FCC Test Report
(Part 22)

Report No.:	RF180713C31-3
FCC ID:	H8N-RTL0102VW
Test Model:	TM-RTL0102
Received Date:	Jul. 13, 2018
Test Date:	Jul. 24 ~ Aug. 08, 2018
Issued Date:	Aug. 10, 2018
Applicant:	ASKEY COMPUTER CORP.
Address:	10F, NO. 119, JIANKANG RD., ZHONGHE DIST., NEW TAIPEI CITY 23585, TAIWAN, R.O.C.
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)
Test Location (1):	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)
FCC Registration / Designation Number:	788550 / TW0003
Test Location (2):	No.215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan, R.O.C
FCC Registration / Designation Number:	427177 / TW0011

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Release Control Record

Issue No.	Description	Date Issued
RF180713C31-3	Original release	Aug. 10, 2018

1 Certificate of Conformity

Product: LTE WiFi Gateway

Brand: T-Mobile

Test Model: TM-RTL0102

Sample Status: Engineering sample

Applicant: ASKEY COMPUTER CORP.

Test Date: Jul. 24 ~ Aug. 08, 2018

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 : _____ , **Date:** Aug. 10, 2018

Polly Chien / Specialist

Approved by : _____ , **Date:** Aug. 10, 2018

Bruce Chen / 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
---	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 -21.26dB at 2509.50MHz.

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	30MHz ~ 200MHz	2.0153 dB
	200MHz ~1000MHz	2.0224 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	1.0121 dB
	18GHz ~ 40GHz	1.1508 dB

2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver Agilent Technologies	N9010A	MY52220314	Nov. 24, 2017	Nov. 23, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Jan. 11, 2018	Jan. 10, 2019
Double Ridge Guide Horn Antenna EMCO	3115	5619	Nov. 30, 2017	Nov. 29, 2018
BILOG Antenna SCHWARZBECK	VULB 9168	9168-153	Dec. 06, 2017	Dec. 05, 2018
HORN Antenna Schwarzbeck	BBHA 9120D	9120D-969	Dec. 12, 2017	Dec. 11, 2018
Fixed Attenuator Woken	00801A1GGAM02Y	NA	May 17, 2018	May 16, 2019
MXG Vector signal generator Agilent	N5182B	MY53050430	Oct. 24, 2017	Oct. 23, 2018
Preamplifier Agilent	310N	187226	Jun. 19, 2018	Jun. 18, 2019
Preamplifier Agilent	83017A	MY39501357	Jun. 19, 2018	Jun. 18, 2019
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-400)	Jun. 19, 2018	Jun. 18, 2019
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(RFC-SMS-100-SMS- 24)	Jun. 19, 2018	Jun. 18, 2019
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 8.130425b	NA	NA	NA
Antenna Tower MF	NA	NA	NA	NA
Turn Table MF	NA	NA	NA	NA
Antenna Tower &Turn Table Controller MF	MF-7802	NA	NA	NA
Radio Communication Analyzer Anritsu	MT8820C	6201010284	Dec. 28, 2017	Dec. 27, 2018
Temperature & Humidity Chamber	GTH-120-40-CP-AR	MAA1306-019	Sep. 08, 2017	Sep. 07, 2018
DC Power Supply Topward	33010D	807748	Oct. 25, 2016	Oct. 24, 2018
Digital Multimeter Fluke	87-III	70360742	Jun. 29, 2018	Jun. 28, 2019

Note: 1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HsinTien Chamber 1.
3. The horn antenna and preamplifier (model: 83017A) are used only for the measurement of emission frequency above 1 GHz if tested.
4. The IC Site Registration No. is IC7450I-1.

3 General Information

3.1 General Description of EUT

Product	LTE WiFi Gateway			
Brand	T-Mobile			
Test Model	TM-RTL0102			
Sample Status	Engineering sample			
Power Supply Rating	12Vdc from adapter 3.7Vdc from battery			
Modulation Type	WCDMA: BPSK, QPSK HSDPA: BPSK HSUPA: QPSK LTE: QPSK, 16QAM, 64QAM			
Operating Frequency	WCDMA	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		
Max. ERP Power	WCDMA	182.05mW (22.60dBm)		
		QPSK	16QAM	64QAM
	LTE Band 5 (Channel Bandwidth 1.4MHz)	253.05mW (24.03dBm)	201.00mW (23.03dBm)	159.29mW (22.02dBm)
	LTE Band 5 (Channel Bandwidth 3MHz)	254.80mW (24.06dBm)	202.86mW (23.07dBm))	161.14mW (22.07dBm))
	LTE Band 5 (Channel Bandwidth 5MHz)	257.16mW (24.10dBm)	203.80mW (23.09dBm)	161.51mW (22.08dBm)
	LTE Band 5 (Channel Bandwidth 10MHz)	258.34mW (24.12dBm)	204.74mW (23.11dBm)	162.26mW (22.10dBm)
Emission Designator	WCDMA	4M15F9W		
		QPSK	16QAM	64QAM
	LTE Band 5 (Channel Bandwidth 1.4MHz)	1M11G7D	1M10W7D	1M09W7D
	LTE Band 5 (Channel Bandwidth 3MHz)	2M70G7D	2M69W7D	2M70W7D
	LTE Band 5 (Channel Bandwidth 5MHz)	4M48G7D	4M48W7D	4M50W7D
	LTE Band 5 (Channel Bandwidth 10MHz)	8M93G7D	8M93W7D	8M93W7D
Antenna Connector	Refer to note			
Antenna Connector	Refer to note			
Accessory Device	Adapter, Battery			
Data Cable Supplied	NA			

Note:

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

Adapter 1	
Brand	FLYPOWER
Model	PS24L120K2000UD
Input	100-240Vac, 50/60Hz, 0.8A Max.
Output	12.0Vdc, 2.0A
Power Line	1.45m DC cable without core attached on adapter

Adapter 2	
Brand	Asian Power Devices Inc.
Model	WB-24J12FU
Input	100-240Vac, 50-60Hz, 0.7A Max.
Output	12.0Vdc, 2.0A
Power Line	1.5m DC cable without core attached on adapter

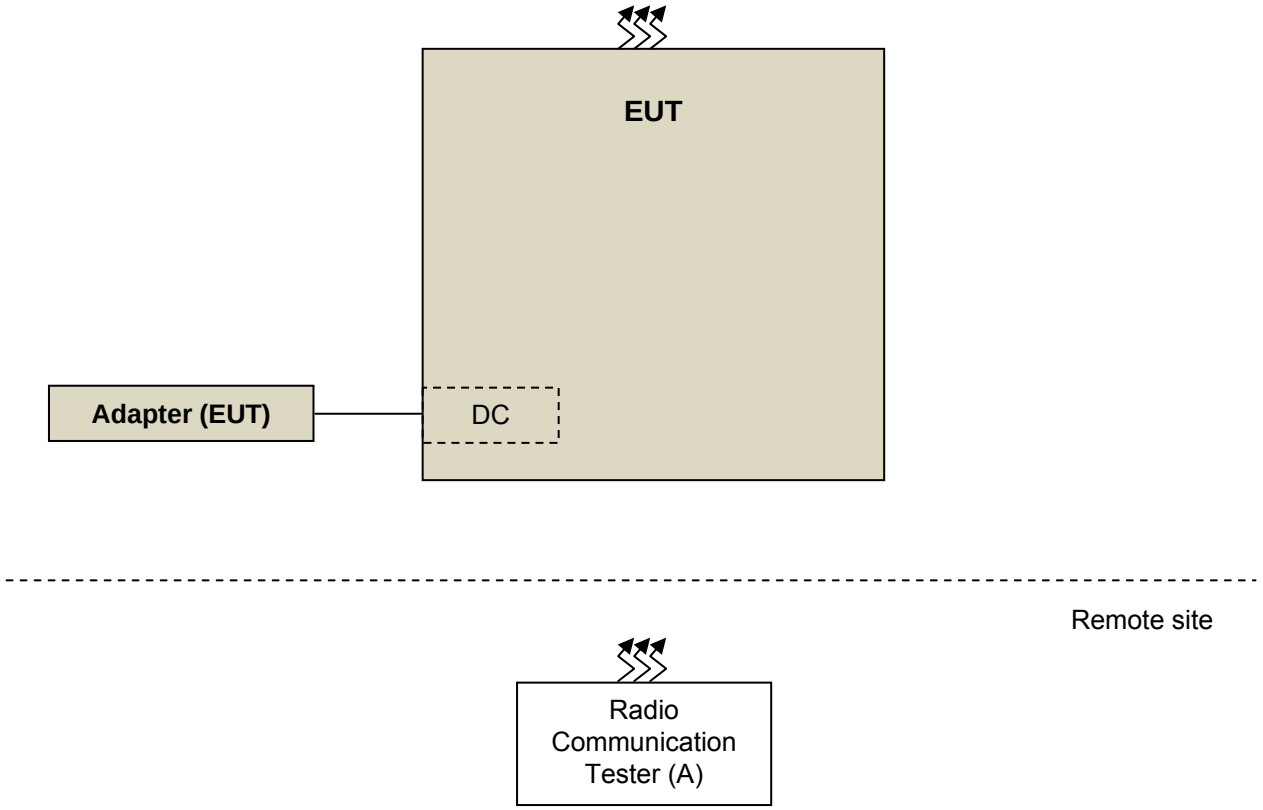
* After pre-test, adapter 1 is the worst case and for final test.

Battery	
Brand	ASKEY COMPUTER CORP.
Model	BP18-002390
Rating	3.7Vdc, 5200mAh, 19.24Wh

2. The following antennas were provided to the EUT.

Ant. No.		Ant 1	Ant 2
Antenna Type		PIFA	PIFA
Connector		NA	NA
Band	Freq. Range	Gain (dBi)	Gain (dBi)
WCDMA Band 2	1850~1910	2.3	-
WCDMA Band 4	1710~1755	1.07	-
WCDMA Band 5	824~849	-	0.33
LTE Band 2	1850~1910	2.3	-
LTE Band 4	1710~1755	1.07	-
LTE Band 5	824~849	-	0.33
LTE Band 12	698~716	-	-1.1
LTE Band 66	1710 ~1780	1.5	-
LTE Band 71	663 to 698	-	-1.3

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 Tester	Anritsu	MT8820C	6201010284	NA	-

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

Band	ERP	Radiated Emission
WCDMA Band 5	X-plane	X-plane
LTE Band 5	X-plane	Z-plane

Test results are presented in the report as below, test mode A for all test items, test mode B only for conducted output power test.

Test Mode	Test Condition
A	EUT with Adapter
B	EUT only (Battery Mode)

WCDMA Mode

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

LTE Band 5

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
A, B	Conducted Output Power	20407 to 20643	20407(824.7MHz), 20525(836.5MHz), 20643(848.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM	1 RB / 5 RB Offset
		20415 to 20635	20415(825.5MHz), 20525(836.5MHz), 20635(847.5MHz)	3MHz	QPSK / 16QAM / 64QAM	1 RB / 14 RB Offset
		20425 to 20625	20425(826.5MHz), 20525(836.5MHz), 20625(846.5MHz)	5MHz	QPSK / 16QAM / 64QAM	1 RB / 24 RB Offset
		20450 to 20600	20450(829.0MHz), 20525(836.5MHz), 20600(844.0MHz)	10MHz	QPSK / 16QAM / 64QAM	1 RB / 49 RB Offset
A	ERP	20407 to 20643	20407(824.7MHz), 20525(836.5MHz), 20643(848.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM	1 RB / 5 RB Offset
		20415 to 20635	20415(825.5MHz), 20525(836.5MHz), 20635(847.5MHz)	3MHz	QPSK / 16QAM / 64QAM	1 RB / 14 RB Offset
		20425 to 20625	20425(826.5MHz), 20525(836.5MHz), 20625(846.5MHz)	5MHz	QPSK / 16QAM / 64QAM	1 RB / 24 RB Offset
		20450 to 20600	20450(829.0MHz), 20525(836.5MHz), 20600(844.0MHz)	10MHz	QPSK / 16QAM / 64QAM	1 RB / 49 RB Offset
A	Modulation characteristics	20450 to 20600	20525(836.5MHz),	10MHz	QPSK / 16QAM/ 64QAM	1 RB / 49 RB Offset
A	Frequency Stability	20407 to 20643	20525(836.5MHz)	1.4MHz	QPSK	1 RB / 5 RB Offset
A	Occupied Bandwidth	20407 to 20643	20407(824.7MHz), 20525(836.5MHz), 20643(848.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM	5 RB / 0RB Offset
		20415 to 20635	20415(825.5MHz), 20525(836.5MHz), 20635(847.5MHz)	3MHz	QPSK / 16QAM / 64QAM	14 RB / 0RB Offset
		20425 to 20625	20425(826.5MHz), 20525(836.5MHz), 20625(846.5MHz)	5MHz	QPSK / 16QAM / 64QAM	24RB / 0RB Offset
		20450 to 20600	20450(829.0MHz), 20525(836.5MHz), 20600(844.0MHz)	10MHz	QPSK / 16QAM / 64QAM	49RB / 0RB Offset
A	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

EUT Configure Mode	Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
A	Peak to Average Ratio	20407 to 20643	20407(824.7MHz), 20525(836.5MHz), 20643(848.3MHz)	1.4MHz	QPSK / 16QAM / 64QAM	1 RB / 5 RB Offset
		20415 to 20635	20415(825.5MHz), 20525(836.5MHz), 20635(847.5MHz)	3MHz	QPSK / 16QAM / 64QAM	1 RB / 14 RB Offset
		20425 to 20625	20425(826.5MHz), 20525(836.5MHz), 20625(846.5MHz)	5MHz	QPSK / 16QAM / 64QAM	1 RB / 24 RB Offset
		20450 to 20600	20450(829.0MHz), 20525(836.5MHz), 20600(844.0MHz)	10MHz	QPSK / 16QAM / 64QAM	1 RB / 49 RB Offset
A	Conducted Emission	20407 to 20643	20407(824.7MHz), 20525(836.5MHz), 20643(848.3MHz)	1.4MHz	QPSK	1 RB / 5 RB Offset
		20415 to 20635	20415(825.5MHz), 20525(836.5MHz), 20635(847.5MHz)	3MHz	QPSK	1 RB / 14 RB Offset
		20425 to 20625	20425(826.5MHz), 20525(836.5MHz), 20625(846.5MHz)	5MHz	QPSK	1 RB / 24 RB Offset
		20450 to 20600	20450(829.0MHz), 20525(836.5MHz), 20600(844.0MHz)	10MHz	QPSK	1 RB / 49 RB Offset
A	Radiated Emission Below 1GHz	20450 to 20600	20525(836.5MHz)	10MHz	QPSK	1 RB / 49 RB Offset
A	Radiated Emission Above 1GHz	20407 to 20643	20407(824.7MHz), 20525(836.5MHz), 20643(848.3MHz)	1.4MHz	QPSK	1 RB / 5 RB Offset
		20425 to 20625	20425(826.5MHz), 20525(836.5MHz), 20625(846.5MHz)	5MHz	QPSK	1 RB / 24 RB Offset
		20450 to 20600	20450(829.0MHz), 20525(836.5MHz), 20600(844.0MHz)	10MHz	QPSK	1 RB / 49 RB Offset

Note:

1. The conducted output power for QPSK, 16QAM and 64QAM, measured value of QPSK is higher than 16QAM and 64QAM mode. Therefore, only occupied bandwidth and Peak to average ratio items had been tested under QPSK, 16QAM and 64QAM modes, the other test items were performed under QPSK mode only.
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.

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
ERP	25deg. C, 66%RH	120Vac, 60Hz	Jones Chang
Modulation characteristics	25deg. C, 66%RH	120Vac, 60Hz	Jones Chang
Frequency Stability	25deg. C, 66%RH	120Vac, 60Hz	Jones Chang
Occupied Bandwidth	25deg. C, 66%RH	120Vac, 60Hz	Jones Chang
Band Edge	25deg. C, 66%RH	120Vac, 60Hz	Jones Chang
Peak To Average Ratio	25deg. C, 66%RH	120Vac, 60Hz	Jones Chang
Conducted Emission	25deg. C, 66%RH	120Vac, 60Hz	Jones Chang
Radiated Emission	25deg. C, 65%RH	120Vac, 60Hz	Charles Hsiao, Karl Lee

3.4 EUT Operating Conditions

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

3.5 General Description of Applied Standards

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

FCC 47 CFR Part 2

FCC 47 CFR Part 22

KDB 971168 D01 Power Meas License Digital Systems v03r01

ANSI/TIA/EIA-603-E 2016

ANSI 63.26-2015

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

EIRP / ERP Measurement:

a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 1 5MHz for WCDMA mode, 10MHz for LTE mode.

b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m(below or equal 1GHz) and/or 1.5m(above 1GHz) height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.

c. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step b. Record the power level of S.G

d. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15dB.

Where:

$EIRP / ERP = P_{Meas} + G_T - L_C$

P_{Meas} : Measure transmitter output power.
G_T : Gain of the transmitting antenna.
L_C : signal attenuation in the connecting cable between the transmitter and antenna.

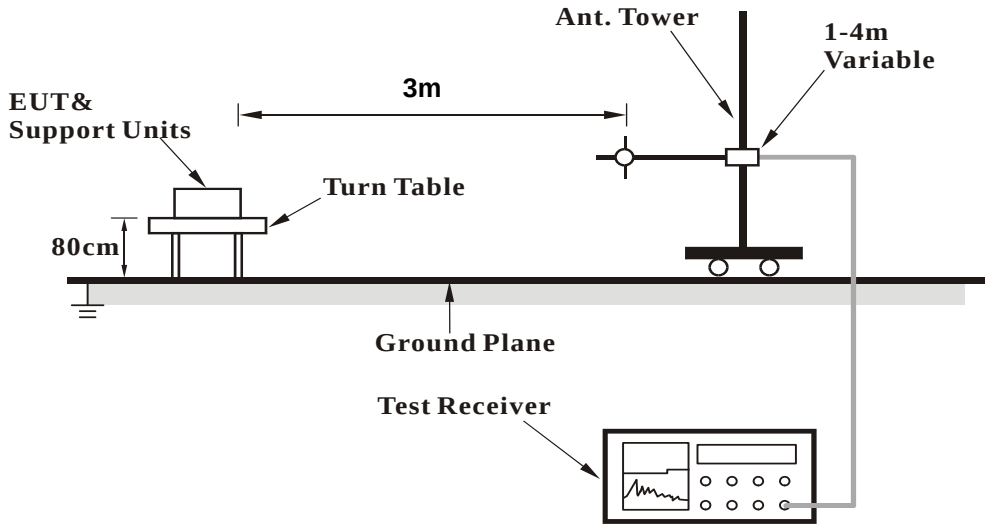
Conducted Power Measurement:

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

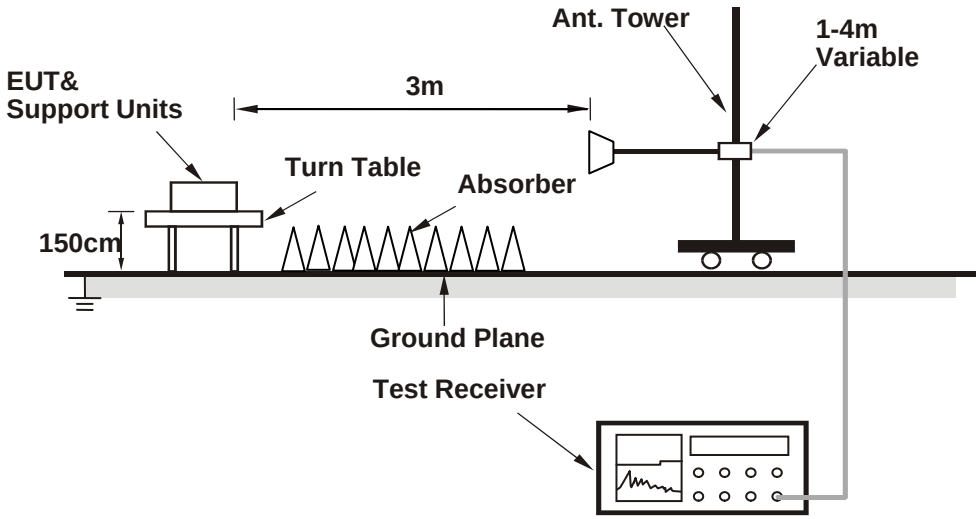
4.1.3 Test Setup

ERP Measurement:

For Radiated Emission below or equal 1GHz



For Radiated Emission above 1GHz



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

Conducted Power Measurement:

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

4.1.4 Test Results

For Test Mode A (EUT + Adapter Mode)

Conducted Output Power (dBm)

Band	WCDMA Band V		
Channel	4132	4182	4233
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	24.67	24.60	24.58
HSDPA Subtest-1	24.12	24.10	24.08
HSDPA Subtest-2	24.09	24.07	24.05
HSDPA Subtest-3	23.64	23.62	23.58
HSDPA Subtest-4	23.61	23.60	23.56
HSUPA Subtest-1	24.10	24.06	24.03
HSUPA Subtest-2	23.01	23.00	22.98
HSUPA Subtest-3	23.41	23.37	23.34
HSUPA Subtest-4	22.96	22.81	22.78
HSUPA Subtest-5	24.18	24.13	24.10

Conducted Output Power (dBm)

LTE Band / BW	RB Size	RB Offset	QPSK			16QAM			64QAM		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			20407	20525	20643	20407	20525	20643	20407	20525	20643
			824.7 MHz	836.5 MHz	848.3 MHz	824.7 MHz	836.5 MHz	848.3 MHz	824.7 MHz	836.5 MHz	848.3 MHz
5 / 1.4M	1	0	24.47	24.64	24.68	23.87	23.98	24.04	22.99	23.42	23.40
	1	2	24.65	24.69	24.80	23.95	24.00	24.09	23.45	23.42	23.42
	1	5	24.59	24.50	24.72	23.94	23.99	24.06	23.25	23.09	23.14
	3	0	24.63	24.55	24.78	23.67	23.60	23.74	23.07	22.69	22.84
	3	1	24.72	24.60	24.77	23.65	23.67	23.82	22.94	22.79	23.16
	3	3	24.60	24.62	24.70	23.58	23.53	23.78	22.80	22.98	22.97
	6	0	23.70	23.70	23.86	22.86	22.88	23.02	21.90	21.97	22.13
LTE Band / BW	RB Size	RB Offset	QPSK			16QAM			64QAM		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			20415	20525	20635	20415	20525	20635	20415	20525	20635
			825.5 MHz	836.5 MHz	847.5 MHz	825.5 MHz	836.5 MHz	847.5 MHz	825.5 MHz	836.5 MHz	847.5 MHz
5 / 3M	1	0	24.64	24.67	24.75	24.14	24.13	23.83	23.34	23.45	22.97
	1	7	24.65	24.76	24.80	24.22	24.18	23.94	23.38	23.63	23.39
	1	14	24.55	24.71	24.79	24.02	24.17	23.93	23.21	23.53	23.12
	8	0	23.74	23.75	23.82	22.90	22.84	23.04	22.28	22.12	22.50
	8	3	23.69	23.72	23.85	22.97	22.92	23.11	22.15	22.01	22.46
	8	7	23.67	23.73	23.83	22.83	22.84	23.06	22.17	22.20	22.10
	15	0	23.65	23.69	23.81	22.84	22.79	23.02	22.34	21.85	22.28
LTE Band / BW	RB Size	RB Offset	QPSK			16QAM			64QAM		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			20425	20525	20625	20425	20525	20625	20425	20525	20625
			826.5 MHz	836.5 MHz	846.5 MHz	826.5 MHz	836.5 MHz	846.5 MHz	826.5 MHz	836.5 MHz	846.5 MHz
5 / 5M	1	0	24.61	24.65	24.69	23.87	24.16	24.18	23.19	23.61	23.61
	1	12	24.53	24.72	24.80	23.75	24.17	24.26	23.11	23.33	23.74
	1	24	24.55	24.69	24.66	23.94	24.20	24.36	23.24	23.64	23.51
	12	0	23.66	23.71	23.83	22.94	22.85	22.88	22.28	22.24	22.10
	12	6	23.76	23.71	23.79	22.86	22.86	22.97	21.88	22.22	22.23
	12	13	23.66	23.70	23.84	22.66	22.85	23.09	21.80	22.32	22.10
	25	0	23.66	23.66	23.74	23.01	22.78	22.72	22.11	22.28	21.80
LTE Band / BW	RB Size	RB Offset	QPSK			16QAM			64QAM		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			20450	20525	20600	20450	20525	20600	20450	20525	20600
			829 MHz	836.5 MHz	844 MHz	829 MHz	836.5 MHz	844 MHz	829 MHz	836.5 MHz	844 MHz
5 / 10M	1	0	24.82	24.65	24.72	24.36	23.99	23.96	23.39	23.17	23.37
	1	24	24.69	24.63	24.56	24.00	23.92	23.79	23.20	23.32	23.14
	1	49	24.72	24.64	24.71	24.05	23.91	24.00	23.35	23.12	23.49
	25	0	23.78	23.79	23.56	22.90	22.93	22.89	22.10	22.08	22.29
	25	12	23.83	23.78	23.78	22.93	22.83	22.96	22.08	21.98	22.39
	25	25	23.82	23.72	23.76	22.96	22.90	22.90	22.15	22.16	22.36
	50	0	23.74	23.73	23.86	22.92	22.76	22.95	22.31	22.11	22.11

For Test Mode B (EUT only - Battery Mode)

Conducted Output Power (dBm)

Band	WCDMA Band V		
Channel	4132	4182	4233
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	24.48	24.25	24.13
HSDPA Subtest-1	24.33	24.22	24.15
HSDPA Subtest-2	24.26	24.15	24.08
HSDPA Subtest-3	24.32	24.21	24.09
HSDPA Subtest-4	24.29	24.18	24.11
HSUPA Subtest-1	24.43	24.32	24.25
HSUPA Subtest-2	22.58	22.47	22.40
HSUPA Subtest-3	23.58	23.47	23.40
HSUPA Subtest-4	22.66	22.55	22.48
HSUPA Subtest-5	24.40	24.47	24.40

