

## FCC Test Report (Part 27)

**Report No.:** RF180129C24-2

**FCC ID:** JOYDA39

**Test Model:** AL-T52V1

**Received Date:** Jan. 29, 2018

**Test Date:** Feb. 01 ~ Feb. 08, 2018

**Issued Date:** Feb. 27, 2018

**Applicant:** Kyocera Corporation

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**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

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**Test Location:** No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)



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### Release Control Record

Issue No.	Description	Date Issued
RF180129C24-2	Original release	Feb. 27, 2018

## 1 Certificate of Conformity

**Product:** Telematics Module  
**Brand:** Kyocera  
**Test Model:** AL-T52V1  
**Sample Status:** Engineering sample  
**Applicant:** Kyocera Corporation  
**Test Date:** Feb. 01 ~ Feb. 08, 2018  
**Standards:** FCC Part 27, Subpart L, H, F

The above equipment 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 RF characteristics under the conditions specified in this report.

**Prepared by :** Sunt Lee , **Date:** Feb. 27, 2018  
Sunt Lee / Specialist

**Approved by :** Bruce Chen , **Date:** Feb. 27, 2018  
Bruce Chen / Project Engineer

## 2 Summary of Test Results

Applied Standard: FCC Part 27 & Part 2					
FCC Clause			Test Item	Result	Remarks
WCDMA Band 4 / LTE Band 4	LTE Band 12	LTE Band 13			
2.1046 27.50(d)(4)	2.1046 27.50(b)(10)	2.1046 27.50(b)(10)	Equivalent Isotropically Radiated Power	Pass	Meet the requirement of limit.
----	----	----	Peak To Average Ratio	Pass	Meet the requirement of limit.
2.1055 27.54	2.1055 27.54	2.1055 27.54	Frequency Stability Stay with the authorized bands of operation	Pass	Meet the requirement of limit.
2.1049 27.53(m)(6)	2.1049 27.53(m)(6)	2.1049 27.53(m)(6)	Emission Bandwidth	Pass	Meet the requirement of limit.
2.1051 27.53(h)	2.1051 27.53(c)	2.1051 27.53(c)	Band Edge Measurements	Pass	Meet the requirement of limit.
2.1051 27.53(h)	2.1051 27.53(c)	2.1051 27.53(c)	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1051 27.53(h)	2.1051 27.53(c)	2.1051 27.53(c)	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -23.4dB at 30.00MHz.

### 2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) ( $\pm$ )
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	3.59 dB
	200MHz ~ 1000MHz	3.60 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

## 2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver KEYSIGHT	N9038A	MY55420137	Mar. 27, 2017	Mar. 26, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	May 11, 2017	May 10, 2018
BILOG Antenna SCHWARZBECK	VULB9168	9168-148	Dec. 11, 2017	Dec. 10, 2018
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Dec. 12, 2017	Dec. 11, 2018
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Dec. 01, 2017	Nov. 30, 2018
Loop Antenna EMCI	EM-6879	269	Aug. 11, 2017	Aug. 10, 2018
Preamplifier Agilent (Below 1GHz)	8447D	2944A10638	Aug. 08, 2017	Aug. 07, 2018
Preamplifier Agilent (Above 1GHz)	8449B	3008A01638	Feb. 22, 2017	Feb. 21, 2018
RF signal cable HUBER+SUHNER&EMCI	SUCOFLEX 104 & EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	Jan. 15, 2018	Jan. 14, 2019
RF signal cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/4)	Aug. 08, 2017	Aug. 07, 2018
RF signal cable Woken	8D-FB	Cable-CH9-01	Aug. 01, 2017	Jul. 31, 2018
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	NA	NA
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 07, 2017	Jun. 06, 2018
JFW 20dB attenuation	50HF-020-SMA	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 test was performed in HwaYa Chamber 9.
  3. The FCC Designation Number is TW0003. The number will be varied with the Lab location and scope as attached.
  4. The IC Site Registration No. is IC 7450F-9.

### 3 General Information

#### 3.1 General Description of EUT

Product	Telematics Module			
Brand	Kyocera			
Test Model	AL-T52V1			
Sample Status	Engineering sample			
Power Supply Rating	5Vdc			
Modulation Type	WCDMA: BPSK, QPSK HSDPA: BPSK HSUPA: QPSK LTE: QPSK, 16QAM			
Operating Frequency	WCDMA Band 4		1712.4~1752.6MHz	
	LTE Band 4	Channel Bandwidth 1.4MHz	1710.7~1754.3MHz	
		Channel Bandwidth 3MHz	1711.5~1753.5MHz	
		Channel Bandwidth 5MHz	1712.5~1752.5MHz	
		Channel Bandwidth 10MHz	1715~1750MHz	
		Channel Bandwidth 15MHz	1717.5~1747.5MHz	
		Channel Bandwidth 20MHz	1720~1745MHz	
	LTE Band 12	Channel Bandwidth 1.4MHz	699.7~715.3MHz	
		Channel Bandwidth 3MHz	700.5~714.5MHz	
		Channel Bandwidth 5MHz	701.5~713.5MHz	
		Channel Bandwidth 10MHz	704~711MHz	
	LTE Band 13	Channel Bandwidth 5MHz	779.5~784.5MHz	
		Channel Bandwidth 10MHz	782MHz	
	Max. EIRP Power	WCDMA Band 4		77.625mW (18.9dBm)
LTE Band 4		Channel Bandwidth 1.4MHz	316.228mW (25.0dBm)	
		Channel Bandwidth 3MHz	338.844mW (25.3dBm)	
		Channel Bandwidth 5MHz	323.594mW (25.1dBm)	
		Channel Bandwidth 10MHz	389.045mW (25.9dBm)	
		Channel Bandwidth 15MHz	338.844mW (25.3dBm)	
		Channel Bandwidth 20MHz	354.813mW (25.5dBm)	
LTE Band 12		Channel Bandwidth 1.4MHz	295.121mW (24.7dBm)	
		Channel Bandwidth 3MHz	275.423mW (24.4dBm)	
		Channel Bandwidth 5MHz	275.423mW (24.4dBm)	
		Channel Bandwidth 10MHz	281.838mW (24.5dBm)	
Max. ERP Power		LTE Band 13	Channel Bandwidth 5MHz	165.959mW (22.2dBm)
			Channel Bandwidth 10MHz	125.893mW (21.0dBm)
Antenna Type		Refer to Note		
Antenna Connector	Refer to Note			
Accessory Device	Refer to Note			
Cable Supplied	0.08m module cable			



Note:

1. The EUT uses following antennas (support units).

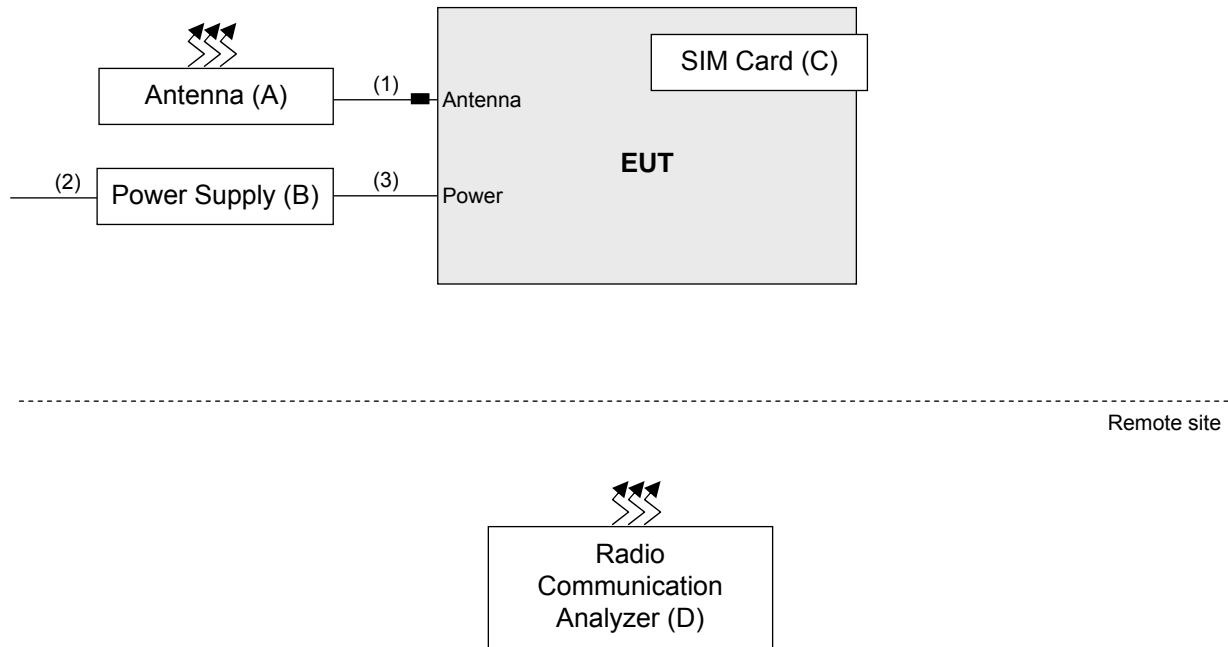
Antenna 1					
Antenna Type	AUX		Connector Type		SMA
Manufacturer	YOKOWO		Part Number		86769-459B1
Band	B12	B13	B5 / B26	B4	B2
Frequency (MHz)	704	782	832	1730	1880
Gain (dBi)	3.1	3.2	3.8	2.6	2.0

Antenna 2					
Antenna Type	AUX		Connector Type		SMA
Manufacturer	taoglas		Part Number		TG.30.8113
Band	B12 / B13	B5 / B26	B4	B2	
Frequency (MHz)	700-800	824-960	1710-1880	1850-1990	
Free Space Straight Gain (dBi)	1.1	0.3	1.9	2.7	
Free Space Bent Gain (dBi)	2.6	1.5	2.7	3.1	

For WCDMA Band 2 and LTE Band 2: Antenna 2 was chosen for final test according to manufacturer's requirement.

For WCDMA Band 4, 5 and LTE Band 4, 5, 12, 13, 26: Antenna 1 was chosen for final test according to manufacturer's requirement.

### 3.2 Configuration of System under Test



#### 3.2.1 Description of Support Units

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

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Antenna	taoglas	TG.30.8113	NA	NA	Provided by manufacturer
B.	Power Supply	Inspower	DC400-20D	212004	FCC DoC Approved	Provided by manufacturer Input:100-240Vac, 0.4A, 50-60Hz Output: 5Vdc, 3A
C.	SIM Card	NA	NA	NA	NA	Provided by manufacturer
D.	Radio Communication Tester	R&S	CMU200	123112	NA	-

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item D acted as a communication partner to transfer data.

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Antenna	1	3	N	1	Provided by manufacturer
2.	Power	1	1.75	N	0	Provided by manufacturer
3.	Module cable	2	0.08	N	0	Attached on EUT

Note: The core(s) is(are) originally attached to the cable(s).

### 3.3 Test Mode Applicability and Tested Channel Detail

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

#### WCDMA Band 4

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	EIRP	1312 to 1513	1312 (1712.4MHz), 1413 (1732.6MHz), 1513 (1752.6MHz)	WCDMA
-	Modulation Characteristics	1312 to 1513	1413 (1732.6MHz)	WCDMA, HSDPA, HSUPA
-	Frequency Stability	1312 to 1513	1413 (1732.6MHz)	WCDMA
-	Occupied Bandwidth	1312 to 1513	1312 (1712.4MHz), 1413 (1732.6MHz), 1513 (1752.6MHz)	WCDMA, HSDPA, HSUPA
-	Band Edge	1312 to 1513	1312 (1712.4MHz), 1513 (1752.6MHz)	WCDMA, HSDPA, HSUPA
-	Peak To Average Ratio	1312 to 1513	1312 (1712.4MHz), 1413 (1732.6MHz), 1513 (1752.6MHz)	WCDMA, HSDPA, HSUPA
-	Conducted Emission	1312 to 1513	1312 (1712.4MHz), 1413 (1732.6MHz), 1513 (1752.6MHz)	WCDMA, HSDPA, HSUPA
-	Radiated Emission Below 1GHz	1312 to 1513	1312 (1712.4MHz)	WCDMA
-	Radiated Emission Above 1GHz	1312 to 1513	1312 (1712.4MHz), 1413 (1732.6MHz), 1513 (1752.6MHz)	WCDMA

## LTE Band 4

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Output Power	19957 to 20393	19957 (1710.7MHz), 20175 (1732.5MHz), 20175 (1732.5MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		19965 to 20385	19965 (1711.5MHz), 20175 (1732.5MHz), 20385 (1753.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset
		19975 to 20375	19975 (1712.5MHz), 20175 (1732.5MHz), 20375 (1752.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		20000 to 20350	20000 (1715.0MHz), 20175 (1732.5MHz), 20350 (1750.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset
		20025 to 20325	20025 (1717.5MHz), 20175 (1732.5MHz), 20325 (1747.5MHz)	15MHz	QPSK	1 RB / 0 RB Offset
		20050 to 20300	20050 (1720.0MHz), 20175 (1732.5MHz), 20300 (1745.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset
-	Modulation Characteristics	20050 to 20300	20175 (1732.5MHz)	20MHz	QPSK, 16QAM	1 RB / 0 RB Offset
-	Frequency Stability	19957 to 20393	20175 (1732.5MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
-	Emission Bandwidth	19957 to 20393	19957 (1710.7MHz), 20175 (1732.5MHz), 20175 (1732.5MHz)	1.4MHz	QPSK, 16QAM	6 RB / 0 RB Offset
		19965 to 20385	19965 (1711.5MHz), 20175 (1732.5MHz), 20385 (1753.5MHz)	3MHz	QPSK, 16QAM	15 RB / 0 RB Offset
		19975 to 20375	19975 (1712.5MHz), 20175 (1732.5MHz), 20375 (1752.5MHz)	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
		20000 to 20350	20000 (1715.0MHz), 20175 (1732.5MHz), 20350 (1750.0MHz)	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset
		20025 to 20325	20025 (1717.5MHz), 20175 (1732.5MHz), 20325 (1747.5MHz)	15MHz	QPSK, 16QAM	75 RB / 0 RB Offset
		20050 to 20300	20050 (1720.0MHz), 20175 (1732.5MHz), 20300 (1745.0MHz)	20MHz	QPSK, 16QAM	100 RB / 0 RB Offset
-	Channel Edge	19957 to 20393	19957 (1710.7MHz), 20175 (1732.5MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset 1 RB / 5 RB Offset 6 RB / 0 RB Offset
		19965 to 20385	19965 (1711.5MHz), 20385 (1753.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset 1 RB / 14 RB Offset 15 RB / 0 RB Offset
		19975 to 20375	19975 (1712.5MHz), 20375 (1752.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
		20000 to 20350	20000 (1715.0MHz), 20350 (1750.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset 1 RB / 49 RB Offset 50 RB / 0 RB Offset
		20025 to 20325	20025 (1717.5MHz), 20325 (1747.5MHz)	15MHz	QPSK	1 RB / 0 RB Offset 1 RB / 74 RB Offset 75 RB / 0 RB Offset
		20050 to 20300	20050 (1720.0MHz), 20300 (1745.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset 1 RB / 99 RB Offset 100 RB / 0 RB Offset

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Conducted Emission	19957 to 20393	19957 (1710.7MHz), 20175 (1732.5MHz), 20175 (1732.5MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		19965 to 20385	19965 (1711.5MHz), 20175 (1732.5MHz), 20385 (1753.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset
		19975 to 20375	19975 (1712.5MHz), 20175 (1732.5MHz), 20375 (1752.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		20000 to 20350	20000 (1715.0MHz), 20175 (1732.5MHz), 20350 (1750.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset
		20025 to 20325	20025 (1717.5MHz), 20175 (1732.5MHz), 20325 (1747.5MHz)	15MHz	QPSK	1 RB / 0 RB Offset
		20050 to 20300	20050 (1720.0MHz), 20175 (1732.5MHz), 20300 (1745.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Below 1GHz	19957 to 20393	19957 (1710.7MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		19965 to 20385	19965 (1711.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset
		19975 to 20375	19975 (1712.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		20000 to 20350	20000 (1715.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset
		20025 to 20325	20025 (1717.5MHz)	15MHz	QPSK	1 RB / 0 RB Offset
		20050 to 20300	20050 (1720.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Above 1GHz	19957 to 20393	19957 (1710.7MHz), 20175 (1732.5MHz), 20175 (1732.5MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		19965 to 20385	19965 (1711.5MHz), 20175 (1732.5MHz), 20385 (1753.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset
		19975 to 20375	19975 (1712.5MHz), 20175 (1732.5MHz), 20375 (1752.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		20000 to 20350	20000 (1715.0MHz), 20175 (1732.5MHz), 20350 (1750.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset
		20025 to 20325	20025 (1717.5MHz), 20175 (1732.5MHz), 20325 (1747.5MHz)	15MHz	QPSK	1 RB / 0 RB Offset
		20050 to 20300	20050 (1720.0MHz), 20175 (1732.5MHz), 20300 (1745.0MHz)	20MHz	QPSK	1 RB / 0 RB Offset

## LTE Band 12

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	Output Power	23017 to 23171	23017 (699.7MHz), 23095 (707.5MHz), 23173 (715.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz), 23095 (707.5MHz), 23165 (714.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23095 (707.5MHz), 23155 (713.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23095 (707.5MHz), 23130 (711.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset
-	Modulation Characteristics	23060 to 23130	23095 (707.5MHz)	10MHz	QPSK / 16QAM	1 RB / 0 RB Offset
-	Frequency Stability	23017 to 23171	23095 (707.5MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
-	Emission Bandwidth	23017 to 23171	23017 (699.7MHz), 23095 (707.5MHz), 23173 (715.3MHz)	1.4MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz), 23095 (707.5MHz), 23165 (714.5MHz)	3MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23095 (707.5MHz), 23155 (713.5MHz)	5MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23095 (707.5MHz), 23130 (711.0MHz)	10MHz	QPSK / 16QAM	1 RB / 0 RB Offset
-	Channel Edge	23017 to 23171	23017 (699.7MHz), 23173 (715.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset 1 RB / 5 RB Offset 6 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz), 23165 (714.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset 1 RB / 14 RB Offset 15 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23155 (713.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23130 (711.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset 1 RB / 49 RB Offset 50 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	Peak to Average Ratio	23017 to 23171	23017 (699.7MHz), 23095 (707.5MHz), 23173 (715.3MHz)	1.4MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz), 23095 (707.5MHz), 23165 (714.5MHz)	3MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23095 (707.5MHz), 23155 (713.5MHz)	5MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23095 (707.5MHz), 23130 (711.0MHz)	10MHz	QPSK / 16QAM	1 RB / 0 RB Offset
-	Conducuted Emission	23017 to 23171	23017 (699.7MHz), 23095 (707.5MHz), 23173 (715.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz), 23165 (714.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23095 (707.5MHz), 23155 (713.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23095 (707.5MHz), 23130 (711.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Below 1GHz	23017 to 23171	23017 (699.7MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Above 1GHz	23017 to 23171	23017 (699.7MHz), 23095 (707.5MHz), 23173 (715.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		23025 to 23165	23025 (700.5MHz), 23095 (707.5MHz), 23165 (714.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset
		23035 to 23155	23035 (701.5MHz), 23095 (707.5MHz), 23155 (713.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		23060 to 23130	23060 (704.0MHz), 23095 (707.5MHz), 23130 (711.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset

**LTE Band 13**

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
-	Output Power	23205 to 23255	23205 (779.5MHz), 23230 (782.0MHz), 23255 (784.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		23230	23230 (782.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset
-	Modulation Characteristics	23230	23230 (782.0MHz),	10MHz	QPSK	1 RB / 0 RB Offset
-	Frequency Stability	23205 to 23255	23230 (782.0MHz)	5MHz	QPSK	1 RB / 0 RB Offset
-	Emission Bandwidth	23205 to 23255	23205 (779.5MHz), 23230 (782.0MHz), 23255 (784.5MHz)	5MHz	QPSK / 16QAM	25 RB / 0 RB Offset
		23230	23230 (782.0MHz)	10MHz	QPSK / 16QAM	50 RB / 0 RB Offset
-	Channel Edge	23205 to 23255	23205 (779.5MHz), 23255 (784.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
		23230	23230 (782.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset 1 RB / 49 RB Offset 50 RB / 0 RB Offset
-	Peak to Average Ratio	23205 to 23255	23205 (779.5MHz), 23230 (782.0MHz), 23255 (784.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		23230	23230 (782.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset
-	Conducted Emission	23205 to 23255	23205 (779.5MHz), 23230 (782.0MHz), 23255 (784.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		23230	23230 (782.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Below 1GHz	23205 to 23255	23205 (779.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		23230	23230 (782.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Above 1GHz	23205 to 23255	23205 (779.5MHz), 23230 (782.0MHz), 23255 (784.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		23230	23230 (782.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset

**Note:**

1. For radiated emission below 1GHz, low, mid and high channels were pre-tested in chamber. Low channel was the worst case for all final tests.
2. The conducted output power for QPSK and 16QAM, measured value of QPSK is higher than 16QAM mode. Therefore, Occupied bandwidth and Peak to average ratio items were tested under QPSK and 16QAM modes, and the other test items were tested under QPSK mode only.



Test Condition:

Test Item	Environmental Conditions	Input Power (system)	Tested By
Output Power	25deg. C, 65%RH 25deg. C, 66%RH	120Vac, 60Hz	Greg Lin James Yang
Modulation Characteristics	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
Frequency Stability	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
Emission Bandwidth	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
Channel Edge	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
Peak To Average Ratio	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
Conducted Emission	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
Radiated Emission	25deg. C, 66%RH	120Vac, 60Hz	James Yang

### 3.4 EUT Operating Conditions

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

### 3.5 General Description of Applied Standards

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

**FCC 47 CFR Part 2**  
**FCC 47 CFR Part 27**  
**KDB 971168 D01 Power Meas License Digital Systems v02r02**  
**ANSI/TIA/EIA-603-E 2016**  
**ANSI 63.26-2015**

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

Mobile / Portable station are limited to 2 watts e.r.p. for WCDMA & 1 watts e.i.r.p for LTE Band 4, 12 & 3 watts e.r.p for LTE Band 13.

#### 4.1.2 Test Procedures

##### EIRP / ERP Measurement:

- All measurements were done at low, middle and high operational frequency range. RWB and VBW is 5MHz for WCDMA mode, 10MHz for LTE mode.
- Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m(below or equal 1GHz) and/or 1.5m(above 1GHz) 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.
- 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
- EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15dBi.

Where:

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

$P_{\text{Meas}}$  : Measure transmitter output power.

$G_{\text{T}}$  : Gain of the transmitting antenna.

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

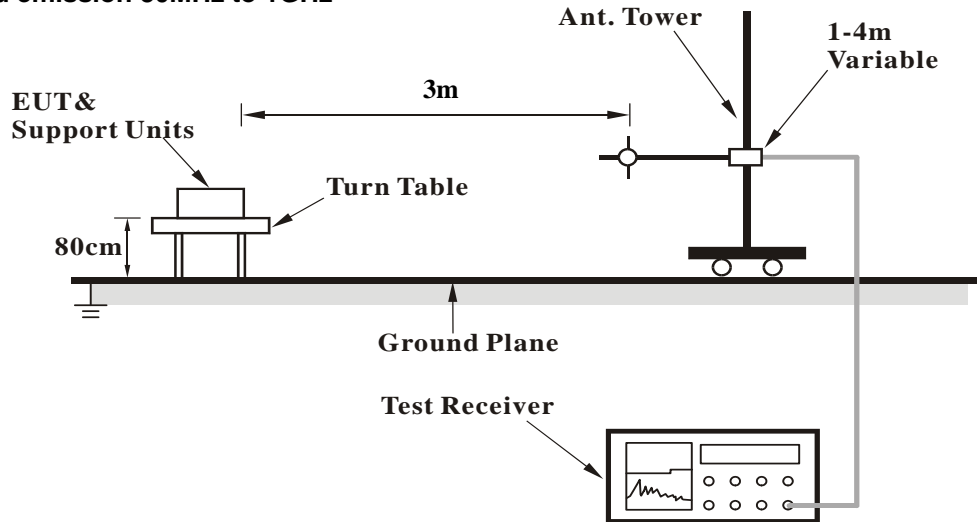
##### Conducted Power Measurement:

A power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.

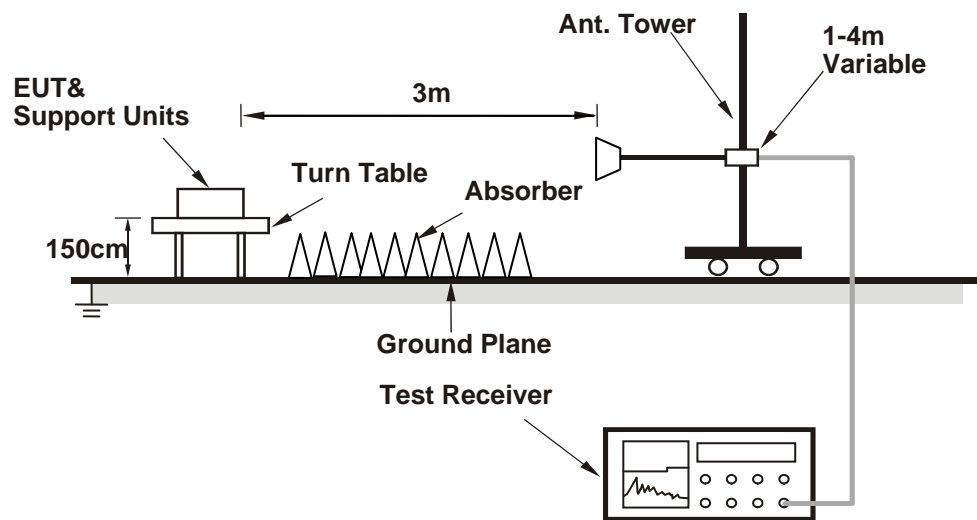
### 4.1.3 Test Setup

EIRP / ERP Measurement:

**For radiated emission 30MHz to 1GHz**



**For radiated emission above 1GHz**



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

Conducted Power Measurement:



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

#### 4.1.4 Test Results

##### Conducted Output Power (dBm)

Band	WCDMA IV		
Channel	1312	1413	1513
Frequency (MHz)	1712.4	1732.6	1752.6
RMC 12.2K	22.89	23.02	23.26
HSDPA Subtest-1	21.76	22.06	22.11
HSUPA Subtest-1	20.88	21.13	21.26

## LTE Band 4

Band / BW	RB Size	RB Offset	QPSK			16QAM		
			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	22.92	23.08	23.12	21.54	21.58	21.62
	1	2	22.87	23.00	22.95	21.33	21.45	21.58
	1	5	22.85	23.01	23.04	21.35	21.43	21.56
	3	0	22.62	22.93	23.02	21.03	21.15	21.43
	3	1	22.58	22.96	23.08	20.99	21.08	21.45
	3	3	22.61	22.97	23.03	21.01	21.06	21.44
	6	0	21.65	21.84	22.95	20.55	20.87	21.25
Band / BW	RB Size	RB Offset	QPSK			16QAM		
			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	22.78	22.94	22.97	21.28	21.33	21.40
	1	7	22.65	22.89	22.92	21.25	21.25	21.33
	1	14	22.70	22.92	22.88	21.26	21.28	21.32
	8	0	21.82	21.90	22.15	20.18	20.35	20.51
	8	3	21.88	21.78	22.07	20.16	20.34	20.56
	8	7	21.83	21.72	22.09	20.16	20.29	20.54
	15	0	21.64	21.85	21.99	19.96	20.11	20.38
Band / BW	RB Size	RB Offset	QPSK			16QAM		
			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	22.69	22.85	22.93	21.18	21.28	21.33
	1	12	22.61	22.82	22.87	21.08	21.25	21.28
	1	24	22.65	22.84	22.86	21.06	21.23	21.26
	12	0	21.56	21.81	21.93	19.86	20.18	20.25
	12	6	21.64	21.80	21.95	20.05	20.34	20.38
	12	13	21.58	21.71	21.88	20.03	20.25	20.27
	25	0	21.34	21.68	21.72	19.75	20.06	20.23

Band / BW	RB Size	RB Offset	QPSK			16QAM		
			Low CH 20000	Mid CH 20175	High CH 20350	Low CH 20000	Mid CH 20175	High CH 20350
			1715 MHz	1732.5 MHz	1750 MHz	1715 MHz	1732.5 MHz	1750 MHz
4 / 10M	1	0	22.67	22.72	22.77	21.21	21.25	21.38
	1	24	22.61	22.68	22.65	21.18	21.18	21.28
	1	49	22.58	22.61	22.68	21.16	21.20	21.26
	25	0	21.43	21.72	21.90	20.18	20.33	20.59
	25	12	21.45	21.67	21.93	20.15	20.34	20.58
	25	25	21.49	21.64	21.86	20.11	20.28	20.60
	50	0	21.28	21.60	21.78	19.98	20.14	20.33
Band / BW	RB Size	RB Offset	QPSK			16QAM		
			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	22.70	22.81	22.83	21.25	21.32	21.55
	1	37	22.65	22.76	22.81	21.08	21.20	21.28
	1	74	22.61	22.62	22.78	21.11	21.26	21.33
	36	0	21.48	21.62	21.65	20.31	20.54	20.55
	36	19	21.44	21.58	21.63	20.26	20.58	20.61
	36	39	21.46	21.55	21.62	20.27	20.60	20.63
	75	0	21.28	21.60	21.66	20.18	20.44	20.55
Band / BW	RB Size	RB Offset	QPSK			16QAM		
			Low CH 20050	Mid CH 20175	High CH 20300	Low CH 20050	Mid CH 20175	High CH 20300
			1720 MHz	1732.5 MHz	1745 MHz	1720 MHz	1732.5 MHz	1745 MHz
4 / 20M	1	0	22.48	22.69	22.86	21.18	21.31	21.52
	1	50	22.37	22.65	22.80	21.08	21.28	21.48
	1	99	22.36	22.60	22.81	21.14	21.30	21.44
	50	0	21.42	21.59	21.65	20.33	20.45	20.68
	50	25	21.38	21.67	21.77	20.38	20.48	20.65
	50	50	21.36	21.55	21.68	20.42	20.56	20.70
	100	0	21.27	21.47	21.65	20.06	20.27	20.45

## LTE Band 12

Band / BW	RB Size	RB Offset	QPSK			16QAM		
			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	23.40	23.53	23.64	22.24	22.46	22.53
	1	2	23.32	23.48	23.58	22.21	22.41	22.49
	1	5	23.28	23.50	23.55	22.23	22.45	22.46
	3	0	23.21	23.51	23.60	22.18	22.38	22.41
	3	1	23.18	23.49	23.61	22.20	22.31	22.42
	3	3	23.16	23.48	23.57	22.16	22.33	22.39
	6	0	23.20	22.58	23.62	22.15	22.34	22.41
Band / BW	RB Size	RB Offset	QPSK			16QAM		
			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	23.43	23.58	23.63	22.19	22.32	22.53
	1	7	23.41	23.55	23.58	22.16	22.28	22.51
	1	14	23.41	23.49	23.57	22.18	22.19	22.48
	8	0	22.38	22.58	22.76	21.20	21.34	21.56
	8	3	22.36	22.70	22.78	21.19	21.32	21.68
	8	7	22.37	22.73	22.73	21.25	21.28	21.66
	15	0	22.21	22.63	22.64	21.16	21.24	21.46
Band / BW	RB Size	RB Offset	QPSK			16QAM		
			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	23.41	23.59	23.63	22.10	22.22	22.74
	1	12	23.38	23.55	23.54	22.10	22.18	22.71
	1	24	23.35	23.44	23.57	22.13	22.15	22.65
	12	0	22.21	22.52	22.67	21.16	21.26	21.46
	12	6	22.30	22.63	22.73	21.11	21.27	21.45
	12	13	22.34	22.65	22.71	21.13	21.23	21.49
	25	0	22.19	22.52	22.62	21.06	21.13	21.27
Band / BW	RB Size	RB Offset	QPSK			16QAM		
			Low CH 23060	Mid CH 23095	High CH 23130	Low CH 23060	Mid CH 23095	High CH 23130
			704 MHz	707.5 MHz	711 MHz	704 MHz	707.5 MHz	711 MHz
12 / 10M	1	0	23.21	23.29	23.49	21.83	21.95	22.34
	1	24	23.18	23.16	23.41	21.79	21.92	22.18
	1	49	23.16	23.22	23.43	21.81	21.90	22.16
	25	0	22.26	22.50	22.65	20.62	20.87	21.06
	25	12	22.21	22.62	22.73	20.65	20.85	21.15
	25	25	22.26	22.64	22.71	20.62	20.85	21.10
	50	0	22.11	22.50	22.61	20.54	20.76	21.03

## LTE Band 13

Band / BW	RB Size	RB Offset	QPSK			16QAM		
			Low CH 23205	Mid CH 23230	High CH 23255	Low CH 23205	Mid CH 23230	High CH 23255
			779.5 MHz	782 MHz	784.5 MHz	779.5 MHz	782 MHz	784.5 MHz
13 / 5M	1	0	23.65	23.68	23.74	22.47	22.51	22.65
	1	12	23.54	23.55	23.68	22.41	22.48	22.58
	1	24	23.58	23.51	23.70	22.46	22.45	22.60
	12	0	22.62	22.79	22.96	21.35	21.52	21.75
	12	6	22.54	22.87	22.95	21.32	21.60	21.78
	12	13	22.56	22.80	22.97	21.39	21.54	21.77
	25	0	22.48	22.71	22.86	21.19	21.34	21.65
Band / BW	RB Size	RB Offset	QPSK			16QAM		
			Mid CH 23230			Mid CH 23230		
			782MHz			782MHz		
13 / 10M	1	0	23.73			22.45		
	1	24	23.68			22.42		
	1	49	23.62			22.41		
	25	0	22.80			21.56		
	25	12	22.76			21.58		
	25	25	22.63			21.52		
	50	0	22.76			21.46		



**EIRP Power**

WCDMA Band 4

MODE		TX channel 1312					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1712.40	-23.4	14.6	0.7	15.3	30.0	-14.7
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1712.40	-19.6	18.2	0.7	<b>18.9</b>	30.0	-11.1

MODE		TX channel 1413					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1732.60	-25.3	13.1	0.6	13.7	30.0	-16.3
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1732.60	-21.1	17.3	0.6	17.9	30.0	-12.1

MODE		TX channel 1513					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1752.60	-25.6	13.2	0.5	13.7	30.0	-16.3
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1752.60	-20.6	18.2	0.5	18.7	30.0	-11.3

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

## LTE Band 4, Channel Bandwidth 1.4MHz

MODE		TX channel 19957					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1710.70	-14.0	24.0	0.7	24.7	30.0	-5.3
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1710.70	-21.8	16.0	0.7	16.7	30.0	-13.3

MODE		TX channel 20175					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1732.50	-14.8	23.6	0.6	24.2	30.0	-5.8
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1732.50	-22.3	16.0	0.6	16.6	30.0	-13.4

MODE		TX channel 20393					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1754.30	-14.3	24.5	0.5	<b>25.0</b>	30.0	-5.0
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1754.30	-22.4	16.5	0.5	17.0	30.0	-13.0

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 4, Channel Bandwidth 3MHz

MODE		TX channel 19965					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1711.50	-13.4	24.6	0.7	<b>25.3</b>	30.0	-4.7
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1711.50	-21.3	16.5	0.7	17.2	30.0	-12.8

MODE		TX channel 20175					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1732.50	-14.7	23.7	0.6	24.3	30.0	-5.7
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1732.50	-22.6	15.7	0.6	16.3	30.0	-13.7

MODE		TX channel 20385					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1753.50	-14.5	24.3	0.5	24.8	30.0	-5.2
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1753.50	-21.4	17.5	0.5	18.0	30.0	-12.0

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

## LTE Band 4, Channel Bandwidth 5MHz

MODE		TX channel 19975					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1712.50	-13.7	24.4	0.7	<b>25.1</b>	30.0	-4.9
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1712.50	-21.5	16.4	0.7	17.1	30.0	-12.9

MODE		TX channel 20175					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1732.50	-14.9	23.5	0.6	24.1	30.0	-5.9
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1732.50	-22.6	15.7	0.6	16.3	30.0	-13.7

MODE		TX channel 20375					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1752.50	-14.5	24.3	0.5	24.8	30.0	-5.2
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1752.50	-22.2	16.6	0.5	17.1	30.0	-12.9

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

## LTE Band 4, Channel Bandwidth 10MHz

MODE		TX channel 20000					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1715.00	-14.3	23.8	0.7	24.5	30.0	-5.5
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1715.00	-22.1	15.8	0.7	16.5	30.0	-13.5

MODE		TX channel 20175					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1732.50	-14.6	23.8	0.6	24.4	30.0	-5.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1732.50	-22.5	15.8	0.6	16.4	30.0	-13.6

MODE		TX channel 20350					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1750.00	-13.4	25.4	0.5	<b>25.9</b>	30.0	-4.1
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1750.00	-21.4	17.4	0.5	17.9	30.0	-12.1

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

## LTE Band 4, Channel Bandwidth 15MHz

MODE		TX channel 20025					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1717.50	-13.5	24.6	0.7	<b>25.3</b>	30.0	-4.7
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1717.50	-21.4	16.6	0.7	17.3	30.0	-12.7

MODE		TX channel 20175					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1732.50	-14.2	24.2	0.6	24.8	30.0	-5.2
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1732.50	-22.1	16.2	0.6	16.8	30.0	-13.2

MODE		TX channel 20325					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1747.50	-14.4	24.3	0.5	24.8	30.0	-5.2
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1747.50	-22.2	16.5	0.5	17.0	30.0	-13.0

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

## LTE Band 4, Channel Bandwidth 20MHz

MODE		TX channel 20050					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1720.00	-13.5	24.7	0.7	25.4	30.0	-4.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1720.00	-21.3	16.7	0.7	17.4	30.0	-12.6

MODE		TX channel 20175					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1732.50	-13.7	24.7	0.6	25.3	30.0	-4.7
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1732.50	-21.3	17.0	0.6	17.6	30.0	-12.4

MODE		TX channel 20300					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1745.00	-13.7	25.0	0.5	<b>25.5</b>	30.0	-4.5
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1745.00	-21.9	16.8	0.5	17.3	30.0	-12.7

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 12, Channel Bandwidth 1.4MHz

MODE		TX channel 23017					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	699.70	-4.7	19.8	3.5	23.3	34.8	-11.5
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	699.70	-14.7	12.8	3.5	16.3	34.8	-18.5

MODE		TX channel 23095					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-4.1	20.7	3.5	24.2	34.8	-10.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-14.6	13.1	3.5	16.6	34.8	-18.2

MODE		TX channel 23173					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	715.30	-3.8	21.2	3.5	<b>24.7</b>	34.8	-10.1
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	715.30	-14.2	13.4	3.5	16.9	34.8	-17.9

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).



