



Test Report No.: W7L-230619W001RF03



VARIANT FCC TEST REPORT (PART 27)

Applicant:	Continental Automotive Systems, Inc.
Address:	21440 W Lake Cook Rd., Deer Park, IL 60010, USA

Manufacturer or Supplier:	Continental Automotive Systems, Inc.
Address:	21440 W Lake Cook Rd., Deer Park, IL 60010, USA
Product:	FE3NA0031
Brand Name:	Continental
Model Name:	FE3NA0031
FCC ID:	LHJ-FE3NA0031
Date of tests:	Jun. 19, 2023 ~ Jun. 28, 2023

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

- FCC Part 27, Subpart C, M 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: Jun. 28, 2023	Date: Jun. 28, 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.



Test Report No.: W7L-230619W001RF03

TABLE OF CONTENTS

RELEASE CONTROL RECORD	3
1 SUMMARY OF TEST RESULTS	4
1.1 MEASREMENT UNCERTAINTY	5
1.2 TEST SITE AND INSTRUMENTS	6
2 GENERAL INFORMATION	7
2.1 GENERAL DESCRIPTION OF EUT.....	7
2.2 CONFIGURATION OF SYSTEM UNDER TEST	11
2.3 DESCRIPTION OF SUPPORT UNITS	12
2.4 TEST ITEM AND TEST CONFIGURATION	12
2.5 GENERAL DESCRIPTION OF APPLIED STANDARDS	15
3 TEST TYPES AND RESULTS	16
3.1 OUTPUT POWER MEASUREMENT	16
3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT	16
3.1.2 TEST PROCEDURES	16
3.1.3 TEST SETUP	17
3.1.4 TEST RESULTS	18
3.2 RADIATED EMISSION MEASUREMENT	36
3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT	36
3.2.2 TEST PROCEDURES	36
3.2.3 DEVIATION FROM TEST STANDARD	36
3.2.4 TEST SETUP	37
3.2.5 TEST RESULTS	39
4 INFORMATION ON THE TESTING LABORATORIES	43
5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB... 44	



Test Report No.: W7L-230619W001RF03

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-211220W001RF03	Original release	Jan. 17, 2022
W7L-230619W001RF03	Based on the original product changing the hardware version and software version, The new Sample only verify RSE worst case and conducted power, So this report only replaces conducted Power and the low frequency data and the high frequency data (LTE Band13 CH23230) of RSE.	Jun. 28, 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	RESULT
§2.1046	Coducted Output Power	Compliance
§27.50(b)(10) §27.50(c)(10)	Equivalent Radiated Power (Band12) (Band13)	Compliance
§27.50(d)(4) §27.50(h)(2)	Equivalent Isotropically Radiated Power (Band4) (Band7)	Compliance
§2.1055 §27.54	Frequency Stability	See Note
§2.1049	Occupied Bandwidth	See Note
§2.1051 §27.53(c)(2)(4) §27.53(g) §27.53(h) §27.53(m)(4)(6)	Band Edge Measurements	See Note
§2.1051 §27.53(c)(2)(4) §27.53(g) §27.53(h) §27.53(m)(4)(6)	Conducted Spurious Emissions	See Note
§2.1053 §27.53(c)(2)(4) §27.53(g) §27.53(h) §27.53(m)(4)(6)	Radiated Spurious Emissions	Compliance
NA	Peak to average ratio	See Note

NOTE: Please refer to the original report W7L-211220W001RF03, FCC ID: LHJ-FE3NA0031.



**BUREAU
VERITAS**

Test Report No.: W7L-230619W001RF03

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	$\pm 76.97\text{Hz}$
Radiated emissions (9KHz~30MHz)	$\pm 2.68\text{dB}$
Radiated emissions & Radiated Power (30MHz~1GHz)	$\pm 4.98\text{dB}$
Radiated emissions & Radiated Power (1GHz ~6GHz)	$\pm 4.70\text{dB}$
Radiated emissions (6GHz ~18GHz)	$\pm 4.60\text{dB}$
Radiated emissions (18GHz ~40GHz)	$\pm 4.12\text{dB}$
Conducted emissions	$\pm 4.01\text{dB}$
Occupied Channel Bandwidth	$\pm 43.58\text{KHz}$
Conducted Output power	$\pm 2.06\text{dB}$
Band Edge Measurements	$\pm 4.70\text{dB}$

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

1.2 TEST SITE AND INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Mar. 28,23	Mar. 27,24
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	May.13,23	May.12,24
Loop Antenna	Schwarzbeck	FMZB 1519B	00173	Sep.03,22	Sep.02,23
Bilog Antenna	ETS-LINDGRE N	3143B	00161965	Feb. 18,23	Feb. 17,24
Horn Antenna	ETS-LINDGRE N	3117	00168692	Feb. 18,23	Feb. 17,24
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K- SG/QMS-00361	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. 06,23	May. 05,24
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	May.11,23	May.10,24
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Feb. 17,23	Feb.16,24
3m Semi-anechoic Chamber	ETS-LINDGRE N	9m*6m*6m	Euroshieldpn- CT0001143-121 6	May. 18,23	May. 17,26
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	50HF-010-SMA	May. 06,23	May. 05,24
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. 06,23	May. 05,24
MXG Analog Microvave Signal Generator	KEYSIGHT	N5183A	MY50143024	Feb. 14,23	Feb. 13,24
Base station R&S CMW500	Rohde&Schwa rz	CMW500	153085	May.11,23	May.10,24
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.