Conducted Output Power (dBm)

LTE Band / BW	RB Size	RB Offset	QPSK			16QAM			64QAM		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			20407	20525	20643	20407	20525	20643	20407	20525	20643
			824.7 MHz	836.5 MHz	848.3 MHz	824.7 MHz	836.5 MHz	848.3 MHz	824.7 MHz	836.5 MHz	848.3 MHz
5 / 1.4M	1	0	25.14	24.89	24.83	24.21	23.92	23.85	23.18	22.89	22.82
	1	2	25.17	24.91	24.86	24.19	23.94	23.89	23.16	22.91	22.86
	1	5	25.06	24.74	24.70	24.10	23.78	23.71	23.07	22.75	22.68
	3	0	25.12	24.87	24.81	24.15	23.88	23.81	23.12	22.85	22.78
	3	1	25.15	24.89	24.84	24.17	23.90	23.85	23.14	22.87	22.82
	3	3	25.04	24.72	24.68	24.06	23.74	23.67	23.03	22.71	22.64
	6	0	23.96	23.70	23.65	22.96	22.67	22.58	21.93	21.64	21.55
LTE Band / BW	RB Size	RB Offset	QPSK			16QAM			64QAM		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			20415	20525	20635	20415	20525	20635	20415	20525	20635
			825.5 MHz	836.5 MHz	847.5 MHz	825.5 MHz	836.5 MHz	847.5 MHz	825.5 MHz	836.5 MHz	847.5 MHz
5 / 3M	1	0	25.21	24.99	24.95	24.24	24.00	23.94	24.00	23.97	23.91
	1	7	25.22	25.01	24.96	24.26	24.02	23.98	23.99	23.99	23.95
	1	14	25.16	24.87	24.74	24.07	23.85	23.78	23.92	23.82	23.75
	8	0	24.21	23.88	23.84	23.19	22.87	22.83	22.89	22.84	22.80
	8	3	24.11	23.87	23.81	23.09	22.86	22.77	22.92	22.83	22.74
	8	7	24.01	23.75	23.72	22.98	22.70	22.66	22.95	22.67	22.63
	15	0	24.09	23.84	23.79	23.07	22.80	22.73	22.97	22.77	22.70
LTE Band / BW	RB Size	RB Offset	QPSK			16QAM			64QAM		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			20425	20525	20625	20425	20525	20625	20425	20525	20625
			826.5 MHz	836.5 MHz	846.5 MHz	826.5 MHz	836.5 MHz	846.5 MHz	826.5 MHz	836.5 MHz	846.5 MHz
5 / 5M	1	0	25.27	25.04	24.99	24.32	24.07	24.03	23.30	23.05	23.01
	1	12	25.26	25.05	25.01	24.29	24.10	24.04	23.27	23.08	23.02
	1	24	25.15	24.92	24.86	24.12	23.96	23.88	23.10	22.94	22.86
	12	0	24.25	23.99	23.95	23.31	22.99	22.94	22.29	21.97	21.92
	12	6	24.19	23.98	23.94	23.20	22.97	22.91	22.18	21.95	21.89
	12	13	24.03	23.90	23.86	23.07	22.85	22.82	22.05	21.83	21.80
	25	0	24.17	23.95	23.93	23.15	22.93	22.85	22.13	21.91	21.83
LTE Band / BW	RB Size	RB Offset	QPSK			16QAM			64QAM		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			20450	20525	20600	20450	20525	20600	20450	20525	20600
			829 MHz	836.5 MHz	844 MHz	829 MHz	836.5 MHz	844 MHz	829 MHz	836.5 MHz	844 MHz
5 / 10M	1	0	25.32	25.12	25.09	24.37	24.14	24.08	23.35	23.12	23.06
	1	24	25.31	25.11	25.08	24.36	24.17	24.11	23.34	23.15	23.09
	1	49	25.12	25.01	24.92	24.26	24.01	23.89	23.24	22.99	22.87
	25	0	24.34	24.12	24.10	23.34	23.10	23.06	22.32	22.08	22.04
	25	12	24.30	24.11	24.08	23.30	23.08	23.01	22.28	22.06	21.99
	25	25	24.26	24.04	24.01	23.16	22.99	22.97	22.14	21.97	21.95
	50	0	24.27	24.09	24.04	23.27	23.06	23.03	22.25	22.04	22.01

ERP Power (dBm)

WCDMA Band 5							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP (dBm)	ERP (mW)	Polarization (H/V)
X	4132	826.4	-6.50	31.21	22.56	180.22	H
	4182	836.4	-6.56	31.30	22.59	181.55	
	4233	846.6	-6.47	31.22	22.60	182.05	
	4132	826.4	-10.80	31.50	18.55	71.68	V
	4182	836.4	-10.41	31.12	18.56	71.73	
	4233	846.6	-11.18	31.92	18.59	72.31	

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15.

ERP Power

LTE Band 5							
Channel Bandwidth: 1.4MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	20407	824.7	-5.10	31.21	23.96	248.77	H
	20525	836.5	-5.17	31.30	23.98	250.03	
	20643	848.3	-5.04	31.22	24.03	253.05	
	20407	824.7	-9.38	31.50	19.97	99.40	V
	20525	836.5	-8.97	31.12	20.00	99.93	
	20643	848.3	-9.73	31.92	20.04	100.97	
Channel Bandwidth: 3MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	20415	825.5	-5.07	31.21	23.99	250.50	H
	20525	836.5	-5.14	31.30	24.01	251.77	
	20635	847.5	-5.01	31.22	24.06	254.80	
	20415	825.5	-9.35	31.50	20.00	100.09	V
	20525	836.5	-8.94	31.12	20.03	100.62	
	20635	847.5	-9.69	31.92	20.08	101.91	
Channel Bandwidth: 5MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	20425	826.5	-5.03	31.21	24.03	252.81	H
	20525	836.5	-5.11	31.30	24.04	253.51	
	20625	846.5	-4.97	31.22	24.10	257.16	
	20425	826.5	-9.31	31.50	20.04	101.02	V
	20525	836.5	-8.91	31.12	20.06	101.32	
	20625	846.5	-9.65	31.92	20.12	102.85	
Channel Bandwidth: 10MHz / QPSK							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	20450	829	-5.00	31.21	24.06	254.57	H
	20525	836.5	-5.08	31.30	24.07	255.27	
	20600	844	-4.95	31.22	24.12	258.34	
	20450	829	-9.27	31.50	20.08	101.95	V
	20525	836.5	-8.87	31.12	20.10	102.26	
	20600	844	-9.62	31.92	20.15	103.56	

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15.

LTE Band 5							
Channel Bandwidth: 1.4MHz / 16QAM							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	20407	824.7	-6.11	31.21	22.95	197.15	H
	20525	836.5	-6.17	31.30	22.98	198.61	
	20643	848.3	-6.04	31.22	23.03	201.00	
	20407	824.7	-10.39	31.50	18.96	78.78	V
	20525	836.5	-9.98	31.12	18.99	79.20	
	20643	848.3	-10.73	31.92	19.04	80.20	
Channel Bandwidth: 3MHz / 16QAM							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	20415	825.5	-6.08	31.21	22.98	198.52	H
	20525	836.5	-6.15	31.30	23.00	199.53	
	20635	847.5	-6.00	31.22	23.07	202.86	
	20415	825.5	-10.36	31.50	18.99	79.32	V
	20525	836.5	-9.95	31.12	19.02	79.74	
	20635	847.5	-10.70	31.92	19.07	80.76	
Channel Bandwidth: 5MHz / 16QAM							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	20425	826.5	-6.04	31.21	23.02	200.35	H
	20525	836.5	-6.12	31.30	23.03	200.91	
	20625	846.5	-5.98	31.22	23.09	203.80	
	20425	826.5	-10.32	31.50	19.03	80.06	V
	20525	836.5	-9.91	31.12	19.06	80.48	
	20625	846.5	-10.65	31.92	19.12	81.70	
Channel Bandwidth: 10MHz / 16QAM							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	20450	829	-6.01	31.21	23.05	201.74	H
	20525	836.5	-6.08	31.30	23.07	202.77	
	20600	844	-5.96	31.22	23.11	204.74	
	20450	829	-10.27	31.50	19.08	80.98	V
	20525	836.5	-9.87	31.12	19.10	81.23	
	20600	844	-10.63	31.92	19.14	82.07	

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15.

LTE Band 5							
Channel Bandwidth: 1.4MHz / 64QAM							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	20407	824.7	-7.12	31.21	21.94	156.24	H
	20525	836.5	-7.18	31.30	21.97	157.40	
	20643	848.3	-7.05	31.22	22.02	159.29	
	20407	824.7	-11.40	31.50	17.95	62.43	V
	20525	836.5	-10.98	31.12	17.99	62.91	
	20643	848.3	-11.74	31.92	18.03	63.56	
Channel Bandwidth: 3MHz / 64QAM							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	20415	825.5	-7.08	31.21	21.98	157.69	H
	20525	836.5	-7.16	31.30	21.99	158.12	
	20635	847.5	-7.00	31.22	22.07	161.14	
	20415	825.5	-11.37	31.50	17.98	62.86	V
	20525	836.5	-10.96	31.12	18.01	63.20	
	20635	847.5	-11.71	31.92	18.06	64.00	
Channel Bandwidth: 5MHz / 64QAM							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	20425	826.5	-7.05	31.21	22.01	158.78	H
	20525	836.5	-7.13	31.30	22.02	159.22	
	20625	846.5	-6.99	31.22	22.08	161.51	
	20425	826.5	-11.32	31.50	18.03	63.59	V
	20525	836.5	-10.92	31.12	18.05	63.78	
	20625	846.5	-11.65	31.92	18.12	64.89	
Channel Bandwidth: 10MHz / 64QAM							
Plane	Channel	Frequency (MHz)	Reading (dBm)	Correction Factor (dB)	ERP(dBm)	ERP(mW)	Polarization (H/V)
X	20450	829	-7.02	31.21	22.04	159.88	H
	20525	836.5	-7.09	31.30	22.06	160.69	
	20600	844	-6.97	31.22	22.10	162.26	
	20450	829	-11.28	31.50	18.07	64.18	V
	20525	836.5	-10.87	31.12	18.10	64.52	
	20600	844	-11.64	31.92	18.13	65.04	

Note: ERP (dBm) = Reading (dBm) + Correction Factor (dB) – 2.15.

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

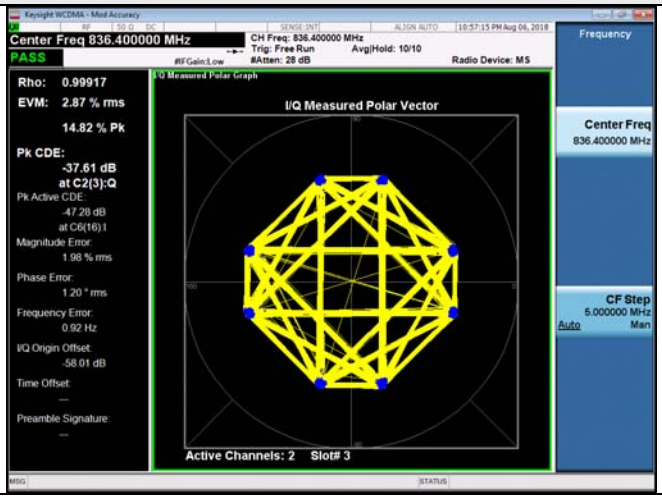
N/A

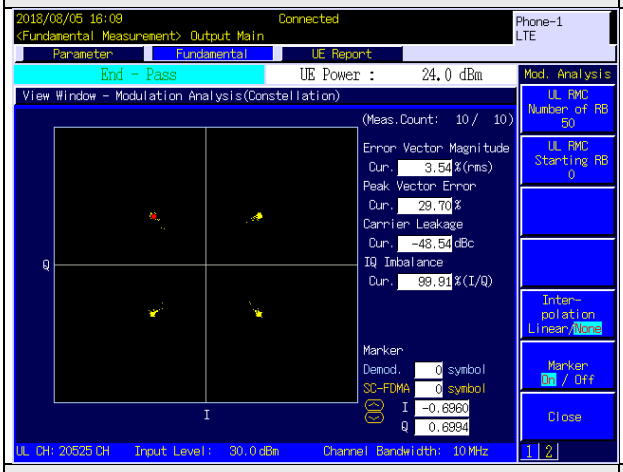
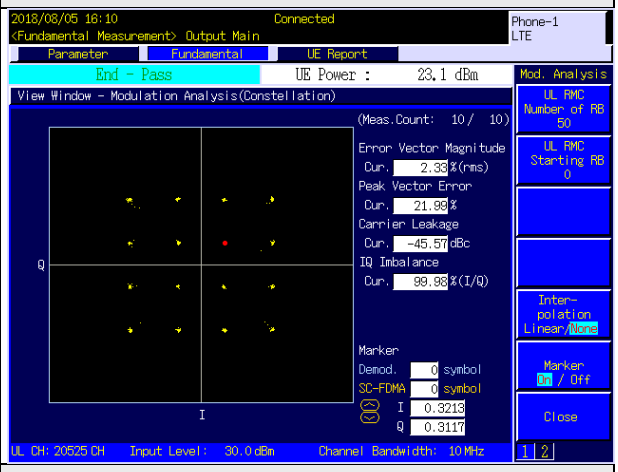
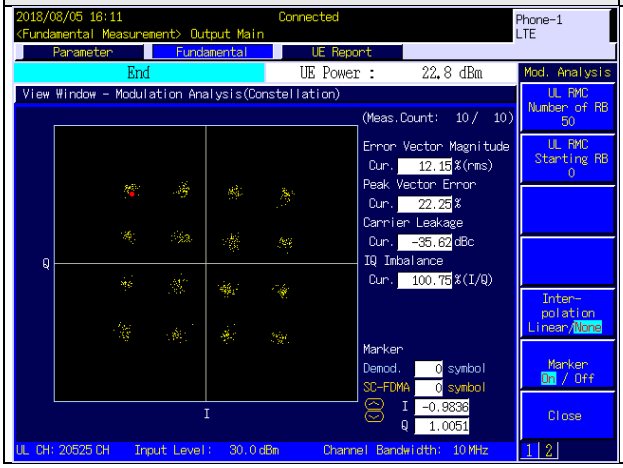
4.2.2 Test Procedure

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

Spectrum Plot of Measurement Value
Channel: 4132 / Frequency (MHz): 826.4MHz
WCDMA


LTE Band 5	
Spectrum Plot of Measurement Value	
Channel: 20525 / Frequency (MHz): 836.5MHz	
Channel Bandwidth: 10MHz / QPSK	Channel Bandwidth: 10MHz / 16QAM
	
Channel Bandwidth: 10MHz / 64QAM	
	

4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

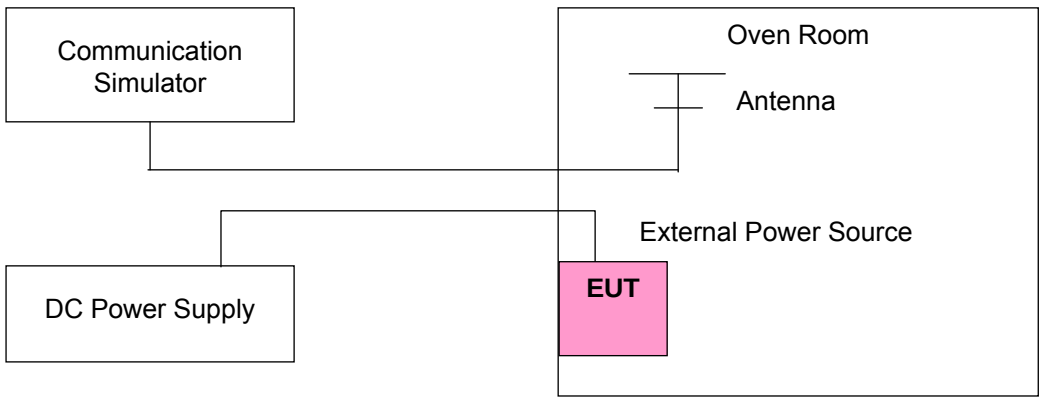
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

4.3.2 Test Procedure

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

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

4.3.3 Test Setup



4.3.4 Test Results

Frequency Error vs. Voltage

Voltage (Volts)	Frequency Error (ppm)		Limit (ppm)
	WCDMA	LTE Band 5	
138	0.01681	0.06287	2.5
120	0.06609	0.06075	2.5
102	0.03577	0.04833	2.5

Note: The applicant defined the normal working voltage is from 102Vac to 138Vac.

Frequency Error vs. Temperature.

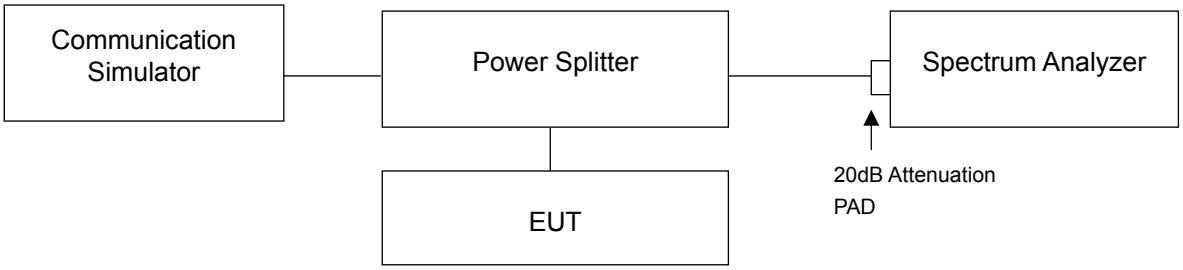
Voltage (Volts)	Frequency Error (ppm)		Limit (ppm)
	WCDMA	LTE Band 5	
50	0.03512	0.03172	2.5
40	0.08683	0.04066	2.5
30	0.03066	0.06188	2.5
20	0.03311	0.06075	2.5
10	0.04475	0.07637	2.5
0	0.04208	0.02228	2.5
-10	0.01028	0.02063	2.5
-20	0.05029	0.00314	2.5
-30	0.05565	0.00888	2.5

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. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

4.4.2 Test Setup



4.4.3 Test Result

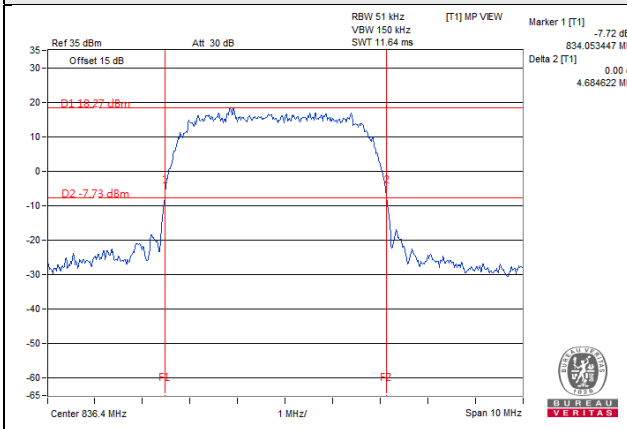
WCDMA Band 5

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			Occupied Bandwidth (MHz)		
		WCDMA	HSDPA	HSUPA	WCDMA	HSDPA	HSUPA
4132	826.4	4.67	4.69	4.67	4.15	4.11	4.13
4182	836.4	4.68	4.68	4.70	4.13	4.13	4.15
4233	846.6	4.68	4.68	4.68	4.13	4.13	4.13

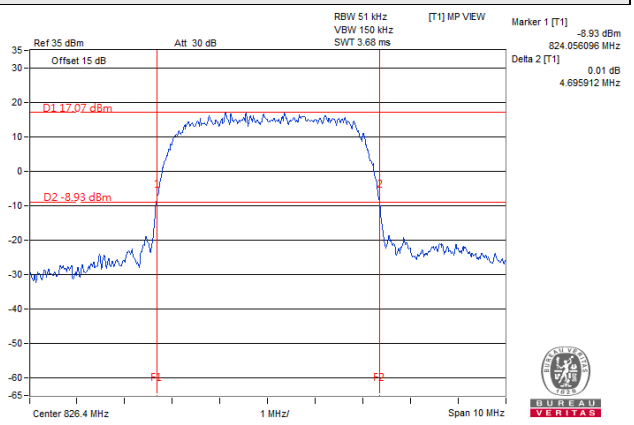
26dBc Bandwidth

Spectrum Plot of Worst Value

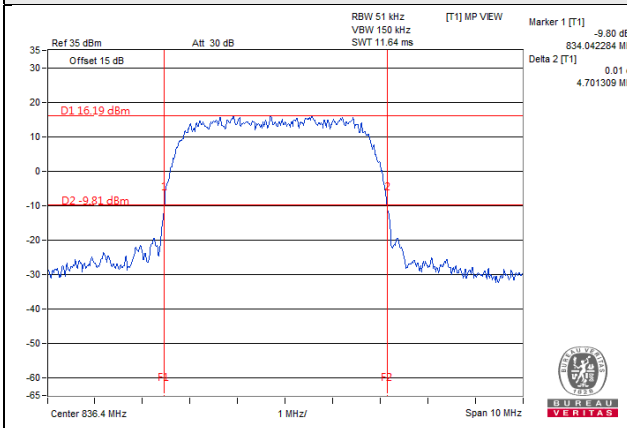
WCDMA

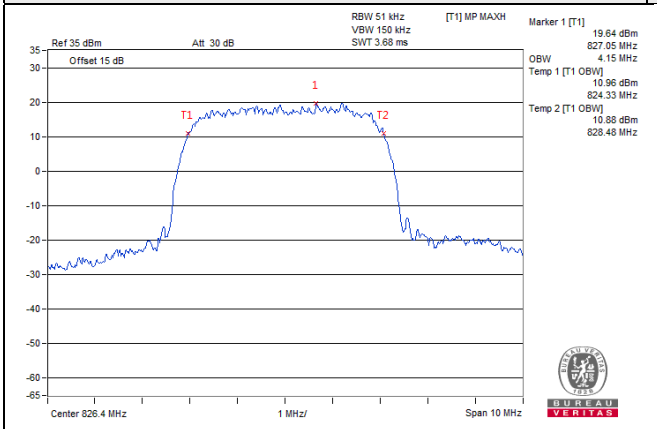
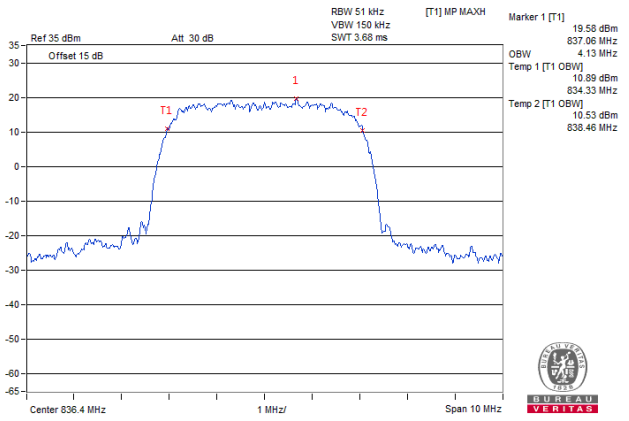
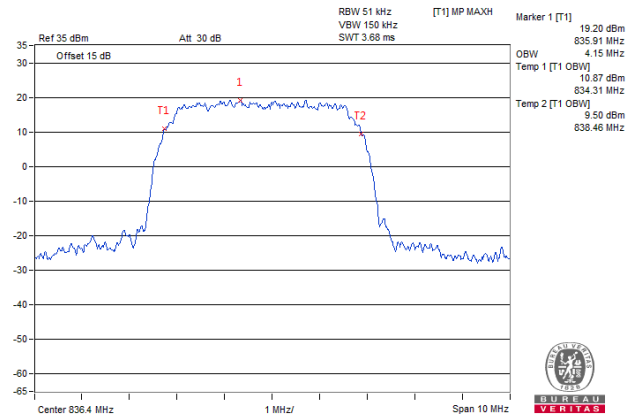


