

FCC TEST REPORT

(PART 27)

REPORT NO.: RF130814E06-2

MODEL NO.: T77H468

FCC ID: B94T77H468

RECEIVED: Aug. 14, 2013

TESTED: Sep. 06 to 10, 2013

ISSUED: Sep. 18, 2013

APPLICANT: Hewlett-Packard Company

ADDRESS: 1501 Page Mill Road Palo Alto, CA 94304 United States

ISSUED BY: Bureau Veritas Consumer Products Services (H.K.) Ltd.,
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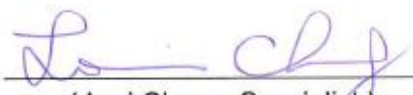
RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF130814E06-2	Original release	Sep. 18, 2013

1 CERTIFICATION

PRODUCT : 3GPP Long Term Evolution Cat3 PCI Express M.2 Module
BRAND NAME : FOXCONN
MODEL NO. : T77H468
TEST ITEM: ENGINEERING SAMPLE
APPLICANT : Hewlett-Packard Company
TESTED DATE : Sep. 06 to 10, 2013
STANDARDS: FCC Part 27, Subpart C, L
FCC Part 2
ANSI C63.4-2003

The above equipment (model: T77H468) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY : , **DATE:** Sep. 18, 2013
(Lori Chung, Specialist)

APPROVED BY : , **DATE:** Sep. 18, 2013
(May Chen, Manager)

2 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	REMARK
2.1046 27.50(d)(4)	Equivalent isotropically radiated power	PASS	Meet the requirement of limit.
2.1055 27.54	Frequency Stability	PASS	Meet the requirement of limit.
2.1049 27.53(h)	Occupied Bandwidth	PASS	Meet the requirement of limit.
27.50(d)(5)	Peak to average ratio	PASS	Meet the requirement of limit.
27.53(h)	Band Edge Measurements	PASS	Meet the requirement of limit.
2.1051 27.53(h)	Conducted Spurious Emissions	PASS	Meet the requirement of limit.
2.1053 27.53(h)	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -2.73dB at 2346.00MHz.

2.1 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	FREQUENCY	UNCERTAINTY
Radiated emissions	30MHz ~ 200MHz	5.46 dB
	200MHz ~1000MHz	3.54 dB
	1GHz ~ 18GHz	4.08 dB
	18GHz ~ 40GHz	4.11 dB

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

2.2 TEST SITE AND INSTRUMENTS

For radiated spurious emissions:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer Agilent	E4446A	MY48250253	Aug. 28, 2013	Aug. 27, 2014
MXE EMI Receiver Agilent	N9038A	MY50010156	Jan. 16, 2013	Jan. 15, 2014
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 14, 2012	Nov. 13, 2013
Pre-Amplifier Agilent	8449B	3008A01923	Oct. 30, 2012	Oct. 29, 2013
Pre-Amplifier SPACEK LABS	SLKKa-48-6	9K16	Nov. 14, 2012	Nov. 13, 2013
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Mar. 25, 2013	Mar. 24, 2014
Horn_Antenna AISI	AIH.8018	0000220091110	Nov. 27, 2012	Nov. 26, 2013
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Oct. 12, 2012	Oct. 11, 2013
RF Cable	NA	RF104-205 RF104-207 RF104-202	Dec. 26, 2012	Dec. 25, 2013
RF Cable	NA	CHHCAB_001	Oct. 07, 2012	Oct. 06, 2013
Software	ADT_Radiated V8.7.05	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA
Radio Communication Analyzer	Anritsu	MT8820C	May 30, 2013	May 29, 2014
Universal Radio Communication Tester	R&S	CMU200	Oct. 23, 2012	Oct. 22, 2013

Note:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5. The CANADA Site Registration No. is IC 7450H-3.
6. Tested Date: Sep. 06 to 10, 2013



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For other test items:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSP 40	100060	May 03, 2013	May 02, 2014
Spectrum Analyzer Agilent	E4446A	MY48250113	Dec. 05, 2012	Dec. 04, 2013
AC Power Source EXTECH Electronics	6502	1140503	NA	NA
Temperature & Humidity Chamber TERCHY	MHU-225AU	911033	Dec. 11, 2012	Dec. 10, 2013
DC Power Supply GOOD WILL INSTRUMENT CO., LTD.	GPC - 3030D	7700087	NA	NA
ESG Vector signal generator Agilent	E4438C	MY47271330 506 602 UNJ	Apr. 30, 2013	Apr. 29, 2014
ESG Vector signal generator Agilent	E4438C	MY45094468/0 05 506 602 UK6 UNJ	Dec. 14, 2012	Dec. 13, 2013
Power meter Anritsu	ML2495A	1014008	Apr. 23, 2013	Apr. 22, 2014
Power sensor Anritsu	MA2411B	0917122	Apr. 23, 2013	Apr. 22, 2014
Power meter Anritsu	ML2495A	0824006	May 20, 2013	May 19, 2014
Power sensor Anritsu	MA2411B	0738172	May 20, 2013	May 19, 2014
Power meter Anritsu	ML2487B	0930006	Nov. 14, 2012	Nov. 13, 2013
Power sensor Anritsu	MA2491A	0845370	Nov. 14, 2012	Nov. 13, 2013
Software	Total Power Measurement Tools V7.1	NA	NA	NA
Software	ADT_RF Test Software V6.6.5.3	NA	NA	NA
Radio Communication Analyzer	Anritsu	MT8820C	May 30, 2013	May 29, 2014
Universal Radio Communication Tester	R&S	CMU200	Oct. 23, 2012	Oct. 22, 2013

- NOTE:**
1. The test was performed in Oven room A.
 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. Tested Date: Sep. 09, 2013

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	3GPP Long Term Evolution Cat3 PCI Express M.2 Module	
MODEL NO.	T77H468	
OPERATING VOLTAGES	Vnom= 3.3 Vdc Vmin= 3.1 Vdc Vmax= 4.4 Vdc	
HW VERSION	115	
SW VERSION	M9615ACETWMLZD4520	
MODULATION TECHNOLOGY	WCDMA	QPSK, BPSK
	LTE Band 13	QPSK, 16QAM
	LTE Band 17	QPSK, 16QAM
	LTE Band 4	QPSK, 16QAM
FREQUENCY RANGE	WCDMA	1712.4MHz ~1752.6MHz
	LTE Band 13 Channel Bandwidth: 5MHz	779.5MHz ~ 784.5MHz
	LTE Band 13 Channel Bandwidth: 10MHz	782MHz
	LTE Band 17 Channel Bandwidth: 5MHz	706.5MHz ~ 713.5MHz
	LTE Band 17 Channel Bandwidth: 10MHz	709MHz ~ 711MHz
	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	1715.0MHz ~1750.0MHz
	LTE Band 4 Channel Bandwidth: 15MHz	1717.5MHz ~ 1747.5MHz
	LTE Band 4 Channel Bandwidth: 20MHz	1720.0MHz ~ 1745.0MHz

EMISSION DESIGNATOR	WCDMA	4M20F9W
	LTE Band 13 Channel Bandwidth: 5MHz	QPSK: 4M50G7W 16QAM: 4M50W7W
	LTE Band 13 Channel Bandwidth: 10MHz	QPSK: 9M00G7W 16QAM: 9M00W7W
	LTE Band 17 Channel Bandwidth: 5MHz	QPSK: 4M52G7W 16QAM: 4M52W7W
	LTE Band 17 Channel Bandwidth: 10MHz	QPSK: 8M93G7W 16QAM: 8M93W7W
	LTE Band 4 Channel Bandwidth: 1.4MHz	QPSK: 1M10G7W 16QAM: 1M09W7W
	LTE Band 4 Channel Bandwidth: 3MHz	QPSK: 2M70G7W 16QAM: 2M69W7W
	LTE Band 4 Channel Bandwidth: 5MHz	QPSK: 4M48G7W 16QAM: 4M52W7W
	LTE Band 4 Channel Bandwidth: 10MHz	QPSK: 9M00G7W 16QAM: 9M00W7W
	LTE Band 4 Channel Bandwidth: 15MHz	QPSK: 13M6G7W 16QAM: 13M6W7W
	LTE Band 4 Channel Bandwidth: 20MHz	QPSK: 18M1G7W 16QAM: 18M1W7W
MAX. ERP POWER (W)	WCDMA	354.8mW
	LTE Band 13 Channel Bandwidth: 5MHz	QPSK: 335.0mW
	LTE Band 13 Channel Bandwidth: 10MHz	QPSK: 285.1mW
	LTE Band 17 Channel Bandwidth: 5MHz	QPSK: 384.6mW
	LTE Band 17 Channel Bandwidth: 10MHz	QPSK: 412.1mW

MAX. EIRP POWER (W)	LTE Band 4 Channel Bandwidth: 1.4MHz	QPSK: 616.6mW
	LTE Band 4 Channel Bandwidth: 3MHz	QPSK: 602.6mW
	LTE Band 4 Channel Bandwidth: 5MHz	QPSK: 588.8mW
	LTE Band 4 Channel Bandwidth: 10MHz	QPSK: 549.5mW
	LTE Band 4 Channel Bandwidth: 15MHz	QPSK: 489.8mW
	LTE Band 4 Channel Bandwidth: 20MHz	QPSK: 467.7mW
CATEGORY	LTE: 3	
ANTENNA TYPE	Refer to NOTE	
I/O PORTS	Refer to users' manual	
DATA CABLE	NA	
ACCESSORY DEVICES	NA	

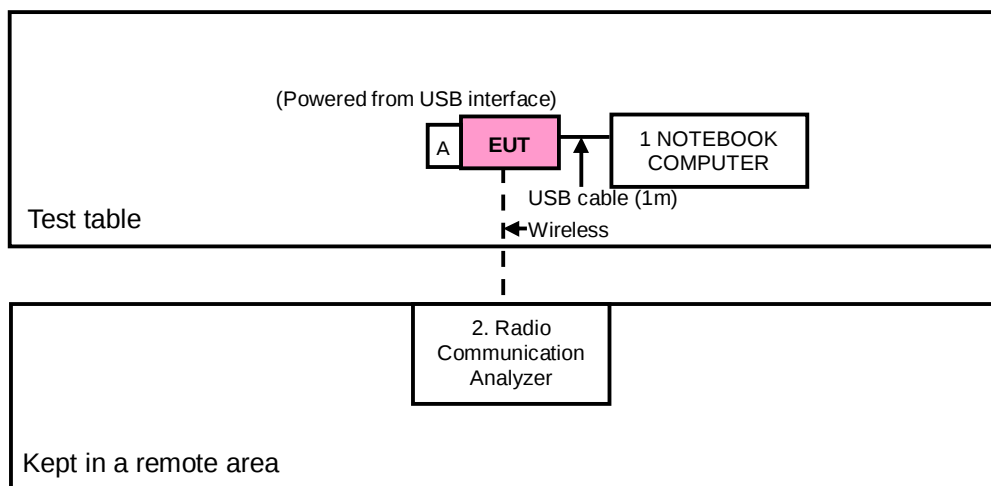
NOTE:

1. The antenna provided to the EUT, please refer to the following table:

Antenna	Antenna Type	Gain(dBi)	Frequency range (MHz to MHz)	Band
1	PIFA	5.28	704~716	LTE Band 17
2	PIFA	6.33	777~915	LTE Band 13
3	PIFA	4.97	1710~2690	WCDMA & LTE Band 4

2. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 CONFIGURATION OF SYSTEM UNDER TEST



NOTE: Item A is SIM card.

3.3 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	NOTEBOOK COMPUTER	DELL	PP32LA	FSLB32S	FCC DoC
2	Radio Communication Analyzer	Anritsu	MT8820C	6201127458	NA

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	USB cable (1m)
2	NA

NOTE:

1. All power cords of the above support units are non-shielded (1.8m).
2. Items 1-2 act as communication partners to transfer data.

3.4 DESCRIPTION OF TEST MODES

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 X-plane for WCDMA, LTE Band 13/17/4 for radiated emission below 1GHz. Z-plane for WCDMA, LTE Band 4 and Y-plane for LTE Band 13 and X-plane for LTE Band 17 for ERP and for radiated emission above 1GHz. Following channel(s) was (were) selected for the final test as listed below:

WCDMA

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

LTE Band 13

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
ERP	23205 to 23255	23205, 23230, 23255	5MHz	QPSK	1 RB / 0 RB Offset
	23230	23230	10MHz	QPSK	1 RB / 0 RB Offset
FREQUENCY STABILITY	23205 to 23255	23230	5MHz	QPSK	1 RB / 0 RB Offset
	23230	23230	10MHz	QPSK	1 RB / 0 RB Offset
OCCUPIED BANDWIDTH	23205 to 23255	23205, 23230, 23255	5MHz	QPSK/16QAM	25 RB / 0 RB Offset
	23230	23230	10MHz	QPSK/16QAM	50 RB / 0 RB Offset
PEAK TO AVERAGE RATIO	23205 to 23255	23205, 23230, 23255	5MHz	QPSK	1 RB / 0 RB Offset
	23230	23230	10MHz	QPSK	1 RB / 0 RB Offset
BAND EDGE	23205 to 23255	23205, 23255	5MHz	QPSK	1 RB / 0 RB Offset
					25 RB / 0 RB Offset
	23230	23230	10MHz	QPSK	1 RB / 0 RB Offset
					50 RB / 0 RB Offset
CONDCUDETED EMISSION	23205 to 23255	23230	5MHz	QPSK	1 RB / 0 RB Offset
	23230	23230	10MHz	QPSK	1 RB / 0 RB Offset
RADIATED EMISSION	23205 to 23255	23230	5MHz	QPSK	1 RB / 0 RB Offset
	23230	23230	10MHz	QPSK	1 RB / 0 RB Offset

LTE Band 17

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
ERP	23755 to 23825	23755, 23790, 23825	5MHz	QPSK	1 RB / 0 RB Offset
	23780 to 23800	23780, 23790, 23800	10MHz	QPSK	1 RB / 0 RB Offset
FREQUENCY STABILITY	23755 to 23825	23790	5MHz	QPSK	1 RB / 0 RB Offset
	23780 to 23800	23790	10MHz	QPSK	1 RB / 0 RB Offset
OCCUPIED BANDWIDTH	23755 to 23825	23755, 23790, 23825	5MHz	QPSK/16QAM	25 RB / 0 RB Offset
	23780 to 23800	23780, 23790, 23800	10MHz	QPSK/16QAM	50 RB / 0 RB Offset
PEAK TO AVERAGE RATIO	23755 to 23825	23755, 23790, 23825	5MHz	QPSK	1 RB / 0 RB Offset
	23780 to 23800	23780, 23790, 23800	10MHz	QPSK	1 RB / 0 RB Offset
BAND EDGE	23755 to 23825	23755, 23825	5MHz	QPSK	1 RB / 0 RB Offset
					25 RB / 0 RB Offset
	23780 to 23800	23780, 23800	10MHz	QPSK	1 RB / 0 RB Offset
					50 RB / 0 RB Offset
CONDCUDETED EMISSION	23755 to 23825	23790	5MHz	QPSK	1 RB / 0 RB Offset
	23780 to 23800	23790	10MHz	QPSK	1 RB / 0 RB Offset
RADIATED EMISSION	23755 to 23825	23790	5MHz	QPSK	1 RB / 0 RB Offset
	23780 to 23800	23790	10MHz	QPSK	1 RB / 0 RB Offset

LTE Band 4

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
EIRP	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK	1 RB / 0 RB Offset
	19965 to 20385	19965, 20175, 20385	3MHz	QPSK	1 RB / 0 RB Offset
	19975 to 20375	19975, 20175, 20375	5MHz	QPSK	1 RB / 0 RB Offset
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK	1 RB / 0 RB Offset
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK	1 RB / 0 RB Offset
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK	1 RB / 0 RB Offset
FREQUENCY STABILITY	19957 to 20393	20175	1.4MHz	QPSK	1 RB / 0 RB Offset
	19965 to 20385	20175	3MHz	QPSK	1 RB / 0 RB Offset
	19975 to 20375	20175	5MHz	QPSK	1 RB / 0 RB Offset
	20000 to 20350	20175	10MHz	QPSK	1 RB / 0 RB Offset
	20025 to 20325	20175	15MHz	QPSK	1 RB / 0 RB Offset
	20050 to 20300	20175	20MHz	QPSK	1 RB / 0 RB Offset
OCCUPIED BANDWIDTH	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK, 16QAM	6 RB / 0 RB Offset
	19965 to 20385	19965, 20175, 20385	3MHz	QPSK, 16QAM	15 RB / 0 RB Offset
	19975 to 20375	19975, 20175, 20375	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK, 16QAM	75 RB / 0 RB Offset
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK, 16QAM	100 RB / 0 RB Offset
PEAK TO AVERAGE RATIO	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK	1 RB / 0 RB Offset
	19965 to 20385	19965, 20175, 20385	3MHz	QPSK	1 RB / 0 RB Offset
	19975 to 20375	19975, 20175, 20375	5MHz	QPSK	1 RB / 0 RB Offset
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK	1 RB / 0 RB Offset
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK	1 RB / 0 RB Offset
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK	1 RB / 0 RB Offset
BAND EDGE	19957 to 20393	19957, 20393	1.4MHz	QPSK	1 RB / 0 RB Offset
					6 RB / 0 RB Offset
	19965 to 20385	19965, 20385	3MHz	QPSK	1 RB / 0 RB Offset
					15 RB / 0 RB Offset
	19975 to 20375	19957, 20393	5MHz	QPSK	1 RB / 0 RB Offset
					25 RB / 0 RB Offset
	20000 to 20350	20000, 20350	10MHz	QPSK	1 RB / 0 RB Offset
					50 RB / 0 RB Offset
	20025 to 20325	20025, 20325	15MHz	QPSK	1 RB / 0 RB Offset
					75 RB / 0 RB Offset
	20050 to 20300	20050, 20300	20MHz	QPSK	1 RB / 0 RB Offset
					100 RB / 0 RB Offset
CONDCUDED EMISSION	19957 to 20393	20175	1.4MHz	QPSK	1 RB / 0 RB Offset
	19965 to 20385	20175	3MHz	QPSK	1 RB / 0 RB Offset
	19975 to 20375	20175	5MHz	QPSK	1 RB / 0 RB Offset
	20000 to 20350	20175	10MHz	QPSK	1 RB / 0 RB Offset
	20025 to 20325	20175	15MHz	QPSK	1 RB / 0 RB Offset
	20050 to 20300	20175	20MHz	QPSK	1 RB / 0 RB Offset



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TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
RADIATED EMISSION	19957 to 20393	20175	1.4MHz	QPSK	1 RB / 0 RB Offset
	19965 to 20385	20175	3MHz	QPSK	1 RB / 0 RB Offset
	19975 to 20375	20175	5MHz	QPSK	1 RB / 0 RB Offset
	20000 to 20350	20175	10MHz	QPSK	1 RB / 0 RB Offset
	20025 to 20325	20175	15MHz	QPSK	1 RB / 0 RB Offset
	20050 to 20300	20175	20MHz	QPSK	1 RB / 0 RB Offset

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
ERP/EIRP	25deg. C, 63%RH	3.3Vdc	Rex Huang
FREQUENCY STABILITY	25deg. C, 63%RH	3.3Vdc	Rex Huang
OCCUPIED BANDWIDTH	25deg. C, 63%RH	3.3Vdc	Rex Huang
PEAK TO AVERAGE RATIO	25deg. C, 63%RH	3.3Vdc	Rex Huang
BAND EDGE	25deg. C, 63%RH	3.3Vdc	Rex Huang
CONDCUDED EMISSION	25deg. C, 63%RH	3.3Vdc	Rex Huang
RADIATED EMISSION	25deg. C, 63%RH	120Vac, 60Hz (SYSTEM)	Rex Huang

3.5 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

ANSI C63.4-2003

ANSI/TIA/EIA-603-C 2004

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

4 TEST TYPES AND RESULTS

4.1 OUTPUT POWER MEASUREMENT

4.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.

Portable stations (hand-held devices) operating in the 698-746 MHz band are limited to 3 watts ERP

4.1.2 TEST PROCEDURES

EIRP / ERP MEASUREMENT:

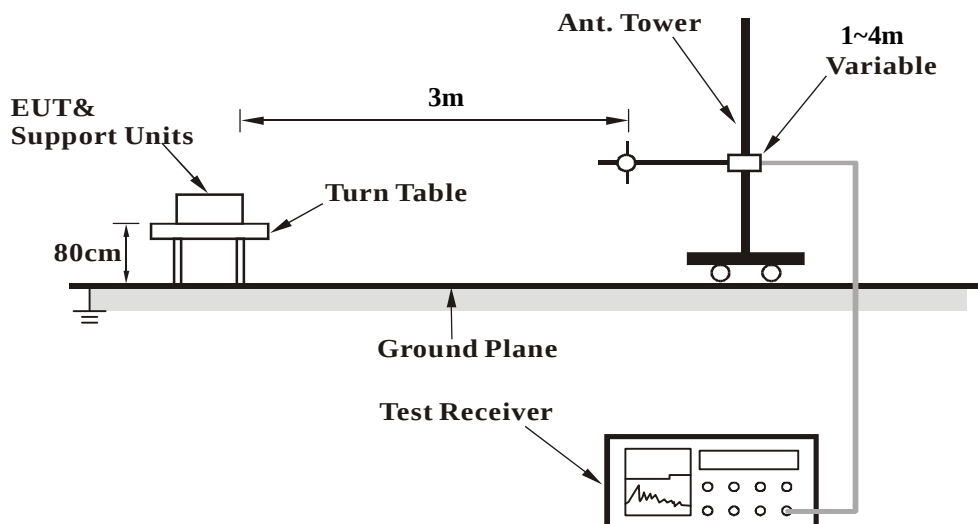
- a. All measurements were done at low, middle and high operational frequency range. RWB and VBW is 5MHz for WCDMA mode and 10MHz for LTE mode.
- b. EIRP power measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum 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.
- c. 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
- d. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$
- e. $ERP = EIRP - 2.15 \text{ dB}$

CONDUCTED POWER MEASUREMENT:

- a. The EUT was set up for the maximum power with WCDMA/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.