## LTE Band 12, Channel Bandwidth 3MHz

MODE		TX channel 23025					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	700.50	-4.8	19.7	3.5	23.2	34.8	-11.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	700.50	-14.9	12.7	3.5	16.2	34.8	-18.6

MODE		TX channel 23095					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-4.2	20.5	3.5	24.0	34.8	-10.8
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-14.4	13.4	3.5	16.9	34.8	-17.9

MODE		TX channel 23165					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	714.50	-4.1	20.9	3.5	<b>24.4</b>	34.8	-10.4
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	714.50	-14.1	13.5	3.5	17.0	34.8	-17.8

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 12, Channel Bandwidth 5MHz

MODE		TX channel 23035					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	701.50	-4.8	19.8	3.4	23.2	34.8	-11.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	701.50	-14.7	13.0	3.4	16.4	34.8	-18.4

MODE		TX channel 23095					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-4.6	20.1	3.5	23.6	34.8	-11.2
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-14.4	13.4	3.5	16.9	34.8	-17.9

MODE		TX channel 23155					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	713.50	-4.1	20.9	3.5	<b>24.4</b>	34.8	-10.4
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	713.50	-14.1	13.6	3.5	17.1	34.8	-17.7

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 12, Channel Bandwidth 10MHz

MODE		TX channel 23060					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	704.00	-4.7	20.0	3.5	23.5	34.8	-11.3
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	704.00	-14.6	13.0	3.5	16.5	34.8	-18.3

MODE		TX channel 23095					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-4.4	20.4	3.5	23.9	34.8	-10.9
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	707.50	-14.4	13.4	3.5	16.9	34.8	-17.9

MODE		TX channel 23130					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	711.00	-4.0	21.0	3.5	<b>24.5</b>	34.8	-10.3
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	711.00	-14.1	13.5	3.5	17.0	34.8	-17.8

Note: EIRP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

## LTE Band 13, Channel Bandwidth 5MHz

MODE		TX channel 23205					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	779.50	-9.0	17.0	4.0	21.0	34.8	-13.8
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	779.50	-16.4	11.7	4.0	15.7	34.8	-19.1

MODE		TX channel 23230					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	782.00	-7.8	18.2	4.0	<b>22.2</b>	34.8	-12.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	782.00	-14.9	13.0	4.0	17.0	34.8	-17.8

MODE		TX channel 23255					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	784.50	-8.3	17.8	4.0	21.8	34.8	-13.0
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	784.50	-15.7	12.2	4.0	16.2	34.8	-18.6

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

LTE Band 13, Channel Bandwidth 10MHz

MODE		TX channel 23230					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	782.00	-9.0	17.0	4.0	<b>21.0</b>	34.8	-13.8
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	782.00	-16.2	11.6	4.0	15.6	34.8	-19.2

Note: ERP (dBm) = S.G Power Value (dBm) + Correction Factor (dB).

## 4.2 Modulation Characteristics Measurement

### 4.2.1 Limits of Modulation Characteristics

N/A

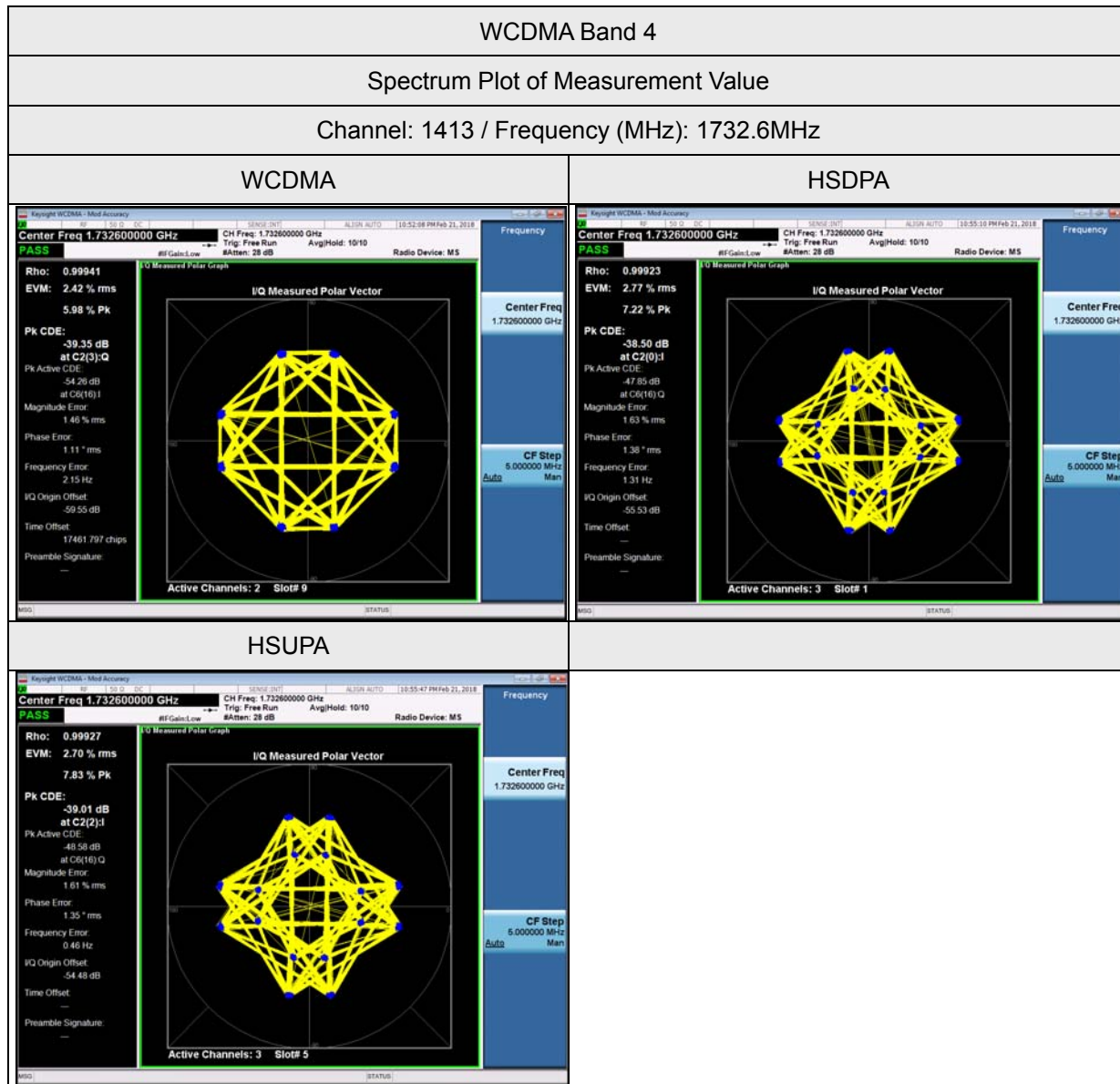
### 4.2.2 Test Procedure

Connect the EUT to Communication Simulator via the antenna connector, The frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

### 4.2.3 Test Setup



### 4.2.4 Test Results



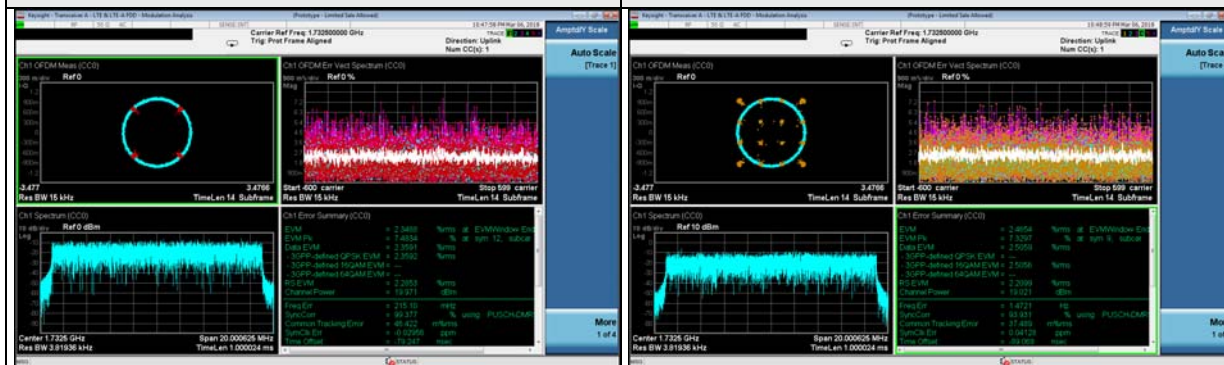
LTE Band 4

Spectrum Plot of Measurement Value

Channel: 20175 / Frequency (MHz): 1732.5MHz

Channel Bandwidth 20MHz / QPSK

Channel Bandwidth 20MHz / 16QAM





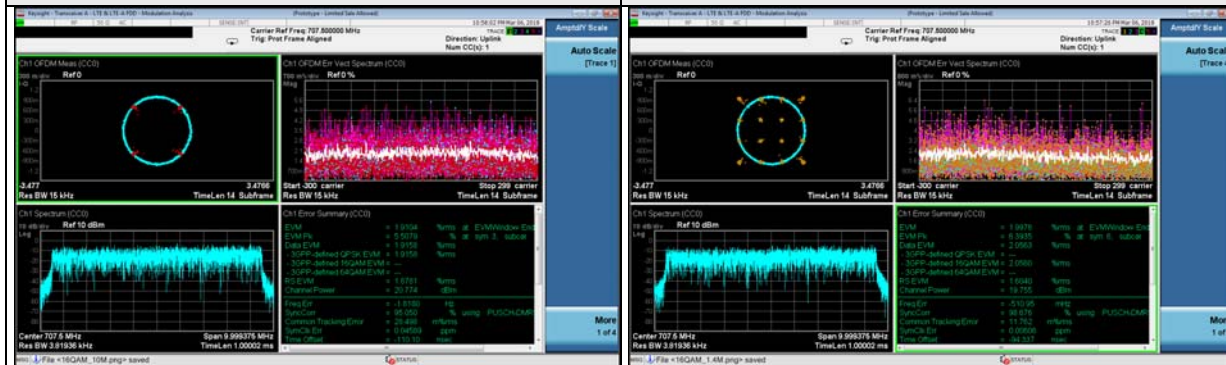
LTE Band 12

Spectrum Plot of Measurement Value

Channel: 23095 / Frequency (MHz): 707.5 MHz

Channel Bandwidth 10MHz / QPSK

Channel Bandwidth 10MHz / 16QAM



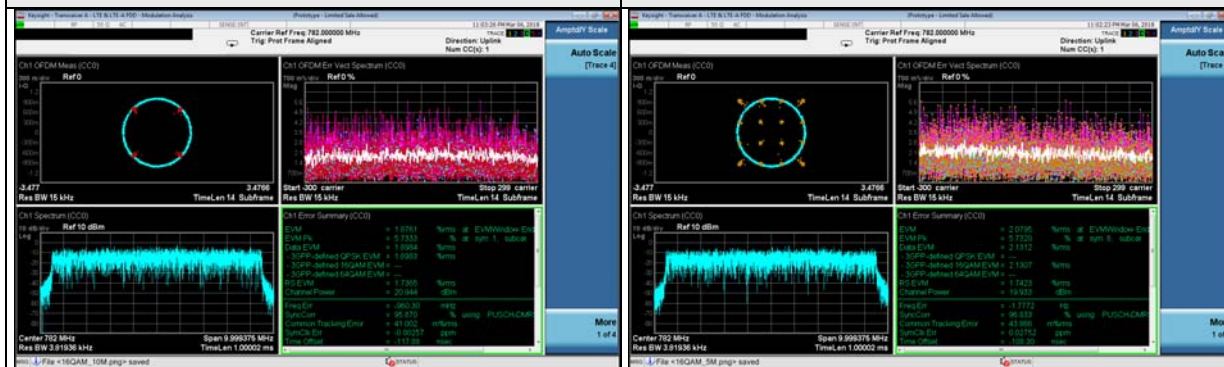
LTE Band 13

Spectrum Plot of Measurement Value

Channel: 23230 / Frequency (MHz): 782.0MHz

Channel Bandwidth 10MHz / QPSK

Channel Bandwidth 10MHz / 16QAM



### 4.3 Frequency Stability Measurement

#### 4.3.1 Limits of Frequency Stability Measurement

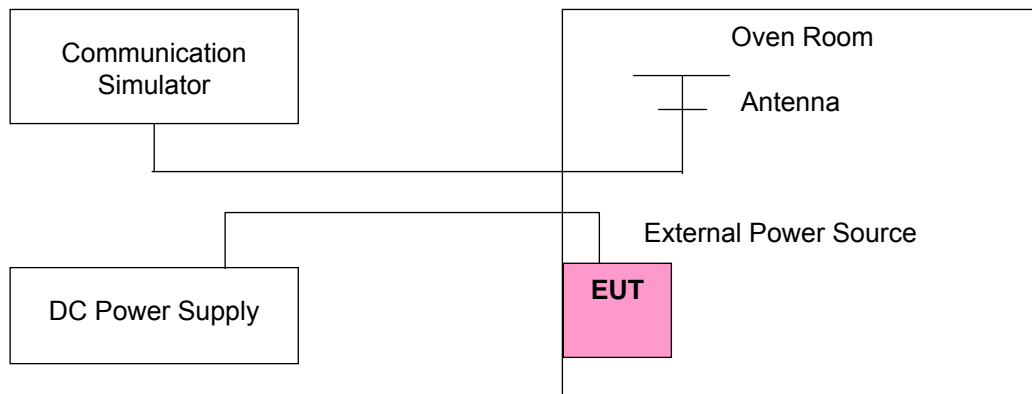
According to the FCC part 2.1055 shall be tested the frequency stability. The rule is defined that "The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block." The test extreme voltage is according to the 2.1055(d)(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment and the extreme temperature rule is comply with specification of EUT  $-30^{\circ}\text{C} \sim 50^{\circ}\text{C}$ .

#### 4.3.2 Test Procedure

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

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

#### 4.3.3 Test Setup



#### 4.3.4 Test Results

##### Frequency Error vs. Voltage

Voltage (Volts)	Frequency Error (ppm)				Limit (ppm)
	WCDMA Band 4	LTE Band 4	LTE Band 12	LTE Band 13	
4.3	0.07302	0.06537	0.01895	0.02069	2.5
3.8	0.12629	0.05012	0.06527	0.07565	2.5
3.4	0.07659	0.08938	0.00777	0.01348	2.5

Note: The applicant defined the normal working voltage is from 3.4Vdc to 4.3Vdc.

##### Frequency Error vs. Temperature

Voltage (Volts)	Frequency Error (ppm)				Limit (ppm)
	WCDMA Band 4	LTE Band 4	LTE Band 12	LTE Band 13	
50	0.07302	0.00039	0.03829	0.04199	2.5
40	0.12629	0.00997	0.06106	0.01354	2.5
30	0.07659	0.02778	0.02597	0.00286	2.5
20	0.07302	0.05012	0.06527	0.07565	2.5
10	0.12629	0.12697	0.06561	0.00713	2.5
0	0.07659	0.12135	0.01533	0.07043	2.5
-10	0.07302	0.02794	0.05403	0.05584	2.5
-20	0.12629	0.10200	0.01156	0.06110	2.5

## 4.4 Emission Bandwidth Measurement

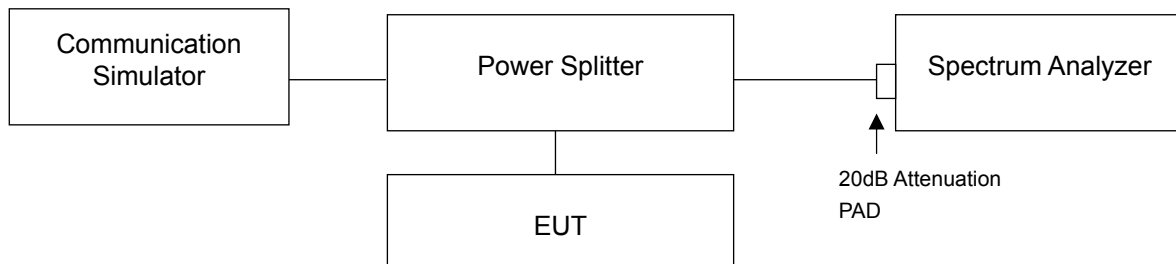
### 4.4.1 Limits of Emission Bandwidth Measurement

According to FCC 27.53(m)(6) specified that emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power.

### 4.4.2 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with RBW = 30kHz and VBW = 100kHz (Channel Bandwidth 1.4MHz), RBW = 51kHz and VBW = 150kHz (Channel Bandwidth 3MHz and 5MHz), RBW = 100kHz and VBW = 300kHz (Channel Bandwidth 10MHz), RBW = 200kHz and VBW = 620kHz (Channel Bandwidth 15MHz) and RBW = 430kHz and VBW = 1.2MHz (Channel Bandwidth 20MHz). The 26dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 26dB.

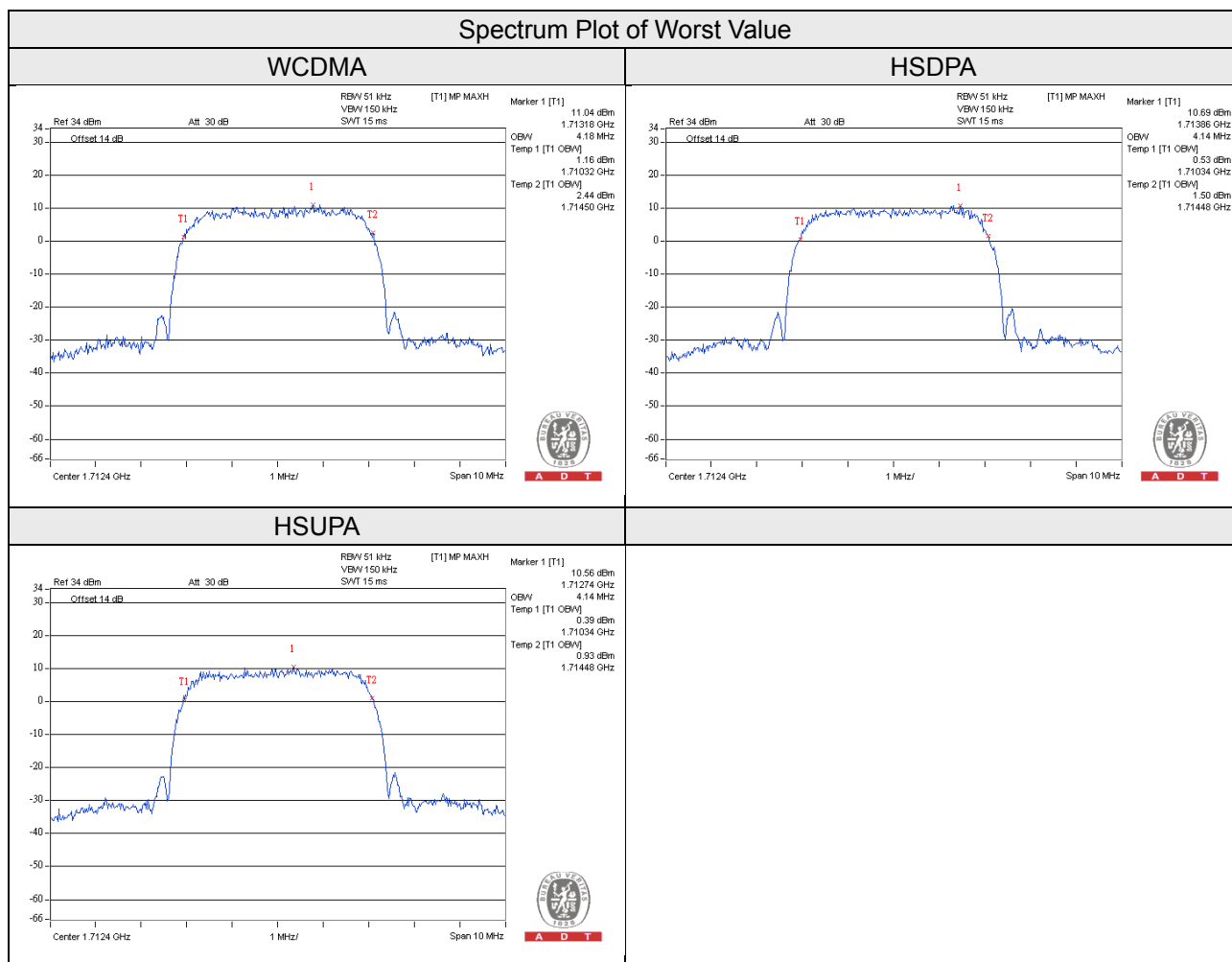
### 4.4.3 Test Setup



#### 4.4.4 Test Result

##### Occupied Bandwidth

WCDMA Band 4				
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		WCDMA	HSDPA	HSUPA
1312	1712.4	4.18	4.14	4.14
1413	1732.6	4.14	4.14	4.14
1513	1752.6	4.10	4.14	4.14



LTE Band 4, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
19957	1710.7	1.10	1.09
20175	1732.5	1.09	1.09
20393	1754.3	1.10	1.10

LTE Band 4, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
19965	1711.5	2.68	2.69
20175	1732.5	2.68	2.68
20385	1753.5	2.68	2.69

LTE Band 4, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
19975	1712.5	4.46	4.46
20175	1732.5	4.48	4.48
20375	1752.5	4.46	4.46

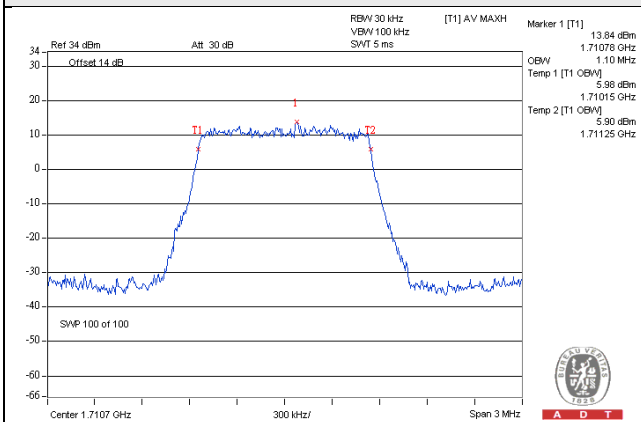
LTE Band 4, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
20000	1715.0	8.96	8.92
20175	1732.5	8.96	8.96
20350	1750.0	8.92	8.96

LTE Band 4, Channel Bandwidth 15MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
20025	1717.5	13.48	13.56
20175	1732.5	13.52	13.52
20325	1747.5	13.52	13.56

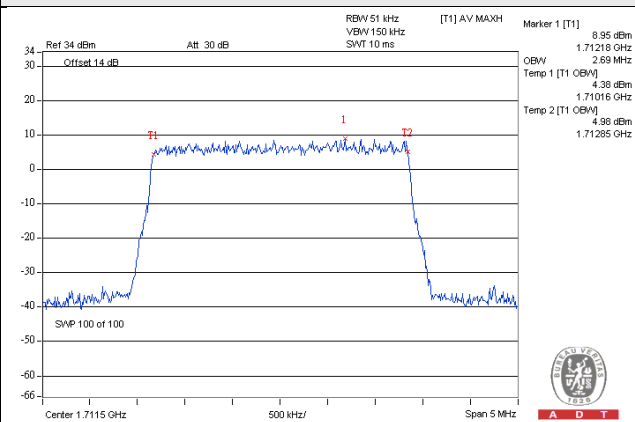
LTE Band 4, Channel Bandwidth 20MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
20050	1720.0	17.92	17.92
20175	1732.5	17.92	17.92
20300	1745.0	17.92	18.00

### Spectrum Plot of Worst Value

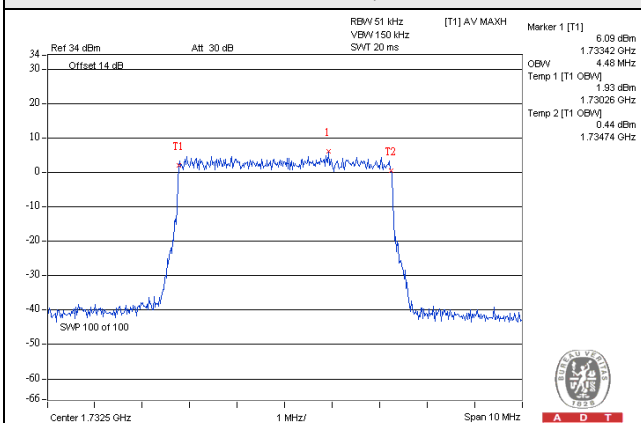
#### 1.4MHz / QPSK



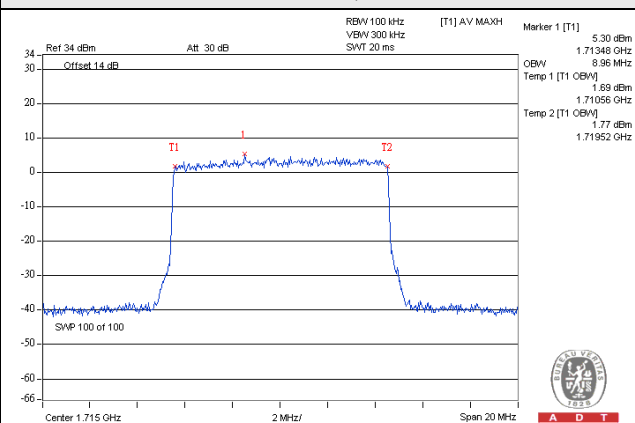
#### 3MHz / 16QAM



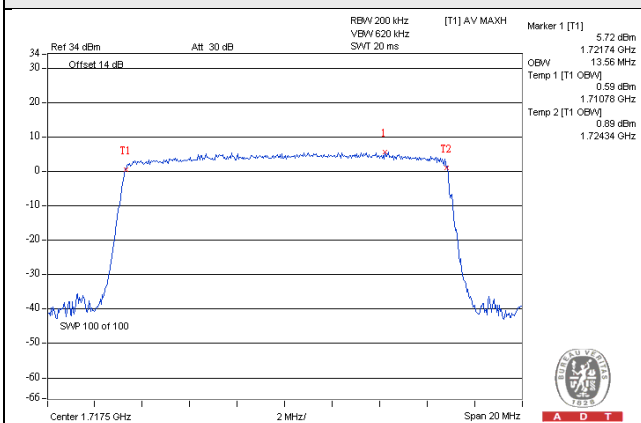
#### 5MHz / 16QAM



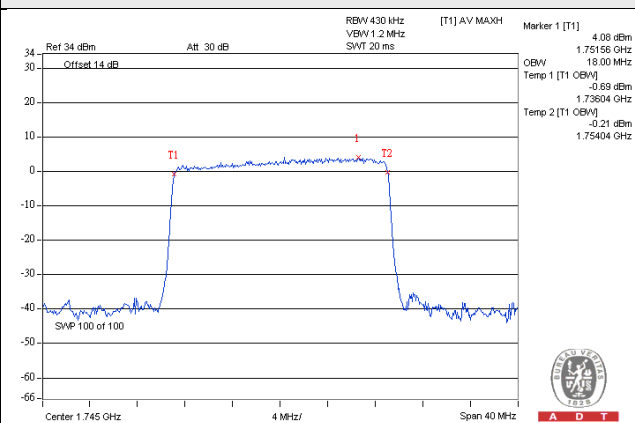
#### 10MHz / QPSK



#### 15MHz / 16QAM



#### 20MHz / 16QAM





LTE Band 12, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
23017	699.7	1.09	1.10
23095	707.5	1.09	1.09
23173	715.3	1.10	1.10

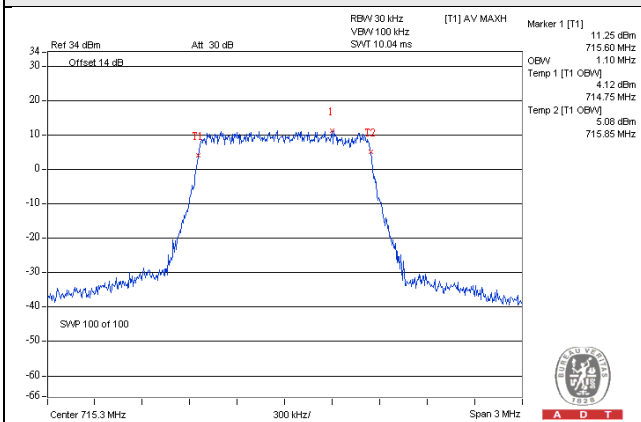
LTE Band 12, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
23025	700.5	2.69	2.68
23095	707.5	2.68	2.68
23165	714.5	2.69	2.68

LTE Band 12, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
23035	701.5	4.48	4.48
23095	707.5	4.47	4.48
23155	713.5	4.48	4.48

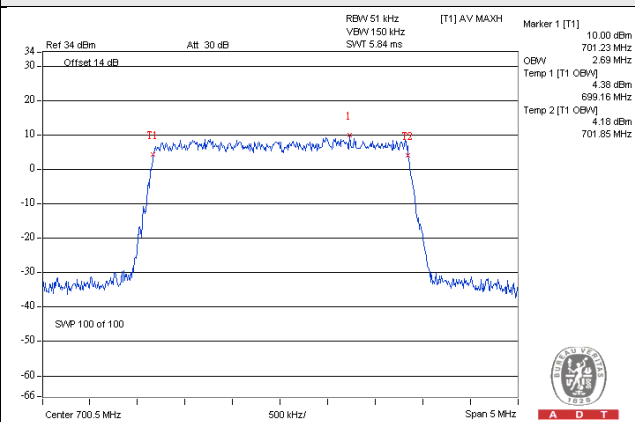
LTE Band 12, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
23060	704.0	8.93	8.93
23095	707.5	8.93	8.93
23130	711.0	8.93	8.93

### Spectrum Plot of Worst Value

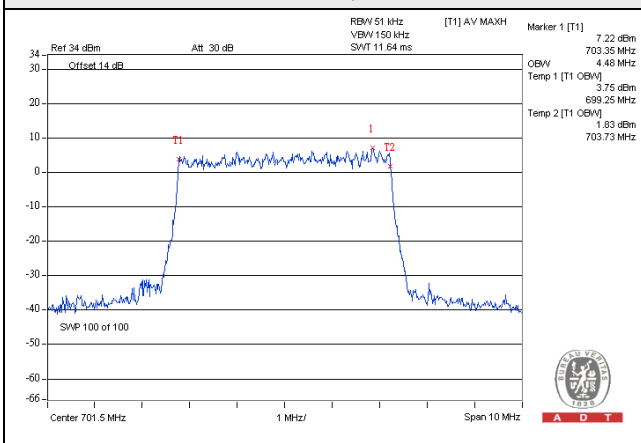
#### 1.4MHz / QPSK



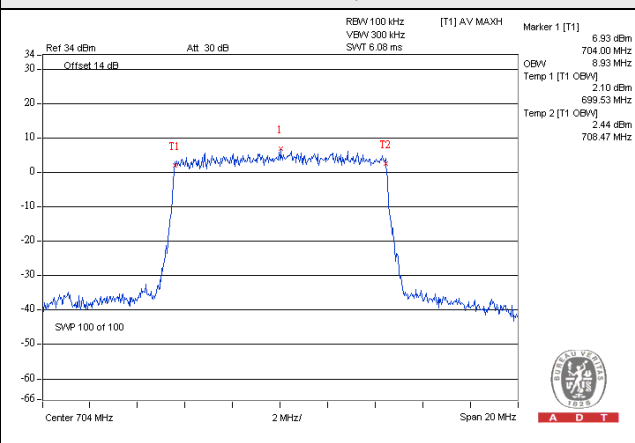
#### 3MHz / QPSK



#### 5MHz / QPSK

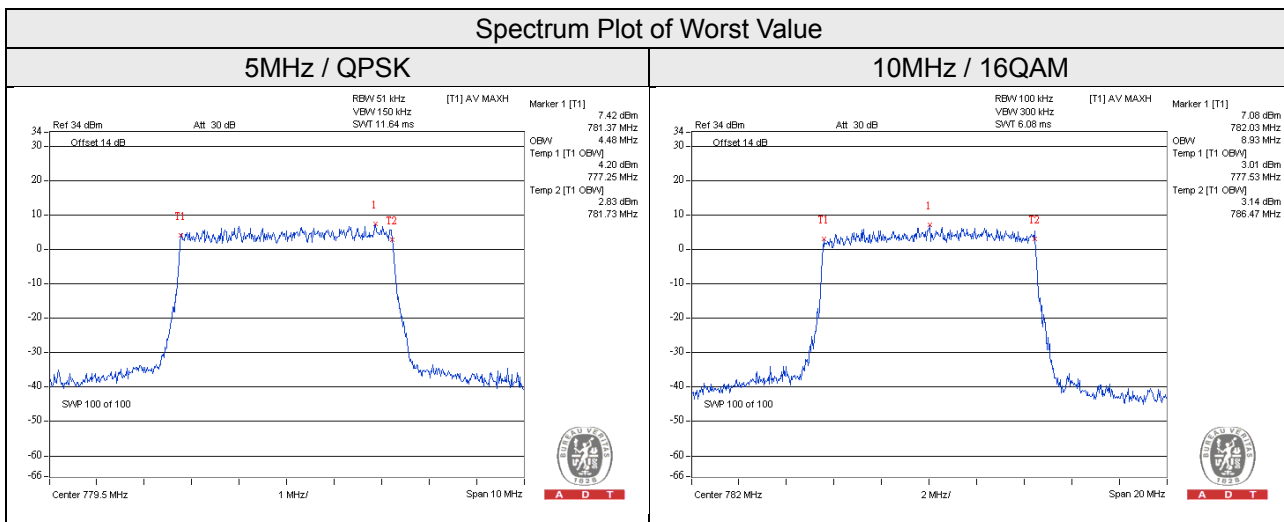


#### 10MHz / QPSK



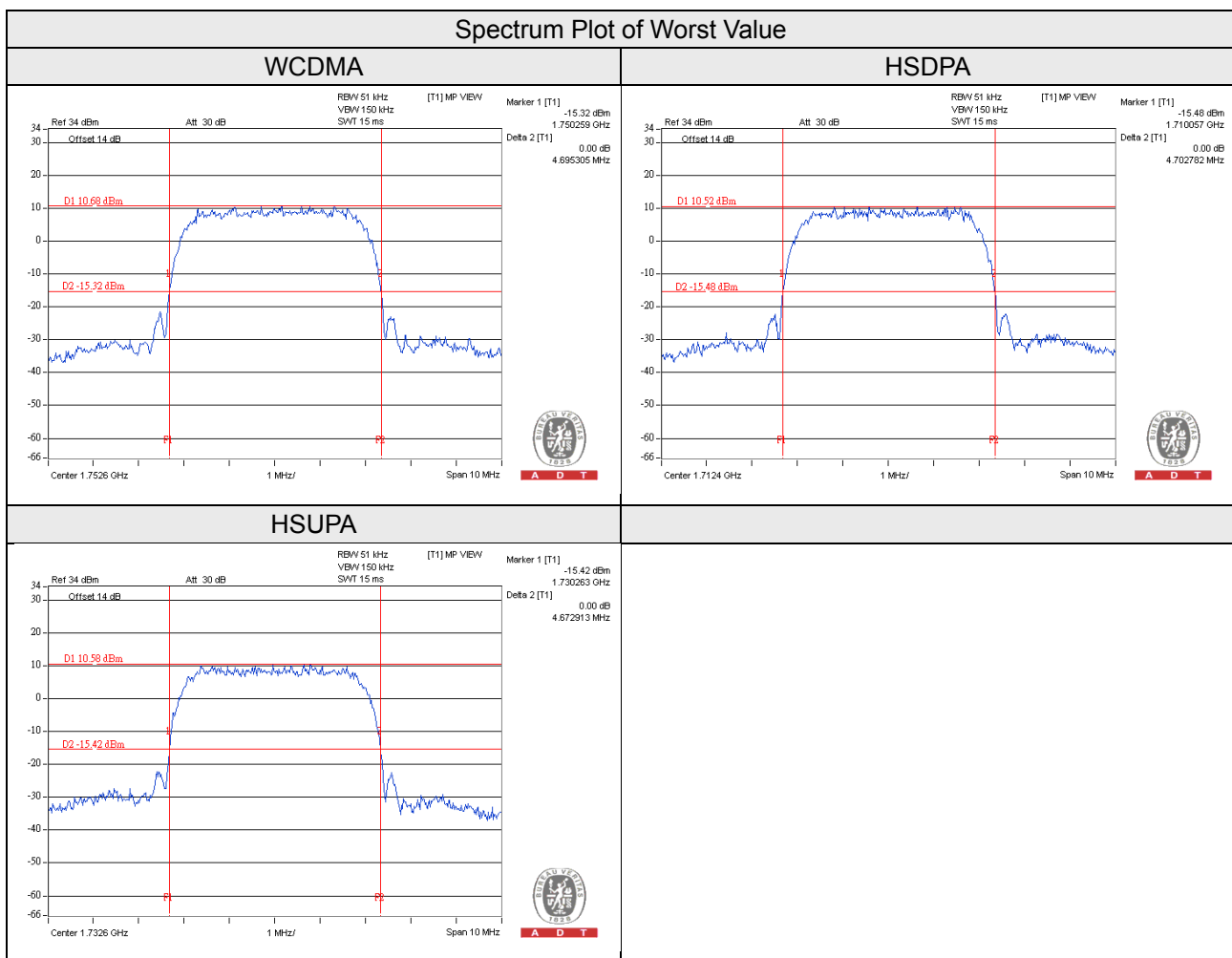
LTE Band 13, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
23205	779.5	4.48	4.48
23230	782.0	4.48	4.48
23255	784.5	4.48	4.48

LTE Band 13, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
23230	782.0	8.90	8.93



## 26dB Bandwidth

WCDMA Band 4				
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)		
		WCDMA	HSDPA	HSUPA
1312	1712.4	4.655	4.703	4.654
1413	1732.6	4.676	4.690	4.673
1513	1752.6	4.695	4.674	4.653



LTE Band 4, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		QPSK	16QAM
19957	1710.7	1.280	1.283
20175	1732.5	1.280	1.289
20393	1754.3	1.280	1.269

LTE Band 4, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		QPSK	16QAM
19965	1711.5	2.919	2.926
20175	1732.5	2.921	2.924
20385	1753.5	2.911	2.919

LTE Band 4, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		QPSK	16QAM
19975	1712.5	4.862	4.852
20175	1732.5	4.861	4.850
20375	1752.5	4.844	4.790

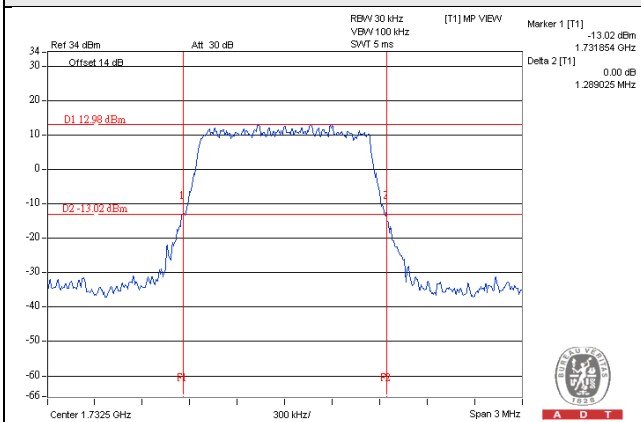
LTE Band 4, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		QPSK	16QAM
20000	1715.0	9.680	9.644
20175	1732.5	9.705	9.673
20350	1750.0	9.640	9.666

LTE Band 4, Channel Bandwidth 15MHz			
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		QPSK	16QAM
20025	1717.5	14.667	14.718
20175	1732.5	14.818	14.829
20325	1747.5	14.753	14.702

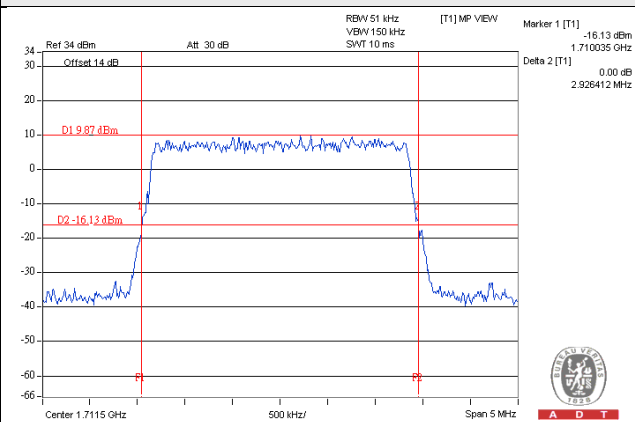
LTE Band 4, Channel Bandwidth 20MHz			
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		QPSK	16QAM
20050	1720.0	19.316	19.358
20175	1732.5	19.544	19.414
20300	1745.0	19.463	19.496

