

FCC Test Report (Part 22)

Report No.: RF170412C17-6

FCC ID: Q3N-RS50

Test Model: RS50

Received Date: Apr. 12, 2017

Test Date: Apr. 15 ~ May 24, 2017

Issued Date: May 31, 2017

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Release Control Record

Issue No.	Description	Date Issued
RF170412C17-6	Original release	May 31, 2017

1 Certificate of Conformity

Product: Mobile Computer

Brand: CIPHERLAB

Test Model: RS50


Sample Status: Engineering sample

Applicant: CIPHERLAB CO., LTD

Test Date: Apr. 15 ~ May 24, 2017

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 EMC characteristics under the conditions specified in this report.

Prepared by : , **Date:** May 31, 2017
Pettie Chen / Senior Specialist

Approved by : , **Date:** May 31, 2017
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 -19.3dB at 1648.40MHz.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (\pm)
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	3.86 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	ESIB7	100187	May 02, 2017	May 01, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Nov. 16, 2016	Nov. 15, 2017
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Dec. 28, 2016	Dec. 27, 2017
HORN Antenna SCHWARZBECK	9120D	209	Dec. 27, 2016	Dec. 26, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Dec. 14, 2016	Dec. 13, 2017
Loop Antenna	EM-6879	269	Aug. 11, 2016	Aug. 10, 2017
Preamplifier Agilent	8447D	2944A10738	Aug. 22, 2016	Aug. 21, 2017
Preamplifier Agilent	8449B	3008A01922	Sep. 18, 2016	Sep. 17, 2017
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (214378)	Aug. 22, 2016	Aug. 21, 2017
RF signal cable HUBER+SUHNER	SUCOFLEX 106	Cable-CH3-03 (309224+12738)	Aug. 22, 2016	Aug. 21, 2017
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	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
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA

- Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 3.
3. The horn antenna and preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 988962.
5. The IC Site Registration No. is IC 7450F-3.

3 General Information

3.1 General Description of EUT

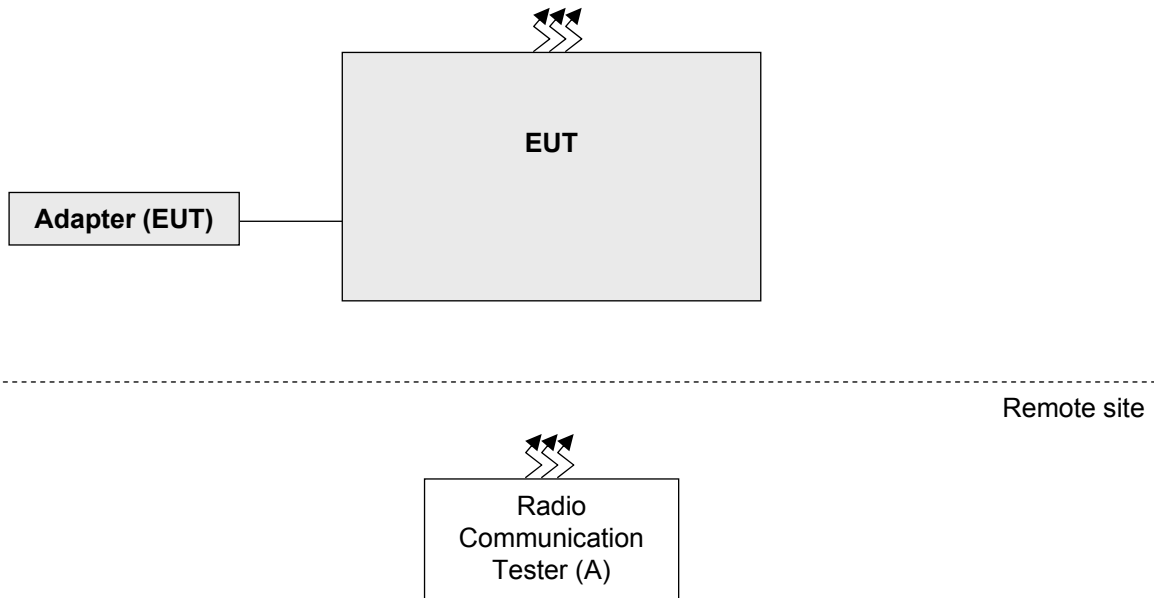
Product	Mobile Computer	
Brand	CIPHERLAB	
Test Model	RS50	
Sample Status	Engineering sample	
Power Supply Rating	5Vdc (adapter) 3.8Vdc (battery)	
Modulation Type	GSM, GPRS: GMSK EDGE: 8PSK WCDMA: BPSK, QPSK HSDPA: BPSK HSUPA: QPSK LTE: QPSK, 16QAM	
Operating Frequency	GSM	824.2MHz ~ 848.8MHz
	WCDMA Band 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
Max. ERP Power	GSM	1698.244mW (32.3dBm)
	WCDMA Band 5	102.329mW (20.1dBm)
	LTE Band 5 (Channel Bandwidth 1.4MHz)	478.630mW (26.8dBm)
	LTE Band 5 (Channel Bandwidth 3MHz)	446.684mW (26.5dBm)
	LTE Band 5 (Channel Bandwidth 5MHz)	467.735mW (26.7dBm)
	LTE Band 5 (Channel Bandwidth 10MHz)	501.187mW (27.0dBm)
Antenna Type	GSM: PIFA antenna with 0.79dBi gain WCDMA Band 5: PIFA antenna with 0.79dBi gain LTE Band 5: Main Ant.: PIFA antenna with 0.79dBi gain Aux. Ant.: PIFA antenna with -5.68dBi gain	
Antenna Connector	spring	
Accessory Device	Adapter, Battery	
Data Cable Supplied	1.5m shielded USB cable with 1 core	

Note:

1. The EUT uses following accessory devices.

Component	Vendor	Model	Specification
Adapter	Sunny COMPUTER TECHNOLOGY CO.,LTD.	SYS1561-1005	I/P: 100-240Vac, 1.0A MAX, 50-60Hz O/P: +5Vdc, 2A, 10W MAX.
Battery	CIPHERLAB	BA-0115A3	3.8Vdc

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	R&S	CMU200	123112	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 on Y-plane. Following channel(s) was (were) selected for the final test as listed below:

GSM Mode

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	ERP	128 to 251	128(824.2MHz), 189(836.4MHz), 251(848.8MHz)	GSM
-	Modulation Characteristics	128 to 251	189(836.4MHz)	GSM, GPRS, EDGE
-	Frequency Stability	128 to 251	189(836.4MHz)	GSM
-	Occupied Bandwidth	128 to 251	128(824.2MHz), 189(836.4MHz), 251(848.8MHz)	GSM, GPRS, EDGE
-	Band Edge	128 to 251	128(824.2MHz), 251(848.8MHz)	GSM, GPRS, EDGE
-	Peak To Average Ratio	128 to 251	128(824.2MHz), 189(836.4MHz), 251(848.8MHz)	GSM, GPRS, EDGE
-	Conducted Emission	128 to 251	128(824.2MHz), 189(836.4MHz), 251(848.8MHz)	GSM, GPRS, EDGE
-	Radiated Emission Below 1GHz	128 to 251	128(824.2MHz)	GSM
-	Radiated Emission Above 1GHz	128 to 251	128(824.2MHz), 189(836.4MHz), 251(848.8MHz)	GSM

WCDMA Mode

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

LTE Band 5

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	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
Modulation characteristics	20407 to 20643	20525(836.5MHz),	1.4MHz	QPSK / 16QAM	1 RB / 5 RB Offset
	20450 to 20600	20525(836.5MHz),	10MHz	QPSK / 16QAM	1 RB / 49 RB Offset
Frequency Stability	20407 to 20643	20525(836.5MHz)	1.4MHz	QPSK	1 RB / 5 RB Offset
Occupied Bandwidth	20407 to 20643	20407(824.7MHz), 20525(836.5MHz), 20643(848.3MHz)	1.4MHz	QPSK / 16QAM	5 RB / 0RB Offset
	20415 to 20635	20415(825.5MHz), 20525(836.5MHz), 20635(847.5MHz)	3MHz	QPSK / 16QAM	14 RB / 0RB Offset
	20425 to 20625	20425(826.5MHz), 20525(836.5MHz), 20625(846.5MHz)	5MHz	QPSK / 16QAM	24RB / 0RB Offset
	20450 to 20600	20450(829.0MHz), 20525(836.5MHz), 20600(844.0MHz)	10MHz	QPSK / 16QAM	49RB / 0RB Offset
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 / 5 RB Offset
	20415 to 20635	20415(825.5MHz), 20525(836.5MHz), 20635(847.5MHz)	3MHz	QPSK / 16QAM	1 RB / 14 RB Offset
	20425 to 20625	20425(826.5MHz), 20525(836.5MHz), 20625(846.5MHz)	5MHz	QPSK / 16QAM	1 RB / 24 RB Offset
	20450 to 20600	20450(829.0MHz), 20525(836.5MHz), 20600(844.0MHz)	10MHz	QPSK / 16QAM	1 RB / 49 RB Offset

Test item	Available channel	Tested channel	Channel Bandwidth	Modulation	Mode
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
Radiated Emission Below 1GHz	20407 to 20643	20407(824.7MHz)	1.4MHz	QPSK	1 RB / 5 RB Offset
	20415 to 20635	20415(825.5MHz)	3MHz	QPSK	1 RB / 14 RB Offset
	20425 to 20625	20425(826.5MHz)	5MHz	QPSK	1 RB / 24 RB Offset
	20450 to 20600	20450(829.0MHz)	10MHz	QPSK	1 RB / 49 RB Offset
Radiated Emission Above 1GHz	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

Note:

1. For radiated emission below 1GHz, the low, mid and high channels were pre-tested in chamber. The low channel was the worst case and chosen for final test.
2. The conducted output power for QPSK and 16QAM, measured value of QPSK is higher than 16QAM mode. Therefore, only 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.
3. The EUT supported 1 antenna transmitter for licence parameter.

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
ERP	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
Modulation characteristics	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
Frequency Stability	24deg. C, 64%RH	3.8Vdc	Match Tsui
Occupied Bandwidth	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
Band Edge	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
Peak To Average Ratio	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
Conducted Emission	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
Radiated Emission	16deg. C, 66%RH 25deg. C, 66%RH 19deg. C, 66%RH 20deg. C, 66%RH	120Vac, 60Hz	James Yang Jones Chang

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 v02r02

ANSI/TIA/EIA-603-D 2010

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

Note: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC).
The test report has been issued separately.

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:

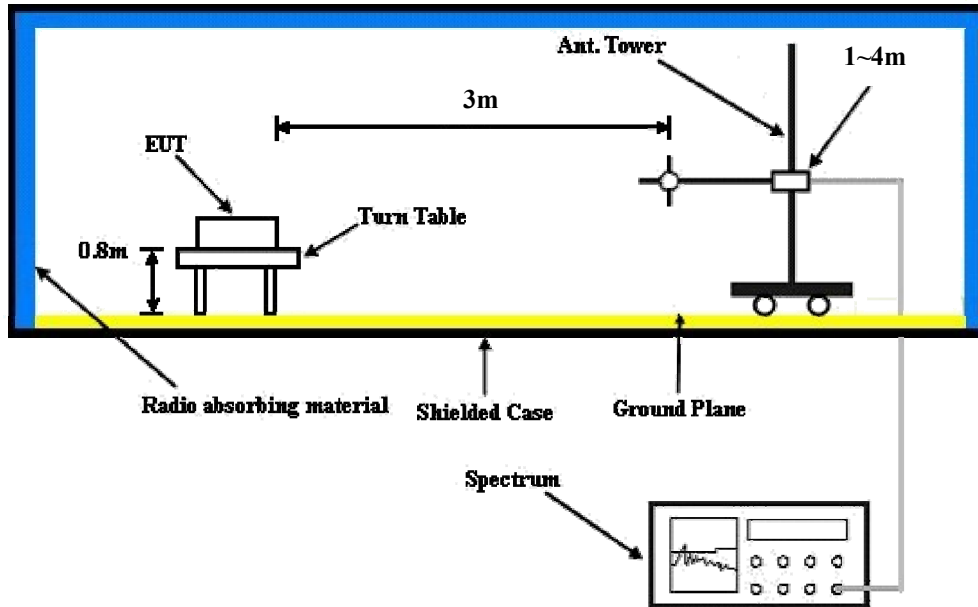
- a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 1MHz for GSM, 5MHz for WCDMA mode, 10MHz for LTE mode.
- b. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- c. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step b. Record the power level of S.G
- d. $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, $E.R.P \text{ power} = E.I.R.P \text{ power} - 2.15\text{dBi}$.

Conducted Power Measurement:

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

EIRP / ERP Measurement:



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

Conducted Power Measurement:



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

4.1.4 Test Results

Conducted Output Power (dBm)

Band	GSM850		
Channel	128	189	251
Frequency	824.2	836.4	848.8
GSM	32.15	32.28	32.39
GPRS 8	32.12	32.26	32.35
GPRS 10	31.54	31.69	31.89
GPRS 11	29.91	30.04	30.17
GPRS 12	28.77	28.94	29.03
EDGE 8 (MCS9)	26.28	26.35	26.48
EDGE 10 (MCS9)	25.06	25.28	25.40
EDGE 11 (MCS9)	23.11	23.25	23.38
EDGE 12 (MCS9)	21.99	22.13	22.32

Band	WCDMA V		
Channel	4132	4182	4233
Frequency	826.4	836.6	846.6
RMC 12.2K	23.13	23.16	23.14
HSDPA Subtest-1	22.13	22.16	22.14
HSDPA Subtest-2	22.09	22.14	22.12
HSDPA Subtest-3	21.65	21.70	21.68
HSDPA Subtest-4	21.60	21.63	21.61
HSUPA Subtest-1	22.09	22.14	22.12
HSUPA Subtest-2	20.15	20.18	20.16
HSUPA Subtest-3	21.16	21.23	21.21
HSUPA Subtest-4	19.70	19.73	19.71
HSUPA Subtest-5	22.14	22.20	22.18

Conducted Output Power (dBm)

Band / BW	RB Size	RB Offset	QPSK			16QAM		
			CH 20407	CH 20525	CH 20643	CH 20407	CH 20525	CH 20643
			824.7 MHz	836.5 MHz	848.3 MHz	824.7 MHz	836.5 MHz	848.3 MHz
5 / 1.4MHz	1	0	23.58	23.47	23.53	22.64	22.50	22.59
	1	2	23.53	23.43	23.46	22.59	22.44	22.48
	1	5	23.60	23.49	23.58	22.66	22.54	22.61
	3	0	23.52	23.31	23.35	22.53	22.28	22.33
	3	1	23.22	23.16	23.20	22.26	22.13	22.17
	3	3	23.60	23.48	23.56	22.59	22.49	22.55
	6	0	22.57	22.43	22.49	21.50	21.40	21.47

Band / BW	RB Size	RB Offset	QPSK			16QAM		
			CH 20415	CH 20525	CH 20635	CH 20415	CH 20525	CH 20635
			825.5 MHz	836.5 MHz	847.5 MHz	825.5 MHz	836.5 MHz	847.5 MHz
5 / 3MHz	1	0	23.63	23.52	23.60	22.67	22.50	22.61
	1	7	23.60	23.50	23.54	22.61	22.48	22.52
	1	14	23.65	23.56	23.63	22.69	22.55	22.63
	8	0	22.54	22.48	22.50	21.69	21.44	21.47
	8	3	22.46	22.36	22.41	21.39	21.31	21.33
	8	7	22.71	22.63	22.68	21.71	21.60	21.67
	15	0	22.61	22.53	22.55	21.64	21.53	21.57

Band / BW	RB Size	RB Offset	QPSK			16QAM		
			CH 20425	CH 20525	CH 20625	CH 20425	CH 20525	CH 20625
			826.5 MHz	836.5 MHz	846.5 MHz	826.5 MHz	836.5 MHz	846.5 MHz
5 / 5MHz	1	0	23.69	23.61	23.65	22.74	22.65	22.72
	1	12	23.65	23.58	23.60	22.72	22.61	22.67
	1	24	23.71	23.63	23.66	22.76	22.69	22.74
	12	0	22.76	22.61	22.63	21.69	21.56	21.60
	12	6	22.59	22.51	22.54	21.55	21.47	21.49
	12	13	22.81	22.75	22.77	21.81	21.73	21.77
	25	0	22.74	22.67	22.69	21.71	21.64	21.66

Band / BW	RB Size	RB Offset	QPSK			16QAM		
			CH 20450	CH 20525	CH 20600	CH 20450	CH 20525	CH 20600
			829.0 MHz	836.5 MHz	844.0 MHz	829.0 MHz	836.5 MHz	844.0 MHz
5 / 10MHz	1	0	23.74	23.69	23.72	22.79	22.70	22.74
	1	24	23.72	23.67	23.70	22.74	22.67	22.69
	1	49	23.76	23.71	23.73	22.81	22.72	22.75
	25	0	22.80	22.75	22.78	21.87	21.72	21.75
	25	12	22.73	22.66	22.69	21.67	21.61	21.63
	25	25	22.90	22.85	22.88	21.90	21.84	21.86
	50	0	22.85	22.79	22.81	21.86	21.77	21.80

ERP Power
GSM Mode

MODE		TX channel 128					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.20	-0.5	31.9	0.0	31.9	38.5	-6.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.20	-4.6	28.8	0.0	28.8	38.5	-9.7

MODE		TX channel 189					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.40	-0.3	32.1	0.2	32.3	38.5	-6.2
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.40	-5.2	28.0	0.2	28.2	38.5	-10.3

MODE		TX channel 251					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	848.80	-1.1	30.5	0.5	31.0	38.5	-7.5
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	848.80	-5.7	26.9	0.5	27.4	38.5	-11.1

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

WCDMA Mode

MODE		TX channel 4132					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	826.40	-12.8	19.5	0.0	19.5	38.5	-19.0
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	826.40	-18.6	14.8	0.0	14.8	38.5	-23.7

MODE		TX channel 4182					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.60	-12.5	19.9	0.2	20.1	38.5	-18.4
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.60	-18.0	15.2	0.2	15.4	38.5	-23.1

MODE		TX channel 4233					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	846.60	-12.8	19.0	0.4	19.4	38.5	-19.1
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	846.60	-18.3	14.4	0.4	14.8	38.5	-23.7

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

LTE Band 5, Channel Bandwidth: 1.4MHz

MODE		TX channel 20407					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.70	-5.6	26.8	0.0	26.8	38.5	-11.7
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.70	-13.4	20.0	0.0	20.0	38.5	-18.5

MODE		TX channel 20525					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.50	-6.6	25.7	0.2	25.9	38.5	-12.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.50	-12.4	20.8	0.2	21.0	38.5	-17.5

MODE		TX channel 20643					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	848.30	-8.0	23.6	0.5	24.1	38.5	-14.4
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	848.30	-13.4	19.2	0.5	19.7	38.5	-18.8

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

LTE Band 5, Channel Bandwidth: 3MHz

MODE		TX channel 20415					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	825.50	-5.8	26.5	0.0	26.5	38.5	-12.0
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	825.50	-13.6	19.8	0.0	19.8	38.5	-18.7

MODE		TX channel 20525					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.50	-6.4	25.9	0.2	26.1	38.5	-12.4
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.50	-13.1	20.1	0.2	20.3	38.5	-18.2

MODE		TX channel 20635					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	847.50	-8.3	23.4	0.4	23.8	38.5	-14.7
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	847.50	-13.7	19.0	0.4	19.4	38.5	-19.1

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

LTE Band 5, Channel Bandwidth: 5MHz

MODE		TX channel 20425					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	826.50	-5.6	26.7	0.0	26.7	38.5	-11.8
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	826.50	-13.5	19.9	0.0	19.9	38.5	-18.6

MODE		TX channel 20525					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.50	-6.1	26.2	0.2	26.4	38.5	-12.1
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.50	-12.6	20.6	0.2	20.8	38.5	-17.7

MODE		TX channel 20625					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	846.50	-8.3	23.4	0.4	23.8	38.5	-14.7
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	846.50	-14.1	18.6	0.4	19.0	38.5	-19.5

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

LTE Band 5, Channel Bandwidth: 10MHz

MODE		TX channel 20450					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	829.00	-5.5	26.9	0.1	27.0	38.5	-11.5
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	829.00	-13.5	19.8	0.1	19.9	38.5	-18.6

MODE		TX channel 20525					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.50	-7.2	25.1	0.2	25.3	38.5	-13.2
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.50	-13.2	19.9	0.2	20.1	38.5	-18.4

MODE		TX channel 20600					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	844.00	-6.7	25.4	0.4	25.8	38.5	-12.7
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	844.00	-13.4	19.6	0.4	20.0	38.5	-18.5

