

FCC Test Report (Part 22)

Report No.: RF201007C02-1

FCC ID: 2AA5WKMP7R2BC

Test Model: PA-MR10LN

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Test Date: Oct. 17 ~ Dec. 30, 2020

Issued Date: Dec. 30, 2020

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**FCC Registration /
Designation Number:** 788550 / TW0003



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Release Control Record

Issue No.	Description	Date Issued
RF201007C02-1	Original release	Dec. 30, 2020

1 Certificate of Conformity

Product: Aterm MR10LN

Brand: NEC

Test Model: PA-MR10LN

Sample Status: Engineering sample

Applicant: NEC Platforms, Ltd.

Test Date: Oct. 17 ~ Dec. 30, 2020

Standards: FCC Part 22, Subpart H

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

Prepared by : Celine Chou , **Date:** Dec. 30, 2020
Celine Chou / Senior Specialist

Approved by : Bruce Chen , **Date:** Dec. 30, 2020
Bruce Chen / Senior Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 22 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 22.913 (a)	Effective radiated power	Pass	Meet the requirement of limit.
2.1047	Modulation Characteristics	Pass	Meet the requirement
22.913 (d)	Peak To Average Ratio	Pass	Meet the requirement of limit.
2.1055 22.355	Frequency Stability	Pass	Meet the requirement of limit.
2.1049	Occupied Bandwidth	Pass	Meet the requirement of limit.
22.917	Band Edge Measurements	Pass	Meet the requirement of limit.
2.1051 22.917	Conducted Spurious Emissions	Pass	Meet the requirement of limit.
2.1053 22.917	Radiated Spurious Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -33.95dB at 49.68MHz.

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) (±)
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.04 dB
	30MHz ~ 200MHz	3.86 dB
	200MHz ~ 1000MHz	3.87 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESR3	102579	Jul. 07, 2020	Jul. 06, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Jun. 09, 2020	Jun. 08, 2021
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Nov. 11, 2019	Nov. 10, 2020
			Nov. 04, 2020	Nov. 03, 2021
BILOG Antenna SCHWARZBECK	VULB9168	9168-161	Nov. 08, 2019	Nov. 07, 2020
HORN Antenna SCHWARZBECK	9120D	209	Nov. 24, 2019	Nov. 23, 2020
			Nov. 22, 2020	Nov. 21, 2021
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 24, 2019	Nov. 23, 2020
			Nov. 22, 2020	Nov. 21, 2021
Loop Antenna TESEQ	HLA 6121	45745	Jul. 06, 2020	Jul. 05, 2021
Preamplifier Agilent (Below 1GHz)	8447D	2944A10738	Aug. 16, 2020	Aug. 15, 2021
Preamplifier Agilent (Above 1GHz)	8449B	3008A02465	Mar. 23, 2020	Mar. 22, 2021
RF Coaxial Cable WOKEN With 5dB PAD	8D-FB	Cable-CH3-01	Aug. 16, 2020	Aug. 15, 2021
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (223653/4)	Aug. 16, 2020	Aug. 15, 2021
RF signal cable HUBER+SUHNER& EMCI	SUCOFLEX 104&EMC104-SM-SM- 8000	Cable-CH3-03 (309224+170907)	Aug. 16, 2020	Aug. 15, 2021
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Standard Temperature And Humidity Chamber TERCHY	MHU-225AU	920842	May 27, 2020	May 26, 2021
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA
True RMS Clamp Meter Fluke	325	31130711WS	Jun 06, 2020	Jun 05, 2021
DC Power Supply Keysight	U8002A	MY56330015	NA	NA
Radio Communication Analyzer Anritsu	MT8821C	6201462755	Feb. 13, 2020	Feb. 12, 2021
Radio Communication Analyzer Anritsu	MT8820C	6201010284	Dec. 25, 2019	Dec. 24, 2020
		6201240431	Dec. 21, 2020	Dec. 20, 2021
Digital Multimeter Fluke	87-III	70360742	Jun. 23, 2020	Jun. 22, 2021
MXG Vector signal generator Agilent	N5182B	MY53050430	Nov. 25, 2019	Nov. 24, 2020
			Nov. 25, 2020	Nov. 24, 2021

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 3.

3 General Information

3.1 General Description of EUT

Product	Aterm MR10LN		
Brand	NEC		
Test Model	PA-MR10LN		
Sample Status	Engineering sample		
Power Supply Rating	5Vdc from adapter or host equipment 3.8Vdc from battery		
Modulation Type	WCDMA: BPSK, QPSK HSDPA: BPSK HSUPA: QPSK LTE: QPSK, 16QAM		
Operating Frequency	WCDMA Band 5	826.4MHz ~ 846.6MHz	
	LTE Band 5 (Channel Bandwidth 1.4MHz)	824.7MHz ~ 848.3MHz	
	LTE Band 5 (Channel Bandwidth 3MHz)	825.5MHz ~ 847.5MHz	
	LTE Band 5 (Channel Bandwidth 5MHz)	826.5MHz ~ 846.5MHz	
	LTE Band 5 (Channel Bandwidth 10MHz)	829.0MHz ~ 844.0MHz	
	LTE Band 26 (Channel Bandwidth 1.4MHz)	824.7MHz ~ 848.3MHz	
	LTE Band 26 (Channel Bandwidth 3MHz)	825.5MHz ~ 847.5MHz	
	LTE Band 26 (Channel Bandwidth 5MHz)	826.5MHz ~ 846.5MHz	
	LTE Band 26 (Channel Bandwidth 10MHz)	829.0MHz ~ 844.0MHz	
	LTE Band 26 (Channel Bandwidth 15MHz)	831.5MHz ~ 841.5MHz	
Max. ERP Power	WCDMA Band 5	104.232mW (20.18dBm)	
		QPSK	16QAM
	LTE Band 5 (Channel Bandwidth 1.4MHz)	95.280mW (19.79dBm)	74.989mW (18.75dBm)
	LTE Band 5 (Channel Bandwidth 3MHz)	95.719mW (19.81dBm)	75.336mW (18.77dBm)
	LTE Band 5 (Channel Bandwidth 5MHz)	95.499mW (19.80dBm)	75.336mW (18.77dBm)
	LTE Band 5 (Channel Bandwidth 10MHz)	96.383mW (19.84dBm)	75.858mW (18.80dBm)
	LTE Band 26 (Channel Bandwidth 1.4MHz)	98.401mW (19.93dBm)	75.162mW (18.76dBm)
	LTE Band 26 (Channel Bandwidth 3MHz)	97.949mW (19.91dBm)	77.090mW (18.87dBm)
	LTE Band 26 (Channel Bandwidth 5MHz)	98.401mW (19.93dBm)	76.208mW (18.82dBm)
	LTE Band 26 (Channel Bandwidth 10MHz)	97.275mW (19.88dBm)	77.268mW (18.88dBm)
LTE Band 26 (Channel Bandwidth 15MHz)	99.770mW (19.99dBm)	78.163mW (18.93dBm)	

Emission Designator	WCDMA Band 5	4M16F9W	
		QPSK	16QAM
	LTE Band 5 (Channel Bandwidth 1.4MHz)	1M09G7D	1M09D7W
	LTE Band 5 (Channel Bandwidth 3MHz)	2M70G7D	2M70D7W
	LTE Band 5 (Channel Bandwidth 5MHz)	4M49G7D	4M49D7W
	LTE Band 5 (Channel Bandwidth 10MHz)	8M96G7D	8M96D7W
	LTE Band 26 (Channel Bandwidth 1.4MHz)	1M09G7D	1M09D7W
	LTE Band 26 (Channel Bandwidth 3MHz)	2M70G7D	2M70D7W
	LTE Band 26 (Channel Bandwidth 5MHz)	4M49G7D	4M49D7W
	LTE Band 26 (Channel Bandwidth 10MHz)	8M96G7D	8M96D7W
	LTE Band 26 (Channel Bandwidth 15MHz)	13M5G7D	13M4D7W
Antenna Type	Refer to Note as below		
Antenna Connector	Refer to Note as below		
Accessory Device	Adapter, Battery		
Cable Supplied	1.0m shielded USB cable without core		

Note:

1. The EUT consumes power from the following adapter and battery.

Adapter (for support unit only)	
Brand	Sony
Model	ACC-283N
Input Power	100-240Vac, 0.2A, 50/60Hz
Output Power	5Vdc, 1.5A

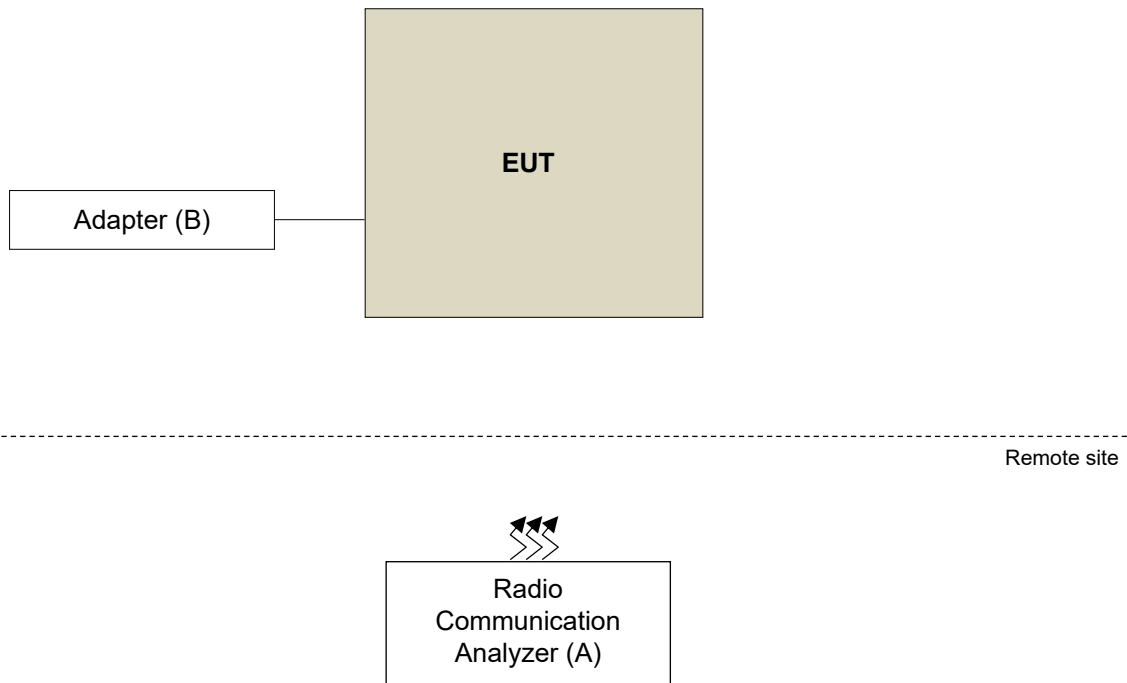
Battery	
Brand	Murata
Model	LIS1717NEPC SY6
Rating	3.8Vdc, 4000mAh

2. The following antennas were provided to the EUT.

Type	Connector	Gain (dBi)						
		WCDMA B2	WCDMA B4	WCDMA B5	LTE B2	LTE B4	LTE B5	LTE B26
Inverted F	NA	0.0	0.0	-1.0	0.0	0.0	-1.0	-1.0

* The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

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.	Radio Communication Analyzer	Anritsu	MT8821C	6261806803	NA	-
B.	Adapter	Sony	ACC-283N	NA	NA	Provided by manufacturer

Note:

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

3.3 Test Mode Applicability and Tested Channel Detail

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

WCDMA Band 5

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	ERP	4132 to 4233	4132 (826.4MHz), 4182 (836.4MHz), 4233 (846.6MHz)	WCDMA
-	Modulation Characteristics	4132 to 4233	4183 (836.6MHz)	WCDMA, HSDPA, HSUPA
-	Frequency Stability	4132 to 4233	4132 (826.4MHz), 4233 (846.6MHz)	WCDMA
-	Occupied Bandwidth	4132 to 4233	4132 (826.4MHz), 4182 (836.4MHz), 4233 (846.6MHz)	WCDMA, HSDPA, HSUPA
-	Band Edge	4132 to 4233	4132 (826.4MHz), 4233 (846.6MHz)	WCDMA, HSDPA, HSUPA
-	Peak To Average Ratio	4132 to 4233	4132 (826.4MHz), 4182 (836.4MHz), 4233 (846.6MHz)	WCDMA, HSDPA, HSUPA
-	Conducted Emission	4132 to 4233	4132 (826.4MHz), 4182 (836.4MHz), 4233 (846.6MHz)	WCDMA, HSDPA, HSUPA
-	Radiated Emission Below 1GHz	4132 to 4233	4233 (846.6MHz)	WCDMA
-	Radiated Emission Above 1GHz	4132 to 4233	4132 (826.4MHz), 4182 (836.4MHz), 4233 (846.6MHz)	WCDMA

Note: For radiated emission below 1GHz, low, mid and high channels were pre-tested E.R.P. in chamber. High channel was found to be the worst case and therefore had been chosen for all final tests.

LTE Band 5

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	ERP	20407 to 20643	20407 (824.7MHz), 20525 (836.5MHz), 20643 (848.3MHz)	1.4MHz	QPSK / 16QAM	1 RB / 0 RB Offset 1 RB / 2 RB Offset 1 RB / 5 RB Offset 3 RB / 0 RB Offset 3 RB / 1 RB Offset 3 RB / 3 RB Offset 6 RB / 0 RB Offset
		20415 to 20635	20415 (825.5MHz), 20525 (836.5MHz), 20635 (847.5MHz)	3MHz	QPSK / 16QAM	1 RB / 0 RB Offset 1 RB / 7 RB Offset 1 RB / 14 RB Offset 8 RB / 0 RB Offset 8 RB / 3 RB Offset 8 RB / 7 RB Offset 15 RB / 0 RB Offset
		20425 to 20625	20425 (826.5MHz), 20525 (836.5MHz), 20625 (846.5MHz)	5MHz	QPSK / 16QAM	1 RB / 0 RB Offset 1 RB / 12 RB Offset 1 RB / 24 RB Offset 12 RB / 0 RB Offset 12 RB / 6 RB Offset 12 RB / 13 RB Offset 25 RB / 0 RB Offset
		20450 to 20600	20450 (829.0MHz), 20525 (836.5MHz), 20600 (844.0MHz)	10MHz	QPSK / 16QAM	1 RB / 0 RB Offset 1 RB / 24 RB Offset 1 RB / 49 RB Offset 25 RB / 0 RB Offset 25 RB / 12 RB Offset 25 RB / 25 RB Offset 50 RB / 0 RB Offset
-	Modulation characteristics	20450 to 20600	20525 (836.5MHz)	10MHz	QPSK / 16QAM	50 RB / 0 RB Offset
-	Frequency Stability	20407 to 20643	20407 (824.7MHz), 20643 (848.3MHz)	1.4MHz	QPSK	6 RB / 0 RB Offset
		20415 to 20635	20415 (825.5MHz), 20635 (847.5MHz)	3MHz	QPSK	15 RB / 0 RB Offset
		20425 to 20625	20425 (826.5MHz), 20625 (846.5MHz)	5MHz	QPSK	25 RB / 0 RB Offset
		20450 to 20600	20450 (829.0MHz), 20600 (844.0MHz)	10MHz	QPSK	50 RB / 0 RB Offset
-	Occupied Bandwidth	20407 to 20643	20407 (824.7MHz), 20525 (836.5MHz), 20643 (848.3MHz)	1.4MHz	QPSK / 16QAM	6 RB / 0RB Offset
		20415 to 20635	20415 (825.5MHz), 20525 (836.5MHz), 20635 (847.5MHz)	3MHz	QPSK / 16QAM	15 RB / 0RB Offset
		20425 to 20625	20425 (826.5MHz), 20525 (836.5MHz), 20625 (846.5MHz)	5MHz	QPSK / 16QAM	25RB / 0RB Offset
		20450 to 20600	20450 (829.0MHz), 20525 (836.5MHz), 20600 (844.0MHz)	10MHz	QPSK / 16QAM	50RB / 0RB Offset

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	Band Edge	20407 to 20643	20407 (824.7MHz), 20643 (848.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset 1 RB / 5 RB Offset 6 RB / 0 RB Offset
		20415 to 20635	20415 (825.5MHz), 20635 (847.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset 1 RB / 14 RB Offset 15 RB / 0 RB Offset
		20425 to 20625	20425 (826.5MHz), 20625 (846.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
		20450 to 20600	20450 (829.0MHz), 20600 (844.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset 1 RB / 49 RB Offset 50 RB / 0 RB Offset
-	Peak to Average Ratio	20407 to 20643	20407 (824.7MHz), 20525 (836.5MHz), 20643 (848.3MHz)	1.4MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		20415 to 20635	20415 (825.5MHz), 20525 (836.5MHz), 20635 (847.5MHz)	3MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		20425 to 20625	20425 (826.5MHz), 20525 (836.5MHz), 20625 (846.5MHz)	5MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		20450 to 20600	20450 (829.0MHz), 20525 (836.5MHz), 20600 (844.0MHz)	10MHz	QPSK / 16QAM	1 RB / 0 RB Offset
-	Conducted Emission	20407 to 20643	20407 (824.7MHz), 20525 (836.5MHz), 20643 (848.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		20415 to 20635	20415 (825.5MHz), 20525 (836.5MHz), 20635 (847.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset
		20425 to 20625	20425 (826.5MHz), 20525 (836.5MHz), 20625 (846.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		20450 to 20600	20450 (829.0MHz), 20525 (836.5MHz), 20600 (844.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	Radiated Emission Below 1GHz	20407 to 20643	20643 (848.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Above 1GHz	20407 to 20643	20407 (824.7MHz), 20525 (836.5MHz), 20643 (848.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		20425 to 20625	20425 (826.5MHz), 20525 (836.5MHz), 20625 (846.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		20450 to 20600	20450 (829.0MHz), 20525 (836.5MHz), 20600 (844.0MHz)	10MHz	QPSK	1 RB / 0 RB Offset

Note:

1. For radiated emission below 1GHz, low, mid and high channels were pre-tested in chamber with 1.4MHz mode. High channel was found to be the worst case and therefore had been chosen for all final tests.
2. For radiated emission above 1GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest, 5MHz & highest channel bandwidth for final test.
3. The conducted output power for QPSK and 16QAM, measured value of QPSK is higher than 16QAM mode. Therefore, only Modulation characteristics, occupied bandwidth and Peak to average ratio items had been tested under QPSK and 16QAM modes, the other test items were performed under QPSK mode only.

LTE Band 26

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	ERP	26797 to 27033	26797 (824.7MHz), 26915 (836.5MHz), 27033 (848.3MHz)	1.4MHz	QPSK / 16QAM	1 RB / 0 RB Offset 1 RB / 2 RB Offset 1 RB / 5 RB Offset 3 RB / 0 RB Offset 3 RB / 1 RB Offset 3 RB / 3 RB Offset 6 RB / 0 RB Offset
		26805 to 27025	26805 (825.5MHz), 26915 (836.5MHz), 27025 (847.5MHz)	3MHz	QPSK / 16QAM	1 RB / 0 RB Offset 1 RB / 7 RB Offset 1 RB / 14 RB Offset 8 RB / 0 RB Offset 8 RB / 3 RB Offset 8 RB / 7 RB Offset 15 RB / 0 RB Offset
		26815 to 27015	26815 (826.5MHz), 26915 (836.5MHz), 27015 (846.5MHz)	5MHz	QPSK / 16QAM	1 RB / 0 RB Offset 1 RB / 12 RB Offset 1 RB / 24 RB Offset 12 RB / 0 RB Offset 12 RB / 6 RB Offset 12 RB / 13 RB Offset 25 RB / 0 RB Offset
		26840 to 26990	26840 (829MHz), 26915 (836.5MHz), 26990 (844MHz)	10MHz	QPSK / 16QAM	1 RB / 0 RB Offset 1 RB / 24 RB Offset 1 RB / 49 RB Offset 25 RB / 0 RB Offset 25 RB / 12 RB Offset 25 RB / 25 RB Offset 50 RB / 0 RB Offset
		26865 to 26965	26865 (831.5MHz), 26915 (836.5MHz), 26965 (841.5MHz)	15MHz	QPSK / 16QAM	1 RB / 0 RB Offset 1 RB / 37 RB Offset 1 RB / 74 RB Offset 36 RB / 0 RB Offset 36 RB / 19 RB Offset 36 RB / 39 RB Offset 75 RB / 0 RB Offset
-	Modulation Characteristics	26865 to 26965	26915 (836.5MHz)	15MHz	QPSK / 16QAM	75 RB / 0 RB Offset
-	Frequency Stability	26797 to 27033	26797 (824.7MHz), 27033 (848.3MHz)	1.4MHz	QPSK	6 RB / 0RB Offset
		26805 to 27025	26805 (825.5MHz), 27025 (847.5MHz)	3MHz	QPSK	15 RB / 0RB Offset
		26815 to 27015	26815 (826.5MHz), 27015 (846.5MHz)	5MHz	QPSK	25RB / 0RB Offset
		26840 to 26990	26840 (829MHz), 26990 (844MHz)	10MHz	QPSK	50RB / 0RB Offset
		26865 to 26965	26865 (831.5MHz), 26965 (841.5MHz)	15MHz	QPSK	75 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	Occupied Bandwidth	26797 to 27033	26797 (824.7MHz), 26915 (836.5MHz), 27033 (848.3MHz)	1.4MHz	QPSK / 16QAM	6 RB / 0RB Offset
		26805 to 27025	26805 (825.5MHz), 26915 (836.5MHz), 27025 (847.5MHz)	3MHz	QPSK / 16QAM	15 RB / 0RB Offset
		26815 to 27015	26815 (826.5MHz), 26915 (836.5MHz), 27015 (846.5MHz)	5MHz	QPSK / 16QAM	25RB / 0RB Offset
		26840 to 26990	26840 (829MHz), 26915 (836.5MHz), 26990 (844MHz)	10MHz	QPSK / 16QAM	50RB / 0RB Offset
		26865 to 26965	26865 (831.5MHz), 26915 (836.5MHz), 26965 (841.5MHz)	15MHz	QPSK / 16QAM	75 RB / 0 RB Offset
-	Band Edge	26797 to 27033	26797 (824.7MHz), 27033 (848.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset 1 RB / 5 RB Offset 6 RB / 0 RB Offset
		26805 to 27025	26805 (825.5MHz), 27025 (847.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset 1 RB / 14 RB Offset 15 RB / 0 RB Offset
		26815 to 27015	26815 (826.5MHz), 27015 (846.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset 1 RB / 24 RB Offset 25 RB / 0 RB Offset
		26840 to 26990	26840 (829MHz), 26990 (844MHz)	10MHz	QPSK	1 RB / 0 RB Offset 1 RB / 49 RB Offset 50 RB / 0 RB Offset
		26865 to 26965	26865 (831.5MHz), 26965 (841.5MHz)	15MHz	QPSK	1 RB / 0 RB Offset 1 RB / 74 RB Offset 75 RB / 0 RB Offset
-	Peak to Average Ratio	26797 to 27033	26797 (824.7MHz), 26915 (836.5MHz), 27033 (848.3MHz)	1.4MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		26805 to 27025	26805 (825.5MHz), 26915 (836.5MHz), 27025 (847.5MHz)	3MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		26815 to 27015	26815 (826.5MHz), 26915 (836.5MHz), 27015 (846.5MHz)	5MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		26840 to 26990	26840 (829MHz), 26915 (836.5MHz), 26990 (844MHz)	10MHz	QPSK / 16QAM	1 RB / 0 RB Offset
		26865 to 26965	26865 (831.5MHz), 26915 (836.5MHz), 26965 (841.5MHz)	15MHz	QPSK / 16QAM	1 RB / 0 RB Offset

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
-	Conducted Emission	26797 to 27033	26797 (824.7MHz), 26915 (836.5MHz), 27033 (848.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		26805 to 27025	26805 (825.5MHz), 26915 (836.5MHz), 27025 (847.5MHz)	3MHz	QPSK	1 RB / 0 RB Offset
		26815 to 27015	26815 (826.5MHz), 26915 (836.5MHz), 27015 (846.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		26840 to 26990	26840 (829MHz), 26915 (836.5MHz), 26990 (844MHz)	10MHz	QPSK	1 RB / 0 RB Offset
		26865 to 26965	26865 (831.5MHz), 26915 (836.5MHz), 26965 (841.5MHz)	15MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Below 1GHz	26797 to 27033	27033 (848.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
-	Radiated Emission Above 1GHz	26797 to 27033	26797 (824.7MHz), 26915 (836.5MHz), 27033 (848.3MHz)	1.4MHz	QPSK	1 RB / 0 RB Offset
		26815 to 27015	26815 (826.5MHz), 26915 (836.5MHz), 27015 (846.5MHz)	5MHz	QPSK	1 RB / 0 RB Offset
		26865 to 26965	26865 (831.5MHz), 26915 (836.5MHz), 26965 (841.5MHz)	15MHz	QPSK	1 RB / 0 RB Offset

Note:

1. For radiated emission below 1GHz, low, mid and high channels were pre-tested in chamber with 1.4MHz mode. High channel was found to be the worst case and therefore had been chosen for all final tests.
2. For radiated emission above 1GHz, according to 3GPP 36.521 Section 6.6.3.1.4, choose the lowest, 5MHz & highest channel bandwidth for final test.
3. The conducted output power for QPSK and 16QAM, measured value of QPSK is higher than 16QAM mode. Therefore, only Modulation characteristics, occupied bandwidth and Peak to average ratio items had been tested under QPSK and 16QAM modes, the other test items were performed under QPSK mode only.

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
ERP	24deg. C, 64%RH	120Vac, 60Hz	Willy Cheng
Modulation Characteristics	24deg. C, 64%RH	120Vac, 60Hz	Willy Cheng
Frequency Stability	24deg. C, 64%RH	3.80Vdc	Willy Cheng
Occupied Bandwidth	24deg. C, 64%RH	120Vac, 60Hz	Willy Cheng
Band Edge	24deg. C, 64%RH	120Vac, 60Hz	Willy Cheng
Peak To Average Ratio	24deg. C, 64%RH	120Vac, 60Hz	Willy Cheng
Conducted Emission	24deg. C, 64%RH	120Vac, 60Hz	Willy Cheng
Radiated Emission	26deg. C, 70%RH	120Vac, 60Hz	Willy Cheng

3.4 EUT Operating Conditions

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

3.5 General Description of Applied Standards and References

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

Test Standard:

FCC 47 CFR Part 2

FCC 47 CFR Part 22

ANSI/TIA/EIA-603-E 2016

ANSI 63.26-2015

References Test Guidance:

KDB 971168 D01 Power Meas License Digital Systems v03r01

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

4 Test Types and Results

4.1 Output Power Measurement

4.1.1 Limits of Output Power Measurement

Mobile / Portable station are limited to 7 watts e.r.p.