### Spectrum Plot of Worst Value

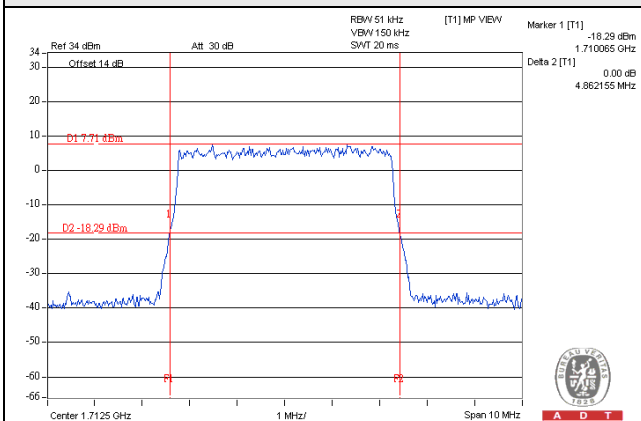
#### 1.4MHz / 16QAM



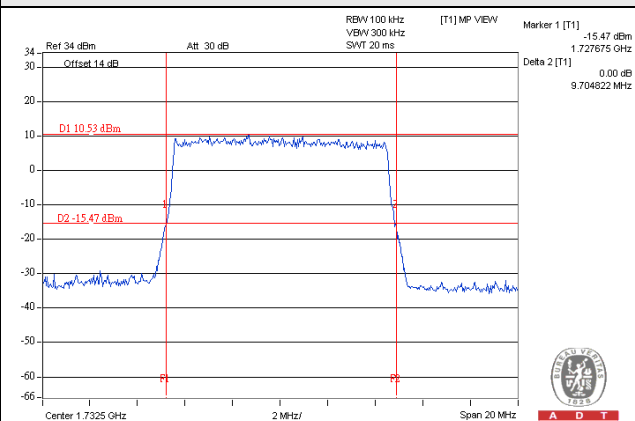
#### 3MHz / 16QAM



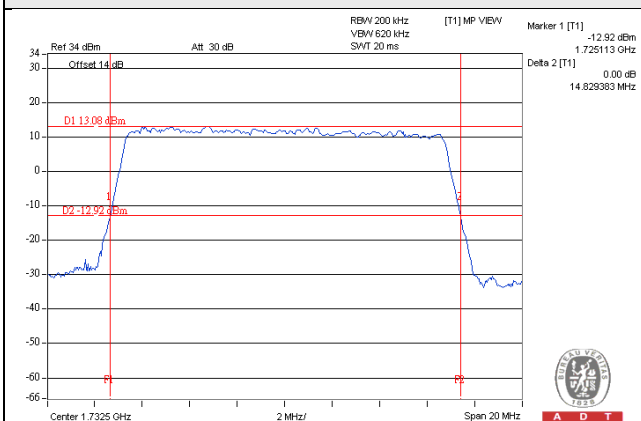
#### 5MHz / QPSK



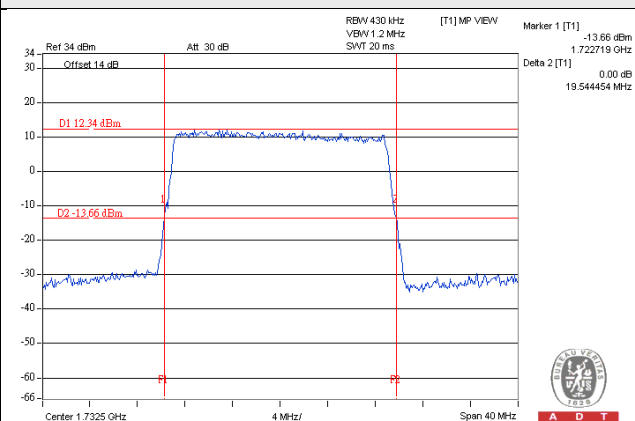
#### 10MHz / QPSK



#### 15MHz / 16QAM



#### 20MHz / QPSK



LTE Band 12, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		QPSK	16QAM
23017	699.7	1.294	1.298
23095	707.5	1.245	1.272
23173	715.3	1.288	1.257

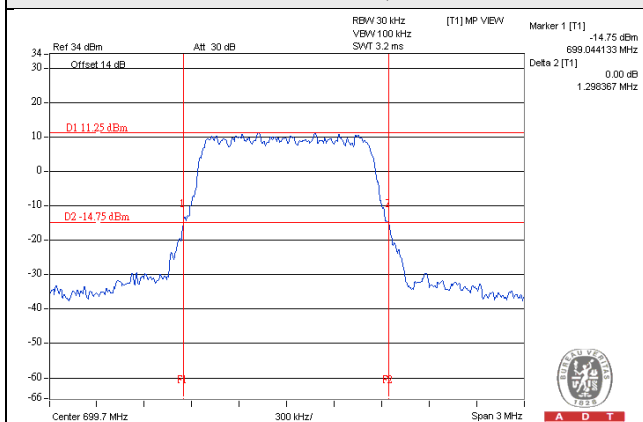
LTE Band 12, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		QPSK	16QAM
23025	700.5	2.926	2.948
23095	707.5	2.973	2.976
23165	714.5	2.944	2.944

LTE Band 12, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		QPSK	16QAM
23035	701.5	4.906	4.926
23095	707.5	4.901	4.894
23155	713.5	4.919	4.939

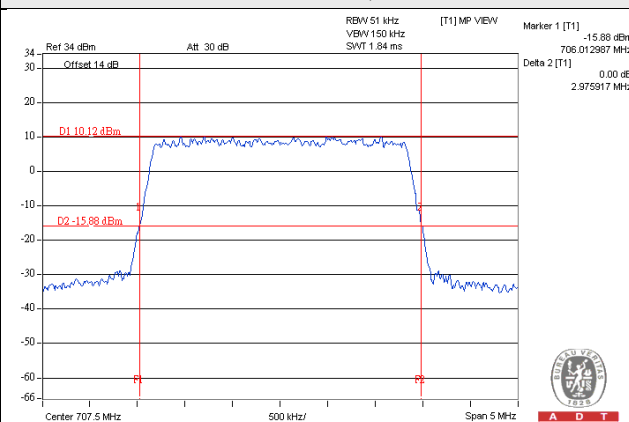
LTE Band 12, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		QPSK	16QAM
23060	704.0	9.659	9.594
23095	707.5	9.539	9.599
23130	711.0	9.652	9.577

### Spectrum Plot of Worst Value

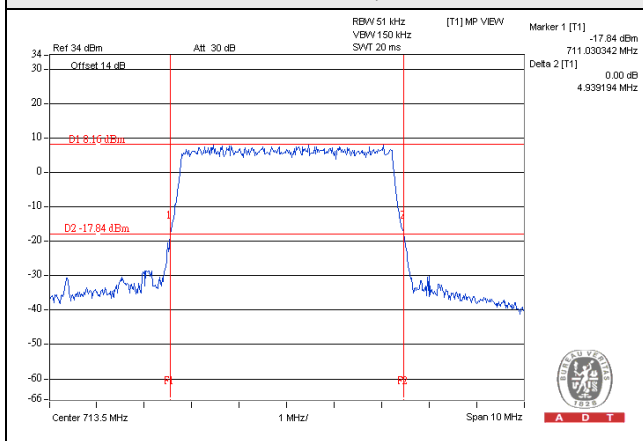
#### 1.4MHz / 16QAM



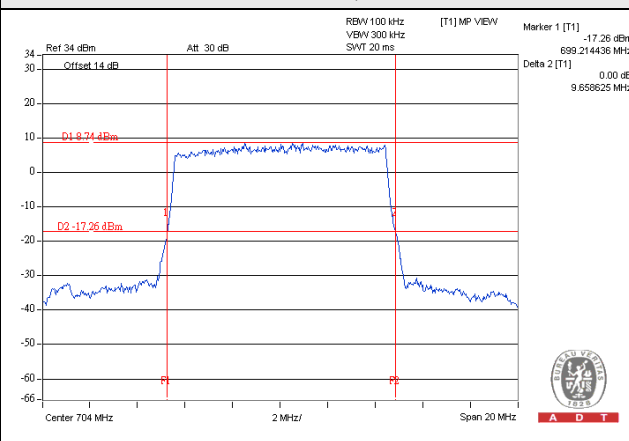
#### 3MHz / 16QAM



#### 5MHz / 16QAM



#### 10MHz / QPSK





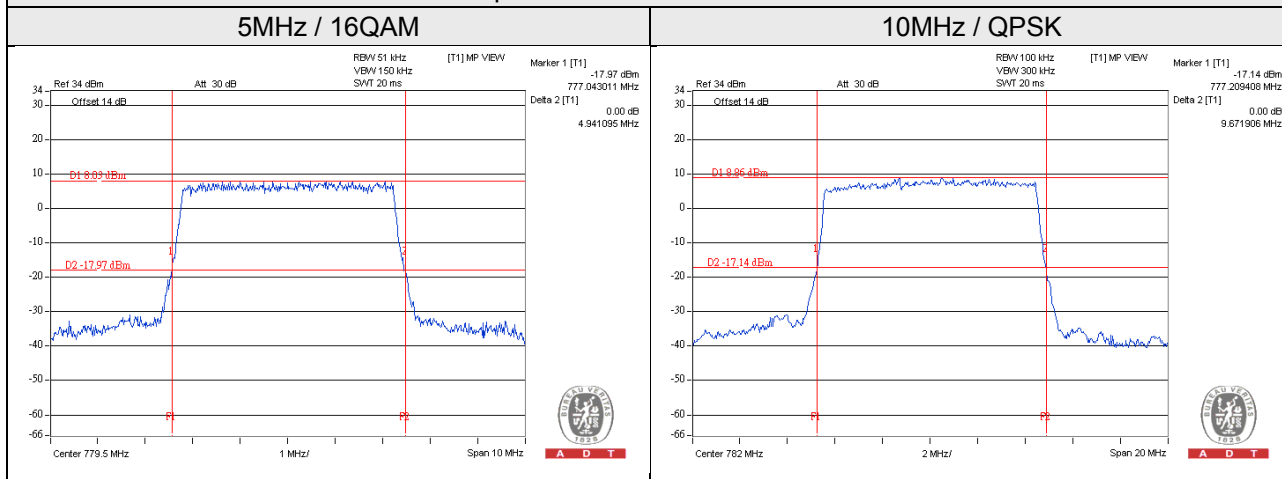
LTE Band 13, Channel Bandwidth 5MHz

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		QPSK	16QAM
23205	779.5	4.924	4.941
23230	782.0	4.900	4.895
23255	784.5	4.911	4.901

LTE Band 13, Channel Bandwidth 10MHz

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		QPSK	16QAM
23230	782.0	9.672	9.596

Spectrum Plot of Worst Value



## 4.5 Channel Edge Measurement

### 4.5.1 Limits of Band Edge Measurement

For WCDMA Band 4, LTE Band 4

According to FCC 27.53(h) for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10}(P)$  dB.

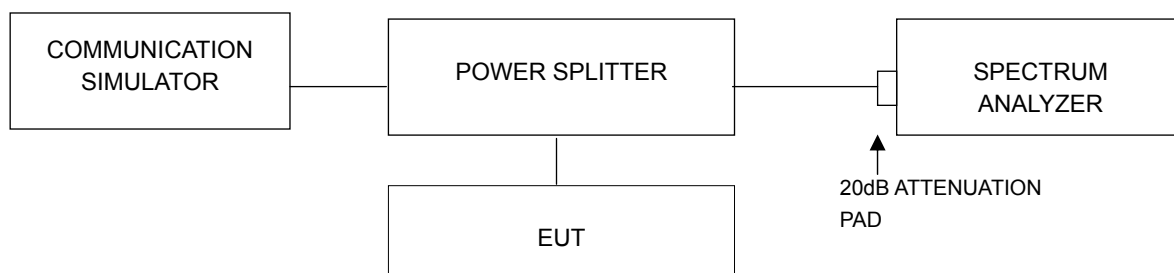
For LTE Band 12

According to FCC 27.53(g) for operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least  $43 + 10 \log_{10}(P)$  dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater.

For LTE Band 13

According to FCC 27.53(c) (2) for on any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least  $43 + 10 \log_{10}(P)$  dB.

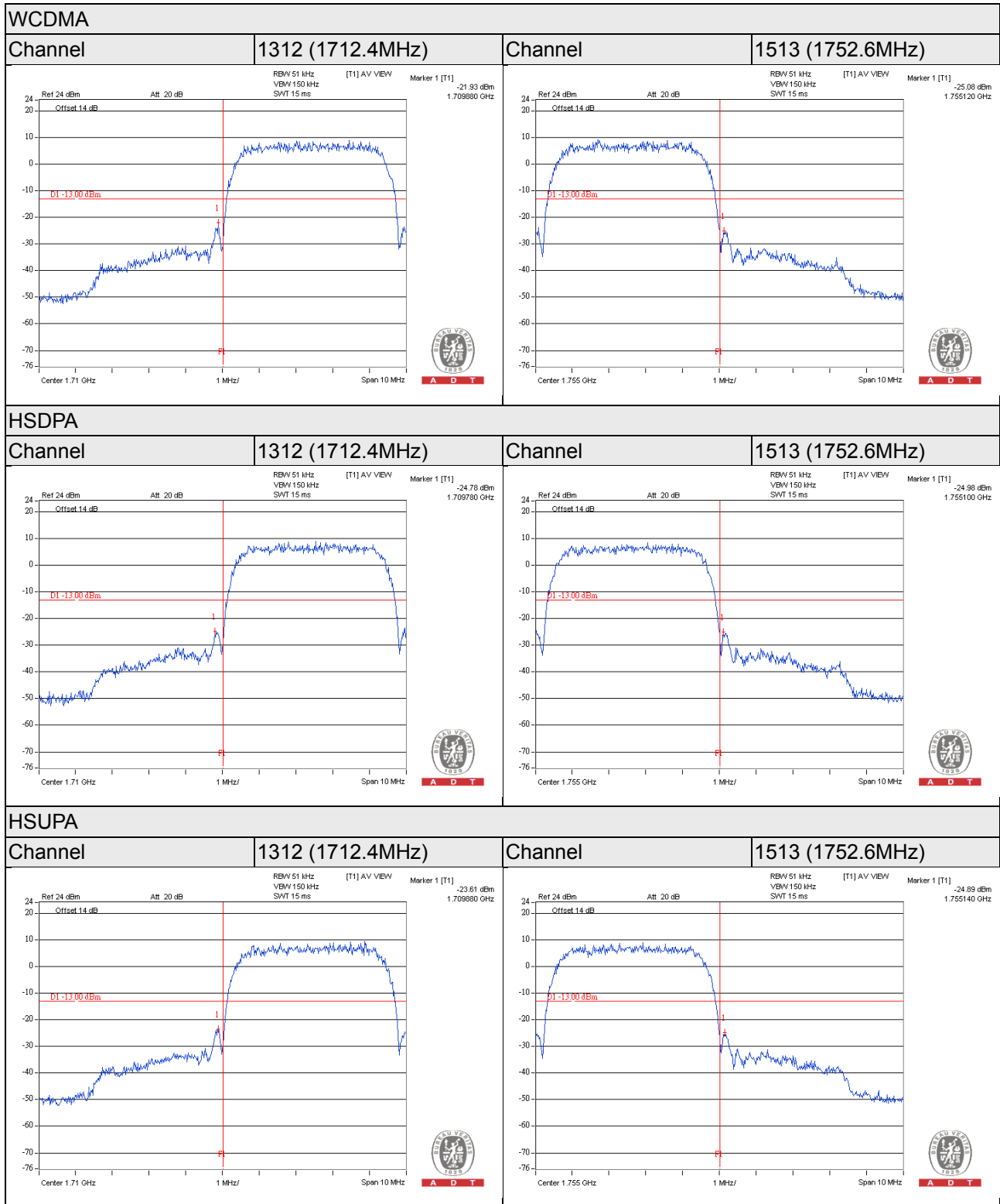
### 4.5.2 Test Setup



### 4.5.3 Test Procedures

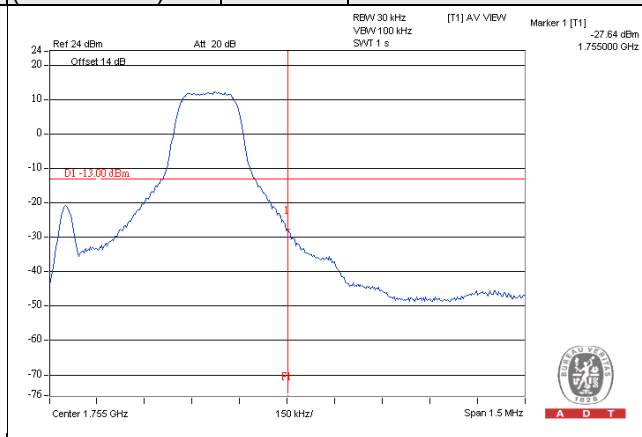
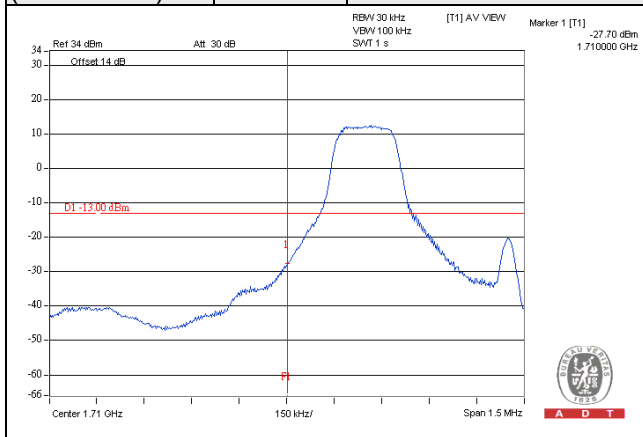
- The EUT was set up for the rated peak power. The power was measured with Spectrum Analyzer. All measurements were done at 3 channels: low, middle and high operational frequency range.
- The center frequency of spectrum is the band edge frequency and span is 1.5MHz. RBW = 30kHz and VBW = 100kHz (Channel Bandwidth 1.4MHz and 3MHz), RBW = 51kHz and VBW = 150kHz (Channel Bandwidth 5MHz), RBW = 100kHz and VBW = 300kHz (Channel Bandwidth 10MHz), RBW = 200kHz and VBW = 620kHz (Channel Bandwidth 15MHz) and RBW = 430kHz and VBW = 1.2MHz (Channel Bandwidth 20MHz).
- Record the max trace plot into the test report.

### 4.5.4 Test Results

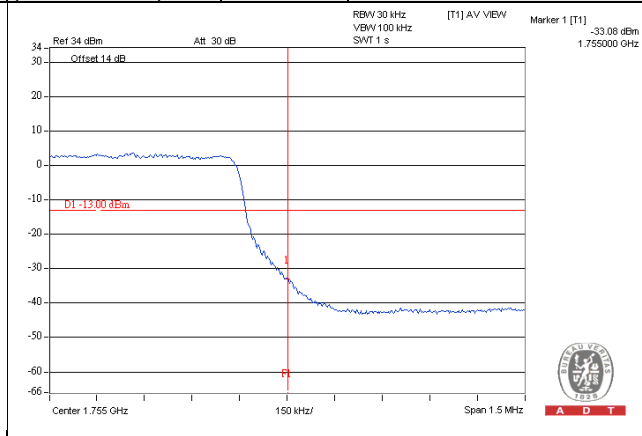
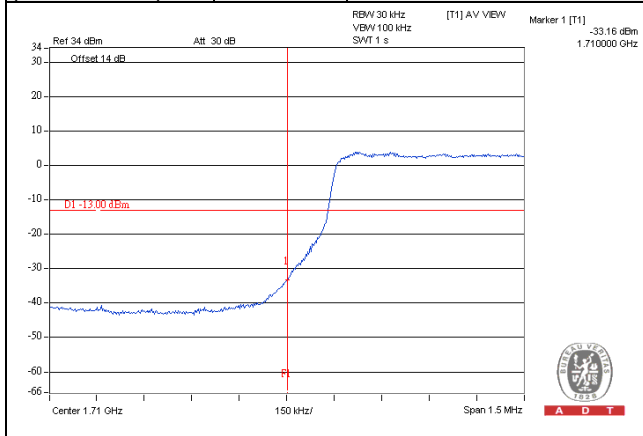


LTE Band 4, Channel Bandwidth 1.4MHz

Channel 19957 (1710.7MHz)	QPSK	1 RB / 0 RB Offset	Channel 20393 (1754.3MHz)	QPSK	1 RB / 5 RB Offset
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Channel 19957 (1710.7MHz)	QPSK	6 RB / 0 RB Offset	Channel 20393 (1754.3MHz)	QPSK	6 RB / 0 RB Offset
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LTE Band 4, Channel Bandwidth 3MHz

Channel 19965  
(1711.5MHz)

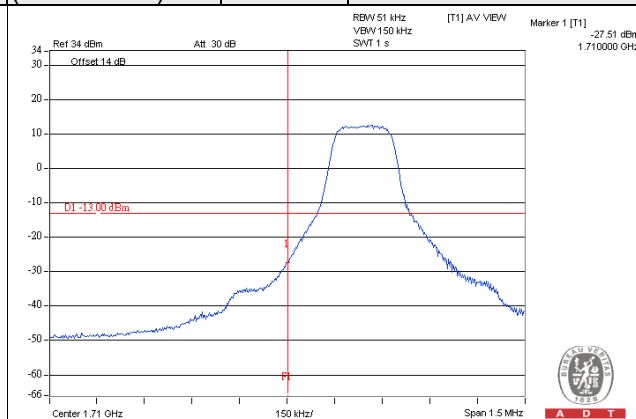
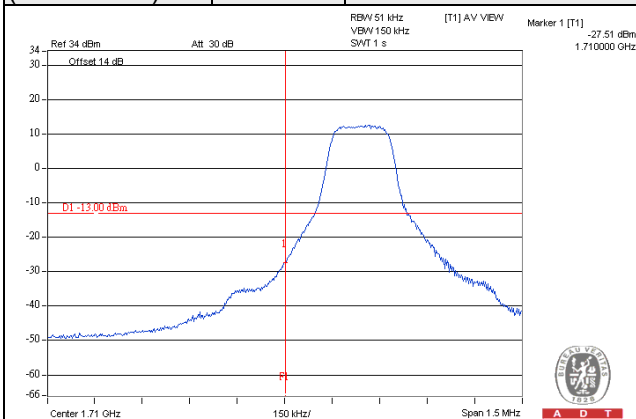
QPSK

1 RB / 0 RB Offset

Channel 20385  
(1753.5MHz)

QPSK

1 RB / 14 RB Offset



Channel 19965  
(1711.5MHz)

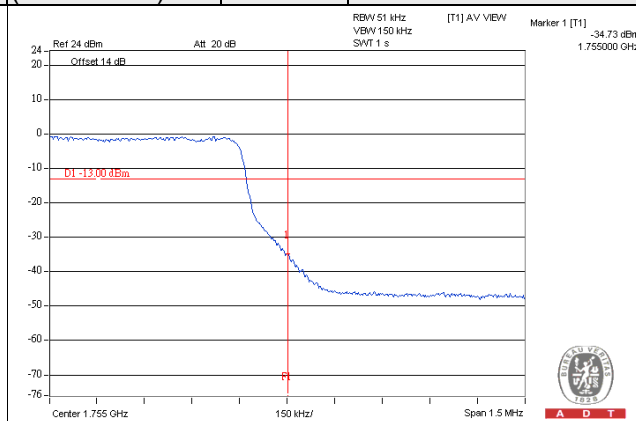
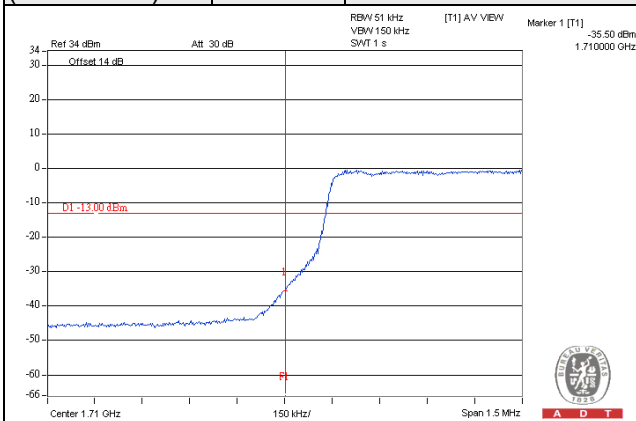
QPSK

15 RB / 0 RB Offset

Channel 20385  
(1753.5MHz)

QPSK

15 RB / 0 RB Offset



LTE Band 4, Channel Bandwidth 5MHz

Channel 19975  
(1712.5MHz)

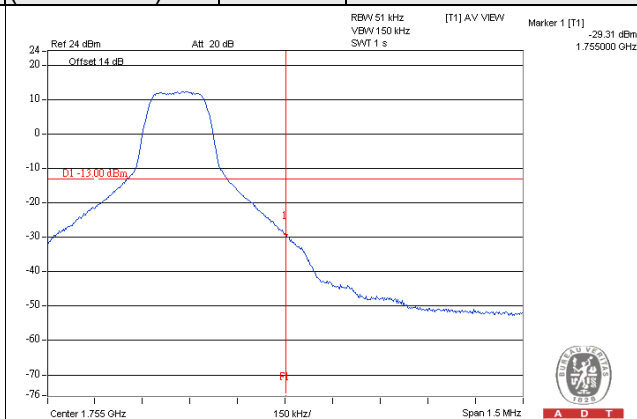
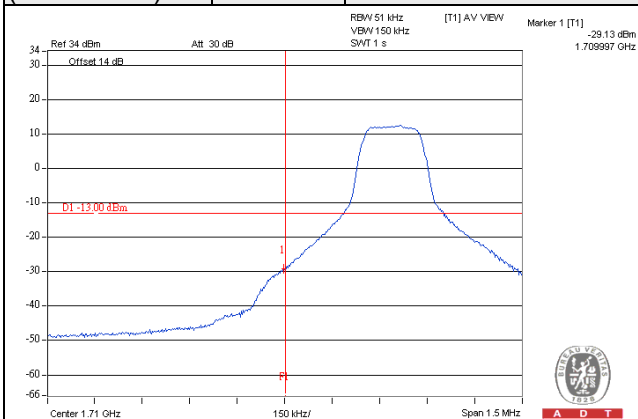
QPSK

1 RB / 0 RB Offset

Channel 20375  
(1752.5MHz)

QPSK

1 RB / 24 RB Offset



Channel 19975  
(1712.5MHz)

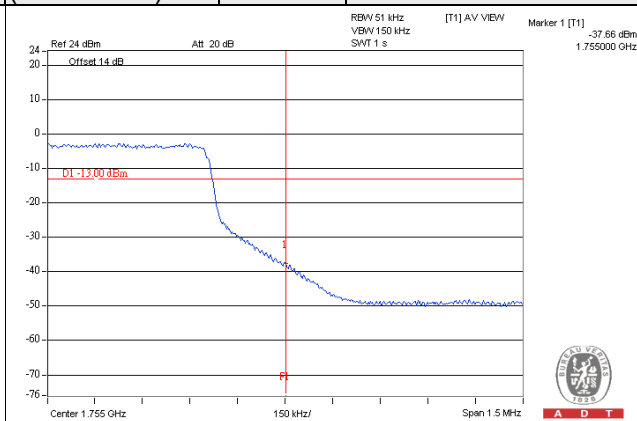
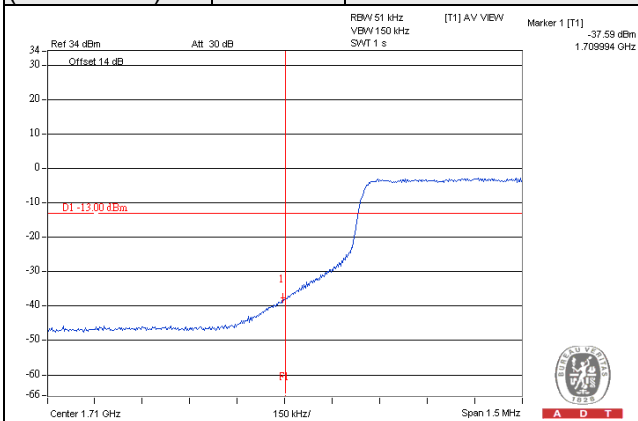
QPSK

25 RB / 0 RB Offset

Channel 20375  
(1752.5MHz)

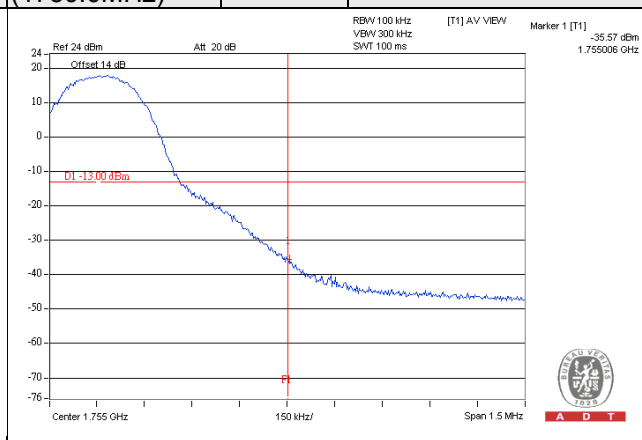
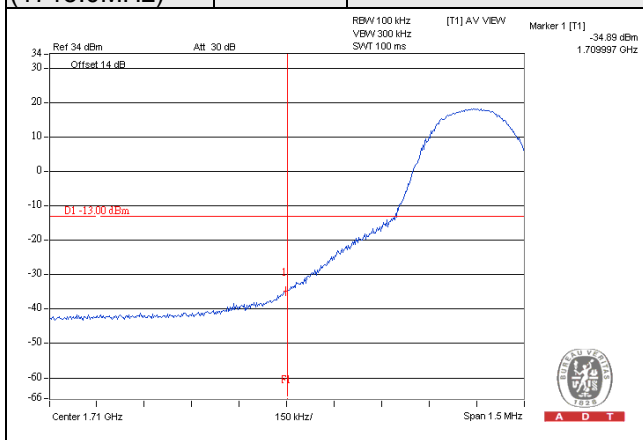
QPSK

25 RB / 0 RB Offset

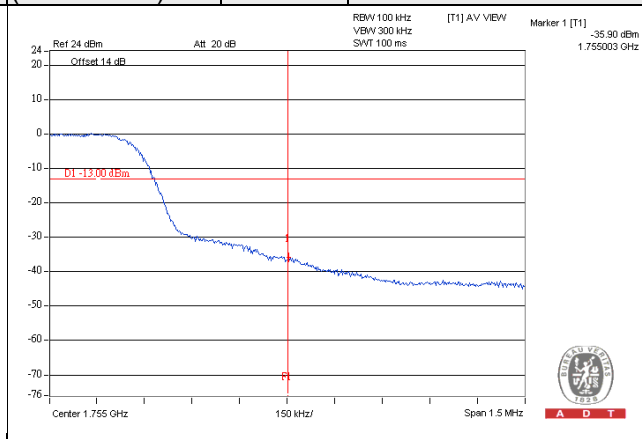
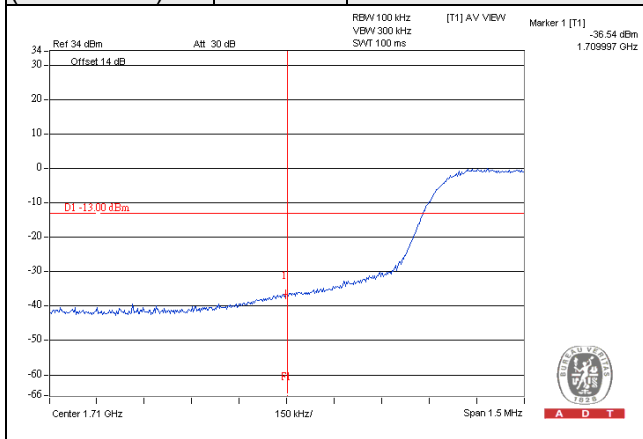


**LTE Band 4, Channel Bandwidth 10MHz**

<b>Channel 20000 (1715.0MHz)</b>	<b>QPSK</b>	<b>1 RB / 0 RB Offset</b>	<b>Channel 20350 (1750.0MHz)</b>	<b>QPSK</b>	<b>1 RB / 49 RB Offset</b>
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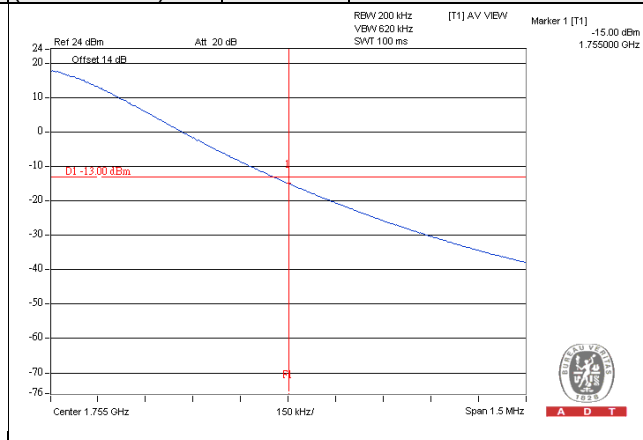
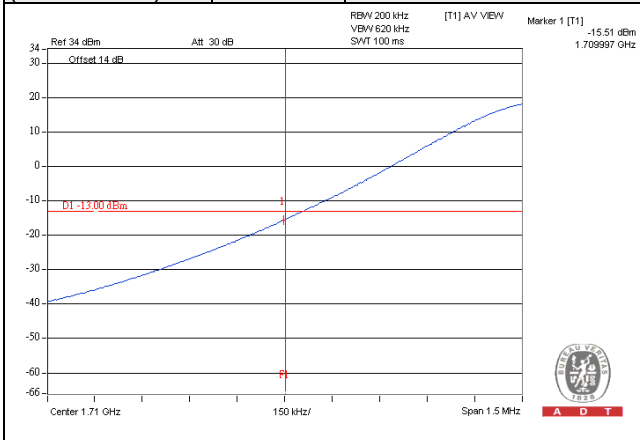


<b>Channel 20000 (1715.0MHz)</b>	<b>QPSK</b>	<b>50 RB / 0 RB Offset</b>	<b>Channel 20350 (1750.0MHz)</b>	<b>QPSK</b>	<b>50 RB / 0 RB Offset</b>
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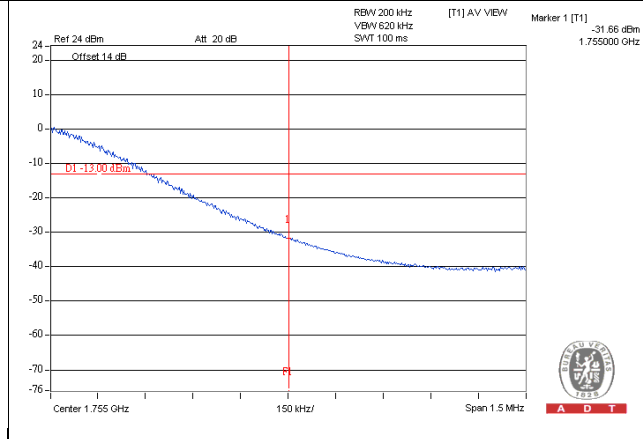
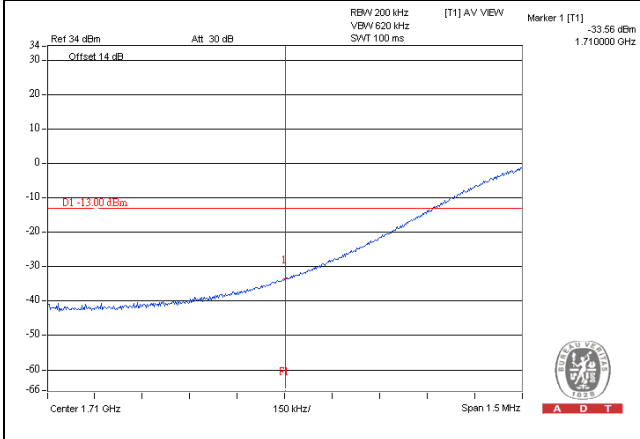


**LTE Band 4, Channel Bandwidth 15MHz**

<b>Channel 20025 (1717.5MHz)</b>	<b>QPSK</b>	<b>1 RB / 0 RB Offset</b>	<b>Channel 20325 (1747.5MHz)</b>	<b>QPSK</b>	<b>1 RB / 74 RB Offset</b>
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<b>Channel 20025 (1717.5MHz)</b>	<b>QPSK</b>	<b>75 RB / 0 RB Offset</b>	<b>Channel 20325 (1747.5MHz)</b>	<b>QPSK</b>	<b>75 RB / 0 RB Offset</b>
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**LTE Band 4, Channel Bandwidth 20MHz**

**Channel 20050  
(1720.0MHz)**

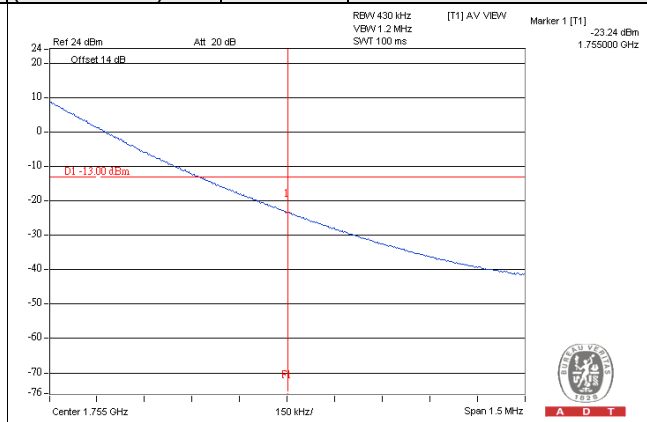
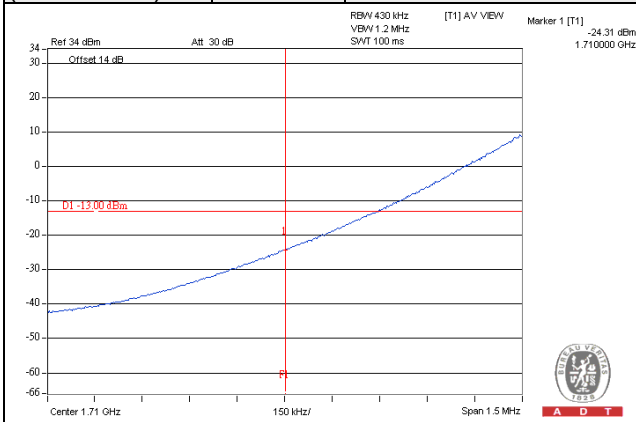
**QPSK**

**1 RB / 0 RB Offset**

**Channel 20300  
(1745.0MHz)**

**QPSK**

**1 RB / 99 RB Offset**



**Channel 20050  
(1720.0MHz)**

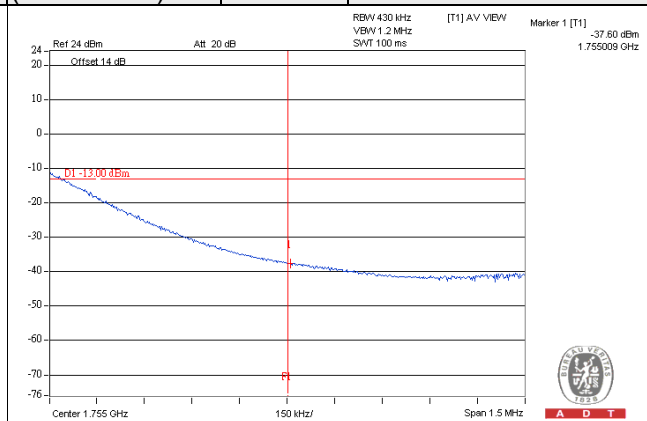
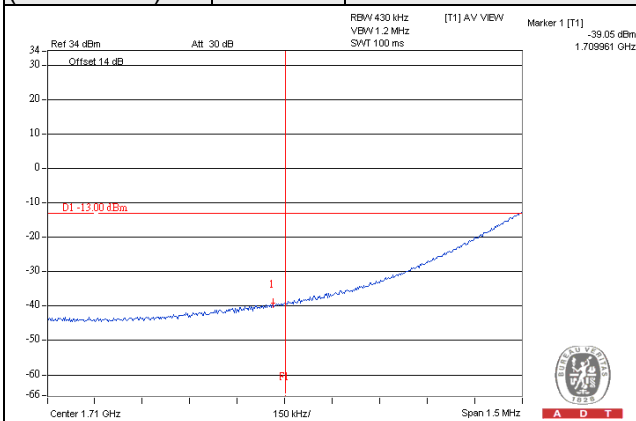
**QPSK**

