

FCC Test Report (PART 27)

Report No.: RF190401E07-2

FCC ID: NKR-LVSK-ODU

Test Model: LVSKODU

Received Date: Apr. 01, 2019

Test Date: Apr. 22 to May 20, 2019

Issued Date: June 12, 2019

Applicant: Wistron NeWeb Corp.

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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**FCC Registration /
Designation Number:** 723255 / TW2022



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Release Control Record

Issue No.	Description	Date Issued
RF190401E07-2	Original release.	June 12, 2019

1 Certificate of Conformity

Product: LVSKODU

Brand: WNC

Test Model: LVSKODU

Sample Status: ENGINEERING SAMPLE

Applicant: Wistron NeWeb Corp.

Test Date: Apr. 22 to May 20, 2019

Standards: FCC Part 27, Subpart F / L
FCC Part 2

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 EMC characteristics under the conditions specified in this report.

Prepared by : Phoenix Huang, **Date:** June 12, 2019
Phoenix Huang / Specialist

Approved by : May Chen, **Date:** June 12, 2019
May Chen / Manager

2 Summary of Test Results

Applied Standard: FCC Part 27 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 27.50	Radiated Power	PASS	Meet the requirement of limit.
2.1047	Modulation characteristics	PASS	Meet the requirement
2.1055 27.54	Frequency Stability Stay with the authorized bands of operation	PASS	Meet the requirement of limit.
2.1049 27.53	Occupied Bandwidth	PASS	Meet the requirement of limit.
27.53	Band Edge Measurements	PASS	Meet the requirement of limit.
---	Peak To Average Ratio	PASS	Meet the requirement of limit.
2.1051 27.53	Conducted Spurious Emissions	PASS	Meet the requirement of limit.
2.1053 27.53	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -20.42 dB at 1559 MHz.

Note:

- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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 ~ 1GHz	4.9 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.1 dB
	6GHz ~ 18GHz	4.9 dB
	18GHz ~ 40GHz	5.2 dB

2.2 Test Site and Instruments

For Radiated Spurious Emissions Test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Keysight	N9038A	MY54450088	July 05, 2018	July 04, 2019
Pre-Amplifier EMCI	EMC001340	980142	Jan. 25, 2019	Jan. 24, 2020
Loop Antenna Electro-Metrics	EM-6879	269	Sep. 07, 2018	Sep. 06, 2019
RF Cable	NA	LOOPCAB-001	Jan. 14, 2019	Jan. 13, 2020
RF Cable	NA	LOOPCAB-002	Jan. 14, 2019	Jan. 13, 2020
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Oct. 30, 2018	Oct. 29, 2019
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Nov. 22, 2018	Nov. 21, 2019
RF Cable	8D	966-4-1	Mar. 19, 2019	Mar. 18, 2020
RF Cable	8D	966-4-2	Mar. 19, 2019	Mar. 18, 2020
RF Cable	8D	966-4-3	Mar. 19, 2019	Mar. 18, 2020
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-4-01	Sep. 27, 2018	Sep. 26, 2019
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Nov. 25, 2018	Nov. 24, 2019
Pre-Amplifier EMCI	EMC12630SE	980385	Aug. 16, 2018	Aug. 15, 2019
RF Cable	EMC104-SM-SM-1200	160923	Jan. 28, 2019	Jan. 27, 2020
RF Cable	104 RF cable	131215	Jan. 10, 2019	Jan. 09, 2020
RF Cable	EMC104-SM-SM-6000	180418	May 03, 2019	May 02, 2020
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 28, 2019	Jan. 27, 2020
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170519	Nov. 25, 2018	Nov. 24, 2019
RF Cable	EMC102-KM-KM-1200	160924	Jan. 28, 2019	Jan. 27, 2020
RF Cable	EMC102-KM-KM-1200	160925	Jan. 28, 2019	Jan. 27, 2020
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	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 966 Chamber No. 4.
3. Loop antenna was used for all emissions below 30 MHz.
4. Tested Date: May 20, 2019

For other test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSV40	100964	June 20, 2018	June 19, 2019
Spectrum Analyzer Agilent	E4446A	MY48250254	Nov. 14, 2018	Nov. 13, 2019
Power meter Anritsu	ML2495A	1014008	May 13, 2019	May 12, 2020
Power sensor Anritsu	MA2411B	0917122	May 13, 2019	May 12, 2020
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 15, 2019	Apr. 14, 2020
AC Power Source Extech Electronics	6205	1440452	NA	NA
DC Power Supply Topward	6603D	795558	NA	NA
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	Jan. 09, 2019	Jan. 08, 2020
True RMS Clamp Meter FLUKE	325	31130711WS	May 22, 2018	May 21, 2019
ESG Vector signal generator Agilent	E4438C	MY45094468/005 506 602 UK6 UNJ	Nov. 19, 2018	Nov. 18, 2019
Mech Switch Absorptive Mini-Circuits	MSP4TA-18+	0140	Feb. 11, 2019	Feb. 10, 2020
FXD ATTEN Mini-Circuits	BW-S3W2+	MN71981	Feb. 11, 2019	Feb. 10, 2020
Software	ADT_RF Test Software V6.6.5.4	NA	NA	NA

- NOTE:**
1. The test was performed in Oven room 2.
 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. Tested Date: May 20, 2019

3 General Information

3.1 General Description of EUT

Product	LVSKODU		
Brand	WNC		
Test Model	LVSKODU		
Status of EUT	ENGINEERING SAMPLE		
Power Supply Rating	12Vdc from USB interface		
Modulation Type	LTE	QPSK, 16QAM, 64QAM	
Operating Frequency	LTE Band 4	1710.7 ~ 1754.3 MHz	
	LTE Band 13	779.5 ~ 784.5 MHz	
	LTE Band 66	1710.7 ~ 1779.3MHz	
Max. EIRP Power	LTE Band 4 (Channel Bandwidth 1.4MHz)	SC mode: 28.85 dBm	
	LTE Band 4 (Channel Bandwidth 3MHz)	SC mode: 28.85 dBm	
	LTE Band 4 (Channel Bandwidth 5MHz)	SC mode: 28.84 dBm CA mode: 24.93 dBm	
	LTE Band 4 (Channel Bandwidth 10MHz)	SC mode: 29.11 dBm CA mode: 24.92 dBm	
	LTE Band 4 (Channel Bandwidth 15MHz)	SC mode: 29.18 dBm CA mode: 25.04 dBm	
	LTE Band 4 (Channel Bandwidth 20MHz)	SC mode: 29.22 dBm CA mode: 25.02 dBm	
	LTE Band 66 (Channel Bandwidth 1.4MHz)	SC mode: 28.96 dBm	
	LTE Band 66 (Channel Bandwidth 3MHz)	SC mode: 29.03 dBm	
	LTE Band 66 (Channel Bandwidth 5MHz)	SC mode: 28.88 dBm CA mode: 28.13 dBm	
	LTE Band 66 (Channel Bandwidth 10MHz)	SC mode: 29.17 dBm CA mode: 28.33 dBm	
	LTE Band 66 (Channel Bandwidth 15MHz)	SC mode: 29.12 dBm CA mode: 28.00 dBm	
	LTE Band 66 (Channel Bandwidth 20MHz)	SC mode: 29.15 dBm CA mode: 28.04 dBm	
Max. ERP Power	LTE Band 13 (Channel Bandwidth 5MHz)	26.92 dBm	
	LTE Band 13 (Channel Bandwidth 10MHz)	26.98 dBm	
Emission Designator	LTE Band 4 (Channel Bandwidth 1.4MHz)	SC mode	QPSK: 1M09G7D
			16QAM: 1M10D7W
			64QAM: 1M11D7W
	LTE Band 4 (Channel Bandwidth 3MHz)	SC mode	QPSK: 2M70G7D
			16QAM: 2M69D7W
			64QAM: 2M70D7W
	LTE Band 4 (Channel Bandwidth 5MHz)	SC mode	QPSK: 4M52G7D
			16QAM: 4M51D7W
			64QAM: 4M51D7W
		CA mode	QPSK: 4M49G7D
			16QAM: 4M52D7W
			64QAM: 4M50D7W

Emission Designator	LTE Band 4 (Channel Bandwidth 10MHz)	SC mode	QPSK: 9M02G7D
			16QAM: 9M00D7W
			64QAM: 9M00D7W
		CA mode	QPSK: 9M00G7D
			16QAM: 9M00D7W
			64QAM: 9M00D7W
	LTE Band 4 (Channel Bandwidth 15MHz)	SC mode	QPSK: 13M5G7D
			16QAM: 13M4D7W
			64QAM: 13M5D7W
		CA mode	QPSK: 13M5G7D
			16QAM: 13M5D7W
			64QAM: 13M5D7W
	LTE Band 4 (Channel Bandwidth 20MHz)	SC mode	QPSK: 18M0G7D
			16QAM: 18M0D7W
			64QAM: 18M0D7W
		CA mode	QPSK: 18M0G7D
			16QAM: 18M0D7W
			64QAM: 18M0D7W
	LTE Band 13 (Channel Bandwidth 5MHz)	SC mode	QPSK: 4M50G7D
			16QAM: 4M51D7W
			64QAM: 4M50D7W
	LTE Band 13 (Channel Bandwidth 10MHz)	SC mode	QPSK: 9M00G7D
			16QAM: 9M00D7W
			64QAM: 8M98D7W
	LTE Band 66 (Channel Bandwidth 1.4MHz)	SC mode	QPSK: 1M09G7D
			16QAM: 1M09D7W
			64QAM: 1M09D7W
	LTE Band 66 (Channel Bandwidth 3MHz)	SC mode	QPSK: 2M70G7D
			16QAM: 2M68D7W
			64QAM: 2M70D7W
	LTE Band 66 (Channel Bandwidth 5MHz)	SC mode	QPSK: 4M52G7D
			16QAM: 4M51D7W
			64QAM: 4M51D7W
		CA mode	QPSK: 4M51G7D
			16QAM: 4M52D7W
			64QAM: 4M50D7W
	LTE Band 66 (Channel Bandwidth 10MHz)	SC mode	QPSK: 9M02G7D
			16QAM: 9M02D7W
			64QAM: 9M00D7W
		CA mode	QPSK: 9M02G7D
			16QAM: 9M00D7W
			64QAM: 9M00D7W
	LTE Band 66 (Channel Bandwidth 15MHz)	SC mode	QPSK: 13M5G7D
			16QAM: 13M5D7W
			64QAM: 13M5D7W
		CA mode	QPSK: 13M5G7D
			16QAM: 13M5D7W
			64QAM: 13M5D7W
	LTE Band 66 (Channel Bandwidth 20MHz)	SC mode	QPSK: 18M0G7D
			16QAM: 18M0D7W
			64QAM: 18M0D7W
		CA mode	QPSK: 18M0G7D
			16QAM: 17M9D7W
			64QAM: 18M0D7W

Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Refer to Note
Data Cable Supplied	NA

Note:

1. The associated devices of EUT information are as below:

For LVSKIDU					
No.	Product	Brand	Model No.	FCC ID	Remark
1	LVSKIDU	WNC	LVSKIDU	NKR-LVSK-IDU	-
2	Adapter	DELTA	ADP-48GR B	-	Input: 100-240Vac, 1A, 50-60Hz AC input cable: Unshielded, 1.7m Output: 12Vdc, 4A DC output cable: Unshielded, 2.9m
3	Battery Cradle	WNC	LVSKCRA	-	Battery Cradle Input: 12Vdc, 4A Battery Cradle Include Battery Battery Output: 3.6Vdc, 3450mAh, 12.42Wh
For LVSKODU					
No.	Product	Brand	Model No.	Remark	
4	LVPKROU	WNC	LVPK	Input: 56Vdc, 1.1A (power from POE Adpater)	
5	POE Adpater	DELTA	ADP-60HR B	AC Input: 100-240V, 2.0A, 50-60Hz DC Output: 56Vdc, 1.1A AC input cable: Unshielded, 1.7m	
6	Surge protection box	CITEL	CRMJ8-POE-C6	Metal case	
7	Surge protection box	CITEL	CRMJ8-POE-C6/WNC	Plastic case	

2. There are WWAN, 5G NR and Bluetooth technology used for the EUT.

3. Simultaneously transmission condition.

Condition	Technology		
1	WWAN	5G NR (n260/n261)	Bluetooth

Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.

4. The EUT was pre-tested under the following modes:

For Radiated Emission test	
Pre-test Mode	Description
Mode A	Power from LVSKIDU
Mode B	Power from LVPKROU (with Surge protection box and model No.: CRMJ8-POE-C6)
Mode C	Power from LVPKROU (with Surge protection box and model No.: CRMJ8-POE-C6/WNC)

From the above modes, the worst case was found in **Mode C**. Therefore only the test data of the mode was recorded in this report.

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

LTE					
Ant. No.	Ant. Net Gain (dBi)	Freq. range (MHz)	Ant. Type	Connector Type	Cable Length (mm)
1.ODU-LH1 (Ant. 0)	3.86	746~894	IFA	NA	NA
		1710~2200			
2.ODU-LH2 (Ant. 2)	4.55	746~894	IFA	NA	NA
		1710~2200			
3.ODU-H1 (Ant. 3)	3.58	1710~2200	IFA	i-pex (MHF)	62
4.ODU-H2 (Ant. 4)	2.27	1710~2200	IFA	i-pex (MHF)	66
Bluetooth					
Ant. No.	Ant. Net Gain (dBi)	Freq. range (GHz)	Ant. Type	Connector Type	
5.ODU-BT (Ant. 1)	2.69	2.4~2.4835	IFA	NA	
5GNR					
Ant. No.	Freq. range (MHz)		Ant. Type	Connector Type	
5GNR Antenna	27500~28350 37000~40000		Smart patch array Antenna	NA	

6. This device is UE LTE 4G 1Tx/4Rx device for single carrier within ANT0 can support uplink Band 2/4/5/13/66 and device support Inter-Band carrier aggregation (two carriers) uplink. For device operation on uplink CA mode, changed the transmitter mode by 2Tx within ANT0 and ANT2.

7. The device uplink Inter-Band CA maximum configurations set as below :

Mode	Description
1	CA_PCC Ant 0 Band 2_SCC Ant 2 Band 4
2	CA_PCC Ant 0 Band 4_SCC Ant 2 Band 2
3	CA_PCC Ant 2 Band 2_SCC Ant 0 Band 13
4	CA_PCC Ant 0 Band 13_SCC Ant 2 Band 2
5	CA_PCC Ant 0 Band 66_SCC Ant 2 Band 2
6	CA_PCC Ant 0 Band 13_SCC Ant 2 Band 4
7	CA_PCC Ant 2 Band 66_SCC Ant 0 Band 13
8	CA_PCC Ant 2 Band 2_SCC Ant 0 Band 5
9	CA_PCC Ant 0 Band 5_SCC Ant 2 Band 2
10	CA_PCC Ant 2 Band 4_SCC Ant 0 Band 5
11	CA_PCC Ant 0 Band 5_SCC Ant 2 Band 4
12	CA_PCC Ant 2 Band 66_SCC Ant 0 Band 5

Note: Above modes was recorded in another test report.

8. ANT 2 can support uplink Band 2/4/66 under CA mode, the test mode are presented in the report as below:

Mode	Description
A	single carrier within ANT0 for each band
B	Inter-Band carrier aggregation mode within ANT0 off / ANT2 uplink for Band 2/4/66

Note:

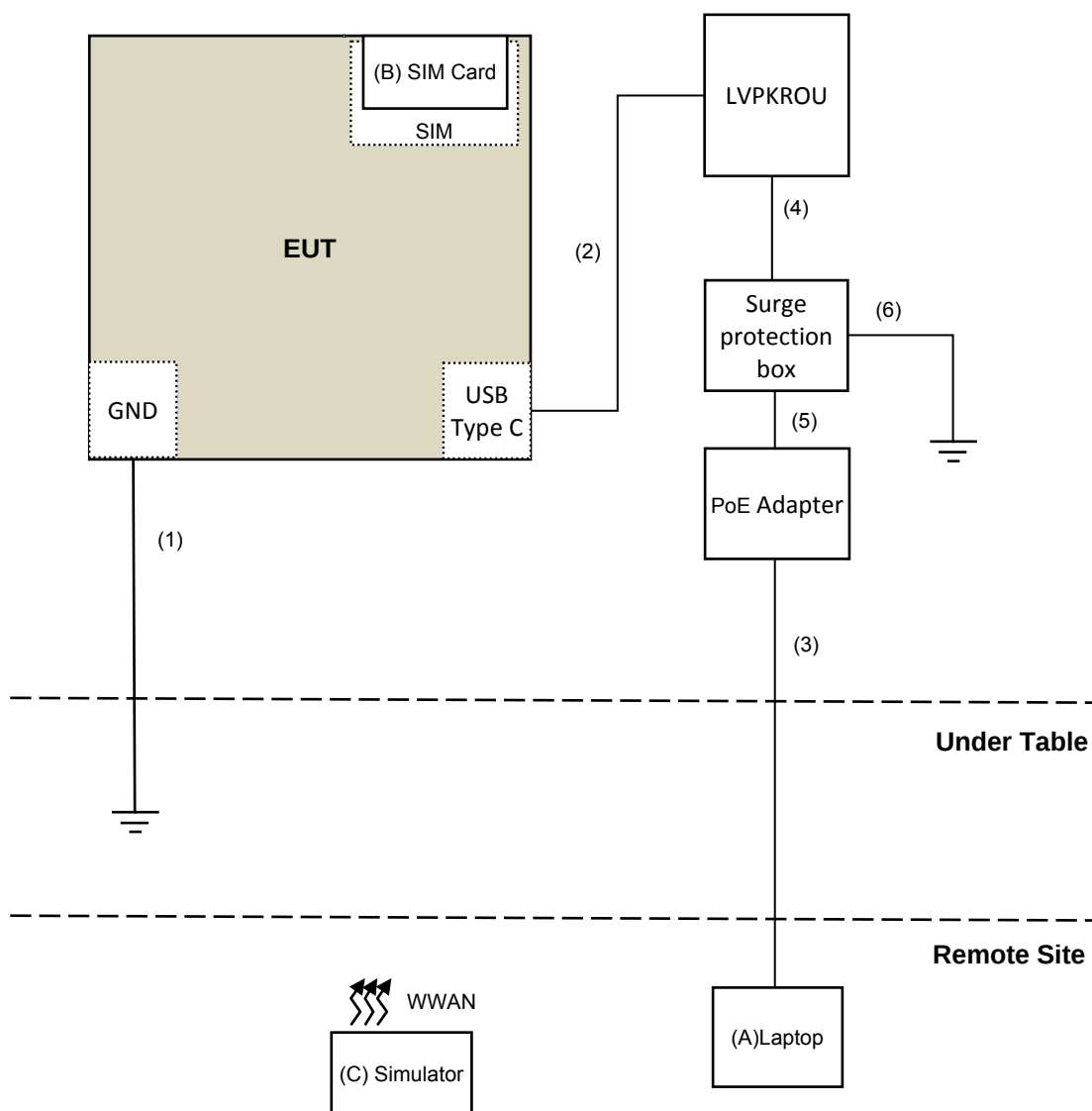
1. ANT2 only under carrier aggregation mode than have Transmitter Power, not support single carrier mode.
2. Inter-Band CA mode 1-12 will independently evaluate in the other report.

9. This device is LVSKODU that can support carrier aggregation (two carrier) uplink Inter Band contiguous, specification following as below:

Uplink CA Configurations	LTE Bands	Channel Bandwidths for Carrier [MHz]	Maximum Aggregated Bandwidth [MHz]	Bandwidth Combination Set
CA_2A-4A	2	1.4, 3, 5, 10, 15, 20	40	0
	4	5, 10, 15, 20		
	2	5, 10	20	1
	4	5, 10		
	2	5, 10, 15, 20	40	2
	4	5, 10, 15, 20		
CA_2A-13A	2	5, 10, 15, 20	30	0
	13	10		
	2	5, 10	20	1
	13	10		
CA_2A-66A	2	1.4, 3, 5, 10, 15, 20	40	0
	66	5, 10, 15, 20		
	2	5, 10	20	1
	66	5, 10		
	2	5, 10, 15, 20	40	2
	66	5, 10, 15, 20		
CA_4A-13A	4	5, 10, 15, 20	30	0
	13	10		
	4	5, 10	20	1
	13	10		
CA_66A-13A	66	5, 10, 15, 20	30	0
	13	10		
	66	5, 10	20	1
	13	10		
CA_2A-5A	2	5, 10, 15, 20	30	0
	5	5, 10		
	2	5, 10	20	1
	5	5, 10		
CA_4A-5A	4	5, 10	20	0
	5	5, 10		
	4	5, 10, 15, 20	30	1
	5	5, 10		
CA_66A-5A	66	5, 10	20	0
	5	5, 10		
	66	5, 10, 15, 20	30	1
	5	5, 10		

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

3.2 Configuration of System under Test



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.	Laptop	DELL	E6420	B92T3R1	FCC DoC	Provided by Lab
B.	SIM Card	NA	NA	NA	NA	Provided by Lab
C.	Simulator	Keysight	E7515A	MY56030229	NA	Provided by Lab

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	GND Cable	1	3	No	0	Provided by Lab
2.	USB Type C Cable	1	0.38	No	0	Supplied by client
3.	RJ-45 Cable	1	10	No	0	Provided by Lab
4.	RJ-45 Cable	1	3	Yes	0	Provided by Lab
5.	RJ-45 Cable	1	1	Yes	0	Provided by Lab
6.	GND Cable	1	3	No	0	Provided by Lab

3.3 Test Mode Applicability and Tested Channel Detail

LTE Band 4 Mode A (Ant. 0)

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
EIRP	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK/16QAM/64QAM	1RB / 0 RB offset
	19965 to 20385	19965, 20175, 20385	3MHz	QPSK/16QAM/64QAM	1RB / 0 RB offset
	19975 to 20375	19975, 20175, 20375	5MHz	QPSK/16QAM/64QAM	1RB / 0 RB offset
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK/16QAM/64QAM	1RB / 0 RB offset
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK/16QAM/64QAM	1RB / 0 RB offset
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK/16QAM/64QAM	1RB / 0 RB offset
Frequency Stability	19957 to 20393	20175	1.4MHz	QPSK	-
	19965 to 20385	20175	3MHz	QPSK	-
	19975 to 20375	20175	5MHz	QPSK	-
	20000 to 20350	20175	10MHz	QPSK	-
	20025 to 20325	20175	15MHz	QPSK	-
	20050 to 20300	20175	20MHz	QPSK	-
Occupied Bandwidth	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK/16QAM/64QAM	Full RB
	19965 to 20385	19965, 20175, 20385	3MHz	QPSK/16QAM/64QAM	Full RB
	19975 to 20375	19975, 20175, 20375	5MHz	QPSK/16QAM/64QAM	Full RB
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK/16QAM/64QAM	Full RB
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK/16QAM/64QAM	Full RB
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK/16QAM/64QAM	Full RB
Peak to Average Ratio	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK/16QAM/64QAM	Full RB
	19965 to 20385	19965, 20175, 20385	3MHz	QPSK/16QAM/64QAM	Full RB
	19975 to 20375	19975, 20175, 20375	5MHz	QPSK/16QAM/64QAM	Full RB
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK/16QAM/64QAM	Full RB
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK/16QAM/64QAM	Full RB
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK/16QAM/64QAM	Full RB
Band Edge	19957 to 20393	19957	1.4MHz	QPSK	1 RB / 0 RB Offset
		20393			1 RB / 5 RB Offset
		19957, 20393			6 RB / 0 RB Offset
	19965 to 20385	19965	3MHz	QPSK	1 RB / 0 RB Offset
		20385			1 RB / 14 RB Offset
		19965 , 20385			15 RB / 0 RB Offset
	19975 to 20375	19975	5MHz	QPSK	1 RB / 0 RB Offset
		20375			1 RB / 24 RB Offset
		19975, 20375			25 RB / 0 RB Offset
	20000 to 20350	20000	10MHz	QPSK	1 RB / 0 RB Offset
		20350			1 RB / 49 RB Offset
		20000, 20350			50 RB / 0 RB Offset
	20025 to 20325	20025	15MHz	QPSK	1 RB / 0 RB Offset
		20325			1 RB / 74 RB Offset
		20025, 20325			75 RB / 0 RB Offset
	20050 to 20300	20050	20MHz	QPSK	1 RB / 0 RB Offset
		20300			1 RB / 99 RB Offset
		20050, 20300			100 RB / 0 RB Offset

Conducted Emission	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK	1 RB / 0 RB Offset
	19965 to 20385	19965, 20175, 20385	3MHz	QPSK	1 RB / 0 RB Offset
	19975 to 20375	19975, 20175, 20375	5MHz	QPSK	1 RB / 0 RB Offset
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK	1 RB / 0 RB Offset
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK	1 RB / 0 RB Offset
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK	1 RB / 0 RB Offset
Radiated Emission	19957 to 20393	19957, 20175, 20393	1.4MHz	QPSK	1 RB / 0 RB Offset
	19965 to 20385	19965, 20175, 20385	3MHz	QPSK	1 RB / 0 RB Offset
	19975 to 20375	19975, 20175, 20375	5MHz	QPSK	1 RB / 0 RB Offset
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK	1 RB / 0 RB Offset
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK	1 RB / 0 RB Offset
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK	1 RB / 0 RB Offset

LTE Band 4 Mode B (Ant. 2)

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
EIRP	19975 to 20375	19975, 20175, 20375	5MHz	QPSK/16QAM/64QAM	1RB / 0 RB offset
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK/16QAM/64QAM	1RB / 0 RB offset
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK/16QAM/64QAM	1RB / 0 RB offset
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK/16QAM/64QAM	1RB / 0 RB offset
Frequency Stability	19975 to 20375	20175	5MHz	QPSK	-
	20000 to 20350	20175	10MHz	QPSK	-
	20025 to 20325	20175	15MHz	QPSK	-
	20050 to 20300	20175	20MHz	QPSK	-
Occupied Bandwidth	19975 to 20375	19975, 20175, 20375	5MHz	QPSK/16QAM/64QAM	Full RB
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK/16QAM/64QAM	Full RB
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK/16QAM/64QAM	Full RB
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK/16QAM/64QAM	Full RB
Peak to Average Ratio	19975 to 20375	19975, 20175, 20375	5MHz	QPSK/16QAM/64QAM	Full RB
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK/16QAM/64QAM	Full RB
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK/16QAM/64QAM	Full RB
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK/16QAM/64QAM	Full RB
Band Edge	19975 to 20375	19975	5MHz	QPSK	1 RB / 0 RB Offset
		20375			1 RB / 24 RB Offset
		19975, 20375			25 RB / 0 RB Offset
	20000 to 20350	20000	10MHz	QPSK	1 RB / 0 RB Offset
		20350			1 RB / 49 RB Offset
		20000, 20350			50 RB / 0 RB Offset
	20025 to 20325	20025	15MHz	QPSK	1 RB / 0 RB Offset
		20325			1 RB / 74 RB Offset
		20025, 20325			75 RB / 0 RB Offset
	20050 to 20300	20050	20MHz	QPSK	1 RB / 0 RB Offset
		20300			1 RB / 99 RB Offset
		20050, 20300			100 RB / 0 RB Offset
Conducted Emission	19975 to 20375	19975, 20175, 20375	5MHz	QPSK	1 RB / 0 RB Offset
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK	1 RB / 0 RB Offset
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK	1 RB / 0 RB Offset
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK	1 RB / 0 RB Offset
Radiated Emission	19975 to 20375	19975, 20175, 20375	5MHz	QPSK	1 RB / 0 RB Offset
	20000 to 20350	20000, 20175, 20350	10MHz	QPSK	1 RB / 0 RB Offset
	20025 to 20325	20025, 20175, 20325	15MHz	QPSK	1 RB / 0 RB Offset
	20050 to 20300	20050, 20175, 20300	20MHz	QPSK	1 RB / 0 RB Offset

LTE Band 13
Mode A (Ant. 0)

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
ERP	23205 to 23255	23205, 23230, 23255	5MHz	QPSK/16QAM/64QAM	1RB / 0 RB offset
	23230	23230	10MHz	QPSK/16QAM/64QAM	1RB / 0 RB offset
Frequency Stability	23205 to 23255	23230	5MHz	QPSK	-
	23230	23230	10MHz	QPSK	-
Occupied Bandwidth	23205 to 23255	23205, 23230, 23255	5MHz	QPSK/16QAM/64QAM	Full RB
	23230	23230	10MHz	QPSK/16QAM/64QAM	Full RB
Peak to Average Ratio	23205 to 23255	23205, 23230, 23255	5MHz	QPSK/16QAM/64QAM	Full RB
	23230	23230	10MHz	QPSK/16QAM/64QAM	Full RB
Band Edge	23205 to 23255	23205	5MHz	QPSK	1 RB / 0 RB Offset
		23255			1 RB / 24 RB Offset
		23205, 23255			25 RB / 0 RB Offset
	23230	23230	10MHz	QPSK	1 RB / 0 RB Offset
					1 RB / 49 RB Offset
					50 RB / 0 RB Offset
Conducted Emission	23205 to 23255	23205, 23230, 23255	5MHz	QPSK	1RB / 0 RB offset
	23230	23230	10MHz	QPSK	1RB / 0 RB offset
Radiated Emission	23205 to 23255	23205, 23230, 23255	5MHz	QPSK	1RB / 0 RB offset
	23230	23230	10MHz	QPSK	1RB / 0 RB offset

Note: CA mode channel bandwidth only 10MHz of LTE Band 13

LTE Band 66
Mode A (Ant. 0)

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
EIRP	131979 to 132665	131979, 132322, 132665	1.4MHz	QPSK/16QAM/64QAM	1RB / 0 RB offset
	131987 to 132657	131987, 132322, 132657	3MHz	QPSK/16QAM/64QAM	1RB / 0 RB offset
	131997 to 132647	131997, 132322, 132647	5MHz	QPSK/16QAM/64QAM	1RB / 0 RB offset
	132022 to 132622	132022, 132322, 132622	10MHz	QPSK/16QAM/64QAM	1RB / 0 RB offset
	132047 to 132597	132047, 132322, 132597	15MHz	QPSK/16QAM/64QAM	1RB / 0 RB offset
	132072 to 132572	132072, 132322, 132572	20MHz	QPSK/16QAM/64QAM	1RB / 0 RB offset
Frequency Stability	131979 to 132665	132322	1.4MHz	QPSK	-
	131987 to 132657	132322	3MHz	QPSK	-
	131997 to 132647	132322	5MHz	QPSK	-
	132022 to 132622	132322	10MHz	QPSK	-
	132047 to 132597	132322	15MHz	QPSK	-
	132072 to 132572	132322	20MHz	QPSK	-
Occupied Bandwidth	131979 to 132665	131979, 132322, 132665	1.4MHz	QPSK/16QAM/64QAM	Full RB
	131987 to 132657	131987, 132322, 132657	3MHz	QPSK/16QAM/64QAM	Full RB
	131997 to 132647	131997, 132322, 132647	5MHz	QPSK/16QAM/64QAM	Full RB
	132022 to 132622	132022, 132322, 132622	10MHz	QPSK/16QAM/64QAM	Full RB
	132047 to 132597	132047, 132322, 132597	15MHz	QPSK/16QAM/64QAM	Full RB
	132072 to 132572	132072, 132322, 132572	20MHz	QPSK/16QAM/64QAM	Full RB
Peak to Average Ratio	131979 to 132665	131979, 132322, 132665	1.4MHz	QPSK/16QAM/64QAM	Full RB
	131987 to 132657	131987, 132322, 132657	3MHz	QPSK/16QAM/64QAM	Full RB
	131997 to 132647	131997, 132322, 132647	5MHz	QPSK/16QAM/64QAM	Full RB
	132022 to 132622	132022, 132322, 132622	10MHz	QPSK/16QAM/64QAM	Full RB
	132047 to 132597	132047, 132322, 132597	15MHz	QPSK/16QAM/64QAM	Full RB
	132072 to 132572	132072, 132322, 132572	20MHz	QPSK/16QAM/64QAM	Full RB
Band Edge	131979 to 132665	131979	1.4MHz	QPSK	1 RB / 0 RB Offset
		132665			1 RB / 5 RB Offset
		131979, 132665			6 RB / 0 RB Offset
	131987 to 132657	131987	3MHz	QPSK	1 RB / 0 RB Offset
		132657			1 RB / 14 RB Offset
		131987, 132657			15 RB / 0 RB Offset
	131997 to 132647	131997	5MHz	QPSK	1 RB / 0 RB Offset
		132647			1 RB / 24 RB Offset
		131997, 132647			25 RB / 0 RB Offset
	132022 to 132622	132022	10MHz	QPSK	1 RB / 0 RB Offset
		132622			1 RB / 49 RB Offset
		132022, 132622			50 RB / 0 RB Offset
	132047 to 132597	132047	15MHz	QPSK	1 RB / 0 RB Offset
		132597			1 RB / 74 RB Offset
		132047, 132597			75 RB / 0 RB Offset
	132072 to 132572	132072	20MHz	QPSK	1 RB / 0 RB Offset
		132572			1 RB / 99 RB Offset
		132072, 132572			100 RB / 0 RB Offset

Conducted Emission	131979 to 132665	131979, 132322, 132665	1.4MHz	QPSK	1 RB / 0 RB Offset
	131987 to 132657	131987, 132322, 132657	3MHz	QPSK	1 RB / 0 RB Offset
	131997 to 132647	131997, 132322, 132647	5MHz	QPSK	1 RB / 0 RB Offset
	132022 to 132622	132022, 132322, 132622	10MHz	QPSK	1 RB / 0 RB Offset
	132047 to 132597	132047, 132322, 132597	15MHz	QPSK	1 RB / 0 RB Offset
	132072 to 132572	132072, 132322, 132572	20MHz	QPSK	1 RB / 0 RB Offset
Radiated Emission	131979 to 132665	131979, 132322, 132665	1.4MHz	QPSK	1 RB / 0 RB Offset
	131987 to 132657	131987, 132322, 132657	3MHz	QPSK	1 RB / 0 RB Offset
	131997 to 132647	131997, 132322, 132647	5MHz	QPSK	1 RB / 0 RB Offset
	132022 to 132622	132022, 132322, 132622	10MHz	QPSK	1 RB / 0 RB Offset
	132047 to 132597	132047, 132322, 132597	15MHz	QPSK	1 RB / 0 RB Offset
	132072 to 132572	132072, 132322, 132572	20MHz	QPSK	1 RB / 0 RB Offset

LTE Band 66 Mode B (Ant. 2)

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
EIRP	131997 to 132647	131997, 132322, 132647	5MHz	QPSK/16QAM/64QAM	1RB / 0 RB offset
	132022 to 132622	132022, 132322, 132622	10MHz	QPSK/16QAM/64QAM	1RB / 0 RB offset
	132047 to 132597	132047, 132322, 132597	15MHz	QPSK/16QAM/64QAM	1RB / 0 RB offset
	132072 to 132572	132072, 132322, 132572	20MHz	QPSK/16QAM/64QAM	1RB / 0 RB offset
Frequency Stability	131997 to 132647	132322	5MHz	QPSK	-
	132022 to 132622	132322	10MHz	QPSK	-
	132047 to 132597	132322	15MHz	QPSK	-
	132072 to 132572	132322	20MHz	QPSK	-
Occupied Bandwidth	131997 to 132647	131997, 132322, 132647	5MHz	QPSK/16QAM/64QAM	Full RB
	132022 to 132622	132022, 132322, 132622	10MHz	QPSK/16QAM/64QAM	Full RB
	132047 to 132597	132047, 132322, 132597	15MHz	QPSK/16QAM/64QAM	Full RB
	132072 to 132572	132072, 132322, 132572	20MHz	QPSK/16QAM/64QAM	Full RB
Peak to Average Ratio	131997 to 132647	131997, 132322, 132647	5MHz	QPSK/16QAM/64QAM	Full RB
	132022 to 132622	132022, 132322, 132622	10MHz	QPSK/16QAM/64QAM	Full RB
	132047 to 132597	132047, 132322, 132597	15MHz	QPSK/16QAM/64QAM	Full RB
	132072 to 132572	132072, 132322, 132572	20MHz	QPSK/16QAM/64QAM	Full RB
Band Edge	131997 to 132647	131997	5MHz	QPSK	1 RB / 0 RB Offset
		132647			1 RB / 24 RB Offset
		131997, 132647			25 RB / 0 RB Offset
	132022 to 132622	132022	10MHz	QPSK	1 RB / 0 RB Offset
		132622			1 RB / 49 RB Offset
		132022, 132622			50 RB / 0 RB Offset
	132047 to 132597	132047	15MHz	QPSK	1 RB / 0 RB Offset
		132597			1 RB / 74 RB Offset
		132047, 132597			75 RB / 0 RB Offset
	132072 to 132572	132072	20MHz	QPSK	1 RB / 0 RB Offset
		132572			1 RB / 99 RB Offset
		132072, 132572			100 RB / 0 RB Offset
Conducted Emission	131997 to 132647	131997, 132322, 132647	5MHz	QPSK	1 RB / 0 RB Offset
	132022 to 132622	132022, 132322, 132622	10MHz	QPSK	1 RB / 0 RB Offset
	132047 to 132597	132047, 132322, 132597	15MHz	QPSK	1 RB / 0 RB Offset
	132072 to 132572	132072, 132322, 132572	20MHz	QPSK	1 RB / 0 RB Offset
Radiated Emission	131997 to 132647	131997, 132322, 132647	5MHz	QPSK	1 RB / 0 RB Offset
	132022 to 132622	132022, 132322, 132622	10MHz	QPSK	1 RB / 0 RB Offset
	132047 to 132597	132047, 132322, 132597	15MHz	QPSK	1 RB / 0 RB Offset
	132072 to 132572	132072, 132322, 132572	20MHz	QPSK	1 RB / 0 RB Offset

NOTE:

All supported modulation types were evaluated. The Worst case of QPSK was selected. Therefore, the Frequency Stability, Band Edge, Condcudeted Emission and Radiated Emission were presented under QPSK mode only.