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

4.2 Modulation Characteristics Measurement

4.2.1 Limits of Modulation Characteristics

N/A

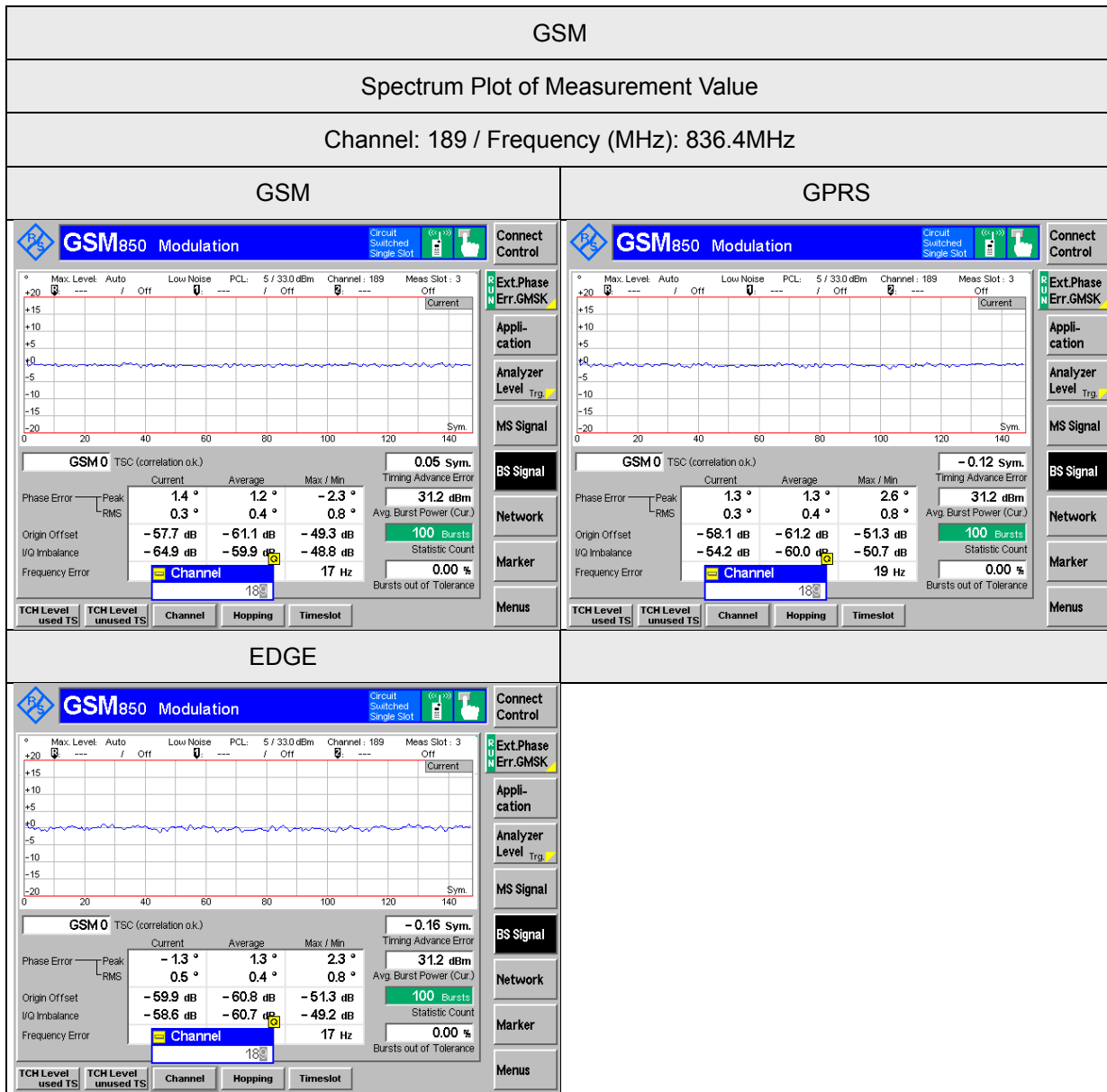
4.2.2 Test Procedure

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

4.2.3 Test Setup



4.2.4 Test Results

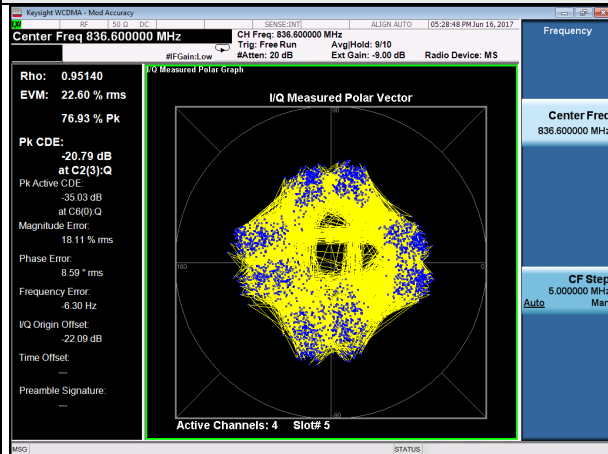


WCDMA Band 5

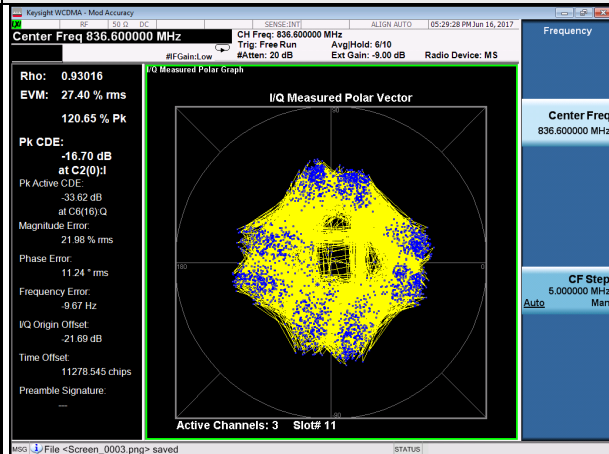
Spectrum Plot of Measurement Value

Channel: 4182 / Frequency (MHz): 836.6MHz

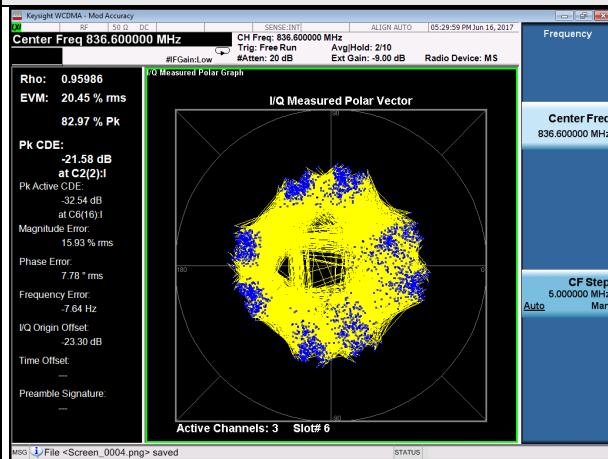
WCDMA



HSDPA



HSUPA



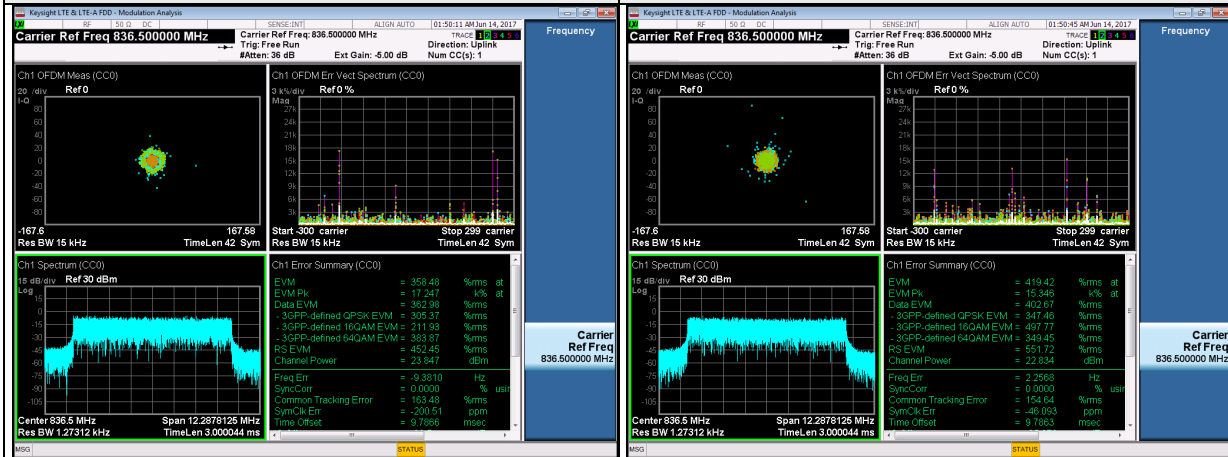
LTE Band 5

Spectrum Plot of Measurement Value

Channel: 20525 / Frequency (MHz): 836.5MHz

Channel Bandwidth: 10MHz / QPSK

Channel Bandwidth: 10MHz / 16QAM



4.3 Frequency Stability Measurement

4.3.1 Limits of Frequency Stability Measurement

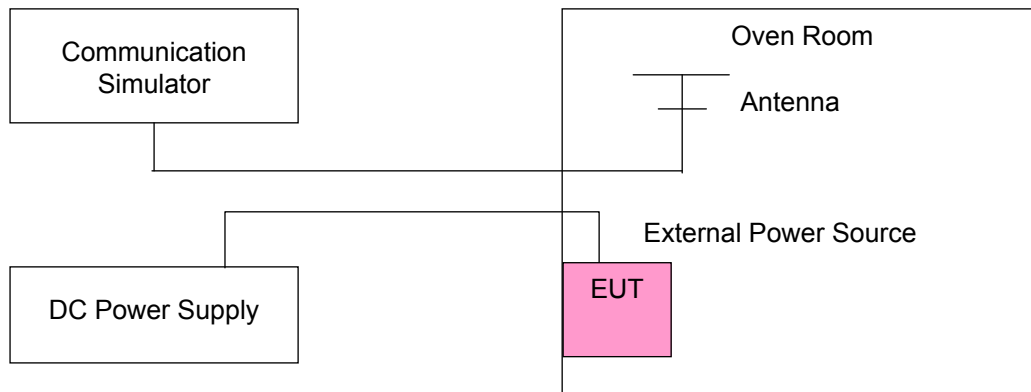
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

4.3.2 Test Procedure

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

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

4.3.3 Test Setup



4.3.4 Test Results

Frequency Error vs. Voltage

Voltage (Volts)	Frequency Error (ppm)			Limit (ppm)
	GSM	WCDMA Band 5	LTE Band 5	
4.3	-0.008	-0.009	-0.008	2.5
3.8	-0.008	-0.008	-0.007	2.5
3.6	-0.008	-0.008	-0.007	2.5

Note: The applicant defined the normal working voltage is from 3.8Vdc to 4.3Vdc.

Frequency Error vs. Temperature.

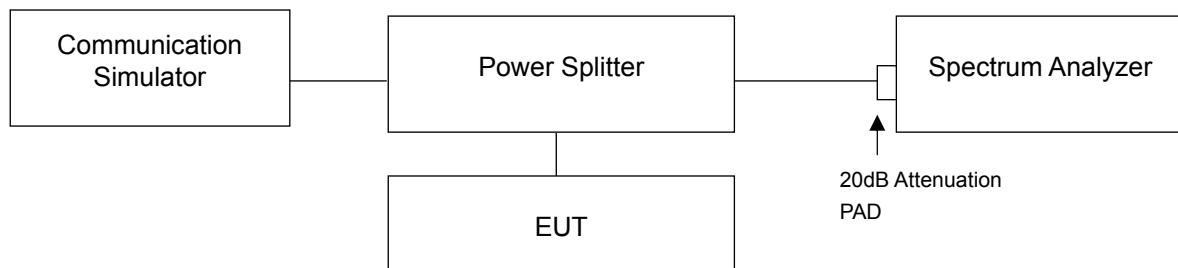
Temp. (°C)	Frequency Error (ppm)			Limit (ppm)
	GSM	WCDMA Band 5	LTE Band 5	
50	-0.009	-0.009	-0.009	2.5
40	-0.008	-0.009	-0.008	2.5
30	-0.008	-0.008	-0.008	2.5
20	-0.008	-0.008	-0.007	2.5
10	-0.010	-0.008	-0.009	2.5
0	-0.010	-0.009	-0.011	2.5
-10	-0.013	-0.013	-0.012	2.5
-20	-0.015	-0.014	-0.014	2.5

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.

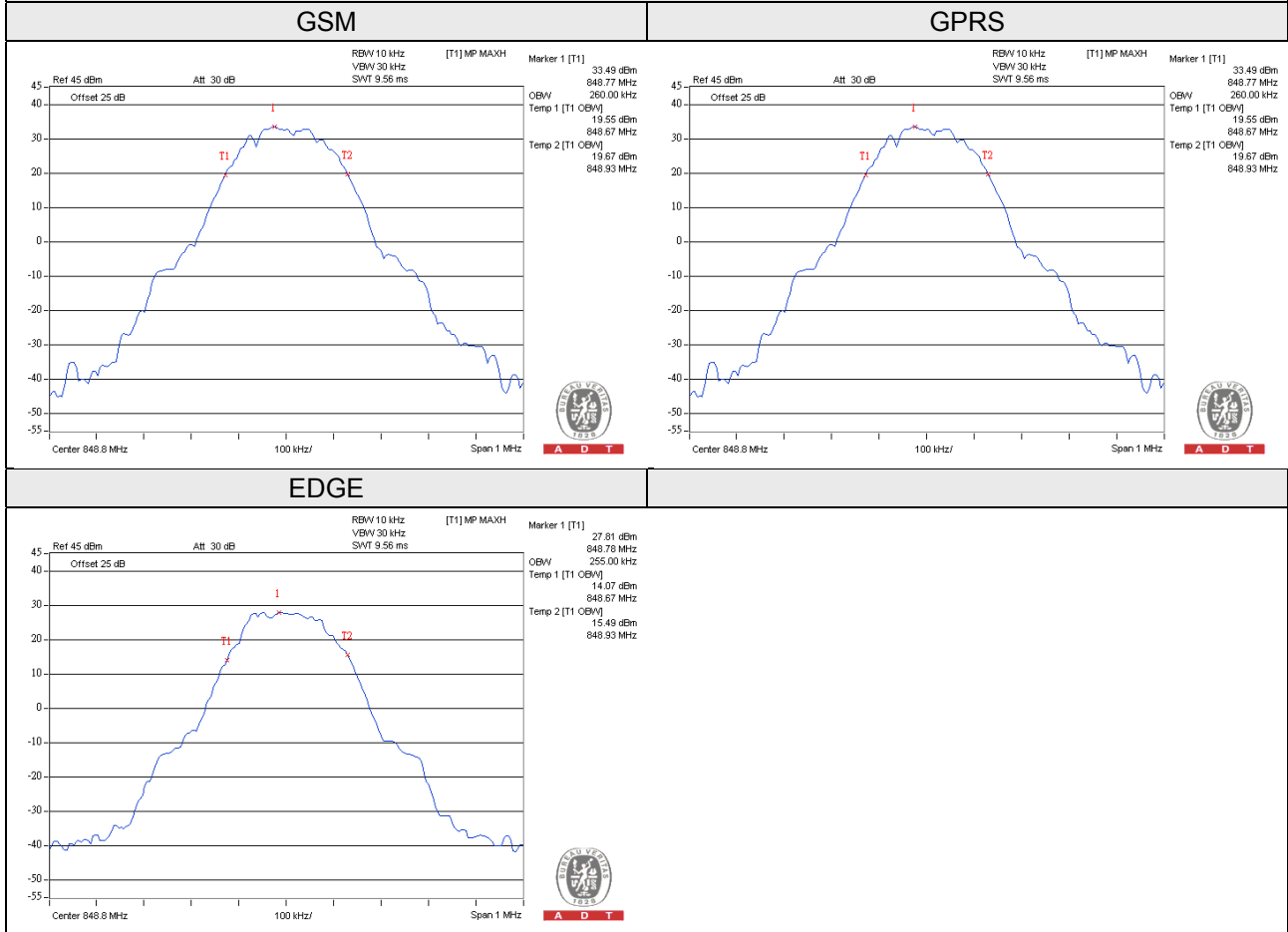
4.4.2 Test Setup



4.4.3 Test Result

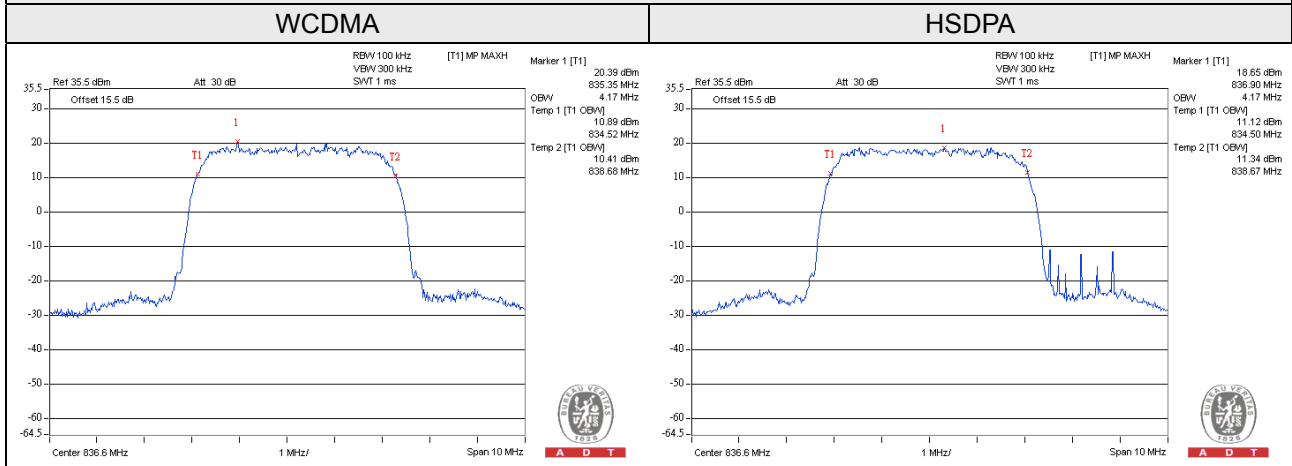
Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)		
		GSM	GPRS	EDGE
128	824.2	250	250	255
189	836.4	260	260	255
251	848.8	260	260	255

Spectrum Plot of Worst Value

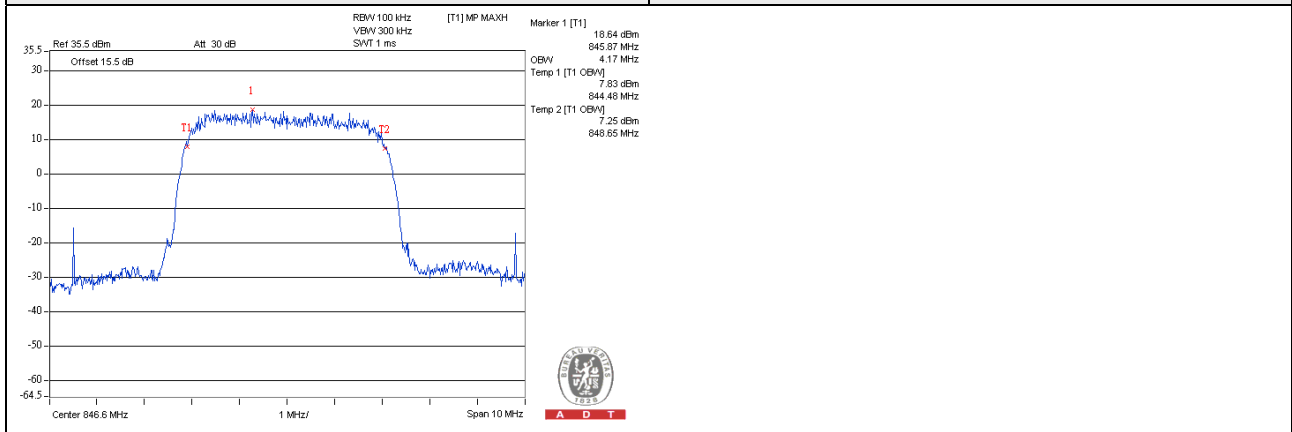


Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)		
		WCDMA	HSDPA	HSUPA
4132	826.4	4.13	4.15	4.15
4182	836.6	4.17	4.17	4.15
4233	846.6	4.15	4.15	4.17

Spectrum Plot of Worst Value



HSUPA

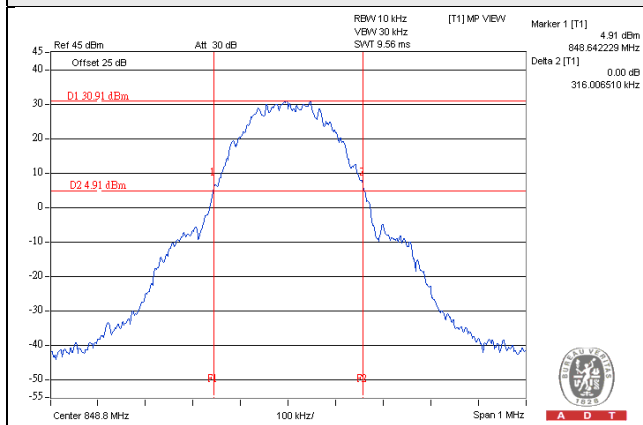


26dB Bandwidth

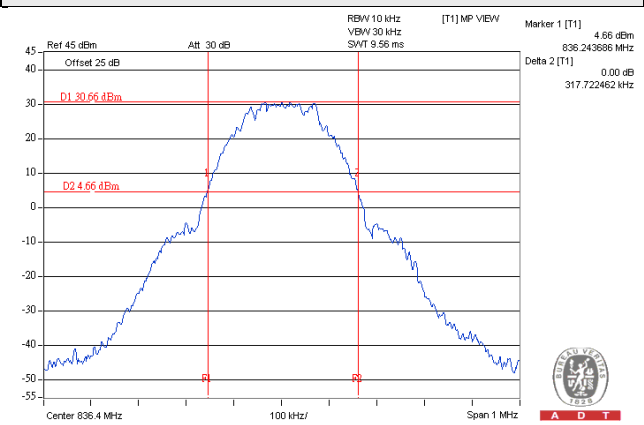
Channel	Frequency (MHz)	26dB Bandwidth (kHz)		
		GSM	GPRS	EDGE
128	824.2	314.635	316.011	312.206
189	836.4	302.843	317.722	308.443
251	848.8	316.007	316.771	311.232

Spectrum Plot of Worst Value

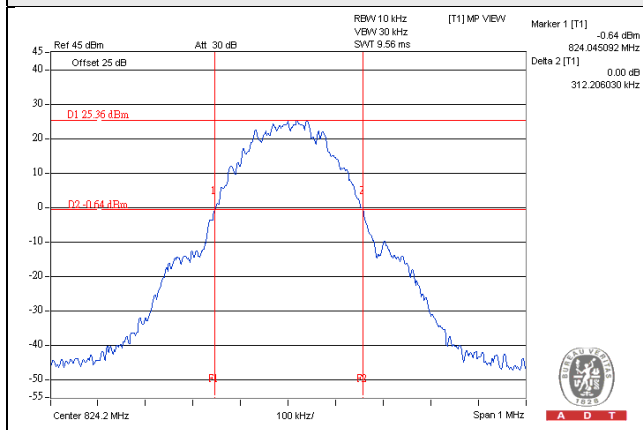
GSM



GPRS



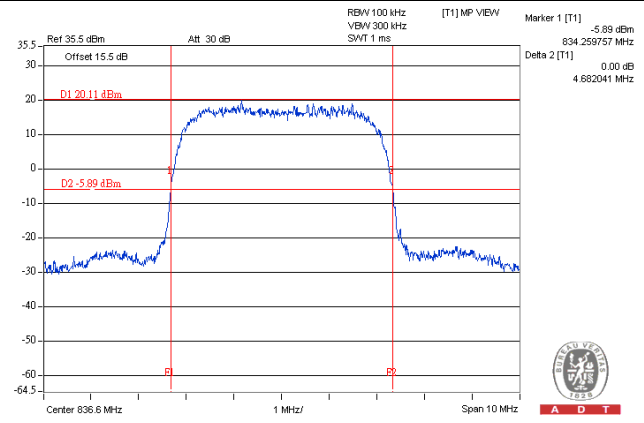
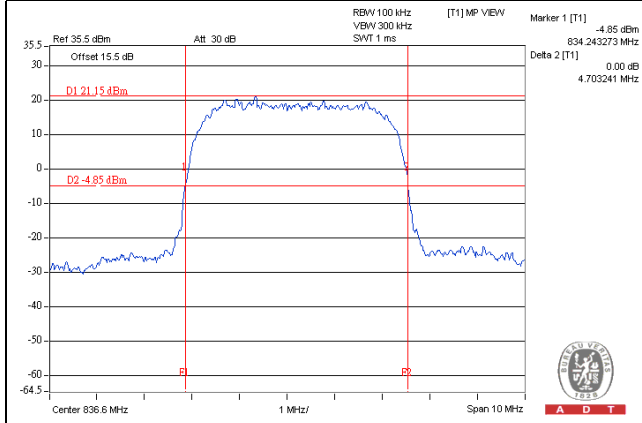
EDGE



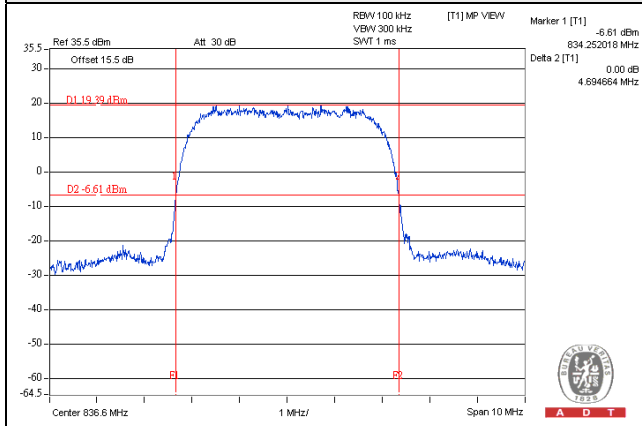
Channel	Frequency (MHz)	26dB Bandwidth (MHz)		
		WCDMA	HSDPA	HSUPA
4132	826.4	4.69	4.67	4.68
4182	836.6	4.70	4.68	4.69
4233	846.6	4.69	4.66	4.67

Spectrum Plot of Worst Value

WCDMA	HSDPA
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HSUPA



LTE Band 5, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
20407	824.7	1.477	1.486
20525	836.5	1.478	1.483
20643	848.3	1.493	1.489

LTE Band 5, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
20415	825.5	3.030	3.037
20525	836.5	3.032	3.040
20635	847.5	3.032	3.029

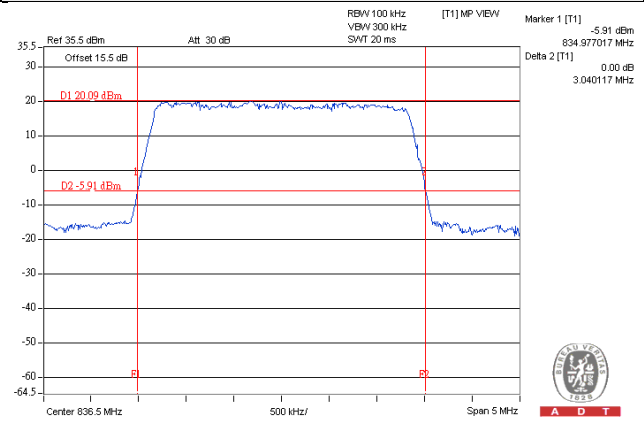
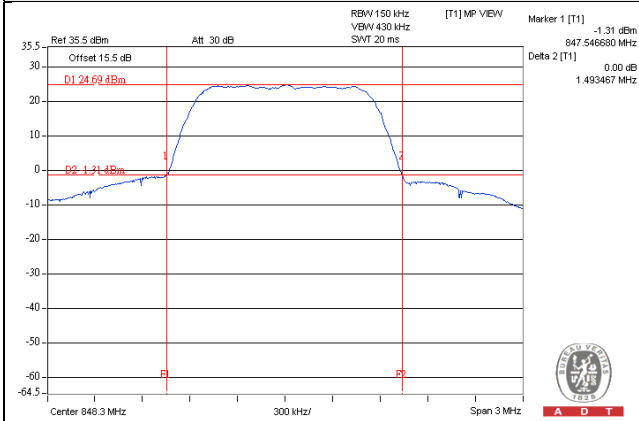
LTE Band 5, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
20425	826.5	5.057	5.062
20525	836.5	5.055	5.028
20625	846.5	5.033	4.989

LTE Band 5, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	26dB Bandwidth (MHz)	
		QPSK	16QAM
20450	829.0	9.951	9.857
20525	836.5	9.991	9.821
20600	844.0	9.941	9.720

Spectrum Plot of Worst Value

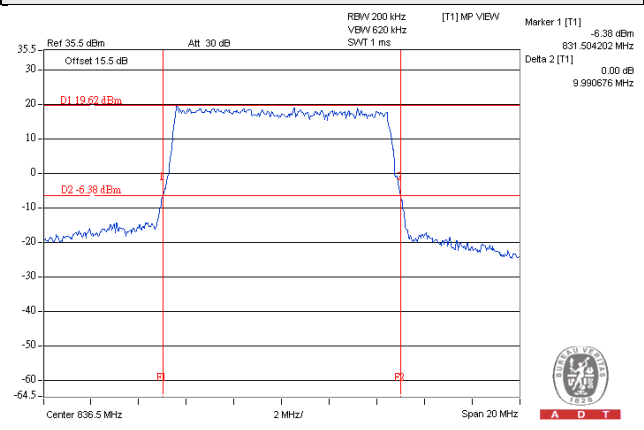
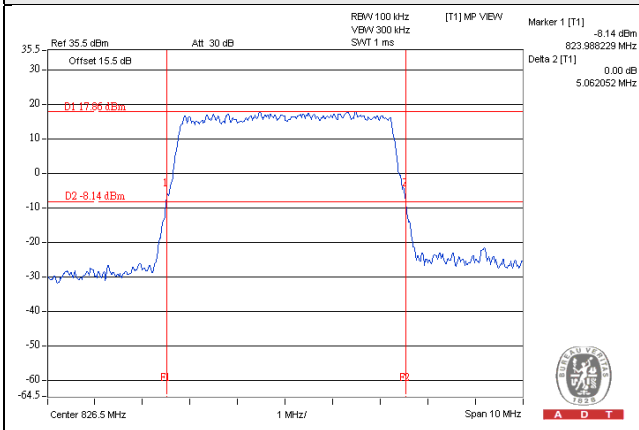
1.4MHz / QPSK

3MHz / 16QAM



5MHz / 16QAM

10MHz / QPSK



Occupied Bandwidth

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

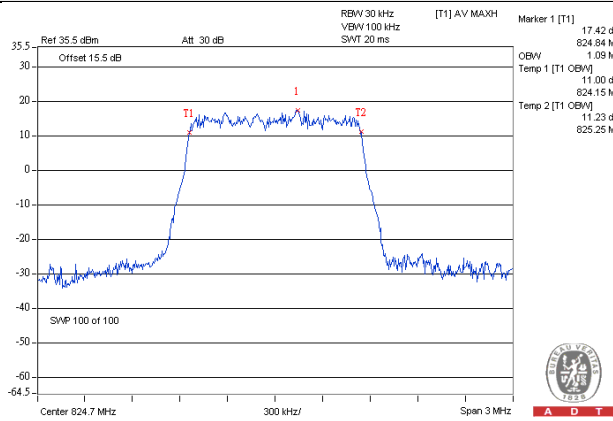
LTE Band 5, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
20415	825.5	2.69	2.69
20525	836.5	2.70	2.70
20635	847.5	2.69	2.70