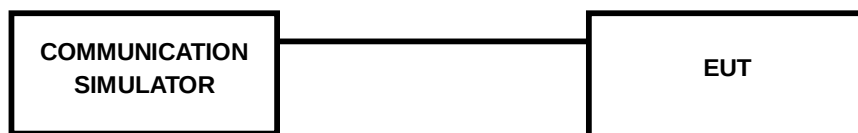
4.1.3 TEST SETUP

EIRP / ERP MEASUREMENT:



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

CONDUCTED POWER MEASUREMENT:



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

4.1.4 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

Band	WCDMA IV		
Channel	1312	1413	1513
Frequency (MHz)	1712.4	1732.6	1752.6
RMC 12.2K	23.60	24.10	23.60
HSDPA Subtest-1	23.40	23.80	23.50
HSDPA Subtest-2	23.40	23.80	23.70
HSDPA Subtest-3	23.30	23.70	23.60
HSDPA Subtest-4	23.70	23.50	23.40
HSUPA Subtest-1	23.40	24.00	23.60
HSUPA Subtest-2	23.30	23.40	23.80
HSUPA Subtest-3	23.70	23.60	23.70
HSUPA Subtest-4	23.30	23.80	23.70
HSUPA Subtest-5	23.30	23.50	23.20



A D T

LTE Band 13								
BW	Modulation	CH	Frequency (MHz)	RB	RB Offset	MPR	Target Power	Measured Power
5 MHz	QPSK	23205	779.5	1	0	0	23.8	23.61
		23230	782	1	0	0	23.8	23.59
		23255	784.5	1	0	0	23.8	23.38
		23205	779.5	1	12	0	23.8	23.22
		23230	782	1	12	0	23.8	23.27
		23255	784.5	1	12	0	23.8	23.08
		23205	779.5	1	24	0	23.8	23.3
		23230	782	1	24	0	23.8	23.37
		23255	784.5	1	24	0	23.8	23.04
		23205	779.5	12	0	1	23.8	22.36
		23230	782	12	0	1	23.8	22.21
		23255	784.5	12	0	1	23.8	22.01
		23205	779.5	12	6	1	23.8	22.33
		23230	782	12	6	1	23.8	22.26
		23255	784.5	12	6	1	23.8	22.02
		23205	779.5	12	13	1	23.8	22.24
		23230	782	12	13	1	23.8	22.21
		23255	784.5	12	13	1	23.8	22.08
		23205	779.5	25	0	1	23.8	22.41
		23230	782	25	0	1	23.8	22.34
		23255	784.5	25	0	1	23.8	22.12
	16QAM	23205	779.5	1	0	1	23.8	22.59
		23230	782	1	0	1	23.8	22.54
		23255	784.5	1	0	1	23.8	22.41
		23205	779.5	1	12	1	23.8	22.26
		23230	782	1	12	1	23.8	22.26
		23255	784.5	1	12	1	23.8	22.11
		23205	779.5	1	24	1	23.8	22.38
		23230	782	1	24	1	23.8	22.22
		23255	784.5	1	24	1	23.8	22.08
		23205	779.5	12	0	2	23.8	21.28
		23230	782	12	0	2	23.8	21.29
		23255	784.5	12	0	2	23.8	21.09
		23205	779.5	12	6	2	23.8	21.35
		23230	782	12	6	2	23.8	21.31
		23255	784.5	12	6	2	23.8	21.02
		23205	779.5	12	13	2	23.8	21.33
		23230	782	12	13	2	23.8	21.32
		23255	784.5	12	13	2	23.8	21.11
		23205	779.5	25	0	2	23.8	21.21
		23230	782	25	0	2	23.8	21.34
		23255	784.5	25	0	2	23.8	21.19



A D T

LTE Band 13								
BW	Modulation	CH	Frequency (MHz)	RB	RB Offset	MPR	Target Power	Measured Power
10 MHz	QPSK	23230	782	1	0	0	23.8	23.39
		23230	782	1	24	0	23.8	23.04
		23230	782	1	49	0	23.8	23.17
		23230	782	25	0	1	23.8	22.03
		23230	782	25	12	1	23.8	22.11
		23230	782	25	25	1	23.8	22.15
		23230	782	50	0	1	23.8	22.17
	16QAM	23230	782	1	0	1	23.8	22.33
		23230	782	1	24	1	23.8	22.06
		23230	782	1	49	1	23.8	22.02
		23230	782	25	0	2	23.8	21
		23230	782	25	12	2	23.8	21.1
		23230	782	25	25	2	23.8	21.07
		23230	782	50	0	2	23.8	20.99



A D T

LTE Band 17								
BW	Modulation	CH	Frequency	RB	RB Offset	MPR	Target	Measured
			(MHz)				Power	Power
5 MHz	QPSK	23755	706.5	1	0	0	24	23.89
		23790	710	1	0	0	24	23.63
		23825	713.5	1	0	0	24	23.53
		23755	706.5	1	12	0	24	23.52
		23790	710	1	12	0	24	23.31
		23825	713.5	1	12	0	24	23.17
		23755	706.5	1	24	0	24	23.5
		23790	710	1	24	0	24	23.42
		23825	713.5	1	24	0	24	23.28
		23755	706.5	12	0	1	24	22.5
		23790	710	12	0	1	24	22.41
		23825	713.5	12	0	1	24	22.22
		23755	706.5	12	6	1	24	22.54
		23790	710	12	6	1	24	22.27
		23825	713.5	12	6	1	24	22.2
		23755	706.5	12	13	1	24	22.63
		23790	710	12	13	1	24	22.32
		23825	713.5	12	13	1	24	22.25
		23755	706.5	25	0	1	24	22.57
		23790	710	25	0	1	24	22.35
		23825	713.5	25	0	1	24	22.14
	16QAM	23755	706.5	1	0	1	24	22.79
		23790	710	1	0	1	24	22.64
		23825	713.5	1	0	1	24	22.61
		23755	706.5	1	12	1	24	22.51
		23790	710	1	12	1	24	22.41
		23825	713.5	1	12	1	24	22.27
		23755	706.5	1	24	1	24	22.46
		23790	710	1	24	1	24	22.41
		23825	713.5	1	24	1	24	22.23
		23755	706.5	12	0	2	24	21.48
		23790	710	12	0	2	24	21.36
		23825	713.5	12	0	2	24	21.37
		23755	706.5	12	6	2	24	21.5
		23790	710	12	6	2	24	21.32
		23825	713.5	12	6	2	24	21.32
		23755	706.5	12	13	2	24	21.48
		23790	710	12	13	2	24	21.39
		23825	713.5	12	13	2	24	21.33
		23755	706.5	25	0	2	24	21.52
		23790	710	25	0	2	24	21.35
		23825	713.5	25	0	2	24	21.3



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LTE Band 17								
BW	Modulation	CH	Frequency	RB	RB Offset	MPR	Target	Measured
			(MHz)				Power	Power
10MHz	QPSK	23780	709	1	0	0	24	23.91
		23790	710	1	0	0	24	23.87
		23800	711	1	0	0	24	23.71
		23780	709	1	24	0	24	23.56
		23790	710	1	24	0	24	23.6
		23800	711	1	24	0	24	23.43
		23780	709	1	49	0	24	23.65
		23790	710	1	49	0	24	23.57
		23800	711	1	49	0	24	23.48
		23780	709	25	0	1	24	22.6
		23790	710	25	0	1	24	22.63
		23800	711	25	0	1	24	22.43
		23780	709	25	12	1	24	22.68
		23790	710	25	12	1	24	22.62
		23800	711	25	12	1	24	22.34
		23780	709	25	25	1	24	22.63
		23790	710	25	25	1	24	22.67
		23800	711	25	25	1	24	22.33
		23780	709	50	0	1	24	22.54
		23790	710	50	0	1	24	22.55
		23800	711	50	0	1	24	22.4
	16QAM	23780	709	1	0	1	24	22.88
		23790	710	1	0	1	24	22.83
		23800	711	1	0	1	24	22.78
		23780	709	1	24	1	24	22.5
		23790	710	1	24	1	24	22.61
		23800	711	1	24	1	24	22.47
		23780	709	1	49	1	24	22.52
		23790	710	1	49	1	24	22.46
		23800	711	1	49	1	24	22.46
		23780	709	25	0	2	24	21.53
		23790	710	25	0	2	24	21.53
		23800	711	25	0	2	24	21.44
		23780	709	25	12	2	24	21.5
		23790	710	25	12	2	24	21.48
		23800	711	25	12	2	24	21.43
		23780	709	25	25	2	24	21.67
		23790	710	25	25	2	24	21.55
		23800	711	25	25	2	24	21.43
		23780	709	50	0	2	24	21.52
		23790	710	50	0	2	24	21.61
		23800	711	50	0	2	24	21.43



A D T

LTE Band 4								
BW	Modulation	CH	Frequency	RB	RB Offset	MPR	Target	Measured
			(MHz)				Power	Power
1.4 MHz	QPSK	19957	1710.7	1	0	0	23.8	23.74
		20175	1732.5	1	0	0	23.8	23.27
		20393	1754.3	1	0	0	23.8	23.38
		19957	1710.7	1	2	0	23.8	23.45
		20175	1732.5	1	2	0	23.8	22.9
		20393	1754.3	1	2	0	23.8	23.03
		19957	1710.7	1	5	0	23.8	23.4
		20175	1732.5	1	5	0	23.8	22.94
		20393	1754.3	1	5	0	23.8	23.15
		19957	1710.7	3	0	0	23.8	23.43
		20175	1732.5	3	0	0	23.8	22.9
		20393	1754.3	3	0	0	23.8	23.07
		19957	1710.7	3	1	0	23.8	23.46
		20175	1732.5	3	1	0	23.8	22.89
		20393	1754.3	3	1	0	23.8	23.13
		19957	1710.7	3	3	0	23.8	23.53
		20175	1732.5	3	3	0	23.8	23.06
		20393	1754.3	3	3	0	23.8	23.05
		19957	1710.7	6	0	1	23.8	22.36
		20175	1732.5	6	0	1	23.8	22.02
		20393	1754.3	6	0	1	23.8	22.11
	16QAM	19957	1710.7	1	0	1	23.8	22.67
		20175	1732.5	1	0	1	23.8	22.18
		20393	1754.3	1	0	1	23.8	22.35
		19957	1710.7	1	2	1	23.8	22.43
		20175	1732.5	1	2	1	23.8	21.84
		20393	1754.3	1	2	1	23.8	21.97
		19957	1710.7	1	5	1	23.8	22.35
		20175	1732.5	1	5	1	23.8	21.81
		20393	1754.3	1	5	1	23.8	22.06
		19957	1710.7	3	0	1	23.8	22.41
		20175	1732.5	3	0	1	23.8	21.9
		20393	1754.3	3	0	1	23.8	22.07
		19957	1710.7	3	1	1	23.8	22.29
		20175	1732.5	3	1	1	23.8	21.98
		20393	1754.3	3	1	1	23.8	22.09
		19957	1710.7	3	3	1	23.8	22.37
		20175	1732.5	3	3	1	23.8	21.86
		20393	1754.3	3	3	1	23.8	22.05
		19957	1710.7	6	0	2	23.8	21.31
		20175	1732.5	6	0	2	23.8	20.9
		20393	1754.3	6	0	2	23.8	21.02



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LTE Band 4								
BW	Modulation	CH	Frequency	RB	RB Offset	MPR	Target	Measured
			(MHz)				Power	Power
3 MHz	QPSK	19965	1711.5	1	0	0	23.8	23.76
		20175	1732.5	1	0	0	23.8	23.27
		20385	1753.5	1	0	0	23.8	23.45
		19965	1711.5	1	7	0	23.8	23.54
		20175	1732.5	1	7	0	23.8	22.89
		20385	1753.5	1	7	0	23.8	23.11
		19965	1711.5	1	14	0	23.8	23.41
		20175	1732.5	1	14	0	23.8	22.91
		20385	1753.5	1	14	0	23.8	23.22
		19965	1711.5	8	0	1	23.8	22.4
		20175	1732.5	8	0	1	23.8	21.94
		20385	1753.5	8	0	1	23.8	22.25
		19965	1711.5	8	3	1	23.8	22.4
		20175	1732.5	8	3	1	23.8	21.91
		20385	1753.5	8	3	1	23.8	22.14
		19965	1711.5	8	7	1	23.8	22.37
		20175	1732.5	8	7	1	23.8	22.07
		20385	1753.5	8	7	1	23.8	22.22
		19965	1711.5	15	0	1	23.8	22.38
		20175	1732.5	15	0	1	23.8	22.07
		20385	1753.5	15	0	1	23.8	22.12
	16QAM	19965	1711.5	1	0	1	23.8	22.68
		20175	1732.5	1	0	1	23.8	22.31
		20385	1753.5	1	0	1	23.8	22.36
		19965	1711.5	1	7	1	23.8	22.43
		20175	1732.5	1	7	1	23.8	22.01
		20385	1753.5	1	7	1	23.8	22.01
		19965	1711.5	1	14	1	23.8	22.34
		20175	1732.5	1	14	1	23.8	21.96
		20385	1753.5	1	14	1	23.8	22.07
		19965	1711.5	8	0	2	23.8	21.42
		20175	1732.5	8	0	2	23.8	21.03
		20385	1753.5	8	0	2	23.8	21.06
		19965	1711.5	8	3	2	23.8	21.35
		20175	1732.5	8	3	2	23.8	21.07
		20385	1753.5	8	3	2	23.8	21.13
		19965	1711.5	8	7	2	23.8	21.41
		20175	1732.5	8	7	2	23.8	21.09
		20385	1753.5	8	7	2	23.8	21.04
		19965	1711.5	15	0	2	23.8	21.36
		20175	1732.5	15	0	2	23.8	20.96
		20385	1753.5	15	0	2	23.8	21.1



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LTE Band 4								
BW	Modulation	CH	Frequency	RB	RB Offset	MPR	Target	Measured
			(MHz)				Power	Power
5 MHz	QPSK	19975	1712.5	1	0	0	23.8	23.72
		20175	1732.5	1	0	0	23.8	23.24
		20375	1752.5	1	0	0	23.8	23.42
		19975	1712.5	1	12	0	23.8	23.37
		20175	1732.5	1	12	0	23.8	22.92
		20375	1752.5	1	12	0	23.8	23.19
		19975	1712.5	1	24	0	23.8	23.5
		20175	1732.5	1	24	0	23.8	22.96
		20375	1752.5	1	24	0	23.8	23.11
		19975	1712.5	12	0	1	23.8	22.35
		20175	1732.5	12	0	1	23.8	22
		20375	1752.5	12	0	1	23.8	22.22
		19975	1712.5	12	6	1	23.8	22.34
		20175	1732.5	12	6	1	23.8	21.9
		20375	1752.5	12	6	1	23.8	22.12
		19975	1712.5	12	13	1	23.8	22.38
		20175	1732.5	12	13	1	23.8	21.93
		20375	1752.5	12	13	1	23.8	22.12
		19975	1712.5	25	0	1	23.8	22.49
		20175	1732.5	25	0	1	23.8	21.96
		20375	1752.5	25	0	1	23.8	22.09
	16QAM	19975	1712.5	1	0	1	23.8	22.68
		20175	1732.5	1	0	1	23.8	22.19
		20375	1752.5	1	0	1	23.8	22.34
		19975	1712.5	1	12	1	23.8	22.41
		20175	1732.5	1	12	1	23.8	21.92
		20375	1752.5	1	12	1	23.8	22.04
		19975	1712.5	1	24	1	23.8	22.33
		20175	1732.5	1	24	1	23.8	21.96
		20375	1752.5	1	24	1	23.8	21.97
		19975	1712.5	12	0	2	23.8	21.38
		20175	1732.5	12	0	2	23.8	20.88
		20375	1752.5	12	0	2	23.8	20.99
		19975	1712.5	12	6	2	23.8	21.34
		20175	1732.5	12	6	2	23.8	20.84
		20375	1752.5	12	6	2	23.8	21.1
		19975	1712.5	12	13	2	23.8	21.41
		20175	1732.5	12	13	2	23.8	20.99
		20375	1752.5	12	13	2	23.8	21.13
		19975	1712.5	25	0	2	23.8	21.41
		20175	1732.5	25	0	2	23.8	20.95
		20375	1752.5	25	0	2	23.8	20.98



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LTE Band 4								
BW	Modulation	CH	Frequency	RB	RB Offset	MPR	Target	Measured
			(MHz)				Power	Power
10MHz	QPSK	20000	1715	1	0	0	23.8	23.75
		20175	1732.5	1	0	0	23.8	23.41
		20350	1750	1	0	0	23.8	23.28
		20000	1715	1	24	0	23.8	23.43
		20175	1732.5	1	24	0	23.8	23.11
		20350	1750	1	24	0	23.8	23.08
		20000	1715	1	49	0	23.8	23.4
		20175	1732.5	1	49	0	23.8	23.09
		20350	1750	1	49	0	23.8	22.99
		20000	1715	25	0	1	23.8	22.46
		20175	1732.5	25	0	1	23.8	22.12
		20350	1750	25	0	1	23.8	22.01
		20000	1715	25	12	1	23.8	22.53
		20175	1732.5	25	12	1	23.8	22.19
		20350	1750	25	12	1	23.8	21.99
		20000	1715	25	25	1	23.8	22.51
		20175	1732.5	25	25	1	23.8	22.19
		20350	1750	25	25	1	23.8	22.07
		20000	1715	50	0	1	23.8	22.53
		20175	1732.5	50	0	1	23.8	22.19
		20350	1750	50	0	1	23.8	21.91
	16QAM	20000	1715	1	0	1	23.8	22.68
		20175	1732.5	1	0	1	23.8	22.39
		20350	1750	1	0	1	23.8	22.25
		20000	1715	1	24	1	23.8	22.39
		20175	1732.5	1	24	1	23.8	22.09
		20350	1750	1	24	1	23.8	21.97
		20000	1715	1	49	1	23.8	22.37
		20175	1732.5	1	49	1	23.8	22.13
		20350	1750	1	49	1	23.8	21.99
		20000	1715	25	0	2	23.8	21.33
		20175	1732.5	25	0	2	23.8	21.08
		20350	1750	25	0	2	23.8	20.89
		20000	1715	25	12	2	23.8	21.47
		20175	1732.5	25	12	2	23.8	21.14
		20350	1750	25	12	2	23.8	20.88
		20000	1715	25	25	2	23.8	21.4
		20175	1732.5	25	25	2	23.8	21.09
		20350	1750	25	25	2	23.8	21.02
		20000	1715	50	0	2	23.8	21.44
		20175	1732.5	50	0	2	23.8	21.13
		20350	1750	50	0	2	23.8	20.95



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LTE Band 4								
BW	Modulation	CH	Frequency	RB	RB Offset	MPR	Target	Measured
			(MHz)				Power	Power
15 MHz	QPSK	20025	1717.5	1	0	0	23.8	23.69
		20175	1732.5	1	0	0	23.8	23.43
		20325	1747.5	1	0	0	23.8	23.19
		20025	1717.5	1	37	0	23.8	23.42
		20175	1732.5	1	37	0	23.8	23.2
		20325	1747.5	1	37	0	23.8	22.95
		20025	1717.5	1	74	0	23.8	23.36
		20175	1732.5	1	74	0	23.8	23.21
		20325	1747.5	1	74	0	23.8	22.96
		20025	1717.5	36	0	1	23.8	22.32
		20175	1732.5	36	0	1	23.8	22.1
		20325	1747.5	36	0	1	23.8	21.91
		20025	1717.5	36	19	1	23.8	22.31
		20175	1732.5	36	19	1	23.8	22.12
		20325	1747.5	36	19	1	23.8	21.83
		20025	1717.5	36	39	1	23.8	22.46
		20175	1732.5	36	39	1	23.8	22.07
		20325	1747.5	36	39	1	23.8	21.97
		20025	1717.5	75	0	1	23.8	22.41
		20175	1732.5	75	0	1	23.8	22.13
		20325	1747.5	75	0	1	23.8	21.98
	16QAM	20025	1717.5	1	0	1	23.8	22.59
		20175	1732.5	1	0	1	23.8	22.47
		20325	1747.5	1	0	1	23.8	22.17
		20025	1717.5	1	37	1	23.8	22.23
		20175	1732.5	1	37	1	23.8	22.25
		20325	1747.5	1	37	1	23.8	21.94
		20025	1717.5	1	74	1	23.8	22.23
		20175	1732.5	1	74	1	23.8	22.27
		20325	1747.5	1	74	1	23.8	21.89
		20025	1717.5	36	0	2	23.8	21.3
		20175	1732.5	36	0	2	23.8	21.11
		20325	1747.5	36	0	2	23.8	20.95
		20025	1717.5	36	19	2	23.8	21.24
		20175	1732.5	36	19	2	23.8	21.1
		20325	1747.5	36	19	2	23.8	20.84
		20025	1717.5	36	39	2	23.8	21.36
		20175	1732.5	36	39	2	23.8	21.13
		20325	1747.5	36	39	2	23.8	20.89
		20025	1717.5	75	0	2	23.8	21.24
		20175	1732.5	75	0	2	23.8	21.13
		20325	1747.5	75	0	2	23.8	20.86



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LTE Band 4								
BW	Modulation	CH	Frequency	RB	RB Offset	MPR	Target	Measured
			(MHz)				Power	Power
20MHz	QPSK	20050	1720	1	0	0	23.8	23.7
		20175	1732.5	1	0	0	23.8	23.56
		20300	1745	1	0	0	23.8	23.32
		20050	1720	1	50	0	23.8	23.43
		20175	1732.5	1	50	0	23.8	23.24
		20300	1745	1	50	0	23.8	22.94
		20050	1720	1	99	0	23.8	23.38
		20175	1732.5	1	99	0	23.8	23.31
		20300	1745	1	99	0	23.8	23.04
		20050	1720	50	0	1	23.8	22.43
		20175	1732.5	50	0	1	23.8	22.33
		20300	1745	50	0	1	23.8	22
		20050	1720	50	25	1	23.8	22.46
		20175	1732.5	50	25	1	23.8	22.26
		20300	1745	50	25	1	23.8	21.93
		20050	1720	50	50	1	23.8	22.34
		20175	1732.5	50	50	1	23.8	22.26
		20300	1745	50	50	1	23.8	21.99
		20050	1720	100	0	1	23.8	22.37
		20175	1732.5	100	0	1	23.8	22.21
		20300	1745	100	0	1	23.8	22.12
	16QAM	20050	1720	1	0	1	23.8	22.68
		20175	1732.5	1	0	1	23.8	22.47
		20300	1745	1	0	1	23.8	22.28
		20050	1720	1	50	1	23.8	22.35
		20175	1732.5	1	50	1	23.8	22.17
		20300	1745	1	50	1	23.8	22
		20050	1720	1	99	1	23.8	22.48
		20175	1732.5	1	99	1	23.8	22.14
		20300	1745	1	99	1	23.8	22.05
		20050	1720	50	0	2	23.8	21.44
		20175	1732.5	50	0	2	23.8	21.14
		20300	1745	50	0	2	23.8	21.04
		20050	1720	50	25	2	23.8	21.35
		20175	1732.5	50	25	2	23.8	21.14
		20300	1745	50	25	2	23.8	20.96
		20050	1720	50	50	2	23.8	21.29
		20175	1732.5	50	50	2	23.8	21.12
		20300	1745	50	50	2	23.8	21.04
		20050	1720	100	0	2	23.8	21.4
		20175	1732.5	100	0	2	23.8	21.21
		20300	1745	100	0	2	23.8	21.06