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	FE3NA0031	
BRAND NAME	Continental	
MODEL NAME	FE3NA0031	
NOMINAL VOLTAGE	EUT 4.0V	
MODULATION TECHNOLOGY	WCDMA IV	HSDPA, HSUPA, DC-HSDPA
	LTE	QPSK, 16QAM
FREQUENCY RANGE	WCDMA IV	1712.4MHz ~ 1752.6MHz
	LTE Band 4 Channel Bandwidth: 1.4MHz	1710.7MHz ~ 1754.3MHz
	LTE Band 4 Channel Bandwidth: 3MHz	1711.5MHz ~ 1753.5MHz
	LTE Band 4 Channel Bandwidth: 5MHz	1712.5MHz ~ 1752.5MHz
	LTE Band 4 Channel Bandwidth: 10MHz	1715MHz ~ 1750MHz
	LTE Band 4 Channel Bandwidth: 15MHz	1717.5MHz ~ 1747.5 MHz
	LTE Band 4 Channel Bandwidth: 20MHz	1720MHz ~ 1745MHz
	LTE Band 7 Channel Bandwidth: 5MHz	2502.5MHz ~ 2567.5MHz
	LTE Band 7 Channel Bandwidth: 10MHz	2505MHz ~ 2565MHz
	LTE Band 7 Channel Bandwidth: 15MHz	2507.5MHz ~ 2562.5MHz
	LTE Band 7 Channel Bandwidth: 20MHz	2510MHz ~ 2560MHz
	LTE Band 12 Channel Bandwidth: 3MHz	700.5MHz ~ 714.5MHz
	LTE Band 12 Channel Bandwidth: 5MHz	701.5MHz ~ 713.5MHz
	LTE Band 12 Channel Bandwidth: 10MHz	704MHz ~ 711MHz
	LTE Band 13 Channel Bandwidth: 5MHz	779.5MHz ~ 784.5MHz
	LTE Band 13 Channel Bandwidth: 10MHz	782MHz
	WCDMA IV	264.24mW



**BUREAU
VERITAS**

Test Report No.: W7L-230619W001RF03

MAX. EIRP POWER	LTE Band 4 Channel Bandwidth: 1.4MHz	213.3mW
	LTE Band 4 Channel Bandwidth: 3MHz	210.86mW
	LTE Band 4 Channel Bandwidth: 5MHz	211.35mW
	LTE Band 4 Channel Bandwidth: 10MHz	209.89mW
	LTE Band 4 Channel Bandwidth: 15MHz	211.84mW
	LTE Band 4 Channel Bandwidth: 20MHz	213.8mW
	LTE Band 7 Channel Bandwidth: 5MHz	407.38mW
	LTE Band 7 Channel Bandwidth: 10MHz	405.51mW
	LTE Band 7 Channel Bandwidth: 15MHz	410.2mW
	LTE Band 7 Channel Bandwidth: 20MHz	411.15mW
	LTE Band 12 Channel Bandwidth: 1.4MHz	128.53mW
	LTE Band 12 Channel Bandwidth: 3MHz	128.53mW
	LTE Band 12 Channel Bandwidth: 5MHz	129.72mW
	LTE Band 12 Channel Bandwidth: 10MHz	130.02mW
	LTE Band 13 Channel Bandwidth: 5MHz	137.09mW
	LTE Band 13 Channel Bandwidth: 10MHz	138.36mW
	MAX. EIRP POWER	WCDMA IV
LTE Band 4 Channel Bandwidth: 1.4MHz		QPSK: 1M09G7D
		16QAM: 1M09W7D
LTE Band 4 Channel Bandwidth: 3MHz		QPSK: 2M69G7D
		16QAM: 2M69W7D
LTE Band 4 Channel Bandwidth: 5MHz		QPSK: 4M50G7D
		16QAM: 4M50W7D
LTE Band 4 Channel Bandwidth: 10MHz	QPSK: 8M98G7D	
	16QAM: 8M98W7D	



**BUREAU
VERITAS**

Test Report No.: W7L-230619W001RF03

	LTE Band 4 Channel Bandwidth: 15MHz	QPSK: 13M5G7D
		16QAM: 13M5W7D
	LTE Band 4 Channel Bandwidth: 20MHz	QPSK: 17M9G7D
		16QAM: 18M0W7D
	LTE Band 7 Channel Bandwidth: 5MHz	QPSK: 4M51G7D
		16QAM: 4M50W7D
	LTE Band 7 Channel Bandwidth: 10MHz	QPSK: 8M98G7D
		16QAM: 8M97W7D
	LTE Band 7 Channel Bandwidth: 15MHz	QPSK: 13M5G7D
		16QAM: 13M5W7D
	LTE Band 7 Channel Bandwidth: 20MHz	QPSK: 17M9G7D
		16QAM: 18M0W7D
	LTE Band 12 Channel Bandwidth: 1.4MHz	QPSK: 1M10G7D
		16QAM: 1M09W7D
	LTE Band 12 Channel Bandwidth: 3MHz	QPSK: 2M69G7D
		16QAM: 2M70W7D
LTE Band 12 Channel Bandwidth: 5MHz	QPSK: 4M52G7D	
	16QAM: 4M52W7D	
LTE Band 12 Channel Bandwidth: 10MHz	QPSK: 9M01G7D	
	16QAM: 9M00W7D	
LTE Band 13 Channel Bandwidth: 5MHz	QPSK: 4M51G7D	
	16QAM: 4M51W7D	
LTE Band 13 Channel Bandwidth: 10MHz	QPSK: 8M96G7D	
	16QAM: 8M96W7D	
ANTENNA TYPE	Dipole Antenna with 0.68 dBi gain for WCDMA IV Dipole Antenna with 0.68 dBi gain for LTE4 Dipole Antenna with 3.35 dBi gain for LTE7 Dipole Antenna with 0.62 dBi gain for LTE12 Dipole Antenna with 0.82 dBi gain for LTE13	
HW VERSION	P2	



**BUREAU
VERITAS**

Test Report No.: W7L-230619W001RF03

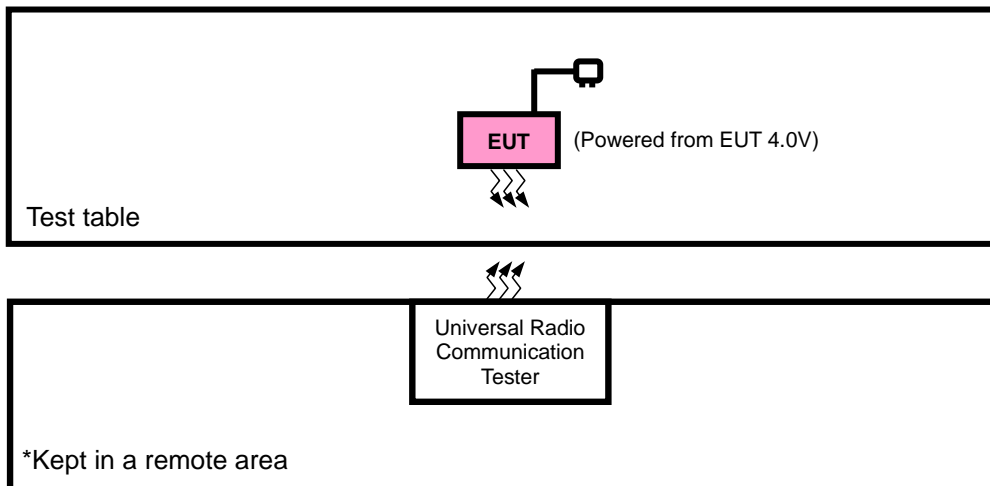
SW VERSION	MODEMSA415M_01.16.34
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	N/A
EXTREME TEMPERATURE	-30-75 °C
EXTREME VOLTAGE	EUT 3.8V - EUT 4.2V

