99	22.99
		25	0	22.05	22.12	22.05
		25	12	22.11	22.19	22.15
		25	25	22.08	22.08	22.02
		50	0	22.05	22.13	22.09
	64QAM	1	0	22.35	22.35	22.29
		1	24	22.31	22.36	22.32
		1	49	22.18	22.18	22.17
		25	0	21.06	21.09	21.09
		25	12	21.13	21.20	21.13
		25	25	21.04	21.07	21.02
		50	0	21.09	21.09	21.03



**BUREAU  
VERITAS**

Test Report No.: W7L-P23030003RF06

#### ANT4

Band	WCDMA IV		
	1312	1413	1513
Channel	1712.4	1732.6	1752.6
Frequency (MHz)	1712.4	1732.6	1752.6
RMC 12.2K	24.07	24.05	24.06
HSDPA Subtest-1	23.10	23.06	23.07
HSDPA Subtest-2	23.07	23.04	23.11
HSDPA Subtest-3	22.04	22.01	22.18
HSDPA Subtest-4	22.03	21.98	22.14
DC-HSDPA Subtest-1	23.05	23.05	23.08
DC-HSDPA Subtest-2	23.03	23.00	23.05
DC-HSDPA Subtest-3	22.09	22.09	22.02
DC-HSDPA Subtest-4	22.04	22.02	22.04
HSUPA Subtest-1	21.18	21.14	21.10
HSUPA Subtest-2	21.19	21.12	20.98
HSUPA Subtest-3	22.13	22.10	22.07
HSUPA Subtest-4	20.75	20.69	20.65
HSUPA Subtest-5	22.18	22.15	22.13

LTE Band 7

Band/BW	Modulation	RB Size	RB Offset	Low CH 20775	Mid CH 21100	High CH 21425
				Frequency 2502.5 MHz	Frequency 2535 MHz	Frequency 2567.5 MHz
7/5	QPSK	1	0	23.99	23.90	23.87
		1	12	24.22	24.17	24.19
		1	24	24.06	24.01	24.05
		12	0	23.10	22.98	23.01
		12	6	23.14	23.13	23.18
		12	13	23.26	23.18	23.23
		25	0	23.17	23.05	23.09
	16QAM	1	0	23.16	23.05	23.13
		1	12	23.42	23.44	23.30
		1	24	23.27	23.18	23.24
		12	0	22.10	21.94	21.99
		12	6	22.21	22.10	22.23
		12	13	22.23	22.27	22.13
		25	0	22.13	22.06	22.11
	64QAM	1	0	22.18	22.11	22.08
		1	12	22.34	22.28	22.30
		1	24	22.25	22.12	22.14
		12	0	21.07	21.03	20.99
		12	6	21.18	21.18	21.10
		12	13	21.24	21.16	21.09
		25	0	21.20	21.08	21.15

Band/BW	Modulation	RB Size	RB Offset	Low CH 20800	Mid CH 21100	High CH 21400
				Frequency 2505 MHz	Frequency 2535 MHz	Frequency 2565 MHz
7/ 10	QPSK	1	0	23.96	23.88	23.85
		1	24	24.23	24.11	24.17
		1	49	24.03	23.99	23.99
		25	0	23.09	22.93	22.99
		25	12	23.14	23.11	23.13
		25	25	23.27	23.13	23.21
		50	0	23.12	23.06	23.04
	16QAM	1	0	23.17	23.04	23.14
		1	24	23.41	23.39	23.29
		1	49	23.27	23.16	23.19
		25	0	22.09	21.94	21.97
		25	12	22.21	22.08	22.18
		25	25	22.24	22.22	22.12
		50	0	22.14	22.00	22.06
	64QAM	1	0	22.15	22.09	22.09
		1	24	22.35	22.22	22.25
		1	49	22.22	22.10	22.15
		25	0	21.06	20.98	20.95
		25	12	21.19	21.12	21.05
		25	25	21.21	21.14	21.10
		50	0	21.19	21.03	21.11