ERP/EIRP (dBm)

WCDMA

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)
Z	1312	1712.4	18.7	6.6	25.3	338.8
	1413	1732.6	18.8	6.7	25.5	354.8
	1513	1752.6	18.4	6.7	25.1	323.6

LTE BAND 13

CHANNEL BANDWIDTH: 5MHz QPSK

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
Y	23205	779.5	23.9	1.3	25.2	327.3
	23230	782	23.8	1.2	25.0	312.6
	23255	784.5	24.3	1.0	25.3	335.0

CHANNEL BANDWIDTH: 10MHz QPSK

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
Y	23230	782	23.4	1.2	24.6	285.1

LTE BAND 17

CHANNEL BANDWIDTH: 5MHz QPSK

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
X	23755	706.5	24.6	1.3	25.9	384.6
	23790	710.0	24.4	1.2	25.6	358.9
	23825	713.5	24.8	1.0	25.8	375.8

CHANNEL BANDWIDTH: 10MHz QPSK

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
X	23780	709.0	24.9	1.3	26.2	412.1
	23790	710.0	24.0	1.2	25.2	327.3
	23800	711.0	25.1	1.0	26.1	402.7

LTE BAND 4

CHANNEL BANDWIDTH: 1.4MHz QPSK

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)
Z	19957	1710.7	21.3	6.6	27.9	616.6
	20175	1732.5	21.1	6.7	27.8	602.6
	20393	1754.3	20.6	6.7	27.3	537.0

CHANNEL BANDWIDTH: 3MHz QPSK

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)
Z	19965	1711.5	21.2	6.6	27.8	602.6
	20175	1732.5	21.0	6.7	27.7	588.8
	20385	1753.5	20.5	6.7	27.2	524.8

CHANNEL BANDWIDTH: 5MHz QPSK

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)
Z	19975	1712.5	21.1	6.6	27.7	588.8
	20175	1732.5	20.9	6.7	27.6	575.4
	20375	1752.5	20.4	6.7	27.1	512.9

CHANNEL BANDWIDTH: 10MHz QPSK

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)
Z	20000	1715.0	20.8	6.6	27.4	549.5
	20175	1732.5	20.7	6.7	27.4	549.5
	20350	1750.0	20.2	6.7	26.9	489.8

CHANNEL BANDWIDTH: 15MHz QPSK

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)
Z	20025	1717.5	20.2	6.6	26.8	478.6
	20175	1732.5	20.2	6.7	26.9	489.8
	20325	1747.5	19.6	6.7	26.3	426.6

CHANNEL BANDWIDTH: 20MHz QPSK

Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)
Z	20050	1720.0	20.0	6.6	26.6	457.1
	20175	1732.5	20.0	6.7	26.7	467.7
	20300	1745.0	19.6	6.7	26.3	426.6

4.2 FREQUENCY STABILITY MEASUREMENT

4.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

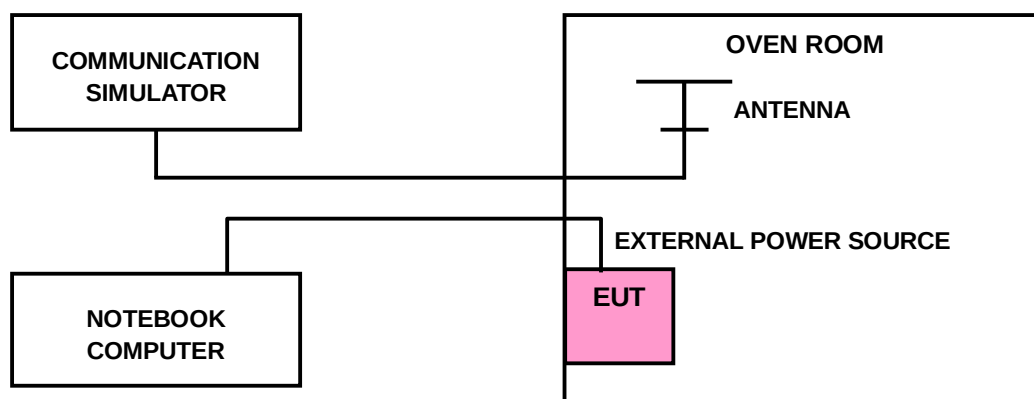
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

4.2.2 TEST PROCEDURE

- Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- EUT is connected notebook. The test voltage range is from 102 to 138 working voltage. Each step shall be record the frequency error rate.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the $\pm 0.5^{\circ}\text{C}$ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

NOTE: The frequency error was recorded frequency error from the communication simulator.

4.2.3 TEST SETUP



4.2.4 TEST RESULTS

VOLTAGE (Volts)	FREQUENCY ERROR (ppm)											LIMIT (ppm)
	WCDMA	LTE BAND 13		LTE BAND 17		LTE BAND 4						
		5MHz	10MHz	5MHz	10MHz	1.4MHz	3MHz	5MHz	10MHz	15MHz	20MHz	
102	0.010	0.040	0.033	0.025	0.035	0.001	0.001	0.002	0.002	0.002	0.001	2.5
138	0.012	0.047	0.043	0.027	0.042	0.002	0.002	0.001	0.002	0.002	0.002	2.5

NOTE: The applicant defined the normal working voltage of the host equipment is from 102Vac to 138Vac.

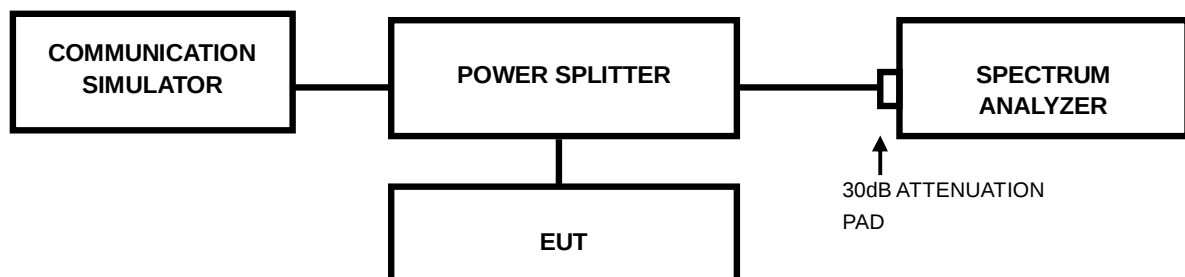
TEMP. (°C)	FREQUENCY ERROR (ppm)											LIMIT (ppm)
	WCDMA	LTE BAND 13		LTE BAND 17		LTE BAND 4						
		5MHz	10MHz	5MHz	10MHz	1.4MHz	3MHz	5MHz	10MHz	15MHz	20MHz	
75	0.019	0.040	0.041	0.045	0.058	0.002	0.002	0.002	0.002	0.002	0.002	2.5
70	0.017	0.033	0.041	0.044	0.032	0.002	0.002	0.002	0.002	0.002	0.001	2.5
60	0.016	0.032	0.045	0.039	0.039	0.002	0.002	0.002	0.001	0.002	0.002	2.5
50	0.015	0.038	0.042	0.038	0.039	0.002	0.002	0.002	0.002	0.002	0.002	2.5
40	0.013	0.047	0.047	0.035	0.041	0.002	0.001	0.002	0.002	0.001	0.002	2.5
30	0.012	0.031	0.038	0.032	0.045	0.001	0.002	0.001	0.002	0.002	0.002	2.5
20	0.012	0.043	0.047	0.027	0.058	0.002	0.001	0.002	0.002	0.002	0.002	2.5
10	0.012	0.035	0.032	0.032	0.051	0.001	0.002	0.002	0.002	0.002	0.002	2.5
0	0.013	0.042	0.047	0.037	0.037	0.002	0.002	0.002	0.001	0.002	0.002	2.5
-10	0.014	0.046	0.043	0.038	0.032	0.002	0.002	0.002	0.001	0.001	0.002	2.5
-20	0.015	0.041	0.058	0.041	0.062	0.001	0.001	0.001	0.002	0.001	0.001	2.5
-30	0.017	0.038	0.042	0.046	0.063	0.002	0.002	0.002	0.001	0.002	0.002	2.5

4.3 OCCUPIED BANDWIDTH MEASUREMENT

4.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

4.3.2 TEST SETUP

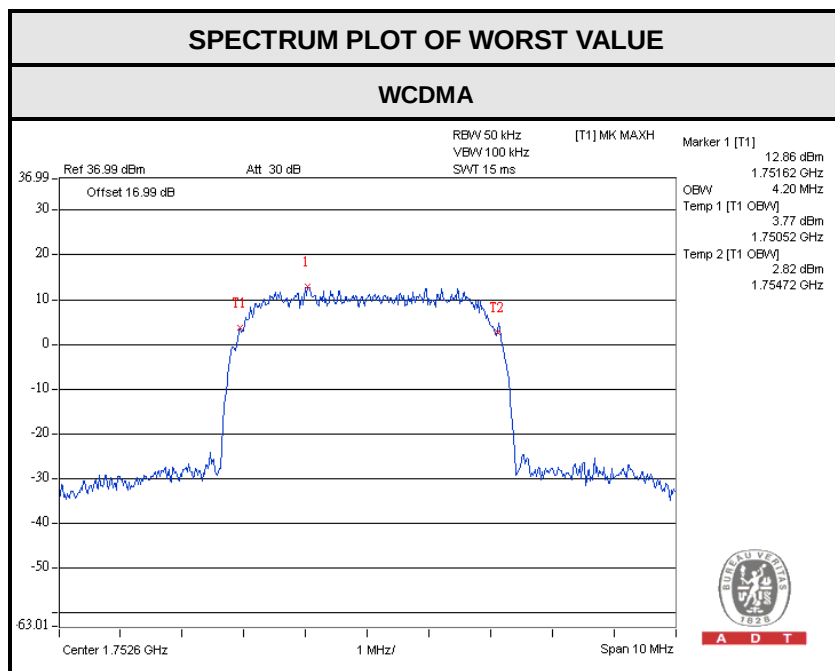


4.3.3 TEST PROCEDURES

- The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

4.3.4 TEST RESULTS

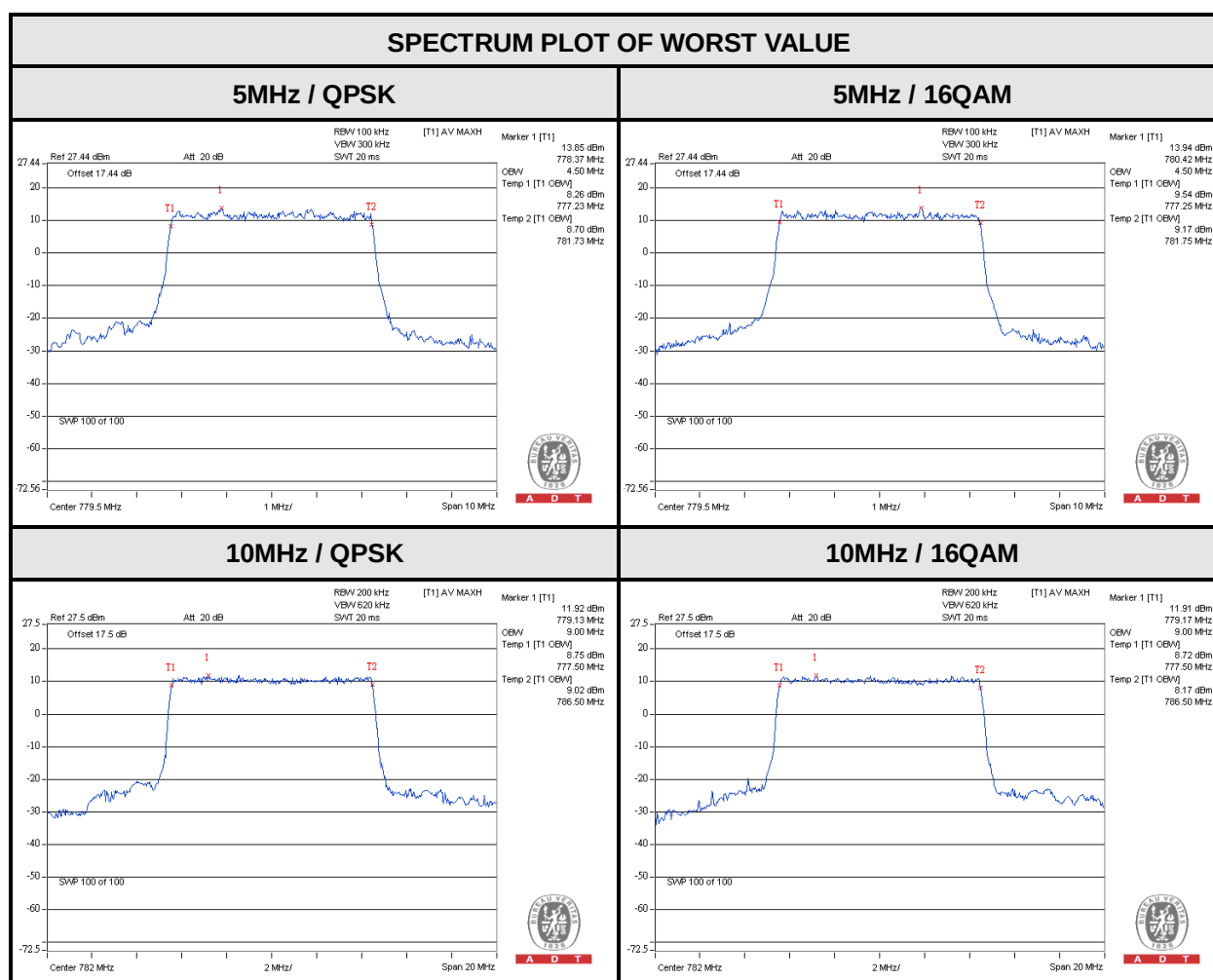
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)
		WCDMA
1312	1712.4	4.18
1413	1732.6	4.2
1513	1752.6	4.2





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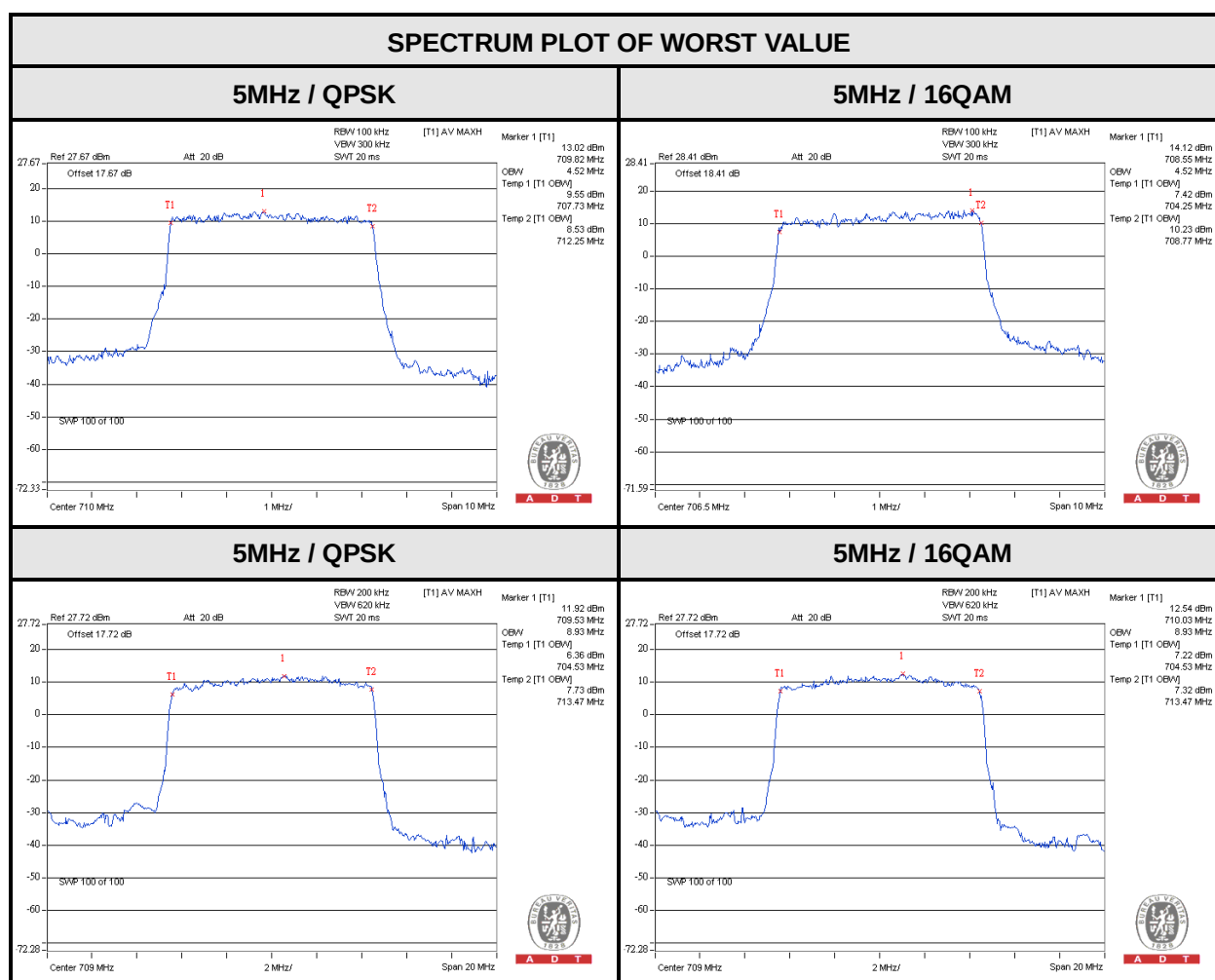
LTE BAND 13							
CHANNEL BANDWIDTH: 5MHz				CHANNEL BANDWIDTH: 10MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
23205	779.5	4.50	4.50	23230	782.0	9.00	9.00
23230	782.0	4.50	4.50				
23255	784.5	4.50	4.50				





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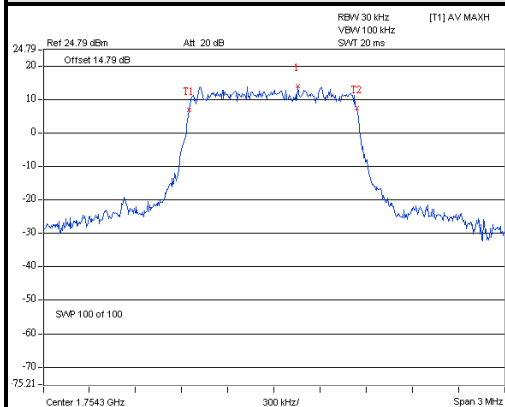
LTE BAND 17							
CHANNEL BANDWIDTH: 5MHz				CHANNEL BANDWIDTH: 10MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
23755	706.5	4.50	4.52	23780	709	8.93	8.93
23790	710	4.52	4.48	23790	710	8.93	8.93
23825	713.5	4.50	4.50	23800	711	8.93	8.93



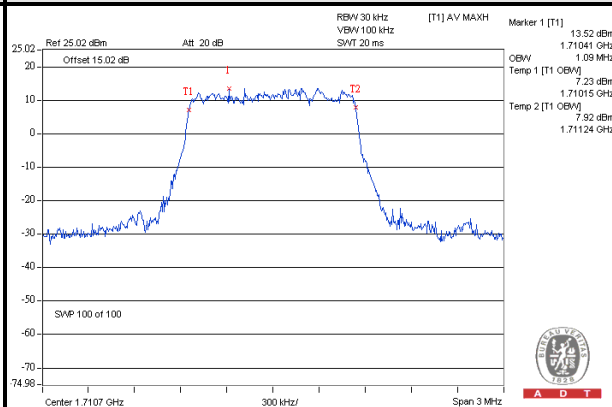
LTE BAND 4							
CHANNEL BANDWIDTH: 1.4MHz				CHANNEL BANDWIDTH:3MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
19957	1710.7	1.09	1.09	19965	1711.5	2.68	2.69
20175	1732.5	1.09	1.09	20175	1732.5	2.69	2.69
20393	1754.3	1.1	1.09	20385	1753.5	2.70	2.69
CHANNEL BANDWIDTH: 5MHz				CHANNEL BANDWIDTH: 10MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
19975	1712.5	4.48	4.48	20000	1715.0	8.97	9.00
20175	1732.5	4.48	4.52	20175	1732.5	9.00	9.00
20375	1752.5	4.48	4.52	20350	1750.0	8.97	9.00
CHANNEL BANDWIDTH: 15MHz				CHANNEL BANDWIDTH: 20MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
20025	1717.5	13.60	13.57	20050	1720	18.00	18.07
20175	1732.5	13.63	13.63	20175	1732.5	18.07	18.07
20325	1747.5	13.53	13.60	20300	1745	17.93	18.00