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. 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 + DC Source with 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

LTE BAND 4 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	EIRP	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		19965 to 20385	19965, 20175, 20385	3MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		19975 to 20375	19975, 20175, 20375	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20000 to 20350	20000, 20175, 20350	10MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20025 to 20325	20025, 20175, 20325	15MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20050 to 20300	20050, 20175, 20300	20MHz	QPSK, 16QAM	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 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	1 RB / 0 RB Offset
		20800 to 21400	20800, 21100, 21400	10MHz	QPSK, 16QAM	1 RB / 0RB Offset
		20825 to 21375	20825, 21100, 21375	15MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		20850 to 21350	20850, 21100, 21350	20MHz	QPSK, 16QAM	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	1 RB / 0 RB Offset
		23025 to 23165	23025, 23095 ,23165	3MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23035 to 23155	23035, 23095 ,23155	5MHz	QPSK, 16QAM	1 RB / 0 RB Offset
		23060 to 23130	23060, 23095 ,23130	10MHz	QPSK, 16QAM	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 13 MODE

EUT CONFIGURE MODE	TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
A	ERP	23205 to 23255	20025, 20175, 20325	5MHz	QPSK,16QAM	1 RB / 0 RB Offset
		23230	23230	10MHz	QPSK,16QAM	1 RB / 0 RB Offset
A	RADIATED EMISSION	23205 to 23255	23230	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-230619W001RF03

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP&EIRP	23deg. C, 70%RH	EUT 4.0V	Jace Hu
RADIATED EMISSION	23deg. C, 70%RH	EUT 4.0V	Jace Hu



Test Report No.: W7L-230619W001RF03

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_{Meas} , typically dBW or dBm);

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

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

L_{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-230619W001RF03

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)

Band	WCDMA IV		
	1312	1413	1513
Channel	1712.4	1732.6	1752.6
Frequency (MHz)	1712.4	1732.6	1752.6
RMC 12.2K	23.54	23.31	23.28
HSDPA Subtest-1	22.46	22.49	22.32
HSDPA Subtest-2	22.31	22.16	22.12
HSDPA Subtest-3	22.03	22.01	22.08
HSDPA Subtest-4	22.10	22.04	22.09
DC-HSDPA Subtest-1	22.51	22.42	22.37
DC-HSDPA Subtest-2	22.30	22.31	22.41
DC-HSDPA Subtest-3	22.07	22.06	22.04
DC-HSDPA Subtest-4	22.06	22.02	22.06
HSUPA Subtest-1	22.41	22.49	22.41
HSUPA Subtest-2	20.75	20.68	20.58
HSUPA Subtest-3	21.82	21.70	21.62
HSUPA Subtest-4	20.53	20.50	20.52
HSUPA Subtest-5	22.47	22.38	22.41



**BUREAU
VERITAS**

Test Report No.: W7L-230619W001RF03

LTE Band 4

Band/BW	Modulation	RB Size	RB Offset	Low CH 19957	Mid CH 20175	High CH 20393
				Frequency 1710.7 MHz	Frequency 1732.5 MHz	Frequency 1754.3 MHz
4/ 1.4	QPSK	1	0	22.61	22.50	22.46
		1	2	22.53	22.44	22.40
		1	5	22.52	22.41	22.42
		3	0	22.43	22.33	22.31
		3	1	22.43	22.36	22.30
		3	3	22.42	22.29	22.27
	16QAM	6	0	21.72	21.62	21.56
		1	0	21.78	21.68	21.68
		1	2	21.86	21.77	21.77
		1	5	21.82	21.66	21.75
		3	0	21.30	21.26	21.20
		3	1	21.30	21.27	21.22
		3	3	21.33	21.21	21.17
		6	0	20.68	20.68	20.59

Band/BW	Modulation	RB Size	RB Offset	Low CH 19965	Mid CH 20175	High CH 20385
				Frequency 1711.5 MHz	Frequency 1732.5 MHz	Frequency 1753.5 MHz
4/ 3	QPSK	1	0	22.56	22.49	22.43
		1	7	22.49	22.45	22.40
		1	14	22.46	22.46	22.41
		8	0	21.71	21.70	21.61
		8	3	21.70	21.63	21.60
		8	7	21.69	21.66	21.61
		15	0	21.68	21.63	21.54
	16QAM	1	0	21.81	21.67	21.72
		1	7	21.80	21.81	21.74
		1	14	21.84	21.68	21.74
		8	0	20.72	20.64	20.60
		8	3	20.72	20.60	20.65
		8	7	20.76	20.64	20.50
		15	0	20.69	20.62	20.58

Band/BW	Modulation	RB Size	RB Offset	Low CH 19975	Mid CH 20175	High CH 20375
				Frequency 1712.5 MHz	Frequency 1732.5 MHz	Frequency 1752.5 MHz
4/ 5	QPSK	1	0	22.57	22.48	22.47
		1	12	22.52	22.45	22.37
		1	24	22.46	22.47	22.42
		12	0	21.75	21.66	21.62
		12	6	21.68	21.66	21.63
		12	13	21.70	21.62	21.61
		25	0	21.65	21.66	21.53
	16QAM	1	0	21.81	21.67	21.71
		1	12	21.80	21.79	21.71
		1	24	21.81	21.72	21.70
		12	0	20.67	20.66	20.63
		12	6	20.72	20.61	20.62
		12	13	20.70	20.61	20.56
		25	0	20.66	20.68	20.58