4.1.2 Test Procedures

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

4.1.3 Test Setup



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

4.1.4 Test Results

Conducted Output Power (dBm)

Band	WCDMA V		
TX Channel	4132	4182	4233
Rx Channel	4357	4407	4458
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	23.33	23.19	23.08
HSDPA Subtest-1	22.28	22.23	22.09
HSDPA Subtest-2	22.29	22.24	22.10
HSDPA Subtest-3	21.78	21.73	21.59
HSDPA Subtest-4	21.76	21.71	21.57
HSUPA Subtest-1	22.08	22.01	22.09
HSUPA Subtest-2	20.73	20.68	20.54
HSUPA Subtest-3	21.01	21.08	21.04
HSUPA Subtest-4	21.08	21.03	20.89
HSUPA Subtest-5	22.30	22.25	22.11

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20450	20525	20600
		Frequency (MHz)		829	836.5	844
10M	QPSK	1	0	22.93	22.99	22.92
		1	24	22.88	22.95	22.87
		1	49	22.97	22.94	22.96
		25	0	21.92	21.95	21.89
		25	12	21.89	21.91	21.94
		25	25	21.91	21.92	21.90
		50	0	21.98	21.99	21.97
10M	16QAM	1	0	21.92	21.95	21.91
		1	24	21.94	21.93	21.92
		1	49	21.92	21.89	21.94
		25	0	20.84	20.96	21.00
		25	12	20.89	20.96	20.88
		25	25	20.82	20.89	20.81
		50	0	20.89	20.96	20.88
BW	MCS Index	Channel		20425	20525	20625
		Frequency (MHz)		826.5	836.5	846.5
5M	QPSK	1	0	22.86	22.90	22.82
		1	12	22.85	22.85	22.84
		1	24	22.95	22.93	22.90
		12	0	21.82	21.95	21.81
		12	6	21.82	21.86	21.84
		12	13	21.83	21.84	21.88
		25	0	21.95	21.91	21.89
5M	16QAM	1	0	21.92	21.88	21.83
		1	12	21.87	21.85	21.85
		1	24	21.92	21.87	21.86
		12	0	20.80	20.95	20.97
		12	6	20.82	20.86	20.78
		12	13	20.75	20.84	20.76
		25	0	20.79	20.93	20.81

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20415	20525	20635
		Frequency (MHz)		825.5	836.5	847.5
3M	QPSK	1	0	22.84	22.90	22.90
		1	7	22.79	22.92	22.87
		1	14	22.89	22.93	22.96
		8	0	21.83	21.86	21.84
		8	3	21.79	21.87	21.84
		8	7	21.85	21.92	21.87
		15	0	21.88	21.96	21.95
3M	16QAM	1	0	21.90	21.88	21.87
		1	7	21.86	21.88	21.92
		1	14	21.90	21.85	21.92
		8	0	20.83	20.96	20.92
		8	3	20.87	20.90	20.83
		8	7	20.73	20.85	20.73
		15	0	20.86	20.92	20.78
BW	MCS Index	Channel		20407	20525	20643
		Frequency (MHz)		824.7	836.5	848.3
1.4M	QPSK	1	0	22.92	22.85	22.87
		1	2	22.77	22.70	22.79
		1	5	22.94	22.74	22.81
		3	0	22.69	22.86	22.80
		3	1	22.78	22.75	22.79
		3	3	22.81	22.77	22.69
		6	0	21.84	21.87	21.75
1.4M	16QAM	1	0	21.84	21.76	21.80
		1	2	21.84	21.74	21.71
		1	5	21.75	21.85	21.79
		3	0	21.77	21.77	21.90
		3	1	21.74	21.86	21.77
		3	3	21.67	21.78	21.67
		6	0	20.79	20.82	20.75

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26865	26915	26965
		Frequency (MHz)		831.5	836.5	841.5
15M	QPSK	1	0	23.14	23.14	23.11
		1	24	23.12	23.03	23.06
		1	49	23.09	23.09	23.03
		25	0	22.24	22.22	22.18
		25	12	22.23	22.13	22.17
		25	25	22.08	22.01	22.02
		50	0	22.21	22.20	22.15
15M	16QAM	1	0	21.92	21.89	21.86
		1	24	22.04	22.01	21.98
		1	49	22.08	22.07	22.02
		25	0	21.08	21.06	21.02
		25	12	21.07	21.05	21.01
		25	25	20.97	20.91	20.91
		50	0	20.98	20.93	20.92
BW	MCS Index	Channel		26840	26915	26990
		Frequency (MHz)		829	836.5	844
10M	QPSK	1	0	23.00	22.97	23.03
		1	24	23.03	23.03	22.98
		1	49	23.01	22.99	22.94
		25	0	22.17	22.16	22.11
		25	12	22.09	22.12	22.13
		25	25	21.93	21.94	21.98
		50	0	22.07	22.10	22.06
10M	16QAM	1	0	21.85	21.74	21.82
		1	24	22.02	21.93	21.93
		1	49	22.03	22.01	21.93
		25	0	21.05	21.02	21.00
		25	12	21.01	21.01	20.93
		25	25	20.87	20.79	20.86
		50	0	20.98	20.88	20.87

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26815	26915	27015
		Frequency (MHz)		826.5	836.5	846.5
5M	QPSK	1	0	23.06	22.92	23.04
		1	12	23.00	22.96	23.03
		1	24	23.08	22.98	22.98
		12	0	22.10	22.13	22.08
		12	6	22.18	22.01	22.08
		12	13	21.91	21.86	22.02
		25	0	22.08	21.87	22.07
5M	16QAM	1	0	21.69	21.79	21.79
		1	12	21.87	21.86	21.88
		1	24	21.91	21.89	21.97
		12	0	20.82	20.82	20.95
		12	6	20.85	20.90	20.99
		12	13	20.86	20.82	20.88
		25	0	20.72	20.84	20.90
BW	MCS Index	Channel		26805	26915	27025
		Frequency (MHz)		825.5	836.5	847.5
3M	QPSK	1	0	22.93	22.88	23.06
		1	7	23.01	22.93	23.00
		1	14	22.96	22.82	23.01
		8	0	22.08	22.03	22.09
		8	3	22.08	22.01	22.14
		8	7	21.80	21.85	21.98
		15	0	21.95	22.01	22.07
3M	16QAM	1	0	21.77	21.75	21.78
		1	7	21.78	21.85	21.95
		1	14	21.98	21.93	22.02
		8	0	20.80	20.91	20.99
		8	3	20.81	20.83	20.98
		8	7	20.82	20.76	20.90
		15	0	20.73	20.85	20.92

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26797	26915	27033
		Frequency (MHz)		824.7	836.5	848.3
1.4M	QPSK	1	0	22.98	22.92	23.02
		1	12	22.82	22.95	22.94
		1	24	22.88	22.86	22.95
		12	0	23.06	23.08	23.03
		12	6	23.07	23.02	23.03
		12	13	22.90	22.84	22.86
		25	0	22.04	22.03	21.96
1.4M	16QAM	1	0	21.77	21.72	21.69
		1	12	21.86	21.86	21.90
		1	24	21.85	21.80	21.84
		12	0	21.91	21.86	21.85
		12	6	21.80	21.91	21.90
		12	13	21.79	21.81	21.72
		25	0	20.90	20.79	20.76

ERP Power (dBm)

Band	WCDMA V		
TX Channel	4132	4182	4233
Rx Channel	4357	4407	4458
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	20.18	20.04	19.93
HSDPA Subtest-1	19.13	19.08	18.94
HSDPA Subtest-2	19.14	19.09	18.95
HSDPA Subtest-3	18.63	18.58	18.44
HSDPA Subtest-4	18.61	18.56	18.42
HSUPA Subtest-1	18.93	18.86	18.94
HSUPA Subtest-2	17.58	17.53	17.39
HSUPA Subtest-3	17.86	17.93	17.89
HSUPA Subtest-4	17.93	17.88	17.74
HSUPA Subtest-5	19.15	19.10	18.96

*ERP = Conducted + antenna gain - 2.15

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20450	20525	20600
		Frequency (MHz)		829	836.5	844
10M	QPSK	1	0	19.78	19.84	19.77
		1	24	19.73	19.80	19.72
		1	49	19.82	19.79	19.81
		25	0	18.77	18.80	18.74
		25	12	18.74	18.76	18.79
		25	25	18.76	18.77	18.75
		50	0	18.83	18.84	18.82
10M	16QAM	1	0	18.77	18.80	18.76
		1	24	18.79	18.78	18.77
		1	49	18.77	18.74	18.79
		25	0	17.69	17.81	17.85
		25	12	17.74	17.81	17.73
		25	25	17.67	17.74	17.66
		50	0	17.74	17.81	17.73
BW	MCS Index	Channel		20425	20525	20625
		Frequency (MHz)		826.5	836.5	846.5
5M	QPSK	1	0	19.71	19.75	19.67
		1	12	19.70	19.70	19.69
		1	24	19.80	19.78	19.75
		12	0	18.67	18.80	18.66
		12	6	18.67	18.71	18.69
		12	13	18.68	18.69	18.73
		25	0	18.80	18.76	18.74
5M	16QAM	1	0	18.77	18.73	18.68
		1	12	18.72	18.70	18.70
		1	24	18.77	18.72	18.71
		12	0	17.65	17.80	17.82
		12	6	17.67	17.71	17.63
		12	13	17.60	17.69	17.61
		25	0	17.64	17.78	17.66

*ERP = Conducted + antenna gain - 2.15

LTE Band 5						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		20415	20525	20635
		Frequency (MHz)		825.5	836.5	847.5
3M	QPSK	1	0	19.69	19.75	19.75
		1	7	19.64	19.77	19.72
		1	14	19.74	19.78	19.81
		8	0	18.68	18.71	18.69
		8	3	18.64	18.72	18.69
		8	7	18.70	18.77	18.72
		15	0	18.73	18.81	18.80
3M	16QAM	1	0	18.75	18.73	18.72
		1	7	18.71	18.73	18.77
		1	14	18.75	18.70	18.77
		8	0	17.68	17.81	17.77
		8	3	17.72	17.75	17.68
		8	7	17.58	17.70	17.58
		15	0	17.71	17.77	17.63
BW	MCS Index	Channel		20407	20525	20643
		Frequency (MHz)		824.7	836.5	848.3
1.4M	QPSK	1	0	19.77	19.70	19.72
		1	2	19.62	19.55	19.64
		1	5	19.79	19.59	19.66
		3	0	19.54	19.71	19.65
		3	1	19.63	19.60	19.64
		3	3	19.66	19.62	19.54
		6	0	18.69	18.72	18.60
1.4M	16QAM	1	0	18.69	18.61	18.65
		1	2	18.69	18.59	18.56
		1	5	18.60	18.70	18.64
		3	0	18.62	18.62	18.75
		3	1	18.59	18.71	18.62
		3	3	18.52	18.63	18.52
		6	0	17.64	17.67	17.60

*ERP = Conducted + antenna gain - 2.15

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26865	26915	26965
		Frequency (MHz)		831.5	836.5	841.5
15M	QPSK	1	0	19.99	19.99	19.96
		1	24	19.97	19.88	19.91
		1	49	19.94	19.94	19.88
		25	0	19.09	19.07	19.03
		25	12	19.08	18.98	19.02
		25	25	18.93	18.86	18.87
		50	0	19.06	19.05	19.00
15M	16QAM	1	0	18.77	18.74	18.71
		1	24	18.89	18.86	18.83
		1	49	18.93	18.92	18.87
		25	0	17.93	17.91	17.87
		25	12	17.92	17.90	17.86
		25	25	17.82	17.76	17.76
		50	0	17.83	17.78	17.77
BW	MCS Index	Channel		26840	26915	26990
		Frequency (MHz)		829	836.5	844
10M	QPSK	1	0	19.85	19.82	19.88
		1	24	19.88	19.88	19.83
		1	49	19.86	19.84	19.79
		25	0	19.02	19.01	18.96
		25	12	18.94	18.97	18.98
		25	25	18.78	18.79	18.83
		50	0	18.92	18.95	18.91
10M	16QAM	1	0	18.70	18.59	18.67
		1	24	18.87	18.78	18.78
		1	49	18.88	18.86	18.78
		25	0	17.90	17.87	17.85
		25	12	17.86	17.86	17.78
		25	25	17.72	17.64	17.71
		50	0	17.83	17.73	17.72

*ERP = Conducted + antenna gain - 2.15

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26815	26915	27015
		Frequency (MHz)		826.5	836.5	846.5
5M	QPSK	1	0	19.91	19.77	19.89
		1	12	19.85	19.81	19.88
		1	24	19.93	19.83	19.83
		12	0	18.95	18.98	18.93
		12	6	19.03	18.86	18.93
		12	13	18.76	18.71	18.87
		25	0	18.93	18.72	18.92
5M	16QAM	1	0	18.54	18.64	18.64
		1	12	18.72	18.71	18.73
		1	24	18.76	18.74	18.82
		12	0	17.67	17.67	17.80
		12	6	17.70	17.75	17.84
		12	13	17.71	17.67	17.73
		25	0	17.57	17.69	17.75
BW	MCS Index	Channel		26805	26915	27025
		Frequency (MHz)		825.5	836.5	847.5
3M	QPSK	1	0	19.78	19.73	19.91
		1	7	19.86	19.78	19.85
		1	14	19.81	19.67	19.86
		8	0	18.93	18.88	18.94
		8	3	18.93	18.86	18.99
		8	7	18.65	18.70	18.83
		15	0	18.80	18.86	18.92
3M	16QAM	1	0	18.62	18.60	18.63
		1	7	18.63	18.70	18.80
		1	14	18.83	18.78	18.87
		8	0	17.65	17.76	17.84
		8	3	17.66	17.68	17.83
		8	7	17.67	17.61	17.75
		15	0	17.58	17.70	17.77

*ERP = Conducted + antenna gain - 2.15

LTE Band 26						
BW	MCS Index	RB Size	RB Offset	Low	Mid	High
		Channel		26797	26915	27033
		Frequency (MHz)		824.7	836.5	848.3
1.4M	QPSK	1	0	19.83	19.77	19.87
		1	12	19.67	19.80	19.79
		1	24	19.73	19.71	19.80
		12	0	19.91	19.93	19.88
		12	6	19.92	19.87	19.88
		12	13	19.75	19.69	19.71
		25	0	18.89	18.88	18.81
1.4M	16QAM	1	0	18.62	18.57	18.54
		1	12	18.71	18.71	18.75
		1	24	18.70	18.65	18.69
		12	0	18.76	18.71	18.70
		12	6	18.65	18.76	18.75
		12	13	18.64	18.66	18.57
		25	0	17.75	17.64	17.61

*ERP = Conducted + antenna gain - 2.15

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



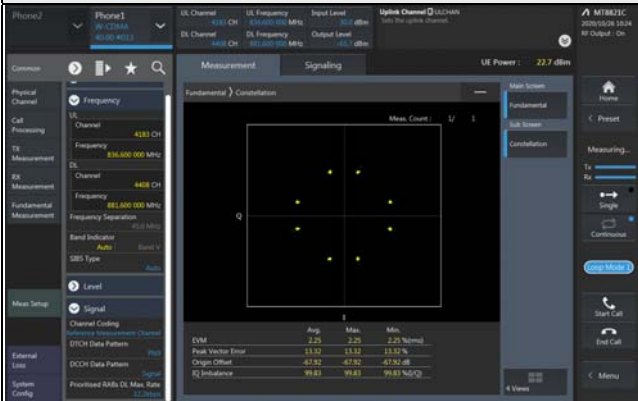
4.2.4 Test Results

WCDMA Band 5

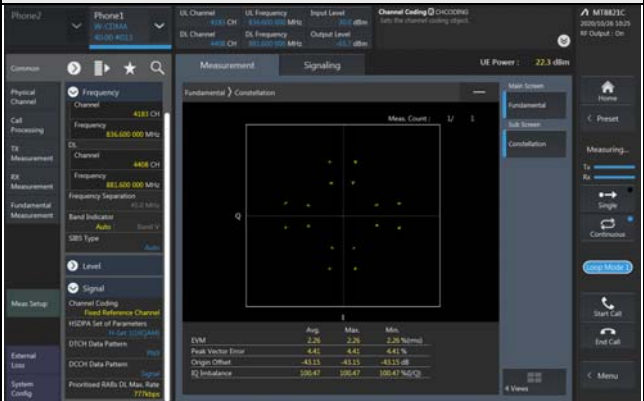
Spectrum Plot of Measurement Value

Channel: 4183 / Frequency (MHz): 836.6MHz

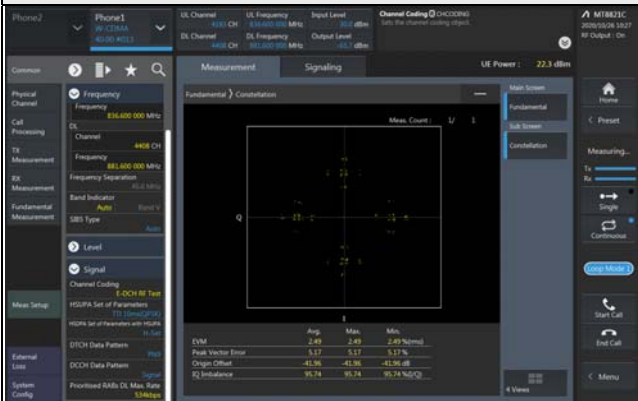
WCDMA



HSDPA



HSUPA

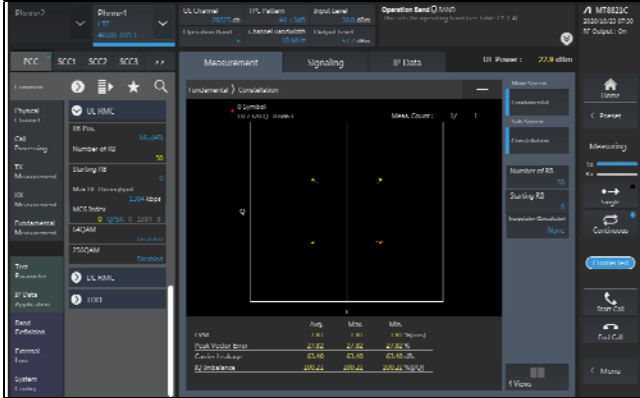


LTE Band 5

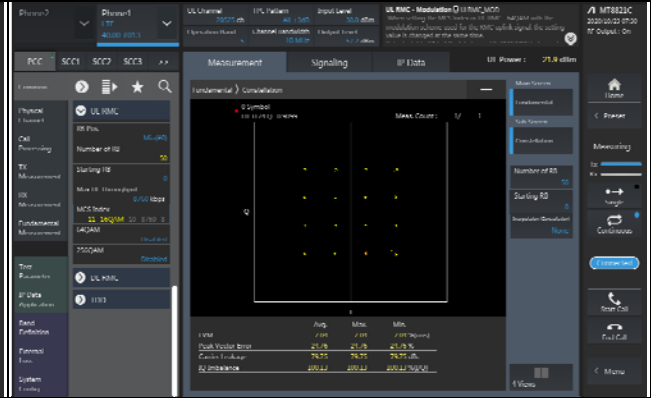
Spectrum Plot of Measurement Value

Channel: 20525 / Frequency (MHz): 836.5MHz

QPSK



16QAM

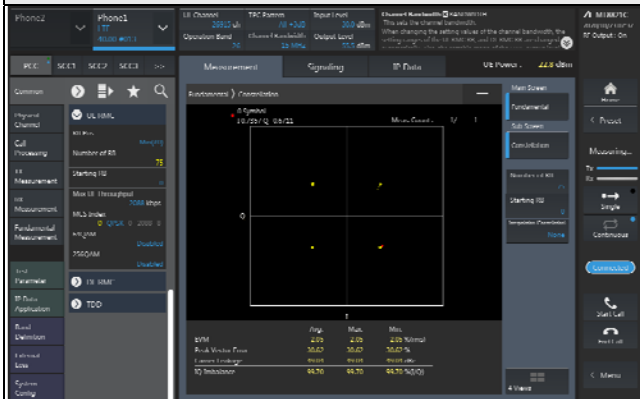


LTE Band 26

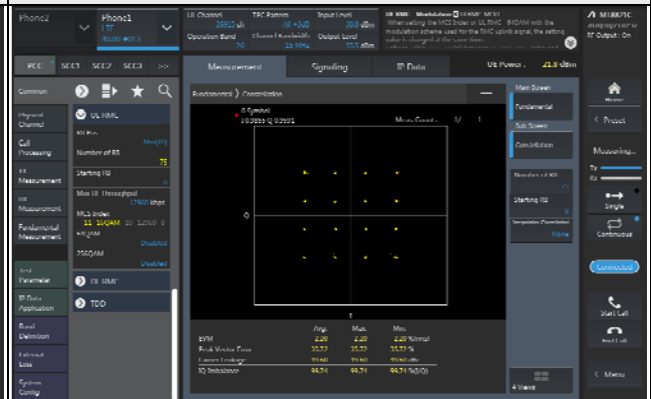
Spectrum Plot of Measurement Value

Channel: 26915 / Frequency (MHz): 836.5MHz

QPSK



16QAM



4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

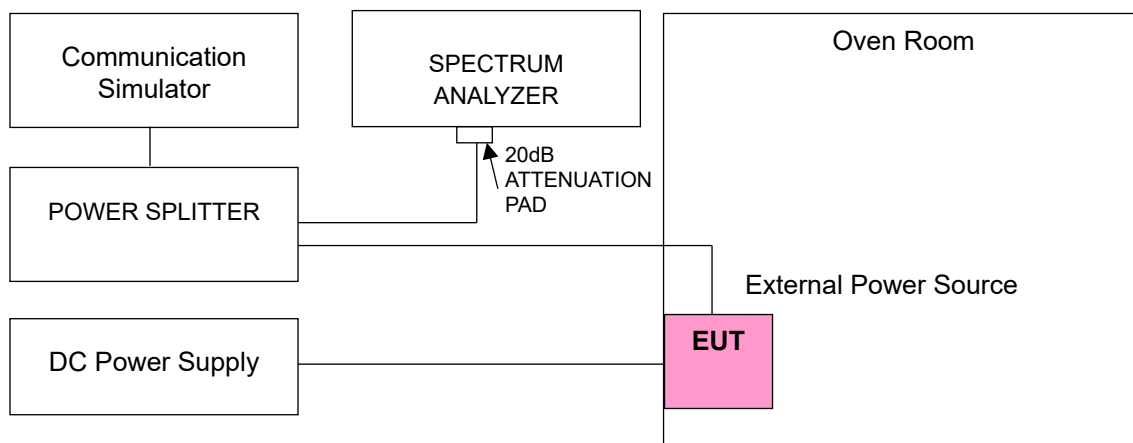
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

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 ± 0.5 °C during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

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

4.3.3 Test Setup



4.3.4 Test Results

Frequency Error vs. Voltage

Voltage (Volts)	WCDMA Band 5			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.23	826.400004	0.005	846.600002	0.003
3.80	826.400001	0.001	846.600001	0.001
4.37	826.400003	0.003	846.600003	0.003

Note: The applicant defined the normal working voltage is from 3.23Vdc to 4.37Vdc.

Frequency Error vs. Temperature

Temp. (°C)	WCDMA Band 5			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	826.400002	0.003	846.600002	0.002
-20	826.400002	0.002	846.600002	0.003
-10	826.400002	0.003	846.600002	0.003
0	826.400003	0.004	846.600002	0.002
10	826.400003	0.003	846.600003	0.004
20	826.399996	-0.004	846.599996	-0.004
30	826.399998	-0.002	846.599998	-0.002
40	826.399998	-0.002	846.599997	-0.003
50	826.399997	-0.004	846.599998	-0.002
55	826.399997	-0.004	846.599998	-0.003

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5			
	Channel Bandwidth: 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.23	824.700003	0.003	848.300001	0.001
3.80	824.700002	0.003	848.300002	0.003
4.37	824.700003	0.004	848.300002	0.003

Note: The applicant defined the normal working voltage is from 3.23Vdc to 4.37Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 5			
	Channel Bandwidth: 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	824.700002	0.002	848.300002	0.002
-20	824.700001	0.002	848.300002	0.002
-10	824.700001	0.002	848.300002	0.002
0	824.700004	0.005	848.300003	0.004
10	824.700003	0.003	848.300004	0.004
20	824.699996	-0.004	848.299997	-0.003
30	824.699998	-0.002	848.299997	-0.003
40	824.699996	-0.004	848.299997	-0.003
50	824.699998	-0.003	848.299997	-0.004
55	824.699998	-0.003	848.299998	-0.003

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5			
	Channel Bandwidth: 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.23	825.500001	0.001	847.500002	0.002
3.80	825.500004	0.005	847.500003	0.004
4.37	825.500001	0.002	847.500003	0.004

Note: The applicant defined the normal working voltage is from 3.23Vdc to 4.37Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 5			
	Channel Bandwidth: 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	825.500004	0.004	847.500003	0.004
-20	825.500004	0.004	847.500003	0.004
-10	825.500004	0.005	847.500003	0.004
0	825.500003	0.004	847.500001	0.001
10	825.500001	0.001	847.500002	0.002
20	825.499996	-0.004	847.499997	-0.004
30	825.499997	-0.004	847.499996	-0.004
40	825.499998	-0.003	847.499998	-0.002
50	825.499999	-0.001	847.499997	-0.003
55	825.499998	-0.003	847.499997	-0.003

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.23	826.500002	0.002	846.500001	0.002
3.80	826.500002	0.003	846.500004	0.004
4.37	826.500004	0.005	846.500003	0.004

Note: The applicant defined the normal working voltage is from 3.23Vdc to 4.37Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 5			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	826.500004	0.005	846.500002	0.003
-20	826.500004	0.004	846.500002	0.002
-10	826.500004	0.005	846.500002	0.003
0	826.500001	0.001	846.500003	0.003
10	826.500001	0.002	846.500002	0.002
20	826.499997	-0.004	846.499999	-0.001
30	826.499999	-0.002	846.499996	-0.005
40	826.499997	-0.003	846.499999	-0.001
50	826.499998	-0.002	846.499996	-0.005
55	826.499997	-0.004	846.499999	-0.001

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 5			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.23	829.000001	0.001	844.000004	0.004
3.80	829.000004	0.004	844.000002	0.002
4.37	829.000003	0.004	844.000004	0.005

Note: The applicant defined the normal working voltage is from 3.23Vdc to 4.37Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 5			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	829.000001	0.002	844.000002	0.002
-20	829.000001	0.002	844.000002	0.002
-10	829.000002	0.002	844.000002	0.002
0	829.000002	0.002	844.000003	0.003
10	829.000003	0.004	844.000003	0.004
20	828.999998	-0.002	843.999999	-0.002
30	828.999998	-0.003	843.999999	-0.001
40	828.999996	-0.004	843.999999	-0.001
50	828.999998	-0.003	843.999998	-0.003
55	828.999997	-0.004	843.999998	-0.003

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26			
	Channel Bandwidth: 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.23	824.700004	0.004	848.300002	0.002
3.80	824.700001	0.002	848.300003	0.004
4.37	824.700003	0.004	848.300002	0.003

Note: The applicant defined the normal working voltage is from 3.23Vdc to 4.37Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 26			
	Channel Bandwidth: 1.4 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	824.700003	0.004	848.300002	0.002
-20	824.700003	0.004	848.300001	0.001
-10	824.700003	0.004	848.300002	0.002
0	824.700003	0.003	848.300002	0.002
10	824.700003	0.003	848.300004	0.004
20	824.699998	-0.002	848.299997	-0.003
30	824.699997	-0.003	848.299997	-0.004
40	824.699997	-0.004	848.299998	-0.002
50	824.699997	-0.004	848.299997	-0.004
55	824.699998	-0.002	848.299999	-0.002

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26			
	Channel Bandwidth: 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.23	825.500004	0.005	847.500004	0.004
3.80	825.500002	0.002	847.500001	0.001
4.37	825.500002	0.002	847.500002	0.002

Note: The applicant defined the normal working voltage is from 3.23Vdc to 4.37Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 26			
	Channel Bandwidth: 3 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	825.500002	0.002	847.500001	0.001
-20	825.500002	0.002	847.500001	0.002
-10	825.500002	0.002	847.500001	0.002
0	825.500003	0.004	847.500002	0.002
10	825.500002	0.002	847.500003	0.004
20	825.499999	-0.002	847.499998	-0.002
30	825.499997	-0.003	847.499998	-0.003
40	825.499997	-0.004	847.499997	-0.003
50	825.499997	-0.004	847.499996	-0.005
55	825.499999	-0.001	847.499998	-0.002

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.23	826.500004	0.005	846.500001	0.002
3.80	826.500001	0.001	846.500001	0.002
4.37	826.500003	0.004	846.500001	0.002

Note: The applicant defined the normal working voltage is from 3.23Vdc to 4.37Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 26			
	Channel Bandwidth: 5 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	826.500002	0.003	846.500002	0.002
-20	826.500002	0.003	846.500001	0.001
-10	826.500003	0.003	846.500002	0.002
0	826.500003	0.003	846.500003	0.003
10	826.500003	0.004	846.500003	0.004
20	826.499999	-0.001	846.499996	-0.005
30	826.499998	-0.002	846.499996	-0.004
40	826.499999	-0.001	846.499998	-0.002
50	826.499997	-0.004	846.499997	-0.003
55	826.499997	-0.004	846.499997	-0.004

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.23	829.000002	0.002	844.000003	0.003
3.80	829.000004	0.004	844.000004	0.004
4.37	829.000002	0.002	844.000003	0.004

Note: The applicant defined the normal working voltage is from 3.23Vdc to 4.37Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 26			
	Channel Bandwidth: 10 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	829.000003	0.003	844.000001	0.002
-20	829.000003	0.003	844.000002	0.002
-10	829.000003	0.004	844.000001	0.001
0	829.000003	0.003	844.000001	0.001
10	829.000003	0.004	844.000003	0.004
20	828.999997	-0.004	843.999999	-0.001
30	828.999997	-0.004	843.999998	-0.002
40	828.999999	-0.002	843.999996	-0.005
50	828.999998	-0.002	843.999996	-0.004
55	828.999997	-0.003	843.999996	-0.004

Frequency Error vs. Voltage

Voltage (Volts)	LTE Band 26			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
3.23	831.500003	0.004	841.500003	0.004
3.80	831.500001	0.002	841.500003	0.003
4.37	831.500002	0.003	841.500002	0.002

Note: The applicant defined the normal working voltage is from 3.23Vdc to 4.37Vdc.