**100 RB / 0 RB Offset**

**Channel 20300  
(1745.0MHz)**

**QPSK**

**100 RB / 0 RB Offset**



LTE Band 12, Channel Bandwidth 1.4MHz

Channel 23017  
(699.7MHz)

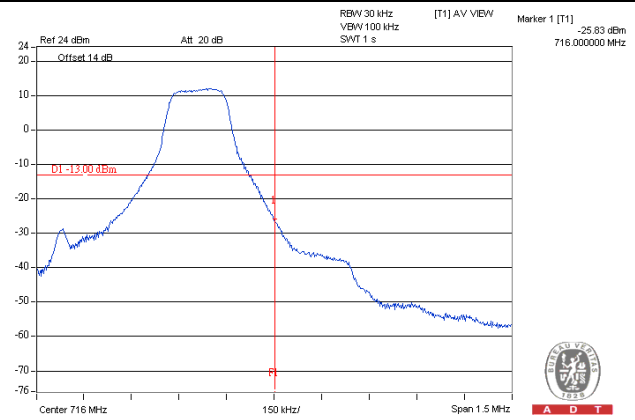
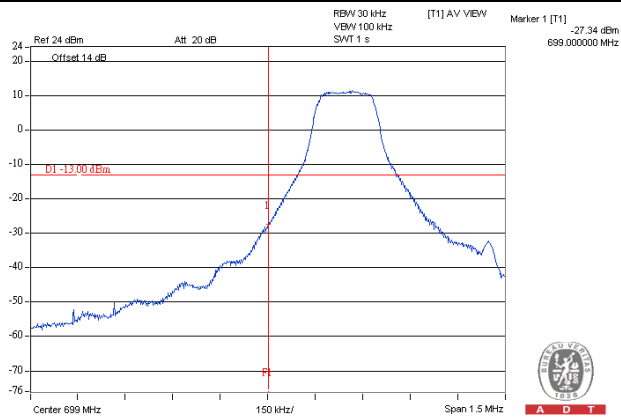
QPSK

1 RB / 0 RB Offset

Channel 23171  
(715.3MHz)

QPSK

1 RB / 5 RB Offset



Channel 23017  
(699.7MHz)

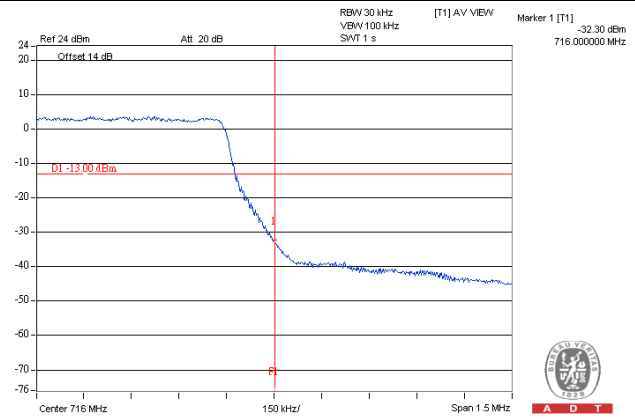
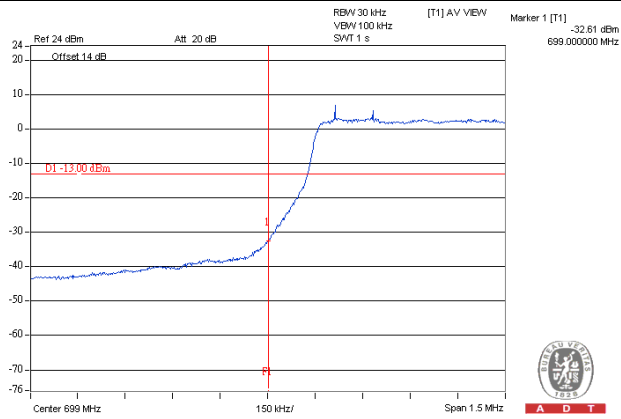
QPSK

6 RB / 0 RB Offset

Channel 23171  
(715.3MHz)

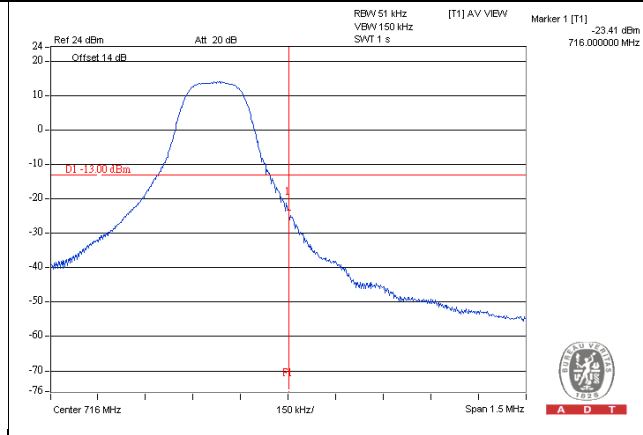
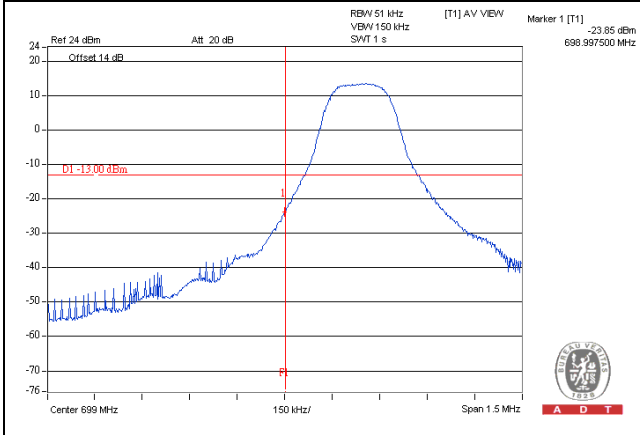
QPSK

6 RB / 0 RB Offset

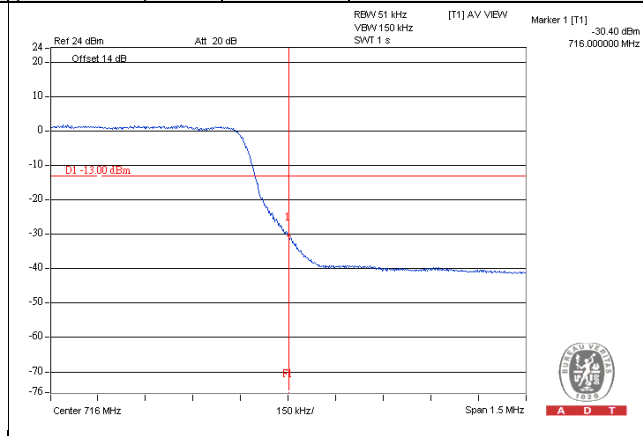
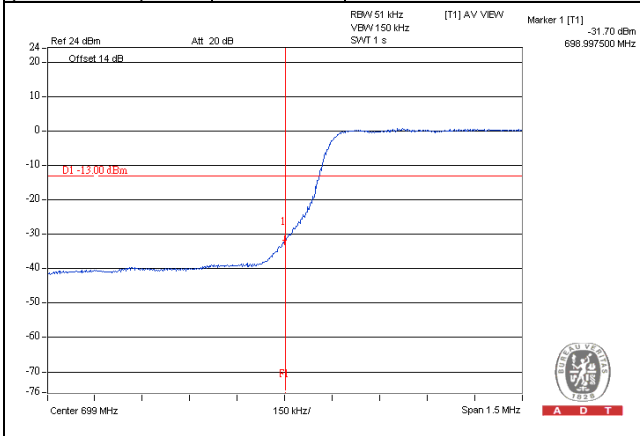


LTE Band 12, Channel Bandwidth 3MHz

Channel 23025 (700.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 23165 (714.5MHz)	QPSK	1 RB / 14 RB Offset
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Channel 23025 (700.5MHz)	QPSK	15 RB / 0 RB Offset	Channel 23165 (714.5MHz)	QPSK	15 RB / 0 RB Offset
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LTE Band 12, Channel Bandwidth 5MHz

Channel 23035  
(701.5MHz)

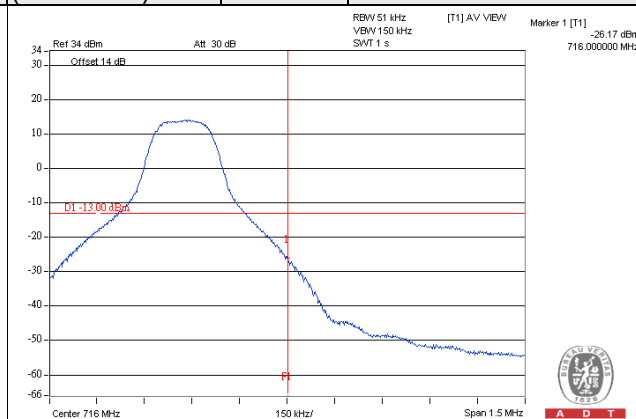
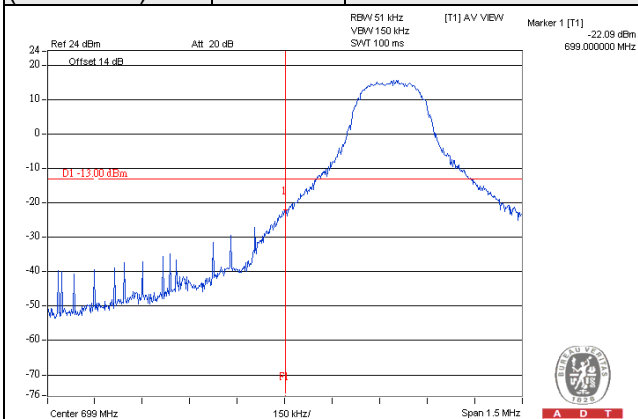
QPSK

1 RB / 0 RB Offset

Channel 23155  
(713.5MHz)

QPSK

1 RB / 24 RB Offset



Channel 23035  
(701.5MHz)

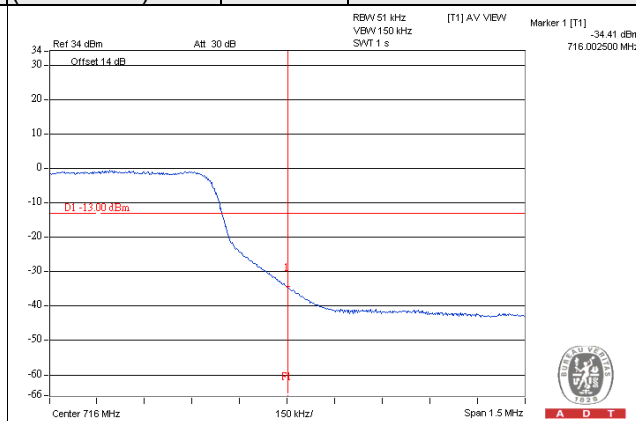
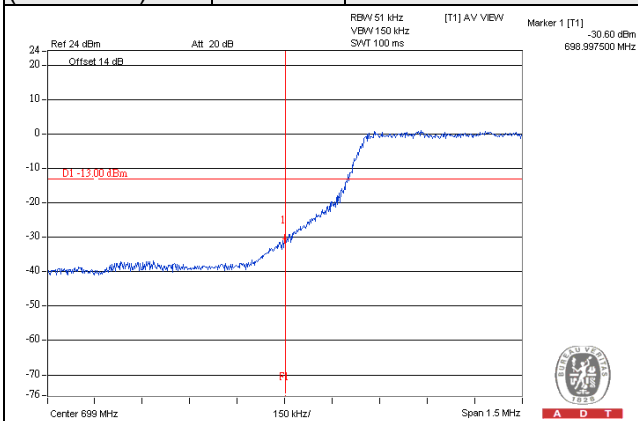
QPSK

25 RB / 0 RB Offset

Channel 23155  
(713.5MHz)

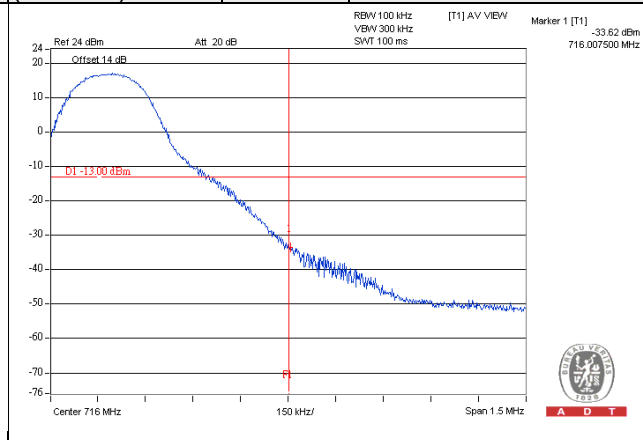
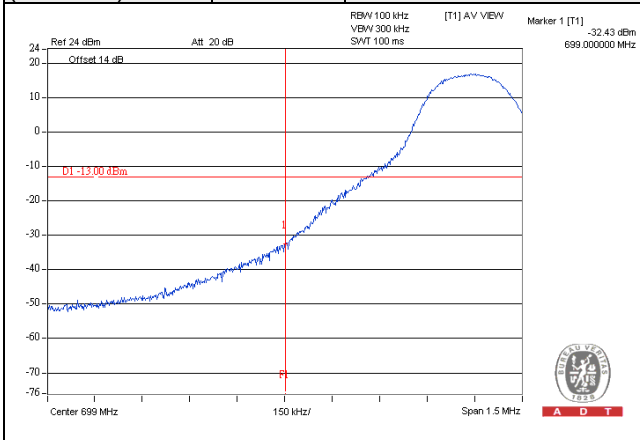
QPSK

25 RB / 0 RB Offset

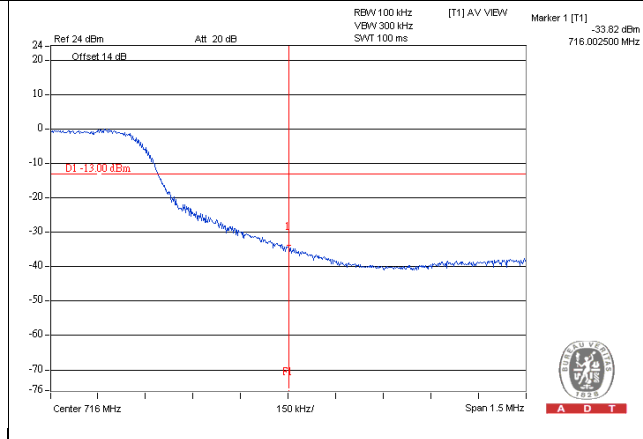
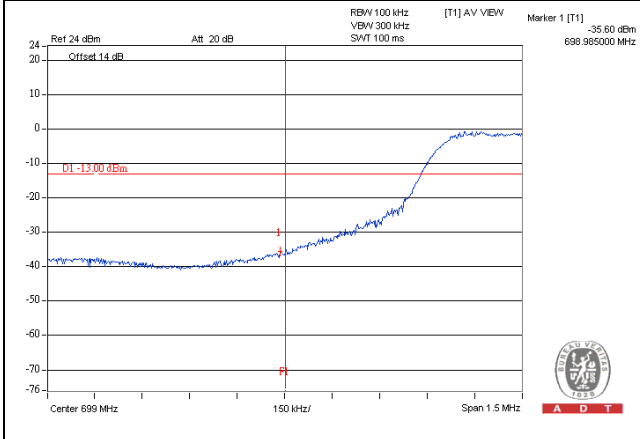


LTE Band 12, Channel Bandwidth 10MHz

Channel 23060 (704MHz)	QPSK	1 RB / 0 RB Offset	Channel 23130 (711MHz)	QPSK	1 RB / 49 RB Offset
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Channel 23060 (704MHz)	QPSK	50 RB / 0 RB Offset	Channel 23130 (711MHz)	QPSK	50 RB / 0 RB Offset
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LTE Band 13, Channel Bandwidth 5MHz

Channel 23205  
(779.5MHz)

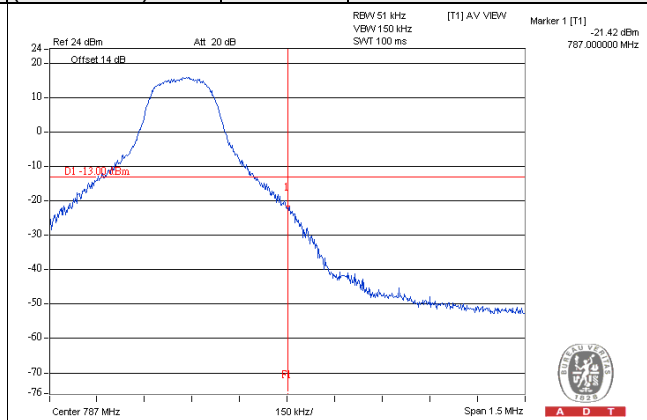
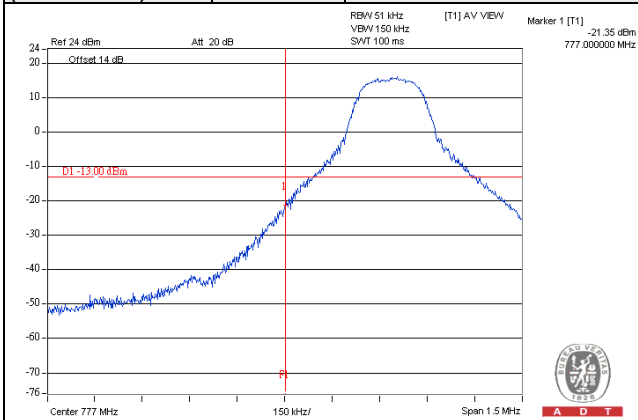
QPSK

1 RB / 0 RB Offset

Channel 23255  
(784.5MHz)

QPSK

1 RB / 24 RB Offset



Channel 23205  
(779.5MHz)

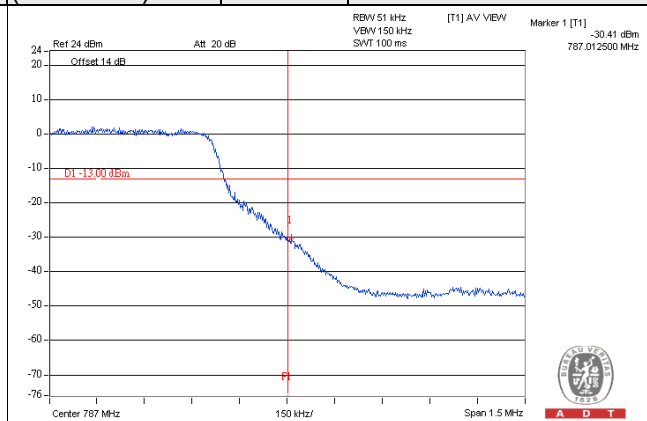
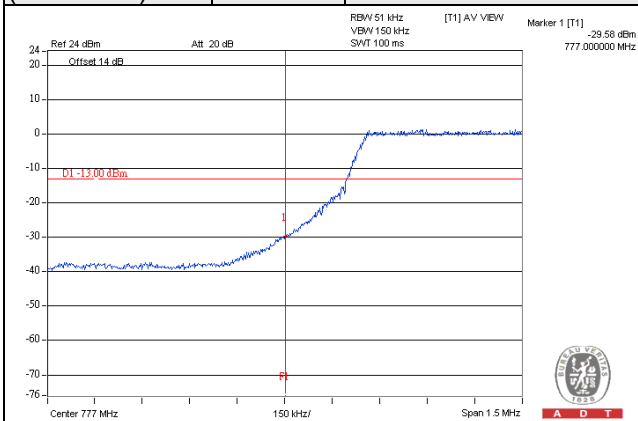
QPSK

25 RB / 0 RB Offset

Channel 23255  
(784.5MHz)

QPSK

25 RB / 0 RB Offset



LTE Band 13, Channel Bandwidth 10MHz

Channel 23230  
(782.0MHz)

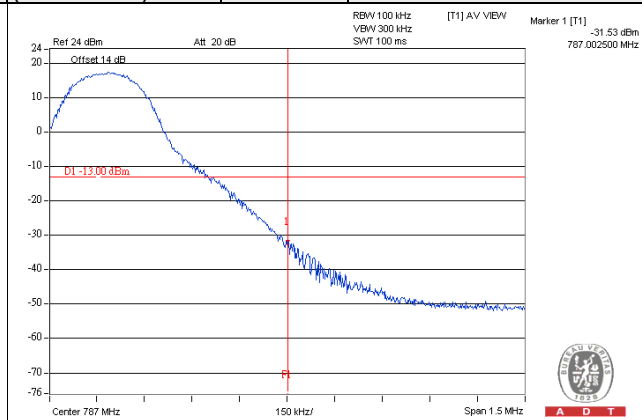
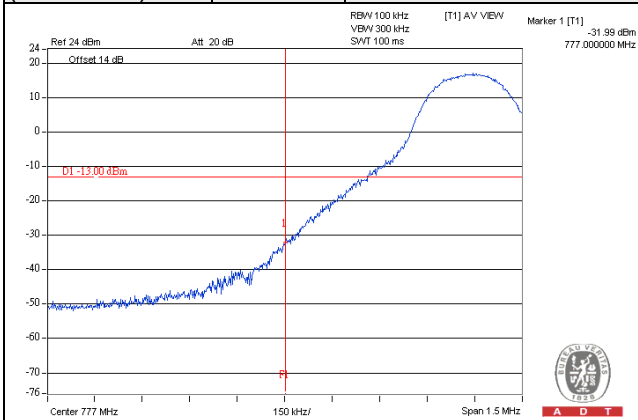
QPSK

1 RB / 0 RB Offset

Channel 23230  
(782.0MHz)

QPSK

1 RB / 49 RB Offset



Channel 23230  
(782.0MHz)

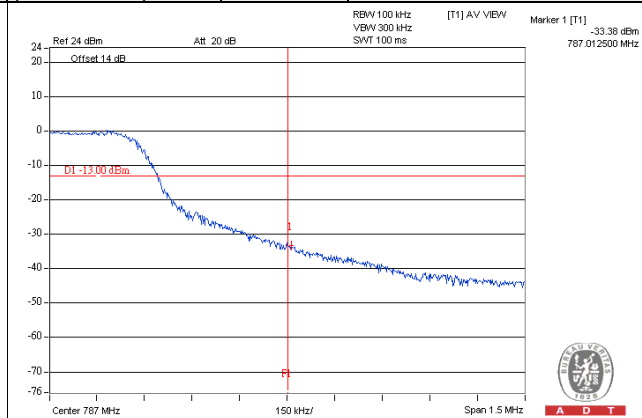
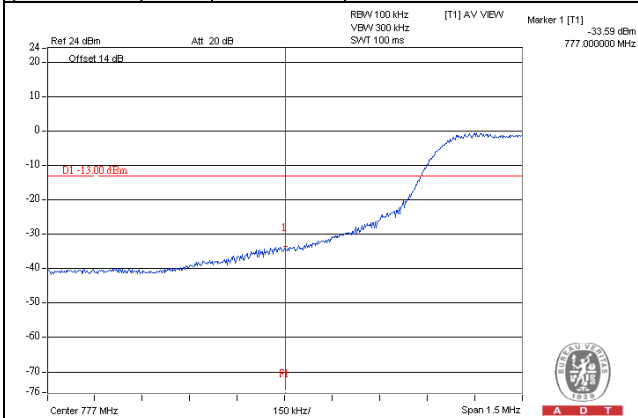
QPSK

50 RB / 0 RB Offset

Channel 23230  
(782.0MHz)

QPSK

50 RB / 0 RB Offset

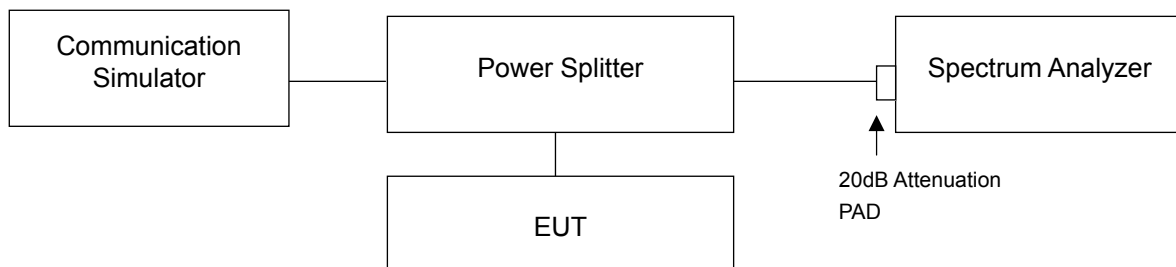


## 4.6 Peak to Average Ratio

### 4.6.1 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

### 4.6.2 Test Setup



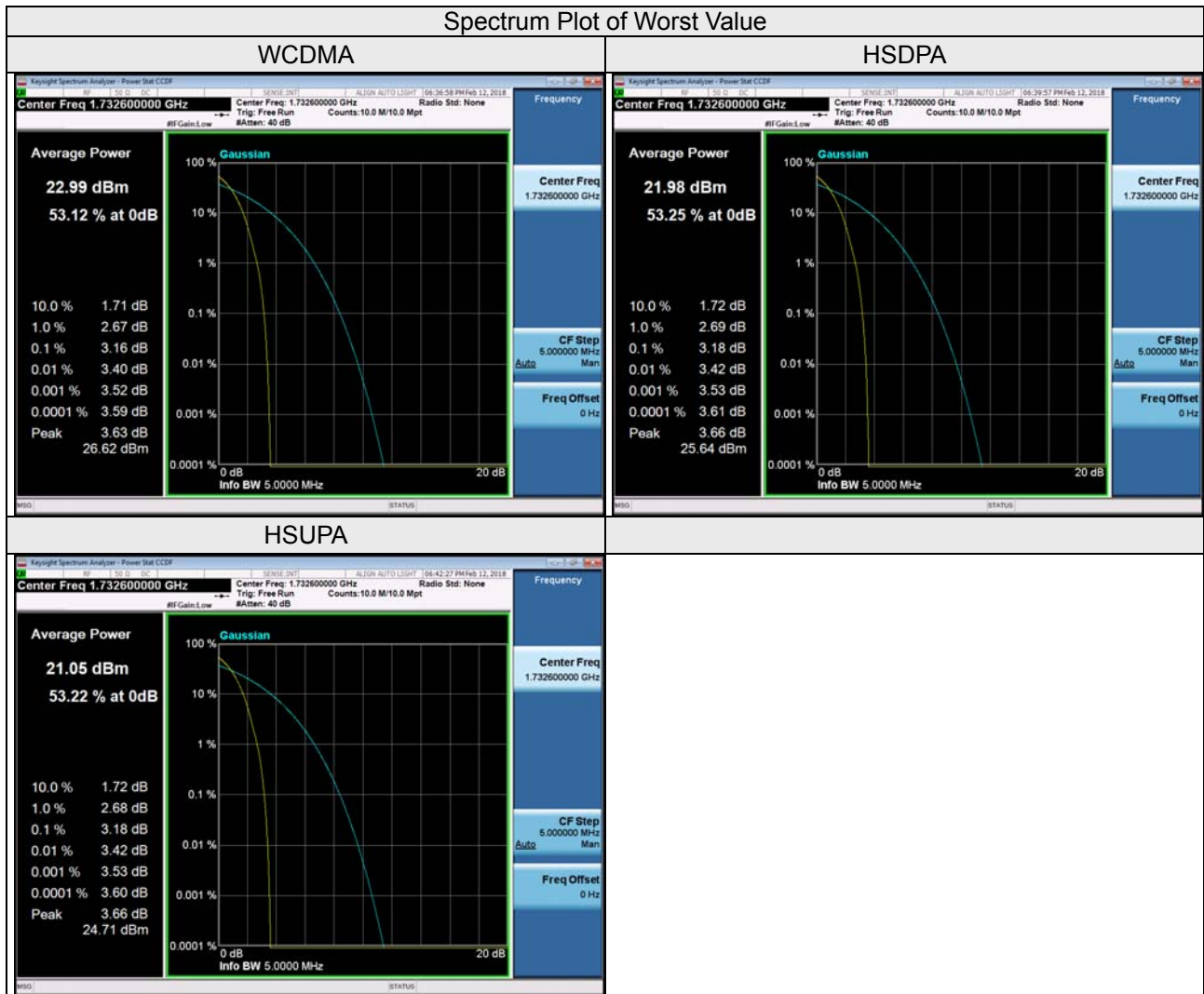
### 4.6.3 Test Procedures

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



#### 4.6.4 Test Results

WCDMA Band 4				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		WCDMA	HSDPA	HSUPA
1312	1712.4	3.11	3.11	3.12
1413	1732.6	3.16	3.18	3.18
1513	1752.6	3.09	3.09	3.09



LTE Band 4, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
19957	1710.7	5.31	5.40
20175	1732.5	5.33	5.47
20393	1754.3	5.27	5.27

LTE Band 4, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
19965	1711.5	5.39	5.41
20175	1732.5	5.47	5.41
20385	1753.5	5.35	5.35

LTE Band 4, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
19975	1712.5	5.34	5.32
20175	1732.5	5.42	5.40
20375	1752.5	5.32	5.30

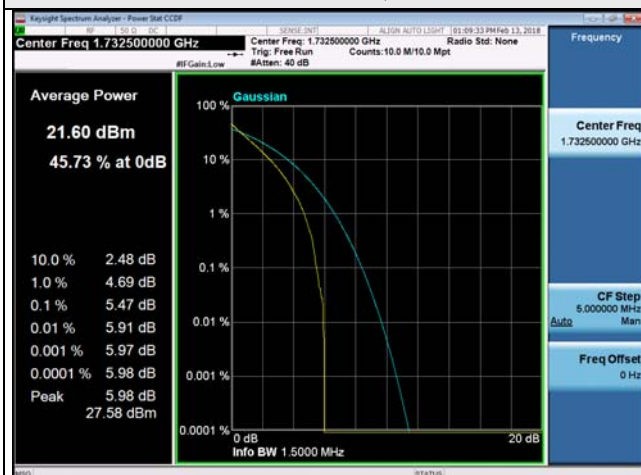
LTE Band 4, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
20000	1715.0	5.31	5.29
20175	1732.5	5.38	5.44
20350	1750.0	5.26	5.34

LTE Band 4, Channel Bandwidth 15MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
20025	1717.5	5.12	5.13
20175	1732.5	5.32	5.32
20325	1747.5	5.22	5.20

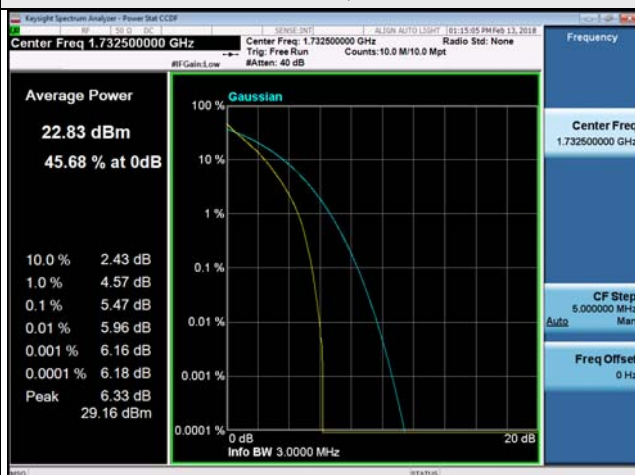
LTE Band 4, Channel Bandwidth 20MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
20050	1720.0	5.11	5.10
20175	1732.5	5.35	5.32
20300	1745.0	5.20	5.18

### Spectrum Plot of Worst Value

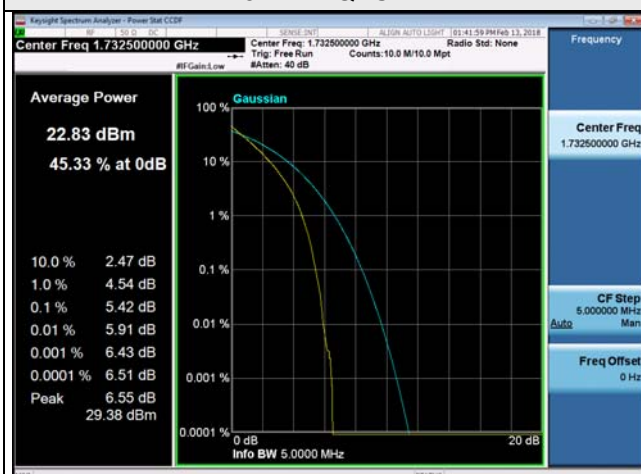
1.4MHz / 16QAM



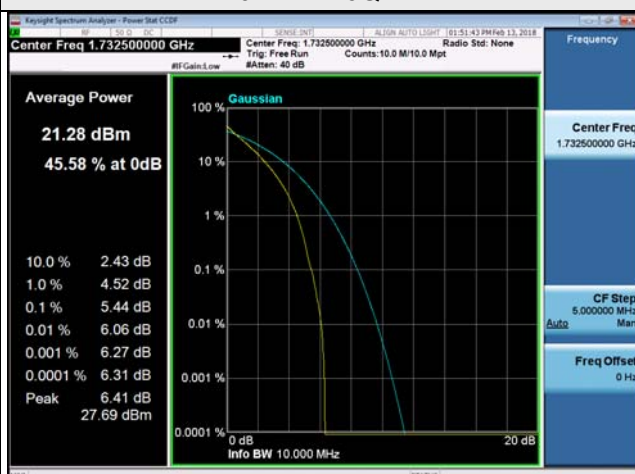
3MHz / QPSK



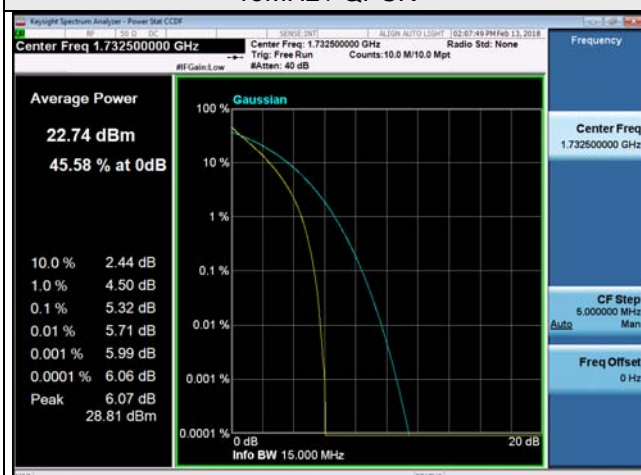
5MHz / QPSK



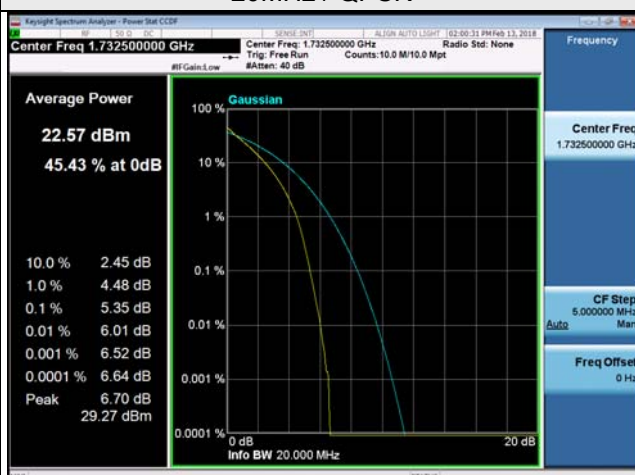
10MHz / 16QAM



15MHz / QPSK



20MHz / QPSK



## LTE Band 12, Channel Bandwidth 1.4MHz

Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
23017	699.7	5.57	5.57
23095	707.5	5.72	5.72
23173	715.3	5.55	5.54

## LTE Band 12, Channel Bandwidth 3MHz

Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
23025	700.5	5.52	5.56
23095	707.5	5.65	5.67
23165	714.5	5.54	5.52

## LTE Band 12, Channel Bandwidth 5MHz

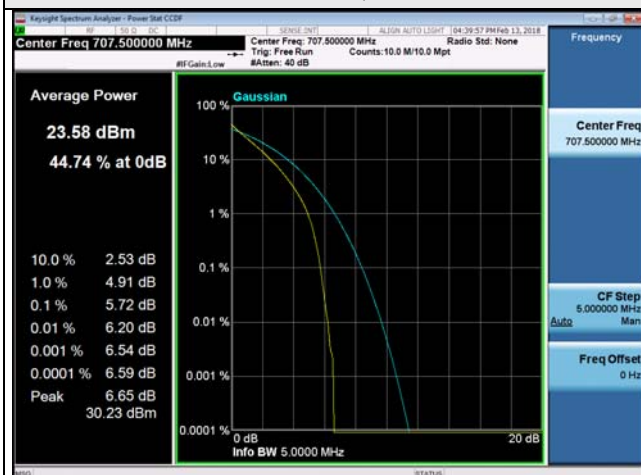
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
23035	701.5	5.42	5.42
23095	707.5	5.49	5.49
23155	713.5	5.44	5.43

## LTE Band 12, Channel Bandwidth 10MHz

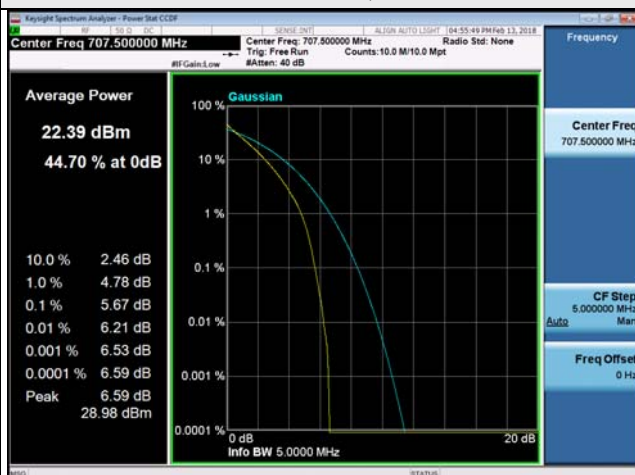
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
23060	704.0	5.58	5.68
23095	707.5	5.50	5.54
23130	711.0	5.31	5.24

### Spectrum Plot of Worst Value

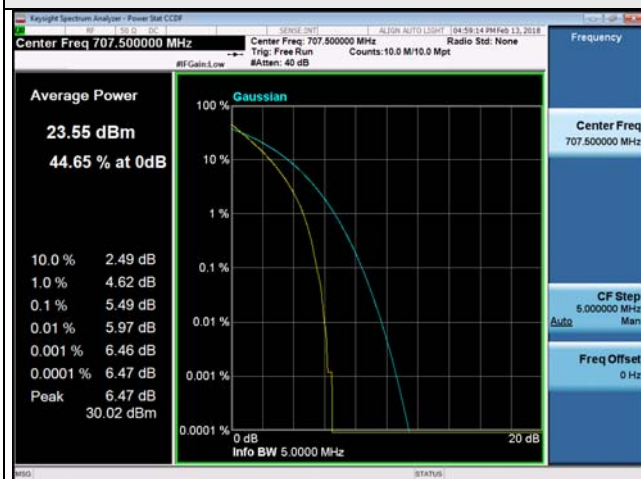
**1.4MHz / QPSK**



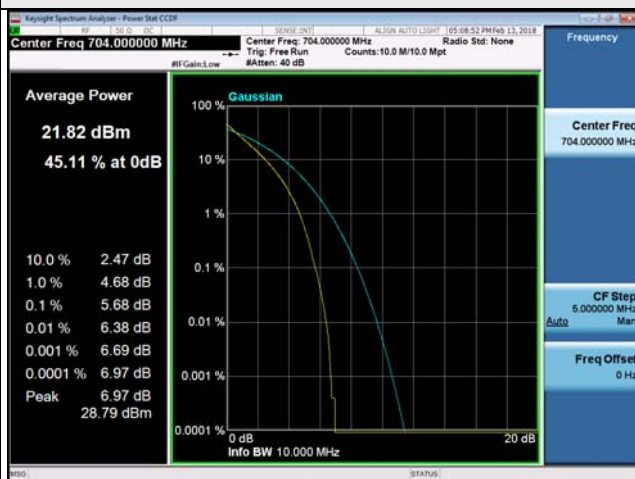
**3MHz / 16QAM**



**5MHz / QPSK**



**10MHz / 16QAM**



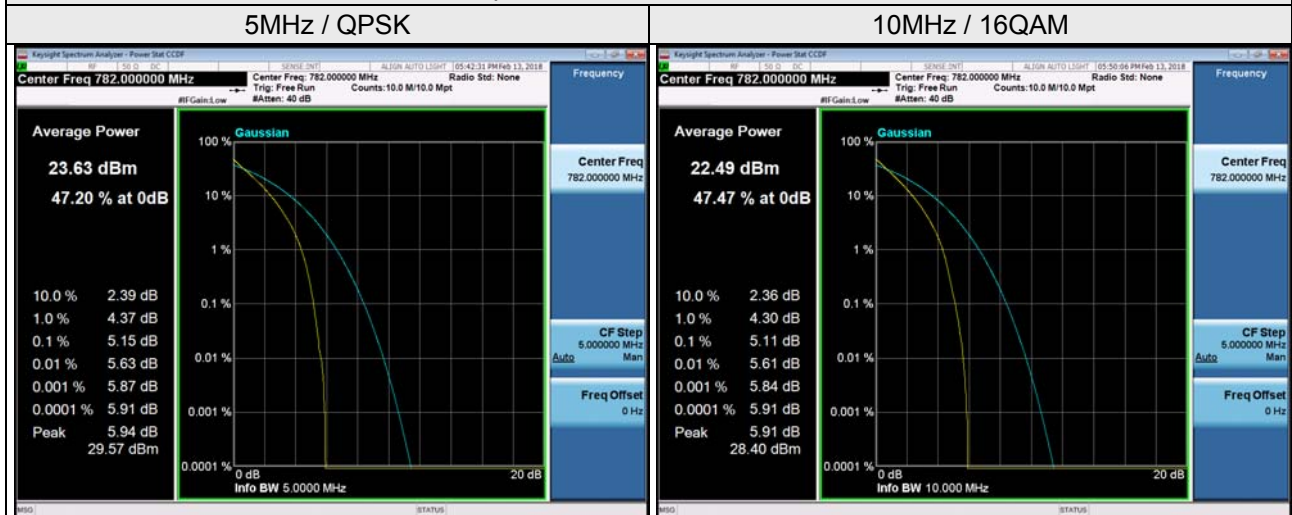
LTE Band 13, Channel Bandwidth 5MHz

Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
23205	779.5	5.14	5.13
23230	782.0	5.15	5.15
23255	784.5	5.12	5.12

LTE Band 13, Channel Bandwidth 10MHz

Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
23230	782.0	5.07	5.11

Spectrum Plot of Worst Value



## 4.7 Conducted Spurious Emissions

### 4.7.1 Limits of Conducted Spurious Emissions Measurement

For WCDMA Band 4, LTE Band 4

According to FCC 27.53(h) for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10}(P)$  dB.