HSDPA



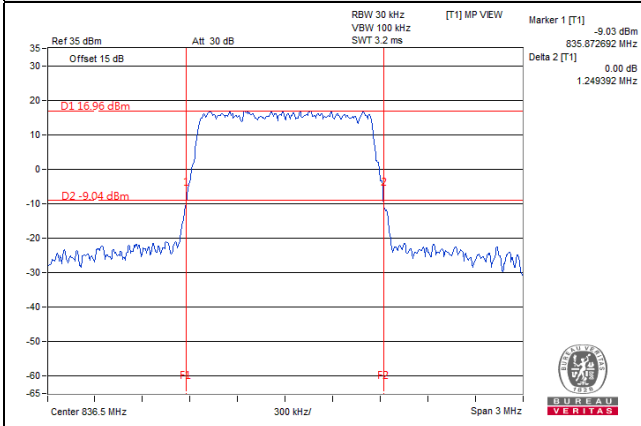
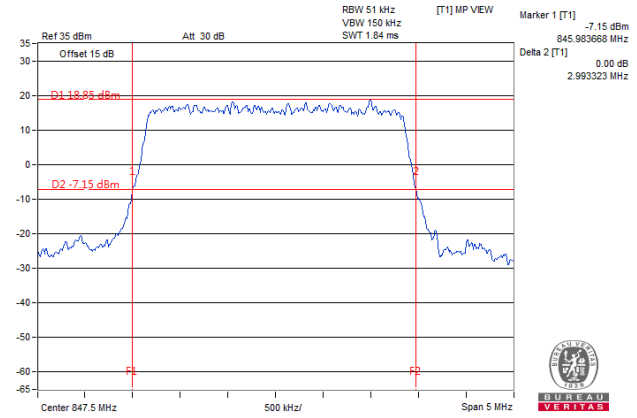
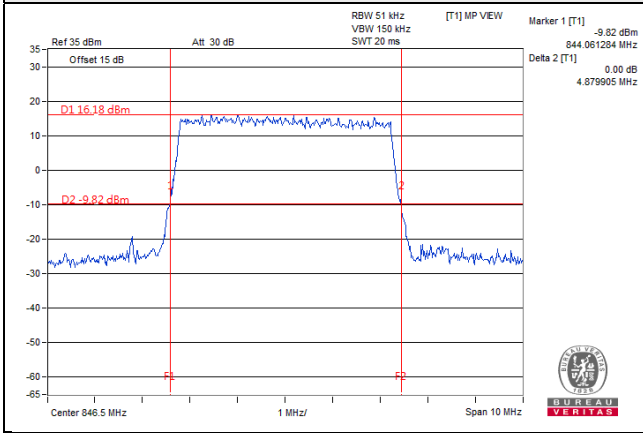
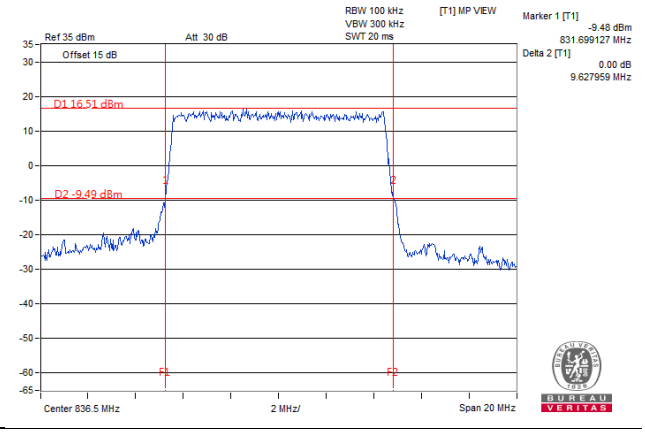
HSUPA

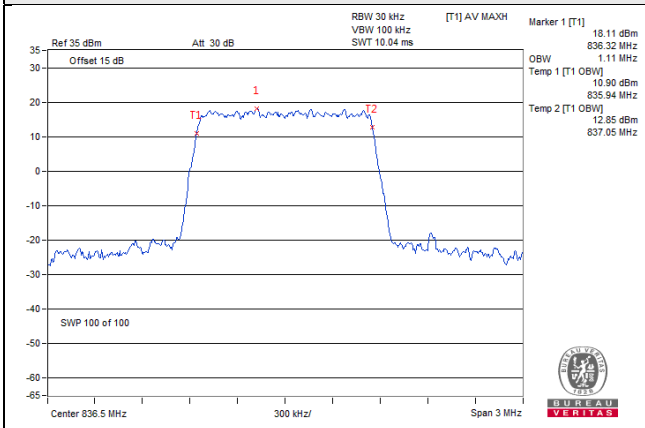
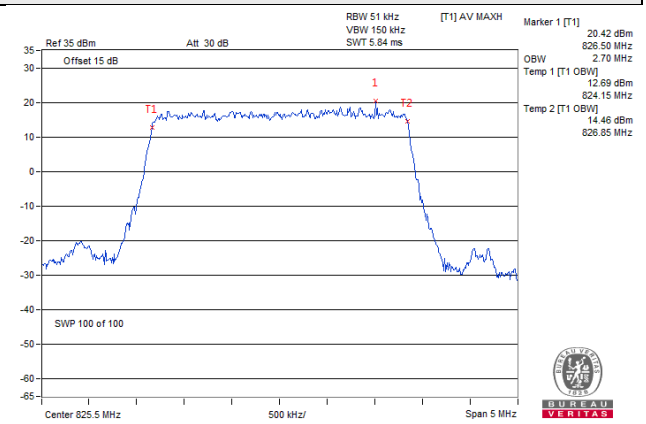
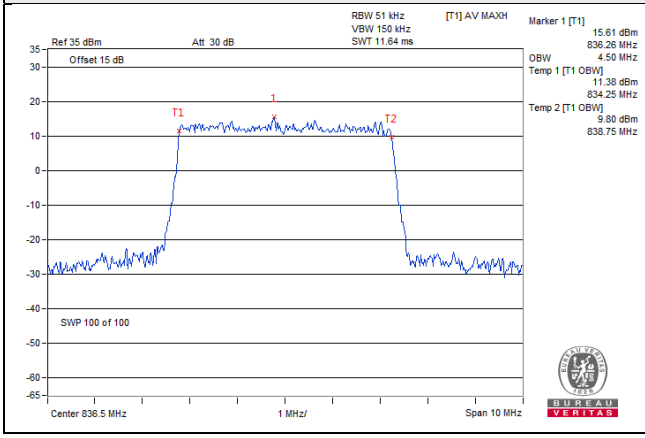
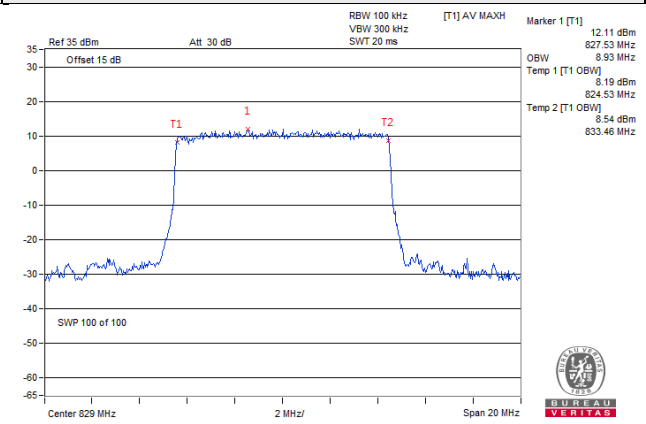


Occupied Bandwidth	
Spectrum Plot of Worst Value	
WCDMA	HSDPA
	
HSUPA	
	

LTE Band 5

Channel Bandwidth: 1.4MHz							
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20407	824.7	1.23	1.22	1.24	1.09	1.09	1.09
20525	836.5	1.24	1.24	1.24	1.11	1.10	1.09
20643	848.3	1.23	1.23	1.23	1.09	1.08	1.09
Channel Bandwidth: 3MHz							
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20415	825.5	2.95	2.96	2.94	2.70	2.68	2.69
20525	836.5	2.99	2.96	2.94	2.69	2.69	2.70
20635	847.5	2.98	2.99	2.95	2.69	2.69	2.70
Channel Bandwidth: 5MHz							
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20425	826.5	4.84	4.86	4.78	4.46	4.46	4.48
20525	836.5	4.86	4.84	4.86	4.46	4.48	4.50
20625	846.5	4.87	4.84	4.83	4.48	4.45	4.48
Channel Bandwidth: 10MHz							
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			Occupied Bandwidth (MHz)		
		QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20450	829.0	9.57	9.49	9.56	8.93	8.93	8.93
20525	836.5	9.62	9.62	9.57	8.93	8.93	8.93
20600	844.0	9.53	9.51	9.62	8.93	8.90	8.90

26dBc Bandwidth	
Spectrum Plot of Worst Value	
1.4MHz / QPSK	3MHz / 16QAM
	
5MHz / QPSK	10MHz / QPSK
	

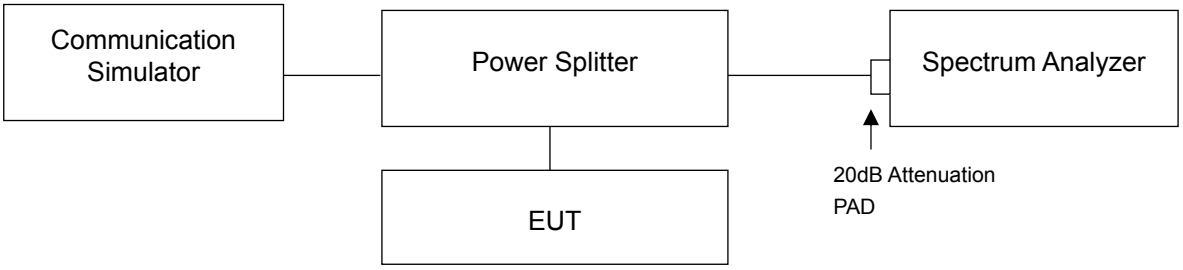
Occupied Bandwidth	
Spectrum Plot of Worst Value	
1.4MHz / QPSK	3MHz / QPSK
	
5MHz / 64QAM	10MHz / QPSK
	

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

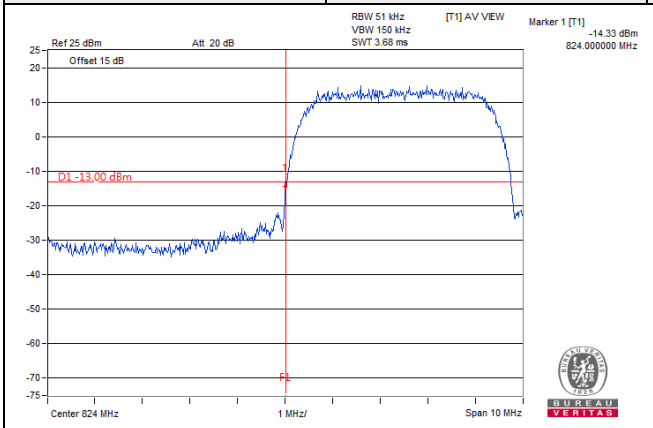
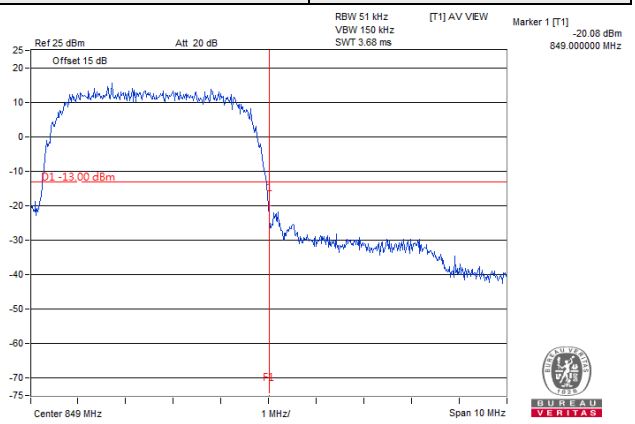


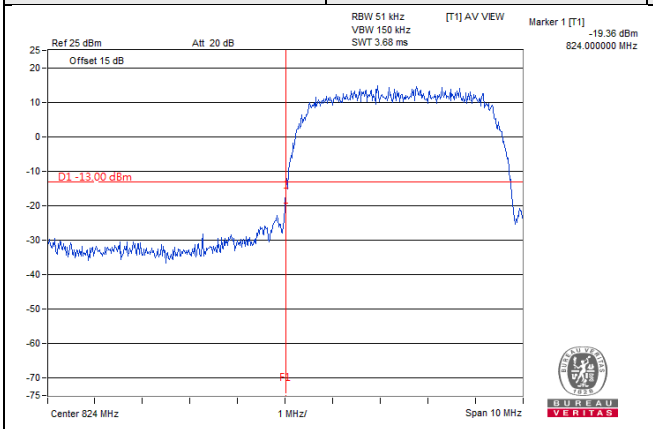
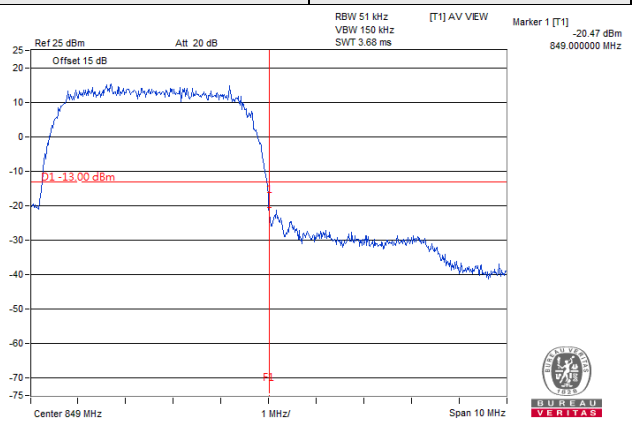
4.5.3 Test Procedures

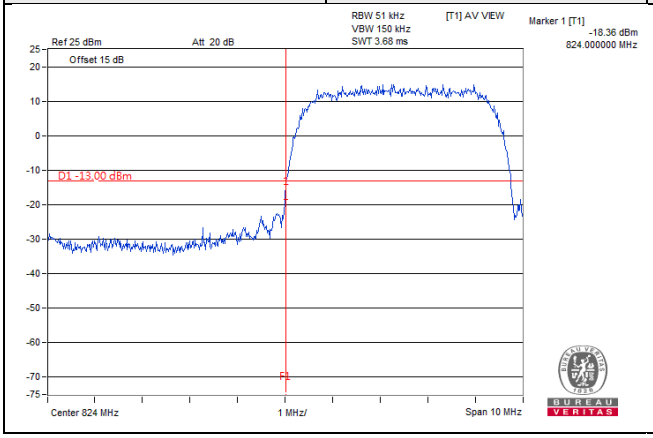
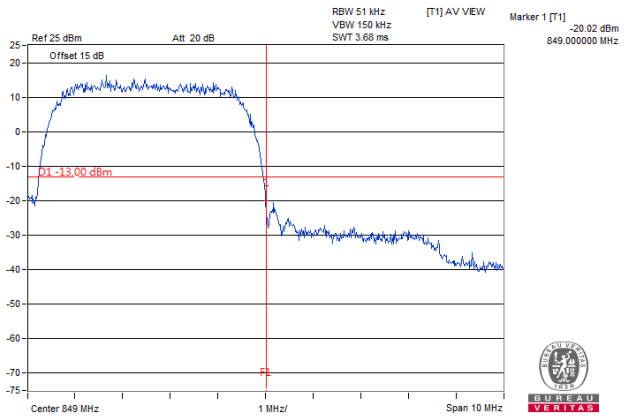
a. All measurements were done at low and high operational frequency range.
b. The center frequency of spectrum is the band edge frequency and span is 10MHz. RB of the spectrum is 51kHz and VB of the spectrum is 150kHz (WCDMA).
c. The center frequency of spectrum is the band edge frequency and span is 1.5MHz. RB of the spectrum is 30kHz and VB of the spectrum is 100kHz (LTE Channel Bandwidth 1.4MHz).
d. The center frequency of spectrum is the band edge frequency and span is 1.5MHz. RB of the spectrum is 51kHz and VB of the spectrum is 150kHz (LTE Channel Bandwidth 3MHz and 5MHz).
e. The center frequency of spectrum is the band edge frequency and span is 1.5MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (LTE Channel Bandwidth 10MHz).
f. Record the max trace plot into the test report.

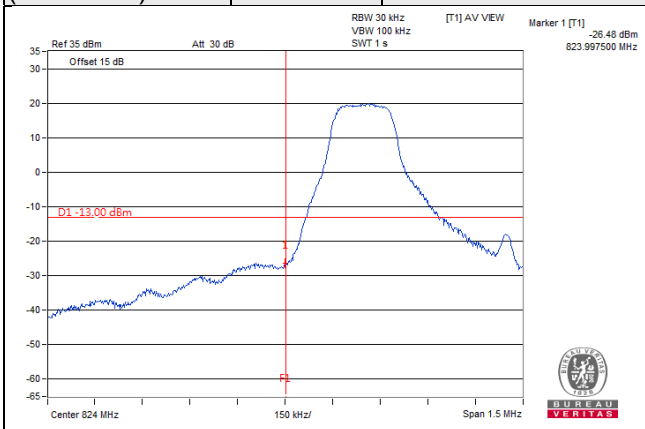
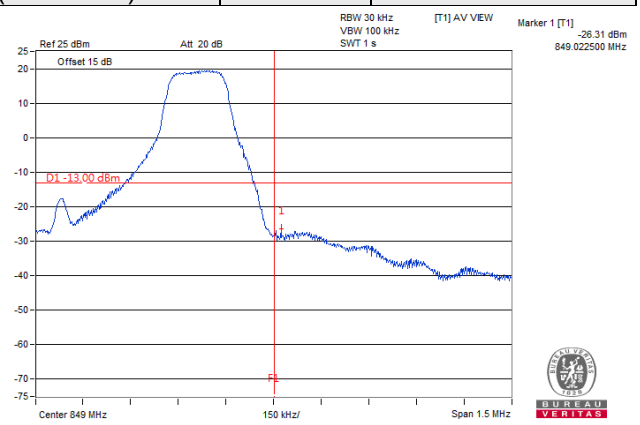
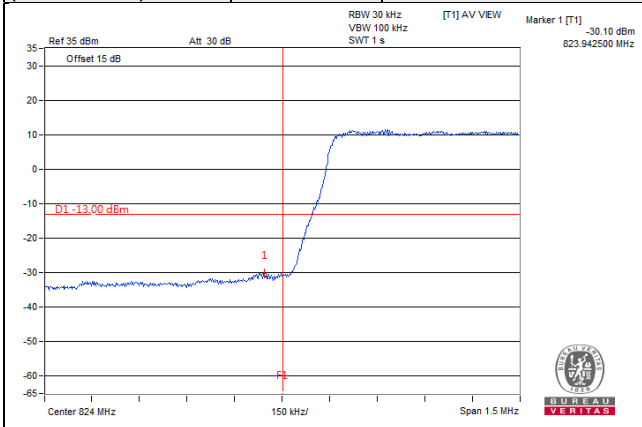
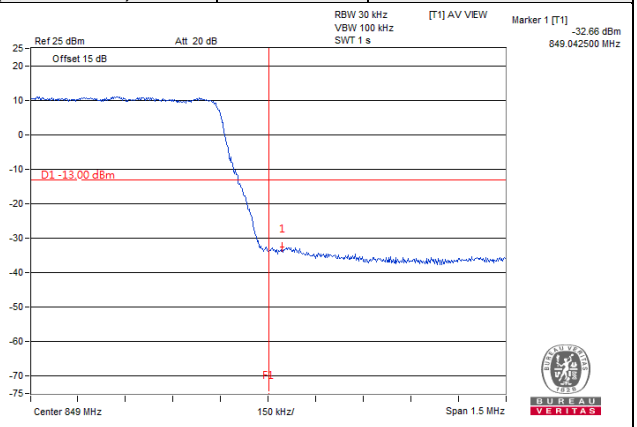
4.5.4 Test Results

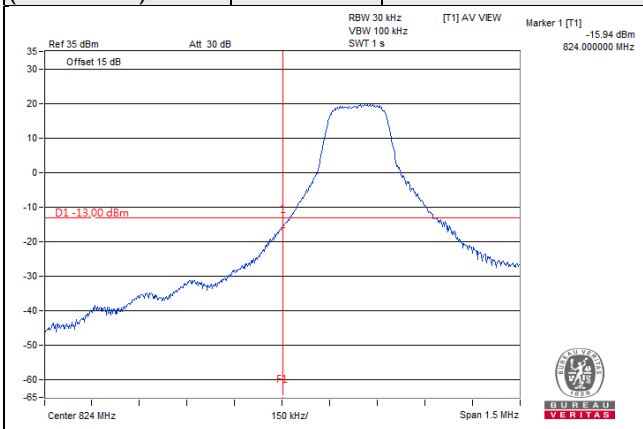
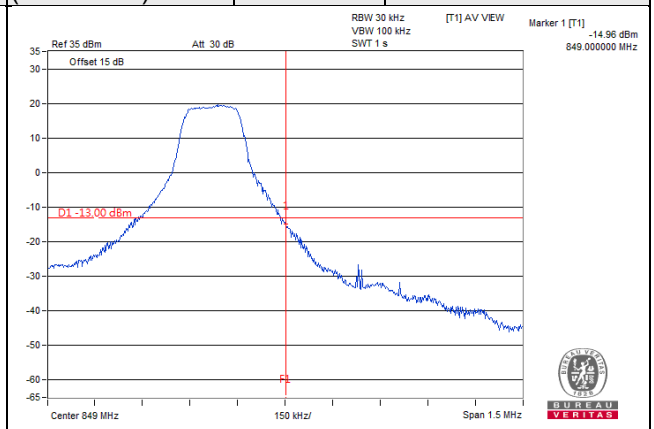
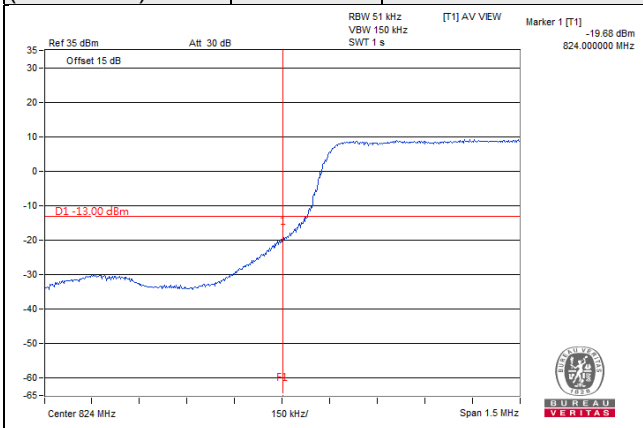
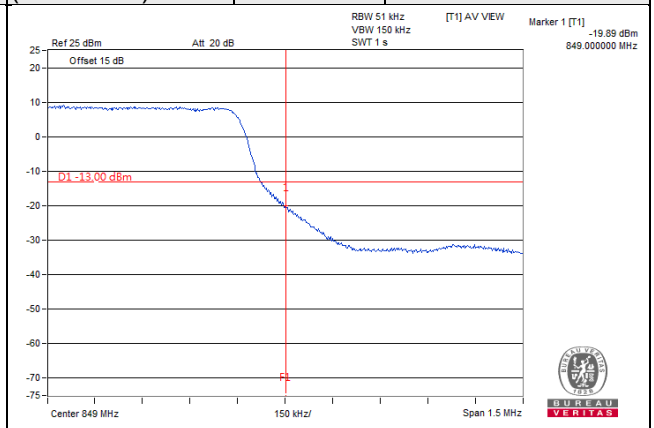
WCDMA Band 5

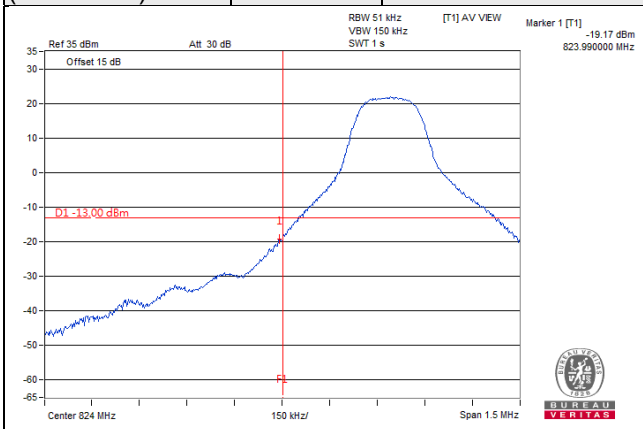
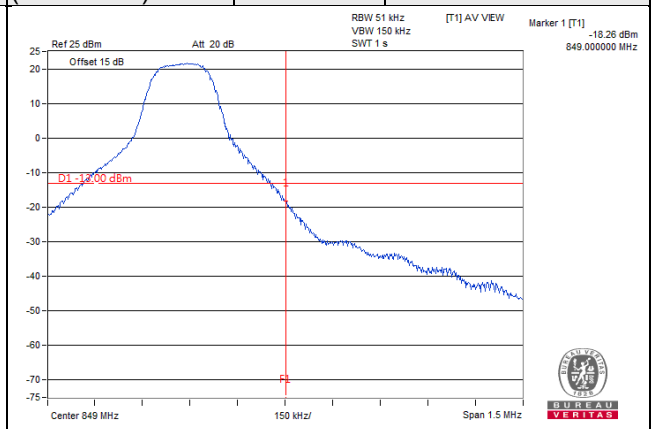
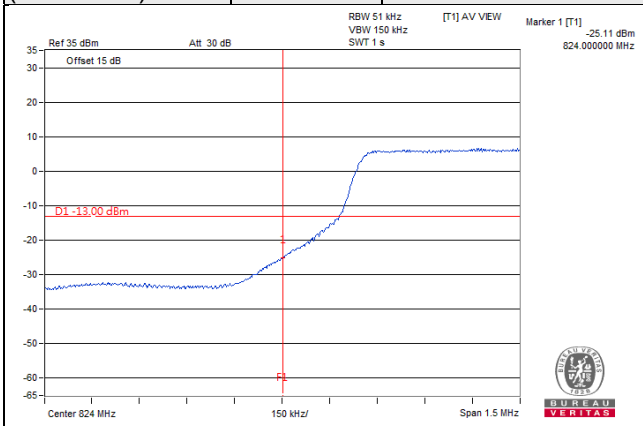
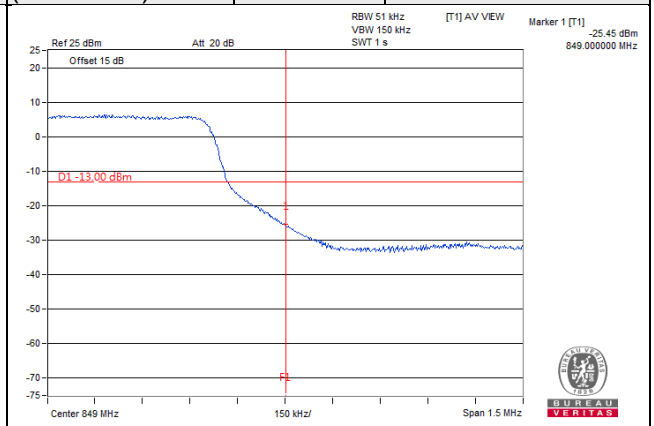
WCDMA			
Channel	4132 (826.4MHz)	Channel	4233 (846.6MHz)
			

