



# FCC TEST REPORT

## (PART 27)

**REPORT NO.:** RF141218E07-2

**MODEL NO.:** T77W595

**FCC ID:** MCLT77W595

**RECEIVED:** Dec. 18, 2014

**TESTED:** Jan. 08 to 15, 2015

**ISSUED:** Jan. 27, 2015

**APPLICANT:** HON HAI PRECISION IND. CO., LTD.

**ADDRESS:** 5F-1,5 Hsin-An Road Hsinchu, Science-Based Industrial Park Taiwan, R.O.C.

**ISSUED BY:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory

**LAB ADDRESS:** No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.

**TEST LOCATION (1):** No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.

**TEST LOCATION (2):** No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan, R.O.C.

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## RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF141218E07-2	Original release	Jan. 27, 2015



# 1 CERTIFICATION

**PRODUCT:** LTE Cat4 PCI Express M.2 Module  
**MODEL NO.:** T77W595  
**BRAND:** FOXCONN  
**APPLICANT:** HON HAI PRECISION IND. CO., LTD.  
**TESTED:** Jan. 08 to 15, 2015  
**TEST SAMPLE:** ENGINEERING SAMPLE  
**TEST STANDARDS:** FCC Part 27, Subpart C, L  
FCC Part 2

The above equipment (model: T77W595) 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 :** Phoenix Huang , **Date:** Jan. 27, 2015  
( Phoenix Huang, Specialist )

**Approved by :** May Chen , **Date:** Jan. 27, 2015  
( May Chen, Manager )



## 2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

WCDMA			
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 -15.04dB at 17326MHz.

LTE Band 4			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
2.1046 27.50(d)(4)	Maximum Peak Output 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 -31.59dB at 30.53MHz.



LTE BAND 12			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
2.1046 27.50(C)(10)	Maximum Peak Output Power	PASS	Meet the requirement of limit.
2.1055 27.54	Frequency Stability	PASS	Meet the requirement of limit.
2.1049 27.53(g)	Occupied Bandwidth	PASS	Meet the requirement of limit.
27.50(d)(5)	Peak to Average Ratio	PASS	Meet the requirement of limit.
27.53(g)	Band Edge Measurements	PASS	Meet the requirement of limit.
2.1051 27.53(g)	Conducted Spurious Emissions	PASS	Meet the requirement of limit.
2.1053 27.53(g)	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -8.95dB at 1415MHz.

LTE BAND 13			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
2.1046 27.50(C)(10)	Maximum Peak Output Power	PASS	Meet the requirement of limit.
2.1055 27.54	Frequency Stability	PASS	Meet the requirement of limit.
2.1049 27.53(g)	Occupied Bandwidth	PASS	Meet the requirement of limit.
27.50(d)(5)	Peak to Average Ratio	PASS	Meet the requirement of limit.
27.53(g)	Band Edge Measurements	PASS	Meet the requirement of limit.
2.1051 27.53(g)	Conducted Spurious Emissions	PASS	Meet the requirement of limit.
2.1053 27.53(g)	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -30.78dB at 32.36MHz.



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LTE Band 17			
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT	REMARK
2.1046 27.50(C)(10)	Maximum Peak Output Power	PASS	Meet the requirement of limit.
2.1055 27.54	Frequency Stability	PASS	Meet the requirement of limit.
2.1049 27.53(g)	Occupied Bandwidth	PASS	Meet the requirement of limit.
27.50(d)(5)	Peak to Average Ratio	PASS	Meet the requirement of limit.
27.53(g)	Band Edge Measurements	PASS	Meet the requirement of limit.
2.1051 27.53(g)	Conducted Spurious Emissions	PASS	Meet the requirement of limit.
2.1053 27.53(g)	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -30.51dB at 31.24MHz.

## 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 ~ 1GHz	5.43 dB
	1GHz ~6GHz	3.72 dB
	6GHz ~ 18GHz	4.00 dB
	18GHz ~ 40GHz	4.11 dB

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





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## 2.2 TEST SITE AND INSTRUMENTS

For radiated spurious emissions test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Aug. 11, 2014	Aug. 10, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 27, 2014	Feb. 26, 2015
RF Cable	NA	CHHCAB_001	Oct. 05, 2014	Oct. 04, 2015
Horn_Antenna AISI	AIH.8018	0000220091110	Aug. 26, 2014	Aug. 25, 2015
Pre-Amplifier Agilent	8449B	300801923	Oct. 28, 2014	Oct. 27, 2015
RF Cable	NA	131206 131215 SNMY23685/4	Jan. 17, 2014	Jan. 16, 2015
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier EMCI	EMC184045	980143	Jan. 17, 2014	Jan. 16, 2015
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Aug. 26, 2014	Aug. 25, 2015
RF Cable	NA	RF104-121 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	NA	NA	NA

**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: Jan. 08 to 15, 2015



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**For other test items:**

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSP 40	100037	Oct. 30, 2014	Oct. 29, 2015
Spectrum Analyzer Agilent	E4446A	MY48250253	Dec. 18, 2014	Dec. 17, 2015
AC Power Source EXTECH Electronics	6502	1140503	NA	NA
Temperature & Humidity Chamber TERCHY	MHU-225AU	911033	Dec. 08, 2014	Dec. 07, 2015
DC Power Supply GOOD WILL INSTRUMENT CO., LTD.	GPC - 3030D	7700087	NA	NA
ESG Vector signal generator Agilent	E4438C	MY47271330 506 602 UNJ	Apr. 28, 2014	Apr. 27, 2015
Upgrade the software license on current E4438C ESG Agilent	E4438CK-403	ESG E4_010004	NA	NA
ESG Vector signal generator Agilent	E4438C	MY45094468/ 005 506 602 UK6 UNJ	Dec. 05, 2014	Dec. 04, 2015
Upgrade the software license on current E4438C ESG Agilent	E4438CK-403	ESG E4_010001	NA	NA
Power meter Anritsu	ML2495A	0824006	May 22, 2014	May 21, 2015
Power sensor Anritsu	MA2411B	0738172	May 22, 2014	May 21, 2015
Software	ADT_RF Test Software V6.6.5.3	NA	NA	NA
Universal Radio Communication Tester R&S	CMU200	121040	Dec. 16, 2014	Dec. 15, 2015
Radio Communication Analyzer Anritsu	MT8820C	6201127458	Mar. 05, 2014	Mar. 04, 2015

- 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: Jan. 13, 2015



### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	LTE Cat4 PCI Express M.2 Module	
<b>MODEL NO.</b>	T77W595	
<b>POWER SUPPLY</b>	3.3Vdc from host equipment	
<b>MODULATION TYPE</b>	<b>WCDMA</b>	QPSK, BPSK
	<b>LTE Band 4</b>	QPSK, 16QAM
	<b>LTE Band 12</b>	QPSK, 16QAM
	<b>LTE Band 13</b>	QPSK, 16QAM
	<b>LTE Band 17</b>	QPSK, 16QAM
<b>FREQUENCY RANGE</b>	<b>WCDMA</b>	1712.4MHz ~1752.6MHz
	<b>LTE Band 4 Channel Bandwidth: 1.4MHz</b>	1710.7MHz ~1754.3MHz
	<b>LTE Band 4 Channel Bandwidth: 3MHz</b>	1711.5MHz ~1753.5MHz
	<b>LTE Band 4 Channel Bandwidth: 5MHz</b>	1712.5MHz ~1752.5MHz
	<b>LTE Band 4 Channel Bandwidth: 10MHz</b>	1715.0MHz ~1750.0MHz
	<b>LTE Band 4 Channel Bandwidth: 15MHz</b>	1717.5MHz ~1747.5MHz
	<b>LTE Band 4 Channel Bandwidth: 20MHz</b>	1720.0MHz ~1745.0MHz
	<b>LTE Band 12 Channel Bandwidth: 1.4MHz</b>	699.7MHz ~ 715.3MHz
	<b>LTE Band 12 Channel Bandwidth: 3MHz</b>	700.5MHz ~ 714.5MHz
	<b>LTE Band 12 Channel Bandwidth: 5MHz</b>	701.5MHz ~ 713.5MHz
	<b>LTE Band 12 Channel Bandwidth: 10MHz</b>	704.0MHz ~ 711.0MHz
	<b>LTE Band 13 Channel Bandwidth: 5MHz</b>	779.5MHz ~ 784.5MHz
	<b>LTE Band 13 Channel Bandwidth: 10MHz</b>	782.0MHz
	<b>LTE Band 17 Channel Bandwidth: 5MHz</b>	706.5MHz ~ 713.5MHz
	<b>LTE Band 17 Channel Bandwidth: 10MHz</b>	709MHz ~ 711MHz



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<b>EMISSION DESIGNATOR</b>	<b>WCDMA</b>	4M18F9W
	<b>LTE Band 4 Channel Bandwidth: 1.4MHz</b>	QPSK: 1M09G7D
		16QAM: 1M09W7D
	<b>LTE Band 4 Channel Bandwidth: 3MHz</b>	QPSK: 2M70G7D
		16QAM: 2M70W7D
	<b>LTE Band 4 Channel Bandwidth: 5MHz</b>	QPSK: 4M52G7D
		16QAM: 4M50W7D
	<b>LTE Band 4 Channel Bandwidth: 10MHz</b>	QPSK: 9M00G7D
		16QAM: 8M97W7D
	<b>LTE Band 4 Channel Bandwidth: 15MHz</b>	QPSK: 13M6G7D
		16QAM: 13M6W7D
	<b>LTE Band 4 Channel Bandwidth: 20MHz</b>	QPSK: 18M0G7D
		16QAM: 18M0W7D
	<b>LTE Band 12 Channel Bandwidth: 1.4MHz</b>	QPSK: 1M10G7D
		16QAM: 1M10W7D
	<b>LTE Band 12 Channel Bandwidth: 3MHz</b>	QPSK: 2M70G7D
		16QAM: 2M70W7D
	<b>LTE Band 12 Channel Bandwidth: 5MHz</b>	QPSK: 4M52G7D
		16QAM: 4M52W7D
	<b>LTE Band 12 Channel Bandwidth: 10MHz</b>	QPSK: 9M00G7D
16QAM: 9M03W7D		
<b>LTE Band 13 Channel Bandwidth: 5MHz</b>	QPSK: 4M50G7D	
	16QAM: 4M53W7D	
<b>LTE Band 13 Channel Bandwidth: 10MHz</b>	QPSK: 8M97G7D	
	16QAM: 8M97W7D	
<b>LTE Band 17 Channel Bandwidth: 5MHz</b>	QPSK: 4M52G7D	
	16QAM: 4M52W7D	
<b>LTE Band 17 Channel Bandwidth: 10MHz</b>	QPSK: 9M00G7D	
	16QAM: 8M97W7D	



<b>MAX. EIRP POWER</b>	<b>WCDMA</b>	609.5mW
	<b>LTE Band 4 Channel Bandwidth: 1.4MHz</b>	614.2mW
	<b>LTE Band 4 Channel Bandwidth: 3MHz</b>	635.8mW
	<b>LTE Band 4 Channel Bandwidth: 5MHz</b>	667.3mW
	<b>LTE Band 4 Channel Bandwidth: 10MHz</b>	664.2mW
	<b>LTE Band 4 Channel Bandwidth: 15MHz</b>	673.5mW
	<b>LTE Band 4 Channel Bandwidth: 20MHz</b>	679.7mW
<b>MAX. ERP POWER</b>	<b>LTE Band 12 Channel Bandwidth: 1.4MHz</b>	534.6mW
	<b>LTE Band 12 Channel Bandwidth: 3MHz</b>	489.8mW
	<b>LTE Band 12 Channel Bandwidth: 5MHz</b>	482.0mW
	<b>LTE Band 12 Channel Bandwidth: 10MHz</b>	478.7mW
	<b>LTE Band 13 Channel Bandwidth: 5MHz</b>	553.8mW
	<b>LTE Band 13 Channel Bandwidth: 10MHz</b>	579.9mW
	<b>LTE Band 17 Channel Bandwidth: 5MHz</b>	349.9mW
	<b>LTE Band 17 Channel Bandwidth: 10MHz</b>	399.9mW
	<b>ANTENNA TYPE</b>	Refer to NOTE
<b>DATA CABLE</b>	NA	
<b>I/O PORTS</b>	Refer to users' manual	
<b>ACCESSORY DEVICES</b>	NA	

**Note:**

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

Ant. Set	Transmitter Circuit	Brand	Model	Operation Band	Ant. Gain(dBi) <including cable loss>	Frequency range (MHz ~ MHz)	Ant. Type	Connecter Type
LTE 1	Main	NA	NA	LTE(4G) B12 / B17	5.19	699 ~ 716	PIFA	I-PEX MHF IV
				LTE(4G) B28	5.2	703 ~ 748		
	Aux			LTE(4G) B12 / B17	5.19	699 ~ 716		
				LTE(4G) B28	5.2	703 ~ 748		

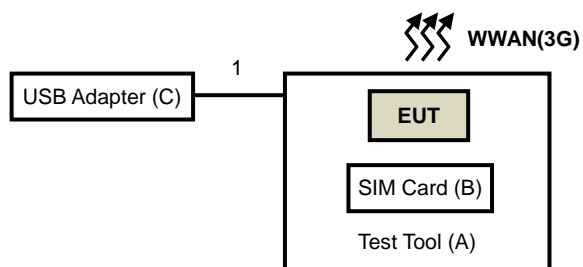


Ant. Set	Transmitter Circuit	Brand	Model	Operation Band	Ant. Gain(dBi) <including cable loss>	Frequency range (MHz ~ MHz)	Ant. Type	Connecter Type
LTE 2	Main	NA	NA	LTE(4G) B13	6.14	777 ~ 787	PIFA	I-PEX MHF IV
				LTE(4G) B20	3.77	832 ~ 862		
				CDMA(3G) BC10	3.22	816 ~ 824		
				LTE(4G) B26	3.4	814 ~ 849		
				WCDMA(3G) B5 / GSM850(2G) / LTE(4G) B5 / CDMA(3G) BC0	3.4	824 ~ 849		
				WCDMA(3G) B8 / E-GSM900(2G) / LTE(4G) B8	4.39	880 ~ 915		
	Aux			LTE(4G) B13	6.14	777 ~ 787		
				LTE(4G) B20	3.77	832 ~ 862		
				CDMA(3G) BC10	3.22	816 ~ 824		
				LTE(4G) B26	3.4	814 ~ 849		
				WCDMA(3G) B5 / GSM850(2G) / LTE(4G) B5 / CDMA(3G) BC0	3.4	824 ~ 849		
				WCDMA(3G) B8 / E-GSM900(2G) / LTE(4G) B8	4.39	880 ~ 915		
LTE 3	Main	NA	NA	WCDMA(3G) B2 / LTE(4G) B2 / B25 / PCS1900(2G) / CDMA(3G) BC1	3.62	1850 to 1915	PIFA	I-PEX MHF IV
				WCDMA(3G) B4 / DCS1800(2G) / LTE(4G) B3 / B4	4.25	1710 to 1785		
				LTE(4G) B7	4.37	2500 to 2570		
				WCDMA(3G) B1/ LTE(4G) B1	3.82	1920 to 1980		
				GPS	2.19	1575.42 ~ 1602		
				WCDMA(3G) B2 / LTE(4G) B2 / B25 / PCS1900(2G) / CDMA(3G) BC1	3.62	1850 to 1915		
	Aux			WCDMA(3G) B4 / DCS1800(2G) / LTE(4G) B3 / B4	4.25	1710 to 1785		
				LTE(4G) B7	4.37	2500 to 2570		
				WCDMA(3G) B1/ LTE(4G) B1	3.82	1920 to 1980		
				GPS	2.19	1575.42 ~ 1602		

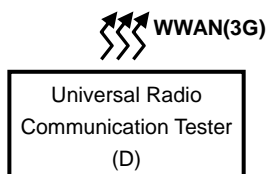
2. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

### 3.2 CONFIGURATION OF SYSTEM UNDER TEST

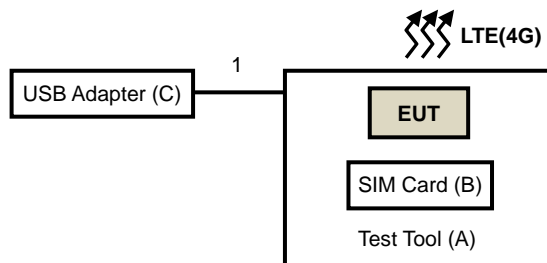
For WCDMA mode:



-----  
Remote site



For LTE mode:



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Remote site







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### 3.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units.

No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	Test Tool	FOXCONN	NA	NA	NA	Supplied by Client
B	SIM Card	NA	NA	NA	NA	Provided by Lab
C	USB Adapter	NICELINK	US-T128	NA	NA	Provided by Lab
D	Universal Radio Communication Tester (For WCDMA mode)	R&S	CMU200	121040	NA	Provided by Lab
	Radio Communication Analyzer (For LTE mode)	Anritsu	MT8820C	6201127458	NA	Provided by Lab

**NOTE:**

1. All power cords of the above support units are non-shielded (1.8 m).

No.	Cable	Qty.	Length (m)	Shielded (Yes/ No)	Cores (Number)	Remark
1	DC	1	1	No	0	Provided by Lab



### 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. Following channel(s) was (were) selected for the final test as listed below:

#### WCDMA (Band IV)

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
BAND EDGE	1312 to 1513	1312, 1513	WCDMA
CONDCUDED EMISSION	1312 to 1513	1413	WCDMA
RADIATED EMISSION	1312 to 1513	1413	WCDMA



**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 / 16QAM	1 RB / 2 RB Offset
	19965 to 20385	19965, 20175, 20385	3MHz	QPSK / 16QAM	1 RB / 7 RB Offset
	19975 to 20375	19975, 20175, 20375	5MHz	QPSK / 16QAM	1 RB / 12 RB Offset
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK / 16QAM	1 RB / 24 RB Offset
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK / 16QAM	1 RB / 37 RB Offset
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK / 16QAM	1 RB / 50 RB Offset

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



TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
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	19975, 20375	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
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

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



**LTE Band 12**

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
ERP	23017 to 23173	23017, 23095, 23173	1.4MHz	QPSK	1 RB / 0 RB Offset
	23025 to 23165	23025, 23095, 23165	3MHz	QPSK	1 RB / 0 RB Offset
	23035 to 23155	23035, 23095, 23155	5MHz	QPSK	1 RB / 0 RB Offset
	23060 to 23130	23060, 23095, 23130	10MHz	QPSK	1 RB / 0 RB Offset
FREQUENCY STABILITY	23017 to 23173	23095	1.4MHz	QPSK	1 RB / 0 RB Offset
	23025 to 23165	23095	3MHz	QPSK	1 RB / 0 RB Offset
	23035 to 23155	23095	5MHz	QPSK	1 RB / 0 RB Offset
	23060 to 23130	23095	10MHz	QPSK	1 RB / 0 RB Offset
OCCUPIED BANDWIDTH	23017 to 23173	23017, 23095, 23173	1.4MHz	QPSK, 16QAM	6 RB / 0 RB Offset
	23025 to 23165	23025, 23095, 23165	3MHz	QPSK, 16QAM	15 RB / 0 RB Offset
	23035 to 23155	23035, 23095, 23155	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
	23060 to 23130	23060, 23095, 23130	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset
PEAK TO AVERAGE RATIO	23017 to 23173	23017, 23095, 23173	1.4MHz	QPSK / 16QAM	1 RB / 2 RB Offset
	23025 to 23165	23025, 23095, 23165	3MHz	QPSK / 16QAM	1 RB / 7 RB Offset
	23035 to 23155	23035, 23095, 23155	5MHz	QPSK / 16QAM	1 RB / 12 RB Offset
	23060 to 23130	23060, 23095, 23130	10MHz	QPSK / 16QAM	1 RB / 24 RB Offset
BAND EDGE	23017 to 23173	23017, 23173	1.4MHz	QPSK	1 RB / 0 RB Offset
					6 RB / 0 RB Offset
	23025 to 23165	23025, 23165	3MHz	QPSK	1 RB / 0 RB Offset
					15 RB / 0 RB Offset
	23035 to 23155	23035, 23155	5MHz	QPSK	1 RB / 0 RB Offset
					25 RB / 0 RB Offset
	23060 to 23130	23060, 23130	10MHz	QPSK	1 RB / 0 RB Offset
					50 RB / 0 RB Offset
CONDCUDED EMISSION	23017 to 23173	23095	1.4MHz	QPSK	1 RB / 0 RB Offset
	23025 to 23165	23095	3MHz	QPSK	1 RB / 0 RB Offset
	23035 to 23155	23095	5MHz	QPSK	1 RB / 0 RB Offset
	23060 to 23130	23095	10MHz	QPSK	1 RB / 0 RB Offset
RADIATED EMISSION	23017 to 23173	23095	1.4MHz	QPSK	1 RB / 0 RB Offset
	23025 to 23165	23095	3MHz	QPSK	1 RB / 0 RB Offset
	23035 to 23155	23095	5MHz	QPSK	1 RB / 0 RB Offset
	23060 to 23130	23095	10MHz	QPSK	1 RB / 0 RB Offset

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



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**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, 16QAM	1 RB / 12 RB Offset
	23230	23230	10MHz	QPSK, 16QAM	1 RB / 24 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
CONDCUDED 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

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

**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, 16QAM	1 RB / 12 RB Offset
	23780 to 23800	23780, 23790, 23800	10MHz	QPSK, 16QAM	1 RB / 24 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
CONDCUDED 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

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



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**TEST CONDITION:**

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

### **3.5 EUT OPERATING CONDITIONS**

The EUT links to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.

### **3.6 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/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 699-787 MHz band are limited to 3 watts ERP

#### 4.1.2 TEST PROCEDURES

##### EIRP / ERP MEASUREMENT:

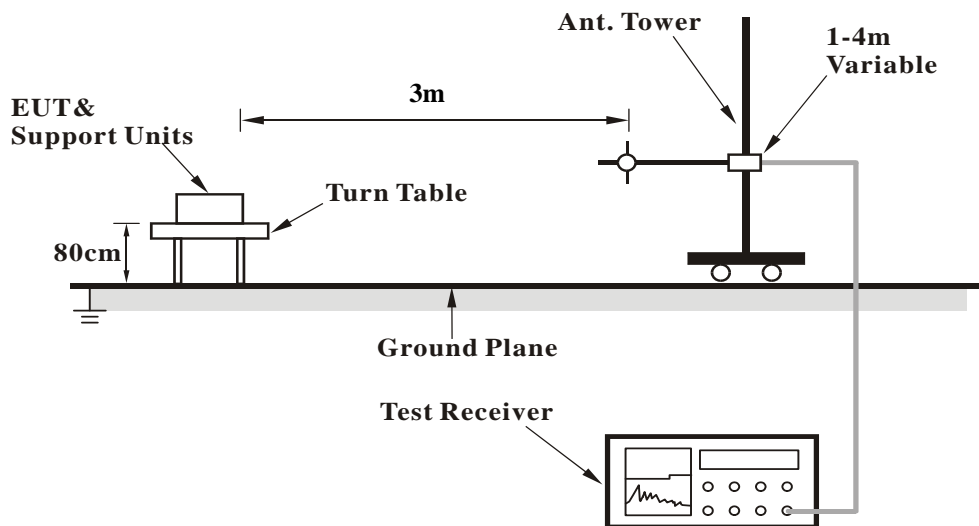
- a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 5MHz for WCDMA and 10MHz for LTE mode.
- b. Substitution method is used for EIRP measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees 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.
- 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 b. 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:

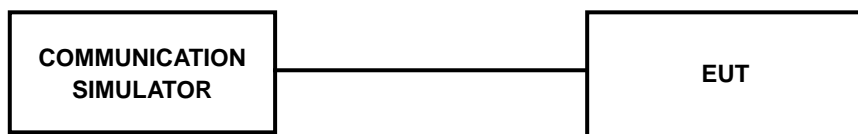
- a. The EUT was set up for the maximum power with WCDMA / LTE link data modulation and link up with simulator.
- b. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

### 4.1.3 TEST SETUP

#### EIRP / ERP MEASUREMENT:



#### CONDUCTED POWER MEASUREMENT:





#### 4.1.4 TEST RESULTS

##### AVERAGE CONDUCTED OUTPUT POWER (dBm)

Band	WCDMA		
Channel	1312	1413	1513
Frequency (MHz)	1712.4	1732.6	1752.6
RMC 12.2K	24.98	24.63	<b>25.25</b>
HSDPA Subtest-1	23.75	23.84	23.76
HSDPA Subtest-2	23.53	23.74	23.78
HSDPA Subtest-3	23.40	23.27	23.27
HSDPA Subtest-4	23.44	23.33	23.23
HSUPA Subtest-1	23.90	23.90	24.00
HSUPA Subtest-2	22.80	22.89	22.84
HSUPA Subtest-3	22.23	22.32	22.12
HSUPA Subtest-4	22.43	22.72	22.72
HSUPA Subtest-5	23.10	23.89	23.79

LTE Band / BW (Hz)	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 19957	Mid CH 20175	High CH 20393		Low CH 19957	Mid CH 20175	High CH 20393	
			1710.7 MHz	1732.5 MHz	1754.3 MHz		1710.7 MHz	1732.5 MHz	1754.3 MHz	
4 / 1.4M	1	0	23.80	<b>24.13</b>	23.74	0	22.89	<b>23.22</b>	22.83	1
	1	2	23.72	23.65	23.72	0	22.81	22.74	22.81	1
	1	5	23.57	23.61	23.37	0	22.66	22.70	22.46	1
	3	0	23.92	23.76	23.79	0	23.01	22.85	22.88	1
	3	1	23.90	23.79	23.78	0	22.99	22.88	22.87	1
	3	3	23.79	23.91	23.65	0	22.88	23.00	22.74	1
6	0	22.95	22.82	22.76	1	22.04	21.91	21.85	2	

LTE Band / BW (Hz)	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 19965	Mid CH 20175	High CH 20385		Low CH 19965	Mid CH 20175	High CH 20385	
			1711.5 MHz	1732.5 MHz	1753.5 MHz		1711.5 MHz	1732.5 MHz	1753.5 MHz	
4 / 3M	1	0	23.81	<b>23.93</b>	23.67	0	22.93	<b>23.05</b>	22.79	1
	1	7	23.74	23.67	23.74	0	22.86	22.79	22.86	1
	1	14	23.59	23.63	23.39	0	22.71	22.75	22.51	1
	8	0	22.94	22.78	22.81	1	22.06	21.90	21.93	2
	8	3	22.92	22.81	22.80	1	22.04	21.93	21.92	2
	8	7	22.82	23.15	22.76	1	21.94	22.27	21.88	2
	15	0	22.97	22.84	22.78	1	22.09	21.96	21.90	2



LTE Band / BW (Hz)	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 19975	Mid CH 20175	High CH 20375		Low CH 19975	Mid CH 20175	High CH 20375	
			1712.5 MHz	1732.5 MHz	1752.5 MHz		1712.5 MHz	1732.5 MHz	1752.5 MHz	
4 / 5M	1	0	23.88	<b>24.00</b>	23.74	0	22.97	<b>23.09</b>	22.83	1
	1	12	23.81	23.74	23.81	0	22.90	22.83	22.90	1
	1	24	23.66	23.70	23.46	0	22.75	22.79	22.55	1
	12	0	23.01	22.85	22.88	1	22.10	21.94	21.97	2
	12	6	22.99	22.88	22.87	1	22.08	21.97	21.96	2
	12	13	22.89	23.22	22.83	1	21.98	22.31	21.92	2
	25	0	23.04	22.91	22.85	1	22.13	22.00	21.94	2

LTE Band / BW (Hz)	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20000	Mid CH 20175	High CH 20350		Low CH 20000	Mid CH 20175	High CH 20350	
			1715.0 MHz	1732.5 MHz	1750.0 MHz		1715.0 MHz	1732.5 MHz	1750.0 MHz	
4 / 10M	1	0	23.94	<b>24.06</b>	23.80	0	22.98	<b>23.10</b>	22.84	1
	1	24	23.87	23.80	23.87	0	22.91	22.84	22.91	1
	1	49	23.72	23.76	23.52	0	22.76	22.80	22.56	1
	25	0	23.07	22.91	22.94	1	22.11	21.95	21.98	2
	25	12	23.05	22.94	22.93	1	22.09	21.98	21.97	2
	25	25	22.95	23.28	22.89	1	21.99	22.32	21.93	2
	50	0	23.10	22.97	22.91	1	22.14	22.01	21.95	2

LTE Band / BW (Hz)	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20025	Mid CH 20175	High CH 20325		Low CH 20025	Mid CH 20175	High CH 20325	
			1717.5 MHz	1732.5 MHz	1747.5 MHz		1717.5 MHz	1732.5 MHz	1747.5 MHz	
4 / 15M	1	0	24.03	<b>24.15</b>	23.89	0	23.03	<b>23.15</b>	22.89	1
	1	37	23.96	23.89	23.96	0	22.96	22.89	22.96	1
	1	74	23.81	23.85	23.61	0	22.81	22.85	22.61	1
	36	0	23.16	23.00	23.03	1	22.16	22.00	22.03	2
	36	19	23.14	23.03	23.02	1	22.14	22.03	22.02	2
	36	39	23.04	23.37	22.98	1	22.04	22.37	21.98	2
	75	0	23.19	23.06	23.00	1	22.19	22.06	22.00	2

LTE Band / BW (Hz)	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20050	Mid CH 20175	High CH 20300		Low CH 20050	Mid CH 20175	High CH 20300	
			1720.0 MHz	1732.5 MHz	1745.0 MHz		1720.0 MHz	1732.5 MHz	1745.0 MHz	
4 / 20M	1	0	24.11	<b>24.23</b>	23.97	0	23.06	<b>23.18</b>	22.92	1
	1	50	24.04	23.97	24.04	0	22.99	22.92	22.99	1
	1	99	23.89	23.93	23.69	0	22.84	22.88	22.64	1
	50	0	23.24	23.45	23.11	1	22.19	22.40	22.06	2
	50	25	23.22	23.11	23.10	1	22.17	22.06	22.05	2
	50	50	23.12	23.08	23.06	1	22.07	22.03	22.01	2
	100	0	23.27	23.14	23.08	1	22.22	22.09	22.03	2



LTE Band / BW (Hz)	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 23017	Mid CH 23095	High CH 23173		Low CH 23017	Mid CH 23095	High CH 23173	
			699.7 MHz	707.5 MHz	715.3 MHz		699.7 MHz	707.5 MHz	715.3 MHz	
12 / 1.4M	1	0	23.18	23.12	23.15	0	22.19	22.13	22.16	1
	1	2	23.10	23.20	23.21	0	22.11	22.21	22.22	1
	1	5	<b>23.37</b>	23.18	23.21	0	<b>22.38</b>	22.19	22.22	1
	3	0	23.33	23.17	23.20	0	22.34	22.18	22.21	1
	3	1	23.17	23.23	23.21	0	22.18	22.24	22.22	1
	3	3	23.24	23.24	23.23	0	22.25	22.25	22.24	1
	6	0	22.34	22.27	22.24	1	21.35	21.28	21.25	2