LTE Band 5, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
20425	826.5	4.47	4.47
20525	836.5	4.47	4.45
20625	846.5	4.47	4.47

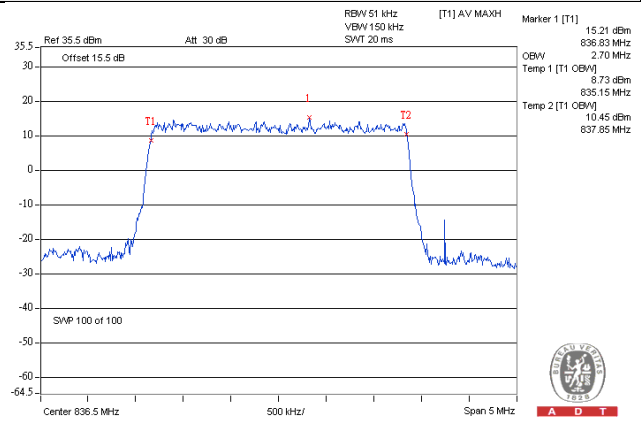
LTE Band 5, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	99% Occupied Bandwidth (MHz)	
		QPSK	16QAM
20450	829.0	8.93	8.93
20525	836.5	8.97	8.93
20600	844.0	8.90	8.93

Spectrum Plot of Worst Value

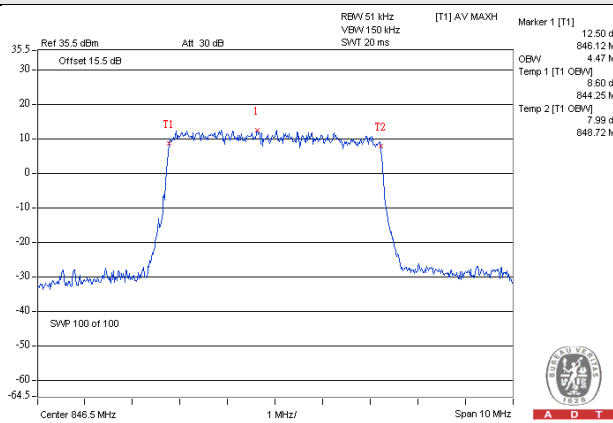
1.4MHz / QPSK



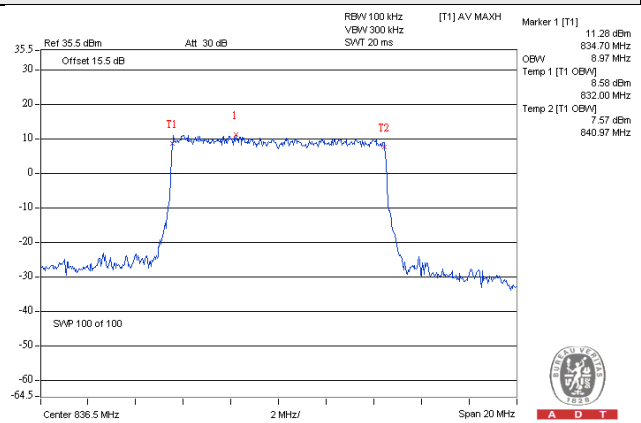
3MHz / QPSK



5MHz / QPSK



10MHz / QPSK

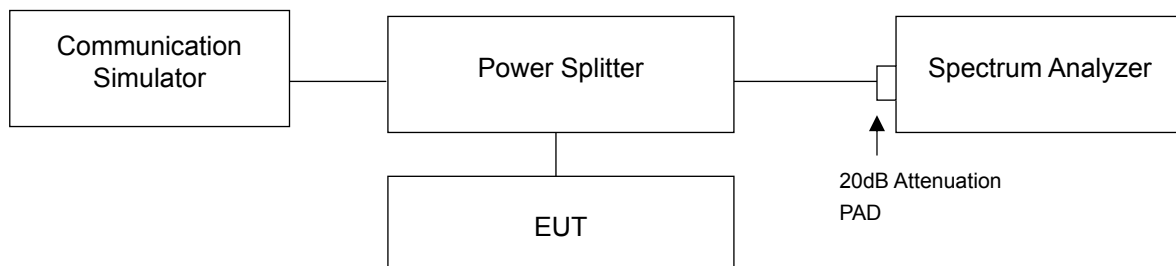


4.5 Band Edge Measurement

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.

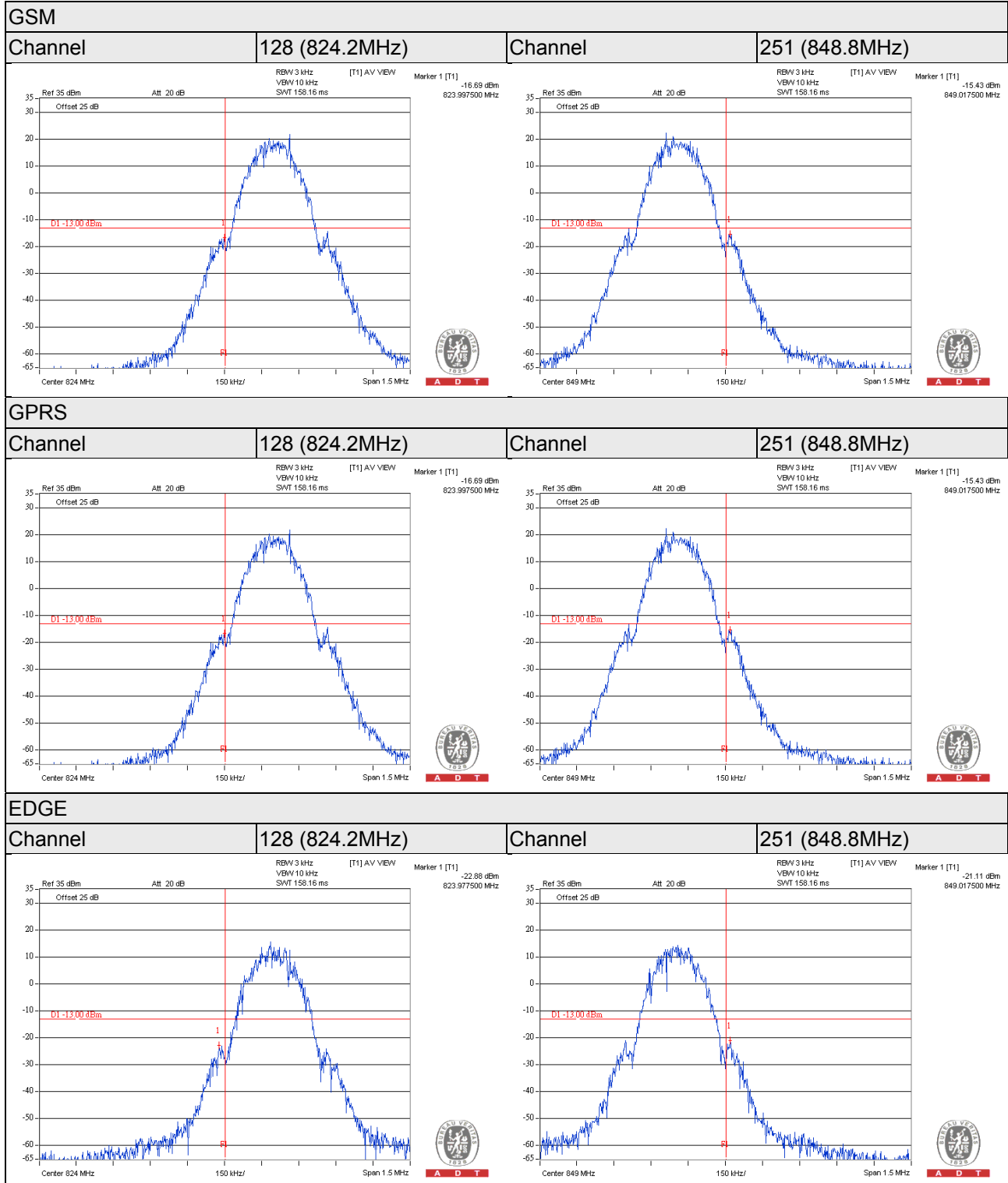
4.5.2 Test Setup



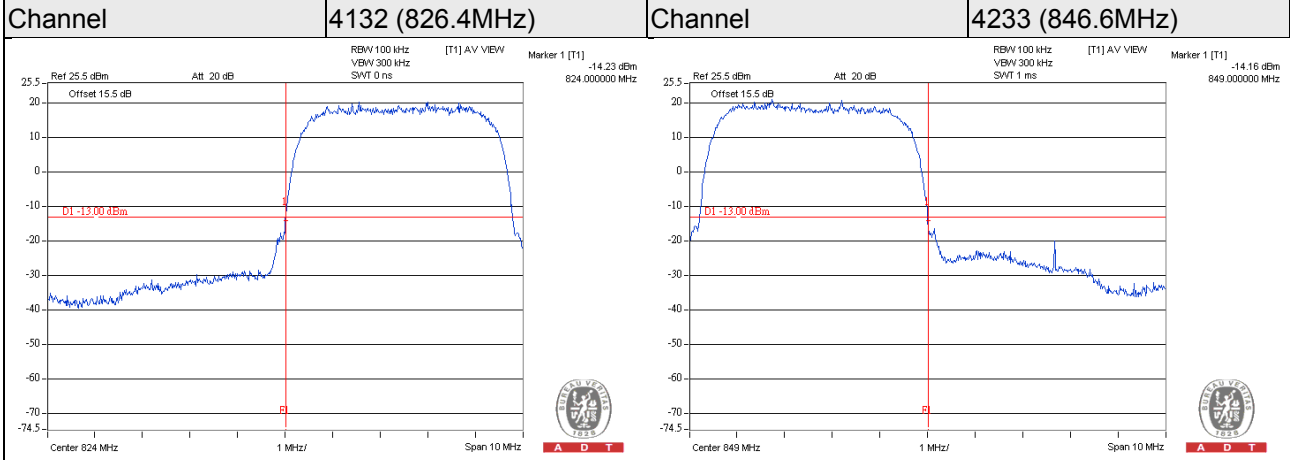
4.5.3 Test Procedures

- All measurements were done at low and high operational frequency range.
- The center frequency of spectrum is the band edge frequency and span is 1.5MHz. RB of the spectrum is 3kHz and VB of the spectrum is 10kHz (GSM / GPRS / EDGE).
- The center frequency of spectrum is the band edge frequency and span is 10MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (WCDMA / HSDPA / HSUPA).
- 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 and 3MHz).
- 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 5MHz).
- 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).
- Record the max trace plot into the test report.

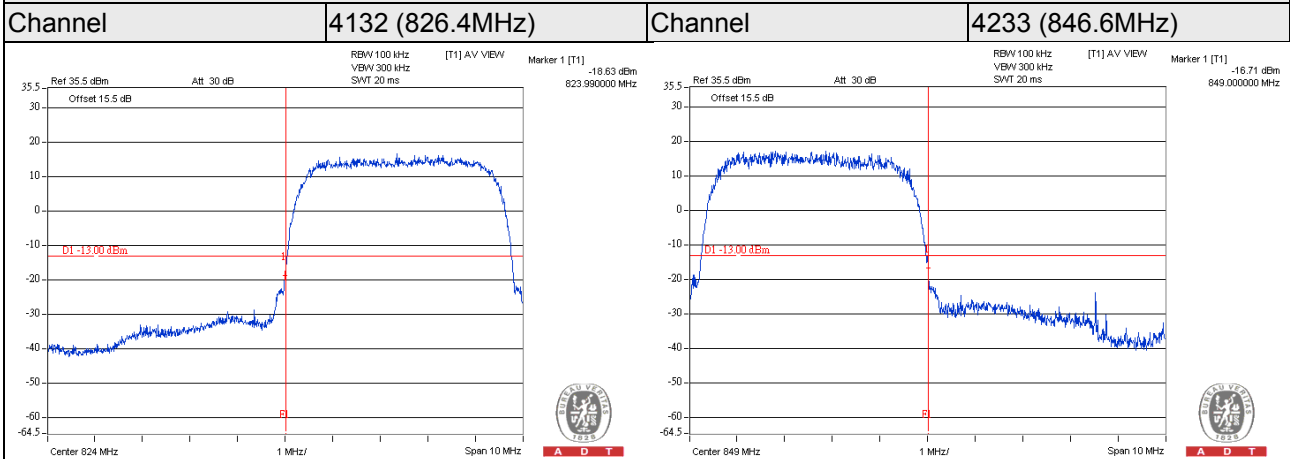
4.5.4 Test Results



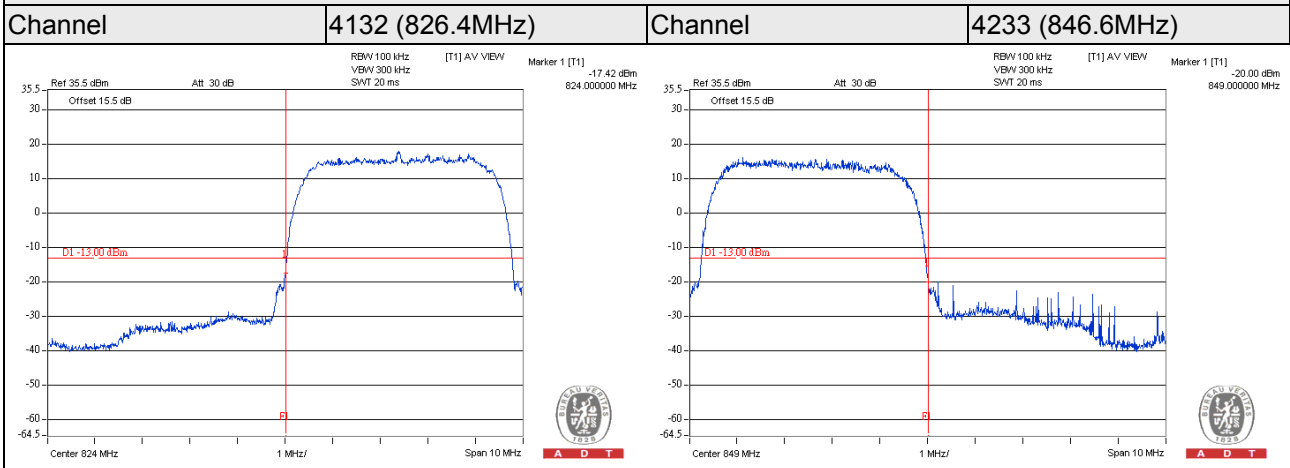
WCDMA



HSDPA

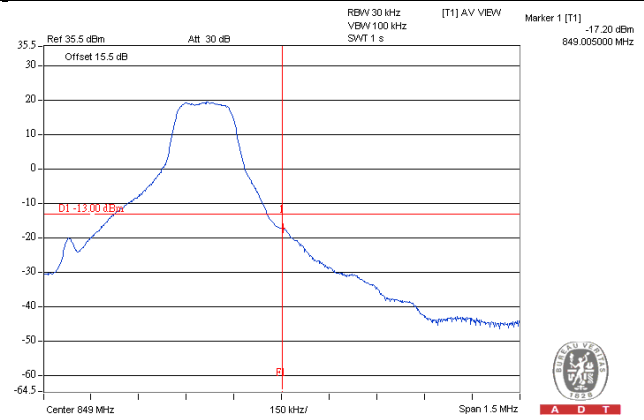
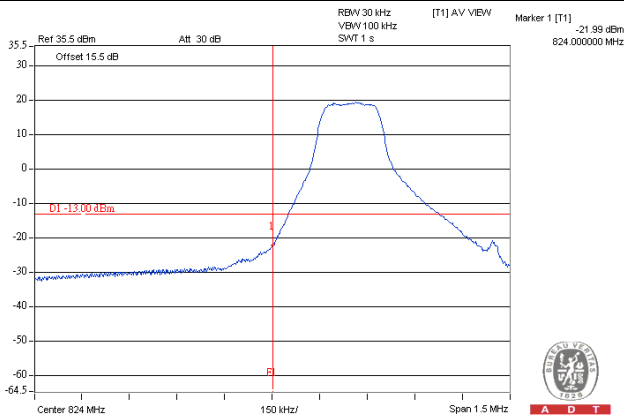


HSUPA

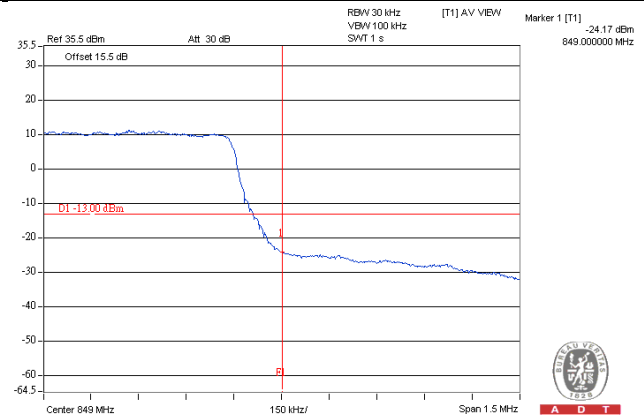
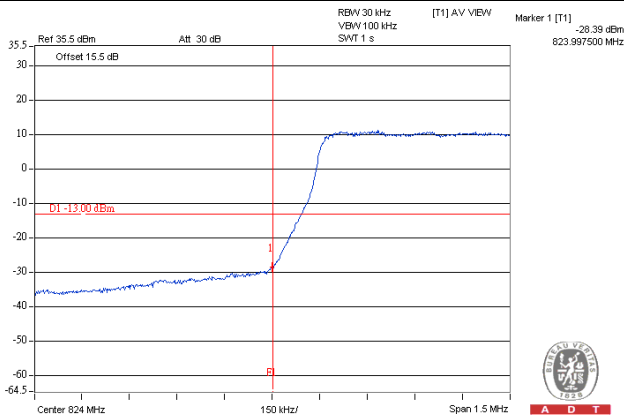


LTE Band 5, Channel Bandwidth 1.4MHz

Channel 20407 (824.7MHz)	QPSK	1 RB / 0 RB Offset	Channel 20643 (848.3MHz)	QPSK	1 RB / 5 RB Offset
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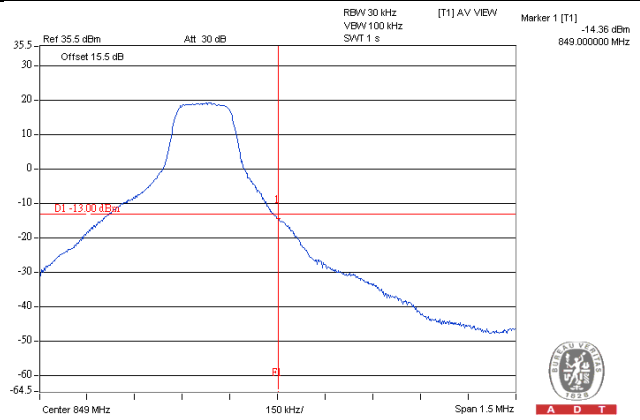
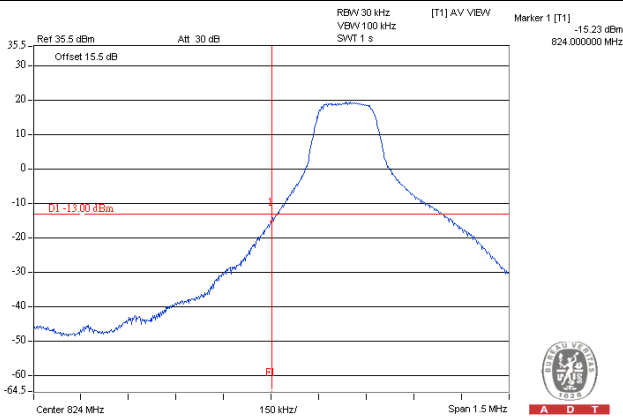


Channel 20407 (824.7MHz)	QPSK	6 RB / 0 RB Offset	Channel 20643 (848.3MHz)	QPSK	6 RB / 0 RB Offset
-----------------------------	------	--------------------	-----------------------------	------	--------------------

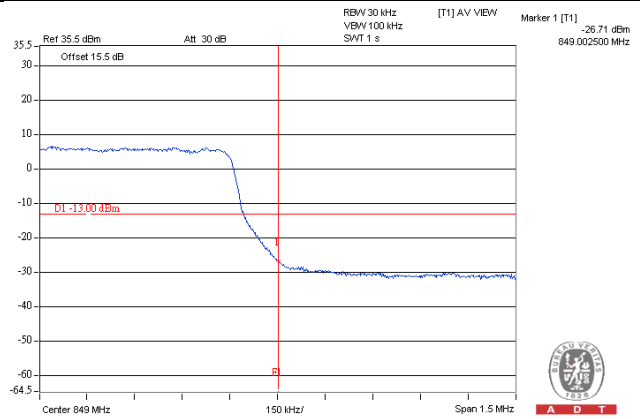
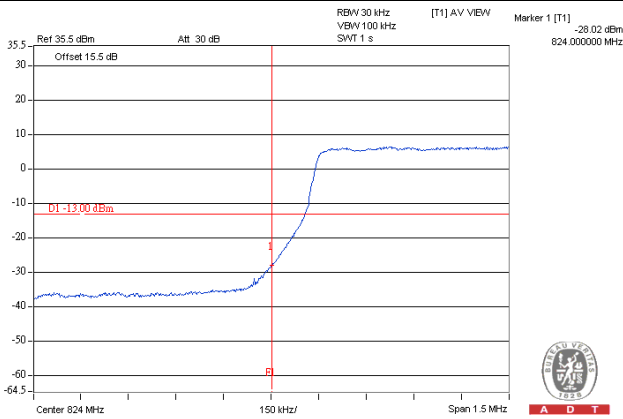


LTE Band 5, Channel Bandwidth 3MHz

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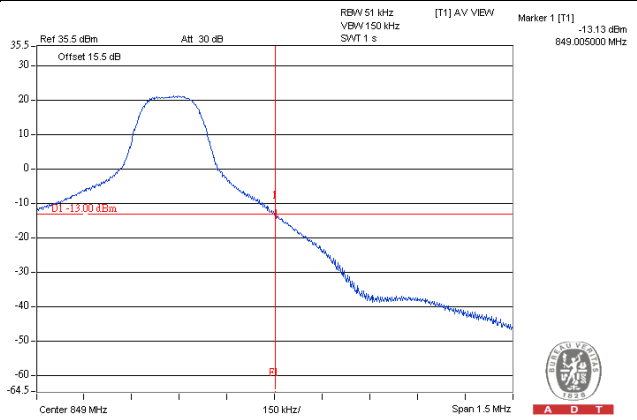
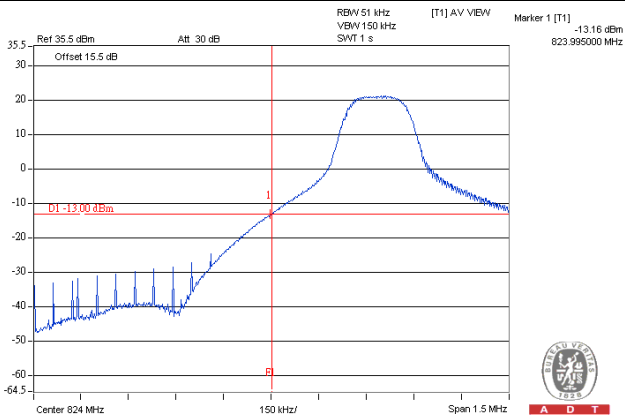


Channel 20415 (825.5MHz)	QPSK	15 RB / 0 RB Offset	Channel 20635 (847.5MHz)	QPSK	15 RB / 0 RB Offset
-------------------------------------	-------------	----------------------------	-------------------------------------	-------------	----------------------------

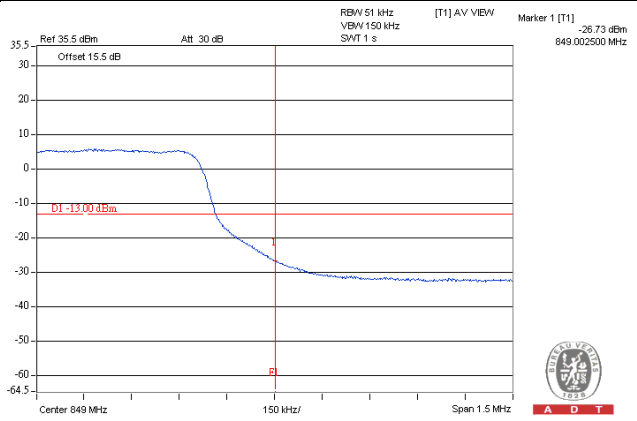
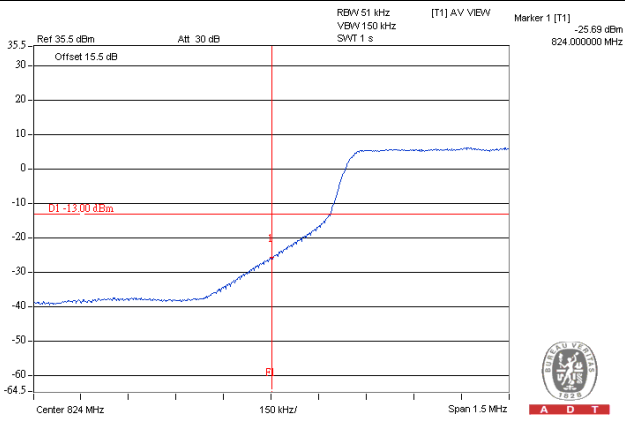


