FCC TEST REPORT

(PART 22)

REPORT NO.: RF141218E07

MODEL NO.: T77W595

FCC ID: MCLT77W595

RECEIVED: Dec. 18, 2014

TESTED: Dec. 26, 2014 to Jan. 15, 2015

ISSUED: Jan. 27, 2015

APPLICANT: HON HAI PRECISION IND. CO., LTD.

ADDRESS: 5F-1,5 Hsin-An Road Hsinchu, Science-Based Industrial Park Taiwan, R.O.C.

ISSUED BY: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
RF141218E07	Original release	Jan. 27, 2015

1 CERTIFICATION

PRODUCT: LTE Cat4 PCI Express M.2 Module
MODEL: T77W595
BRAND: FOXCONN
APPLICANT: HON HAI PRECISION IND. CO., LTD.
TESTED: Dec. 26, 2014 to Jan. 15, 2015
TEST SAMPLE: ENGINEERING SAMPLE
STANDARDS: **FCC PART 22, Subpart H**

The above equipment (Model: T77W595) 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:** Jan. 27, 2015
(Lori Chung, Specialist)

Approved by : _____ , **Date:** Jan. 27, 2015
(May Chen, Manager)

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 22 & Part 2			
STANDARD SECTION	**TEST TYPE**	**RESULT**	**REMARK**
2.1046 22.913 (a)	Effective Radiated Power	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 -9.13dB at 1673MHz.

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	UNCERTAINTY
Radiated emissions	30MHz ~ 1GHz – Chamber G	5.37 dB
	30MHz ~ 1GHz – Chamber H	5.43 dB
	1GHz ~6GHz – Chamber G	3.65 dB
	1GHz ~6GHz – Chamber H	3.72 dB
	6GHz ~ 18GHz – Chamber G	3.88 dB
	6GHz ~ 18GHz – Chamber H	4.00 dB
	18GHz ~ 40GHz	4.11 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

2.2 TEST SITE AND INSTRUMENTS

For Radiated Spurious Emissions test – GPRS, EDGE, WCDMA, CDMA2000:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY51210105	July 21, 2014	July 20, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-03	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-360	Feb. 26, 2014	Feb. 25, 2015
RF Cable	NA	CHGCAB_001	Oct. 04, 2014	Oct. 03, 2015
Horn_Antenna AISI	AIH.8018	0000320091110	Aug. 27, 2014	Aug. 26, 2015
Pre-Amplifier Agilent	8449B	3008A02578	June 24, 2014	June 23, 2015
RF Cable	NA	131205 131214 SNMY23684/4	Jan. 17, 2014	Jan. 16, 2015
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier EMCI	EMC184045	980143	Jan. 17, 2014	Jan. 16, 2015
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Aug. 26, 2014	Aug. 25, 2015
RF Cable	NA	RF104-121 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Antenna Tower & Turn Table CT	NA	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 horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. G.
4. The FCC Site Registration No. is 966073.
5 The VCCI Site Registration No. is G-137.
6 The CANADA Site Registration No. is IC 7450H-2.
7 Tested Date: Jan. 08, 2015

For Radiated Spurious Emissions test – LTE band 5 & 26:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
MXE EMI Receiver Agilent	N9038A	MY50010156	Aug. 11, 2014	Aug. 10, 2015
Pre-Amplifier Mini-Circuits	ZFL-1000VH2 B	AMP-ZFL-04	Nov. 12, 2014	Nov. 11, 2015
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Feb. 27, 2014	Feb. 26, 2015
RF Cable	NA	CHHCAB_001	Oct. 05, 2014	Oct. 04, 2015
Horn_Antenna AISI	AIH.8018	0000220091110	Aug. 26, 2014	Aug. 25, 2015
Pre-Amplifier Agilent	8449B	300801923	Oct. 28, 2014	Oct. 27, 2015
RF Cable	NA	131206 131215 SNMY23685/4	Jan. 17, 2014	Jan. 16, 2015
Spectrum Analyzer R&S	FSV40	100964	July 05, 2014	July 04, 2015
Pre-Amplifier EMCI	EMC184045	980143	Jan. 17, 2014	Jan. 16, 2015
Horn_Antenna SCHWARZBECK	BBHA 9170	9170-424	Aug. 26, 2014	Aug. 25, 2015
RF Cable	NA	RF104-121 RF104-204	Dec. 11, 2014	Dec. 10, 2015
Software	ADT_Radiated _V8.7.07	NA	NA	NA
Antenna Tower & Turn Table CT	NA	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 horn antenna, preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3 The test was performed in 966 Chamber No. H.
4. The FCC Site Registration No. is 797305.
5 The CANADA Site Registration No. is IC 7450H-3.
6 Tested Date: Jan. 15, 2015

For other test items:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSP 40	100037	Oct. 30, 2014	Oct. 29, 2015
Spectrum Analyzer Agilent	E4446A	MY48250253	Dec. 18, 2014	Dec. 17, 2015
AC Power Source EXTECH Electronics	6502	1140503	NA	NA
Temperature & Humidity Chamber TERCHY	MHU-225AU	911033	Dec. 08, 2014	Dec. 07, 2015
DC Power Supply GOOD WILL INSTRUMENT CO., LTD.	GPC - 3030D	7700087	NA	NA
ESG Vector signal generator Agilent	E4438C	MY47271330 506 602 UNJ	Apr. 28, 2014	Apr. 27, 2015
Upgrade the software license on current E4438C ESG Agilent	E4438CK-403	ESG E4_010004	NA	NA
ESG Vector signal generator Agilent	E4438C	MY45094468/ 005 506 602 UK6 UNJ	Dec. 05, 2014	Dec. 04, 2015
Upgrade the software license on current E4438C ESG Agilent	E4438CK-403	ESG E4_010001	NA	NA
Power meter Anritsu	ML2495A	0824006	May 22, 2014	May 21, 2015
Power sensor Anritsu	MA2411B	0738172	May 22, 2014	May 21, 2015
Software	ADT_RF Test Software V6.6.5.3	NA	NA	NA
Universal Radio Communication Tester R&S	CMU200	121040	Dec. 16, 2014	Dec. 15, 2015
Radio Communication Analyzer Anritsu	MT8820C	6201127458	Mar. 05, 2014	Mar. 04, 2015

NOTE:
1. The test was performed in Oven room A.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: Dec. 26, 2014 to Jan. 13, 2015

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

EUT	LTE Cat4 PCI Express M.2 Module	
MODEL NO.	T77W595	
POWER SUPPLY	3.3Vdc from host equipment	
MODULATION TYPE	**GPRS**	GMSK
	EDGE	GMSK, 8PSK
	WCDMA	BPSK
	CDMA2000	QPSK, OQPSK, HPSK
	LTE	QPSK, 16QAM
FREQUENCY RANGE	**GPRS/EDGE**	824.2MHz ~ 848.8MHz
	WCDMA	826.4MHz ~ 846.6MHz
	CDMA2000 & EVDO	824.7MHz ~ 848.31MHz
	LTE 5 (Channel Bandwidth: 1.4MHz)	824.7MHz ~ 848.3MHz
	LTE 5 (Channel Bandwidth: 3MHz)	825.5MHz ~ 847.5MHz
	LTE 5 (Channel Bandwidth: 5MHz)	826.5MHz ~ 846.5MHz
	LTE 5 (Channel Bandwidth: 10MHz)	829MHz ~ 844MHz
	LTE 26 (Channel Bandwidth: 1.4MHz)	824.7MHz ~ 848.3MHz
	LTE 26 (Channel Bandwidth: 3MHz)	825.5MHz ~ 847.5MHz
	LTE 26 (Channel Bandwidth: 5MHz)	826.5MHz ~ 846.5MHz
	LTE 26 (Channel Bandwidth: 10MHz)	829MHz ~ 844MHz
	LTE 26 (Channel Bandwidth: 15MHz)	831.5MHz ~ 841.5MHz
MAX. ERP POWER	**GPRS**	1905.5mW
	EDGE	776.2mW
	WCDMA	259.4mW
	CDMA2000 & EVDO	305.072mW
	LTE 5 (Channel Bandwidth: 1.4MHz)	380.2mW
	LTE 5 (Channel Bandwidth: 3MHz)	446.7mW
	LTE 5 (Channel Bandwidth: 5MHz)	426.6mW
	LTE 5 (Channel Bandwidth: 10MHz)	354.8mW
	LTE 26 (Channel Bandwidth: 1.4MHz)	323.6mW
	LTE 26 (Channel Bandwidth: 3MHz)	309.0mW
	LTE 26 (Channel Bandwidth: 5MHz)	275.4mW
	LTE 26 (Channel Bandwidth: 10MHz)	302.0mW
	LTE 26 (Channel Bandwidth: 15MHz)	288.4mW