Frequency Error vs. Temperature

Temp. (°C)	LTE Band 26			
	Channel Bandwidth: 15 MHz			
	Low Channel		High Channel	
	Frequency (MHz)	Frequency Error (ppm)	Frequency (MHz)	Frequency Error (ppm)
-30	831.500002	0.002	841.500002	0.002
-20	831.500001	0.001	841.500002	0.002
-10	831.500002	0.002	841.500002	0.002
0	831.500002	0.003	841.500004	0.004
10	831.500002	0.002	841.500001	0.001
20	831.499997	-0.003	841.499997	-0.003
30	831.499998	-0.002	841.499997	-0.004
40	831.499996	-0.005	841.499996	-0.005
50	831.499997	-0.004	841.499996	-0.004
55	831.499997	-0.004	841.499996	-0.004

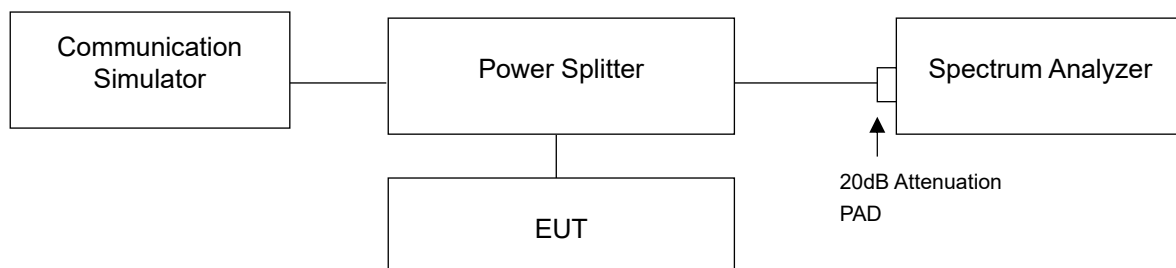
4.4 Occupied Bandwidth Measurement

4.4.1 Test Procedure

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. Measurement method, please refer to section 5.4.4 of ANSI C63.26. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

For the 26dBc bandwidth measurement method, please refer to section 5.4.3 of ANSI C63.26.

4.4.2 Test Setup

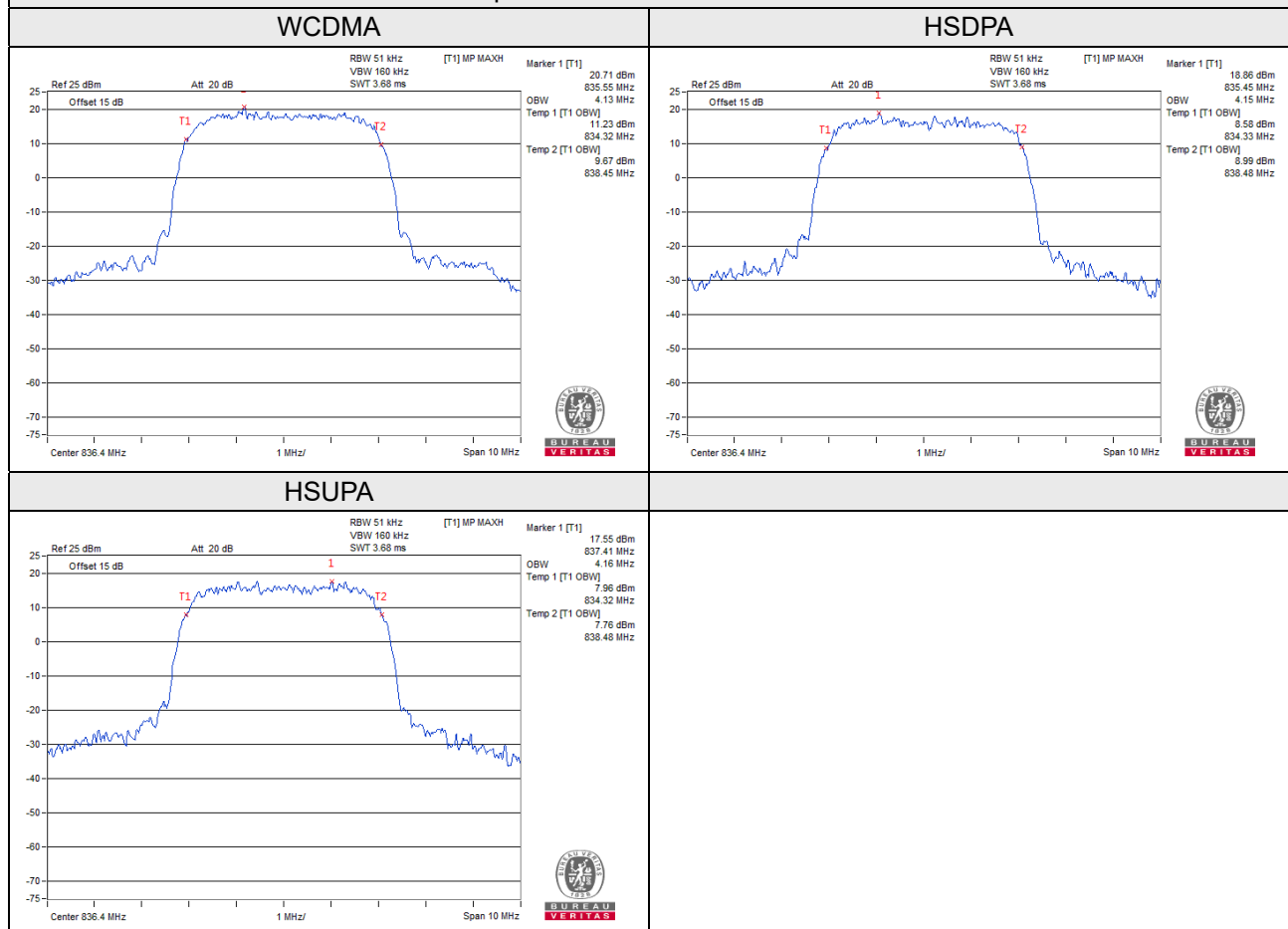


4.4.3 Test Result

Occupied Bandwidth WCDMA Band 5

Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		WCDMA	HSDPA	HSUPA
4132	826.4	4.12	4.13	4.13
4182	836.4	4.13	4.15	4.16
4233	846.6	4.13	4.13	4.13

Spectrum Plot of Worst Value



LTE Band 5

LTE Band 5, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
20407	824.7	1.09	1.09
20525	836.5	1.09	1.09
20643	848.3	1.09	1.09
LTE Band 5, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
20415	825.5	2.70	2.70
20525	836.5	2.70	2.70
20635	847.5	2.70	2.70
LTE Band 5, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
20425	826.5	4.49	4.49
20525	836.5	4.49	4.49
20625	846.5	4.49	4.49
LTE Band 5, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
20450	829.0	8.95	8.95
20525	836.5	8.96	8.96
20600	844.0	8.93	8.94

Spectrum Plot of Worst Value

1.4MHz / 16QAM



3MHz / QPSK



5MHz / 16QAM



10MHz / 16QAM

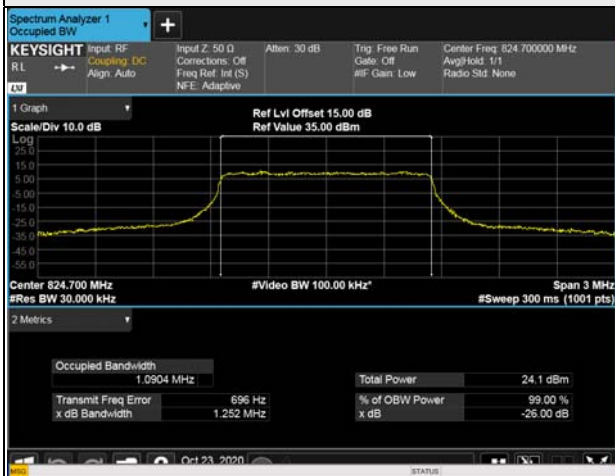


LTE Band 26

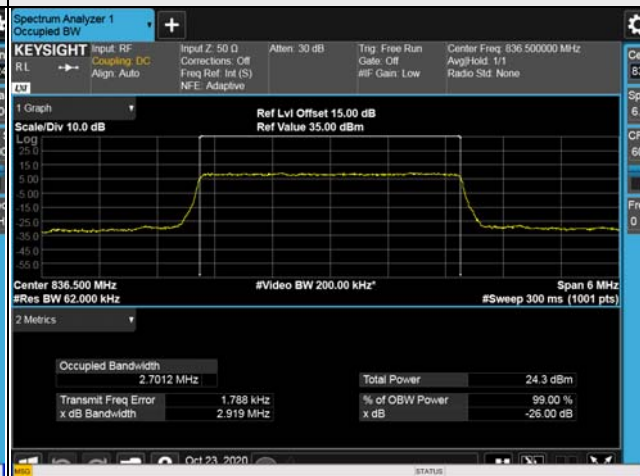
LTE Band 26, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
26797	824.7	1.09	1.09
26915	836.5	1.09	1.09
27033	848.3	1.09	1.09
LTE Band 26, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
26805	825.5	2.70	2.70
26915	836.5	2.70	2.70
27025	847.5	2.70	2.70
LTE Band 26, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
26815	826.5	4.49	4.49
26915	836.5	4.49	4.49
27015	846.5	4.49	4.49
LTE Band 26, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
26840	829.0	8.95	8.95
26915	836.5	8.96	8.96
26990	844.0	8.94	8.94
LTE Band 26, Channel Bandwidth 15MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
26865	831.5	13.42	13.41
26915	836.5	13.45	13.44
26965	841.5	13.42	13.41

Spectrum Plot of Worst Value

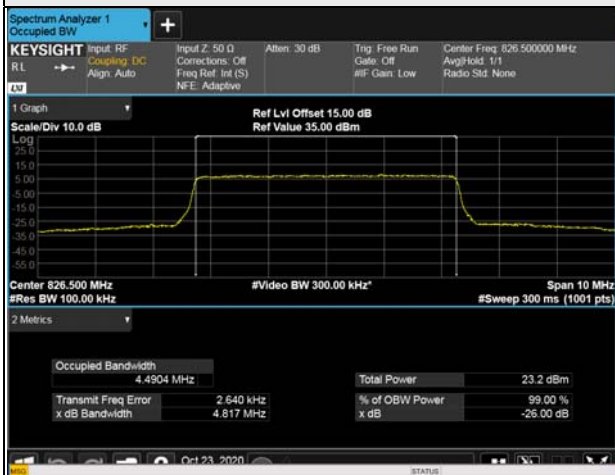
1.4MHz / 16QAM



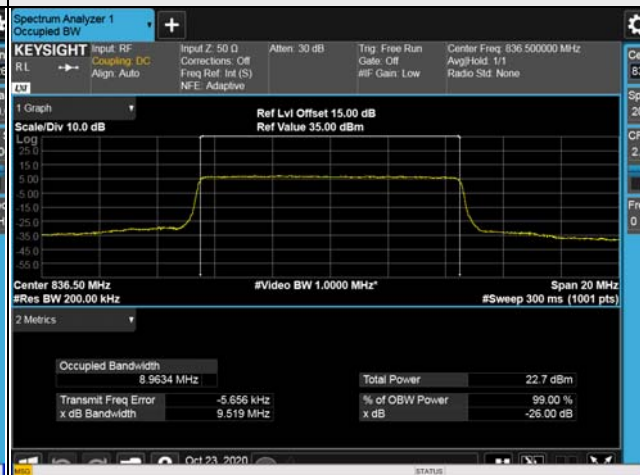
3MHz / 16QAM



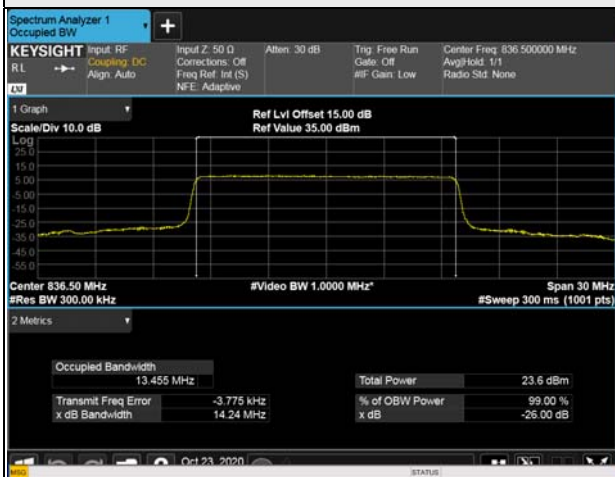
5MHz / 16QAM



10MHz / 16QAM



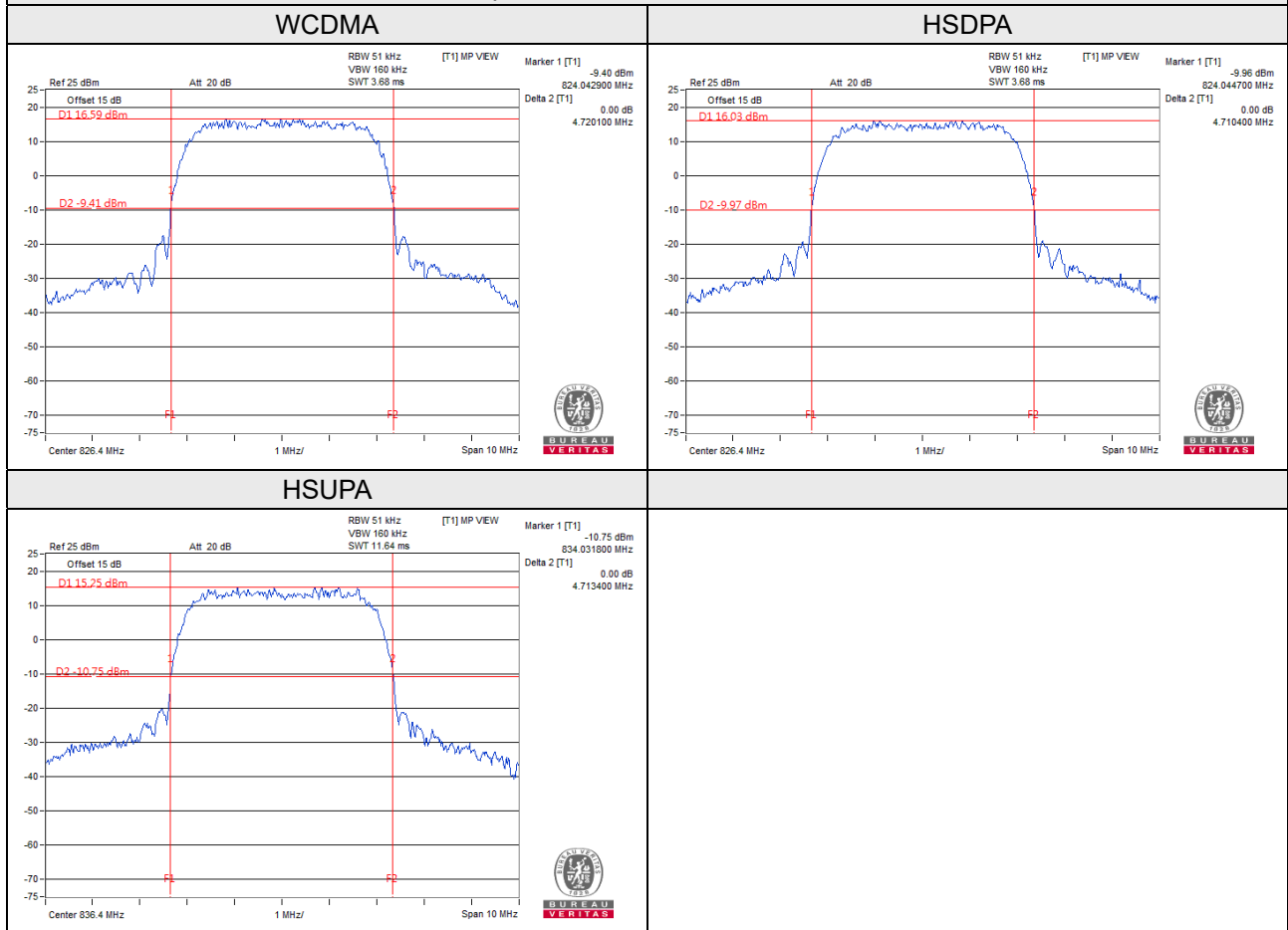
15MHz / QPSK



26dB Bandwidth
WCDMA Band 5

Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		WCDMA	HSDPA	HSUPA
4132	826.4	4.72	4.71	4.69
4182	836.4	4.69	4.66	4.71
4233	846.6	4.70	4.70	4.71

Spectrum Plot of Worst Value



LTE Band 5

LTE Band 5, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
20407	824.7	1.24	1.24
20525	836.5	1.25	1.24
20643	848.3	1.26	1.25
LTE Band 5, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
20415	825.5	2.91	2.92
20525	836.5	2.91	2.92
20635	847.5	2.93	2.92
LTE Band 5, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
20425	826.5	4.79	4.81
20525	836.5	4.80	4.83
20625	846.5	4.82	4.81
LTE Band 5, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
20450	829.0	9.51	9.51
20525	836.5	9.51	9.52
20600	844.0	9.47	9.49

Spectrum Plot of Worst Value

1.4MHz / QPSK



3MHz / QPSK



5MHz / 16QAM



10MHz / 16QAM



LTE Band 26

LTE Band 26, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
26797	824.7	1.26	1.25
26915	836.5	1.26	1.24
27033	848.3	1.25	1.26
LTE Band 26, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
26805	825.5	2.92	2.92
26915	836.5	2.92	2.92
27025	847.5	2.91	2.81
LTE Band 26, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
26815	826.5	4.82	4.82
26915	836.5	4.83	4.83
27015	846.5	4.80	4.83
LTE Band 26, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
26840	829.0	9.49	9.51
26915	836.5	9.50	9.52
26990	844.0	9.48	9.50
LTE Band 26, Channel Bandwidth 15MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
26865	831.5	14.23	14.22
26915	836.5	14.24	14.26
26965	841.5	14.23	14.22

Spectrum Plot of Worst Value

1.4MHz / QPSK



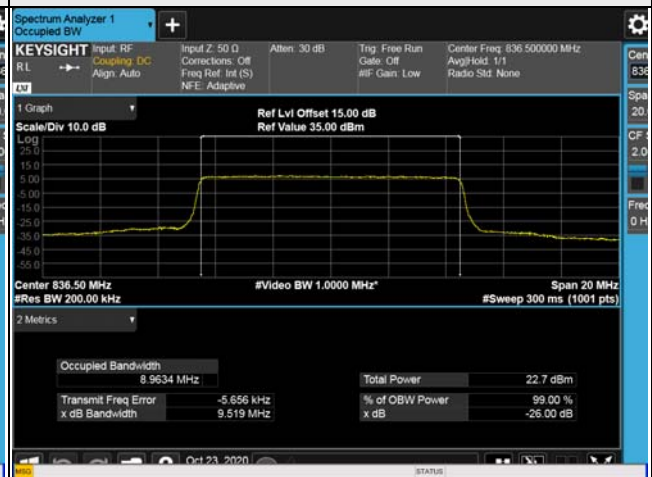
3MHz / 16QAM



5MHz / QPSK



10MHz / 16QAM



15MHz / 16QAM

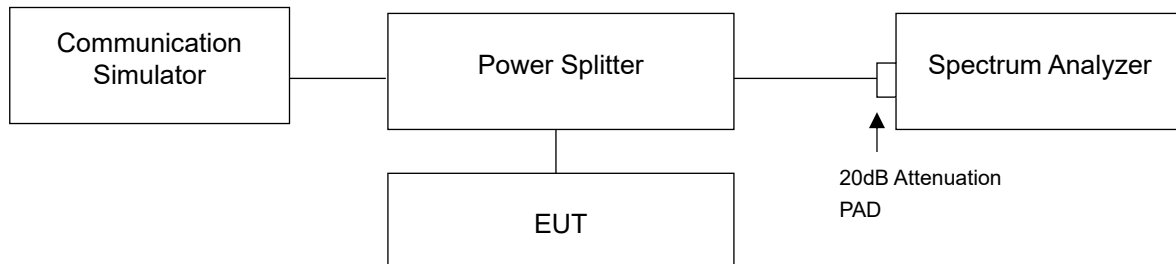


4.5 Band Edge Measurement

4.5.1 Limits of Band Edge Measurement

Power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

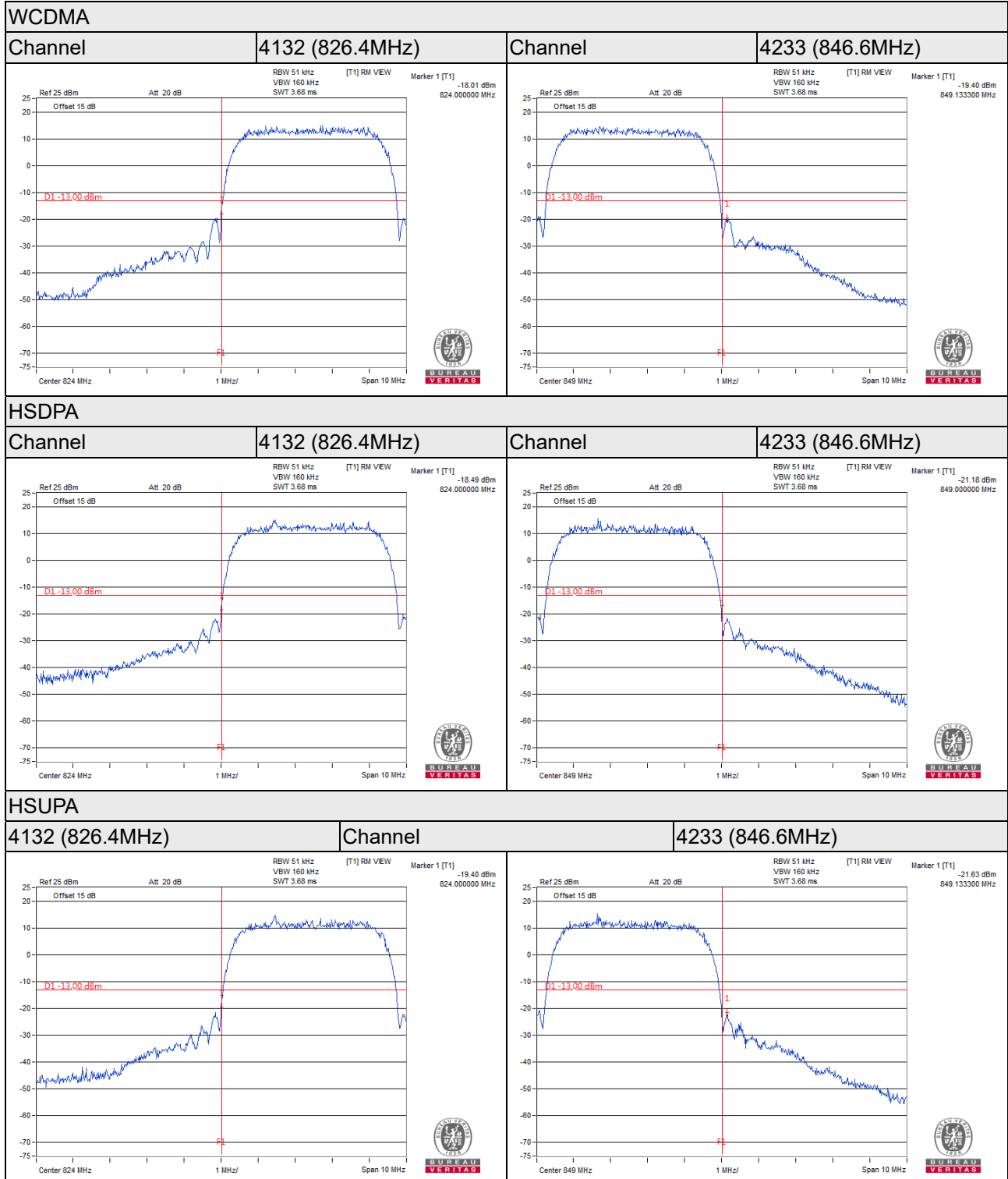
4.5.2 Test Setup



4.5.3 Test Procedures

- All measurements were done at low and high operational frequency range.
- The center frequency of spectrum is the band edge frequency and span is 10MHz. RB of the spectrum is 51kHz and VB of the spectrum is 160kHz (WCDMA / HSDPA / HSUPA).
- The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 15kHz and VB of the spectrum is 51kHz (LTE Channel Bandwidth 1.4MHz).
- The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 30kHz and VB of the spectrum is 100kHz (LTE Channel Bandwidth 3MHz).
- The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 51kHz and VB of the spectrum is 160kHz (LTE Channel Bandwidth 5MHz).
- The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (LTE Channel Bandwidth 10MHz).
- The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 150kHz and VB of the spectrum is 470kHz (LTE Channel Bandwidth 15MHz).
- Record the max trace plot into the test report.