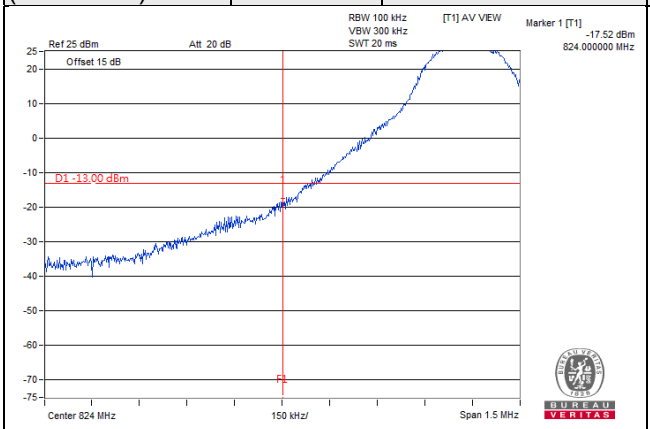
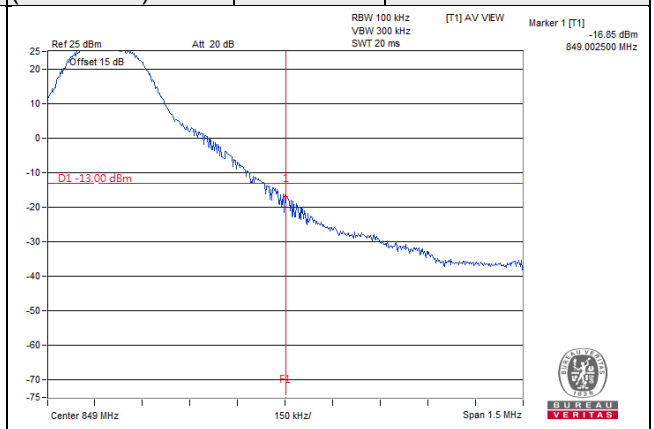
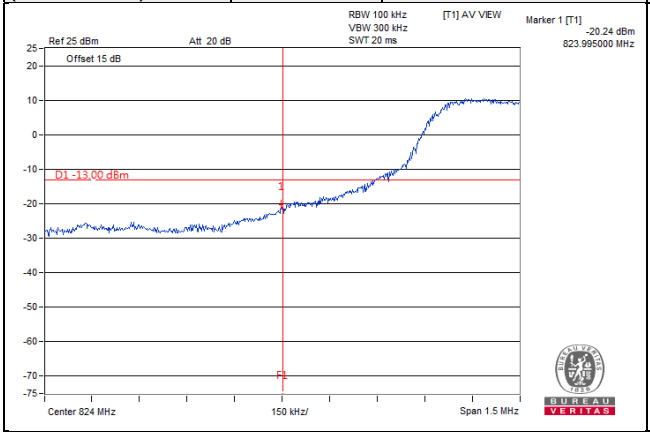
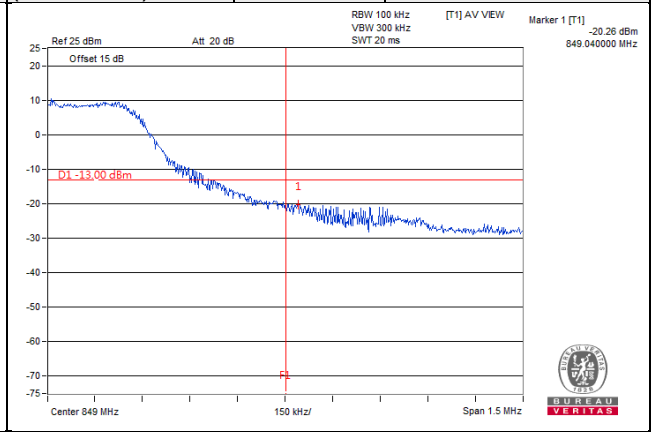
HSDPA			
Channel	4132 (826.4MHz)	Channel	4233 (846.6MHz)
			

HSUPA			
Channel	4132 (826.4MHz)	Channel	4233 (846.6MHz)
			

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

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
					
Channel 20425 (826.5MHz)	QPSK	25 RB / 0 RB Offset	Channel 20625 (846.5MHz)	QPSK	25 RB / 0 RB Offset
					

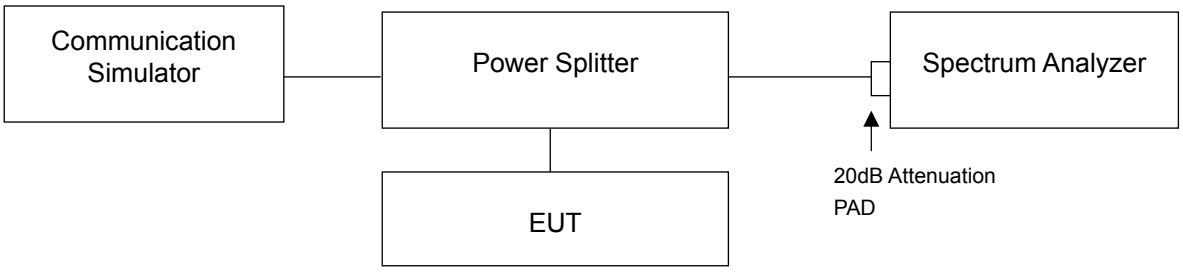
LTE Band 5, Channel Bandwidth 10MHz					
Channel 20450 (829.0MHz)	QPSK	1 RB / 0 RB Offset	Channel 20600 (844.0MHz)	QPSK	1 RB / 49 RB Offset
					
Channel 20450 (829.0MHz)	QPSK	50 RB / 0 RB Offset	Channel 20600 (844.0MHz)	QPSK	50 RB / 0 RB Offset
					

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

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

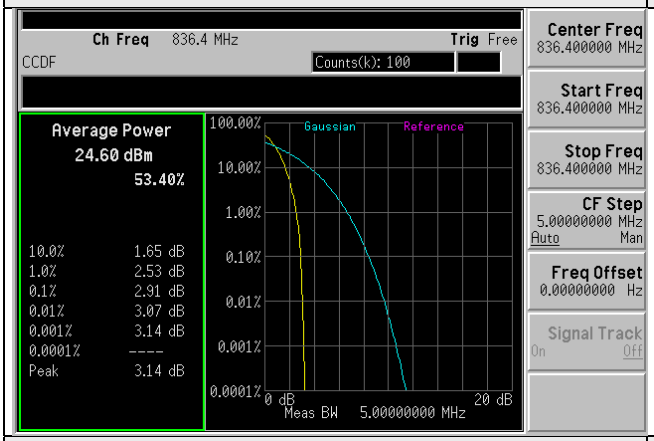
4.6.4 Test Results

WCDMA Band 5

Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		WCDMA	HSDPA	HSUPA
4132	826.4	2.80	2.82	2.81
4182	836.4	2.91	2.92	2.94
4233	846.6	2.89	2.86	2.87

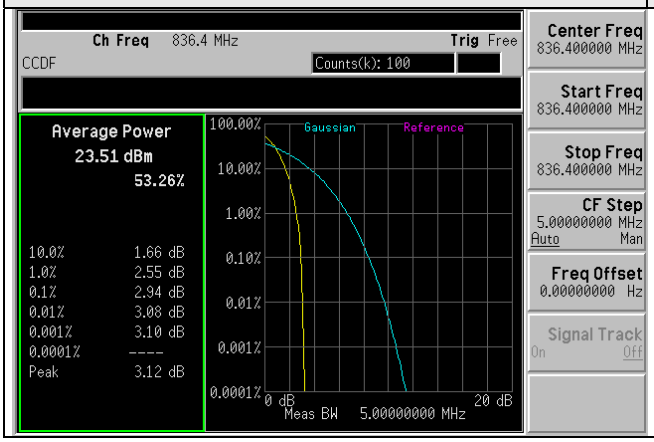
Spectrum Plot of Worst Value

WCDMA



HSDPA

HSUPA

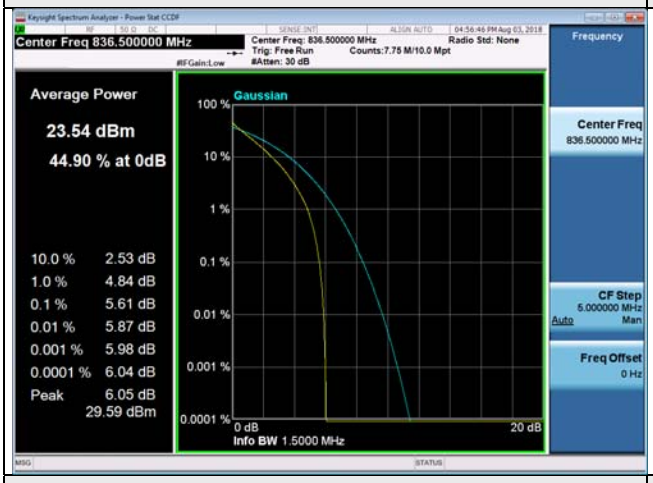
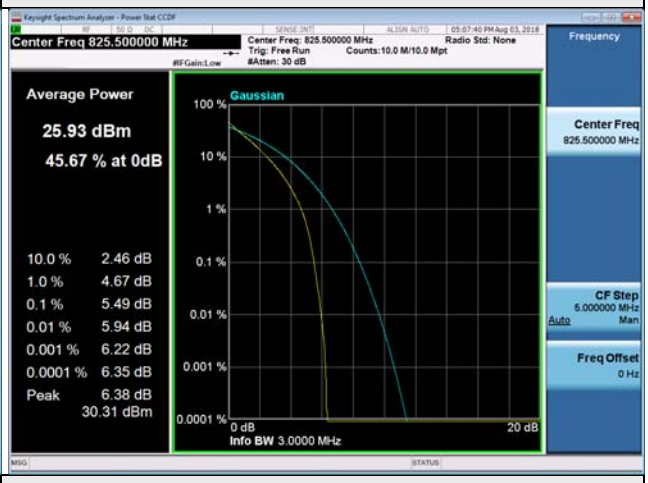
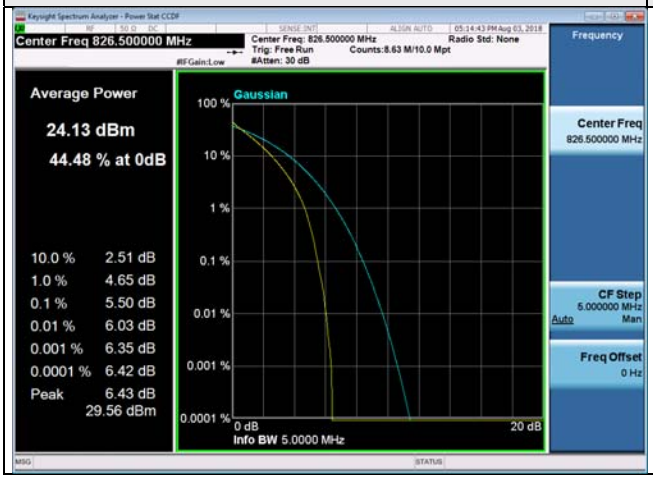
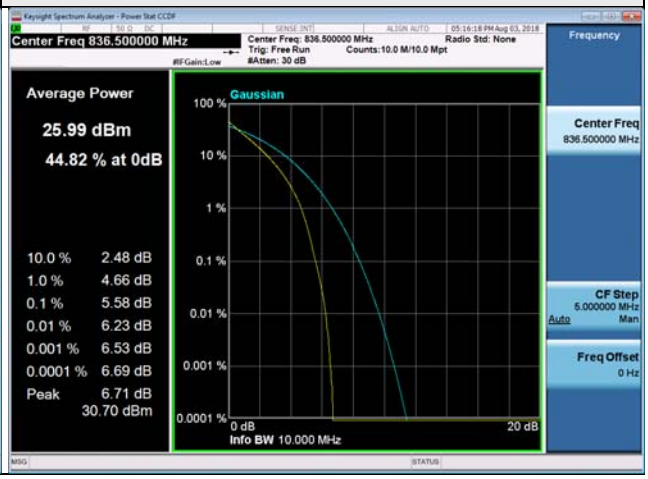


LTE Band 5, Channel Bandwidth 1.4MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
20407	824.7	5.34	5.38	5.34
20525	836.5	5.61	5.36	5.61
20643	848.3	4.97	4.91	4.97

LTE Band 5, Channel Bandwidth 3MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
20415	825.5	5.49	5.48	5.48
20525	836.5	5.46	5.42	5.42
20635	847.5	5.06	5.06	5.06

LTE Band 5, Channel Bandwidth 5MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
20425	826.5	5.48	5.50	5.50
20525	836.5	5.41	5.42	5.42
20625	846.5	5.17	5.18	5.18

LTE Band 5, Channel Bandwidth 10MHz				
Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		QPSK	16QAM	64QAM
20450	829.0	5.53	5.48	5.48
20525	836.5	5.58	5.44	5.44
20600	844.0	5.27	5.24	5.24

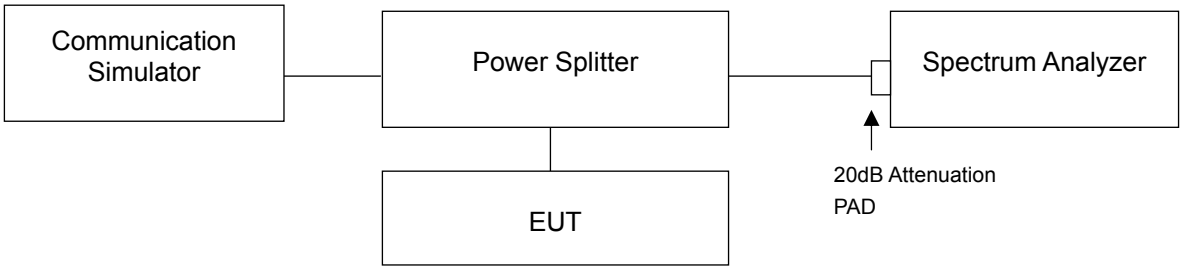
Spectrum Plot of Worst Value	
1.4MHz / 64QAM	3MHz / QPSK
	
5MHz / 64QAM	10MHz / QPSK
	

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

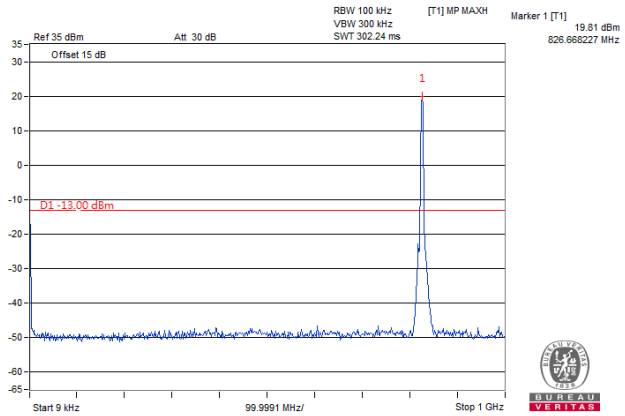
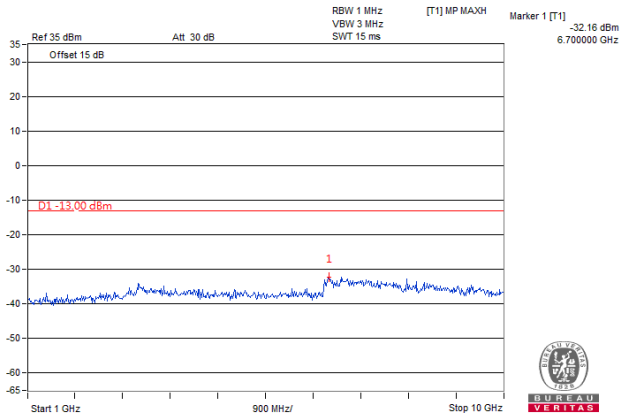
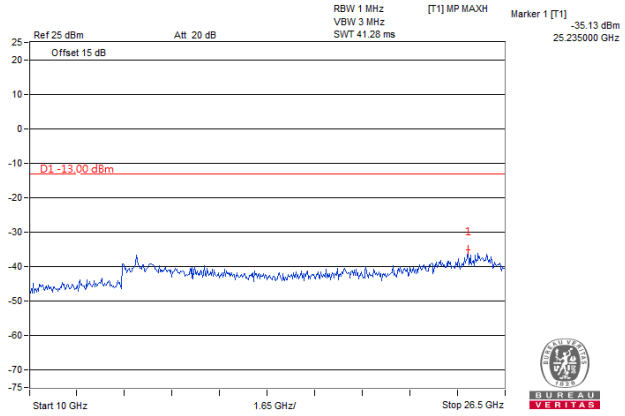


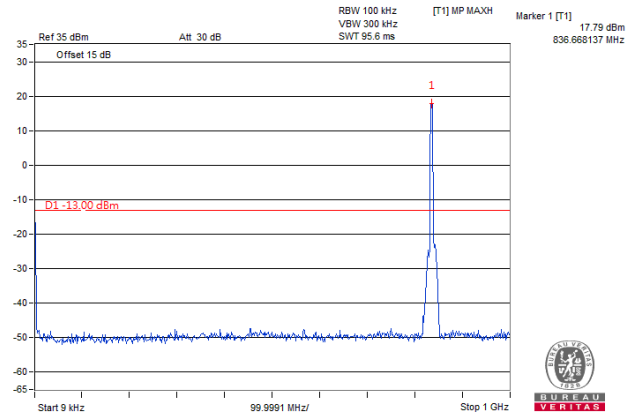
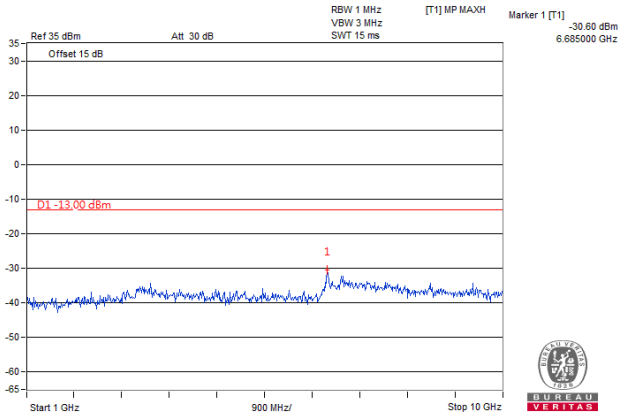
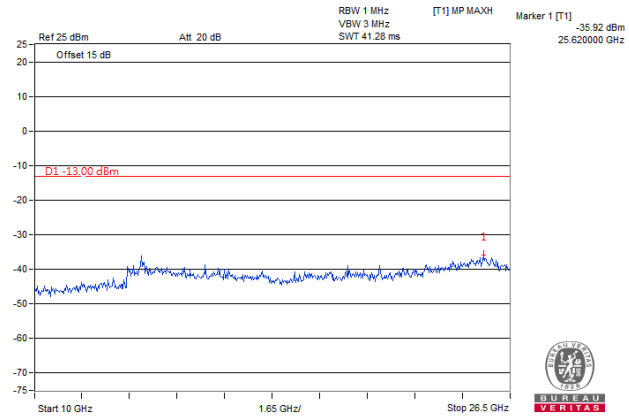
4.7.3 Test Procedure

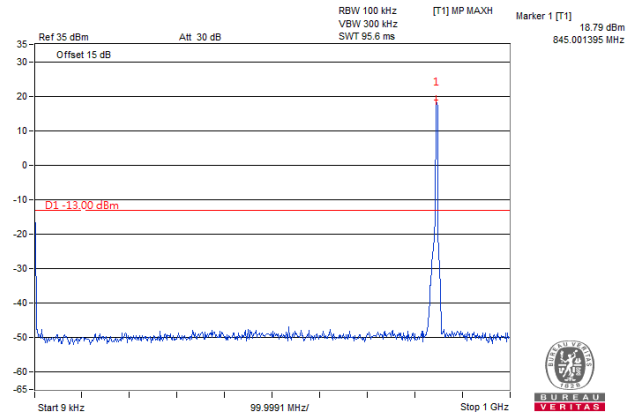
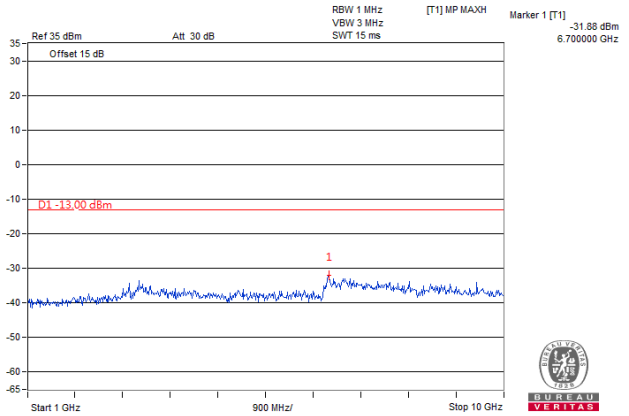
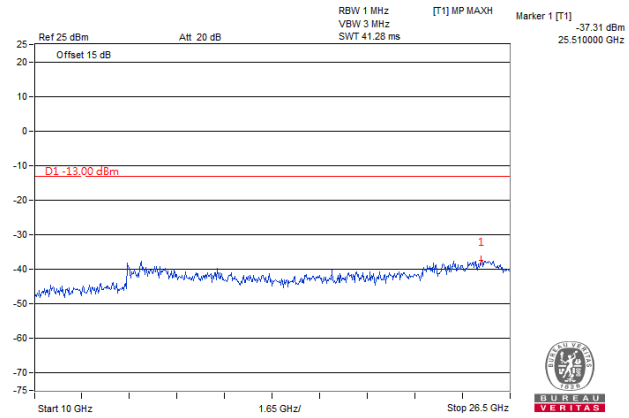
a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
b. Measuring frequency range is from 9 kHz to 1GHz. 20dB attenuation pad is connected with spectrum. RBW=100kHz and VBW=300kHz is used for conducted emission measurement.
c. Measuring frequency range is from 1GHz to 26.5GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

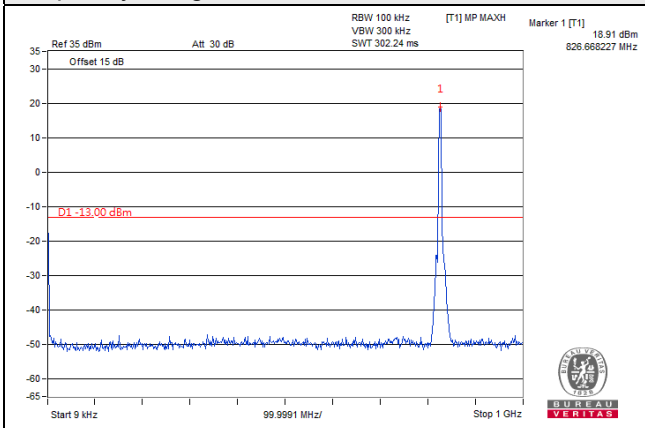
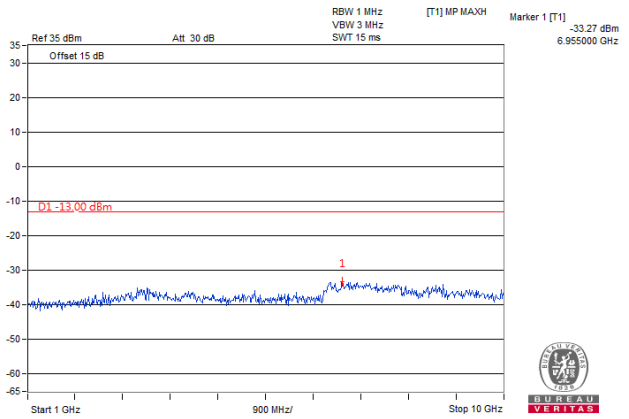
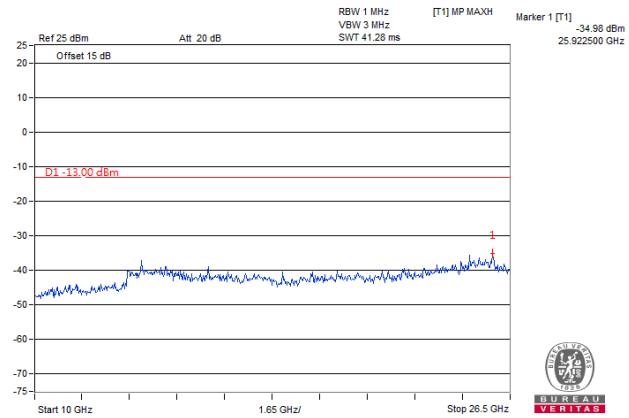
4.7.4 Test Results

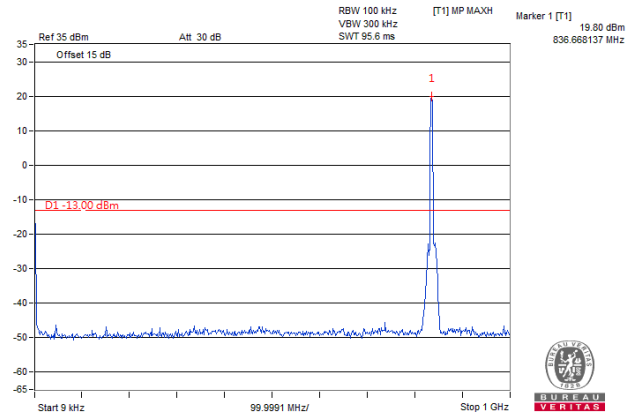
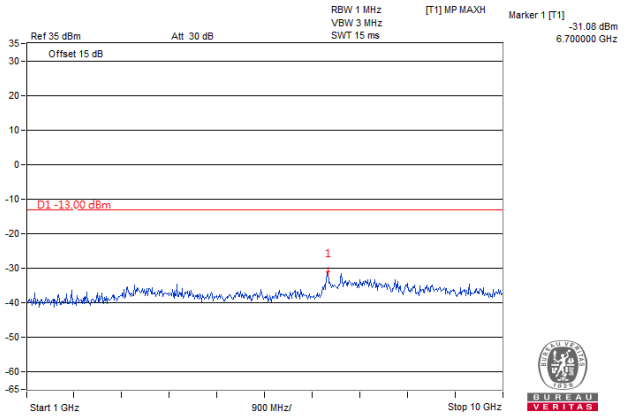
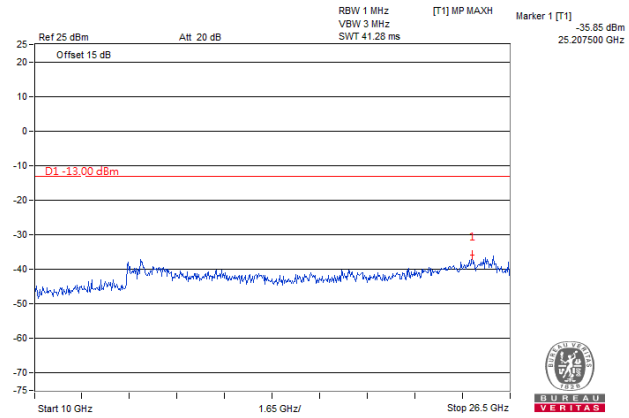
WCDMA Band 5