EMISSION DESIGNATOR	**GPRS**	242KGXW
	EDGE	246KG7W
	WCDMA	4M18F9W
	CDMA2000 & EVDO	1M28F9W
	LTE 5 (Channel Bandwidth: 1.4MHz)	QPSK: 1M24G7D
		16QAM: 1M23W7D
	LTE 5 (Channel Bandwidth: 3MHz)	QPSK: 2M74G7D
		16QAM: 2M73W7D
	LTE 5 (Channel Bandwidth: 5MHz)	QPSK: 4M50G7D
		16QAM: 4M48W7D
	LTE 5 (Channel Bandwidth: 10MHz)	QPSK: 9M03G7D
		16QAM: 9M00W7D
	LTE 26 (Channel Bandwidth: 1.4MHz)	QPSK: 1M09G7D
		16QAM: 1M09W7D
	LTE 26 (Channel Bandwidth: 3MHz)	QPSK: 2M73G7D
		16QAM: 2M73W7D
	LTE 26 (Channel Bandwidth: 5MHz)	QPSK: 4M50G7D
		16QAM: 4M48W7D
	LTE 26 (Channel Bandwidth: 10MHz)	QPSK: 9M00G7D
		16QAM: 9M00W7D
	LTE 26 (Channel Bandwidth: 15MHz)	QPSK: 13M4G7D
		16QAM: 13M4W7D
ANTENNA TYPE	Refer to NOTE	
I/O PORTS	Refer to users' manual	
DATA CABLE	NA	
ACCESSORY DEVICES	NA	

NOTE:

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

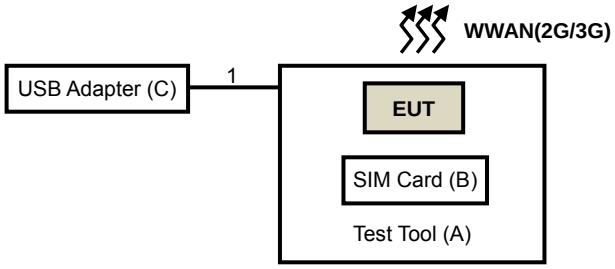
Ant. Set	Transmitter Circuit	Brand	Model	Operation Band	Ant. Gain(dBi) <including cable loss>	Frequency range (MHz ~ MHz)	Ant. Type	Connecter Type
LTE 1	Main	NA	NA	LTE(4G) B12 / B17	5.19	699 ~ 716	PIFA	I-PEX MHF IV
				LTE(4G) B28	5.2	703 ~ 748		
	Aux			LTE(4G) B12 / B17	5.19	699 ~ 716		
				LTE(4G) B28	5.2	703 ~ 748		

Ant. Set	Transmitter Circuit	Brand	Model	Operation Band	Ant. Gain(dBi) <including cable loss>	Frequency range (MHz ~ MHz)	Ant. Type	Connecter Type
LTE 2	Main	NA	NA	LTE(4G) B13	6.14	777 ~ 787	PIFA	I-PEX MHF IV
				LTE(4G) B20	3.77	832 ~ 862		
				CDMA(3G) BC10	3.22	816 ~ 824		
				LTE(4G) B26	3.4	814 ~ 849		
				WCDMA(3G) B5 / GSM850(2G) / LTE(4G) B5 / CDMA(3G) BC0	3.4	824 ~ 849		
				WCDMA(3G) B8 / E-GSM900(2G) / LTE(4G) B8	4.39	880 ~ 915		
	Aux			LTE(4G) B13	6.14	777 ~ 787		
				LTE(4G) B20	3.77	832 ~ 862		
				CDMA(3G) BC10	3.22	816 ~ 824		
				LTE(4G) B26	3.4	814 ~ 849		
				WCDMA(3G) B5 / GSM850(2G) / LTE(4G) B5 / CDMA(3G) BC0	3.4	824 ~ 849		
				WCDMA(3G) B8 / E-GSM900(2G) / LTE(4G) B8	4.39	880 ~ 915		
LTE 3	Main	NA	NA	WCDMA(3G) B2 / LTE(4G) B2 / B25 / PCS1900(2G) / CDMA(3G) BC1	3.62	1850 to 1915	PIFA	I-PEX MHF IV
				WCDMA(3G) B4 / DCS1800(2G) / LTE(4G) B3 / B4	4.25	1710 to 1785		
				LTE(4G) B7	4.37	2500 to 2570		
				WCDMA(3G) B1/ LTE(4G) B1	3.82	1920 to 1980		
				GPS	2.19	1575.42 ~ 1602		
	Aux			WCDMA(3G) B2 / LTE(4G) B2 / B25 / PCS1900(2G) / CDMA(3G) BC1	3.62	1850 to 1915		
				WCDMA(3G) B4 / DCS1800(2G) / LTE(4G) B3 / B4	4.25	1710 to 1785		
				LTE(4G) B7	4.37	2500 to 2570		
				WCDMA(3G) B1/ LTE(4G) B1	3.82	1920 to 1980		
				GPS	2.19	1575.42 ~ 1602		

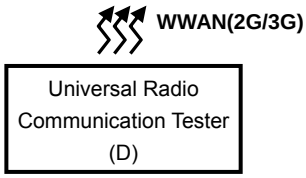
2. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 CONFIGURATION OF SYSTEM UNDER TEST

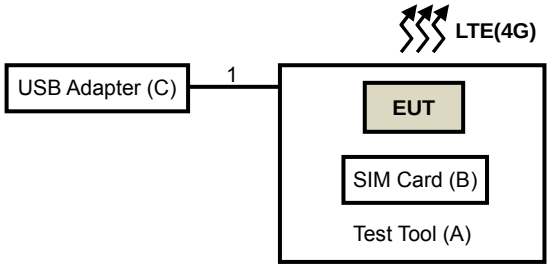
For GPRS, EDGE, WCDMA, CDMA2000 mode:



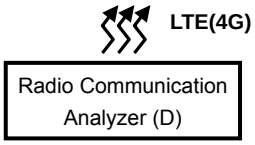
Remote site



For LTE mode:



Remote site



3.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units.

No.	Product	Brand	Model No.	Serial No.	FCC ID	Remark
A	Test Tool	FOXCONN	NA	NA	NA	Supplied by Client
B	SIM Card	NA	NA	NA	NA	Provided by Lab
C	USB Adapter	NICELINK	US-T128	NA	NA	Provided by Lab
D	Universal Radio Communication Tester (For GPRS, EDGE, WCDMA, CDMA2000 mode)	R&S	CMU200	121040	NA	Provided by Lab
	Radio Communication Analyzer (For LTE mode)	Anritsu	MT8820C	6201127458	NA	Provided by Lab

NOTE:

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

No.	Cable	Qty.	Length (m)	Shielded (Yes/ No)	Cores (Number)	Remark
1	DC	1	1	No	0	Provided by Lab

3.4 TEST ITEM AND TEST CONFIGURATION

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

GPRS & EDGE MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
ERP	128 to 251	128, 189, 251	GPRS, EDGE
FREQUENCY STABILITY	128 to 251	189	GPRS, EDGE
OCCUPIED BANDWIDTH	128 to 251	128, 189, 251	GPRS, EDGE
PEAK TO AVERAGE RATIO	128 to 251	128, 189, 251	GPRS, EDGE
BAND EDGE	128 to 251	128, 251	GPRS, EDGE
CONDCUDETED EMISSION	128 to 251	189	GPRS, EDGE
RADIATED EMISSION	128 to 251	189	GPRS, EDGE

WCDMA MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
ERP	4132 to 4233	4132, 4182, 4233	WCDMA
FREQUENCY STABILITY	4132 to 4233	4182	WCDMA
OCCUPIED BANDWIDTH	4132 to 4233	4132, 4182, 4233	WCDMA
PEAK TO AVERAGE RATIO	4132 to 4233	4132, 4182, 4233	WCDMA
BAND EDGE	4132 to 4233	4132, 4233	WCDMA
CONDCUDETED EMISSION	4132 to 4233	4182	WCDMA
RADIATED EMISSION	4132 to 4233	4182	WCDMA

CDMA2000 & EVDO

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	MODE
ERP	1013 to 777	1013, 384, 777	CDMA2000
FREQUENCY STABILITY	1013 to 777	384	CDMA2000
OCCUPIED BANDWIDTH	1013 to 777	1013, 384, 777	CDMA2000
PEAK TO AVERAGE RATIO	1013 to 777	1013, 384, 777	CDMA2000
BAND EDGE	1013 to 777	1013, 777	CDMA2000
CONDCUDETED EMISSION	1013 to 777	384	CDMA2000
RADIATED EMISSION	1013 to 777	384	CDMA2000

Note: This device was tested under EVDO mode and CDMA2000 mode. The worst case was found in CDMA2000 mode.