4.5.4 Test Results



LTE Band 5, Channel Bandwidth 1.4MHz

Channel 20407
(824.7MHz)

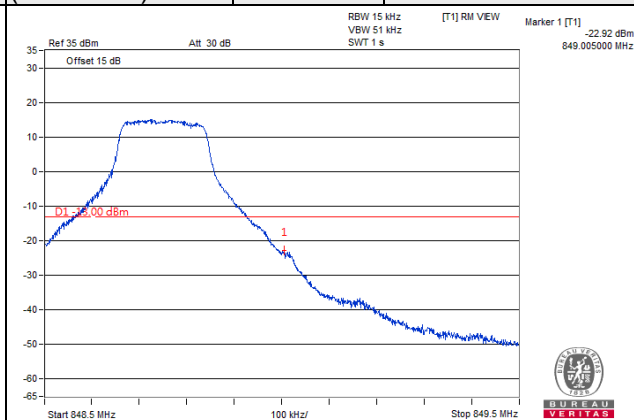
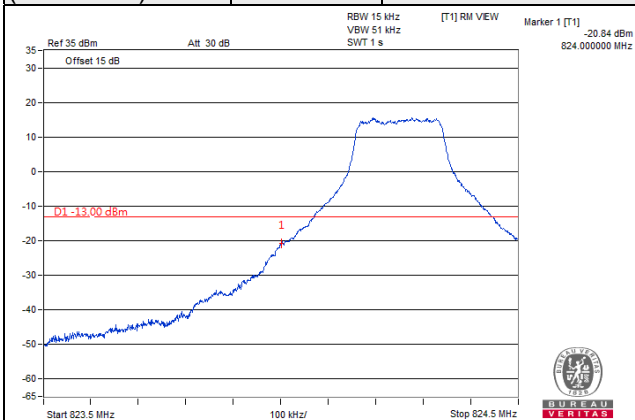
QPSK

1 RB / 0 RB Offset

Channel 20643
(848.3MHz)

QPSK

1 RB / 5 RB Offset



Channel 20407
(824.7MHz)

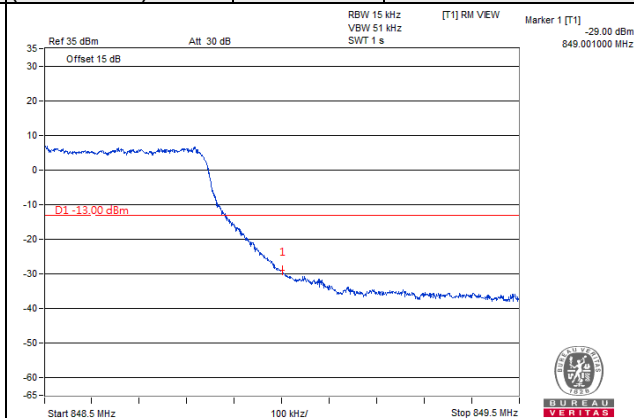
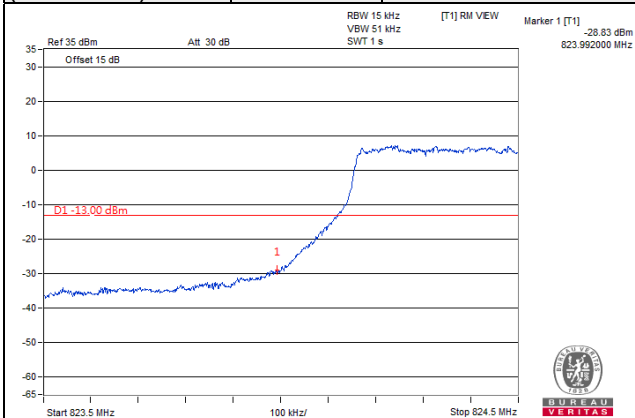
QPSK

6 RB / 0 RB Offset

Channel 20643
(848.3MHz)

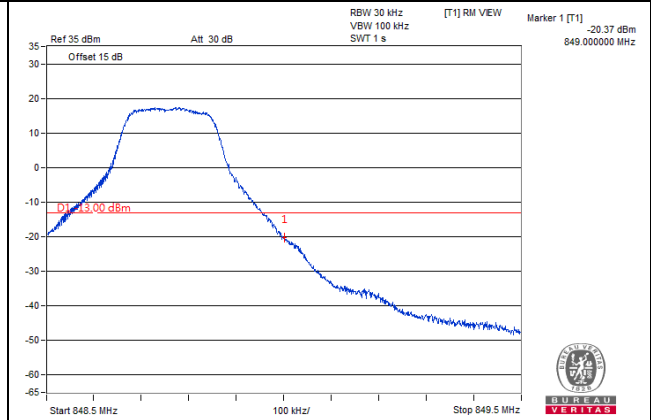
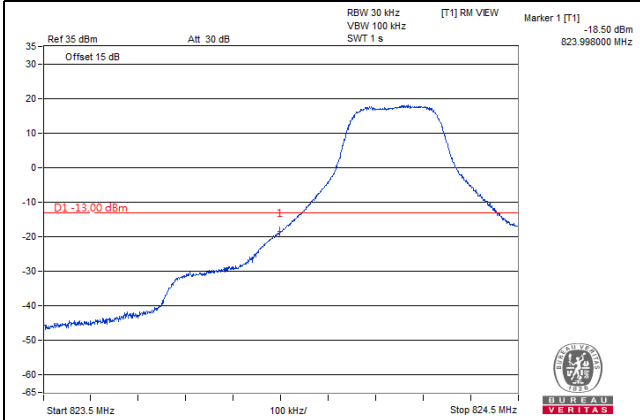
QPSK

6 RB / 0 RB Offset

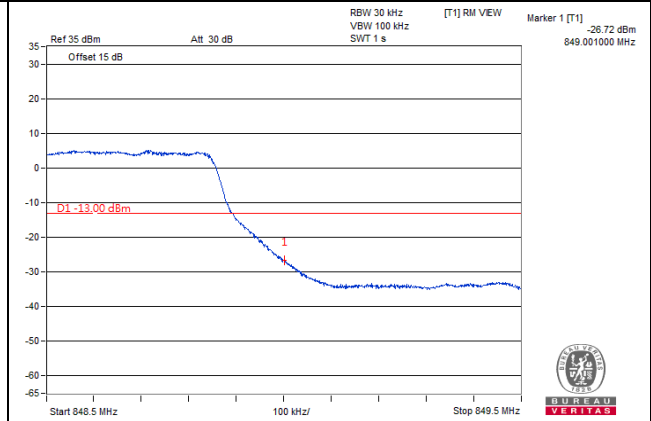
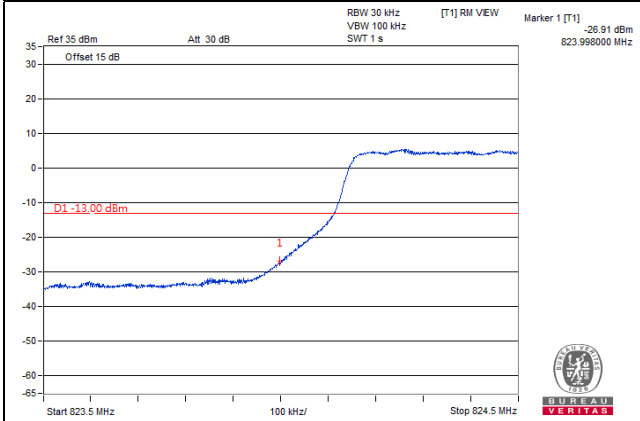


LTE Band 5, Channel Bandwidth 3MHz

Channel 20415 (825.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 20635 (847.5MHz)	QPSK	1 RB / 14 RB Offset
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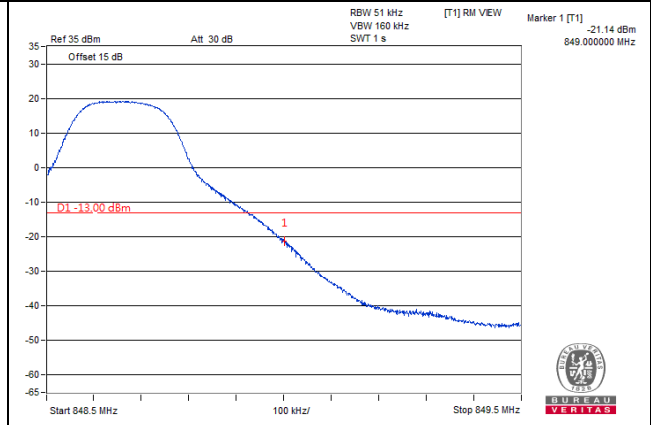
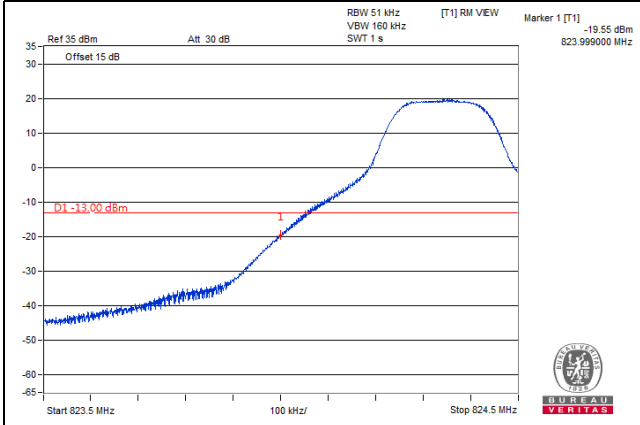


Channel 20415 (825.5MHz)	QPSK	15 RB / 0 RB Offset	Channel 20635 (847.5MHz)	QPSK	15 RB / 0 RB Offset
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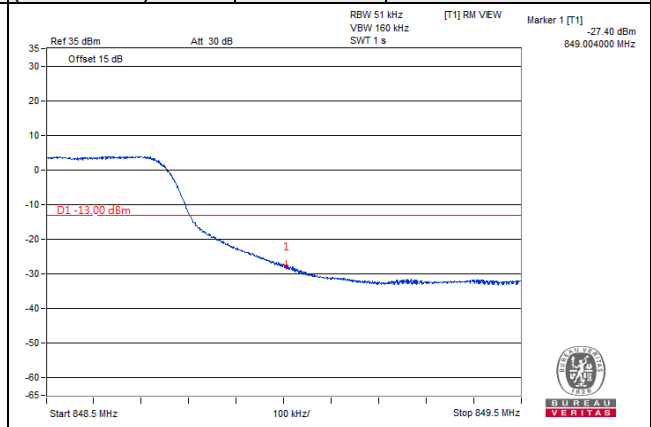
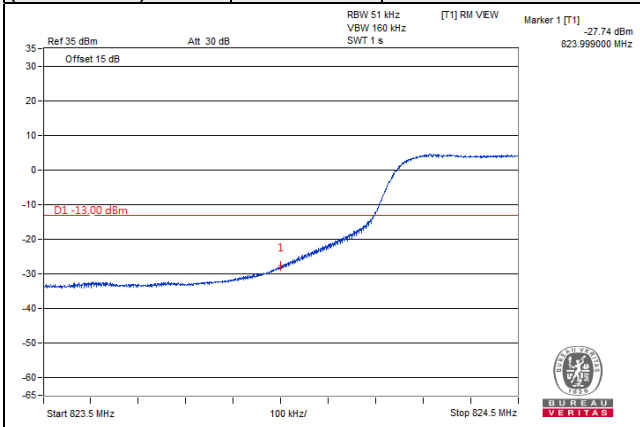


LTE Band 5, Channel Bandwidth 5MHz

Channel 20425 (826.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 20625 (846.5MHz)	QPSK	1 RB / 24 RB Offset
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Channel 20425 (826.5MHz)	QPSK	25 RB / 0 RB Offset	Channel 20625 (846.5MHz)	QPSK	25 RB / 0 RB Offset
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LTE Band 5, Channel Bandwidth 10MHz

Channel 20450
(829.0MHz)

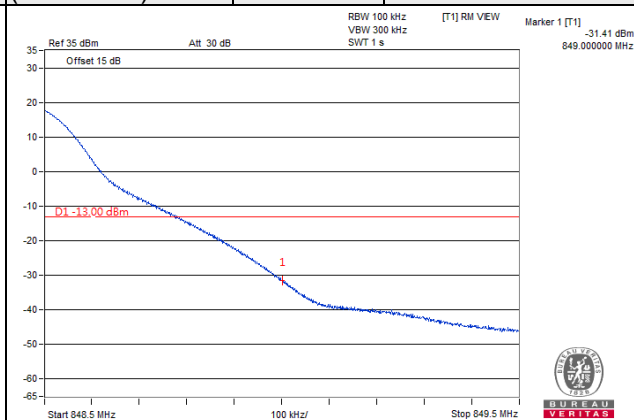
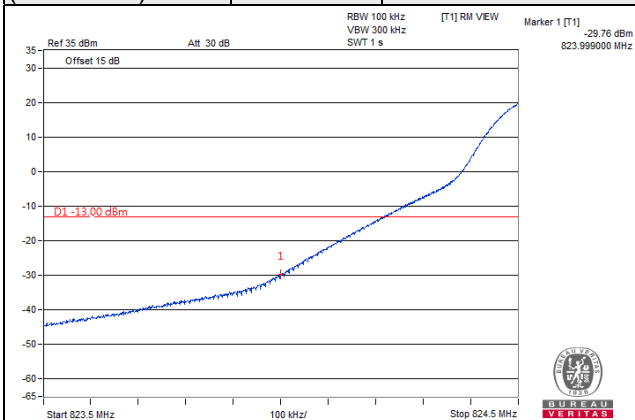
QPSK

1 RB / 0 RB Offset

Channel 20600
(844.0MHz)

QPSK

1 RB / 49 RB Offset



Channel 20450
(829.0MHz)

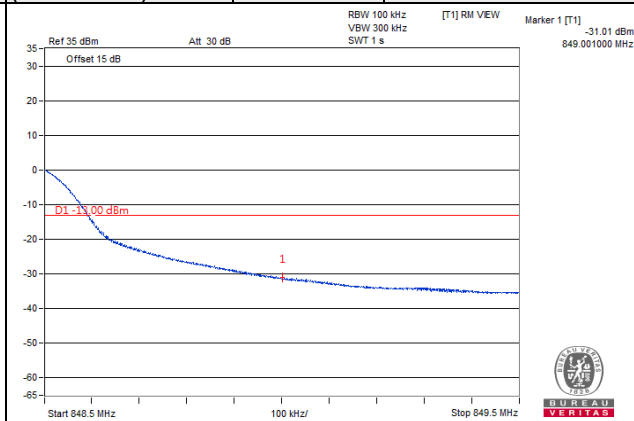
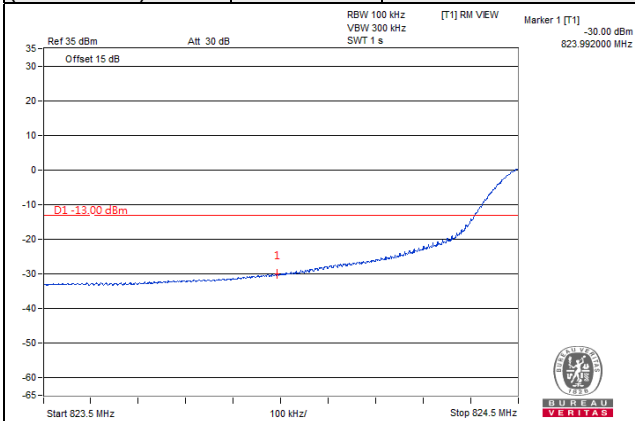
QPSK

50 RB / 0 RB Offset

Channel 20600
(844.0MHz)

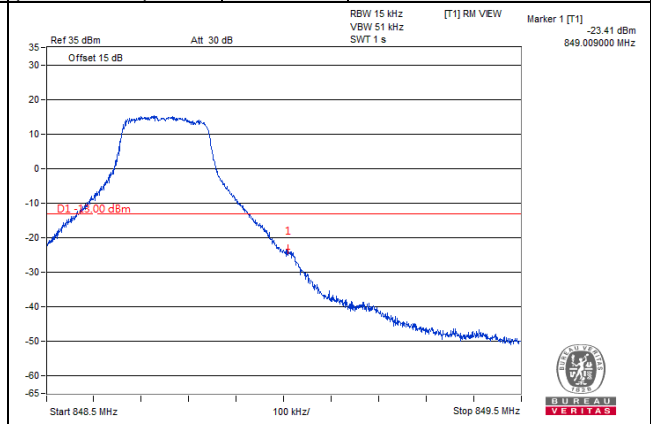
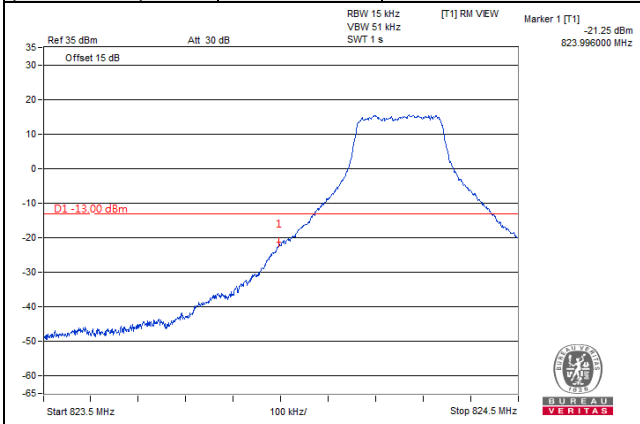
QPSK

50 RB / 0 RB Offset

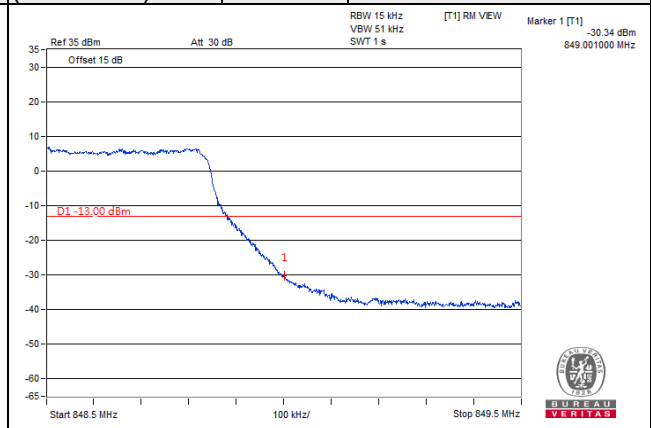
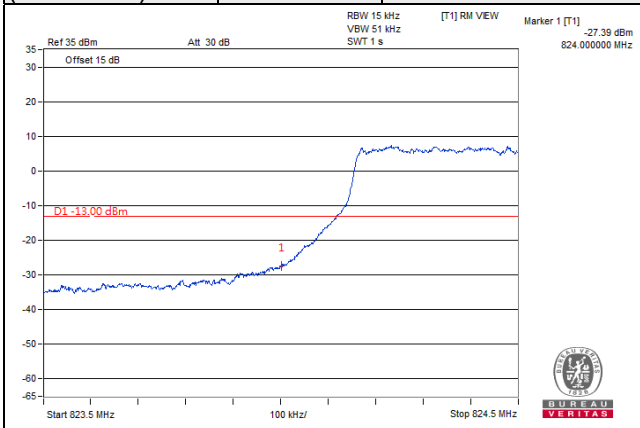


LTE Band 26, Channel Bandwidth 1.4MHz

Channel 26797 (824.7MHz)	QPSK	1 RB / 0 RB Offset	Channel 27033 (848.3MHz)	QPSK	1 RB / 5 RB Offset
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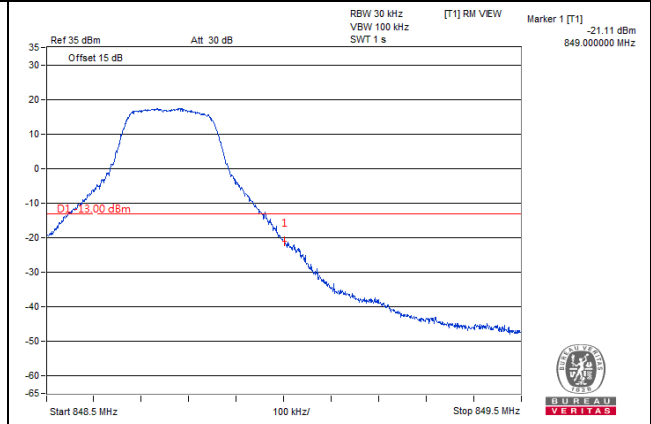
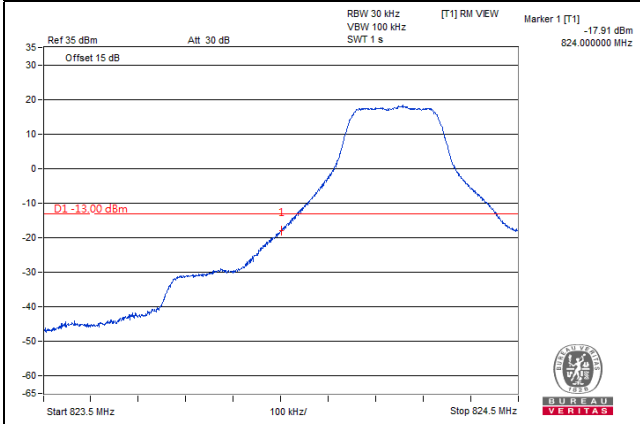


Channel 26797 (824.7MHz)	QPSK	6 RB / 0 RB Offset	Channel 27033 (848.3MHz)	QPSK	6 RB / 0 RB Offset
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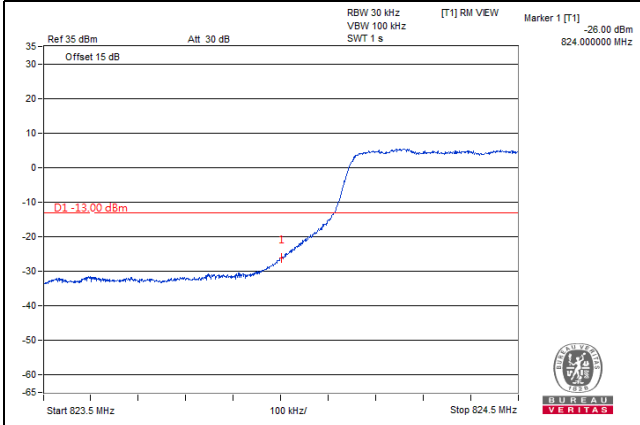


LTE Band 26, Channel Bandwidth 3MHz

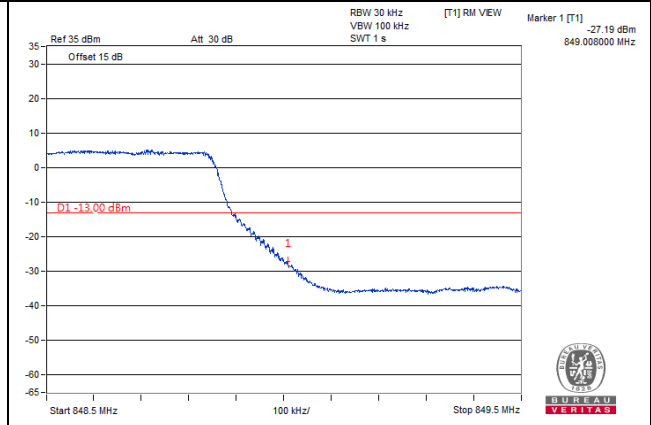
Channel 26805 (825.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 27025 (847.5MHz)	QPSK	1 RB / 14 RB Offset
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Channel 26805 (825.5MHz)	QPSK	15 RB / 0 RB Offset
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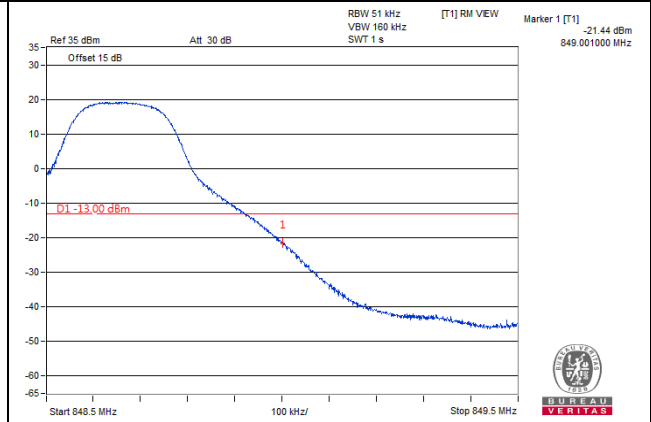
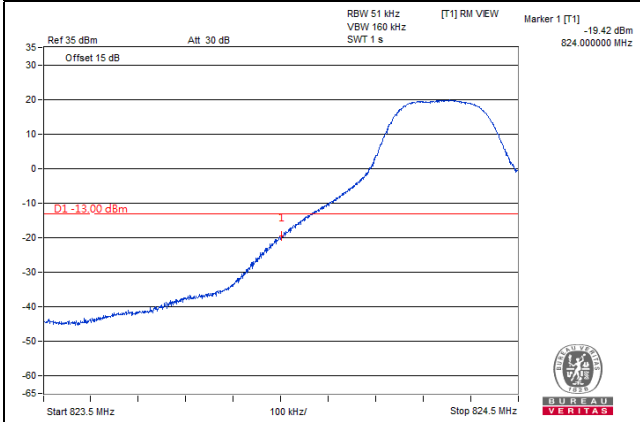


Channel 27025 M(847.5MHz)	QPSK	15 RB / 0 RB Offset
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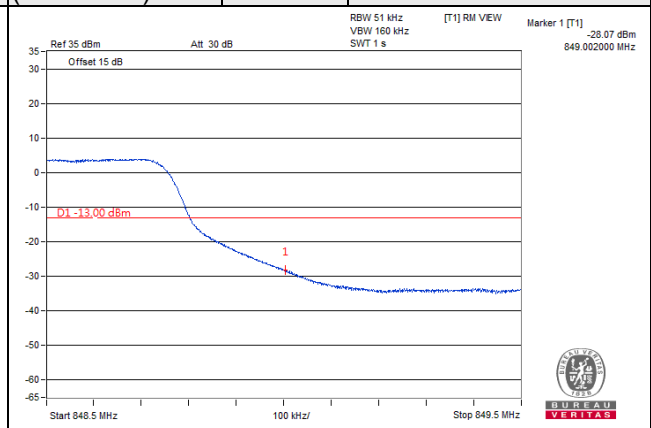
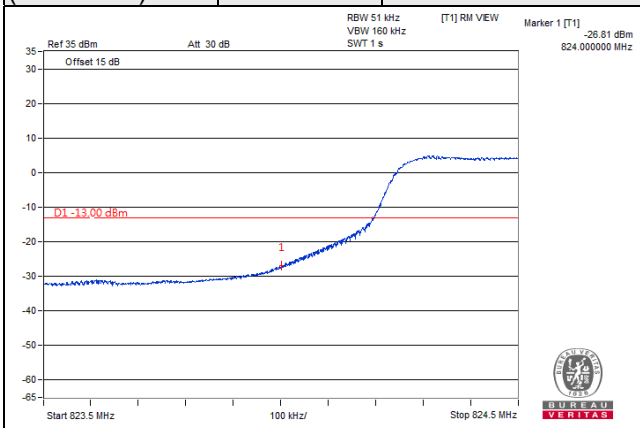