Test Condition:

Test Item	Environmental Conditions	Input Power (System)	Tested By
EIRP/ERP	25deg. C, 60%RH	120Vac, 60Hz	Jynuchun Lin
Frequency Stability	25deg. C, 60%RH	120Vac, 60Hz	Jynuchun Lin
Occupied Bandwidth	25deg. C, 60%RH	120Vac, 60Hz	Jynuchun Lin
Band Edge	25deg. C, 60%RH	120Vac, 60Hz	Jynuchun Lin
Peak to Average Ratio	25deg. C, 60%RH	120Vac, 60Hz	Jynuchun Lin
Conducuted Emission	25deg. C, 73%RH	120Vac, 60Hz	Robert Cheng
Radiated Emission Below 1GHz	25deg. C, 65%RH	120Vac, 60Hz	Robert Cheng
Radiated Emission Above 1GHz	25deg. C, 75%RH	120Vac, 60Hz	Robert Cheng

3.4 EUT Operating Conditions

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, Subpart F / L

KDB 971168 D01 Power Meas License Digital Systems v03r01

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

For section 27.50(d)(4): Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

For section 27.50(b)(10): Portable stations (hand-held devices) operating in the 698-787 MHz band are limited to 3 watts ERP. In the BRS and EBS Band, Mobile and other user stations are limited to 2.0 watts EIRP.

4.1.2 Test Procedures

Conducted Power Measurement:

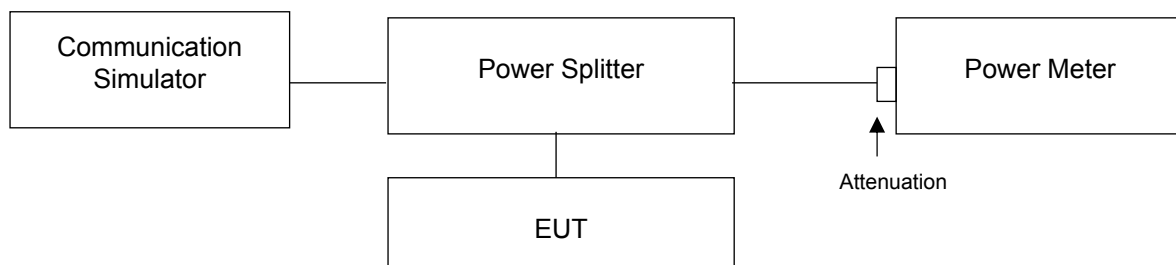
The EUT was set up for the maximum power with WCDMA/LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and difference RB size/ RB offset for difference bandwidth record the power level shown on power meter.

EIRP / ERP Measurement:

- EIRP = Conducted Output power level + Antenna gain.
- ERP power can be calculated form EIRP power by subtracting the gain of dipole, ERP power = EIPR power - 2.15dBi.
- ERP = Conducted Output power level + Antenna gain (dBi) - Isotropically Factor (2.15dB)

4.1.3 Test Setup

Conducted Power Measurement:



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

4.1.4 Test Results (Mode A)

CONDUCTED OUTPUT POWER (dBm)
LTE Band 4

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			19957	20175	20393		19957	20175	20393		19957	20175	20393	
			1710.7	1732.5	1754.3		1710.7	1732.5	1754.3		1710.7	1732.5	1754.3	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
4 / 1.4M	1	0	24.96	24.99	24.92	0	23.69	23.81	23.79	1	22.65	22.71	22.80	2
	1	2	24.89	24.94	24.93	0	23.88	23.74	23.78	1	22.69	22.64	22.73	2
	1	5	24.88	24.96	24.85	0	23.84	23.75	23.78	1	22.64	22.69	22.79	2
	3	0	24.93	24.97	24.91	0	23.83	23.88	23.75	1	22.61	22.65	22.75	2
	3	1	24.95	24.89	24.86	0	23.75	23.78	23.84	1	22.70	22.60	22.71	2
	3	3	24.88	24.89	24.87	0	23.81	23.91	23.84	1	22.68	22.75	22.68	2
	6	0	23.73	23.87	23.85	1	22.79	22.81	22.84	2	21.75	21.69	21.64	3

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			19965	20175	20385		19965	20175	20385		19965	20175	20385	
			1711.5	1732.5	1753.5		1711.5	1732.5	1753.5		1711.5	1732.5	1753.5	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
4 / 3M	1	0	24.81	24.99	24.96	0	23.78	23.81	23.85	1	22.75	22.70	22.81	2
	1	7	24.98	24.95	24.94	0	23.86	23.89	23.84	1	22.71	22.74	22.79	2
	1	14	24.88	24.82	24.77	0	23.81	23.75	23.77	1	22.69	22.75	22.83	2
	8	0	23.83	23.81	23.78	1	22.85	22.79	22.86	2	21.70	21.78	21.69	3
	8	3	23.86	23.89	23.87	1	22.79	22.81	22.73	2	21.73	21.74	21.77	3
	8	7	23.79	23.81	23.85	1	22.75	22.86	22.75	2	21.66	21.70	21.74	3
	15	0	23.74	23.77	23.83	1	22.80	22.83	22.86	2	21.71	21.68	21.67	3

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			19975	20175	20375		19975	20175	20375		19975	20175	20375	
			1712.5	1732.5	1752.5		1712.5	1732.5	1752.5		1712.5	1732.5	1752.5	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
4 / 5M	1	0	24.86	24.90	24.98	0	23.69	23.71	23.82	1	22.65	22.68	22.51	2
	1	12	24.88	24.92	24.89	0	23.74	23.81	23.79	1	22.61	22.70	22.59	2
	1	24	24.92	24.75	24.96	0	23.82	23.75	23.84	1	22.64	22.66	22.67	2
	12	0	23.81	23.79	23.80	1	22.69	22.73	22.75	2	21.67	21.58	21.71	3
	12	6	23.77	23.86	23.75	1	22.66	22.70	22.69	2	21.64	21.63	21.68	3
	12	13	23.79	23.82	23.77	1	22.71	22.64	22.68	2	21.58	21.61	21.66	3
	25	0	23.75	23.80	23.84	1	22.69	22.71	22.66	2	21.63	21.67	21.64	3

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			20000	20175	20350		20000	20175	20350		20000	20175	20350	
			1715	1732.5	1750		1715	1732.5	1750		1715	1732.5	1750	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
4 / 10M	1	0	25.11	25.25	24.94	0	24.06	24.01	24.03	1	22.98	22.85	22.94	2
	1	24	25.07	25.24	24.99	0	24.05	24.03	24.05	1	22.92	22.90	22.99	2
	1	49	25.23	25.05	24.89	0	24.00	23.96	24.01	1	22.89	22.94	22.96	2
	25	0	23.97	24.01	24.04	1	23.11	23.09	23.05	2	21.88	21.91	21.94	3
	25	12	24.12	24.03	24.11	1	23.09	23.04	23.07	2	21.93	21.85	21.88	3
	25	25	24.09	24.10	24.01	1	23.05	23.01	23.03	2	21.94	21.89	21.92	3
	50	0	24.05	24.03	24.04	1	23.04	23.02	23.08	2	21.90	21.84	21.86	3

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			20025	20175	20325		20025	20175	20325		20025	20175	20325	
			1717.5	1732.5	1747.5		1717.5	1732.5	1747.5		1717.5	1732.5	1747.5	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
4 / 15M	1	0	25.19	25.14	25.32	0	23.89	23.88	23.93	1	22.78	22.81	22.93	2
	1	37	25.31	25.02	25.21	0	23.75	23.92	23.99	1	22.84	22.79	22.89	2
	1	74	25.29	25.26	25.15	0	23.85	23.88	23.88	1	22.81	22.84	22.91	2
	36	0	24.05	24.09	24.09	1	22.73	22.84	22.91	2	21.75	21.71	21.79	3
	36	19	23.99	23.94	23.97	1	22.81	22.83	22.79	2	21.74	21.80	21.83	3
	36	39	23.98	24.02	24.04	1	22.79	22.86	22.86	2	21.77	21.82	21.89	3
	75	0	24.05	24.01	23.99	1	22.84	22.83	22.95	2	21.75	21.84	21.93	3

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			20050	20175	20300		20050	20175	20300		20050	20175	20300	
			1720	1732.5	1745		1720	1732.5	1745		1720	1732.5	1745	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
4 / 20M	1	0	25.29	25.36	25.18	0	23.69	23.67	23.83	1	22.62	22.68	22.59	2
	1	50	25.17	25.32	25.20	0	23.67	23.78	23.79	1	22.55	22.49	22.56	2
	1	99	25.25	25.20	25.11	0	23.71	23.75	23.88	1	22.58	22.51	22.54	2
	50	0	24.00	24.08	24.04	1	22.69	22.65	22.63	2	21.64	21.68	21.59	3
	50	25	24.07	24.09	24.04	1	22.50	22.58	22.67	2	21.62	21.55	21.61	3
	50	50	24.05	24.06	24.00	1	22.62	22.63	22.61	2	21.63	21.59	21.54	3
	100	0	23.98	24.01	24.06	1	22.65	22.66	22.60	2	21.57	21.61	21.63	3

LTE Band 13

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			23205	23230	23255		23205	23230	23255		23205	23230	23255	
			779.5	782	784.5		779.5	782	784.5		779.5	782	784.5	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
13 / 5M	1	0	25.21	25.19	25.05	0	23.56	23.76	23.98	1	22.85	22.93	22.89	2
	1	12	25.09	25.09	25.07	0	23.75	24.01	23.83	1	22.80	22.89	22.83	2
	1	24	25.05	25.12	24.96	0	23.91	24.06	23.82	1	22.89	22.91	22.93	2
	12	0	24.04	24.01	24.00	1	22.94	22.98	23.02	2	21.75	21.83	21.79	3
	12	6	24.02	23.97	23.89	1	22.97	23.02	22.96	2	21.77	21.81	21.84	3
	12	13	23.98	23.89	23.92	1	22.91	22.89	22.94	2	21.79	21.83	21.86	3
	25	0	23.93	23.88	23.95	1	22.85	22.91	22.98	2	21.80	21.85	21.77	3

Band / BW	RB Size	RB Offset	QPSK	3GPP MPR (dB)	16QAM	3GPP MPR (dB)	64QAM	3GPP MPR (dB)
			Mid CH		Mid CH		Mid CH	
			23230		23230		23230	
			782		782		782	
			MHz		MHz		MHz	
13 / 10M	1	0	25.27	0	24.11	1	22.85	2
	1	24	25.11	0	24.05	1	22.83	2
	1	49	25.04	0	23.98	1	22.90	2
	25	0	24.01	1	22.85	2	21.84	3
	25	12	23.98	1	22.88	2	21.81	3
	25	25	23.88	1	22.94	2	21.83	3
	50	0	23.92	1	22.91	2	21.79	3

LTE Band 66

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			131979	132322	132665		131979	132322	132665		131979	132322	132665	
			1710.7	1745	1779.3		1710.7	1745	1779.3		1710.7	1745	1779.3	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
66 / 1.4M	1	0	25.10	25.09	24.99	0	23.59	23.38	23.48	1	22.65	22.60	22.54	2
	1	2	24.98	25.04	24.90	0	23.60	23.40	23.52	1	22.61	22.58	22.64	2
	1	5	24.24	25.05	24.81	0	23.62	23.43	23.51	1	22.59	22.54	22.61	2
	3	0	24.34	24.96	24.04	0	23.48	23.49	23.50	1	22.64	22.64	22.63	2
	3	1	24.85	25.02	24.90	0	23.61	23.54	23.53	1	22.62	22.69	22.64	2
	3	3	24.88	24.99	24.96	0	23.65	23.68	23.46	1	21.69	21.64	21.66	2
	6	0	23.83	23.98	23.62	1	22.58	22.60	22.64	2	21.63	21.67	21.61	3

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			131987	132322	132657		131987	132322	132657		131987	132322	132657	
			1711.5	1745	1778.5		1711.5	1745	1778.5		1711.5	1745	1778.5	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
66 / 3M	1	0	24.90	25.17	25.06	0	23.88	23.68	23.89	1	22.69	22.71	22.64	2
	1	7	24.96	25.12	24.99	0	23.69	23.74	23.68	1	22.64	22.58	22.61	2
	1	14	25.09	23.11	24.97	0	23.65	23.66	23.64	1	22.65	22.63	22.72	2
	8	0	24.08	24.05	23.88	1	22.58	22.69	22.62	2	21.59	21.64	21.61	3
	8	3	24.03	24.04	23.85	1	22.69	22.73	22.74	2	21.62	21.59	21.58	3
	8	7	24.01	24.03	23.88	1	22.64	22.71	22.71	2	21.67	21.66	21.64	3
	15	0	23.98	24.00	23.82	1	22.73	22.68	22.74	2	21.63	21.62	21.69	3

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			131997	132322	132647		131997	132322	132647		131997	132322	132647	
			1712.5	1745	1777.5		1712.5	1745	1777.5		1712.5	1745	1777.5	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
66 / 5M	1	0	25.02	24.80	24.84	0	23.66	23.62	23.54	1	22.64	22.70	22.66	2
	1	12	24.73	24.88	24.72	0	23.61	23.71	23.65	1	22.60	22.68	22.59	2
	1	24	24.89	24.90	24.55	0	23.55	23.58	23.62	1	22.59	22.64	22.61	2
	12	0	23.80	23.78	23.72	1	22.58	22.62	22.76	2	21.68	21.63	21.59	3
	12	6	23.69	23.71	23.64	1	22.49	22.55	22.63	2	21.64	21.61	21.66	3
	12	13	23.72	23.83	23.67	1	22.51	22.67	22.74	2	21.67	21.59	21.62	3
	25	0	23.76	23.75	23.55	1	22.52	22.64	22.63	2	21.62	21.67	21.70	3

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			132022	132322	132622		132022	132322	132622		132022	132322	132622	
			1715	1745	1775		1715	1745	1775		1715	1745	1775	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
66 / 10M	1	0	24.90	25.04	25.31	0	23.59	23.62	23.64	1	22.67	22.70	22.65	2
	1	24	25.27	25.03	24.85	0	23.65	23.55	23.42	1	22.64	22.68	22.66	2
	1	49	25.19	25.01	24.95	0	23.62	23.58	23.61	1	22.69	22.60	22.61	2
	25	0	23.84	23.79	23.75	1	22.71	22.68	22.62	2	21.75	21.68	21.59	3
	25	12	23.66	23.75	23.68	1	22.65	22.61	22.58	2	21.70	21.65	21.61	3
	25	25	23.69	23.70	23.72	1	22.69	22.70	22.62	2	21.71	21.70	21.64	3
	50	0	23.71	23.74	23.81	1	22.64	22.73	22.65	2	21.79	21.69	21.69	3

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			132047	132322	132597		132047	132322	132597		132047	132322	132597	
			1717.5	1745	1772.5		1717.5	1745	1772.5		1717.5	1745	1772.5	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
66 / 15M	1	0	25.02	25.07	25.26	0	23.12	24.02	24.12	1	22.62	22.68	22.59	2
	1	37	25.20	25.02	24.98	0	24.07	24.08	23.80	1	22.65	22.61	22.67	2
	1	74	25.22	24.96	24.96	0	23.99	24.01	22.84	1	22.60	22.73	22.64	2
	36	0	24.01	24.03	23.91	1	22.76	22.85	22.76	2	21.55	21.63	21.70	3
	36	19	23.98	23.89	23.86	1	22.72	22.78	22.69	2	21.58	21.67	21.68	3
	36	39	23.86	23.91	23.96	1	22.63	22.68	22.79	2	21.63	21.64	21.71	3
	75	0	23.94	23.89	23.99	1	22.67	22.61	22.68	2	21.59	21.69	21.65	3

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			132072	132322	132572		132072	132322	132572		132072	132322	132572	
			1720	1745	1770		1720	1745	1770		1720	1745	1770	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
66 / 20M	1	0	24.96	25.14	25.29	0	23.74	23.85	23.88	1	22.52	22.58	22.60	2
	1	50	25.28	25.11	25.16	0	23.83	23.84	23.78	1	22.68	22.65	22.58	2
	1	99	25.14	25.20	24.05	0	23.78	23.75	23.69	1	22.60	22.64	22.61	2
	50	0	23.98	23.89	23.81	1	22.65	22.55	22.61	2	21.68	21.71	21.64	3
	50	25	23.96	23.94	23.92	1	22.66	22.61	22.63	2	21.64	21.68	21.70	3
	50	50	23.88	23.85	23.94	1	22.54	22.63	22.62	2	21.63	21.67	21.64	3
	100	0	23.99	23.85	23.91	1	22.61	22.66	22.64	2	21.51	21.63	21.59	3

EIRP / ERP POWER

LTE Band 4

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			19957	20175	20393		19957	20175	20393		19957	20175	20393	
			1710.7	1732.5	1754.3		1710.7	1732.5	1754.3		1710.7	1732.5	1754.3	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
4 / 1.4M	1	0	24.96	24.99	24.92	0	23.69	23.81	23.79	1	22.65	22.71	22.80	2
Gain (dBi)			3.86	3.86	3.86		3.86	3.86	3.86		3.86	3.86	3.86	
Max EIRP Power (dBm)			28.82	28.85	28.78		27.55	27.67	27.65		26.51	26.57	26.66	

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			19965	20175	20385		19965	20175	20385		19965	20175	20385	
			1711.5	1732.5	1753.5		1711.5	1732.5	1753.5		1711.5	1732.5	1753.5	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
4 / 3M	1	0	24.81	24.99	24.96	0	23.78	23.81	23.85	1	22.75	22.70	22.81	2
Gain (dBi)			3.86	3.86	3.86		3.86	3.86	3.86		3.86	3.86	3.86	
Max EIRP Power (dBm)			28.67	28.85	28.82		27.64	27.67	27.71		26.61	26.56	26.67	

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			19975	20175	20375		19975	20175	20375		19975	20175	20375	
			1712.5	1732.5	1752.5		1712.5	1732.5	1752.5		1712.5	1732.5	1752.5	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
4 / 5M	1	0	24.86	24.90	24.98	0	23.69	23.71	23.82	1	22.65	22.68	22.51	2
Gain (dBi)			3.86	3.86	3.86		3.86	3.86	3.86		3.86	3.86	3.86	
Max EIRP Power (dBm)			28.72	28.76	28.84		27.55	27.57	27.68		26.51	26.54	26.37	

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			20000	20175	20350		20000	20175	20350		20000	20175	20350	
			1715	1732.5	1750		1715	1732.5	1750		1715	1732.5	1750	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
4 / 10M	1	0	25.11	25.25	24.94	0	24.06	24.01	24.03	1	22.98	22.85	22.94	2
Gain (dBi)			3.86	3.86	3.86		3.86	3.86	3.86		3.86	3.86	3.86	
Max EIRP Power (dBm)			28.97	29.11	28.80		27.92	27.87	27.89		26.84	26.71	26.80	

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			20025	20175	20325		20025	20175	20325		20025	20175	20325	
			1717.5	1732.5	1747.5		1717.5	1732.5	1747.5		1717.5	1732.5	1747.5	
4 / 15M	1	0	25.19	25.14	25.32	0	23.89	23.88	23.93	1	22.78	22.81	22.93	2
Gain (dBi)			3.86	3.86	3.86		3.86	3.86	3.86		3.86	3.86	3.86	
Max EIRP Power (dBm)			29.05	29.00	29.18		27.75	27.74	27.79		26.64	26.67	26.79	

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			20050	20175	20300		20050	20175	20300		20050	20175	20300	
			1720	1732.5	1745		1720	1732.5	1745		1720	1732.5	1745	
4 / 20M	1	0	25.29	25.36	25.18	0	23.69	23.67	23.83	1	22.62	22.68	22.59	2
Gain (dBi)			3.86	3.86	3.86		3.86	3.86	3.86		3.86	3.86	3.86	
Max EIRP Power (dBm)			29.15	29.22	29.04		27.55	27.53	27.69		26.48	26.54	26.45	

LTE Band 13

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			23205	23230	23255		23205	23230	23255		23205	23230	23255	
			779.5	782	784.5		779.5	782	784.5		779.5	782	784.5	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
13 / 5M	1	0	25.21	25.19	25.05	0	23.56	23.76	23.98	1	22.85	22.93	22.89	2
Gain (dBi)			3.86	3.86	3.86		3.86	3.86	3.86		3.86	3.86	3.86	
Isotropically Factor (dBc)			2.15	2.15	2.15		2.15	2.15	2.15		2.15	2.15	2.15	
Max ERP Power (dBm)			26.92	26.90	26.76		25.27	25.47	25.69		24.56	24.64	24.60	

Band / BW	RB Size	RB Offset	QPSK	3GPP MPR (dB)	16QAM	3GPP MPR (dB)	64QAM	3GPP MPR (dB)
			Mid CH		Mid CH		Mid CH	
			23230		23230		23230	
			782		782		782	
			MHz		MHz		MHz	
13 / 10M	1	0	25.27	0	24.11	1	22.85	2
Gain (dBi)		3.86	3.86		3.86			
Isotropically Factor (dBc)		2.15	2.15		2.15			
Max ERP Power (dBm)		26.98	25.82		24.56			

LTE Band 66

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			131979	132322	132665		131979	132322	132665		131979	132322	132665	
			1710.7	1745	1779.3		1710.7	1745	1779.3		1710.7	1745	1779.3	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
66 / 1.4M	1	0	25.10	25.09	24.99	0	23.59	23.38	23.48	1	22.65	22.60	22.54	2
Gain (dBi)			3.86	3.86	3.86		3.86	3.86	3.86		3.86	3.86	3.86	
Max EIRP Power (dBm)			28.96	28.95	28.85		27.45	27.24	27.34		26.51	26.46	26.40	

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			131987	132322	132657		131987	132322	132657		131987	132322	132657	
			1711.5	1745	1778.5		1711.5	1745	1778.5		1711.5	1745	1778.5	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
66 / 3M	1	0	24.90	25.17	25.06	0	23.88	23.68	23.89	1	22.69	22.71	22.64	2
Gain (dBi)			3.86	3.86	3.86		3.86	3.86	3.86		3.86	3.86	3.86	
Max EIRP Power (dBm)			28.76	29.03	28.92		27.74	27.54	27.75		26.55	26.57	26.50	

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			131997	132322	132647		131997	132322	132647		131997	132322	132647	
			1712.5	1745	1777.5		1712.5	1745	1777.5		1712.5	1745	1777.5	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
66 / 5M	1	0	25.02	24.80	24.84	0	23.66	23.62	23.54	1	22.64	22.70	22.66	2
Gain (dBi)			3.86	3.86	3.86		3.86	3.86	3.86		3.86	3.86	3.86	
Max EIRP Power (dBm)			28.88	28.66	28.70		27.52	27.48	27.40		26.50	26.56	26.52	

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			132022	132322	132622		132022	132322	132622		132022	132322	132622	
			1715	1745	1775		1715	1745	1775		1715	1745	1775	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
66 / 10M	1	0	24.90	25.04	25.31	0	23.59	23.62	23.64	1	22.67	22.70	22.65	2
Gain (dBi)			3.86	3.86	3.86		3.86	3.86	3.86		3.86	3.86	3.86	
Max EIRP Power (dBm)			28.76	28.90	29.17		27.45	27.48	27.50		26.53	26.56	26.51	

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			132047	132322	132597		132047	132322	132597		132047	132322	132597	
			1717.5	1745	1772.5		1717.5	1745	1772.5		1717.5	1745	1772.5	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
66 / 15M	1	0	25.02	25.07	25.26	0	23.12	24.02	24.12	1	22.62	22.68	22.59	2
Gain (dBi)			3.86	3.86	3.86		3.86	3.86	3.86		3.86	3.86	3.86	
Max EIRP Power (dBm)			28.88	28.93	29.12		26.98	27.88	27.98		26.48	26.54	26.45	

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			132072	132322	132572		132072	132322	132572		132072	132322	132572	
			1720	1745	1770		1720	1745	1770		1720	1745	1770	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
66 / 20M	1	0	24.96	25.14	25.29		23.74	23.85	23.88		22.52	22.58	22.60	2
Gain (dBi)			3.86	3.86	3.86		3.86	3.86	3.86		3.86	3.86	3.86	
Max EIRP Power (dBm)			28.82	29.00	29.15		27.60	27.71	27.74		26.38	26.44	26.46	

4.1.5 Test Results (Mode B)

CONDUCTED OUTPUT POWER (dBm)

LTE Band 4

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			19975	20175	20375		19975	20175	20375		19975	20175	20375	
			1712.5	1732.5	1752.5		1712.5	1732.5	1752.5		1712.5	1732.5	1752.5	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
4 / 5M	1	0	20.34	20.38	20.02	0	19.30	19.25	18.93	1	18.47	18.52	17.91	2
	1	12	20.35	20.37	20.17	0	19.32	19.43	19.08	1	18.31	18.30	18.22	2
	1	24	20.20	20.34	20.05	0	19.15	19.30	18.94	1	18.18	18.23	18.16	2
	12	0	19.24	19.17	18.94	1	18.38	18.20	18.01	2	17.15	17.28	16.79	3
	12	6	19.25	19.25	18.95	1	18.33	18.40	17.99	2	17.22	17.31	16.83	3
	12	13	19.22	19.27	18.94	1	18.27	18.21	17.94	2	17.25	17.20	16.98	3
	25	0	19.18	19.14	18.87	1	18.24	18.18	17.95	2	17.09	16.99	16.91	3

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			20000	20175	20350		20000	20175	20350		20000	20175	20350	
			1715	1732.5	1750		1715	1732.5	1750		1715	1732.5	1750	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
4 / 10M	1	0	20.22	20.32	20.37	0	19.23	19.22	19.29	1	18.21	18.38	18.48	2
	1	24	20.16	20.27	20.13	0	19.06	19.36	19.08	1	18.04	18.40	18.03	2
	1	49	20.32	20.36	20.22	0	19.41	19.27	19.19	1	18.45	18.44	18.09	2
	25	0	19.23	19.22	19.02	1	18.37	18.09	18.09	2	17.20	17.34	17.09	3
	25	12	19.24	19.31	18.98	1	18.38	18.33	17.88	2	17.33	17.32	17.01	3
	25	25	19.11	19.25	18.96	1	17.97	18.33	17.97	2	17.09	17.11	16.84	3
	50	0	19.13	19.23	19.01	1	18.00	18.11	18.15	2	17.24	17.17	17.13	3

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			20025	20175	20325		20025	20175	20325		20025	20175	20325	
			1717.5	1732.5	1747.5		1717.5	1732.5	1747.5		1717.5	1732.5	1747.5	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
4 / 15M	1	0	20.37	20.36	20.49	0	19.31	19.22	19.37	1	18.26	18.42	18.46	2
	1	37	20.44	20.43	20.33	0	19.31	19.56	19.23	1	18.31	18.34	18.38	2
	1	74	20.32	20.38	20.17	0	19.24	19.43	19.20	1	18.43	18.44	18.17	2
	36	0	19.29	19.32	19.28	1	18.39	18.42	18.13	2	17.31	17.47	17.32	3
	36	19	19.27	19.41	19.24	1	18.21	18.28	18.09	2	17.33	17.27	17.23	3
	36	39	19.30	19.44	19.15	1	18.34	18.32	18.19	2	17.41	17.51	17.15	3
	75	0	19.26	19.36	19.25	1	18.15	18.48	18.25	2	17.24	17.48	17.33	3

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			20050	20175	20300		20050	20175	20300		20050	20175	20300	
			1720	1732.5	1745		1720	1732.5	1745		1720	1732.5	1745	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
4 / 20M	1	0	20.41	20.29	20.47	0	19.32	19.29	19.52	1	18.53	18.35	18.60	2
	1	50	20.27	20.42	20.31	0	19.35	19.43	19.39	1	18.30	18.53	18.20	2
	1	99	20.35	20.46	20.26	0	19.22	19.41	19.22	1	18.43	18.50	18.19	2
	50	0	19.24	19.32	19.36	1	18.35	18.32	18.40	2	17.26	17.19	17.26	3
	50	25	19.23	19.41	19.27	1	18.19	18.43	18.15	2	17.13	17.39	17.32	3
	50	50	19.28	19.35	19.25	1	18.32	18.32	18.25	2	17.28	17.32	17.23	3
	100	0	19.27	19.34	19.29	1	18.19	18.20	18.23	2	17.19	17.34	17.39	3

LTE Band 66

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			131997	132322	132647		131997	132322	132647		131997	132322	132647	
			1712.5	1745	1777.5		1712.5	1745	1777.5		1712.5	1745	1777.5	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
66 / 5M	1	0	23.29	23.58	23.11	0	22.17	22.54	22.25	1	21.34	21.71	21.11	2
	1	12	23.31	23.06	23.20	0	22.38	22.05	22.20	1	21.40	21.04	21.28	2
	1	24	23.37	23.17	23.57	0	22.48	22.31	22.60	1	21.36	21.19	21.49	2
	12	0	21.83	22.45	22.51	1	20.93	21.51	21.55	2	19.96	20.51	20.61	3
	12	6	22.19	22.47	22.52	1	21.16	21.42	21.62	2	20.28	20.43	20.48	3
	12	13	22.46	22.52	22.57	1	21.51	21.37	21.50	2	20.31	20.46	20.68	3
	25	0	22.02	22.43	22.54	1	20.93	21.34	21.41	2	19.92	20.38	20.64	3

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			132022	132322	132622		132022	132322	132622		132022	132322	132622	
			1715	1745	1775		1715	1745	1775		1715	1745	1775	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
66 / 10M	1	0	23.58	23.63	23.78	0	22.44	22.78	22.87	1	21.44	21.55	21.83	2
	1	24	23.51	23.61	23.59	0	22.54	22.58	22.70	1	21.55	21.54	21.50	2
	1	49	23.66	23.42	23.76	0	22.58	22.31	22.72	1	21.74	21.56	21.70	2
	25	0	22.23	22.52	22.52	1	21.27	21.60	21.46	2	20.27	20.39	20.41	3
	25	12	22.80	22.54	22.51	1	21.73	21.55	21.42	2	20.79	20.66	20.58	3
	25	25	22.79	22.44	22.47	1	21.74	21.57	21.59	2	20.77	20.37	20.49	3
	50	0	22.70	22.51	22.49	1	21.82	21.53	21.61	2	20.67	20.55	20.38	3

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			132047	132322	132597		132047	132322	132597		132047	132322	132597	
			1717.5	1745	1772.5		1717.5	1745	1772.5		1717.5	1745	1772.5	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
66 / 15M	1	0	23.34	23.39	23.45	0	22.31	22.46	22.42	1	21.34	21.35	21.33	2
	1	37	23.32	23.11	23.33	0	22.25	22.10	22.47	1	21.41	20.99	21.27	2
	1	74	23.13	23.14	23.18	0	21.99	22.22	22.24	1	21.19	21.06	21.17	2
	36	0	22.58	22.70	22.73	1	21.56	21.68	21.64	2	20.72	20.58	20.88	3
	36	19	23.06	22.67	22.77	1	21.94	21.75	21.77	2	20.94	20.53	20.72	3
	36	39	22.94	22.59	22.71	1	21.82	21.60	21.70	2	20.97	20.69	20.75	3
	75	0	22.98	22.63	22.72	1	21.89	21.49	21.76	2	20.88	20.66	20.83	3

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			132072	132322	132572		132072	132322	132572		132072	132322	132572	
			1720	1745	1770		1720	1745	1770		1720	1745	1770	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
66 / 20M	1	0	23.49	23.31	23.21	0	22.63	22.21	22.17	1	21.48	21.29	21.19	2
	1	50	23.15	23.17	23.03	0	22.01	22.03	22.00	1	21.20	21.11	21.03	2
	1	99	23.02	23.08	23.01	0	21.98	22.07	21.88	1	20.89	21.23	20.95	2
	50	0	22.86	22.54	22.31	1	21.90	21.44	21.43	2	20.76	20.62	20.26	3
	50	25	22.38	22.42	22.37	1	21.38	21.50	21.43	2	20.44	20.30	20.49	3
	50	50	22.43	22.55	22.61	1	21.52	21.55	21.47	2	20.33	20.42	20.67	3
	100	0	22.55	22.65	22.68	1	21.43	21.55	21.74	2	20.60	20.59	20.75	3