SPECTRUM PLOT OF WORST VALUE

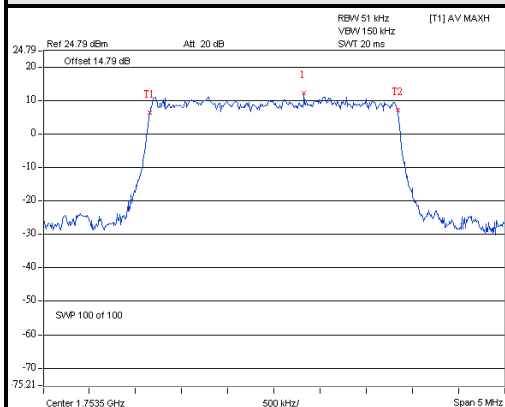
1.4MHz / QPSK



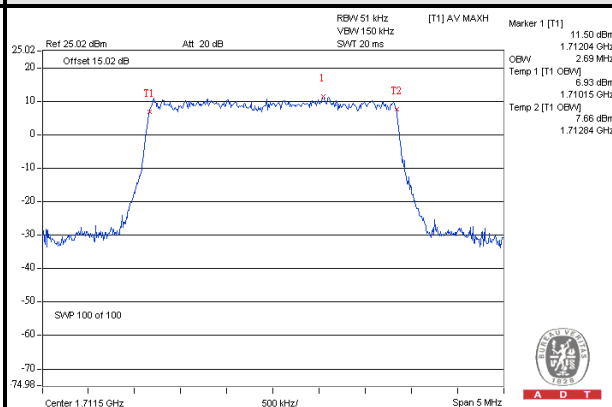
1.4MHz / 16QAM



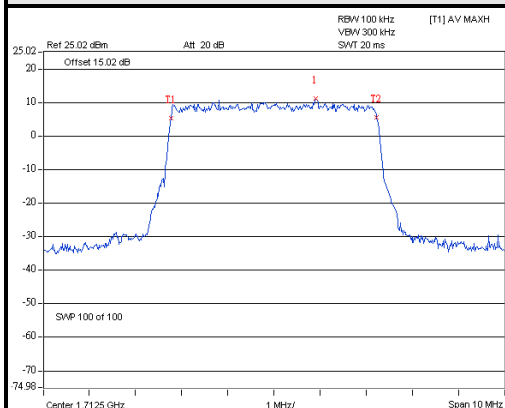
3MHz / QPSK



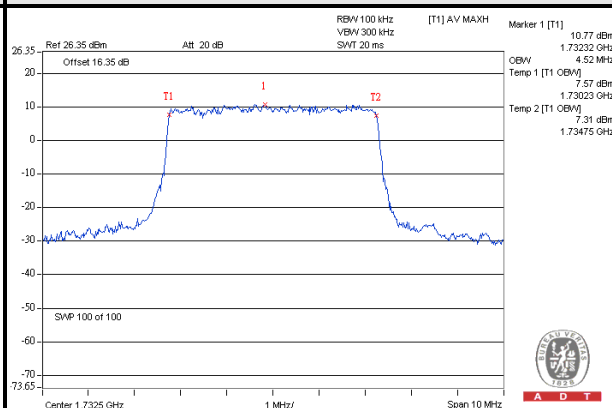
3MHz / 16QAM



5MHz / QPSK

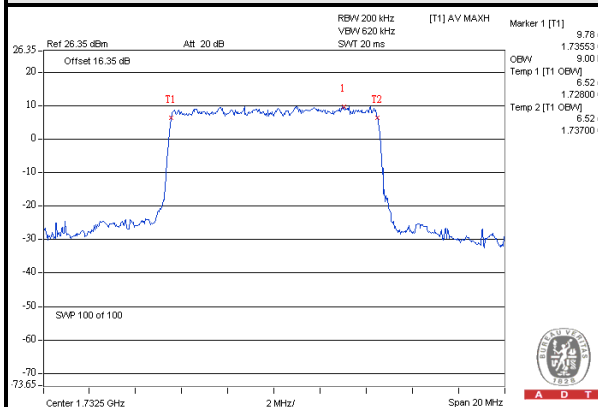


5MHz / 16QAM

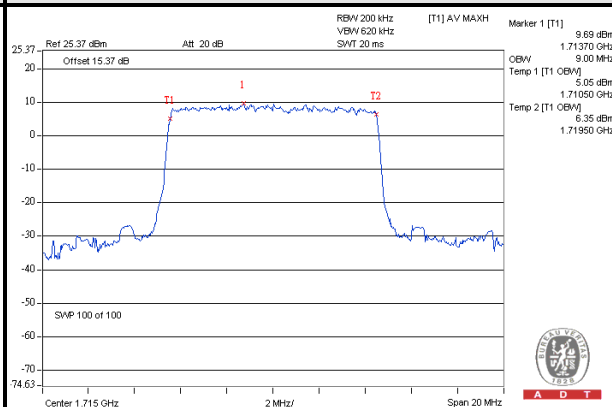


SPECTRUM PLOT OF WORST VALUE

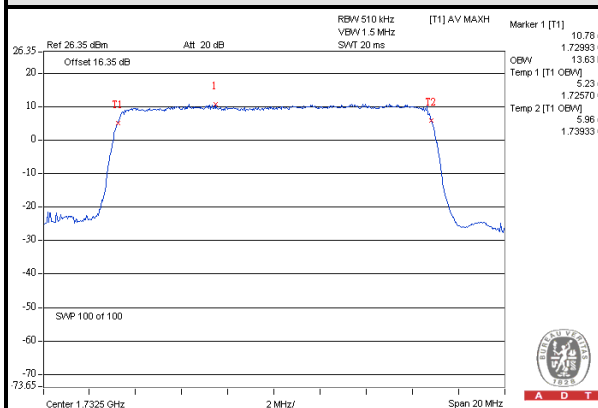
10MHz / QPSK



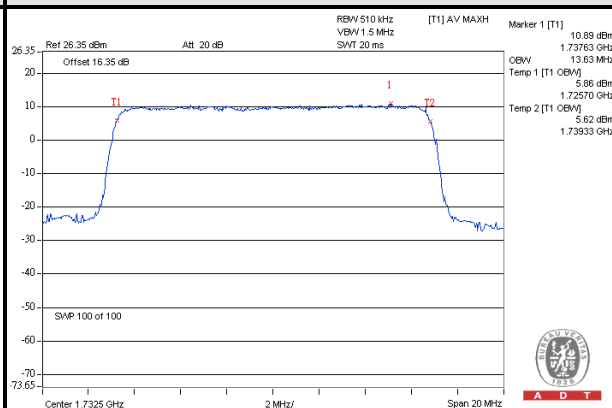
10MHz / 16QAM



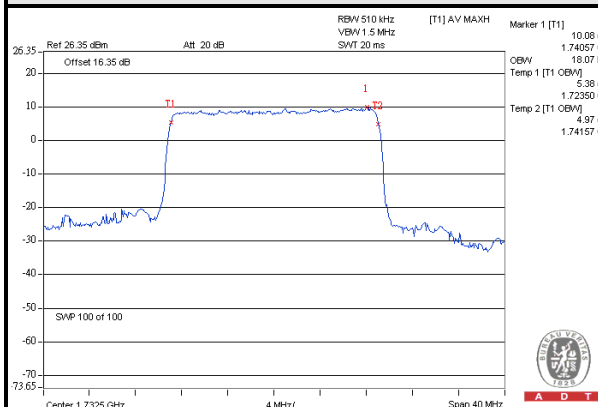
15MHz / QPSK



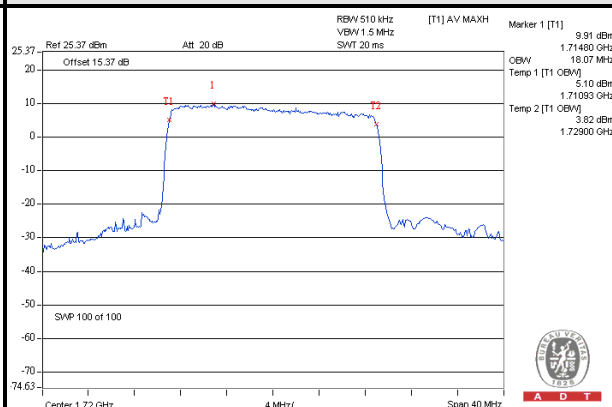
15MHz / 16QAM



20MHz / QPSK



20MHz / 16QAM

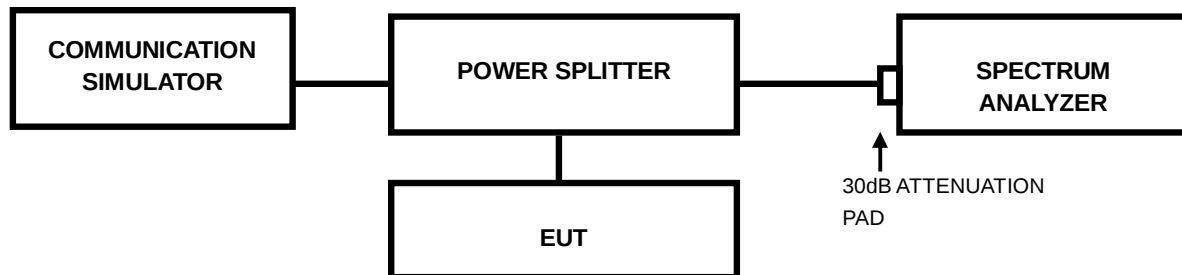


4.4 PEAK TO AVERAGE RATIO

4.4.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT

In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB

4.4.2 TEST SETUP



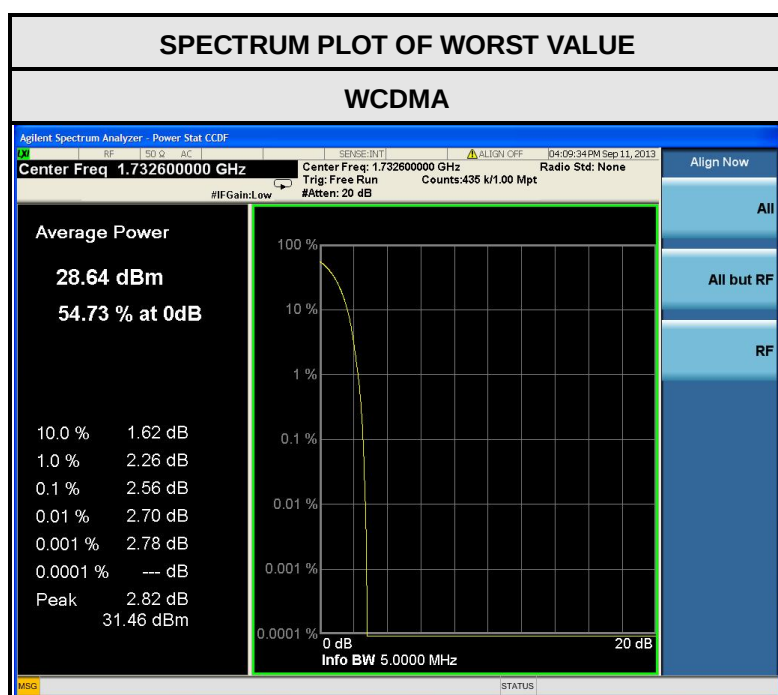
4.4.3 TEST PROCEDURES

1. Set resolution/measurement bandwidth $\geq$ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.

4.4.4 TEST RESULTS

WCDMA

CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
		WCDMA
1312	1712.4	2.51
1413	1732.6	2.56
1513	1752.6	2.55



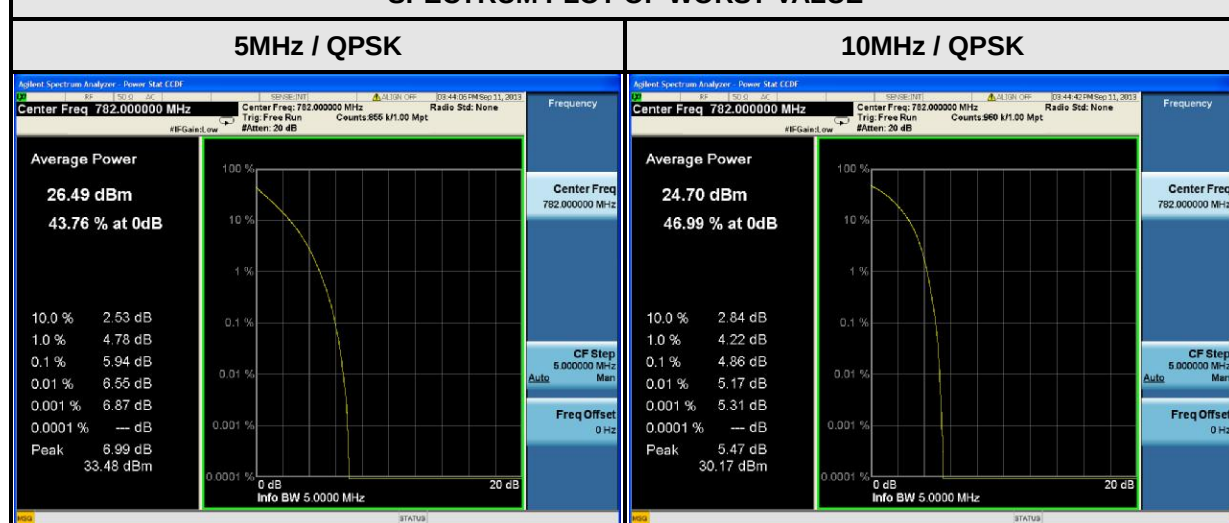


A D T

LTE BAND 13

LTE BAND 13					
CHANNEL BANDWIDTH: 5MHz			CHANNEL BANDWIDTH: 10MHz		
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
		QPSK			QPSK
23205	779.5	5.87	23230	782	4.86
23230	782	5.94			
23255	784.5	5.88			

SPECTRUM PLOT OF WORST VALUE

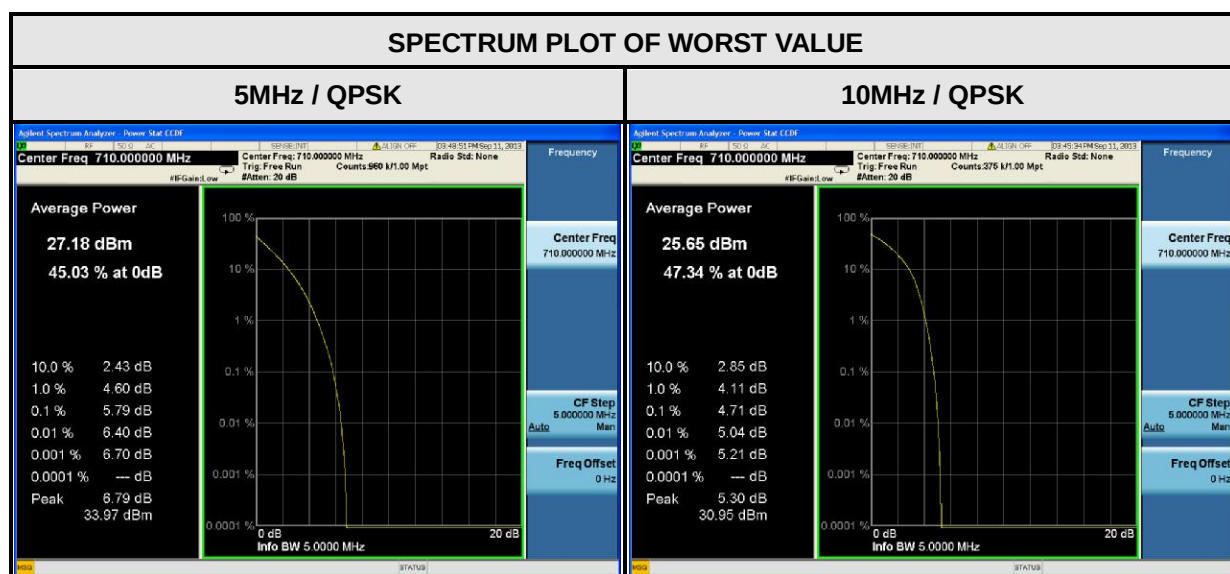




A D T

LTE BAND 17

LTE BAND 17					
CHANNEL BANDWIDTH: 5MHz			CHANNEL BANDWIDTH: 10MHz		
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
23755	706.5	5.71	23780	709	4.68
23790	710	5.79	23790	710	4.71
23825	713.5	5.76	23800	711	4.65



LTE BAND 4

LTE BAND 4					
CHANNEL BANDWIDTH: 1.4MHz			CHANNEL BANDWIDTH: 3MHz		
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
19957	1710.7	4.44	19965	1711.5	4.78
20175	1732.5	4.55	20175	1732.5	4.87
20393	1754.3	4.49	20385	1753.5	4.83
CHANNEL BANDWIDTH: 5MHz			CHANNEL BANDWIDTH: 10MHz		
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
19975	1712.5	5.07	20000	1715.0	4.68
20175	1732.5	5.11	20175	1732.5	4.78
20375	1752.5	5.06	20350	1750.0	4.69
CHANNEL BANDWIDTH: 15MHz			CHANNEL BANDWIDTH: 20MHz		
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
20025	1717.5	5.63	20050	1720	6.47
20175	1732.5	5.78	20175	1732.5	6.5
20325	1747.5	5.65	20300	1745	6.44



A D T

SPECTRUM PLOT OF WORST VALUE

1.4MHz / QPSK



3MHz / QPSK



5MHz / QPSK



10MHz / QPSK



15MHz / QPSK



20MHz / QPSK



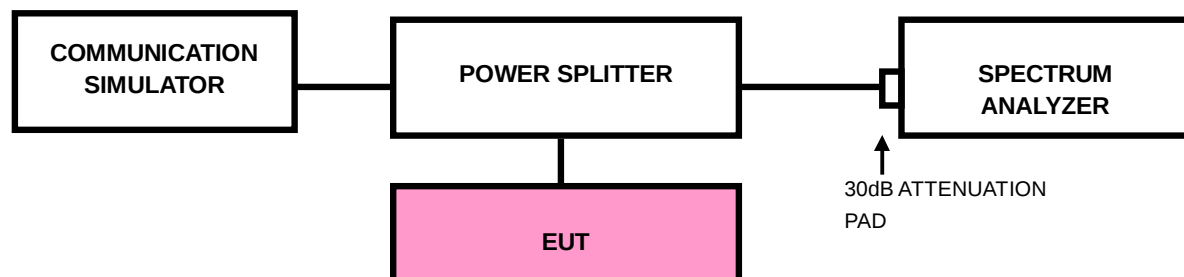
4.5 BAND EDGE MEASUREMENT

4.5.1 LIMITS OF BAND EDGE MEASUREMENT

For operations in the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

For operations in the 1710 – 1755 MHz MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB.

4.5.2 TEST SETUP

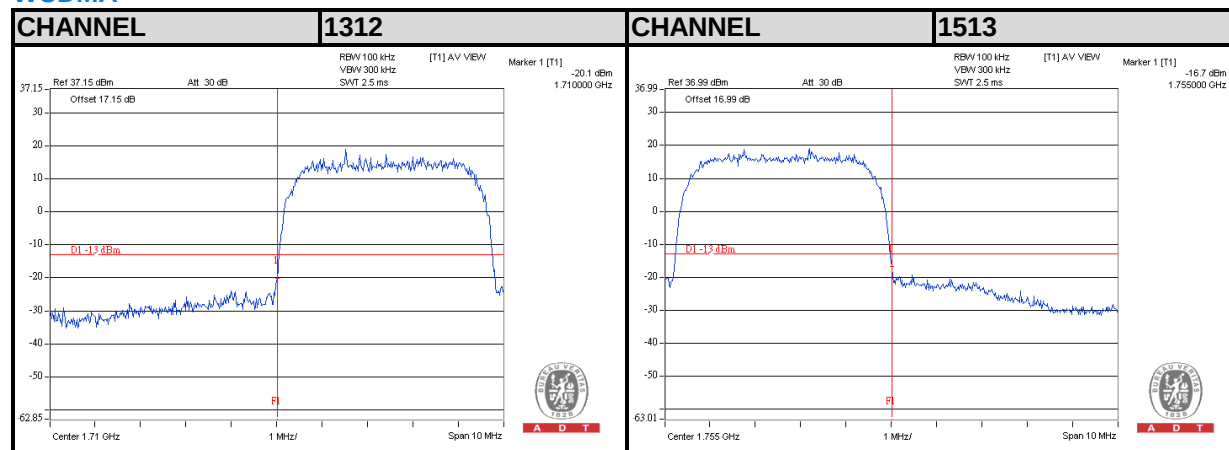


4.5.3 TEST PROCEDURES

- All measurements were done at low and high operational frequency range.
- The center frequency of spectrum is the band edge frequency and s RB of the spectrum is $>1\%$ OCCUPIED BANDWIDTH and VB of the spectrum is $\geq 3 \times RB$.
- Record the max trace plot into the test report.