LTE Band 26, Channel Bandwidth 5MHz

Channel 26815 (826.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 27015 (846.5MHz)	QPSK	1 RB / 24 RB Offset
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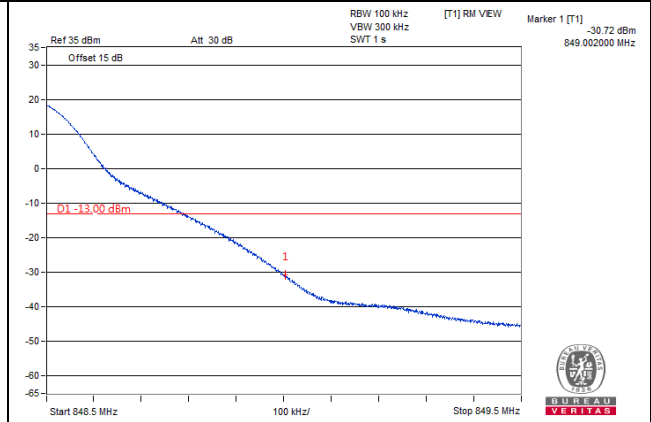
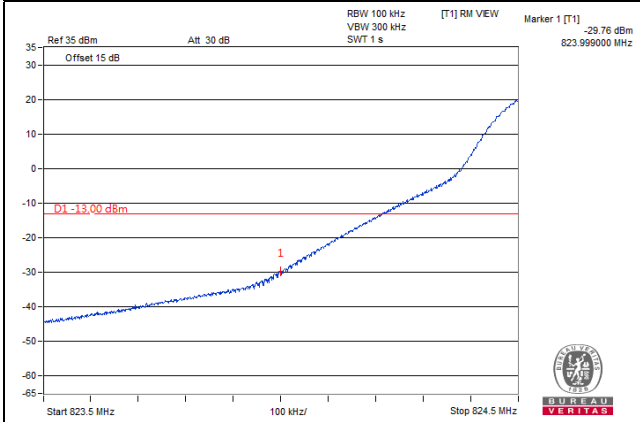


Channel 26815 (826.5MHz)	QPSK	25 RB / 0 RB Offset	Channel 27015 (846.5MHz)	QPSK	25 RB / 0 RB Offset
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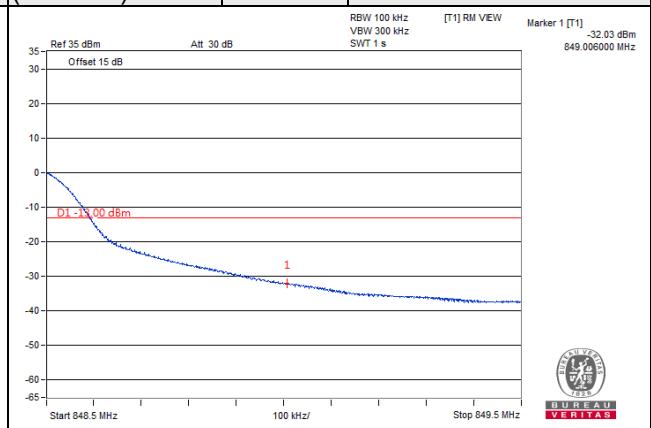
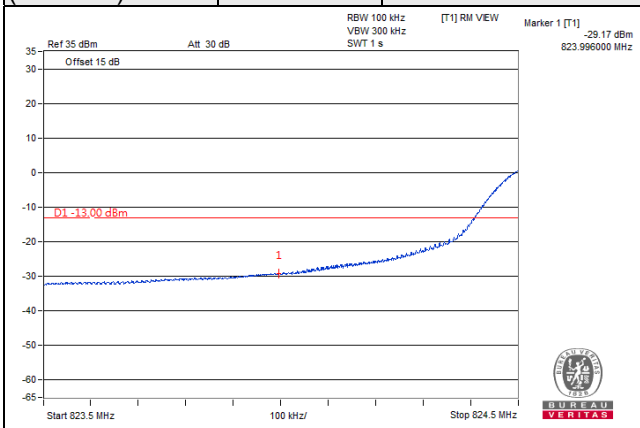


LTE Band 26, Channel Bandwidth 10MHz

Channel 26840 (829MHz)	QPSK	1 RB / 0 RB Offset	Channel 26990 (844MHz)	QPSK	1 RB / 49 RB Offset
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Channel 26840 (829MHz)	QPSK	50 RB / 0 RB Offset	Channel 26990 (844MHz)	QPSK	50 RB / 0 RB Offset
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LTE Band 26, Channel Bandwidth 15MHz

Channel 26865
(831.5MHz)

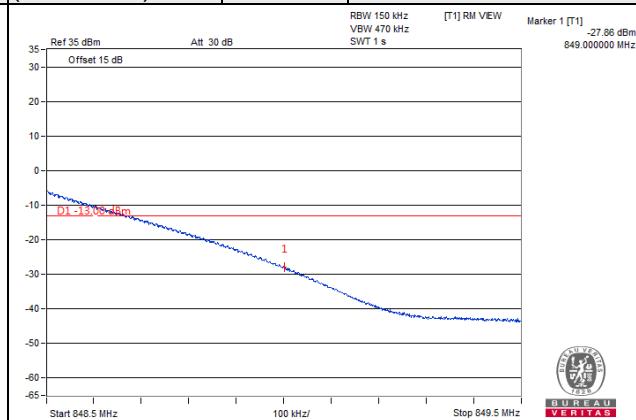
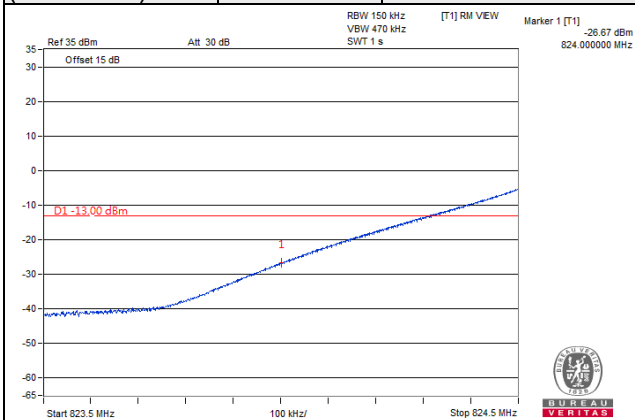
QPSK

1 RB / 0 RB Offset

Channel 26965
(841.5MHz)

QPSK

1 RB / 74 RB Offset



Channel 26865
(831.5MHz)

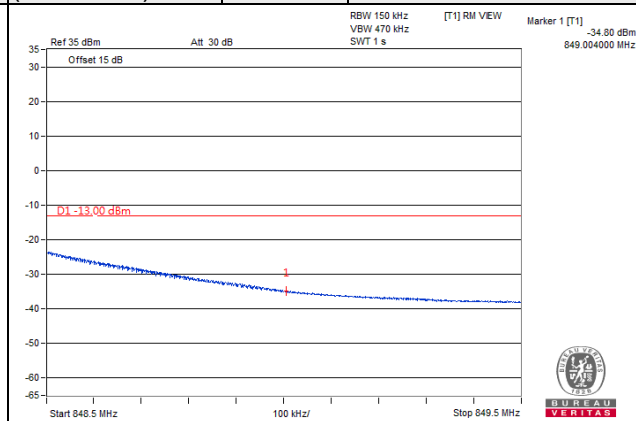
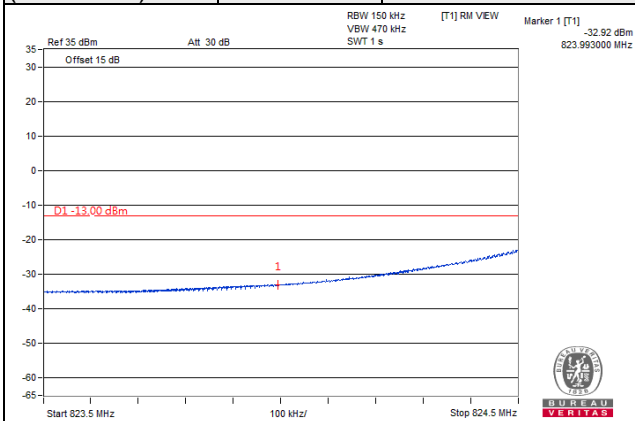
QPSK

75 RB / 0 RB Offset

Channel 26965
(841.5MHz)

QPSK

75 RB / 0 RB Offset

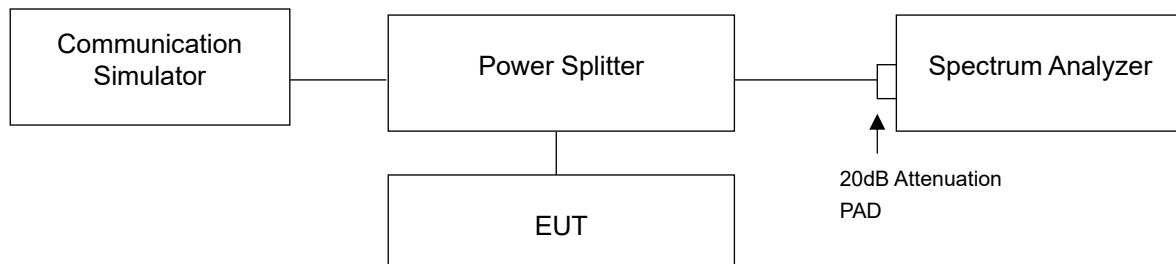


4.6 Peak to Average Ratio

4.6.1 Limits of Peak to Average Ratio Measurement

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

4.6.2 Test Setup



4.6.3 Test Procedures

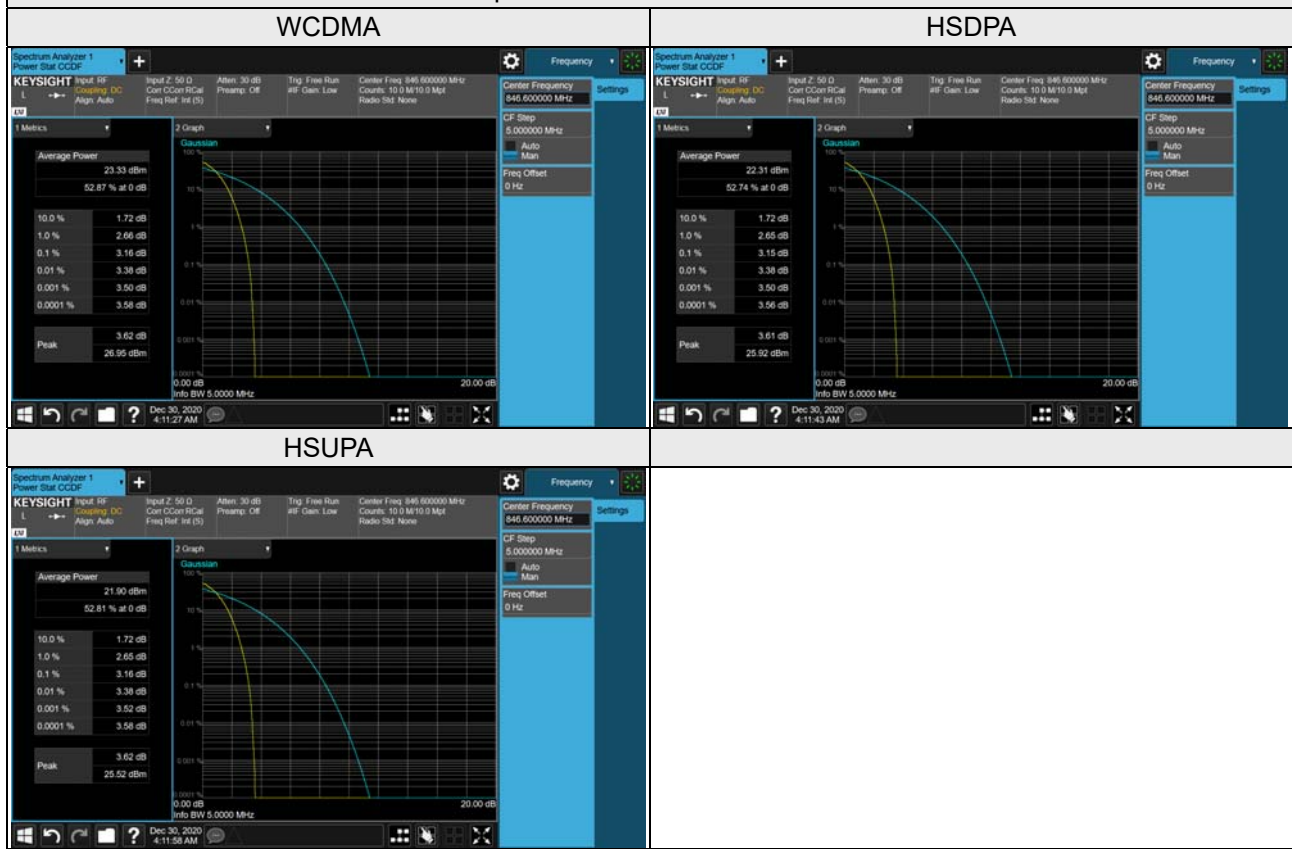
- Set resolution/measurement bandwidth \geq signal's occupied bandwidth;
- Set the number of counts to a value that stabilizes the measured CCDF curve;
- Record the maximum PAPR level associated with a probability of 0.1%.

4.6.4 Test Results

WCDMA Band 5

Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		WCDMA	HSDPA	HSUPA
4132	826.4	3.08	3.08	3.09
4182	836.4	3.13	3.11	3.12
4233	846.6	3.16	3.15	3.16

Spectrum Plot of Worst Value



LTE Band 5

LTE Band 5, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
20407	824.7	4.32	5.25
20525	836.5	4.42	5.29
20643	848.3	4.13	5.09
LTE Band 5, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
20415	825.5	4.32	5.24
20525	836.5	4.45	5.37
20635	847.5	4.30	5.15
LTE Band 5, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
20425	826.5	4.34	5.19
20525	836.5	4.42	5.31
20625	846.5	4.34	5.24
LTE Band 5, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
20450	829.0	4.29	5.12
20525	836.5	4.44	5.38
20600	844.0	4.33	5.21

Spectrum Plot of Worst Value

1.4MHz / 16QAM



3MHz / 16QAM



5MHz / 16QAM



10MHz / 16QAM



LTE Band 26

LTE Band 26, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
26797	824.7	4.47	5.37
26915	836.5	4.57	5.40
27033	848.3	4.30	5.09
LTE Band 26, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
26805	825.5	4.52	5.41
26915	836.5	4.63	5.48
27025	847.5	4.46	5.34
LTE Band 26, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
26815	826.5	4.44	5.31
26915	836.5	4.55	5.36
27015	846.5	4.47	5.35
LTE Band 26, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
26840	829.0	4.40	5.36
26915	836.5	4.52	5.29
26990	844.0	4.44	5.37
LTE Band 26, Channel Bandwidth 15MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
26865	831.5	4.30	5.28
26915	836.5	4.42	5.34
26965	841.5	4.54	5.38

Spectrum Plot of Worst Value

1.4MHz / 16QAM



3MHz / 16QAM



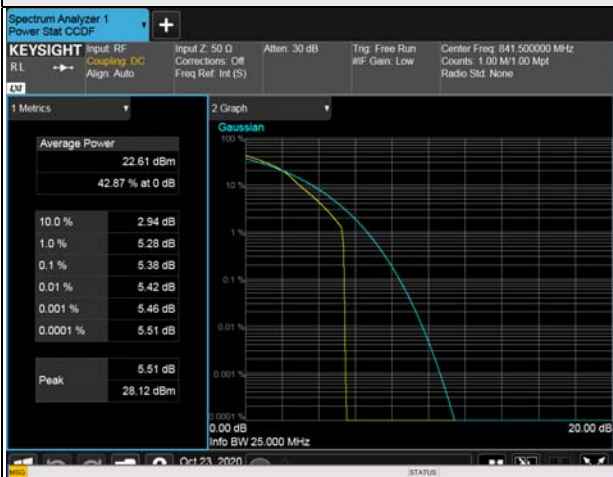
5MHz / 16QAM



10MHz / 16QAM



15MHz / 16QAM

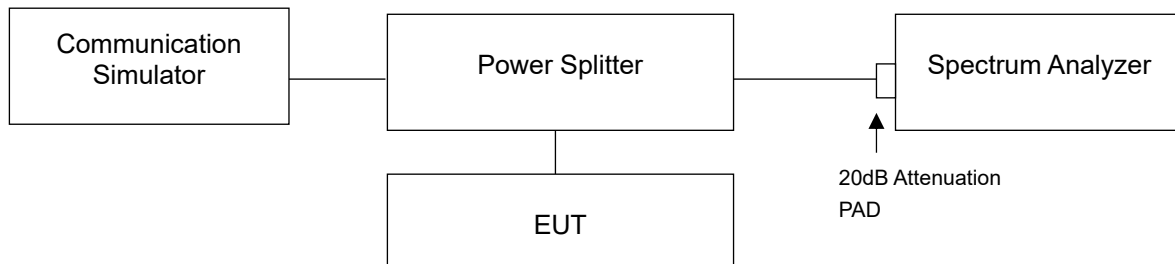


4.7 Conducted Spurious Emissions

4.7.1 Limits of Conducted Spurious Emissions Measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13dBm .

4.7.2 Test Setup



4.7.3 Test Procedure

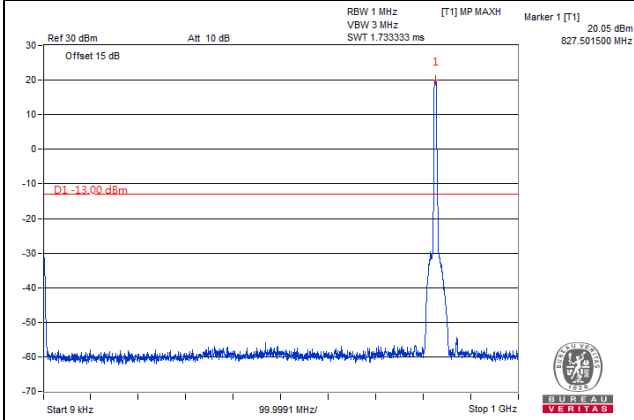
- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 9 kHz to 10GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for WCDMA/HSUPA/HSDPA band conducted emission measurement.
- Measuring frequency range is from 9 kHz to 1GHz and 1GHz to 9GHz. 20dB attenuation pad is connected with spectrum. RBW=100kHz and VBW=300kHz and RBW=1MHz and VBW=3MHz are used for LTE Band conducted emission measurement.

4.7.4 Test Results

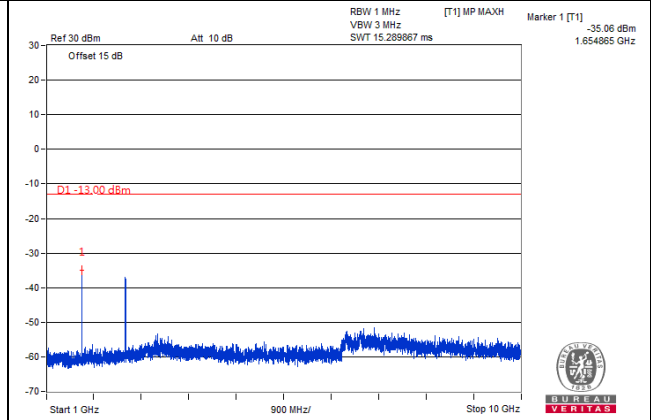
WCDMA

Channel 4132 (826.4MHz)

Frequency Range : 9kHz ~ 1GHz

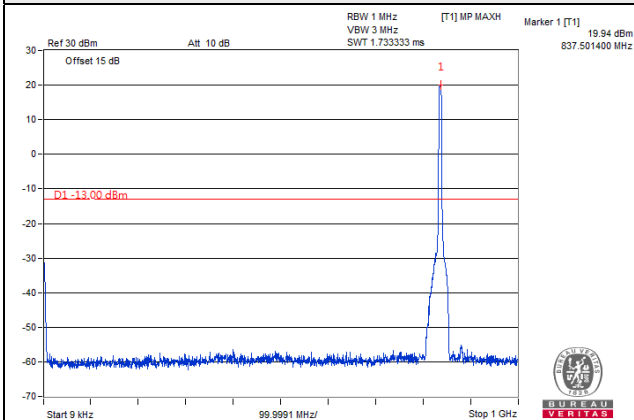


Frequency Range : 1GHz ~ 10GHz

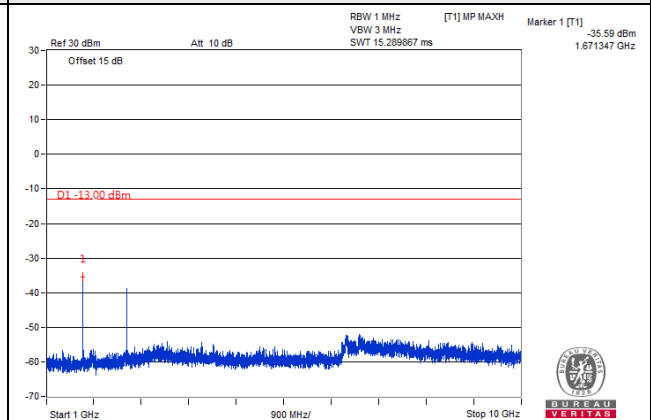


Channel 4182 (836.4MHz)

Frequency Range : 9kHz ~ 1GHz

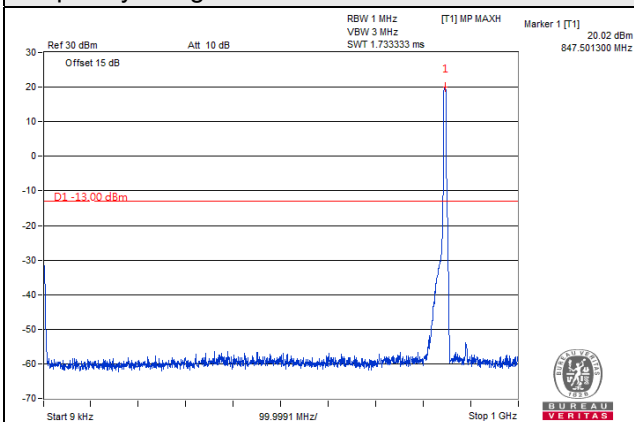


Frequency Range : 1GHz ~ 10GHz

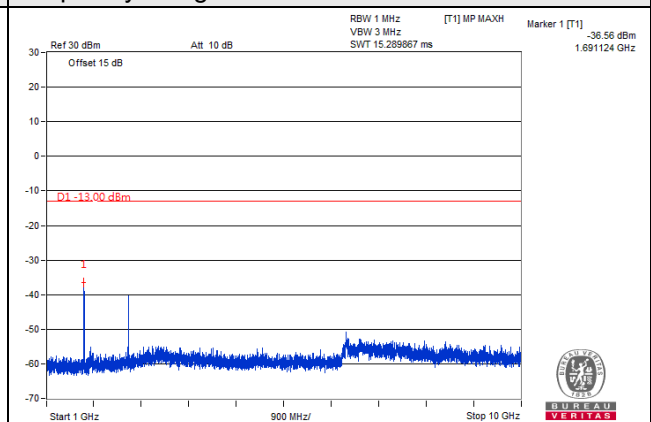


Channel 4233 (846.6MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 10GHz

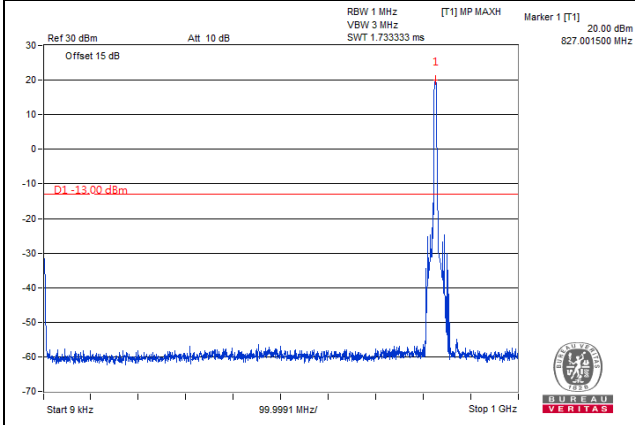


*The 9kHz signal over the limit is from Spectrum.

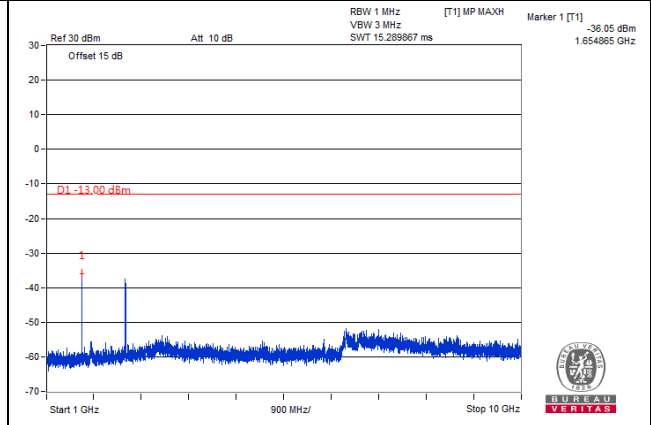
HSDPA

Channel 4132 (826.4MHz)

Frequency Range : 9kHz ~ 1GHz

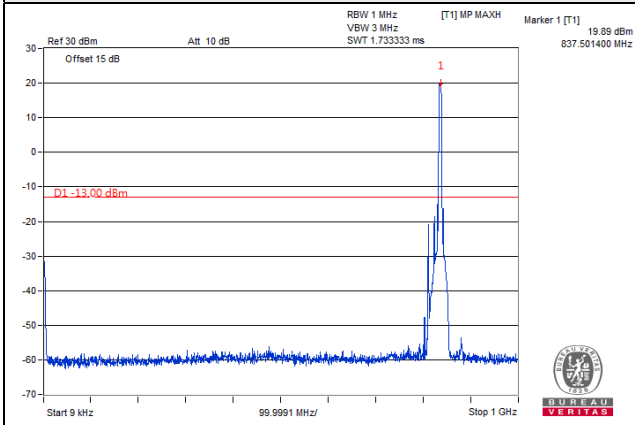


Frequency Range : 1GHz ~ 10GHz

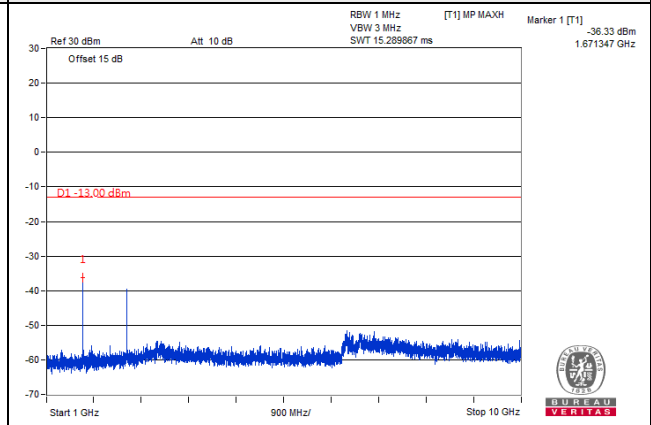


Channel 4182 (836.4MHz)

Frequency Range : 9kHz ~ 1GHz

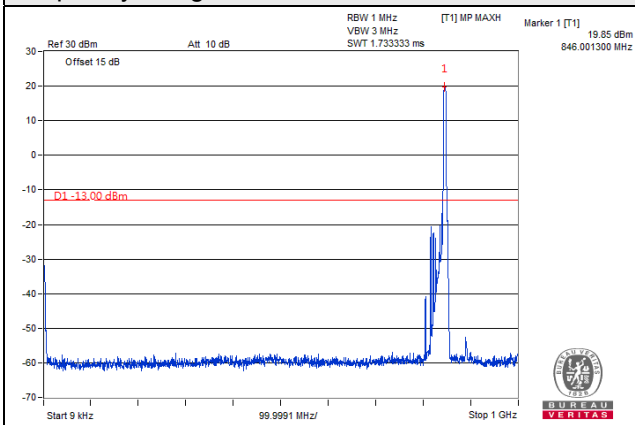


Frequency Range : 1GHz ~ 10GHz

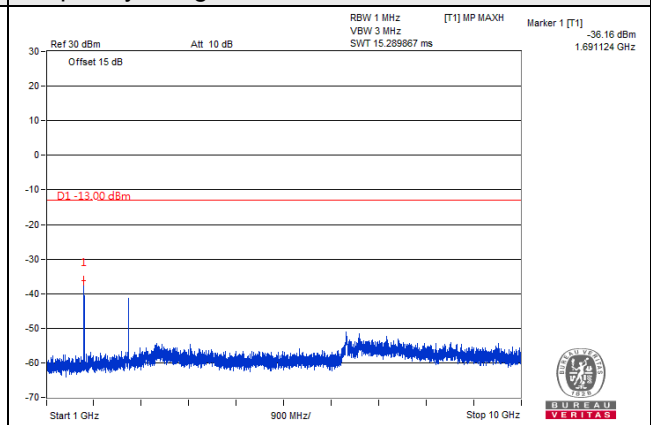


Channel 4233 (846.6MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 10GHz

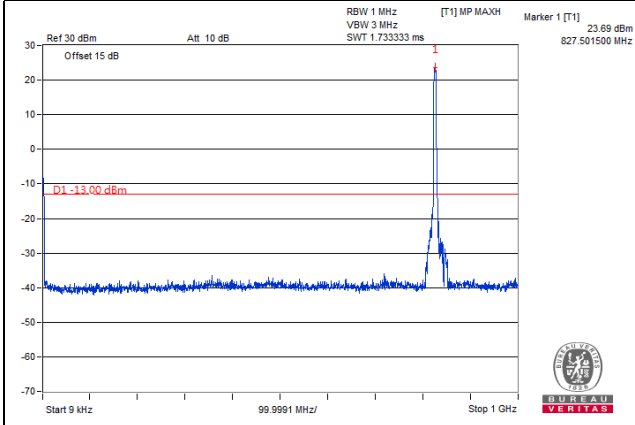


*The 9kHz signal over the limit is from Spectrum.