LTE Band / BW (Hz)	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 23025	Mid CH 23095	High CH 23165		Low CH 23025	Mid CH 23095	High CH 23165	
			700.5 MHz	707.5 MHz	714.5 MHz		700.5 MHz	707.5 MHz	714.5 MHz	
12 / 3M	1	0	23.22	23.16	23.19	0	22.22	22.16	22.19	1
	1	7	23.14	23.24	23.25	0	22.14	22.24	22.25	1
	1	14	<b>23.37</b>	23.21	23.24	0	<b>22.37</b>	22.21	22.24	1
	8	0	22.22	22.41	22.25	1	21.22	21.41	21.25	2
	8	3	22.21	22.27	22.25	1	21.21	21.27	21.25	2
	8	7	22.28	22.28	22.27	1	21.28	21.28	21.27	2
	15	0	22.38	22.31	22.28	1	21.38	21.31	21.28	2

LTE Band / BW (Hz)	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 23035	Mid CH 23095	High CH 23155		Low CH 23035	Mid CH 23095	High CH 23155	
			701.5 MHz	707.5 MHz	713.5 MHz		701.5 MHz	707.5 MHz	713.5 MHz	
12 / 5M	1	0	23.29	23.23	23.26	0	22.24	22.18	22.21	1
	1	12	23.21	23.31	23.32	0	22.16	22.26	22.27	1
	1	24	<b>23.44</b>	23.28	23.31	0	<b>22.39</b>	22.23	22.26	1
	12	0	22.29	22.48	22.32	1	21.24	21.43	21.27	2
	12	6	22.28	22.34	22.32	1	21.23	21.29	21.27	2
	12	13	22.35	22.35	22.34	1	21.30	21.30	21.29	2
	25	0	22.45	22.38	22.35	1	21.40	21.33	21.30	2

LTE Band / BW (Hz)	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 23060	Mid CH 23095	High CH 23130		Low CH 23060	Mid CH 23095	High CH 23130	
			704.0 MHz	707.5 MHz	711.0 MHz		704.0 MHz	707.5 MHz	711.0 MHz	
12 / 10M	1	0	23.35	23.29	23.32	0	22.27	22.21	22.24	1
	1	24	23.27	23.37	23.38	0	22.19	22.29	22.30	1
	1	49	<b>23.50</b>	23.34	23.37	0	<b>22.42</b>	22.26	22.29	1
	25	0	22.35	22.41	22.38	1	21.27	21.33	21.30	2
	25	12	22.34	22.40	22.38	1	21.26	21.32	21.30	2
	25	25	22.54	22.41	22.40	1	21.46	21.33	21.32	2
	50	0	22.51	22.44	22.41	1	21.43	21.36	21.33	2



LTE Band / BW (Hz)	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 23205	Mid CH 23230	High CH 23255		Low CH 23205	Mid CH 23230	High CH 23255	
			779.5 MHz	782.0 MHz	784.5 MHz		779.5 MHz	782.0 MHz	784.5 MHz	
13 / 5M	1	0	23.16	23.29	23.38	0	22.13	22.26	22.35	1
	1	12	23.25	23.38	23.47	0	22.22	22.35	22.44	1
	1	24	23.26	<b>23.48</b>	23.39	0	22.23	<b>22.45</b>	22.36	1
	12	0	22.31	22.44	22.53	1	21.28	21.41	21.50	2
	12	6	22.30	22.43	22.52	1	21.27	21.40	21.49	2
	12	13	22.32	22.45	22.54	1	21.29	21.42	21.51	2
	25	0	22.35	22.48	22.57	1	21.32	21.45	21.54	2

LTE Band / BW (Hz)	RB Size	RB Offset	QPSK	3GPP MPR (dB)	16QAM	3GPP MPR (dB)
			Mid CH 23230		Mid CH 23230	
			782.0 MHz		782.0 MHz	
13 / 10M	1	0	23.23	0	21.97	1
	1	24	23.43	0	22.17	1
	1	49	<b>23.44</b>	0	<b>22.18</b>	1
	25	0	22.49	1	21.23	2
	25	12	22.53	1	21.27	2
	25	25	22.56	1	21.30	2
	50	0	22.58	1	21.32	2

LTE Band / BW (Hz)	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 23755	Mid CH 23790	High CH 23825		Low CH 23755	Mid CH 23790	High CH 23825	
			706.5 MHz	710.0 MHz	713.5 MHz		706.5 MHz	710.0 MHz	713.5 MHz	
17 / 5M	1	0	23.04	23.10	23.12	0	21.96	22.02	22.04	1
	1	12	23.05	23.11	23.13	0	21.97	22.03	22.05	1
	1	24	23.08	23.14	<b>23.16</b>	0	22.00	22.06	<b>22.08</b>	1
	12	0	22.07	22.13	22.15	1	20.99	21.05	21.07	2
	12	6	22.03	22.09	22.11	1	20.95	21.01	21.03	2
	12	13	22.11	22.17	22.19	1	21.03	21.09	21.11	2
	25	0	22.02	22.08	22.10	1	20.94	21.00	21.02	2

LTE Band / BW (Hz)	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 23780	Mid CH 23790	High CH 23800		Low CH 23780	Mid CH 23790	High CH 23800	
			709.0 MHz	710.0 MHz	711.0 MHz		709.0 MHz	710.0 MHz	711.0 MHz	
17 / 10M	1	0	23.16	23.22	23.24	0	22.12	22.18	22.20	1
	1	24	23.17	23.23	23.25	0	22.13	22.19	22.21	1
	1	49	23.20	23.26	<b>23.28</b>	0	22.16	22.22	<b>22.24</b>	1
	25	0	22.19	22.25	22.27	1	21.15	21.21	21.23	2
	25	12	22.15	22.21	22.23	1	21.11	21.17	21.19	2
	25	25	22.23	22.29	22.31	1	21.19	21.25	21.27	2
	50	0	22.14	22.20	22.22	1	21.10	21.16	21.18	2



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### AVERAGE ERP / EIRP (dBm)

WCDMA					
Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)
1312	1712.4	21.2	6.4	27.7	582.1
1413	1732.6	21.2	6.4	27.6	568.9
1513	1752.6	21.4	6.4	27.9	609.5

LTE Band 4					
Channel Bandwidth: 1.4MHz / QPSK					
Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)
19957	1710.7	20.9	6.5	27.4	547.4
20175	1732.5	21.5	6.4	27.9	614.2
20393	1754.3	20.6	6.6	27.2	522.8

LTE Band 4					
Channel Bandwidth: 3MHz / QPSK					
Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)
19965	1711.5	20.8	6.5	27.3	535.0
20175	1732.5	21.6	6.4	28.0	635.8
20385	1753.5	20.6	6.6	27.1	516.8

LTE Band 4					
Channel Bandwidth: 5MHz / QPSK					
Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)
19975	1712.5	21.1	6.5	27.6	578.5
20175	1732.5	21.8	6.4	28.2	667.3
20375	1752.5	20.9	6.6	27.5	562.7



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LTE Band 4					
Channel Bandwidth: 10MHz / QPSK					
Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)
20000	1715.0	20.9	6.5	27.4	552.5
20175	1732.5	21.8	6.4	28.2	664.2
20350	1750.0	21.0	6.6	27.6	570.6

LTE Band 4					
Channel Bandwidth: 15MHz / QPSK					
Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)
20025	1717.5	21.3	6.5	27.8	604.4
20175	1732.5	21.9	6.4	28.3	673.5
20325	1747.5	20.9	6.6	27.5	560.2

LTE Band 4					
Channel Bandwidth: 20MHz / QPSK					
Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	EIRP(dBm)	EIRP(mW)
20050	1720.0	21.4	6.5	27.9	615.6
20175	1732.5	21.9	6.4	28.3	679.7
20300	1745.0	20.9	6.6	27.5	564.0





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LTE Band 12					
Channel Bandwidth: 1.4MHz / QPSK					
Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
23017	699.7	25.0	2.2	27.2	522.5
23095	707.5	24.8	2.2	27.0	498.9
23173	715.3	25.0	2.3	27.3	534.6

LTE Band 12					
Channel Bandwidth: 3MHz / QPSK					
Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
23025	700.5	24.7	2.2	26.9	489.8
23095	707.5	24.6	2.2	26.8	473.2
23165	714.5	24.5	2.3	26.8	478.7

LTE Band 12					
Channel Bandwidth: 5MHz / QPSK					
Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
23035	701.5	24.6	2.2	26.8	476.5
23095	707.5	24.4	2.2	26.6	454.0
23155	713.5	24.5	2.3	26.8	482.0

LTE Band 12					
Channel Bandwidth: 10MHz / QPSK					
Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
23060	704	24.5	2.2	26.8	473.2
23095	707.5	24.5	2.2	26.6	457.1
23130	711	24.5	2.3	26.8	478.7



LTE Band 13					
Channel Bandwidth: 5MHz / QPSK					
Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
23205	779.5	25.4	1.4	26.8	482.3
23230	782	26.0	1.5	27.4	553.8
23255	784.5	25.3	1.4	26.7	471.3

LTE Band 13					
Channel Bandwidth: 10MHz / QPSK					
Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
23230	782	26.2	1.5	27.6	579.9

LTE Band 17					
Channel Bandwidth: 5MHz / QPSK					
Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
23755	706.5	22.4	2.1	24.5	281.8
23790	710	23.1	2.2	25.2	334.9
23825	713.5	23.3	2.1	25.4	349.9

LTE Band 17					
Channel Bandwidth: 10MHz / QPSK					
Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
23780	709	23.4	2.1	25.5	354.8
23790	710	23.9	2.2	26.0	399.9
23800	711	23.4	2.1	25.6	359.7

## 4.2 FREQUENCY STABILITY MEASUREMENT

### 4.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

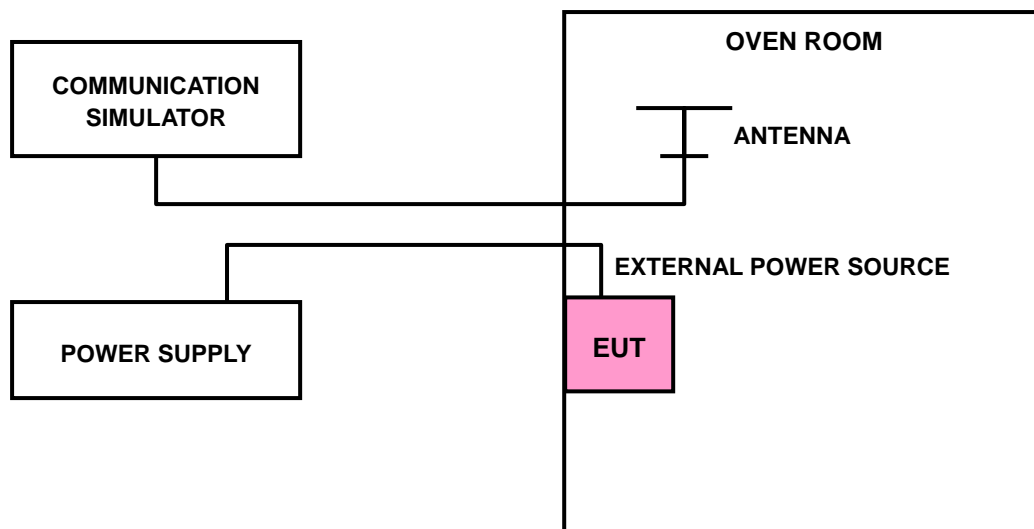
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

### 4.2.2 TEST PROCEDURE

- a. 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.
- b. EUT is connected the external power supply to control the input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- c. 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 4						
		1.4MHz	3MHz	5MHz	10MHz	15MHz	20MHz	
102	0.009	0.002	0.002	0.002	0.002	0.001	0.001	2.5
138	0.009	0.001	0.002	0.002	0.002	0.001	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 4						
		1.4MHz	3MHz	5MHz	10MHz	15MHz	20MHz	
75	0.018	0.001	0.001	0.002	0.001	0.001	0.002	2.5
70	0.016	0.002	0.002	0.002	0.002	0.001	0.001	2.5
60	0.017	0.002	0.002	0.001	0.002	0.001	0.002	2.5
50	0.017	0.002	0.001	0.002	0.002	0.001	0.001	2.5
40	0.014	0.002	0.001	0.002	0.002	0.002	0.002	2.5
30	0.013	0.001	0.001	0.002	0.002	0.002	0.002	2.5
20	0.011	0.002	0.002	0.002	0.002	0.002	0.001	2.5
10	0.012	0.002	0.002	0.002	0.002	0.001	0.002	2.5
0	0.011	0.001	0.002	0.002	0.001	0.002	0.002	2.5
-10	0.013	0.001	0.002	0.002	0.002	0.002	0.002	2.5
-20	0.015	0.001	0.002	0.001	0.001	0.001	0.001	2.5
-30	0.017	0.001	0.002	0.001	0.002	0.001	0.001	2.5



VOLTAGE (Volts)	FREQUENCY ERROR (ppm)								LIMIT (ppm)
	LTE BAND 12				LTE BAND 13		LTE BAND 17		
	1.4MHz	3MHz	5MHz	10MHz	5MHz	10MHz	5MHz	10MHz	
102	0.033	0.034	0.051	0.038	0.035	0.037	0.054	0.055	2.5
138	0.051	0.057	0.037	0.065	0.049	0.050	0.061	0.051	2.5

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

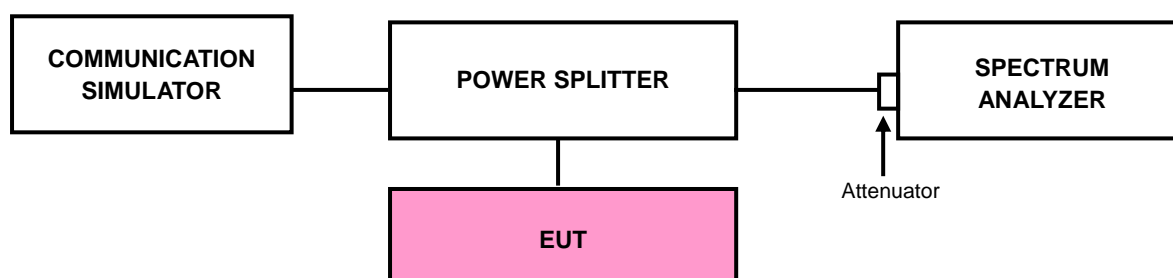
TEMP. (°C)	FREQUENCY ERROR (ppm)								LIMIT (ppm)
	LTE BAND 12				LTE BAND 13		LTE BAND 17		
	1.4MHz	3MHz	5MHz	10MHz	5MHz	10MHz	5MHz	10MHz	
75	0.047	0.047	0.059	0.054	0.050	0.046	0.062	0.032	2.5
70	0.047	0.044	0.052	0.037	0.041	0.042	0.034	0.065	2.5
60	0.065	0.044	0.065	0.065	0.052	0.047	0.037	0.039	2.5
50	0.057	0.051	0.065	0.045	0.036	0.033	0.037	0.065	2.5
40	0.057	0.058	0.055	0.035	0.037	0.029	0.063	0.039	2.5
30	0.061	0.041	0.054	0.037	0.049	0.055	0.044	0.037	2.5
20	0.064	0.059	0.058	0.054	0.056	0.043	0.041	0.059	2.5
10	0.062	0.047	0.065	0.064	0.059	0.056	0.055	0.055	2.5
0	0.051	0.044	0.048	0.058	0.033	0.036	0.041	0.037	2.5
-10	0.037	0.047	0.045	0.049	0.038	0.035	0.035	0.035	2.5
-20	0.052	0.059	0.062	0.052	0.056	0.055	0.034	0.063	2.5
-30	0.049	0.054	0.044	0.051	0.041	0.036	0.065	0.046	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

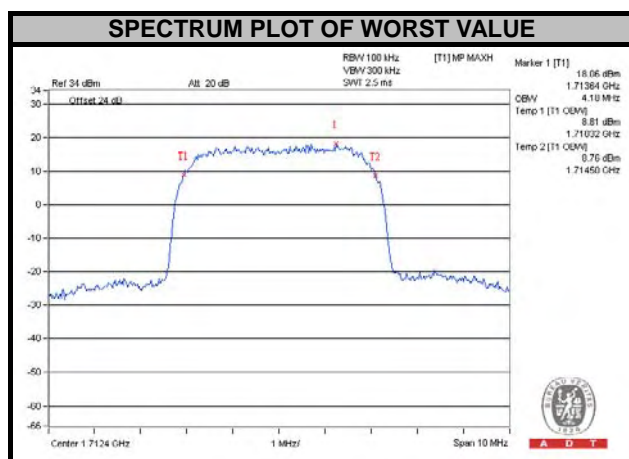


#### 4.3.3 TEST PROCEDURES

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

### 4.3.4 TEST RESULTS

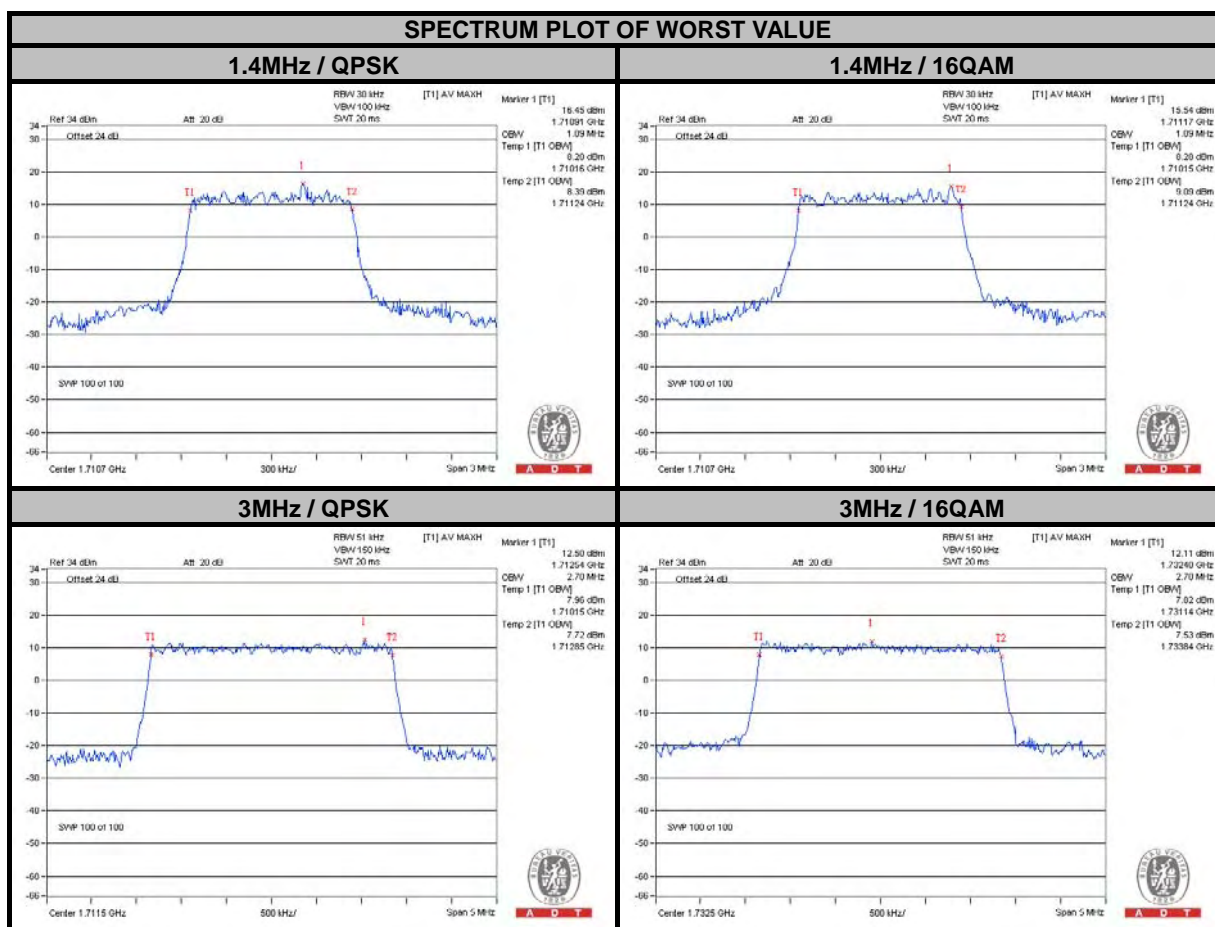
WCDMA		
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)
1312	1712.4	4.18
1413	1732.6	4.16
1513	1752.6	4.16





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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	2.70	2.69
20175	1732.5	1.09	1.09	20175	1732.5	2.69	2.70
20393	1754.3	1.09	1.09	20385	1753.5	2.69	2.69

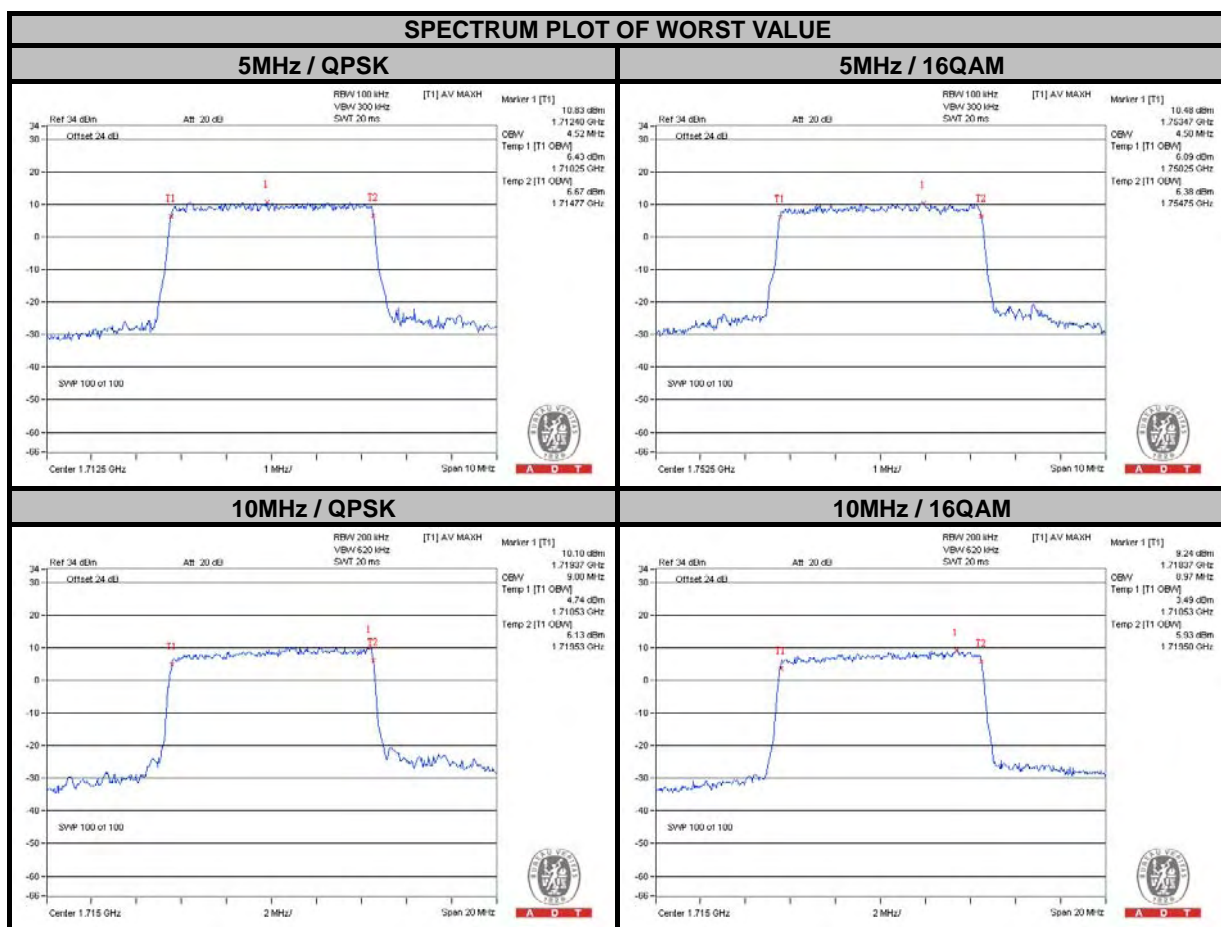






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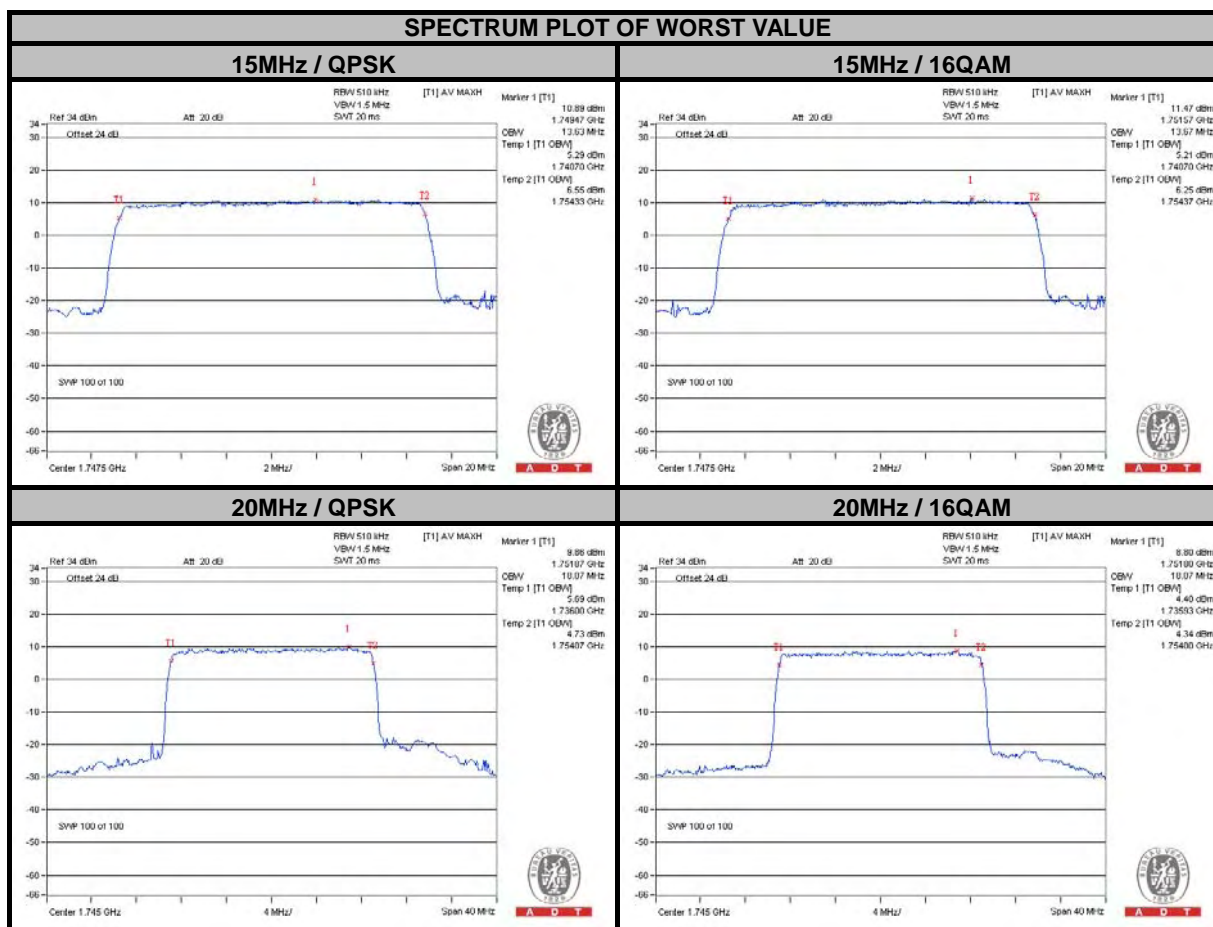
LTE BAND 4							
CHANNEL BANDWIDTH: 5MHz				CHANNEL BANDWIDTH: 10MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
19975	1712.5	4.52	4.48	20000	1715.0	9.00	8.97
20175	1732.5	4.50	4.48	20175	1732.5	8.97	8.97
20375	1752.5	4.50	4.50	20350	1750.0	8.97	8.97





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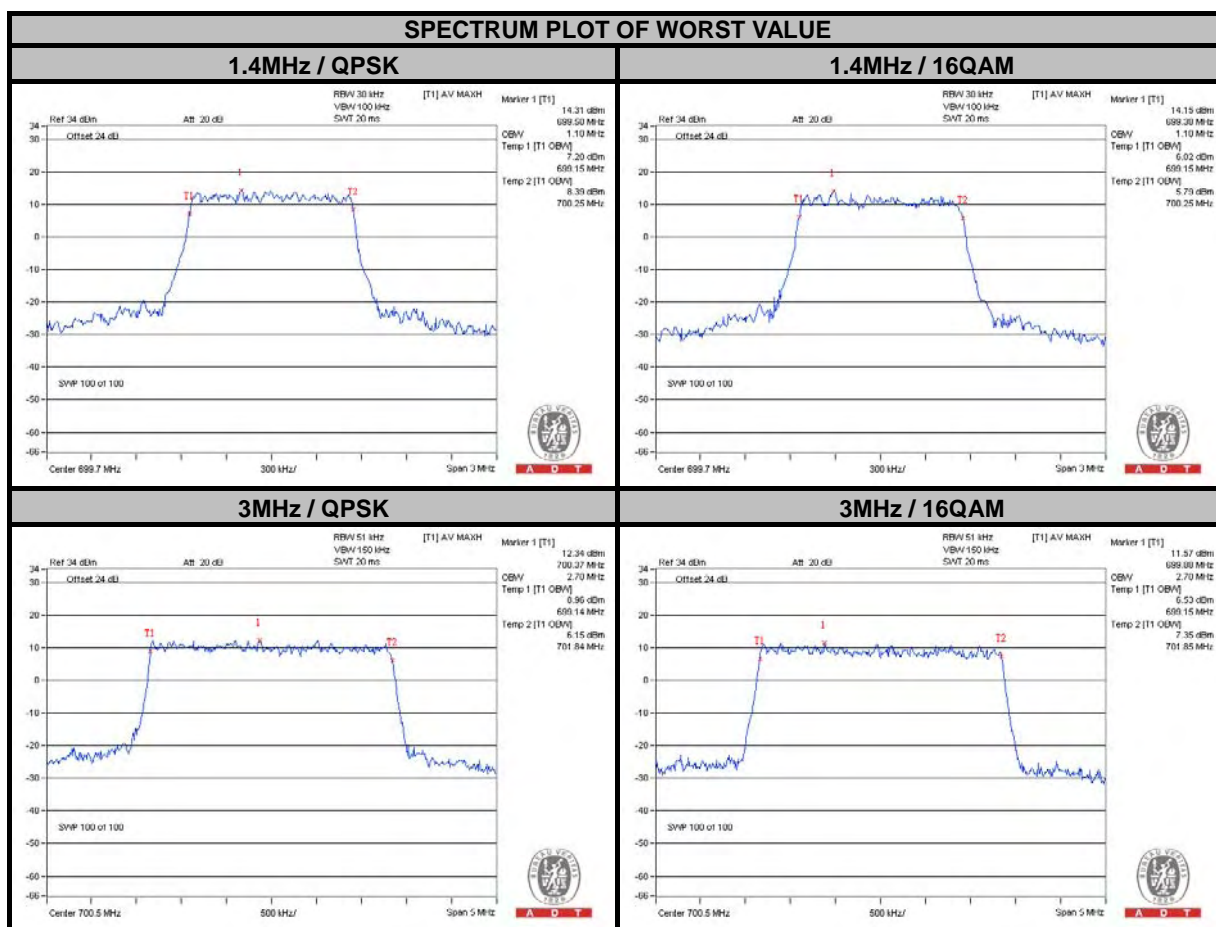
LTE BAND 4							
CHANNEL BANDWIDTH: 15MHz				CHANNEL BANDWIDTH: 20MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
20025	1717.5	13.60	13.63	20050	1720.0	17.93	17.93
20175	1732.5	13.60	13.60	20175	1732.5	18.00	17.93
20325	1747.5	13.63	13.67	20300	1745.0	18.07	18.07