EIRP / ERP POWER

LTE Band 4

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			19975	20175	20375		19975	20175	20375		19975	20175	20375	
			1712.5	1732.5	1752.5		1712.5	1732.5	1752.5		1712.5	1732.5	1752.5	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
4 / 5M	1	0	20.34	20.38	20.02	0	19.30	19.25	18.93	1	18.47	18.52	17.91	2
Gain (dBi)			4.55	4.55	4.55		4.55	4.55	4.55		4.55	4.55	4.55	
Max EIRP Power (dBm)			24.89	24.93	24.57		23.85	23.80	23.48		23.02	23.07	22.46	

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			20000	20175	20350		20000	20175	20350		20000	20175	20350	
			1715	1732.5	1750		1715	1732.5	1750		1715	1732.5	1750	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
4 / 10M	1	0	20.22	20.32	20.37	0	19.23	19.22	19.29	1	18.21	18.38	18.48	2
Gain (dBi)			4.55	4.55	4.55		4.55	4.55	4.55		4.55	4.55	4.55	
Max EIRP Power (dBm)			24.77	24.87	24.92		23.78	23.77	23.84		22.76	22.93	23.03	

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			20025	20175	20325		20025	20175	20325		20025	20175	20325	
			1717.5	1732.5	1747.5		1717.5	1732.5	1747.5		1717.5	1732.5	1747.5	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
4 / 15M	1	0	20.37	20.36	20.49	0	19.31	19.22	19.37	1	18.26	18.42	18.46	2
Gain (dBi)			4.55	4.55	4.55		4.55	4.55	4.55		4.55	4.55	4.55	
Max EIRP Power (dBm)			24.92	24.91	25.04		23.86	23.77	23.92		22.81	22.97	23.01	

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			20050	20175	20300		20050	20175	20300		20050	20175	20300	
			1720	1732.5	1745		1720	1732.5	1745		1720	1732.5	1745	
			MHz	MHz	MHz		MHz	MHz	MHz		MHz	MHz	MHz	
4 / 20M	1	0	20.41	20.29	20.47	0	19.32	19.29	19.52	1	18.53	18.35	18.60	2
Gain (dBi)			4.55	4.55	4.55		4.55	4.55	4.55		4.55	4.55	4.55	
Max EIRP Power (dBm)			24.96	24.84	25.02		23.87	23.84	24.07		23.08	22.90	23.15	

LTE Band 66

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			131997	132322	132647		131997	132322	132647		131997	132322	132647	
			1712.5	1745	1777.5		1712.5	1745	1777.5		1712.5	1745	1777.5	
66 / 5M	1	0	23.29	23.58	23.11	0	22.17	22.54	22.25	1	21.34	21.71	21.11	2
Gain (dBi)			4.55	4.55	4.55		4.55	4.55	4.55		4.55	4.55	4.55	
Max EIRP Power (dBm)			27.84	28.13	27.66		26.72	27.09	26.80		25.89	26.26	25.66	

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			132022	132322	132622		132022	132322	132622		132022	132322	132622	
			1715	1745	1775		1715	1745	1775		1715	1745	1775	
66 / 10M	1	0	23.58	23.63	23.78	0	22.44	22.78	22.87	1	21.44	21.55	21.83	2
Gain (dBi)			4.55	4.55	4.55		4.55	4.55	4.55		4.55	4.55	4.55	
Max EIRP Power (dBm)			28.13	28.18	28.33		26.99	27.33	27.42		25.99	26.10	26.38	

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			132047	132322	132597		132047	132322	132597		132047	132322	132597	
			1717.5	1745	1772.5		1717.5	1745	1772.5		1717.5	1745	1772.5	
66 / 15M	1	0	23.34	23.39	23.45	0	22.31	22.46	22.42	1	21.34	21.35	21.33	2
Gain (dBi)			4.55	4.55	4.55		4.55	4.55	4.55		4.55	4.55	4.55	
Max EIRP Power (dBm)			27.89	27.94	28.00		26.86	27.01	26.97		25.89	25.90	25.88	

Band / BW	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)	64QAM			3GPP MPR (dB)
			Low CH	Mid CH	High CH		Low CH	Mid CH	High CH		Low CH	Mid CH	High CH	
			132072	132322	132572		132072	132322	132572		132072	132322	132572	
			1720	1745	1770		1720	1745	1770		1720	1745	1770	
66 / 20M	1	0	23.49	23.31	23.21	0	22.63	22.21	22.17	1	21.48	21.29	21.19	2
Gain (dBi)			4.55	4.55	4.55		4.55	4.55	4.55		4.55	4.55	4.55	
Max EIRP Power (dBm)			28.04	27.86	27.76		27.18	26.76	26.72		26.03	25.84	25.74	

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

N/A

4.2.2 Test Procedure

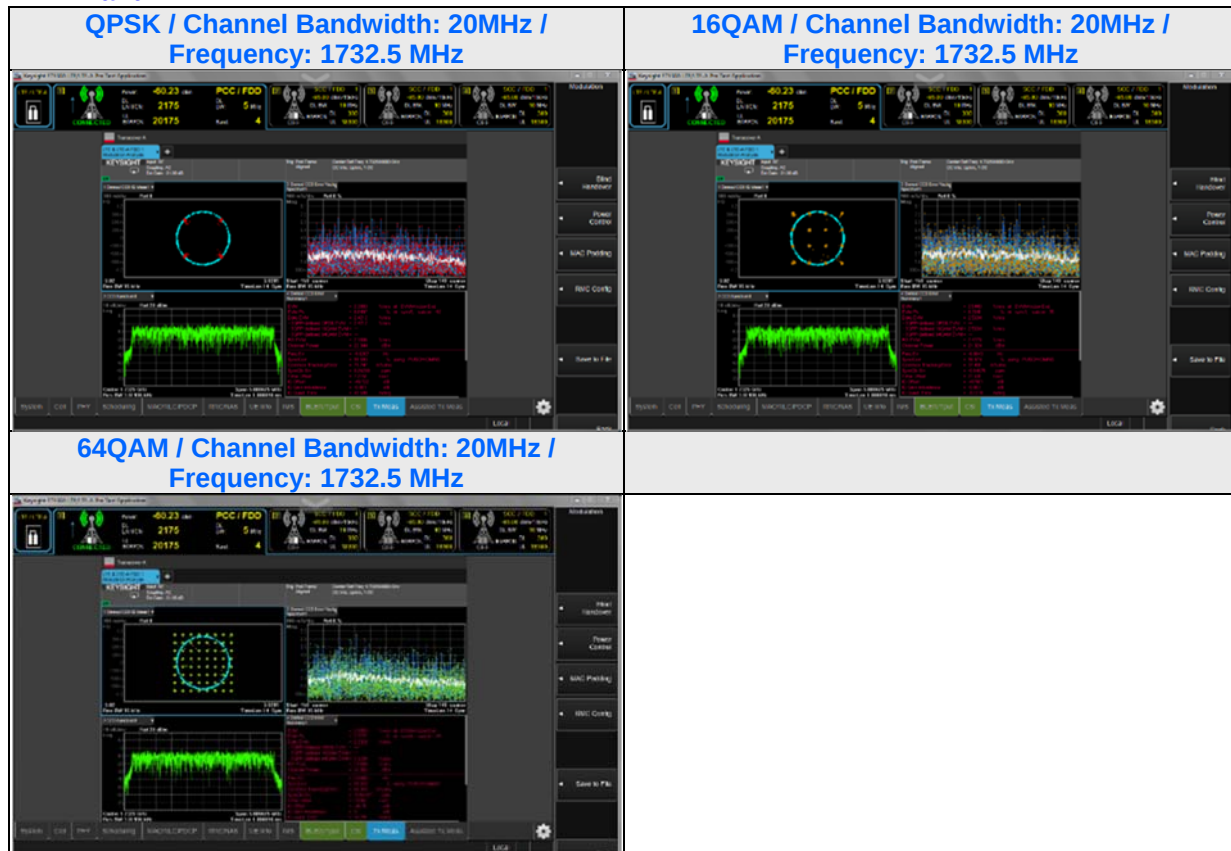
Connect the EUT to Communication Simulator via the antenna connector, The frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

4.2.3 Test Setup



4.2.4 Test Results

LTE Band 4



LTE Band 13

**QPSK / Channel Bandwidth: 10MHz /
Frequency: 782 MHz**



**16QAM / Channel Bandwidth: 10MHz /
Frequency: 782 MHz**



**64QAM / Channel Bandwidth: 10MHz /
Frequency: 782 MHz**



LTE Band 66

**QPSK / Channel Bandwidth: 20MHz /
Frequency: 1745 MHz**



**16QAM / Channel Bandwidth: 20MHz /
Frequency: 1745 MHz**



**64QAM / Channel Bandwidth: 20MHz /
Frequency: 1745 MHz**



4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

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

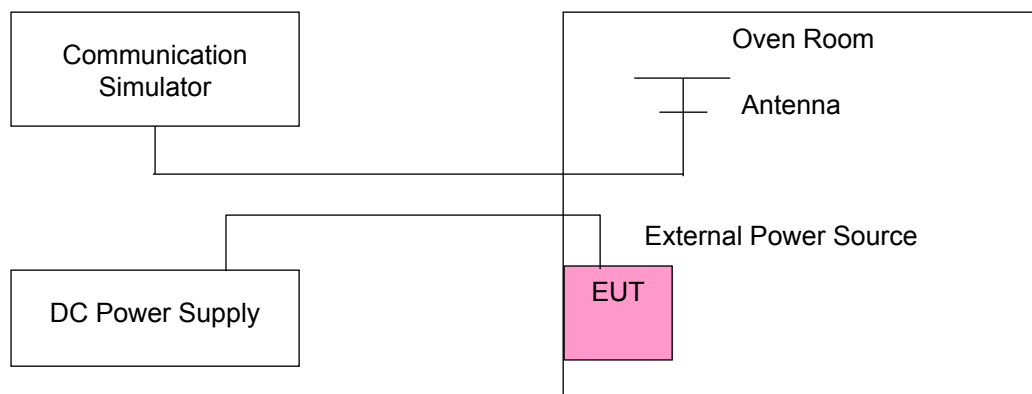
According to the FCC part 2.1055 shall be tested the frequency stability. The rule is defined that "The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block." The test extreme voltage is according to the 2.1055(d)(1) Vary primary 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 (Mode A)

LTE Band 4

Voltage (Volts)	Frequency Error (MHz)												Limit (MHz)	
	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz			
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low Edge	High Edge
10.2	1710.24	1754.88	1710.02	1754.93	1710.17	1754.82	1710.53	1754.48	1710.83	1754.28	1710.92	1753.92	1710	1755
13.8	1710.07	1754.80	1710.06	1754.79	1710.15	1754.67	1710.49	1754.57	1710.71	1754.32	1710.99	1753.93	1710	1755

Temp. (°C)	Frequency Error (MHz)												Limit (MHz)	
	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz			
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
50	1710.20	1754.81	1710.06	1754.88	1710.21	1754.69	1710.53	1754.55	1710.81	1754.23	1711.00	1753.94	1710	1755
40	1710.14	1754.79	1710.12	1754.88	1710.29	1754.80	1710.44	1754.44	1710.84	1754.23	1710.97	1753.97	1710	1755
30	1710.10	1754.77	1710.17	1754.85	1710.27	1754.78	1710.49	1754.41	1710.77	1754.34	1710.99	1754.05	1710	1755
20	1710.21	1754.74	1710.08	1754.76	1710.26	1754.76	1710.52	1754.54	1710.77	1754.25	1711.06	1754.08	1710	1755
10	1710.14	1754.81	1710.03	1754.94	1710.17	1754.83	1710.52	1754.53	1710.74	1754.33	1711.04	1754.11	1710	1755
0	1710.13	1754.83	1710.02	1754.89	1710.20	1754.71	1710.52	1754.54	1710.78	1754.27	1710.92	1754.04	1710	1755
-10	1710.24	1754.75	1710.10	1754.83	1710.33	1754.76	1710.51	1754.45	1710.85	1754.19	1711.07	1753.99	1710	1755
-20	1710.14	1754.78	1710.11	1754.87	1710.30	1754.75	1710.42	1754.57	1710.73	1754.15	1710.90	1753.96	1710	1755
-30	1710.14	1754.80	1710.03	1754.85	1710.17	1754.79	1710.57	1754.46	1710.84	1754.24	1711.00	1754.10	1710	1755

LTE Band 13

Voltage (Volts)	Frequency Error (MHz)				Limit (MHz)	
	5MHz		10MHz		Low Edge	High Edge
	Low	High	Low	High		
10.2	777.16	786.78	777.59	786.55	777	787
13.8	777.21	786.73	777.40	786.57	777	787

Temp. (°C)	Frequency Error (MHz)				Limit (MHz)	
	5MHz		10MHz		Low Edge	High Edge
	Low	High	Low	High		
50	777.16	786.78	777.46	786.56	777	787
40	777.27	786.83	777.44	786.54	777	787
30	777.17	786.83	777.47	786.55	777	787
20	777.24	786.78	777.52	786.52	777	787
10	777.32	786.78	777.55	786.48	777	787
0	777.29	786.83	777.44	786.48	777	787
-10	777.21	786.74	777.41	786.44	777	787
-20	777.28	786.75	777.58	786.50	777	787
-30	777.34	786.82	777.47	786.54	777	787

LTE Band 66

Voltage (Volts)	Frequency Error (MHz)												Limit (MHz)	
	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz			
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low Edge	High Edge
10.2	1710.73	1779.20	1711.52	1778.55	1712.52	1777.57	1715.08	1775.07	1717.58	1772.54	1720.04	1769.97	1710	1780
13.8	1710.78	1779.23	1711.50	1778.50	1712.53	1777.47	1714.94	1774.94	1717.42	1772.46	1720.06	1770.09	1710	1780

Temp. (°C)	Frequency Error (MHz)												Limit (MHz)	
	1.4MHz		3MHz		5MHz		10MHz		15MHz		20MHz			
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low Edge	High Edge
50	1710.71	1779.22	1711.45	1778.40	1712.51	1777.46	1715.06	1775.08	1717.41	1772.54	1719.93	1769.99	1710	1780
40	1710.68	1779.35	1711.58	1778.52	1712.40	1777.59	1714.94	1775.04	1717.49	1772.42	1720.00	1770.02	1710	1780
30	1710.70	1779.35	1711.52	1778.42	1712.53	1777.53	1714.98	1775.00	1717.45	1772.53	1719.92	1769.99	1710	1780
20	1710.65	1779.20	1711.56	1778.40	1712.41	1777.46	1714.92	1775.02	1717.59	1772.48	1719.93	1770.06	1710	1780
10	1710.78	1779.35	1711.55	1778.49	1712.56	1777.43	1715.09	1774.99	1717.56	1772.58	1719.96	1769.99	1710	1780
0	1710.69	1779.38	1711.44	1778.59	1712.41	1777.46	1715.05	1775.04	1717.40	1772.40	1720.05	1770.05	1710	1780
-10	1710.74	1779.35	1711.42	1778.55	1712.46	1777.53	1715.04	1775.01	1717.51	1772.58	1720.06	1769.99	1710	1780
-20	1710.74	1779.38	1711.53	1778.43	1712.50	1777.58	1715.00	1774.95	1717.57	1772.56	1720.07	1769.95	1710	1780
-30	1710.71	1779.36	1711.53	1778.57	1712.59	1777.40	1715.00	1775.03	1717.59	1772.44	1720.09	1770.09	1710	1780

4.3.5 Test Results (Mode B)

LTE Band 4

Voltage (Volts)	Frequency Error (MHz)								Limit (MHz)	
	5MHz		10MHz		15MHz		20MHz			
	Low	High	Low	High	Low	High	Low	High	Low Edge	High Edge
10.2	1712.54	1752.57	1715.06	1750.09	1717.44	1747.47	1720.03	1745.02	1710	1755
13.8	1712.40	1752.57	1715.09	1749.93	1717.45	1747.42	1719.96	1744.90	1710	1755

Temp. (°C)	Frequency Error (MHz)								Limit (MHz)	
	5MHz		10MHz		15MHz		20MHz			
	Low	High	Low	High	Low	High	Low	High	Low Edge	High Edge
50	1712.50	1752.44	1714.95	1750.08	1717.44	1747.47	1719.94	1745.01	1710	1755
40	1712.51	1752.45	1715.04	1750.06	1717.45	1747.44	1720.09	1744.96	1710	1755
30	1712.57	1752.52	1714.94	1750.01	1717.42	1747.43	1719.97	1744.96	1710	1755
20	1712.44	1752.42	1715.00	1749.92	1717.55	1747.42	1719.93	1744.98	1710	1755
10	1712.55	1752.54	1715.06	1750.04	1717.52	1747.50	1720.00	1745.06	1710	1755
0	1712.59	1752.43	1714.95	1749.93	1717.48	1747.47	1719.93	1744.94	1710	1755
-10	1712.45	1752.50	1714.92	1750.04	1717.41	1747.52	1720.06	1745.05	1710	1755
-20	1712.42	1752.43	1714.97	1749.91	1717.58	1747.48	1719.98	1745.03	1710	1755
-30	1712.44	1752.59	1715.03	1750.07	1717.51	1747.44	1719.95	1744.90	1710	1755

LTE Band 66

Voltage (Volts)	Frequency Error (MHz)								Limit (MHz)	
	5MHz		10MHz		15MHz		20MHz		Low Edge	High Edge
	Low	High	Low	High	Low	High	Low	High		
10.2	1712.58	1777.42	1715.05	1775.04	1717.57	1772.43	1720.07	1769.93	1710	1780
13.8	1712.57	1777.40	1714.94	1774.99	1717.51	1772.40	1720.05	1770.09	1710	1780

Temp. (°C)	Frequency Error (MHz)								Limit (MHz)	
	5MHz		10MHz		15MHz		20MHz		Low Edge	High Edge
	Low	High	Low	High	Low	High	Low	High		
50	1712.47	1777.41	1715.00	1774.90	1717.46	1772.52	1720.09	1770.04	1710	1780
40	1712.59	1777.59	1715.00	1775.02	1717.40	1772.44	1719.91	1769.93	1710	1780
30	1712.50	1777.41	1715.01	1774.90	1717.48	1772.51	1720.04	1770.06	1710	1780
20	1712.51	1777.44	1714.92	1774.99	1717.53	1772.48	1720.06	1769.97	1710	1780
10	1712.59	1777.49	1715.06	1774.91	1717.55	1772.49	1720.09	1770.05	1710	1780
0	1712.42	1777.43	1714.95	1774.97	1717.41	1772.51	1720.04	1770.03	1710	1780
-10	1712.58	1777.55	1715.05	1775.05	1717.54	1772.52	1719.94	1769.95	1710	1780
-20	1712.40	1777.52	1715.04	1774.99	1717.41	1772.59	1719.90	1769.91	1710	1780
-30	1712.41	1777.51	1715.09	1774.91	1717.46	1772.55	1720.00	1770.04	1710	1780

4.4 Emission Bandwidth Measurement

4.4.1 Limits of Emission Bandwidth Measurement

-26dB Bandwidth

According to FCC 27.53 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.

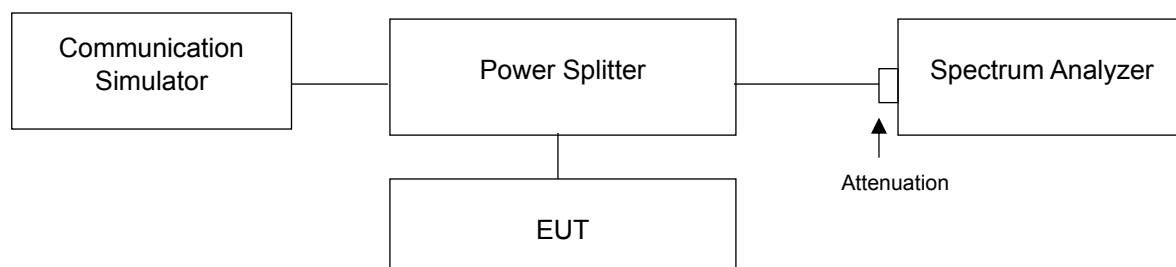
Occupied Bandwidth

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

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 $RBW \geq 1\% \times OBW$ and $VBW \geq 3 \times VBW$.

4.4.3 Test Setup



4.4.4 Test Results (Mode A)

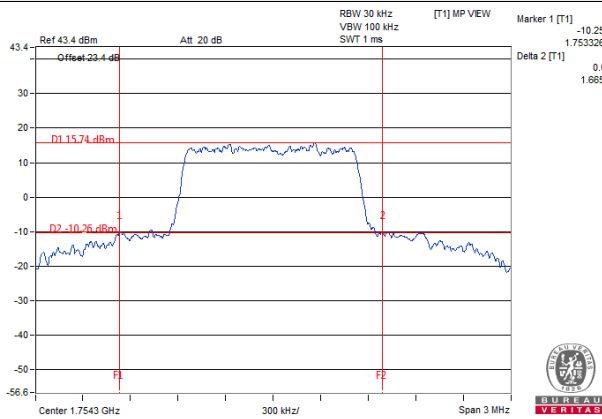
4.4.4.1 -26dB Bandwidth

LTE Band 4

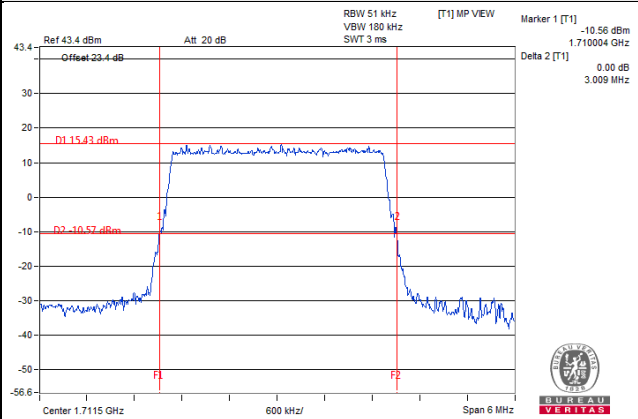
LTE Band 4									
Channel Bandwidth 1.4MHz					Channel Bandwidth 3MHz				
Channel	Frequency (MHz)	-26dB Bandwidth (MHz)			Channel	Frequency (MHz)	-26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
19957	1710.7	1.23	1.22	1.22	19965	1711.5	3.00	2.95	2.96
20175	1732.5	1.23	1.24	1.24	20175	1732.5	3.00	2.97	2.96
20393	1754.3	1.24	1.24	1.66	20385	1753.5	3.00	2.98	3.00
Channel Bandwidth 5MHz					Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	-26dB Bandwidth (MHz)			Channel	Frequency (MHz)	-26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
19975	1712.5	4.92	4.92	4.93	20000	1715	9.83	9.85	9.81
20175	1732.5	4.95	4.96	4.92	20175	1732.5	9.83	9.87	9.81
20375	1752.5	4.94	4.96	4.96	20350	1750	9.81	9.85	9.78
Channel Bandwidth 15MHz					Channel Bandwidth 20MHz				
Channel	Frequency (MHz)	-26dB Bandwidth (MHz)			Channel	Frequency (MHz)	-26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
20025	1717.5	14.66	14.67	14.68	20050	1720	19.29	19.38	19.52
20175	1732.5	14.68	14.67	14.71	20175	1732.5	19.55	19.43	19.60
20325	1747.5	14.73	14.70	14.68	20300	1745	19.51	19.54	19.56

Spectrum Plot of Worst Value

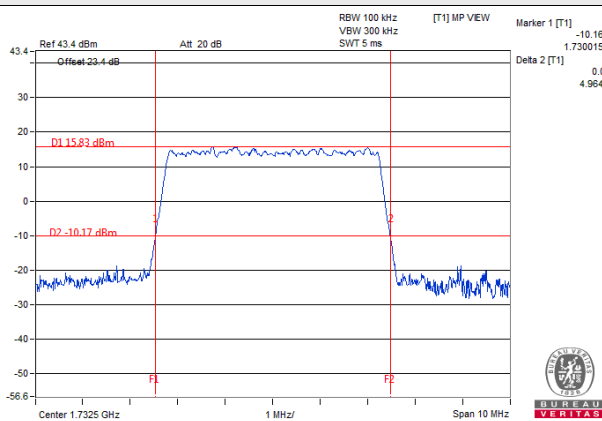
1.4MHz / 64QAM



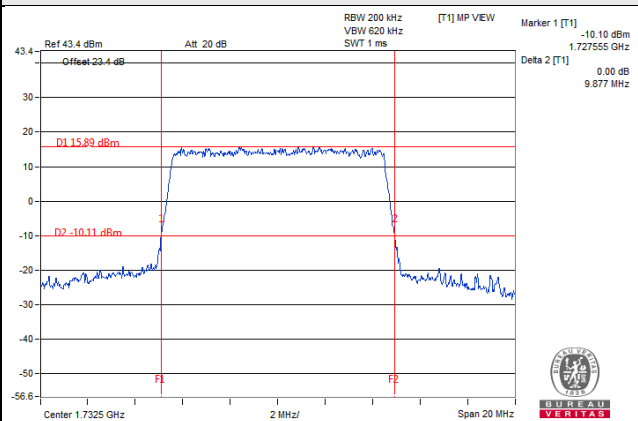
3MHz / QPSK



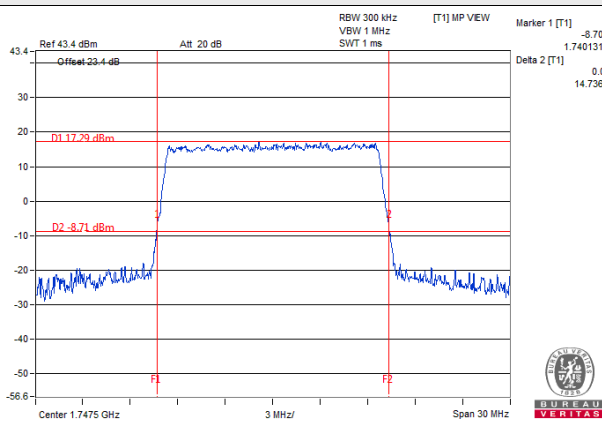
5MHz / 16QAM



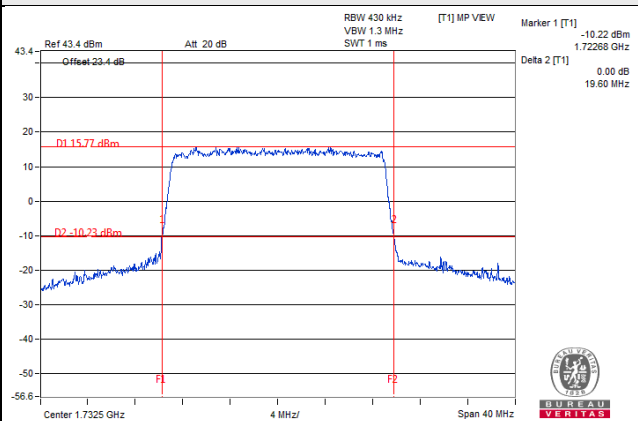
10MHz / 16QAM



15MHz / QPSK



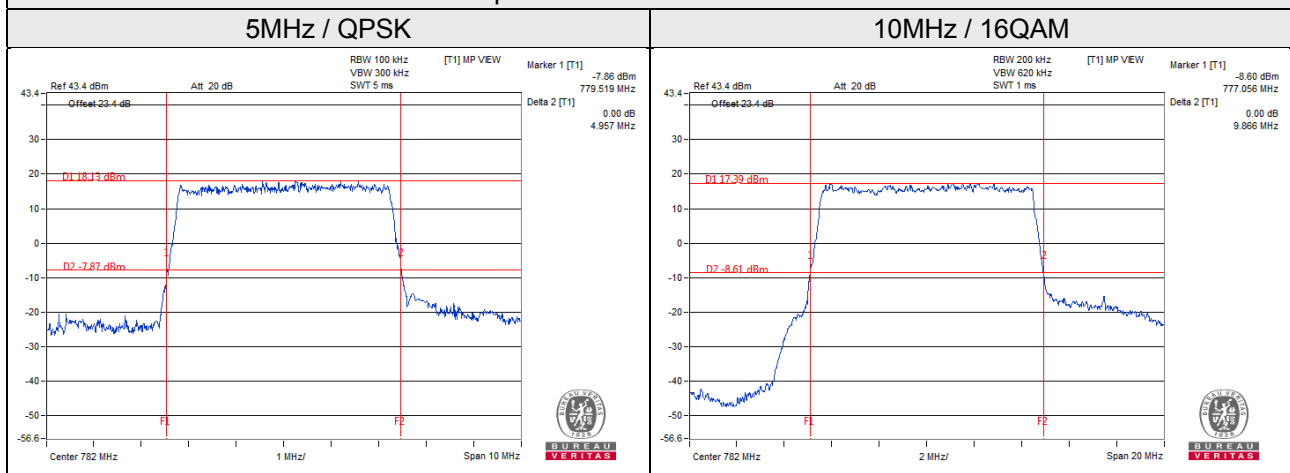
20MHz / 64QAM



LTE Band 13

LTE Band 13									
Channel Bandwidth 5MHz					Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	-26dB Bandwidth (MHz)			Channel	Frequency (MHz)	-26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
23205	779.5	4.91	4.92	4.93	23230	782	9.81	9.86	9.77
23230	782	4.95	4.93	4.94					
23255	784.5	4.92	4.91	4.94					

Spectrum Plot of Worst Value

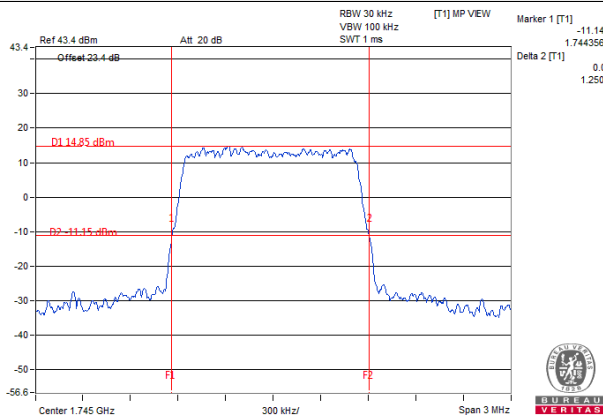


LTE Band 66

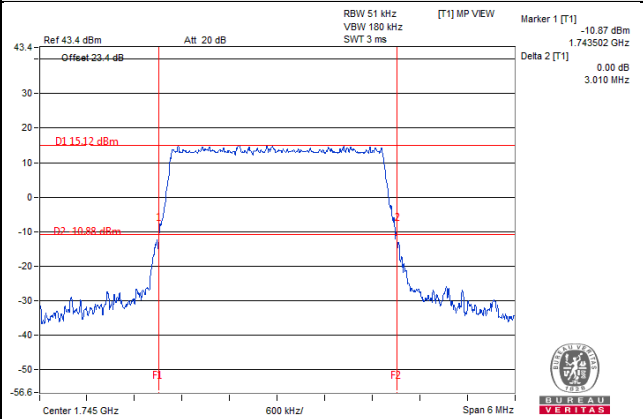
LTE Band 66									
Channel Bandwidth 1.4MHz					Channel Bandwidth 3MHz				
Channel	Frequency (MHz)	-26dB Bandwidth (MHz)			Channel	Frequency (MHz)	-26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
131979	1710.7	1.22	1.24	1.24	131987	1711.5	2.96	2.96	2.94
132322	1745	1.24	1.23	1.25	132322	1745	3.01	2.96	3.00
132665	1779.3	1.24	1.23	1.24	132657	1778.5	3.00	2.96	2.95
Channel Bandwidth 5MHz					Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	-26dB Bandwidth (MHz)			Channel	Frequency (MHz)	-26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
131997	1712.5	4.95	4.92	4.92	132022	1715	9.76	9.85	9.84
132322	1745	4.96	4.92	4.90	132322	1745	9.84	9.87	9.79
132647	1777.5	4.95	4.97	4.94	132622	1775	9.83	9.81	9.81
Channel Bandwidth 15MHz					Channel Bandwidth 20MHz				
Channel	Frequency (MHz)	-26dB Bandwidth (MHz)			Channel	Frequency (MHz)	-26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
132047	1717.5	14.68	14.65	14.71	132072	1720	19.46	19.39	19.59
132322	1745	14.73	14.68	14.68	132322	1745	19.48	19.63	19.51
132597	1722.5	14.71	14.68	14.63	132572	1770	19.59	19.42	19.50