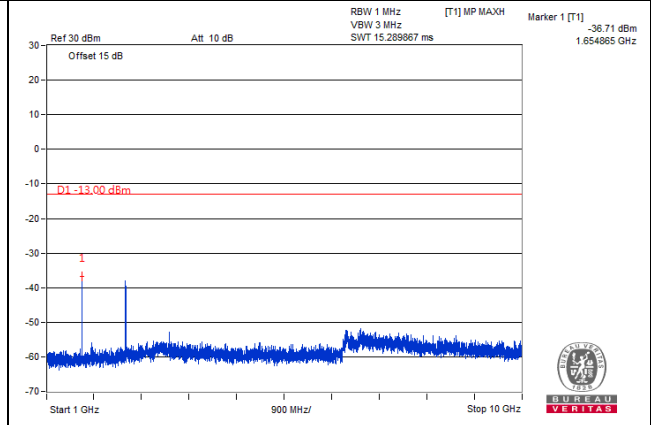
HSUPA

Channel 4132 (826.4MHz)

Frequency Range : 9kHz ~ 1GHz

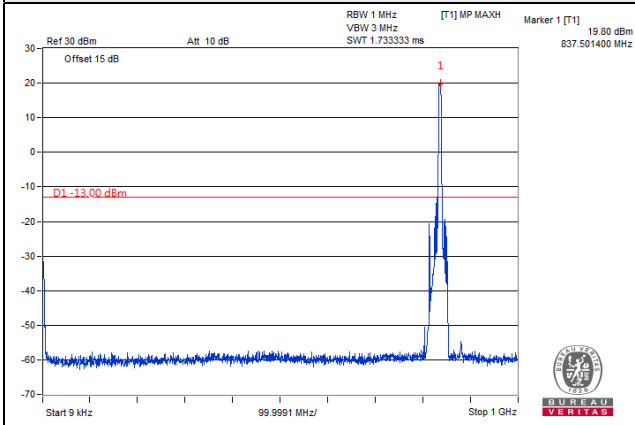


Frequency Range : 1GHz ~ 10GHz

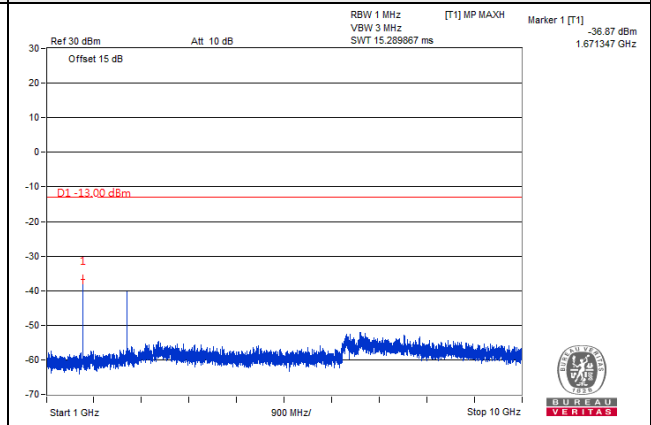


Channel 4182 (836.4MHz)

Frequency Range : 9kHz ~ 1GHz

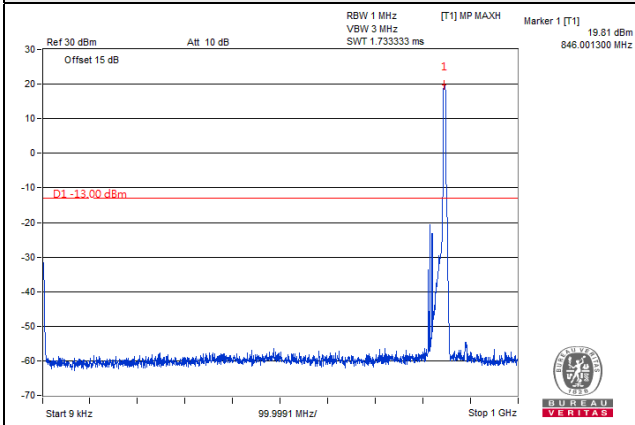


Frequency Range : 1GHz ~ 10GHz

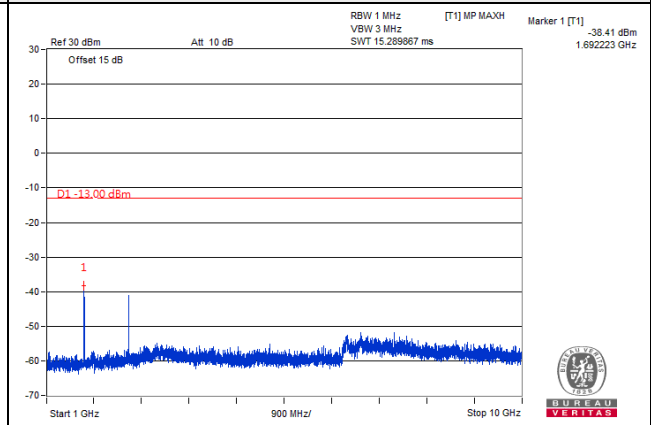


Channel 4233 (846.6MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 10GHz

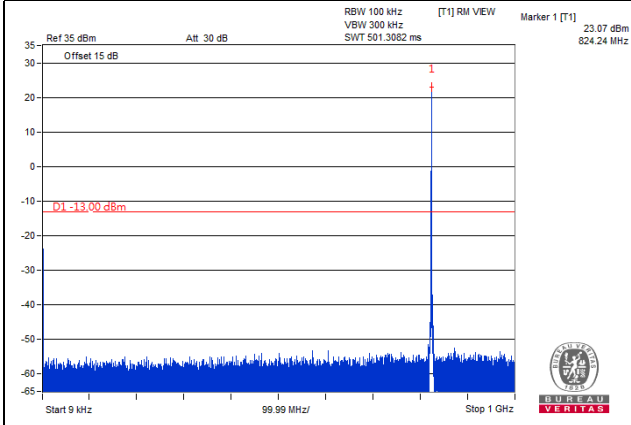


*The 9kHz signal over the limit is from Spectrum.

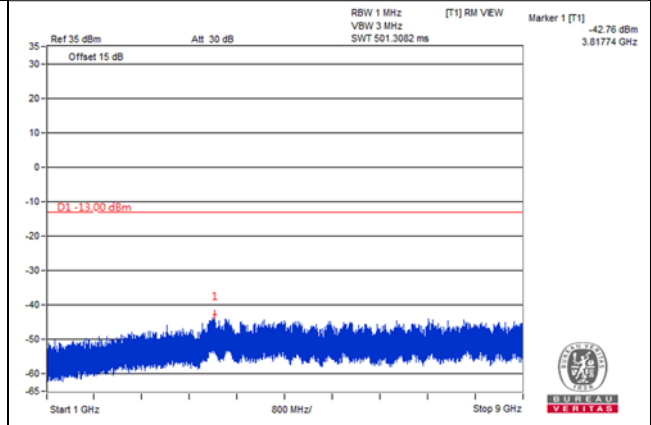
LTE Band 5, Channel Bandwidth 1.4MHz

Channel 20407 (824.7MHz)

Frequency Range : 9kHz ~ 1GHz

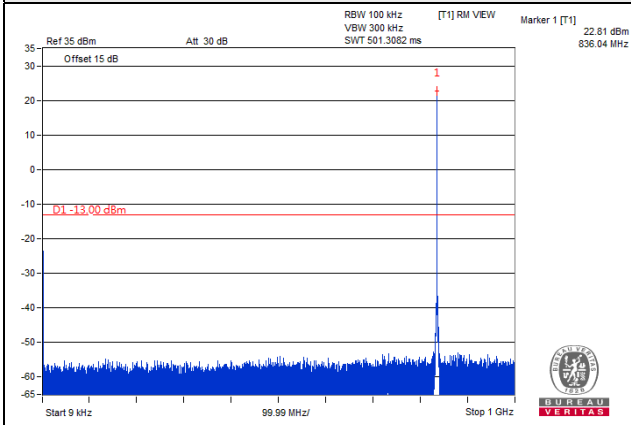


Frequency Range : 1GHz ~ 9GHz

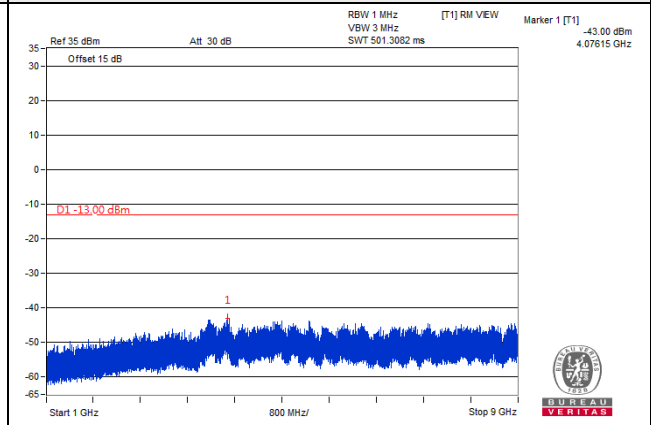


Channel 20525 (836.5MHz)

Frequency Range : 9kHz ~ 1GHz

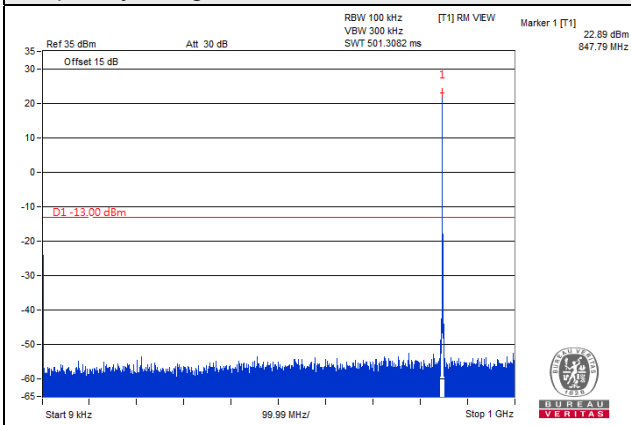


Frequency Range : 1GHz ~ 9GHz

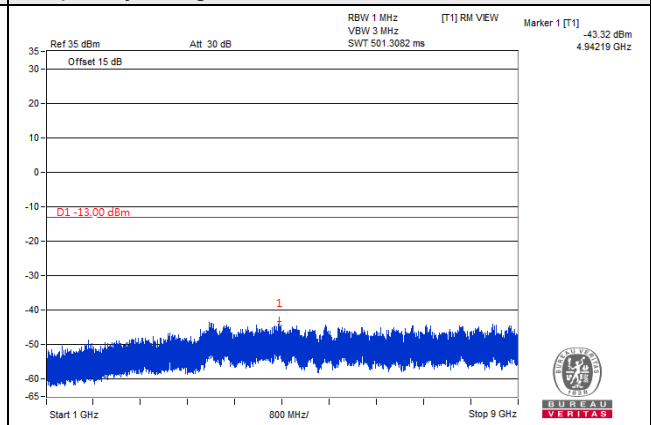


Channel 20643 (848.3MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 9GHz

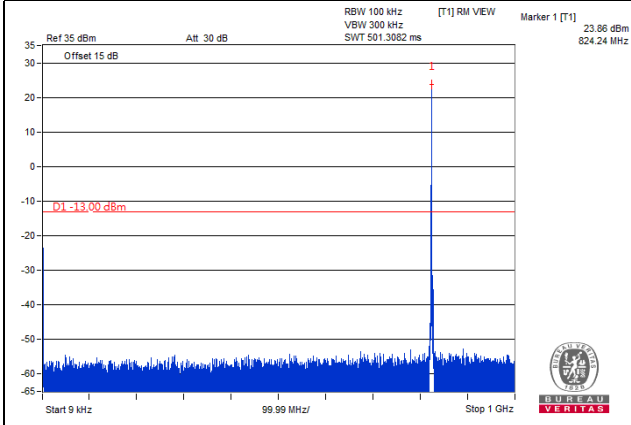


*The 9kHz signal over the limit is from Spectrum.

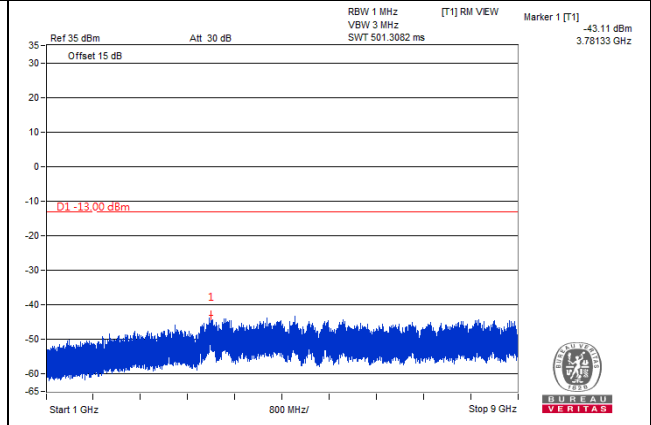
LTE Band 5, Channel Bandwidth 3MHz

Channel 20415 (825.5MHz)

Frequency Range : 9kHz ~ 1GHz

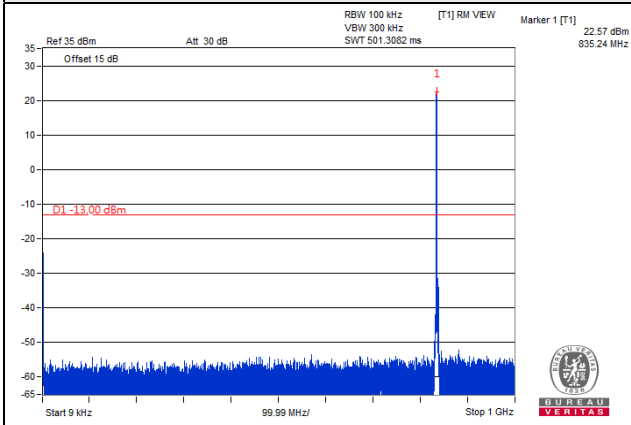


Frequency Range : 1GHz ~ 9GHz

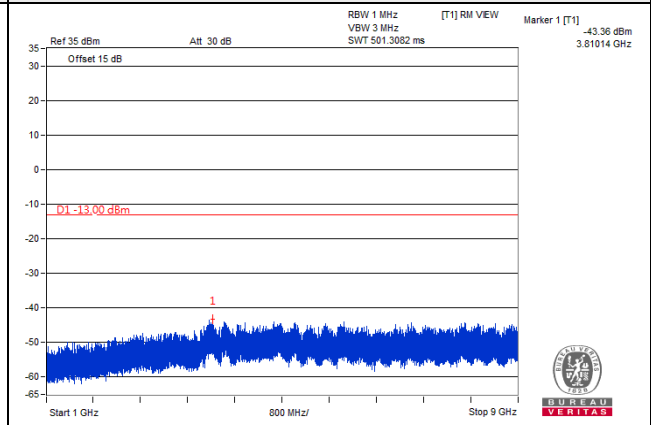


Channel 20525 (836.5MHz)

Frequency Range : 9kHz ~ 1GHz

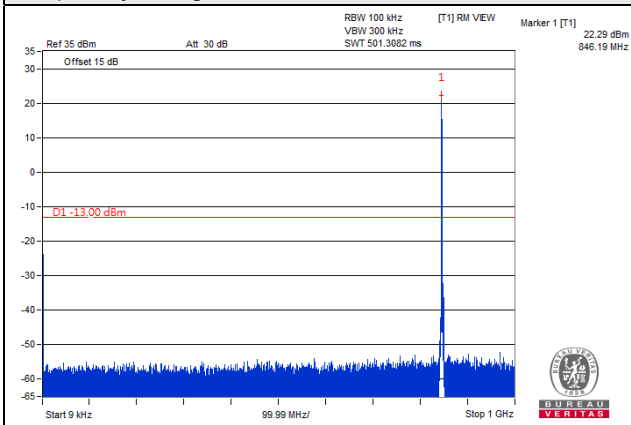


Frequency Range : 1GHz ~ 9GHz

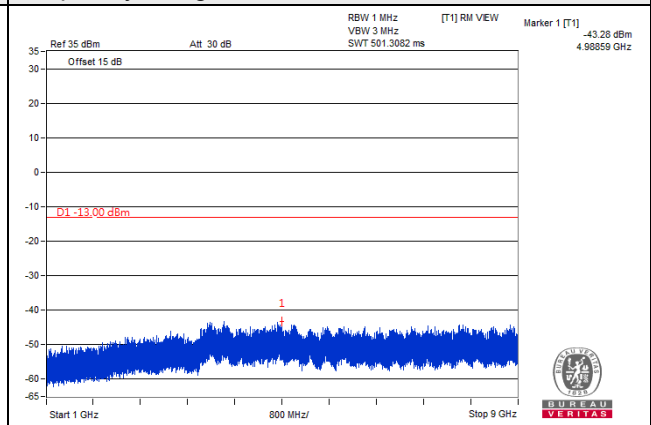


Channel 20635 (847.5MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 9GHz

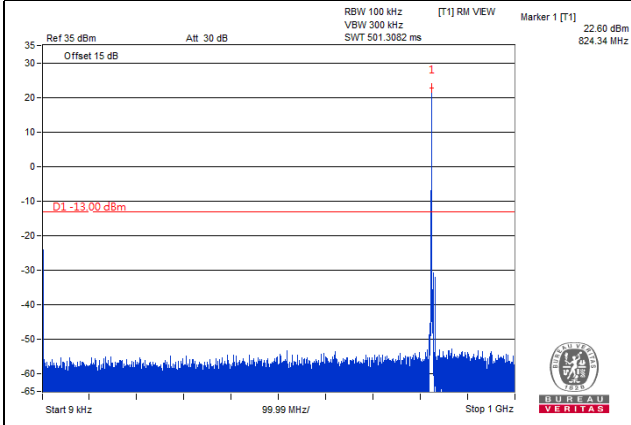


*The 9kHz signal over the limit is from Spectrum.

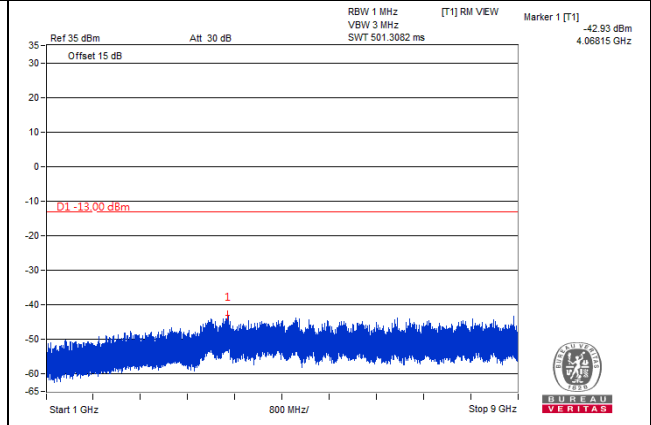
LTE Band 5, Channel Bandwidth 5MHz

Channel 20425 (826.5MHz)

Frequency Range : 9kHz ~ 1GHz

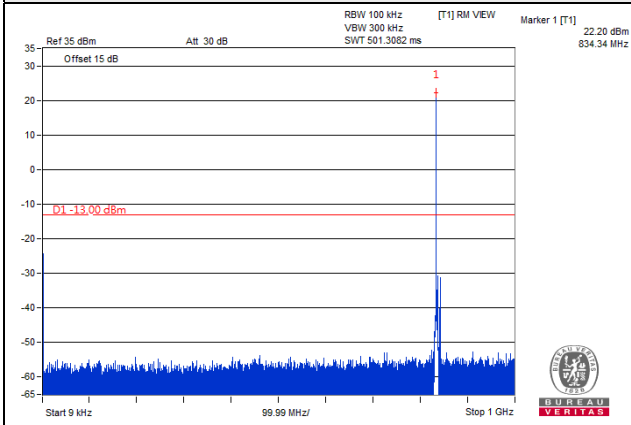


Frequency Range : 1GHz ~ 9GHz

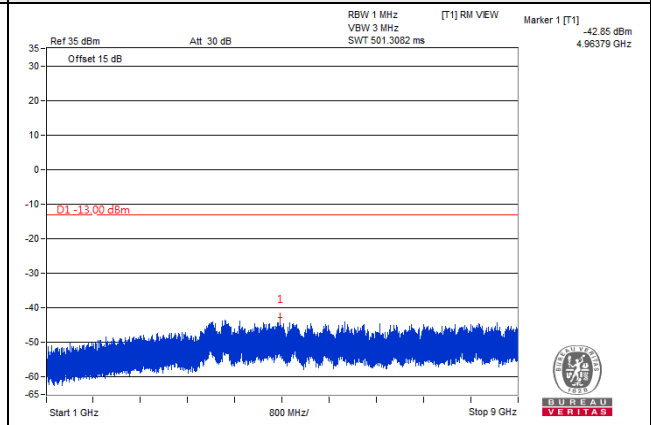


Channel 20525 (836.5MHz)

Frequency Range : 9kHz ~ 1GHz

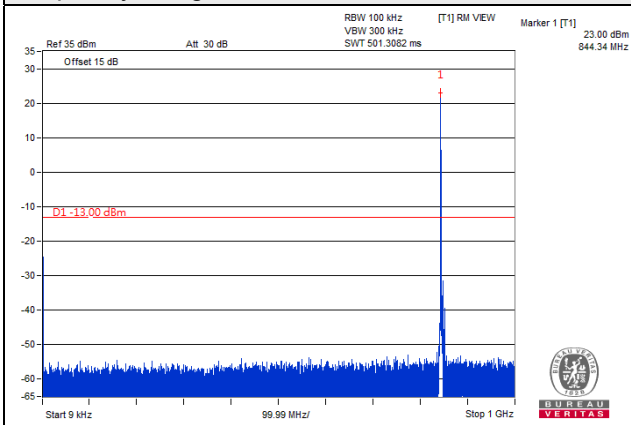


Frequency Range : 1GHz ~ 9GHz

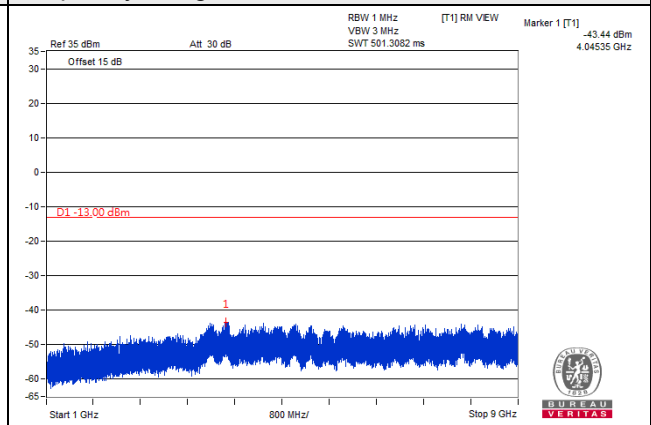


Channel 20625 (846.5MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 9GHz

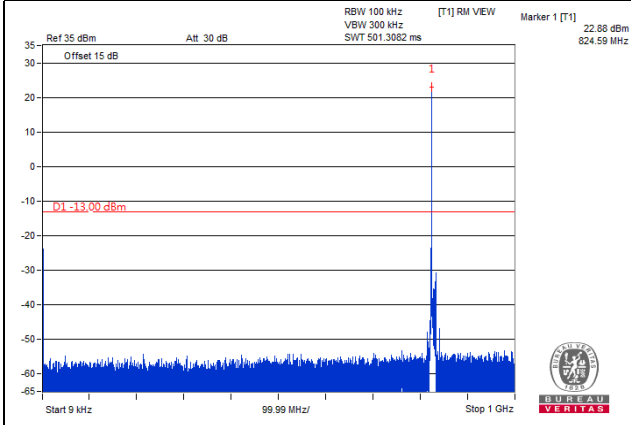


*The 9kHz signal over the limit is from Spectrum.