LTE BAND 5 MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
ERP	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK	1 RB / 0 RB Offset
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK	1 RB / 0 RB Offset
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK	1 RB / 0 RB Offset
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK	1 RB / 0 RB Offset
FREQUENCY STABILITY	20407 to 20643	20525	1.4MHz	QPSK	1 RB / 0 RB Offset
	20415 to 20635	20525	3MHz	QPSK	1 RB / 0 RB Offset
	20425 to 20625	20525	5MHz	QPSK	1 RB / 0 RB Offset
	20450 to 20600	20525	10MHz	QPSK	1 RB / 0 RB Offset
OCCUPIED BANDWIDTH	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK, 16QAM	6 RB / 0 RB Offset
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM	15 RB / 0 RB Offset
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset
PEAK TO AVERAGE RATIO	20407 to 20643	20407, 20525, 20643	1.4MHz	QPSK, 16QAM	1 RB / 2 RB Offset
	20415 to 20635	20415, 20525, 20635	3MHz	QPSK, 16QAM	1 RB / 7 RB Offset
	20425 to 20625	20425, 20525, 20625	5MHz	QPSK, 16QAM	1 RB / 12 RB Offset
	20450 to 20600	20450, 20525, 20600	10MHz	QPSK, 16QAM	1 RB / 24 RB Offset
BAND EDGE	20407 to 20643	20407	1.4MHz	QPSK	1 RB / 0 RB Offset
					6 RB / 0 RB Offset
		20643	1.4MHz	QPSK	1 RB / 5 RB Offset
					6 RB / 0 RB Offset
	20415 to 20635	20415	3MHz	QPSK	1 RB / 0 RB Offset
					15 RB / 0 RB Offset
		20635	3MHz	QPSK	1 RB / 14 RB Offset
					15 RB / 0 RB Offset
	20425 to 20625	20425	5MHz	QPSK	1 RB / 0 RB Offset
					25 RB / 0 RB Offset
		20625	5MHz	QPSK	1 RB / 24 RB Offset
					25 RB / 0 RB Offset
	20450 to 20600	20450	10MHz	QPSK	1 RB / 0 RB Offset
					50 RB / 0 RB Offset
		20600	10MHz	QPSK	1 RB / 49 RB Offset
					50 RB / 0 RB Offset
CONDCUDETED EMISSION	20407 to 20643	20525	1.4MHz	QPSK	1 RB / 0 RB Offset
	20415 to 20635	20525	3MHz	QPSK	75 RB / 0 RB Offset
	20425 to 20625	20525	5MHz	QPSK	1 RB / 74 RB Offset
	20450 to 20600	20525	10MHz	QPSK	75 RB / 0 RB Offset
RADIATED EMISSION	20407 to 20643	20525	1.4MHz	QPSK	1 RB / 0 RB Offset
	20415 to 20635	20525	3MHz	QPSK	100 RB / 0 RB Offset
	20425 to 20625	20525	5MHz	QPSK	1 RB / 99 RB Offset
	20450 to 20600	20525	10MHz	QPSK	100 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

LTE BAND 26 MODE

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
ERP	26797 to 27033	26797, 26915, 27033	1.4MHz	QPSK	1 RB / 0 RB Offset
	26805 to 27025	26805, 26915, 27025	3MHz	QPSK	1 RB / 0 RB Offset
	26815 to 27015	26815, 26915, 27015	5MHz	QPSK	1 RB / 0 RB Offset
	26840 to 26990	26840, 26915, 26990	10MHz	QPSK	1 RB / 0 RB Offset
	26865 to 26965	26865, 26915, 26965	15MHz	QPSK	1 RB / 0 RB Offset
FREQUENCY STABILITY	26797 to 27033	26915	1.4MHz	QPSK	1 RB / 0 RB Offset
	26805 to 27025	26915	3MHz	QPSK	1 RB / 0 RB Offset
	26815 to 27015	26915	5MHz	QPSK	1 RB / 0 RB Offset
	26840 to 26990	26915	10MHz	QPSK	1 RB / 0 RB Offset
	26865 to 26965	26915	15MHz	QPSK	1 RB / 0 RB Offset
OCCUPIED BANDWIDTH	26797 to 27033	26797, 26915, 27033	1.4MHz	QPSK, 16QAM	6 RB / 0 RB Offset
	26805 to 27025	26805, 26915, 27025	3MHz	QPSK, 16QAM	15 RB / 0 RB Offset
	26815 to 27015	26815, 26915, 27015	5MHz	QPSK, 16QAM	25 RB / 0 RB Offset
	26840 to 26990	26840, 26915, 26990	10MHz	QPSK, 16QAM	50 RB / 0 RB Offset
	26865 to 26965	26865, 26915, 26965	15MHz	QPSK, 16QAM	75 RB / 0 RB Offset
PEAK TO AVERAGE RATIO	26797 to 27033	26797, 26915, 27033	1.4MHz	QPSK, 16QAM	100 RB / 0 RB Offset
	26805 to 27025	26805, 26915, 27025	3MHz	QPSK, 16QAM	1 RB / 2 RB Offset
	26815 to 27015	26815, 26915, 27015	5MHz	QPSK, 16QAM	1 RB / 7 RB Offset
	26840 to 26990	26840, 26915, 26990	10MHz	QPSK, 16QAM	1 RB / 12 RB Offset
	26865 to 26965	26865, 26915, 26965	15MHz	QPSK, 16QAM	1 RB / 24 RB Offset
BAND EDGE	26797 to 27033	26797	1.4MHz	QPSK	1 RB / 0 RB Offset
					6 RB / 0 RB Offset
		27033	1.4MHz	QPSK	1 RB / 5 RB Offset
					6 RB / 0 RB Offset
	26805 to 27025	26805	3MHz	QPSK	1 RB / 0 RB Offset
					15 RB / 0 RB Offset
		27025	3MHz	QPSK	1 RB / 14 RB Offset
					15 RB / 0 RB Offset
	26815 to 27015	26815	5MHz	QPSK	1 RB / 0 RB Offset
					25 RB / 0 RB Offset
		27015	5MHz	QPSK	1 RB / 24 RB Offset
					25 RB / 0 RB Offset
	26840 to 26990	26840	10MHz	QPSK	1 RB / 0 RB Offset
					50 RB / 0 RB Offset
		26990	10MHz	QPSK	1 RB / 49 RB Offset
					50 RB / 0 RB Offset
	26865 to 26965	26865	15MHz	QPSK	1 RB / 0 RB Offset
					75 RB / 0 RB Offset
		26965	15MHz	QPSK	1 RB / 74 RB Offset
					75 RB / 0 RB Offset

TEST ITEM	AVAILABLE CHANNEL	TESTED CHANNEL	CHANNEL BANDWIDTH	MODULATION	MODE
CONDCUDETED EMISSION	26797 to 27033	26915	1.4MHz	QPSK	1 RB / 0 RB Offset
	26805 to 27025	26915	3MHz	QPSK	1 RB / 0 RB Offset
	26815 to 27015	26915	5MHz	QPSK	1 RB / 0 RB Offset
	26840 to 26990	26915	10MHz	QPSK	1 RB / 0 RB Offset
	26865 to 26965	26915	15MHz	QPSK	1 RB / 0 RB Offset
RADIATED EMISSION	26797 to 27033	26915	1.4MHz	QPSK	1 RB / 0 RB Offset
	26805 to 27025	26915	3MHz	QPSK	1 RB / 0 RB Offset
	26815 to 27015	26915	5MHz	QPSK	1 RB / 0 RB Offset
	26840 to 26990	26915	10MHz	QPSK	1 RB / 0 RB Offset
	26865 to 26965	26915	15MHz	QPSK	1 RB / 0 RB Offset