Test Report No.: W7L-P23030003RF06

Band/BW	Modulation	RB Size	RB Offset	Low CH 20825	Mid CH 21100	High CH 21375
				Frequency 2507.5 MHz	Frequency 2535 MHz	Frequency 2562.5 MHz
7/ 15	QPSK	1	0	24.02	23.95	23.80
		1	37	24.19	24.12	24.13
		1	74	24.09	23.98	24.03
		36	0	23.10	22.95	22.96
		36	19	23.17	23.08	23.17
		36	39	23.29	23.12	23.23
		75	0	23.07	23.10	23.05
	16QAM	1	0	23.22	23.05	23.16
		1	37	23.35	23.38	23.33
		1	74	23.30	23.19	23.24
		36	0	22.09	21.94	21.95
		36	19	22.18	22.09	22.18
		36	39	22.32	22.25	22.10
		75	0	22.12	22.01	22.02
	64QAM	1	0	22.23	22.08	22.13
		1	37	22.37	22.22	22.23
		1	74	22.19	22.10	22.19
		36	0	21.12	21.05	20.90
		36	19	21.14	21.07	21.08
		36	39	21.25	21.22	21.13
		75	0	21.19	21.02	21.13





Test Report No.: W7L-P23030003RF06

Band/BW	Modulation	RB Size	RB Offset	Low CH	Mid CH	High CH
				20850	21100	21350
				Frequency	Frequency	Frequency
				2510 MHz	2535 MHz	2560 MHz
7/ 20	QPSK	1	0	24.09	24.03	23.94
		1	50	<b>24.32</b>	24.26	24.25
		1	99	24.18	24.10	24.11
		50	0	23.18	23.08	23.07
		50	25	23.29	23.22	23.25
		50	50	23.37	23.26	23.30
		100	0	23.21	23.20	23.16
	16QAM	1	0	23.30	23.19	23.23
		1	50	23.49	23.48	23.44
		1	99	23.39	23.31	23.32
		50	0	22.17	22.07	22.06
		50	25	22.30	22.23	22.26
		50	50	22.39	22.33	22.24
		100	0	22.23	22.15	22.14
	64QAM	1	0	22.30	22.20	22.21
		1	50	22.45	22.35	22.34
		1	99	22.31	22.24	22.27
		50	0	21.19	21.13	21.04
		50	25	21.27	21.21	21.20
		50	50	21.33	21.29	21.23
		100	0	21.27	21.16	21.20



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**Test Report No.: W7L-P23030003RF06**

**LTE Band 12**

Band/BW	Modulation	RB Size	RB Offset	Low CH 23017	Mid CH 23095	High CH 23173
				Frequency 699.7 MHz	Frequency 707.5 MHz	Frequency 715.3 MHz
12/ 1.4	QPSK	1	0	23.69	23.72	23.70
		1	2	23.88	23.80	23.87
		1	5	23.82	23.75	23.81
		3	0	23.83	23.81	23.84
		3	1	23.86	23.93	23.80
		3	3	24.04	23.98	24.01
		6	0	22.99	22.89	22.92
	16QAM	1	0	22.95	22.96	22.98
		1	2	23.16	23.17	23.17
		1	5	23.06	22.98	23.08
		3	0	22.89	22.91	22.86
		3	1	22.89	23.01	22.90
		3	3	23.06	23.08	23.12
		6	0	21.98	22.02	21.98
	64QAM	1	0	21.86	21.91	21.94
		1	2	22.02	22.15	22.05
		1	5	21.98	22.00	22.02
		3	0	21.89	21.91	21.83
		3	1	21.91	22.03	21.95
		3	3	22.11	22.08	22.09
		6	0	21.00	21.04	21.00