Spectrum Plot of Worst Value

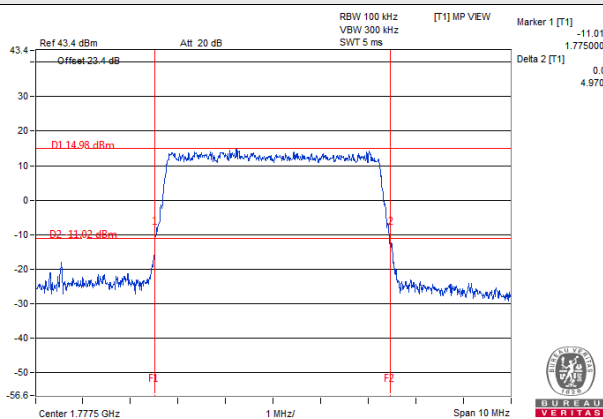
1.4MHz / 64QAM



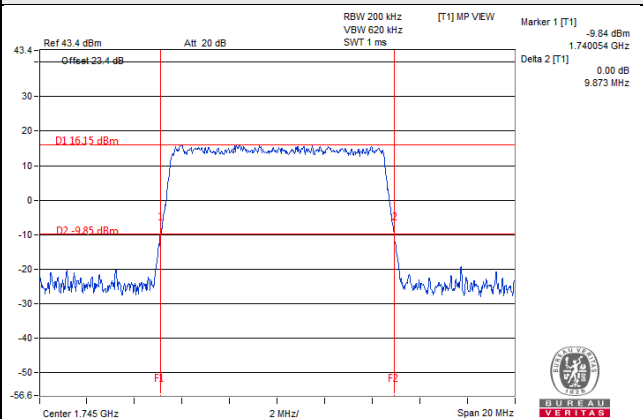
3MHz / QPSK



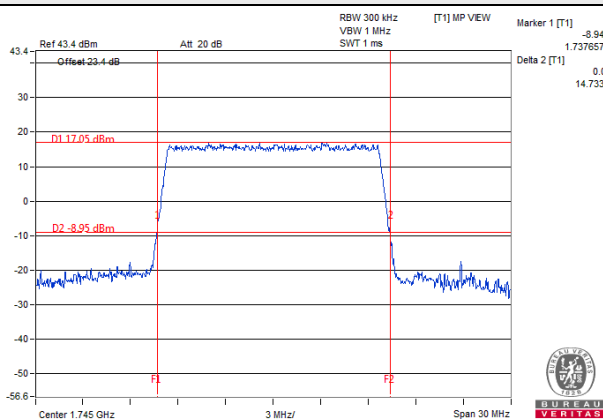
5MHz / 16QAM



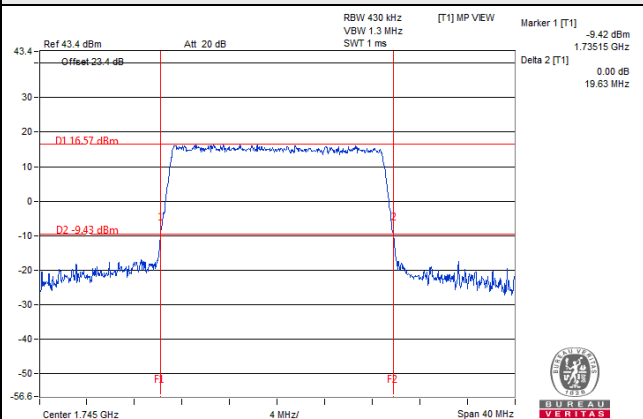
10MHz / 16QAM



15MHz / QPSK



20MHz / 16QAM



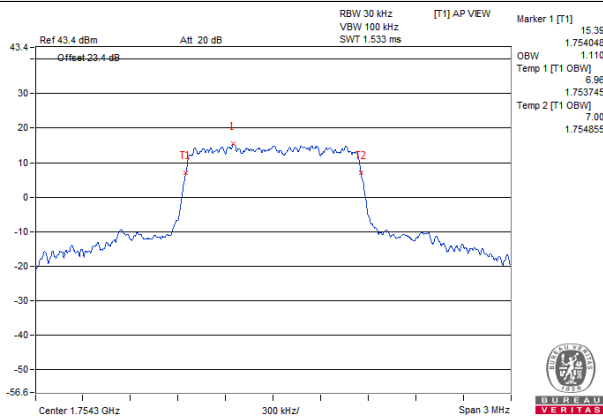
4.4.4.2 Occupied Bandwidth

LTE Band 4

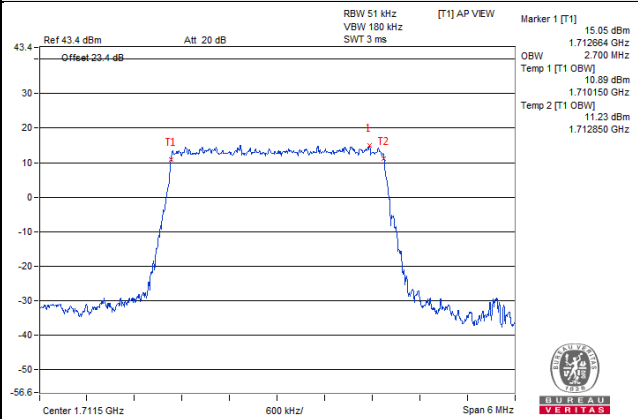
LTE Band 4									
Channel Bandwidth 1.4MHz					Channel Bandwidth 3MHz				
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
19957	1710.7	1.08	1.09	1.09	19965	1711.5	2.70	2.68	2.69
20175	1732.5	1.08	1.09	1.09	20175	1732.5	2.70	2.68	2.70
20393	1754.3	1.09	1.10	1.11	20385	1753.5	2.70	2.69	2.70
Channel Bandwidth 5MHz					Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
19975	1712.5	4.51	4.51	4.51	20000	1715	9.02	9.00	9.00
20175	1732.5	4.52	4.51	4.50	20175	1732.5	9.02	9.00	8.98
20375	1752.5	4.52	4.51	4.51	20350	1750	9.00	8.98	9.00
Channel Bandwidth 15MHz					Channel Bandwidth 20MHz				
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
20025	1717.5	13.47	13.44	13.47	20050	1720	18.00	17.92	17.96
20175	1732.5	13.50	13.44	13.47	20175	1732.5	18.00	17.92	17.92
20325	1747.5	13.50	13.44	13.50	20300	1745	18.04	17.96	18.04

Spectrum Plot of Worst Value

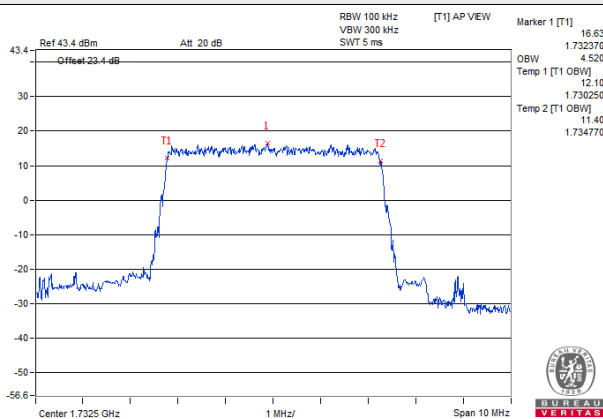
1.4MHz / 64QAM



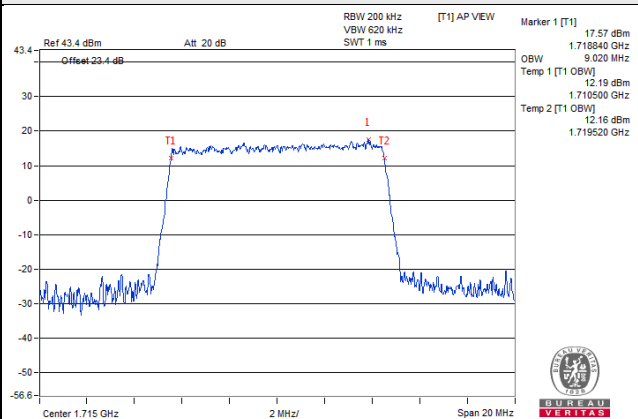
3MHz / QPSK



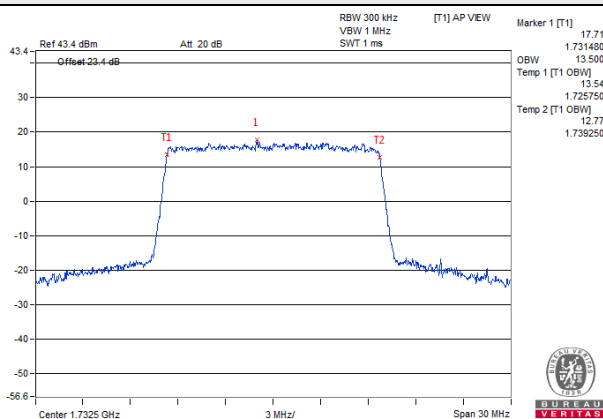
5MHz / QPSK



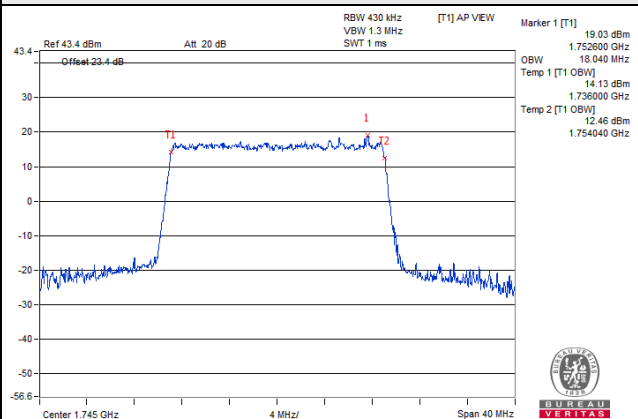
10MHz / QPSK



15MHz / QPSK

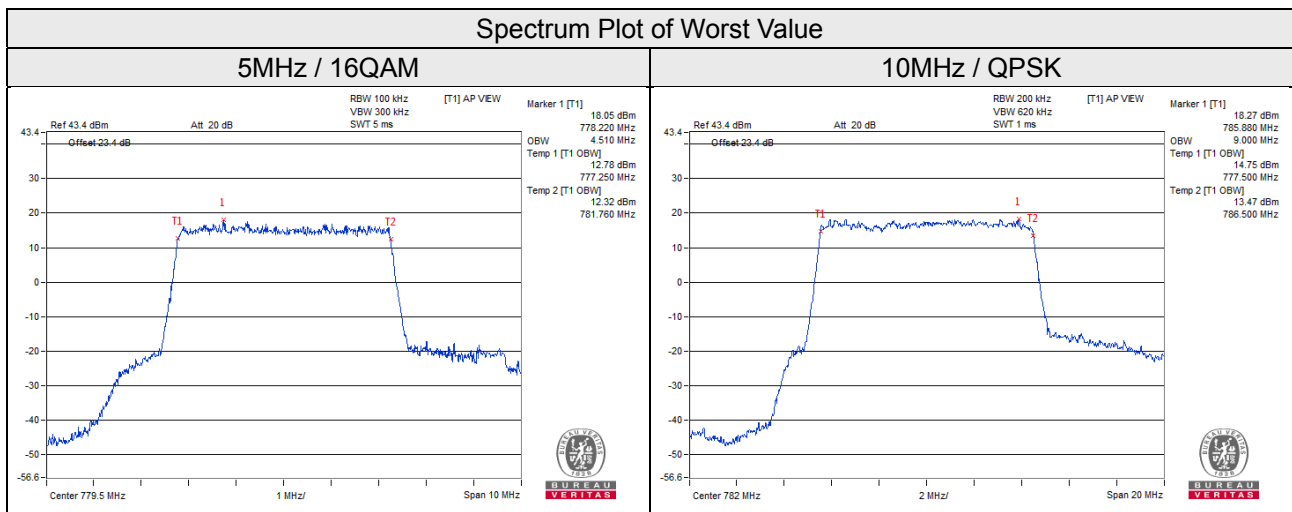


20MHz / QPSK



LTE Band 13

LTE Band 13									
Channel Bandwidth 5MHz					Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
23205	779.5	4.50	4.51	4.50	23230	782	9.00	9.00	8.98
23230	782	4.50	4.51	4.49					
23255	784.5	4.50	4.50	4.50					

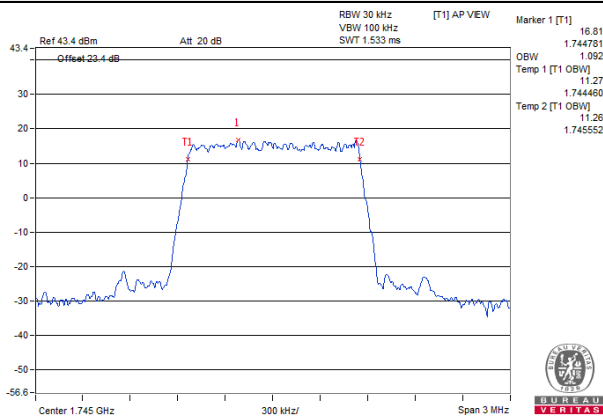


LTE Band 66

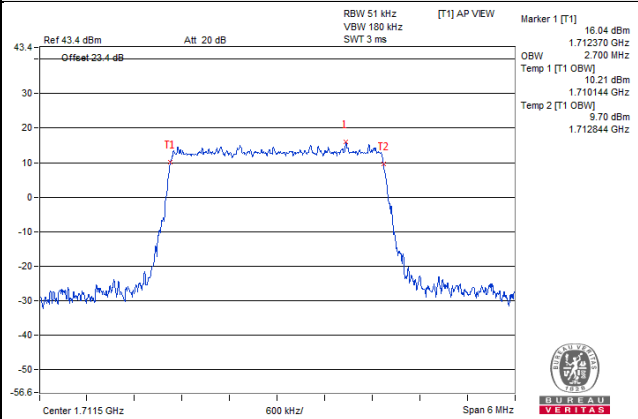
LTE Band 66									
Channel Bandwidth 1.4MHz					Channel Bandwidth 3MHz				
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
131979	1710.7	1.08	1.08	1.09	131987	1711.5	2.70	2.68	2.69
132322	1745	1.09	1.09	1.09	132322	1745	2.70	2.68	2.70
132665	1779.3	1.09	1.09	1.09	132657	1778.5	2.70	2.68	2.69
Channel Bandwidth 5MHz					Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
131997	1712.5	4.52	4.51	4.49	132022	1715	9.02	9.00	9.00
132322	1745	4.49	4.51	4.51	132322	1745	9.00	9.02	9.00
132647	1777.5	4.50	4.51	4.50	132622	1775	9.00	9.00	9.00
Channel Bandwidth 15MHz					Channel Bandwidth 20MHz				
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
132047	1717.5	13.50	13.47	13.50	132072	1720	18.00	17.92	17.96
132322	1745	13.53	13.47	13.50	132322	1745	18.04	17.96	17.96
132597	1722.5	13.47	13.47	13.47	132572	1770	17.96	17.88	17.92

Spectrum Plot of Worst Value

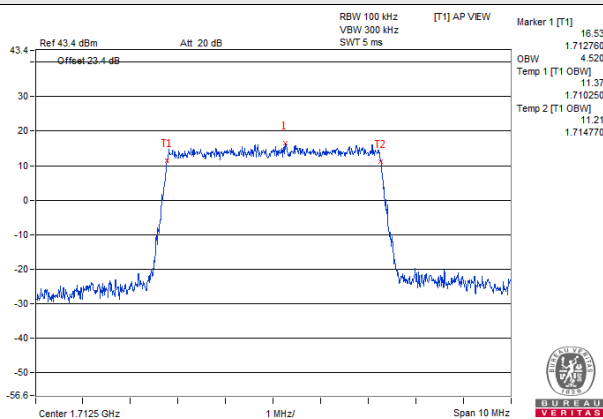
1.4MHz / QPSK



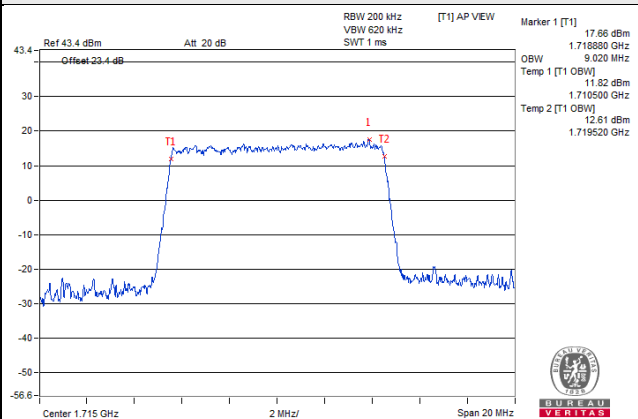
3MHz / QPSK



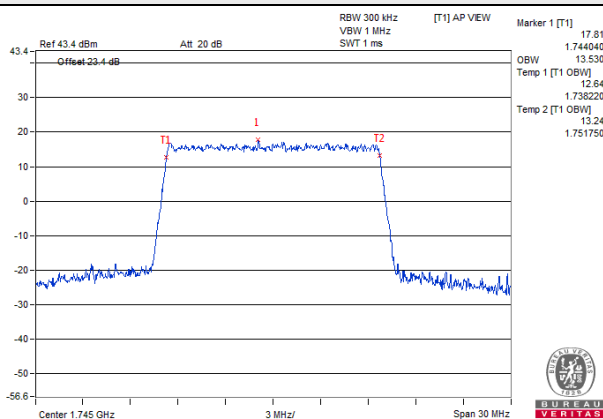
5MHz / QPSK



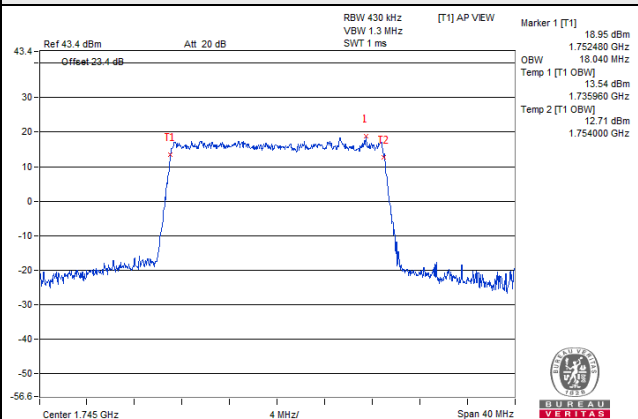
10MHz / QPSK



15MHz / QPSK



20MHz / QPSK



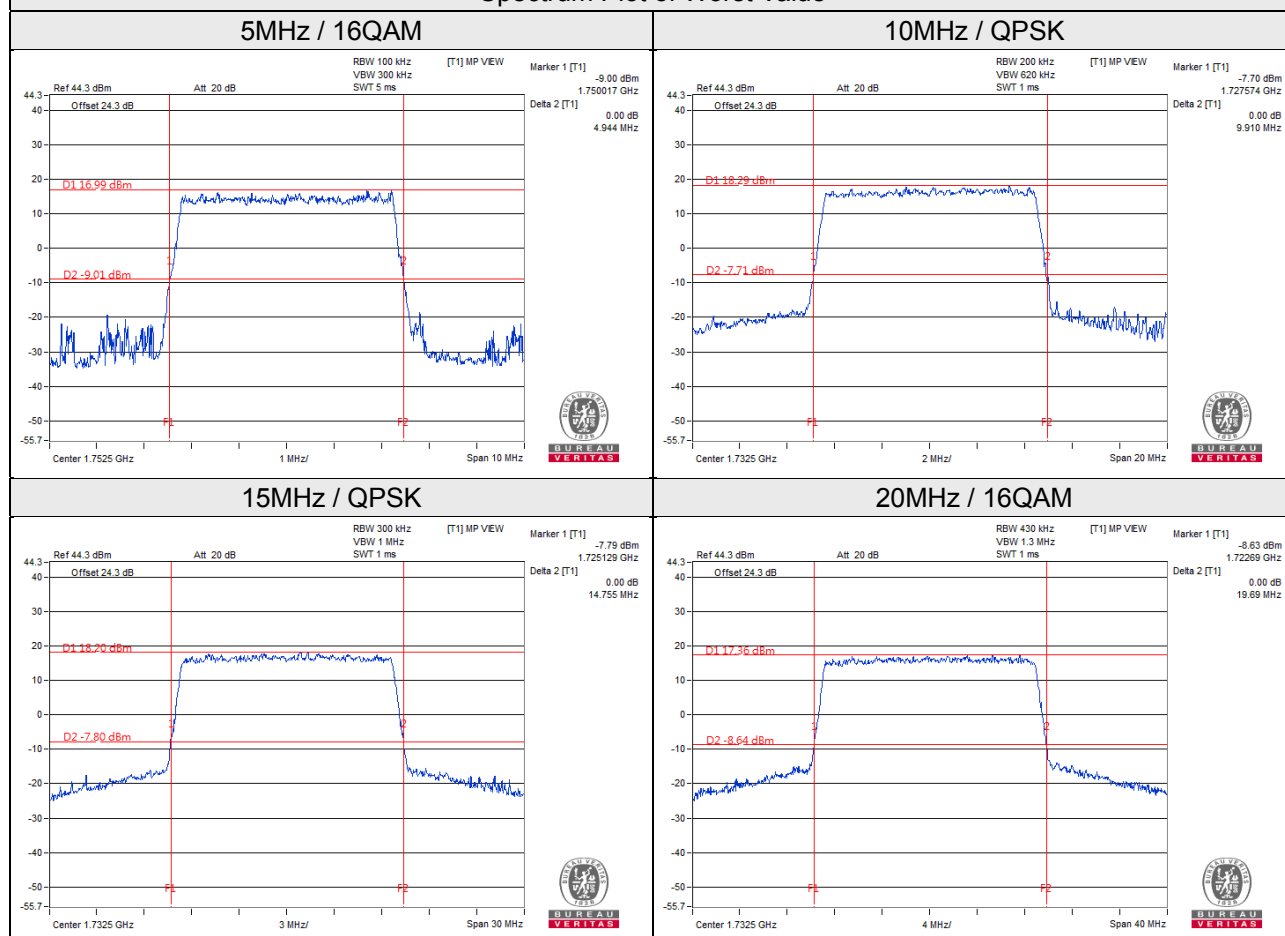
4.4.5 Test Results (Mode B)

4.4.5.1 -26dB Bandwidth

LTE Band 4

LTE Band 4									
Channel Bandwidth 5MHz					Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	-26dB Bandwidth (MHz)			Channel	Frequency (MHz)	-26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
19975	1712.5	4.92	4.92	4.91	20000	1715	9.85	9.84	9.90
20175	1732.5	4.93	4.93	4.89	20175	1732.5	9.91	9.84	9.87
20375	1752.5	4.93	4.94	4.94	20350	1750	9.89	9.83	9.86
Channel Bandwidth 15MHz					Channel Bandwidth 20MHz				
Channel	Frequency (MHz)	-26dB Bandwidth (MHz)			Channel	Frequency (MHz)	-26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
20025	1717.5	14.74	14.69	14.64	20050	1720	19.62	19.57	19.51
20175	1732.5	14.75	14.68	14.64	20175	1732.5	19.53	19.69	19.51
20325	1747.5	14.73	14.74	14.71	20300	1745	19.56	19.54	19.47

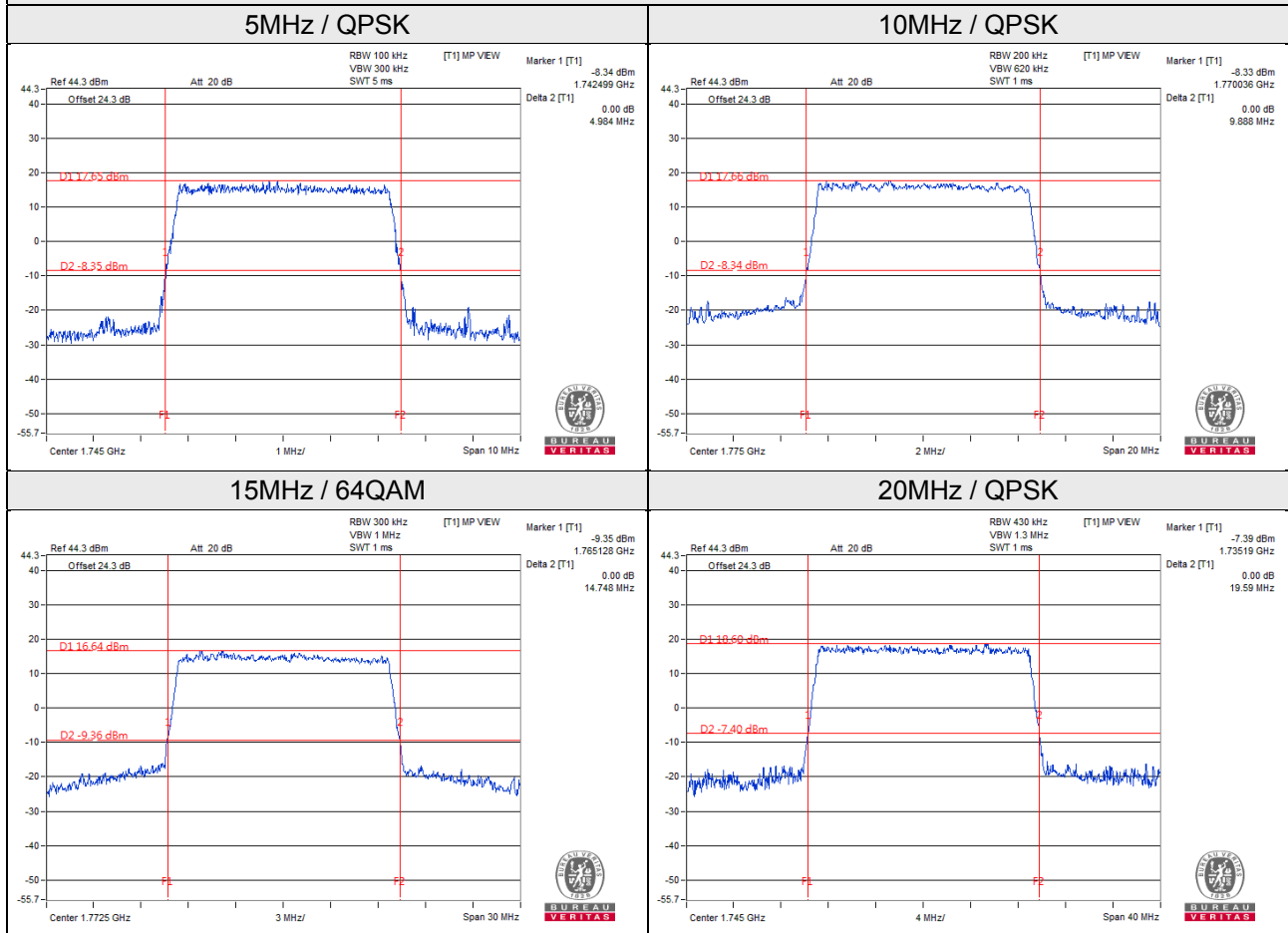
Spectrum Plot of Worst Value



LTE Band 66

LTE Band 66									
Channel Bandwidth 5MHz					Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	-26dB Bandwidth (MHz)			Channel	Frequency (MHz)	-26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
131997	1712.5	4.93	4.84	4.92	132022	1715	9.78	9.82	9.79
132322	1745	4.98	4.92	4.93	132322	1745	9.84	9.85	9.78
132647	1777.5	4.92	4.94	4.91	132622	1775	9.88	9.81	9.82
Channel Bandwidth 15MHz					Channel Bandwidth 20MHz				
Channel	Frequency (MHz)	-26dB Bandwidth (MHz)			Channel	Frequency (MHz)	-26dB Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
132047	1717.5	14.69	14.65	14.70	132072	1720	19.43	19.48	19.58
132322	1745	14.66	14.68	14.67	132322	1745	19.59	19.54	19.43
132597	1722.5	14.69	14.70	14.74	132572	1770	19.49	19.49	19.56

Spectrum Plot of Worst Value

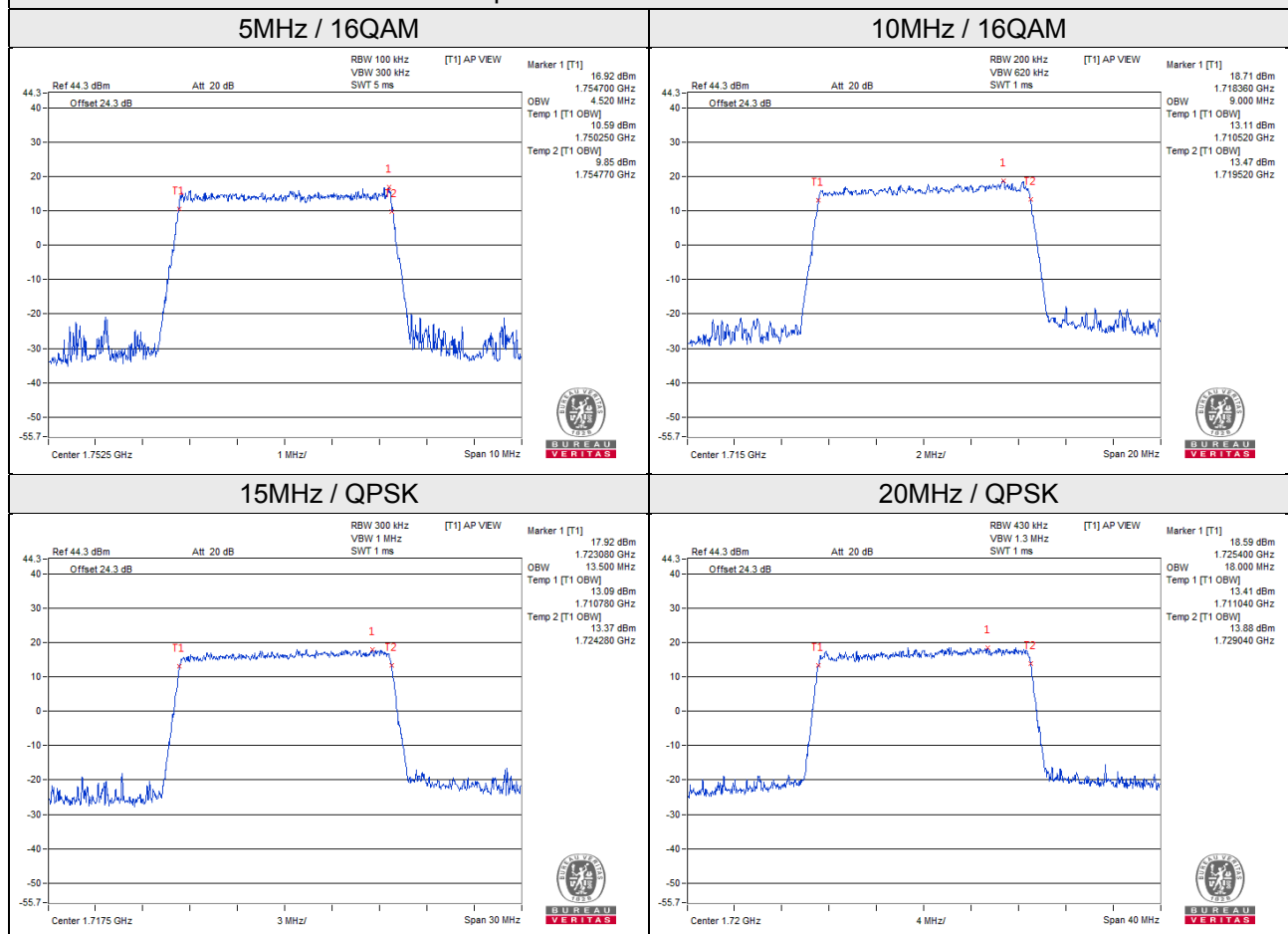


4.4.5.2 Occupied Bandwidth

LTE Band 4

LTE Band 4									
Channel Bandwidth 5MHz					Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
19975	1712.5	4.49	4.51	4.49	20000	1715	9.00	8.98	8.98
20175	1732.5	4.49	4.51	4.50	20175	1732.5	8.98	9.00	9.00
20375	1752.5	4.49	4.52	4.49	20350	1750	8.98	8.98	9.00
Channel Bandwidth 15MHz					Channel Bandwidth 20MHz				
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
20025	1717.5	13.50	13.50	13.50	20050	1720	18.00	18.00	17.92
20175	1732.5	13.47	13.50	13.47	20175	1732.5	18.00	17.96	17.96
20325	1747.5	13.50	13.47	13.47	20300	1745	17.96	18.00	17.96

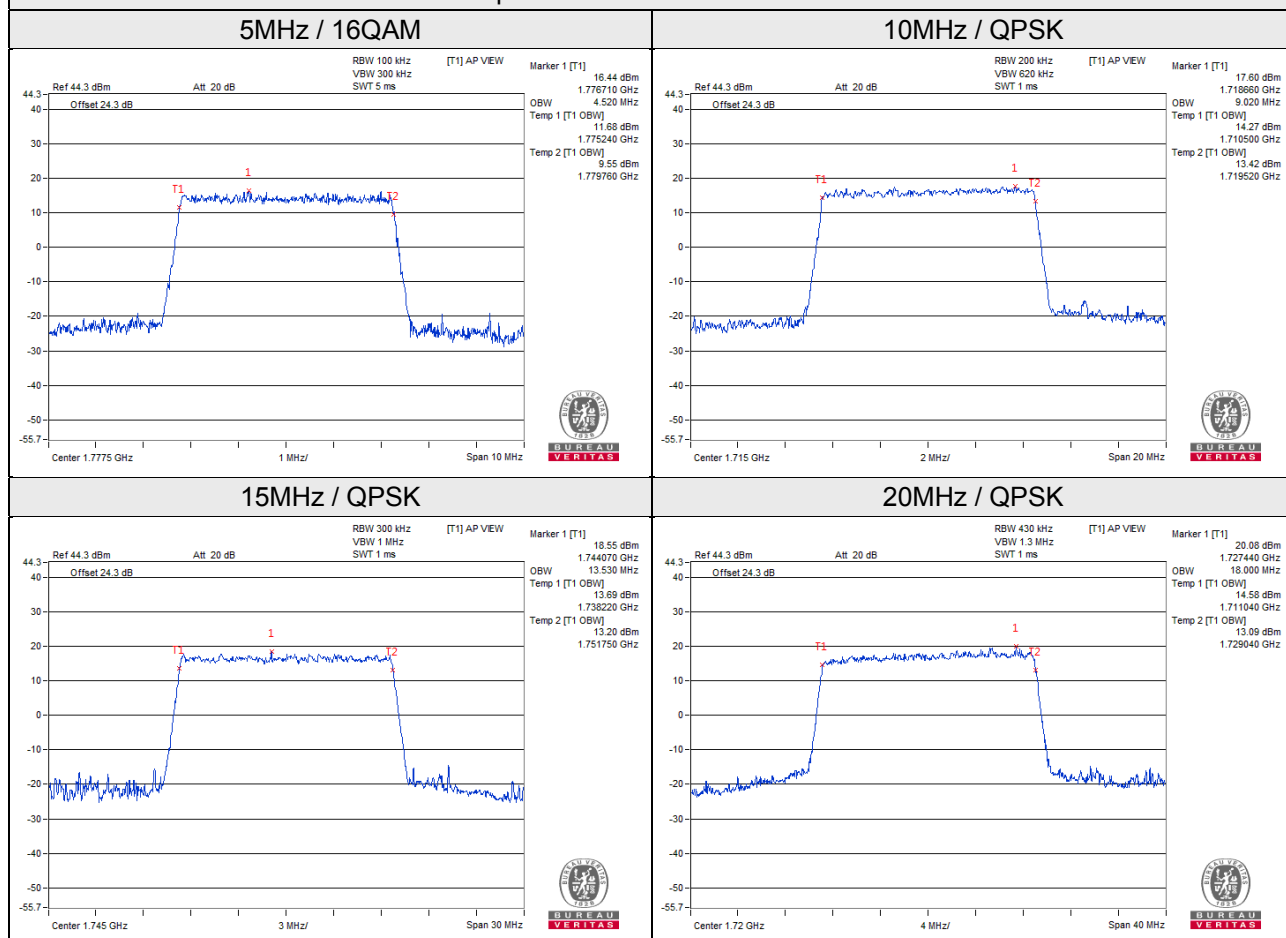
Spectrum Plot of Worst Value



LTE Band 66

LTE Band 66									
Channel Bandwidth 5MHz					Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
131997	1712.5	4.51	4.51	4.49	132022	1715	9.02	9.00	9.00
132322	1745	4.50	4.49	4.50	132322	1745	9.00	8.98	9.00
132647	1777.5	4.51	4.52	4.50	132622	1775	9.02	9.00	9.00
Channel Bandwidth 15MHz					Channel Bandwidth 20MHz				
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			Channel	Frequency (MHz)	Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
132047	1717.5	13.50	13.50	13.47	132072	1720	18.00	17.92	17.96
132322	1745	13.53	13.47	13.47	132322	1745	18.00	17.92	18.00
132597	1722.5	13.50	13.50	13.47	132572	1770	18.00	17.88	18.00

Spectrum Plot of Worst Value



4.5 Channel Edge Measurement

4.5.1 Limits of Channel Edge Measurement

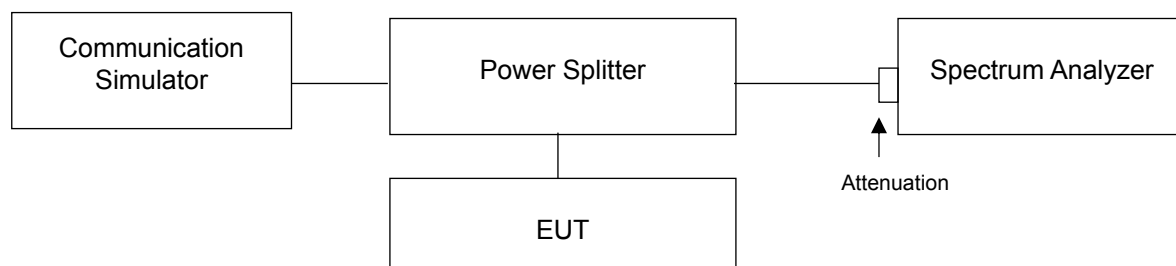
According to FCC 27.53 (c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

- (1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;
- (2) 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 $43 + 10 \log (P)$ dB;
- (3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations;
- (4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;
- (5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;
- (6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

According to FCC 27.53(f) For operations in the 746–758 MHz, 775–788 MHz, and 805–806 MHz bands, emissions in the band 1559–1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

According to FCC 27.53(h) AWS emission limits— General protection levels. Except as otherwise specified below, 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.