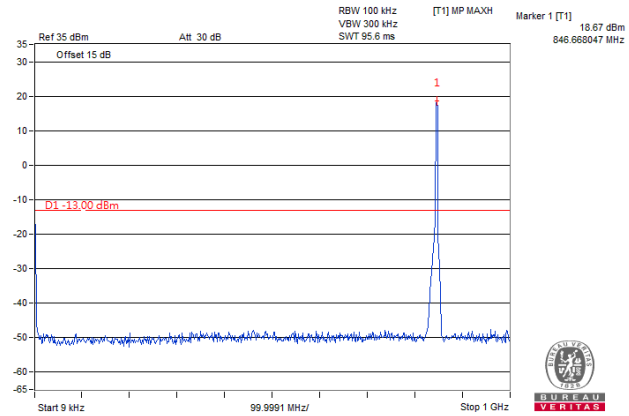
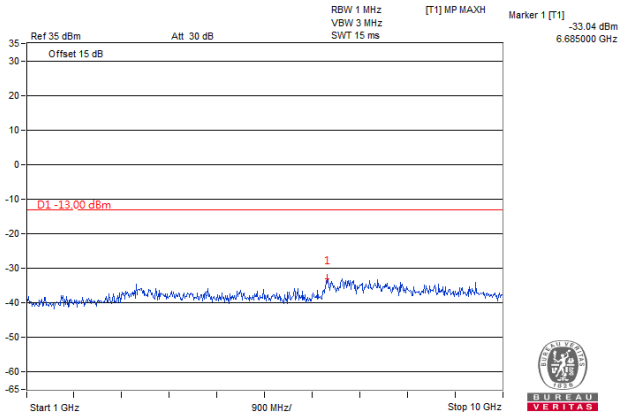
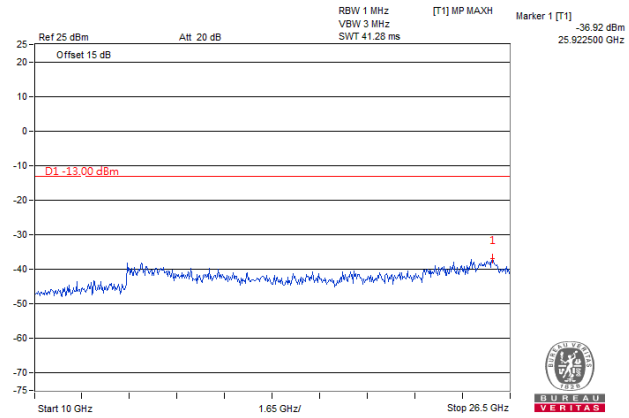
WCDMA	
Channel 4132 (826.4MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~10GHz
	
Frequency Range : 10GHz~26.5GHz	
	

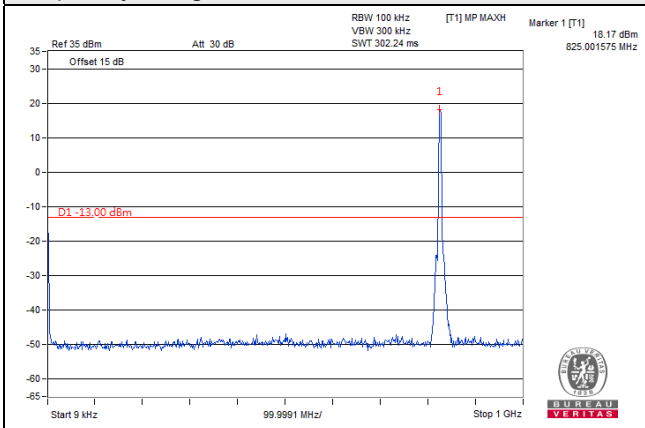
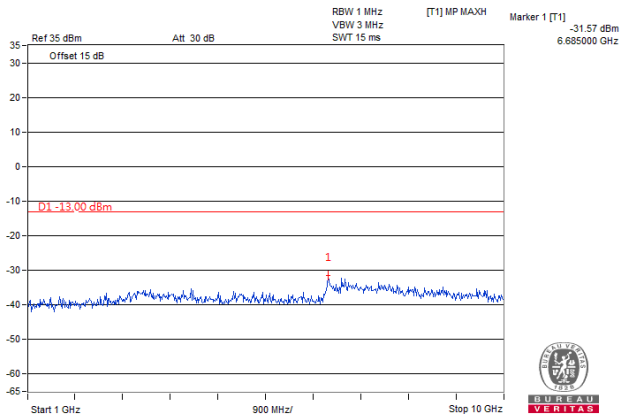
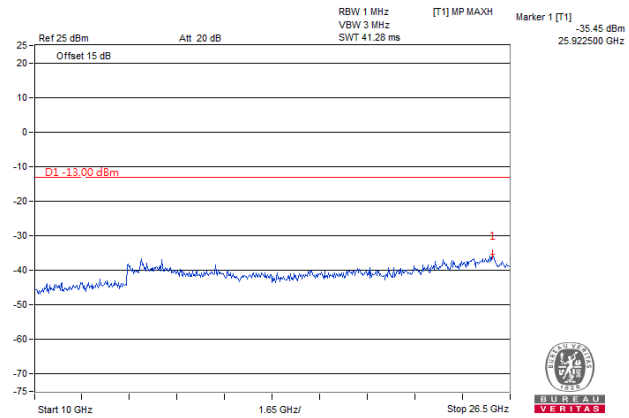
WCDMA	
Channel 4182 (836.4MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~10GHz
	
Frequency Range : 10GHz~26.5GHz	
	

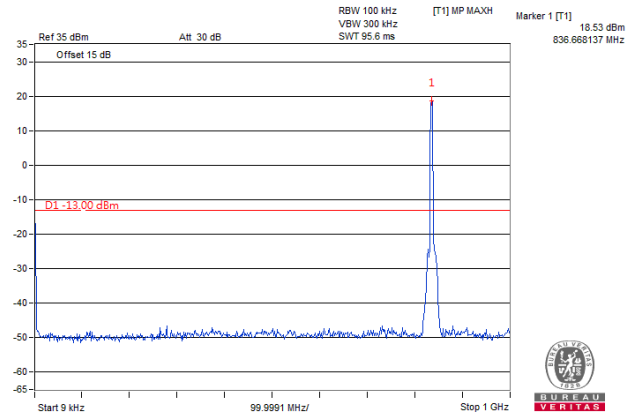
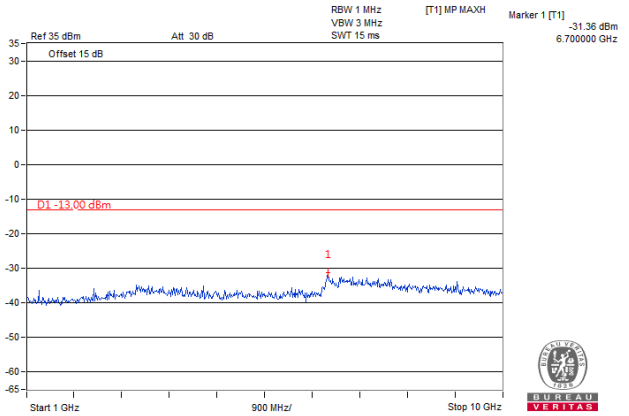
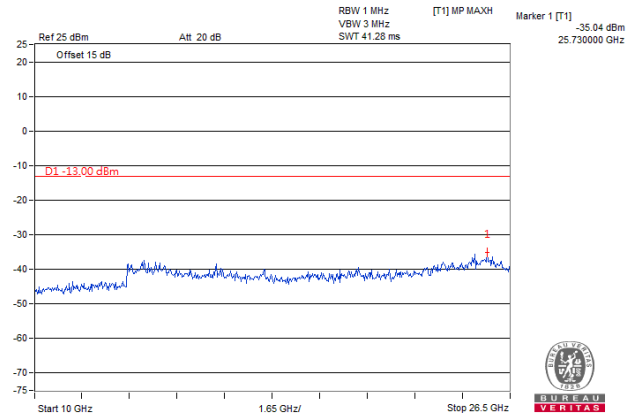
WCDMA	
Channel 4233 (846.6MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~10GHz
	
Frequency Range : 10GHz~26.5GHz	
	

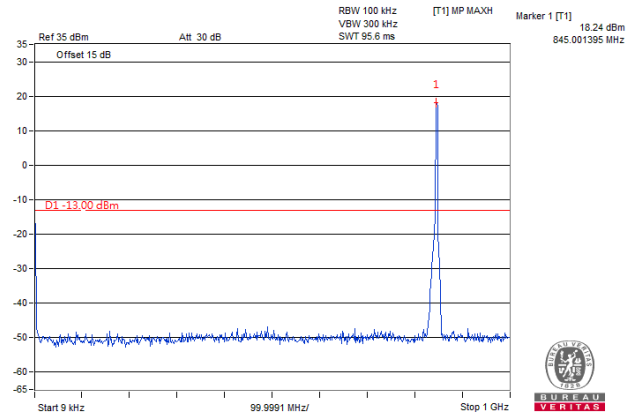
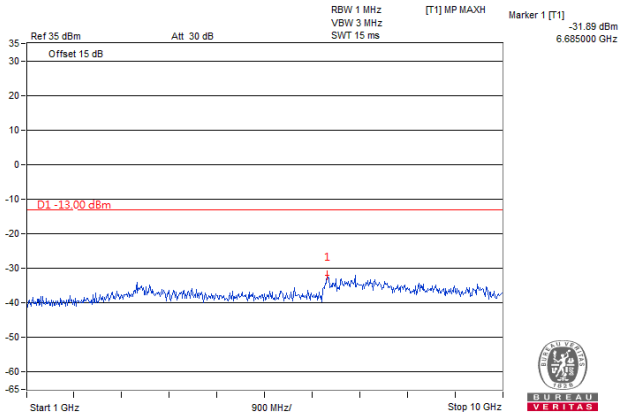
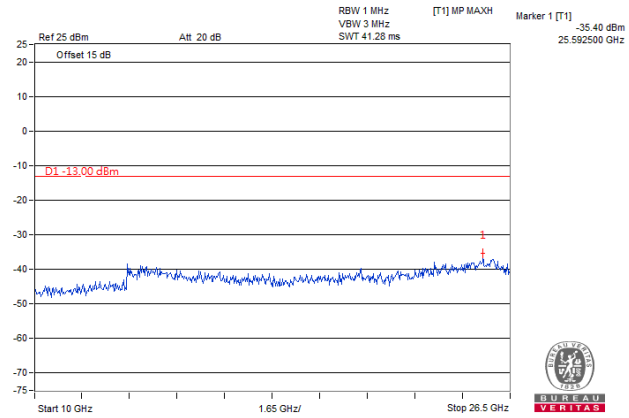
HSDPA	
Channel 4132 (826.4MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~10GHz
	
Frequency Range : 10GHz~26.5GHz	
	

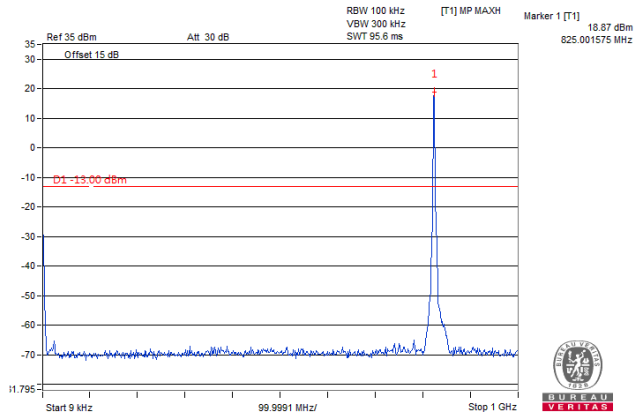
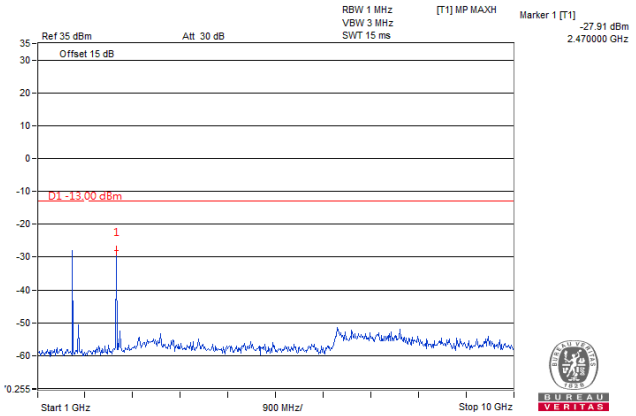
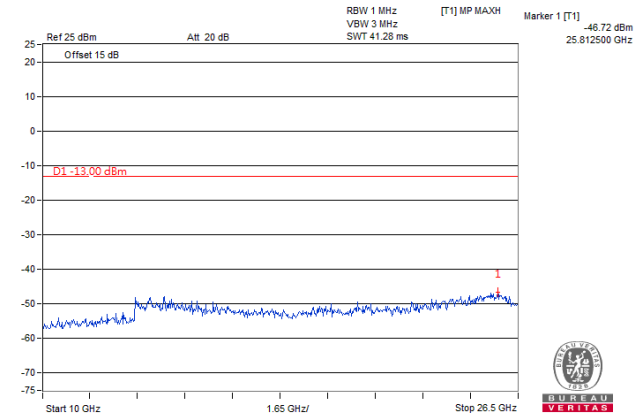
HSDPA	
Channel 4182 (836.4MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~10GHz
	
Frequency Range : 10GHz~26.5GHz	
	

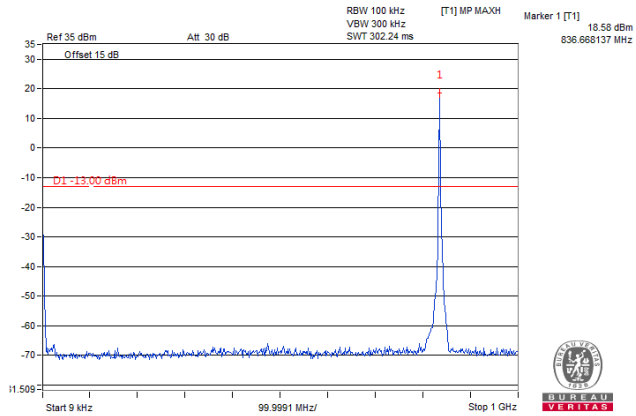
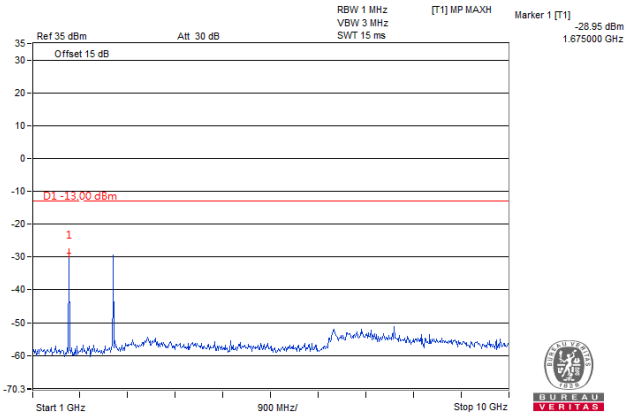
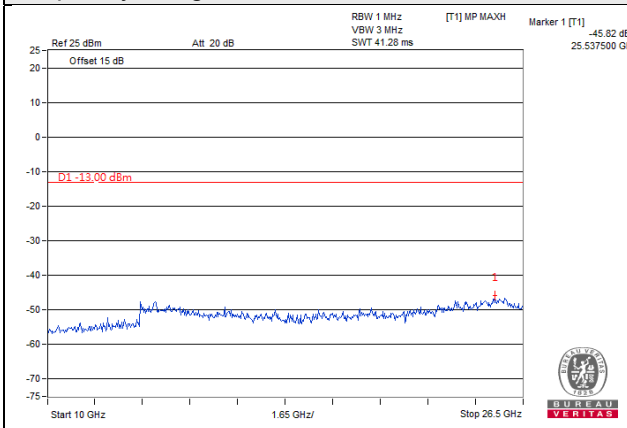
HSDPA	
Channel 4233 (846.6MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~10GHz
	
Frequency Range : 10GHz~26.5GHz	
	

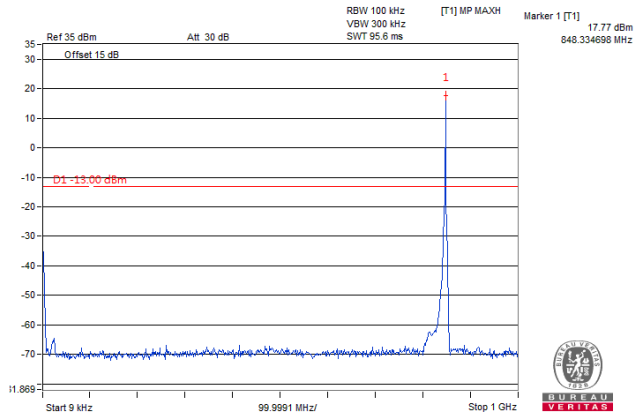
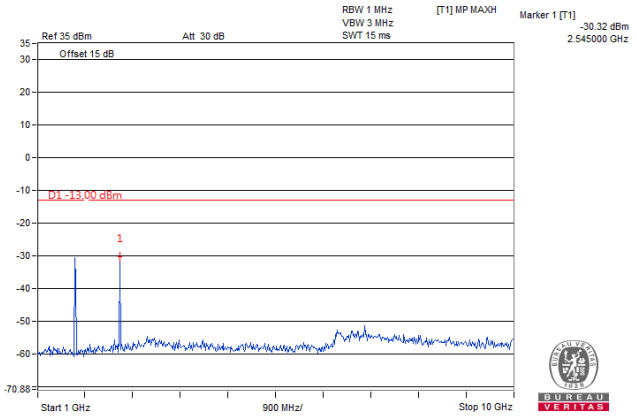
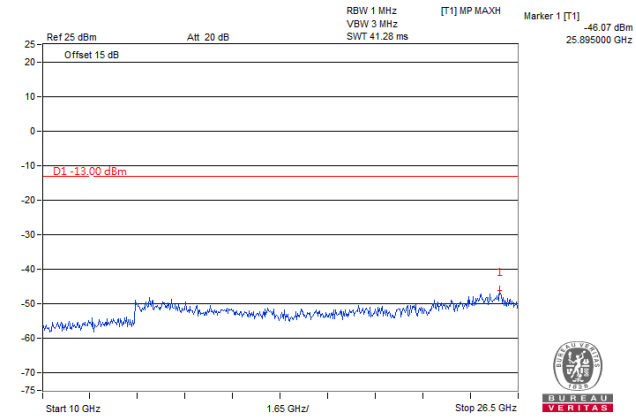
HSUPA	
Channel 4132 (826.4MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~10GHz
	
Frequency Range : 10GHz~26.5GHz	
	

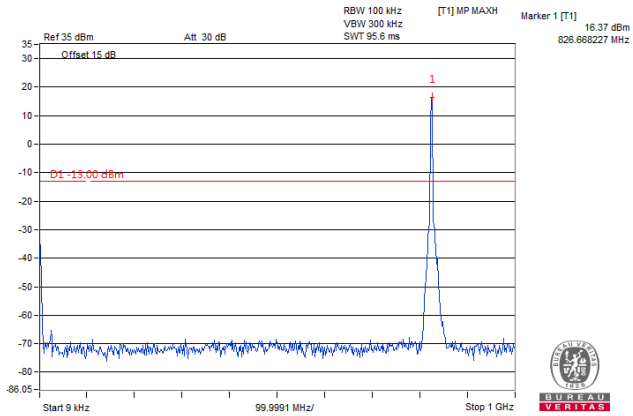
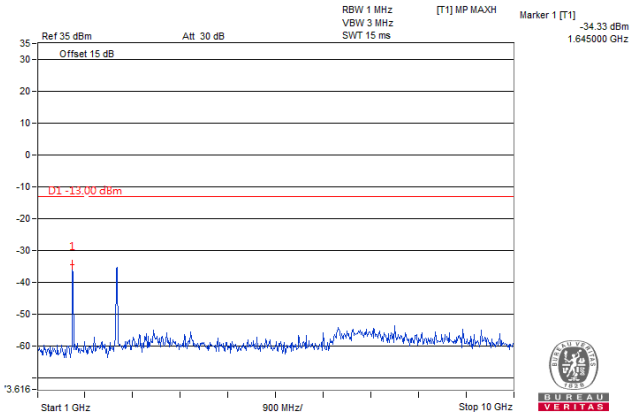
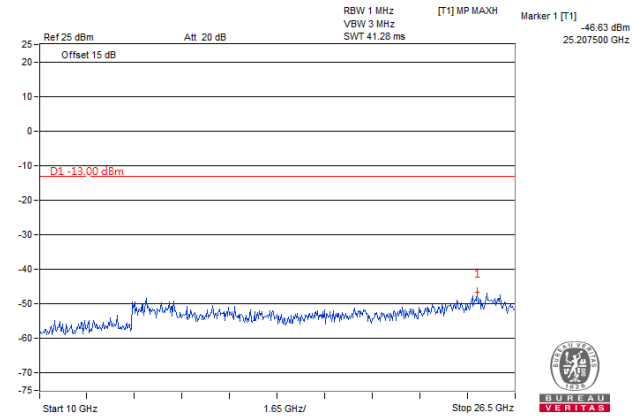
HSUPA	
Channel 4182 (836.4MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~10GHz
	
Frequency Range : 10GHz~26.5GHz	
	

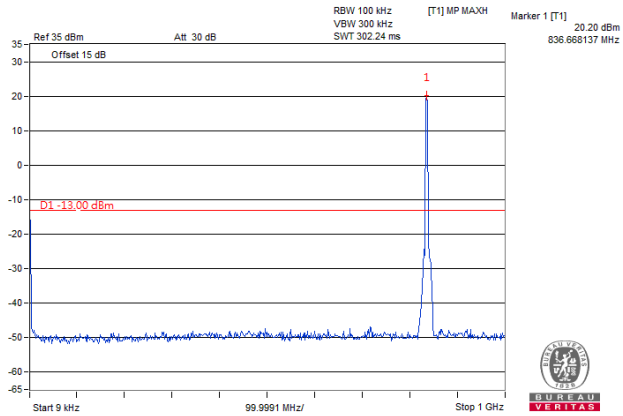
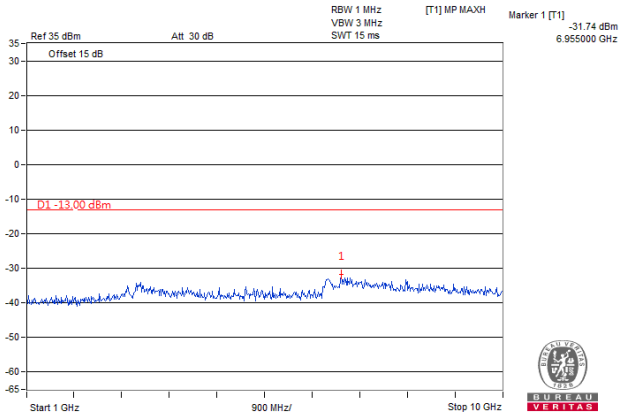
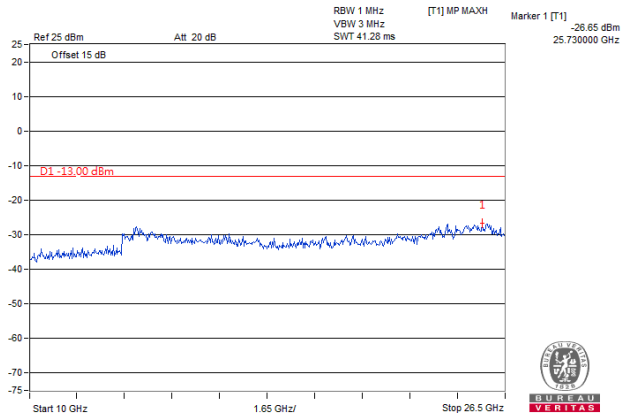
HSUPA	
Channel 4233 (846.6MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~10GHz
	