Note: This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

TEST CONDITION:

TEST ITEM	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
ERP	25deg. C, 63%RH	120Vac, 60Hz	James Chan
FREQUENCY STABILITY	25deg. C, 63%RH	120Vac, 60Hz	James Chan
OCCUPIED BANDWIDTH	25deg. C, 63%RH	120Vac, 60Hz	James Chan
PEAK TO AVERAGE RATIO	25deg. C, 63%RH	120Vac, 60Hz	James Chan
BAND EDGE	25deg. C, 63%RH	120Vac, 60Hz	James Chan
CONDCUDETED EMISSION	25deg. C, 63%RH	120Vac, 60Hz	James Chan
RADIATED EMISSION	25deg. C, 65%RH	120Vac, 60Hz	Robert Cheng

3.5 EUT OPERATING CONDITIONS

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

3.6 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
ANSI/TIA/EIA-603-C 2004

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

4 TEST TYPES AND RESULTS

4.1 OUTPUT POWER MEASUREMENT

4.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

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

4.1.2 TEST PROCEDURES

EIRP / ERP MEASUREMENT:

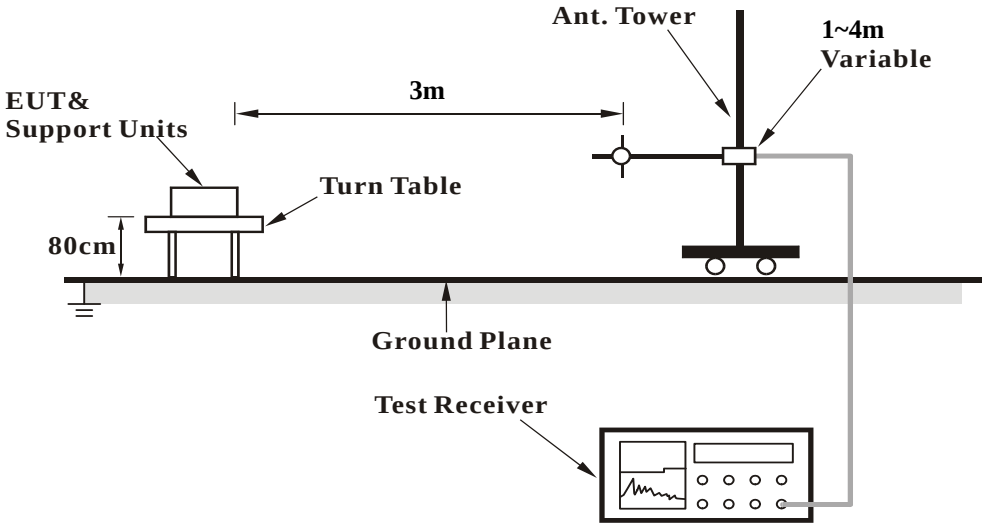
a. All measurements were done at low, middle and high operational frequency range. RBW and VBW is 1MHz for GPRS & EDGE, 5MHz for WCDMA, and 10MHz for LTE mode.
b. Substitution method is used for EIRP measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table 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 = Output power level of S.G – TX cable loss + Antenna gain of substitution horn. ERP power can be calculated form EIRP power by subtracting the gain of dipole, ERP power = EIRP power - 2.15dBi.

CONDUCTED POWER MEASUREMENT:

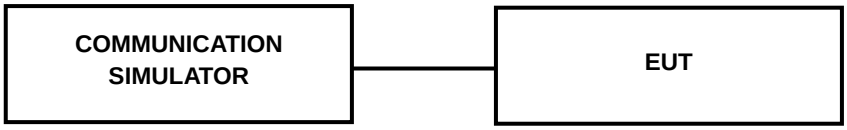
The EUT was set up for the maximum power with GPRS, EDGE, WCDMA & LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

4.1.3 TEST SETUP

EIRP / ERP MEASUREMENT:



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	GPRS850		
Channel	128	189	251
Frequency (MHz)	824.2	836.4	848.8
GPRS 8 (GMSK, 1 slot)	32.04	**32.09**	32.06
GPRS 10 (GMSK, 2 slot)	31.86	31.91	31.88
GPRS 11 (GMSK, 3 slot)	31.63	31.68	31.65
GPRS 12 (GMSK, 4 slot)	31.41	31.46	31.43
EDGE 8 (GMSK, 1 Uplink)	32.01	32.06	32.03
EDGE 10 (GMSK, 2 Uplink)	31.73	31.78	31.75
EDGE 11 (GMSK, 3 Uplink)	31.57	31.62	31.59
EDGE 12 (GMSK, 4 Uplink)	31.37	31.42	31.39
EDGE 8 (8PSK, 1 Uplink)	26.96	27.01	26.98
EDGE 10 (8PSK, 2 Uplink)	26.89	26.94	26.91
EDGE 11 (8PSK, 3 Uplink)	26.72	26.77	26.74
EDGE 12 (8PSK, 4 Uplink)	26.56	26.61	26.58

Band	WCDMA V		
Channel	4132	4182	4233
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	24.14	**24.35**	24.10
HSDPA Subtest-1	23.37	23.34	23.29
HSDPA Subtest-2	23.44	23.46	23.34
HSDPA Subtest-3	22.92	22.95	22.84
HSDPA Subtest-4	22.88	22.92	22.90
HSUPA Subtest-1	23.40	23.53	23.30
HSUPA Subtest-2	22.34	22.44	22.29
HSUPA Subtest-3	22.00	22.14	21.91
HSUPA Subtest-4	22.28	22.27	22.26
HSUPA Subtest-5	22.97	23.50	22.91

Band	CDMA2000 BC0		
Channel	1013	384	777
Frequency (MHz)	824.7	836.52	848.31
RC1+SO55	24.43	24.49	24.44
RC3+SO55	24.48	**24.53**	24.49
RC3+SO32(+ F-SCH)	24.43	24.48	24.44
RC3+SO32(+SCH)	24.44	24.46	24.45
RTAP 153.6	24.44	24.44	24.45
RETAP 4096	24.49	24.52	24.50

LTE Band / BW (Hz)	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20407	Mid CH 20525	High CH 20643		Low CH 20407	Mid CH 20525	High CH 20643	
			824.7 MHz	836.5 MHz	848.3 MHz		824.7 MHz	836.5 MHz	848.3 MHz	
5 / 1.4M	1	0	23.31	23.31	23.27	0	22.24	22.24	22.20	1
	1	2	23.33	**23.36**	23.29	0	22.26	**22.29**	22.22	1
	1	5	23.24	23.28	23.24	0	22.17	22.21	22.17	1
	3	0	23.33	23.35	23.29	0	22.26	22.28	22.22	1
	3	1	23.33	23.33	23.33	0	22.26	22.26	22.26	1
	3	3	23.20	23.32	23.27	0	22.13	22.25	22.20	1
	6	0	22.45	22.42	22.38	1	21.38	21.35	21.31	2

LTE Band / BW (Hz)	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20415	Mid CH 20525	High CH 20635		Low CH 20415	Mid CH 20525	High CH 20635	
			825.5 MHz	836.5 MHz	847.5 MHz		825.5 MHz	836.5 MHz	847.5 MHz	
5 / 3M	1	0	23.37	23.37	23.33	0	22.28	22.28	22.24	1
	1	7	23.26	**23.38**	23.33	0	22.17	**22.29**	22.24	1
	1	14	23.30	23.34	23.30	0	22.21	22.25	22.21	1
	8	0	22.39	22.41	22.35	1	21.30	21.32	21.26	2
	8	3	22.39	22.39	22.39	1	21.30	21.30	21.30	2
	8	7	22.39	22.42	22.35	1	21.30	21.33	21.26	2
	15	0	22.51	22.48	22.44	1	21.42	21.39	21.35	2