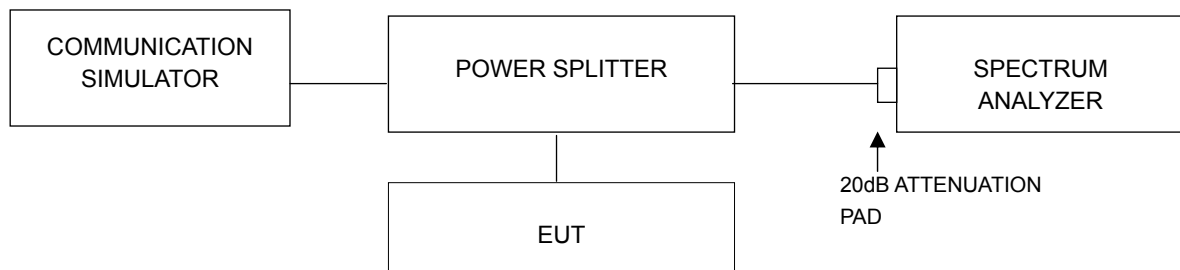
For LTE Band 12

According to FCC 27.53(g) for operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least  $43 + 10 \log_{10}(P)$  dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater.

For LTE Band 13

According to FCC 27.53(c) (2) for on any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least  $43 + 10 \log_{10}(P)$  dB.

### 4.7.2 Test Setup



### 4.7.3 Test Procedure

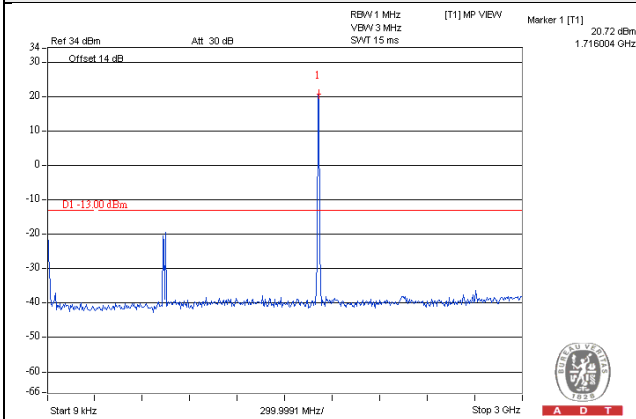
- All measurements were done at 3 channels: low, middle and high operational frequency range.
- When the spectrum scanned from 9kHz to 26.5GHz for WCDMA Band 4, LTE Band 4, LTE Band 12, it shall be connected to the 20dB pad attenuated the carried frequency. The spectrum set RB = 1MHz, VB = 3MHz.

### 4.7.4 Test Results

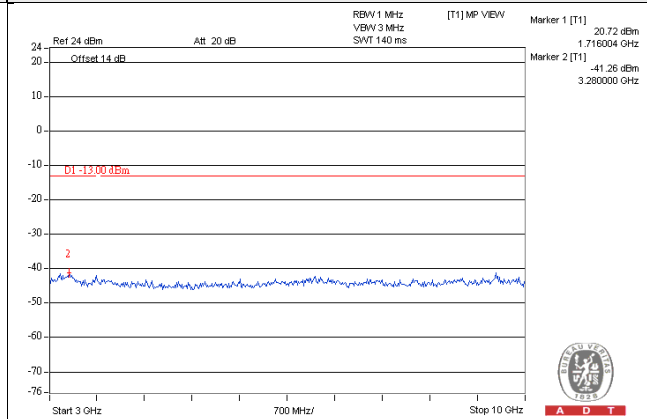
WCDMA

Channel 1312 (1712.4MHz)

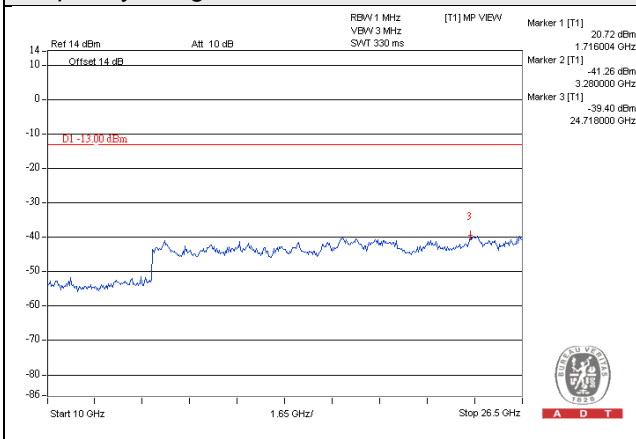
Frequency Range : 9kHz~3GHz



Frequency Range : 3GHz~10GHz



Frequency Range : 10GHz~26.5GHz

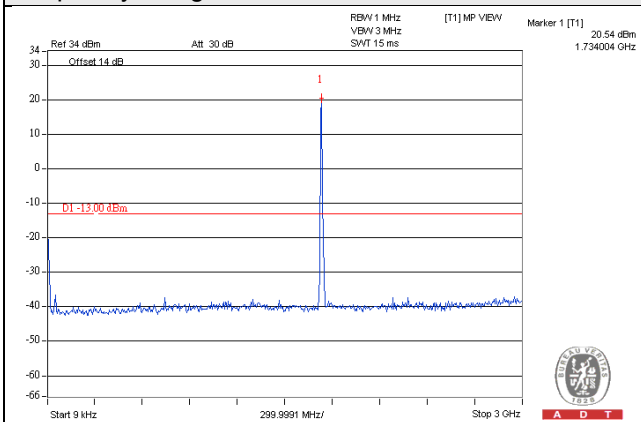




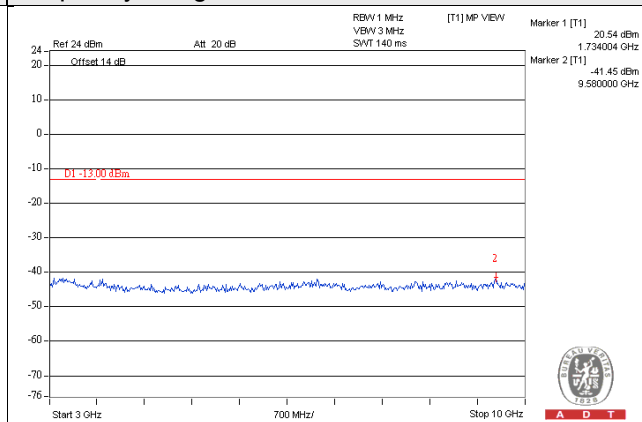
WCDMA

Channel 1413 (1732.6MHz)

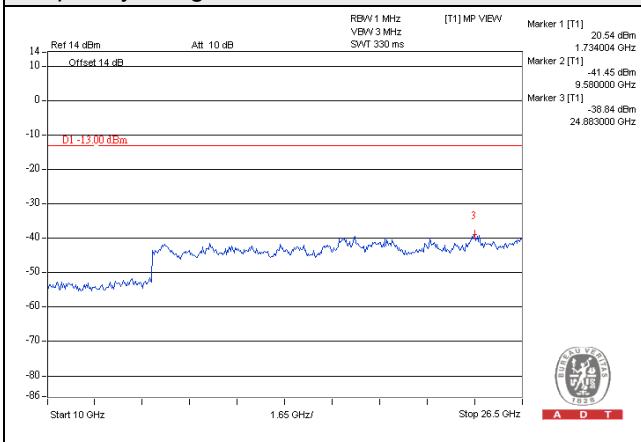
Frequency Range : 9kHz~3GHz



Frequency Range : 3GHz~10GHz



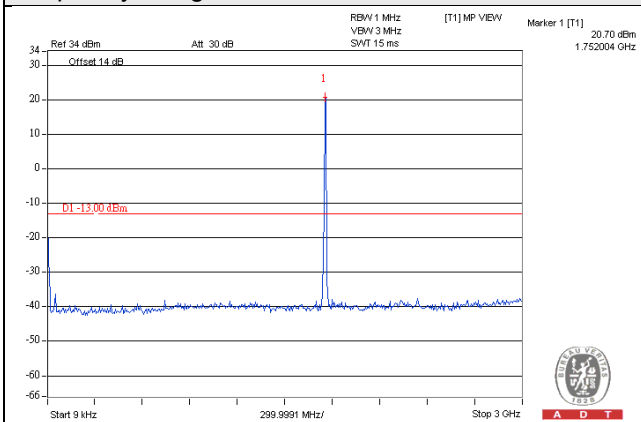
Frequency Range : 10GHz~26.5GHz



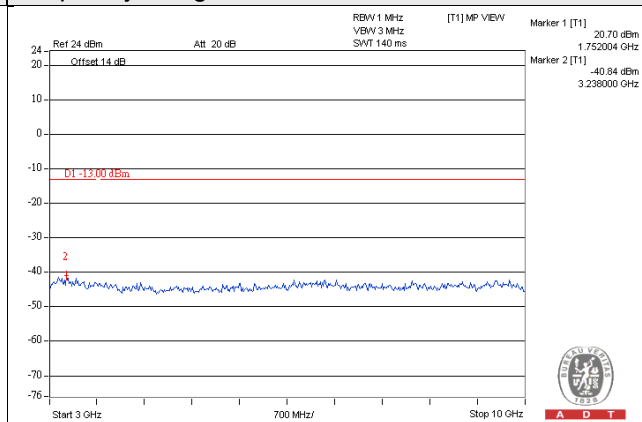
**WCDMA**

**Channel 1513 (1752.6MHz)**

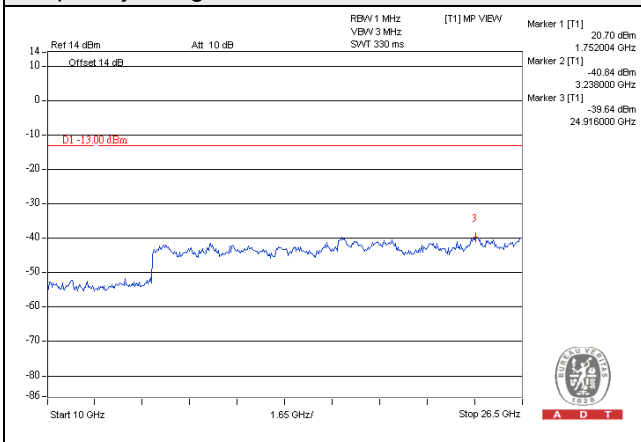
**Frequency Range : 9kHz~3GHz**



**Frequency Range : 3GHz~10GHz**



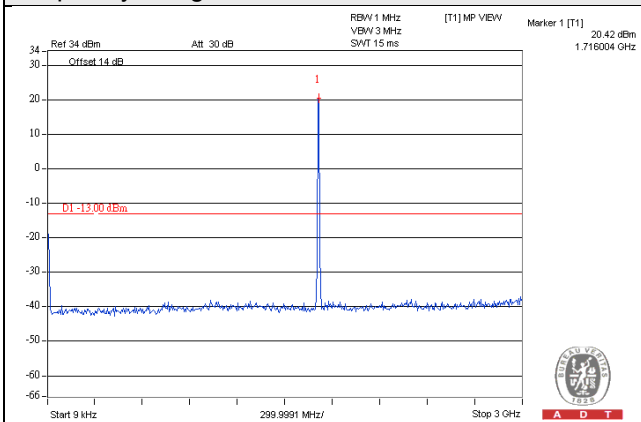
**Frequency Range : 10GHz~26.5GHz**



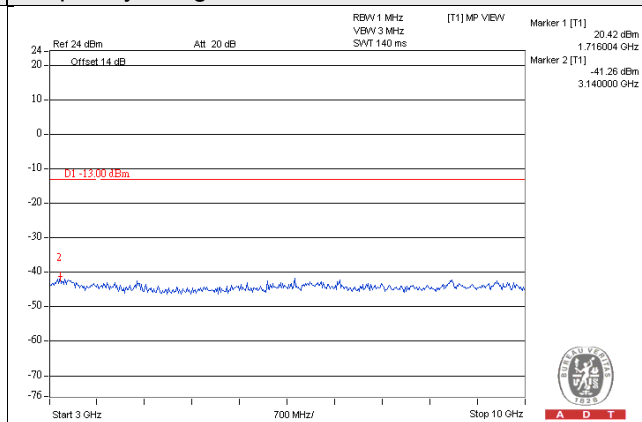
HSDPA

Channel 1312 (1712.4MHz)

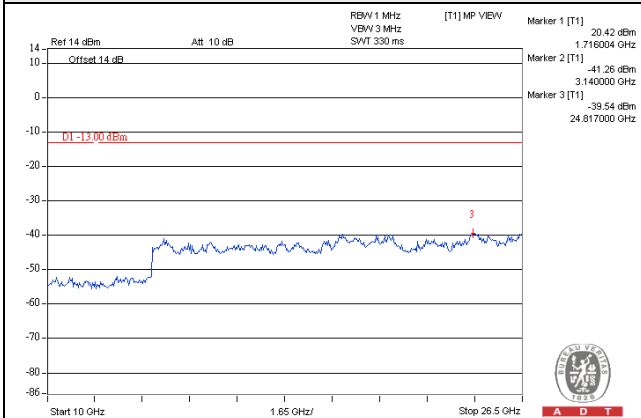
Frequency Range : 9kHz~3GHz



Frequency Range : 3GHz~10GHz



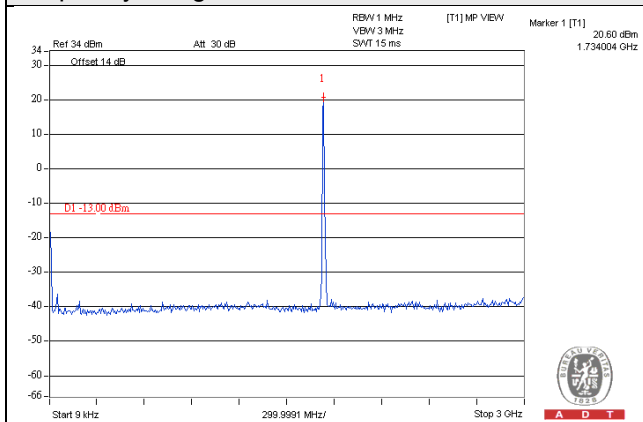
Frequency Range : 10GHz~26.5GHz



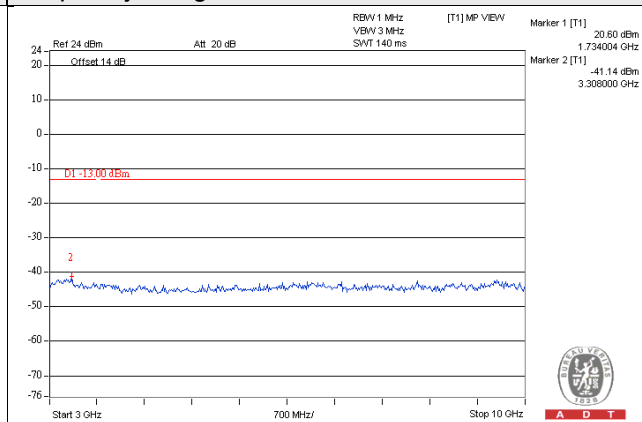
HSDPA

Channel 1413 (1732.6MHz)

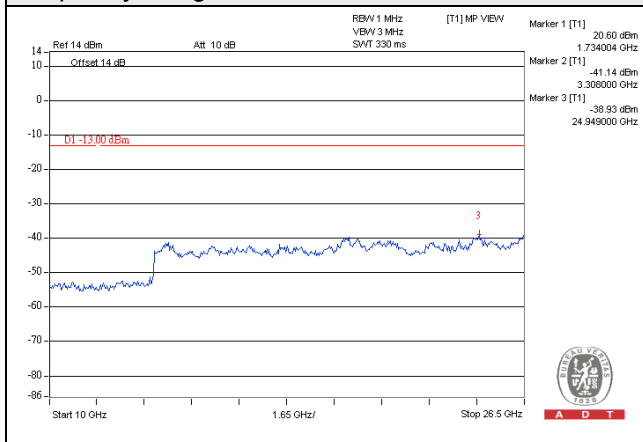
Frequency Range : 9kHz~3GHz



Frequency Range : 3GHz~10GHz



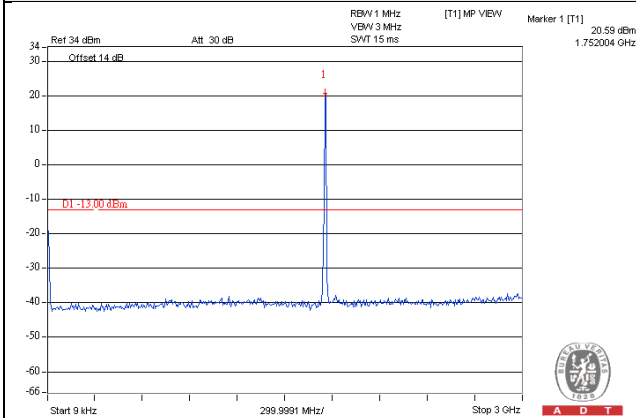
Frequency Range : 10GHz~26.5GHz



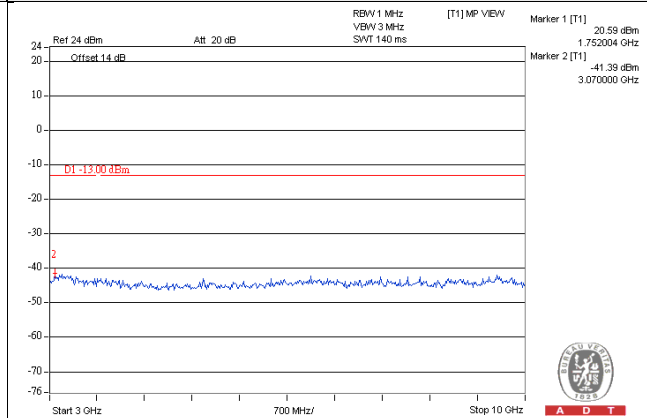
# HSDPA

## Channel 1513 (1752.6MHz)

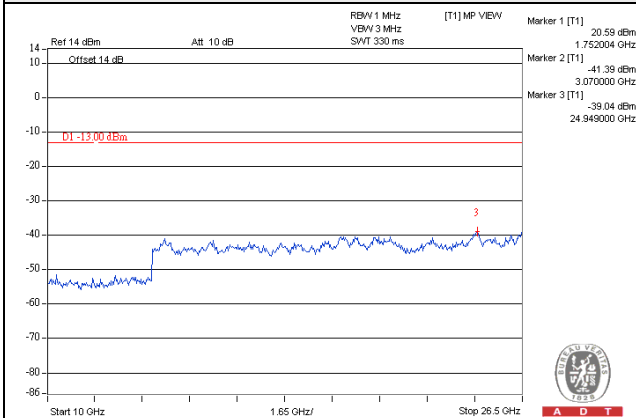
### Frequency Range : 9kHz~3GHz



### Frequency Range : 3GHz~10GHz



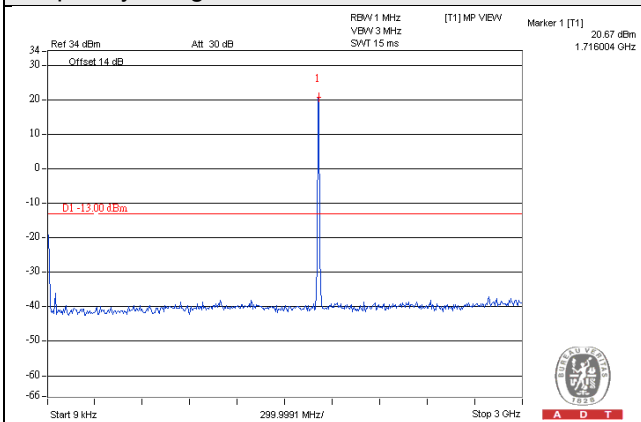
### Frequency Range : 10GHz~26.5GHz



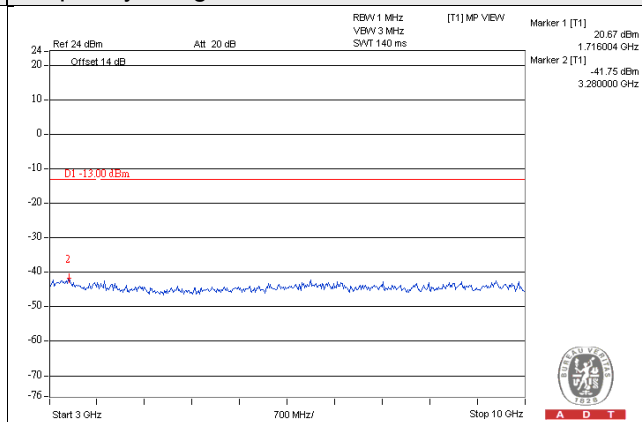
HSUPA

Channel 1312 (1712.4MHz)

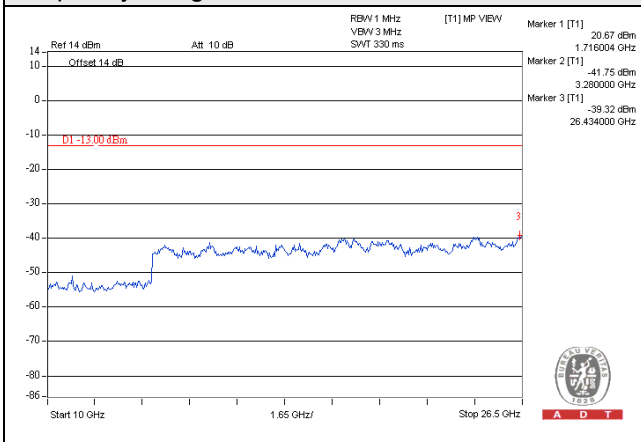
Frequency Range : 9kHz~3GHz



Frequency Range : 3GHz~10GHz



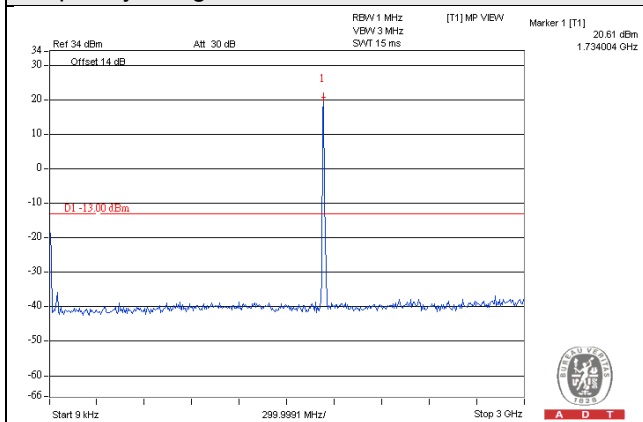
Frequency Range : 10GHz~26.5GHz



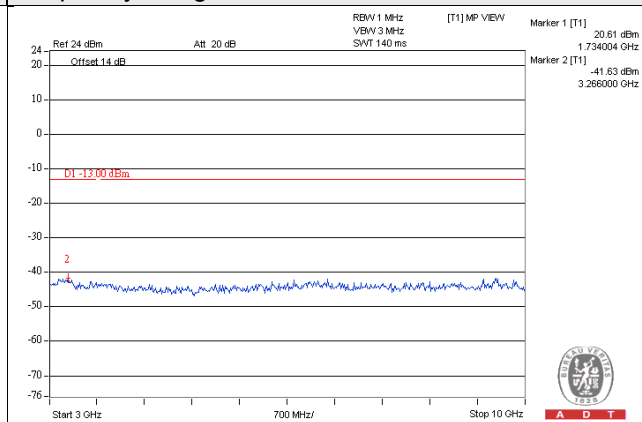
HSUPA

Channel 1413 (1732.6MHz)

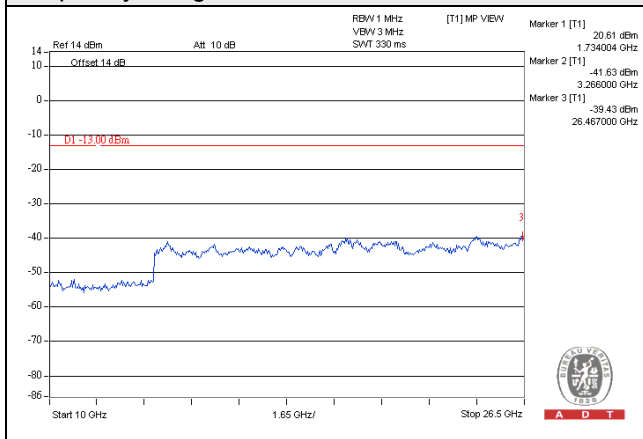
Frequency Range : 9kHz~3GHz



Frequency Range : 3GHz~10GHz



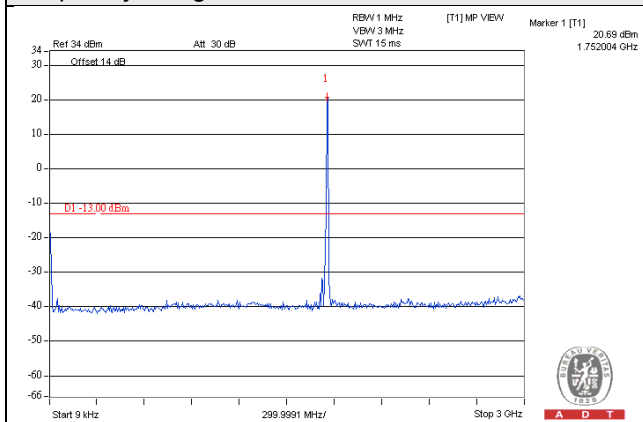
Frequency Range : 10GHz~26.5GHz



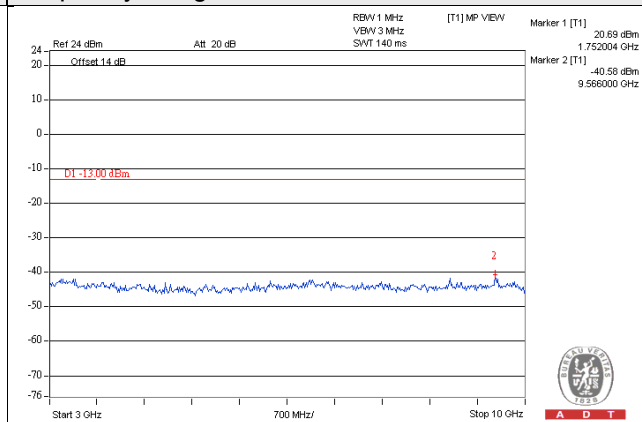
HSUPA

Channel 1513 (1752.6MHz)

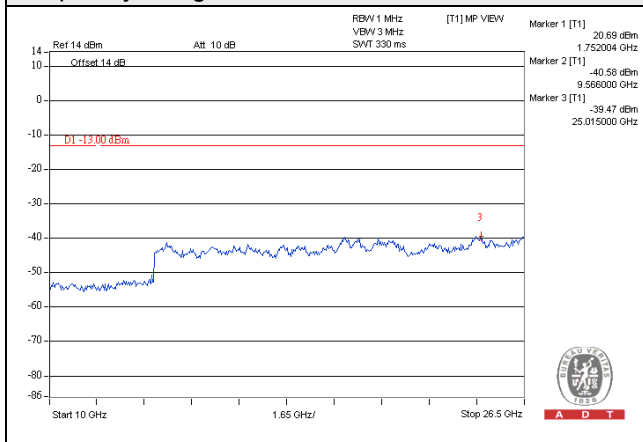
Frequency Range : 9kHz~3GHz



Frequency Range : 3GHz~10GHz



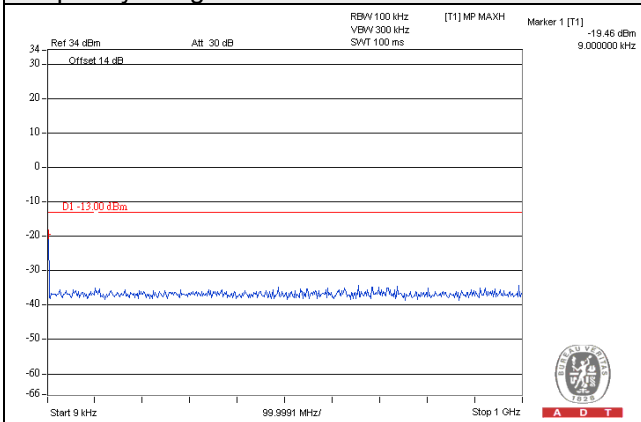
Frequency Range : 10GHz~26.5GHz



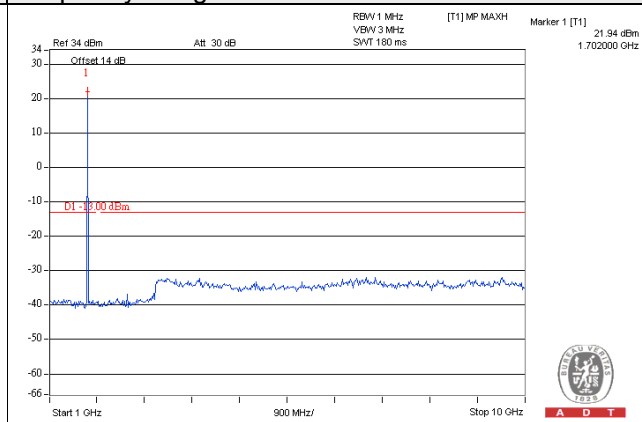


**LTE Band 4, Channel Bandwidth 1.4MHz**  
**Channel 19957 (1710.7MHz)**

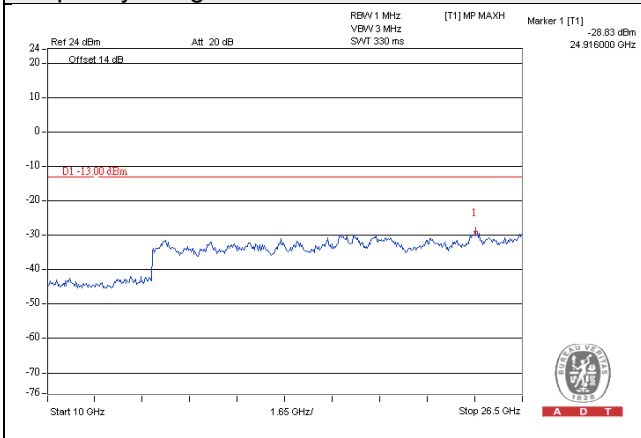
**Frequency Range : 9kHz~1GHz**



**Frequency Range : 1GHz~10GHz**

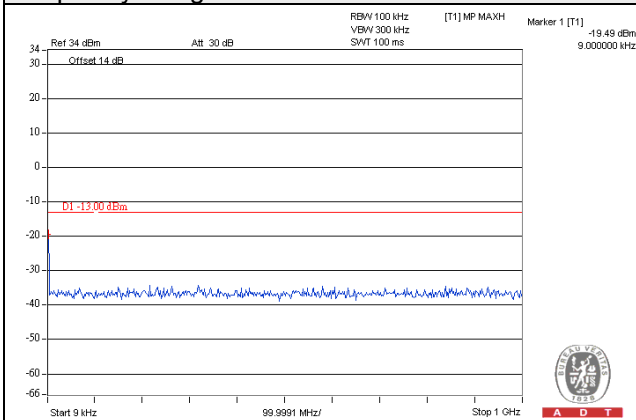


**Frequency Range : 10GHz~26.5GHz**

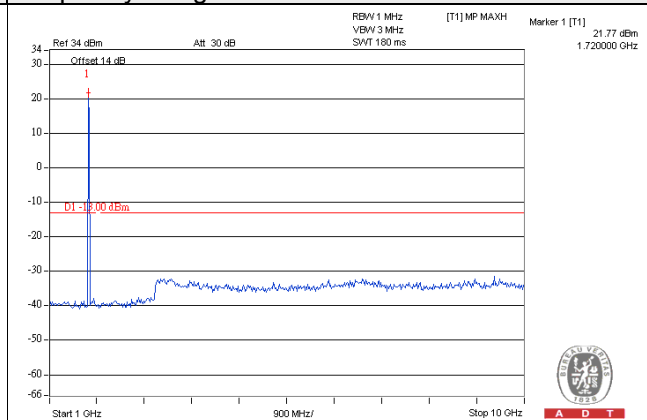


**LTE Band 4, Channel Bandwidth 1.4MHz**  
**Channel 20175 (1732.5MHz)**

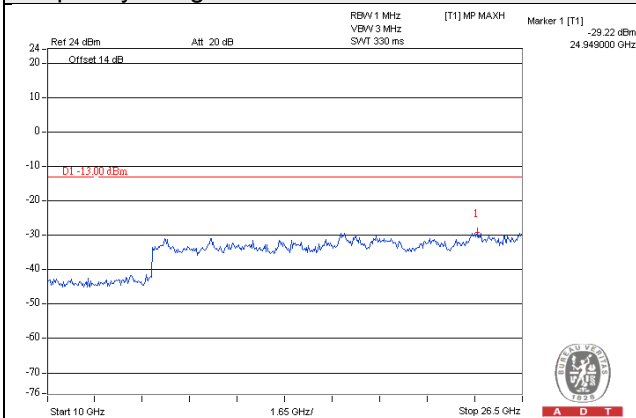
**Frequency Range : 9kHz~1GHz**



**Frequency Range : 1GHz~10GHz**



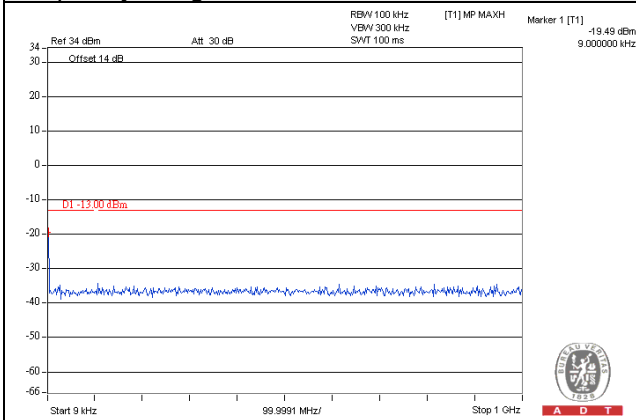
**Frequency Range : 10GHz~26.5GHz**



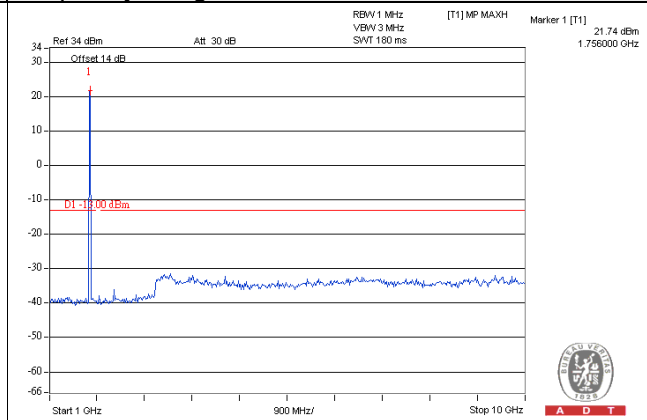
**LTE Band 4, Channel Bandwidth 1.4MHz**