Frequency Range : 10GHz~26.5GHz	
	

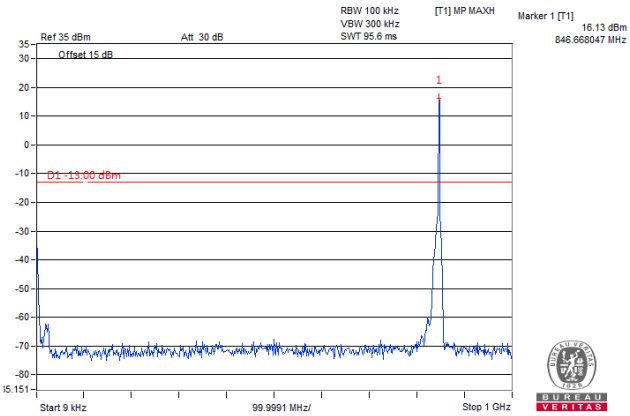
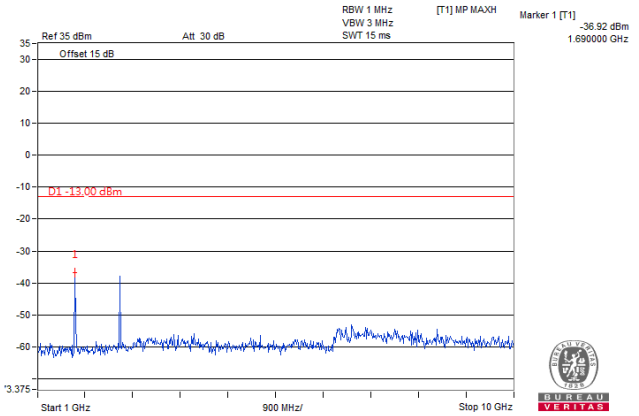
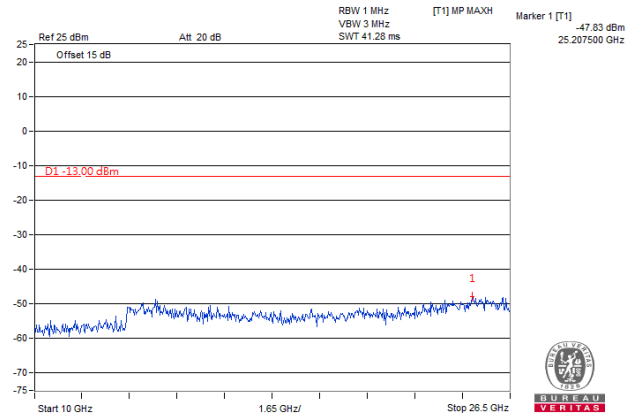
LTE Band 5, Channel Bandwidth 1.4MHz	
Channel 20407 (824.7MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~10GHz
	
Frequency Range : 10GHz~26.5GHz	
	

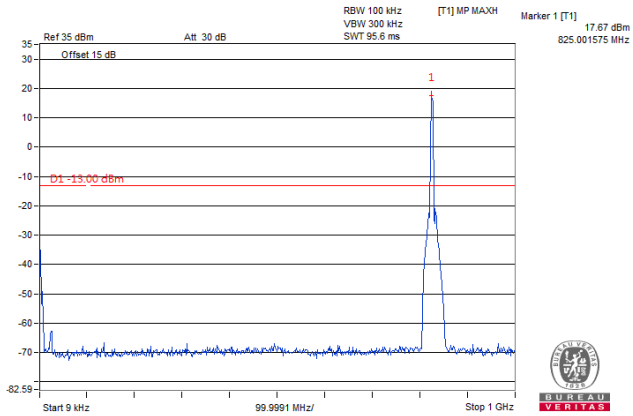
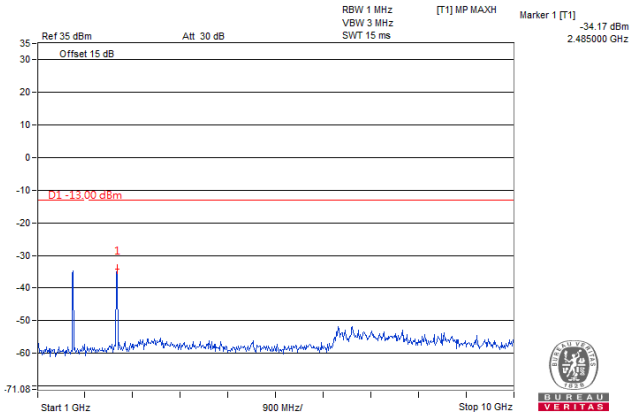
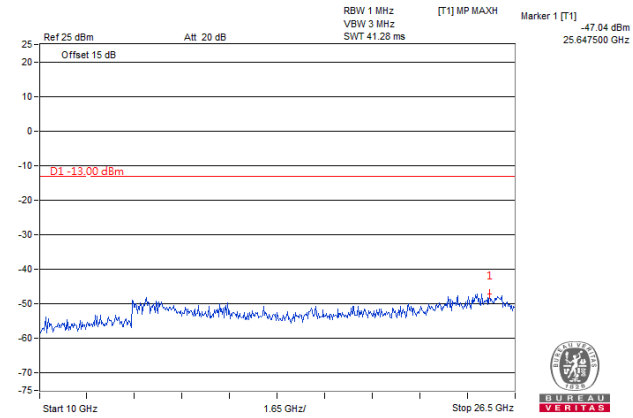
LTE Band 5, Channel Bandwidth 1.4MHz	
Channel 20525 (836.5MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~10GHz
	
Frequency Range : 10GHz~26.5GHz	
	

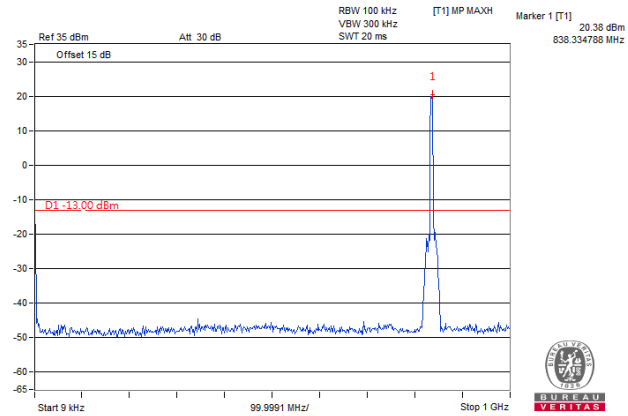
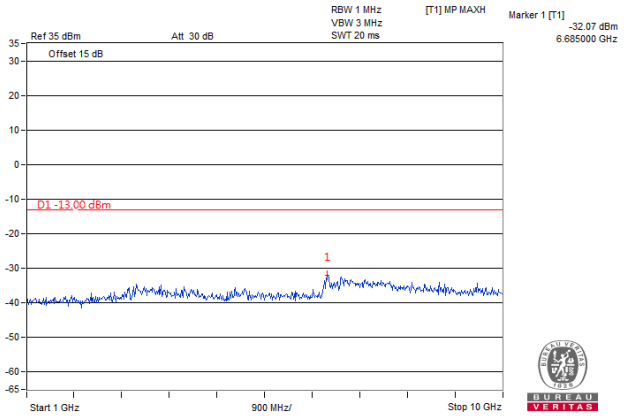
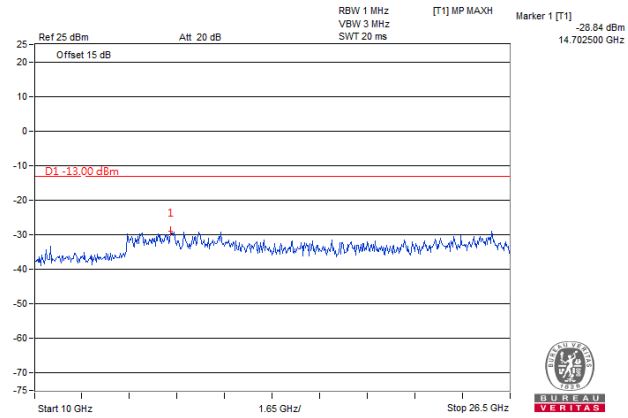
LTE Band 5, Channel Bandwidth 1.4MHz	
Channel 20643 (848.3MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~10GHz
	
Frequency Range : 10GHz~26.5GHz	
	

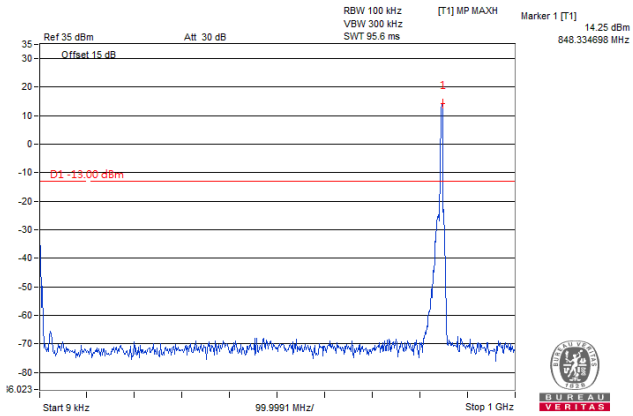
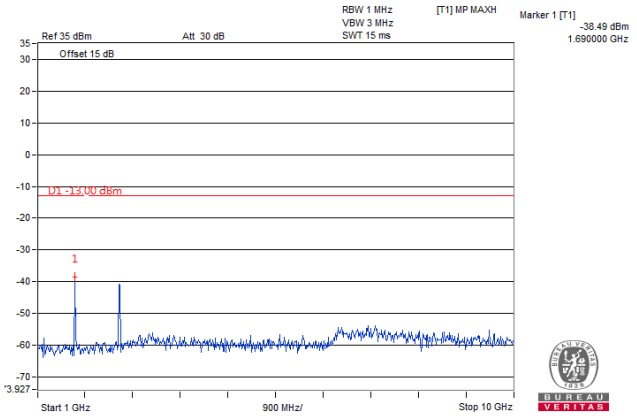
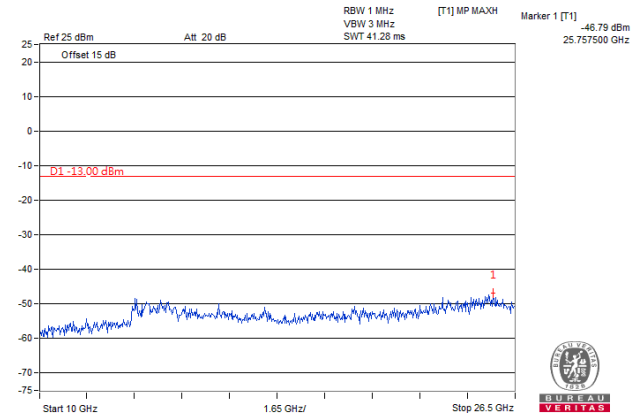
LTE Band 5, Channel Bandwidth 3MHz	
Channel 20415 (825.5MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~10GHz
	
Frequency Range : 10GHz~26.5GHz	
	

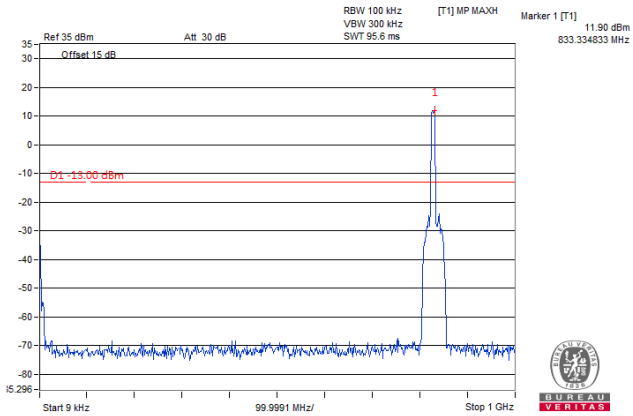
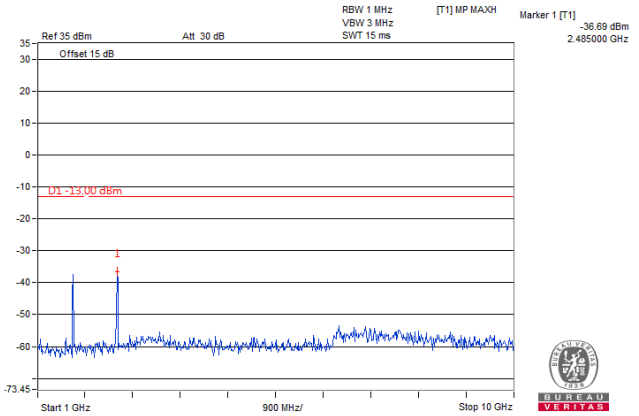
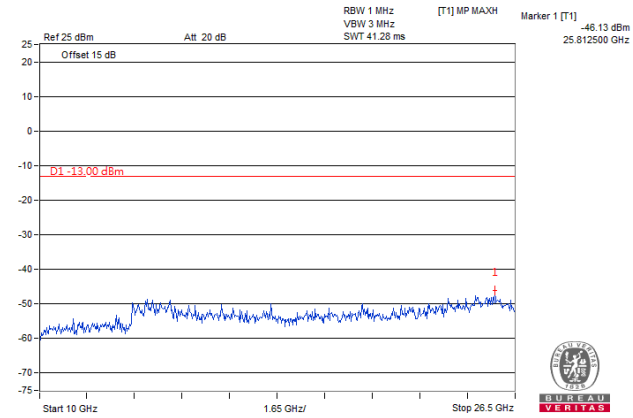
LTE Band 5, Channel Bandwidth 3MHz	
Channel 20525 (836.5MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~10GHz
	
Frequency Range : 10GHz~26.5GHz	
	

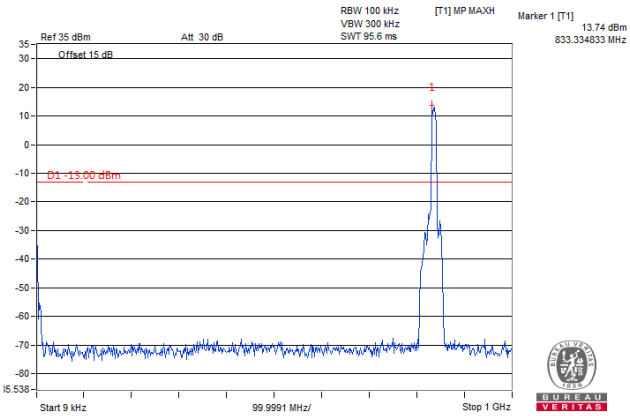
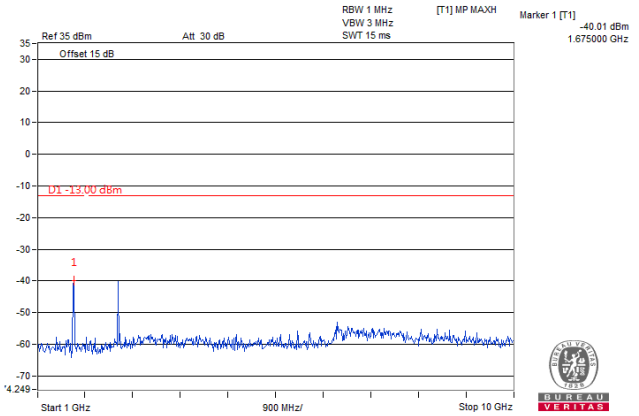
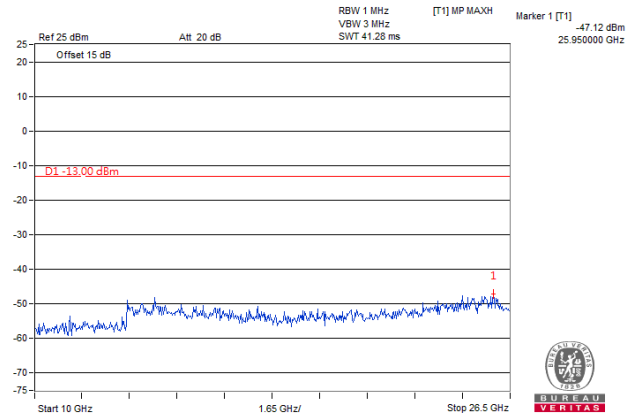
LTE Band 5, Channel Bandwidth 3MHz	
Channel 20635 (847.5MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~10GHz
	
Frequency Range : 10GHz~26.5GHz	
	

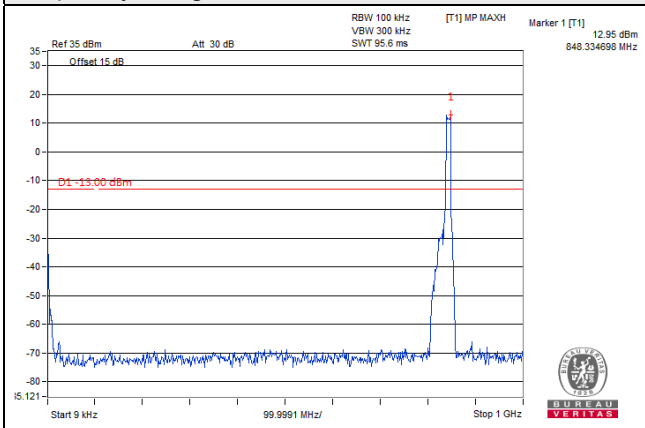
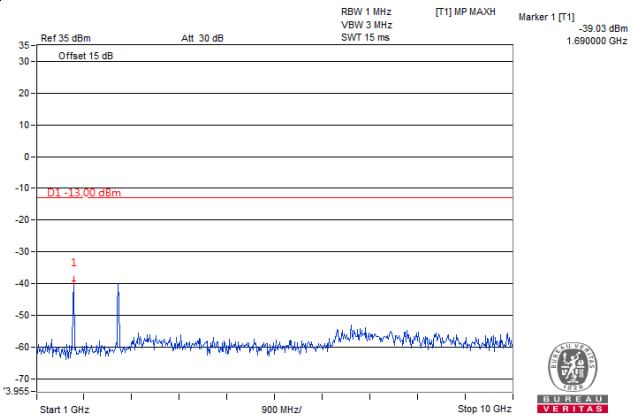
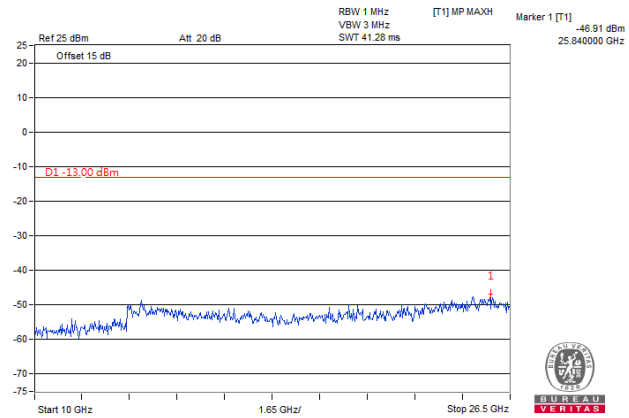
LTE Band 5, Channel Bandwidth 5MHz	
Channel 20425 (826.5MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~10GHz
	
Frequency Range : 10GHz~26.5GHz	
	

LTE Band 5, Channel Bandwidth 5MHz	
Channel 20525 (836.5MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~10GHz
	
Frequency Range : 10GHz~26.5GHz	
	

LTE Band 5, Channel Bandwidth 5MHz	
Channel 20625 (846.5MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~10GHz
	
Frequency Range : 10GHz~26.5GHz	
	

LTE Band 5, Channel Bandwidth 10MHz	
Channel 20450 (829.0MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~10GHz
	
Frequency Range : 10GHz~26.5GHz	
	

LTE Band 5, Channel Bandwidth 10MHz	
Channel 20525 (836.5MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~10GHz
	
Frequency Range : 10GHz~26.5GHz	
	

LTE Band 5, Channel Bandwidth 10MHz	
Channel 20600 (844.0MHz)	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~10GHz
	
Frequency Range : 10GHz~26.5GHz	
	

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. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value” of step a. Record the power level of S.G
c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15dBi.

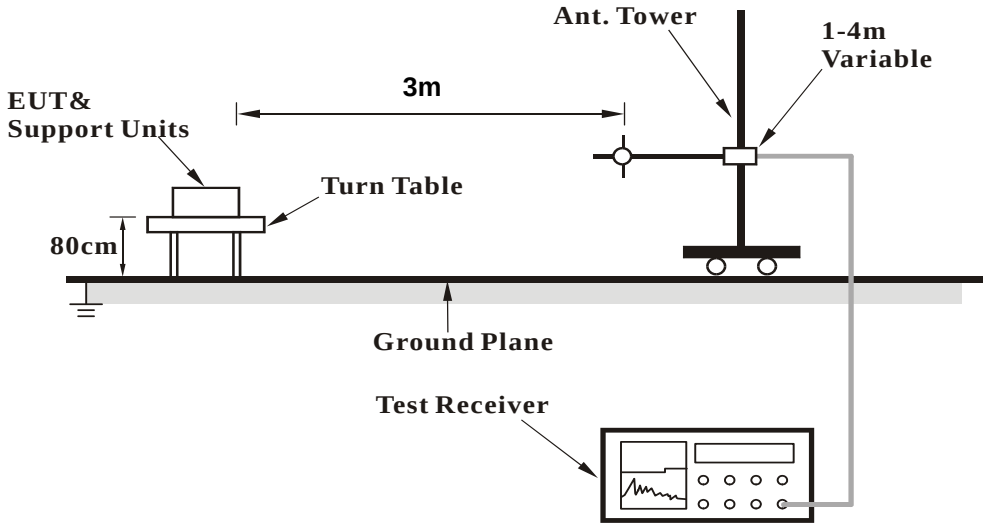
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

4.8.3 Deviation from Test Standard

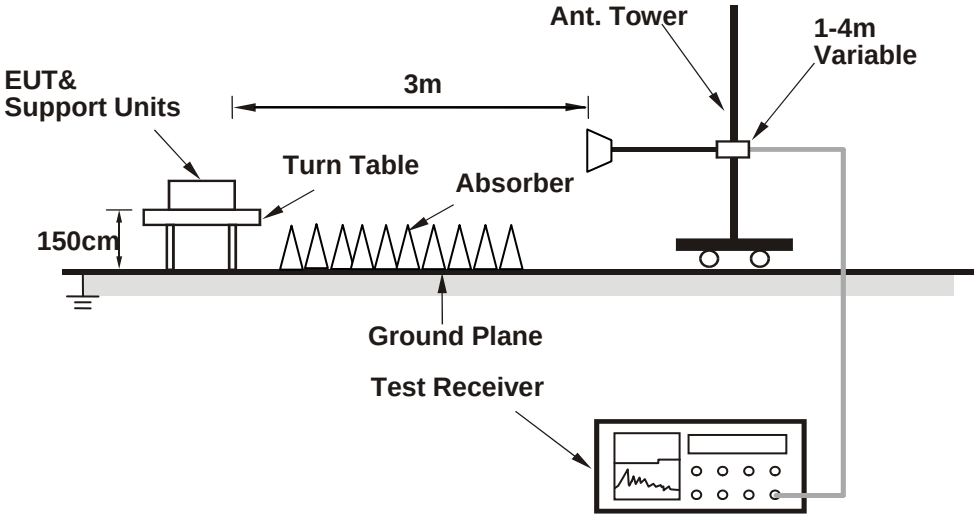
No deviation.