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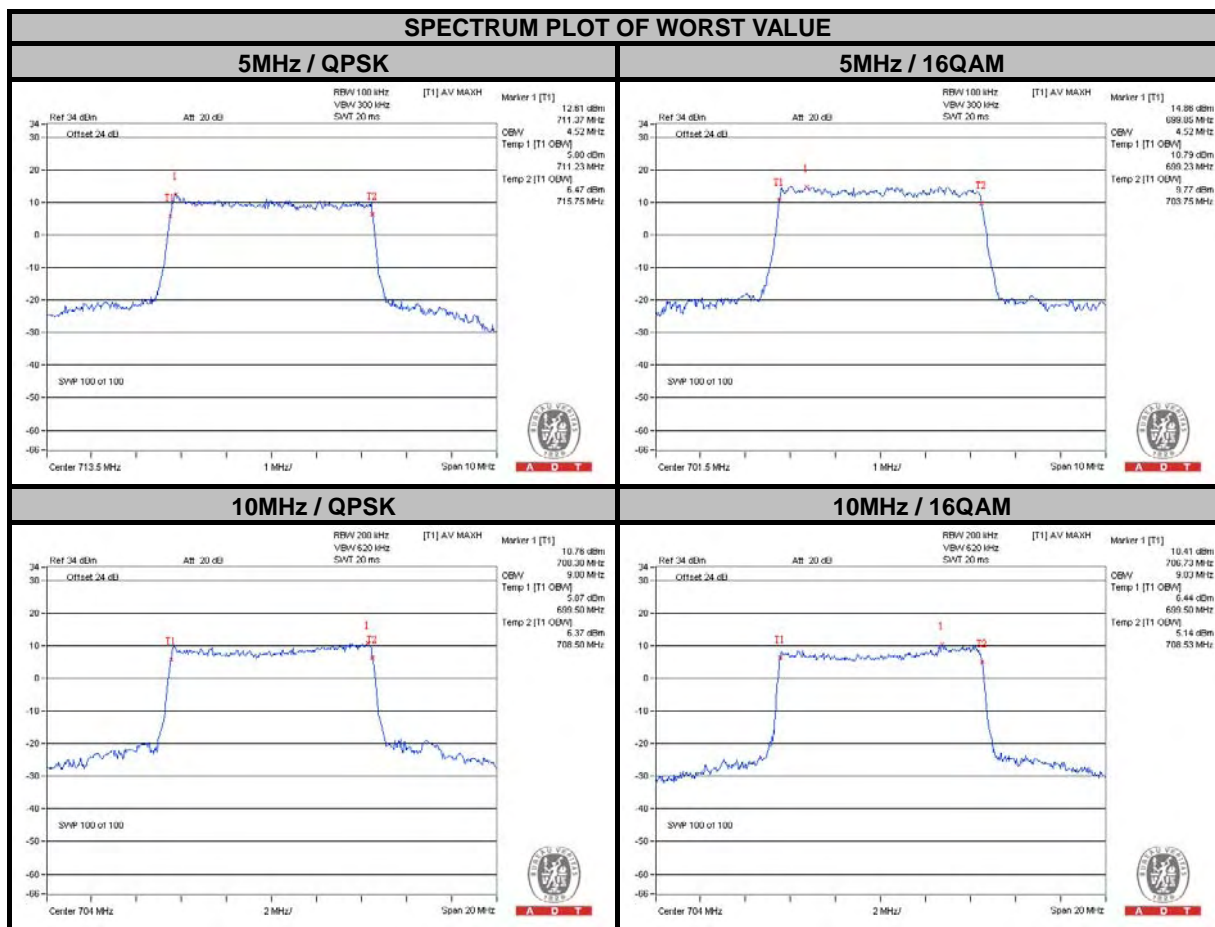
LTE BAND 12							
CHANNEL BANDWIDTH: 1.4MHz				CHANNEL BANDWIDTH: 3MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
23017	699.7	1.1	1.1	23025	700.5	2.70	2.70
23095	707.5	1.09	1.09	23095	707.5	2.70	2.69
23173	715.3	1.09	1.09	23165	714.5	2.68	2.70





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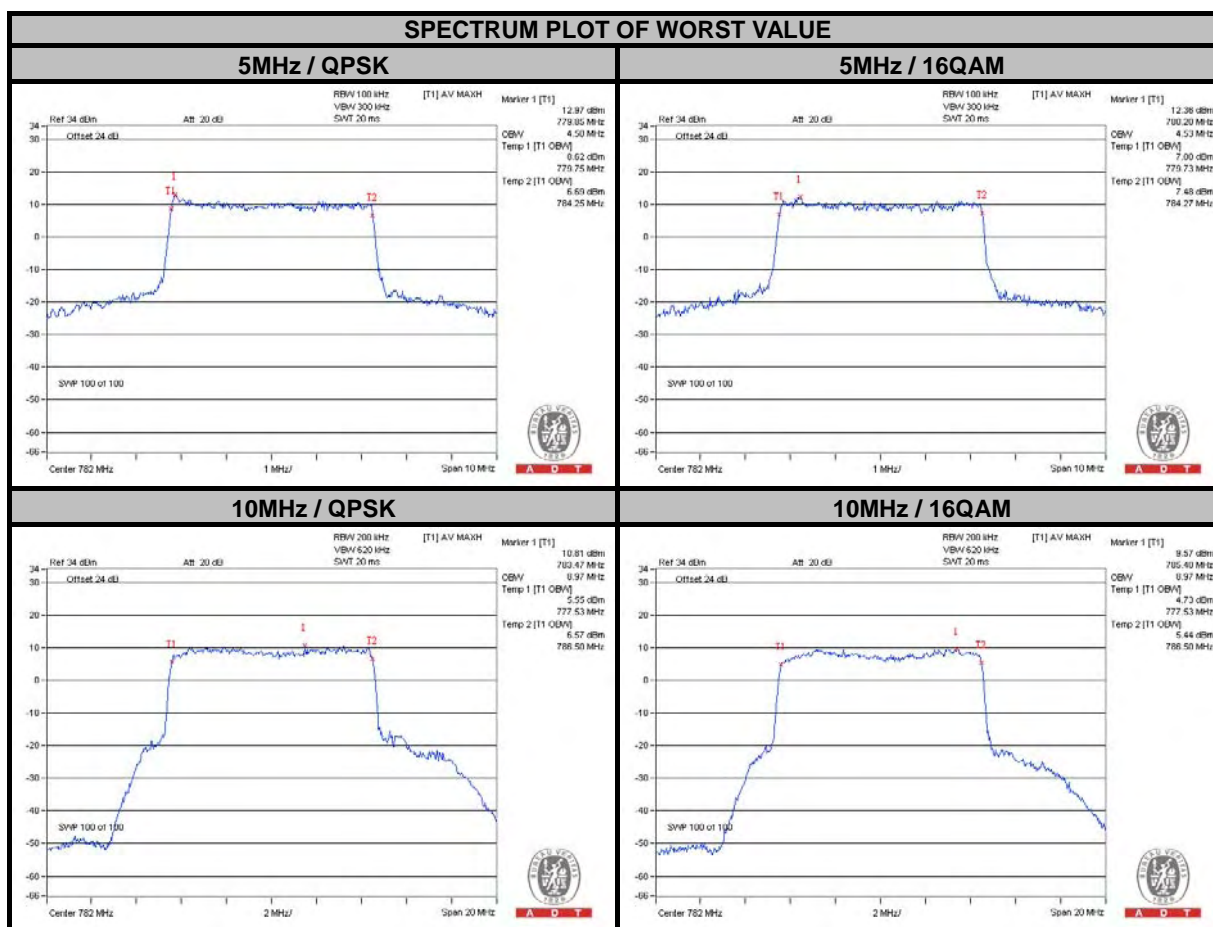
LTE BAND 12							
CHANNEL BANDWIDTH: 5MHz				CHANNEL BANDWIDTH: 10MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
23035	701.5	4.50	4.52	23060	704.0	9.00	9.03
23095	707.5	4.50	4.52	23095	707.5	8.97	8.97
23155	713.5	4.52	4.52	23130	711.0	9.00	8.97





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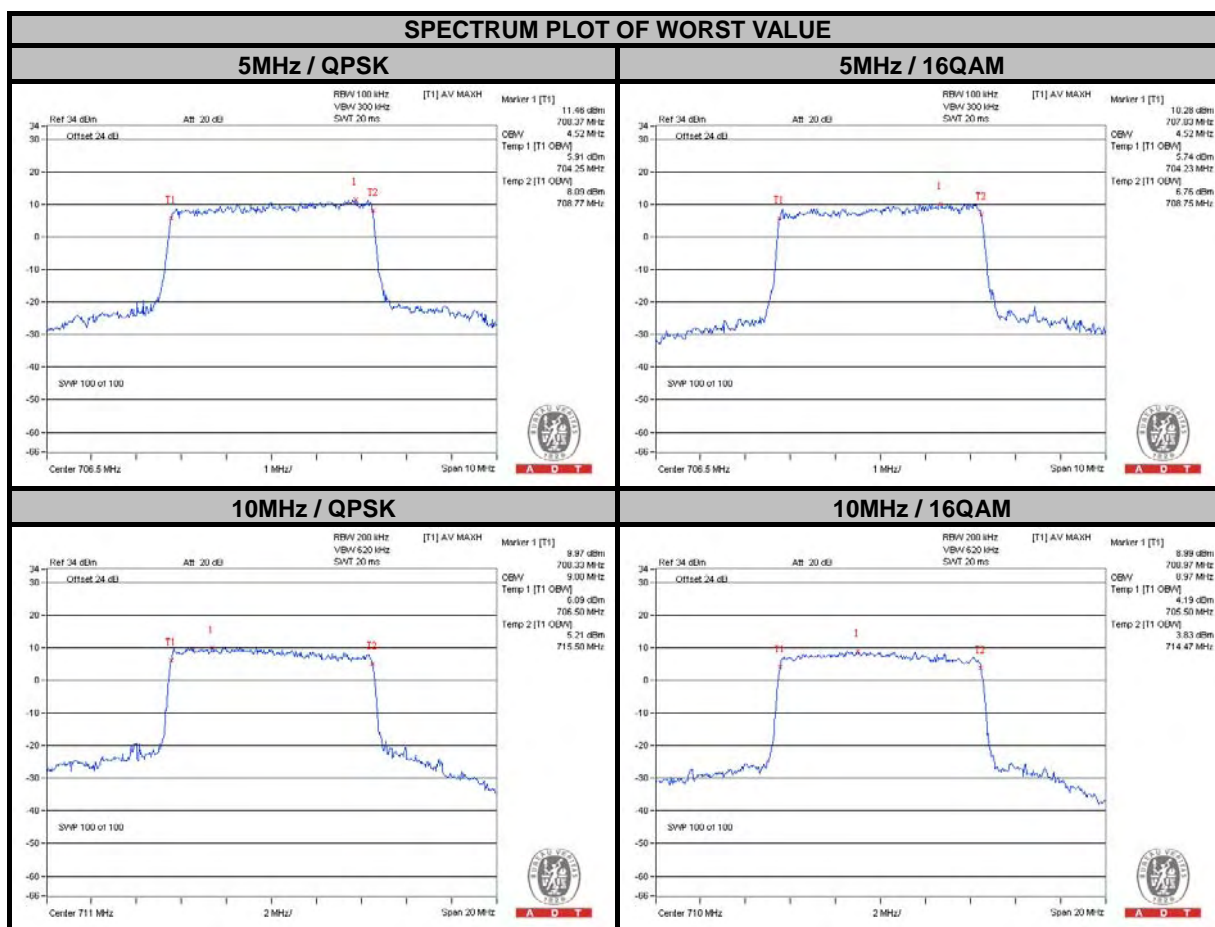
LTE BAND 13							
CHANNEL BANDWIDTH: 5MHz				CHANNEL BANDWIDTH: 10MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
23205	779.5	4.48	4.50	23230	782.0	8.97	8.97
23230	782.0	4.50	4.53				
23255	784.5	4.50	4.48				





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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	4.52	4.52	23780	709.0	8.93	8.93
23790	710.0	4.50	4.50	23790	710.0	8.97	8.97
23825	713.5	4.52	4.52	23800	711.0	9.00	8.97

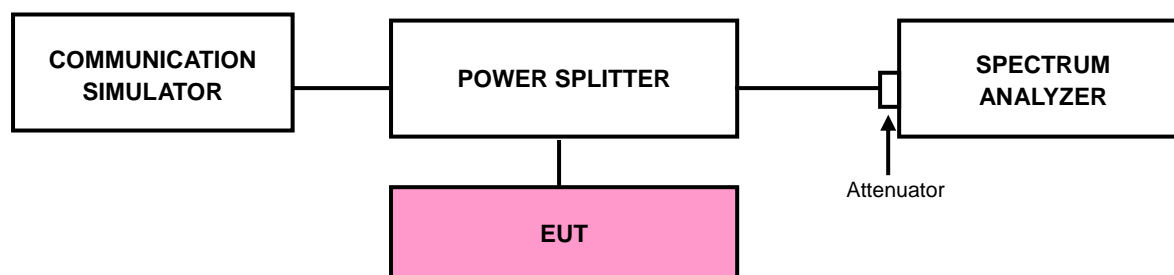


## 4.4 PEAK TO AVERAGE RATIO MEASUREMENT

### 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

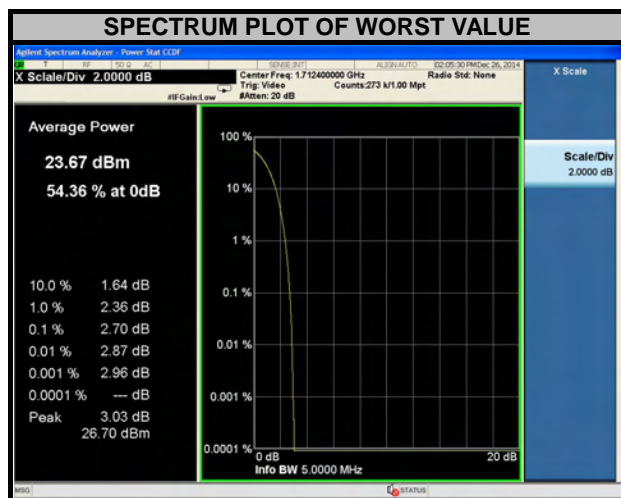
1. Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.





#### 4.4.4 TEST RESULTS

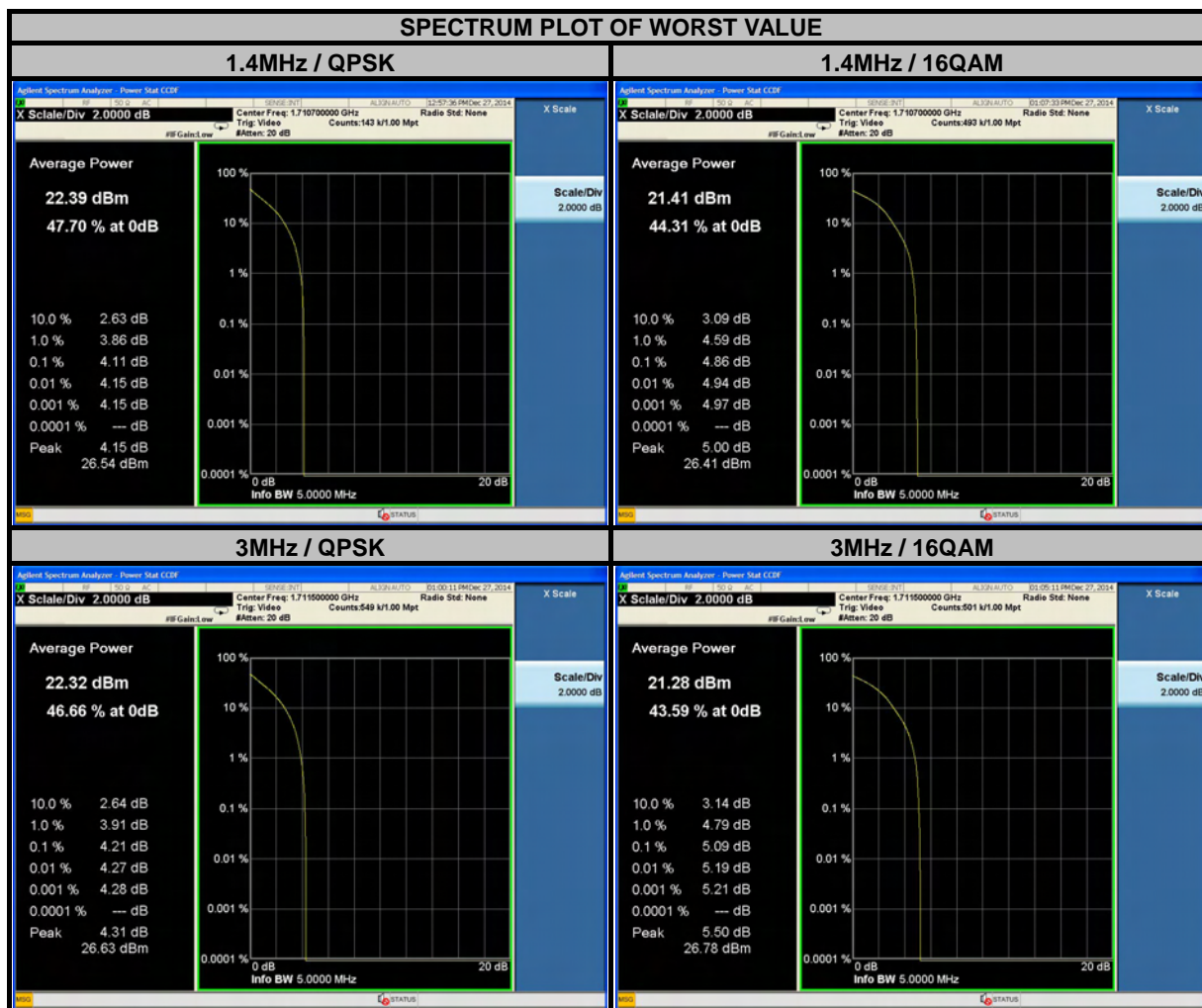
WCDMA		
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
1312	1712.4	2.7
1413	1732.6	2.03
1513	1752.6	2.65





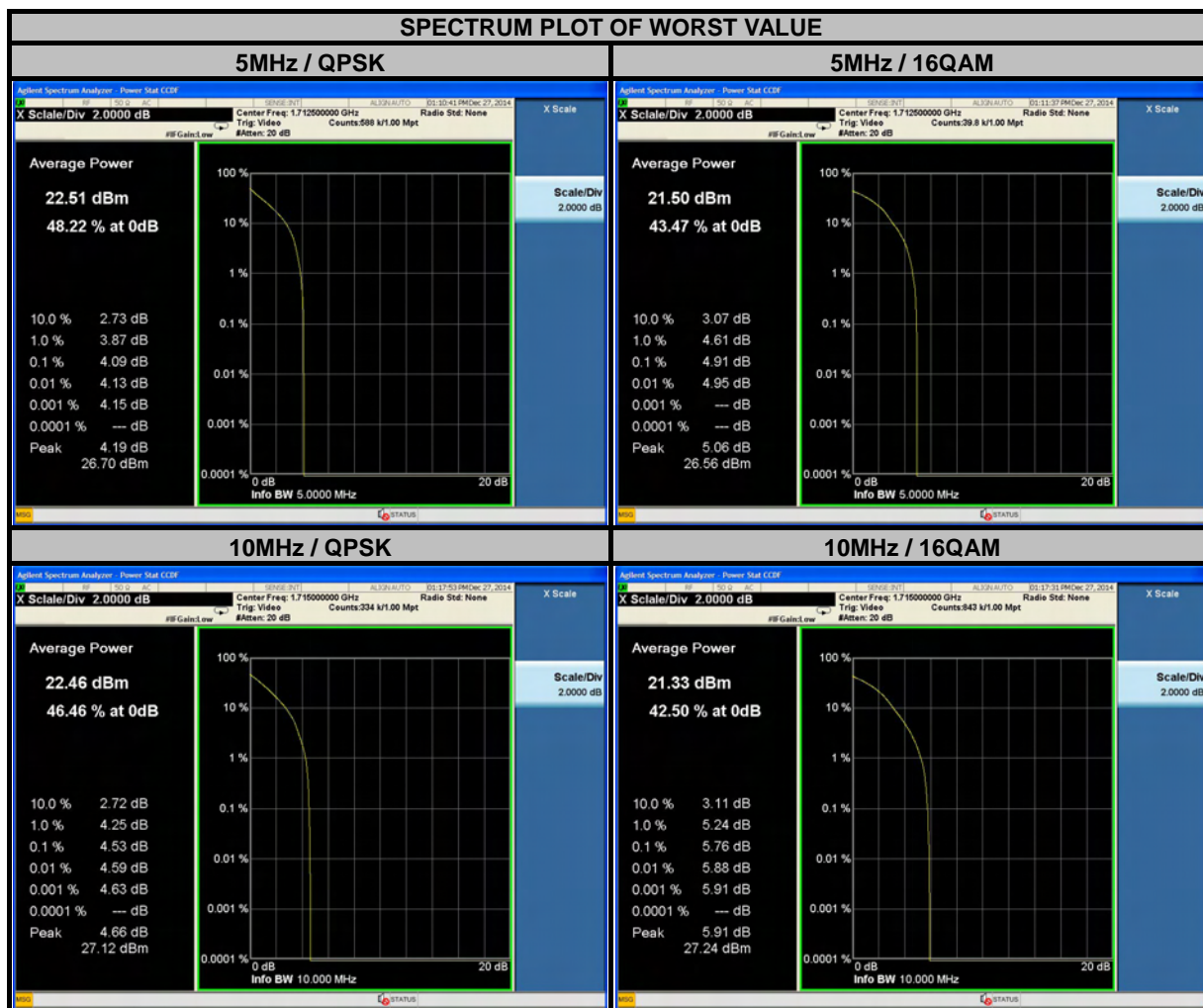


LTE BAND 4							
CHANNEL BANDWIDTH: 1.4MHz				CHANNEL BANDWIDTH: 3MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)		CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM			QPSK	16QAM
19957	1710.7	4.11	4.86	19965	1711.5	4.21	5.09
20175	1732.5	3.09	3.9	20175	1732.5	2.92	3.94
20393	1754.3	3.6	4.57	20385	1753.5	3.55	4.68



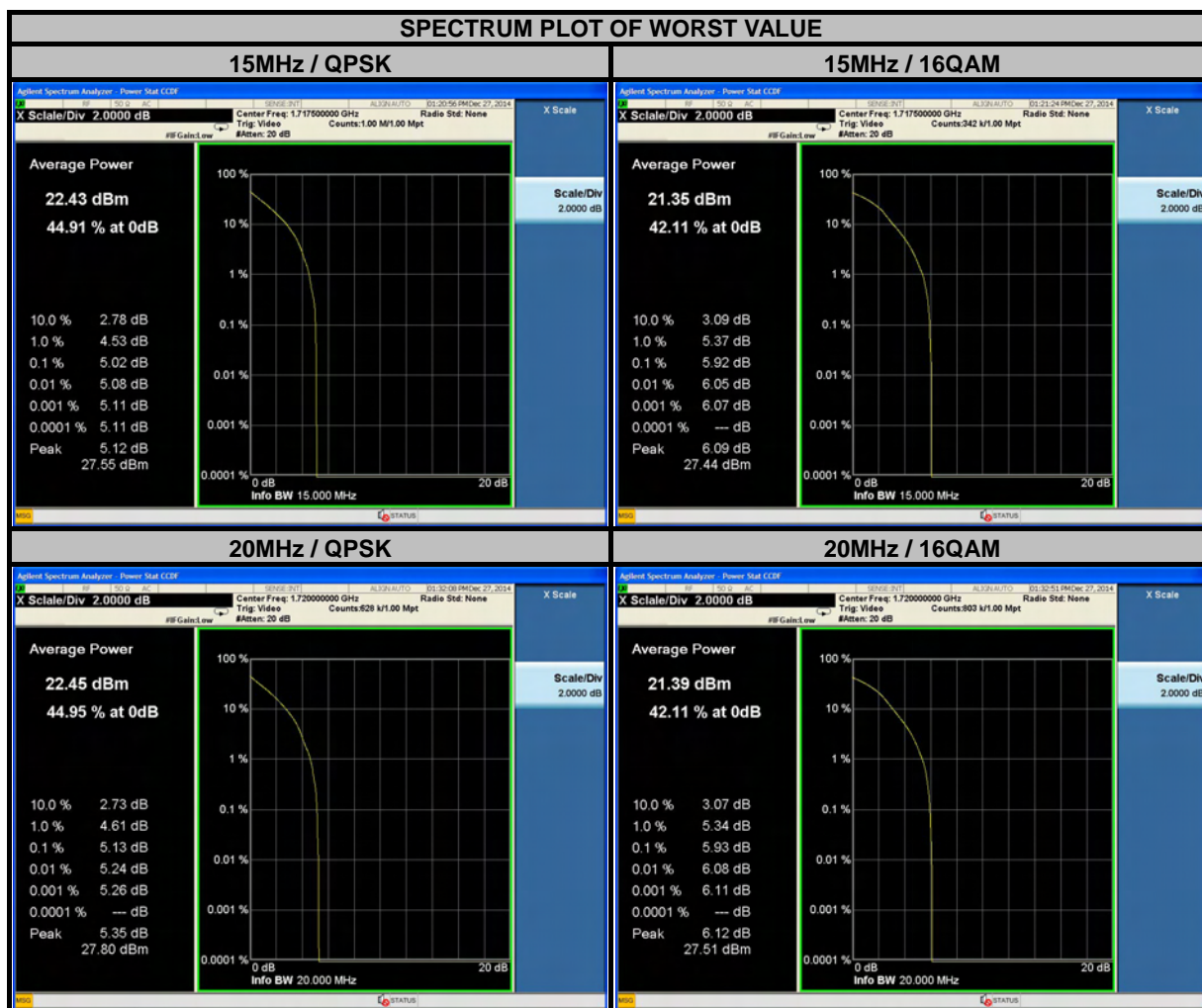


LTE BAND 4							
CHANNEL BANDWIDTH: 5MHz				CHANNEL BANDWIDTH: 10MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)		CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM			QPSK	16QAM
19975	1712.5	4.09	4.91	20000	1715.0	4.53	5.76
20175	1732.5	2.78	3.91	20175	1732.5	2.79	3.85
20375	1752.5	3.41	4.78	20350	1750.0	3.9	5.45





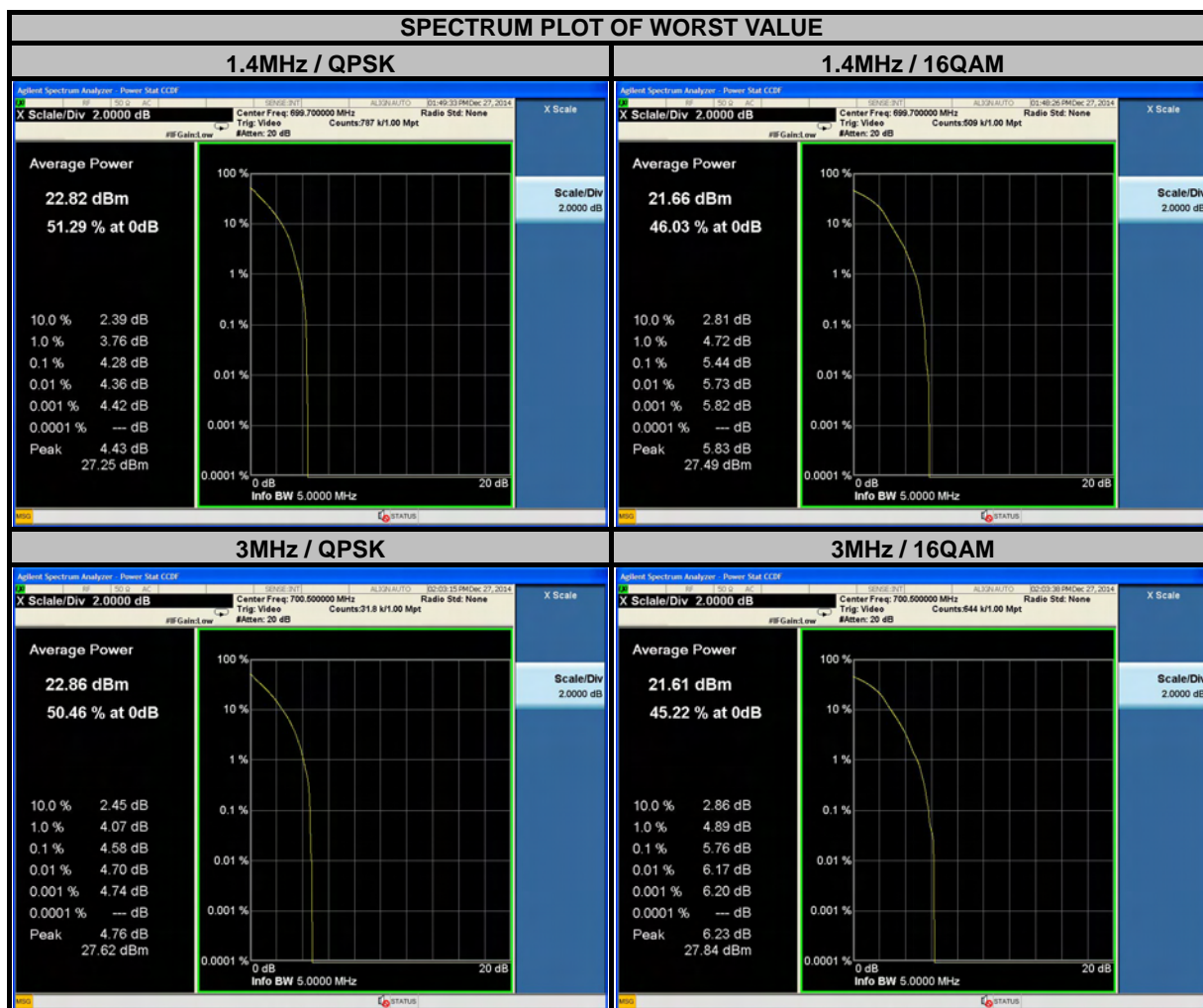
LTE BAND 4							
CHANNEL BANDWIDTH: 15MHz				CHANNEL BANDWIDTH: 20MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)		CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM			QPSK	16QAM
20025	1717.5	5.02	5.92	20050	1720	5.13	5.93
20175	1732.5	2.93	4.09	20175	1732.5	2.83	4.13
20325	1747.5	3.88	4.86	20300	1745	3.58	4.59