**Channel 20393 (1754.3MHz)**

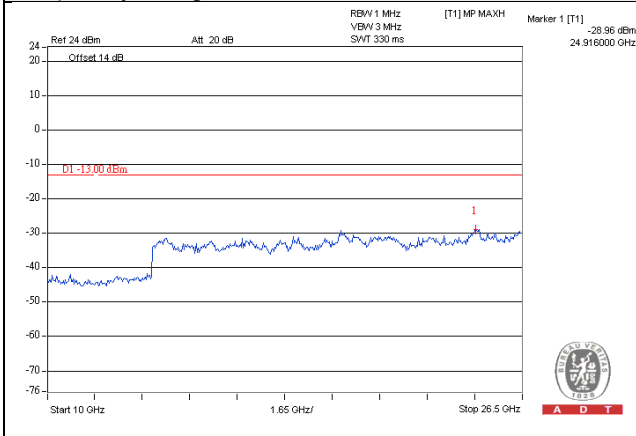
**Frequency Range : 9kHz~1GHz**



**Frequency Range : 1GHz~10GHz**



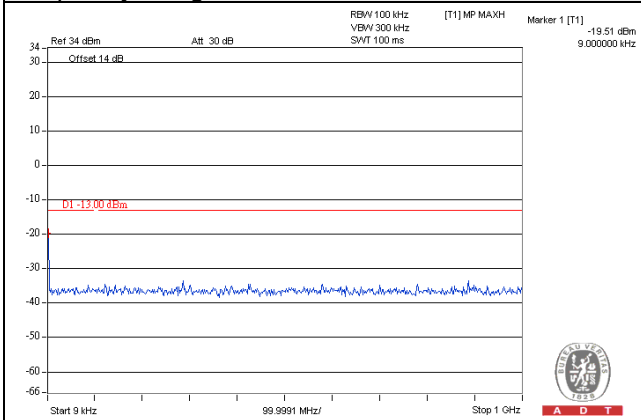
**Frequency Range : 10GHz~26.5GHz**



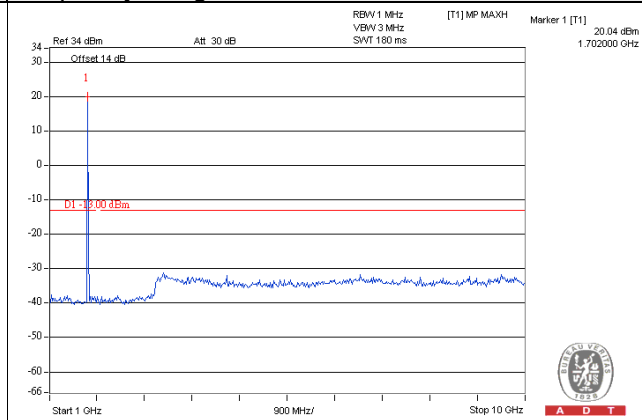
**LTE Band 4, Channel Bandwidth 3MHz**

**Channel 19965 (1711.5MHz)**

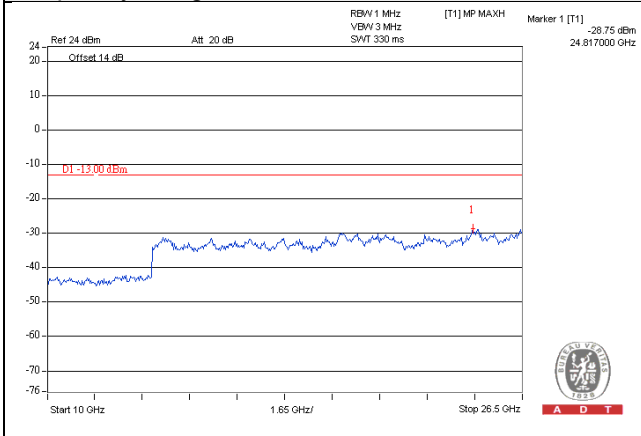
**Frequency Range : 9kHz~1GHz**



**Frequency Range : 1GHz~10GHz**



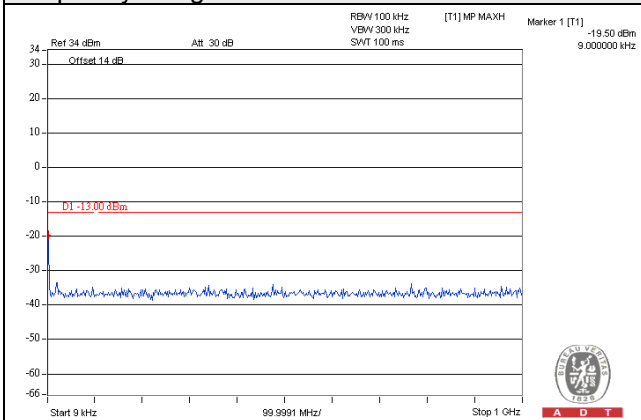
**Frequency Range : 10GHz~26.5GHz**



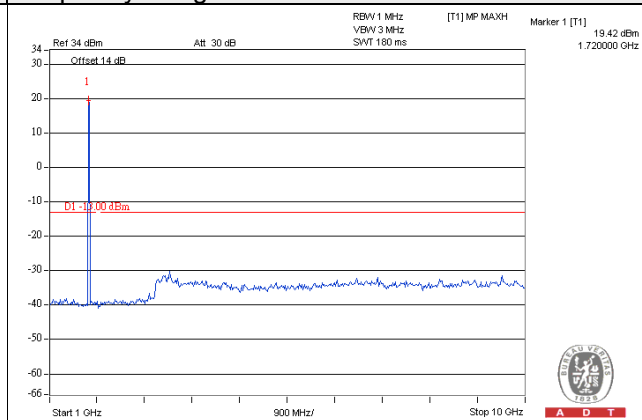
**LTE Band 4, Channel Bandwidth 3MHz**

**Channel 20175 (1732.5MHz)**

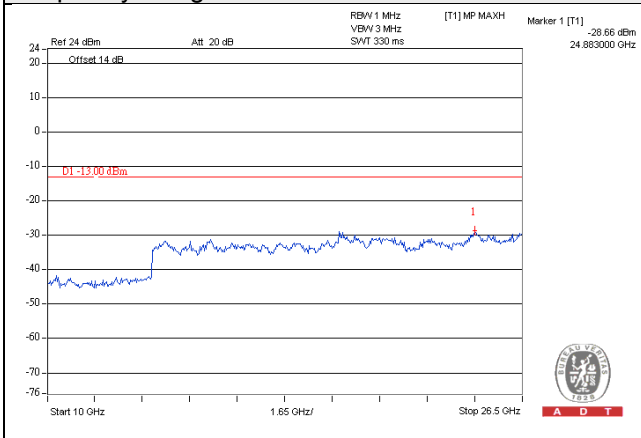
**Frequency Range : 9kHz~1GHz**



**Frequency Range : 1GHz~10GHz**



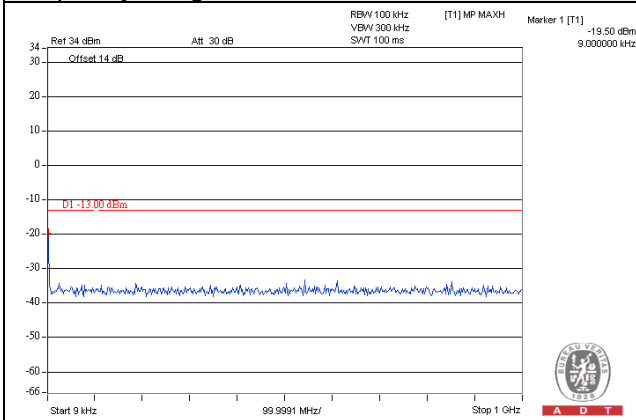
**Frequency Range : 10GHz~26.5GHz**



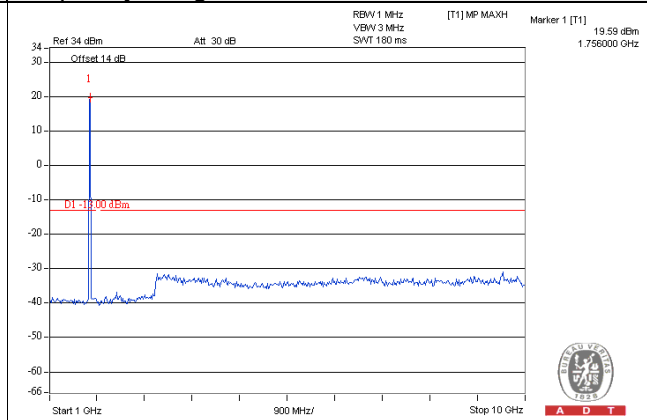
**LTE Band 4, Channel Bandwidth 3MHz**

**Channel 20385 (1753.5MHz)**

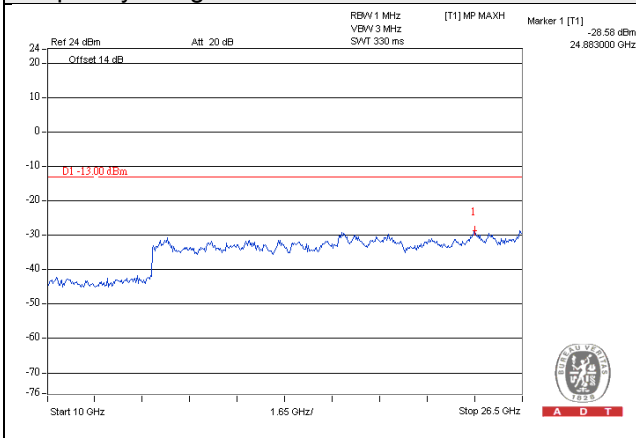
**Frequency Range : 9kHz~1GHz**



**Frequency Range : 1GHz~10GHz**



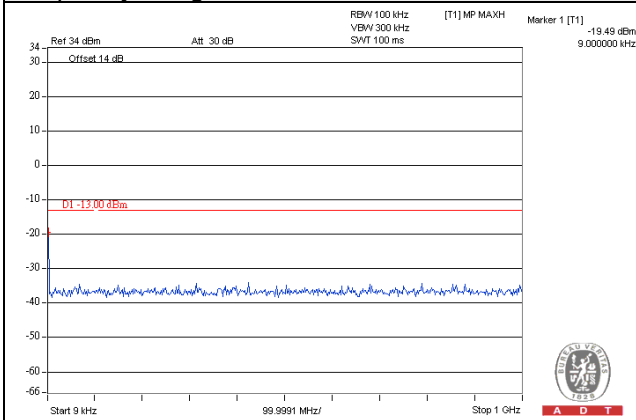
**Frequency Range : 10GHz~26.5GHz**



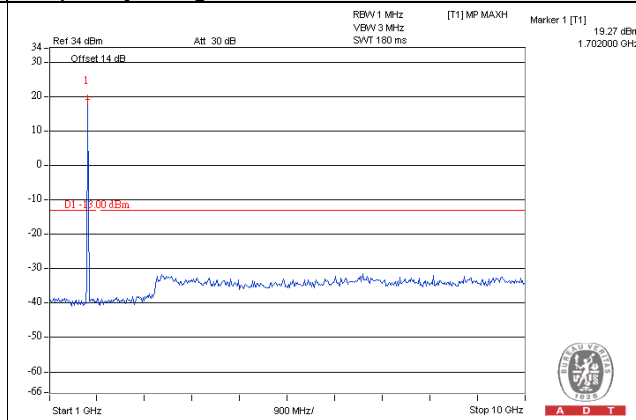
**LTE Band 4, Channel Bandwidth 5MHz**

**Channel 19975 (1712.5MHz)**

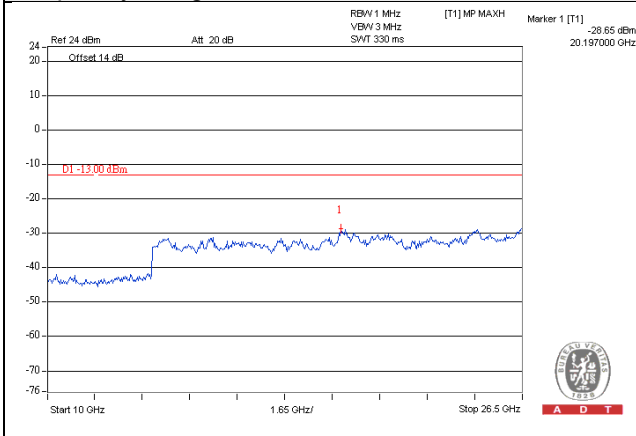
**Frequency Range : 9kHz~1GHz**



**Frequency Range : 1GHz~10GHz**



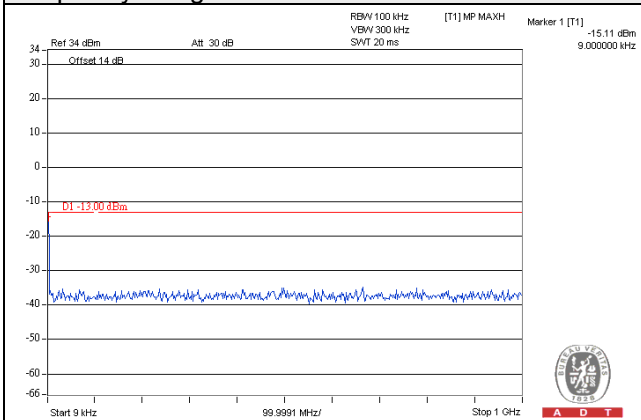
**Frequency Range : 10GHz~26.5GHz**



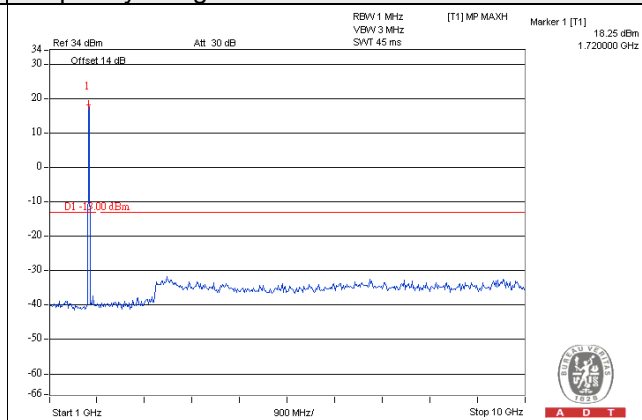
**LTE Band 4, Channel Bandwidth 5MHz**

**Channel 20175 (1732.5MHz)**

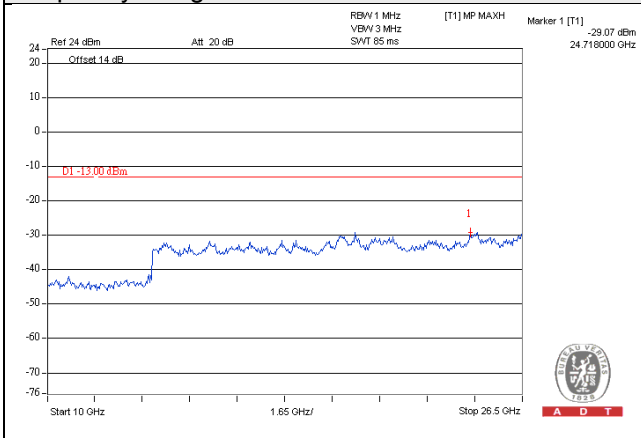
**Frequency Range : 9kHz~1GHz**



**Frequency Range : 1GHz~10GHz**



**Frequency Range : 10GHz~26.5GHz**

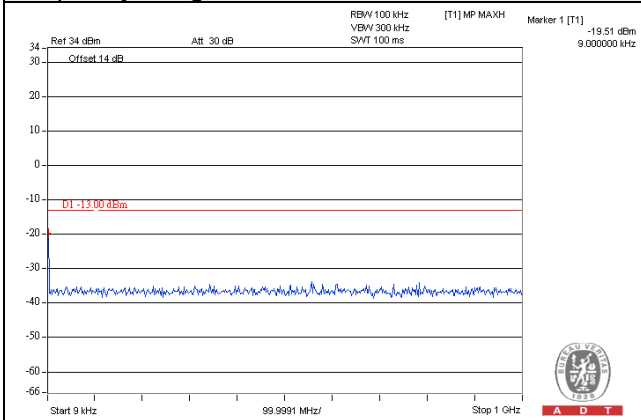




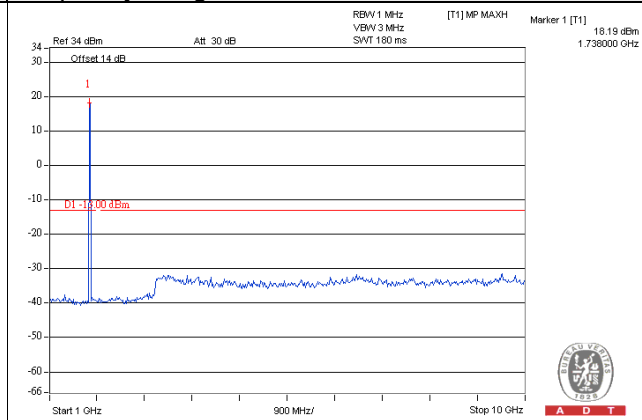
**LTE Band 4, Channel Bandwidth 5MHz**

**Channel 20375 (1752.5MHz)**

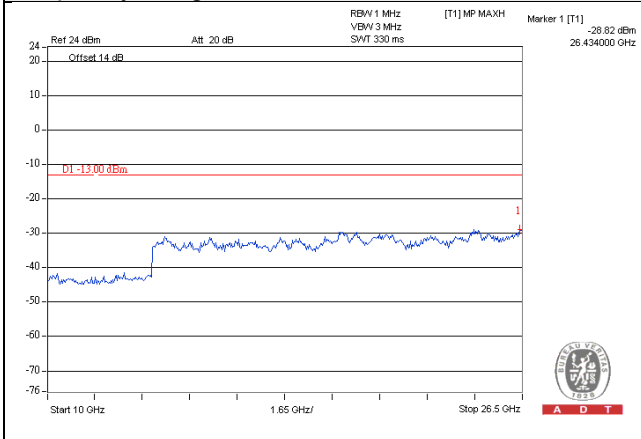
**Frequency Range : 9kHz~1GHz**



**Frequency Range : 1GHz~10GHz**

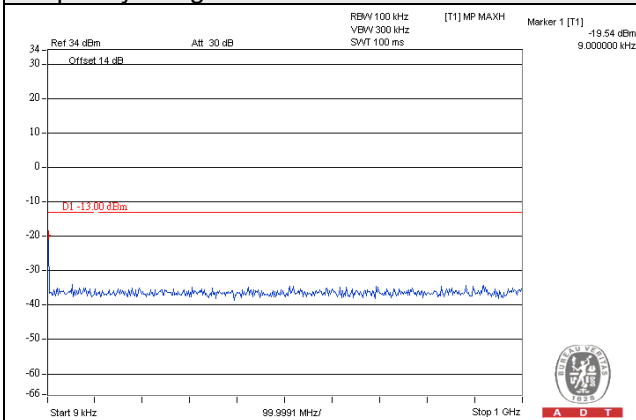


**Frequency Range : 10GHz~26.5GHz**

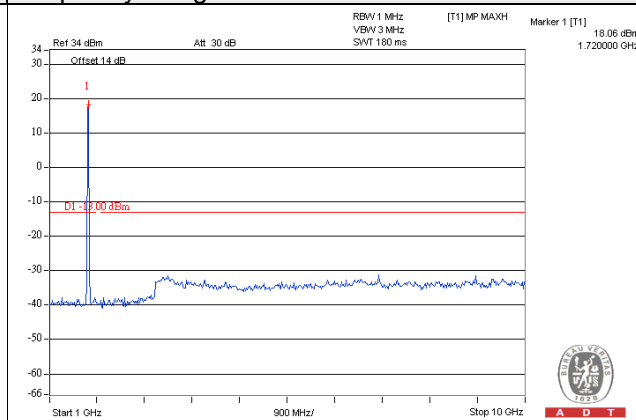


**LTE Band 4, Channel Bandwidth 10MHz  
Channel 20000 (1715.0MHz)**

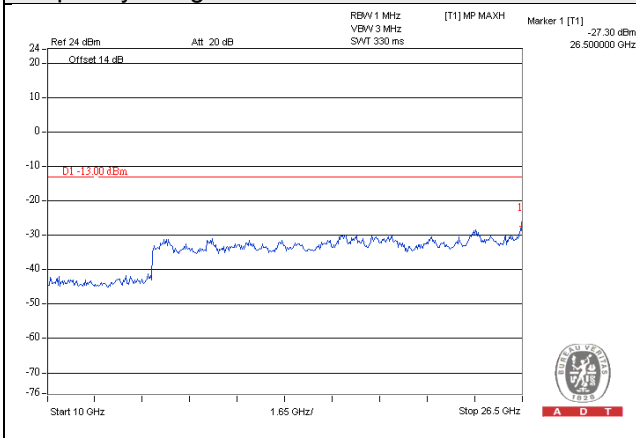
**Frequency Range : 9kHz~1GHz**



**Frequency Range : 1GHz~10GHz**

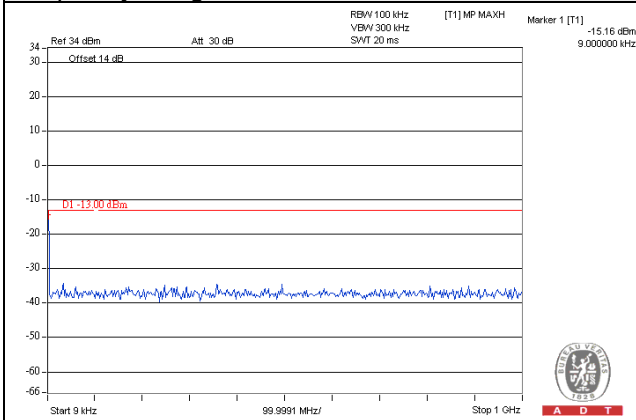


**Frequency Range : 10GHz~26.5GHz**

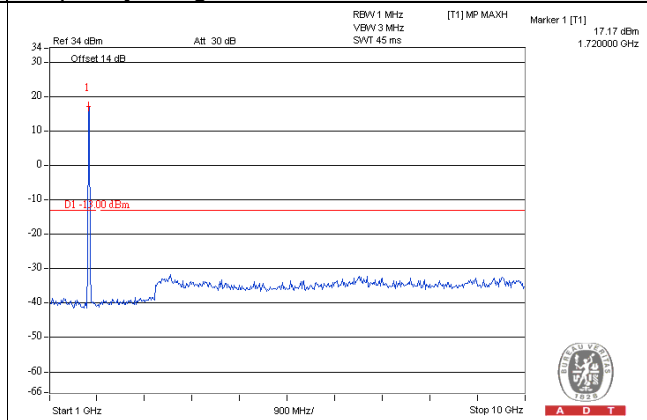


**LTE Band 4, Channel Bandwidth 10MHz**  
**Channel 20175 (1732.5MHz)**

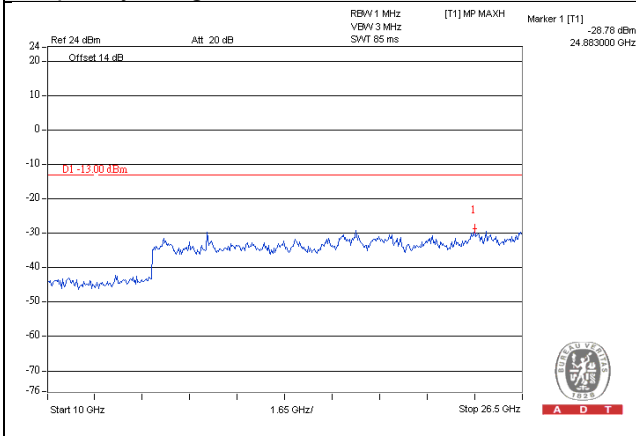
**Frequency Range : 9kHz~1GHz**



**Frequency Range : 1GHz~10GHz**



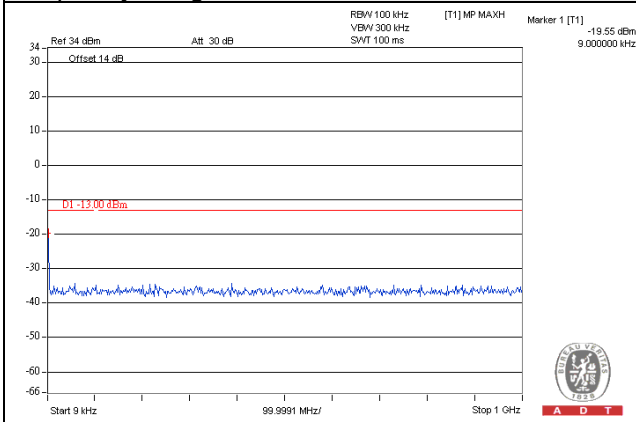
**Frequency Range : 10GHz~26.5GHz**



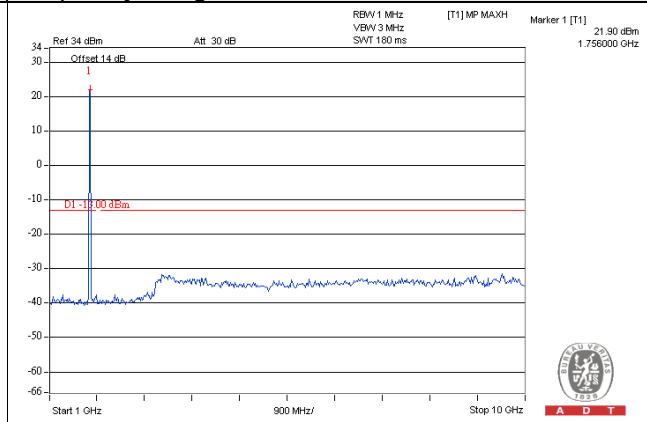
**LTE Band 4, Channel Bandwidth 10MHz**

**Channel 20350 (1750.0MHz)**

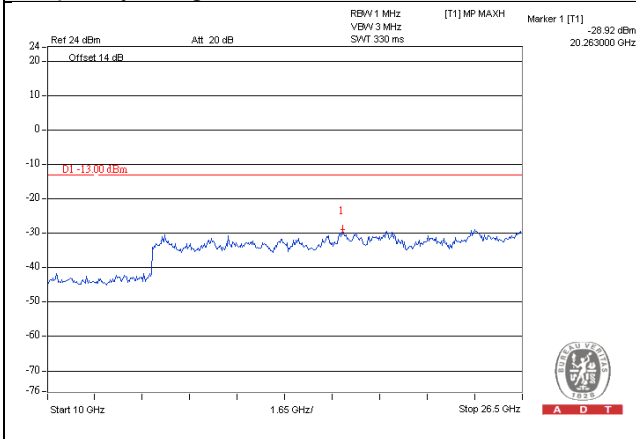
**Frequency Range : 9kHz~1GHz**



**Frequency Range : 1GHz~10GHz**

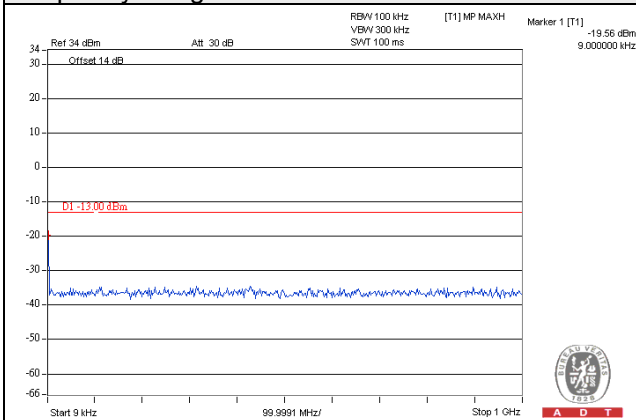


**Frequency Range : 10GHz~26.5GHz**

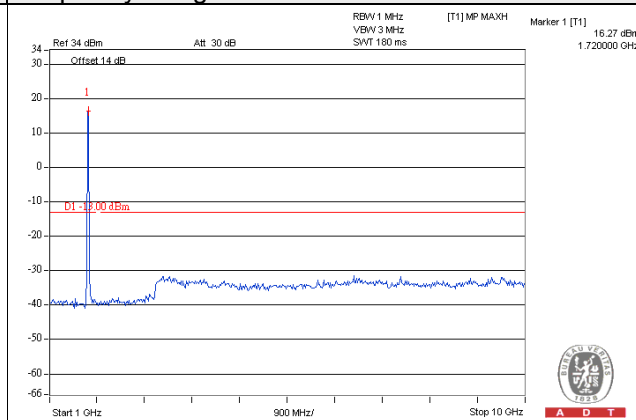


**LTE Band 4, Channel Bandwidth 15MHz**  
**Channel 20025 (1717.5MHz)**

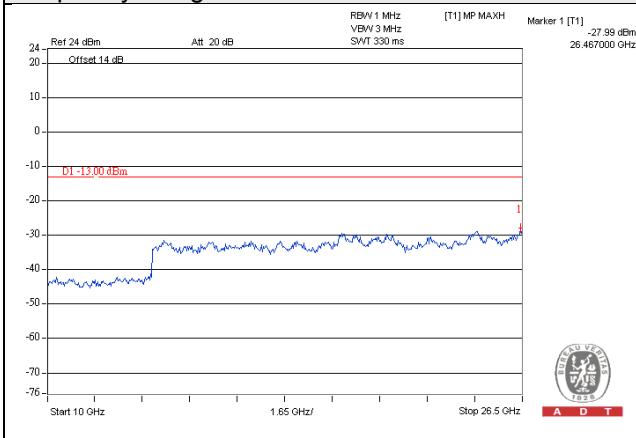
**Frequency Range : 9kHz~1GHz**



**Frequency Range : 1GHz~10GHz**

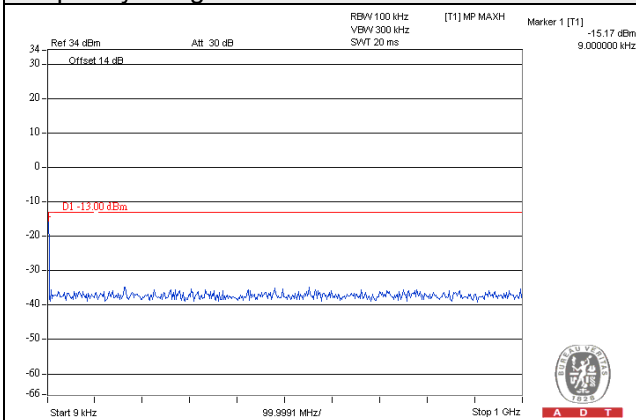


**Frequency Range : 10GHz~26.5GHz**

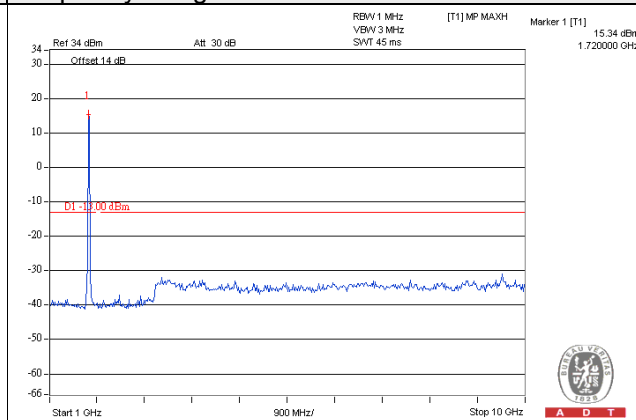


**LTE Band 4, Channel Bandwidth 15MHz**  
**Channel 20175 (1732.5MHz)**

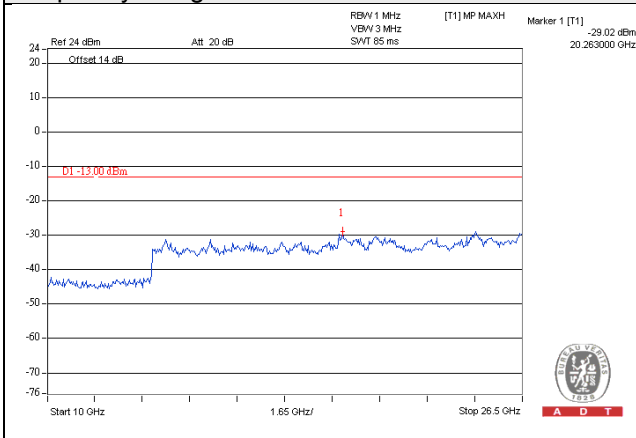
**Frequency Range : 9kHz~1GHz**



**Frequency Range : 1GHz~10GHz**

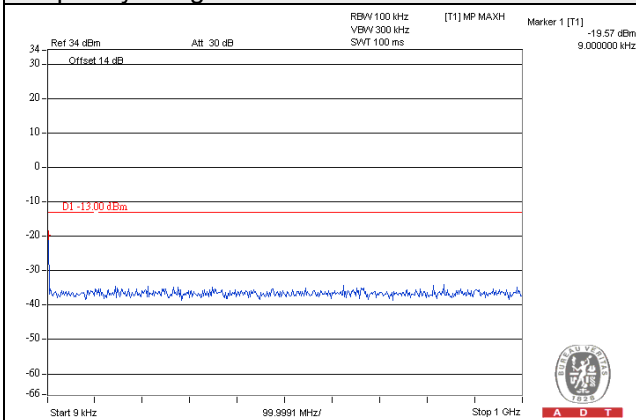


**Frequency Range : 10GHz~26.5GHz**

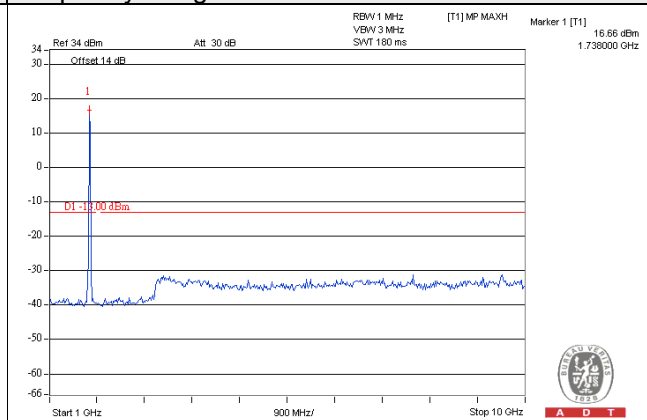


**LTE Band 4, Channel Bandwidth 15MHz**  
**Channel 20325 (1747.5MHz)**

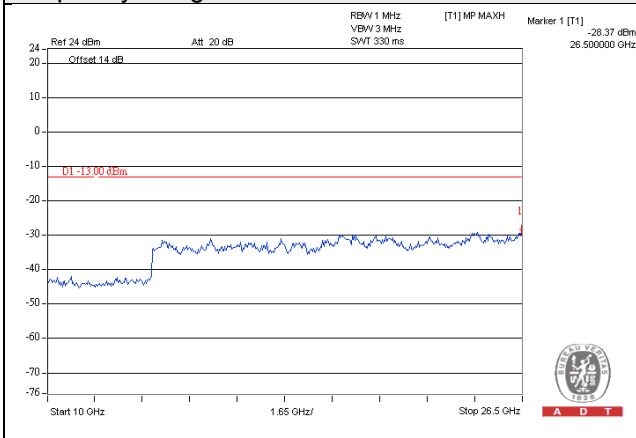
**Frequency Range : 9kHz~1GHz**



**Frequency Range : 1GHz~10GHz**



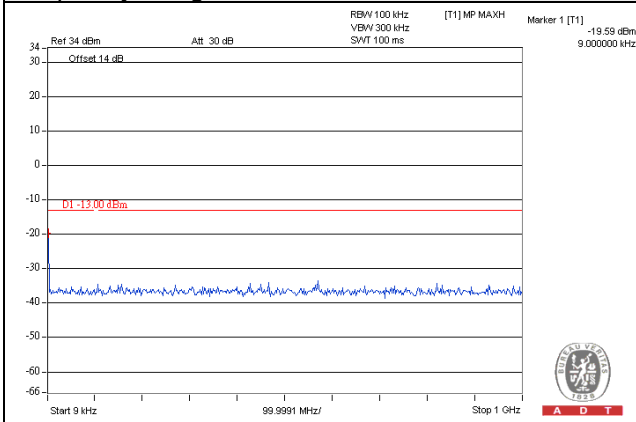
**Frequency Range : 10GHz~26.5GHz**



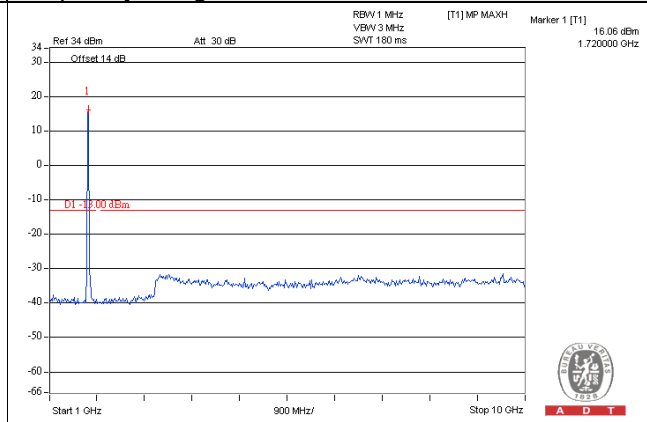
**LTE Band 4, Channel Bandwidth 20MHz**

**Channel 20050 (1720.0MHz)**

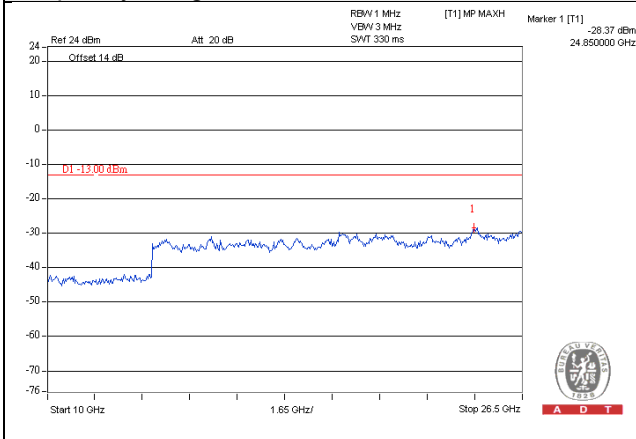
**Frequency Range : 9kHz~1GHz**



**Frequency Range : 1GHz~10GHz**



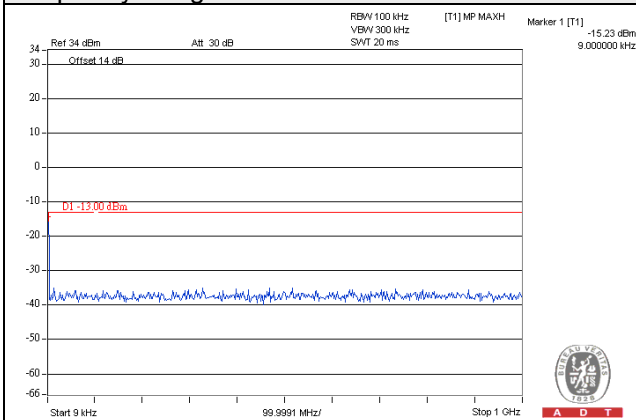
**Frequency Range : 10GHz~26.5GHz**



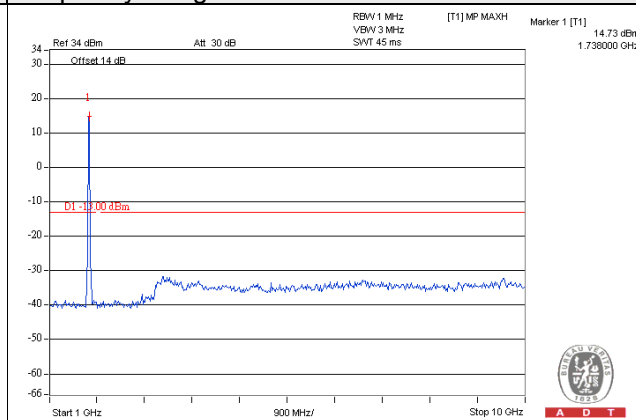


**LTE Band 4, Channel Bandwidth 20MHz**  
**Channel 20175 (1732.5MHz)**

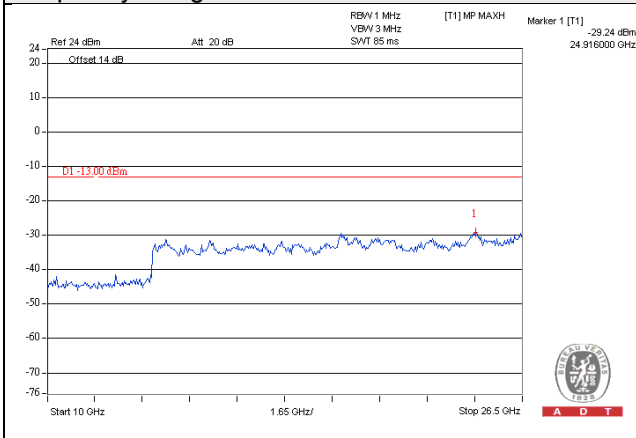
**Frequency Range : 9kHz~1GHz**



**Frequency Range : 1GHz~10GHz**

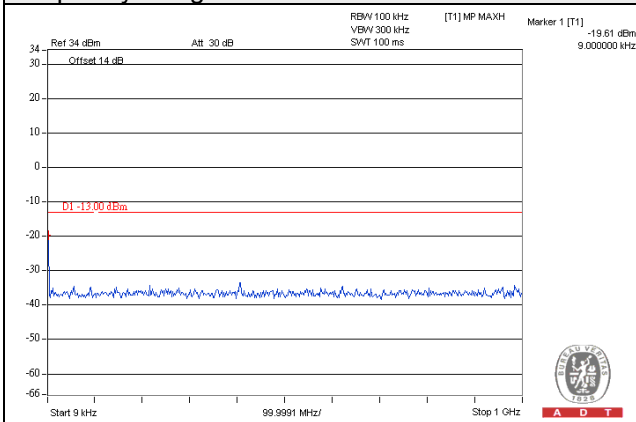


**Frequency Range : 10GHz~26.5GHz**

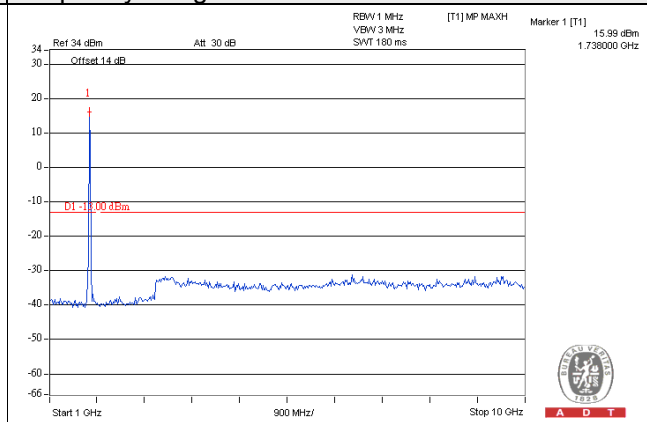


**LTE Band 4, Channel Bandwidth 20MHz**  
**Channel 20300 (1745.0MHz)**

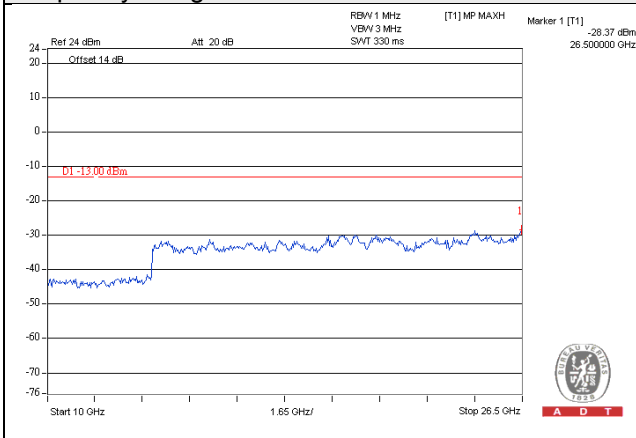
**Frequency Range : 9kHz~1GHz**



**Frequency Range : 1GHz~10GHz**



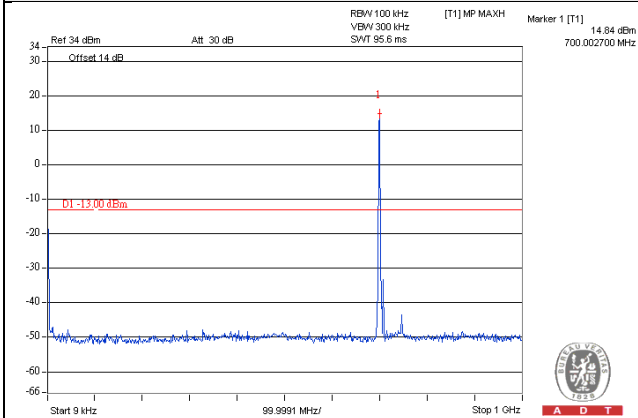
**Frequency Range : 10GHz~26.5GHz**



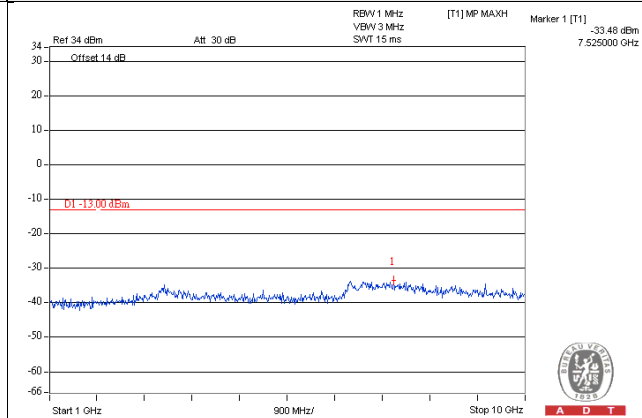
LTE Band 12, Channel Band width: 1.4MHz

Channel 23017 (699.7MHz)