4.8.4 Test Setup

For Radiated Emission below or equal 1GHz



For Radiated Emission above 1GHz

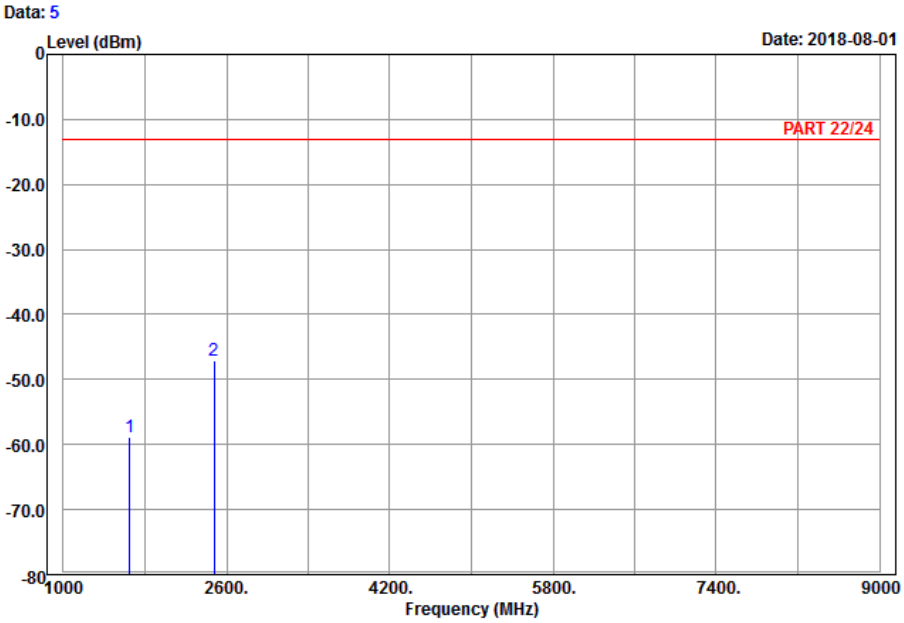


For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.8.5 Test Results

Mode	WCDMA Band 5	Channel	TX channel 4132 (826.4MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

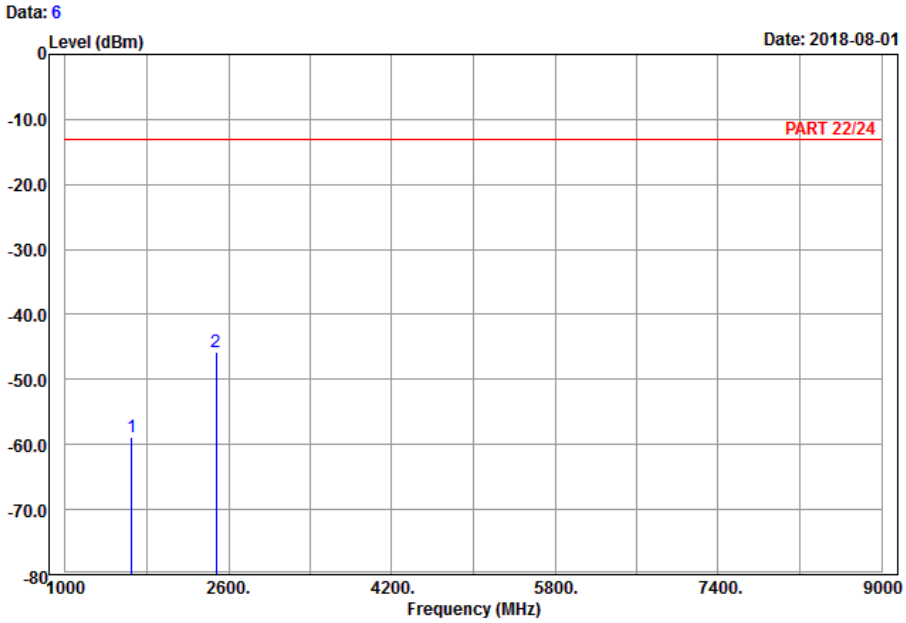



```
Site     : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark   : Band V_Link_CH4132
Tested by: Charles Hsiao
                        Read  Limit   Over
          Freq  Level  Level  Line  Limit Factor Remark
          ------ ------ ------ ------ ------ ------ ------
            MHz    dBm    dBm    dBm     dB     dB

  1     1652.80 -58.77 -66.50 -13.00 -45.77   7.73 Peak
  2 pp  2479.20 -47.00 -58.03 -13.00 -34.00  11.03 Peak
```

Mode	WCDMA Band 5	Channel	TX channel 4132 (826.4MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

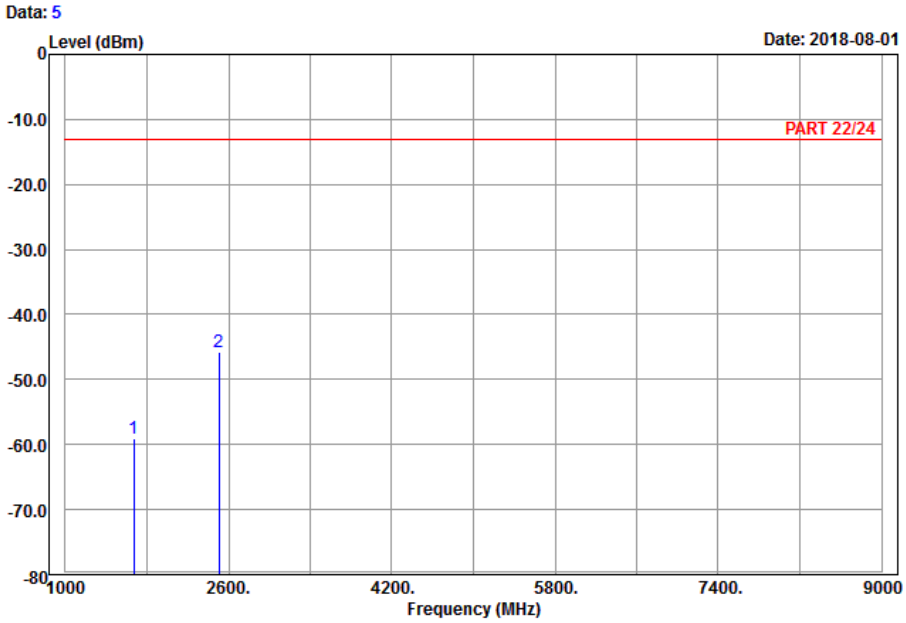


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : Band V_Link_CH4132
Tested by: Charles Hsiao

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1652.80	-58.84	-66.57	-13.00	-45.84	7.73	Peak
2 pp	2479.20	-45.79	-56.82	-13.00	-32.79	11.03	Peak

Mode	WCDMA Band 5	Channel	TX channel 4182 (836.4MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

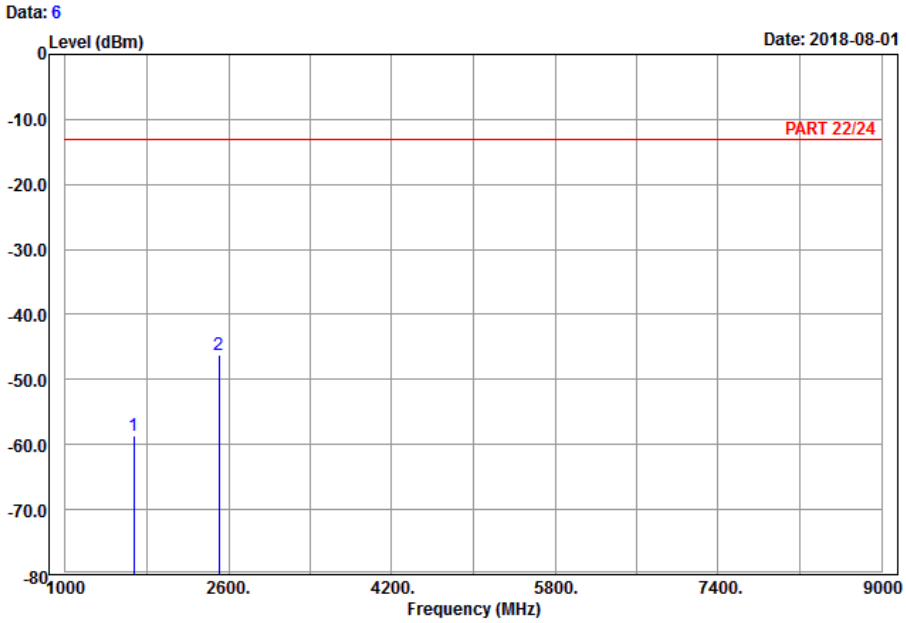


Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : Band V_Link_CH4182
Tested by: Charles Hsiao

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1672.80	-58.99	-66.90	-13.00	-45.99	7.91	Peak
2 pp	2509.20	-45.71	-56.99	-13.00	-32.71	11.28	Peak

Mode	WCDMA Band 5	Channel	TX channel 4182 (836.4MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

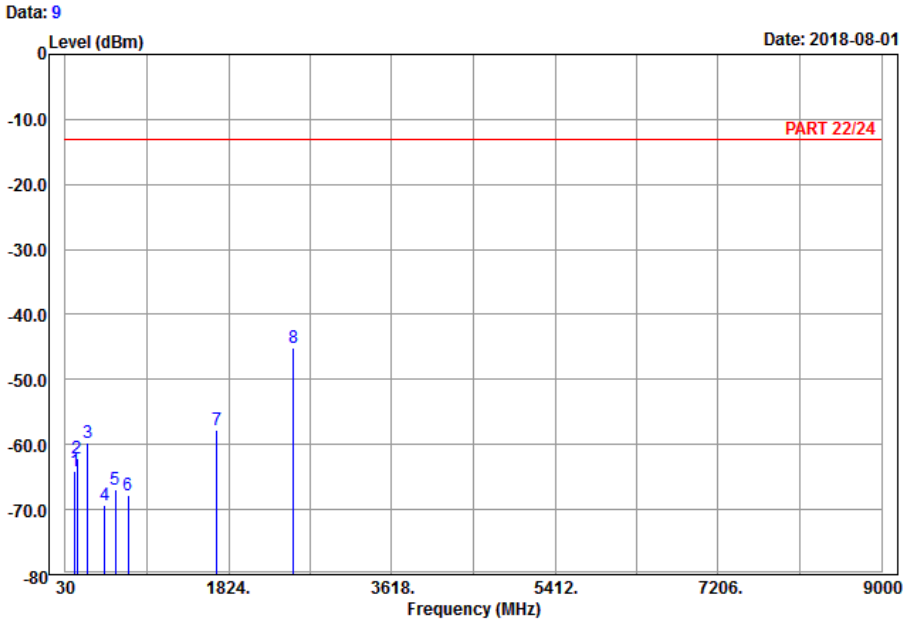


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : Band V_Link_CH4182
Tested by: Charles Hsiao

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1672.80	-58.59	-66.50	-13.00	-45.59	7.91	Peak
2 pp	2509.20	-46.29	-57.57	-13.00	-33.29	11.28	Peak

Mode	WCDMA Band 5	Channel	TX channel 4233 (846.6MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

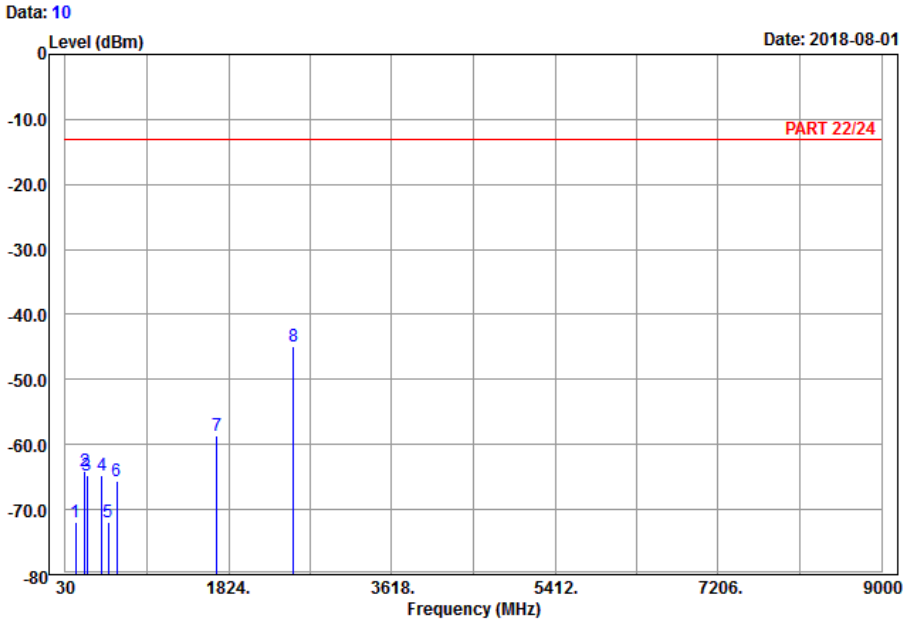


Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : Band V_Link_CH4233
Tested by: Charles Hsiao

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	137.19	-64.13	-56.45	-13.00	-51.13	-7.68	Peak
2	161.49	-62.04	-54.57	-13.00	-49.04	-7.47	Peak
3	276.24	-59.63	-53.88	-13.00	-46.63	-5.75	Peak
4	461.70	-69.40	-65.22	-13.00	-56.40	-4.18	Peak
5	582.10	-66.84	-66.50	-13.00	-53.84	-0.34	Peak
6	723.50	-67.77	-66.95	-13.00	-54.77	-0.82	Peak
7	1693.20	-57.67	-65.81	-13.00	-44.67	8.14	Peak
8 pp	2539.80	-45.03	-56.50	-13.00	-32.03	11.47	Peak

Mode	WCDMA Band 5	Channel	TX channel 4233 (846.6MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

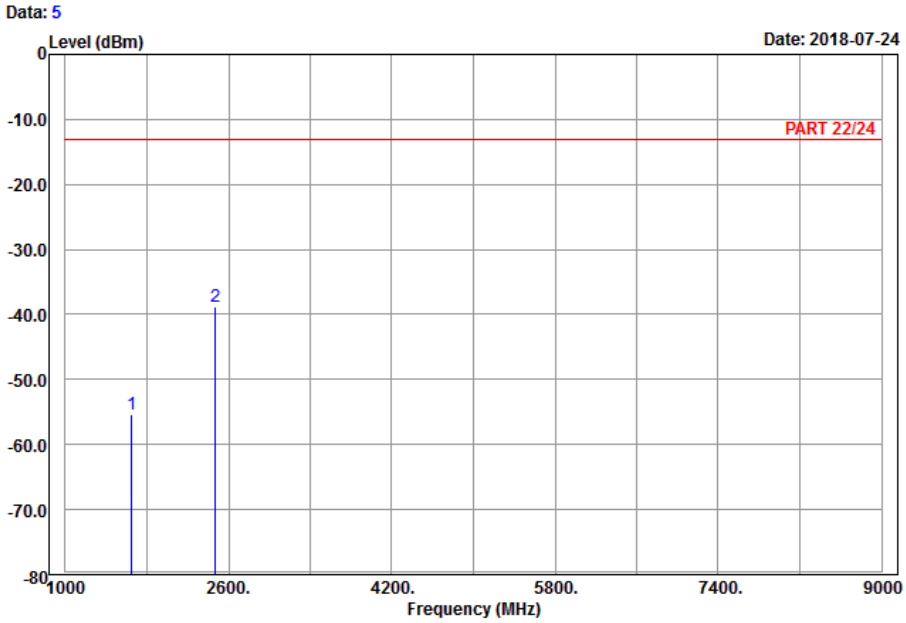


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : Band V_Link_CH4233
Tested by: Charles Hsiao

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	145.56	-71.91	-64.08	-13.00	-58.91	-7.83	Peak
2	247.08	-64.18	-58.63	-13.00	-51.18	-5.55	Peak
3	269.22	-64.67	-58.99	-13.00	-51.67	-5.68	Peak
4	433.00	-64.82	-61.36	-13.00	-51.82	-3.46	Peak
5	500.20	-72.01	-66.73	-13.00	-59.01	-5.28	Peak
6	598.90	-65.67	-66.02	-13.00	-52.67	0.35	Peak
7	1693.20	-58.67	-66.81	-13.00	-45.67	8.14	Peak
8 pp	2539.80	-44.84	-56.31	-13.00	-31.84	11.47	Peak

Mode	LTE Band 5 Channel Bandwidth: 1.4MHz	Channel	TX channel 20407 (824.7MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

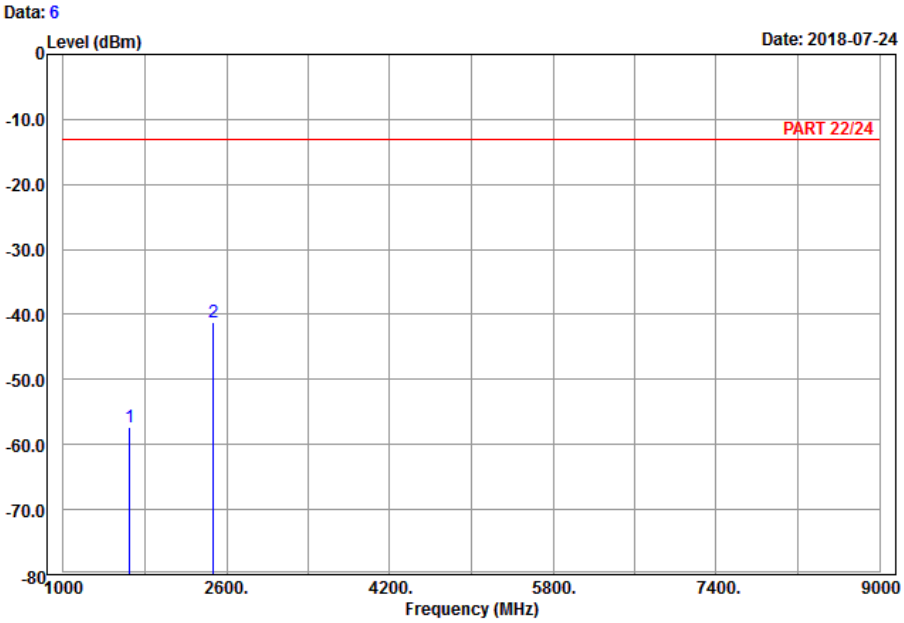


Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_CH20407
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1649.40	-55.27	-63.00	-13.00	-42.27	7.73	Peak
2 pp	2474.10	-38.89	-49.92	-13.00	-25.89	11.03	Peak

Mode	LTE Band 5 Channel Bandwidth: 1.4MHz	Channel	TX channel 20407 (824.7MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

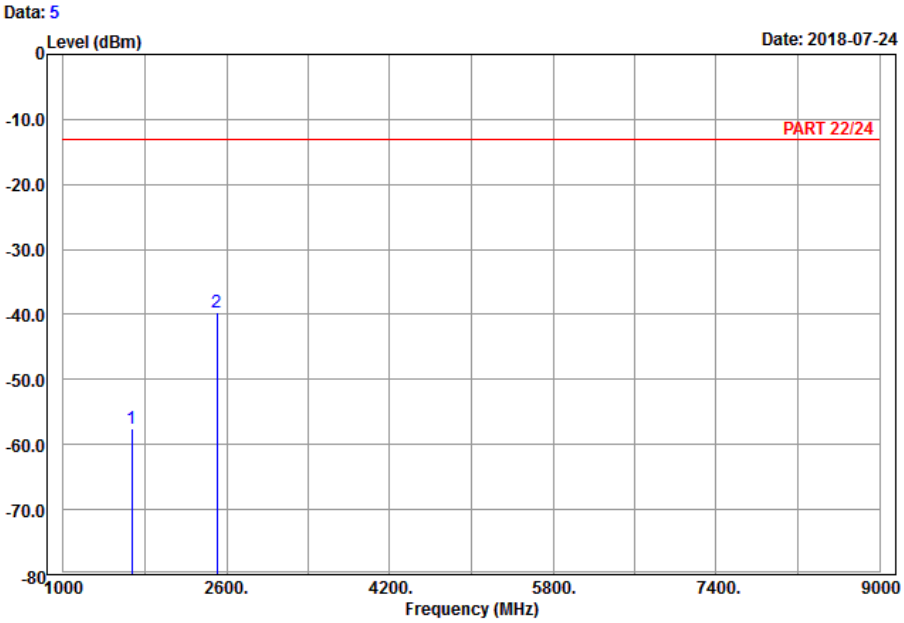


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 5_Link_CH20407
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1649.40	-57.33	-65.06	-13.00	-44.33	7.73	Peak
2 pp	2474.10	-41.09	-52.12	-13.00	-28.09	11.03	Peak

Mode	LTE Band 5 Channel Bandwidth: 1.4MHz	Channel	TX channel 20525 (836.5MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

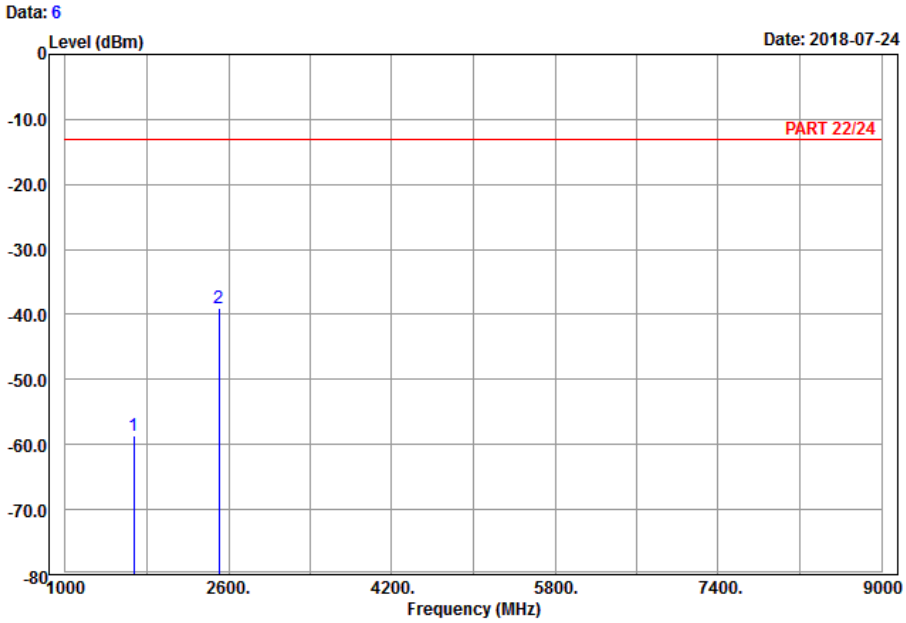


Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_CH20525
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1673.00	-57.47	-65.38	-13.00	-44.47	7.91	Peak
2 pp	2509.50	-39.67	-50.95	-13.00	-26.67	11.28	Peak

Mode	LTE Band 5 Channel Bandwidth: 1.4MHz	Channel	TX channel 20525 (836.5MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

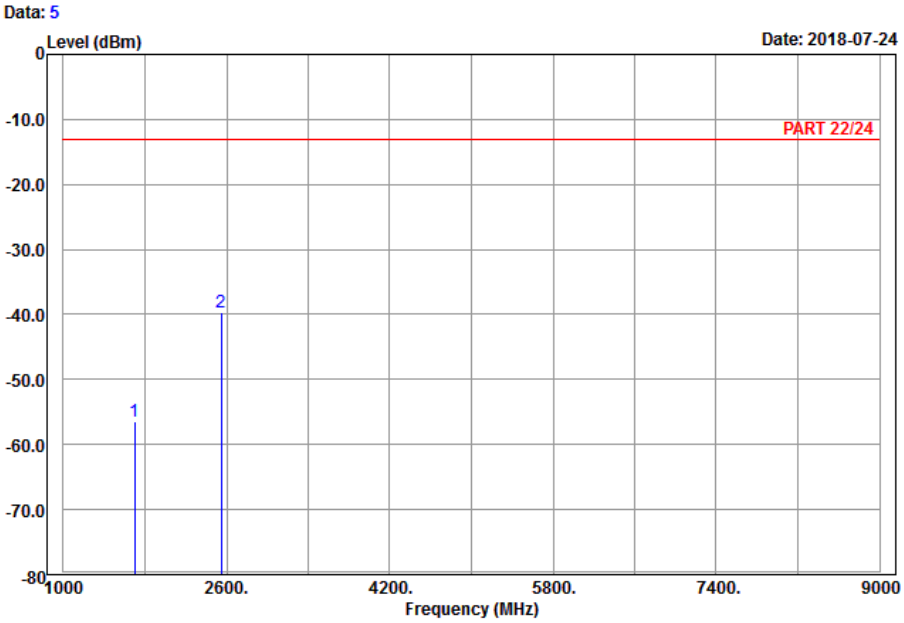


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 5_Link_CH20525
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1673.00	-58.71	-66.62	-13.00	-45.71	7.91	Peak
2 pp	2509.50	-38.97	-50.25	-13.00	-25.97	11.28	Peak

Mode	LTE Band 5 Channel Bandwidth: 1.4MHz	Channel	TX channel 20643 (848.3MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

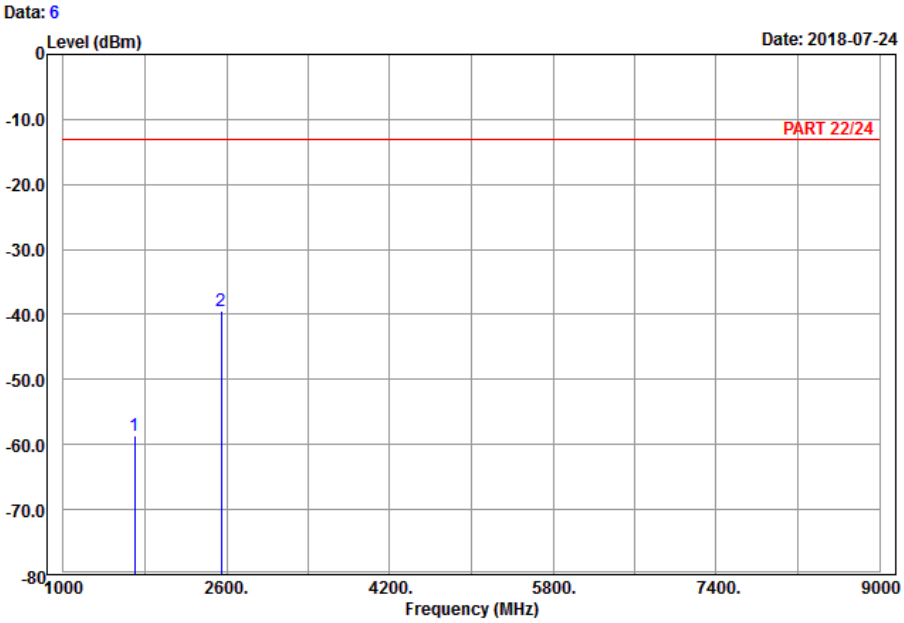


Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_CH20643
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1696.60	-56.47	-64.61	-13.00	-43.47	8.14	Peak
2 pp	2544.90	-39.57	-51.04	-13.00	-26.57	11.47	Peak

Mode	LTE Band 5 Channel Bandwidth: 1.4MHz	Channel	TX channel 20643 (848.3MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

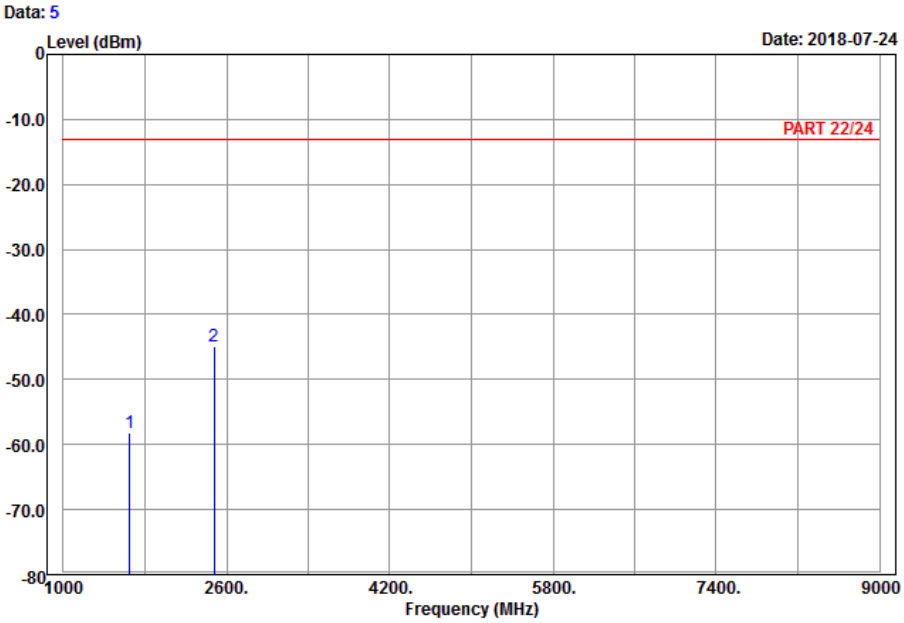


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 5_Link_CH20643
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1696.60	-58.58	-66.72	-13.00	-45.58	8.14	Peak
2 pp	2544.90	-39.49	-50.96	-13.00	-26.49	11.47	Peak