Test Report No.: W7L-P23030003RF06

Band/BW	Modulation	RB Size	RB Offset	Low CH 23025	Mid CH 23095	High CH 23165
				Frequency 700.5 MHz	Frequency 707.5 MHz	Frequency 714.5 MHz
12/ 3	QPSK	1	0	23.69	23.72	23.67
		1	7	23.82	23.79	23.85
		1	14	23.76	23.73	23.79
		8	0	22.80	22.82	22.82
		8	3	22.77	22.91	22.80
		8	7	22.99	23.03	23.03
		15	0	22.94	22.88	22.84
	16QAM	1	0	22.90	23.00	22.99
		1	7	23.11	23.18	23.13
		1	14	23.07	22.96	23.06
		8	0	21.83	21.90	21.84
		8	3	21.92	21.94	21.91
		8	7	22.06	22.04	22.06
		15	0	21.96	21.94	21.99
	64QAM	1	0	21.90	21.92	21.86
		1	7	22.03	22.07	22.02
		1	14	21.97	22.00	22.00
		8	0	20.90	20.93	20.82
		8	3	20.93	20.95	20.98
		8	7	21.06	21.10	21.03
		15	0	21.00	20.99	21.02

Band/BW	Modulation	RB Size	RB Offset	Low CH 23035	Mid CH 23095	High CH 23155
				Frequency 701.5 MHz	Frequency 707.5 MHz	Frequency 713.5 MHz
12/ 5	QPSK	1	0	23.69	23.66	23.67
		1	12	23.86	23.75	23.84
		1	24	23.76	23.71	23.82
		12	0	22.82	22.81	22.78
		12	6	22.76	22.91	22.80
		12	13	23.02	22.98	23.03
		25	0	22.91	22.90	22.86
	16QAM	1	0	22.90	22.95	22.98
		1	12	23.07	23.20	23.11
		1	24	23.06	22.95	23.04
		12	0	21.82	21.87	21.80
		12	6	21.88	21.97	21.86
		12	13	22.00	22.05	22.08
		25	0	21.95	21.94	21.95
	64QAM	1	0	21.83	21.88	21.91
		1	12	21.99	22.12	22.01
		1	24	21.89	22.04	21.99
		12	0	20.90	20.89	20.80
		12	6	20.86	21.01	20.96
		12	13	21.09	21.08	20.99
		25	0	20.95	21.04	20.99

Band/BW	Modulation	RB Size	RB Offset	Low CH 23060	Mid CH 23095	High CH 23130
				Frequency 704 MHz	Frequency 707.5 MHz	Frequency 711 MHz
12/ 10	QPSK	1	0	23.80	23.79	23.78
		1	24	<b>23.94</b>	23.89	23.92
		1	49	23.87	23.85	23.89
		25	0	22.92	22.92	22.89
		25	12	22.90	22.98	22.91
		25	25	23.12	23.09	23.10
		50	0	23.03	22.98	22.97
	16QAM	1	0	23.03	23.06	23.06
		1	24	23.21	23.28	23.22
		1	49	23.14	23.09	23.12
		25	0	21.96	21.99	21.94
		25	12	22.00	22.05	21.98
		25	25	22.13	22.16	22.16
		50	0	22.07	22.07	22.06
	64QAM	1	0	21.96	21.99	21.99
		1	24	22.13	22.20	22.13
		1	49	22.03	22.11	22.07
		25	0	21.00	21.00	20.94
		25	12	21.00	21.08	21.04
		25	25	21.19	21.19	21.13
		50	0	21.07	21.12	21.08