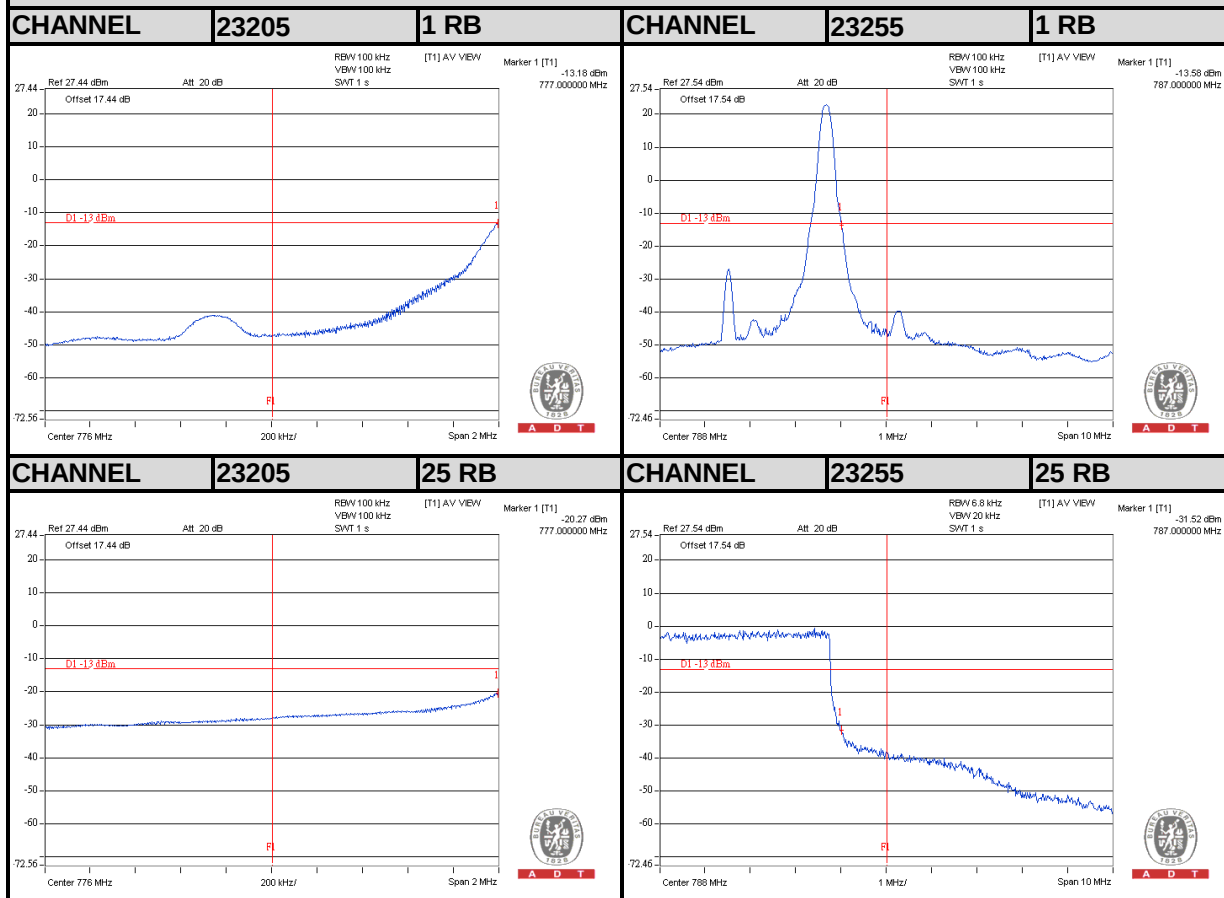
4.5.4 TEST RESULTS

WCDMA



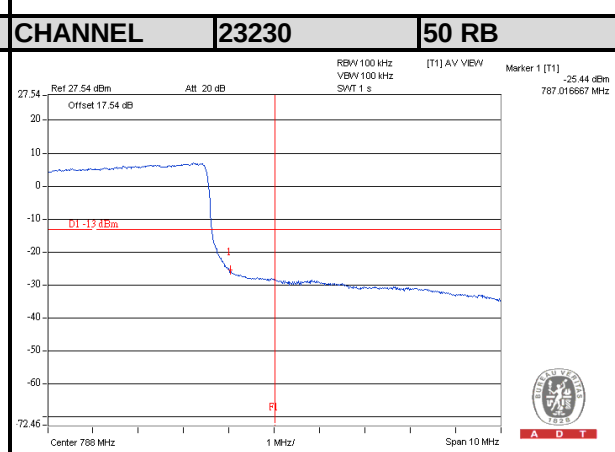
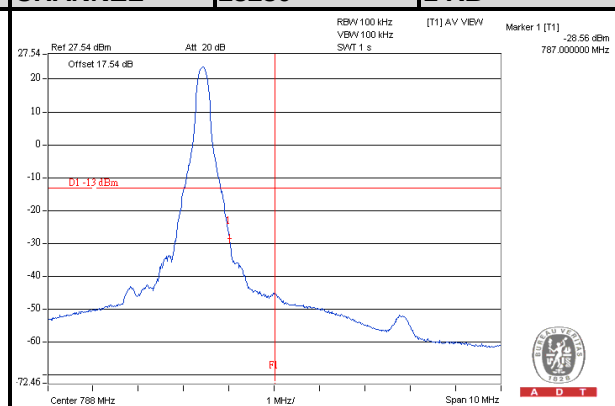
LTE BAND 13

Channel Bandwidth: 5MHz



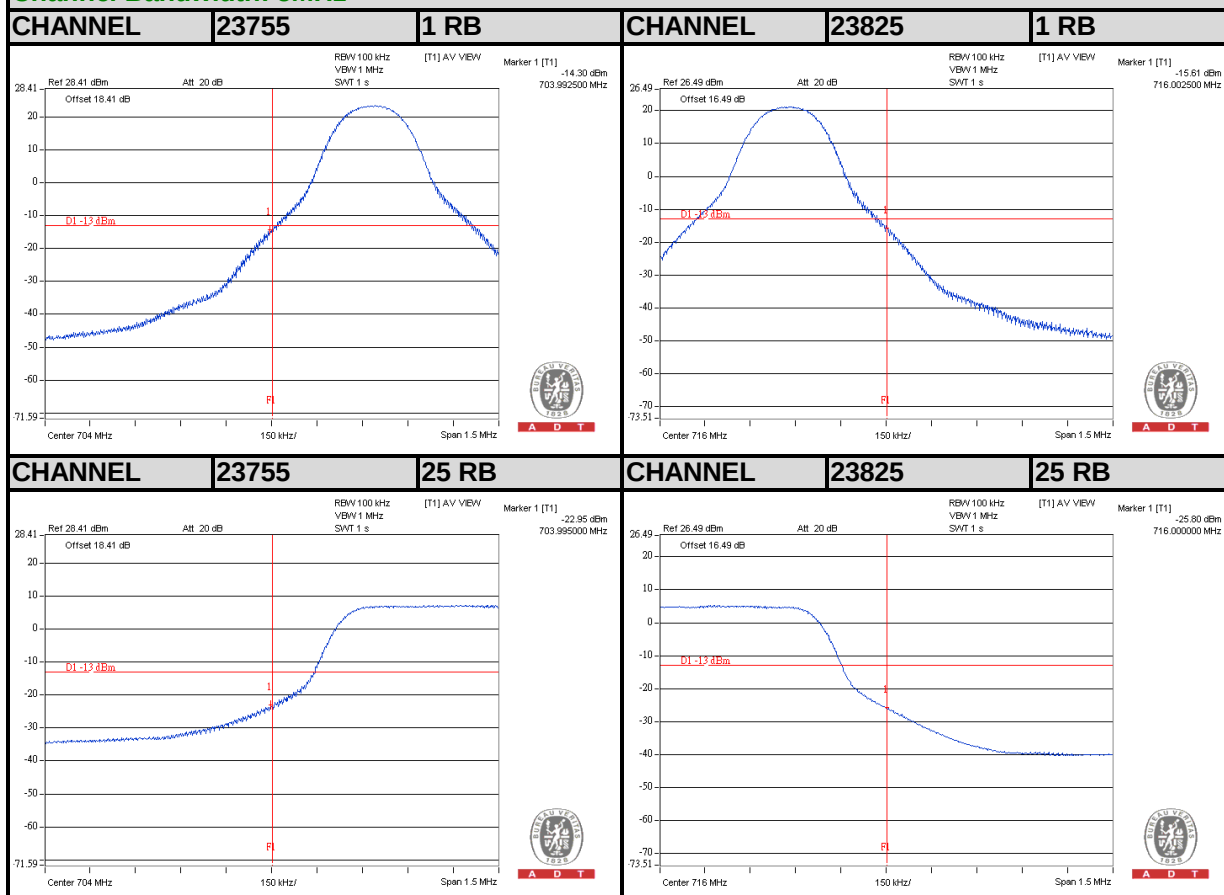


CHANNEL	23230	1 RB	CHANNEL	23230	1 RB
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LTE BAND 17