4.5.2 Test Setup



4.5.3 Test Procedures

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

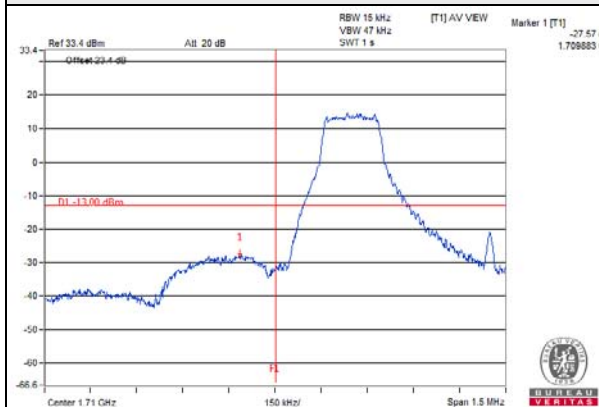
4.5.4 Test Results (Mode A)

LTE Band 4

LTE Band 4 Channel Band width: 1.4MHz

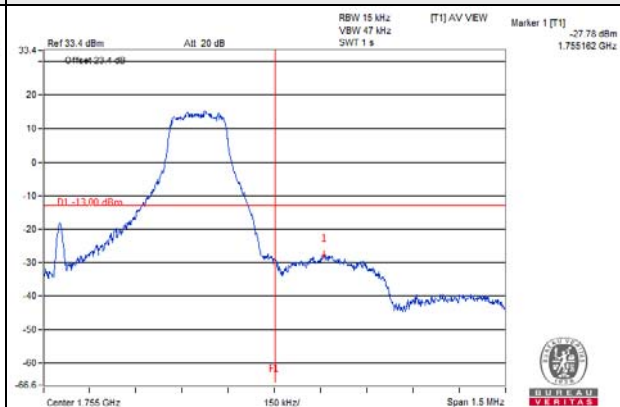
Channel 19957

1 RB

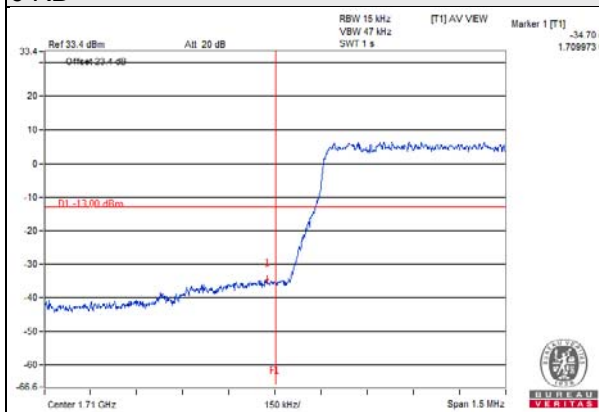


Channel 20393

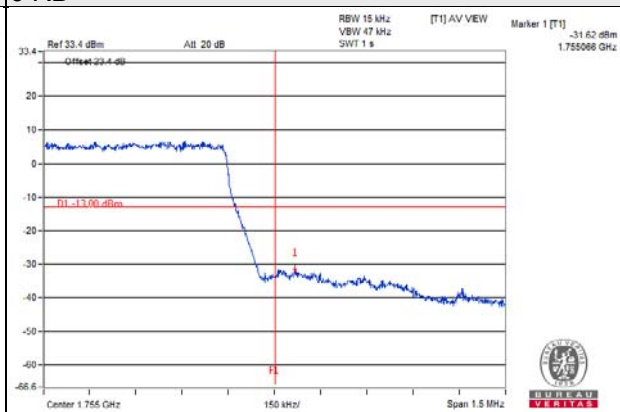
1 RB



6 RB



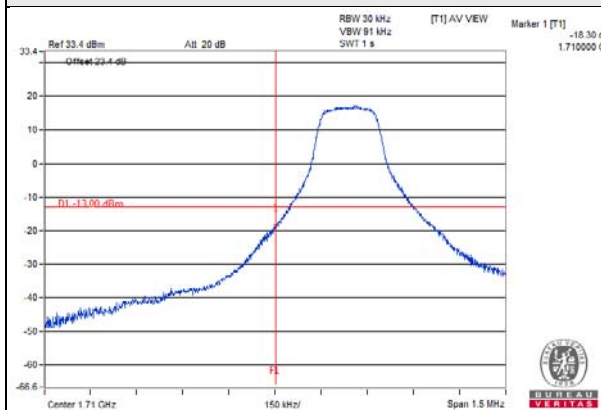
6 RB



LTE Band 4 Channel Band width: 3MHz

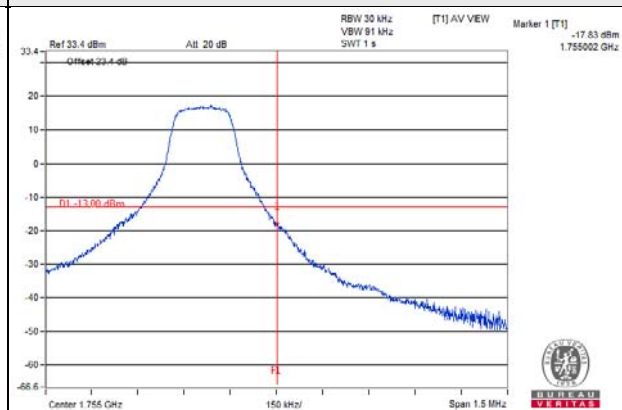
Channel 19965

1 RB

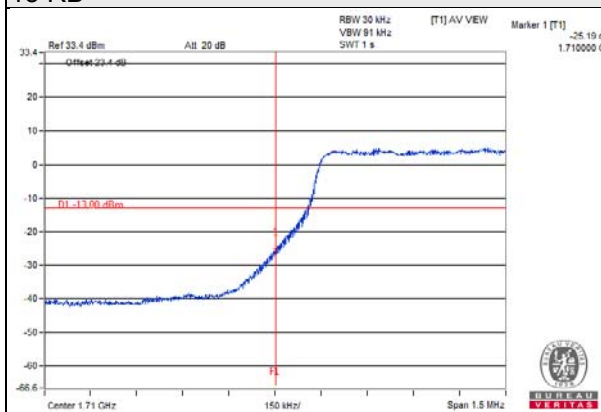


Channel 20385

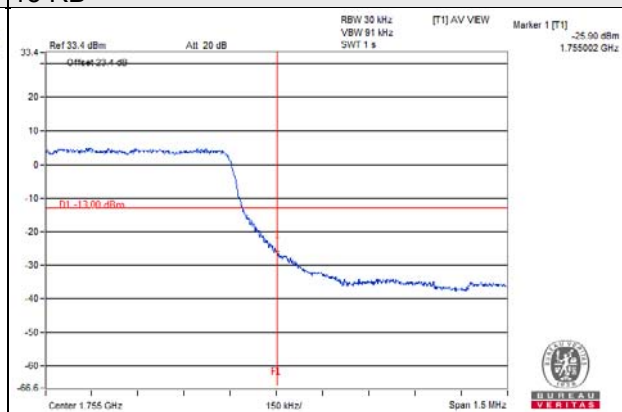
1 RB



15 RB



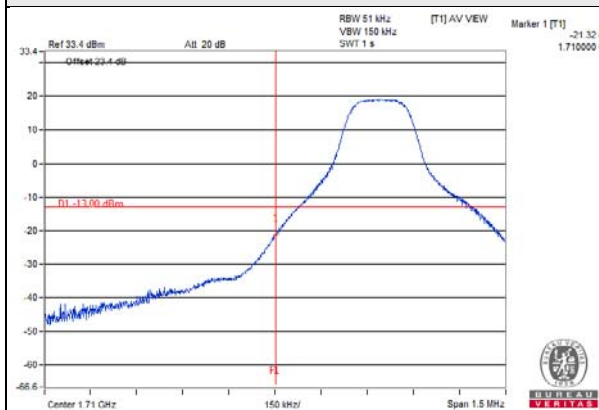
15 RB



LTE Band 4 Channel Band width: 5MHz

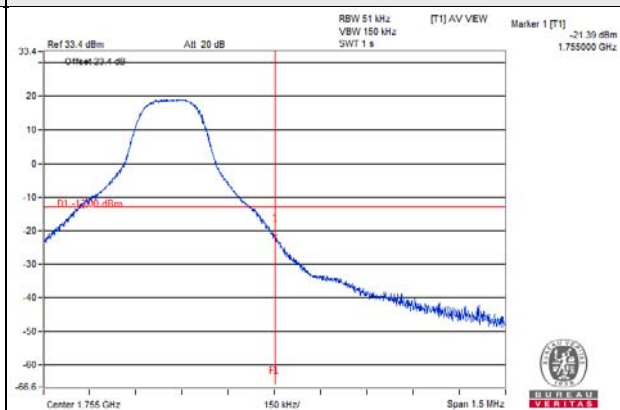
Channel 19975

1 RB

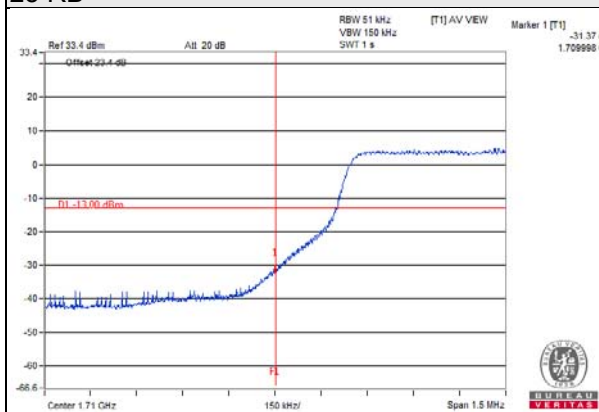


Channel 20375

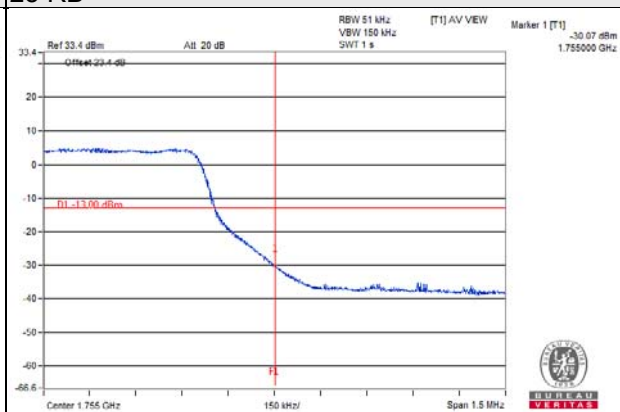
1 RB



25 RB



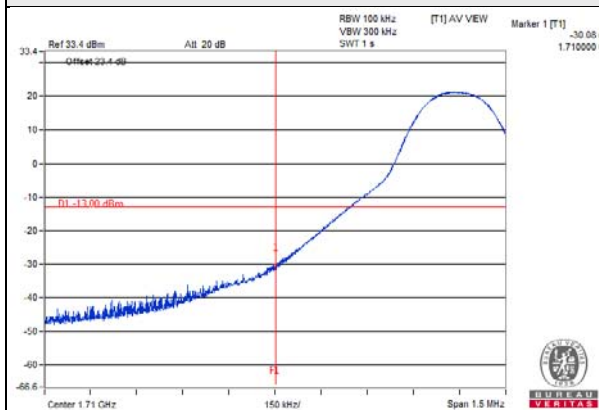
25 RB



LTE Band 4 Channel Band width: 10MHz

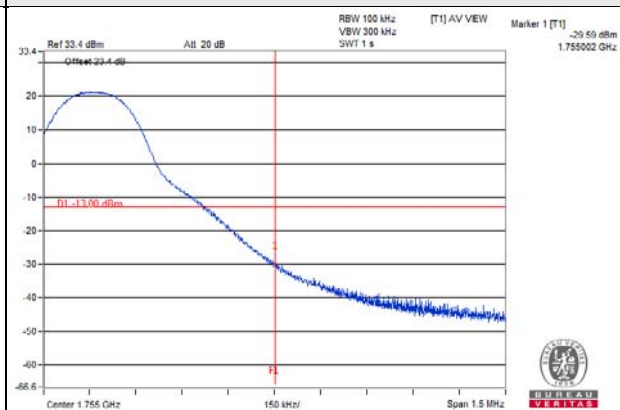
Channel 20000

1 RB

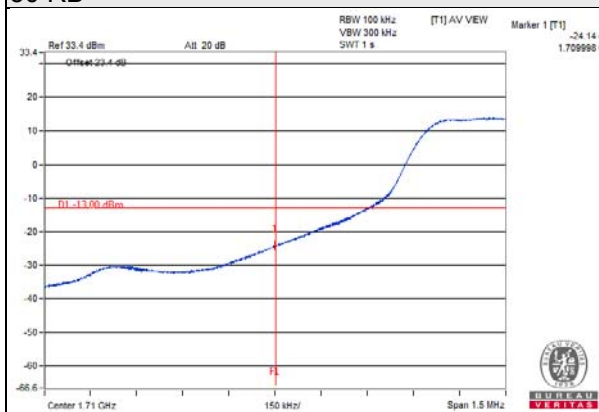


Channel 20350

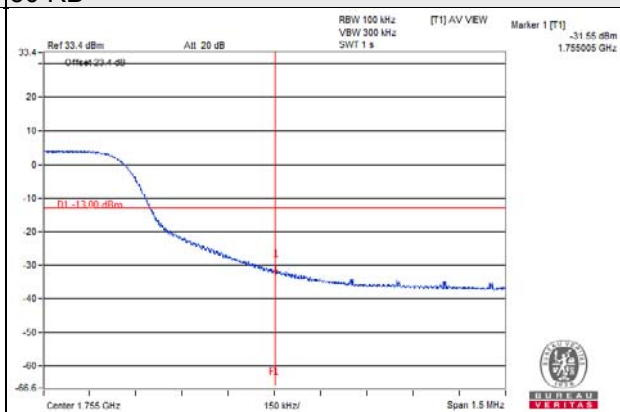
1 RB



50 RB



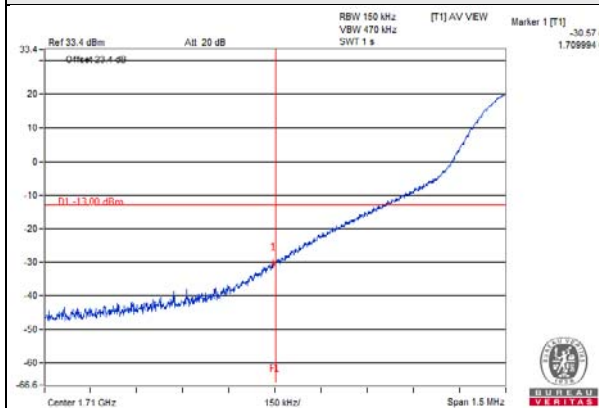
50 RB



LTE Band 4 Channel Band width: 15MHz

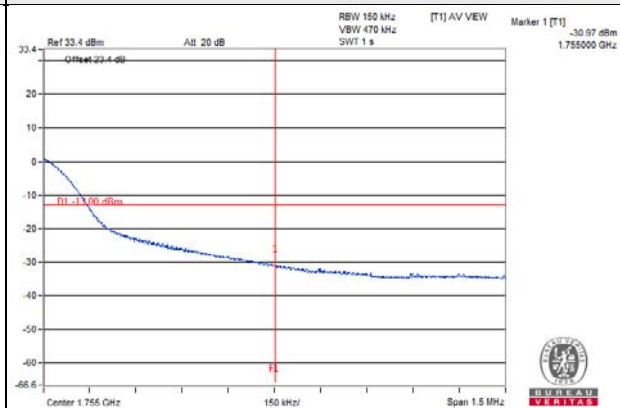
Channel 20025

1 RB

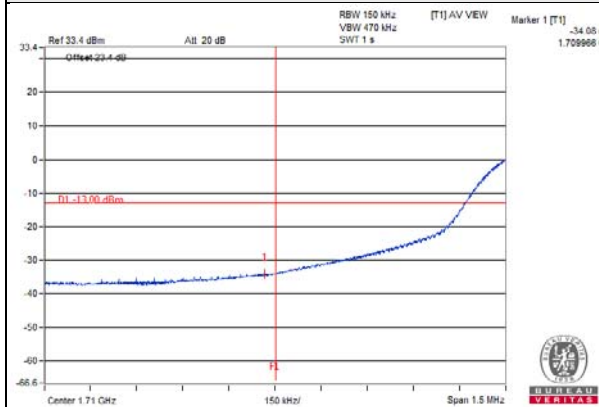


Channel 20325

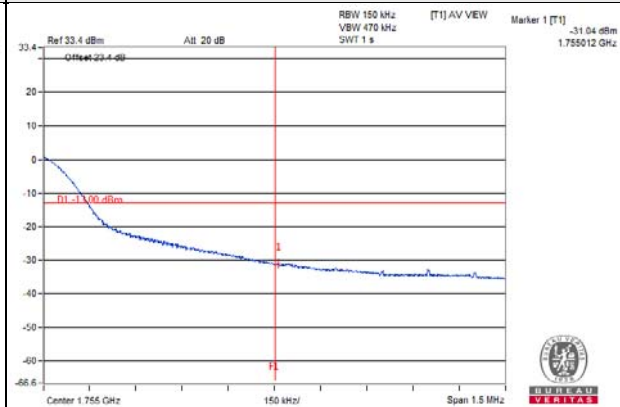
1 RB



75 RB



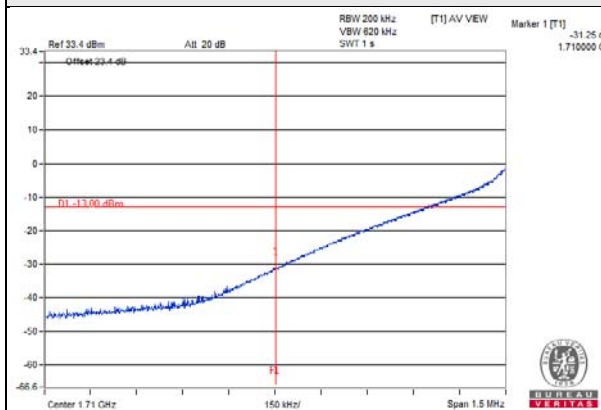
75 RB



LTE Band 4 Channel Band width: 20MHz

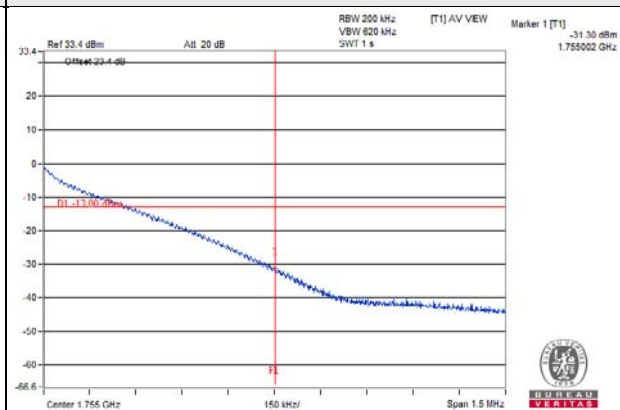
Channel 20050

1 RB

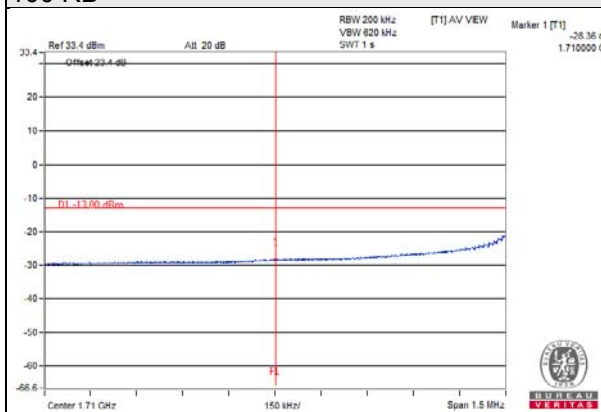


Channel 20300

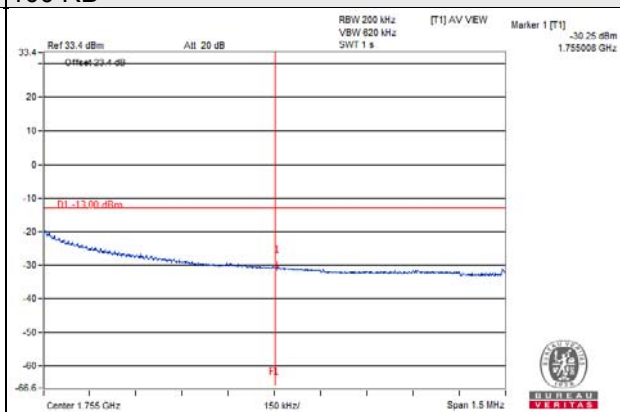
1 RB



100 RB



100 RB

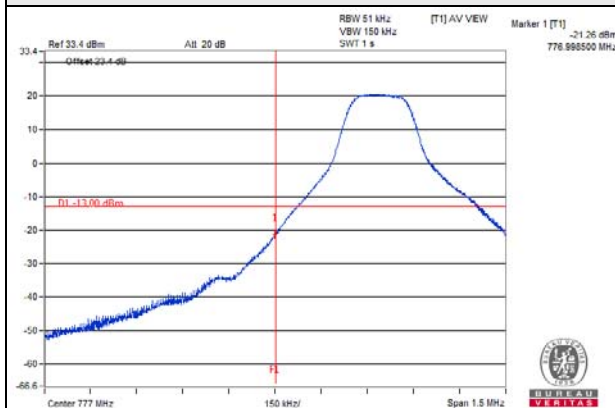


LTE Band 13

LTE Band 13 Channel Band width: 5MHz

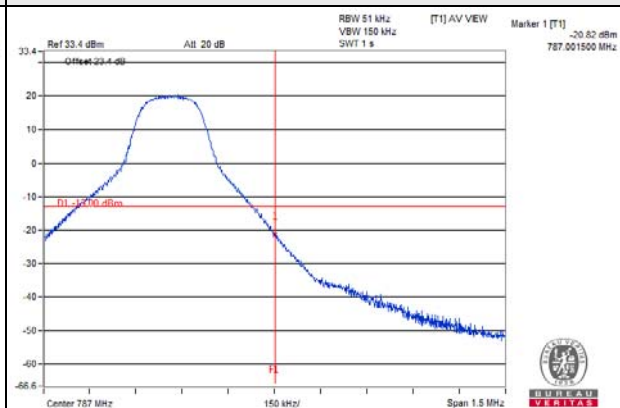
Channel 23205

1 RB

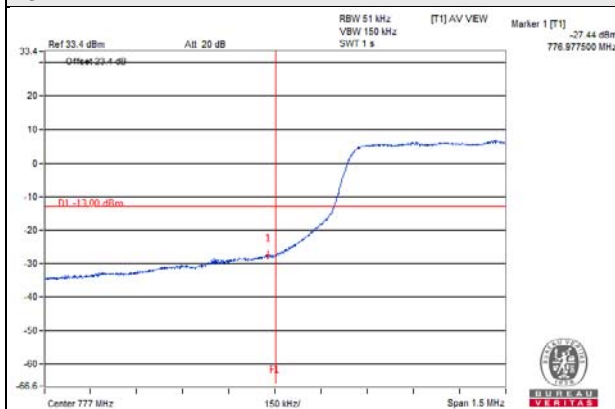


Channel 23255

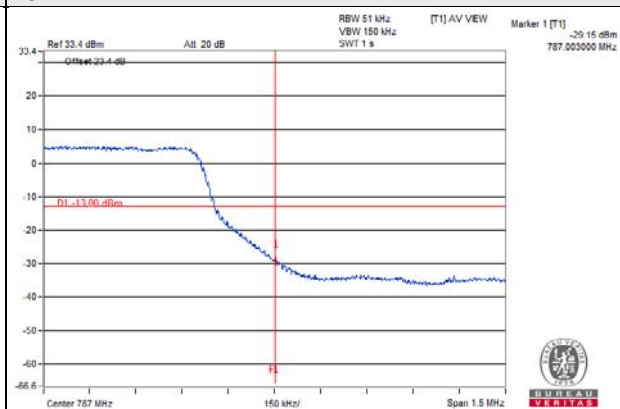
1 RB



25 RB



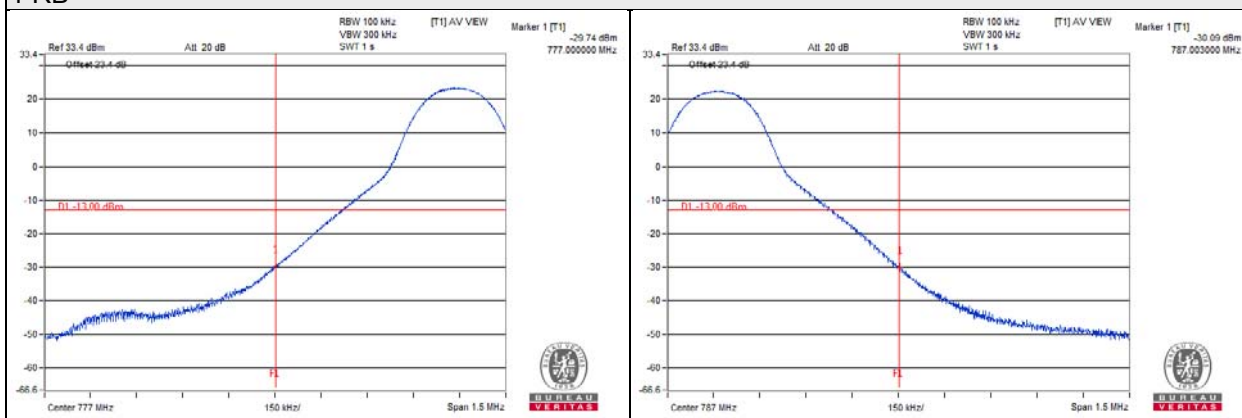
25 RB



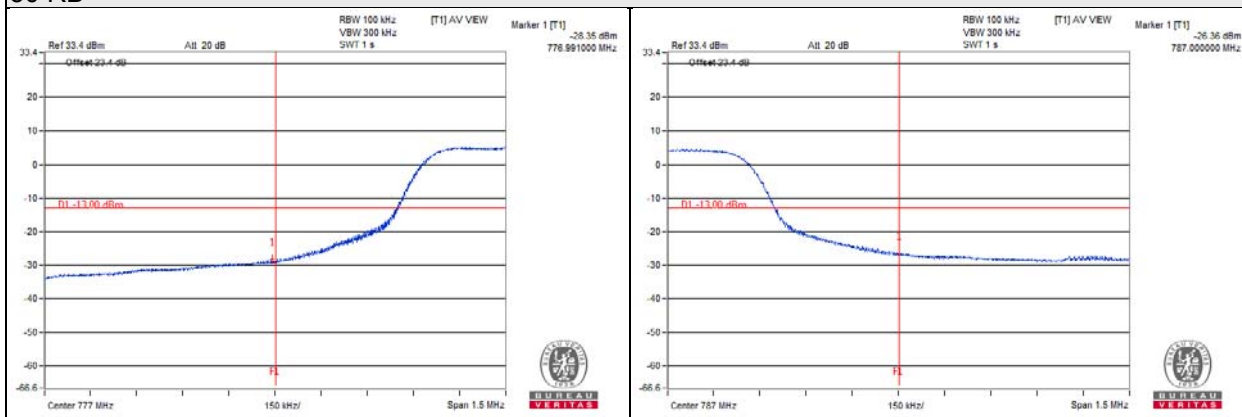
LTE Band 13 Channel Band width: 10MHz

Channel 23230

1 RB



50 RB

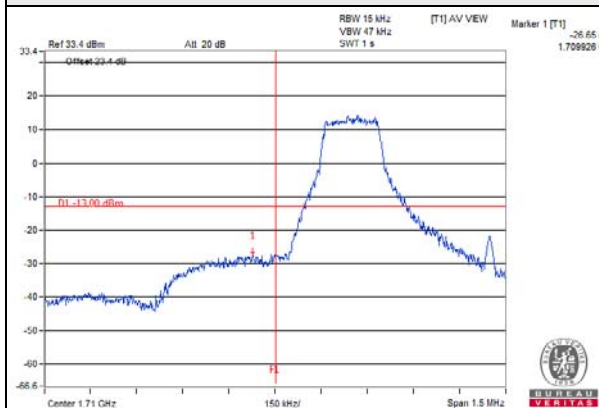


LTE Band 66

LTE Band 66 Channel Band width: 1.4MHz

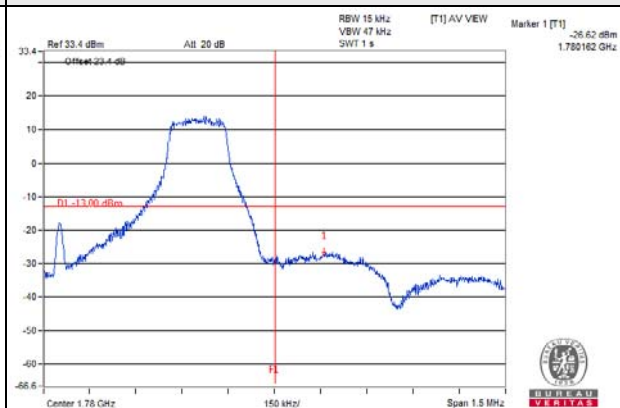
Channel 131979

1 RB

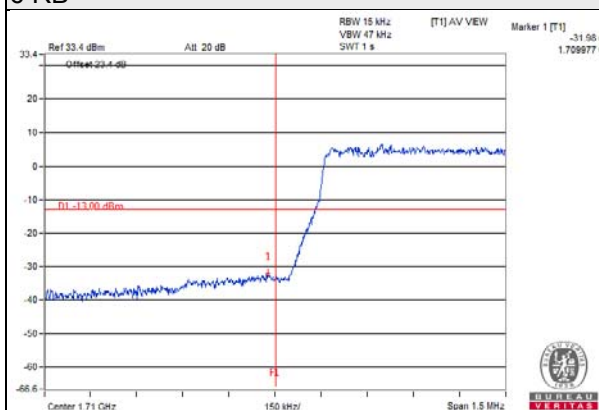


Channel 132665

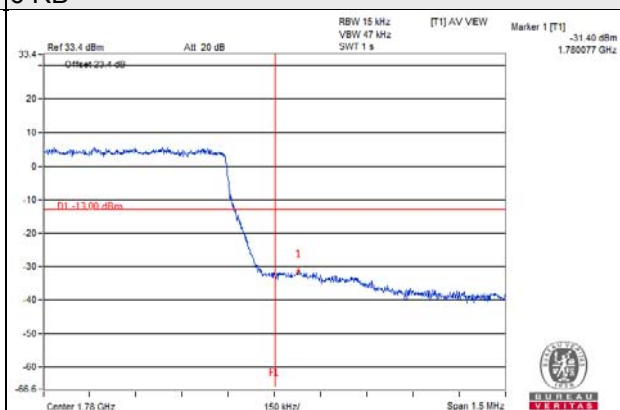
1 RB



6 RB



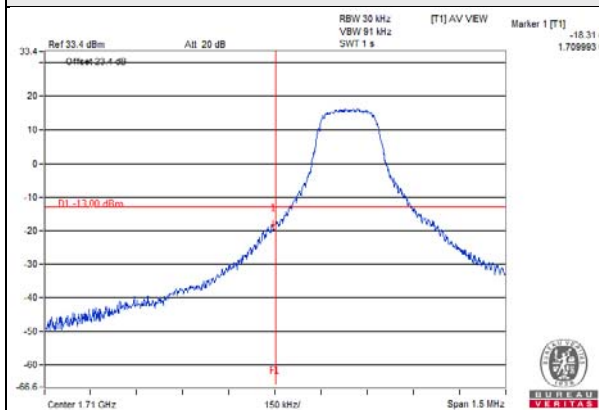
6 RB



LTE Band 66 Channel Band width: 3MHz

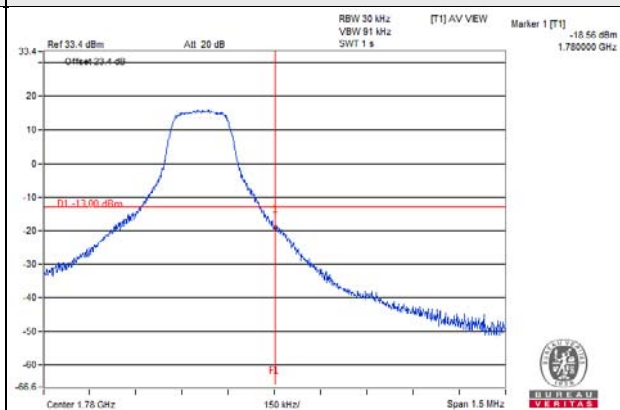
Channel 131987

1 RB

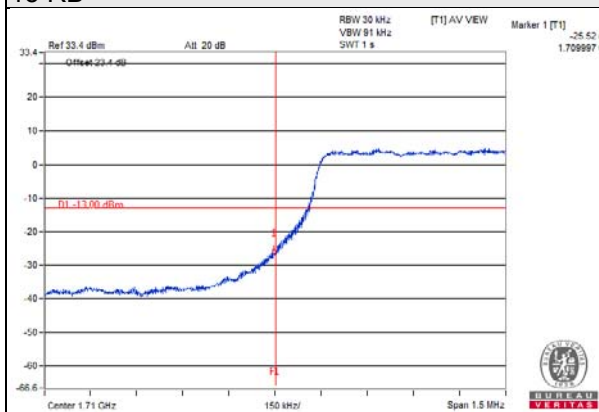


Channel 132657

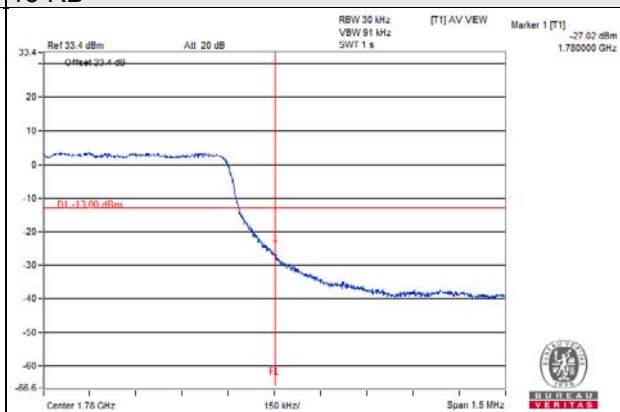
1 RB



15 RB



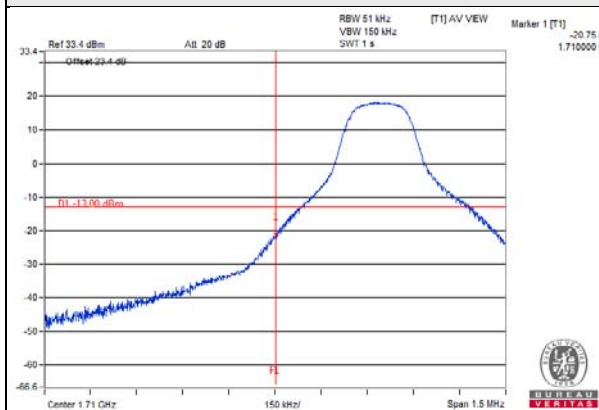
15 RB



LTE Band 66 Channel Band width: 5MHz

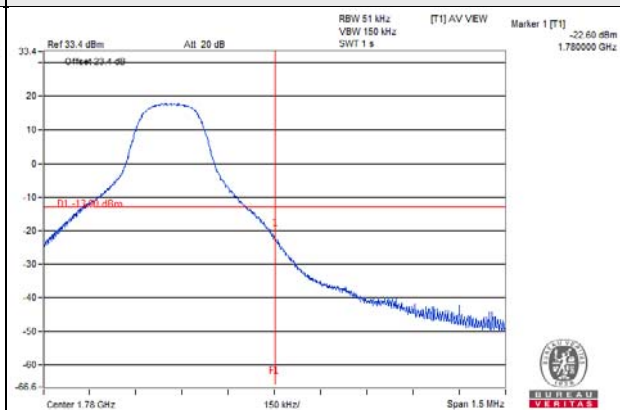
Channel 131997

1 RB

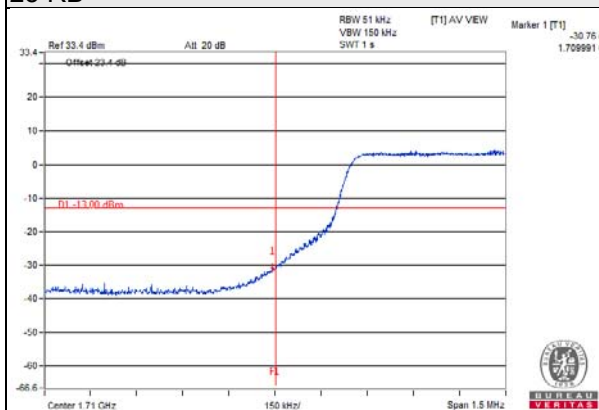


Channel 132647

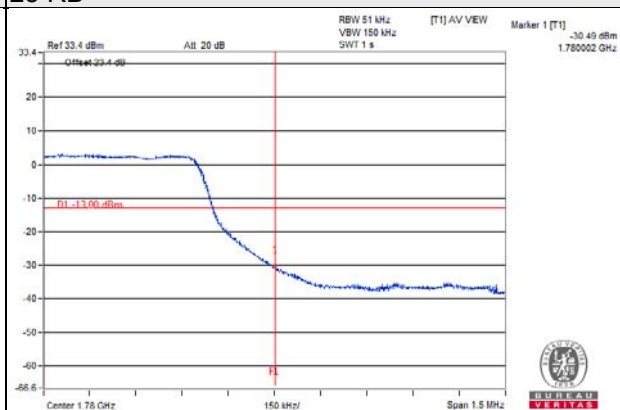
1 RB



25 RB



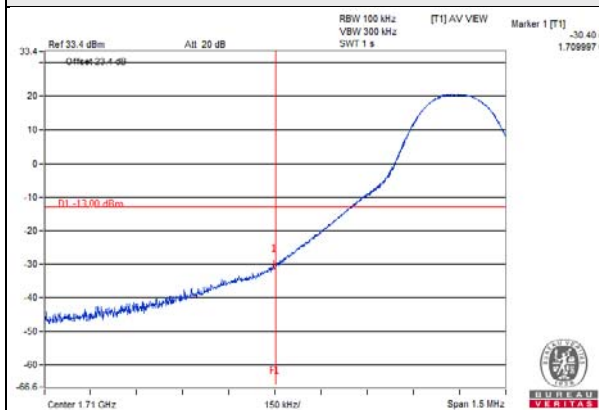
25 RB



LTE Band 66 Channel Band width: 10MHz

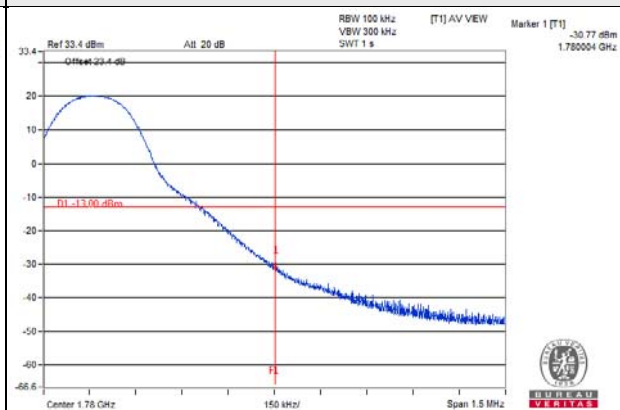
Channel 132022

1 RB

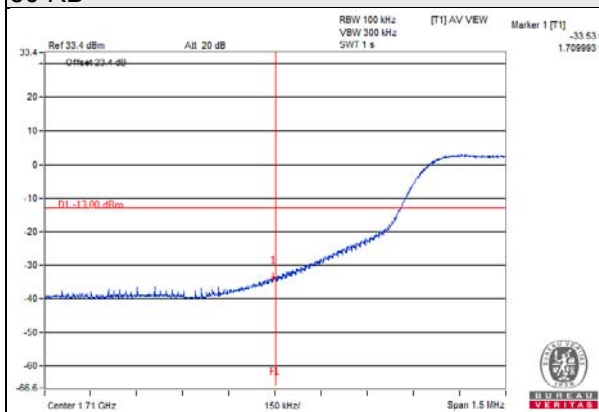


Channel 132622

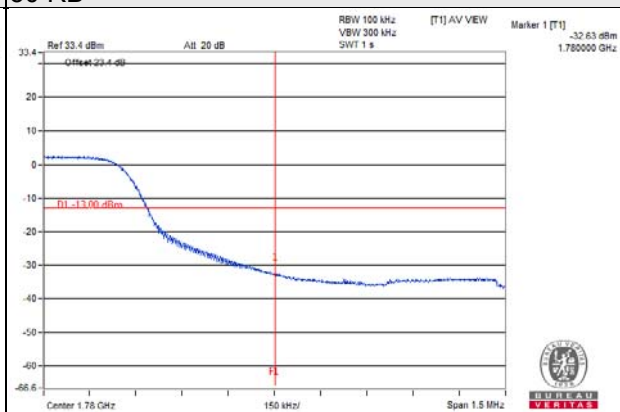
1 RB



50 RB



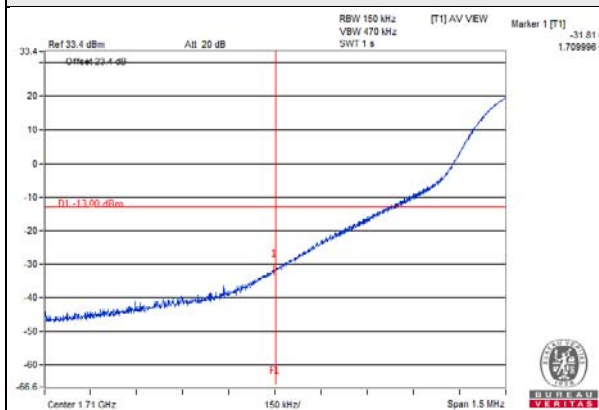
50 RB



LTE Band 66 Channel Band width: 15MHz

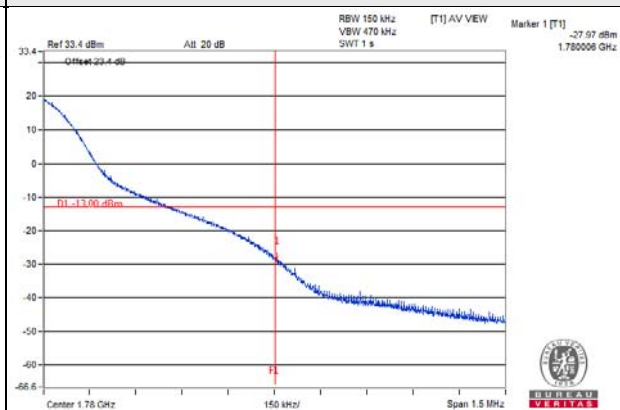
Channel 132047

1 RB

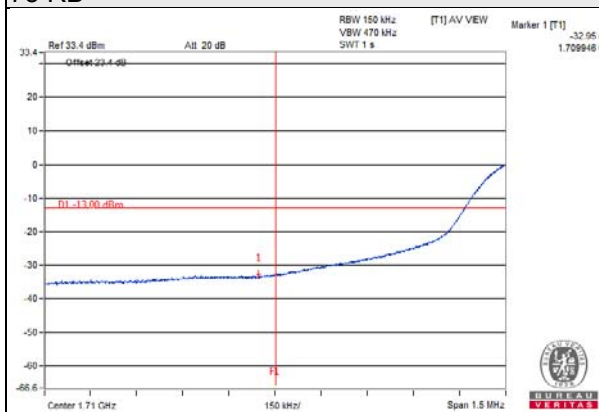


Channel 132597

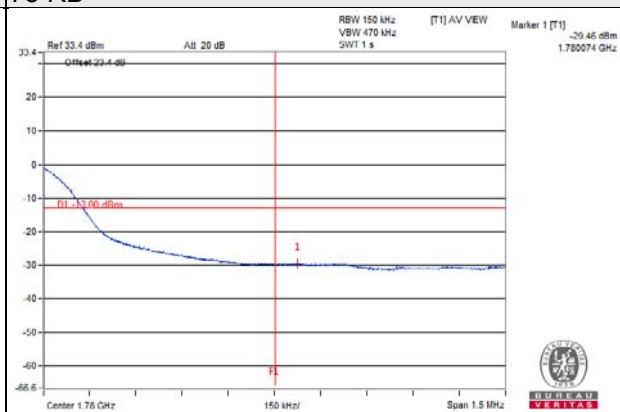
1 RB



75 RB



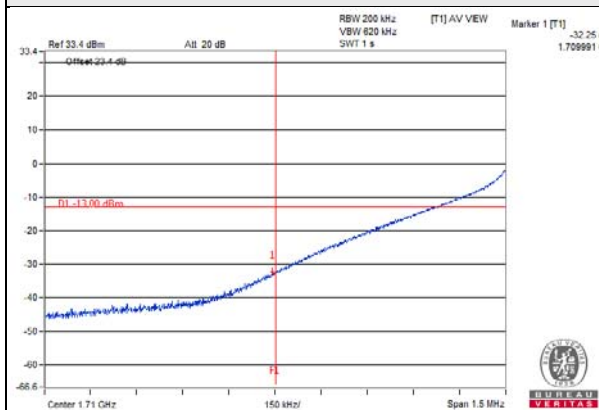
75 RB



LTE Band 66 Channel Band width: 20MHz

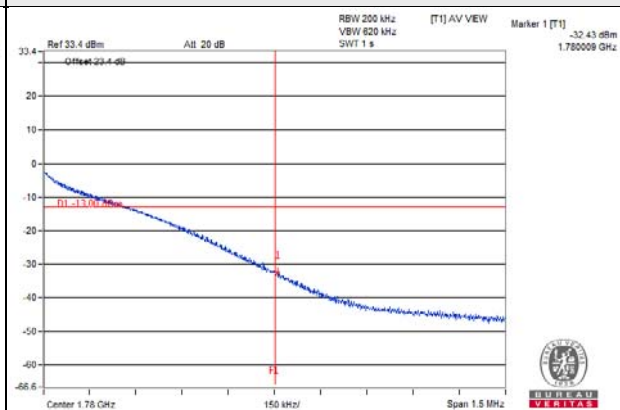
Channel 132072

1 RB

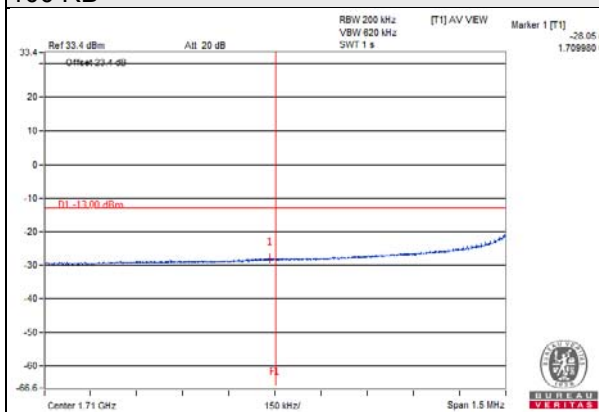


Channel 132572

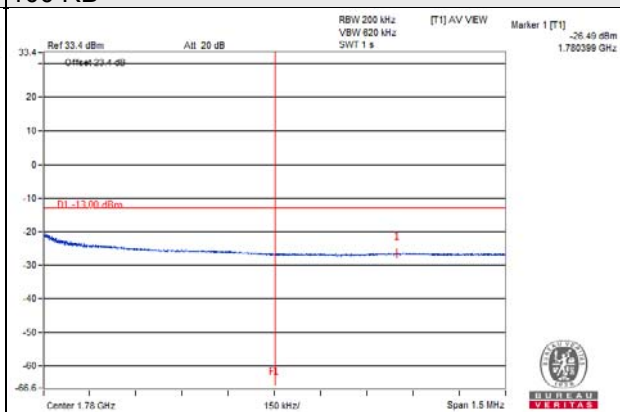
1 RB



100 RB



100 RB



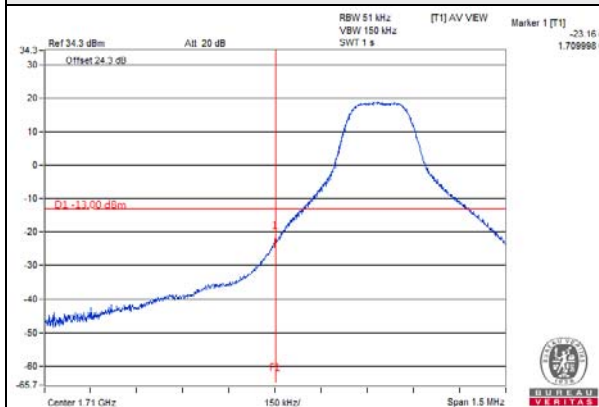
4.5.5 Test Results (Mode B)