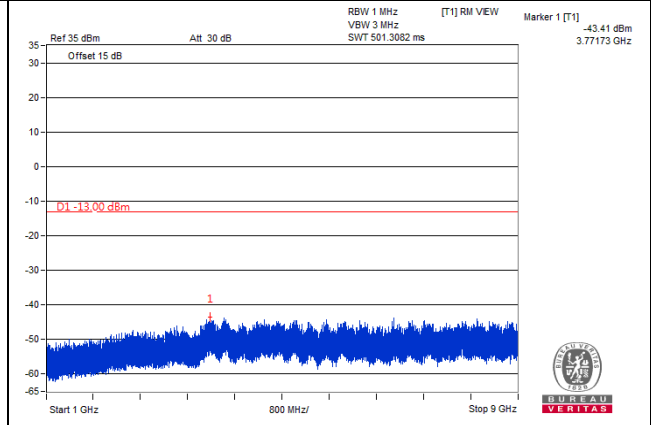
LTE Band 5, Channel Bandwidth 10MHz

Channel 20450 (829.0MHz)

Frequency Range : 9kHz ~ 1GHz

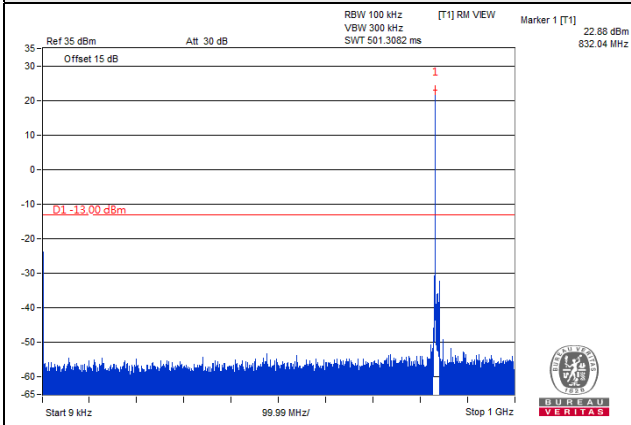


Frequency Range : 1GHz ~ 9GHz

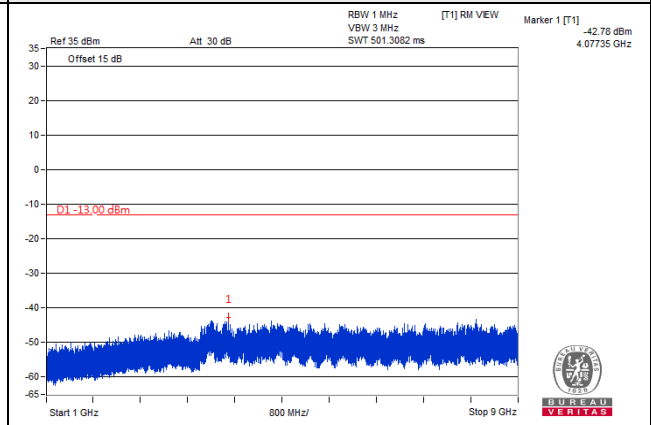


Channel 20525 (836.5MHz)

Frequency Range : 9kHz ~ 1GHz

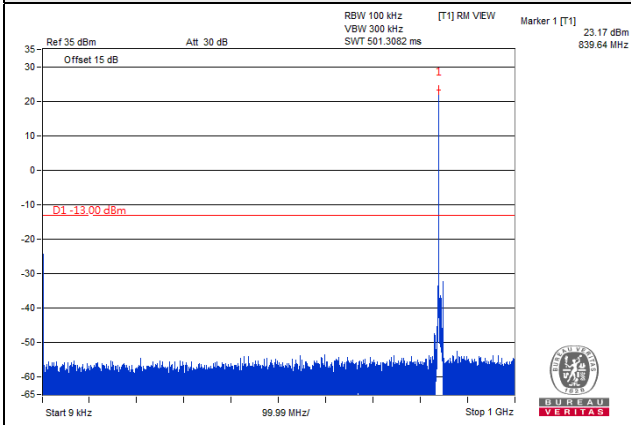


Frequency Range : 1GHz ~ 9GHz

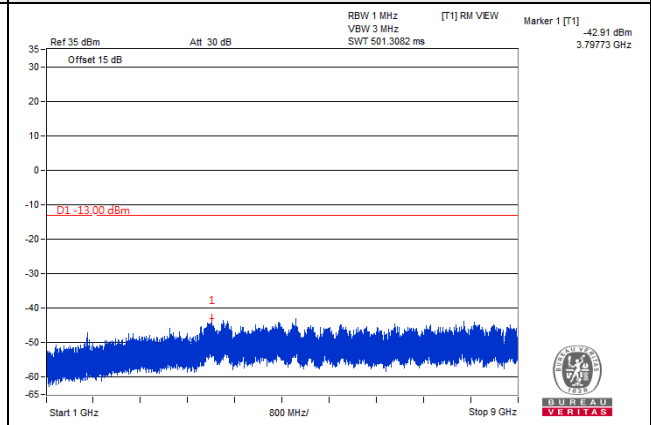


Channel 20600 (844.0MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 9GHz

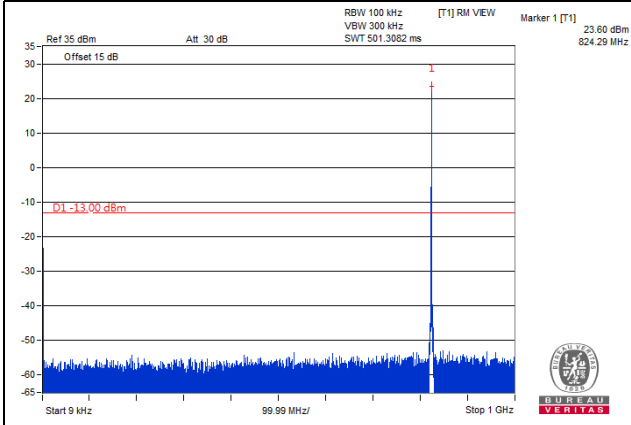


*The 9kHz signal over the limit is from Spectrum.

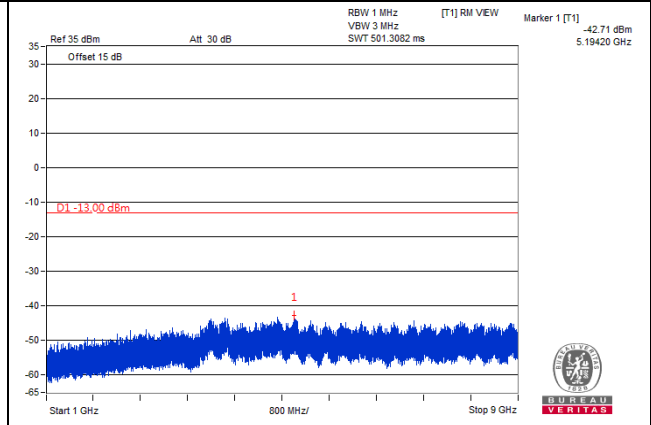
LTE Band 26, Channel Bandwidth 1.4MHz

Channel 26797 (824.7MHz)

Frequency Range : 9kHz ~ 1GHz

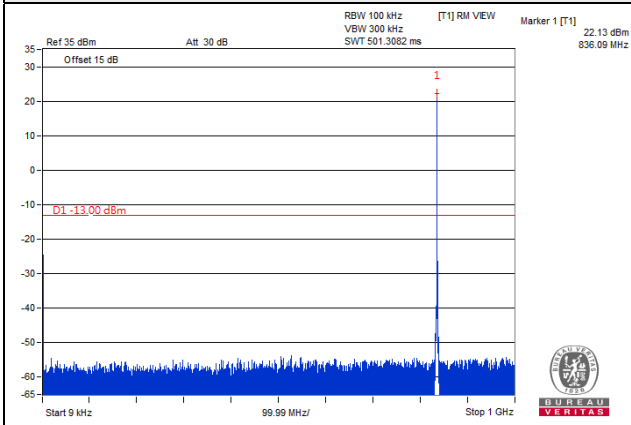


Frequency Range : 1GHz ~ 9GHz

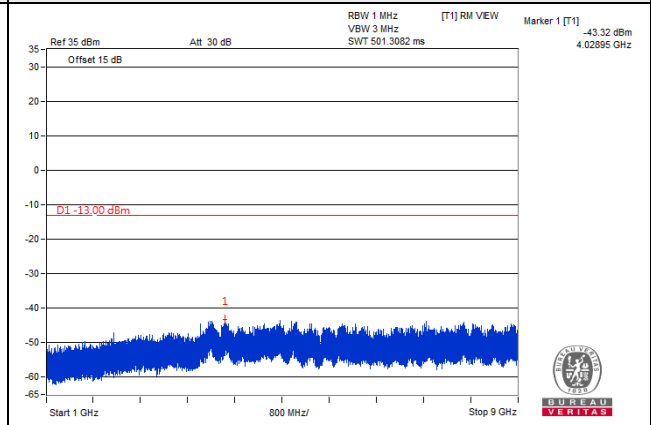


Channel 26915 (836.5MHz)

Frequency Range : 9kHz ~ 1GHz

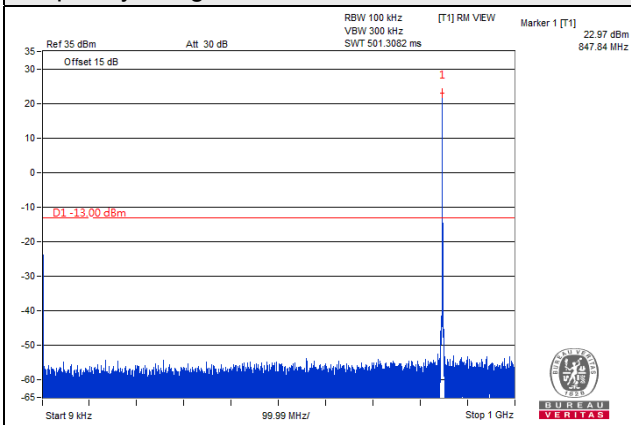


Frequency Range : 1GHz ~ 9GHz

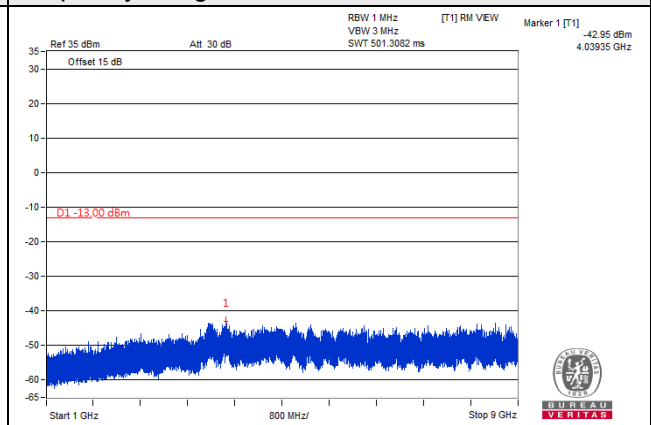


Channel 27033 (848.3MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 9GHz

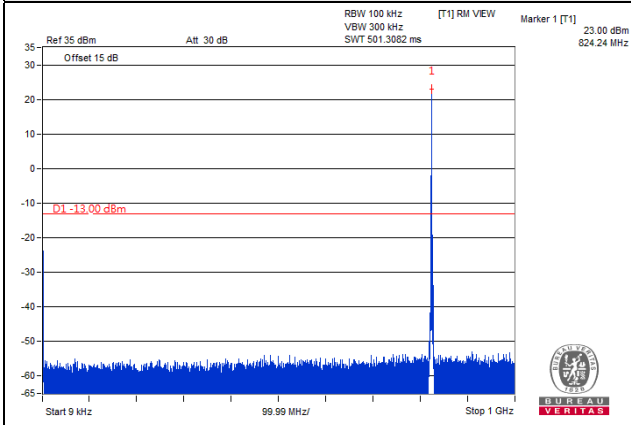


*The 9kHz signal over the limit is from Spectrum.

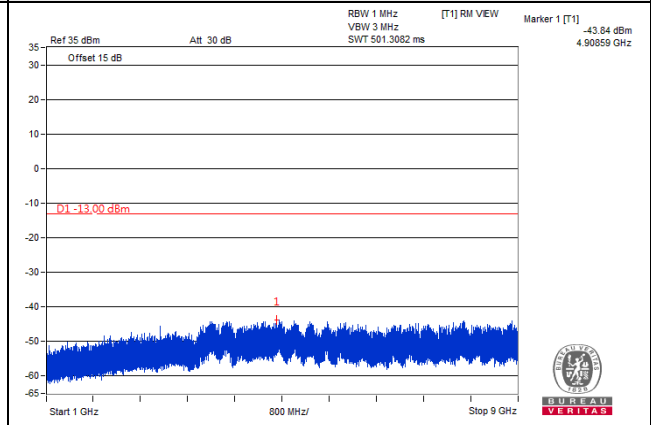
LTE Band 26, Channel Bandwidth 3MHz

Channel 26805 (825.5MHz)

Frequency Range : 9kHz ~ 1GHz

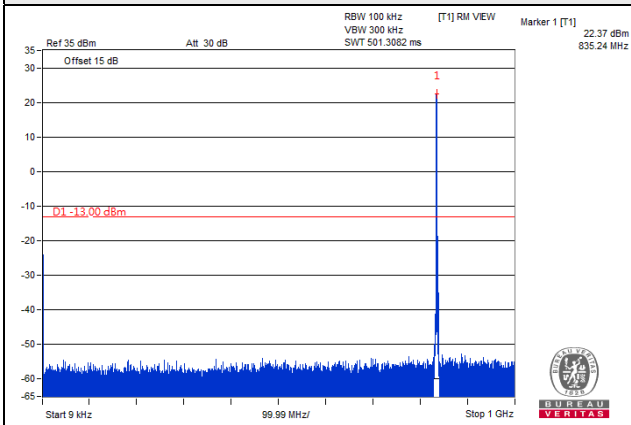


Frequency Range : 1GHz ~ 9GHz

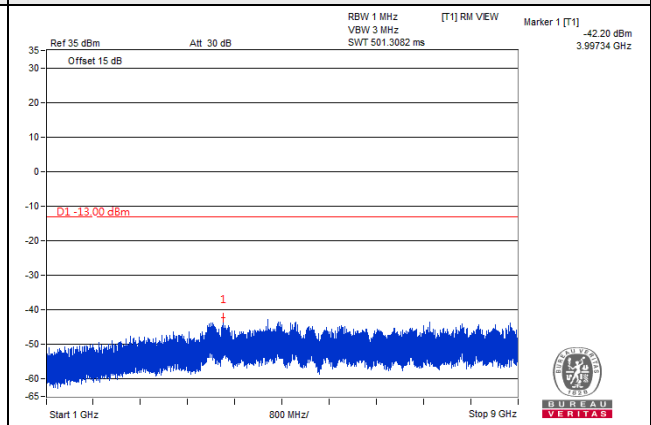


Channel 26915 (836.5MHz)

Frequency Range : 9kHz ~ 1GHz

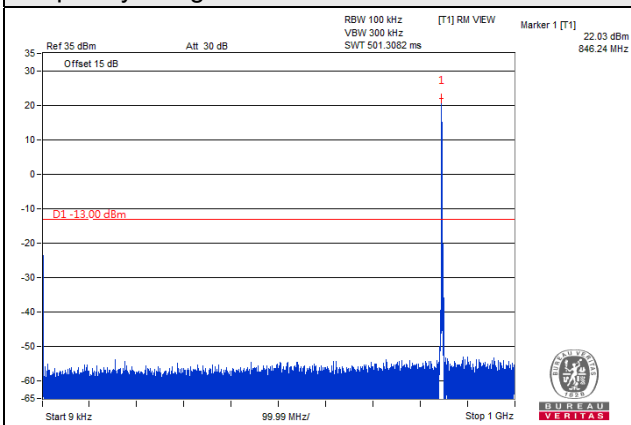


Frequency Range : 1GHz ~ 9GHz

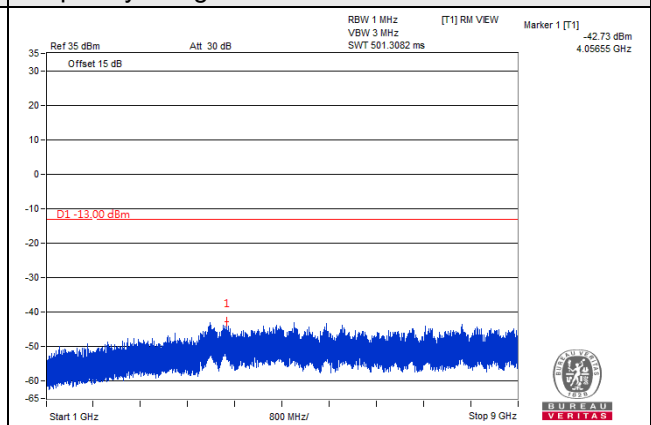


Channel 27025 (847.5MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 9GHz

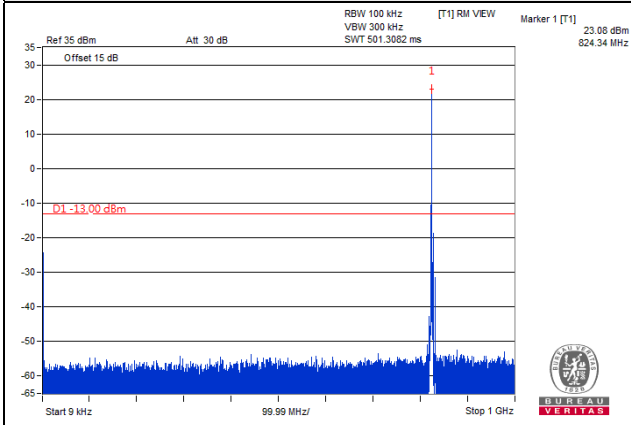


*The 9kHz signal over the limit is from Spectrum.

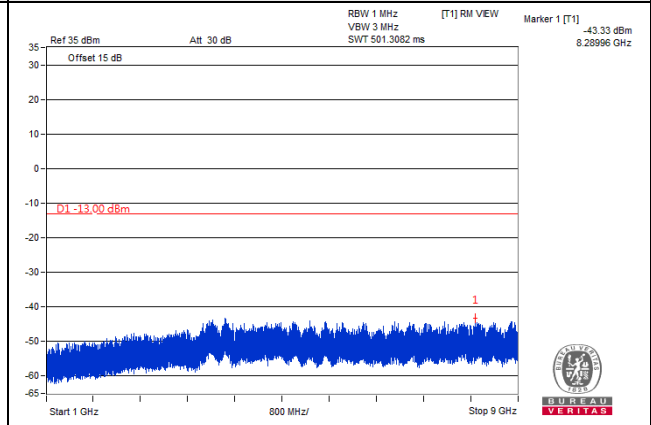
LTE Band 26, Channel Bandwidth 5MHz

Channel 26815 (826.5MHz)

Frequency Range : 9kHz ~ 1GHz

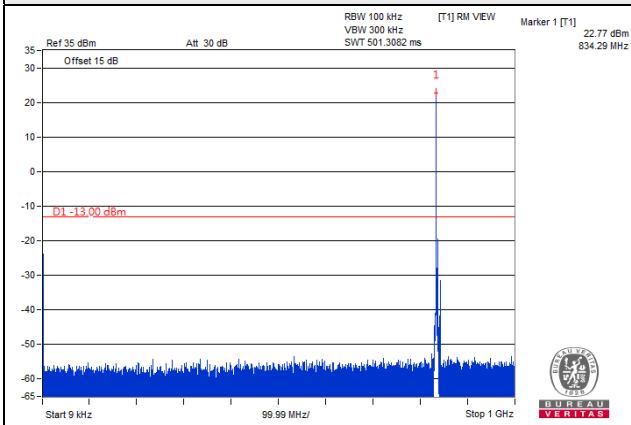


Frequency Range : 1GHz ~ 9GHz

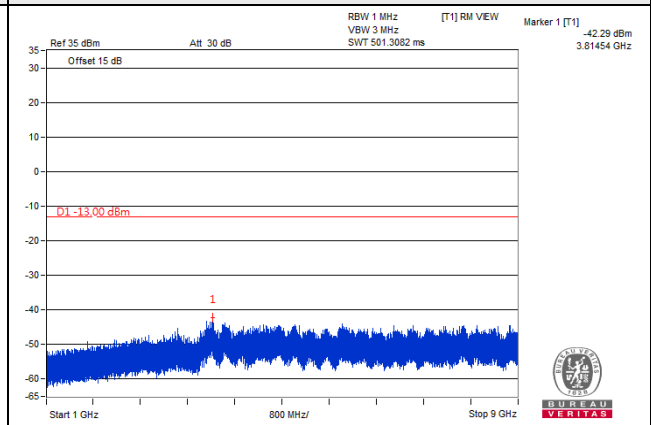


Channel 26915 (836.5MHz)

Frequency Range : 9kHz ~ 1GHz

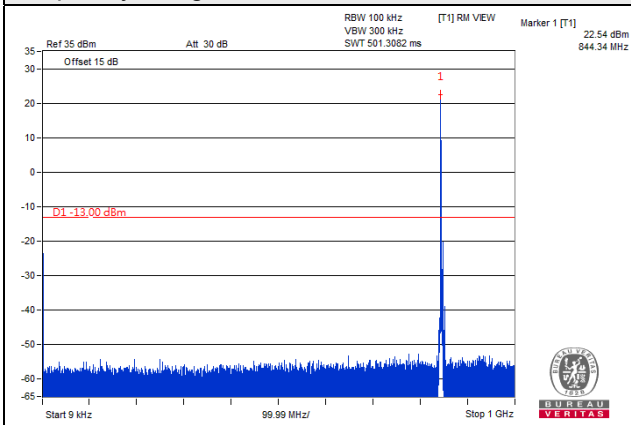


Frequency Range : 1GHz ~ 9GHz

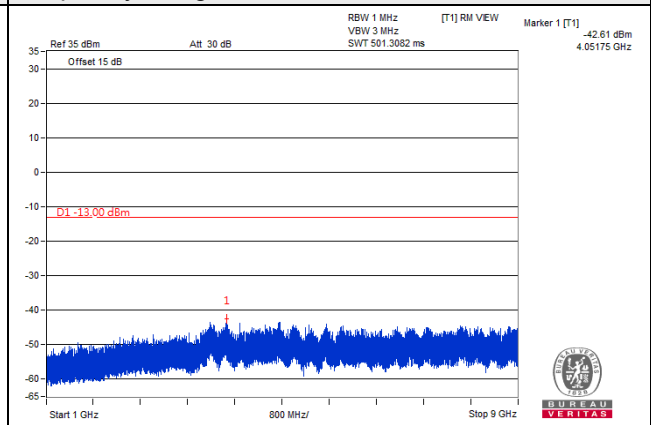


Channel 27015 (846.5MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 9GHz

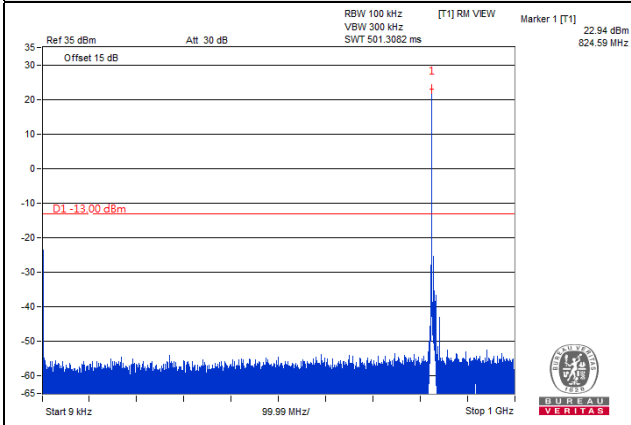


*The 9kHz signal over the limit is from Spectrum.

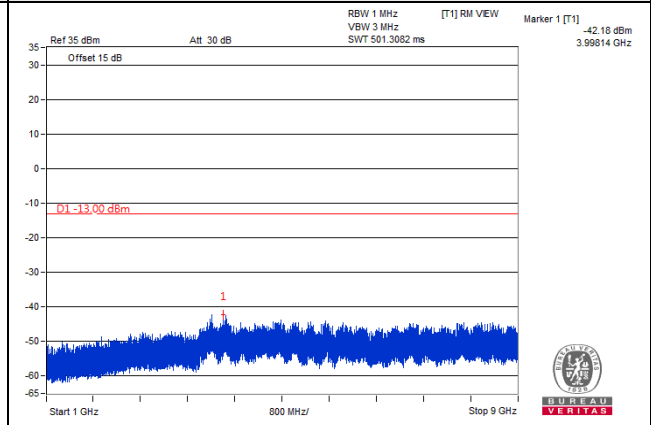
LTE Band 26, Channel Bandwidth 10MHz

Channel 26840 (829MHz)

Frequency Range : 9kHz ~ 1GHz

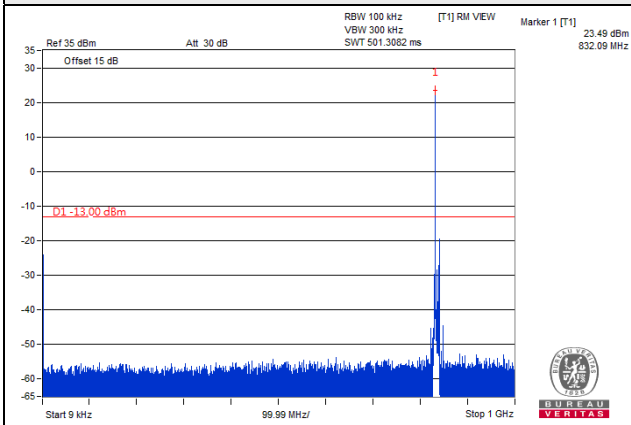


Frequency Range : 1GHz ~ 9GHz

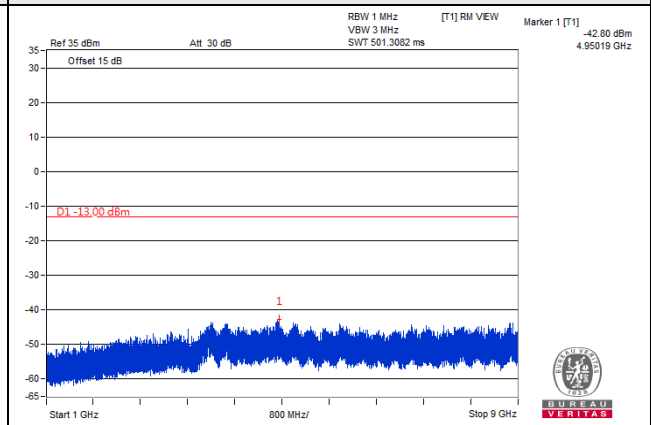


Channel 26915 (836.5MHz)

Frequency Range : 9kHz ~ 1GHz

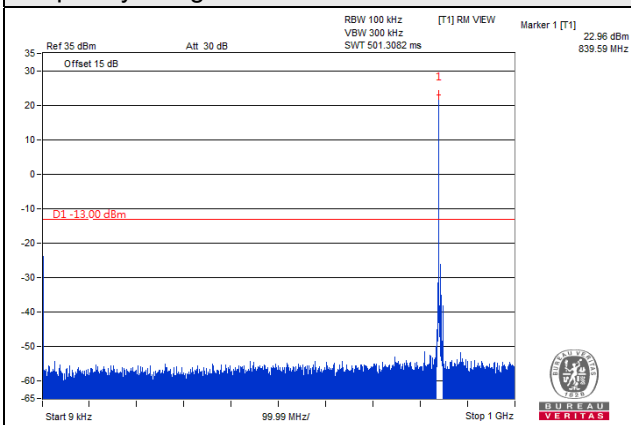


Frequency Range : 1GHz ~ 9GHz

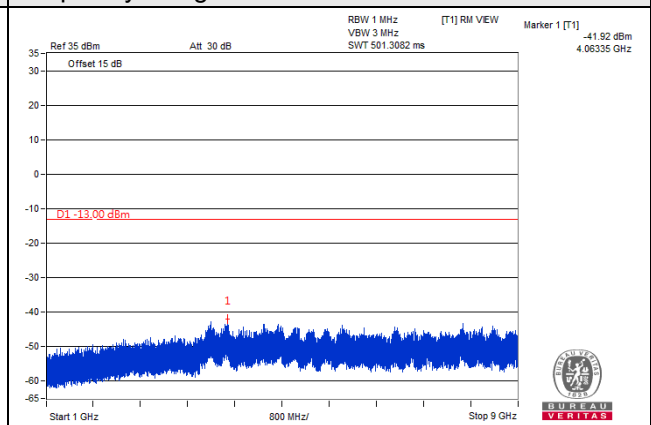


Channel 26990 (844MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 9GHz

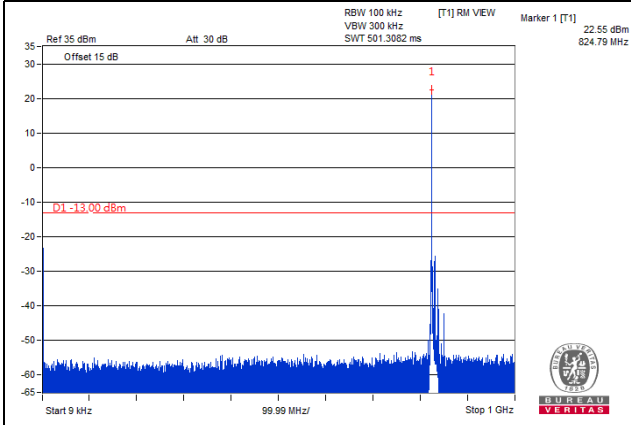


*The 9kHz signal over the limit is from Spectrum.