LTE Band / BW (Hz)	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20425	Mid CH 20525	High CH 20625		Low CH 20425	Mid CH 20525	High CH 20625	
			826.5 MHz	836.5 MHz	846.5 MHz		826.5 MHz	836.5 MHz	846.5 MHz	
5 / 5M	1	0	23.40	23.40	23.36	0	22.37	22.37	22.33	1
	1	12	23.29	**23.41**	23.36	0	22.26	**22.38**	22.33	1
	1	24	23.33	23.37	23.33	0	22.30	22.34	22.30	1
	12	0	22.42	22.44	22.38	1	21.39	21.41	21.35	2
	12	6	22.42	22.42	22.42	1	21.39	21.39	21.39	2
	12	13	22.42	22.45	22.38	1	21.39	21.42	21.35	2
	25	0	22.54	22.51	22.47	1	21.51	21.48	21.44	2

LTE Band / BW (Hz)	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 20450	Mid CH 20525	High CH 20600		Low CH 20450	Mid CH 20525	High CH 20600	
			829.0 MHz	836.5 MHz	844.0 MHz		829.0 MHz	836.5 MHz	844.0 MHz	
5 / 10M	1	0	23.48	23.48	23.44	0	22.42	22.42	22.38	1
	1	24	23.37	**23.49**	23.44	0	22.31	**22.43**	22.38	1
	1	49	23.41	23.45	23.41	0	22.35	22.39	22.35	1
	25	0	22.50	22.52	22.46	1	21.44	21.46	21.40	2
	25	12	22.50	22.53	22.50	1	21.44	21.47	21.44	2
	25	25	22.50	22.50	22.46	1	21.44	21.44	21.40	2
	50	0	22.62	22.59	22.55	1	21.56	21.53	21.49	2

LTE Band / BW (Hz)	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 26797	Mid CH 26915	High CH 27033		Low CH 26797	Mid CH 26915	High CH 27033	
			824.7 MHz	836.5 MHz	848.3 MHz		824.7 MHz	836.5 MHz	848.3 MHz	
26 / 1.4M	1	0	23.14	23.13	23.15	0	22.17	22.16	22.18	1
	1	2	23.31	23.30	23.27	0	22.34	22.33	22.30	1
	1	5	23.16	23.15	22.81	0	22.19	22.18	21.84	1
	3	0	23.29	23.28	23.19	0	22.32	22.31	22.22	1
	3	1	23.19	23.18	**23.32**	0	22.22	22.21	**22.35**	1
	3	3	23.30	23.29	23.19	0	22.33	22.32	22.22	1
	6	0	22.31	22.30	22.29	1	21.34	21.33	21.32	2

LTE Band / BW (Hz)	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 26805	Mid CH 26915	High CH 27025		Low CH 26805	Mid CH 26915	High CH 27025	
			825.5 MHz	836.5 MHz	847.5 MHz		825.5 MHz	836.5 MHz	847.5 MHz	
26 / 3M	1	0	23.20	23.19	23.21	0	22.21	22.20	22.22	1
	1	7	**23.36**	23.35	23.25	0	**22.37**	22.36	22.26	1
	1	14	23.22	23.21	22.87	0	22.23	22.22	21.88	1
	8	0	22.35	22.34	22.25	1	21.36	21.35	21.26	2
	8	3	22.25	22.24	22.38	1	21.26	21.25	21.39	2
	8	7	22.27	22.26	22.33	1	21.28	21.27	21.34	2
	15	0	22.37	22.36	22.35	1	21.38	21.37	21.36	2

LTE Band / BW (Hz)	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 26815	Mid CH 26915	High CH 27015		Low CH 26815	Mid CH 26915	High CH 27015	
			826.5 MHz	836.5 MHz	846.5 MHz		826.5 MHz	836.5 MHz	846.5 MHz	
26 / 5M	1	0	23.28	23.28	23.29	0	22.26	22.26	22.27	1
	1	12	**23.44**	**23.44**	23.33	0	**22.42**	22.42	22.31	1
	1	24	23.30	23.30	22.95	0	22.28	22.28	21.93	1
	12	0	22.43	22.43	22.33	1	21.41	21.41	21.31	2
	12	6	22.33	22.33	22.46	1	21.31	21.31	21.44	2
	12	13	22.35	22.35	22.41	1	21.33	21.33	21.39	2
	25	0	22.45	22.45	22.43	1	21.43	21.43	21.41	2

LTE Band / BW (Hz)	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 26840	Mid CH 26915	High CH 26990		Low CH 26840	Mid CH 26915	High CH 26990	
			829.0 MHz	836.5 MHz	844.0 MHz		829.0 MHz	836.5 MHz	844.0 MHz	
26 / 10M	1	0	23.40	23.39	23.38	0	22.34	22.33	22.32	1
	1	24	**23.56**	23.55	23.42	0	**22.50**	22.49	22.36	1
	1	49	23.42	23.41	23.04	0	22.36	22.35	21.98	1
	25	0	22.55	22.54	22.42	1	21.49	21.48	21.36	2
	25	12	22.45	22.44	22.55	1	21.39	21.38	21.49	2
	25	25	22.47	22.46	22.50	1	21.41	21.40	21.44	2
	50	0	22.57	22.56	22.52	1	21.51	21.50	21.46	2

LTE Band / BW (Hz)	RB Size	RB Offset	QPSK			3GPP MPR (dB)	16QAM			3GPP MPR (dB)
			Low CH 26865	Mid CH 26915	High CH 26965		Low CH 26865	Mid CH 26915	High CH 26965	
			831.5 MHz	836.5 MHz	841.5 MHz		831.5 MHz	836.5 MHz	841.5 MHz	
26 / 15M	1	0	23.15	23.13	23.12	0	22.09	22.07	22.05	1
	1	37	23.15	23.13	23.16	0	**22.25**	22.07	22.09	1
	1	74	**23.22**	23.20	22.78	0	22.11	22.14	21.71	1
	36	0	22.18	22.16	22.16	1	21.24	21.10	21.09	2
	36	19	22.18	22.16	22.29	1	21.14	21.10	21.22	2
	36	39	22.33	22.31	22.24	1	21.16	21.25	21.17	2
	75	0	22.29	22.27	22.26	1	21.26	21.21	21.19	2

ERP POWER (dBm)

GPRS						
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
X	128	824.2	29.8	2.75	32.5	1778.3
	189	836.4	30.0	2.78	32.8	1905.5
	251	848.8	29.6	2.73	32.3	1698.2

EDGE						
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
X	128	824.2	26.2	2.8	28.9	776.2
	189	836.4	25.9	2.8	28.7	741.3
	251	848.8	26.2	2.7	28.9	776.2

WCDMA						
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
X	4132	826.4	21.1	2.8	23.8	241.5
	4182	836.4	21.4	2.8	24.1	259.4
	4233	846.6	20.7	2.8	23.5	224.9

CDMA2000						
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
X	1013	824.7	22.1	2.8	24.8	304.371
	384	836.52	22.1	2.8	24.8	305.072
	777	848.31	22.0	2.7	24.8	299.504

LTE Band 5						
Channel Bandwidth: 1.4MHz / QPSK						
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
X	20407	824.7	22.7	2.8	25.5	354.8
	20525	836.5	23.0	2.8	25.8	380.2
	20643	848.3	22.8	2.8	25.6	363.1

LTE Band 5						
Channel Bandwidth: 3MHz / QPSK						
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
X	20415	825.5	23.5	2.8	26.3	426.6
	20525	836.5	23.7	2.8	26.5	446.7
	20635	847.5	23.4	2.8	26.2	416.9

LTE Band 5						
Channel Bandwidth: 5MHz / QPSK						
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
X	20425	826.5	23.4	2.8	26.2	416.9
	20525	836.5	23.5	2.8	26.3	426.6
	20625	846.5	23.4	2.8	26.2	416.9

LTE Band 5						
Channel Bandwidth: 10MHz / QPSK						
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
X	20450	829.0	22.7	2.8	25.5	354.8
	20525	836.5	22.6	2.8	25.4	346.7
	20600	844.0	22.7	2.8	25.5	354.8