**BUREAU  
VERITAS**

**Test Report No.: W7L-P23030003RF06**

**LTE Band 13**

Band/BW	Modulation	RB Size	RB Offset	Low CH 23205	Mid CH 23230	High CH 23255
				Frequency 779.5 MHz	Frequency 782.0 MHz	Frequency 784.5 MHz
13/ 5	QPSK	1	0	23.59	23.63	23.62
		1	12	23.77	23.71	23.78
		1	24	23.59	23.63	23.62
		12	0	22.73	22.70	22.74
		12	6	22.78	22.73	22.75
		12	13	22.71	22.69	22.75
		25	0	22.74	22.73	22.67
	16QAM	1	0	22.62	22.61	22.63
		1	12	22.81	22.78	22.82
		1	24	22.69	22.64	22.66
		12	0	21.69	21.67	21.73
		12	6	21.78	21.72	21.79
		12	13	21.68	21.72	21.71
		25	0	21.72	21.66	21.73
	64QAM	1	0	21.75	21.79	21.78
		1	12	21.92	21.89	21.93
		1	24	21.85	21.80	21.82
		12	0	20.76	20.74	20.80
		12	6	20.85	20.84	20.78
		12	13	20.79	20.76	20.78
		25	0	20.79	20.74	20.78

Band/BW	Modulation	RB Size	RB Offset	/	Mid CH 23230	/
				/	Frequency 782.0 MHz	/
13/ 10	QPSK	1	0	/	23.70	/
		1	24	/	<b>23.82</b>	/
		1	49	/	23.70	/
		25	0	/	22.79	/
		25	12	/	22.83	/
		25	25	/	22.80	/
		50	0	/	22.78	/
	16QAM	1	0	/	22.72	/
		1	24	/	22.87	/
		1	49	/	22.74	/
		25	0	/	21.78	/
		25	12	/	21.83	/
		25	25	/	21.79	/
		50	0	/	21.77	/
	64QAM	1	0	/	21.86	/
		1	24	/	21.98	/
		1	49	/	21.90	/
		25	0	/	20.85	/
		25	12	/	20.89	/
		25	25	/	20.87	/
		50	0	/	20.83	/



**BUREAU  
VERITAS**

**Test Report No.: W7L-P23030003RF06**

**LTE Band 17**

Band/BW	Modulation	RB Size	RB Offset	Low CH 23755	Mid CH 23790	High CH 23825
				Frequency 706.5 MHz	Frequency 710 MHz	Frequency 713.5 MHz
17/ 5	QPSK	1	0	23.72	23.71	23.77
		1	12	23.81	23.90	23.82
		1	24	23.69	23.74	23.78
		12	0	22.74	22.87	22.79
		12	6	22.89	22.78	22.88
		12	13	22.78	22.83	22.77
		25	0	22.81	22.90	22.80
	16QAM	1	0	22.70	22.75	22.79
		1	12	22.90	22.89	22.91
		1	24	22.74	22.79	22.83
		12	0	21.80	21.93	21.83
		12	6	21.85	22.00	21.96
		12	13	21.88	21.87	21.79
		25	0	21.84	21.99	21.95
	64QAM	1	0	21.96	21.95	21.87
		1	12	22.03	22.12	22.08
		1	24	21.92	21.91	21.93
		12	0	20.84	20.89	20.93
		12	6	20.82	20.95	20.85
		12	13	20.83	20.88	20.82
		25	0	20.93	20.92	20.84



Band/BW	Modulation	RB Size	RB Offset	Low CH 23780	Mid CH 23790	High CH 23800
				Frequency 709 MHz	Frequency 710 MHz	Frequency 711 MHz
17/ 10	QPSK	1	0	23.79	23.79	23.81
		1	24	23.90	<b>23.95</b>	23.90
		1	49	23.79	23.82	23.83
		25	0	22.85	22.92	22.87
		25	12	22.94	22.89	22.93
		25	25	22.89	22.92	22.88
		50	0	22.90	22.95	22.89
	16QAM	1	0	22.80	22.83	22.84
		1	24	22.99	22.99	22.99
		1	49	22.84	22.87	22.88
		25	0	21.91	21.98	21.92
		25	12	21.96	22.04	22.01
		25	25	21.95	21.95	21.90
		50	0	21.95	22.03	22.00
	64QAM	1	0	22.03	22.03	21.98
		1	24	22.12	22.17	22.14
		1	49	22.01	22.01	22.01
		25	0	20.94	20.97	20.98
		25	12	20.93	21.00	20.94
		25	25	20.94	20.97	20.93
		50	0	21.00	21.00	20.95