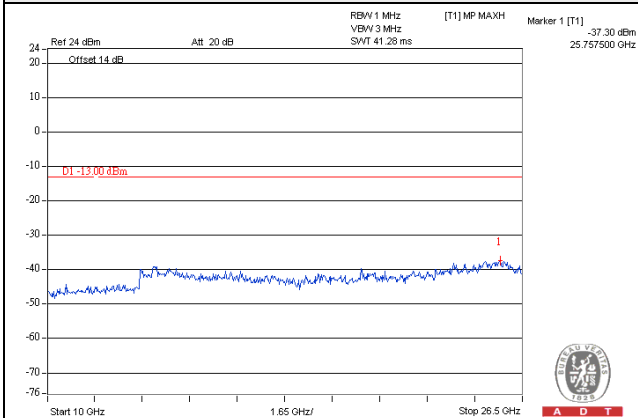
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



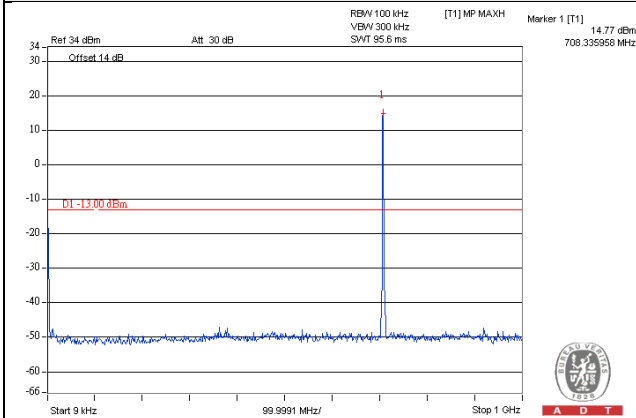
Frequency Range : 10GHz~26.5GHz



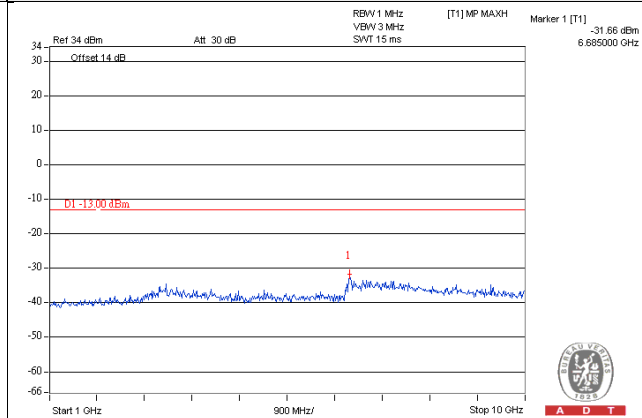
LTE Band 12, Channel Band width: 1.4MHz

Channel 23095 (707.5MHz)

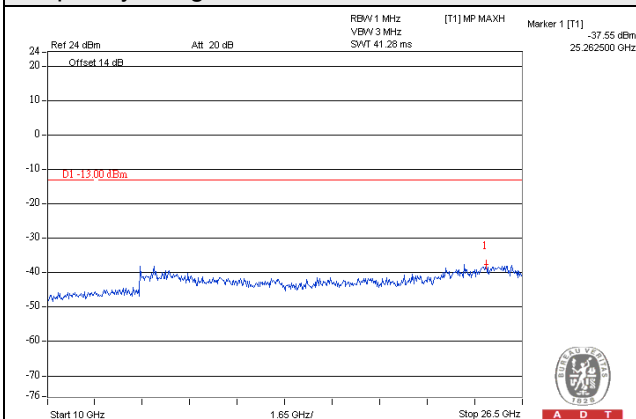
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



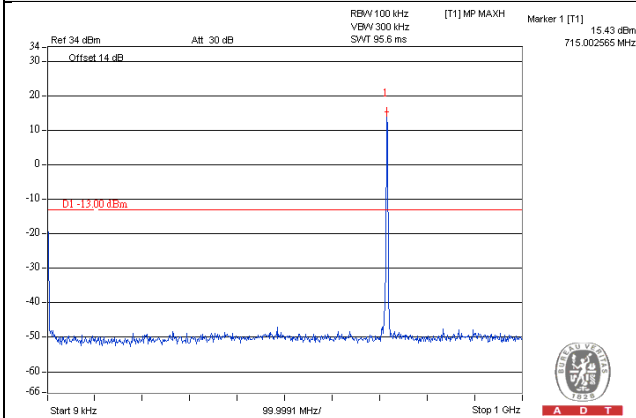
Frequency Range : 10GHz~26.5GHz



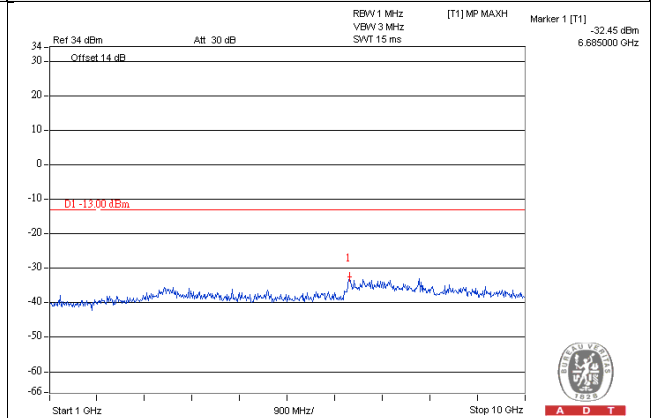
LTE Band 12, Channel Band width: 1.4MHz

Channel 23173 (715.3MHz)

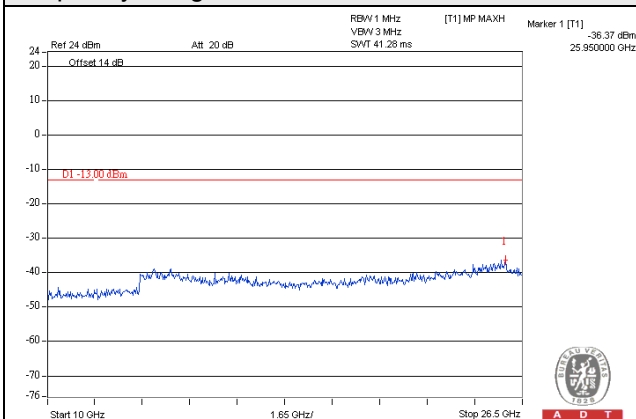
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



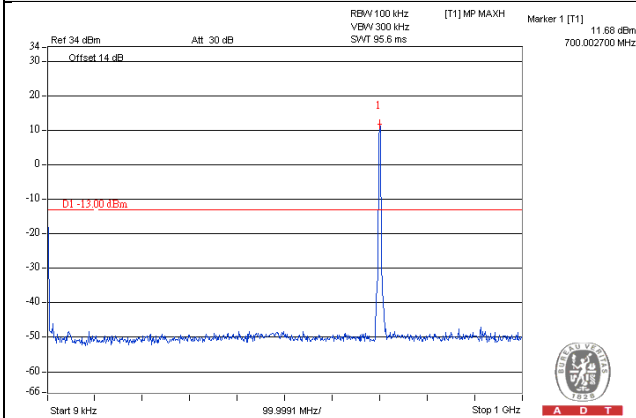
Frequency Range : 10GHz~26.5GHz



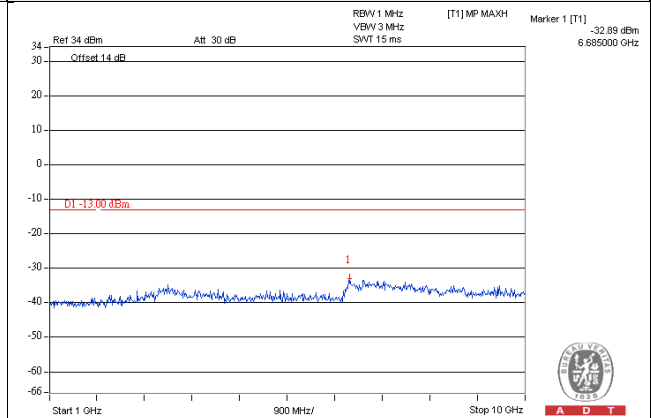
LTE Band 12, Channel Band width: 3MHz

Channel 23025 (700.5MHz)

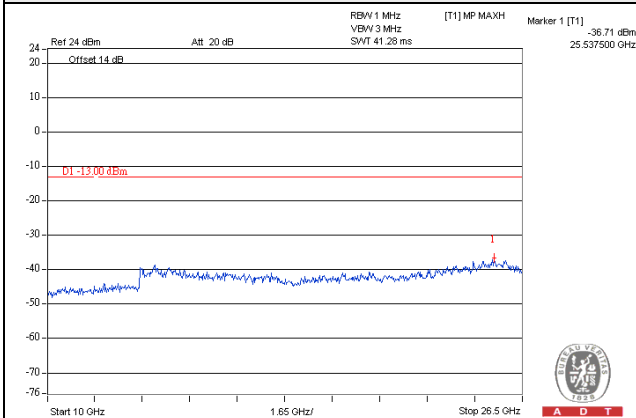
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



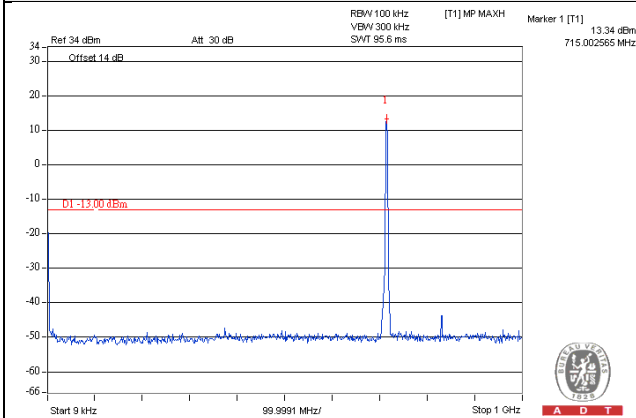
Frequency Range : 10GHz~26.5GHz



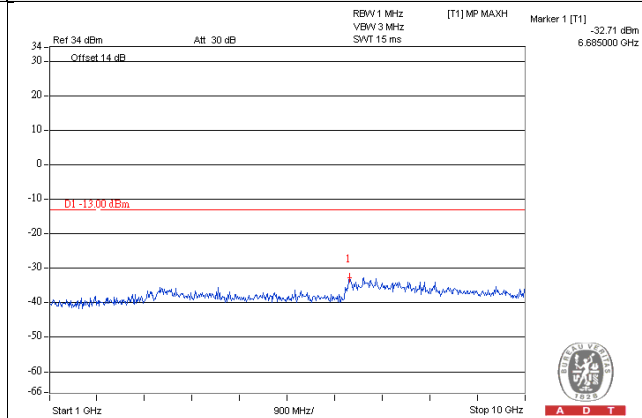
LTE Band 12, Channel Band width: 3MHz

Channel 23165 (714.5MHz)

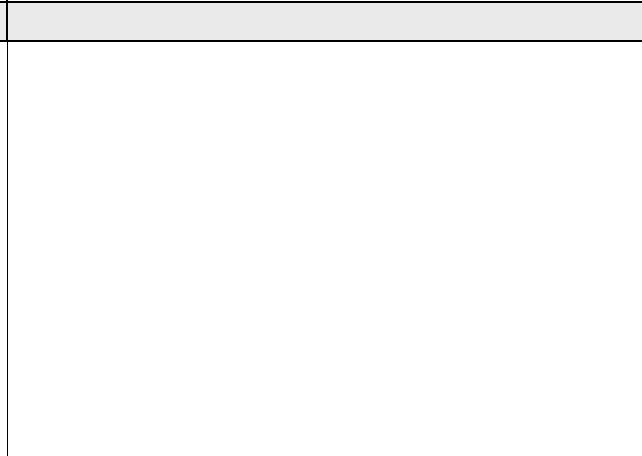
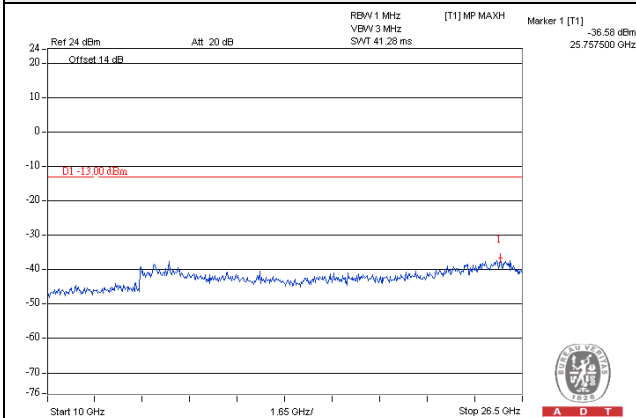
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



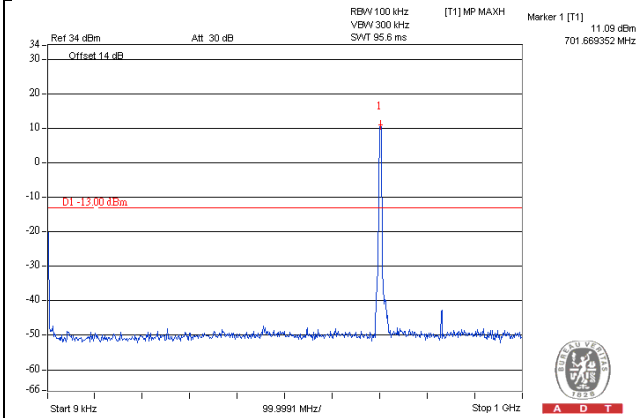
Frequency Range : 10GHz~26.5GHz



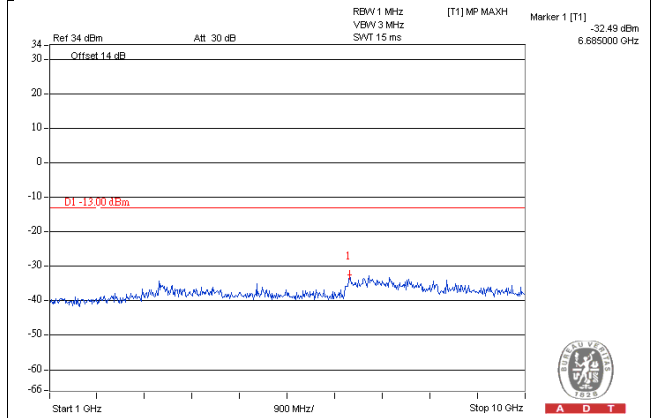
LTE Band 12, Channel Band width: 5MHz

Channel 23035 (701.5MHz)

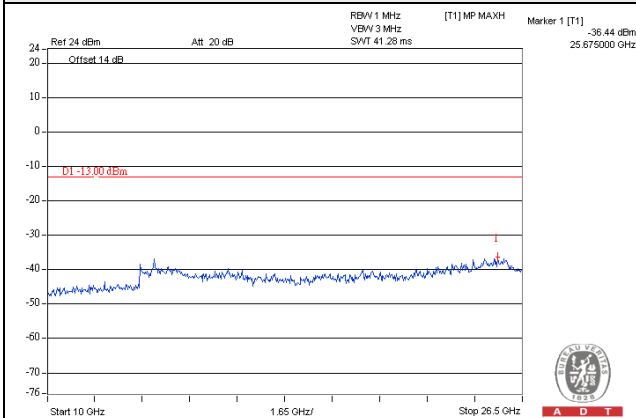
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~26.5GHz

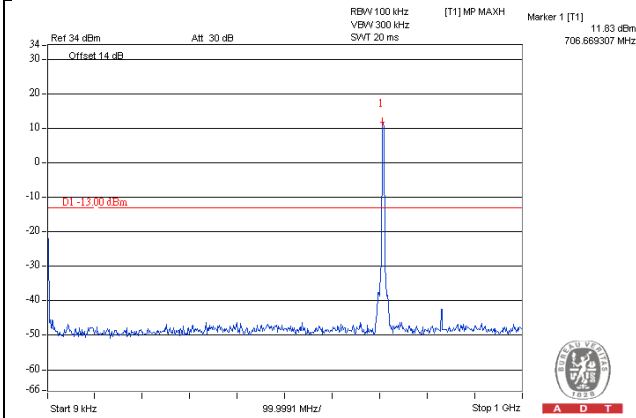




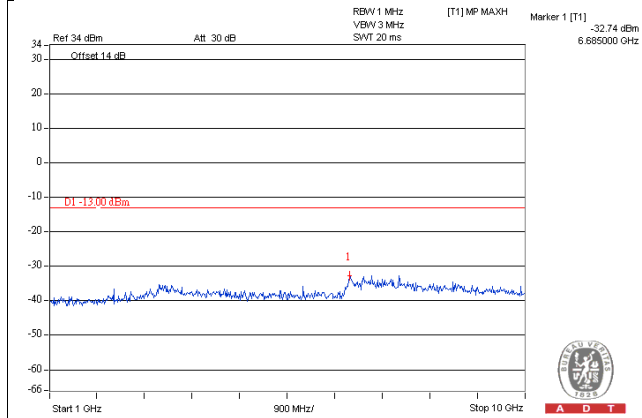
LTE Band 12, Channel Band width: 5MHz

Channel 23095 (707.5MHz)

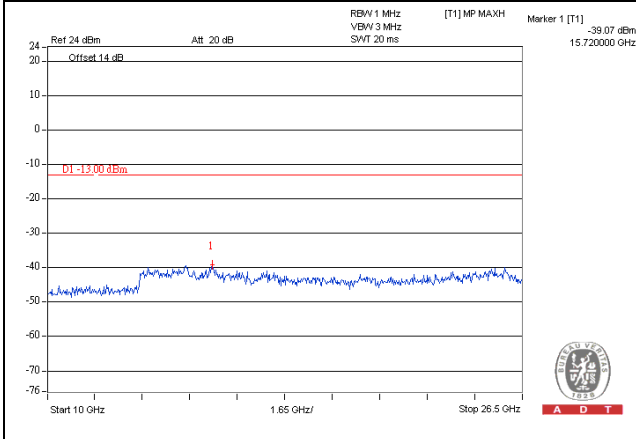
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



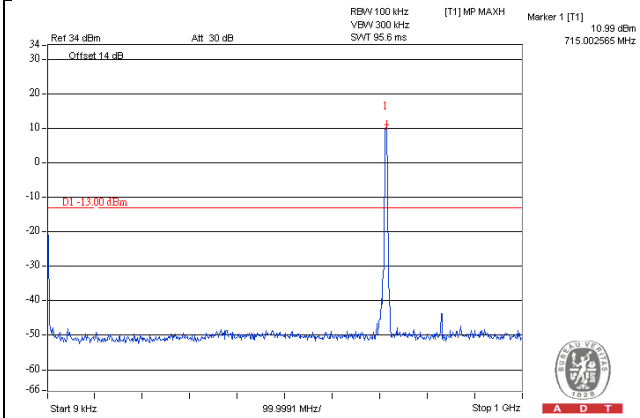
Frequency Range : 10GHz~26.5GHz



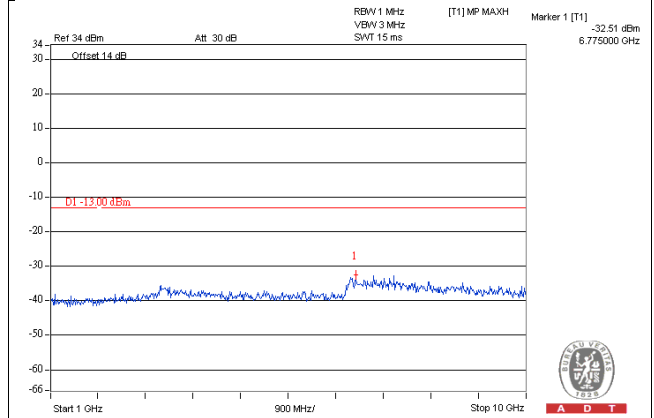
LTE Band 12, Channel Band width: 5MHz

Channel 23155 (713.5MHz)

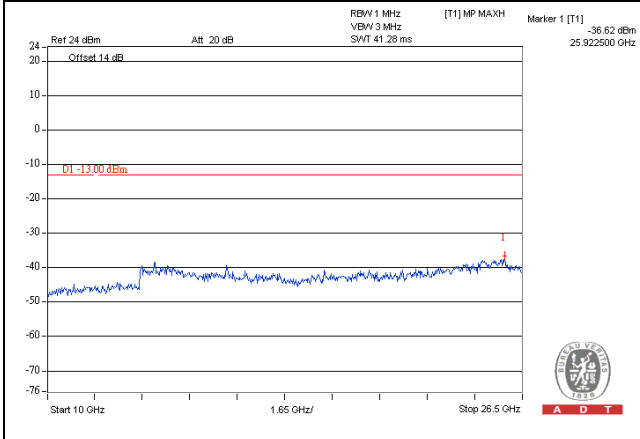
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



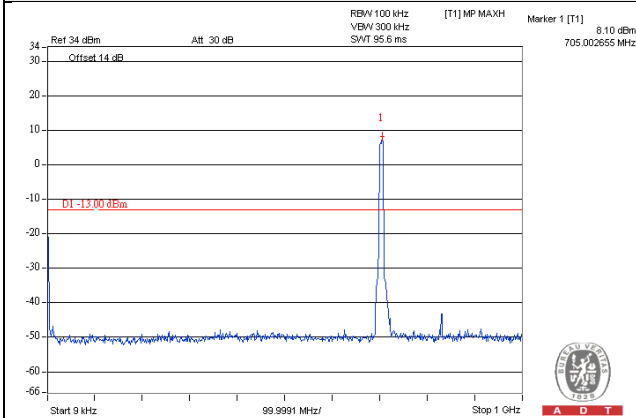
Frequency Range : 10GHz~26.5GHz



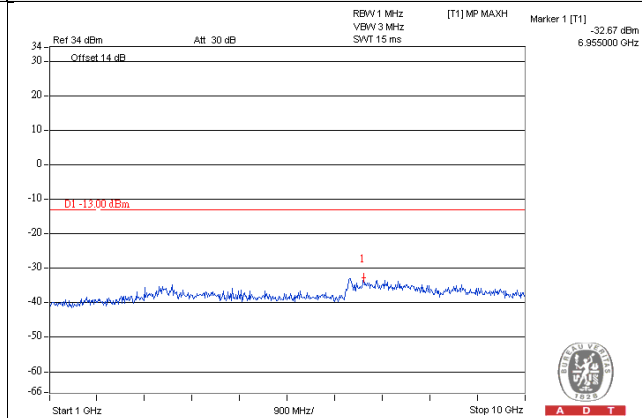
LTE Band 12, Channel Band width: 10MHz

Channel 23060 (704MHz)

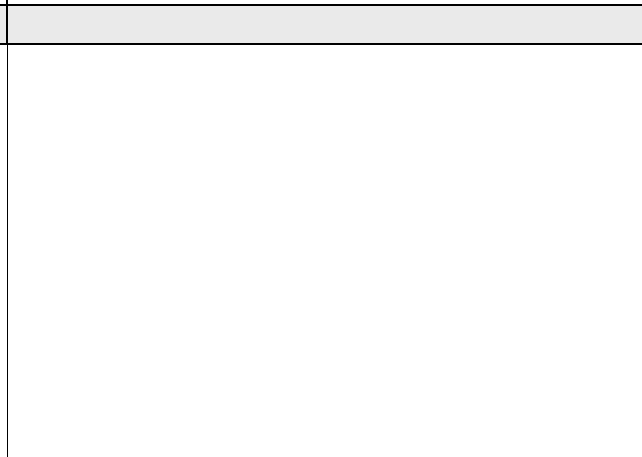
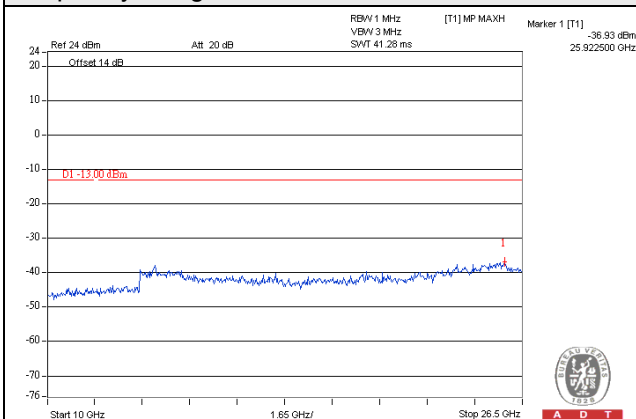
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



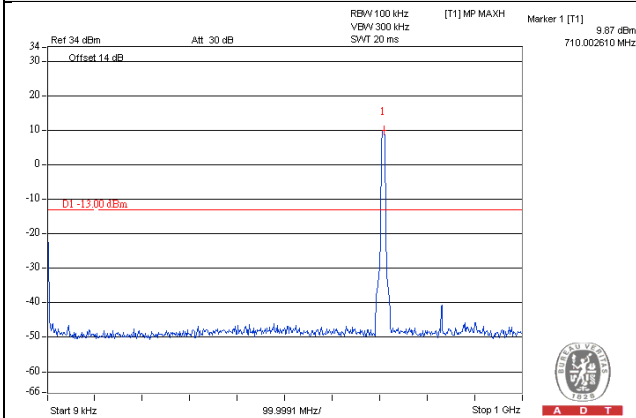
Frequency Range : 10GHz~26.5GHz



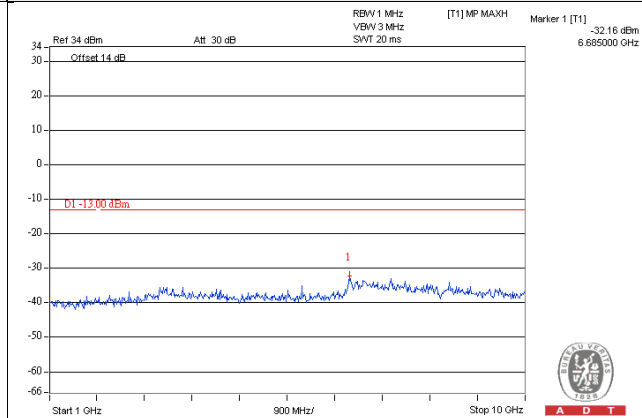
LTE Band 12, Channel Band width: 10MHz

Channel 23095 (707.5MHz)

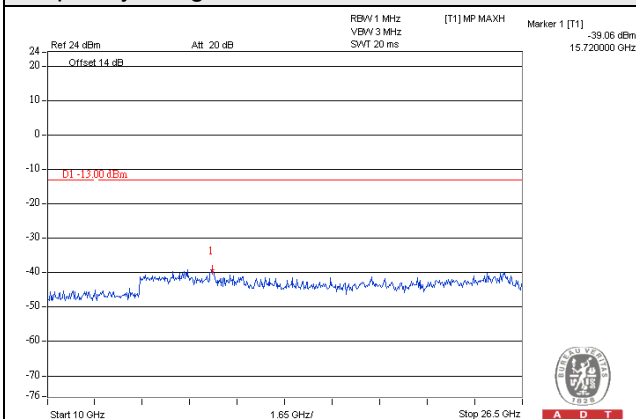
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



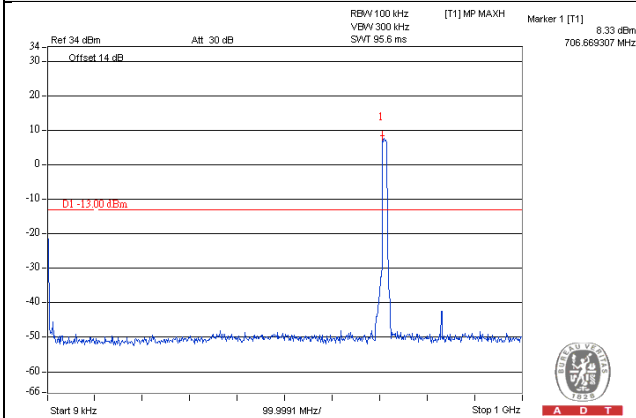
Frequency Range : 10GHz~26.5GHz



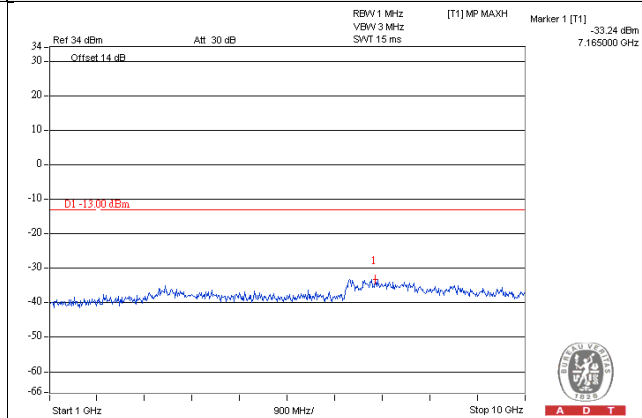
LTE Band 12, Channel Band width: 10MHz

Channel 23130 (711MHz)

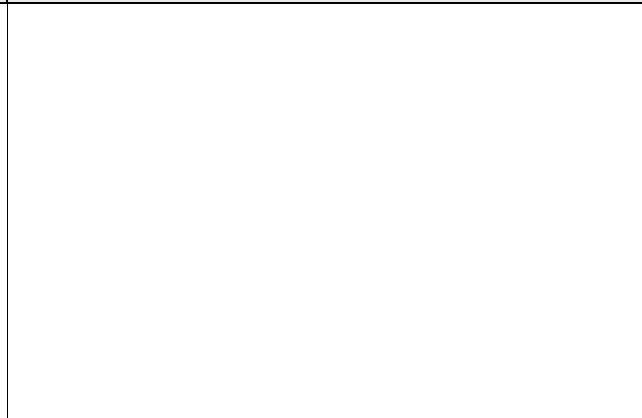
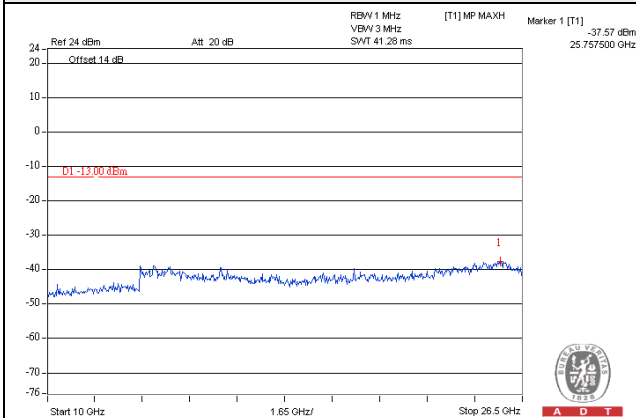
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



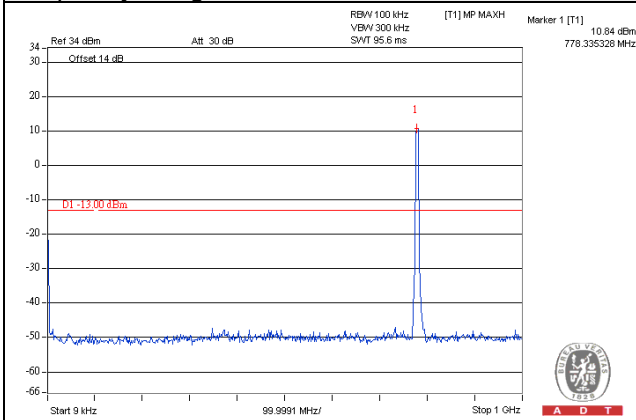
Frequency Range : 10GHz~26.5GHz



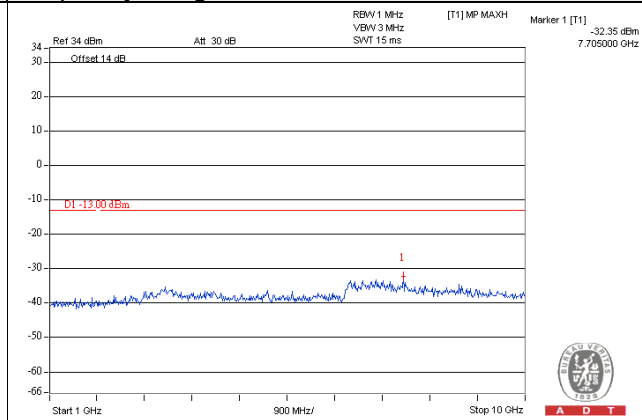
**LTE Band 13, Channel Bandwidth 5MHz**

**Channel 23205 (779.5MHz)**

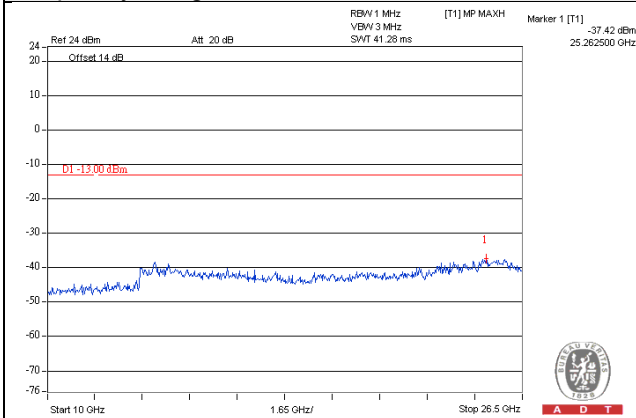
**Frequency Range : 9kHz~1GHz**



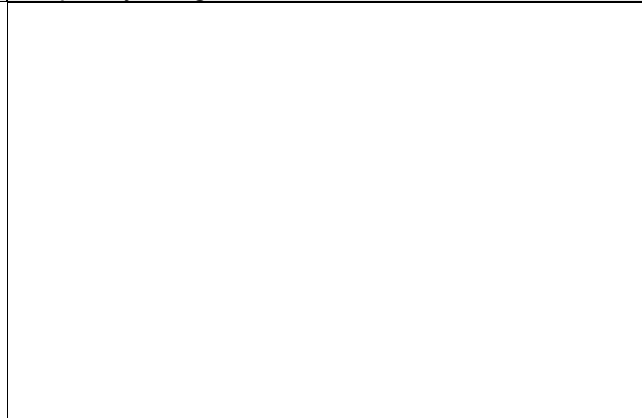
**Frequency Range : 1GHz~4GHz**



**Frequency Range : 4GHz~7GHz**



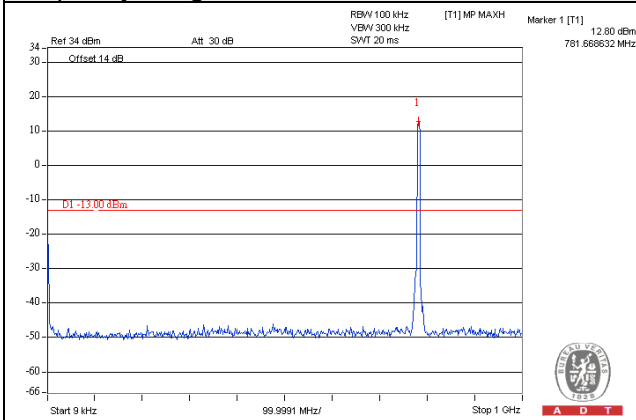
**Frequency Range : 7GHz~9GHz**



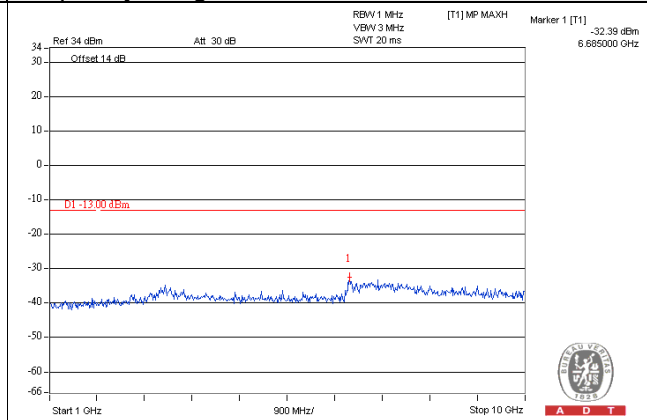
**LTE Band 13, CChannel Bandwidth 5MHz**