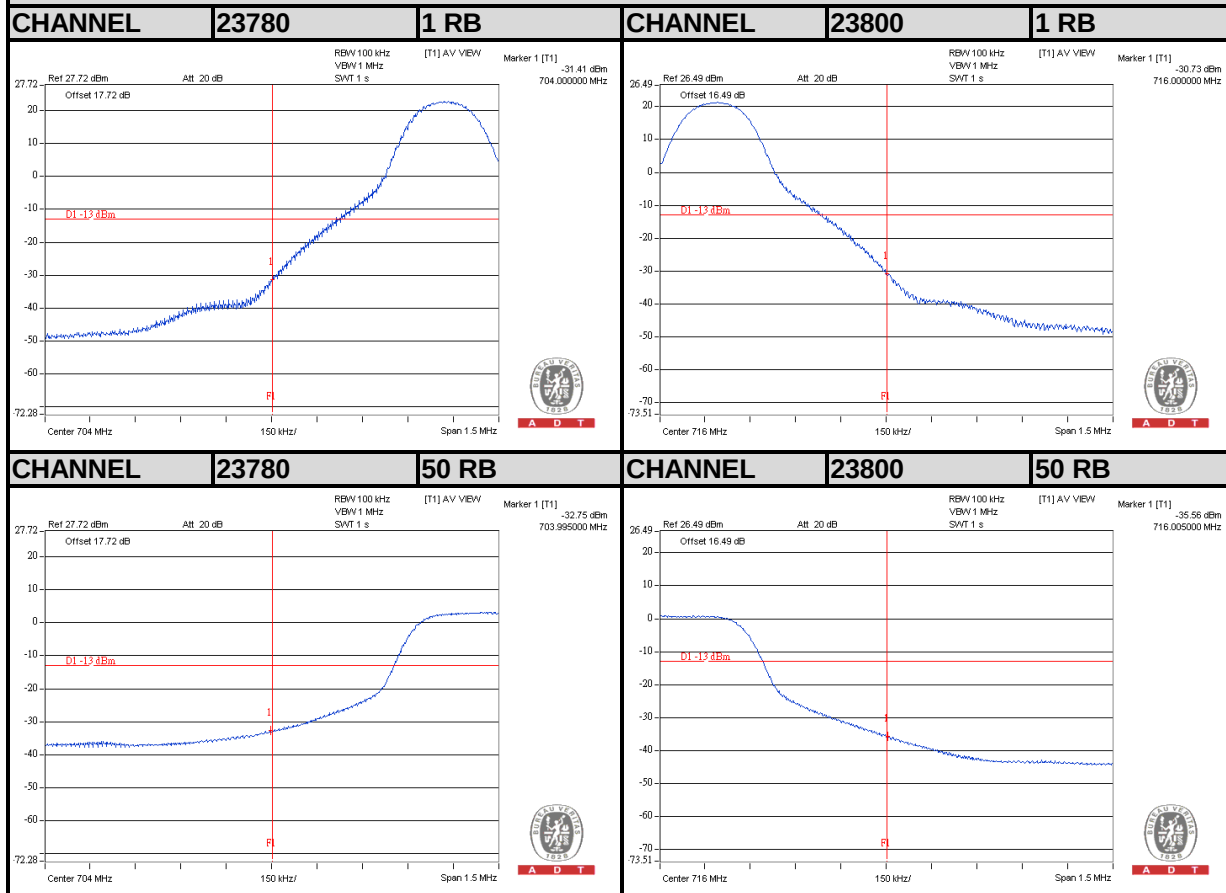
Channel Bandwidth: 5MHz



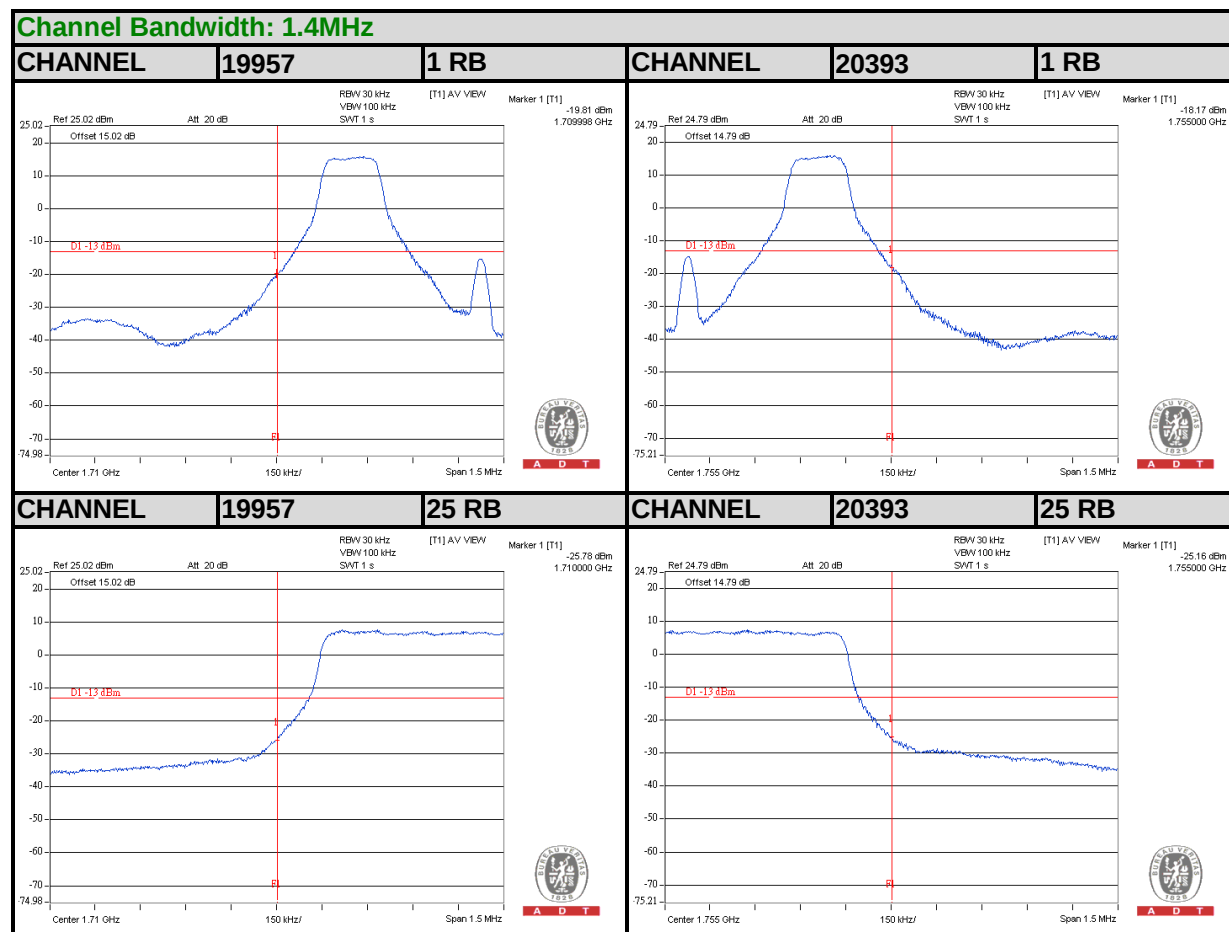


A D T

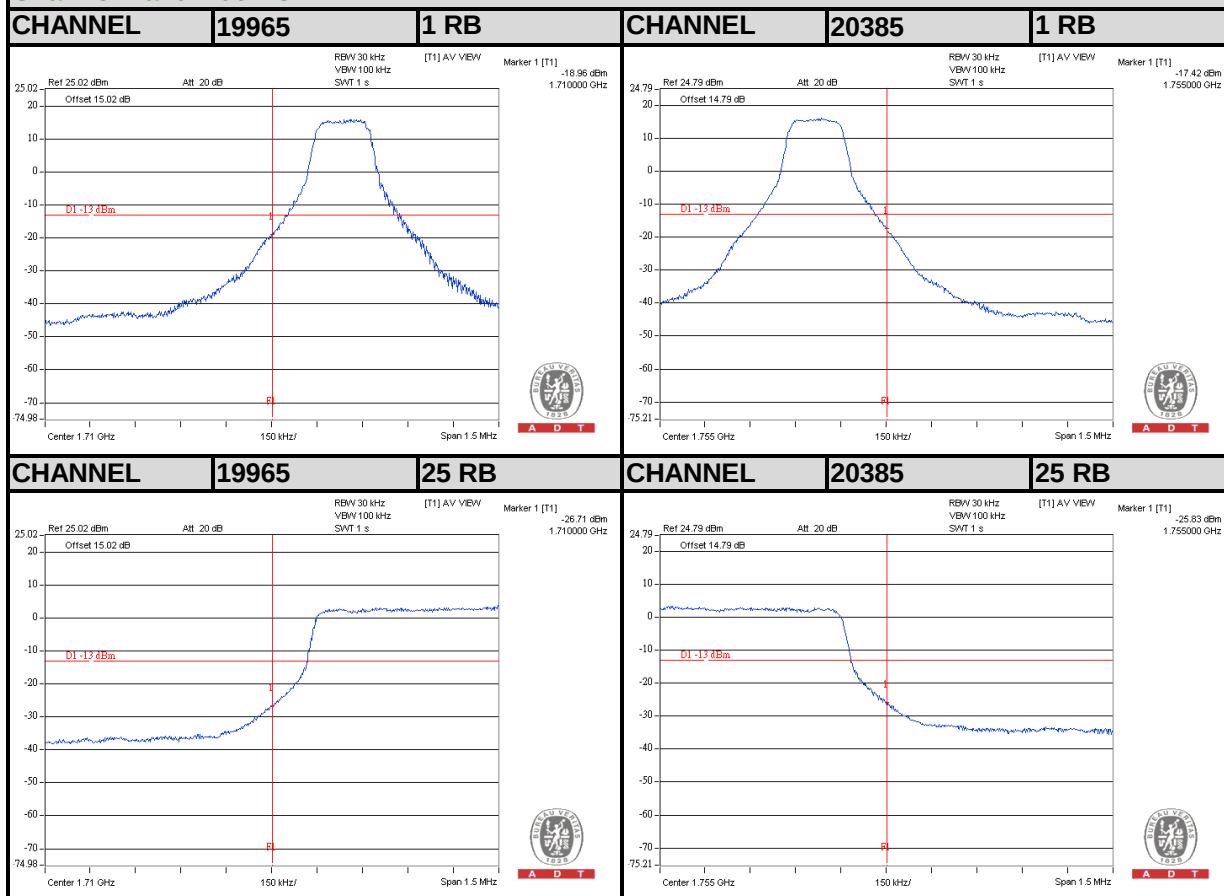
Channel Bandwidth: 10MHz



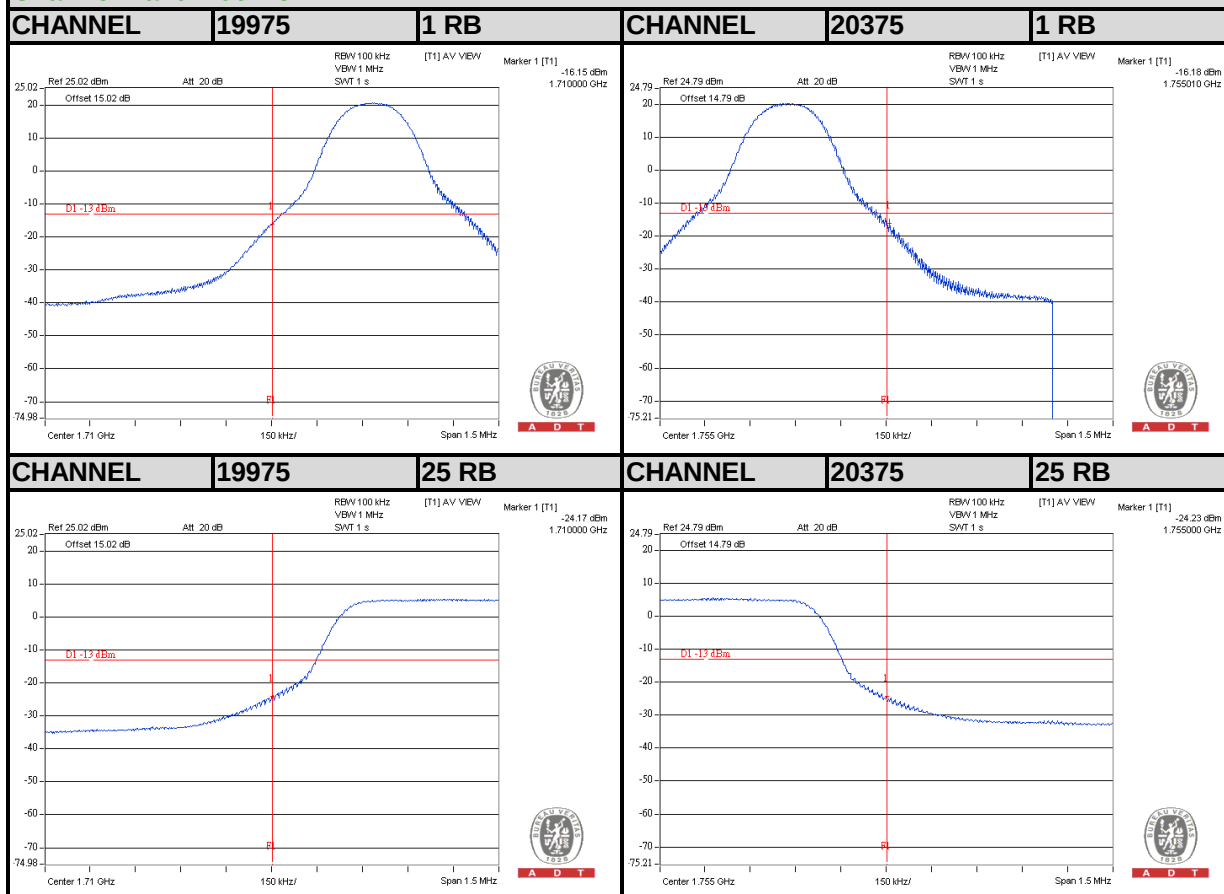
LTE BAND 4



Channel Bandwidth: 3MHz



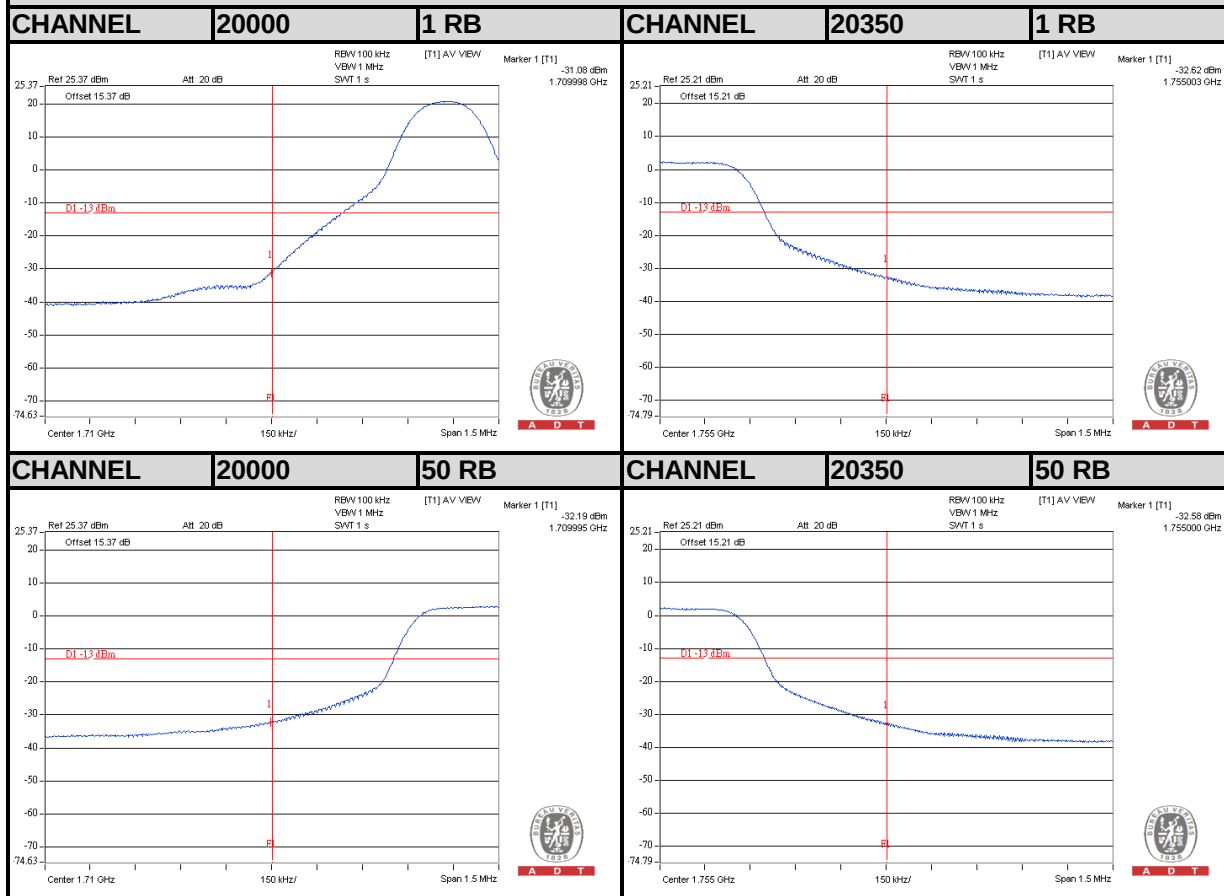
Channel Bandwidth: 5MHz





A D T

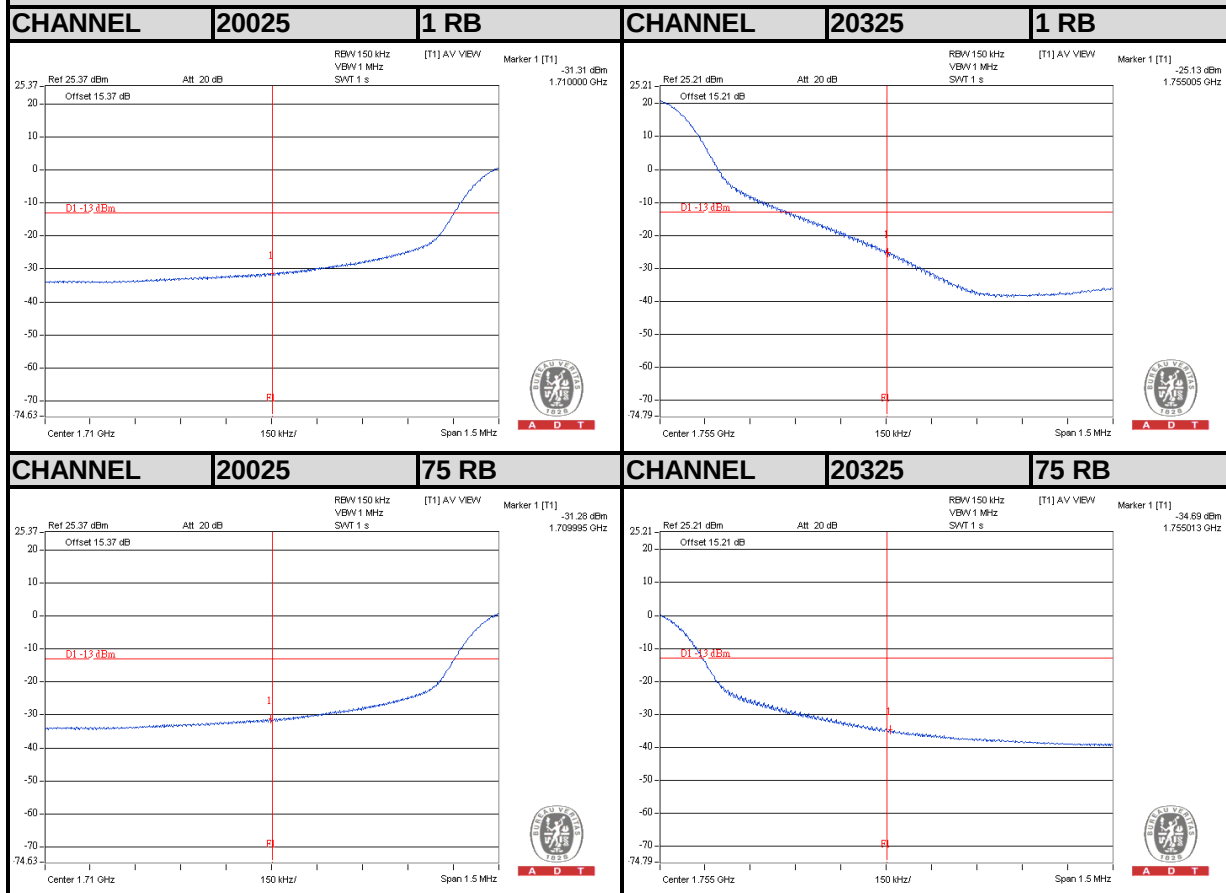
Channel Bandwidth: 10MHz





A D T

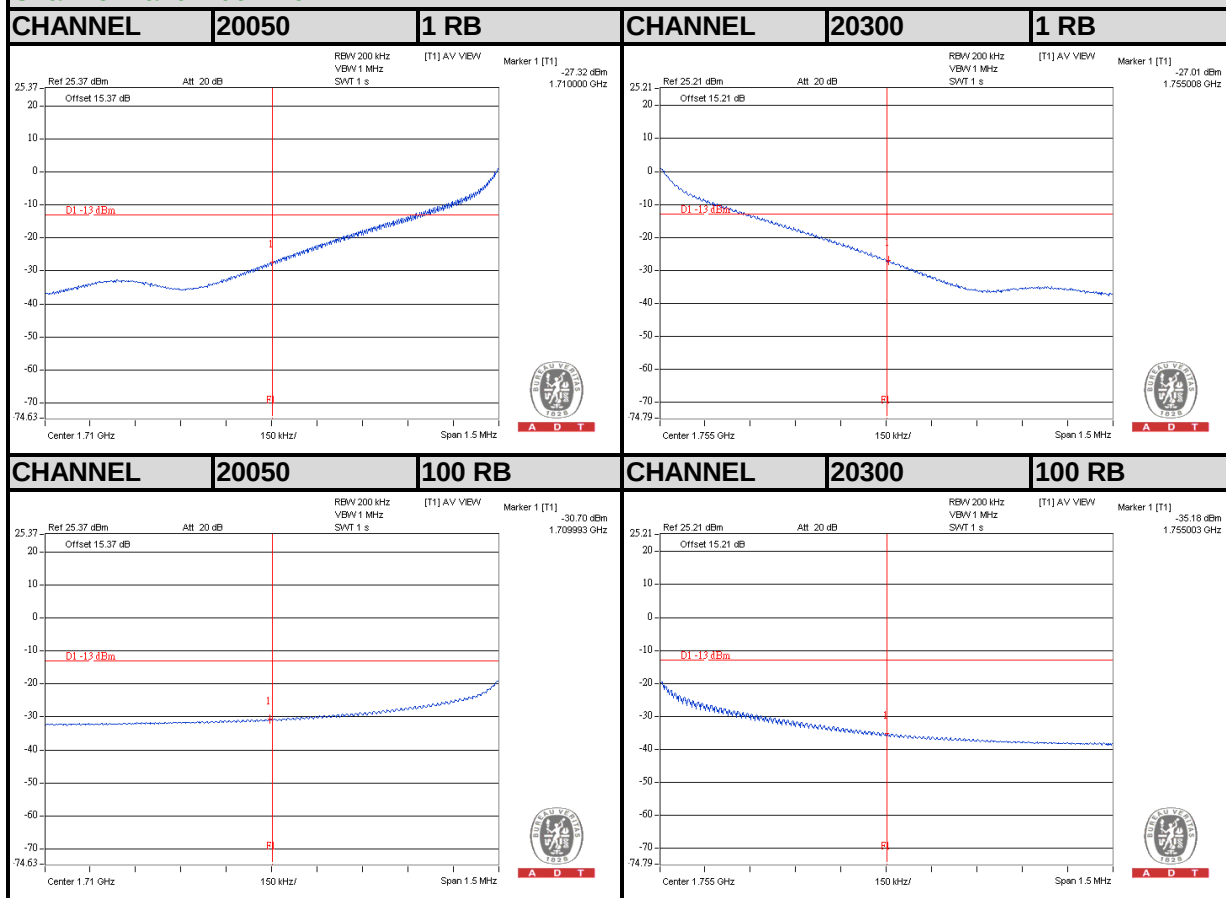
Channel Bandwidth: 15MHz





A D T

Channel Bandwidth: 20MHz



4.6 CONDUCTED SPURIOUS EMISSIONS

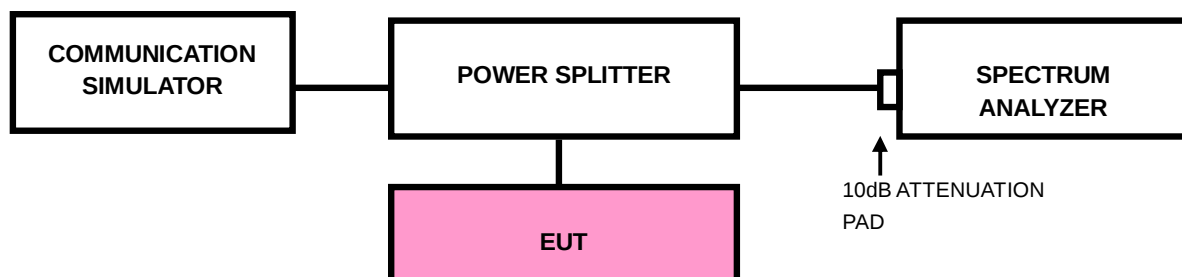
4.6.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB. The limit of emission equal to -13dBm

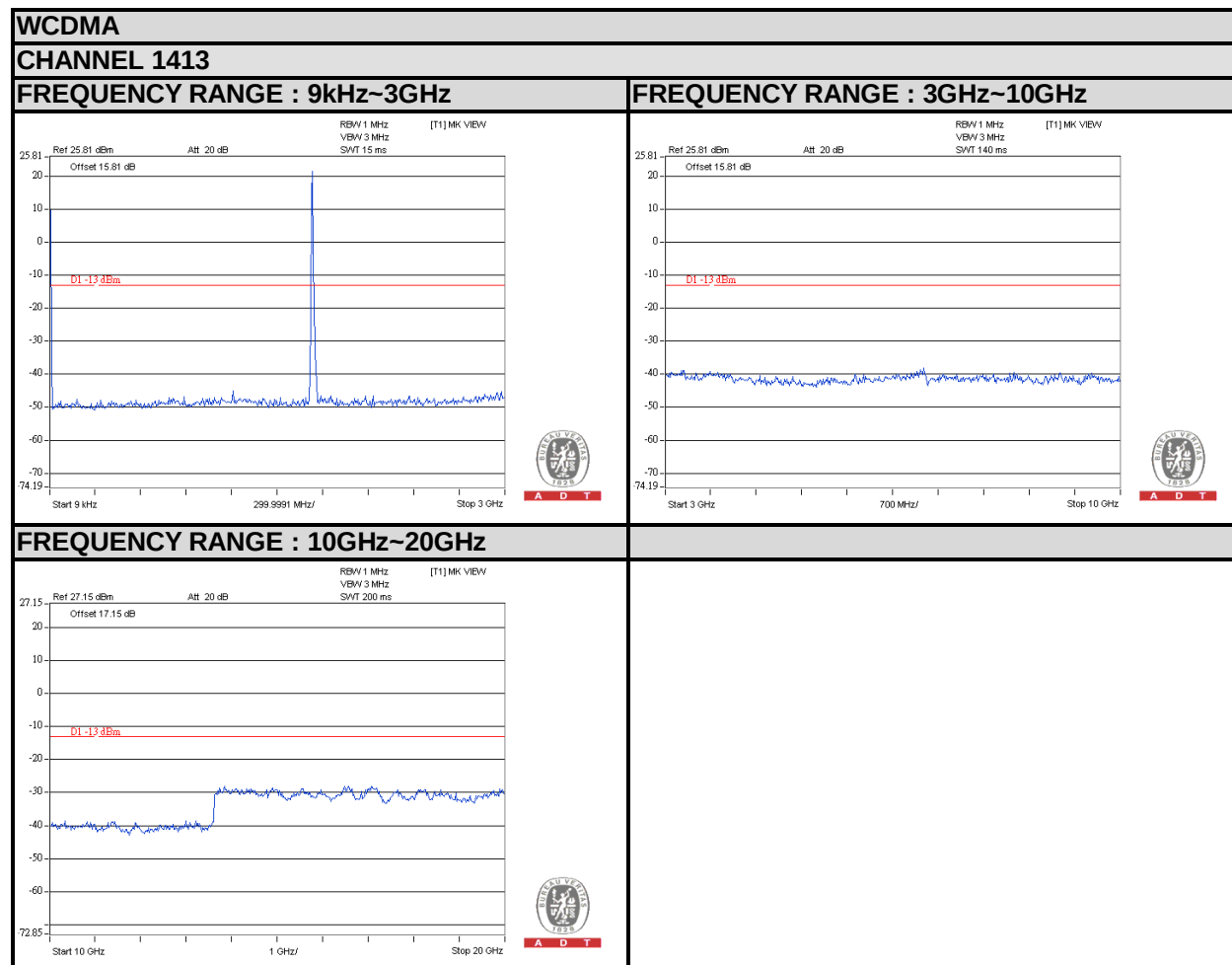
4.6.2 TEST PROCEDURE

- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 9kHz to 9GHz for LTE Band 13 & 17 and from 9kHz to 20GHz for WCDMA & LTE Band 4. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz are used for conducted emission measurement.

4.6.3 TEST SETUP



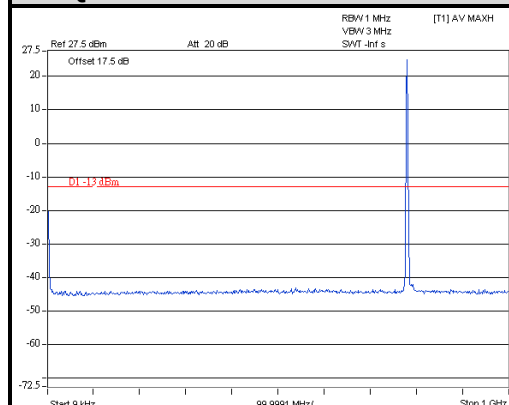
4.6.4 TEST RESULTS



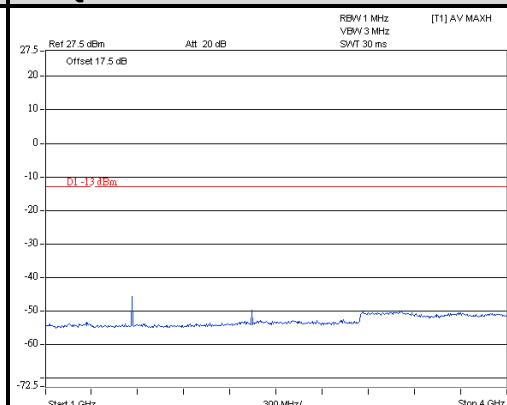
LTE Band 13 (Channel Bandwidth: 5MHz)

CHANNEL 23230

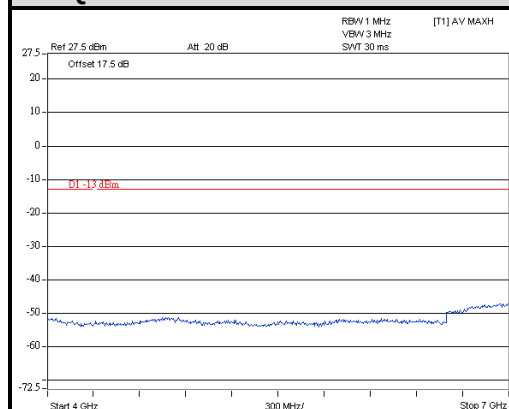
FREQUENCY RANGE : 9kHz~1GHz



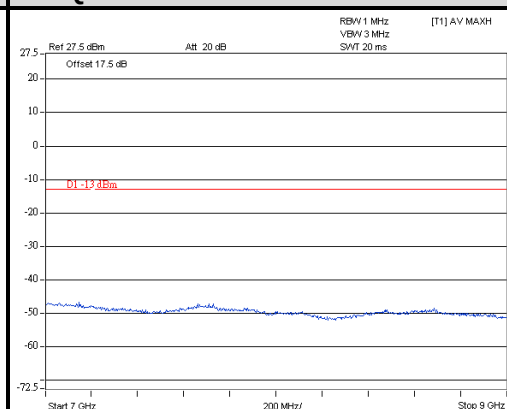
FREQUENCY RANGE : 1GHz~4GHz



FREQUENCY RANGE : 4GHz~7GHz



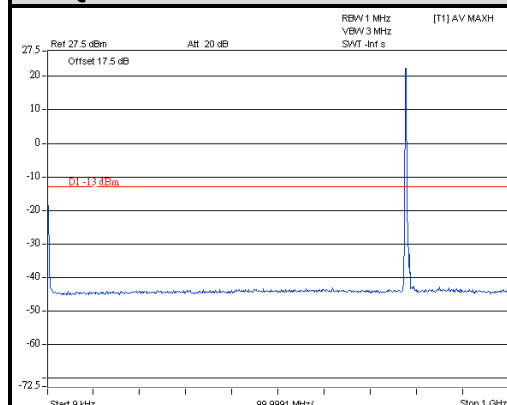
FREQUENCY RANGE : 7GHz~9GHz



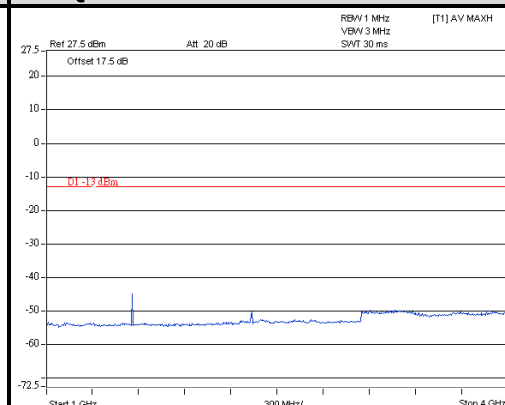
LTE Band 13 (Channel Bandwidth: 10MHz)

CHANNEL 23230

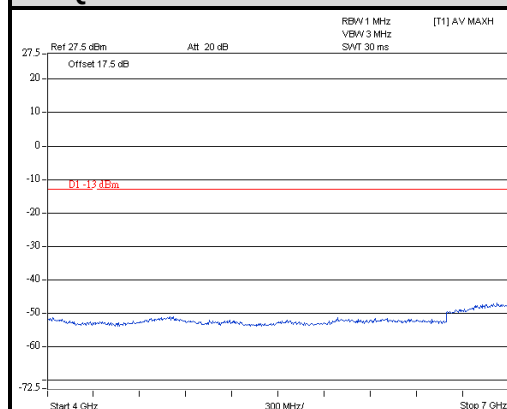
FREQUENCY RANGE : 9kHz~1GHz



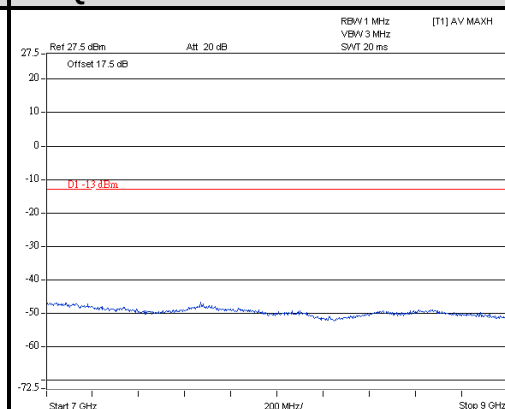
FREQUENCY RANGE : 1GHz~4GHz



FREQUENCY RANGE : 4GHz~7GHz



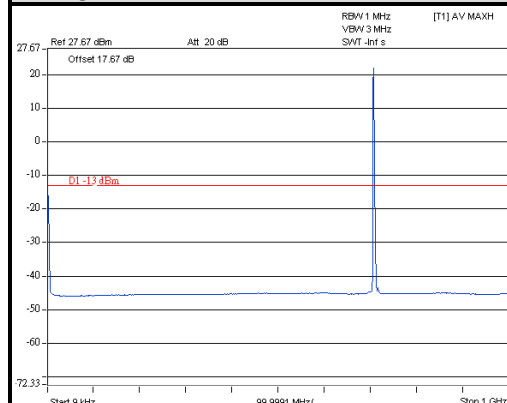
FREQUENCY RANGE : 7GHz~9GHz



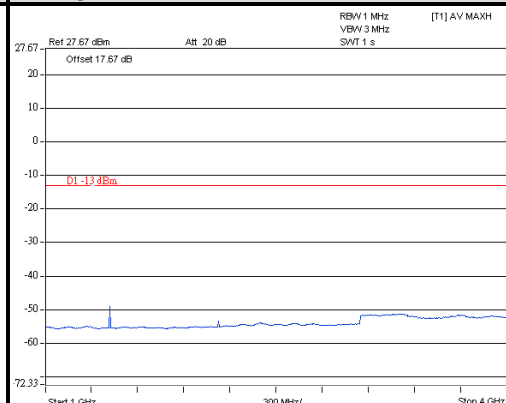
LTE Band 17 (Channel Bandwidth: 5MHz)