Band/BW	Modulation	RB Size	RB Offset	Low CH 20000	Mid CH 20175	High CH 20350
				Frequency 1715 MHz	Frequency 1732.5 MHz	Frequency 1750 MHz
4/ 10	QPSK	1	0	22.54	22.52	22.43
		1	24	22.53	22.44	22.40
		1	49	22.52	22.41	22.42
		25	0	21.73	21.63	21.61
		25	12	21.73	21.66	21.60
		25	25	21.70	21.59	21.57
		50	0	21.70	21.62	21.56
	16QAM	1	0	21.81	21.68	21.68
		1	24	21.82	21.77	21.77
		1	49	21.85	21.66	21.75
		25	0	20.66	20.67	20.60
		25	12	20.76	20.60	20.66
		25	25	20.69	20.62	20.53
		50	0	20.71	20.64	20.62

Band/BW	Modulation	RB Size	RB Offset	Low CH 20025	Mid CH 20175	High CH 20325
				Frequency 1717.5 MHz	Frequency 1732.5 MHz	Frequency 1747.5 MHz
4/ 15	QPSK	1	0	22.58	22.53	22.42
		1	37	22.54	22.49	22.38
		1	74	22.48	22.43	22.46
		36	0	21.78	21.69	21.58
		36	19	21.66	21.61	21.66
		36	39	21.76	21.63	21.60
		75	0	21.70	21.67	21.52
	16QAM	1	0	21.79	21.70	21.71
		1	37	21.82	21.83	21.76
		1	74	21.85	21.66	21.75
		36	0	20.66	20.67	20.60
		36	19	20.75	20.62	20.65
		36	39	20.76	20.61	20.50
		75	0	20.68	20.67	20.60

Band/BW	Modulation	RB Size	RB Offset	Low CH 20050	Mid CH 20175	High CH 20300
				Frequency 1720 MHz	Frequency 1732.5 MHz	Frequency 1745 MHz
4/ 20	QPSK	1	0	22.62	22.56	22.48
		1	50	22.56	22.50	22.42
		1	99	22.54	22.48	22.47
		50	0	21.79	21.71	21.63
		50	25	21.74	21.68	21.68
		50	50	21.77	21.67	21.63
		100	0	21.73	21.68	21.58
	16QAM	1	0	21.83	21.75	21.73
		1	50	21.88	21.85	21.79
		1	99	21.87	21.74	21.76
		50	0	20.74	20.71	20.65
		50	25	20.78	20.68	20.67
		50	50	20.77	20.66	20.58
		100	0	20.74	20.70	20.64

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	22.75	22.33	22.15
		1	12	22.39	22.05	21.91
		1	24	22.41	21.97	21.93
		12	0	21.64	21.23	21.10
		12	6	21.56	21.16	21.13
		12	13	21.53	21.13	21.05
		25	0	21.55	21.13	21.06
	16QAM	1	0	22.01	21.57	21.50
		1	12	21.85	21.53	21.36
		1	24	21.80	21.39	21.34
		12	0	20.68	20.22	20.14
		12	6	20.65	20.25	20.22
		12	13	20.58	20.23	20.01
		25	0	20.57	20.21	20.10

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	22.73	22.30	22.18
		1	24	22.45	21.98	21.95
		1	49	22.37	21.98	21.89
		25	0	21.68	21.17	21.14
		25	12	21.55	21.17	21.10
		25	25	21.58	21.09	21.08
		50	0	21.55	21.14	21.03
	16QAM	1	0	22.03	21.55	21.56
		1	24	21.90	21.53	21.34
		1	49	21.82	21.36	21.30
		25	0	20.73	20.23	20.17
		25	12	20.70	20.22	20.23
		25	25	20.58	20.21	20.02
		50	0	20.63	20.14	20.11

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	22.78	22.36	22.12
		1	37	22.40	21.98	21.90
		1	74	22.42	21.96	21.92
		36	0	21.68	21.18	21.10
		36	19	21.57	21.13	21.13
		36	39	21.59	21.07	21.09
		75	0	21.49	21.17	21.03
	16QAM	1	0	22.07	21.55	21.57
		1	37	21.83	21.51	21.37
		1	74	21.84	21.38	21.34
		36	0	20.72	20.22	20.14
		36	19	20.66	20.22	20.22
		36	39	20.65	20.23	19.99
		75	0	20.60	20.14	20.06

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	22.79	22.38	22.20
		1	50	22.47	22.06	21.96
		1	99	22.45	22.02	21.94
		50	0	21.70	21.25	21.15
		50	25	21.63	21.21	21.15
		50	50	21.61	21.15	21.10
		100	0	21.57	21.21	21.08
	16QAM	1	0	22.09	21.63	21.58
		1	50	21.91	21.55	21.42
		1	99	21.87	21.44	21.36
		50	0	20.74	20.29	20.19
		50	25	20.72	20.30	20.24
		50	50	20.66	20.25	20.07
		100	0	20.65	20.22	20.12



**BUREAU
VERITAS**

Test Report No.: W7L-230619W001RF03

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	22.39	22.47	22.60
		1	2	22.26	22.23	22.45
		1	5	22.43	22.41	22.62
		3	0	22.29	22.32	22.50
		3	1	22.33	22.45	22.47
		3	3	22.32	22.34	22.52
		6	0	21.51	21.56	21.69
	16QAM	1	0	21.77	21.83	22.00
		1	2	21.61	21.67	21.82
		1	5	21.82	21.79	22.04
		3	0	21.27	21.34	21.44
		3	1	21.32	21.49	21.53
		3	3	21.32	21.39	21.58
		6	0	20.52	20.61	20.72

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	22.41	22.49	22.59
		1	7	22.22	22.24	22.45
		1	14	22.39	22.41	22.62
		8	0	21.48	21.55	21.70
		8	3	21.46	21.65	21.69
		8	7	21.49	21.61	21.76
		15	0	21.48	21.57	21.63
	16QAM	1	0	21.74	21.89	22.03
		1	7	21.58	21.70	21.80
		1	14	21.85	21.79	22.04
		8	0	20.43	20.55	20.64
		8	3	20.57	20.64	20.76
		8	7	20.54	20.57	20.74
		15	0	20.52	20.55	20.75

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	22.42	22.44	22.60
		1	12	22.27	22.21	22.45
		1	24	22.40	22.40	22.66
		12	0	21.51	21.55	21.67
		12	6	21.46	21.66	21.70
		12	13	21.53	21.57	21.77
	16QAM	25	0	21.46	21.60	21.66
		1	0	21.75	21.85	22.03
		1	12	21.55	21.73	21.79
		1	24	21.85	21.79	22.03
		12	0	20.43	20.53	20.61
		12	6	20.54	20.68	20.72
		12	13	20.49	20.59	20.77
		25	0	20.52	20.56	20.72