LTE Band 4

LTE Band 4 Channel Band width: 5MHz

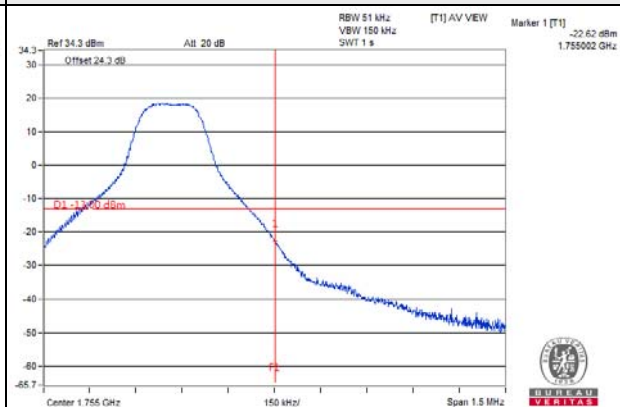
Channel 19975

1 RB

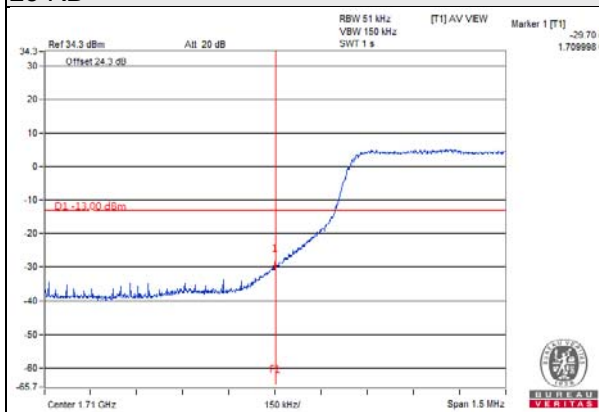


Channel 20375

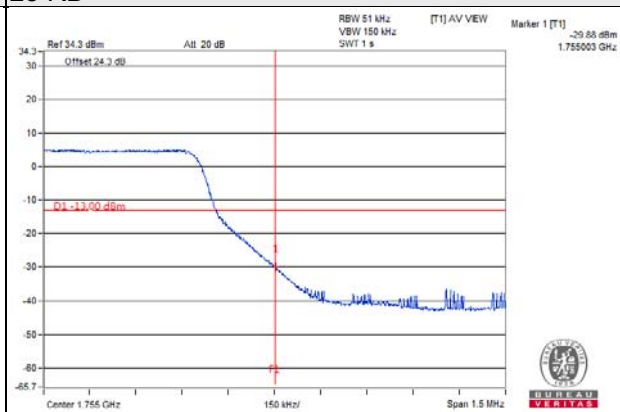
1 RB



25 RB



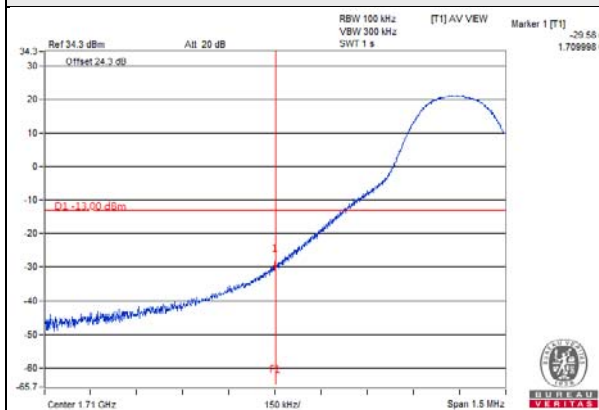
25 RB



LTE Band 4 Channel Band width: 10MHz

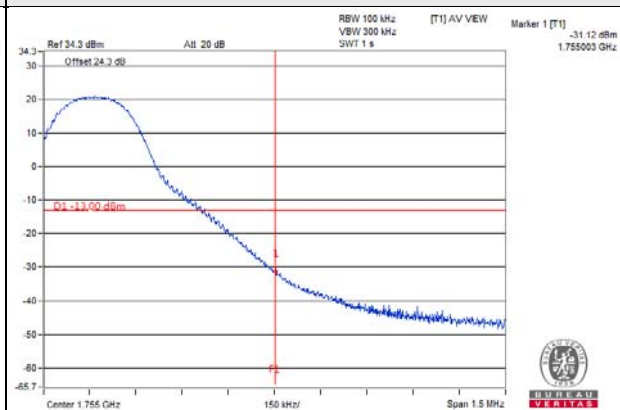
Channel 20000

1 RB

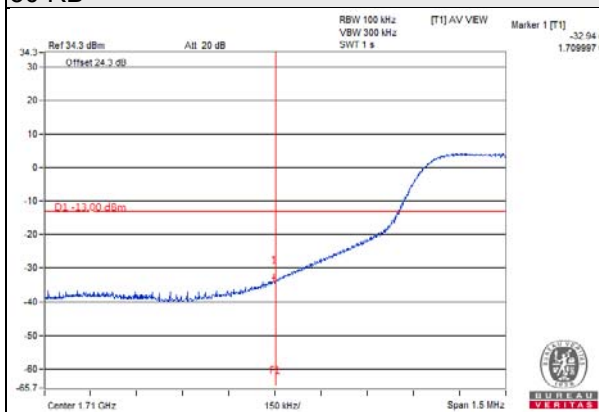


Channel 20350

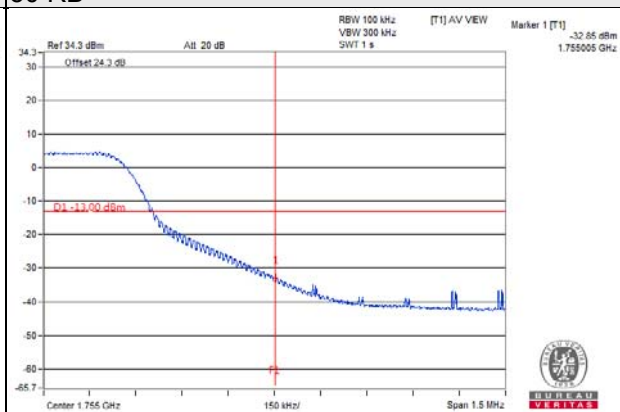
1 RB



50 RB



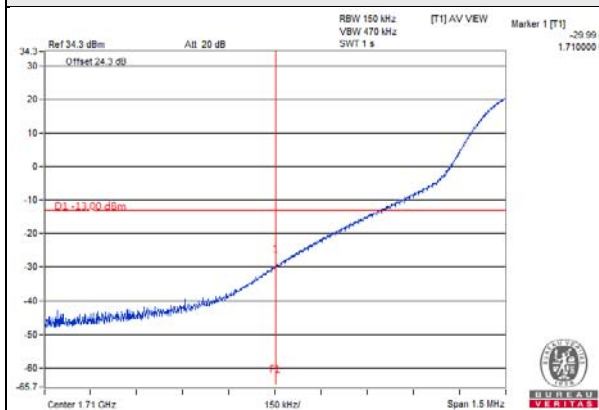
50 RB



LTE Band 4 Channel Band width: 15MHz

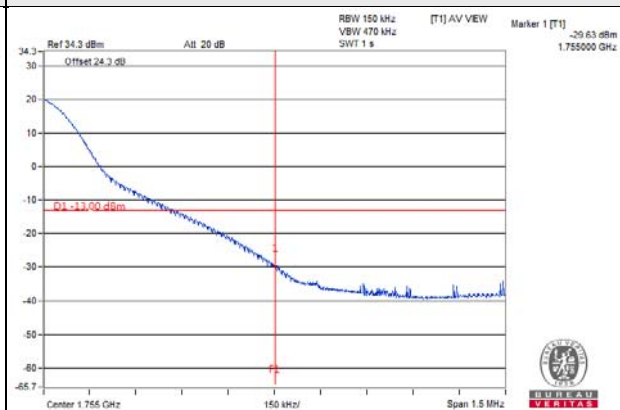
Channel 20025

1 RB

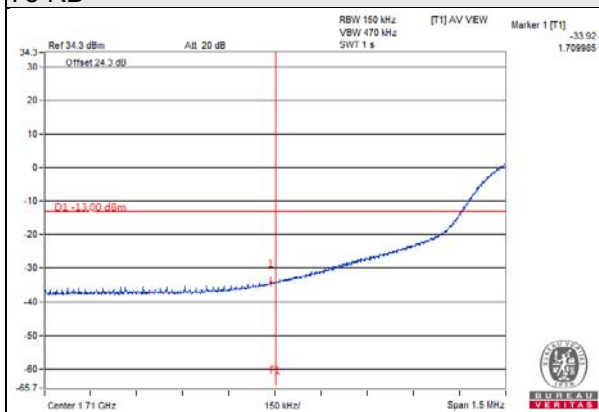


Channel 20325

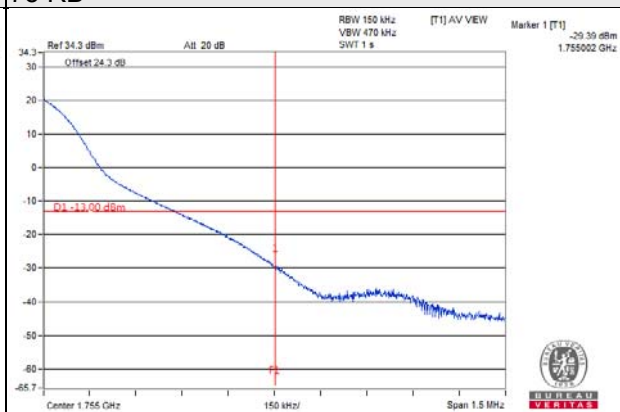
1 RB



75 RB



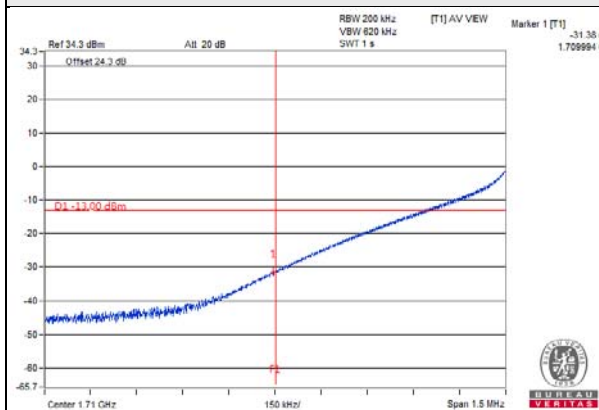
75 RB



LTE Band 4 Channel Band width: 20MHz

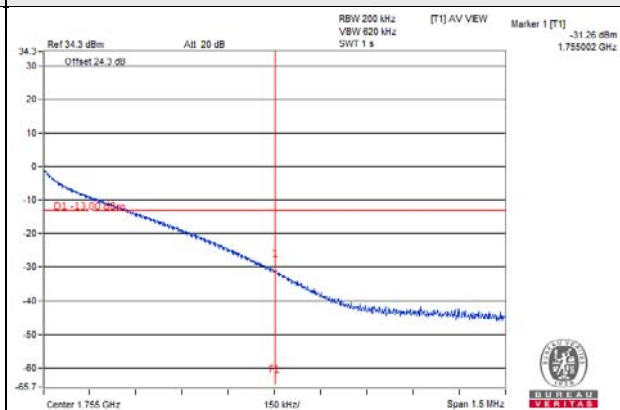
Channel 20050

1 RB

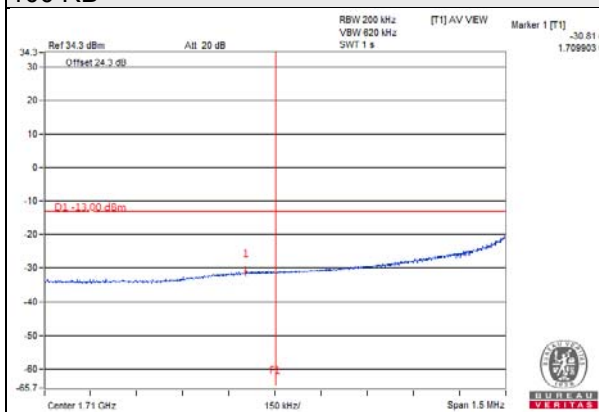


Channel 20300

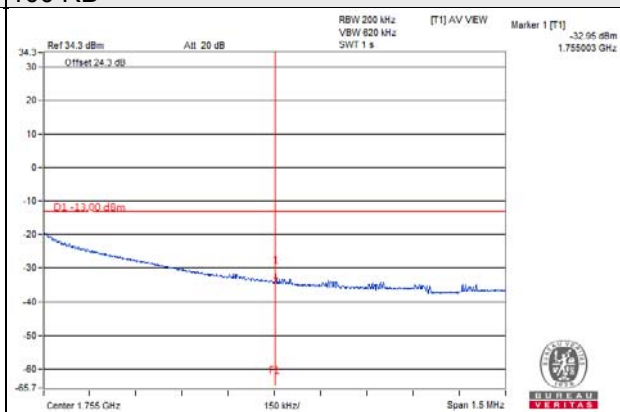
1 RB



100 RB



100 RB

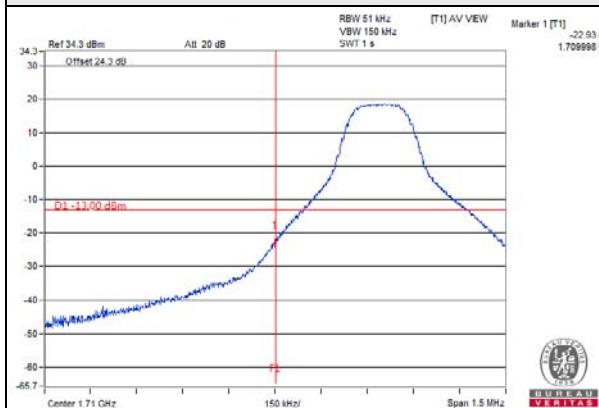


LTE Band 66

LTE Band 66 Channel Band width: 5MHz

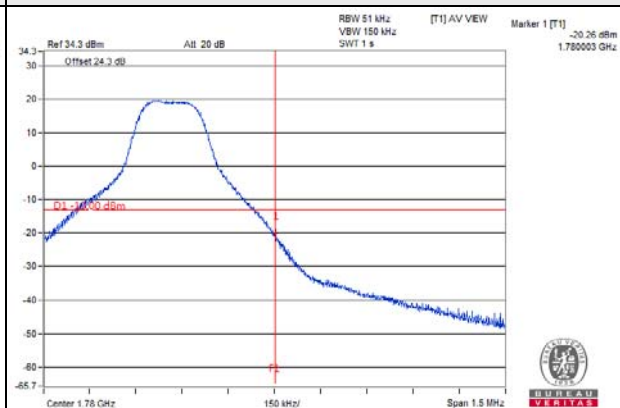
Channel 131997

1 RB

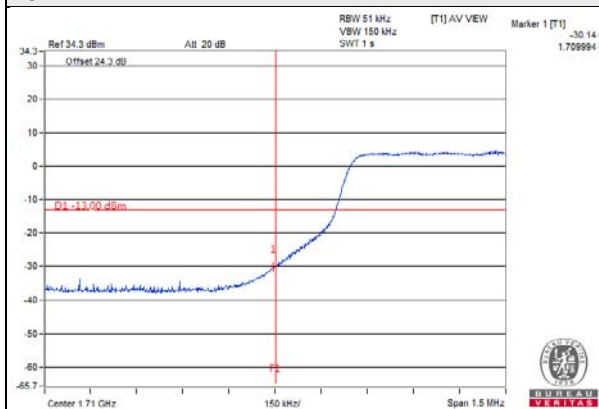


Channel 132647

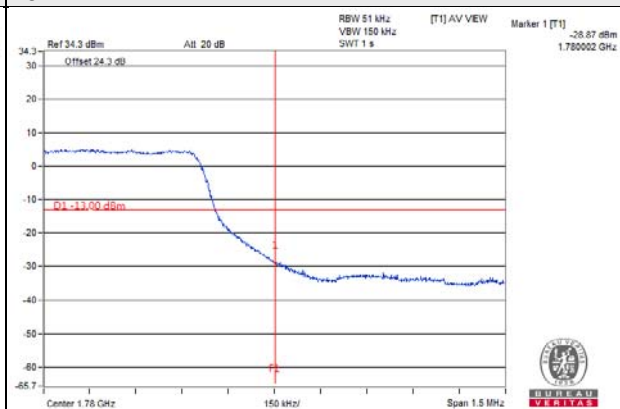
1 RB



25 RB



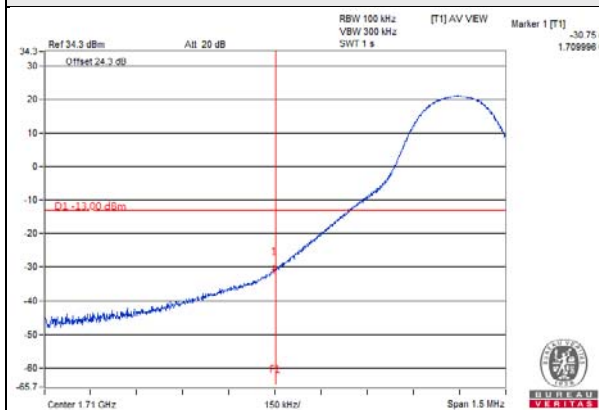
25 RB



LTE Band 66 Channel Band width: 10MHz

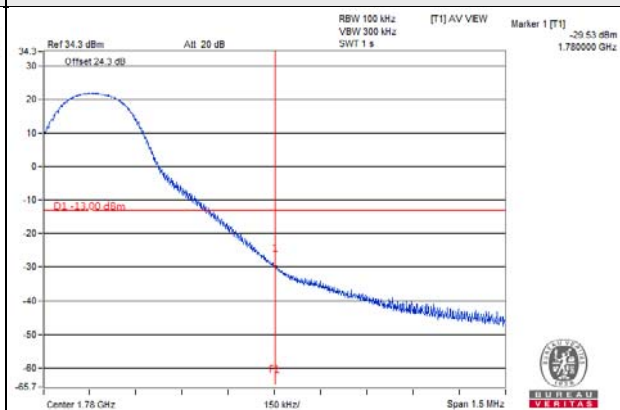
Channel 132022

1 RB

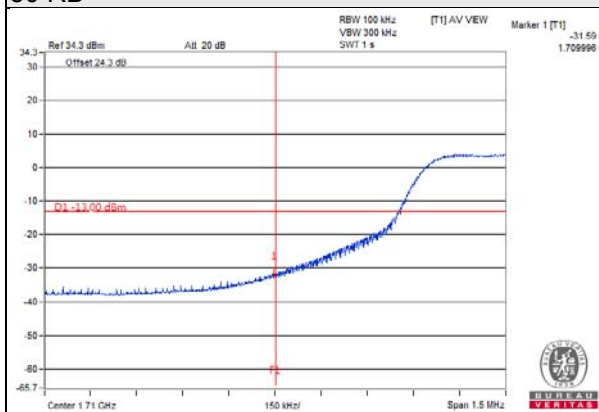


Channel 132622

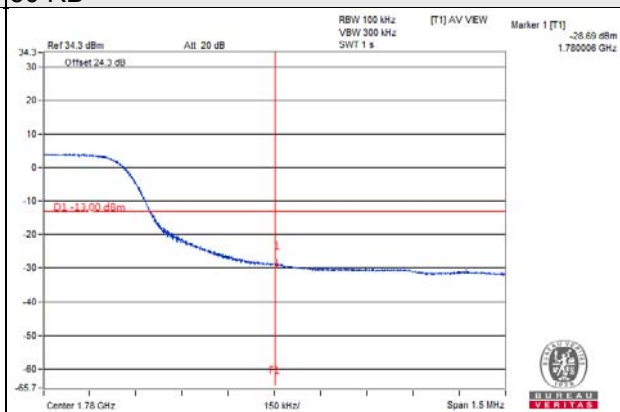
1 RB



50 RB



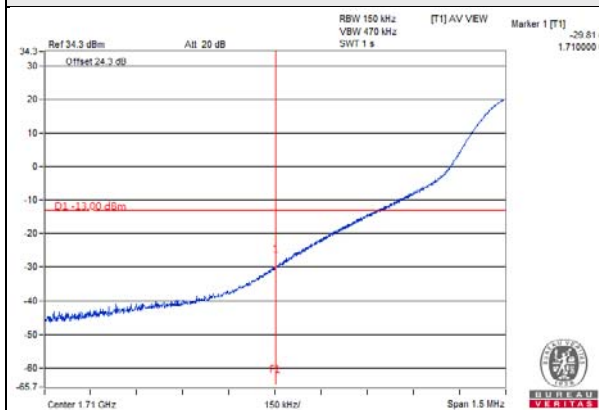
50 RB



LTE Band 66 Channel Band width: 15MHz

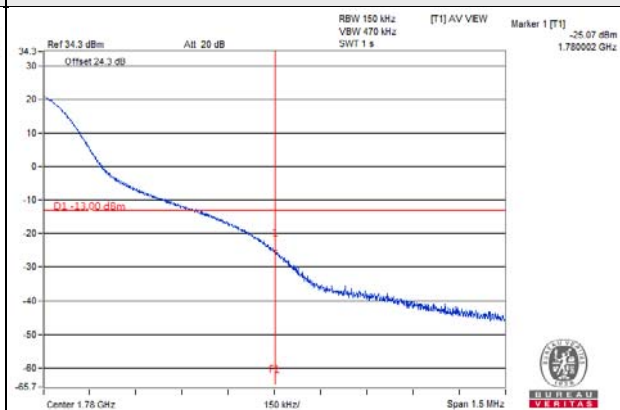
Channel 132047

1 RB

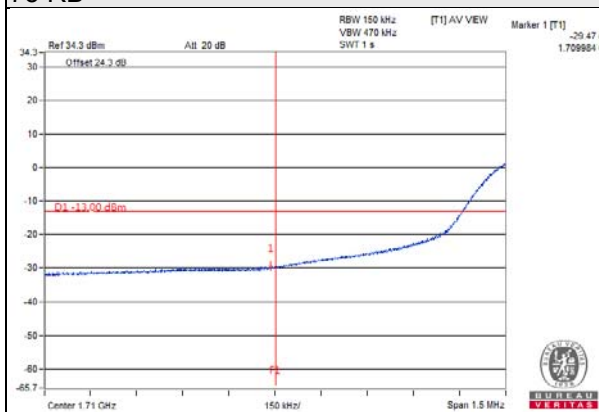


Channel 132597

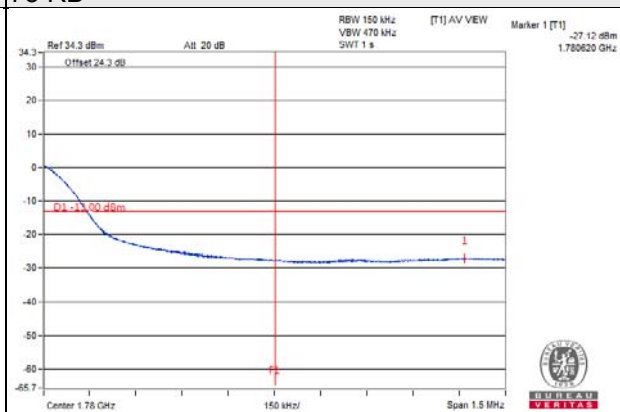
1 RB



75 RB



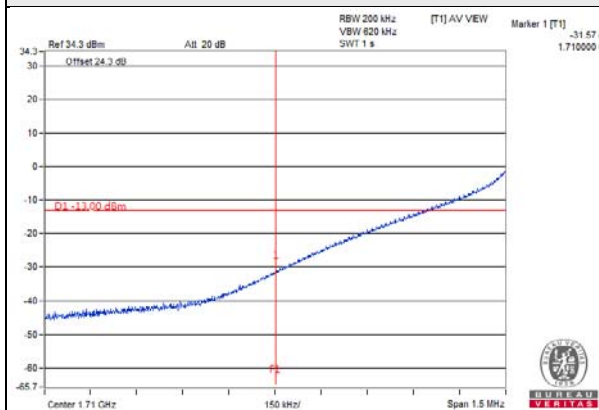
75 RB



LTE Band 66 Channel Band width: 20MHz

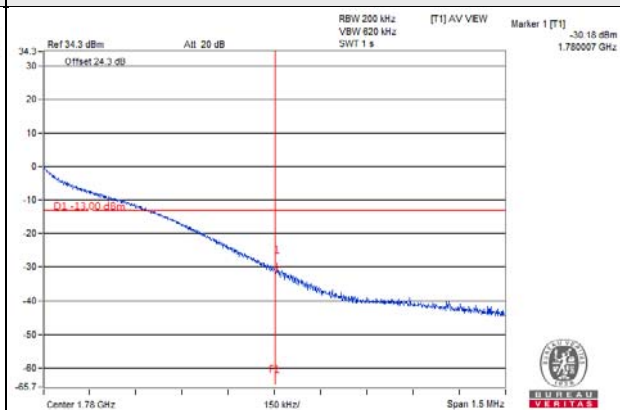
Channel 132072

1 RB

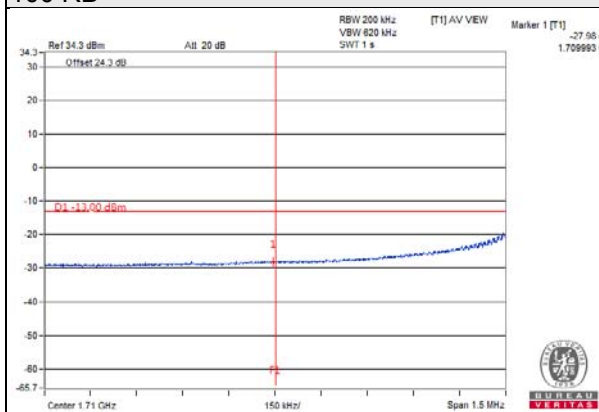


Channel 132572

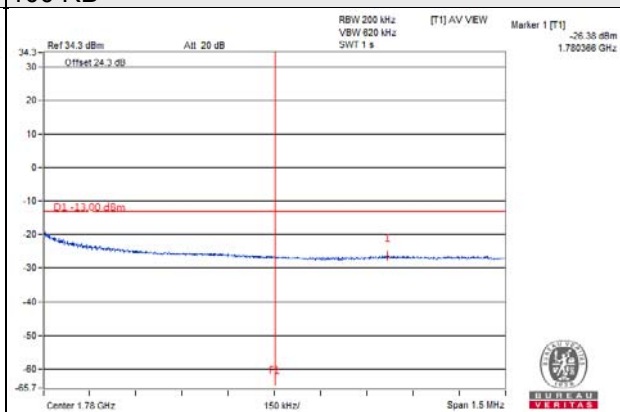
1 RB



100 RB



100 RB

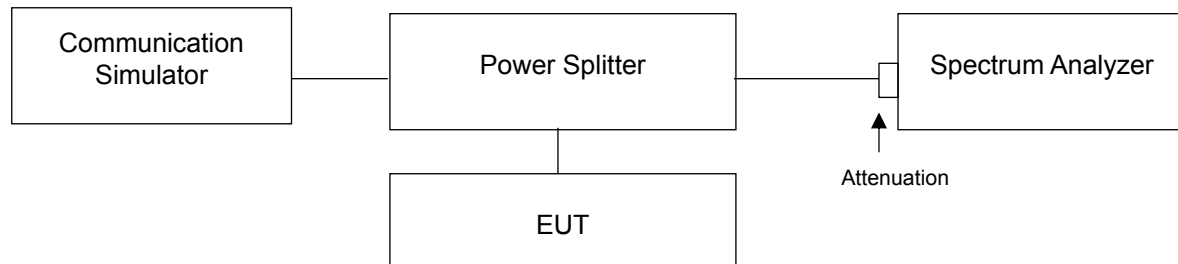


4.6 Peak to Average Ratio

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

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

4.6.4 Test Results (Mode A)

LTE Band 4

LTE Band 4									
Channel Bandwidth 1.4MHz					Channel Bandwidth 3MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
19957	1710.7	5.23	6.04	6.61	19965	1711.5	5.10	5.98	6.64
20175	1732.5	5.34	6.00	6.51	20175	1732.5	5.11	5.92	6.46
20393	1754.3	5.33	6.05	5.26	20385	1753.5	5.11	6.00	5.80
Channel Bandwidth 5MHz					Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
19975	1712.5	5.27	6.07	6.68	20000	1715	5.28	6.09	6.62
20175	1732.5	5.22	5.94	6.46	20175	1732.5	5.21	5.96	6.46
20375	1752.5	5.25	6.04	6.57	20350	1750	5.25	6.07	6.57
Channel Bandwidth 15MHz					Channel Bandwidth 20MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
20025	1717.5	5.47	6.11	6.69	20050	1720	5.18	5.97	6.60
20175	1732.5	5.42	6.02	6.54	20175	1732.5	5.19	5.94	6.48
20325	1747.5	5.48	6.11	6.66	20300	1745	5.30	6.02	6.60

Spectrum Plot of Worst Value

1.4MHz / 64QAM



3MHz / 64QAM



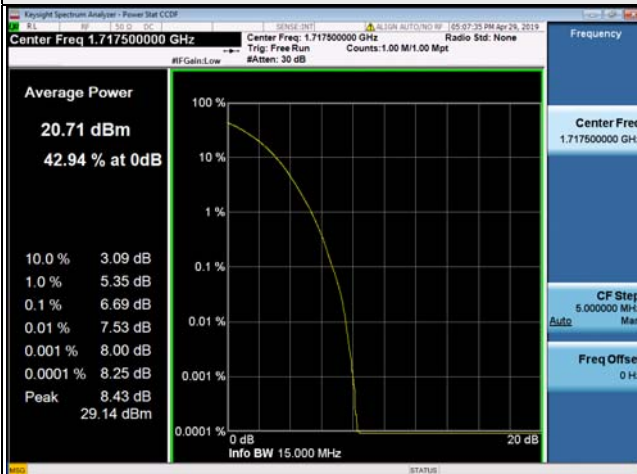
5MHz / 64QAM



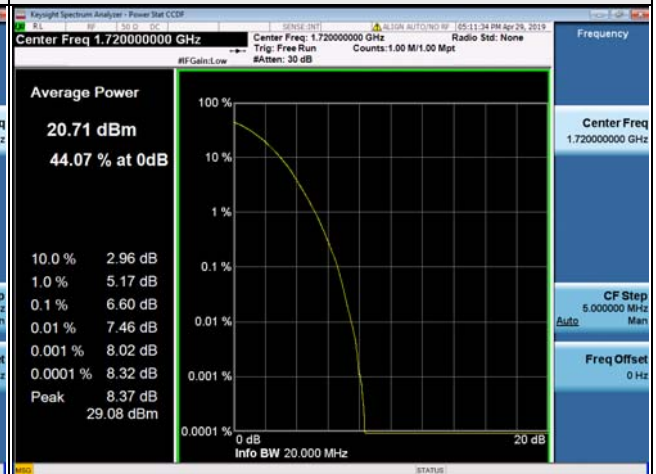
10MHz / 64QAM



15MHz / 64QAM



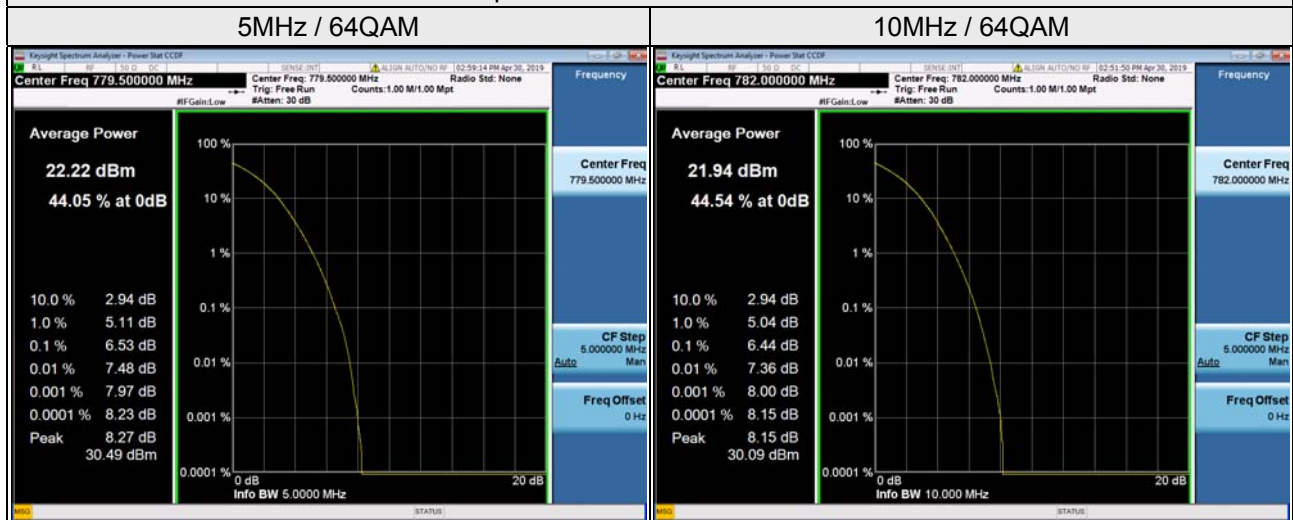
20MHz / 64QAM



LTE Band 13

LTE Band 13									
Channel Bandwidth 5MHz					Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
23205	779.5	5.39	6.09	6.53	23230	782	5.12	5.94	6.44
23230	782	5.06	5.90	6.45					
23255	784.5	5.12	5.89	5.95					

Spectrum Plot of Worst Value



LTE Band 66

LTE Band 66									
Channel Bandwidth 1.4MHz					Channel Bandwidth 3MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
131979	1710.7	4.42	5.36	6.79	131987	1711.5	4.60	5.56	6.74
132322	1745	5.16	6.07	6.76	132322	1745	5.12	6.03	6.72
132665	1779.3	4.45	5.40	6.73	132657	1778.5	4.61	5.52	6.72
Channel Bandwidth 5MHz					Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
131997	1712.5	4.88	5.76	6.71	132022	1715	5.09	5.99	6.69
132322	1745	5.16	6.04	6.67	132322	1745	5.2	6.08	6.69
132647	1777.5	4.83	5.72	6.65	132622	1775	4.87	5.70	6.66