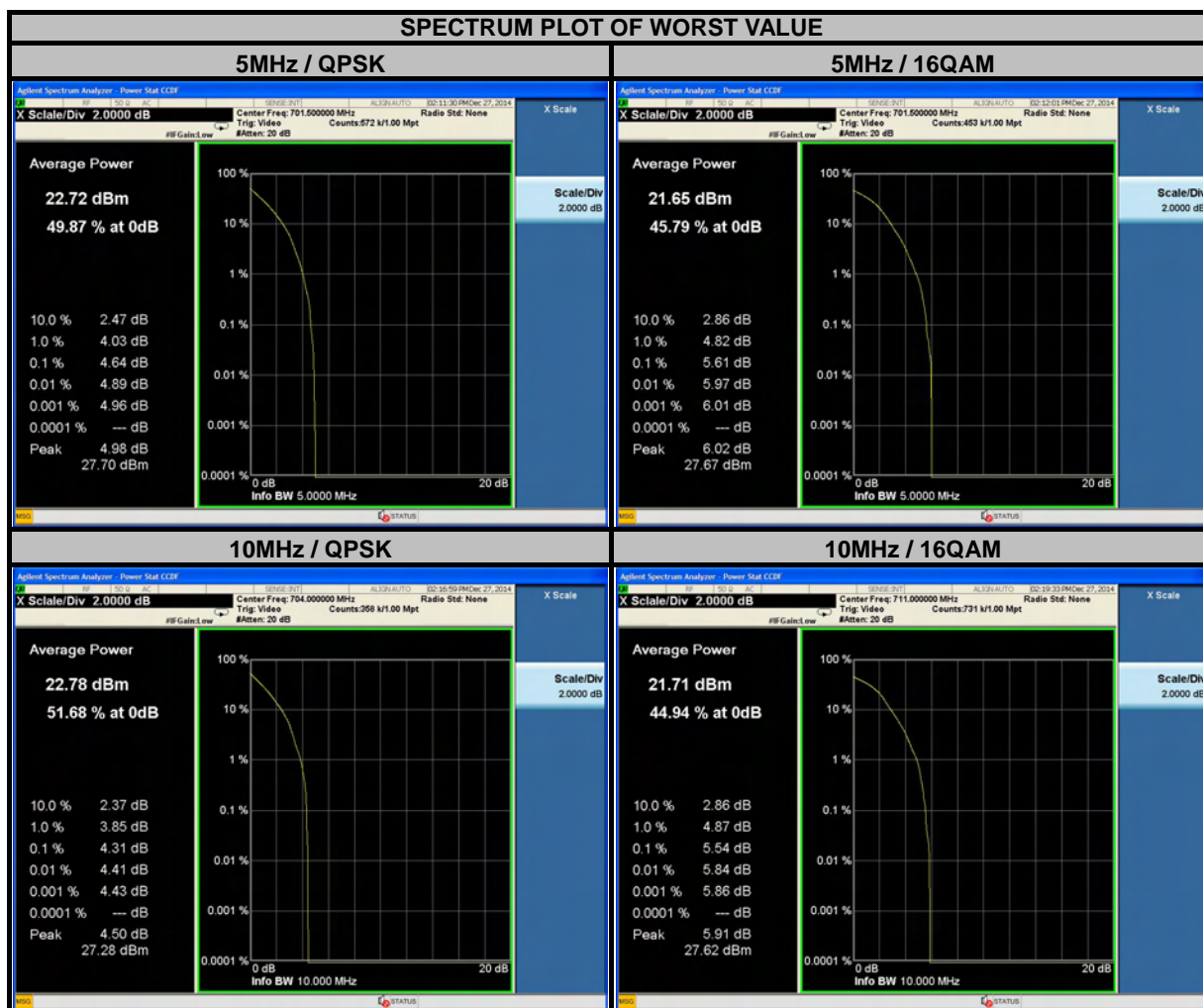
A D T

LTE BAND 12							
CHANNEL BANDWIDTH: 1.4MHz				CHANNEL BANDWIDTH: 3MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)		CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM			QPSK	16QAM
23017	699.7	4.28	5.44	23025	700.5	4.58	5.76
23095	707.5	3.4	4.56	23095	707.5	3.52	4.71
23173	715.3	2.87	3.93	23165	714.5	3.14	4.32





LTE BAND 12							
CHANNEL BANDWIDTH: 5MHz				CHANNEL BANDWIDTH: 10MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)		CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM			QPSK	16QAM
23035	701.5	4.64	5.61	23060	704.0	4.31	5.1
23095	707.5	3.42	4.64	23095	707.5	3.42	4.6
23155	713.5	3.63	4.86	23130	711.0	4.31	5.54

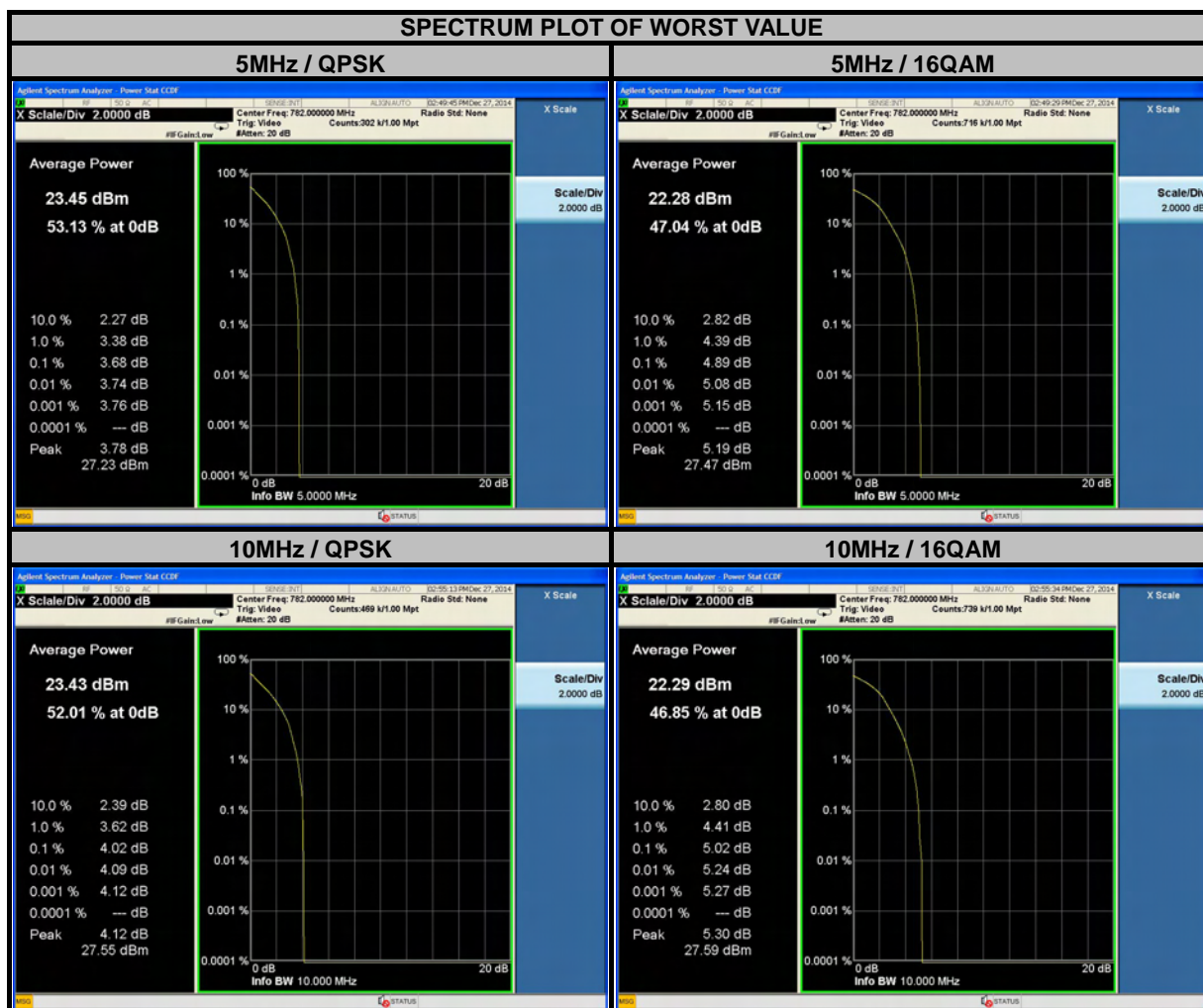






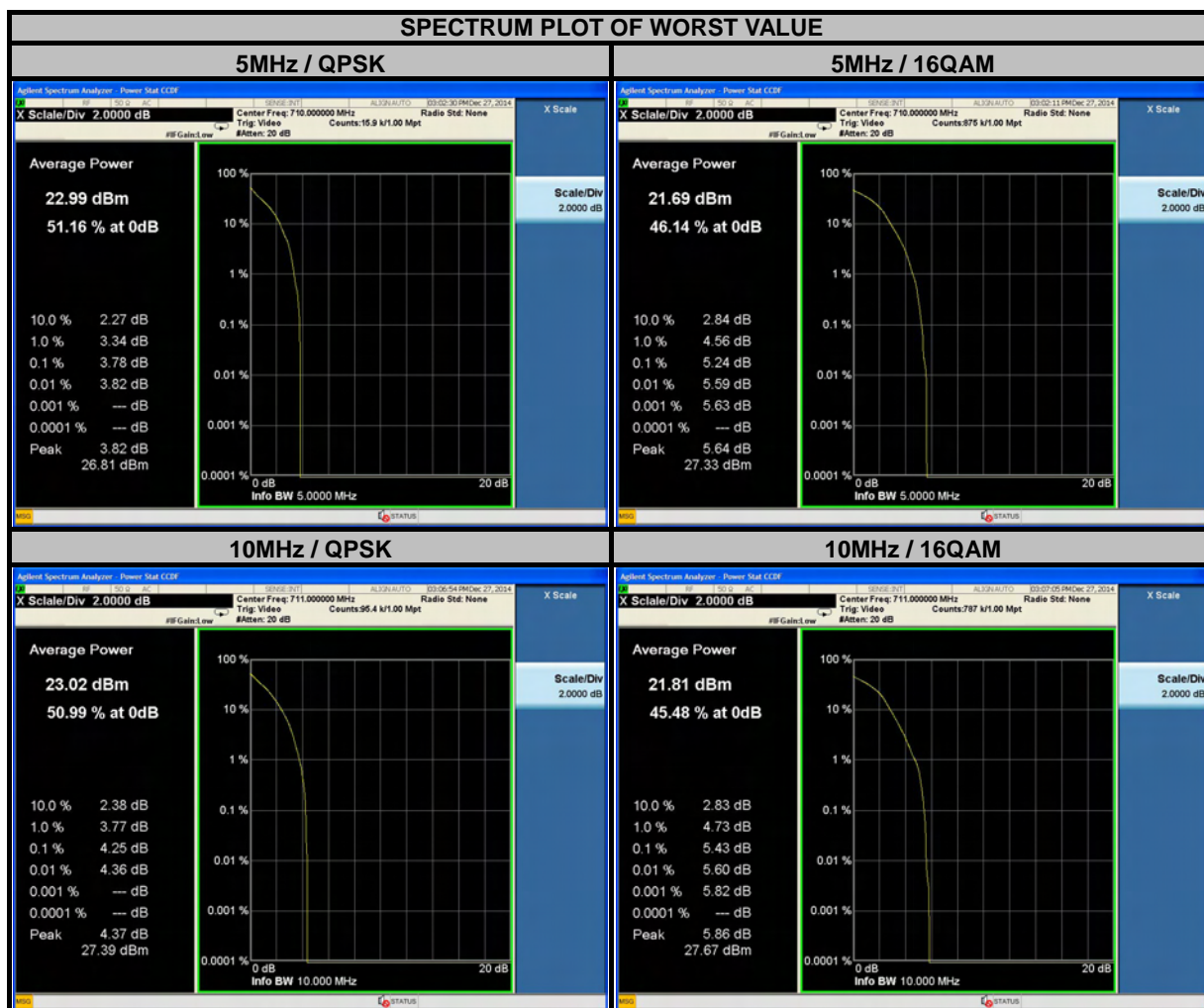
A D T

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	16QAM			QPSK	16QAM
23205	779.5	2.85	3.94	23230	782.0	4.02	5.02
23230	782.0	3.68	4.89				
23255	784.5	2.31	3.44				





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)	
		QPSK	16QAM			QPSK	16QAM
23755	706.5	3.27	4.36	23780	709.0	3.83	4.96
23790	710.0	3.78	5.24	23790	710.0	4.11	5.19
23825	713.5	3.66	4.84	23800	711.0	4.25	5.43



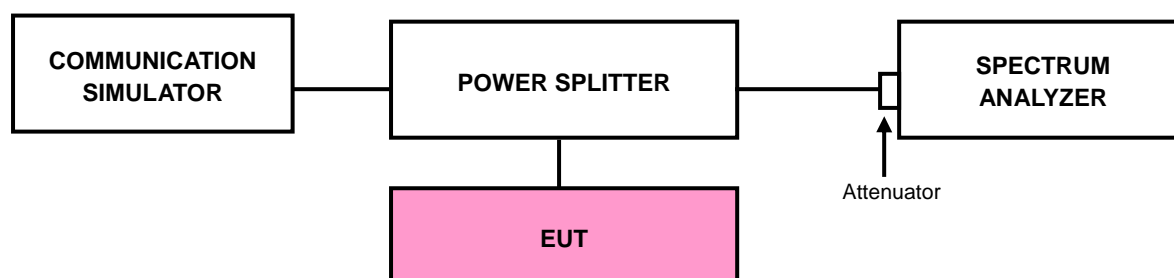
## 4.5 BAND EDGE MEASUREMENT

### 4.5.1 LIMITS OF BAND EDGE MEASUREMENT

For operations in the 699-787 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 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

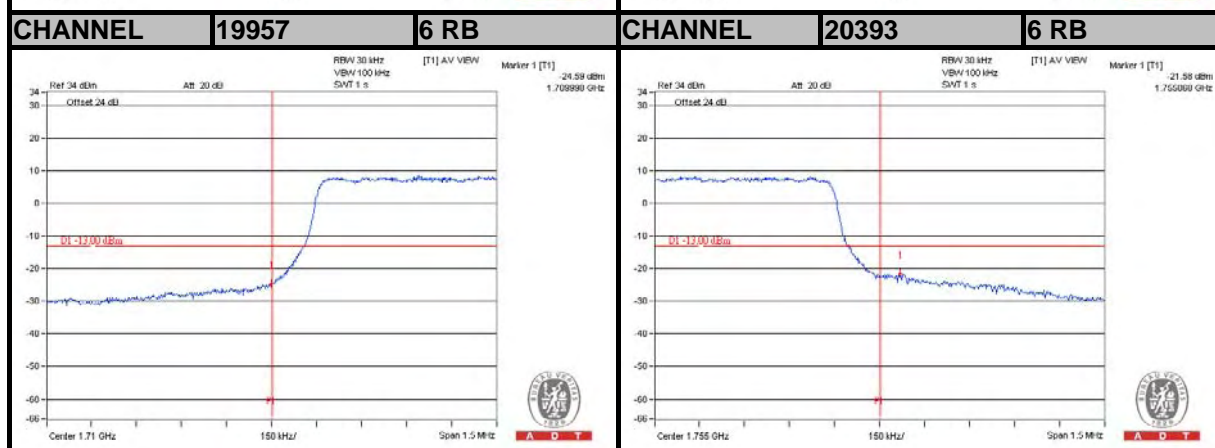
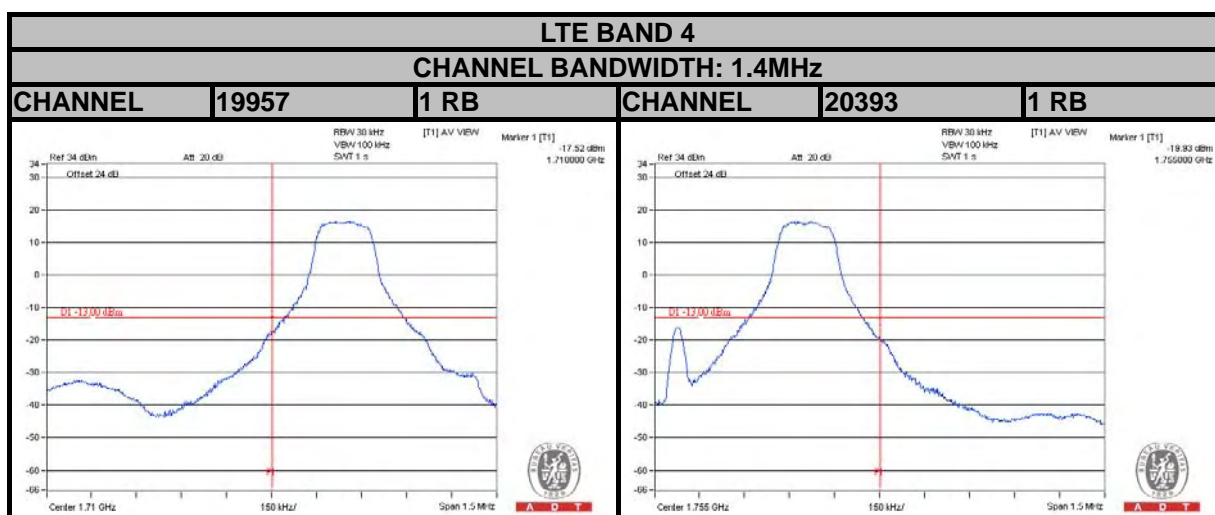
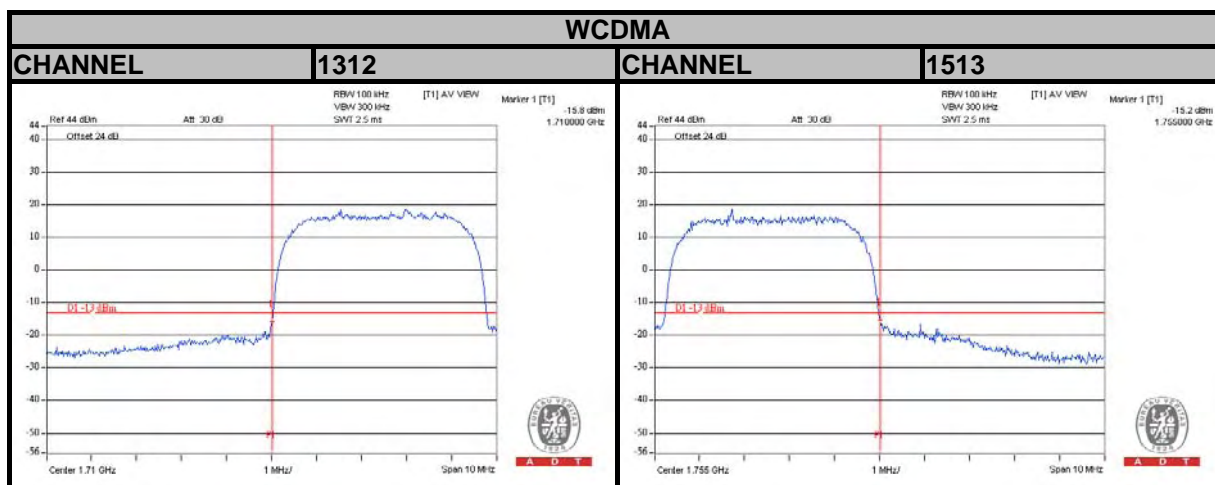
- All measurements were done at low and high operational frequency range.
- The center frequency of spectrum is the band edge frequency and s RB of the spectrum is  $>1\%$  OCCUPIED BANDWIDTH and VB of the spectrum is  $\geq 3*RB$ .
- Record the max trace plot into the test report.





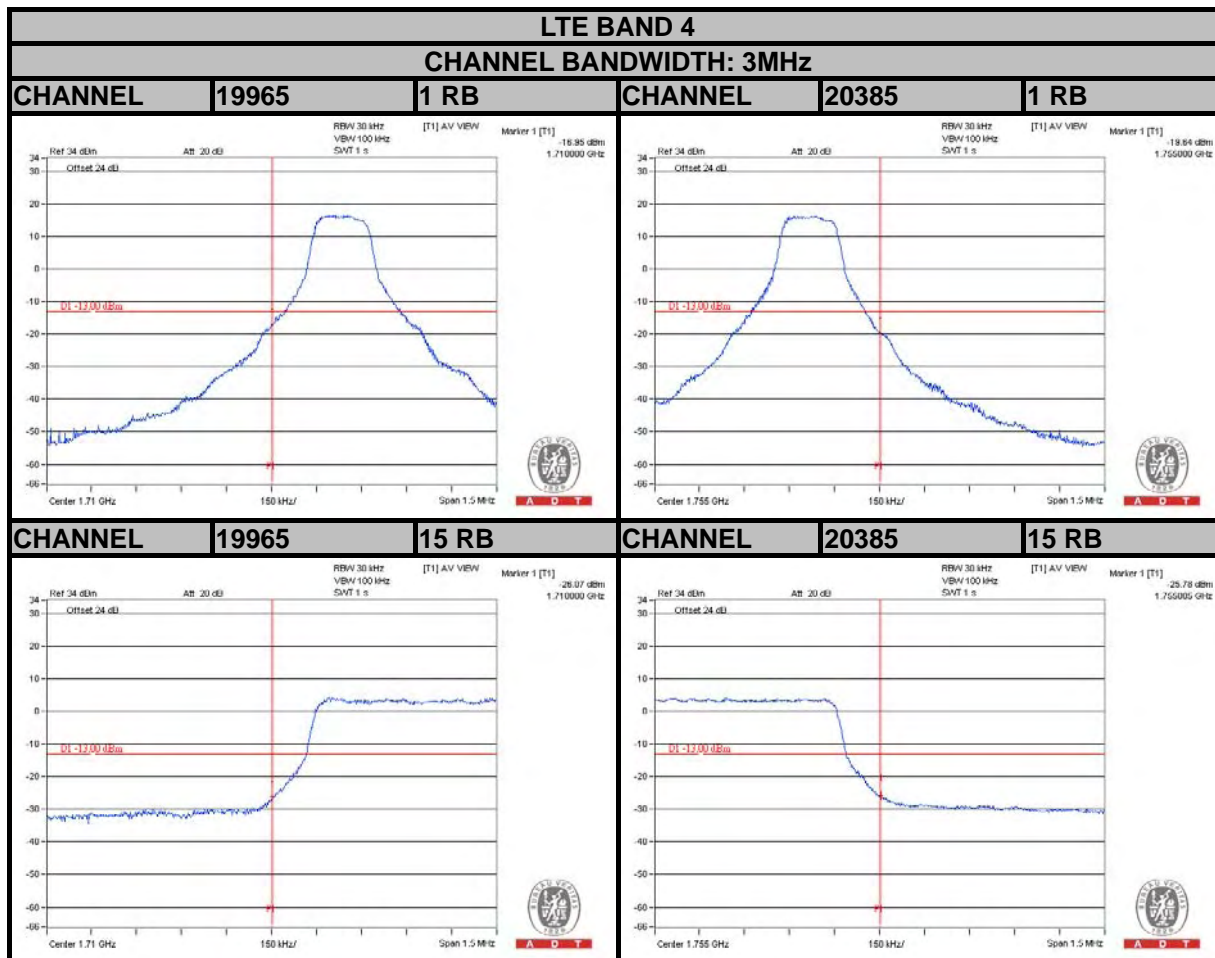
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### 4.5.4 TEST RESULTS



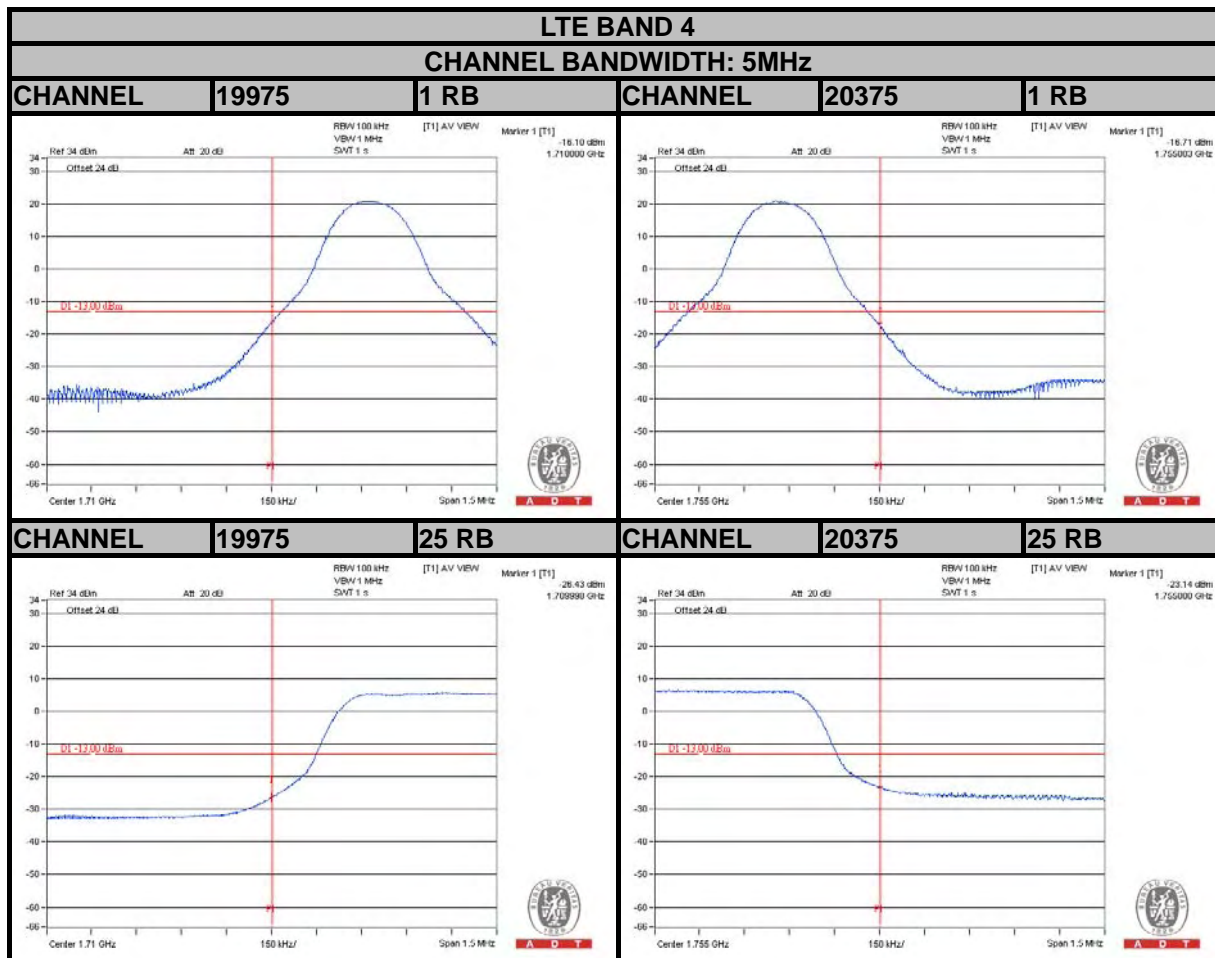


A D T



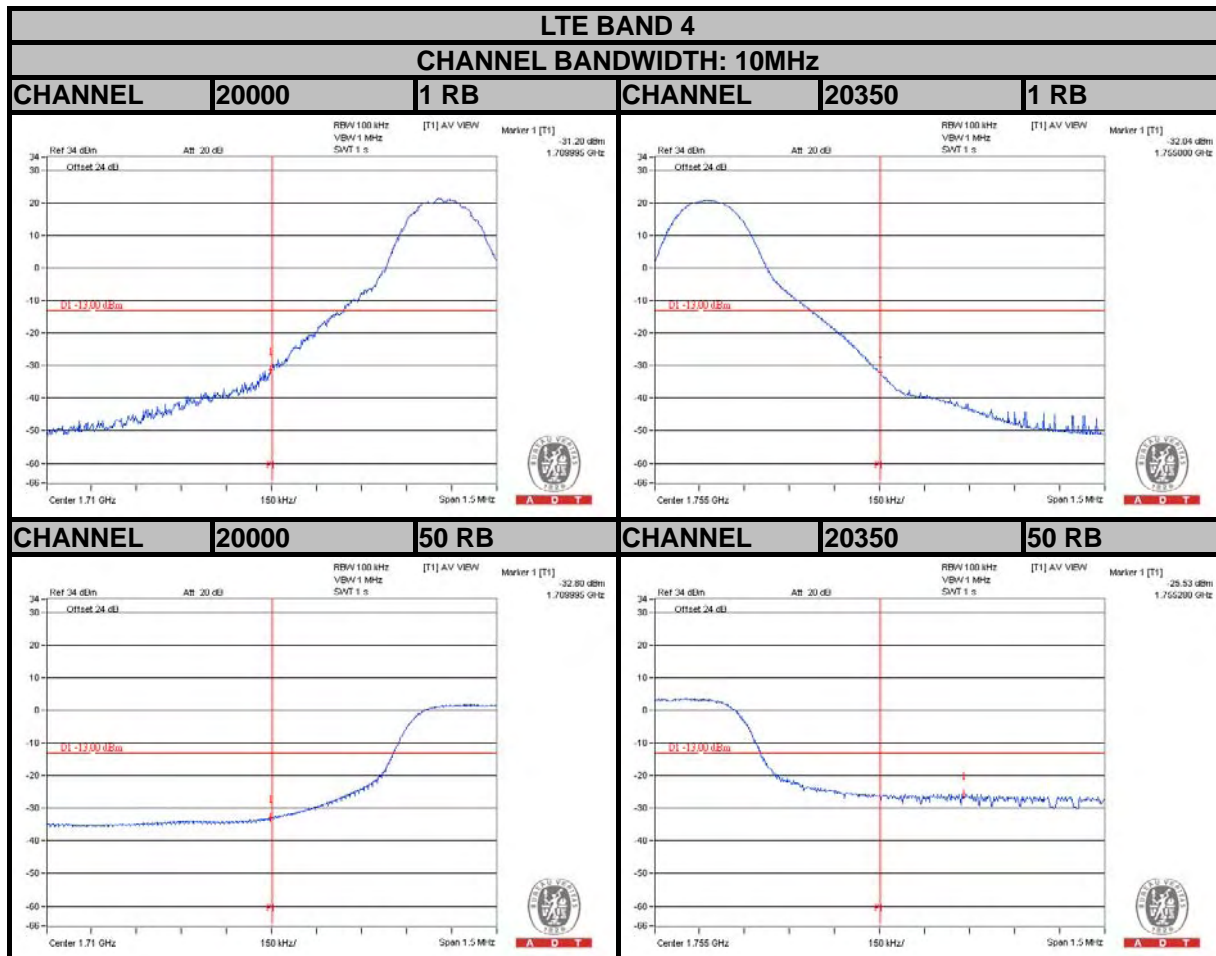


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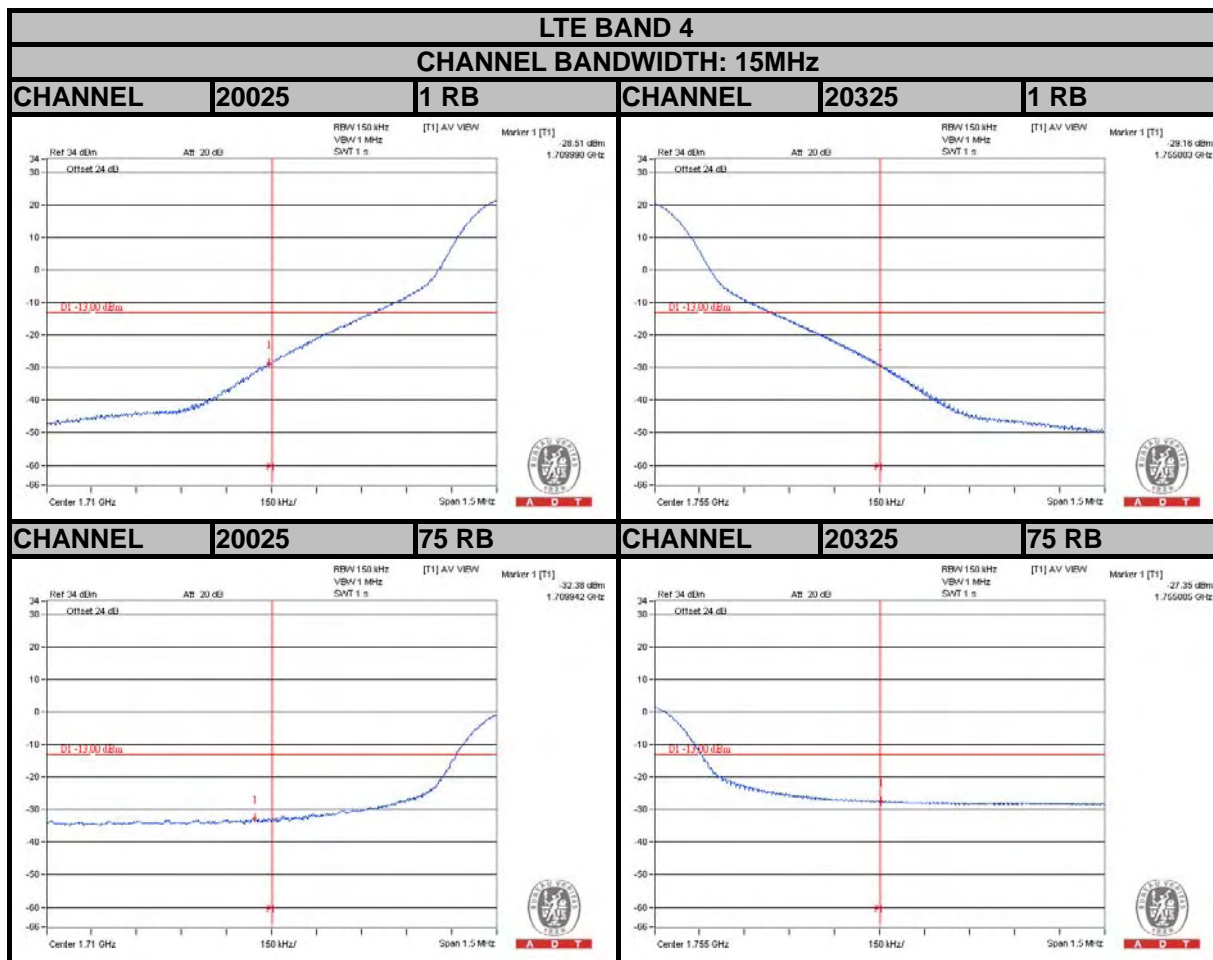