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	22.47	22.51	22.65
		1	24	22.29	22.29	22.47
		1	49	22.45	22.48	22.67
		25	0	21.55	21.60	21.72
		25	12	21.54	21.67	21.75
		25	25	21.57	21.62	21.78
		50	0	21.52	21.62	21.71
	16QAM	1	0	21.82	21.90	22.05
		1	24	21.63	21.75	21.84
		1	49	21.87	21.87	22.05
		25	0	20.51	20.59	20.69
		25	12	20.60	20.70	20.78
		25	25	20.56	20.64	20.79
		50	0	20.58	20.63	20.77



BUREAU
VERITAS

Test Report No.: W7L-230619W001RF03

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	22.66	22.70	22.69
		1	12	22.48	22.42	22.49
		1	24	22.58	22.62	22.61
		12	0	21.75	21.72	21.76
		12	6	21.78	21.73	21.75
		12	13	21.67	21.65	21.71
		25	0	21.75	21.74	21.68
	16QAM	1	0	22.02	22.01	22.03
		1	12	21.78	21.75	21.79
		1	24	21.98	21.93	21.95
		12	0	20.74	20.72	20.78
		12	6	20.81	20.75	20.82
		12	13	20.67	20.71	20.70
		25	0	20.77	20.71	20.78

Band/BW	Modulation	RB Size	RB Offset	/	Mid CH 23230	/
				/	Frequency 782.0 MHz	/
13/ 10	QPSK	1	0	/	22.74	/
		1	24	/	22.50	/
		1	49	/	22.66	/
		25	0	/	21.78	/
		25	12	/	21.80	/
		25	25	/	21.73	/
		50	0	/	21.76	/
	16QAM	1	0	/	22.09	/
		1	24	/	21.81	/
		1	49	/	22.00	/
		25	0	/	20.80	/
		25	12	/	20.83	/
		25	25	/	20.75	/
		50	0	/	20.79	/



Test Report No.: W7L-230619W001RF03

EIRP

WCDMA IV

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
1312	1712.4	23.54	0.68	24.22	264.24	1
1413	1732.6	23.31	0.68	23.99	250.61	1
1513	1752.6	23.28	0.68	23.96	248.89	1

LTE BAND 4

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19957	1710.7	22.61	0.68	23.29	213.3	1
20175	1732.5	22.5	0.68	23.18	207.97	1
20393	1754.3	22.46	0.68	23.14	206.06	1

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19957	1710.7	21.86	0.68	22.54	179.47	1
20175	1732.5	21.77	0.68	22.45	175.79	1
20393	1754.3	21.77	0.68	22.45	175.79	1

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19965	1711.5	22.56	0.68	23.24	210.86	1
20175	1732.5	22.49	0.68	23.17	207.49	1
20385	1753.5	22.43	0.68	23.11	204.64	1

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19965	1711.5	21.84	0.68	22.52	178.65	1
20175	1732.5	21.84	0.68	22.52	178.65	1
20385	1753.5	21.84	0.68	22.52	178.65	1

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19975	1712.5	22.57	0.68	23.25	211.35	1
20175	1732.5	22.48	0.68	23.16	207.01	1
20375	1752.5	22.47	0.68	23.15	206.54	1

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
19975	1712.5	21.81	0.68	22.49	177.42	1
20175	1732.5	21.79	0.68	22.47	176.6	1
20375	1752.5	21.71	0.68	22.39	173.38	1

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20000	1715	22.54	0.68	23.22	209.89	1
20175	1732.5	22.52	0.68	23.2	208.93	1
20350	1750	22.43	0.68	23.11	204.64	1

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20000	1715	21.85	0.68	22.53	179.06	1
20175	1732.5	21.77	0.68	22.45	175.79	1
20350	1750	21.77	0.68	22.45	175.79	1

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20025	1717.5	22.58	0.68	23.26	211.84	1
20175	1732.5	22.53	0.68	23.21	209.41	1
20325	1747.5	22.46	0.68	23.14	206.06	1

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20025	1717.5	21.85	0.68	22.53	179.06	1
20175	1732.5	21.83	0.68	22.51	178.24	1
20325	1747.5	21.76	0.68	22.44	175.39	1



Test Report No.: W7L-230619W001RF03

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20050	1720	22.62	0.68	23.3	213.8	1
20175	1732.5	22.56	0.68	23.24	210.86	1
20300	1745	22.48	0.68	23.16	207.01	1

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20050	1720	21.88	0.68	22.56	180.3	1
20175	1732.5	21.85	0.68	22.53	179.06	1
20300	1745	21.79	0.68	22.47	176.6	1

LTE BAND 7

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20775	2502.5	22.75	3.35	26.1	407.38	2
21100	2535.0	22.33	3.35	25.68	369.83	2
21425	2567.5	22.15	3.35	25.5	354.81	2

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20775	2502.5	22.01	3.35	25.36	343.56	2
21100	2535.0	21.57	3.35	24.92	310.46	2
21425	2567.5	21.5	3.35	24.85	305.49	2

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20800	2505.0	22.73	3.35	26.08	405.51	2
21100	2535.0	22.3	3.35	25.65	367.28	2
21400	2565.0	22.18	3.35	25.53	357.27	2

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20800	2505.0	22.03	3.35	25.38	345.14	2
21100	2535.0	21.55	3.35	24.9	309.03	2
21400	2565.0	21.56	3.35	24.91	309.74	2

CHANNEL BANDWIDTH: 15MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20825	2507.5	22.78	3.35	26.13	410.2	2
21100	2535.0	22.36	3.35	25.71	372.39	2
21375	2562.5	22.12	3.35	25.47	352.37	2

CHANNEL BANDWIDTH: 15MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20825	2507.5	22.07	3.35	25.42	348.34	2
21100	2535.0	21.55	3.35	24.9	309.03	2
21375	2562.5	21.57	3.35	24.92	310.46	2

CHANNEL BANDWIDTH: 20MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20850	2510.0	22.79	3.35	26.14	411.15	2
21100	2535.0	22.38	3.35	25.73	374.11	2
21350	2560.0	22.2	3.35	25.55	358.92	2