**BUREAU  
VERITAS**

Test Report No.: W7L-P23030003RF06

**EIRP  
ANT0**

**WCDMA IV**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
1312	1712.4	24.11	-1.04	23.07	202.77	1
1413	1732.6	24.09	-1.04	23.05	201.84	1
1513	1752.6	24.08	-1.04	23.04	201.37	1

**LTE BAND 7**

**CHANNEL BANDWIDTH: 5MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20775	2502.5	24.01	0.45	24.46	279.25	2
21100	2535.0	24.06	0.45	24.51	282.49	2
21425	2567.5	24.06	0.45	24.51	282.49	2

**CHANNEL BANDWIDTH: 5MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20775	2502.5	23.01	0.45	23.46	221.82	2
21100	2535.0	23.08	0.45	23.53	225.42	2
21425	2567.5	23.05	0.45	23.5	223.87	2

**CHANNEL BANDWIDTH: 5MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20775	2502.5	22.17	0.45	22.62	182.81	2
21100	2535	22.18	0.45	22.63	183.23	2
21425	2567.5	22.21	0.45	22.66	184.5	2

**CHANNEL BANDWIDTH: 10MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20800	2505.0	24.07	0.45	24.52	283.14	2
21100	2535.0	23.99	0.45	24.44	277.97	2
21400	2565.0	24.1	0.45	24.55	285.1	2

**CHANNEL BANDWIDTH: 10MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20800	2505.0	23.06	0.45	23.51	224.39	2
21100	2535.0	23.08	0.45	23.53	225.42	2
21400	2565.0	23.03	0.45	23.48	222.84	2

**CHANNEL BANDWIDTH: 10MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20800	2505	22.22	0.45	22.67	184.93	2
21100	2535	22.13	0.45	22.58	181.13	2
21400	2565	22.21	0.45	22.66	184.5	2



Test Report No.: W7L-P23030003RF06

**CHANNEL BANDWIDTH: 15MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20825	2507.5	24.02	0.45	24.47	279.9	2
21100	2535.0	23.99	0.45	24.44	277.97	2
21375	2562.5	24.05	0.45	24.5	281.84	2

**CHANNEL BANDWIDTH: 15MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20825	2507.5	22.99	0.45	23.44	220.8	2
21100	2535.0	23.06	0.45	23.51	224.39	2
21375	2562.5	23.06	0.45	23.51	224.39	2

**CHANNEL BANDWIDTH: 15MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20825	2507.5	22.23	0.45	22.68	185.35	2
21100	2535	22.12	0.45	22.57	180.72	2
21375	2562.5	22.18	0.45	22.63	183.23	2



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Test Report No.: W7L-P23030003RF06

**CHANNEL BANDWIDTH: 20MHz QPSK**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20850	2510.0	24.09	0.45	24.54	284.45	2
21100	2535.0	24.07	0.45	24.52	283.14	2
21350	2560.0	24.11	0.45	24.56	285.76	2

**CHANNEL BANDWIDTH: 20MHz 16QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20850	2510.0	23.07	0.45	23.52	224.91	2
21100	2535.0	23.1	0.45	23.55	226.46	2
21350	2560.0	23.11	0.45	23.56	226.99	2

**CHANNEL BANDWIDTH: 20MHz 64QAM**

Channel	Frequency (MHz)	Conducted Power (dBm)	G <sub>T</sub> -L <sub>c</sub> (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20850	2510	22.25	0.45	22.7	186.21	2
21100	2535	22.19	0.45	22.64	183.65	2
21350	2560	22.23	0.45	22.68	185.35	2

**REMARKS:** ERP Output Power (dBm) = EIRP (dBm) -2.15(dB).