**Channel 23230 (782.0MHz)**

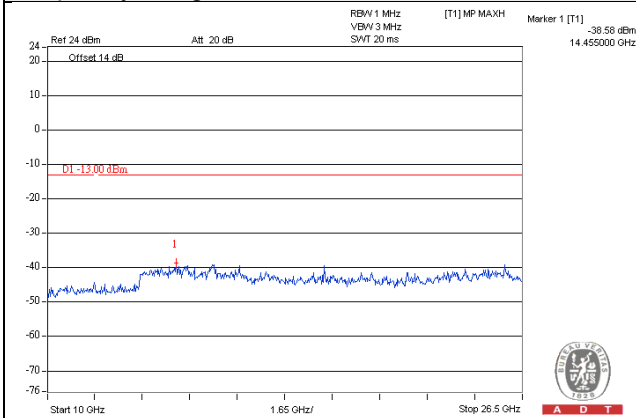
**Frequency Range : 9kHz~1GHz**



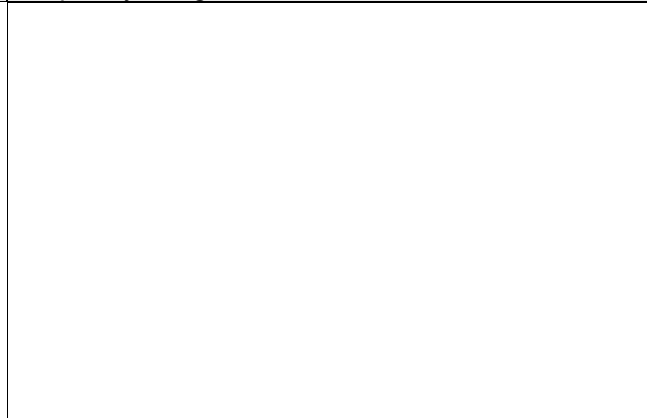
**Frequency Range : 1GHz~4GHz**



**Frequency Range : 4GHz~7GHz**



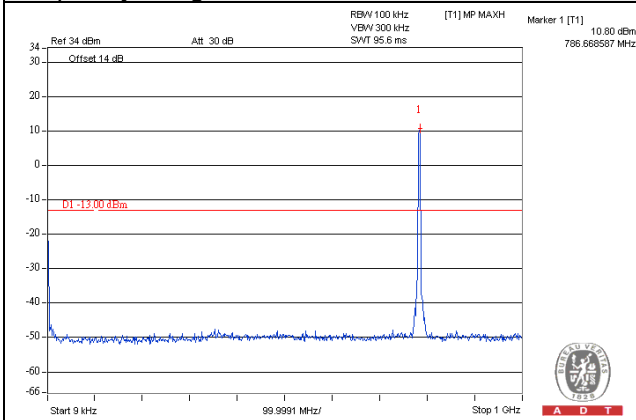
**Frequency Range : 7GHz~9GHz**



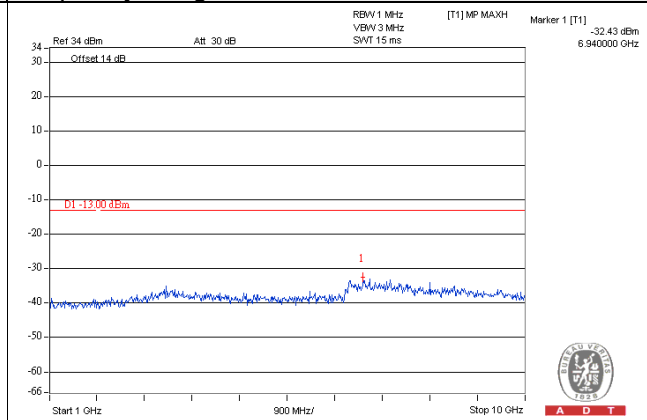
**LTE Band 13, CChannel Bandwidth 5MHz**

**Channel 23255 (784.5MHz)**

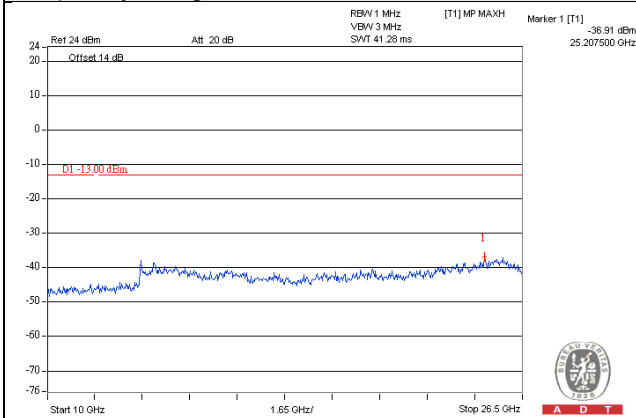
**Frequency Range : 9kHz~1GHz**



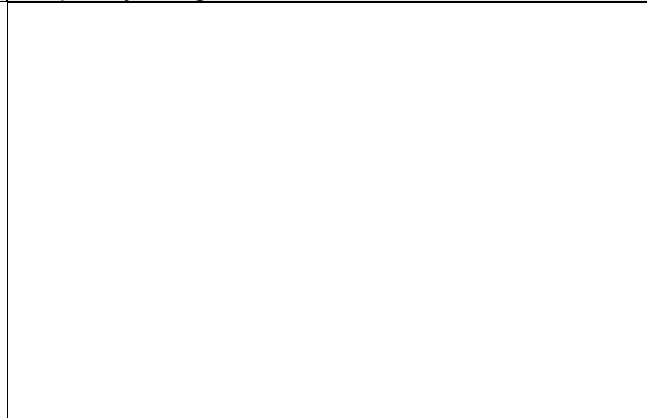
**Frequency Range : 1GHz~4GHz**



**Frequency Range : 4GHz~7GHz**



**Frequency Range : 7GHz~9GHz**

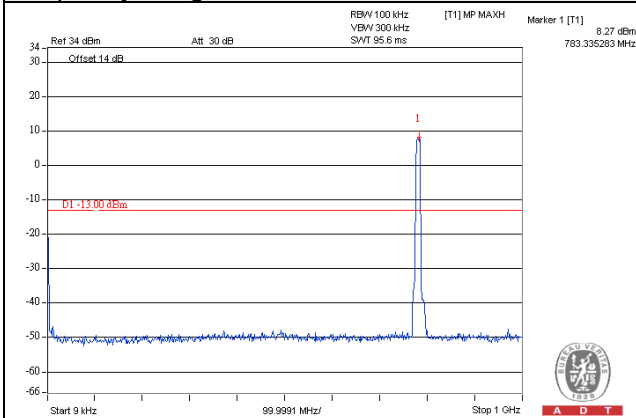




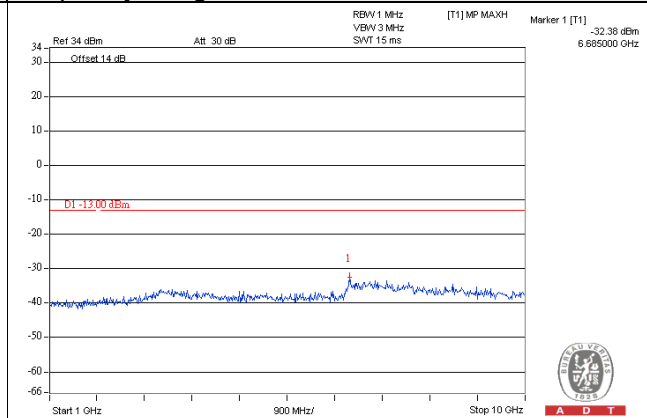
**LTE Band 13, CChannel Bandwidth 10MHz**

**Channel 23230 (782.0MHz)**

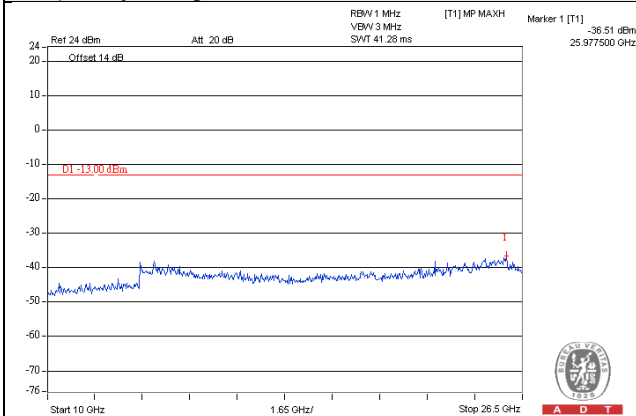
**Frequency Range : 9kHz~1GHz**



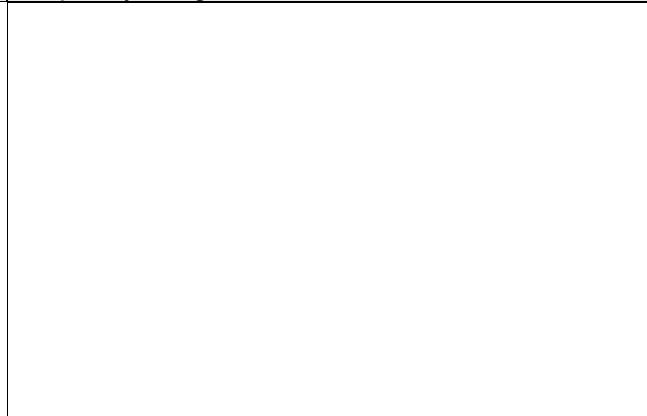
**Frequency Range : 1GHz~4GHz**



**Frequency Range : 4GHz~7GHz**



**Frequency Range : 7GHz~9GHz**



## 4.8 Radiated Emission Measurement

### 4.8.1 Limits of Radiated Emission Measurement

For WCDMA Band 4, LTE Band 4

According to FCC 27.53(h) for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10}(P)$  dB.

For LTE Band 12

According to FCC 27.53(g) for operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least  $43 + 10 \log_{10}(P)$  dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater.

For LTE Band 13

According to FCC 27.53(c) (2) for on any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least  $43 + 10 \log_{10}(P)$  dB.

### 4.8.2 Test Procedure

- a. The power was measured with R&S Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high channel of operational frequency range.)
- b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- c. The substitution 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.  $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution antenna}$ .

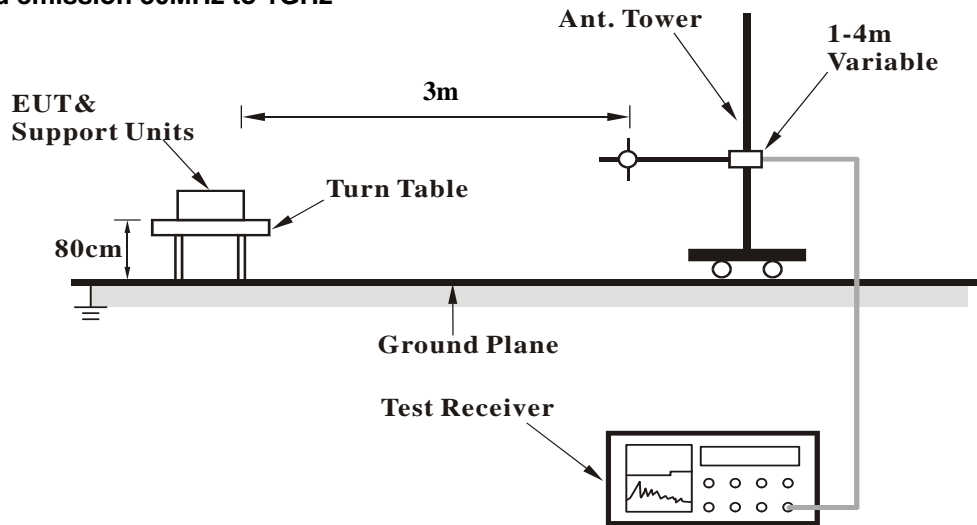
Note: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

### 4.8.3 Deviation from Test Standard

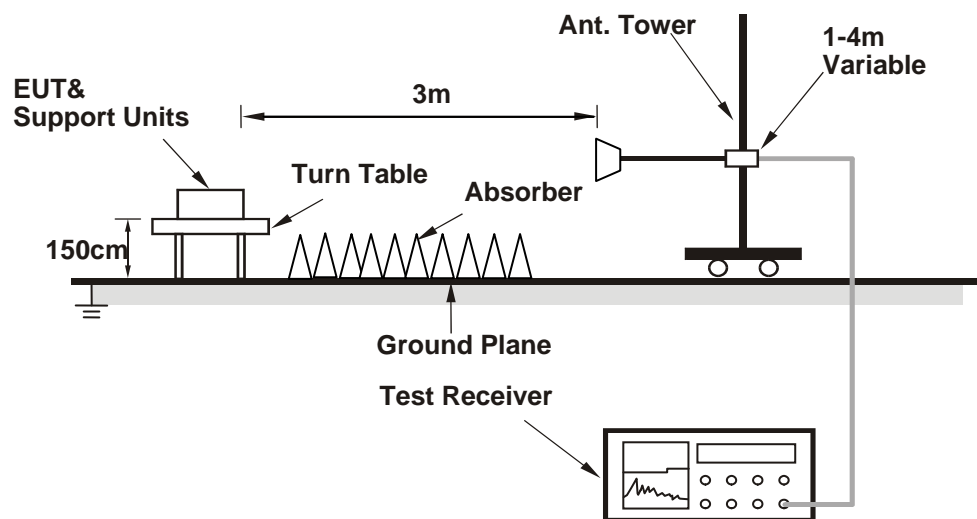
No deviation.

#### 4.8.4 Test Setup

For radiated emission 30MHz to 1GHz



For radiated emission above 1GHz



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

#### 4.8.5 Test Results

Below 1GHz  
 WCDMA Band 4

Mode	TX channel 1312 (1712.4MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

##### Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	31.94	-50.9	-31.3	-18.3	-49.6	-13.0	-36.6
2	140.58	-50.4	-55.1	-3.0	-58.1	-13.0	-45.1
3	191.99	-51.0	-59.0	-2.6	-61.6	-13.0	-48.6
4	378.23	-60.2	-67.6	3.6	-64.0	-13.0	-51.0
5	652.74	-69.1	-72.7	3.6	-69.1	-13.0	-56.1
6	969.93	-69.8	-67.1	3.7	-63.4	-13.0	-50.4

##### Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.97	-32.4	-26.0	-18.8	-44.8	-13.0	-31.8
2	137.67	-46.0	-48.2	-3.2	-51.4	-13.0	-38.4
3	250.19	-54.8	-55.6	-1.3	-56.9	-13.0	-43.9
4	377.26	-59.9	-66.0	3.6	-62.4	-13.0	-49.4
5	665.35	-69.8	-70.1	3.6	-66.5	-13.0	-53.5
6	943.74	-69.0	-65.7	3.7	-62.0	-13.0	-49.0

Remarks:

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

LTE Band 4, Channel Bandwidth 1.4MHz

Mode	TX channel 19957 (1710.7MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	37.76	-46.5	-30.7	-14.7	-45.4	-13.0	-32.4
2	73.65	-49.8	-57.8	0.1	-57.7	-13.0	-44.7
3	138.64	-52.4	-57.3	-3.2	-60.5	-13.0	-47.5
4	363.68	-59.1	-67.6	3.9	-63.7	-13.0	-50.7
5	660.50	-69.2	-72.7	3.7	-69.0	-13.0	-56.0
6	957.32	-68.5	-66.0	3.8	-62.2	-13.0	-49.2

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-30.3	-23.0	-19.4	-42.4	-13.0	-29.4
2	75.59	-43.8	-51.9	0.2	-51.7	-13.0	-38.7
3	169.68	-46.1	-48.7	-2.8	-51.5	-13.0	-38.5
4	363.68	-54.2	-60.6	3.9	-56.7	-13.0	-43.7
5	660.50	-64.2	-64.5	3.7	-60.8	-13.0	-47.8
6	916.58	-70.8	-68.0	3.6	-64.4	-13.0	-51.4

Remarks:

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

## LTE Band 4, Channel Bandwidth 3MHz

Mode	TX channel 19965 (1711.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

## Antenna Polarity &amp; Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-38.2	-17.0	-19.4	-36.4	-13.0	-23.4
2	138.64	-52.1	-57.1	-3.2	-60.3	-13.0	-47.3
3	363.68	-59.6	-68.2	3.9	-64.3	-13.0	-51.3
4	528.58	-69.1	-74.8	3.9	-70.9	-13.0	-57.9
5	659.53	-68.5	-71.9	3.7	-68.2	-13.0	-55.2
6	957.32	-69.3	-66.8	3.8	-63.0	-13.0	-50.0

## Antenna Polarity &amp; Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-34.8	-27.4	-19.4	-46.8	-13.0	-33.8
2	62.98	-44.4	-50.9	-2.4	-53.3	-13.0	-40.3
3	169.68	-48.8	-51.3	-2.8	-54.1	-13.0	-41.1
4	363.68	-54.8	-61.1	3.9	-57.2	-13.0	-44.2
5	660.50	-64.2	-64.5	3.7	-60.8	-13.0	-47.8
6	950.53	-71.0	-67.6	3.7	-63.9	-13.0	-50.9

## Remarks:

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

## LTE Band 4, Channel Bandwidth 5MHz

Mode	TX channel 19975 (1712.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

## Antenna Polarity &amp; Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-50.0	-28.7	-19.4	-48.1	-13.0	-35.1
2	138.64	-52.4	-57.3	-3.2	-60.5	-13.0	-47.5
3	287.05	-56.2	-60.4	-1.7	-62.1	-13.0	-49.1
4	429.64	-62.9	-69.1	3.5	-65.6	-13.0	-52.6
5	608.12	-69.3	-73.4	3.6	-69.8	-13.0	-56.8
6	957.32	-68.8	-66.2	3.8	-62.4	-13.0	-49.4

## Antenna Polarity &amp; Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.97	-30.9	-24.4	-18.8	-43.2	-13.0	-30.2
2	62.98	-46.4	-52.9	-2.4	-55.3	-13.0	-42.3
3	168.71	-48.2	-50.8	-2.8	-53.6	-13.0	-40.6
4	363.68	-54.5	-60.9	3.9	-57.0	-13.0	-44.0
5	660.50	-64.7	-64.9	3.7	-61.2	-13.0	-48.2
6	946.65	-70.5	-67.1	3.8	-63.3	-13.0	-50.3

## Remarks:

- Output Power (dBm) = S.G Value (dBm) + Correction Factor (dB).
- Correction Factor (dB) = Substitution Antenna Gain (dB) + Cable Loss (dB).

LTE Band 4, Channel Bandwidth 10MHz

Mode	TX channel 20000 (1715.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-47.1	-25.9	-19.4	-45.3	-13.0	-32.3
2	137.67	-52.5	-57.5	-3.2	-60.7	-13.0	-47.7
3	260.86	-59.4	-64.8	-1.5	-66.3	-13.0	-53.3
4	429.64	-63.4	-69.5	3.5	-66.0	-13.0	-53.0
5	660.50	-68.3	-71.8	3.7	-68.1	-13.0	-55.1
6	957.32	-69.3	-66.8	3.8	-63.0	-13.0	-50.0

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	45.52	-37.0	-37.1	-10.4	-47.5	-13.0	-34.5
2	137.67	-49.5	-51.7	-3.2	-54.9	-13.0	-41.9
3	260.86	-61.9	-61.5	-1.5	-63.0	-13.0	-50.0
4	363.68	-54.6	-61.0	3.9	-57.1	-13.0	-44.1
5	429.64	-60.8	-66.8	3.5	-63.3	-13.0	-50.3
6	660.50	-63.8	-64.0	3.7	-60.3	-13.0	-47.3

Remarks:

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



LTE Band 4, Channel Bandwidth 15MHz

Mode	TX channel 20025 (1717.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.97	-51.3	-31.0	-18.8	-49.8	-13.0	-36.8
2	138.64	-52.5	-57.4	-3.2	-60.6	-13.0	-47.6
3	259.89	-59.3	-64.8	-1.5	-66.3	-13.0	-53.3
4	363.68	-59.4	-68.0	3.9	-64.1	-13.0	-51.1
5	627.52	-69.9	-73.7	3.6	-70.1	-13.0	-57.1
6	957.32	-69.8	-67.2	3.8	-63.4	-13.0	-50.4

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-33.5	-26.2	-19.4	-45.6	-13.0	-32.6
2	138.64	-49.1	-51.1	-3.2	-54.3	-13.0	-41.3
3	259.89	-61.6	-61.4	-1.5	-62.9	-13.0	-49.9
4	363.68	-54.1	-60.5	3.9	-56.6	-13.0	-43.6
5	660.50	-64.8	-65.0	3.7	-61.3	-13.0	-48.3
6	991.27	-71.2	-66.9	3.4	-63.5	-13.0	-50.5

Remarks:

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

## LTE Band 4, Channel Bandwidth 20MHz

Mode	TX channel 20050 (1720.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

## Antenna Polarity &amp; Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	31.94	-50.0	-30.4	-18.3	-48.7	-13.0	-35.7
2	62.98	-53.8	-59.4	-2.4	-61.8	-13.0	-48.8
3	138.64	-52.8	-57.7	-3.2	-60.9	-13.0	-47.9
4	314.21	-60.7	-70.9	4.0	-66.9	-13.0	-53.9
5	544.10	-70.0	-75.5	3.8	-71.7	-13.0	-58.7
6	957.32	-69.2	-66.7	3.8	-62.9	-13.0	-49.9

## Antenna Polarity &amp; Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-32.5	-25.1	-19.4	-44.5	-13.0	-31.5
2	62.98	-45.0	-51.5	-2.4	-53.9	-13.0	-40.9
3	169.68	-48.1	-50.7	-2.8	-53.5	-13.0	-40.5
4	363.68	-54.5	-60.9	3.9	-57.0	-13.0	-44.0
5	660.50	-63.5	-63.7	3.7	-60.0	-13.0	-47.0
6	952.47	-70.2	-66.8	3.8	-63.0	-13.0	-50.0

## Remarks:

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

LTE Band 12, Channel Bandwidth 1.4MHz

Mode	TX channel 23017 (699.7MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.97	-45.2	-24.9	-18.8	-43.7	-13.0	-30.7
2	138.64	-52.2	-57.2	-3.2	-60.4	-13.0	-47.4
3	308.39	-57.5	-67.8	3.9	-63.9	-13.0	-50.9
4	480.08	-61.9	-67.9	3.6	-64.3	-13.0	-51.3
5	665.35	-61.9	-65.1	3.6	-61.5	-13.0	-48.5
6	972.84	-61.4	-58.4	3.7	-54.7	-13.0	-41.7

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-31.2	-23.8	-19.4	-43.2	-13.0	-30.2
2	124.09	-47.0	-52.3	-3.1	-55.4	-13.0	-42.4
3	330.70	-56.2	-62.9	4.0	-58.9	-13.0	-45.9
4	495.60	-61.0	-67.0	3.8	-63.2	-13.0	-50.2
5	645.95	-62.1	-62.4	3.6	-58.8	-13.0	-45.8
6	946.65	-61.1	-57.8	3.8	-54.0	-13.0	-41.0

Remarks:

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

LTE Band 12, Channel Bandwidth 3MHz

Mode	TX channel 23025 (700.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	31.94	-45.5	-25.9	-18.3	-44.2	-13.0	-31.2
2	82.38	-53.7	-61.6	0.4	-61.2	-13.0	-48.2
3	138.64	-52.9	-57.8	-3.2	-61.0	-13.0	-48.0
4	260.86	-59.1	-64.5	-1.5	-66.0	-13.0	-53.0
5	429.64	-60.1	-66.2	3.5	-62.7	-13.0	-49.7
6	935.01	-61.2	-58.9	3.7	-55.2	-13.0	-42.2

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-27.7	-20.3	-19.4	-39.7	-13.0	-26.7
2	62.98	-45.4	-51.9	-2.4	-54.3	-13.0	-41.3
3	168.71	-48.2	-50.8	-2.8	-53.6	-13.0	-40.6
4	363.68	-53.8	-60.2	3.9	-56.3	-13.0	-43.3
5	552.83	-61.8	-66.1	3.8	-62.3	-13.0	-49.3
6	963.14	-61.7	-58.4	3.7	-54.7	-13.0	-41.7

Remarks:

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

LTE Band 12, Channel Bandwidth 5MHz

Mode	TX channel 23035 (701.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-42.2	-21.0	-19.4	-40.4	-13.0	-27.4
2	138.64	-53.1	-58.1	-3.2	-61.3	-13.0	-48.3
3	260.86	-59.7	-65.1	-1.5	-66.6	-13.0	-53.6
4	429.64	-60.1	-66.2	3.5	-62.7	-13.0	-49.7
5	659.53	-61.5	-64.9	3.7	-61.2	-13.0	-48.2
6	971.87	-60.8	-57.9	3.7	-54.2	-13.0	-41.2

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-26.8	-19.5	-19.4	-38.9	-13.0	-25.9
2	139.61	-49.5	-51.4	-3.1	-54.5	-13.0	-41.5
3	300.63	-57.3	-62.7	3.4	-59.3	-13.0	-46.3
4	429.64	-57.2	-63.2	3.5	-59.7	-13.0	-46.7
5	612.00	-61.9	-63.1	3.7	-59.4	-13.0	-46.4
6	992.24	-61.4	-57.0	3.4	-53.6	-13.0	-40.6

Remarks:

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

LTE Band 12, Channel Bandwidth 10MHz

Mode	TX channel 23060 (704MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	31.94	-40.9	-21.3	-18.3	-39.6	-13.0	-26.6
2	142.52	-53.8	-58.0	-3.1	-61.1	-13.0	-48.1
3	260.86	-58.9	-64.3	-1.5	-65.8	-13.0	-52.8
4	363.68	-59.4	-68.0	3.9	-64.1	-13.0	-51.1
5	460.68	-61.9	-67.5	3.4	-64.1	-13.0	-51.1
6	629.46	-61.1	-64.8	3.6	-61.2	-13.0	-48.2

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-27.4	-20.1	-19.4	-39.5	-13.0	-26.5
2	62.01	-38.8	-44.7	-3.0	-47.7	-13.0	-34.7
3	170.65	-48.5	-51.2	-2.8	-54.0	-13.0	-41.0
4	363.68	-54.3	-60.7	3.9	-56.8	-13.0	-43.8
5	534.40	-62.3	-67.1	3.8	-63.3	-13.0	-50.3
6	660.50	-60.6	-60.8	3.7	-57.1	-13.0	-44.1

Remarks:

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

LTE Band 13, Channel Bandwidth 5MHz

Mode	TX channel 23205 (779.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	31.94	-44.0	-24.4	-18.3	-42.7	-13.0	-29.7
2	138.64	-53.6	-58.6	-3.2	-61.8	-13.0	-48.8
3	256.01	-60.6	-66.5	-1.5	-68.0	-13.0	-55.0
4	363.68	-59.4	-68.0	3.9	-64.1	-13.0	-51.1
5	429.64	-63.4	-69.5	3.5	-66.0	-13.0	-53.0
6	660.50	-68.5	-72.0	3.7	-68.3	-13.0	-55.3

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-30.2	-22.9	-19.4	-42.3	-13.0	-29.3
2	46.49	-36.1	-36.6	-9.9	-46.5	-13.0	-33.5
3	138.64	-49.1	-51.1	-3.2	-54.3	-13.0	-41.3
4	300.63	-58.9	-64.3	3.4	-60.9	-13.0	-47.9
5	363.68	-54.2	-60.6	3.9	-56.7	-13.0	-43.7
6	660.50	-63.7	-63.9	3.7	-60.2	-13.0	-47.2

Remarks:

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

LTE Band 13, Channel Bandwidth 10MHz

Mode	TX channel 23230 (782.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	30.97	-43.9	-23.6	-18.8	-42.4	-13.0	-29.4
2	139.61	-54.0	-58.8	-3.1	-61.9	-13.0	-48.9
3	260.86	-60.9	-66.2	-1.5	-67.7	-13.0	-54.7
4	429.64	-63.8	-69.9	3.5	-66.4	-13.0	-53.4
5	594.54	-68.8	-73.4	3.8	-69.6	-13.0	-56.6
6	957.32	-70.4	-67.9	3.8	-64.1	-13.0	-51.1

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-30.2	-22.8	-19.4	-42.2	-13.0	-29.2
2	63.95	-45.6	-52.4	-2.0	-54.4	-13.0	-41.4
3	170.65	-48.5	-51.1	-2.8	-53.9	-13.0	-40.9
4	363.68	-54.0	-60.4	3.9	-56.5	-13.0	-43.5
5	429.64	-60.7	-66.7	3.5	-63.2	-13.0	-50.2
6	911.73	-68.5	-65.8	3.6	-62.2	-13.0	-49.2

Remarks:

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



Above 1GHz  
 WCDMA Band 4

Mode	TX channel 1312 (1712.4MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3424.80	-61.5	-52.9	1.3	-51.6	-13.0	-38.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3424.80	-61.8	-53.7	1.3	-52.4	-13.0	-39.4

Remarks:

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

Mode	TX channel 1413 (1732.6MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3465.20	-61.4	-53.0	1.4	-51.6	-13.0	-38.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3465.20	61.8	-54.0	1.4	-52.6	-13.0	-39.6

Remarks:

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

Mode	TX channel 1513 (1752.6MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3505.20	-62.3	-54.1	1.5	-52.6	-13.0	-39.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3505.20	-61.6	-54.0	1.5	-52.5	-13.0	-39.5

Remarks:

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

## LTE Band 4, Channel Bandwidth 1.4MHz

Mode	TX channel 19957 (1710.7MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

## Antenna Polarity &amp; Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3421.40	-61.8	-53.2	1.3	-51.9	-13.0	-38.9

## Antenna Polarity &amp; Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3421.40	-61.4	-53.3	1.3	-52.0	-13.0	-39.0

## Remarks:

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

Mode	TX channel 20175 (1732.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

## Antenna Polarity &amp; Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3465.00	-61.4	-53.0	1.4	-51.6	-13.0	-38.6

## Antenna Polarity &amp; Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3465.00	-61.6	-53.8	1.4	-52.4	-13.0	-39.4

## Remarks:

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

Mode	TX channel 20393 (1754.3MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3508.60	-60.1	-51.8	1.4	-50.4	-13.0	-37.4
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3508.60	-61.6	-53.9	1.4	-52.5	-13.0	-39.5

Remarks:

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

LTE Band 4, Channel Bandwidth 3MHz

Mode	TX channel 19965 (1711.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3423.00	-61.4	-52.8	1.3	-51.5	-13.0	-38.5

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3423.00	-61.0	-52.9	1.3	-51.6	-13.0	-38.6

Remarks:

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

Mode	TX channel 20175 (1732.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3465.00	-61.2	-52.8	1.4	-51.4	-13.0	-38.4

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3465.00	-61.3	-53.5	1.4	-52.1	-13.0	-39.1

Remarks:

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

Mode	TX channel 20385 (1753.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3507.00	-61.4	-53.1	1.4	-51.7	-13.0	-38.7
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3507.00	-61.2	-53.5	1.4	-52.1	-13.0	-39.1

Remarks:

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

## LTE Band 4, Channel Bandwidth 5MHz

Mode	TX channel 19975 (1712.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

## Antenna Polarity &amp; Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3425.00	-61.2	-52.6	1.3	-51.3	-13.0	-38.3

## Antenna Polarity &amp; Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3425.00	-61.4	-53.3	1.3	-52.0	-13.0	-39.0

## Remarks:

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

Mode	TX channel 20175 (1732.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

## Antenna Polarity &amp; Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3465.00	-61.2	-52.8	1.4	-51.4	-13.0	-38.4

## Antenna Polarity &amp; Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3465.00	-61.5	-53.7	1.4	-52.3	-13.0	-39.3

## Remarks:

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

Mode	TX channel 20375 (1752.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3505.00	-61.4	-53.2	1.5	-51.7	-13.0	-38.7
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3505.00	-61.6	-54.0	1.5	-52.5	-13.0	-39.5

Remarks:

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



## LTE Band 4, Channel Bandwidth 10MHz

Mode	TX channel 20000 (1715.0MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

## Antenna Polarity &amp; Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3430.00	-61.4	-52.9	1.4	-51.5	-13.0	-38.5

## Antenna Polarity &amp; Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3430.00	-61.2	-53.2	1.4	-51.8	-13.0	-38.8

## Remarks:

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

Mode	TX channel 20175 (1732.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

## Antenna Polarity &amp; Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3465.00	-61.1	-52.7	1.4	-51.3	-13.0	-38.3

## Antenna Polarity &amp; Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3465.00	-61.2	-53.4	1.4	-52.0	-13.0	-39.0

## Remarks:

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

Mode	TX channel 20350 (1750.0MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3500.00	-61.3	-53.1	1.5	-51.6	-13.0	-38.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3500.00	-61.1	-53.5	1.5	-52.0	-13.0	-39.0

Remarks:

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

## LTE Band 4, Channel Bandwidth 15MHz

Mode	TX channel 20025 (1717.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

## Antenna Polarity &amp; Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3435.00	-61.2	-52.6	1.3	-51.3	-13.0	-38.3

## Antenna Polarity &amp; Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3435.00	-61.5	-53.4	1.3	-52.1	-13.0	-39.1

## Remarks:

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

Mode	TX channel 20175 (1732.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

## Antenna Polarity &amp; Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3465.00	-61.2	-52.8	1.4	-51.4	-13.0	-38.4

## Antenna Polarity &amp; Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3465.00	-61.0	-53.2	1.4	-51.8	-13.0	-38.8

## Remarks:

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

Mode	TX channel 20325 (1747.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3495.00	-61.1	-52.9	1.5	-51.4	-13.0	-38.4
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3495.00	-61.3	-53.7	1.5	-52.2	-13.0	-39.2

Remarks:

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

## LTE Band 4, Channel Bandwidth 20MHz

Mode	TX channel 20050 (1720.0MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

## Antenna Polarity &amp; Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3440.00	-61.2	-52.7	1.3	-51.4	-13.0	-38.4

## Antenna Polarity &amp; Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3440.00	-61.5	-53.5	1.3	-52.2	-13.0	-39.2

## Remarks:

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

Mode	TX channel 20175 (1732.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

## Antenna Polarity &amp; Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3465.00	-61.3	-52.9	1.4	-51.5	-13.0	-38.5

## Antenna Polarity &amp; Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3465.00	-61.4	-53.6	1.4	-52.2	-13.0	-39.2

## Remarks:

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

Mode	TX channel 20300 (1745.0MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3490.00	-61.2	-53.0	1.5	-51.5	-13.0	-38.5
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3490.00	-61.1	-53.5	1.5	-52.0	-13.0	-39.0

Remarks:

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

## LTE Band 12, Channel Bandwidth 1.4MHz

Mode	TX channel 23017 (699.7MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

## Antenna Polarity &amp; Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1399.40	-57.95	-51.65	0.85	-50.80	-13.00	-37.80

## Antenna Polarity &amp; Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1399.40	-58.52	-53.35	0.85	-52.50	-13.00	-39.50

## Remarks:

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

Mode	TX channel 23095 (707.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

## Antenna Polarity &amp; Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1415.00	-61.33	-54.84	0.94	-53.90	-13.00	-40.90

## Antenna Polarity &amp; Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1415.00	-60.30	-54.94	0.94	-54.00	-13.00	-41.00

## Remarks:

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

Mode	TX channel 23173 (715.3MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1430.60	-61.40	-54.75	1.05	-53.70	-13.00	-40.70
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1430.60	-61.67	-56.15	1.05	-55.10	-13.00	-42.10

Remarks:

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



## LTE Band 12, Channel Bandwidth 3MHz

Mode	TX channel 23025 (700.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

## Antenna Polarity &amp; Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1401.00	-58.88	-52.56	0.86	-51.70	-13.00	-38.70

## Antenna Polarity &amp; Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1401.00	-61.75	-56.56	0.86	-55.70	-13.00	-42.70

## Remarks:

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

Mode	TX channel 23095 (707.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

## Antenna Polarity &amp; Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1415.00	-60.63	-54.14	0.94	-53.20	-13.00	-40.20

## Antenna Polarity &amp; Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1415.00	-60.40	-55.04	0.94	-54.10	-13.00	-41.10

## Remarks:

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

Mode	TX channel 23165 (714.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1429.00	-60.57	-53.94	1.04	-52.90	-13.00	-39.90
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1429.00	-61.14	-55.64	1.04	-54.60	-13.00	-41.60

Remarks:

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

## LTE Band 12, Channel Bandwidth 5MHz

Mode	TX channel 23035 (701.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

## Antenna Polarity &amp; Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1403.00	-59.92	-53.56	0.86	-52.70	-13.00	-39.70

## Antenna Polarity &amp; Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1403.00	-59.28	-54.06	0.86	-53.20	-13.00	-40.20

## Remarks:

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

Mode	TX channel 23095 (707.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

## Antenna Polarity &amp; Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1415.00	-60.13	-53.64	0.94	-52.70	-13.00	-39.70

## Antenna Polarity &amp; Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1415.00	-59.90	-54.54	0.94	-53.60	-13.00	-40.60

## Remarks:

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

Mode	TX channel 23155 (713.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1427.00	-60.94	-54.32	1.02	-53.30	-13.00	-40.30
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1427.00	-60.21	-54.72	1.02	-53.70	-13.00	-40.70

Remarks:

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

## LTE Band 12, Channel Bandwidth 10MHz

Mode	TX channel 23060 (704.0MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

## Antenna Polarity &amp; Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1408.00	-59.91	-53.50	0.90	-52.60	-13.00	-39.60

## Antenna Polarity &amp; Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1408.00	-60.97	-55.70	0.90	-54.80	-13.00	-41.80

## Remarks:

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

Mode	TX channel 23095 (707.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

## Antenna Polarity &amp; Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1415.00	-61.23	-54.74	0.94	-53.80	-13.00	-40.80

## Antenna Polarity &amp; Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1415.00	-60.20	-54.84	0.94	-53.90	-13.00	-40.90

## Remarks:

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

Mode	TX channel 23130 (711.0MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1422.00	-60.65	-54.09	0.99	-53.10	-13.00	-40.10
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1422.00	-60.22	-54.79	0.99	-53.80	-13.00	-40.80

Remarks:

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

## LTE Band 13, Channel Bandwidth 5MHz

Mode	TX channel 23205 (779.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

## Antenna Polarity &amp; Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1559.00	-61.8	-54.1	1.3	-52.8	-13.0	-39.8

## Antenna Polarity &amp; Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1559.00	-60.6	-53.8	1.3	-52.5	-13.0	-39.5

## Remarks:

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

Mode	TX channel 23230 (782.0MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

## Antenna Polarity &amp; Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1564.00	-61.5	-53.7	1.2	-52.5	-13.0	-39.5

## Antenna Polarity &amp; Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1564.00	-60.2	-53.3	1.2	-52.1	-13.0	-39.1

## Remarks:

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

Mode	TX channel 23255 (784.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1569.00	-61.0	-53.2	1.2	-52.0	-13.0	-39.0
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1569.00	-61.4	-54.4	1.2	-53.2	-13.0	-40.2

Remarks:

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



LTE Band 13, Channel Bandwidth 10MHz

Mode	TX channel 23230 (782.0MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1564.00	-60.2	-52.4	1.2	-51.2	-13.0	-38.2

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1564.00	-60.4	-53.5	1.2	-52.3	-13.0	-39.3

Remarks:

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

## 5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

## Appendix – 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 FCC recognized accredited test firms and 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.

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