CHANNEL BANDWIDTH: 20MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	EIRP (dBm)	EIRP (mW)	Limit (W)
20850	2510.0	22.09	3.35	25.44	349.95	2
21100	2535.0	21.63	3.35	24.98	314.77	2
21350	2560.0	21.58	3.35	24.93	311.17	2



**BUREAU
VERITAS**

Test Report No.: W7L-230619W001RF03

ERP

LTE BAND 12

CHANNEL BANDWIDTH: 1.4MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23017	699.7	22.43	0.62	20.9	123.03	3
23095	707.5	22.47	0.62	20.94	124.17	3
23173	715.3	22.62	0.62	21.09	128.53	3

CHANNEL BANDWIDTH: 1.4MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23017	699.7	21.82	0.62	20.29	106.91	3
23095	707.5	21.83	0.62	20.3	107.15	3
23173	715.3	22.04	0.62	20.51	112.46	3

CHANNEL BANDWIDTH: 3MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23025	700.5	22.41	0.62	20.88	122.46	3
23095	707.5	22.49	0.62	20.96	124.74	3
23165	714.5	22.62	0.62	21.09	128.53	3

CHANNEL BANDWIDTH: 3MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23025	700.5	21.85	0.62	20.32	107.65	3
23095	707.5	21.89	0.62	20.36	108.64	3
23165	714.5	22.04	0.62	20.51	112.46	3

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23035	701.5	22.42	0.62	20.89	122.74	3
23095	707.5	22.44	0.62	20.91	123.31	3
23155	713.5	22.66	0.62	21.13	129.72	3

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23035	701.5	21.85	0.62	20.32	107.65	3
23095	707.5	21.85	0.62	20.32	107.65	3
23155	713.5	22.03	0.62	20.5	112.2	3

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23060	704	22.47	0.62	20.94	124.17	3
23095	707.5	22.51	0.62	20.98	125.31	3
23130	711	22.67	0.62	21.14	130.02	3

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23060	704	21.87	0.62	20.34	108.14	3
23095	707.5	21.9	0.62	20.37	108.89	3
23130	711	22.05	0.62	20.52	112.72	3

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



BUREAU
VERITAS

Test Report No.: W7L-230619W001RF03

LTE BAND 13

CHANNEL BANDWIDTH: 5MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23205	779.5	22.66	0.82	21.33	135.83	3
23230	782	22.7	0.82	21.37	137.09	3
23255	784.5	22.69	0.82	21.36	136.77	3

CHANNEL BANDWIDTH: 5MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
23205	779.5	22.02	0.82	20.69	117.22	3
23230	782	22.01	0.82	20.68	116.95	3
23255	784.5	22.03	0.82	20.7	117.49	3

CHANNEL BANDWIDTH: 10MHz QPSK

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
-	-	-	-	-	-	-
23230	782	22.74	0.82	21.41	138.36	3
-	-	-	-	-	-	-

CHANNEL BANDWIDTH: 10MHz 16QAM

Channel	Frequency (MHz)	Conducted Power (dBm)	G _T -L _c (dB)	ERP (dBm)	ERP (mW)	Limit (W)
-	-	-	-	-	-	-
23230	782	22.09	0.82	20.76	119.12	3
-	-	-	-	-	-	-

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



Test Report No.: W7L-230619W001RF03

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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 emission limit equal to -13dBm .

For LTE Band7

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $55 + 10 \log_{10}(P)$ dB. The limit of emission is equal to -25dBm .

3.2.2 TEST PROCEDURES

- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G.
- c. $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$.
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, $\text{E.R.P power} = \text{E.I.P.R power} - 2.15\text{dBi}$.

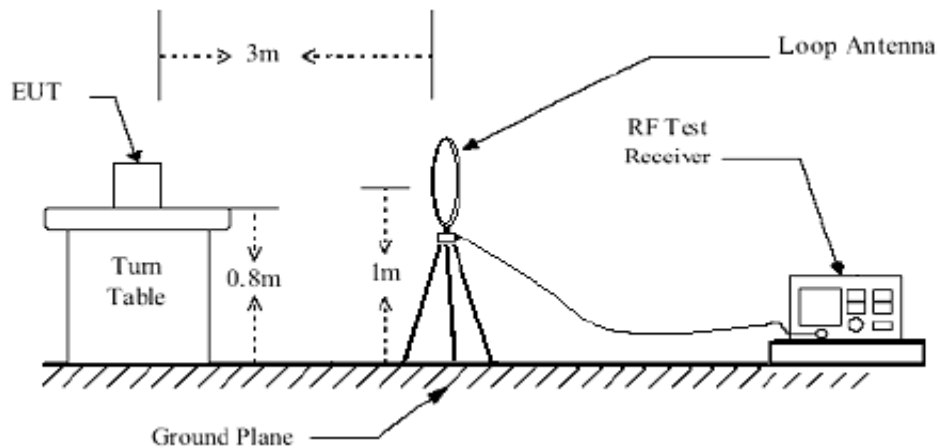
NOTE: The resolution bandwidth of spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz.