A D T



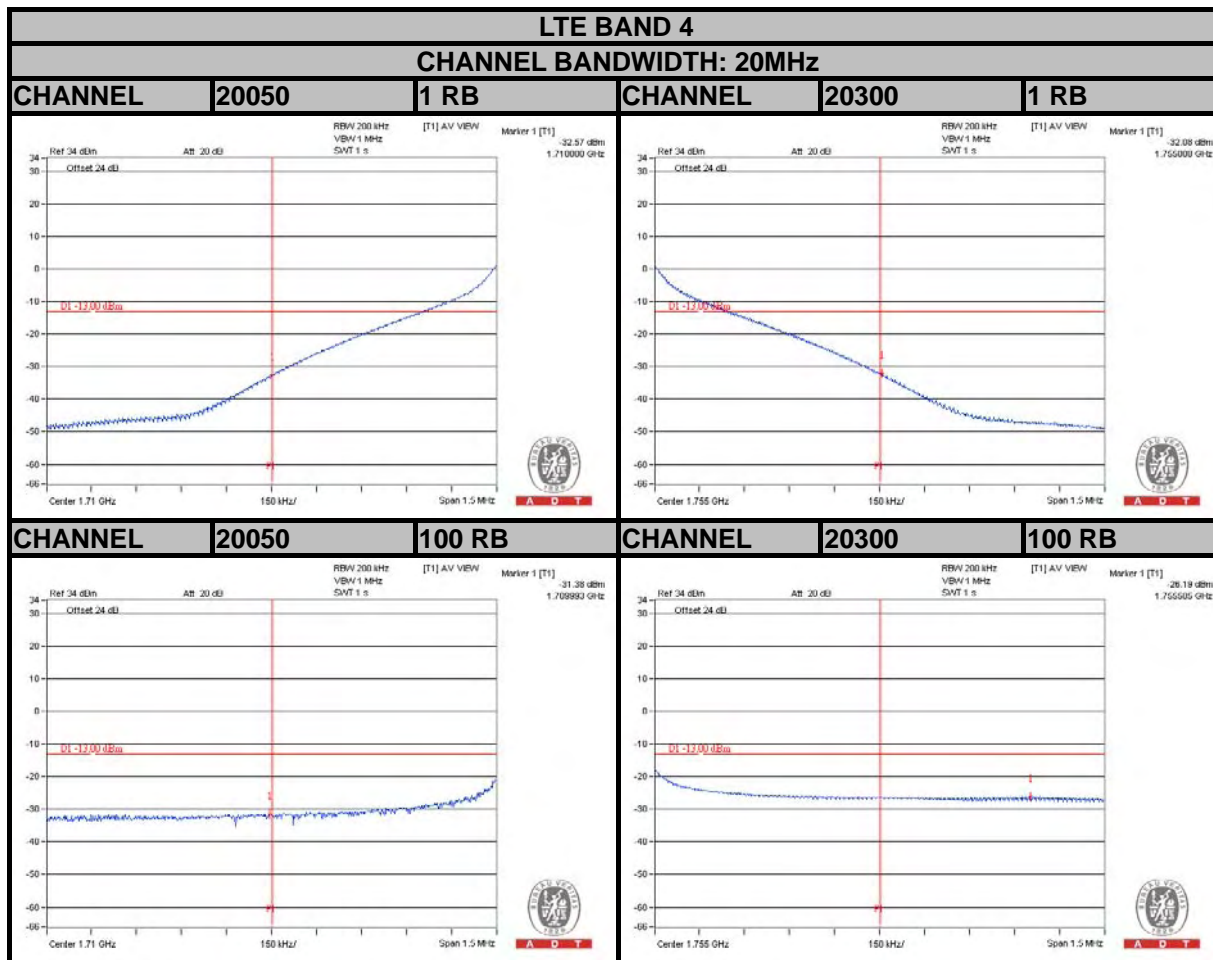


A D T



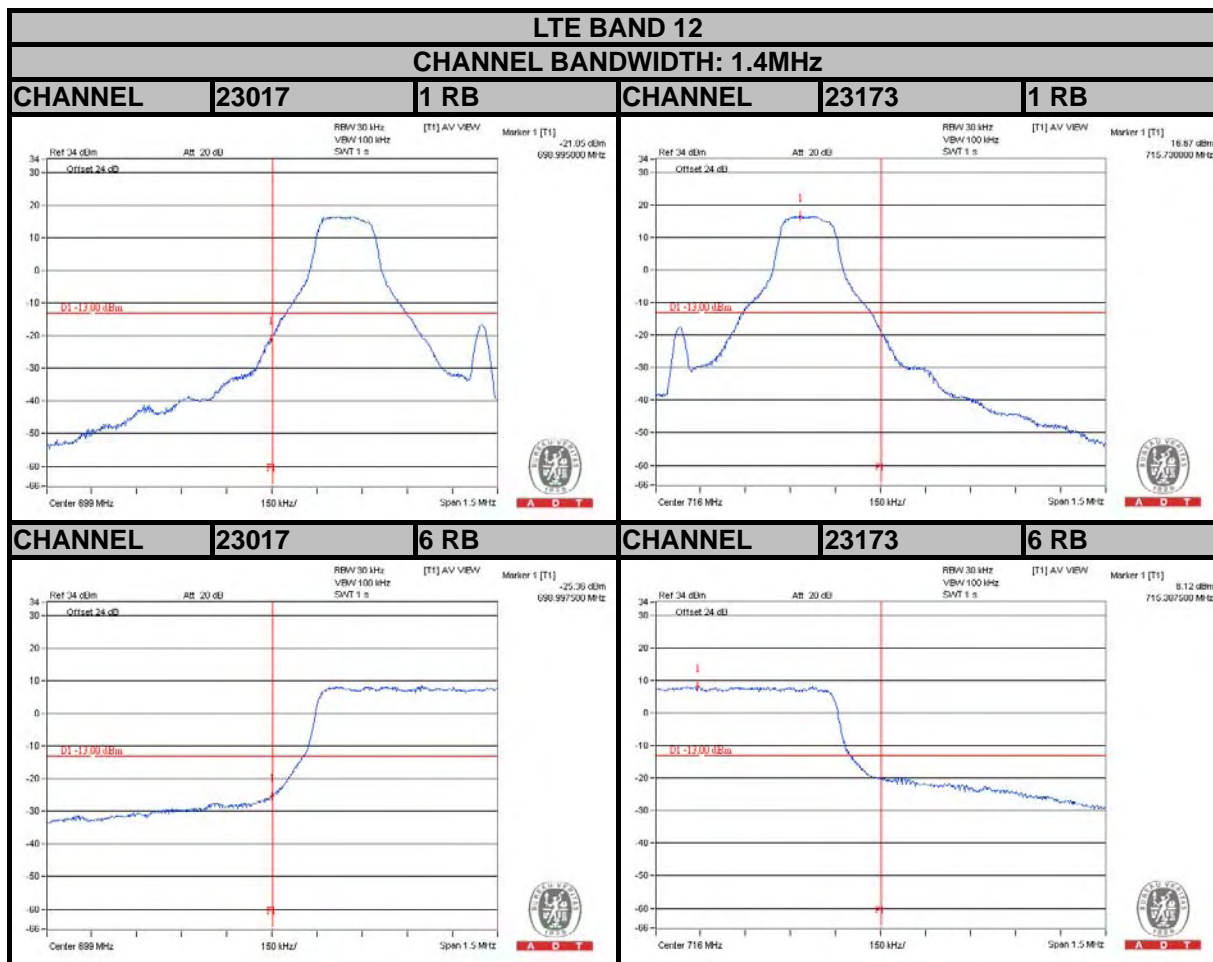


A D T





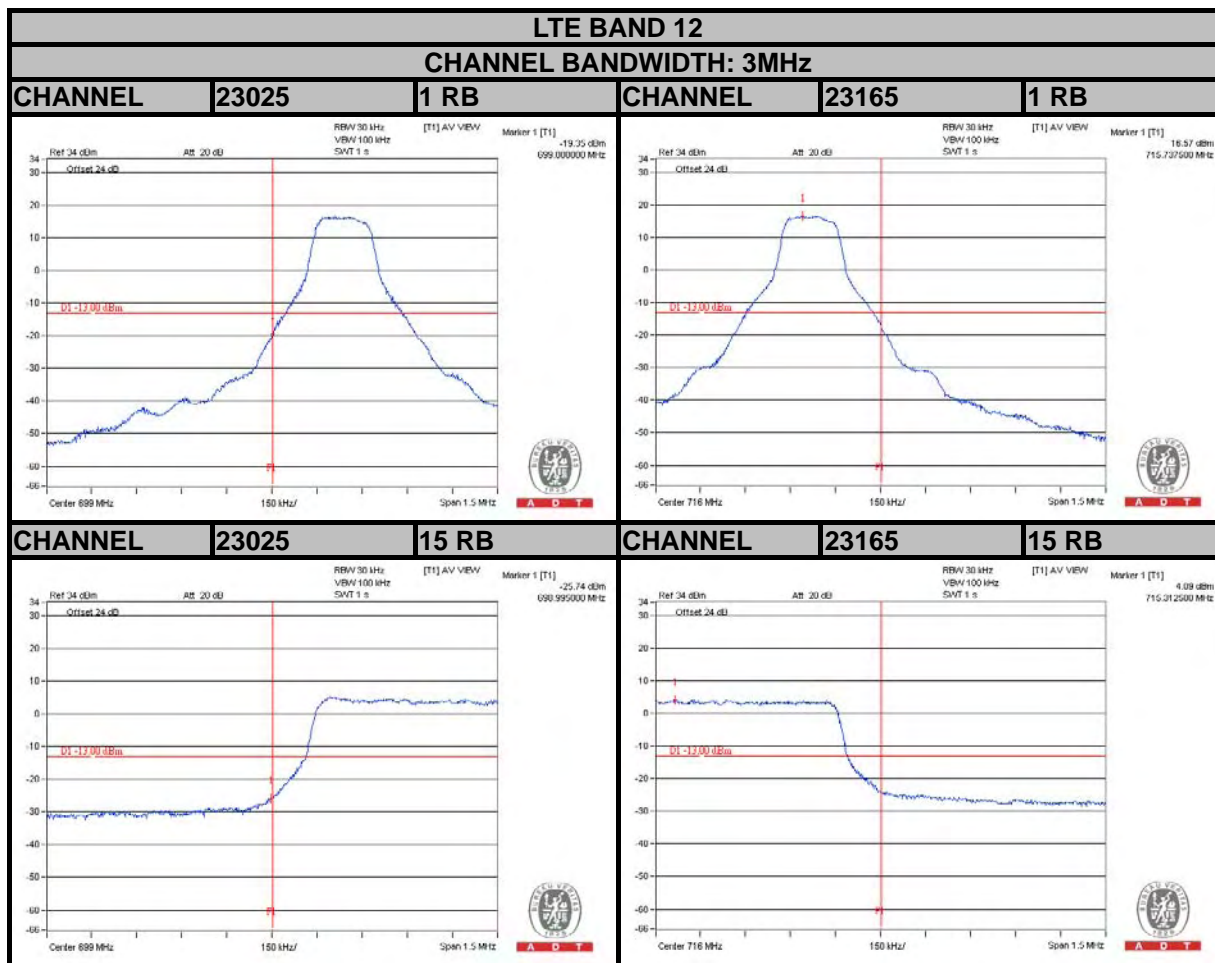
A D T







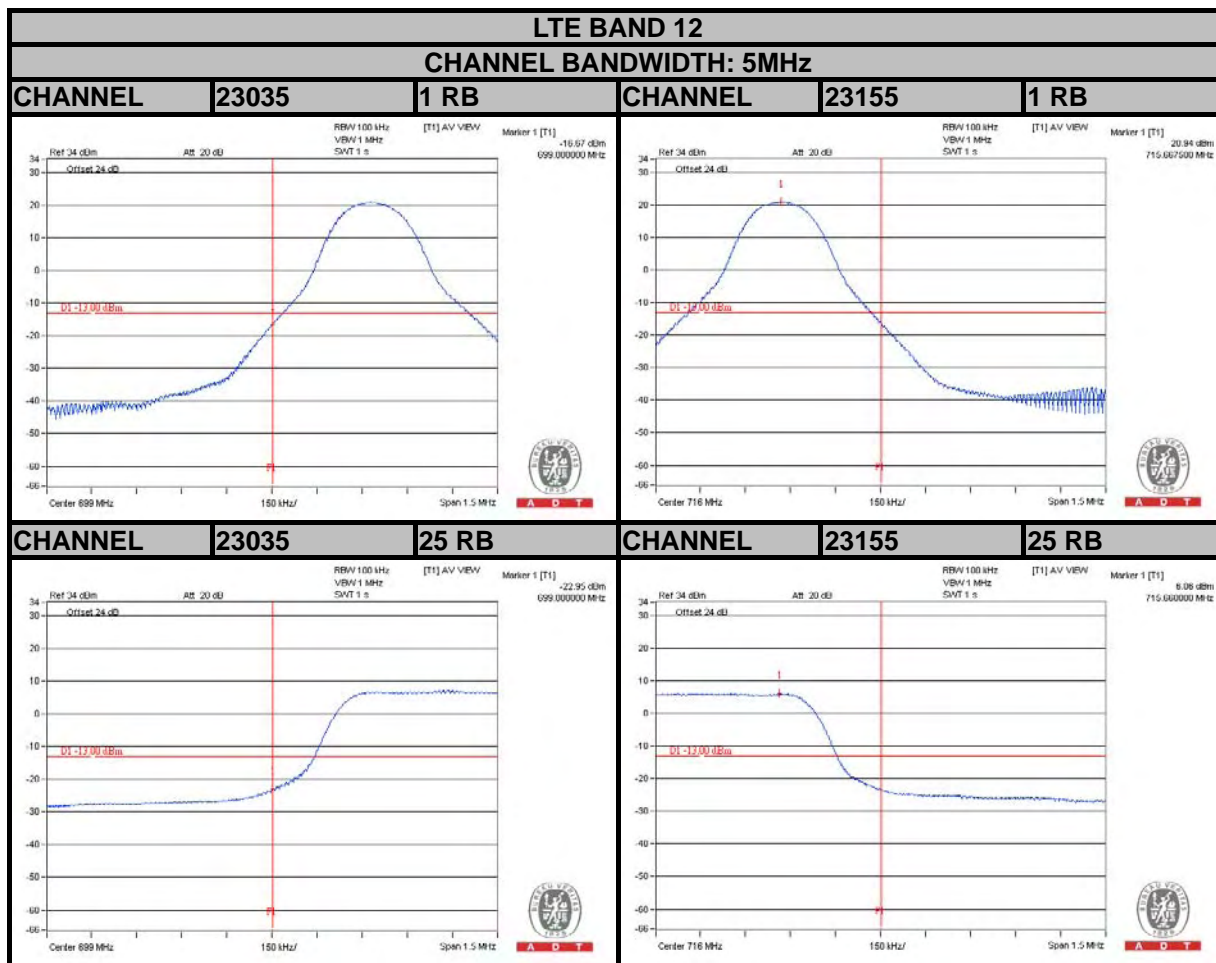
A D T





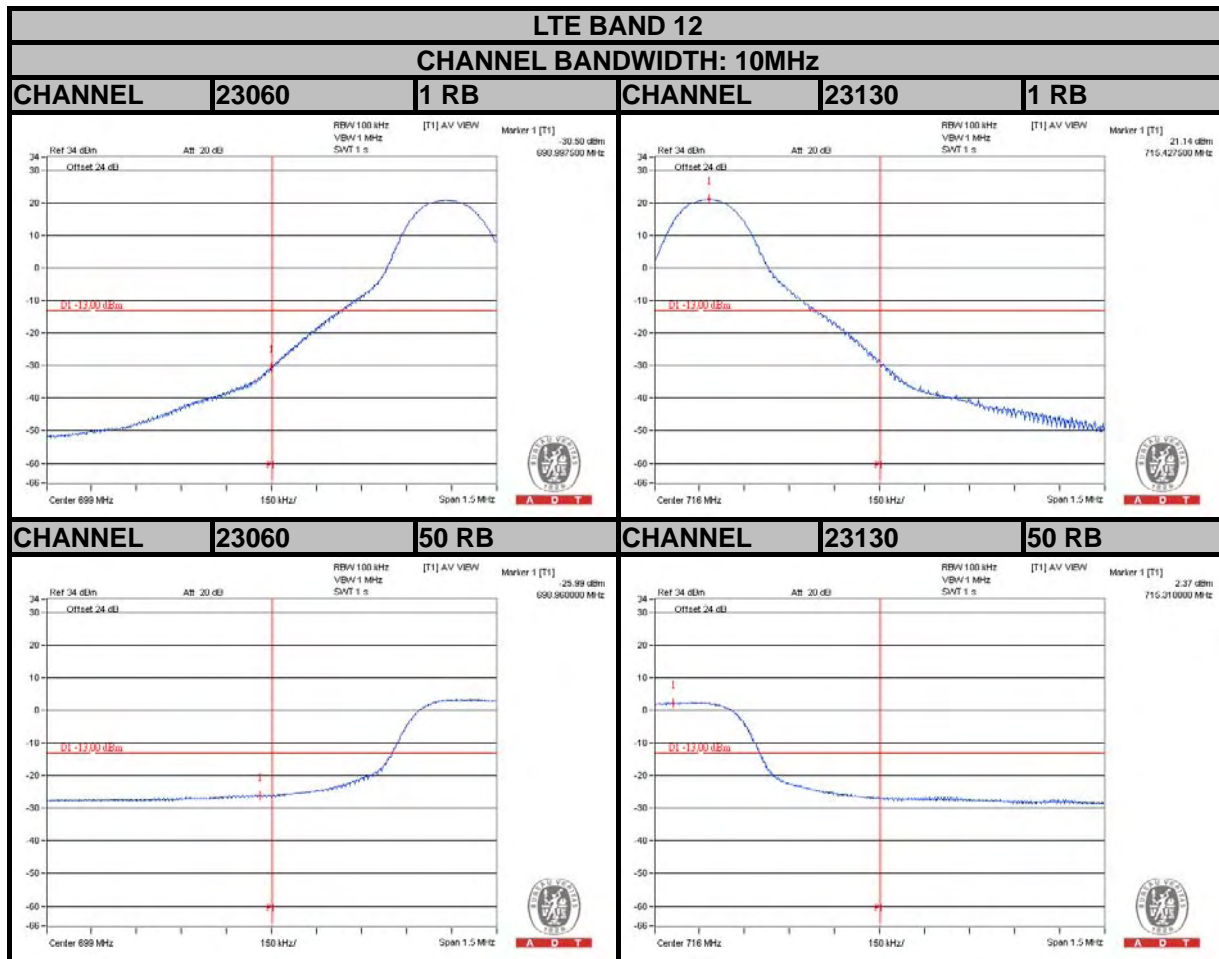


A D T



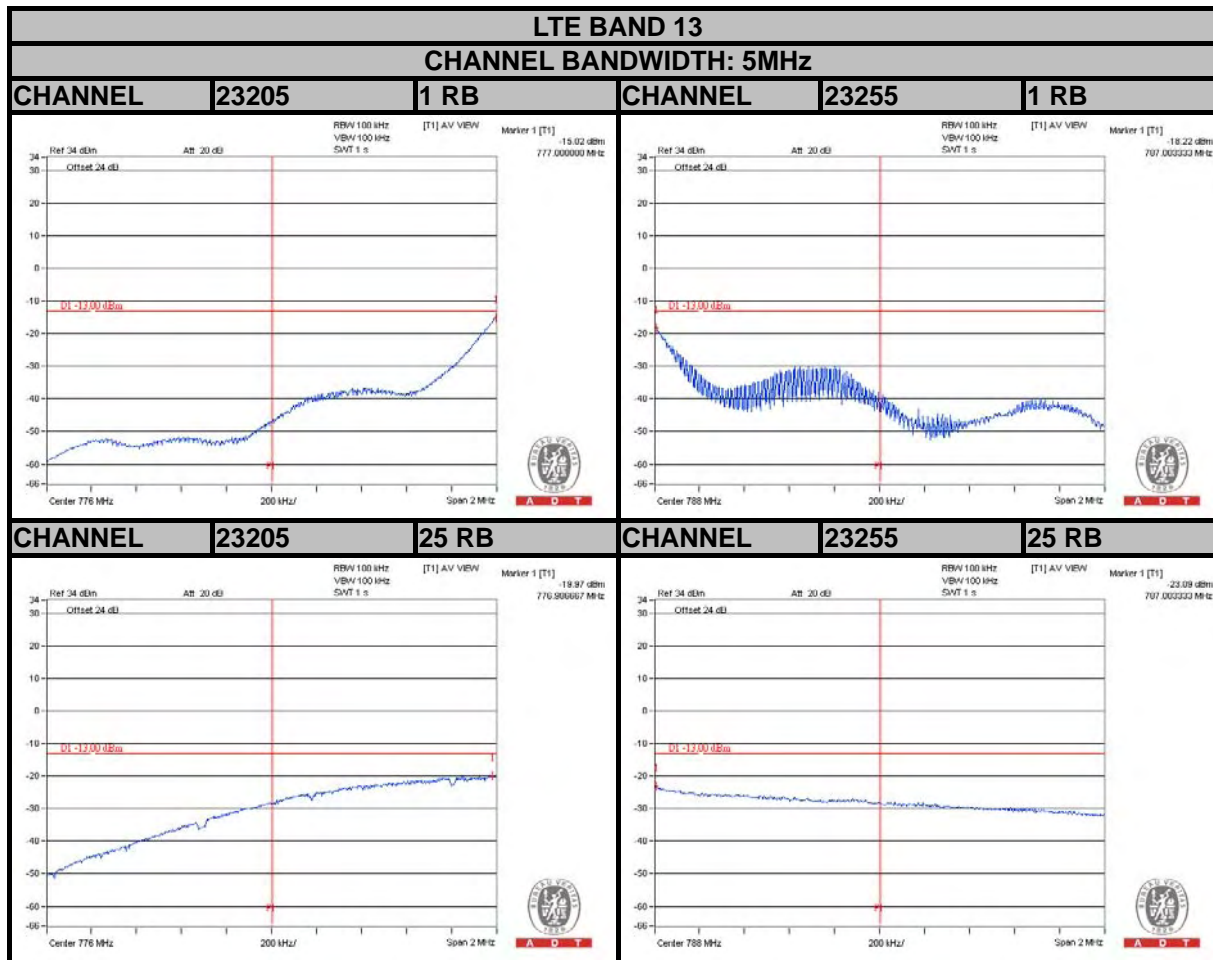


A D T



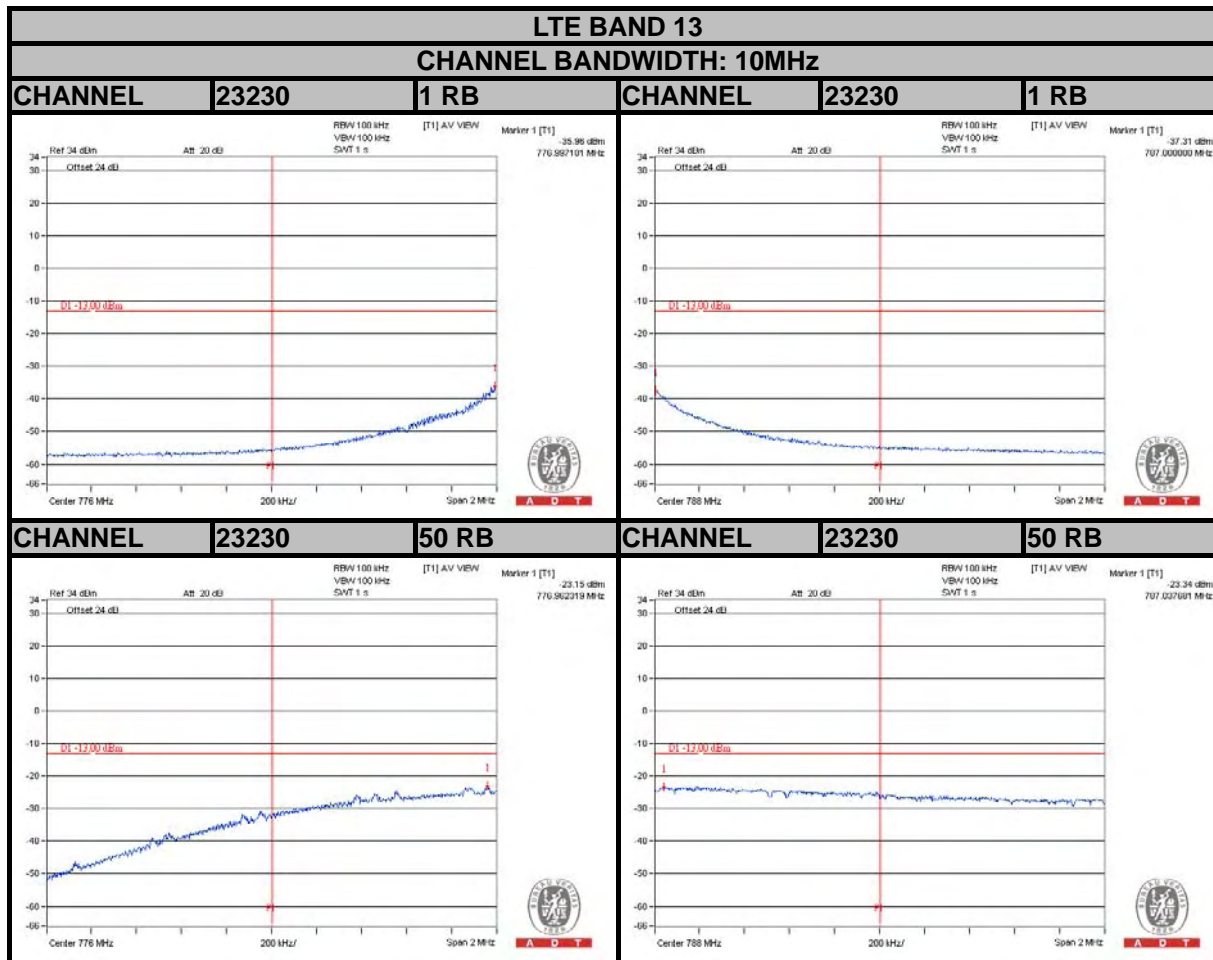


A D T



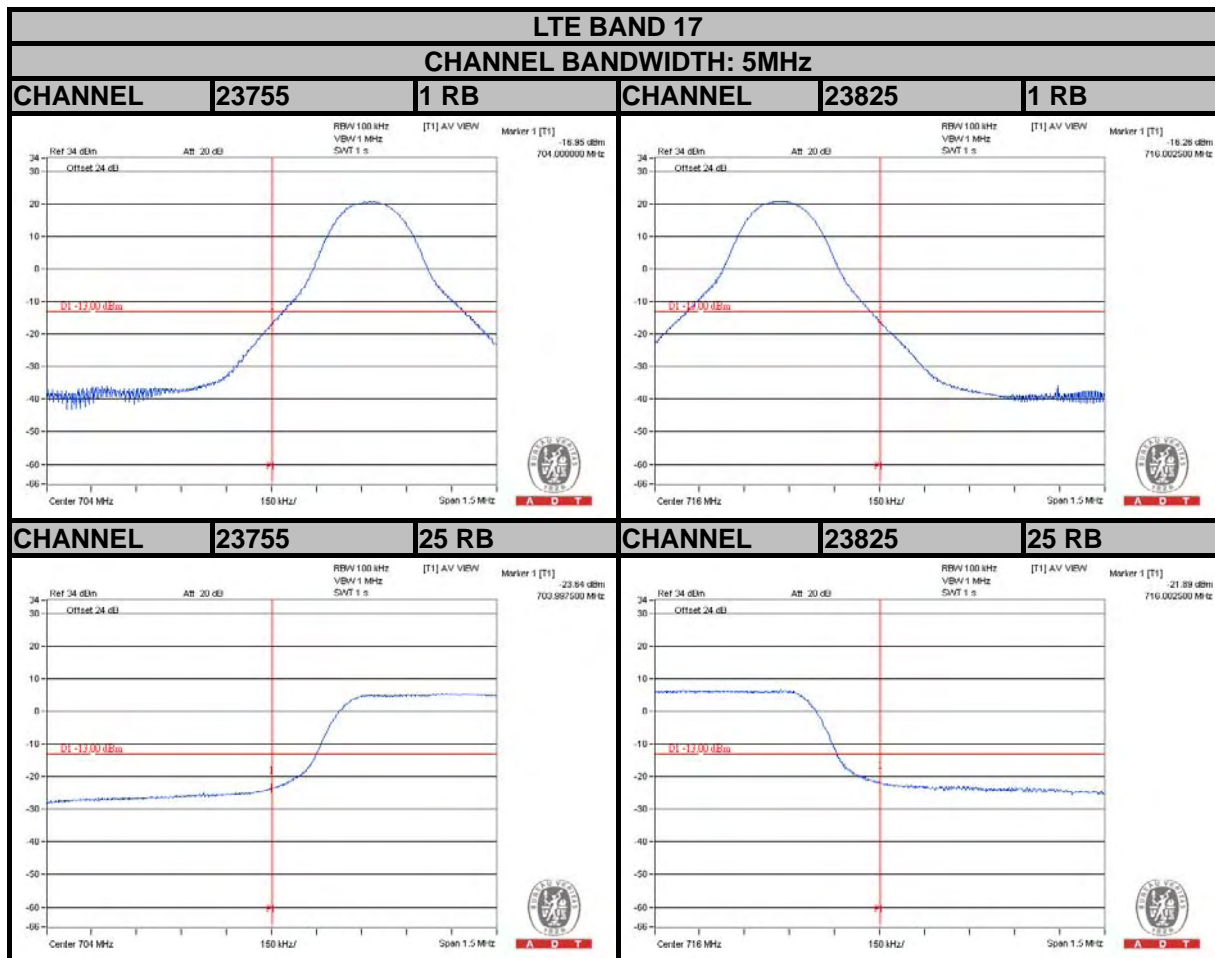


A D T



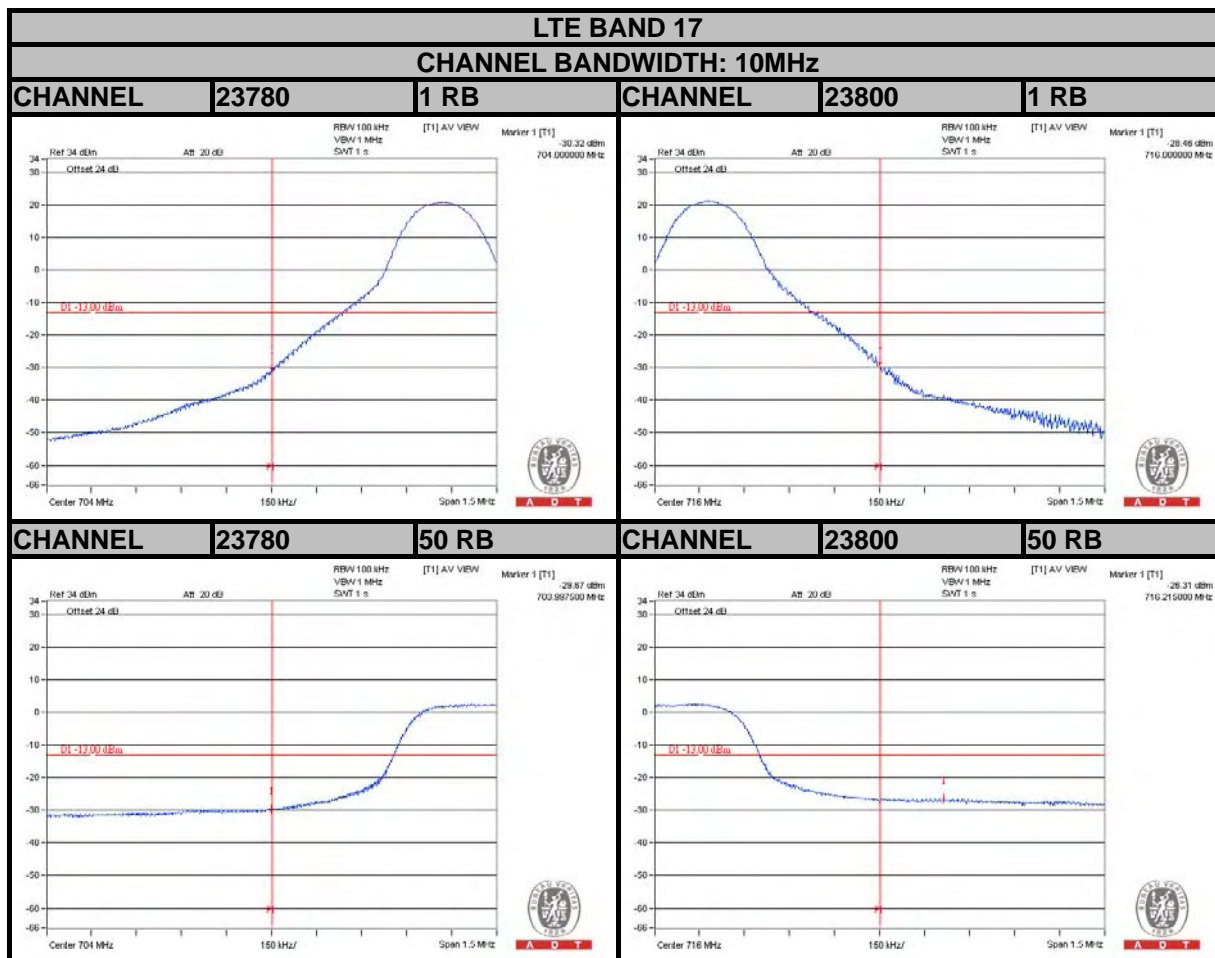


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## 4.6 CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

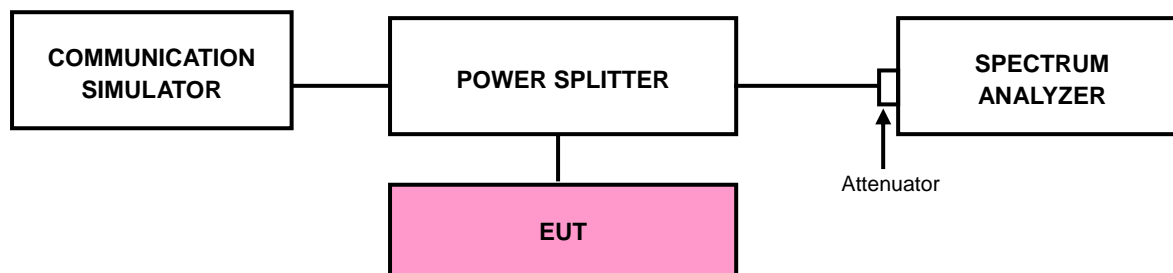
### 4.6.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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 is equal to -13dBm.

### 4.6.2 TEST PROCEDURE

- a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- b. Measuring frequency range is from 9kHz to 9GHz for LTE Band 12/13/17 and from 9kHz to 20GHz for WCDMA Band 4 / LTE Band 4. Attenuator is connected with spectrum. RBW=1MHz and VBW=3MHz are used for conducted emission measurement.

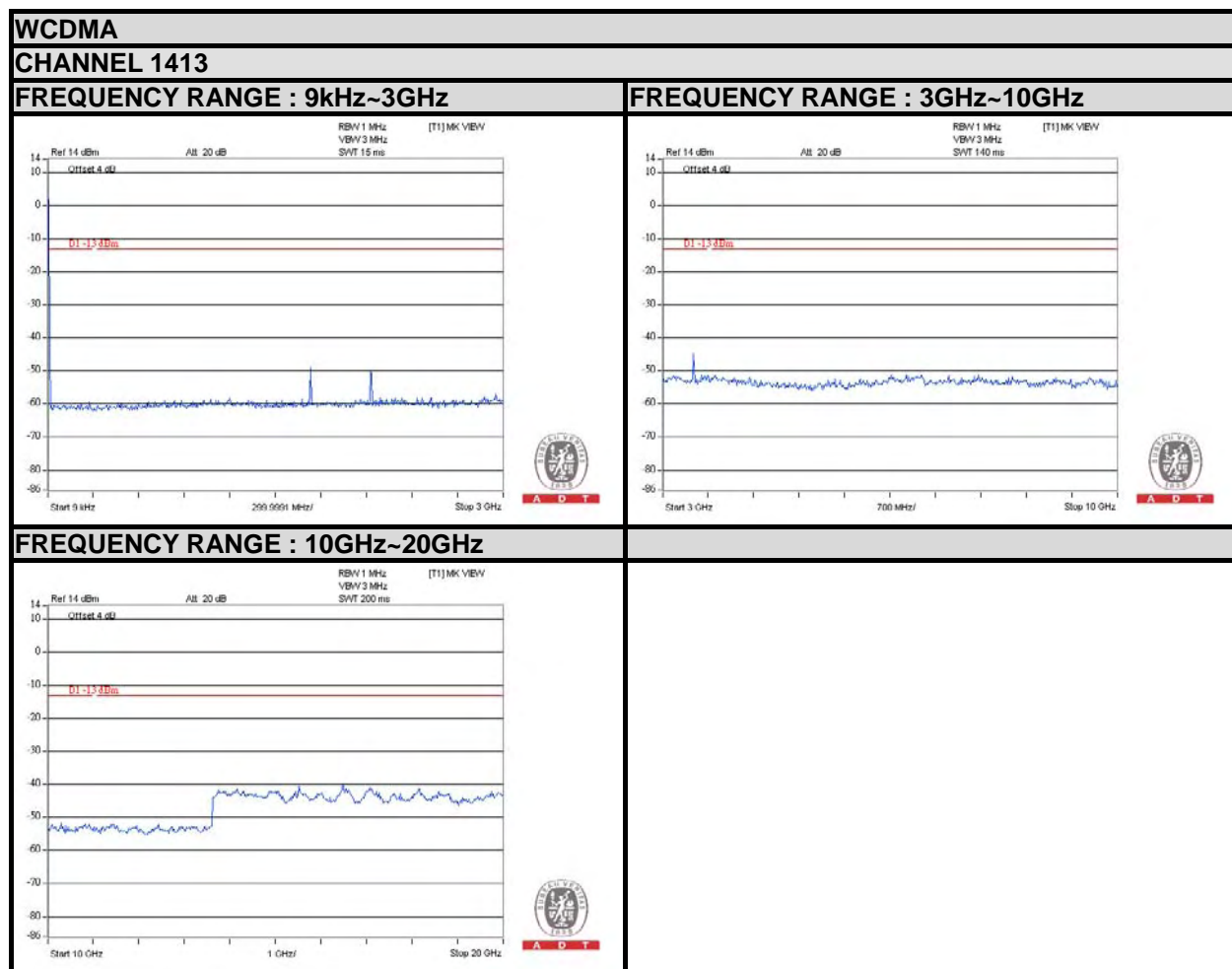
### 4.6.3 TEST SETUP





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#### 4.6.4 TEST RESULTS





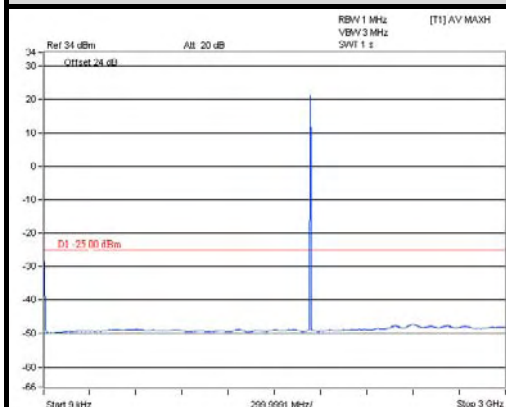


A D T

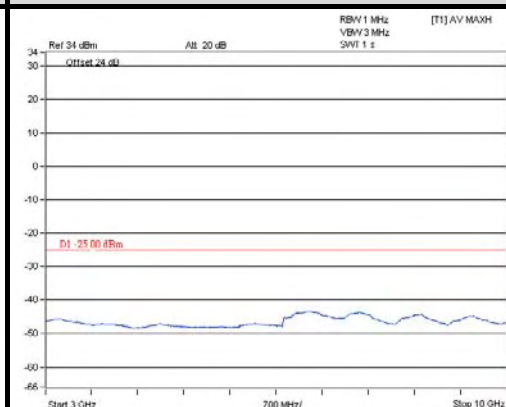
**LTE Band 4 (Channel Bandwidth: 1.4MHz)**

**CHANNEL 20175**

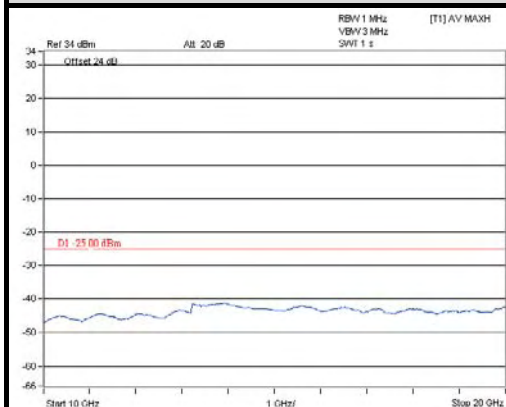
**FREQUENCY RANGE : 9kHz~3GHz**



**FREQUENCY RANGE : 3GHz~10GHz**



**FREQUENCY RANGE : 10GHz~20GHz**



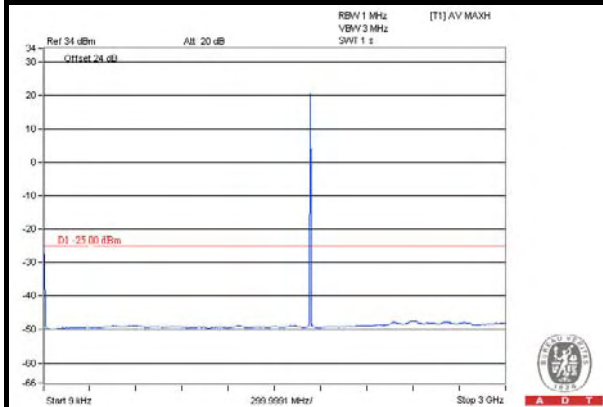


A D T

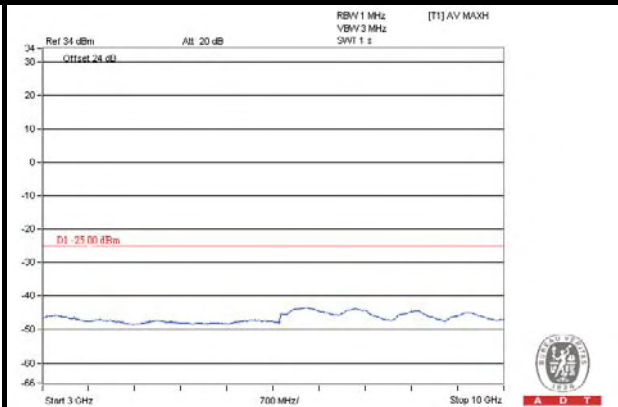