LTE Band 5, Channel Bandwidth 5MHz

Channel 20425 (826.5MHz)	QPSK	1 RB / 0 RB Offset	Channel 20625 (846.5MHz)	QPSK	1 RB / 24 RB Offset
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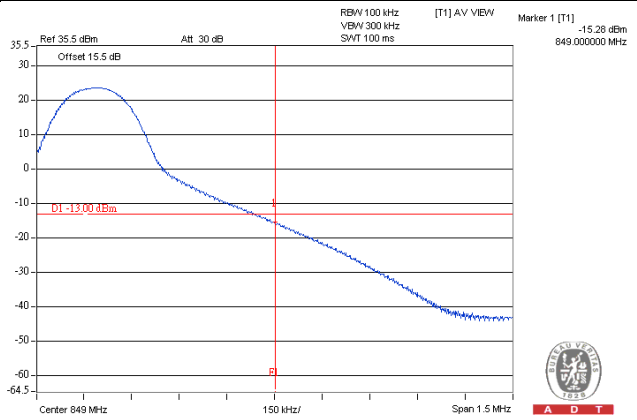
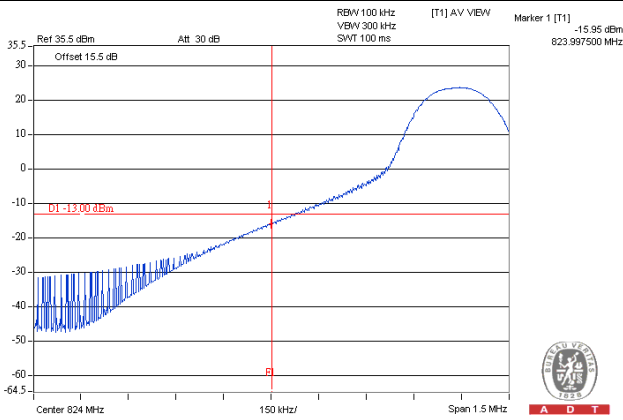


Channel 20425 (826.5MHz)	QPSK	25 RB / 0 RB Offset	Channel 20625 (846.5MHz)	QPSK	25 RB / 0 RB Offset
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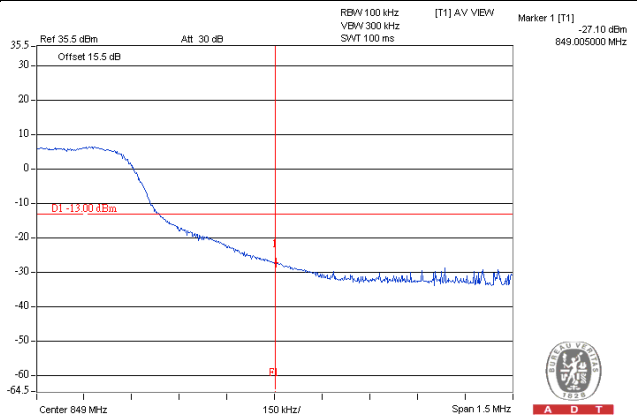
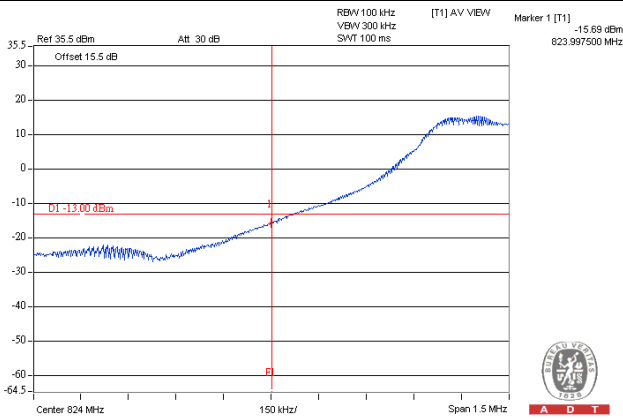


LTE Band 5, Channel Bandwidth 10MHz

Channel 20450 (829.0MHz)	QPSK	1 RB / 0 RB Offset	Channel 20600 (844.0MHz)	QPSK	1 RB / 49 RB Offset
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Channel 20450 (829.0MHz)	QPSK	50 RB / 0 RB Offset	Channel 20600 (844.0MHz)	QPSK	50 RB / 0 RB Offset
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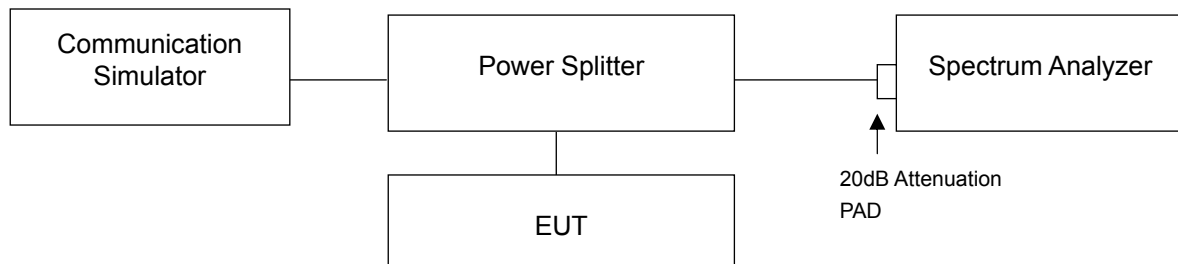


4.6 Peak to Average Ratio

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

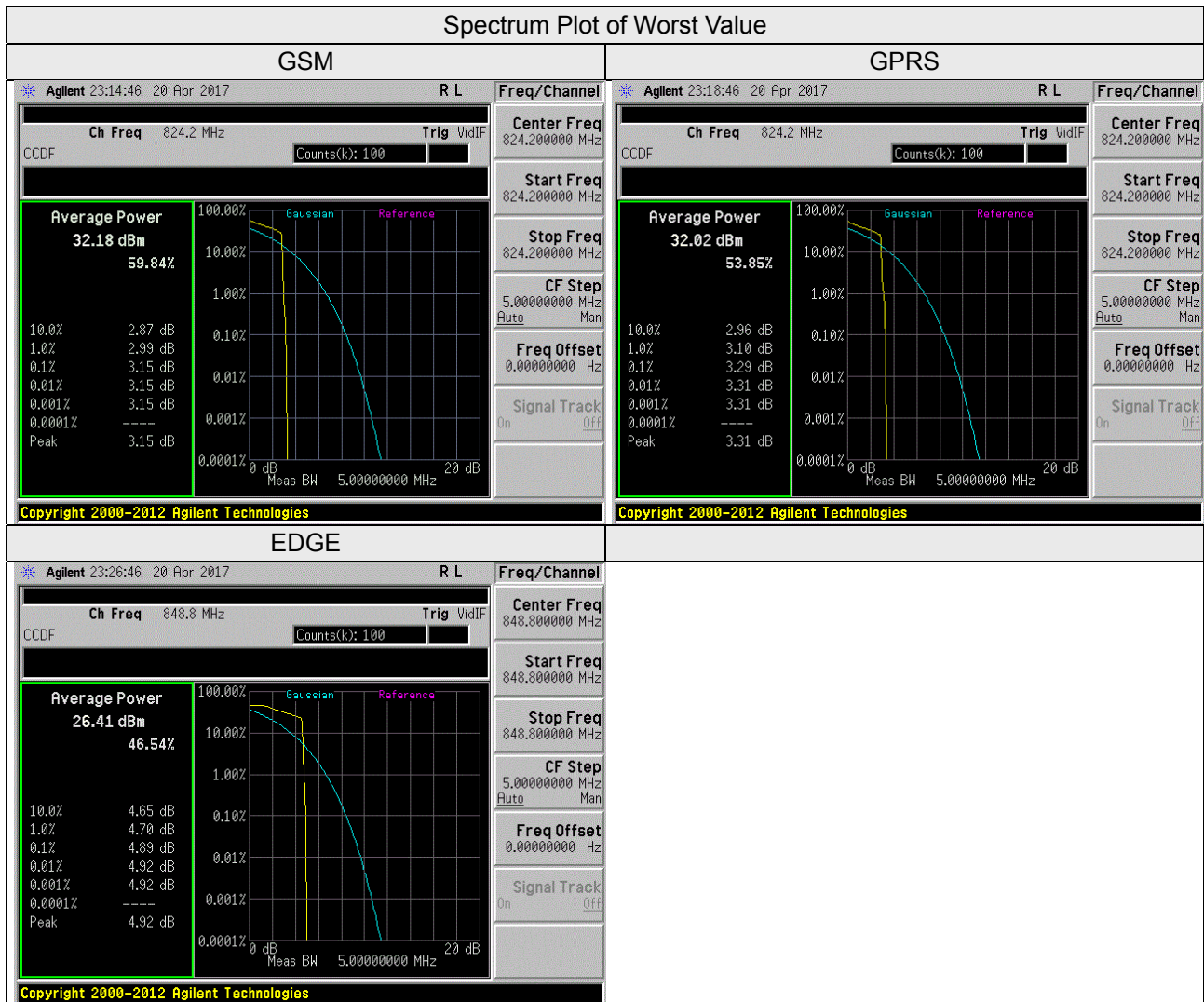


4.6.3 Test Procedures

- 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%.

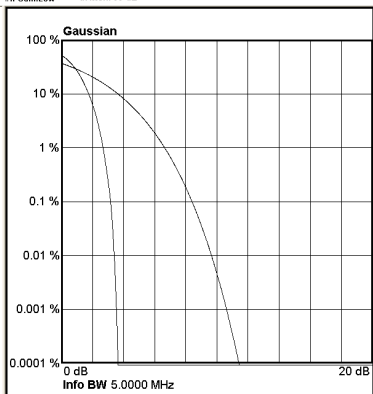
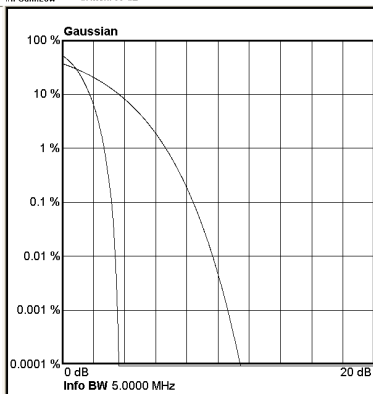
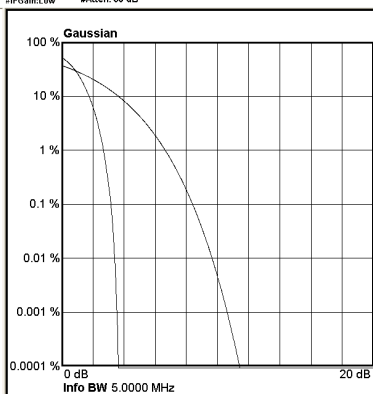
4.6.4 Test Results

Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		GSM	GPRS	EDGE
128	824.2	3.15	3.29	3.49
189	836.4	1.49	1.95	2.53
251	848.8	2.68	2.49	4.89



Channel	Frequency (MHz)	Peak To Average Ratio (dB)		
		WCDMA	HSDPA	HSUPA
4132	826.4	3.14	3.13	3.14
4182	836.6	3.04	3.04	3.04
4233	846.6	3.16	3.18	3.16

Spectrum Plot of Worst Value

WCDMA		HSDPA	
<p>Agilent Spectrum Analyzer - Power Stat CCDF</p> <p>Center Freq: 846.600000 MHz</p> <p>Average Power: 24.09 dBm</p> <p>51.96 % at 0dB</p> <p>10.0 % 1.75 dB</p> <p>1.0 % 2.68 dB</p> <p>0.1 % 3.16 dB</p> <p>0.01 % 3.40 dB</p> <p>0.001 % 3.54 dB</p> <p>0.0001 % 3.63 dB</p> <p>Peak 3.67 dB</p> <p>27.76 dBm</p>  <p>Center Freq: 846.600000 MHz</p> <p>CF Step: 5.000000 MHz</p> <p>Freq Offset: 0 Hz</p>	<p>Agilent Spectrum Analyzer - Power Stat CCDF</p> <p>Center Freq: 846.600000 MHz</p> <p>Average Power: 24.08 dBm</p> <p>51.91 % at 0dB</p> <p>10.0 % 1.76 dB</p> <p>1.0 % 2.69 dB</p> <p>0.1 % 3.18 dB</p> <p>0.01 % 3.41 dB</p> <p>0.001 % 3.55 dB</p> <p>0.0001 % 3.63 dB</p> <p>Peak 3.68 dB</p> <p>27.76 dBm</p>  <p>Center Freq: 846.600000 MHz</p> <p>CF Step: 5.000000 MHz</p> <p>Freq Offset: 0 Hz</p>		
<p>Agilent Spectrum Analyzer - Power Stat CCDF</p> <p>Center Freq: 846.600000 MHz</p> <p>Average Power: 24.07 dBm</p> <p>51.86 % at 0dB</p> <p>10.0 % 1.75 dB</p> <p>1.0 % 2.68 dB</p> <p>0.1 % 3.16 dB</p> <p>0.01 % 3.40 dB</p> <p>0.001 % 3.54 dB</p> <p>0.0001 % 3.63 dB</p> <p>Peak 3.67 dB</p> <p>27.74 dBm</p>  <p>Center Freq: 846.600000 MHz</p> <p>CF Step: 5.000000 MHz</p> <p>Freq Offset: 0 Hz</p>			

LTE Band 5, Channel Bandwidth 1.4MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
20407	824.7	5.80	6.52
20525	836.5	5.12	5.90
20643	848.3	4.99	5.78

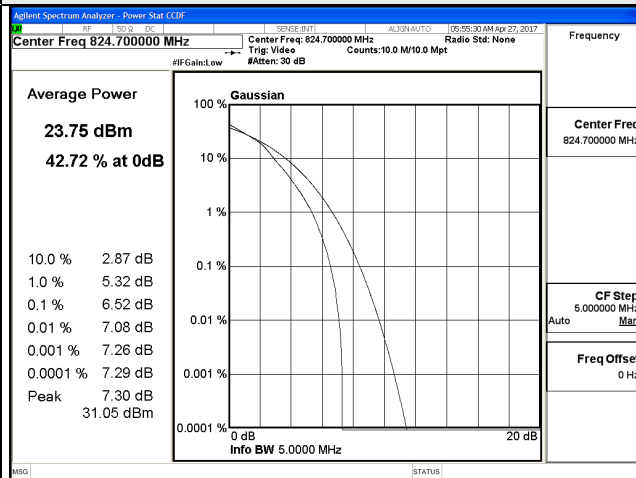
LTE Band 5, Channel Bandwidth 3MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
20415	825.5	5.82	6.61
20525	836.5	5.23	6.06
20635	847.5	5.16	5.98

LTE Band 5, Channel Bandwidth 5MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
20425	826.5	5.68	6.35
20525	836.5	5.47	6.12
20625	846.5	5.44	6.13

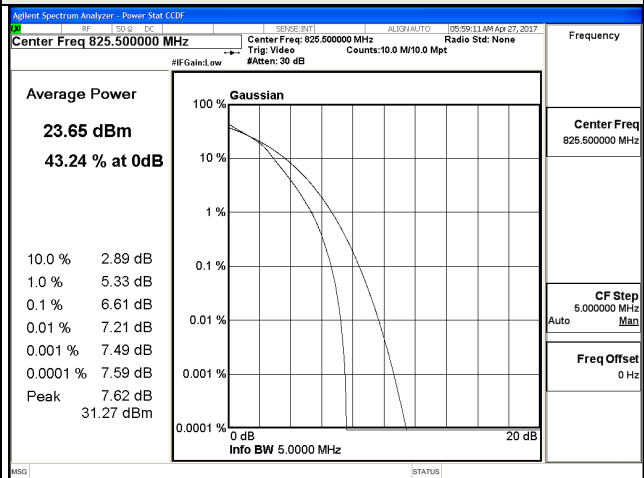
LTE Band 5, Channel Bandwidth 10MHz			
Channel	Frequency (MHz)	Peak To Average Ratio (dB)	
		QPSK	16QAM
20450	829.0	5.41	6.08
20525	836.5	5.53	6.15
20600	844.0	5.66	6.35

Spectrum Plot of Worst Value

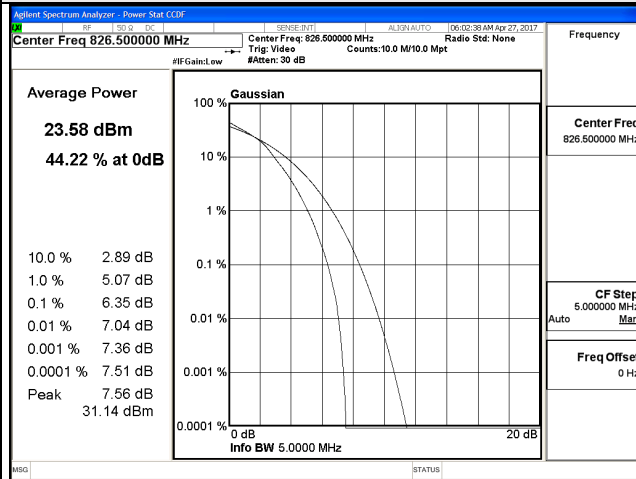
1.4MHz / 16QAM



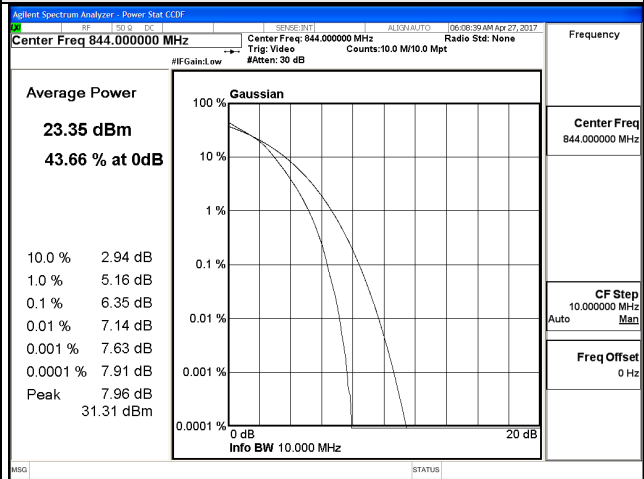
3MHz / 16QAM



5MHz / 16QAM



10MHz / 16QAM

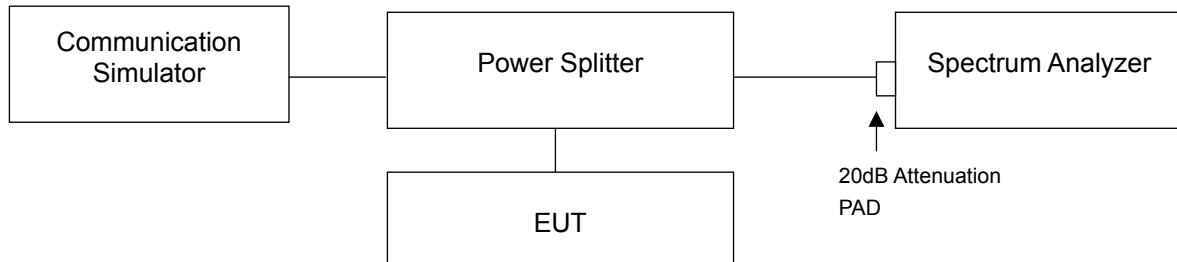


4.7 Conducted Spurious Emissions

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

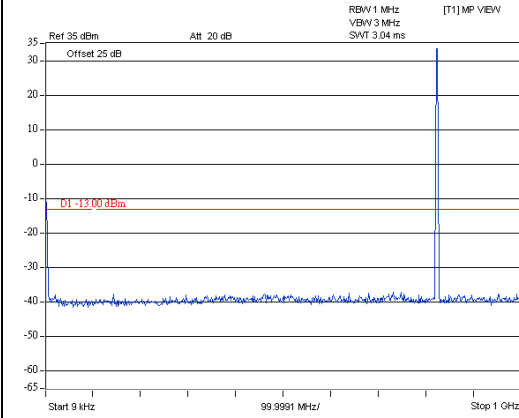
- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 9 kHz to 9GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

4.7.4 Test Results

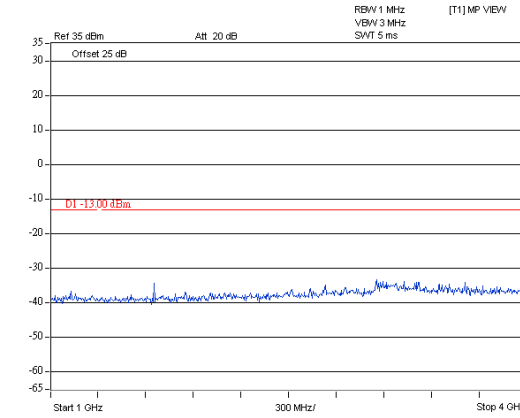
GSM

Channel 128 (824.2MHz)

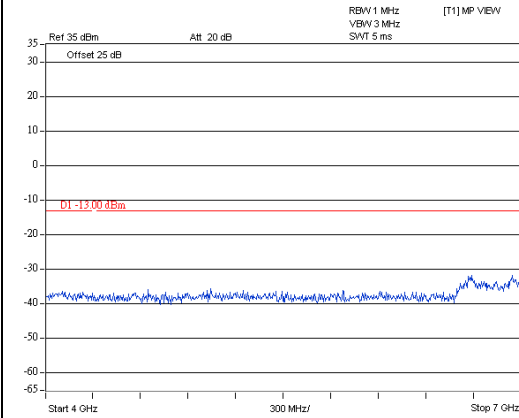
Frequency Range : 9kHz~1GHz



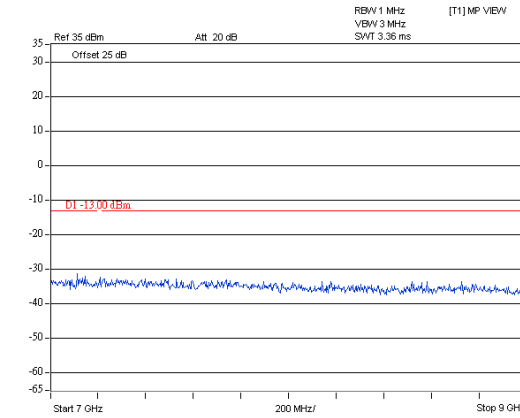
Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz



Frequency Range : 7GHz~9GHz

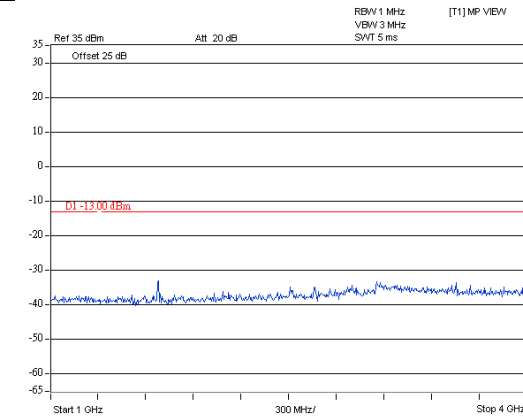
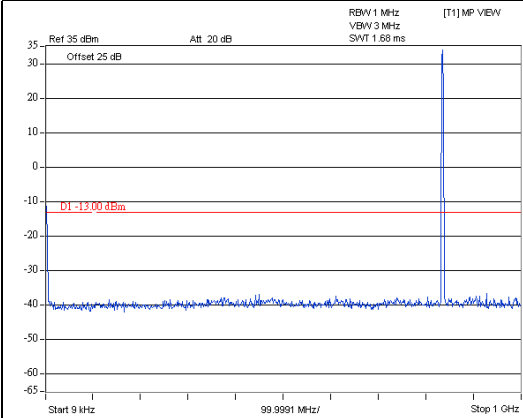


GSM

Channel 189 (836.4MHz)

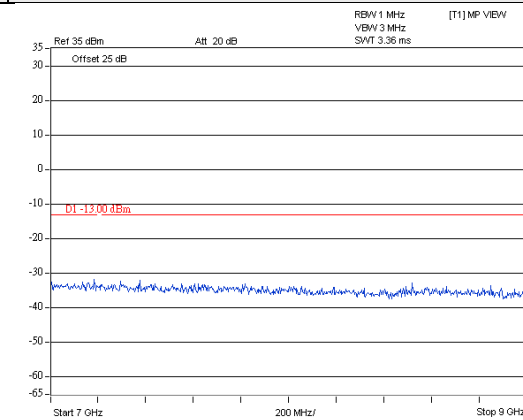
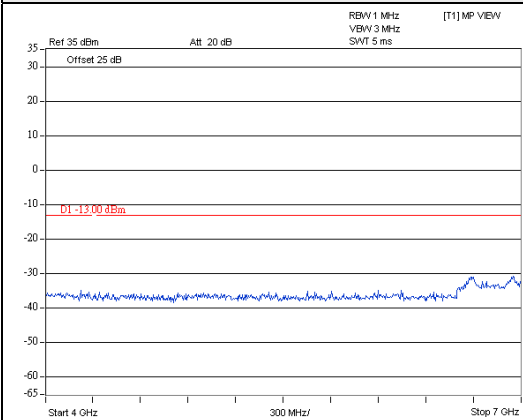
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz

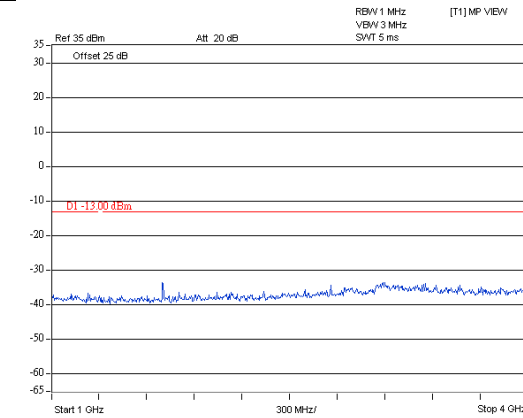
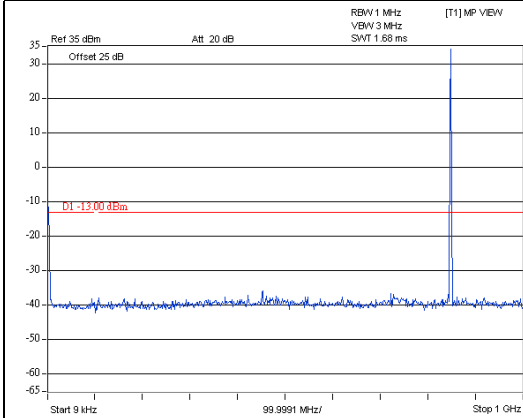


GSM

Channel 251 (848.8MHz)