Channel Bandwidth 15MHz					Channel Bandwidth 20MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
132047	1717.5	5.15	5.97	6.68	132072	1720	4.92	5.85	6.58
132322	1745	5.33	6.07	6.75	132322	1745	5.25	6.04	6.65
132597	1772.5	4.98	5.81	6.68	132572	1770	5.00	5.94	6.65

Spectrum Plot of Worst Value

1.4MHz / 64QAM



3MHz / 64QAM



5MHz / 64QAM



10MHz / 64QAM



15MHz / 64QAM



20MHz / 64QAM

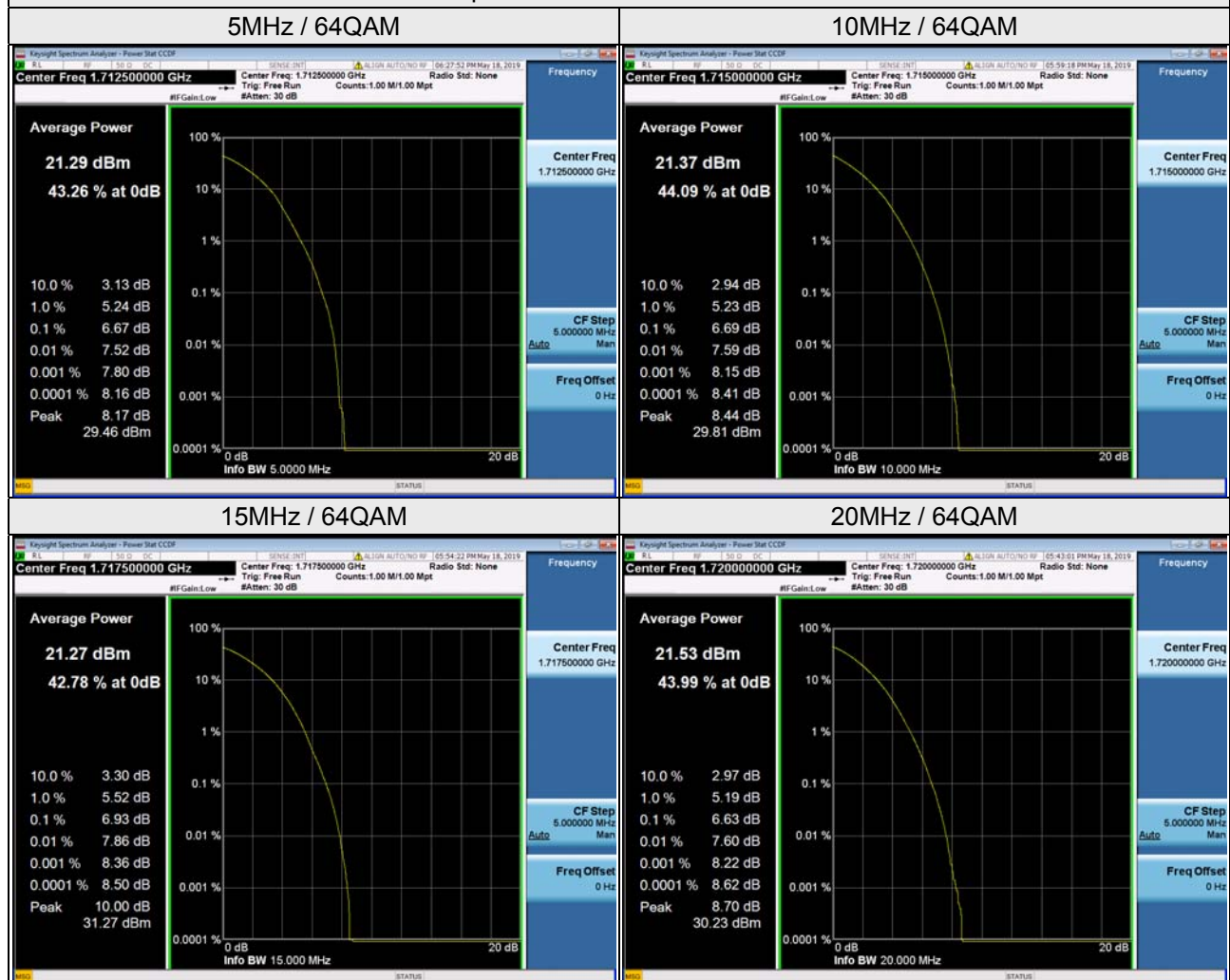


4.6.5 Test Results (Mode B)

LTE Band 4

LTE Band 4									
Channel Bandwidth 5MHz					Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
19975	1712.5	5.35	6.14	6.67	20000	1715	5.38	6.13	6.69
20175	1732.5	5.26	5.97	6.47	20175	1732.5	5.22	5.97	6.49
20375	1752.5	5.31	6.07	6.56	20350	1750	5.28	6.06	6.62
Channel Bandwidth 15MHz					Channel Bandwidth 20MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
20025	1717.5	5.50	6.14	6.93	20050	1720	5.28	6.15	6.63
20175	1732.5	5.38	5.96	6.50	20175	1732.5	5.15	5.97	6.48
20325	1747.5	5.38	6.05	6.60	20300	1745	5.25	6.06	6.62

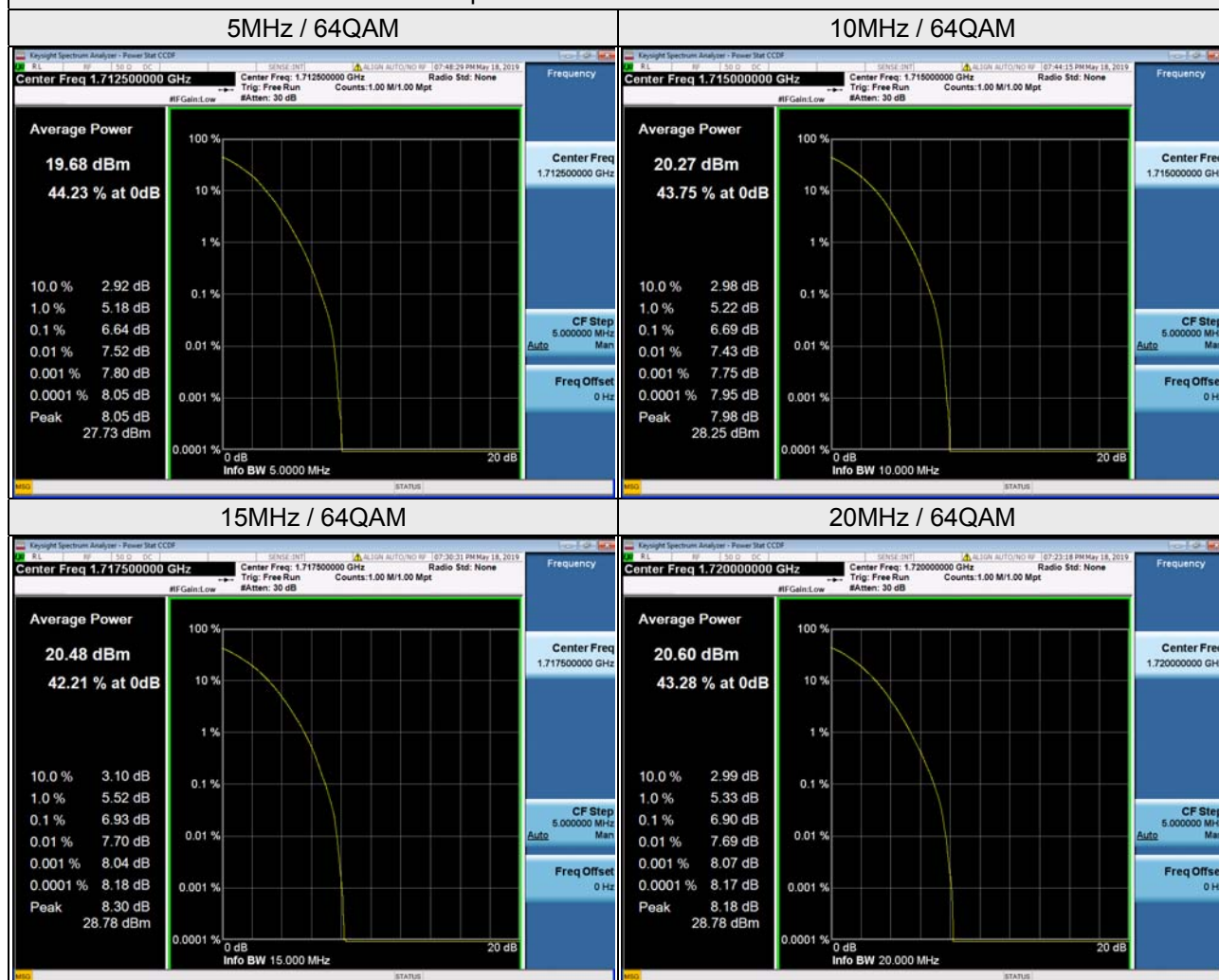
Spectrum Plot of Worst Value



LTE Band 66

LTE Band 66									
Channel Bandwidth 5MHz					Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
131997	1712.5	4.88	5.89	6.64	132022	1715	4.86	5.76	6.69
132322	1745	5.11	5.98	6.64	132322	1745	5.16	6.02	6.66
132647	1777.5	4.86	5.80	6.61	132622	1775	5.07	6.00	6.60
Channel Bandwidth 15MHz					Channel Bandwidth 20MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM			QPSK	16QAM	64QAM
132047	1717.5	5.08	5.91	6.93	132072	1720	4.90	5.83	6.90
132322	1745	5.49	6.23	6.90	132322	1745	5.37	6.19	6.86
132597	1772.5	5.51	6.28	6.87	132572	1770	5.25	6.15	6.73

Spectrum Plot of Worst Value



4.7 Conducted Spurious Emissions

4.7.1 Limits of Conducted Spurious Emissions Measurement

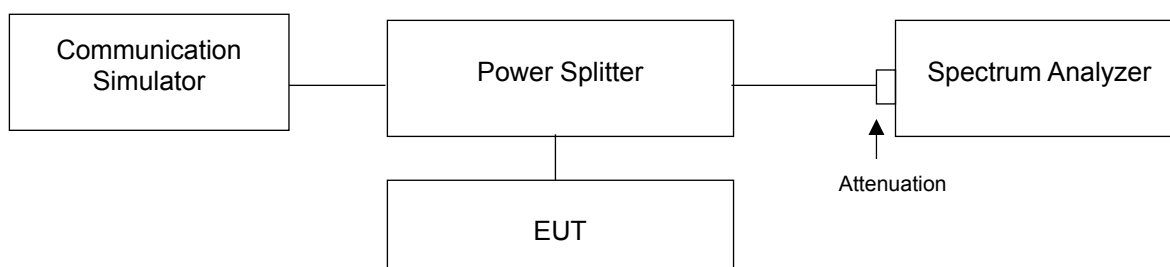
According to FCC 27.53 (c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

- (1) On any frequency outside the 746-758 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;
- (2) 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 $43 + 10 \log (P)$ dB;
- (3) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $76 + 10 \log (P)$ dB in a 6.25 kHz band segment, for base and fixed stations;
- (4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;
- (5) Compliance with the provisions of paragraphs (c)(1) and (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;
- (6) Compliance with the provisions of paragraphs (c)(3) and (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

According to FCC 27.53(f) For operations in the 746–758 MHz, 775–788 MHz, and 805–806 MHz bands, emissions in the band 1559–1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth.

According to FCC 27.53(h) AWS emission limits— General protection levels. Except as otherwise specified below, 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.

4.7.2 Test Setup



4.7.3 Test Procedure

- a. All measurements were done at 3 channels: low, middle and high operational frequency range.
- b. When the spectrum scanned from 9 kHz to the tenth harmonic of the highest fundamental frequency, it shall be connected to the 20dB pad attenuated the carried frequency.

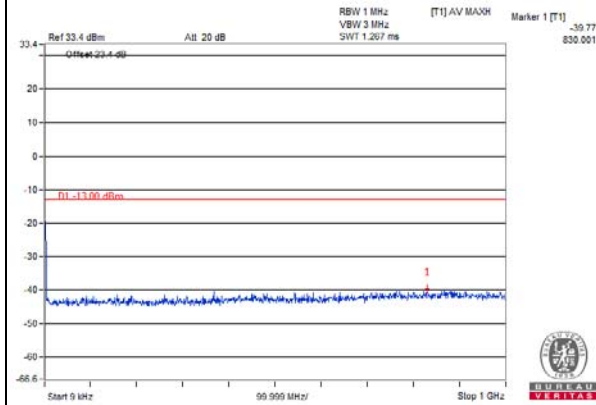
4.7.4 Test Results (Mode A)

LTE Band 4

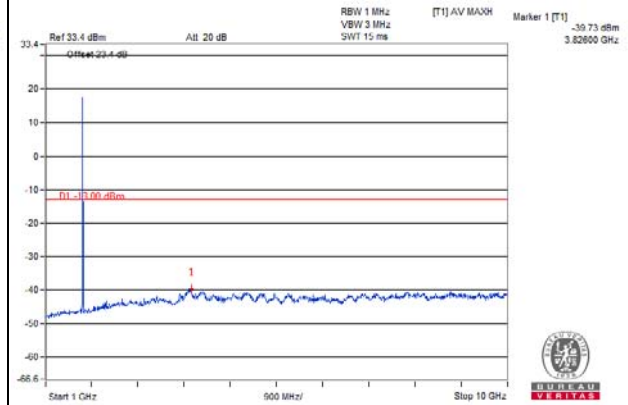
LTE Band 4 Channel Band width: 1.4MHz

Channel 19957

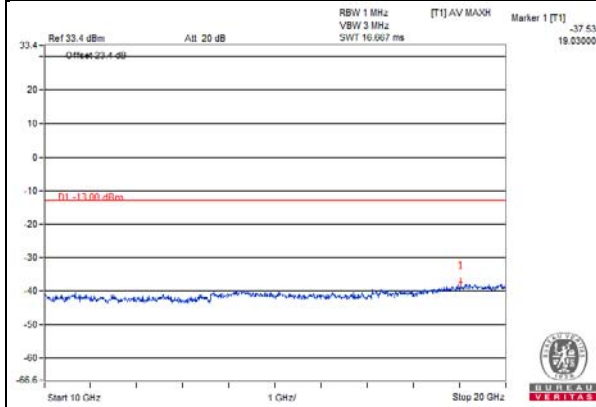
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~20GHz

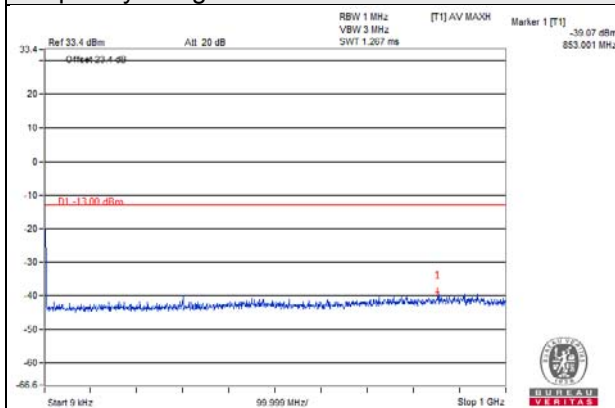


Note: The signal of 9kHz is IF signal from test instrument.

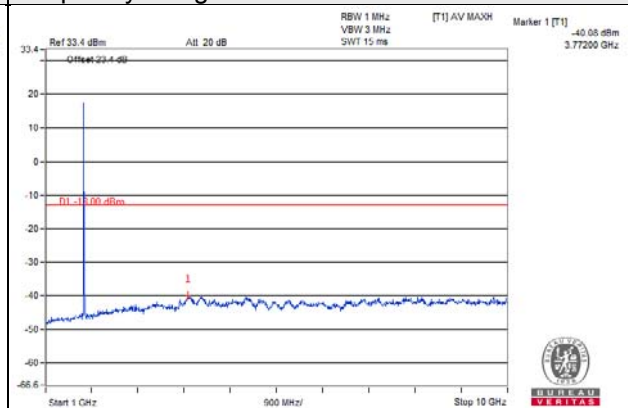
LTE Band 4 Channel Band width: 1.4MHz

Channel 20175

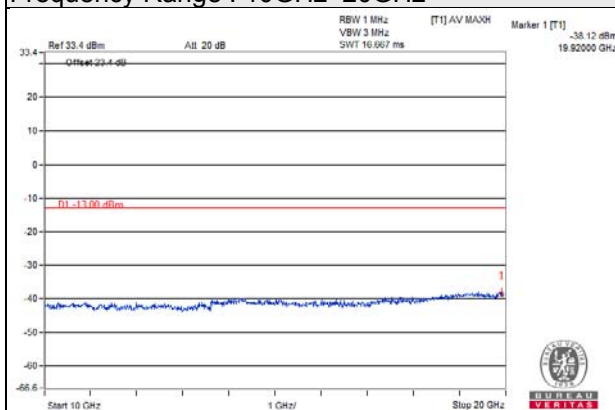
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~20GHz

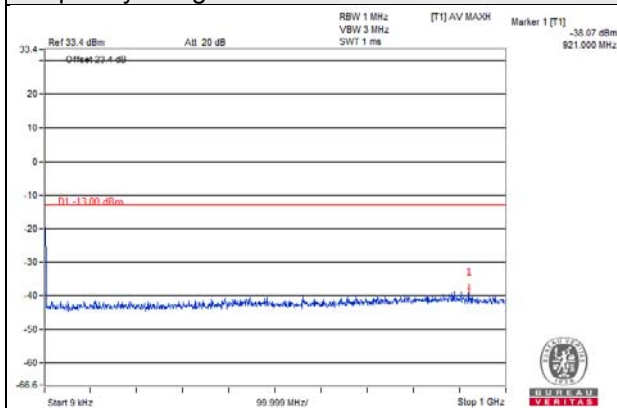


Note: The signal of 9kHz is IF signal from test instrument.

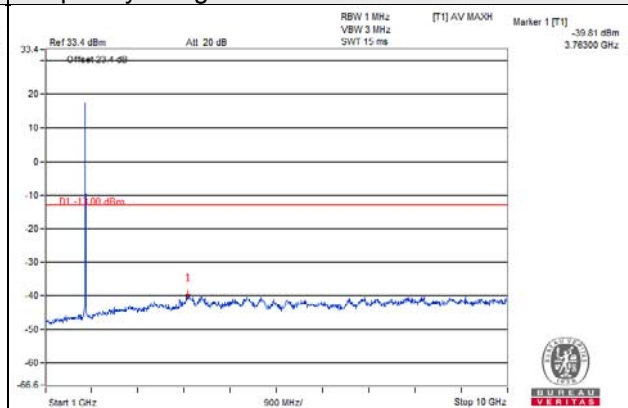
LTE Band 4 Channel Band width: 1.4MHz

Channel 20393

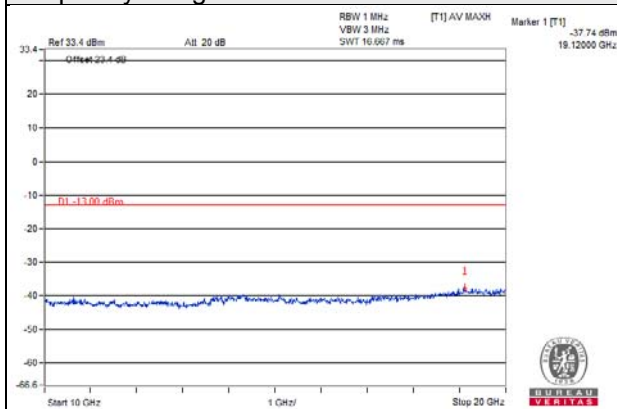
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~20GHz

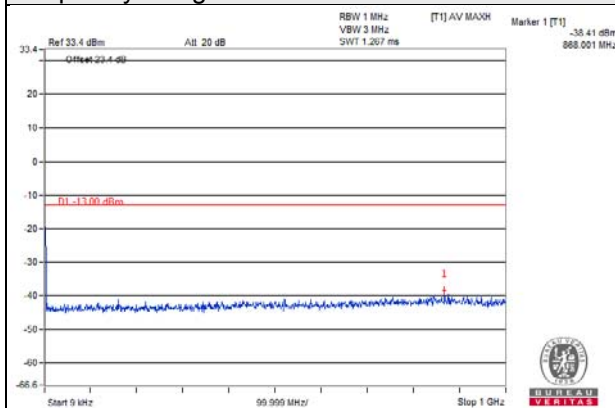


Note: The signal of 9kHz is IF signal from test instrument.