LTE Band 26						
Channel Bandwidth: 1.4MHz / QPSK						
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
X	26797	824.7	22.4	2.6	25.0	316.2
	26915	836.5	22.4	2.7	25.1	323.6
	27033	848.3	22.2	2.7	24.9	309.0

LTE Band 26						
Channel Bandwidth: 3MHz / QPSK						
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
X	26805	825.5	22.2	2.6	24.8	302.0
	26915	836.5	22.2	2.7	24.9	309.0
	27025	847.5	21.9	2.7	24.6	288.4

LTE Band 26						
Channel Bandwidth: 5MHz / QPSK						
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
X	26815	826.5	21.8	2.6	24.4	275.4
	26915	836.5	21.7	2.7	24.4	275.4
	27015	846.5	21.7	2.7	24.4	275.4

LTE Band 26						
Channel Bandwidth: 10MHz / QPSK						
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
X	26840	829.0	22.0	2.6	24.6	288.4
	26915	836.5	22.1	2.7	24.8	302.0
	26990	844.0	22.0	2.7	24.7	295.1

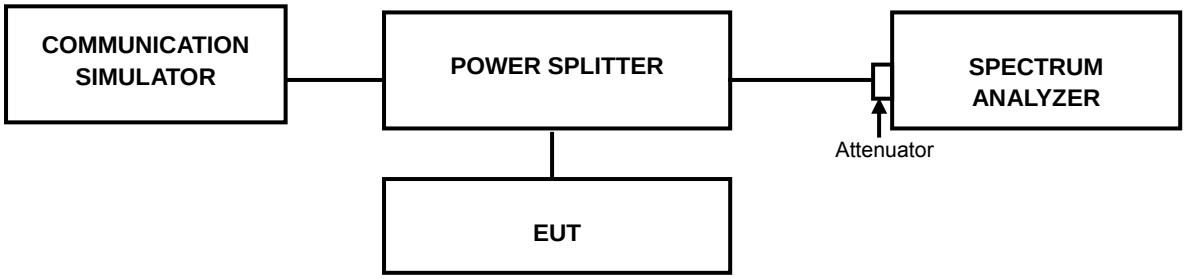
LTE Band 26						
Channel Bandwidth: 15MHz / QPSK						
Plane	Channel	Frequency (MHz)	LVL (dBm)	Correction Factor(dB)	ERP(dBm)	ERP(mW)
X	26865	831.5	22.0	2.6	24.6	288.4
	26915	836.5	21.7	2.7	24.4	275.4
	26965	841.5	21.6	2.7	24.3	269.2

4.2 PEAK TO AVERAGE RATIO MEASUREMENT

4.2.1 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

4.2.2 TEST SETUP



4.2.3 TEST PROCEDURES

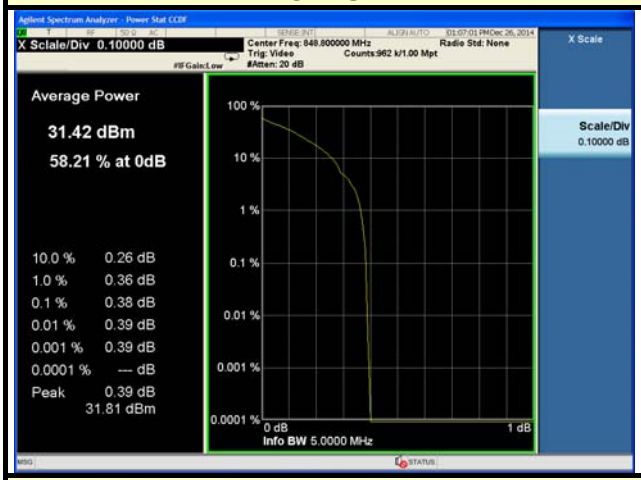
1. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.

4.2.4 TEST RESULTS

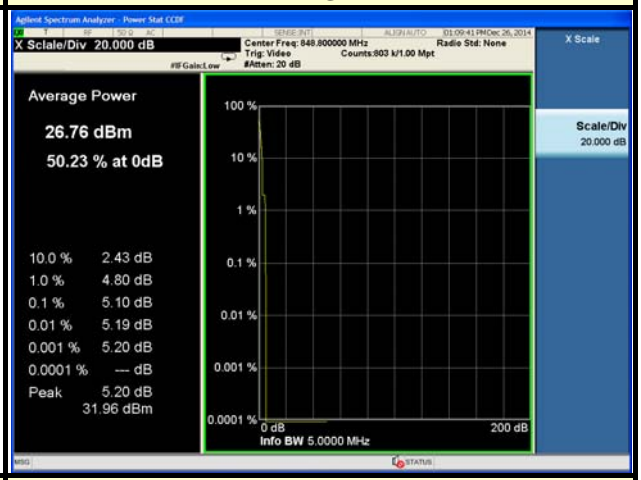
GPRS			EDGE		
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
128	824.2	0.31	128	824.2	2.95
189	836.4	0.34	189	836.4	4.79
251	848.8	0.38	251	848.8	5.1
WCDMA			**CDMA2000**		
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)
4132	826.4	2.62	1013	824.7	3.41
4182	836.4	3.02	384	836.52	3.81
4233	846.6	2.66	777	848.31	3.44

SPECTRUM PLOT OF WORST VALUE

GPRS

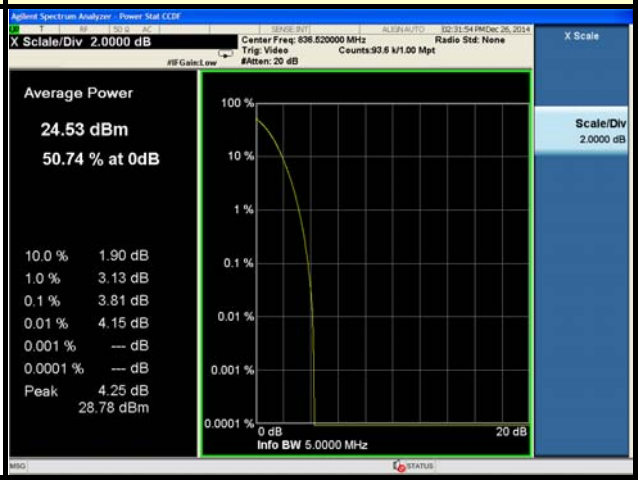


EDGE



WCDMA

CDMA2000

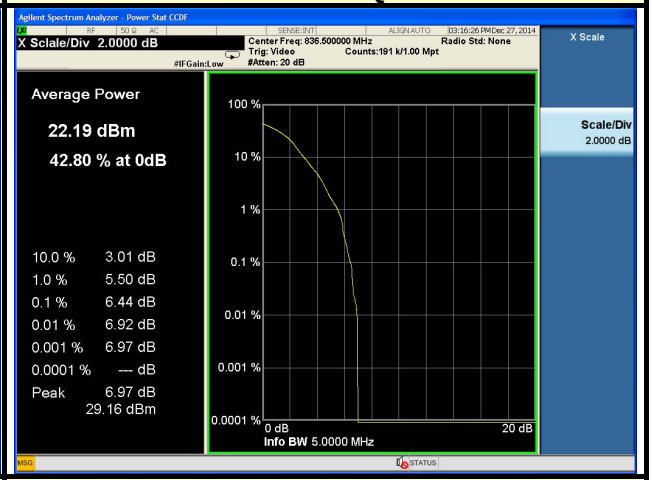


LTE Band 5							
CHANNEL BANDWIDTH: 1.4MHz				CHANNEL BANDWIDTH: 3MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)		CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM			QPSK	16QAM
20407	824.7	5.2	5.98	20415	825.5	4.98	5.97
20525	836.5	5.3	6.44	20525	836.5	5.25	6.6
20643	848.3	4.5	5.67	20635	847.5	4.44	5.58
CHANNEL BANDWIDTH: 5MHz				CHANNEL BANDWIDTH: 10MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)		CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM			QPSK	16QAM
20425	826.5	4.7	5.91	20450	829	4.02	5.03
20525	836.5	5.24	6.35	20525	836.5	5.3	6.38
20625	846.5	4.05	5.22	20600	844	3.85	5.07