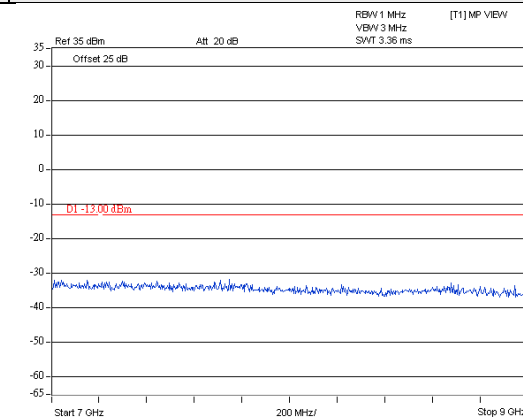
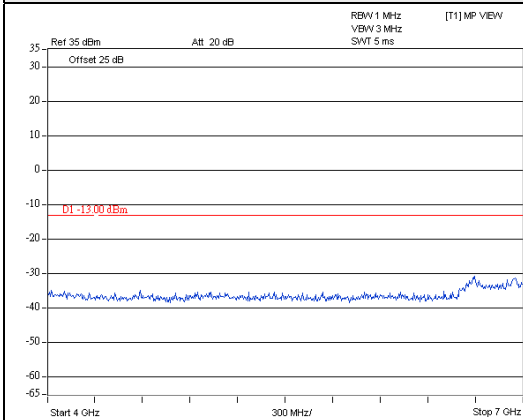
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz

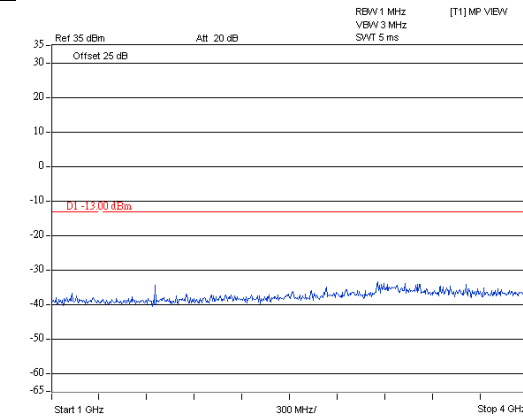
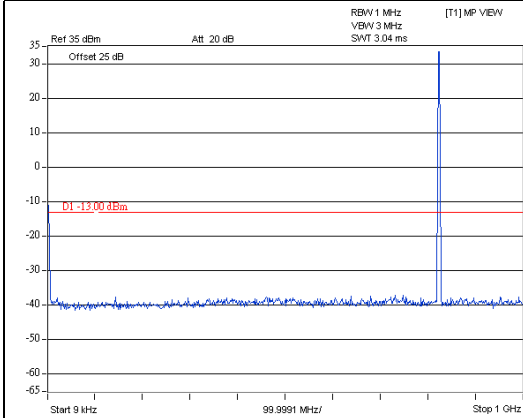


GPRS

Channel 128 (824.2MHz)

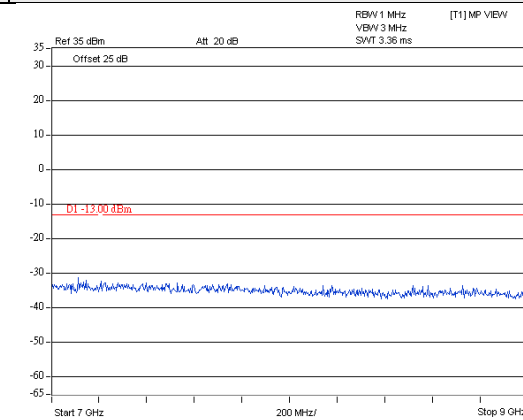
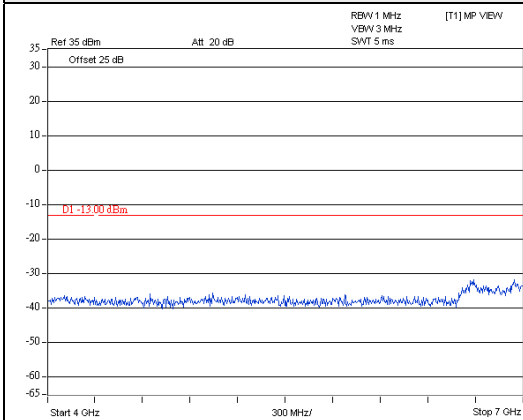
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz

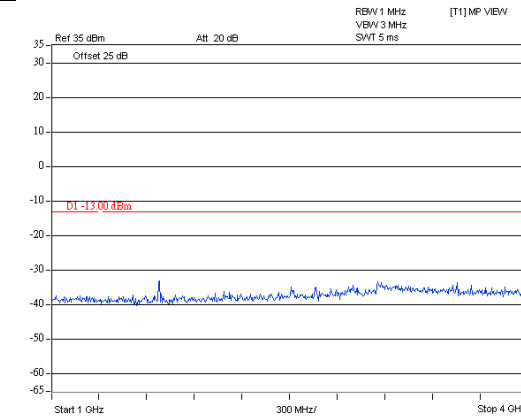
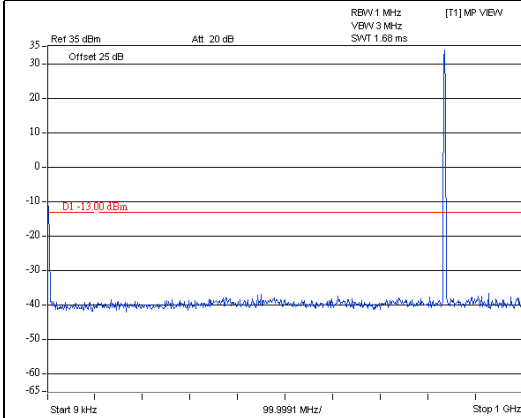


GPRS

Channel 189 (836.4MHz)

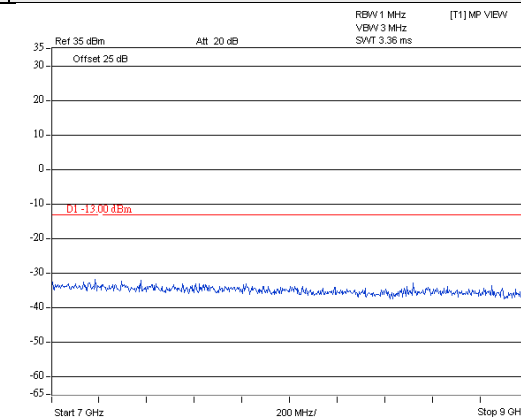
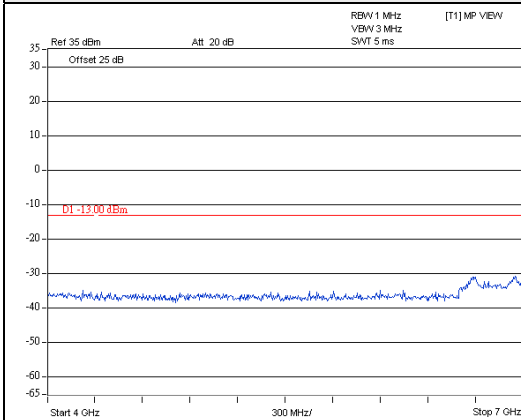
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz

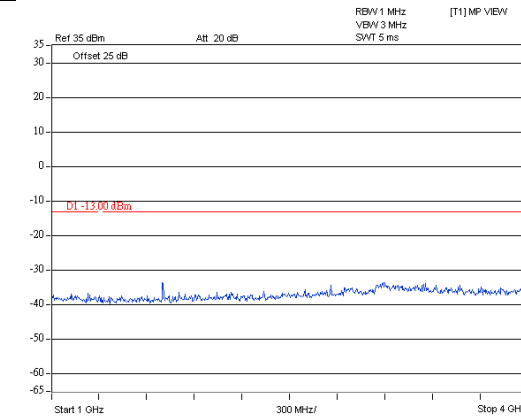
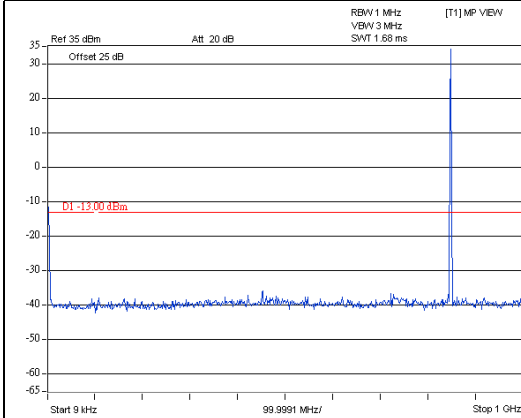


GPRS

Channel 251 (848.8MHz)

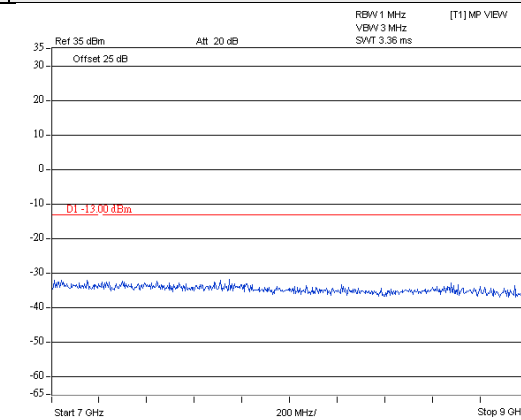
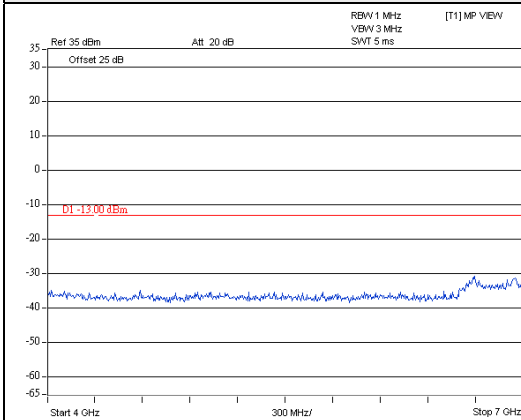
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz

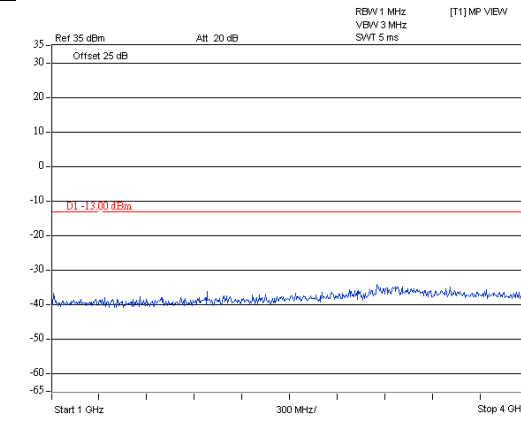
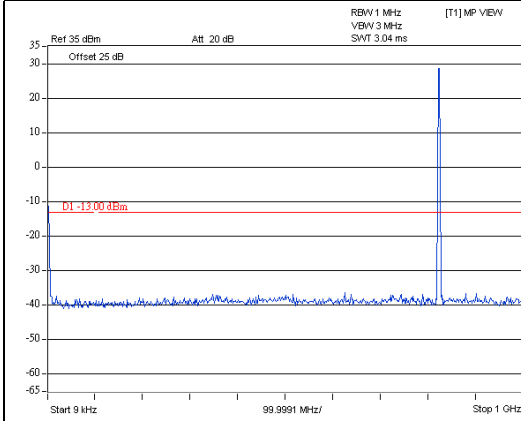


EDGE

Channel 128 (824.2MHz)

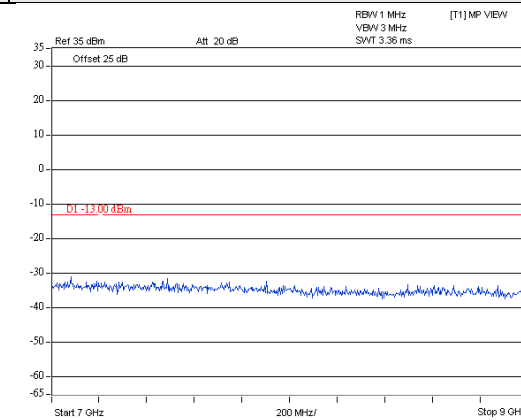
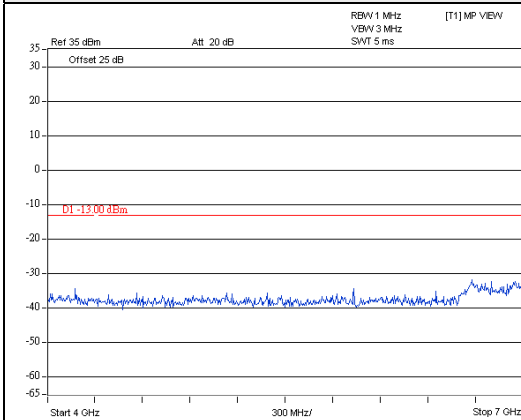
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz

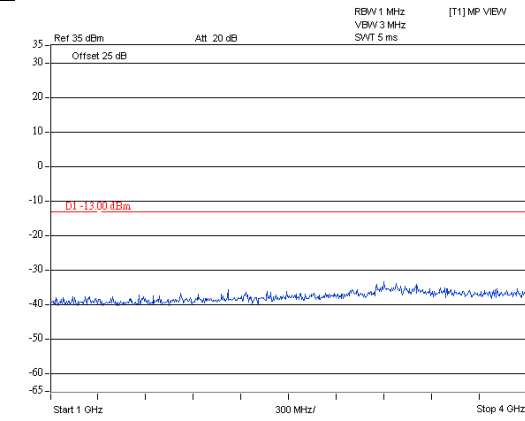
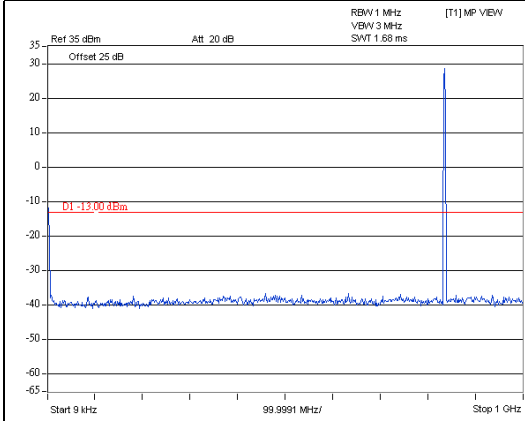


EDGE

Channel 189 (836.4MHz)

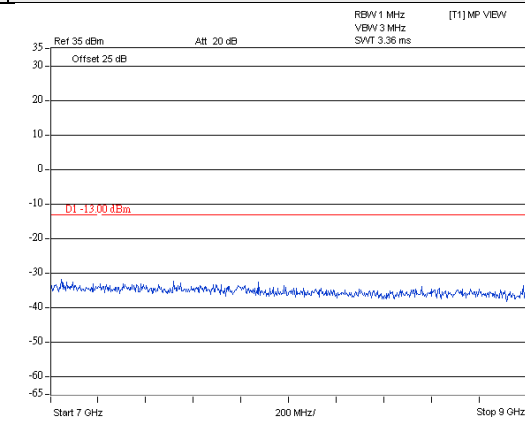
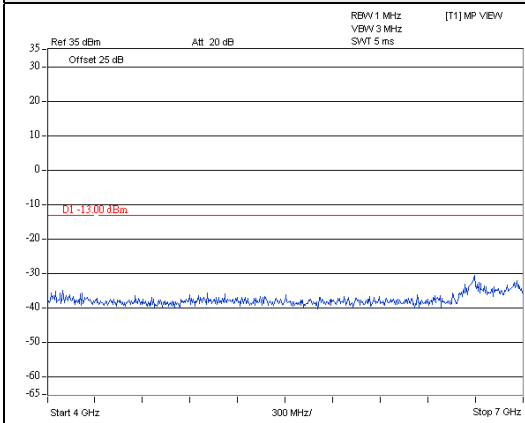
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz

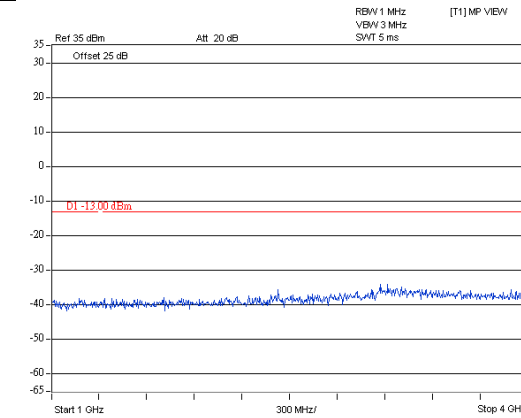
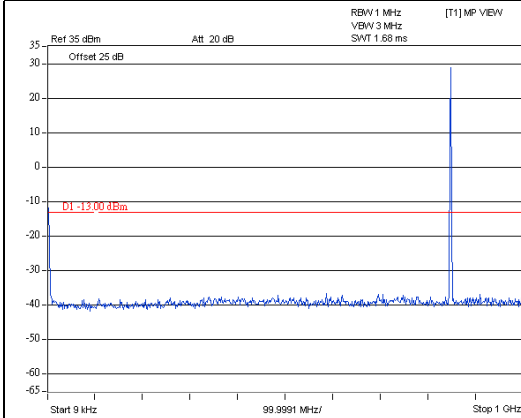


EDGE

Channel 251 (848.8MHz)

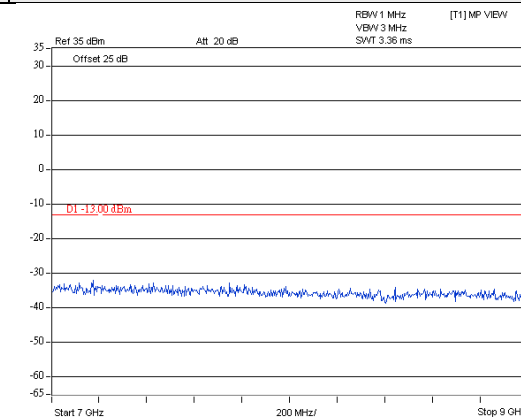
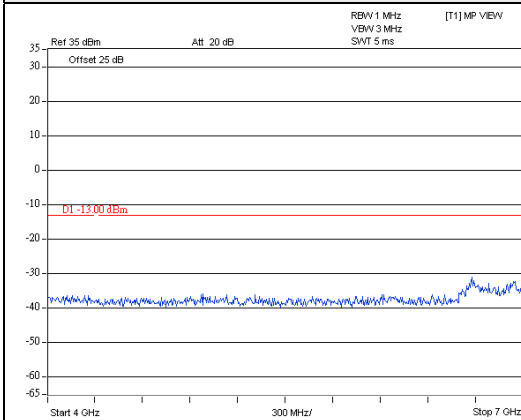
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz

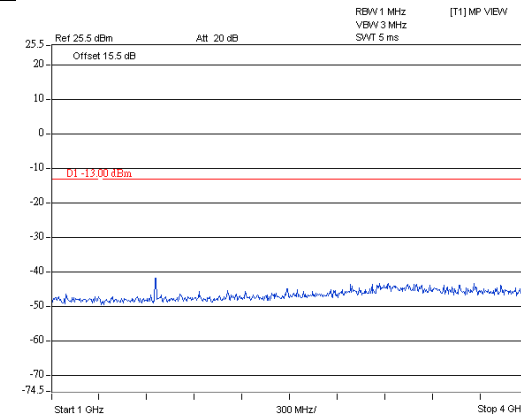
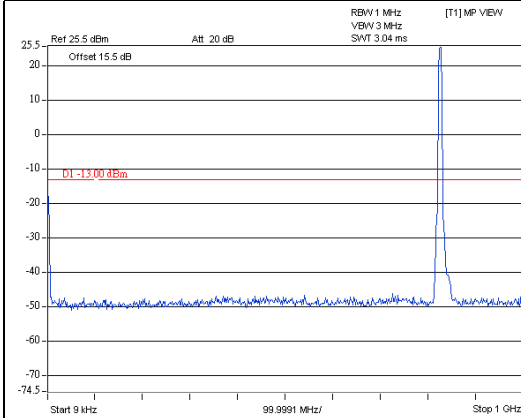


WCDMA

Channel 4132 (826.4MHz)

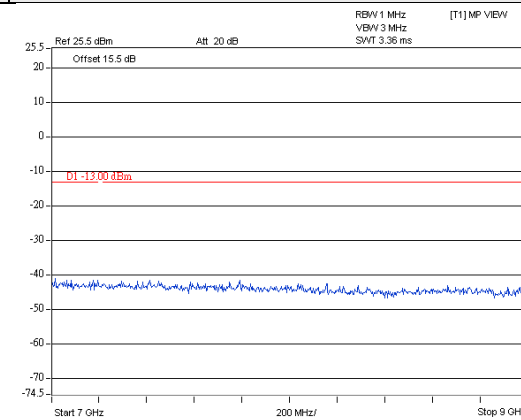
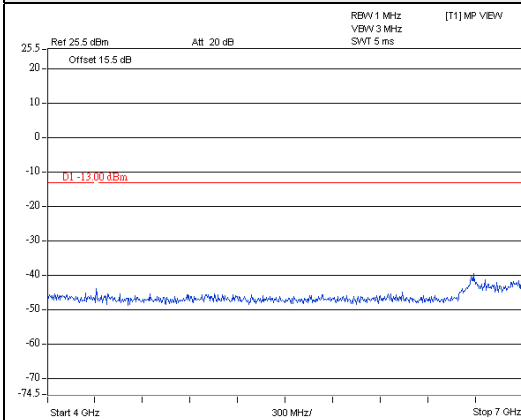
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz

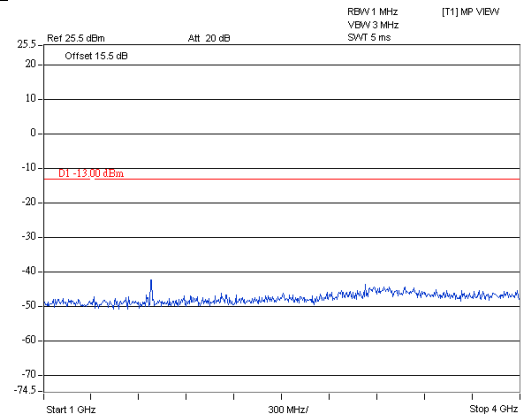
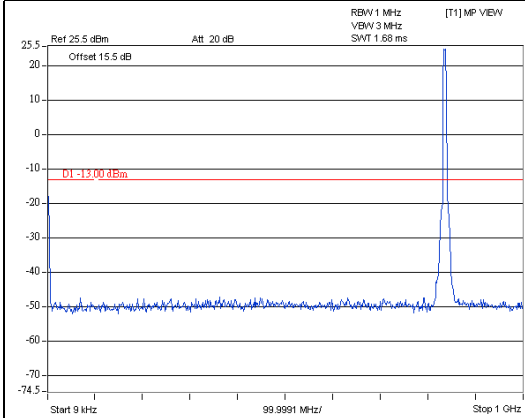


WCDMA

Channel 4182 (836.6MHz)

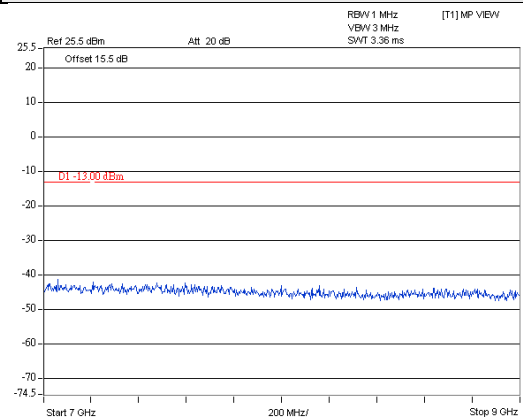
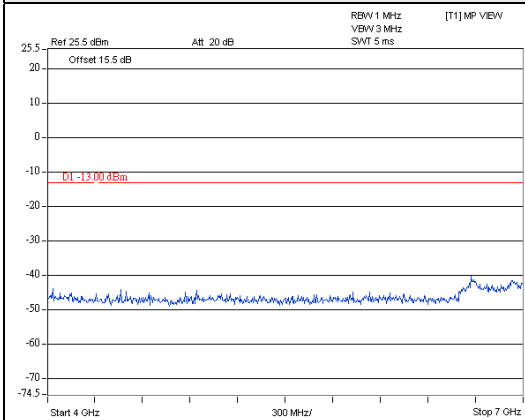
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz

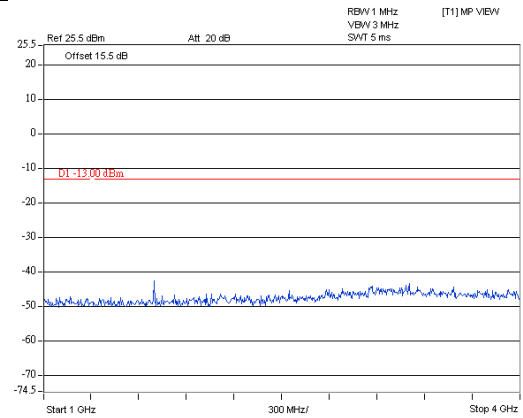
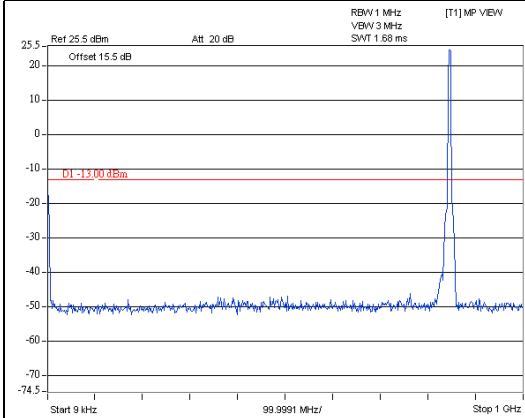


WCDMA

Channel 4233 (846.6MHz)