CHANNEL 23790

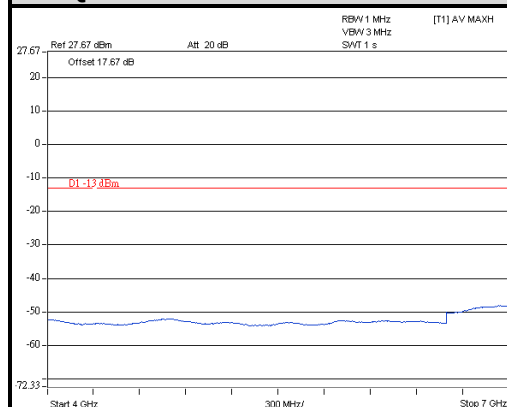
FREQUENCY RANGE : 9kHz~1GHz



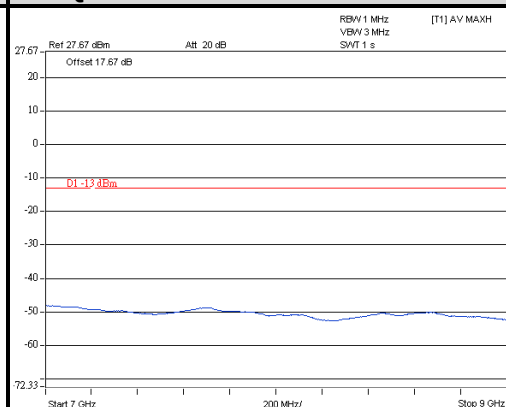
FREQUENCY RANGE : 1GHz~4GHz



FREQUENCY RANGE : 4GHz~7GHz



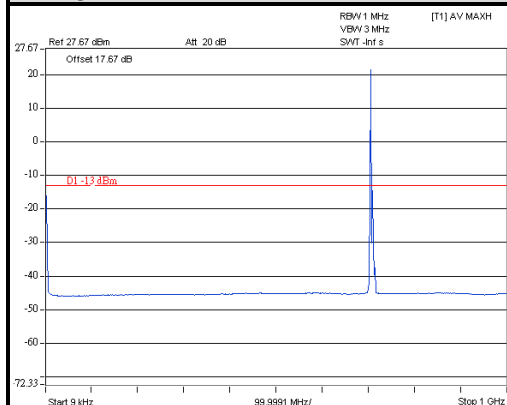
FREQUENCY RANGE : 7GHz~9GHz



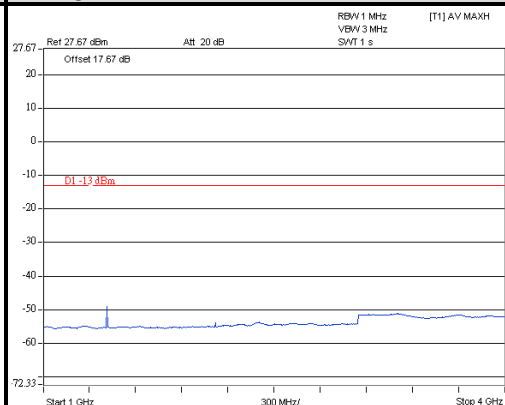
LTE Band 17 (Channel Bandwidth: 10MHz)

CHANNEL 23790

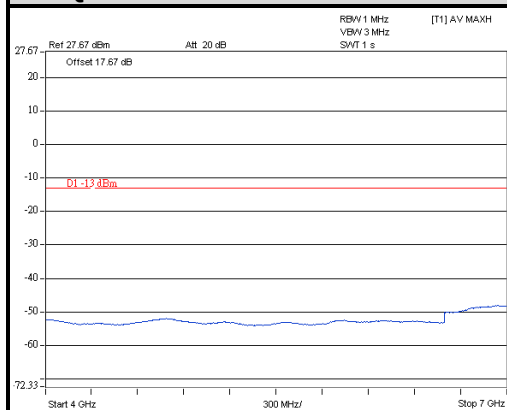
FREQUENCY RANGE : 9kHz~1GHz



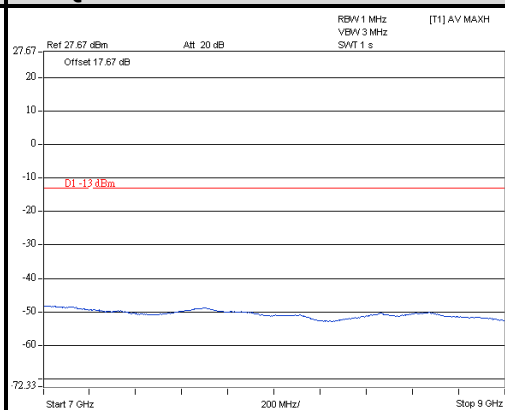
FREQUENCY RANGE : 1GHz~4GHz



FREQUENCY RANGE : 4GHz~7GHz



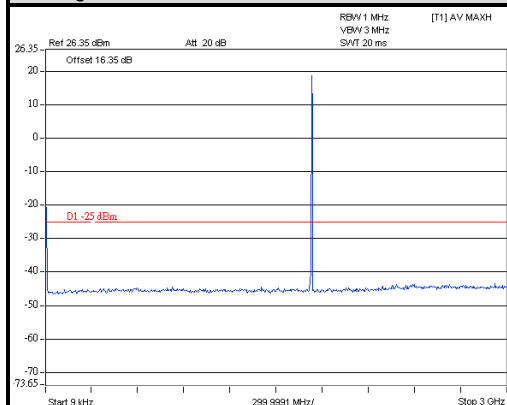
FREQUENCY RANGE : 7GHz~9GHz



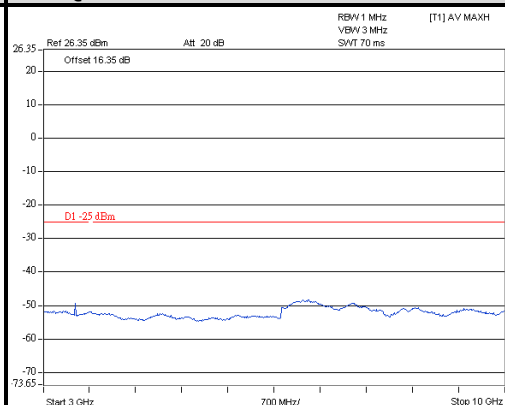
LTE Band 4 (Channel Bandwidth: 1.4MHz)

CHANNEL 20175

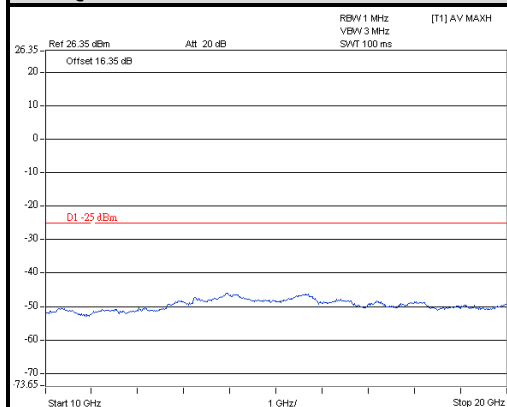
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



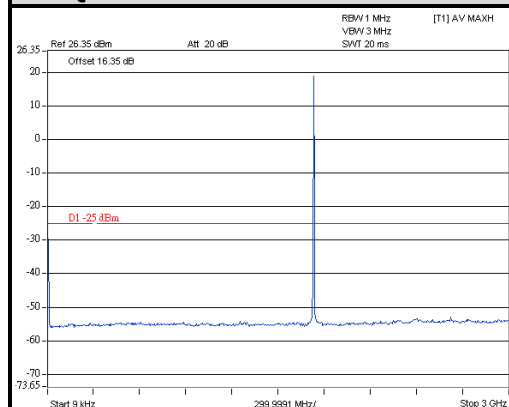
FREQUENCY RANGE : 10GHz~20GHz



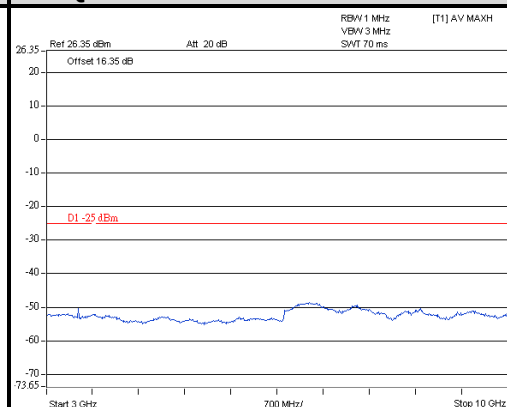
LTE Band 4 (Channel Bandwidth: 3MHz)

CHANNEL 20175

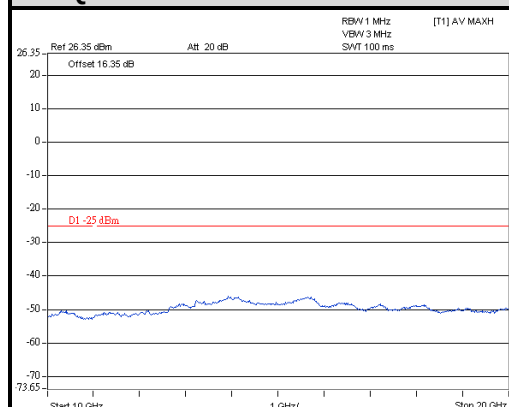
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



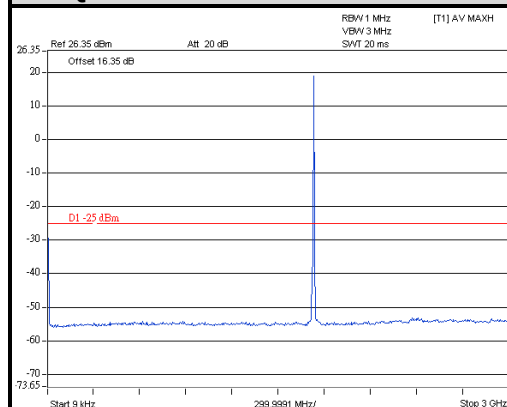
FREQUENCY RANGE : 10GHz~20GHz



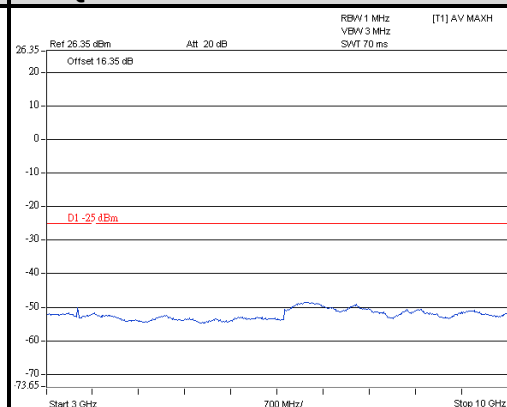
LTE Band 4 (Channel Bandwidth: 5MHz)

CHANNEL 20175

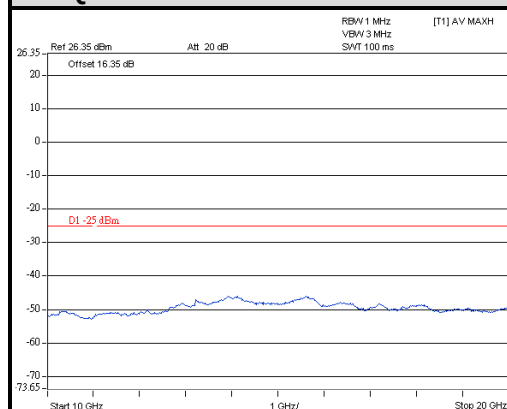
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



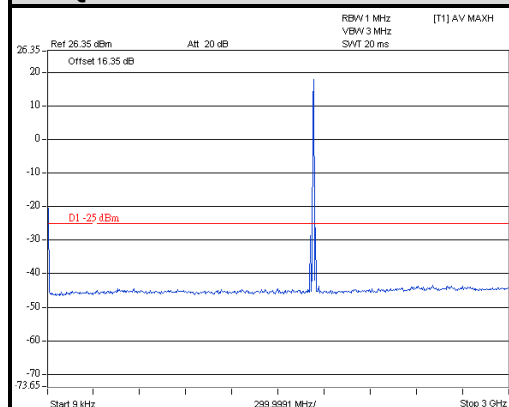
FREQUENCY RANGE : 10GHz~20GHz



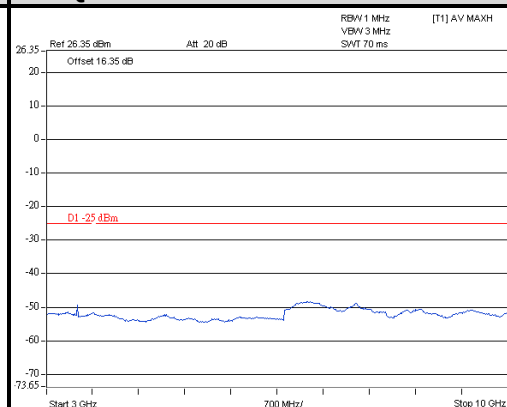
LTE Band 4 (Channel Bandwidth: 10MHz)

CHANNEL 20175

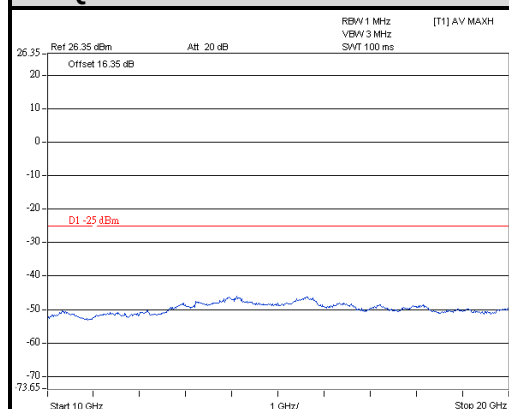
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



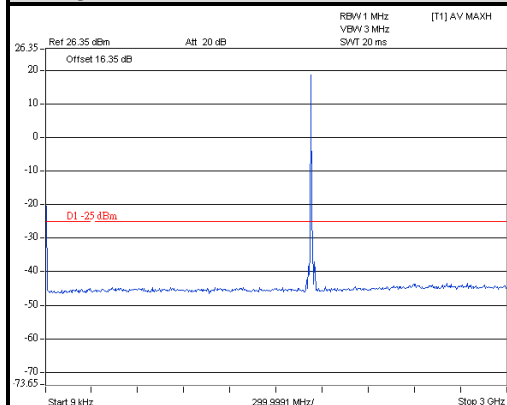
FREQUENCY RANGE : 10GHz~20GHz



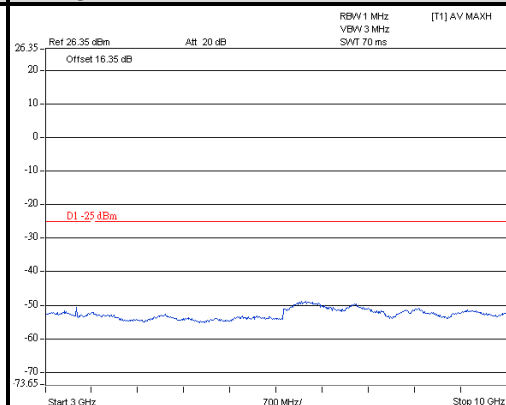
LTE Band 4 (Channel Bandwidth: 15MHz)

CHANNEL 20175

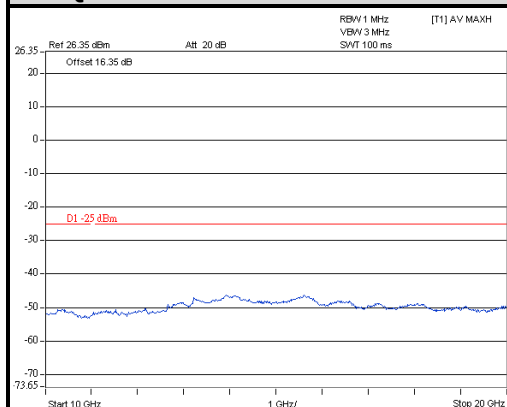
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



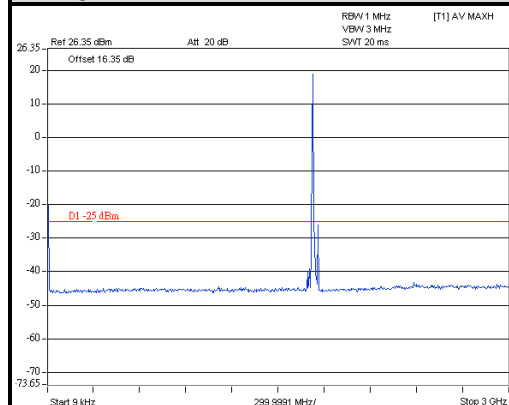
FREQUENCY RANGE : 10GHz~20GHz



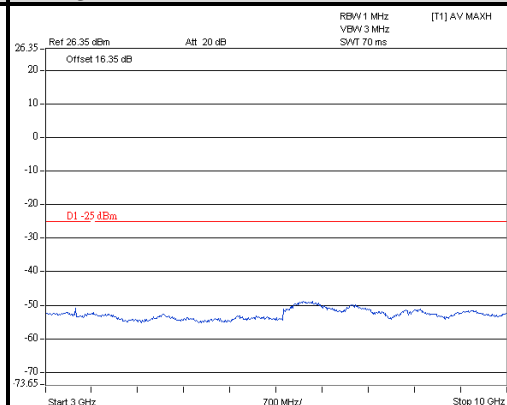
LTE Band 4 (Channel Bandwidth: 20MHz)

CHANNEL 20175

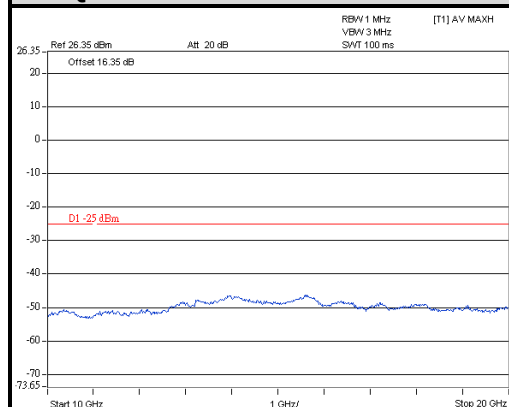
FREQUENCY RANGE : 9kHz~3GHz



FREQUENCY RANGE : 3GHz~10GHz



FREQUENCY RANGE : 10GHz~20GHz



4.7 RADIATED EMISSION MEASUREMENT

4.7.1 LIMITS OF RADIATED EMISSION MEASUREMENT

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB. The limit of emission equal to -13dBm

4.7.2 TEST PROCEDURES

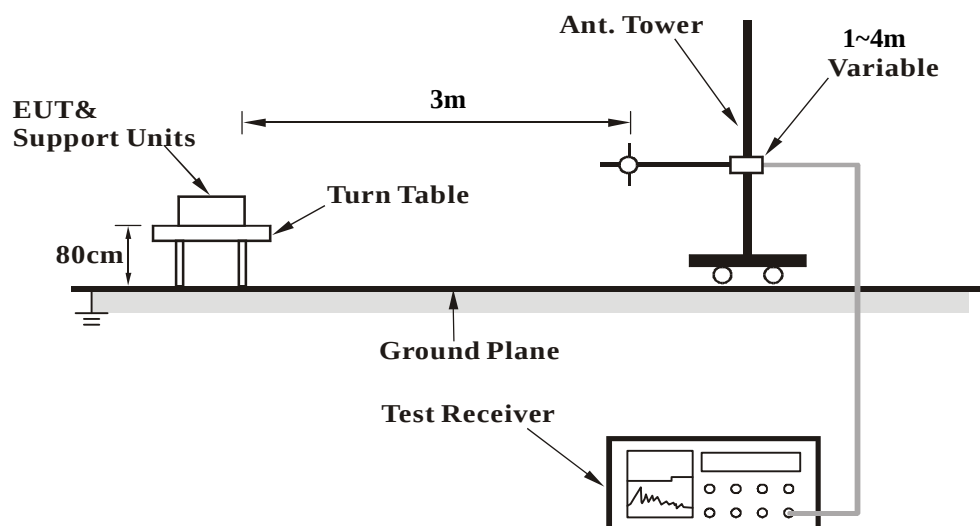
- a. Substitution method is used for EIRP measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 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. ERP power can be calculated form EIRP power by subtracting the gain of dipole, $\text{ERP power} = \text{E.I.P.R power} - 2.15\text{dBi}.$

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

4.7.3 DEVIATION FROM TEST STANDARD

No deviation

4.7.4 TEST SETUP



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

4.7.5 TEST RESULTS

Below 1GHz

WCDMA:

MODE	TX channel 1413	FREQUENCY RANGE	Below 1000MHz
------	-----------------	-----------------	---------------

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	54.56	32.64	-13	-47.51	-8.91	-56.42	-43.42
2	163.17	28.81	-13	-60.28	-0.24	-60.52	-47.52
3	226.85	34.32	-13	-61.08	3.99	-57.09	-44.09
4	477.74	27.71	-13	-69.03	2.85	-66.18	-53.18
5	710.37	31.26	-13	-65.09	1.45	-63.63	-50.63
6	848.73	29.32	-13	-65.23	1.05	-64.18	-51.18
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	54.47	28.20	-13	-51.92	-8.93	-60.85	-47.85
2	142.18	26.32	-13	-66.99	-1.24	-68.24	-55.24
3	263.89	27.55	-13	-67.14	3.95	-63.19	-50.19
4	304.39	27.34	-13	-68.63	3.70	-64.92	-51.92
5	479.48	34.41	-13	-64.09	2.50	-61.59	-48.59
6	745.49	28.23	-13	-68.14	0.89	-67.25	-54.25

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. $\text{Correction Factor (dB)} = \text{Substitution Antenna Gain (dB)} + \text{Cable Loss (dB)}$.