3.2.3 DEVIATION FROM TEST STANDARD

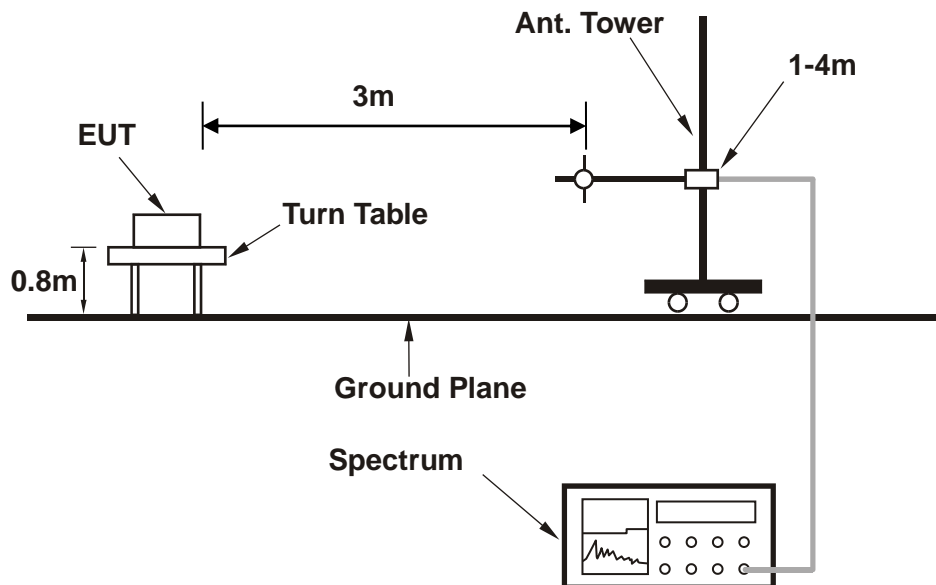
No deviation

3.2.4 TEST SETUP

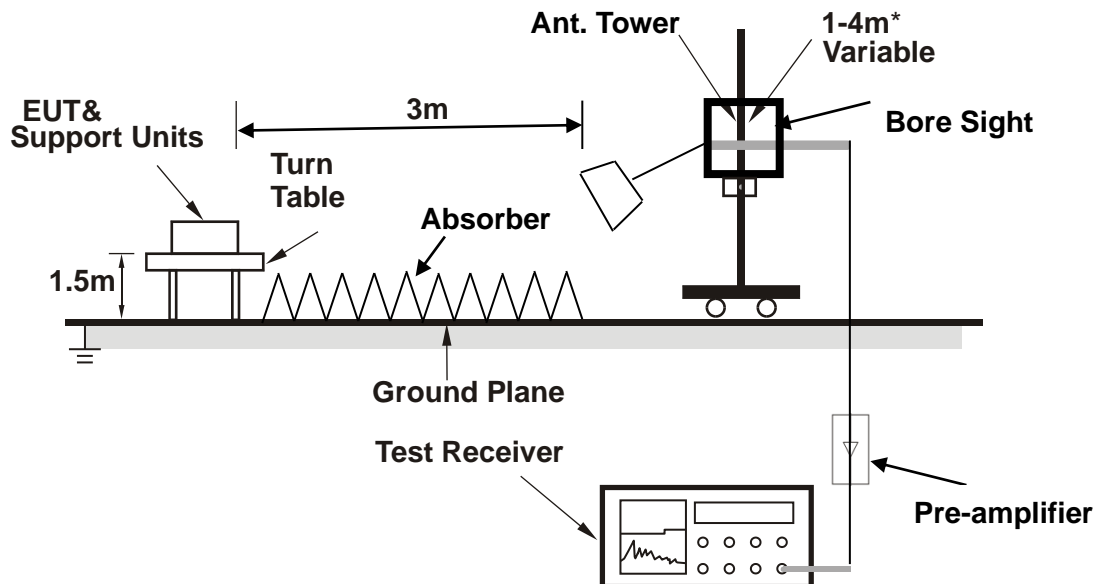
< Frequency Range below 30MHz >



< Frequency Range 30MHz~1GHz >



<Frequency Range above 1GHz>



Note: Above 1G is a directional antenna depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

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



3.2.5 TEST RESULTS

NOTE : The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

BELOW 1GHz WORST-CASE DATA

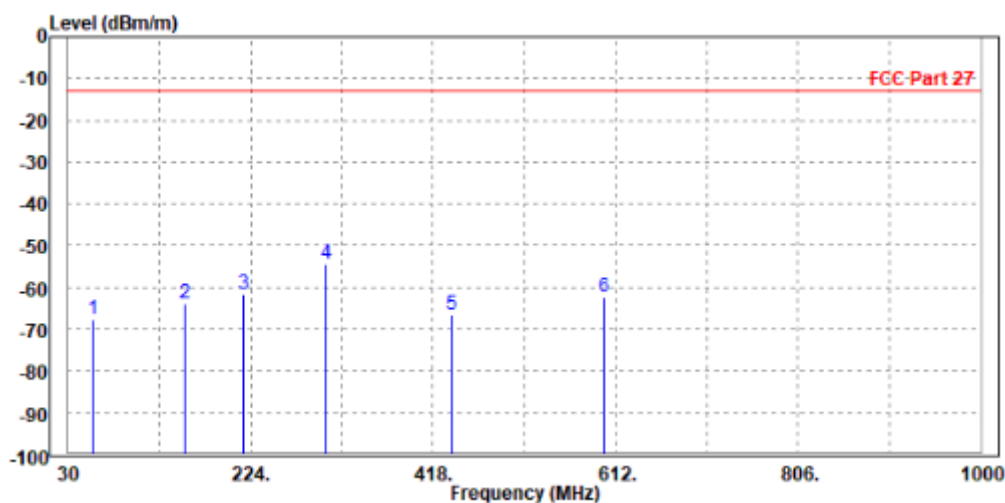
30 MHz – 1GHz data:

LTE Band 13

CHANNEL BANDWIDTH: 5MHz / QPSK

MODE	TX channel 23230	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	EUT 4.0V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	56.190	-67.74	-49.66	-13.00	-54.74	-18.08	Peak	Horizontal
2	154.160	-63.78	-46.03	-13.00	-50.78	-17.75	Peak	Horizontal
3	216.240	-61.61	-46.13	-13.00	-48.61	-15.48	Peak	Horizontal
4 PP	303.540	-54.42	-42.04	-13.00	-41.42	-12.38	Peak	Horizontal
5	437.400	-66.67	-57.31	-13.00	-53.67	-9.36	Peak	Horizontal
6	599.390	-62.28	-58.21	-13.00	-49.28	-4.07	Peak	Horizontal