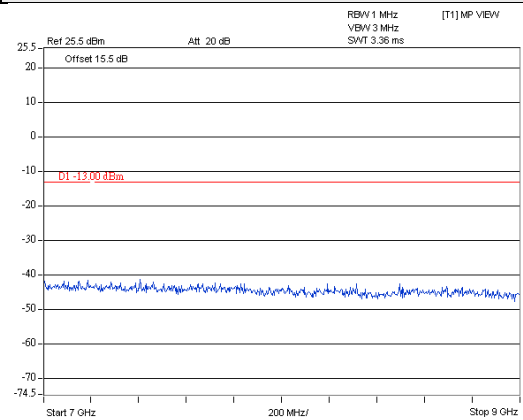
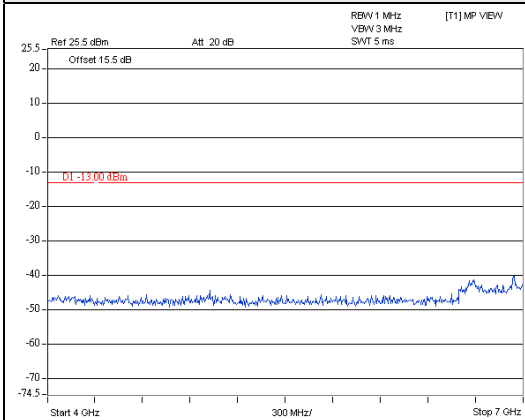
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz

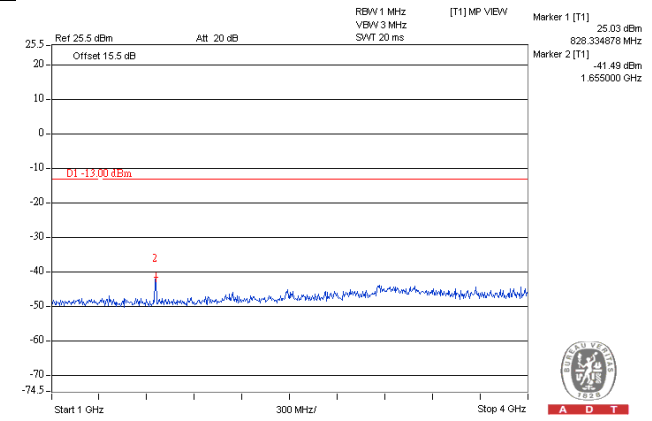
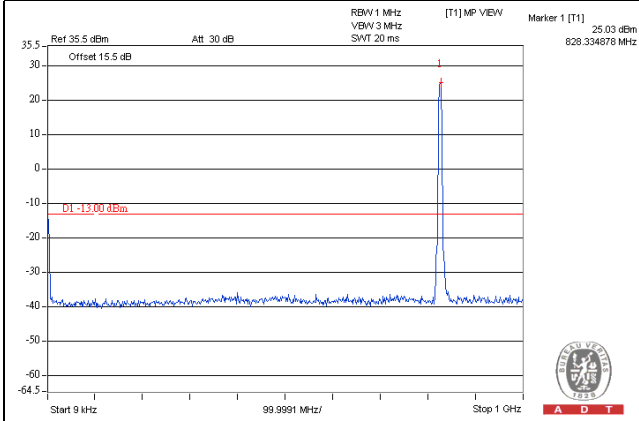


HSDPA

Channel 4132 (826.4MHz)

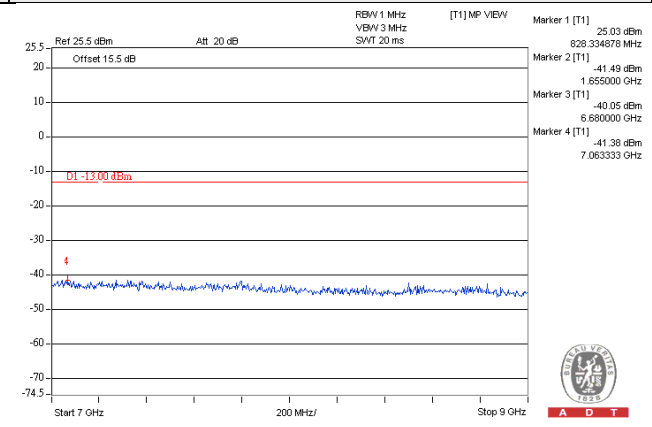
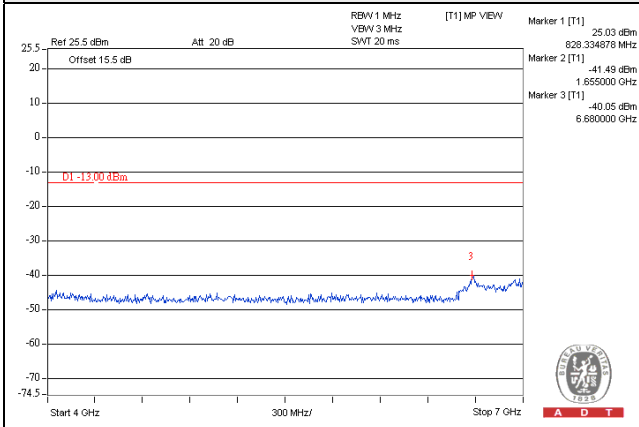
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz

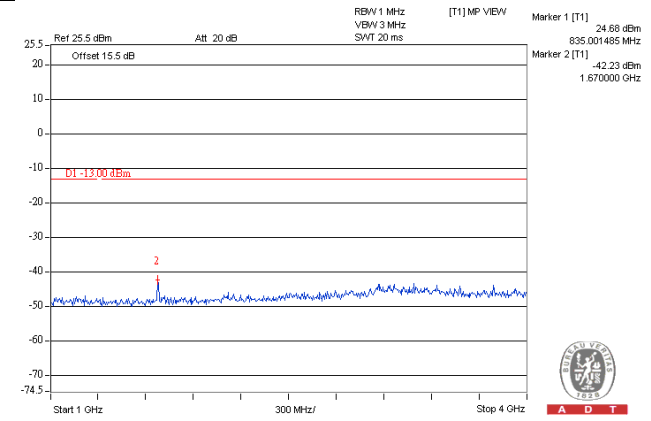
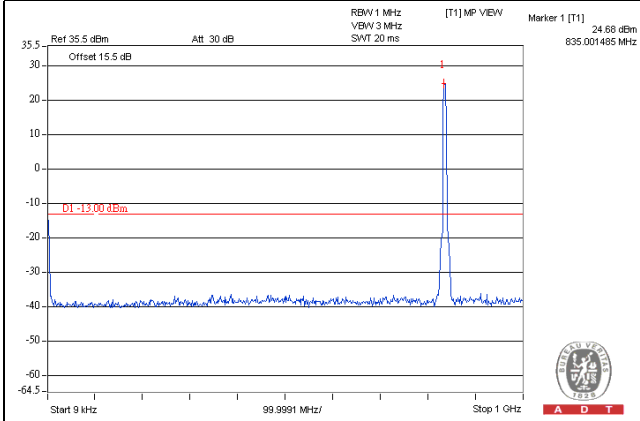


HSDPA

Channel 4182 (836.6MHz)

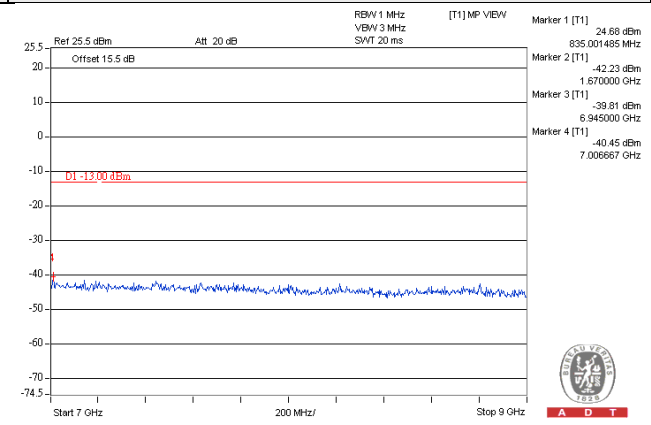
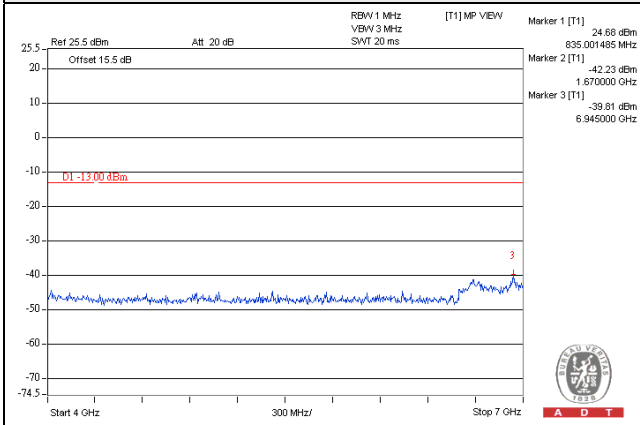
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz

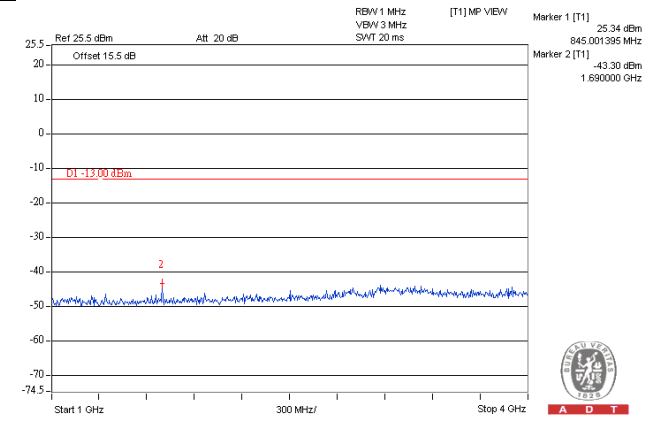
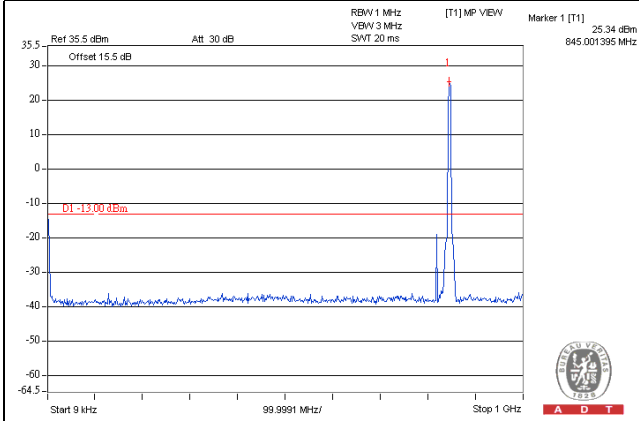


HSDPA

Channel 4233 (846.6MHz)

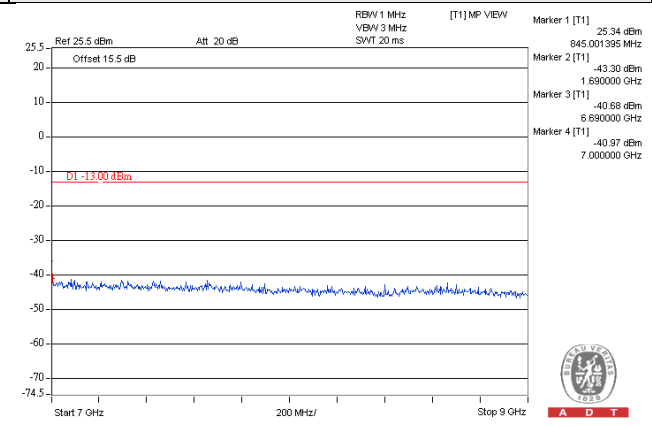
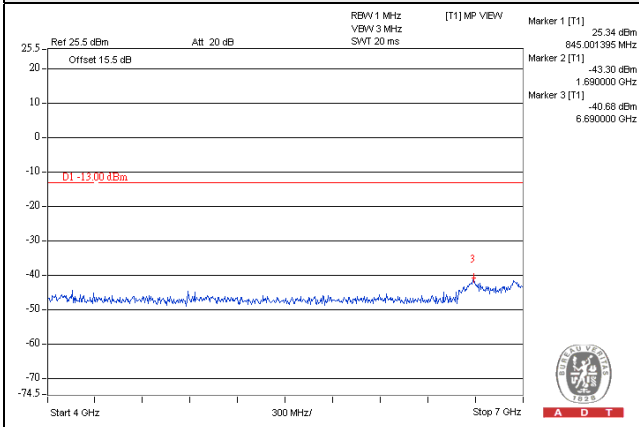
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz

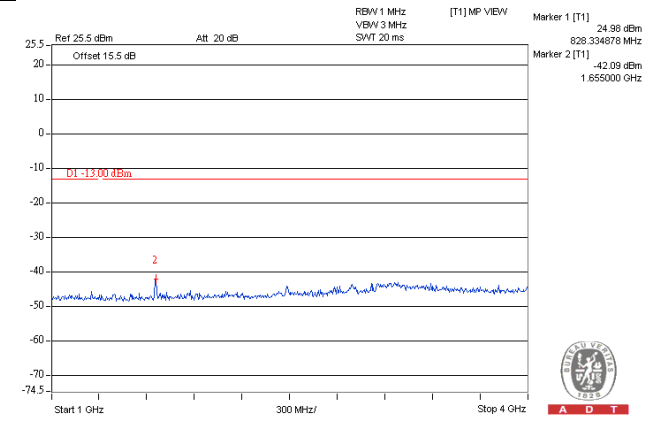
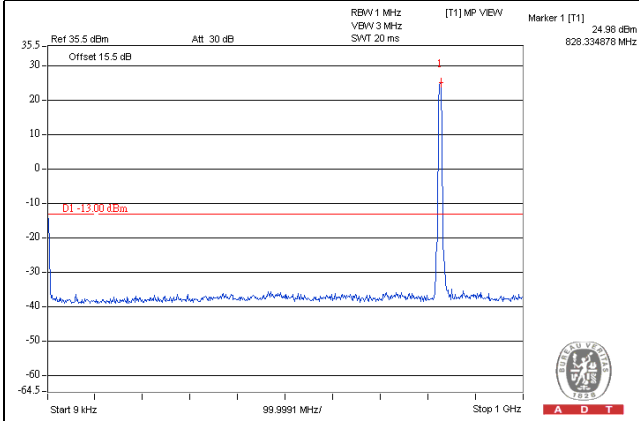


HSUPA

Channel 4132 (826.4MHz)

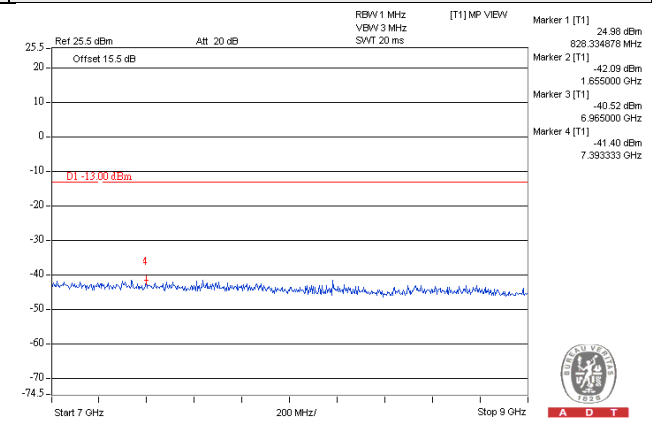
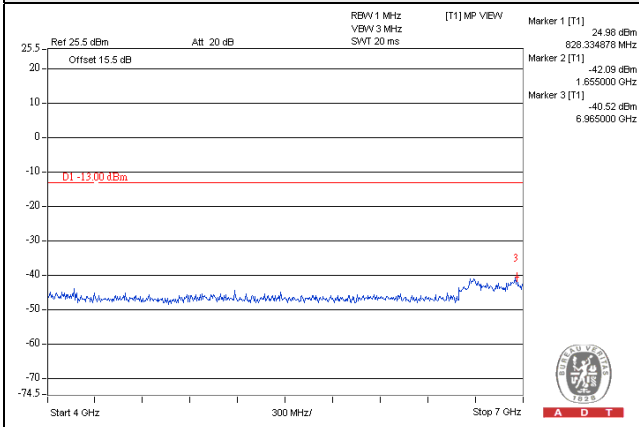
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz

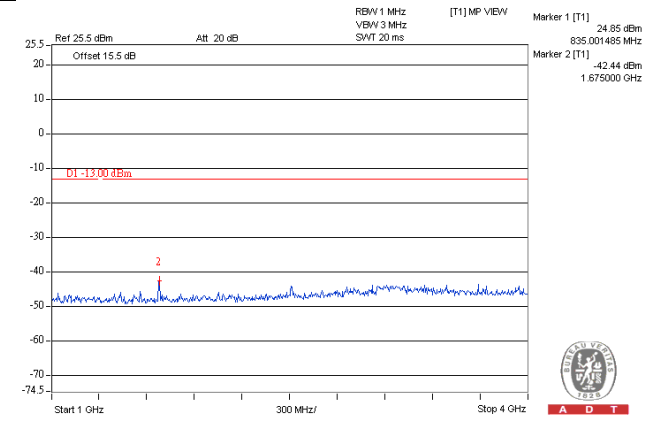
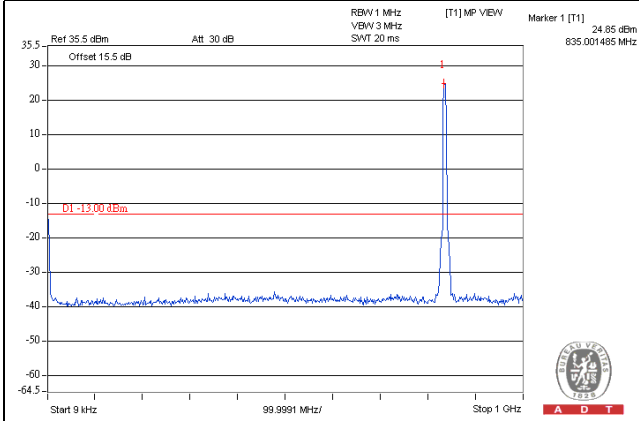


HSUPA

Channel 4182 (836.6MHz)

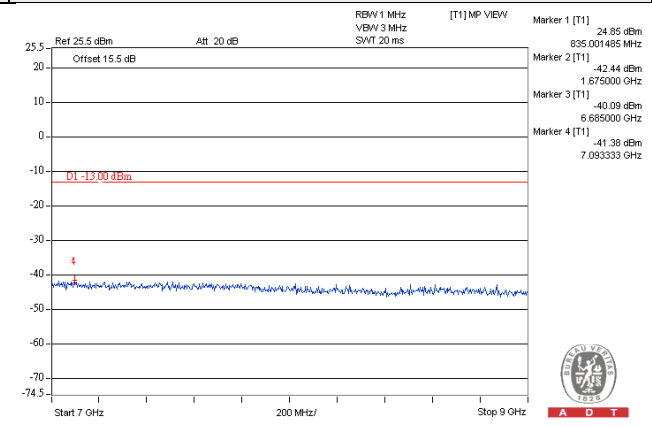
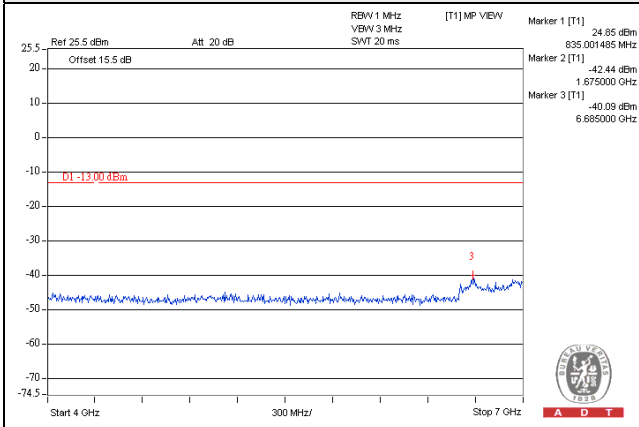
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz

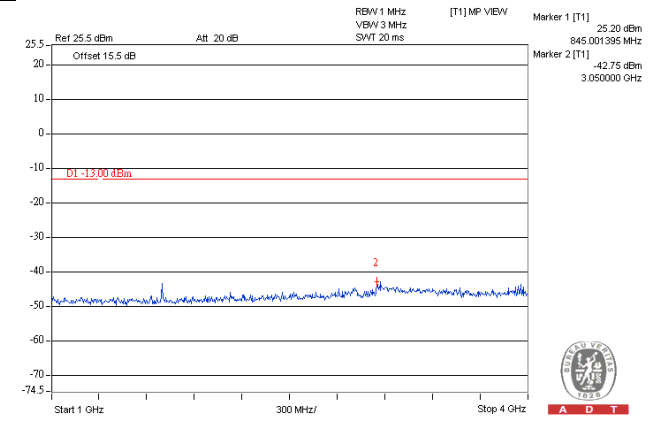
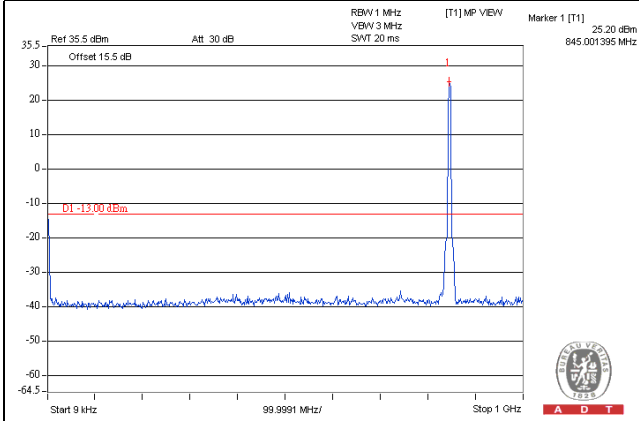


HSUPA

Channel 4233 (846.6MHz)

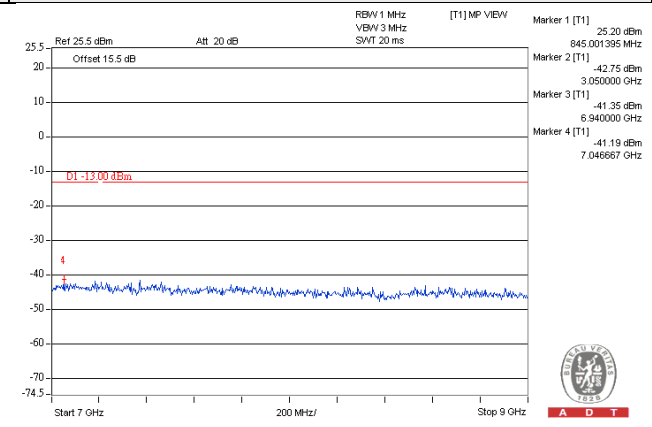
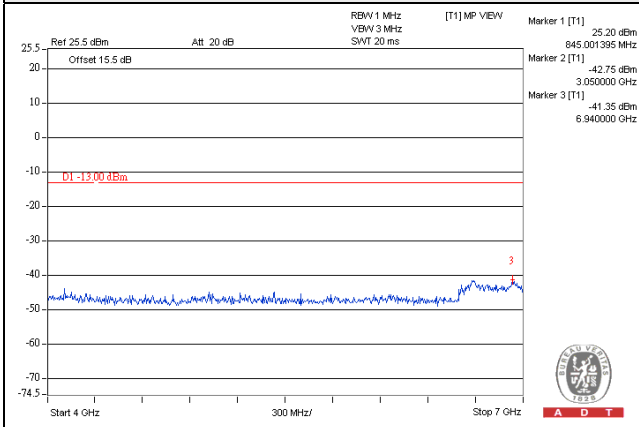
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz

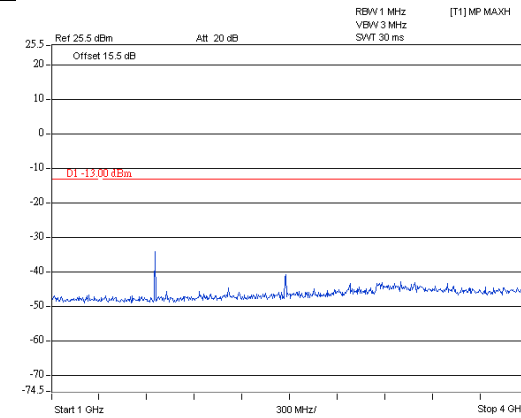
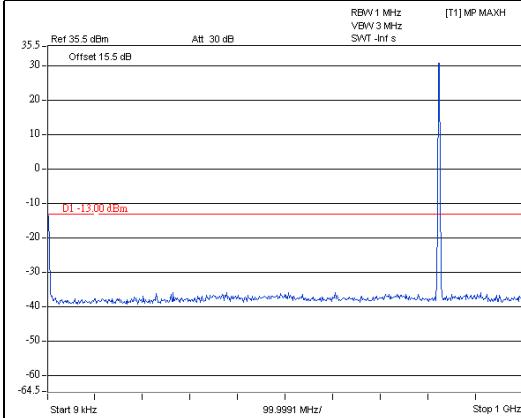


LTE Band 5, Channel Bandwidth 1.4MHz

Channel 20407 (824.7MHz)

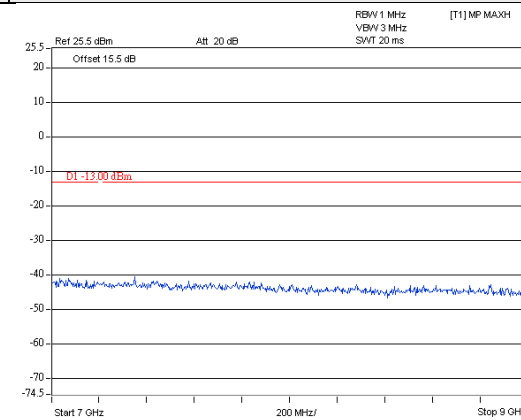
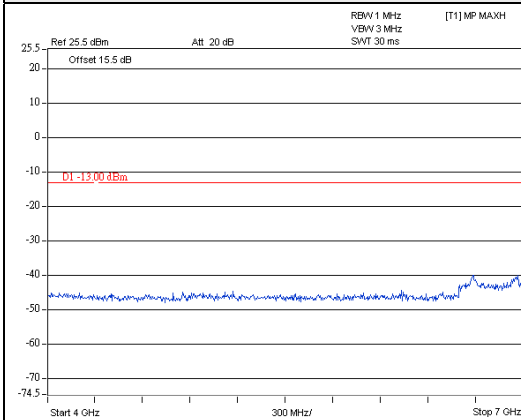
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz

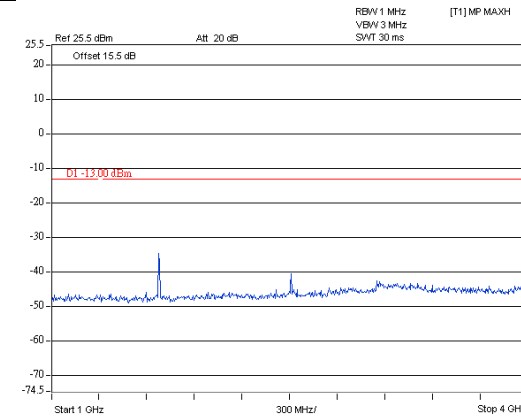
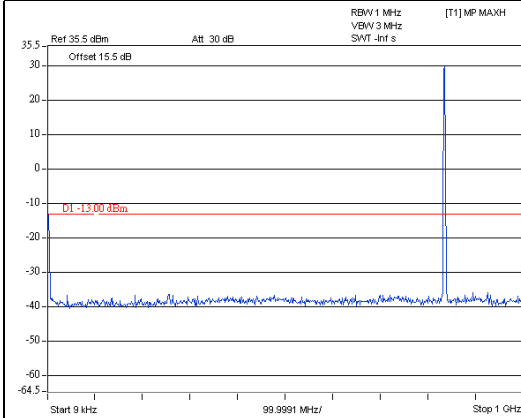


LTE Band 5, Channel Bandwidth 1.4MHz

Channel 20525 (836.5MHz)

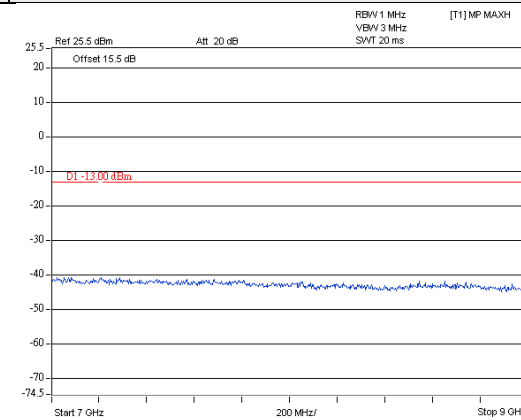
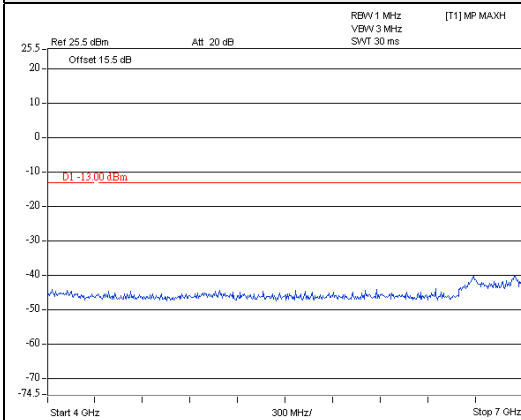
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz

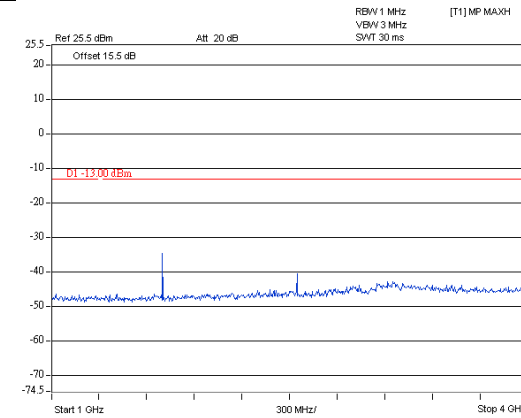
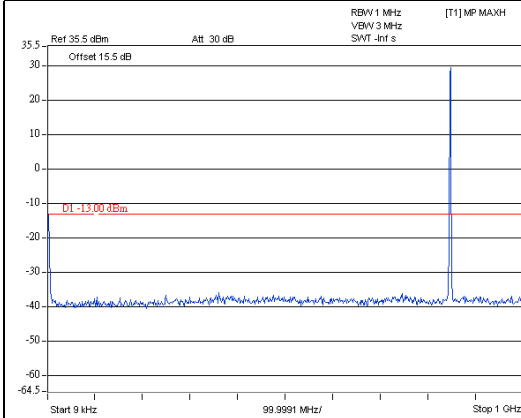


LTE Band 5, Channel Bandwidth 1.4MHz

Channel 20643 (848.3MHz)

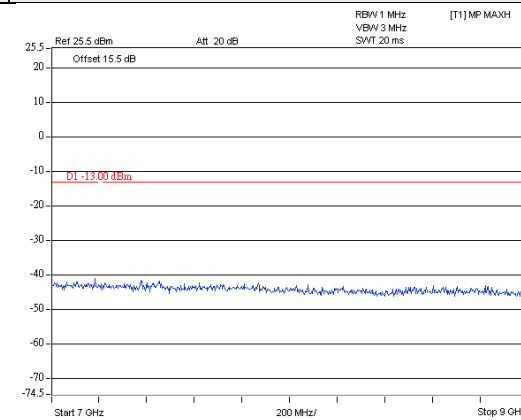
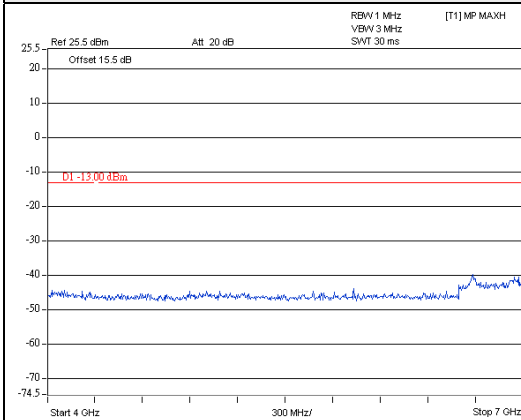
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz

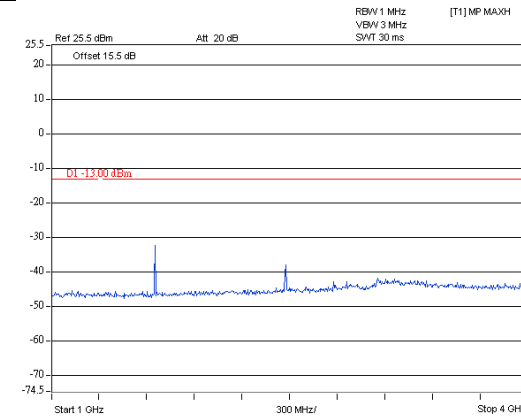
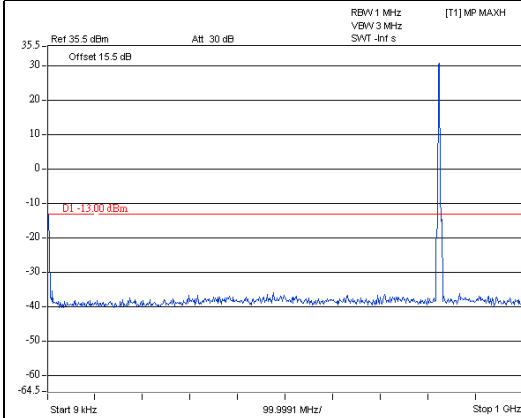


LTE Band 5, Channel Bandwidth 3MHz

Channel 20415 (825.5MHz)

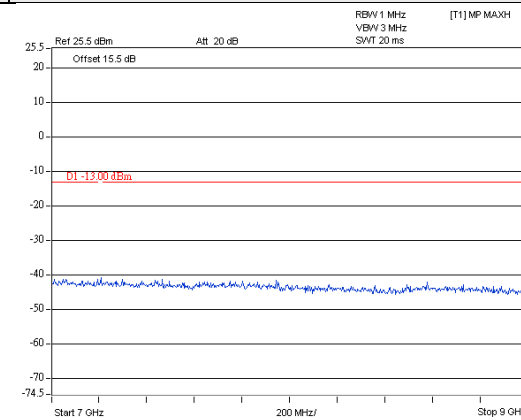
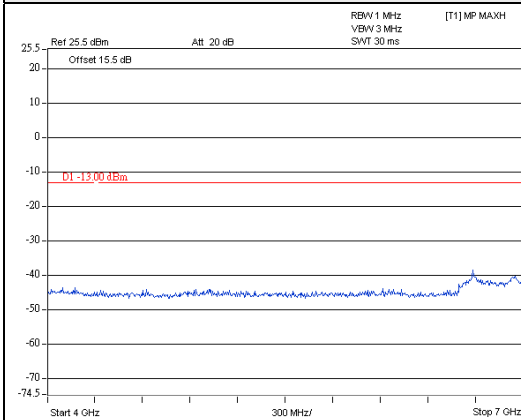
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz

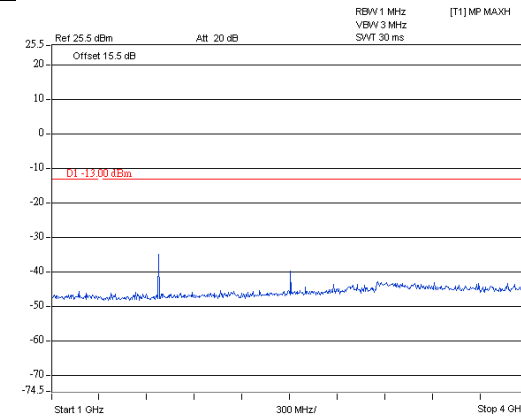
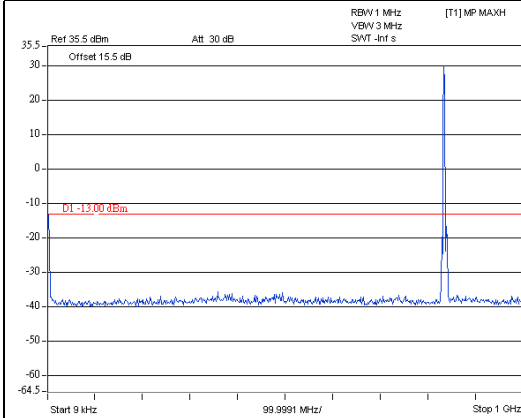


LTE Band 5, Channel Bandwidth 3MHz

Channel 20525 (836.5MHz)

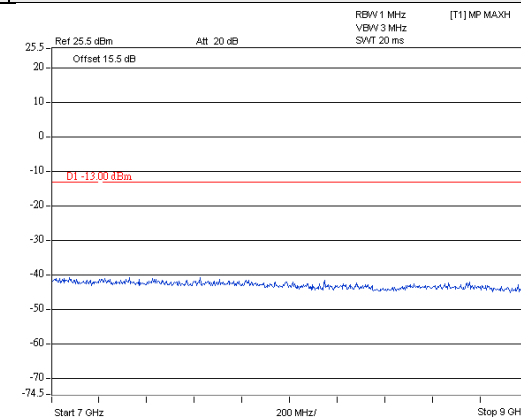
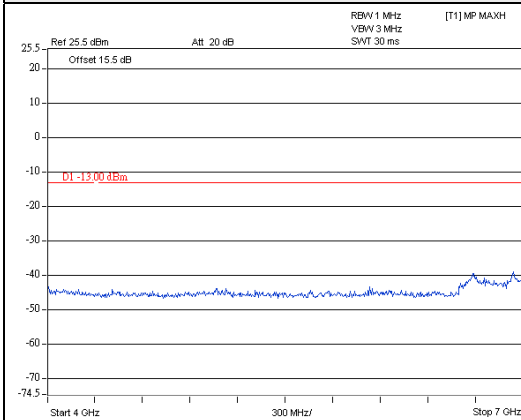
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

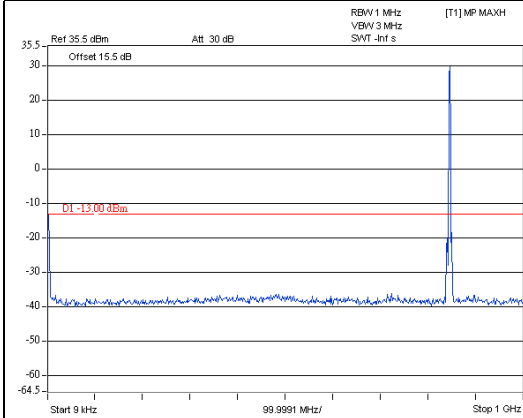
Frequency Range : 7GHz~9GHz



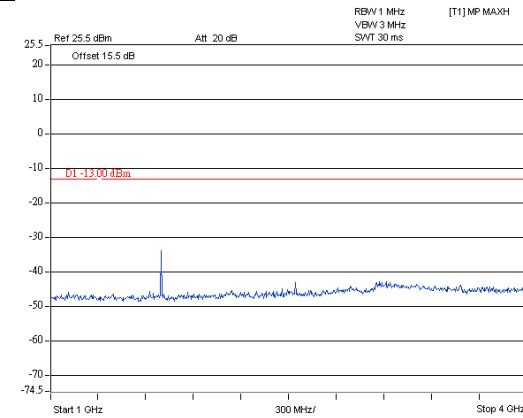
LTE Band 5, Channel Bandwidth 3MHz

Channel 20635 (847.5MHz)

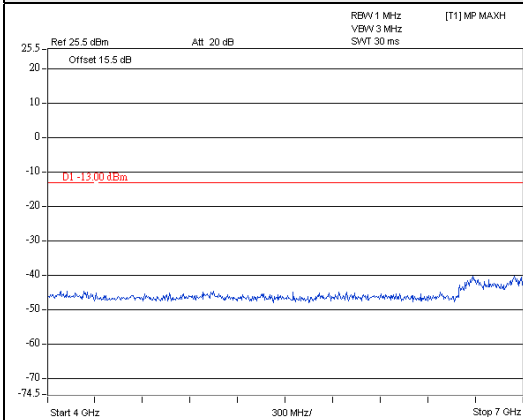
Frequency Range : 9kHz~1GHz



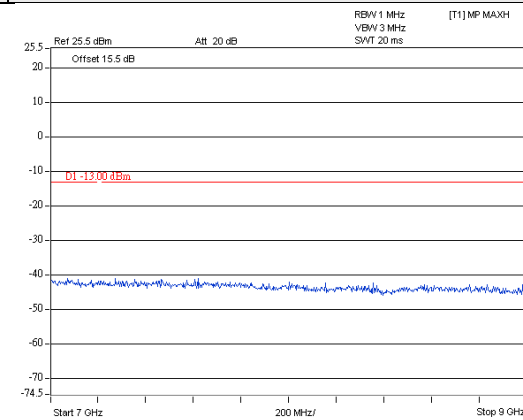
Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz



Frequency Range : 7GHz~9GHz

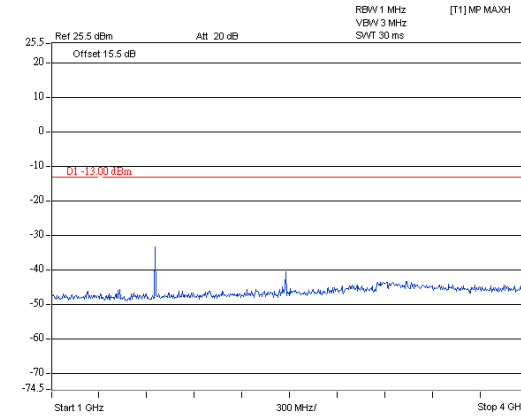
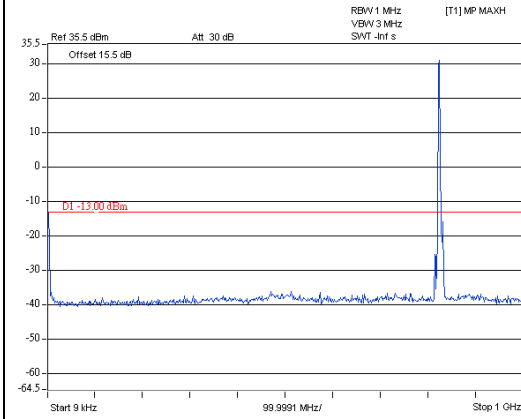


LTE Band 5, Channel Bandwidth 5MHz

Channel 20425 (826.5MHz)

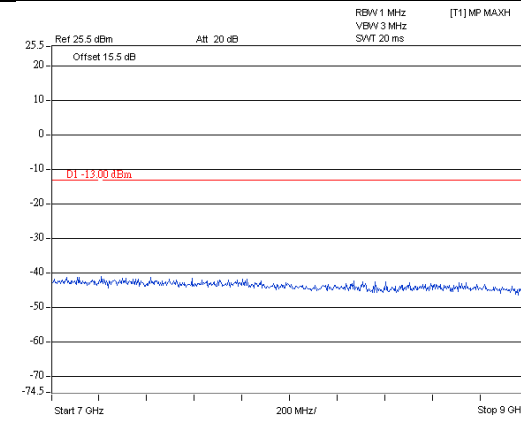
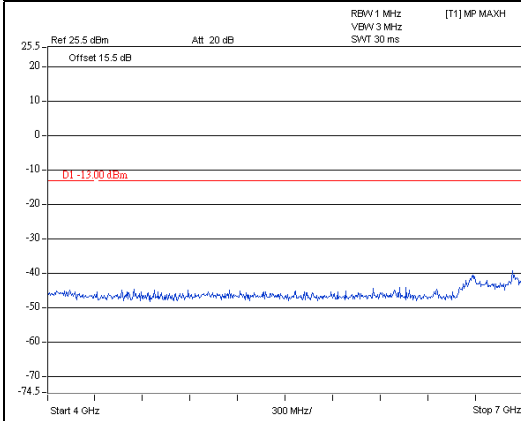
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz

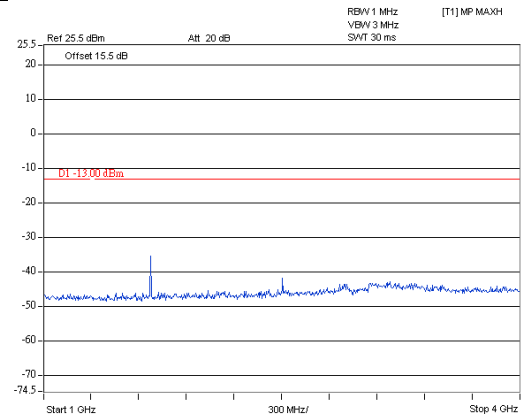
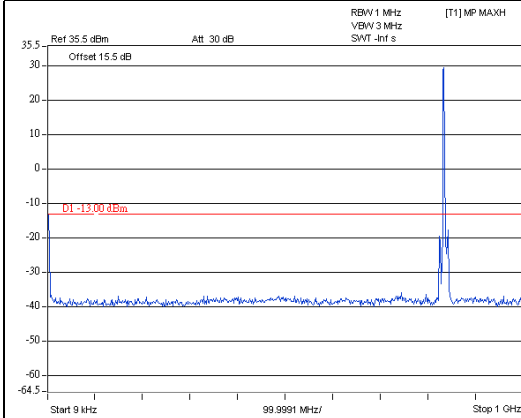


LTE Band 5, Channel Bandwidth 5MHz

Channel 20525 (836.5MHz)

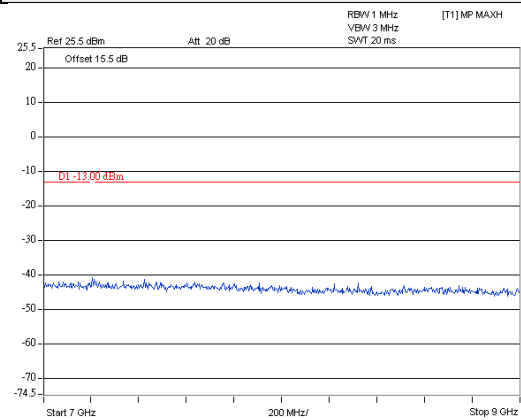
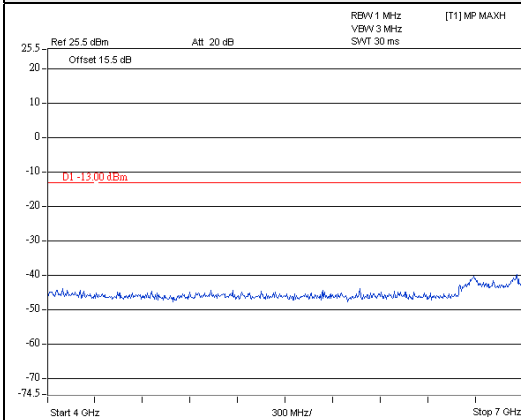
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

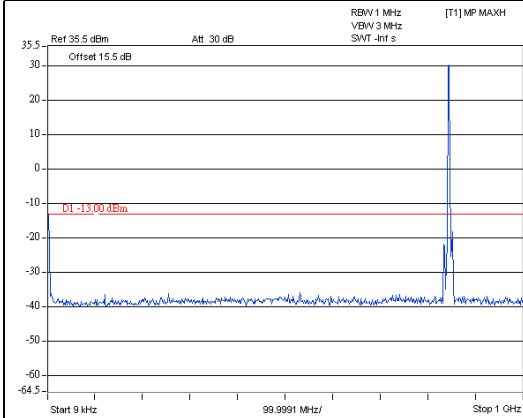
Frequency Range : 7GHz~9GHz



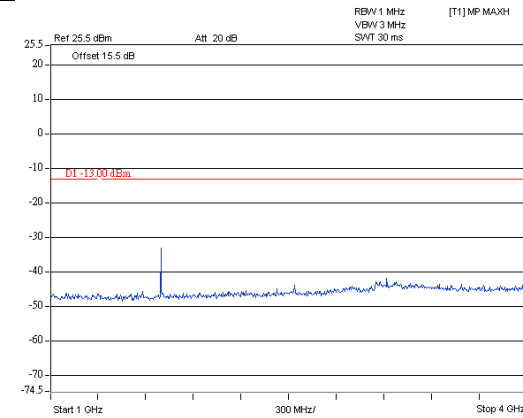
LTE Band 5, Channel Bandwidth 5MHz

Channel 20625 (847.5MHz)

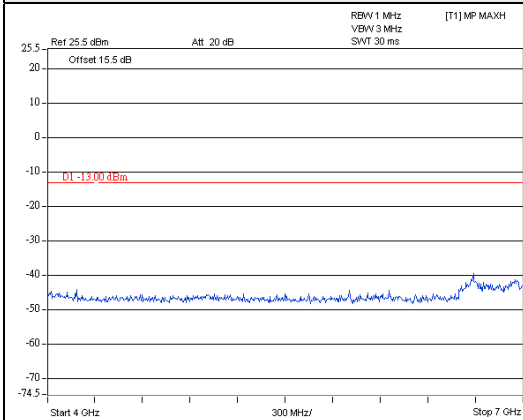
Frequency Range : 9kHz~1GHz



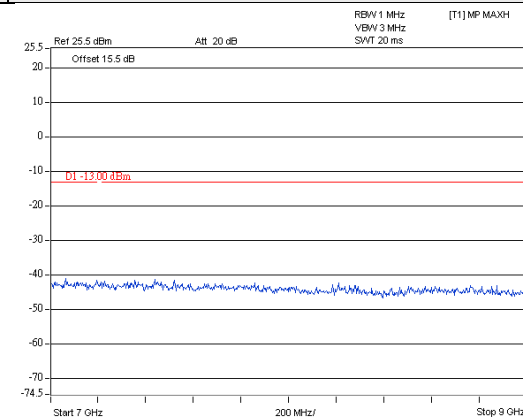
Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz



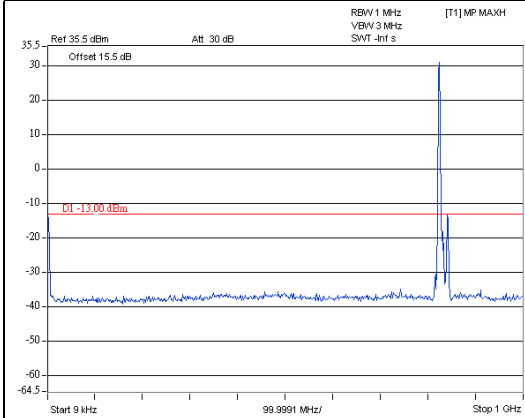
Frequency Range : 7GHz~9GHz



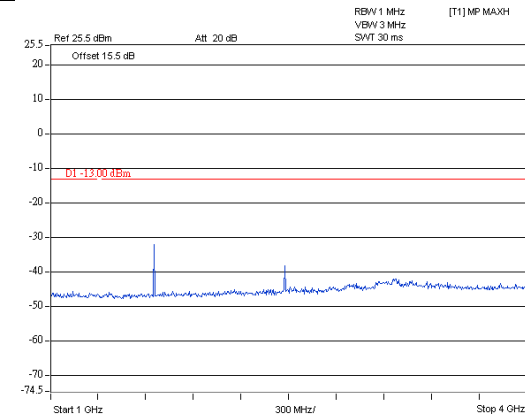
LTE Band 5, Channel Bandwidth 10MHz

Channel 20450 (829.0MHz)

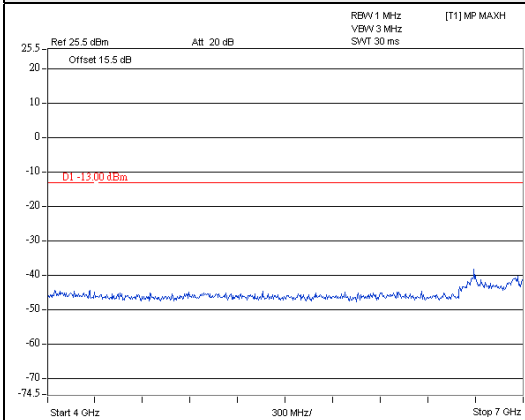
Frequency Range : 9kHz~1GHz



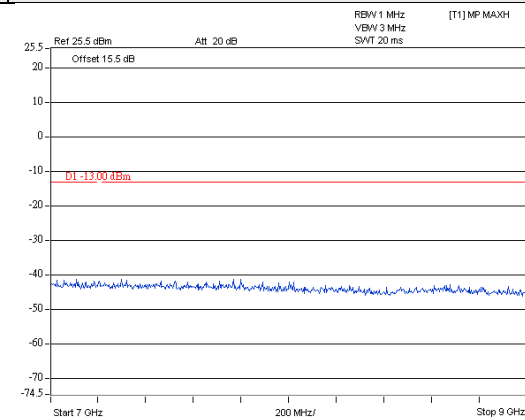
Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz



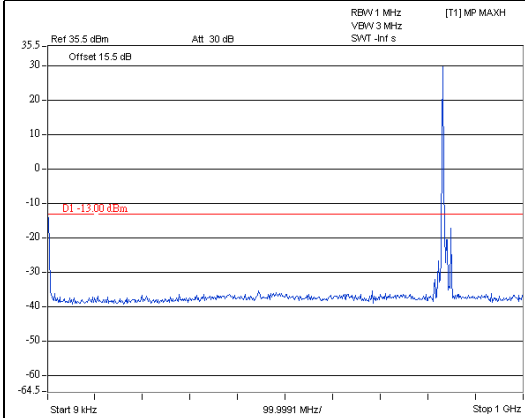
Frequency Range : 7GHz~9GHz



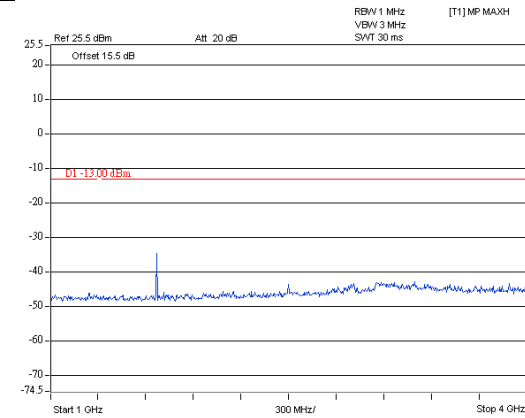
LTE Band 5, Channel Bandwidth 10MHz

Channel 20525 (836.5MHz)

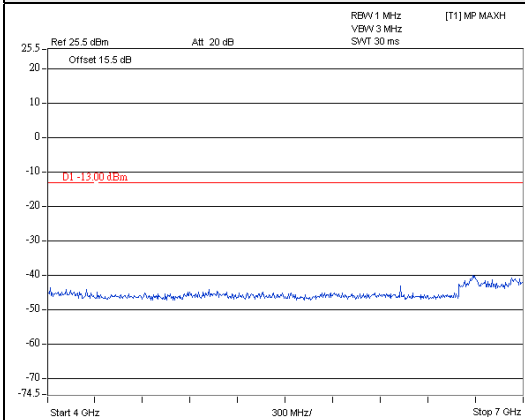
Frequency Range : 9kHz~1GHz



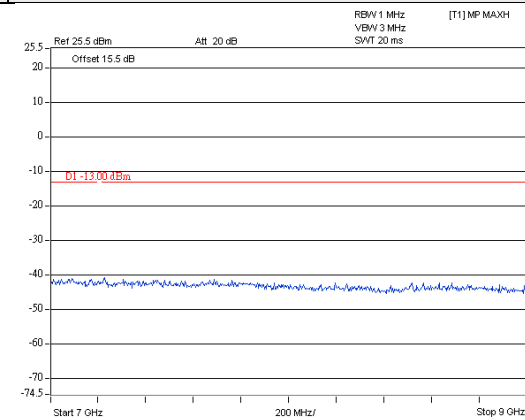
Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz



Frequency Range : 7GHz~9GHz

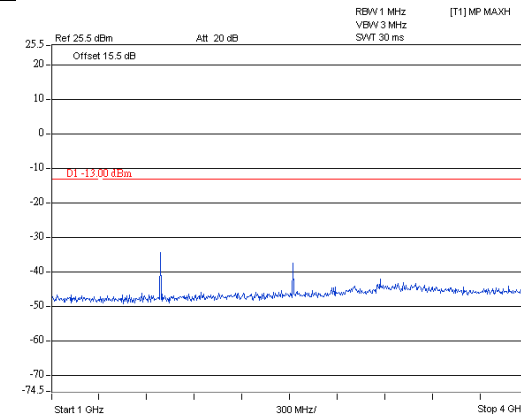
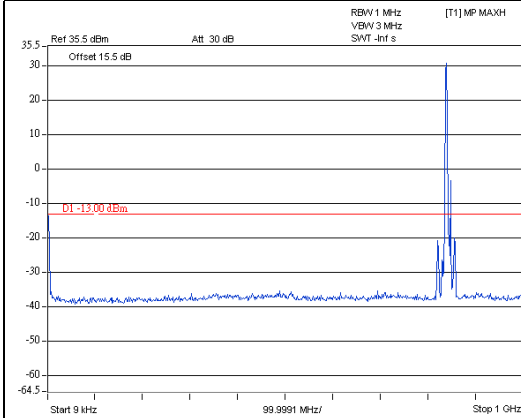


LTE Band 5, Channel Bandwidth 10MHz

Channel 20600 (844.0MHz)

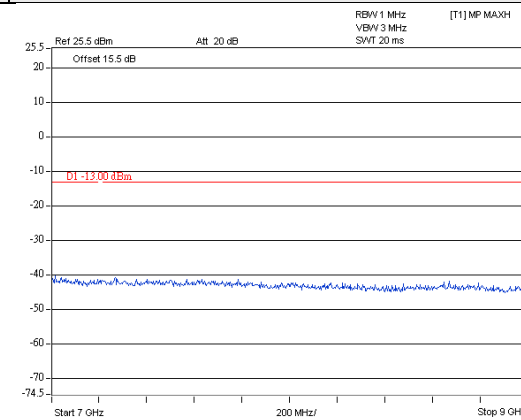
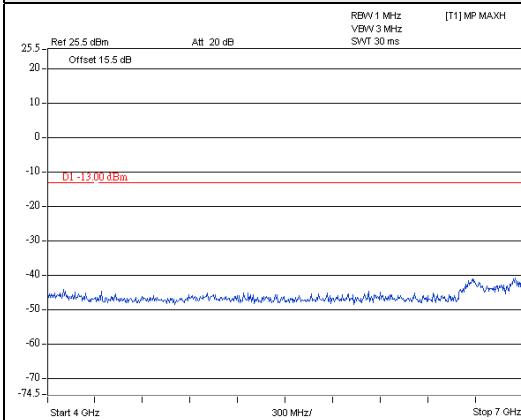
Frequency Range : 9kHz~1GHz

Frequency Range : 1GHz~4GHz



Frequency Range : 4GHz~7GHz

Frequency Range : 7GHz~9GHz



4.8 Radiated Emission Measurement

4.8.1 Limits of Radiated Emission Measurement

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

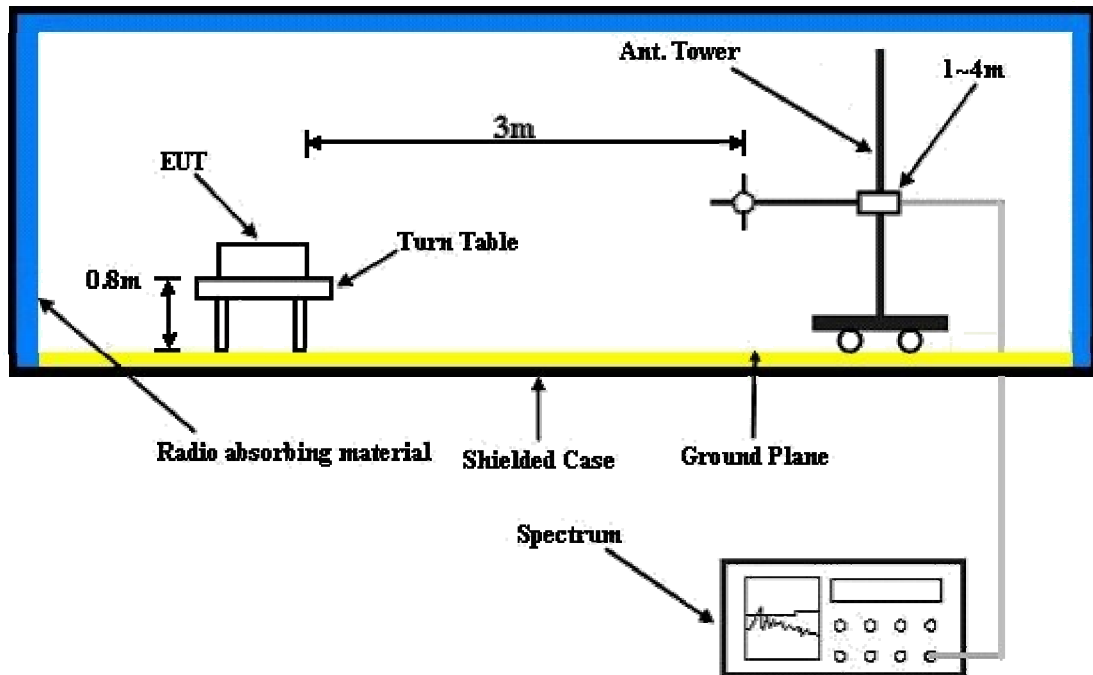
- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 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. $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn.}$
- d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, $\text{E.R.P power} = \text{E.I.R.P power} - 2.15\text{dBi.}$

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

4.8.5 Test Results

Below 1GHz
GSM Mode

Mode	TX channel 128 (824.2MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	19deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	45.52	-49.0	-39.4	-10.0	-49.4	-13.0	-36.4
2	152.22	-49.8	-56.5	0.0	-56.5	-13.0	-43.5
3	187.14	-46.5	-60.9	3.8	-57.1	-13.0	-44.1
4	658.56	-57.6	-61.9	4.9	-57.0	-13.0	-44.0
5	804.06	-50.5	-50.4	4.0	-46.4	-13.0	-33.4
6	972.84	-61.1	-57.7	3.9	-53.8	-13.0	-40.8

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	53.28	-47.3	-47.9	-8.5	-56.4	-13.0	-43.4
2	154.16	-47.4	-52.1	0.1	-52.0	-13.0	-39.0
3	194.90	-49.4	-59.0	4.9	-54.1	-13.0	-41.1
4	712.88	-58.2	-58.8	5.1	-53.7	-13.0	-40.7
5	804.06	-51.9	-49.9	4.0	-45.9	-13.0	-32.9
6	974.78	-58.8	-54.5	3.9	-50.6	-13.0	-37.6

Remarks:

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

WCDMA Mode

Mode	TX channel 4132 (826.4MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	20deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	41.64	-59.2	-47.2	-10.6	-57.8	-13.0	-44.8
2	158.04	-55.0	-62.4	0.3	-62.1	-13.0	-49.1
3	187.14	-55.9	-70.2	3.8	-66.4	-13.0	-53.4
4	400.54	-68.0	-75.8	5.2	-70.6	-13.0	-57.6
5	699.30	-67.7	-71.8	5.3	-66.5	-13.0	-53.5
6	945.68	-69.3	-66.7	3.9	-62.8	-13.0	-49.8

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	39.70	-49.4	-50.0	-10.9	-60.9	-13.0	-47.9
2	132.82	-50.0	-57.0	-0.1	-57.1	-13.0	-44.1
3	189.08	-53.0	-62.2	4.1	-58.1	-13.0	-45.1
4	247.28	-60.5	-67.6	5.4	-62.2	-13.0	-49.2
5	699.30	-68.2	-69.2	5.3	-63.9	-13.0	-50.9
6	947.62	-68.0	-64.4	3.9	-60.5	-13.0	-47.5

Remarks:

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

LTE Band 5, Channel Bandwidth: 1.4MHz

Mode	TX channel 20407 (824.7MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	119.24	-46.5	-56.7	0.1	-56.6	-13.0	-43.6
2	158.04	-54.6	-62.1	0.3	-61.8	-13.0	-48.8
3	297.72	-55.5	-65.0	5.1	-59.9	-13.0	-46.9
4	363.68	-59.8	-69.5	5.2	-64.3	-13.0	-51.3
5	476.20	-61.0	-68.4	5.0	-63.4	-13.0	-50.4
6	701.24	-66.1	-70.1	5.2	-64.9	-13.0	-51.9
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	47.46	-42.0	-42.2	-9.7	-51.9	-13.0	-38.9
2	109.54	-40.1	-50.7	0.5	-50.2	-13.0	-37.2
3	169.68	-48.4	-54.5	1.6	-52.9	-13.0	-39.9
4	297.72	-57.8	-64.1	5.1	-59.0	-13.0	-46.0
5	476.20	-61.5	-68.5	5.0	-63.5	-13.0	-50.5
6	646.92	-65.0	-65.7	4.8	-60.9	-13.0	-47.9

Remarks:

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

LTE Band 5, Channel Bandwidth: 3MHz

Mode	TX channel 20415 (825.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	119.24	-47.6	-57.9	0.1	-57.8	-13.0	-44.8
2	159.98	-53.4	-61.5	0.4	-61.1	-13.0	-48.1
3	297.72	-56.0	-65.5	5.1	-60.4	-13.0	-47.4
4	363.68	-60.4	-70.1	5.2	-64.9	-13.0	-51.9
5	476.20	-61.7	-69.1	5.0	-64.1	-13.0	-51.1
6	701.24	-65.7	-69.7	5.2	-64.5	-13.0	-51.5

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	53.28	-41.7	-42.2	-8.5	-50.7	-13.0	-37.7
2	111.48	-40.9	-51.1	0.4	-50.7	-13.0	-37.7
3	297.72	-57.5	-63.9	5.1	-58.8	-13.0	-45.8
4	355.92	-58.5	-66.3	5.2	-61.1	-13.0	-48.1
5	476.20	-61.6	-68.6	5.0	-63.6	-13.0	-50.6
6	701.24	-64.0	-64.9	5.2	-59.7	-13.0	-46.7

Remarks:

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

LTE Band 5, Channel Bandwidth: 5MHz

Mode	TX channel 20425 (826.5MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	31.94	-59.0	-46.8	-11.9	-58.7	-13.0	-45.7
2	119.24	-47.8	-58.0	0.1	-57.9	-13.0	-44.9
3	189.08	-52.0	-66.7	4.1	-62.6	-13.0	-49.6
4	297.72	-55.5	-65.0	5.1	-59.9	-13.0	-46.9
5	476.20	-61.9	-69.2	5.0	-64.2	-13.0	-51.2
6	701.24	-65.6	-69.6	5.2	-64.4	-13.0	-51.4
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	76.56	-43.5	-48.6	-2.8	-51.4	-13.0	-38.4
2	109.54	-39.5	-50.1	0.5	-49.6	-13.0	-36.6
3	196.84	-55.5	-64.8	5.1	-59.7	-13.0	-46.7
4	297.72	-57.8	-64.1	5.1	-59.0	-13.0	-46.0
5	355.92	-56.8	-64.6	5.2	-59.4	-13.0	-46.4
6	476.20	-62.2	-69.2	5.0	-64.2	-13.0	-51.2

Remarks:

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

LTE Band 5, Channel Bandwidth: 10MHz

Mode	TX channel 20450 (829.0MHz)	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	121.18	-47.6	-57.9	0.1	-57.8	-13.0	-44.8
2	189.08	-51.5	-66.2	4.1	-62.1	-13.0	-49.1
3	297.72	-56.5	-66.1	5.1	-61.0	-13.0	-48.0
4	410.24	-62.4	-70.0	5.2	-64.8	-13.0	-51.8
5	478.14	-61.5	-68.7	5.0	-63.7	-13.0	-50.7
6	701.24	-65.7	-69.7	5.2	-64.5	-13.0	-51.5
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	78.50	-47.5	-52.5	-2.2	-54.7	-13.0	-41.7
2	111.48	-39.8	-50.0	0.4	-49.6	-13.0	-36.6
3	231.76	-54.5	-65.0	5.4	-59.6	-13.0	-46.6
4	297.72	-57.6	-64.0	5.1	-58.9	-13.0	-45.9
5	476.20	-62.2	-69.2	5.0	-64.2	-13.0	-51.2
6	644.98	-65.2	-65.9	4.8	-61.1	-13.0	-48.1

Remarks:

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

Above 1GHz
GSM Mode

Mode	TX channel 128 (824.2MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	19deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1648.4	-38.2	-41.8	5.5	-36.3	-13.0	-23.3
2	2472.6	-40.9	-41.3	6.5	-34.8	-13.0	-21.8
3	3296.8	-50.0	-48.0	6.9	-41.1	-13.0	-28.1
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1648.4	-35.5	-37.8	5.5	-32.3	-13.0	-19.3
2	2472.6	-41.9	-41.0	6.5	-34.5	-13.0	-21.5
3	3286.8	-46.8	-45.3	6.9	-38.4	-13.0	-25.4

Remarks:

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

Mode	TX channel 189 (836.4MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	19deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1672.8	-42.5	-45.7	5.5	-40.2	-13.0	-27.2
2	2509.2	-45.1	-45.3	6.4	-38.9	-13.0	-25.9
3	3345.6	-55.8	-53.8	6.9	-46.9	-13.0	-33.9
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1672.8	-44.2	-46.2	5.5	-40.7	-13.0	-27.7
2	2509.2	-46.1	-45.3	6.4	-38.9	-13.0	-25.9
3	3345.6	-54.1	-52.5	6.9	-45.6	-13.0	-32.6

Remarks:

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

Mode	TX channel 251 (848.8MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	19deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1697.6	-48.5	-51.6	5.6	-46.0	-13.0	-33.0
2	2546.4	-49.5	-49.7	6.4	-43.3	-13.0	-30.3
3	3395.2	-55.7	-53.7	7.0	-46.7	-13.0	-33.7
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1697.6	-48.5	-50.3	5.6	-44.7	-13.0	-31.7
2	2546.4	-50.2	-49.2	6.4	-42.8	-13.0	-29.8
3	3395.2	-55.9	-54.1	7.0	-47.1	-13.0	-34.1

Remarks:

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

WCDMA Mode

Mode	TX channel 4132 (826.4MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	19deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1652.8	-54.3	-55.6	5.5	-50.1	-13.0	-37.1
2	2479.2	-54.2	-52.3	6.5	-45.8	-13.0	-32.8
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1652.8	-54.8	-54.9	5.5	-49.4	-13.0	-36.4
2	2479.2	-52.0	-49.0	6.5	-42.5	-13.0	-29.5

Remarks:

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

Mode	TX channel 4182 (836.6MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	19deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1672.8	-56.0	-57.1	5.5	-51.6	-13.0	-38.6
2	2509.2	-56.1	-54.1	6.4	-47.7	-13.0	-34.7
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1672.8	-57.5	-57.4	5.5	-51.9	-13.0	-38.9
2	2509.2	-51.8	-48.8	6.4	-42.4	-13.0	-29.4

Remarks:

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

Mode	TX channel 4233 (846.6MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	19deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1693.2	-58.9	-59.8	5.6	-54.2	-13.0	-41.2
2	2539.8	-54.1	-52.1	6.4	-45.7	-13.0	-32.7

Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1693.2	-57.1	-56.9	5.6	-51.3	-13.0	-38.3
2	2539.8	-51.6	-48.4	6.4	-42.0	-13.0	-29.0

Remarks:

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

LTE Band 5, Channel Bandwidth: 1.4MHz

Mode	TX channel 20407 (824.7MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	20deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1649.4	-58.5	-59.8	5.5	-54.3	-13.0	-41.3
2	2474.1	-49.9	-48.1	6.5	-41.6	-13.0	-28.6
3	3298.8	-57.8	-53.7	6.9	-46.8	-13.0	-33.8
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1649.4	-53.9	-54.0	5.5	-48.5	-13.0	-35.5
2	2474.1	-48.0	-45.0	6.5	-38.5	-13.0	-25.5
3	3298.8	-57.5	-53.8	6.9	-46.9	-13.0	-33.9

Remarks:

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

Mode	TX channel 20525 (836.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	20deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.0	-57.4	-58.5	5.5	-53.0	-13.0	-40.0
2	2509.5	-51.4	-49.4	6.4	-43.0	-13.0	-30.0
3	3346.0	-57.5	-53.4	6.9	-46.5	-13.0	-33.5
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.0	-51.5	-51.4	5.5	-45.9	-13.0	-32.9
2	2509.5	-49.5	-46.5	6.4	-40.1	-13.0	-27.1
3	3346.0	-57.1	-53.3	6.9	-46.4	-13.0	-33.4

Remarks:

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

Mode	TX channel 20643 (848.3MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	20deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1696.6	-58.2	-59.1	5.6	-53.5	-13.0	-40.5
2	2544.9	-55.3	-53.3	6.4	-46.9	-13.0	-33.9
3	3393.2	-57.6	-53.5	7.0	-46.5	-13.0	-33.5
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1696.6	-56.0	-55.7	5.6	-50.1	-13.0	-37.1
2	2544.9	-50.5	-47.3	6.4	-40.9	-13.0	-27.9
3	3393.2	-57.7	-53.8	7.0	-46.8	-13.0	-33.8

Remarks:

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

LTE Band 5, Channel Bandwidth: 3MHz

Mode	TX channel 20415 (825.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	20deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1651.0	-50.0	-53.5	5.5	-48.0	-13.0	-35.0
2	2476.5	-54.9	-55.1	6.5	-48.6	-13.0	-35.6
3	3302.0	-57.6	-55.5	6.8	-48.7	-13.0	-35.7
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1651.0	-49.0	-51.3	5.5	-45.8	-13.0	-32.8
2	2476.5	-47.6	-46.7	6.5	-40.2	-13.0	-27.2
3	3302.0	-56.3	-54.7	6.8	-47.9	-13.0	-34.9

Remarks:

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

Mode	TX channel 20525 (836.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	20deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.0	-52.9	-56.1	5.5	-50.6	-13.0	-37.6
2	2509.5	-55.9	-56.0	6.4	-49.6	-13.0	-36.6
3	3346.0	-58.8	-56.8	6.9	-49.9	-13.0	-36.9
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.0	-50.0	-52.0	5.5	-46.5	-13.0	-33.5
2	2509.5	-47.6	-46.8	6.4	-40.4	-13.0	-27.4
3	3346.0	-58.2	-56.6	6.9	-49.7	-13.0	-36.7

Remarks:

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

Mode	TX channel 20635 (847.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	20deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	James Yang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1695.0	-54.8	-57.9	5.6	-52.3	-13.0	-39.3
2	2542.5	-54.8	-54.9	6.4	-48.5	-13.0	-35.5
3	3390.0	-57.8	-55.8	7.0	-48.8	-13.0	-35.8
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1695.0	-53.5	-55.5	5.6	-49.9	-13.0	-36.9
2	2542.5	-51.0	-49.9	6.4	-43.5	-13.0	-30.5
3	3390.0	-58.5	-56.7	7.0	-49.7	-13.0	-36.7

Remarks:

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

LTE Band 5, Channel Bandwidth: 5MHz

Mode	TX channel 20425 (826.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	20deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1653.0	-56.4	-59.9	5.5	-54.4	-13.0	-41.4
2	2479.5	-57.1	-57.4	6.5	-50.9	-13.0	-37.9
3	3306.0	-58.6	-56.6	6.8	-49.8	-13.0	-36.8
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1653.0	-55.8	-58.0	5.5	-52.5	-13.0	-39.5
2	2479.5	-53.4	-52.5	6.5	-46.0	-13.0	-33.0
3	3306.0	-59.2	-57.6	6.8	-50.8	-13.0	-37.8

Remarks:

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

Mode	TX channel 20525 (836.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	20deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.0	-58.1	-61.4	5.5	-55.9	-13.0	-42.9
2	2509.5	-59.0	-59.1	6.4	-52.7	-13.0	-39.7
3	3346.0	-58.4	-56.4	6.9	-49.5	-13.0	-36.5
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.0	-58.0	-60.0	5.5	-54.5	-13.0	-41.5
2	2509.5	-55.6	-54.8	6.4	-48.4	-13.0	-35.4
3	3346.0	-58.6	-57.0	6.9	-50.1	-13.0	-37.1

Remarks:

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

Mode	TX channel 20625 (846.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	20deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1693.0	-57.6	-60.7	5.6	-55.1	-13.0	-42.1
2	2539.5	-55.6	-55.8	6.4	-49.4	-13.0	-36.4
3	3386.0	-59.2	-57.4	7.0	-50.4	-13.0	-37.4
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1693.0	-58.0	-60.0	5.6	-54.4	-13.0	-41.4
2	2539.5	-54.8	-53.7	6.4	-47.3	-13.0	-34.3
3	3386.0	-58.4	-56.7	7.0	-49.7	-13.0	-36.7

Remarks:

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

LTE Band 5, Channel Bandwidth: 10MHz

Mode	TX channel 20450 (829.0MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	20deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1658.0	-57.9	-61.3	5.5	-55.8	-13.0	-42.8
2	2487.0	-58.6	-58.9	6.5	-52.4	-13.0	-39.4
3	3316.0	-57.9	-55.9	6.9	-49.0	-13.0	-36.0

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1658.0	-57.5	-59.6	5.5	-54.1	-13.0	-41.1
2	2487.0	-55.6	-54.7	6.5	-48.2	-13.0	-35.2
3	3316.0	-59.0	-57.5	6.9	-50.6	-13.0	-37.6

Remarks:

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

Mode	TX channel 20525 (836.5MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	20deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.0	-59.0	-62.2	5.5	-56.7	-13.0	-43.7
2	2509.5	-59.1	-59.3	6.4	-52.9	-13.0	-39.9
3	3346.0	-58.9	-56.9	6.9	-50.0	-13.0	-37.0

Antenna Polarity & Test Distance: Vertical at 3 M

No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1673.0	-57.8	-59.8	5.5	-54.3	-13.0	-41.3
2	2509.5	-56.5	-55.6	6.4	-49.2	-13.0	-36.2
3	3346.0	-59.1	-57.5	6.9	-50.6	-13.0	-37.6

Remarks:

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

Mode	TX channel 20600 (844.0MHz)	Frequency Range	Above 1000MHz
Environmental Conditions	20deg. C, 66%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1688.0	-58.4	-61.4	5.5	-55.9	-13.0	-42.9
2	2532.0	-59.2	-59.4	6.4	-53.0	-13.0	-40.0
3	3376.0	-59.1	-57.2	7.0	-50.2	-13.0	-37.2
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1688.0	-58.2	-60.1	5.5	-54.6	-13.0	-41.6
2	2532.0	-56.6	-55.7	6.4	-49.3	-13.0	-36.3
3	3376.0	-59.4	-57.7	7.0	-50.7	-13.0	-37.7

Remarks:

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

5 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are 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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