**LTE Band 4 (Channel Bandwidth: 3MHz)**

**CHANNEL 20175**

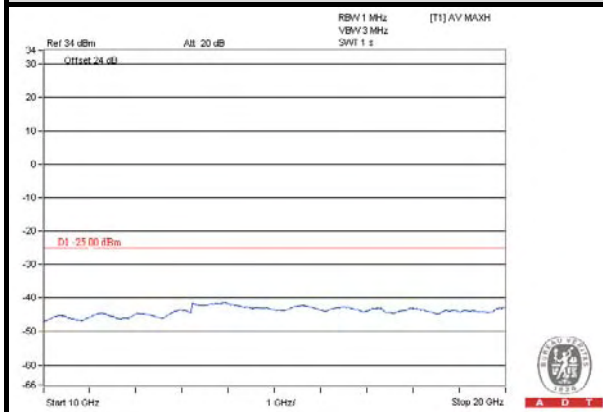
**FREQUENCY RANGE : 9kHz~3GHz**



**FREQUENCY RANGE : 3GHz~10GHz**



**FREQUENCY RANGE : 10GHz~20GHz**



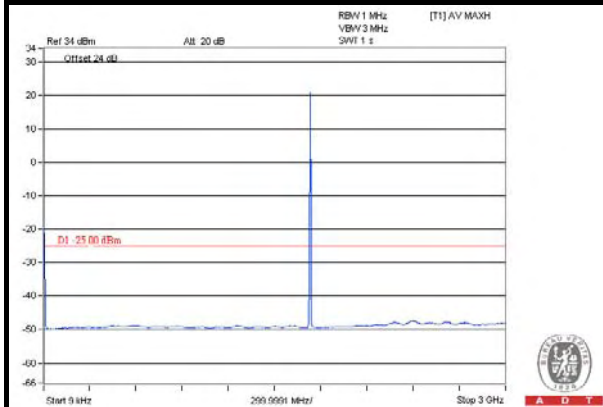


A D T

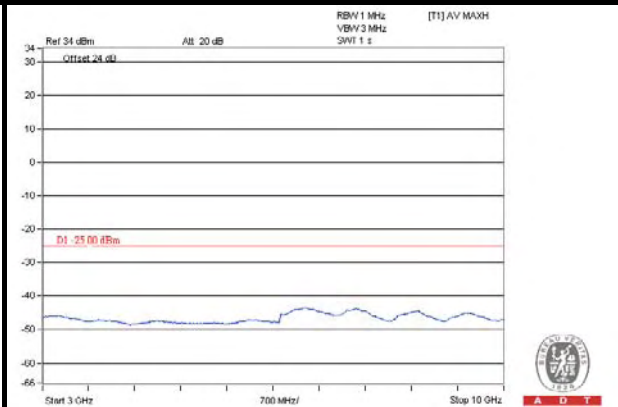
**LTE Band 4 (Channel Bandwidth: 5MHz)**

**CHANNEL 20175**

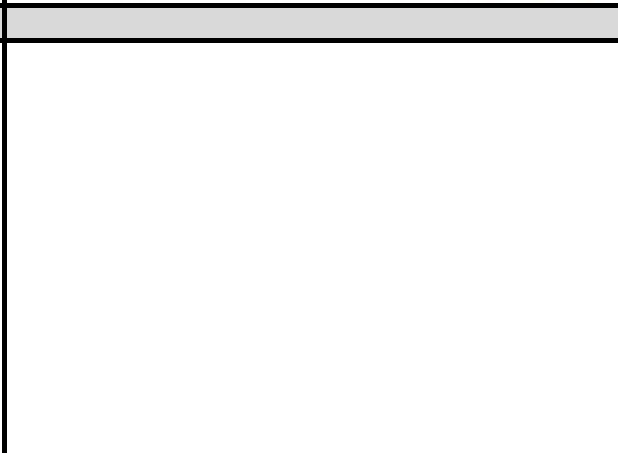
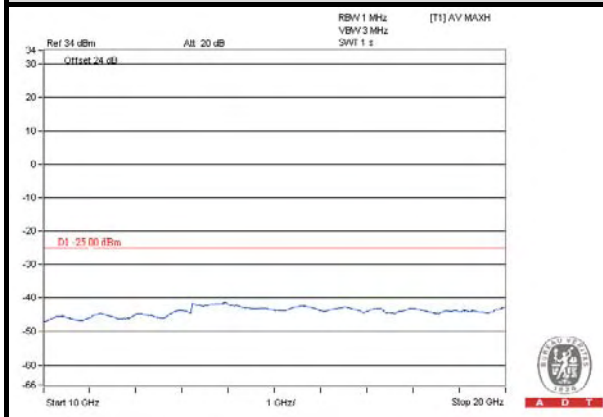
**FREQUENCY RANGE : 9kHz~3GHz**



**FREQUENCY RANGE : 3GHz~10GHz**



**FREQUENCY RANGE : 10GHz~20GHz**



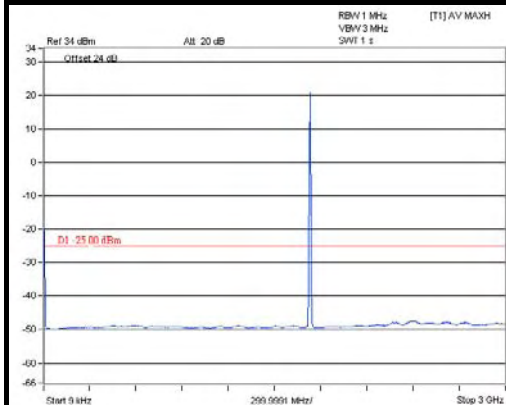


A D T

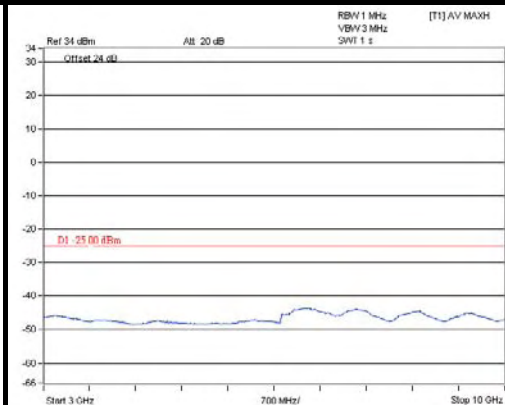
**LTE Band 4 (Channel Bandwidth: 10MHz)**

**CHANNEL 20175**

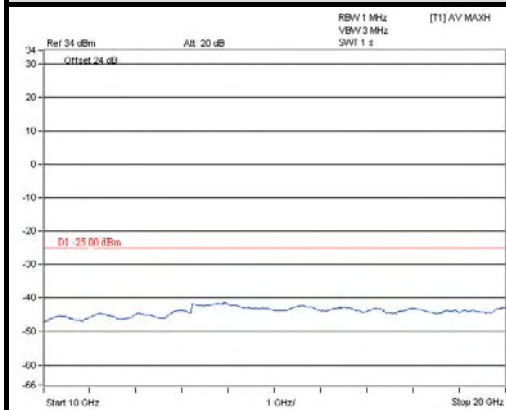
**FREQUENCY RANGE : 9kHz~3GHz**



**FREQUENCY RANGE : 3GHz~10GHz**



**FREQUENCY RANGE : 10GHz~20GHz**



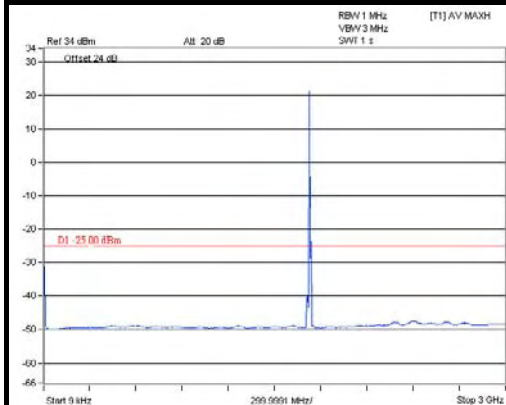


A D T

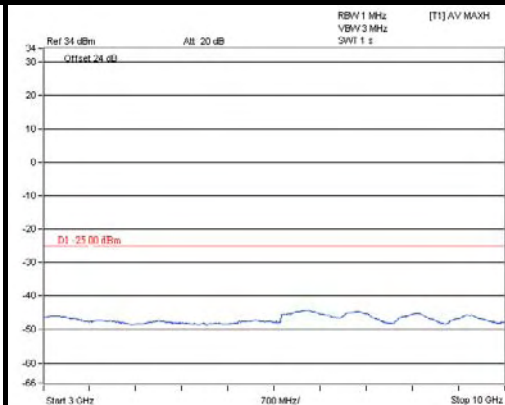
**LTE Band 4 (Channel Bandwidth: 15MHz)**

**CHANNEL 20175**

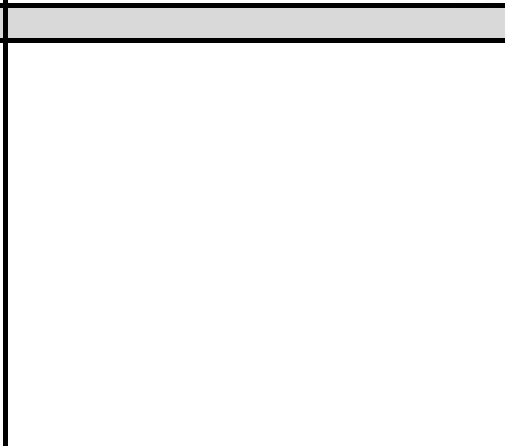
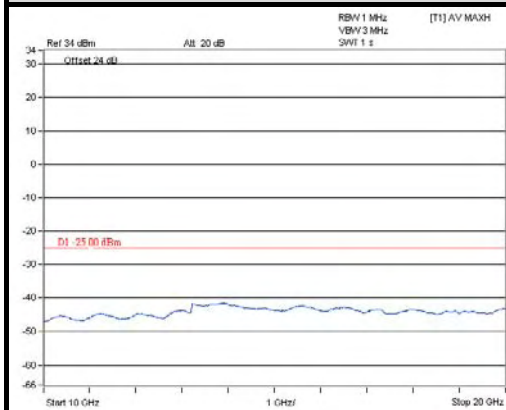
**FREQUENCY RANGE : 9kHz~3GHz**



**FREQUENCY RANGE : 3GHz~10GHz**



**FREQUENCY RANGE : 10GHz~20GHz**



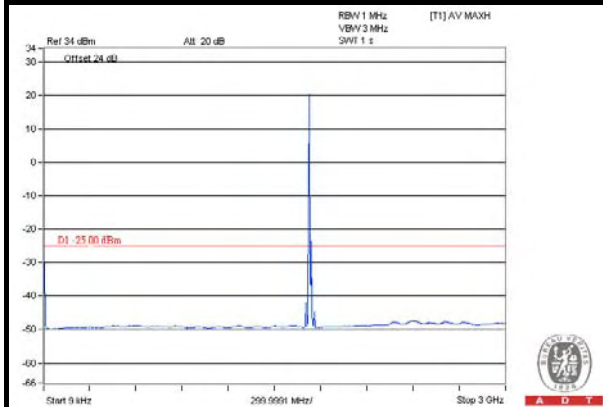


A D T

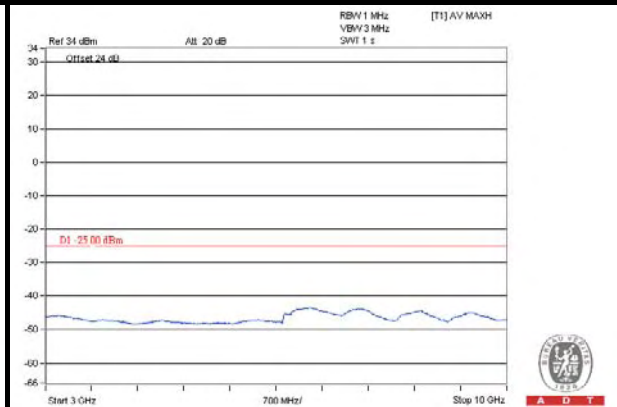
**LTE Band 4 (Channel Bandwidth: 20MHz)**

**CHANNEL 20175**

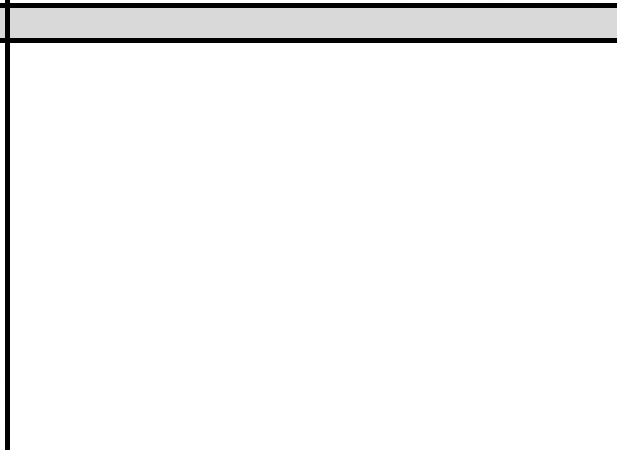
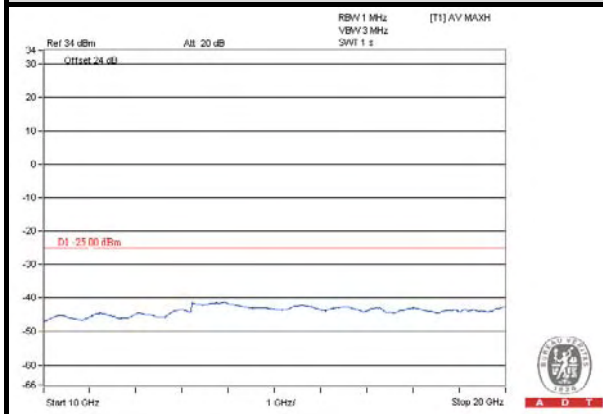
**FREQUENCY RANGE : 9kHz~3GHz**

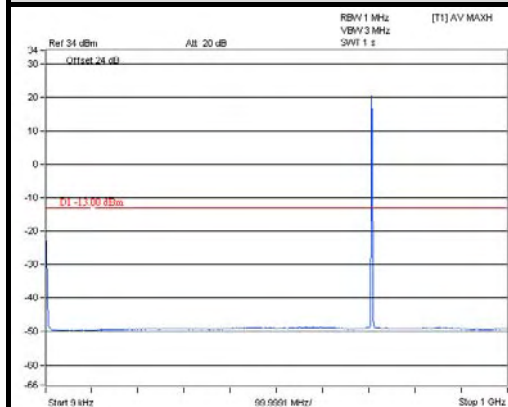
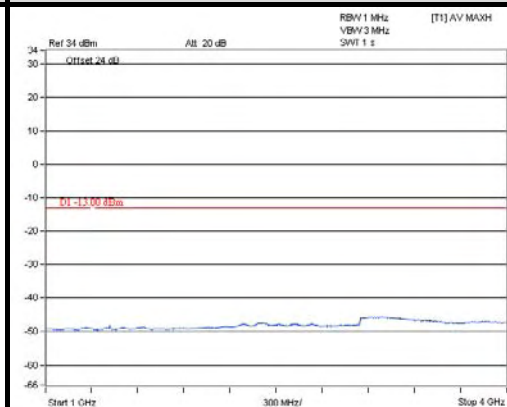
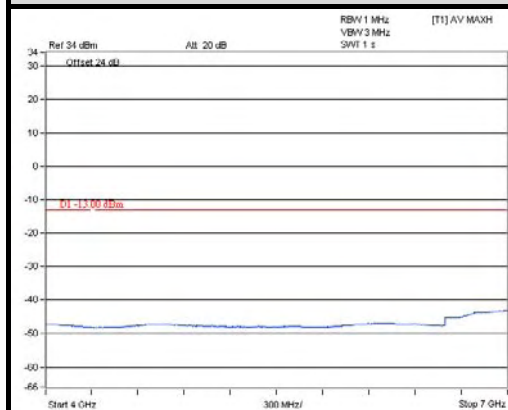
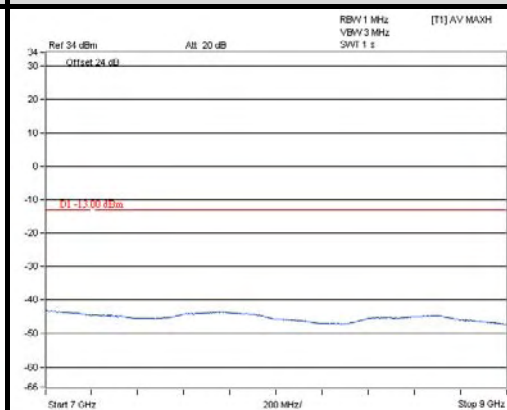