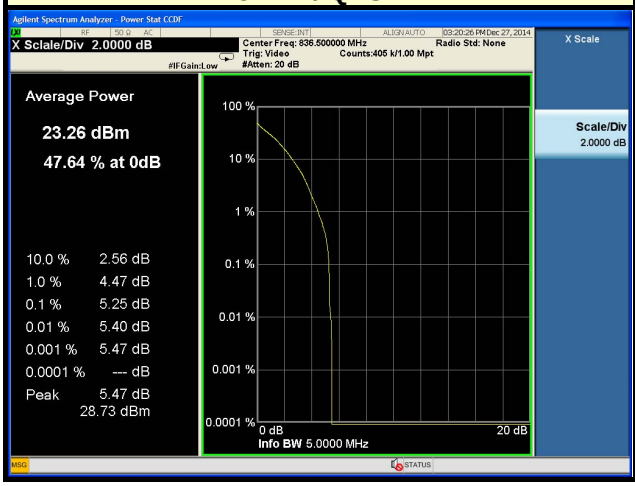
SPECTRUM PLOT OF WORST VALUE

1.4MHz / QPSK

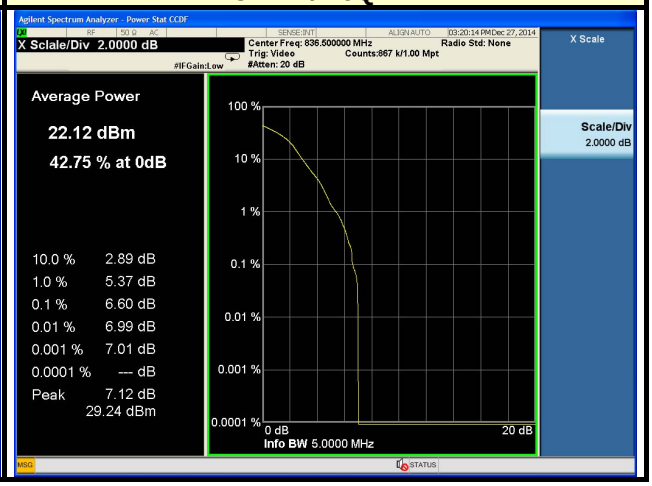
1.4MHz / 16QAM



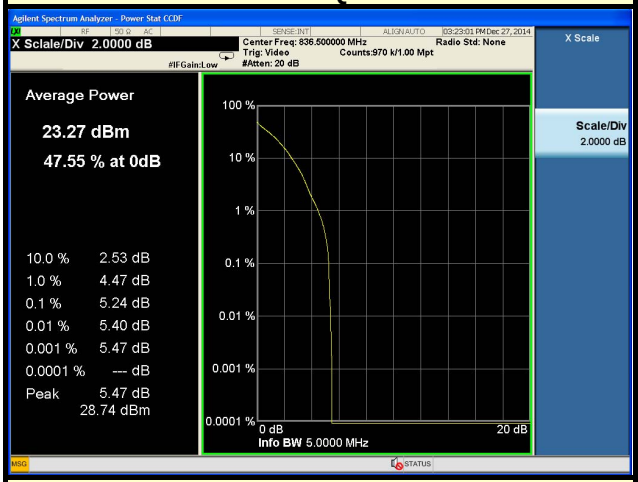
3MHz / QPSK



3MHz / 16QAM



5MHz / QPSK



5MHz / 16QAM

10MHz / QPSK

10MHz / 16QAM

LTE Band 26							
CHANNEL BANDWIDTH: 1.4MHz				CHANNEL BANDWIDTH: 3MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)		CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM			QPSK	16QAM
26797	824.7	5.3	6.27	26805	825.5	5.06	6.04
26915	836.5	5.3	6.67	26915	836.5	5.33	6.53
27033	848.3	4.66	5.81	27025	847.5	4.45	5.65
CHANNEL BANDWIDTH: 5MHz				CHANNEL BANDWIDTH: 10MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)		CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM			QPSK	16QAM
26815	826.5	4.73	5.74	26840	829.0	4.08	5.08
26915	836.5	5.28	6.39	26915	836.5	5.27	6.56
27015	846.5	4.08	5.25	26990	844.0	3.87	4.98

CHANNEL BANDWIDTH: 15MHz			
CHANNEL	FREQUENCY (MHz)	PEAK TO AVERAGE RATIO (dB)	
		QPSK	16QAM
26865	831.5	4.15	5.09
26915	836.5	5.19	6.42
26965	841.5	4.76	5.87

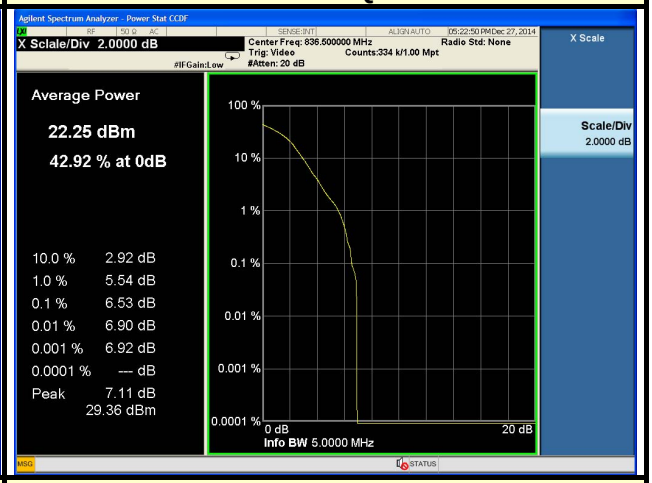
SPECTRUM PLOT OF WORST VALUE

1.4MHz / QPSK

1.4MHz / 16QAM

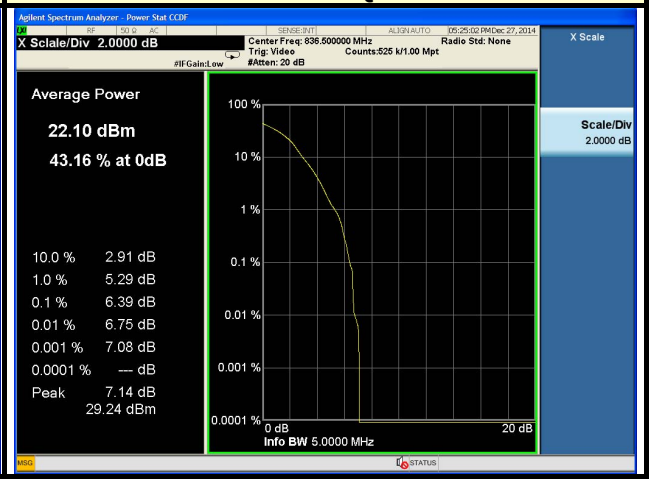
3MHz / QPSK

3MHz / 16QAM



5MHz / QPSK

5MHz / 16QAM



10MHz / QPSK

10MHz / 16QAM

15MHz / QPSK

15MHz / 16QAM

4.3 FREQUENCY STABILITY MEASUREMENT

4.3.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

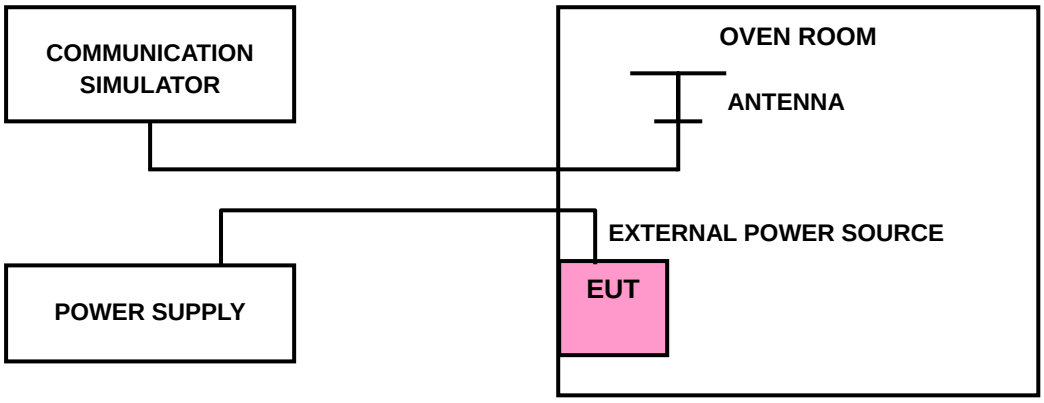
1.5 ppm is for base and fixed station. 2.5 ppm is for mobile station.