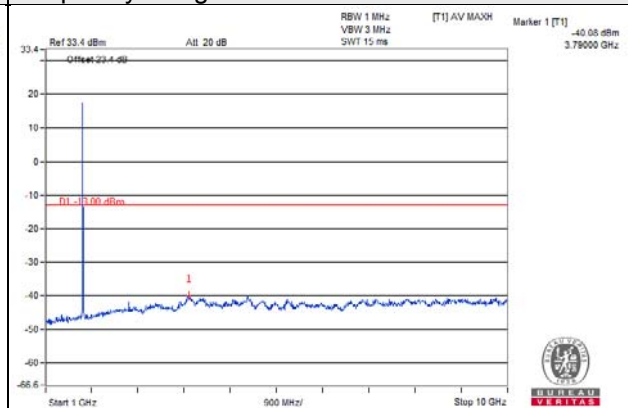
LTE Band 4 Channel Band width: 3MHz

Channel 19965

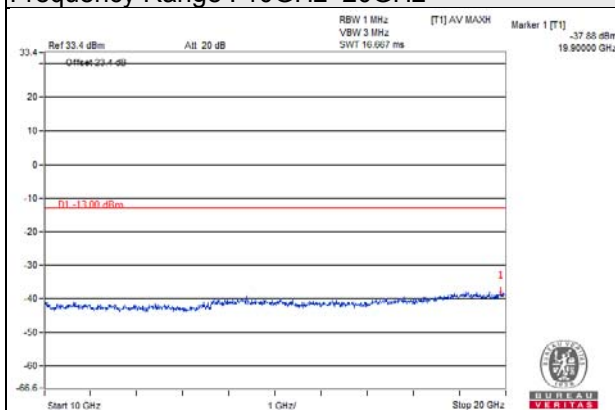
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~20GHz

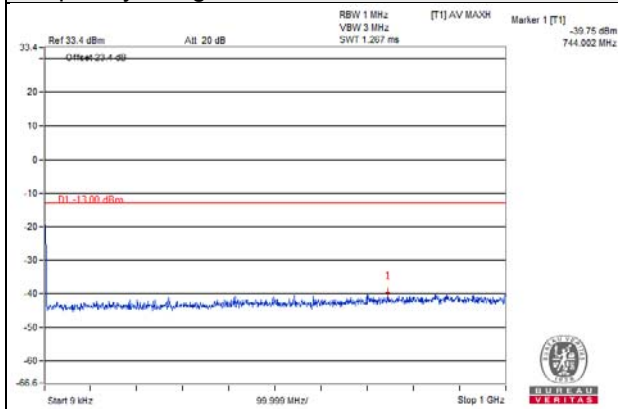


Note: The signal of 9kHz is IF signal from test instrument.

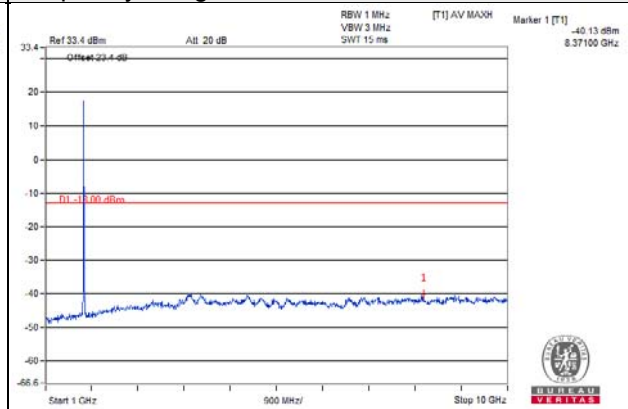
LTE Band 4 Channel Band width: 3MHz

Channel 20175

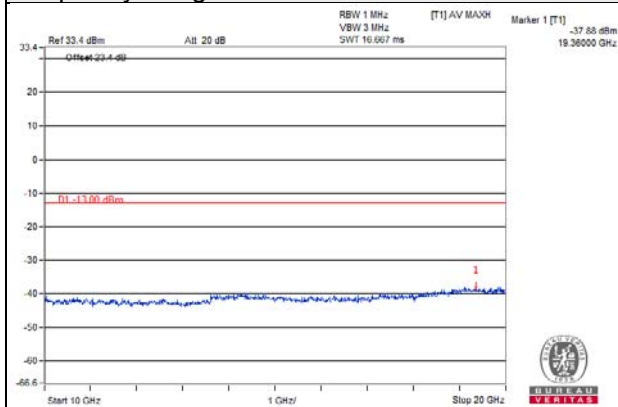
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~20GHz

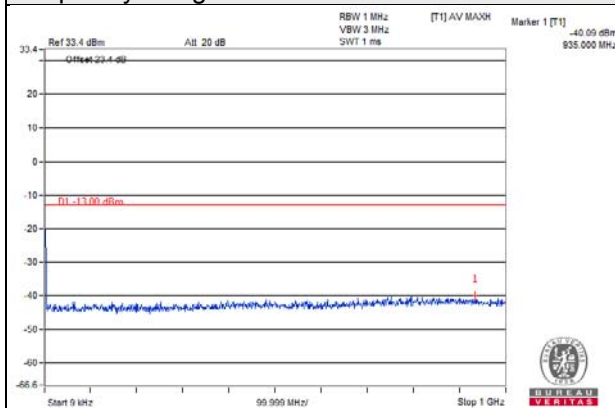


Note: The signal of 9kHz is IF signal from test instrument.

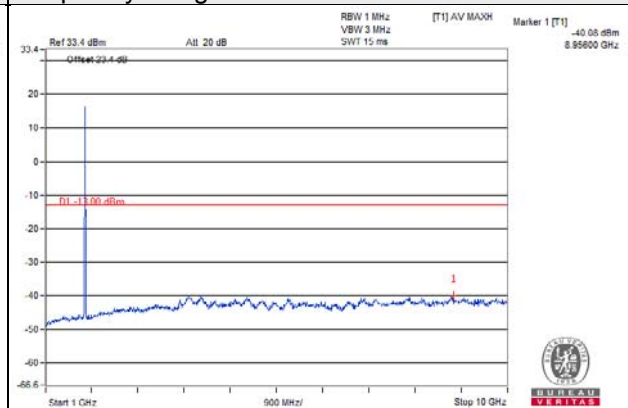
LTE Band 4 Channel Band width: 3MHz

Channel 20385

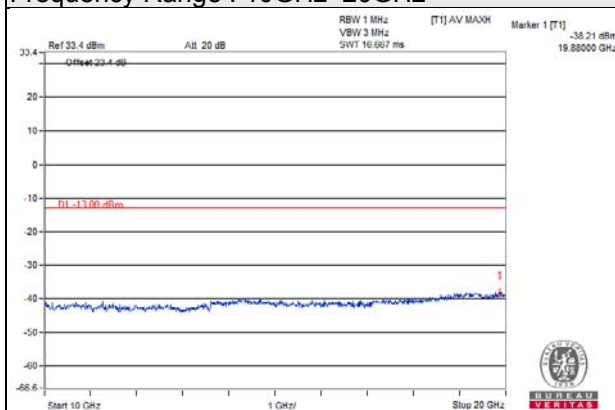
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~20GHz

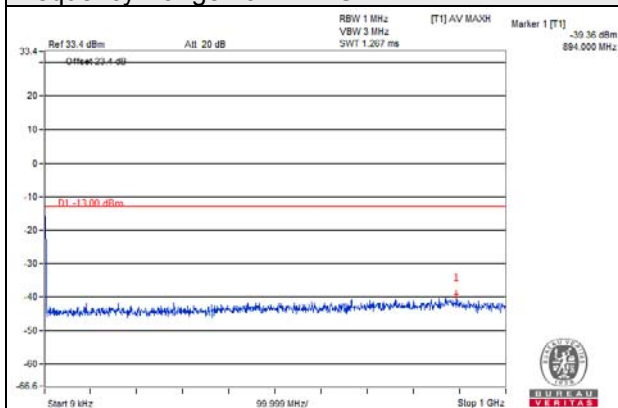


Note: The signal of 9kHz is IF signal from test instrument.

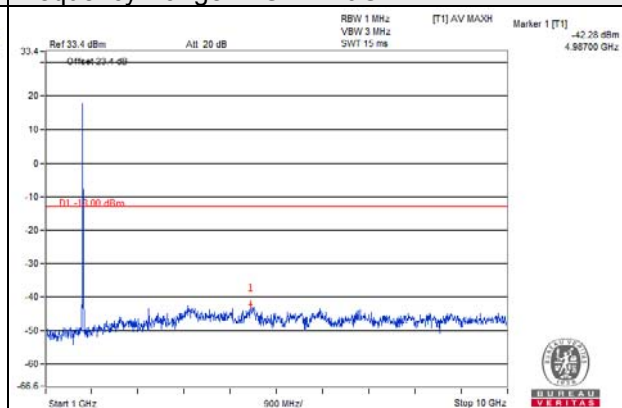
LTE Band 4 Channel Band width: 5MHz

Channel 19975

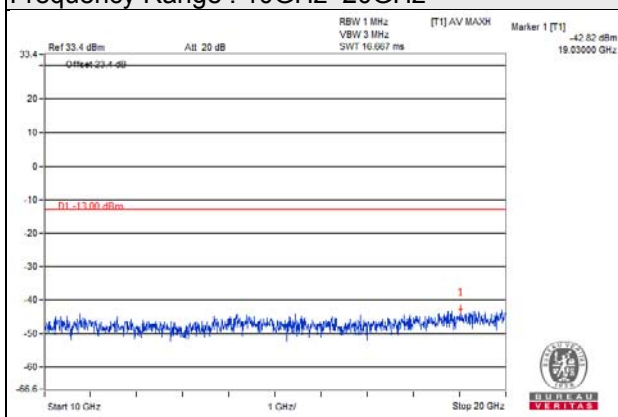
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~20GHz

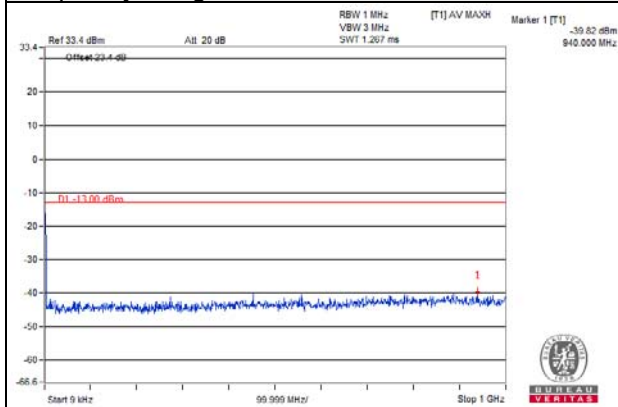


Note: The signal of 9kHz is IF signal from test instrument.

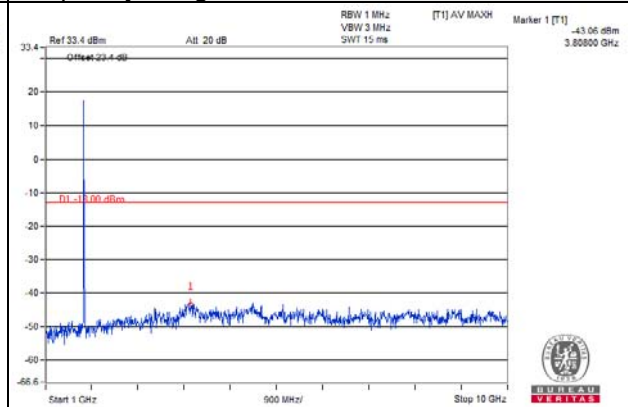
LTE Band 4 Channel Band width: 5MHz

Channel 20175

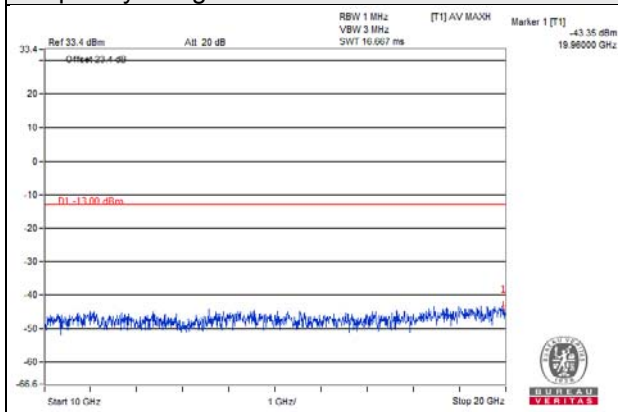
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~20GHz

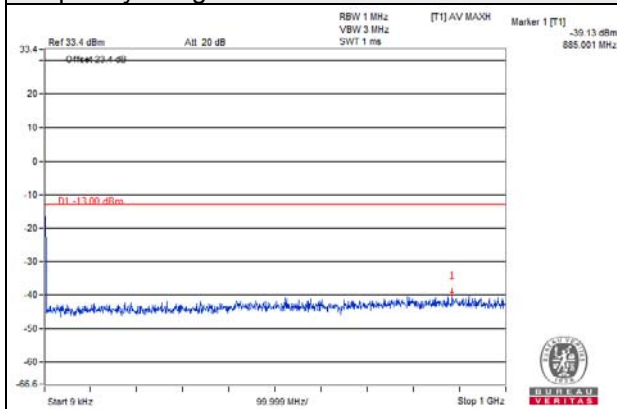


Note: The signal of 9kHz is IF signal from test instrument.

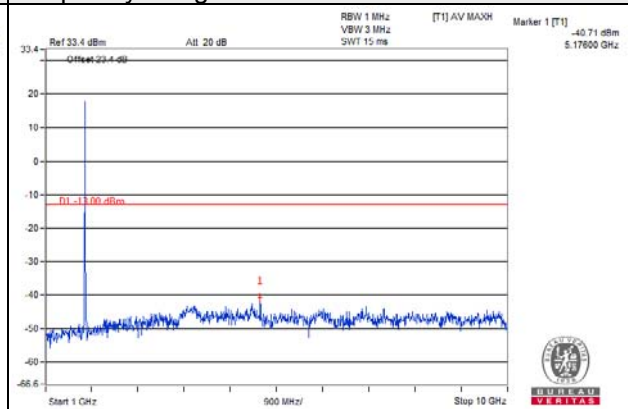
LTE Band 4 Channel Band width: 5MHz

Channel 20375

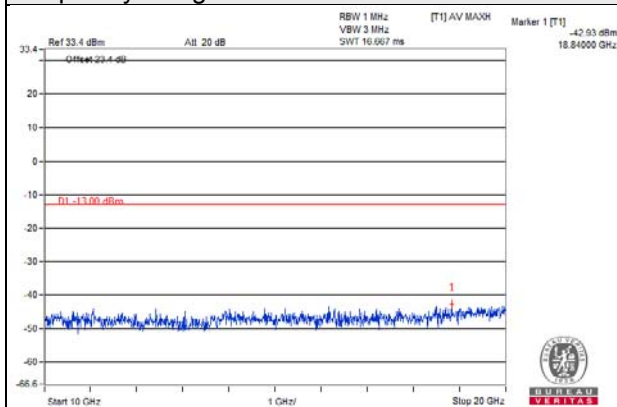
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~20GHz

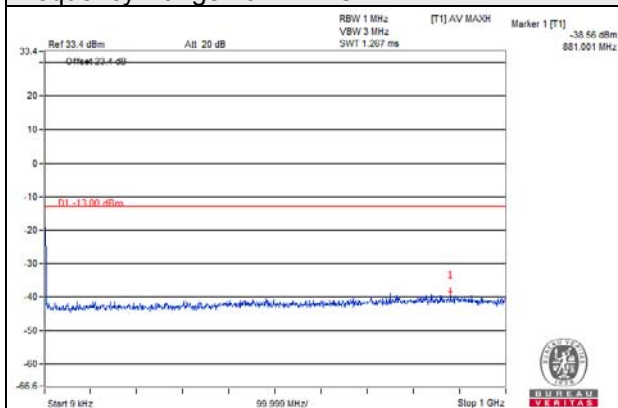


Note: The signal of 9kHz is IF signal from test instrument.

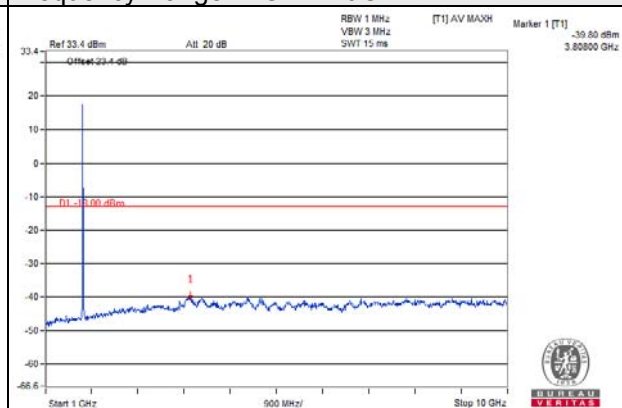
LTE Band 4 Channel Band width: 10MHz

Channel 20000

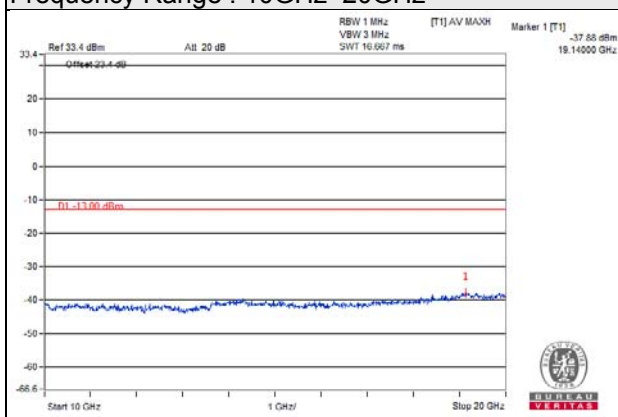
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~20GHz

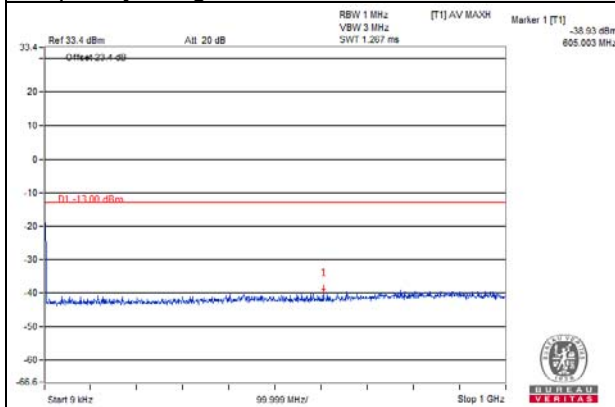


Note: The signal of 9kHz is IF signal from test instrument.

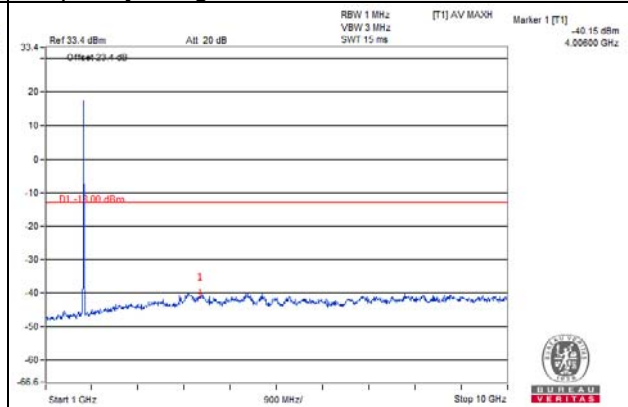
LTE Band 4 Channel Band width: 10MHz

Channel 20175

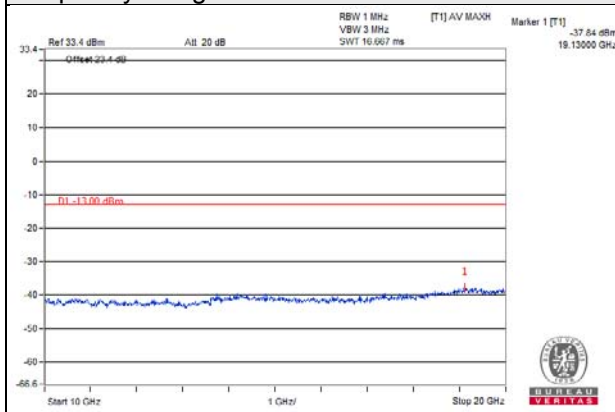
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~20GHz

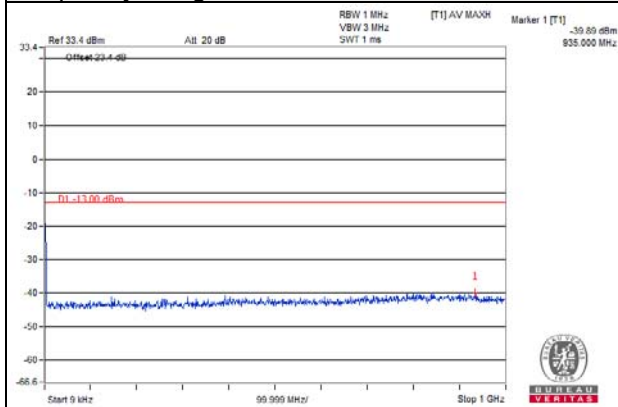


Note: The signal of 9kHz is IF signal from test instrument.

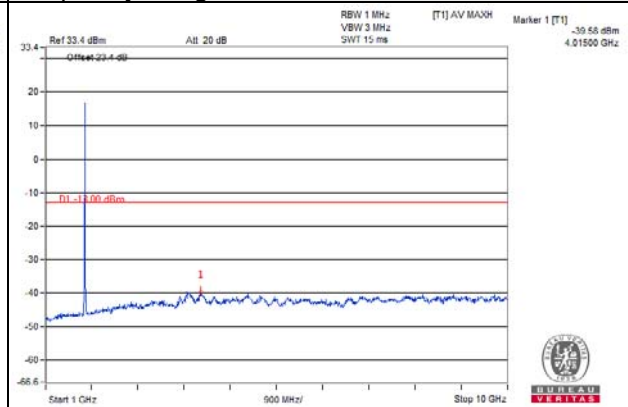
LTE Band 4 Channel Band width: 10MHz

Channel 20350

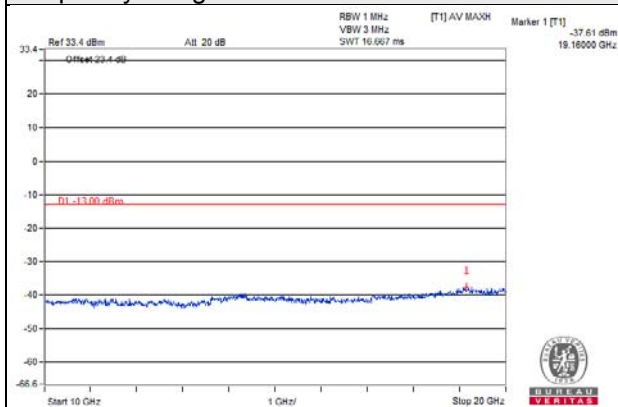
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~20GHz

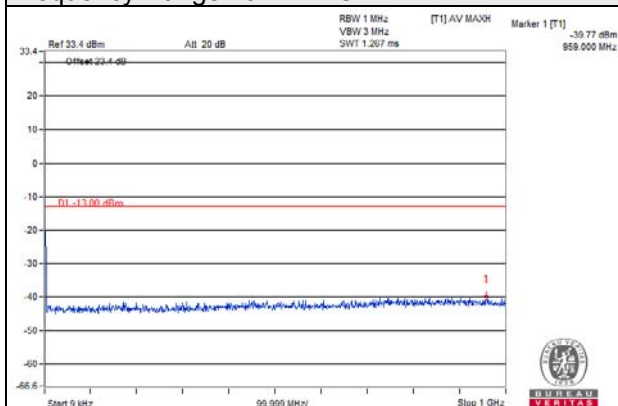


Note: The signal of 9kHz is IF signal from test instrument.

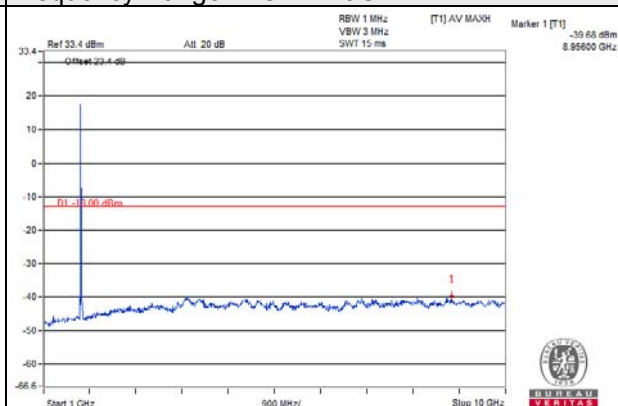
LTE Band 4 Channel Band width: 15MHz

Channel 20025

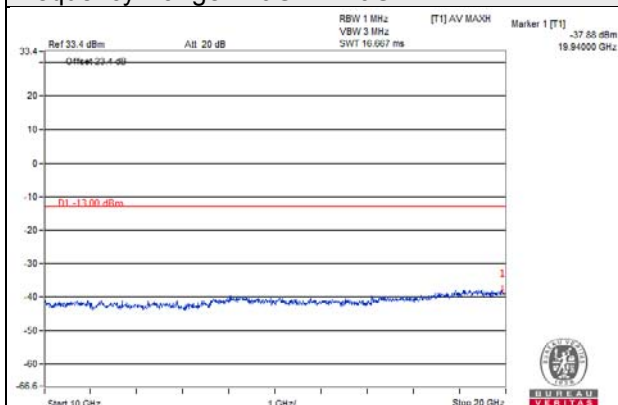
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~20GHz

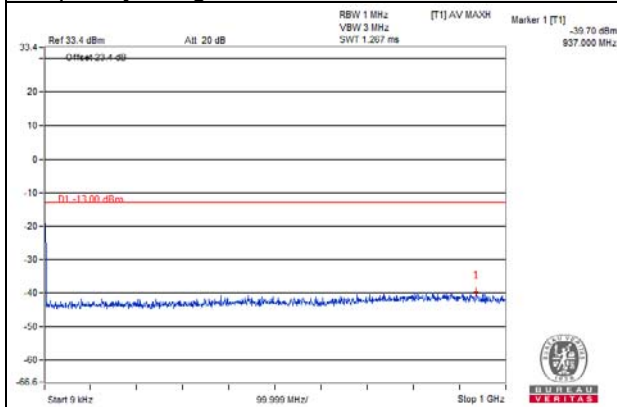


Note: The signal of 9kHz is IF signal from test instrument.

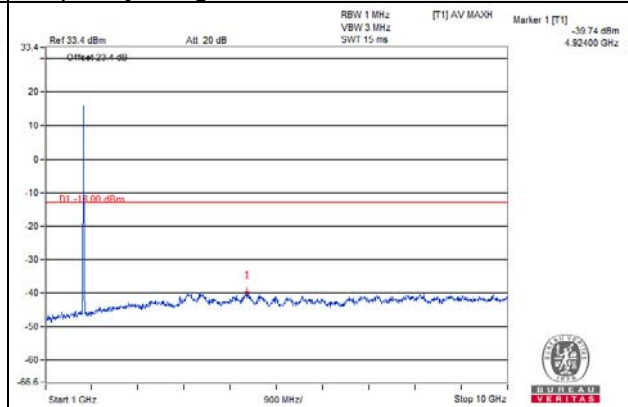
LTE Band 4 Channel Band width: 15MHz

Channel 20175

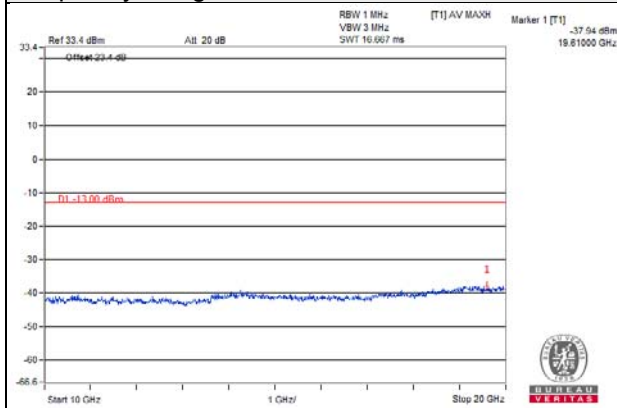
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~20GHz

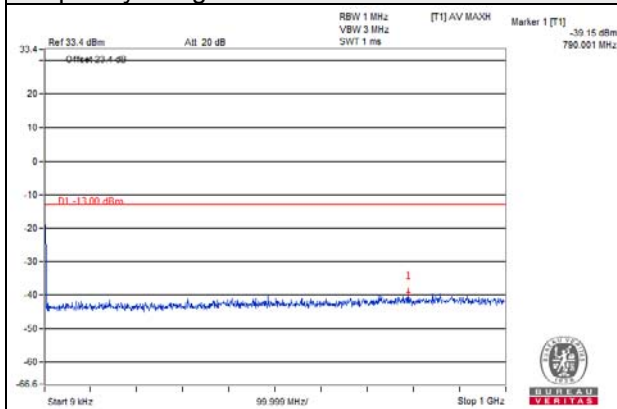


Note: The signal of 9kHz is IF signal from test instrument.

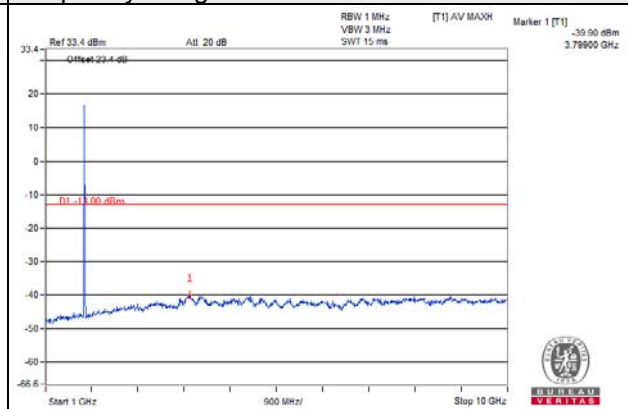
LTE Band 4 Channel Band width: 15MHz

Channel 20325

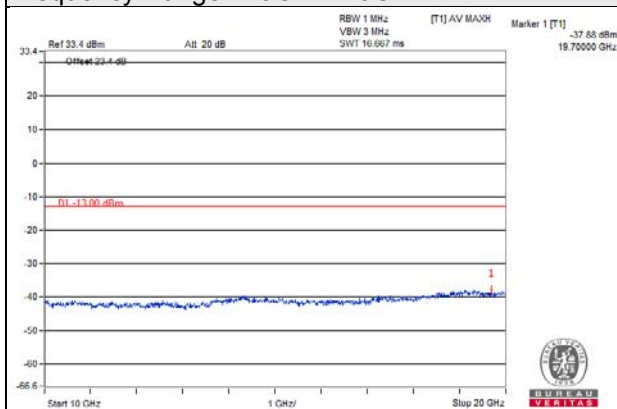
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~20GHz

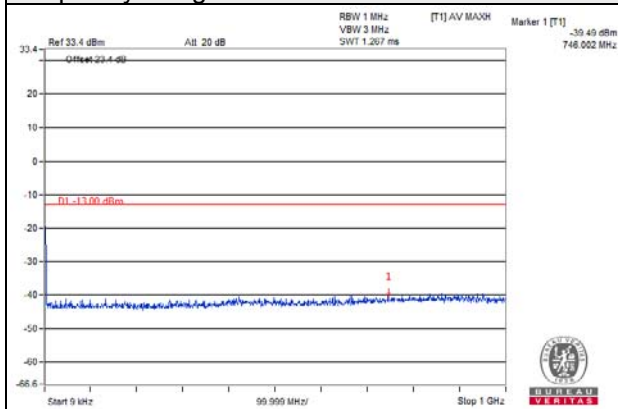


Note: The signal of 9kHz is IF signal from test instrument.

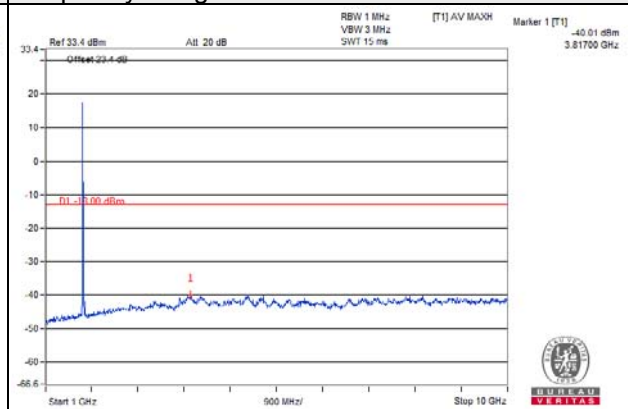
LTE Band 4 Channel Band width: 20MHz

Channel 20050

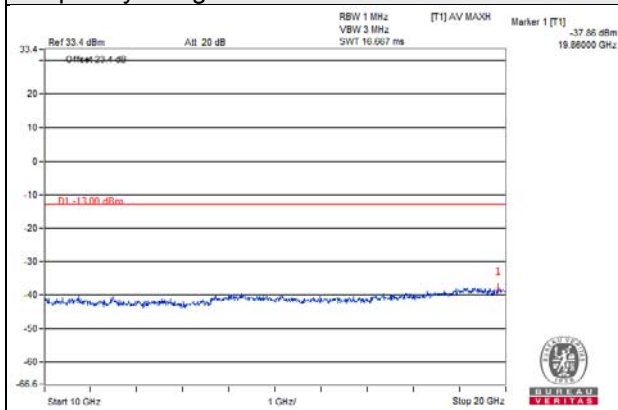
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~20GHz

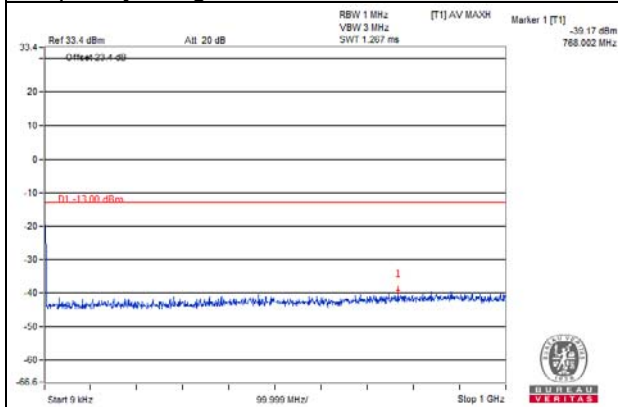


Note: The signal of 9kHz is IF signal from test instrument.

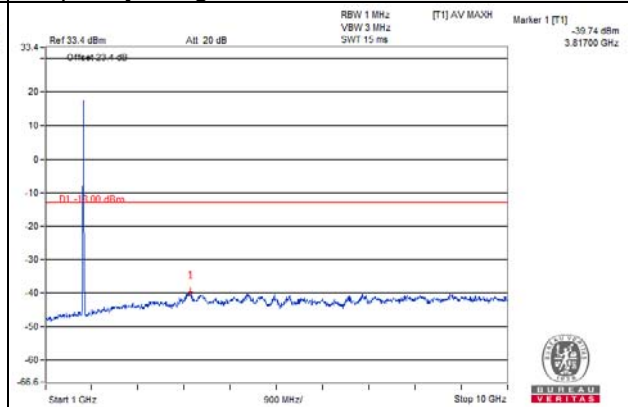
LTE Band 4 Channel Band width: 20MHz

Channel 20175

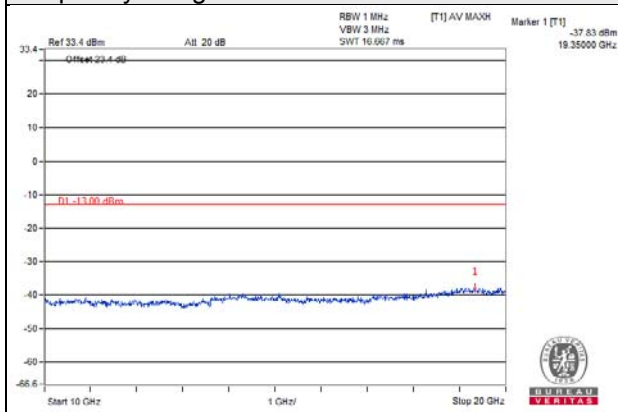
Frequency Range : 9kHz~1GHz



Frequency Range : 1GHz~10GHz



Frequency Range : 10GHz~20GHz



Note: The signal of 9kHz is IF signal from test instrument.