**FREQUENCY RANGE : 3GHz~10GHz**



**FREQUENCY RANGE : 10GHz~20GHz**



**LTE Band 12 (Channel Bandwidth: 1.4MHz)****CHANNEL 23095****FREQUENCY RANGE : 9kHz~1GHz****FREQUENCY RANGE : 1GHz~4GHz****FREQUENCY RANGE : 4GHz~7GHz****FREQUENCY RANGE : 7GHz~9GHz**

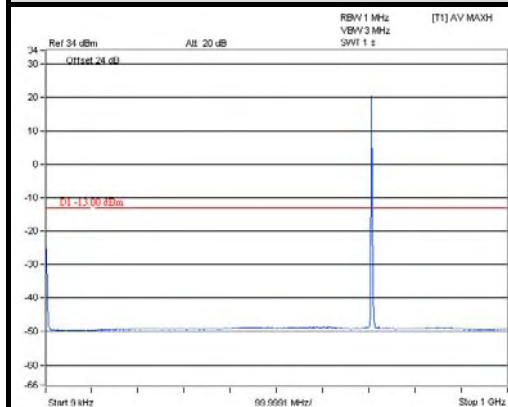


A D T

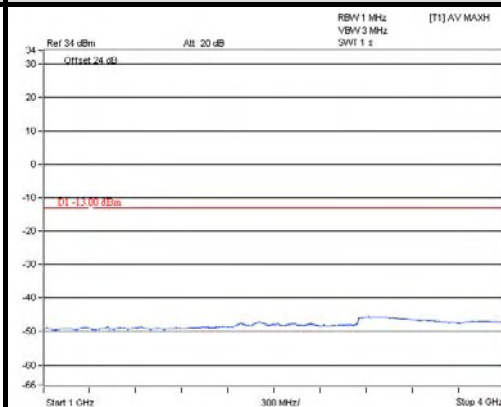
**LTE Band 12 (Channel Bandwidth: 3MHz)**

**CHANNEL 23095**

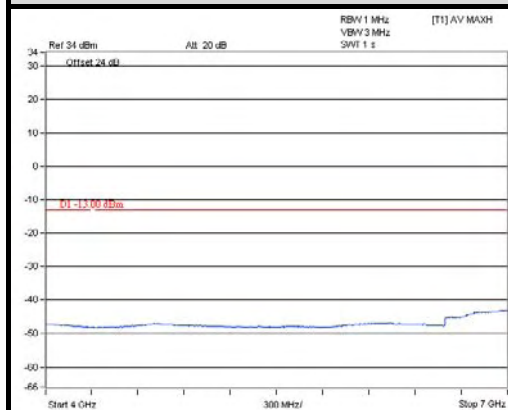
**FREQUENCY RANGE : 9kHz~1GHz**



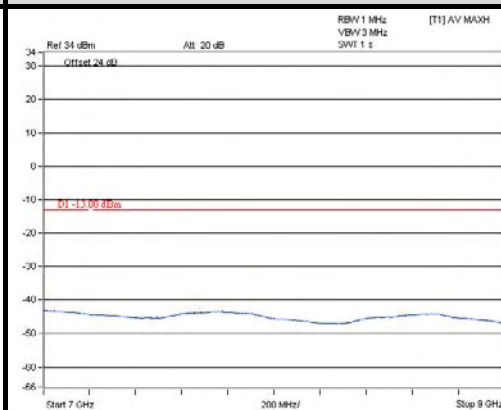
**FREQUENCY RANGE : 1GHz~4GHz**



**FREQUENCY RANGE : 4GHz~7GHz**



**FREQUENCY RANGE : 7GHz~9GHz**





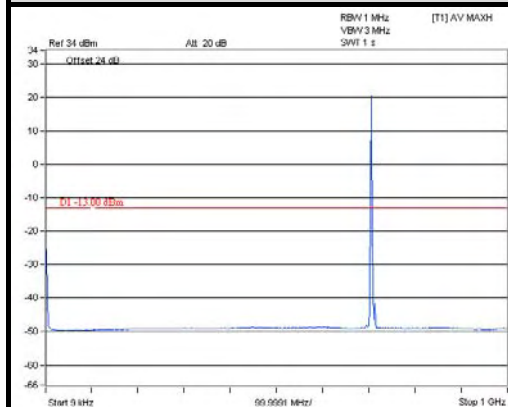


A D T

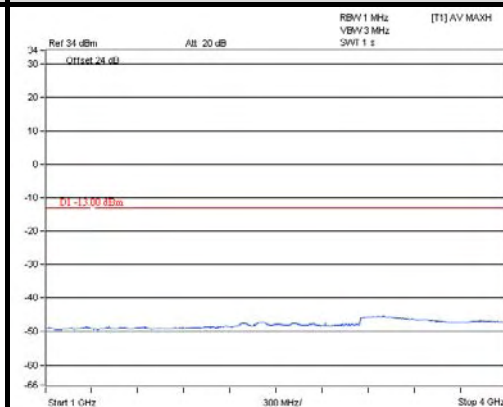
### LTE Band 12 (Channel Bandwidth: 5MHz)

#### CHANNEL 23095

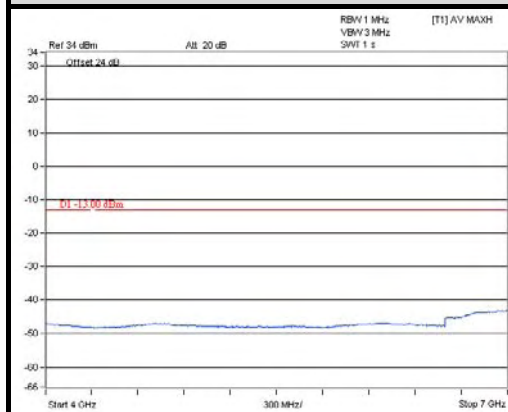
#### FREQUENCY RANGE : 9kHz~1GHz



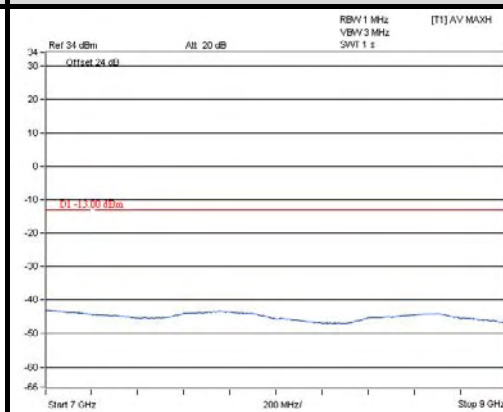
#### FREQUENCY RANGE : 1GHz~4GHz



#### FREQUENCY RANGE : 4GHz~7GHz



#### FREQUENCY RANGE : 7GHz~9GHz



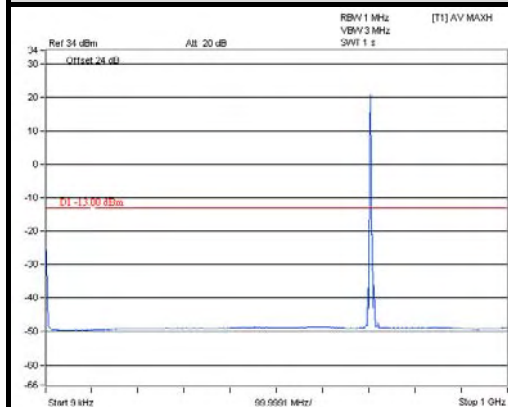


A D T

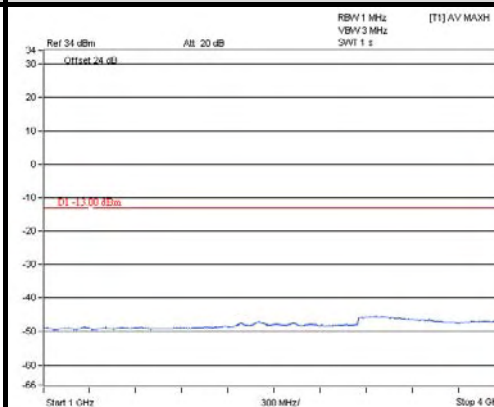
**LTE Band 12 (Channel Bandwidth: 10MHz)**

**CHANNEL 23095**

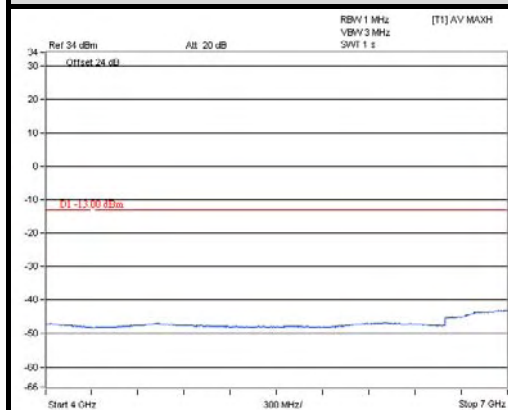
**FREQUENCY RANGE : 9kHz~1GHz**



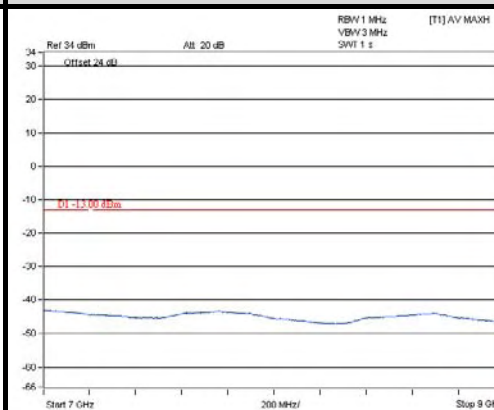
**FREQUENCY RANGE : 1GHz~4GHz**



**FREQUENCY RANGE : 4GHz~7GHz**



**FREQUENCY RANGE : 7GHz~9GHz**



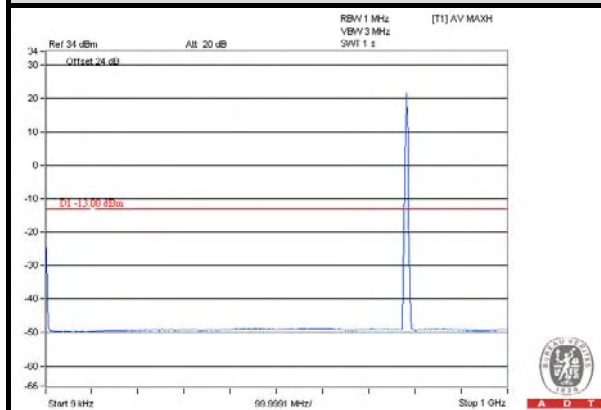


A D T

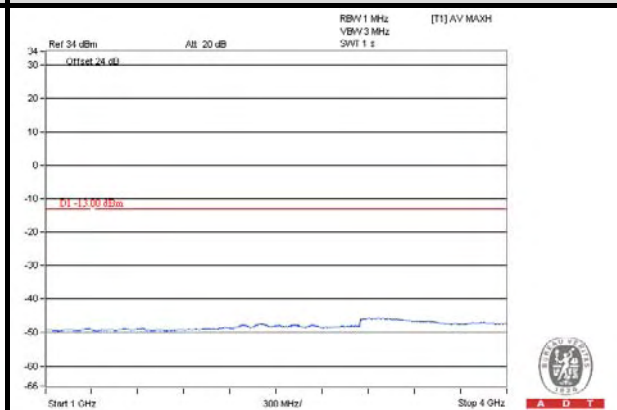
**LTE Band 13 (Channel Bandwidth: 5MHz)**

**CHANNEL 23230**

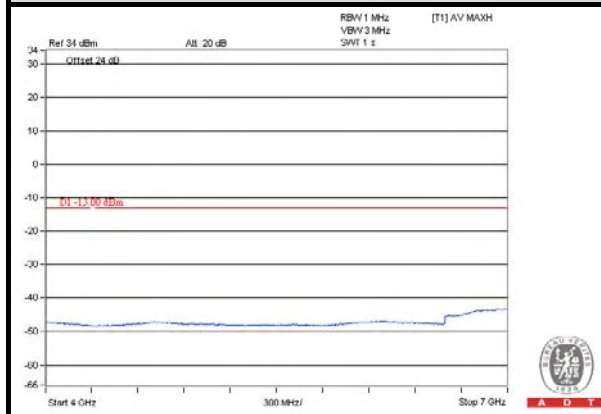
**FREQUENCY RANGE : 9kHz~1GHz**



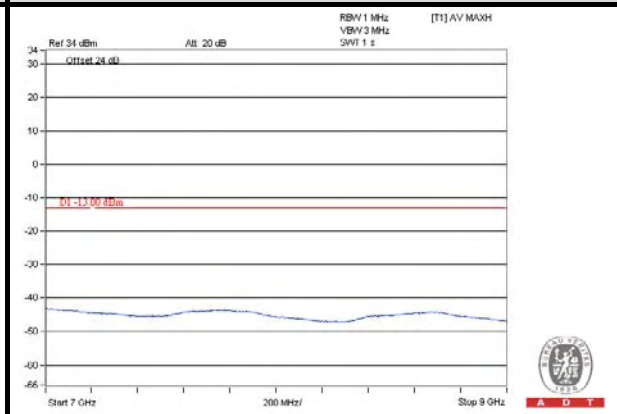
**FREQUENCY RANGE : 1GHz~4GHz**



**FREQUENCY RANGE : 4GHz~7GHz**



**FREQUENCY RANGE : 7GHz~9GHz**



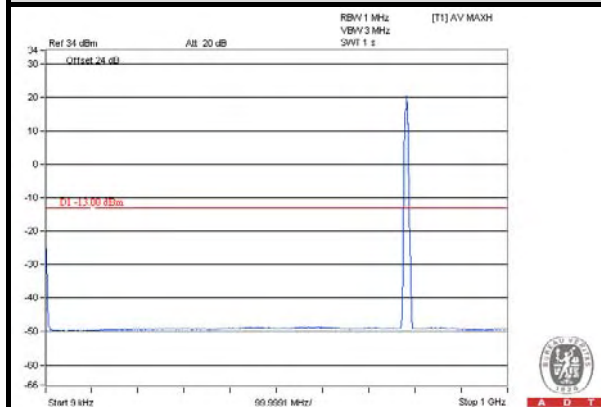


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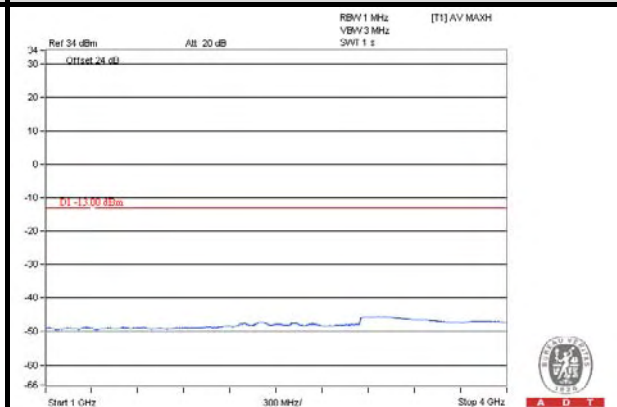
**LTE Band 13 (Channel Bandwidth: 10MHz)**

**CHANNEL 23230**

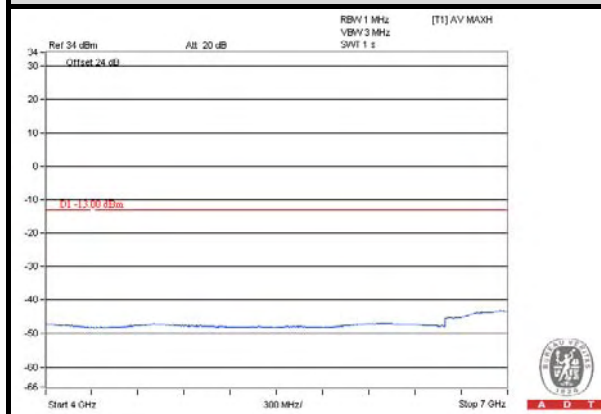
**FREQUENCY RANGE : 9kHz~1GHz**



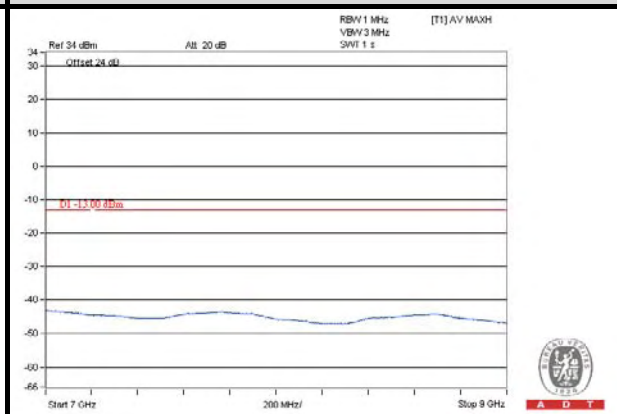
**FREQUENCY RANGE : 1GHz~4GHz**



**FREQUENCY RANGE : 4GHz~7GHz**



**FREQUENCY RANGE : 7GHz~9GHz**



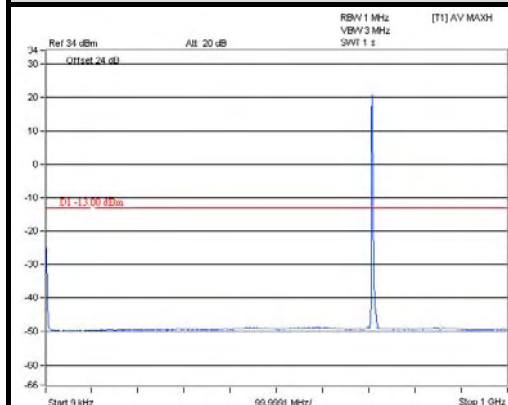


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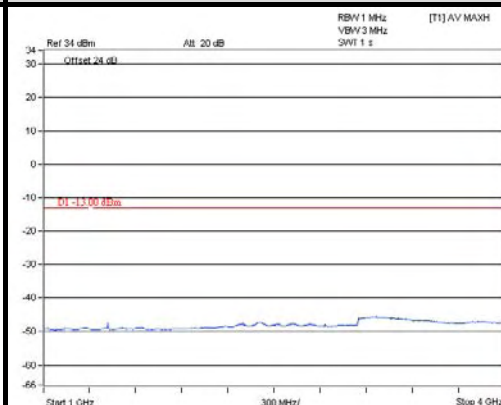
### LTE Band 17 (Channel Bandwidth: 5MHz)

#### CHANNEL 23790

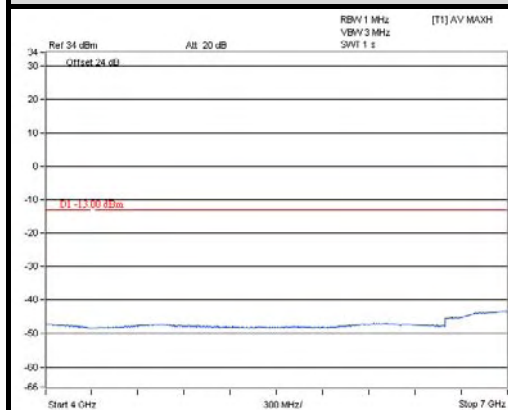
#### FREQUENCY RANGE : 9kHz~1GHz



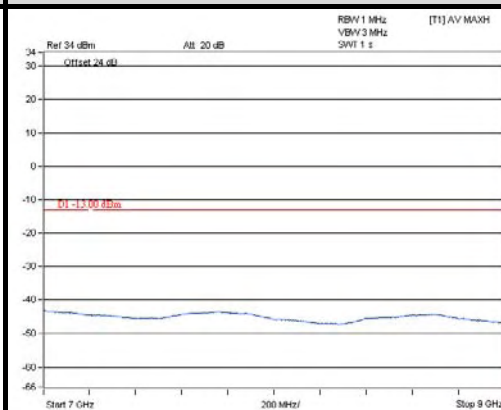
#### FREQUENCY RANGE : 1GHz~4GHz



#### FREQUENCY RANGE : 4GHz~7GHz



#### FREQUENCY RANGE : 7GHz~9GHz



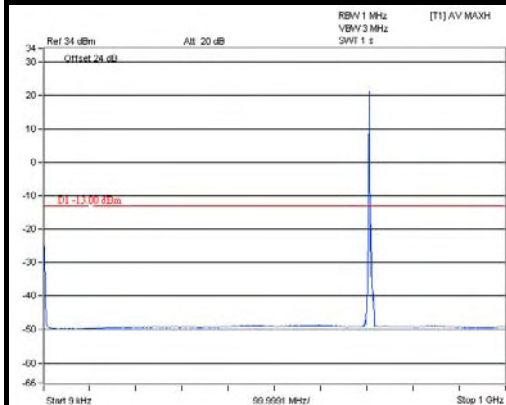


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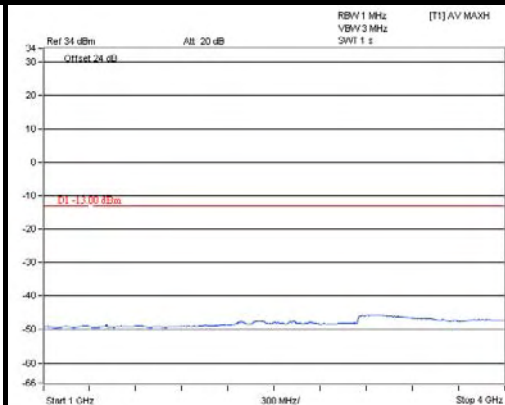
**LTE Band 17 (Channel Bandwidth: 10MHz)**

**CHANNEL 23790**

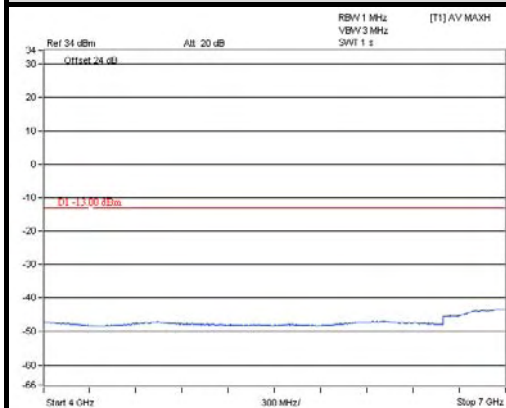
**FREQUENCY RANGE : 9kHz~1GHz**



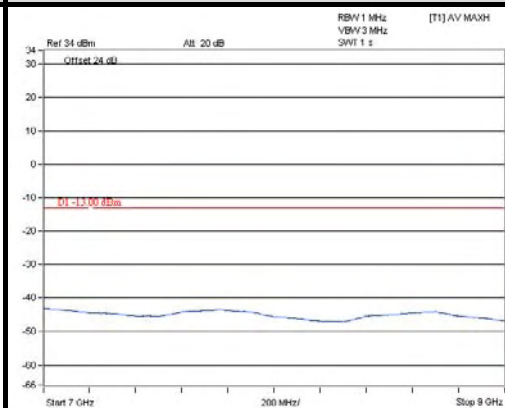
**FREQUENCY RANGE : 1GHz~4GHz**



**FREQUENCY RANGE : 4GHz~7GHz**



**FREQUENCY RANGE : 7GHz~9GHz**



## 4.7 RADIATED SPURIOUS EMISSION MEASUREMENT

### 4.7.1 LIMITS OF RADIATED SPURIOUS 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  $-13\text{dBm}$

### 4.7.2 TEST PROCEDURES

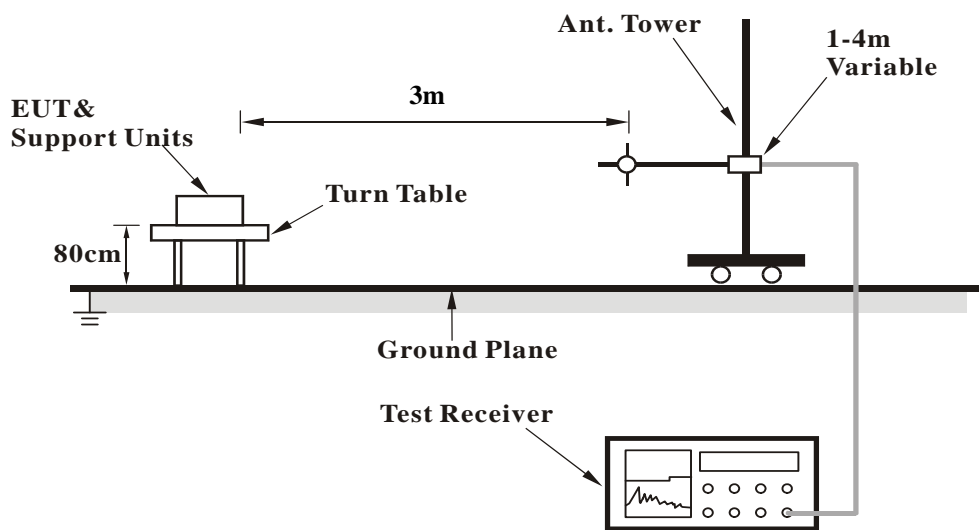
- a. Substitution method is used for EIRP measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from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

**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).





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#### 4.7.5 TEST RESULTS

##### WCDMA

<b>MODE</b>	TX channel 1413	<b>FREQUENCY RANGE</b>	Below 1000MHz
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ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	55.17	33.27	-13	-45.96	-8.98	-54.94	-41.94
2	163.79	29.18	-13	-60.08	-0.15	-60.23	-47.23
3	227.62	34.41	-13	-60.99	3.98	-57.01	-44.01
4	477.17	27.35	-13	-69.42	2.85	-66.57	-53.57
5	710.86	31.06	-13	-65.29	1.44	-63.84	-50.84
6	848.73	30.27	-13	-64.28	1.05	-63.23	-50.23

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	54.93	27.21	-13	-51.87	-9.05	-60.92	-47.92
2	141.39	25.40	-13	-68.14	-1.27	-69.41	-56.41
3	264.71	26.66	-13	-68.06	3.94	-64.11	-51.11
4	304.28	27.87	-13	-68.09	3.70	-64.39	-51.39
5	479.18	34.20	-13	-62.46	2.86	-59.60	-46.60
6	745.87	28.38	-13	-67.80	0.75	-67.05	-54.05

##### REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



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<b>MODE</b>	TX channel 1413	<b>FREQUENCY RANGE</b>	Above 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (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 (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (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. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



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**LTE BAND 4**

**CHANNEL BANDWIDTH: 1.4MHz / QPSK**

<b>MODE</b>	TX channel 20175	<b>FREQUENCY RANGE</b>	Below 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	31.088	27.83	-13	-43.82	-14.63	-58.46	-45.46
2	74.276	20.94	-13	-74.15	-2.11	-76.26	-63.26
3	134.219	23.13	-13	-72.47	-1.49	-73.96	-60.96
4	159.348	23.62	-13	-64.40	-0.79	-65.19	-52.19
5	205.604	24.87	-13	-70.60	4.27	-66.33	-53.33
6	239.815	25.52	-13	-69.84	3.81	-66.03	-53.03

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	31.26	41.37	-13	-30.35	-14.59	-44.94	-31.94
2	127.387	28.73	-13	-62.47	-1.23	-63.70	-50.70
3	158.998	25.71	-13	-62.21	-0.84	-63.05	-50.05
4	168.791	28.57	-13	-62.09	0.57	-61.52	-48.52
5	205.894	25.98	-13	-69.49	4.27	-65.23	-52.23
6	956.811	35.04	-13	-62.90	0.37	-62.52	-49.52

**REMARKS:**

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



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<b>MODE</b>	TX channel 20175	<b>FREQUENCY RANGE</b>	Above 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	3465	63.49	-13	-39.58	7.87	-31.71	-18.71
2	5197.5	61.71	-13	-42.81	7.05	-35.76	-22.76
3	6930	64.48	-13	-37.46	5.03	-32.43	-19.43
4	8662.5	57.1	-13	-45.61	4.23	-41.38	-28.38
5	10395	51.65	-13	-50.59	3.67	-46.92	-33.92
6	12127.5	51.83	-13	-49.68	4.37	-45.31	-32.31
7	13860	56.58	-13	-43.27	1.93	-41.33	-28.33
8	15592.5	55.33	-13	-45.86	3.85	-42.01	-29.01

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	3465	69.13	-13	-33.94	7.87	-26.07	-13.07
2	5197.5	65.3	-13	-39.22	7.05	-32.17	-19.17
3	6930	58.79	-13	-43.15	5.03	-38.12	-25.12
4	8662.5	50	-13	-52.71	4.23	-48.48	-35.48
5	10395	53.22	-13	-49.02	3.67	-45.35	-32.35
6	12127.5	56.27	-13	-45.24	4.37	-40.87	-27.87
7	13860	55.02	-13	-44.83	1.93	-42.89	-29.89
8	15592.5	62.06	-13	-39.13	3.85	-35.28	-22.28

**REMARKS:**

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



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**CHANNEL BANDWIDTH: 3MHz / QPSK**

<b>MODE</b>	TX channel 20175	<b>FREQUENCY RANGE</b>	Below 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	30.908	26.81	-13	-44.78	-14.68	-59.46	-46.46
2	73.856	21.81	-13	-73.36	-2.13	-75.49	-62.49
3	134.729	24.76	-13	-70.69	-1.47	-72.16	-59.16
4	158.438	22.66	-13	-65.11	-0.92	-66.03	-53.03
5	205.614	25.67	-13	-69.80	4.27	-65.53	-52.53
6	239.015	25.73	-13	-69.66	3.81	-65.86	-52.86

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	30.53	41.63	-13	-29.82	-14.77	-44.59	-31.59
2	127.167	29.55	-13	-61.60	-1.23	-62.83	-49.83
3	158.868	25.61	-13	-62.29	-0.86	-63.14	-50.14
4	168.661	27.79	-13	-62.83	0.55	-62.28	-49.28
5	207.244	25.78	-13	-69.69	4.25	-65.44	-52.44
6	956.651	35.98	-13	-61.96	0.37	-61.59	-48.59

**REMARKS:**

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



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<b>MODE</b>	TX channel 20175	<b>FREQUENCY RANGE</b>	Above 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	3465	62.75	-13	-40.32	7.87	-32.45	-19.45
2	5197.5	62.92	-13	-41.60	7.05	-34.55	-21.55
3	6930	64.83	-13	-37.11	5.03	-32.08	-19.08
4	8662.5	56.98	-13	-45.73	4.23	-41.50	-28.50
5	10395	50.72	-13	-51.52	3.67	-47.85	-34.85
6	12127.5	52.33	-13	-49.18	4.37	-44.81	-31.81
7	13860	56.47	-13	-43.38	1.93	-41.44	-28.44
8	15592.5	56.27	-13	-44.92	3.85	-41.07	-28.07

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	3465	68.79	-13	-34.28	7.87	-26.41	-13.41
2	5197.5	65.11	-13	-39.41	7.05	-32.36	-19.36
3	6930	58.62	-13	-43.32	5.03	-38.29	-25.29
4	8662.5	49.84	-13	-52.87	4.23	-48.64	-35.64
5	10395	53.14	-13	-49.10	3.67	-45.43	-32.43
6	12127.5	55.76	-13	-45.75	4.37	-41.38	-28.38
7	13860	54.67	-13	-45.18	1.93	-43.24	-30.24
8	15592.5	61.92	-13	-39.27	3.85	-35.42	-22.42

**REMARKS:**

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



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**CHANNEL BANDWIDTH: 5MHz / QPSK**

<b>MODE</b>	TX channel 20175	<b>FREQUENCY RANGE</b>	Below 1000MHz
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<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>							
No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	31.208	27.99	-13	-43.71	-14.60	-58.31	-45.31
2	74.266	22.42	-13	-72.68	-2.11	-74.79	-61.79
3	134.389	23.08	-13	-72.47	-1.48	-73.95	-60.95
4	158.738	22.70	-13	-65.15	-0.88	-66.03	-53.03
5	207.344	24.95	-13	-70.52	4.25	-66.27	-53.27
6	240.705	25.58	-13	-69.75	3.82	-65.93	-52.93
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>							
No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	31.61	40.42	-13	-31.42	-14.51	-45.93	-32.93
2	126.817	28.35	-13	-62.72	-1.23	-63.95	-50.95
3	158.568	26.61	-13	-61.99	-0.74	-62.73	-49.73
4	167.611	27.91	-13	-62.42	0.40	-62.02	-49.02
5	205.454	25.79	-13	-69.68	4.27	-65.41	-52.41
6	957.461	36.22	-13	-61.70	0.38	-61.32	-48.32

**REMARKS:**

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



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<b>MODE</b>	TX channel 20175	<b>FREQUENCY RANGE</b>	Above 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	3465	62.64	-13	-40.43	7.87	-32.56	-19.56
2	5197.5	61.31	-13	-43.21	7.05	-36.16	-23.16
3	6930	64.02	-13	-37.92	5.03	-32.89	-19.89
4	8662.5	57.48	-13	-45.23	4.23	-41.00	-28.00
5	10395	50.18	-13	-52.06	3.67	-48.39	-35.39
6	12127.5	51.03	-13	-50.48	4.37	-46.11	-33.11
7	13860	55.43	-13	-44.42	1.93	-42.48	-29.48
8	15592.5	55.67	-13	-45.52	3.85	-41.67	-28.67

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	3465	67.99	-13	-35.08	7.87	-27.21	-14.21
2	5197.5	65.89	-13	-38.63	7.05	-31.58	-18.58
3	6930	59.58	-13	-42.36	5.03	-37.33	-24.33
4	8662.5	49.58	-13	-53.13	4.23	-48.90	-35.90
5	10395	53.55	-13	-48.69	3.67	-45.02	-32.02
6	12127.5	56.55	-13	-44.96	4.37	-40.59	-27.59
7	13860	55.41	-13	-44.44	1.93	-42.50	-29.50
8	15592.5	62.05	-13	-39.14	3.85	-35.29	-22.29

**REMARKS:**

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).