LTE Band 13 (Channel Bandwidth 5MHz):

MODE	TX channel 23230	FREQUENCY RANGE	Below 1000MHz
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	33.31	30.29	-13	-42.17	-14.09	-56.26	-43.26
2	48.46	36.69	-13	-35.77	-14.09	-49.86	-36.86
3	106.71	37.50	-13	-52.81	-0.81	-53.62	-40.62
4	269.5	35.49	-13	-59.37	3.91	-55.46	-42.46
5	344.89	36.85	-13	-60.80	3.61	-57.19	-44.19
6	358.07	39.18	-13	-58.69	3.55	-55.13	-42.13
7	376.68	40.30	-13	-57.57	3.55	-54.01	-41.01
8	895.48	43.98	-13	-54.39	0.54	-53.84	-40.84
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	33.79	40.99	-13	-31.64	-13.97	-45.62	-32.62
2	50.66	42.97	-13	-29.66	-13.97	-43.64	-30.64
3	62.08	42.15	-13	-41.22	-6.97	-48.20	-35.20
4	108.42	44.10	-13	-46.12	-0.86	-46.98	-33.98
5	367.27	35.75	-13	-62.11	3.50	-58.60	-45.60
6	382.47	38.31	-13	-59.55	3.50	-56.04	-43.04
7	396.82	38.47	-13	-59.35	3.37	-55.98	-42.98
8	895.37	43.28	-13	-55.08	0.54	-54.53	-41.53

REMARKS:

1. ERP(dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss



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LTE Band 13 (Channel Bandwidth 10MHz):

MODE	TX channel 23230	FREQUENCY RANGE	Below 1000MHz
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	33.33	29.66	-13	-42.80	-14.09	-56.89	-43.89
2	48.94	37.63	-13	-34.83	-14.09	-48.92	-35.92
3	106.59	37.73	-13	-52.59	-0.81	-53.40	-40.40
4	270.57	36.25	-13	-58.65	3.91	-54.74	-41.74
5	345.85	36.48	-13	-61.21	3.60	-57.60	-44.60
6	359.27	39.36	-13	-58.51	3.55	-54.96	-41.96
7	378.58	40.88	-13	-56.98	3.55	-53.44	-40.44
8	896.09	44.36	-13	-54.06	0.54	-53.52	-40.52
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	33.31	40.92	-13	-31.32	-14.24	-45.56	-32.56
2	49.28	42.71	-13	-36.37	-9.63	-46.00	-33.00
3	61.58	42.88	-13	-40.19	-7.12	-47.31	-34.31
4	108.47	42.97	-13	-47.31	-0.83	-48.14	-35.14
5	365.17	36.99	-13	-60.87	3.50	-57.37	-44.37
6	381.22	37.33	-13	-60.52	3.43	-57.09	-44.09
7	397.54	37.07	-13	-60.78	3.36	-57.42	-44.42
8	896.51	42.30	-13	-56.14	0.53	-55.61	-42.61

REMARKS:

1. $ERP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



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LTE Band 17 (Channel Bandwidth 5MHz):

MODE	TX channel 23790	FREQUENCY RANGE	Below 1000MHz
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	34.2	29.31	-13	-43.47	-13.87	-57.34	-44.34
2	46.87	37.70	-13	-35.08	-13.87	-48.95	-35.95
3	107.26	35.73	-13	-54.55	-0.83	-55.38	-42.38
4	270.08	36.27	-13	-58.61	3.91	-54.70	-41.70
5	346.58	35.62	-13	-62.10	3.60	-58.50	-45.50
6	361.29	38.80	-13	-59.06	3.54	-55.53	-42.53
7	377.53	40.79	-13	-57.07	3.54	-53.54	-40.54
8	897	44.25	-13	-54.24	0.53	-53.72	-40.72
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	33.81	42.21	-13	-30.43	-13.97	-44.40	-31.40
2	47.4	42.83	-13	-29.81	-13.97	-43.78	-30.78
3	63.38	42.57	-13	-41.58	-6.60	-48.18	-35.18
4	109.51	41.06	-13	-49.10	-0.89	-49.99	-36.99
5	365.65	35.96	-13	-61.90	3.51	-58.39	-45.39
6	381.04	37.27	-13	-60.59	3.51	-57.08	-44.08
7	396.75	38.64	-13	-59.18	3.37	-55.81	-42.81
8	896.23	42.23	-13	-56.20	0.53	-55.66	-42.66

REMARKS:

1. $ERP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



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LTE Band 17 (Channel Bandwidth 10MHz):

MODE	TX channel 23790	FREQUENCY RANGE	Below 1000MHz
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	35.12	28.42	-13	-44.69	-13.65	-58.34	-45.34
2	46.38	38.26	-13	-34.85	-13.65	-48.50	-35.50
3	108.19	36.67	-13	-53.56	-0.85	-54.41	-41.41
4	270.14	37.05	-13	-57.83	3.91	-53.92	-40.92
5	346.31	34.64	-13	-63.07	3.60	-59.46	-46.46
6	360.65	39.09	-13	-58.77	3.54	-55.24	-42.24
7	376.92	40.96	-13	-56.90	3.54	-53.36	-40.36
8	897.54	44.55	-13	-53.98	0.52	-53.47	-40.47
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	33.43	41.82	-13	-30.68	-14.06	-44.75	-31.75
2	47.62	42.63	-13	-29.87	-14.06	-43.94	-30.94
3	64.36	42.64	-13	-42.10	-6.31	-48.41	-35.41
4	109.4	41.60	-13	-48.57	-0.89	-49.45	-36.45
5	365.62	35.18	-13	-62.68	3.51	-59.17	-46.17
6	380.62	37.10	-13	-60.76	3.51	-57.25	-44.25
7	396.64	39.58	-13	-58.24	3.37	-54.87	-41.87
8	896.84	42.47	-13	-56.01	0.53	-55.48	-42.48

REMARKS:

1. $ERP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



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LTE Band 4 (Channel Bandwidth 1.4MHz):

MODE	TX channel 20175	FREQUENCY RANGE	Below 1000MHz
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	33.24	31.48	-13	-40.95	-14.11	-55.06	-42.06
2	50.52	35.43	-13	-43.26	-9.89	-53.15	-40.15
3	107.22	36.83	-13	-47.66	-6.43	-54.09	-41.09
4	270.84	34.85	-13	-55.44	-0.83	-56.26	-43.26
5	346.2	37.30	-13	-60.40	3.60	-56.80	-43.80
6	357.4	39.04	-13	-58.83	3.56	-55.27	-42.27
7	378.4	39.00	-13	-58.86	3.45	-55.41	-42.41
8	896.4	43.51	-13	-54.93	0.53	-54.40	-41.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	32.7	39.41	-13	-32.83	-14.24	-47.07	-34.07
2	51.6	40.52	-13	-38.56	-9.63	-48.19	-35.19
3	63.48	43.88	-13	-40.33	-6.57	-46.90	-33.90
4	107.22	42.96	-13	-47.32	-0.83	-48.15	-35.15
5	368.6	36.99	-13	-60.87	3.50	-57.37	-44.37
6	381.2	38.85	-13	-59.00	3.43	-55.57	-42.57
7	395.2	36.65	-13	-61.16	3.38	-57.77	-44.77
8	896.4	44.57	-13	-53.87	0.53	-53.34	-40.34

REMARKS:

1. $ERP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



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LTE Band 4 (Channel Bandwidth 3MHz):

MODE	TX channel 20175	FREQUENCY RANGE	Below 1000MHz
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	34.1	31.17	-13	-41.38	-14.03	-55.41	-42.41
2	50.47	36.09	-13	-42.60	-9.89	-52.49	-39.49
3	108.15	36.58	-13	-53.70	-0.83	-54.53	-41.53
4	269.92	34.77	-13	-51.95	5.67	-46.28	-33.28
5	345.52	37.28	-13	-60.42	3.60	-56.82	-43.82
6	358.34	38.72	-13	-59.14	3.45	-55.69	-42.69
7	378.23	39.31	-13	-58.55	3.45	-55.10	-42.10
8	897.12	44.16	-13	-54.28	0.53	-53.75	-40.75
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	31.79	38.98	-13	-32.93	-14.46	-47.39	-34.39
2	51.58	39.92	-13	-39.15	-9.63	-48.79	-35.79
3	63.26	42.97	-13	-41.11	-6.63	-47.74	-34.74
4	107.01	42.61	-13	-47.68	-0.82	-48.51	-35.51
5	369.53	37.61	-13	-60.25	3.49	-56.75	-43.75
6	381.12	39.75	-13	-58.10	3.43	-54.67	-41.67
7	396.07	37.38	-13	-60.43	3.37	-57.06	-44.06
8	896.8	44.24	-13	-54.23	0.53	-53.71	-40.71

REMARKS:

1. $ERP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss

LTE Band 4 (Channel Bandwidth 5MHz):

MODE	TX channel 20175	FREQUENCY RANGE	Below 1000MHz
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	33.37	30.40	-13	-41.86	-14.22	-56.09	-43.09
2	49.64	36.33	-13	-42.36	-9.89	-52.25	-39.25
3	109.07	36.63	-13	-53.65	-0.83	-54.48	-41.48
4	270.43	34.55	-13	-70.18	1.91	-68.27	-55.27
5	345.75	36.53	-13	-50.18	5.67	-44.51	-31.51
6	358.65	37.80	-13	-59.91	3.60	-56.31	-43.31
7	377.72	38.52	-13	-59.34	3.45	-55.89	-42.89
8	896.46	43.54	-13	-54.90	0.53	-54.37	-41.37
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	32.17	38.26	-13	-33.79	-14.37	-48.16	-35.16
2	52.53	39.43	-13	-39.99	-9.40	-49.39	-36.39
3	63.95	43.01	-13	-41.48	-6.43	-47.92	-34.92
4	107.01	41.61	-13	-48.68	-0.82	-49.51	-36.51
5	370.27	38.28	-13	-59.58	3.49	-56.09	-43.09
6	382.11	39.89	-13	-57.96	3.43	-54.53	-41.53
7	395.12	37.72	-13	-60.09	3.38	-56.70	-43.70
8	897.28	44.78	-13	-53.73	0.52	-53.21	-40.21

REMARKS:

1. $ERP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss

LTE Band 4 (Channel Bandwidth 10MHz):

MODE	TX channel 20175	FREQUENCY RANGE	Below 1000MHz
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	32.5	30.98	-13	-41.18	-14.29	-55.47	-42.47
2	49.33	36.95	-13	-41.31	-10.18	-51.49	-38.49
3	109.8	36.15	-13	-53.99	-0.90	-54.89	-41.89
4	271.39	35.12	-13	-59.80	3.90	-55.90	-42.90
5	345.82	35.86	-13	-61.83	3.60	-58.22	-45.22
6	357.76	37.91	-13	-59.96	3.55	-56.40	-43.40
7	377.25	39.25	-13	-58.61	3.45	-55.15	-42.15
8	897	44.50	-13	-53.99	0.53	-53.47	-40.47
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	31.21	39.20	-13	-32.50	-14.60	-47.10	-34.10
2	52.61	38.45	-13	-41.00	-9.38	-50.38	-37.38
3	63.34	43.03	-13	-41.10	-6.61	-47.71	-34.71
4	106.92	41.37	-13	-48.93	-0.82	-49.75	-36.75
5	369.99	37.35	-13	-60.51	3.49	-57.02	-44.02
6	381.46	40.89	-13	-56.96	3.43	-53.53	-40.53
7	395.14	38.33	-13	-59.48	3.38	-56.09	-43.09
8	897.29	45.72	-13	-52.79	0.52	-52.27	-39.27

REMARKS:

1. $ERP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



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LTE Band 4 (Channel Bandwidth 15MHz):

MODE	TX channel 20175	FREQUENCY RANGE	Below 1000MHz
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	32.56	31.82	-13	-40.37	-14.27	-54.64	-41.64
2	49.55	37.33	-13	-41.01	-10.13	-51.14	-38.14
3	110.02	35.16	-13	-54.97	-0.91	-55.88	-42.88
4	270.78	34.86	-13	-60.04	3.90	-56.14	-43.14
5	346.06	35.88	-13	-61.98	3.62	-58.37	-45.37
6	358.55	38.59	-13	-59.28	3.55	-55.73	-42.73
7	376.42	38.29	-13	-59.57	3.46	-56.11	-43.11
8	896.81	45.14	-13	-53.34	0.53	-52.81	-39.81
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	30.83	39.64	-13	-31.92	-14.70	-46.62	-33.62
2	51.8	38.01	-13	-41.14	-9.58	-50.72	-37.72
3	62.73	42.42	-13	-41.34	-6.79	-48.13	-35.13
4	106.16	42.26	-13	-48.08	-0.80	-48.88	-35.88
5	370.72	36.45	-13	-61.41	3.49	-57.92	-44.92
6	381.12	40.75	-13	-57.10	3.43	-53.67	-40.67
7	394.37	38.52	-13	-59.28	3.39	-55.89	-42.89
8	898.11	44.84	-13	-53.74	0.51	-53.23	-40.23

REMARKS:

1. $ERP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss

LTE Band 4 (Channel Bandwidth 20MHz):

MODE	TX channel 20175	FREQUENCY RANGE	Below 1000MHz
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	31.82	31.02	-13	-40.90	-14.46	-55.35	-42.35
2	50.03	36.84	-13	-41.67	-10.01	-51.68	-38.68
3	110.98	36.09	-13	-53.99	-0.93	-54.92	-41.92
4	271.12	34.88	-13	-60.03	3.90	-56.13	-43.13
5	345.15	36.17	-13	-61.49	3.61	-57.88	-44.88
6	359.15	38.57	-13	-59.30	3.55	-55.75	-42.75
7	375.68	37.43	-13	-60.43	3.46	-56.97	-43.97
8	897.7	44.60	-13	-53.95	0.52	-53.43	-40.43
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	30.64	38.77	-13	-32.72	-14.74	-47.47	-34.47
2	51.74	37.64	-13	-41.49	-9.59	-51.09	-38.09
3	62.18	42.53	-13	-36.60	-9.59	-46.20	-33.20
4	105.46	42.78	-13	-40.65	-6.95	-47.59	-34.59
5	369.96	36.32	-13	-54.06	-0.78	-54.84	-41.84
6	380.84	40.96	-13	-56.90	3.49	-53.41	-40.41
7	395.01	39.13	-13	-58.67	3.39	-55.29	-42.29
8	897.57	45.03	-13	-53.51	0.52	-52.99	-39.99

REMARKS:

1. $ERP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



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Above 1GHz

WCDMA:

MODE	TX channel 1413	FREQUENCY RANGE	Above 1000MHz
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3465.2	47.10	-13	-56.06	7.80	-48.26	-35.26
2	5197.8	49.80	-13	-54.73	7.05	-47.67	-34.67
3	6930.4	56.30	-13	-46.02	5.10	-40.91	-27.91
4	8663	55.9	-13	-46.81	4.23	-42.58	-29.58
5	10395.6	55.9	-13	-46.10	3.67	-42.43	-29.43
6	12128.2	59	-13	-42.48	4.38	-38.10	-25.10
7	13860.8	62.1	-13	-37.55	2.46	-35.09	-22.09
8	15593.4	63.5	-13	-34.44	3.73	-30.71	-17.71
9	17326	66.8	-13	-32.42	3.77	-28.64	-15.64
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3465.2	46.4	-13	-56.76	7.80	-48.96	-35.96
2	5197.8	49.8	-13	-54.73	7.05	-47.67	-34.67
3	6930.4	55.2	-13	-47.12	5.10	-42.01	-29.01
4	8663	55.8	-13	-46.91	4.23	-42.68	-29.68
5	10395.6	57.3	-13	-44.70	3.67	-41.03	-28.03
6	12128.2	58.8	-13	-42.68	4.38	-38.30	-25.30
7	13860.8	61.4	-13	-38.25	2.46	-35.79	-22.79
8	15593.4	62.8	-13	-35.14	3.73	-31.41	-18.41
9	17326	67.4	-13	-31.82	3.77	-28.04	-15.04

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. $\text{Correction Factor (dB)} = \text{Substitution Antenna Gain (dB)} + \text{Cable Loss (dB)}$.

LTE Band 13 (Channel Bandwidth 5MHz):

MODE	TX channel 23230	FREQUENCY RANGE	Above 1000MHz
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1564	67.28	-13	-35.89	6.11	-29.78	-16.78
2	2346	74.78	-13	-22.38	6.50	-15.88	-2.88
3	3128	62.78	-13	-39.97	7.32	-32.65	-19.65
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1564	54.61	-13	-48.56	6.11	-42.45	-29.45
2	2346	62.64	-13	-34.52	6.50	-28.02	-15.02
3	3128	64.39	-13	-38.36	7.32	-31.04	-18.04

REMARKS:

1. $ERP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss

LTE Band 13 (Channel Bandwidth 10MHz):

MODE	TX channel 23230	FREQUENCY RANGE	Above 1000MHz
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1564	67.44	-13	-35.73	6.11	-29.62	-16.62
2	2346	74.93	-13	-22.23	6.50	-15.73	-2.73
3	3128	63.65	-13	-39.10	7.32	-31.78	-18.78
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1564	55.51	-13	-47.66	6.11	-41.55	-28.55
2	2346	62.56	-13	-34.60	6.50	-28.10	-15.10
3	3128	64.4	-13	-38.35	7.32	-31.03	-18.03

REMARKS:

1. $ERP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



A D T

LTE Band 17 (Channel Bandwidth 5MHz):

MODE	TX channel 23790	FREQUENCY RANGE	Above 1000MHz
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1420	66.92	-13	-36.79	5.61	-31.18	-18.18
2	2130	77.14	-13	-23.19	6.83	-16.36	-3.36
3	2840	64.90	-13	-36.36	6.98	-29.38	-16.38
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1420	55.31	-13	-48.40	5.61	-42.79	-29.79
2	2130	59.91	-13	-40.42	6.83	-33.59	-20.59
3	2840	63.29	-13	-37.97	6.98	-30.99	-17.99

REMARKS:

1. $ERP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss



A D T

LTE Band 17 (Channel Bandwidth 10MHz):

MODE	TX channel 23790	FREQUENCY RANGE	Above 1000MHz
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1420	65.44	-13	-38.27	5.61	-32.66	-19.66
2	2130	75.45	-13	-24.88	6.83	-18.05	-5.05
3	2840	64.17	-13	-37.09	6.98	-30.11	-17.11
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1420	54.76	-13	-48.95	5.61	-43.34	-30.34
2	2130	59.48	-13	-40.85	6.83	-34.02	-21.02
3	2840	62.98	-13	-38.28	6.98	-31.30	-18.30

REMARKS:

1. $ERP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. Correction Factor = gain of substitution antenna + cable loss

LTE Band 4 (Channel Bandwidth 1.4MHz):

MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3464	55.70	-13	-47.46	7.80	-39.66	-26.66
2	5196	64.90	-13	-39.62	7.05	-32.57	-19.57
3	6928	61.00	-13	-41.33	5.11	-36.22	-23.22
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3464	47.66	-13	-55.50	7.80	-47.70	-34.70
2	5196	50.92	-13	-53.60	7.05	-46.55	-33.55
3	6928	53.86	-13	-48.47	5.11	-43.36	-30.36

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. $\text{Correction Factor (dB)} = \text{Substitution Antenna Gain (dB)} + \text{Cable Loss (dB)}$.

LTE Band 4 (Channel Bandwidth 3MHz):

MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3464	51.80	-13	-51.36	7.80	-43.56	-30.56
2	5196	59.90	-13	-44.62	7.05	-37.57	-24.57
3	6928	55.80	-13	-46.53	5.11	-41.42	-28.42
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3464	47.78	-13	-55.38	7.80	-47.58	-34.58
2	5196	50.66	-13	-53.86	7.05	-46.81	-33.81
3	6928	53.19	-13	-49.14	5.11	-44.03	-31.03

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. $\text{Correction Factor (dB)} = \text{Substitution Antenna Gain (dB)} + \text{Cable Loss (dB)}$.

LTE Band 4 (Channel Bandwidth 5MHz):

MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3464	51.07	-13	-52.09	7.80	-44.29	-31.29
2	5196	60.60	-13	-43.92	7.05	-36.87	-23.87
3	6928	56.32	-13	-46.01	5.11	-40.90	-27.90
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3464	47.37	-13	-55.79	7.80	-47.99	-34.99
2	5196	50.81	-13	-53.71	7.05	-46.66	-33.66
3	6928	52.33	-13	-50.00	5.11	-44.89	-31.89

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. $\text{Correction Factor (dB)} = \text{Substitution Antenna Gain (dB)} + \text{Cable Loss (dB)}$.

LTE Band 4 (Channel Bandwidth 10MHz):

MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3464	52.68	-13	-50.48	7.80	-42.68	-29.68
2	5196	59.61	-13	-44.91	7.05	-37.86	-24.86
3	6928	56.79	-13	-45.54	5.11	-40.43	-27.43
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3464	48.03	-13	-55.13	7.80	-47.33	-34.33
2	5196	51.32	-13	-53.20	7.05	-46.15	-33.15
3	6928	52.27	-13	-50.06	5.11	-44.95	-31.95

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. $\text{Correction Factor (dB)} = \text{Substitution Antenna Gain (dB)} + \text{Cable Loss (dB)}$.

LTE Band 4 (Channel Bandwidth 15MHz):

MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3464	51.83	-13	-51.33	7.80	-43.53	-30.53
2	5196	59.86	-13	-44.66	7.05	-37.61	-24.61
3	6928	57.21	-13	-45.12	5.11	-40.01	-27.01
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3464	48.85	-13	-54.31	7.80	-46.51	-33.51
2	5196	51.41	-13	-53.11	7.05	-46.06	-33.06
3	6928	53.25	-13	-49.08	5.11	-43.97	-30.97

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. $\text{Correction Factor (dB)} = \text{Substitution Antenna Gain (dB)} + \text{Cable Loss (dB)}$.

LTE Band 4 (Channel Bandwidth 20MHz):

MODE	TX channel 20175	FREQUENCY RANGE	Above 1000MHz
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3464	51.94	-13	-51.22	7.80	-43.42	-30.42
2	5196	61.35	-13	-43.17	7.05	-36.12	-23.12
3	6928	56.98	-13	-45.35	5.11	-40.24	-27.24
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3464	49.6	-13	-53.56	7.80	-45.76	-32.76
2	5196	52.12	-13	-52.40	7.05	-45.35	-32.35
3	6928	53.34	-13	-48.99	5.11	-43.88	-30.88

REMARKS:

1. $EIRP(dBm) = S.G \text{ Power Value (dBm)} + \text{Correction Factor (dB)}$.
2. $\text{Correction Factor (dB)} = \text{Substitution Antenna Gain (dB)} + \text{Cable Loss (dB)}$.

5 INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

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

6 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No modifications were made to the EUT by the lab during the test.

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