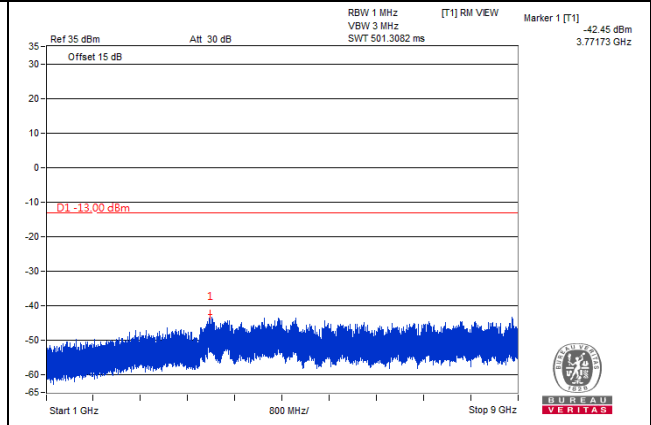
LTE Band 26, Channel Bandwidth 15MHz

Channel 26865 (831.5MHz)

Frequency Range : 9kHz ~ 1GHz

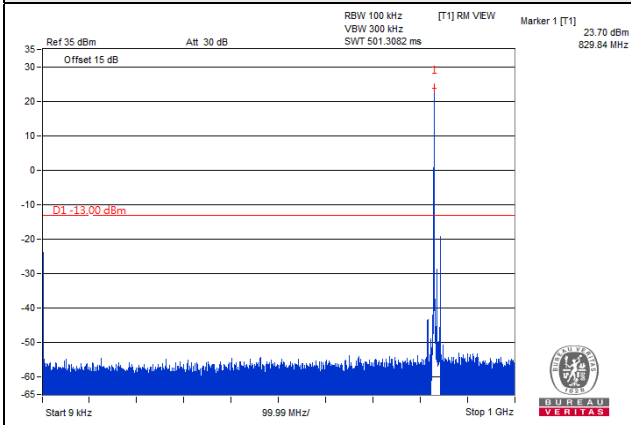


Frequency Range : 1GHz ~ 9GHz

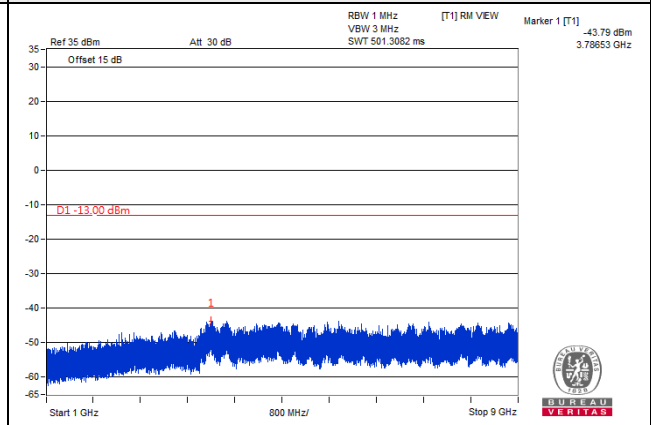


Channel 26915 (836.5MHz)

Frequency Range : 9kHz ~ 1GHz

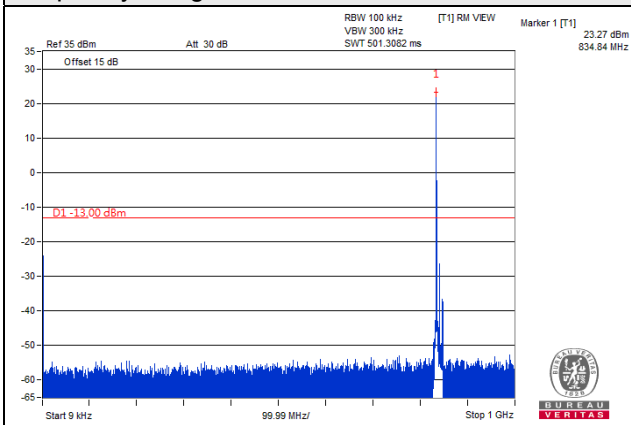


Frequency Range : 1GHz ~ 9GHz

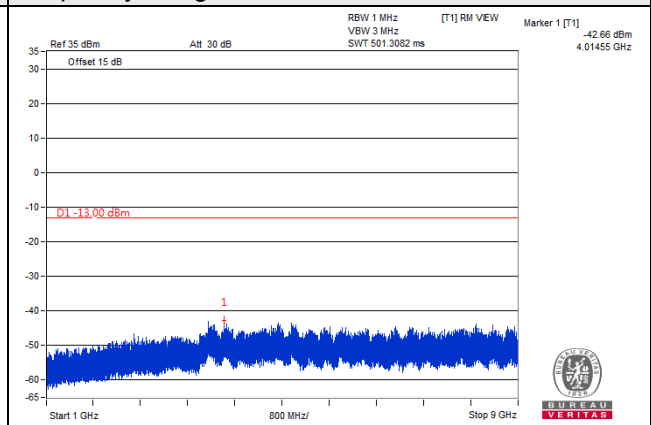


Channel 26965 (841.5MHz)

Frequency Range : 9kHz ~ 1GHz



Frequency Range : 1GHz ~ 9GHz



*The 9kHz signal over the limit is from Spectrum.

4.8 Radiated Emission Measurement

4.8.1 Limits of Radiated Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log(P)$ dB. The emission limit equal to -13dBm .

4.8.2 Test Procedure

- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$. Correction Factor (includes EIRP and ERP unit conversion factor) = Antenna gain of substitution horn. – Tx cable loss. Measurement method refers to ANSI C63.26 section 5.5.3.2.
- c. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, $\text{E.R.P power} = \text{E.I.R.P power} - 2.15\text{dBi}$.

Note:

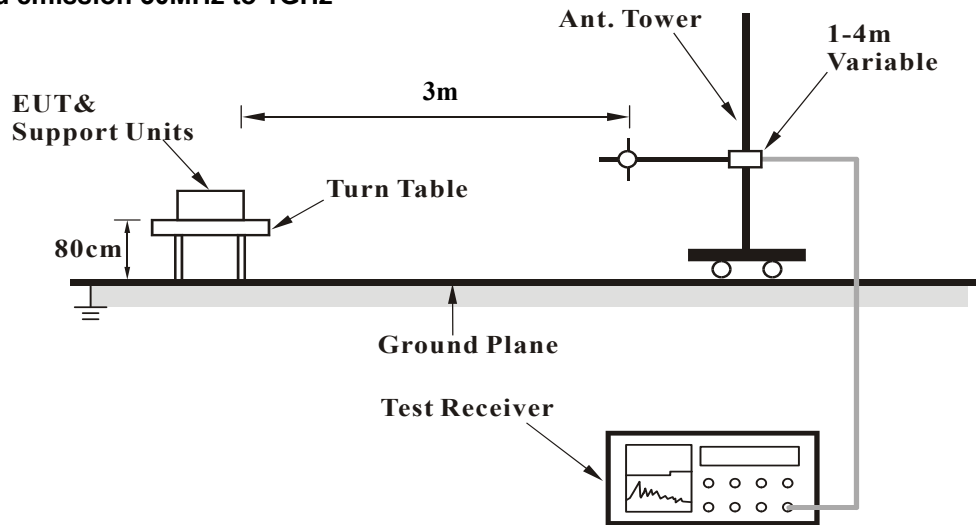
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.
2. The emission levels were against the limit of frequency range 9 kHz ~ 30 MHz:
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

4.8.3 Deviation from Test Standard

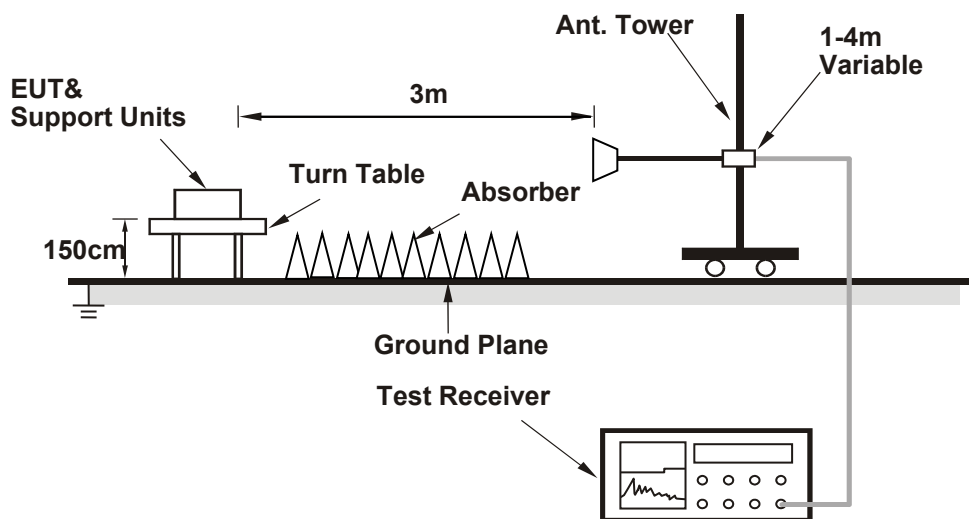
No deviation.

4.8.4 Test Setup

For radiated emission 30MHz to 1GHz



For radiated emission above 1GHz



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

4.8.5 Test Results

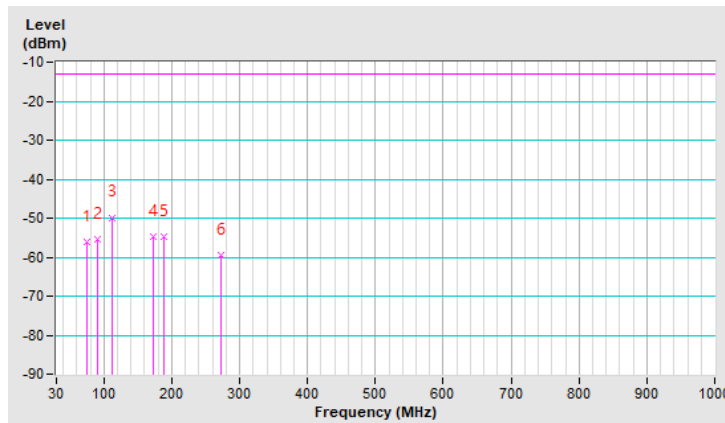
Below 1GHz
WCDMA Band 5

Mode	TX channel 4233 (846.6MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	74.99	-56.15	-13.00	-43.15	2.00 H	280	53.22	-109.37
2	90.45	-55.59	-13.00	-42.59	2.00 H	120	56.22	-111.81
3	111.54	-49.83	-13.00	-36.83	1.00 H	147	59.29	-109.12
4	173.39	-54.78	-13.00	-41.78	2.00 H	85	51.66	-106.44
5	187.45	-54.70	-13.00	-41.70	2.00 H	95	53.31	-108.01
6	271.80	-59.55	-13.00	-46.55	1.00 H	123	45.49	-105.04

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit.

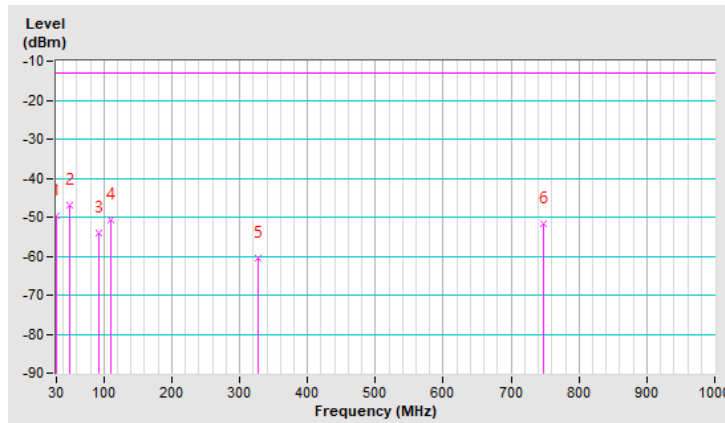


Mode	TX channel 4233 (846.6MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	30.00	-49.69	-13.00	-36.69	1.01 V	88	58.39	-108.08
2	49.68	-46.95	-13.00	-33.95	1.51 V	185	59.50	-106.45
3	91.86	-54.13	-13.00	-41.13	2.00 V	150	57.52	-111.65
4	110.13	-50.54	-13.00	-37.54	2.00 V	171	58.67	-109.21
5	328.03	-60.42	-13.00	-47.42	2.00 V	356	42.94	-103.36
6	746.96	-51.58	-13.00	-38.58	1.01 V	76	42.59	-94.17

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.



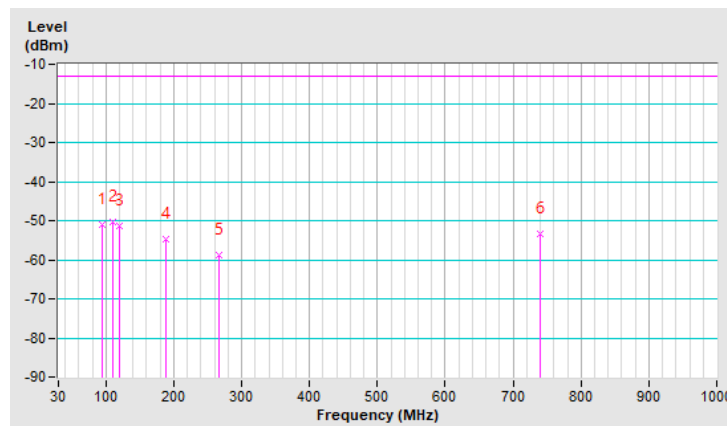
LTE Band 5, Channel Bandwidth: 1.4MHz

Mode	TX channel 20643 (848.3MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	94.67	-50.99	-13.00	-37.99	2.00 H	115	60.44	-111.43
2	110.13	-50.29	-13.00	-37.29	1.00 H	85	58.92	-109.21
3	119.97	-51.31	-13.00	-38.31	1.49 H	86	56.98	-108.29
4	187.45	-54.79	-13.00	-41.79	2.00 H	80	53.22	-108.01
5	266.17	-58.77	-13.00	-45.77	1.49 H	248	46.63	-105.40
6	739.93	-53.37	-13.00	-40.37	1.49 H	327	40.94	-94.31

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit.

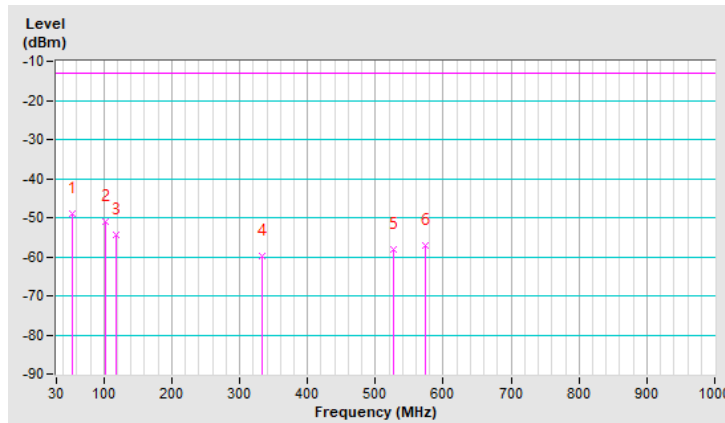


Mode	TX channel 20643 (848.3MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	52.49	-49.08	-13.00	-36.08	1.01 V	34	57.37	-106.45
2	101.70	-51.09	-13.00	-38.09	2.00 V	134	59.26	-110.35
3	118.57	-54.28	-13.00	-41.28	1.01 V	98	54.16	-108.44
4	333.65	-59.92	-13.00	-46.92	2.00 V	14	43.36	-103.28
5	527.65	-58.11	-13.00	-45.11	1.01 V	3	41.03	-99.14
6	574.04	-57.21	-13.00	-44.21	1.51 V	274	40.88	-98.09

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit.



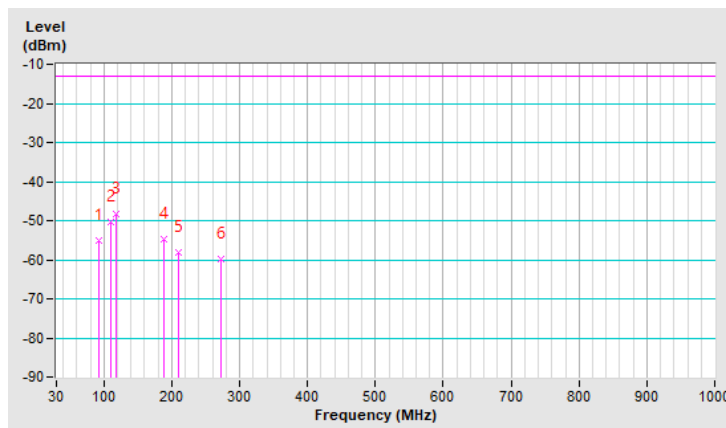
LTE Band 26, Channel Bandwidth 1.4MHz

Mode	TX channel 27033 (848.3MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	91.86	-55.17	-13.00	-42.17	1.51 H	16	56.48	-111.65
2	110.13	-50.31	-13.00	-37.31	1.01 H	45	58.90	-109.21
3	117.16	-48.27	-13.00	-35.27	1.51 H	137	60.29	-108.56
4	188.86	-54.74	-13.00	-41.74	1.51 H	72	53.36	-108.10
5	209.94	-58.15	-13.00	-45.15	2.00 H	18	50.27	-108.42
6	271.80	-59.88	-13.00	-46.88	1.01 H	244	45.16	-105.04

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit.

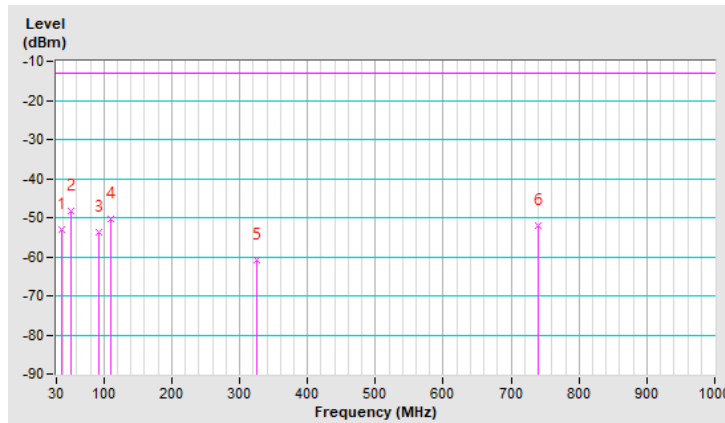


Mode	TX channel 27033 (848.3MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	38.43	-52.95	-13.00	-39.95	1.49 V	5	54.20	-107.15
2	51.09	-48.16	-13.00	-35.16	1.00 V	184	58.20	-106.36
3	93.26	-53.72	-13.00	-40.72	2.00 V	78	57.86	-111.58
4	110.13	-50.31	-13.00	-37.31	1.00 V	27	58.90	-109.21
5	325.22	-60.74	-13.00	-47.74	2.00 V	78	42.72	-103.46
6	739.93	-52.11	-13.00	-39.11	1.49 V	56	42.20	-94.31

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit.



Above 1GHz
WCDMA Band 5

Mode	TX channel 4132 (826.4MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1652.80	-54.90	-13.00	-41.90	2.83 H	143	47.70	-102.60
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1652.80	-57.00	-13.00	-44.00	1.38 V	209	45.60	-102.60

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit.

Mode	TX channel 4182 (836.4MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1672.80	-55.00	-13.00	-42.00	2.36 H	140	47.60	-102.60
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1672.80	-56.20	-13.00	-43.20	1.07 V	211	46.40	-102.60

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit.

Mode	TX channel 4233 (846.6MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1693.20	-54.60	-13.00	-41.60	1.31 H	206	48.20	-102.80
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1693.20	-56.30	-13.00	-43.30	1.00 V	216	46.50	-102.80

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit.

LTE Band 5, Channel Bandwidth: 1.4MHz

Mode	TX channel 20407 (824.7MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1649.40	-52.70	-13.00	-39.70	1.81 H	154	49.90	-102.60
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1649.40	-54.80	-13.00	-41.80	1.52 V	321	47.80	-102.60

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit.

Mode	TX channel 20525 (836.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1673.00	-54.00	-13.00	-41.00	2.26 H	133	48.60	-102.60
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1673.00	-55.00	-13.00	-42.00	1.54 V	320	47.60	-102.60

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit.

Mode	TX channel 20643 (848.3MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1696.60	-52.40	-13.00	-39.40	2.62 H	142	50.40	-102.80
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1696.60	-53.00	-13.00	-40.00	1.59 V	316	49.80	-102.80

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit.

LTE Band 5, Channel Bandwidth: 5MHz

Mode	TX channel 20425 (826.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1653.00	-52.50	-13.00	-39.50	2.49 H	132	50.10	-102.60
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1653.00	-54.80	-13.00	-41.80	1.52 V	324	47.80	-102.60

Remarks:

1. ERP(dBm) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + 20log(D) – 104.8 - 2.15
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.

Mode	TX channel 20525 (836.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1673.00	-54.90	-13.00	-41.90	2.40 H	128	47.70	-102.60
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1673.00	-57.90	-13.00	-44.90	1.14 V	315	44.70	-102.60

Remarks:

1. ERP(dBm) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + 20log(D) – 104.8 - 2.15
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.

Mode	TX channel 20625 (846.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1693.00	-53.60	-13.00	-40.60	1.31 H	309	49.20	-102.80
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1693.00	-55.50	-13.00	-42.50	1.26 V	119	47.30	-102.80

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit.

LTE Band 5, Channel Bandwidth: 10MHz

Mode	TX channel 20450 (829.0MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1658.00	-53.30	-13.00	-40.30	1.31 H	313	49.30	-102.60
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1658.00	-53.90	-13.00	-40.90	1.31 V	122	48.70	-102.60

Remarks:

1. ERP(dBm) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + 20log(D) – 104.8 - 2.15
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.

Mode	TX channel 20525 (836.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1673.00	-55.10	-13.00	-42.10	1.30 H	314	47.50	-102.60
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1673.00	-56.00	-13.00	-43.00	1.18 V	123	46.60	-102.60

Remarks:

1. ERP(dBm) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + 20log(D) – 104.8 - 2.15
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.

Mode	TX channel 20600 (844.0MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1688.00	-52.60	-13.00	-39.60	1.36 H	306	50.20	-102.80
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1688.00	-55.40	-13.00	-42.40	1.25 V	114	47.40	-102.80

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit.

LTE Band 26, Channel Bandwidth 1.4MHz

Mode	TX channel 26797 (824.7MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1649.40	-52.40	-13.00	-39.40	2.04 H	309	50.20	-102.60
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1649.40	-53.10	-13.00	-40.10	1.20 V	206	49.50	-102.60

Remarks:

1. ERP(dBm) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + 20log(D) – 104.8 - 2.15
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.

Mode	TX channel 26915 (836.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1673.00	-51.20	-13.00	-38.20	2.30 H	141	51.40	-102.60
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1673.00	-53.10	-13.00	-40.10	1.16 V	208	49.50	-102.60

Remarks:

1. ERP(dBm) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + 20log(D) – 104.8 - 2.15
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.

Mode	TX channel 27033 (848.3MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1696.60	-50.40	-13.00	-37.40	2.35 H	138	52.40	-102.80
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1696.60	-52.50	-13.00	-39.50	1.20 V	202	50.30	-102.80

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit.

LTE Band 26, Channel Bandwidth 5MHz

Mode	TX channel 26815 (826.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1653.00	-51.70	-13.00	-38.70	2.49 H	132	50.90	-102.60
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1653.00	-53.80	-13.00	-40.80	1.20 V	204	48.80	-102.60

Remarks:

1. ERP(dBm) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + 20log(D) – 104.8 - 2.15
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.

Mode	TX channel 26915 (836.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1673.00	-52.40	-13.00	-39.40	2.48 H	143	50.20	-102.60
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1673.00	-54.50	-13.00	-41.50	1.10 V	208	48.10	-102.60

Remarks:

1. ERP(dBm) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + 20log(D) – 104.8 - 2.15
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.

Mode	TX channel 27015 (846.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1693.00	-53.40	-13.00	-40.40	2.38 H	138	49.40	-102.80
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1693.00	-54.90	-13.00	-41.90	1.24 V	200	47.90	-102.80

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit.

LTE Band 26, Channel Bandwidth 15MHz

Mode	TX channel 26865 (831.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1663.00	-52.40	-13.00	-39.40	2.43 H	141	50.20	-102.60
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1663.00	-54.50	-13.00	-41.50	1.22 V	199	48.10	-102.60

Remarks:

1. ERP(dBm) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + 20log(D) – 104.8 - 2.15
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.

Mode	TX channel 26915 (836.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1673.00	-52.30	-13.00	-39.30	2.41 H	142	50.30	-102.60
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1673.00	-54.50	-13.00	-41.50	1.01 V	201	48.10	-102.60

Remarks:

1. ERP(dBm) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB) + 20log(D) – 104.8 - 2.15
3. Margin value = ERP – Limit value
4. The other ERP levels were very low against the limit.

Mode	TX channel 26965 (841.5MHz)	Frequency Range	1GHz ~ 10GHz
Environmental Conditions	26deg. C, 70%RH	Input Power	120Vac, 60Hz
Tested By	Willy Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1683.00	-53.30	-13.00	-40.30	2.33 H	137	49.50	-102.80
Antenna Polarity & Test Distance : Vertical at 3m								
No	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1683.00	-54.50	-13.00	-41.50	1.02 V	212	48.30	-102.80

Remarks:

1. $ERP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8 - 2.15$
3. $Margin\ value = ERP - Limit\ value$
4. The other ERP levels were very low against the limit.

5 Pictures of Test Arrangements

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

Appendix – Information of the Testing Laboratories

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

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

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