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**CHANNEL BANDWIDTH: 10MHz / QPSK**

<b>MODE</b>	TX channel 20175	<b>FREQUENCY RANGE</b>	Below 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	30.118	27.80	-13	-43.50	-14.87	-58.37	-45.37
2	73.996	20.65	-13	-74.49	-2.12	-76.62	-63.62
3	134.119	23.01	-13	-72.62	-1.49	-74.11	-61.11
4	157.518	22.20	-13	-65.31	-1.05	-66.36	-53.36
5	205.414	25.14	-13	-70.33	4.27	-66.06	-53.06
6	239.485	27.16	-13	-68.21	3.81	-64.40	-51.40

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	31.94	40.93	-13	-31.03	-14.43	-45.46	-32.46
2	127.757	29.42	-13	-61.86	-1.23	-63.09	-50.09
3	158.868	25.34	-13	-63.19	-0.73	-63.92	-50.92
4	167.871	29.14	-13	-61.26	0.44	-60.83	-47.83
5	207.314	27.15	-13	-68.32	4.25	-64.07	-51.07
6	957.901	35.19	-13	-62.71	0.38	-62.33	-49.33

**REMARKS:**

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



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<b>MODE</b>	TX channel 20175	<b>FREQUENCY RANGE</b>	Above 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	3465	63.18	-13	-39.89	7.87	-32.02	-19.02
2	5197.5	60.39	-13	-44.13	7.05	-37.08	-24.08
3	6930	63.74	-13	-38.20	5.03	-33.17	-20.17
4	8662.5	57.74	-13	-44.97	4.23	-40.74	-27.74
5	10395	50.43	-13	-51.81	3.67	-48.14	-35.14
6	12127.5	50.62	-13	-50.89	4.37	-46.52	-33.52
7	13860	56.4	-13	-43.45	1.93	-41.51	-28.51
8	15592.5	55.95	-13	-45.24	3.85	-41.39	-28.39

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	3465	67.39	-13	-35.68	7.87	-27.81	-14.81
2	5197.5	66.39	-13	-38.13	7.05	-31.08	-18.08
3	6930	59.37	-13	-42.57	5.03	-37.54	-24.54
4	8662.5	48.79	-13	-53.92	4.23	-49.69	-36.69
5	10395	53.11	-13	-49.13	3.67	-45.46	-32.46
6	12127.5	56.34	-13	-45.17	4.37	-40.80	-27.80
7	13860	54.08	-13	-45.77	1.93	-43.83	-30.83
8	15592.5	62.4	-13	-38.79	3.85	-34.94	-21.94

**REMARKS:**

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



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**CHANNEL BANDWIDTH: 15MHz / QPSK**

<b>MODE</b>	TX channel 20175	<b>FREQUENCY RANGE</b>	Below 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	32.58	28.29	-13	-43.90	-14.27	-58.17	-45.17
2	74.016	21.74	-13	-73.40	-2.12	-75.52	-62.52
3	133.919	23.78	-13	-71.90	-1.50	-73.40	-60.40
4	158.508	23.56	-13	-64.23	-0.91	-65.14	-52.14
5	206.104	25.94	-13	-69.53	4.26	-65.27	-52.27
6	239.105	25.66	-13	-69.73	3.81	-65.92	-52.92

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	31.33	40.97	-13	-30.77	-14.57	-45.35	-32.35
2	126.337	27.98	-13	-62.99	-1.22	-64.22	-51.22
3	158.638	25.62	-13	-62.97	-0.74	-63.71	-50.71
4	167.991	27.80	-13	-62.64	0.45	-62.18	-49.18
5	206.394	27.06	-13	-68.41	4.26	-64.15	-51.15
6	956.381	34.67	-13	-63.28	0.37	-62.91	-49.91

**REMARKS:**

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



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<b>MODE</b>	TX channel 20175	<b>FREQUENCY RANGE</b>	Above 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	3465	61.66	-13	-41.41	7.87	-33.54	-20.54
2	5197.5	60.52	-13	-44.00	7.05	-36.95	-23.95
3	6930	63.33	-13	-38.61	5.03	-33.58	-20.58
4	8662.5	57.69	-13	-45.02	4.23	-40.79	-27.79
5	10395	50.12	-13	-52.12	3.67	-48.45	-35.45
6	12127.5	50.36	-13	-51.15	4.37	-46.78	-33.78
7	13860	56.5	-13	-43.35	1.93	-41.41	-28.41
8	15592.5	54.99	-13	-46.20	3.85	-42.35	-29.35

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	3465	66.29	-13	-36.78	7.87	-28.91	-15.91
2	5197.5	65.49	-13	-39.03	7.05	-31.98	-18.98
3	6930	58.62	-13	-43.32	5.03	-38.29	-25.29
4	8662.5	48.71	-13	-54.00	4.23	-49.77	-36.77
5	10395	52.13	-13	-50.11	3.67	-46.44	-33.44
6	12127.5	56.09	-13	-45.42	4.37	-41.05	-28.05
7	13860	54.03	-13	-45.82	1.93	-43.88	-30.88
8	15592.5	62.24	-13	-38.95	3.85	-35.10	-22.10

**REMARKS:**

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



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**CHANNEL BANDWIDTH: 20MHz / QPSK**

<b>MODE</b>	TX channel 20175	<b>FREQUENCY RANGE</b>	Below 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	30.68	28.06	-13	-43.45	-14.73	-58.18	-45.18
2	74.396	20.48	-13	-74.59	-2.10	-76.70	-63.70
3	133.869	23.85	-13	-71.85	-1.50	-73.35	-60.35
4	158.868	22.13	-13	-65.76	-0.86	-66.62	-53.62
5	206.764	25.89	-13	-69.58	4.25	-65.33	-52.33
6	239.675	25.91	-13	-69.46	3.81	-65.65	-52.65

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	31.3	40.65	-13	-31.08	-14.58	-45.66	-32.66
2	126.877	28.10	-13	-62.99	-1.23	-64.22	-51.22
3	158.988	25.48	-13	-63.01	-0.73	-63.74	-50.74
4	168.871	28.45	-13	-62.23	0.58	-61.65	-48.65
5	206.834	25.38	-13	-70.09	4.25	-65.84	-52.84
6	957.51	36.08	-13	-61.84	0.38	-61.46	-48.46

**REMARKS:**

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



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<b>MODE</b>	TX channel 20175	<b>FREQUENCY RANGE</b>	Above 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	3465	60.89	-13	-42.18	7.87	-34.31	-21.31
2	5197.5	60.22	-13	-44.30	7.05	-37.25	-24.25
3	6930	62.94	-13	-39.00	5.03	-33.97	-20.97
4	8662.5	56.95	-13	-45.76	4.23	-41.53	-28.53
5	10395	50.14	-13	-52.10	3.67	-48.43	-35.43
6	12127.5	49.24	-13	-52.27	4.37	-47.90	-34.90
7	13860	55.61	-13	-44.24	1.93	-42.30	-29.30
8	15592.5	54.13	-13	-47.06	3.85	-43.21	-30.21

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	3465	65.87	-13	-37.20	7.87	-29.33	-16.33
2	5197.5	64.92	-13	-39.60	7.05	-32.55	-19.55
3	6930	57.07	-13	-44.87	5.03	-39.84	-26.84
4	8662.5	46.39	-13	-56.32	4.23	-52.09	-39.09
5	10395	51.59	-13	-50.65	3.67	-46.98	-33.98
6	12127.5	55.08	-13	-46.43	4.37	-42.06	-29.06
7	13860	54.84	-13	-45.01	1.93	-43.07	-30.07
8	15592.5	62.7	-13	-38.49	3.85	-34.64	-21.64

**REMARKS:**

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



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**LTE BAND 12**

**CHANNEL BANDWIDTH: 1.4MHz / QPSK**

<b>MODE</b>	TX channel 23095	<b>FREQUENCY RANGE</b>	Below 1000MHz
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<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>							
No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	30.388	27.42	-13	-43.98	-14.80	-58.79	-45.79
2	74.766	21.44	-13	-73.57	-2.08	-75.65	-62.65
3	134.469	23.89	-13	-71.64	-1.48	-73.12	-60.12
4	158.428	22.71	-13	-65.05	-0.92	-65.98	-52.98
5	206.394	25.06	-13	-70.41	4.26	-66.15	-53.15
6	240.005	26.25	-13	-69.10	3.82	-65.29	-52.29
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>							
No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	31.1	40.95	-13	-30.71	-14.63	-45.34	-32.34
2	127.097	28.70	-13	-62.44	-1.23	-63.67	-50.67
3	158.428	25.91	-13	-61.85	-0.92	-62.78	-49.78
4	168.031	28.35	-13	-62.10	0.46	-61.64	-48.64
5	206.394	26.34	-13	-69.13	4.26	-64.87	-51.87
6	956.981	35.45	-13	-62.48	0.38	-62.11	-49.11

**REMARKS:**

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



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<b>MODE</b>	TX channel 23095	<b>FREQUENCY RANGE</b>	Above 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1415	74.50	-13	-29.22	5.58	-23.64	-10.64
2	2122.5	57.40	-13	-42.97	6.84	-36.14	-23.14
3	2830	60.10	-13	-41.08	6.97	-34.11	-21.11
4	3537.5	49.3	-13	-54.04	7.82	-46.21	-33.21
5	4245	46.6	-13	-58.18	7.42	-50.76	-37.76
6	4952.5	47.7	-13	-56.56	7.04	-49.52	-36.52
7	5660	49.22	-13	-55.49	7.01	-48.48	-35.48
8	6367.5	49.35	-13	-54.79	6.15	-48.64	-35.64
9	7075	49.01	-13	-53.10	4.91	-48.19	-35.19

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1415	71.9	-13	-31.82	5.58	-26.24	-13.24
2	2122.5	57.8	-13	-42.57	6.84	-35.74	-22.74
3	2830	63.5	-13	-37.68	6.97	-30.71	-17.71
4	3537.5	49.29	-13	-54.05	7.82	-46.22	-33.22
5	4245	50.9	-13	-53.88	7.42	-46.46	-33.46
6	4952.5	48.51	-13	-55.75	7.04	-48.71	-35.71
7	5660	49.3	-13	-55.41	7.01	-48.40	-35.40
8	6367.5	49.77	-13	-54.37	6.15	-48.22	-35.22
9	7075	49.24	-13	-52.87	4.91	-47.96	-34.96

**REMARKS:**

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).





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**CHANNEL BANDWIDTH: 3MHz / QPSK**

<b>MODE</b>	TX channel 23095	<b>FREQUENCY RANGE</b>	Below 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	30.478	27.22	-13	-44.21	-14.78	-59.00	-46.00
2	75.216	21.50	-13	-73.43	-2.05	-75.49	-62.49
3	134.139	24.43	-13	-71.19	-1.49	-72.68	-59.68
4	159.348	23.28	-13	-64.74	-0.79	-65.53	-52.53
5	205.834	24.66	-13	-70.81	4.27	-66.55	-53.55
6	239.855	26.19	-13	-69.17	3.81	-65.36	-52.36

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	31.58	41.72	-13	-30.11	-14.51	-44.63	-31.63
2	126.727	29.16	-13	-61.90	-1.23	-63.12	-50.12
3	157.618	25.61	-13	-61.93	-1.04	-62.97	-49.97
4	168.141	28.40	-13	-62.08	0.48	-61.60	-48.60
5	207.164	25.45	-13	-70.02	4.25	-65.77	-52.77
6	957.581	36.32	-13	-61.59	0.38	-61.21	-48.21

**REMARKS:**

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



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<b>MODE</b>	TX channel 23095	<b>FREQUENCY RANGE</b>	Above 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1415	75.42	-13	-28.30	5.58	-22.72	-9.72
2	2122.5	57.17	-13	-43.20	6.84	-36.37	-23.37
3	2830	60.43	-13	-40.75	6.97	-33.78	-20.78
4	3537.5	49.9	-13	-53.44	7.82	-45.61	-32.61
5	4245	46.93	-13	-57.85	7.42	-50.43	-37.43
6	4952.5	48.36	-13	-55.90	7.04	-48.86	-35.86
7	5660	49.72	-13	-54.99	7.01	-47.98	-34.98
8	6367.5	49.56	-13	-54.58	6.15	-48.43	-35.43
9	7075	48.54	-13	-53.57	4.91	-48.66	-35.66

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1415	70.92	-13	-32.80	5.58	-27.22	-14.22
2	2122.5	58.24	-13	-42.13	6.84	-35.30	-22.30
3	2830	63.43	-13	-37.75	6.97	-30.78	-17.78
4	3537.5	48.75	-13	-54.59	7.82	-46.76	-33.76
5	4245	50.06	-13	-54.72	7.42	-47.30	-34.30
6	4952.5	48.41	-13	-55.85	7.04	-48.81	-35.81
7	5660	50.28	-13	-54.43	7.01	-47.42	-34.42
8	6367.5	49.07	-13	-55.07	6.15	-48.92	-35.92
9	7075	49.68	-13	-52.43	4.91	-47.52	-34.52

**REMARKS:**

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



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**CHANNEL BANDWIDTH: 5MHz / QPSK**

<b>MODE</b>	TX channel 23095	<b>FREQUENCY RANGE</b>	Below 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	30.5	27.28	-13	-44.16	-14.78	-58.94	-45.94
2	75.446	21.83	-13	-73.06	-2.04	-75.10	-62.10
3	133.599	24.68	-13	-67.87	-1.27	-69.14	-56.14
4	159.258	24.05	-13	-63.95	-0.80	-64.75	-51.75
5	204.914	24.31	-13	-71.17	4.28	-66.89	-53.89
6	239.025	26.18	-13	-69.21	3.81	-65.41	-52.41

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	31.57	41.24	-13	-30.59	-14.52	-45.11	-32.11
2	127.527	29.57	-13	-61.66	-1.23	-62.89	-49.89
3	157.928	25.79	-13	-61.83	-1.00	-62.83	-49.83
4	167.801	28.47	-13	-61.91	0.43	-61.49	-48.49
5	205.784	25.52	-13	-69.95	4.27	-65.69	-52.69
6	956.121	35.32	-13	-62.64	0.37	-62.27	-49.27

**REMARKS:**

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



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<b>MODE</b>	TX channel 23095	<b>FREQUENCY RANGE</b>	Above 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1415	74.66	-13	-29.06	5.58	-23.48	-10.48
2	2122.5	57.32	-13	-43.05	6.84	-36.22	-23.22
3	2830	60.52	-13	-40.66	6.97	-33.69	-20.69
4	3537.5	49.76	-13	-53.58	7.82	-45.75	-32.75
5	4245	46.87	-13	-57.91	7.42	-50.49	-37.49
6	4952.5	48.91	-13	-55.35	7.04	-48.31	-35.31
7	5660	49.04	-13	-55.67	7.01	-48.66	-35.66
8	6367.5	50.38	-13	-53.76	6.15	-47.61	-34.61
9	7075	48.92	-13	-53.19	4.91	-48.28	-35.28

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1415	71.15	-13	-32.57	5.58	-26.99	-13.99
2	2122.5	57.86	-13	-42.51	6.84	-35.68	-22.68
3	2830	63.81	-13	-37.37	6.97	-30.40	-17.40
4	3537.5	48.99	-13	-54.35	7.82	-46.52	-33.52
5	4245	50.06	-13	-54.72	7.42	-47.30	-34.30
6	4952.5	48.93	-13	-55.33	7.04	-48.29	-35.29
7	5660	49.44	-13	-55.27	7.01	-48.26	-35.26
8	6367.5	49.27	-13	-54.87	6.15	-48.72	-35.72
9	7075	49.13	-13	-52.98	4.91	-48.07	-35.07

**REMARKS:**

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



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**CHANNEL BANDWIDTH: 10MHz / QPSK**

<b>MODE</b>	TX channel 23095	<b>FREQUENCY RANGE</b>	Below 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	31.148	27.44	-13	-44.24	-14.62	-58.86	-45.86
2	74.526	21.99	-13	-73.06	-2.09	-75.16	-62.16
3	134.119	23.62	-13	-72.01	-1.49	-73.50	-60.50
4	158.578	24.10	-13	-63.71	-0.90	-64.61	-51.61
5	206.084	25.39	-13	-70.08	4.26	-65.82	-52.82
6	239.315	27.16	-13	-68.22	3.81	-64.41	-51.41

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	31.08	39.99	-13	-31.66	-14.64	-46.30	-33.30
2	126.677	28.20	-13	-62.85	-1.23	-64.07	-51.07
3	158.868	25.94	-13	-61.95	-0.86	-62.81	-49.81
4	168.471	28.62	-13	-61.95	0.52	-61.43	-48.43
5	206.894	26.54	-13	-68.93	4.25	-64.68	-51.68
6	956.091	35.91	-13	-62.05	0.37	-61.68	-48.68

**REMARKS:**

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



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<b>MODE</b>	TX channel 23095	<b>FREQUENCY RANGE</b>	Above 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1415	76.19	-13	-27.53	5.58	-21.95	-8.95
2	2122.5	56.41	-13	-43.96	6.84	-37.13	-24.13
3	2830	60.86	-13	-40.32	6.97	-33.35	-20.35
4	3537.5	49.28	-13	-54.06	7.82	-46.23	-33.23
5	4245	46.26	-13	-58.52	7.42	-51.10	-38.10
6	4952.5	49.15	-13	-55.11	7.04	-48.07	-35.07
7	5660	49.72	-13	-54.99	7.01	-47.98	-34.98
8	6367.5	49.65	-13	-54.49	6.15	-48.34	-35.34
9	7075	48.54	-13	-53.57	4.91	-48.66	-35.66

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1415	71.73	-13	-31.99	5.58	-26.41	-13.41
2	2122.5	57.46	-13	-42.91	6.84	-36.08	-23.08
3	2830	62.49	-13	-38.69	6.97	-31.72	-18.72
4	3537.5	49.14	-13	-54.20	7.82	-46.37	-33.37
5	4245	50.98	-13	-53.80	7.42	-46.38	-33.38
6	4952.5	48.89	-13	-55.37	7.04	-48.33	-35.33
7	5660	49.8	-13	-54.91	7.01	-47.90	-34.90
8	6367.5	49.83	-13	-54.31	6.15	-48.16	-35.16
9	7075	48.72	-13	-53.39	4.91	-48.48	-35.48

**REMARKS:**

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



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**LTE BAND 13**

**CHANNEL BANDWIDTH: 5MHz / QPSK**

<b>MODE</b>	TX channel 23230	<b>FREQUENCY RANGE</b>	Below 1000MHz
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<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>							
No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	30.348	26.44	-13	-44.95	-14.81	-59.76	-46.76
2	75.586	20.87	-13	-74.00	-2.03	-76.03	-63.03
3	133.909	22.99	-13	-69.63	-1.27	-70.90	-57.90
4	158.128	23.21	-13	-64.47	-0.97	-65.44	-52.44
5	205.994	24.98	-13	-70.49	4.26	-66.23	-53.23
6	240.335	25.43	-13	-69.91	3.82	-66.09	-53.09
<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>							
No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	31.9	40.70	-13	-31.25	-14.44	-45.68	-32.68
2	126.117	27.75	-13	-63.18	-1.22	-64.40	-51.40
3	159.208	25.28	-13	-62.70	-0.81	-63.51	-50.51
4	167.621	28.50	-13	-61.83	0.40	-61.43	-48.43
5	207.194	26.44	-13	-69.03	4.25	-64.78	-51.78
6	957.021	35.08	-13	-62.85	0.38	-62.48	-49.48

**REMARKS:**

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



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<b>MODE</b>	TX channel 23230	<b>FREQUENCY RANGE</b>	Above 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1564	51.00	-13	-52.17	6.11	-46.06	-33.06
2	2346	57.37	-13	-41.86	6.73	-35.13	-22.13
3	3128	59.14	-13	-43.61	7.32	-36.29	-23.29
4	3910	47.03	-13	-58.09	7.56	-50.53	-37.53
5	4692	48.67	-13	-55.74	7.19	-48.55	-35.55
6	5474	50	-13	-55.02	7.14	-47.89	-34.89
7	6256	48.81	-13	-55.33	6.34	-48.99	-35.99
8	7038	54.55	-13	-47.52	4.94	-42.58	-29.58
9	7820	54.93	-13	-47.69	4.27	-43.42	-30.42

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1564	52.4	-13	-50.77	6.11	-44.66	-31.66
2	2346	56.41	-13	-42.82	6.73	-36.09	-23.09
3	3128	61.11	-13	-41.64	7.32	-34.32	-21.32
4	3910	51.82	-13	-53.30	7.56	-45.74	-32.74
5	4692	47.25	-13	-57.16	7.19	-49.97	-36.97
6	5474	48.68	-13	-56.34	7.14	-49.21	-36.21
7	6256	49.91	-13	-54.23	6.34	-47.89	-34.89
8	7038	53.99	-13	-48.08	4.94	-43.14	-30.14
9	7820	51.85	-13	-50.77	4.27	-46.50	-33.50

**REMARKS:**

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).





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**CHANNEL BANDWIDTH: 10MHz / QPSK**

<b>MODE</b>	TX channel 23230	<b>FREQUENCY RANGE</b>	Below 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	30.798	27.70	-13	-43.85	-14.70	-58.55	-45.55
2	76.126	21.89	-13	-72.89	-2.00	-74.89	-61.89
3	133.259	23.61	-13	-68.87	-1.27	-70.13	-57.13
4	159.138	22.62	-13	-65.34	-0.82	-66.16	-53.16
5	205.474	23.73	-13	-71.74	4.27	-67.47	-54.47
6	238.945	25.51	-13	-69.89	3.81	-66.08	-53.08

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	32.36	41.33	-13	-30.78	-14.32	-45.11	-32.11
2	125.957	28.42	-13	-62.47	-1.22	-63.69	-50.69
3	158.208	25.23	-13	-62.47	-0.95	-63.43	-50.43
4	168.501	28.69	-13	-61.89	0.53	-61.36	-48.36
5	207.074	24.91	-13	-70.56	4.25	-66.31	-53.31
6	958.321	36.98	-13	-60.91	0.38	-60.53	-47.53

**REMARKS:**

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



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<b>MODE</b>	TX channel 23230	<b>FREQUENCY RANGE</b>	Above 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1564	51.04	-13	-52.13	6.11	-46.02	-33.02
2	2346	56.57	-13	-42.66	6.73	-35.93	-22.93
3	3128	58.63	-13	-44.12	7.32	-36.80	-23.80
4	3910	47.55	-13	-57.57	7.56	-50.01	-37.01
5	4692	48.04	-13	-56.37	7.19	-49.18	-36.18
6	5474	49.36	-13	-55.66	7.14	-48.53	-35.53
7	6256	49.71	-13	-54.43	6.34	-48.09	-35.09
8	7038	53.58	-13	-48.49	4.94	-43.55	-30.55
9	7820	54.07	-13	-48.55	4.27	-44.28	-31.28

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1564	53.1	-13	-50.07	6.11	-43.96	-30.96
2	2346	55.99	-13	-43.24	6.73	-36.51	-23.51
3	3128	60.68	-13	-42.07	7.32	-34.75	-21.75
4	3910	51.48	-13	-53.64	7.56	-46.08	-33.08
5	4692	47.39	-13	-57.02	7.19	-49.83	-36.83
6	5474	48.41	-13	-56.61	7.14	-49.48	-36.48
7	6256	49.58	-13	-54.56	6.34	-48.22	-35.22
8	7038	54.54	-13	-47.53	4.94	-42.59	-29.59
9	7820	51.74	-13	-50.88	4.27	-46.61	-33.61

**REMARKS:**

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



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**LTE BAND 17**

**CHANNEL BANDWIDTH: 5MHz / QPSK**

<b>MODE</b>	TX channel 23790	<b>FREQUENCY RANGE</b>	Below 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	30.298	27.81	-13	-43.56	-14.83	-58.39	-45.39
2	74.926	22.88	-13	-72.10	-2.07	-74.17	-61.17
3	133.319	23.93	-13	-71.93	-1.51	-73.44	-60.44
4	157.668	24.47	-13	-63.08	-1.03	-64.11	-51.11
5	206.984	24.40	-13	-71.07	4.25	-66.82	-53.82
6	238.375	26.63	-13	-68.79	3.80	-64.99	-51.99

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	31.24	41.20	-13	-30.51	-14.60	-45.11	-32.11
2	126.187	27.14	-13	-63.80	-1.22	-65.02	-52.02
3	159.868	27.06	-13	-61.11	-0.72	-61.82	-48.82
4	168.191	28.93	-13	-61.56	0.48	-61.08	-48.08
5	205.504	25.81	-13	-69.66	4.27	-65.39	-52.39
6	956.731	36.53	-13	-61.41	0.37	-61.04	-48.04

**REMARKS:**

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



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<b>MODE</b>	TX channel 23790	<b>FREQUENCY RANGE</b>	Above 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1420	51.40	-13	-52.49	5.85	-46.64	1420
2	2130	55.71	-13	-44.62	6.83	-37.79	2130
3	2840	58.55	-13	-43.84	6.90	-36.94	2840
4	3550	47.79	-13	-55.59	7.82	-47.78	3550
5	4260	48.87	-13	-55.89	7.41	-48.48	4260
6	4970	49.39	-13	-54.86	7.03	-47.83	4970
7	5680	50.33	-13	-54.35	6.99	-47.35	5680
8	6390	54.28	-13	-49.86	6.11	-43.75	6390
9	7100	52.66	-13	-49.48	4.89	-44.59	7100

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1420	68.9	-13	-34.99	5.85	-29.14	1420
2	2130	55.97	-13	-44.36	6.83	-37.53	2130
3	2840	61.94	-13	-40.45	6.90	-33.55	2840
4	3550	51.77	-13	-51.61	7.82	-43.80	3550
5	4260	47.68	-13	-57.08	7.41	-49.67	4260
6	4970	49.12	-13	-55.13	7.03	-48.10	4970
7	5680	50.22	-13	-54.46	6.99	-47.46	5680
8	6390	54.07	-13	-50.07	6.11	-43.96	6390
9	7100	52.17	-13	-49.97	4.89	-45.08	7100

**REMARKS:**

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).



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**CHANNEL BANDWIDTH: 10MHz / QPSK**

<b>MODE</b>	TX channel 23790	<b>FREQUENCY RANGE</b>	Below 1000MHz
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**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	31.208	28.40	-13	-43.30	-14.60	-57.90	-44.90
2	74.346	22.98	-13	-72.10	-2.10	-74.21	-61.21
3	134.339	22.86	-13	-72.70	-1.48	-74.19	-61.19
4	158.818	24.01	-13	-63.86	-0.87	-64.73	-51.73
5	206.704	24.43	-13	-71.04	4.25	-66.79	-53.79
6	239.575	26.72	-13	-68.65	3.81	-64.84	-51.84

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	30.32	40.57	-13	-30.81	-14.82	-45.63	-32.63
2	126.737	28.11	-13	-62.95	-1.23	-64.18	-51.18
3	159.488	26.45	-13	-61.61	-0.77	-62.38	-49.38
4	167.501	28.71	-13	-61.59	0.38	-61.21	-48.21
5	206.144	26.58	-13	-68.89	4.26	-64.63	-51.63
6	956.301	36.52	-13	-61.44	0.37	-61.06	-48.06

**REMARKS:**

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



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<b>MODE</b>	TX channel 23790	<b>FREQUENCY RANGE</b>	Above 1000MHz
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<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>							
No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1420	50.68	-13	-53.21	5.85	-47.36	-34.36
2	2130	55.37	-13	-44.96	6.83	-38.13	-25.13
3	2840	57.67	-13	-44.72	6.90	-37.82	-24.82
4	3550	48.21	-13	-55.17	7.82	-47.36	-34.36
5	4260	48.43	-13	-56.33	7.41	-48.92	-35.92
6	4970	48.52	-13	-55.73	7.03	-48.70	-35.70
7	5680	50.63	-13	-54.05	6.99	-47.05	-34.05
8	6390	54.08	-13	-50.06	6.11	-43.95	-30.95
9	7100	53.58	-13	-48.56	4.89	-43.67	-30.67

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>							
No.	Freq. (MHz)	Reading (dBuV/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1420	52.68	-13	-51.21	5.85	-45.36	-32.36
2	2130	56.2	-13	-44.13	6.83	-37.30	-24.30
3	2840	61.03	-13	-41.36	6.90	-34.46	-21.46
4	3550	51.59	-13	-51.79	7.82	-43.98	-30.98
5	4260	48.57	-13	-56.19	7.41	-48.78	-35.78
6	4970	48.27	-13	-55.98	7.03	-48.95	-35.95
7	5680	49.9	-13	-54.78	6.99	-47.78	-34.78
8	6390	53.98	-13	-50.16	6.11	-44.05	-31.05
9	7100	51.46	-13	-50.68	4.89	-45.79	-32.79

**REMARKS:**

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor (dB) = Substitution Antenna Gain (dB) + 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.

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

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



A D T

## **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.

---END---