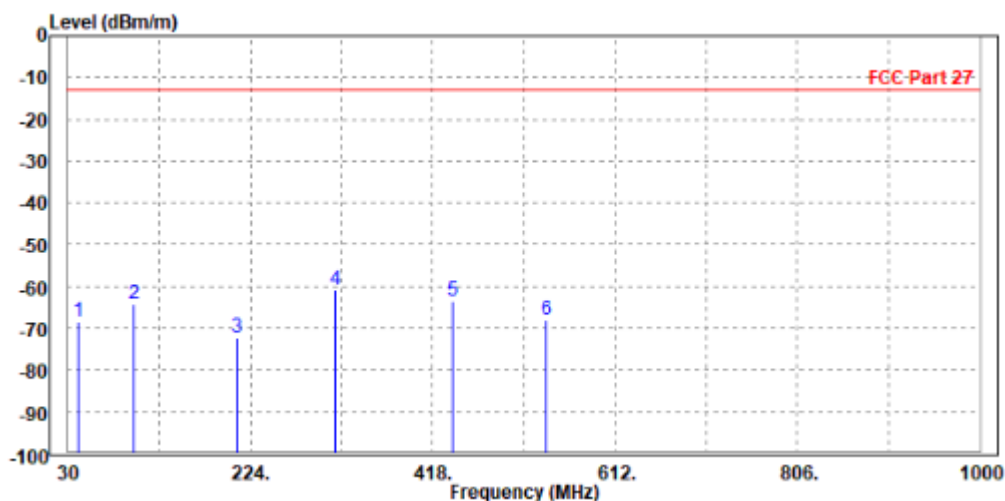




Test Report No.: W7L-230619W001RF03

MODE	TX channel 23230	FREQUENCY RANGE	Below 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	EUT 4.0V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	40.670	-68.61	-43.69	-13.00	-55.61	-24.92	Peak	Vertical
2	99.840	-64.36	-57.85	-13.00	-51.36	-6.51	Peak	Vertical
3	210.420	-72.19	-55.09	-13.00	-59.19	-17.10	Peak	Vertical
4 PP	314.210	-60.86	-50.30	-13.00	-47.86	-10.56	Peak	Vertical
5	439.340	-63.39	-54.75	-13.00	-50.39	-8.64	Peak	Vertical
6	539.250	-68.21	-60.89	-13.00	-55.21	-7.32	Peak	Vertical





BUREAU VERITAS

Test Report No.: W7L-230619W001RF03

ABOVE 1GHz

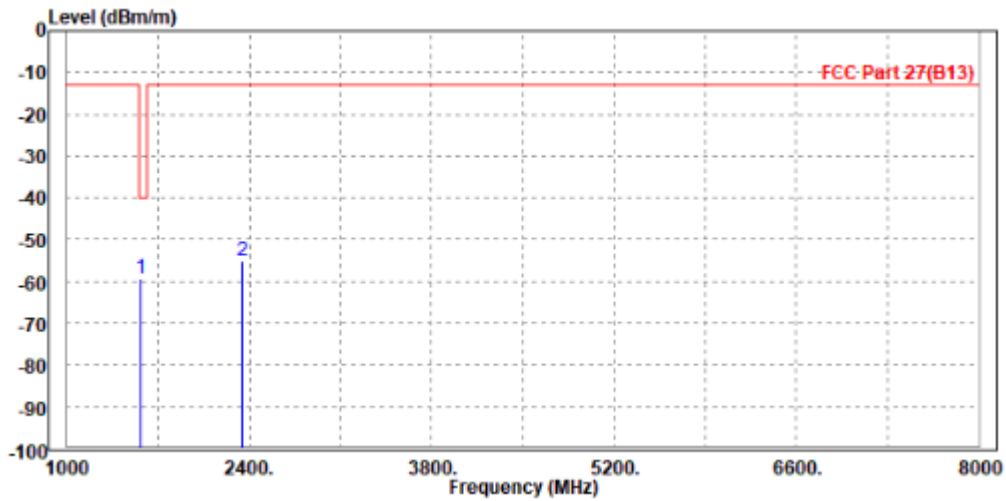
Note: For higher frequency, the emission is too low to be detected.

LTE B13

CHANNEL BANDWIDTH: 5MHz / QPSK

MODE	TX channel 23230	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	EUT 4.0V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M			

	Freq	Level	Read Level	Limit	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1 PP	1564.000	-59.37	-59.47	-40.00	-19.37	0.10	Peak	Horizontal
2	2346.000	-55.12	-60.00	-13.00	-42.12	4.88	Peak	Horizontal

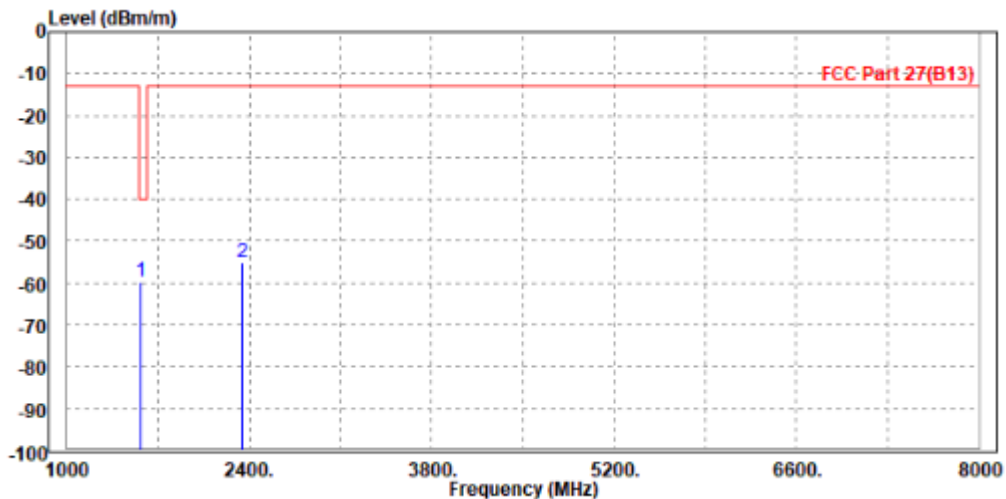




Test Report No.: W7L-230619W001RF03

MODE	TX channel 23230	FREQUENCY RANGE	Above 1000MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70%RH	INPUT POWER	EUT 4.0V
TESTED BY	Jace Hu		
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M			

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBm/m	dBm	dBm/m	dB	dB/m		
1	PP 1564.000	-59.54	-59.97	-40.00	-19.54	0.43	Peak	Vertical
2	2346.000	-54.98	-59.50	-13.00	-41.98	4.52	Peak	Vertical





Test Report No.: W7L-230619W001RF03

4 INFORMATION ON THE TESTING LABORATORIES

We, BV 7LAYERS COMMUNICATIONS TECHNOLOGY (SHENZHEN) CO., LTD., were founded in 2015 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Shenzhen EMC/RF Lab:

Tel: +86-755-88696566

Fax: +86-755-88696577

Email: customerservice.sw@bureauveritas.com

Web Site: www.adt.com.tw

The address and road map of all our labs can be found in our web site also.



Test Report No.: W7L-230619W001RF03

5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

---END---