Mode	LTE Band 5 Channel Bandwidth: 5MHz	Channel	TX channel 20425 (826.5MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

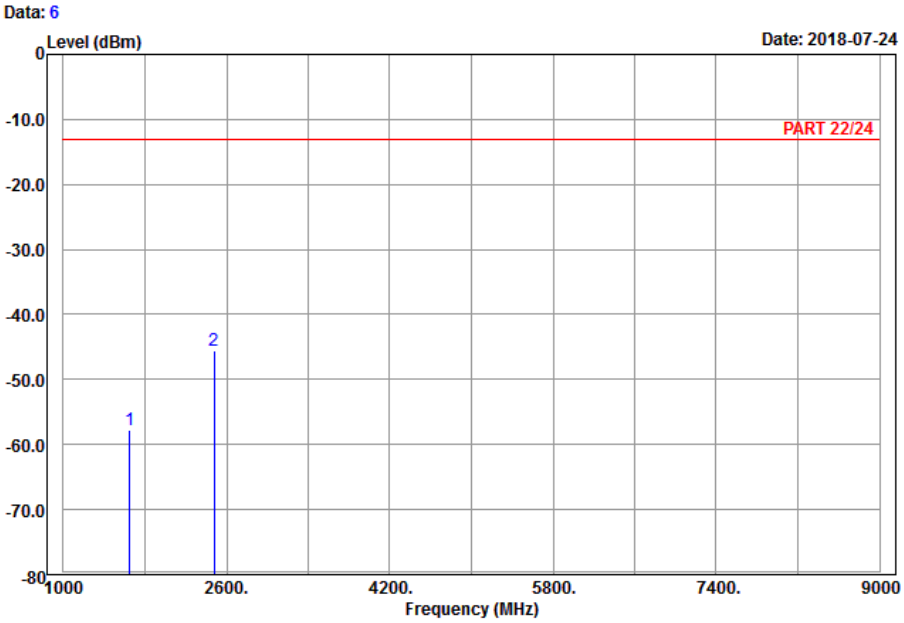


Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_CH20425
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1653.00	-58.24	-65.97	-13.00	-45.24	7.73	Peak
2 pp	2479.50	-44.89	-55.92	-13.00	-31.89	11.03	Peak

Mode	LTE Band 5 Channel Bandwidth: 5MHz	Channel	TX channel 20425 (826.5MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

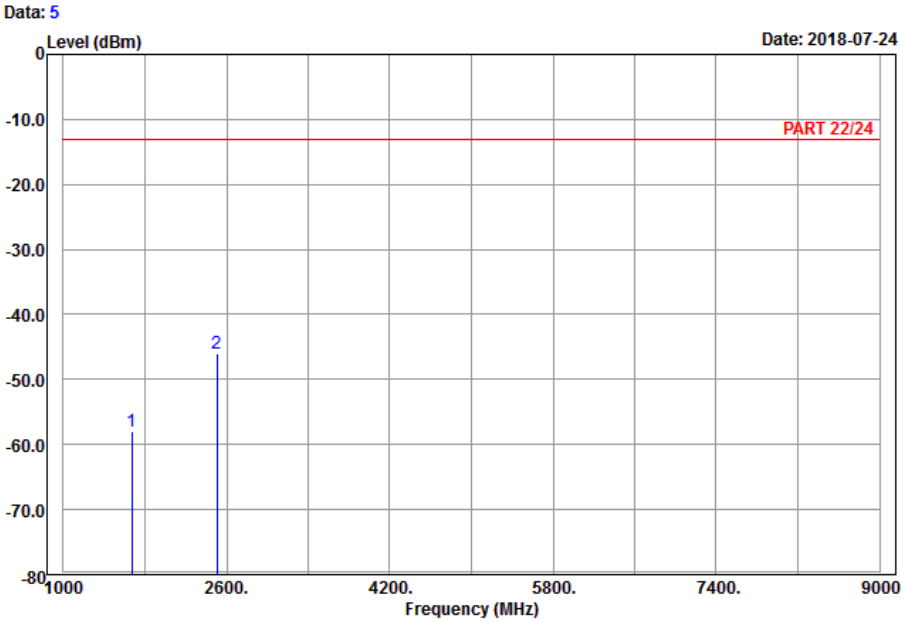


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 5_Link_CH20425
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1653.00	-57.84	-65.57	-13.00	-44.84	7.73	Peak
2 pp	2479.50	-45.57	-56.60	-13.00	-32.57	11.03	Peak

Mode	LTE Band 5 Channel Bandwidth: 5MHz	Channel	TX channel 20525 (836.5MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

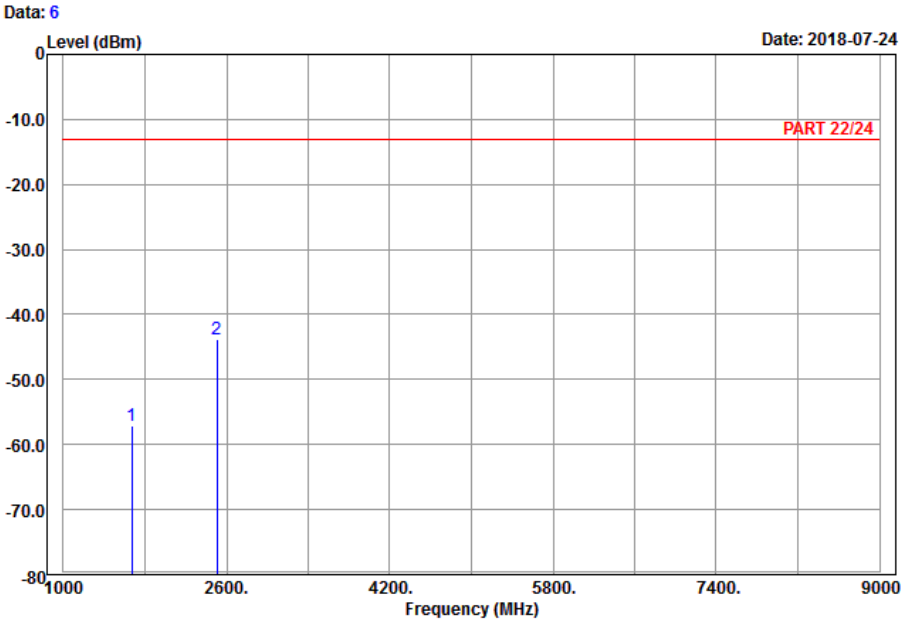


Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_CH20525
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1673.00	-57.88	-65.79	-13.00	-44.88	7.91	Peak
2 pp	2509.50	-46.05	-57.33	-13.00	-33.05	11.28	Peak

Mode	LTE Band 5 Channel Bandwidth: 5MHz	Channel	TX channel 20525 (836.5MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

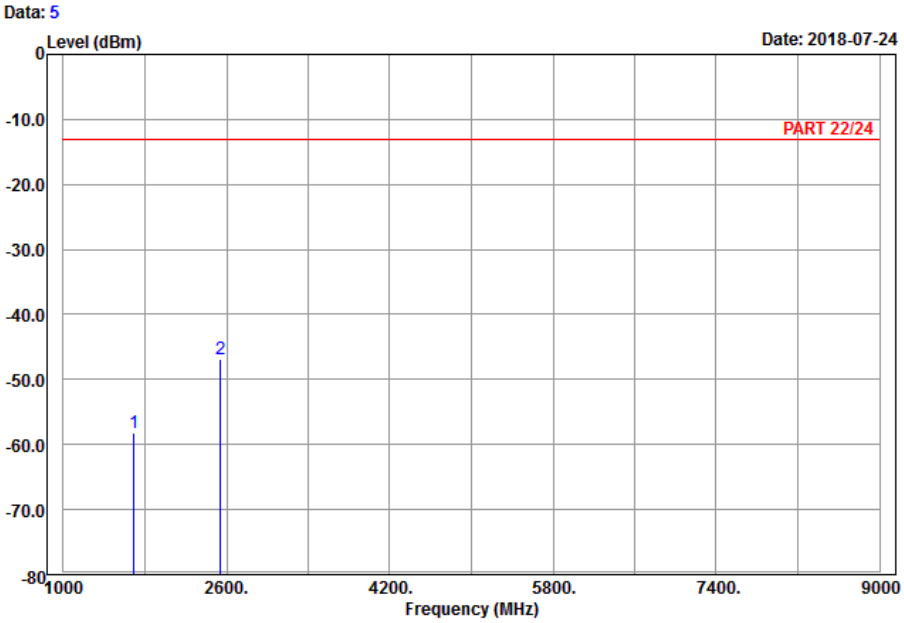


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 5_Link_CH20525
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1673.00	-57.04	-64.95	-13.00	-44.04	7.91	Peak
2 pp	2509.50	-43.91	-55.19	-13.00	-30.91	11.28	Peak

Mode	LTE Band 5 Channel Bandwidth: 5MHz	Channel	TX channel 20625 (846.5MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

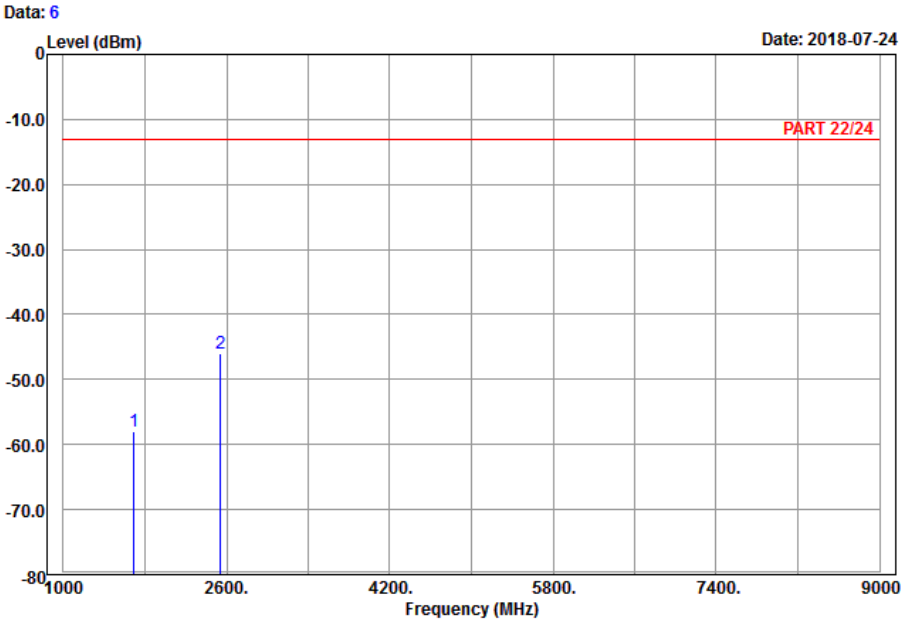


Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_CH20625
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1693.00	-58.11	-66.13	-13.00	-45.11	8.02	Peak
2 pp	2539.50	-46.77	-58.24	-13.00	-33.77	11.47	Peak

Mode	LTE Band 5 Channel Bandwidth: 5MHz	Channel	TX channel 20625 (846.5MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

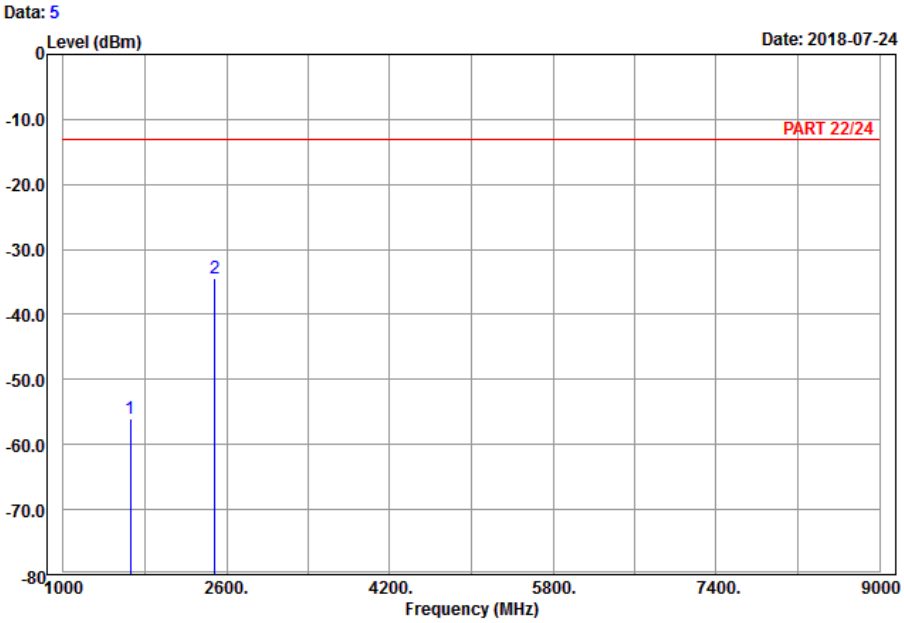


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 5_Link_CH20625
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1693.00	-58.04	-66.06	-13.00	-45.04	8.02	Peak
2 pp	2539.50	-46.03	-57.50	-13.00	-33.03	11.47	Peak

Mode	LTE Band 5 Channel Bandwidth: 10MHz	Channel	TX channel 20450 (829.0MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

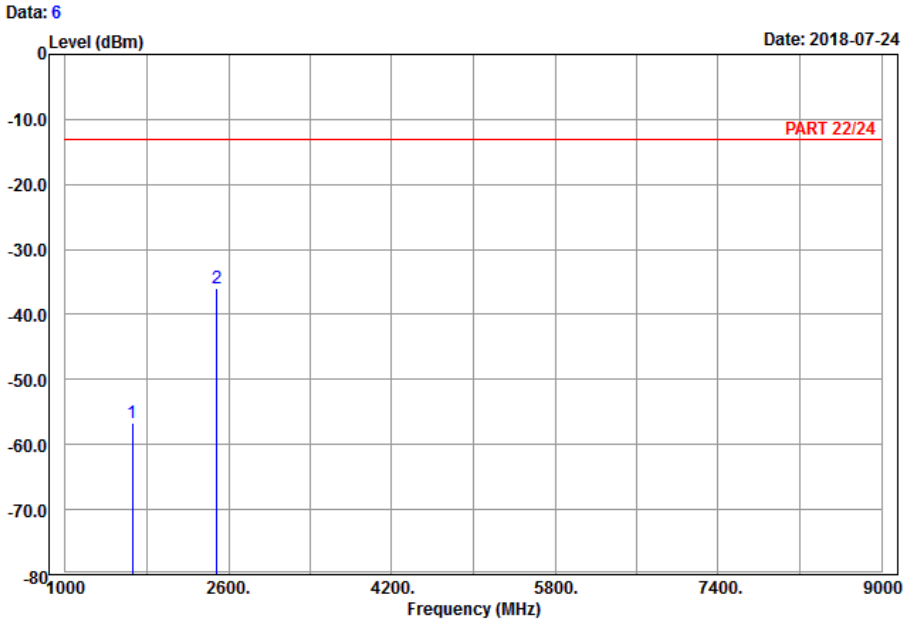


Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_CH20450
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1658.00	-55.97	-63.88	-13.00	-42.97	7.91	Peak
2 pp	2487.00	-34.47	-45.51	-13.00	-21.47	11.04	Peak

Mode	LTE Band 5 Channel Bandwidth: 10MHz	Channel	TX channel 20450 (829.0MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

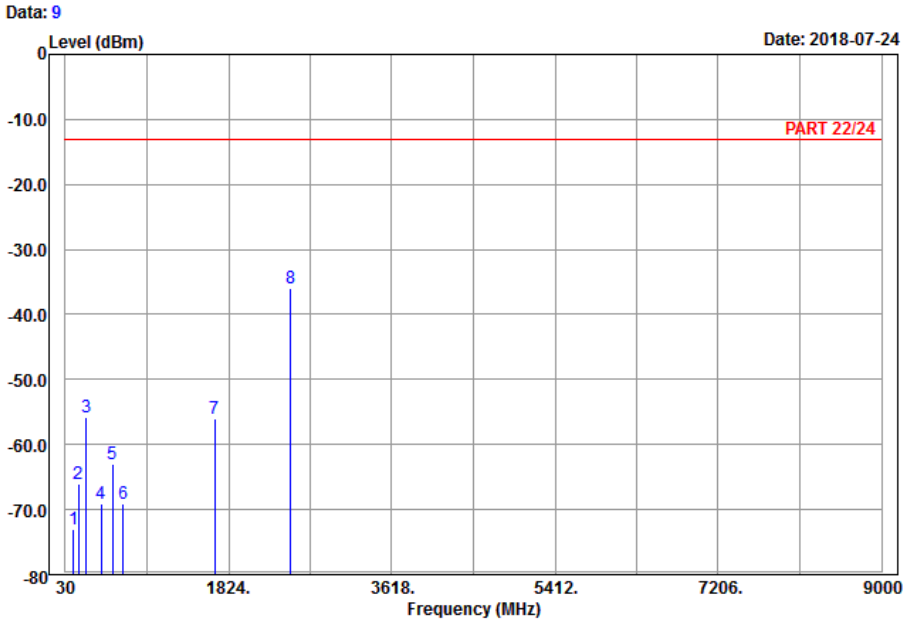


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 5_Link_CH20450
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1658.00	-56.57	-64.48	-13.00	-43.57	7.91	Peak
2 pp	2487.00	-35.97	-47.01	-13.00	-22.97	11.04	Peak

Mode	LTE Band 5 Channel Bandwidth: 10MHz	Channel	TX channel 20525 (836.5MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

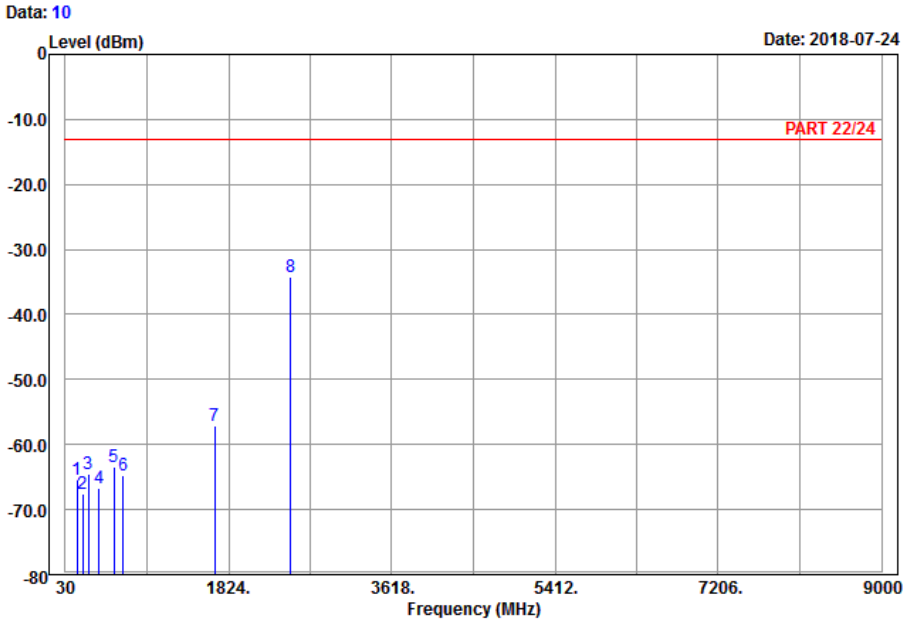


Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_CH20525
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	120.99	-72.94	-64.75	-13.00	-59.94	-8.19	Peak
2	174.72	-66.15	-59.96	-13.00	-53.15	-6.19	Peak
3	263.01	-55.88	-50.26	-13.00	-42.88	-5.62	Peak
4	426.00	-68.99	-65.68	-13.00	-55.99	-3.31	Peak
5	547.80	-63.09	-61.29	-13.00	-50.09	-1.80	Peak
6	668.20	-69.11	-68.89	-13.00	-56.11	-0.22	Peak
7	1673.00	-56.00	-63.91	-13.00	-43.00	7.91	Peak
8 pp	2509.50	-35.89	-47.17	-13.00	-22.89	11.28	Peak

Mode	LTE Band 5 Channel Bandwidth: 10MHz	Channel	TX channel 20525 (836.5MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

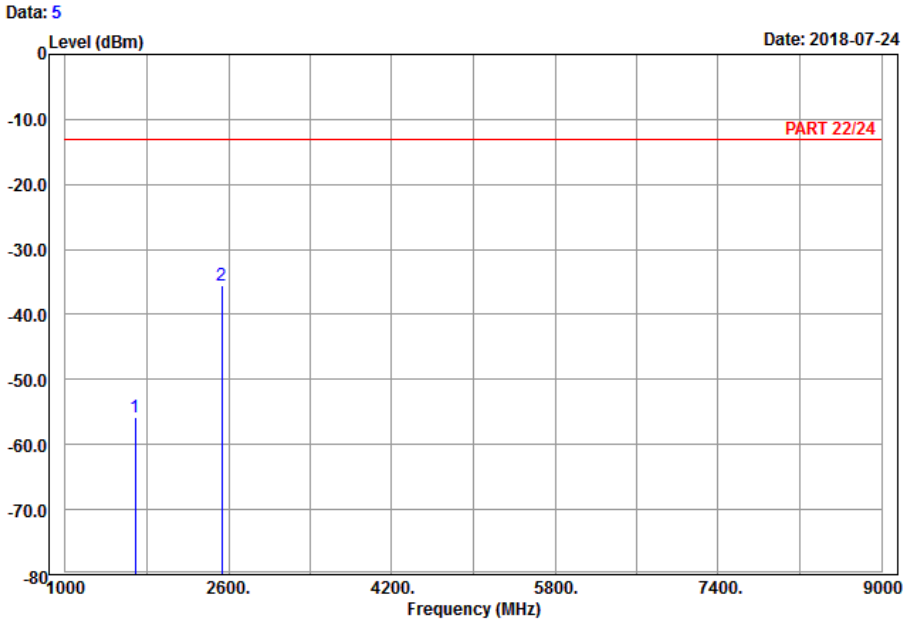


Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 5_Link_CH20525
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	159.06	-65.44	-57.74	-13.00	-52.44	-7.70	Peak
2	218.73	-67.65	-61.73	-13.00	-54.65	-5.92	Peak
3	281.37	-64.53	-58.74	-13.00	-51.53	-5.79	Peak
4	400.80	-66.65	-63.89	-13.00	-53.65	-2.76	Peak
5	564.60	-63.50	-62.44	-13.00	-50.50	-1.06	Peak
6	668.90	-64.79	-64.56	-13.00	-51.79	-0.23	Peak
7	1673.00	-57.22	-65.13	-13.00	-44.22	7.91	Peak
8 pp	2509.50	-34.26	-45.54	-13.00	-21.26	11.28	Peak

Mode	LTE Band 5 Channel Bandwidth: 10MHz	Channel	TX channel 20600 (844.0MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch

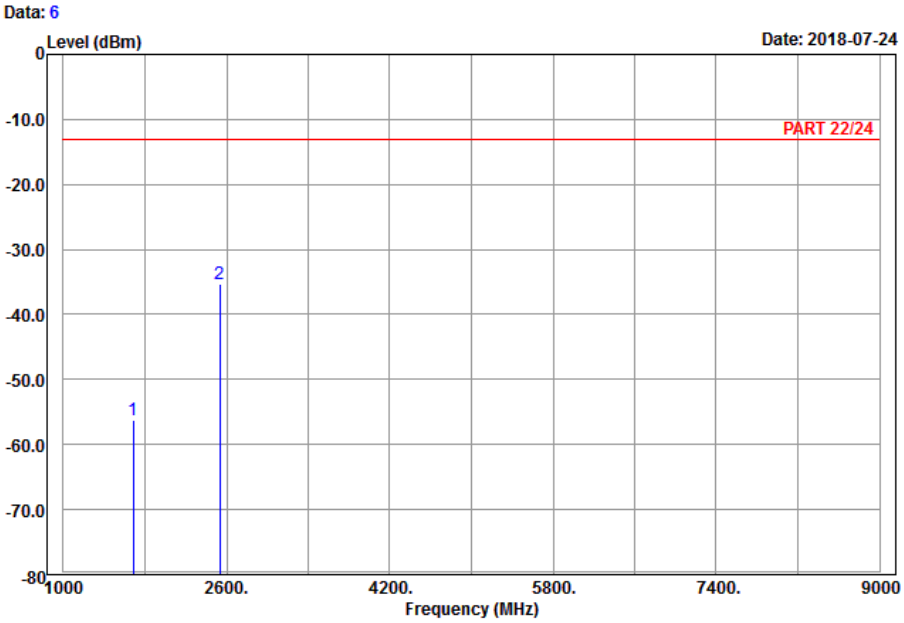


Site : 966 chamber 1
Condition: PART 22/24 Horizontal
Remark : LTE_Band 5_Link_CH20600
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1688.00	-55.78	-63.80	-13.00	-42.78	8.02	Peak
2 pp	2532.00	-35.62	-47.00	-13.00	-22.62	11.38	Peak

Mode	LTE Band 5 Channel Bandwidth: 10MHz	Channel	TX channel 20600 (844.0MHz)

Bureau Veritas Consumer Products Services Ltd.,Taoyuan Branch



Site : 966 chamber 1
Condition: PART 22/24 Vertical
Remark : LTE_Band 5_Link_CH20600
Tested by: Karl Lee

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark
	MHz	dBm	dBm	dBm	dB	dB	
1	1688.00	-56.25	-64.27	-13.00	-43.25	8.02	Peak
2 pp	2532.00	-35.39	-46.77	-13.00	-22.39	11.38	Peak

5 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

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

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

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Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

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

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