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 input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ±0.5℃ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

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

4.3.3 TEST SETUP



4.3.4 TEST RESULTS

FREQUENCY ERROR vs. VOLTAGE

VOLTAGE (Volts)	FREQUENCY ERROR (ppm)			LIMIT (ppm)
	GPRS	WCDMA	CDMA2000	
102	0.018	0.008	-0.017	2.5
138	0.017	0.007	-0.020	2.5

NOTE: The applicant defined the normal working voltage of the host equipment is from 102Vac to 138Vac

FREQUENCY ERROR vs. TEMPERATURE

TEMP. (℃)	FREQUENCY ERROR (ppm)			LIMIT (ppm)
	GPRS	WCDMA	CDMA2000	
75	0.038	0.025	-0.030	2.5
70	0.035	0.024	-0.029	2.5
60	0.035	0.022	-0.026	2.5
50	0.030	0.018	-0.026	2.5
40	0.027	0.016	-0.024	2.5
30	0.023	0.011	-0.020	2.5
20	0.022	0.008	-0.017	2.5
10	0.024	0.012	-0.020	2.5
0	0.025	0.011	-0.023	2.5
-10	0.032	0.016	-0.022	2.5

FREQUENCY ERROR vs. VOLTAGE

VOLTAGE (Volts)	FREQUENCY ERROR (ppm)				LIMIT (ppm)
	LTE Band 5				
	1.4MHz	3MHz	5MHz	10MHz	
102	0.033	0.050	0.051	0.030	2.5
138	0.032	0.029	0.048	0.045	2.5

NOTE: The applicant defined the normal working voltage of the host equipment is from 102Vac to 138Vac

FREQUENCY ERROR vs. TEMPERATURE

TEMP. (℃)	FREQUENCY ERROR (ppm)				LIMIT (ppm)
	LTE Band 5				
	1.4MHz	3MHz	5MHz	10MHz	
75	0.035	0.033	0.037	0.032	2.5
70	0.055	0.047	0.031	0.047	2.5
60	0.045	0.043	0.044	0.051	2.5
50	0.045	0.044	0.038	0.045	2.5
40	0.053	0.053	0.053	0.048	2.5
30	0.053	0.031	0.048	0.050	2.5
20	0.042	0.029	0.029	0.041	2.5
10	0.047	0.038	0.043	0.039	2.5
0	0.033	0.033	0.039	0.050	2.5
-10	0.033	0.050	0.055	0.055	2.5

FREQUENCY ERROR vs. VOLTAGE

VOLTAGE (Volts)	FREQUENCY ERROR (ppm)					LIMIT (ppm)
	LTE Band 26					
	1.4MHz	3MHz	5MHz	10MHz	15MHz	
102	0.044	0.031	0.047	0.039	0.044	2.5
138	0.036	0.032	0.053	0.038	0.054	2.5

NOTE: The applicant defined the normal working voltage of the host equipment is from 102Vac to 138Vac

FREQUENCY ERROR vs. TEMPERATURE

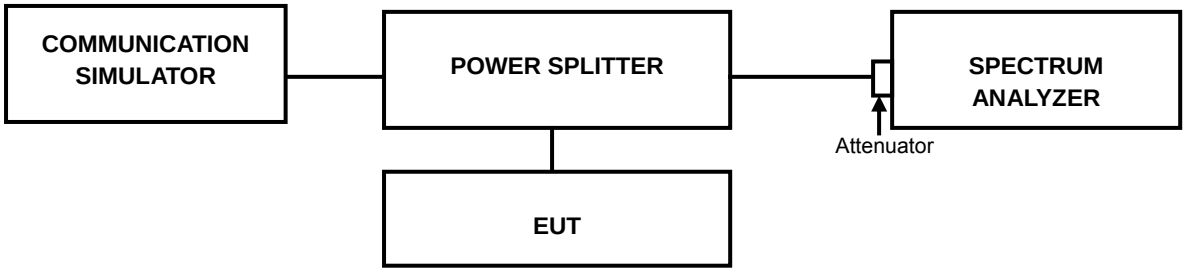
TEMP. (℃)	FREQUENCY ERROR (ppm)					LIMIT (ppm)
	LTE Band 26					
	1.4MHz	3MHz	5MHz	10MHz	15MHz	
75	0.030	0.032	0.030	0.047	0.031	2.5
70	0.054	0.029	0.050	0.029	0.050	2.5
60	0.043	0.039	0.035	0.043	0.054	2.5
50	0.036	0.029	0.033	0.030	0.038	2.5
40	0.043	0.032	0.038	0.048	0.045	2.5
30	0.029	0.030	0.041	0.051	0.041	2.5
20	0.030	0.037	0.048	0.042	0.027	2.5
10	0.047	0.035	0.043	0.050	0.036	2.5
0	0.042	0.048	0.041	0.044	0.053	2.5
-10	0.039	0.048	0.043	0.039	0.036	2.5

4.4 OCCUPIED BANDWIDTH MEASUREMENT

4.4.1 TEST PROCEDURES

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



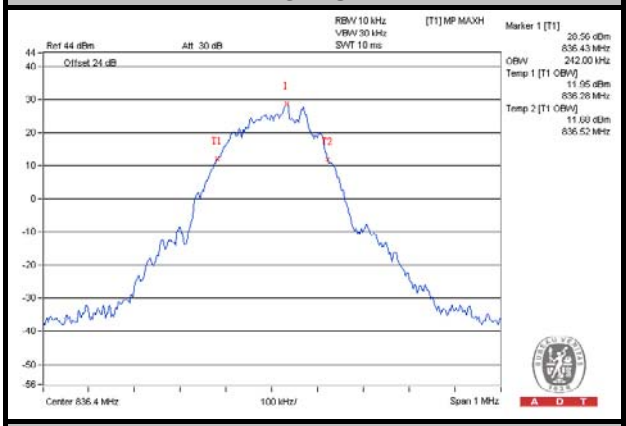
4.4.3 TEST RESULTS

CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (kHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)
		GPRS	EDGE			WCDMA
128	824.2	240	240	4132	826.4	4.16
189	836.4	242	246	4182	836.4	4.18
251	848.8	240	244	4233	846.6	4.14

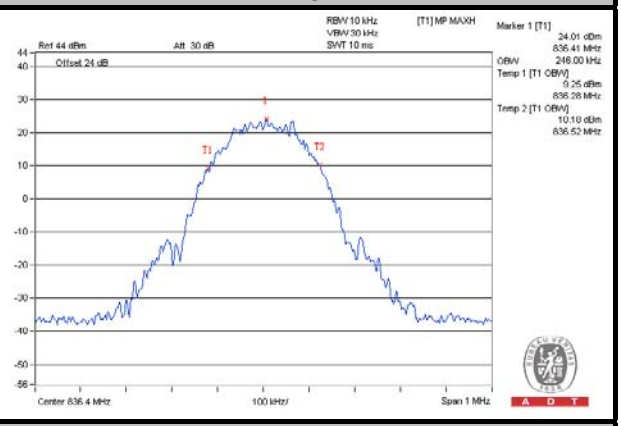
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)
		CDMA2000
1013	824.7	1.28
384	836.52	1.28
777	848.31	1.28

SPECTRUM PLOT OF WORST VALUE

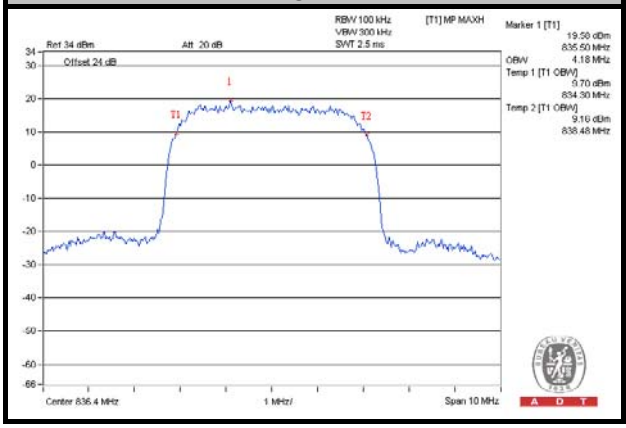
GPRS



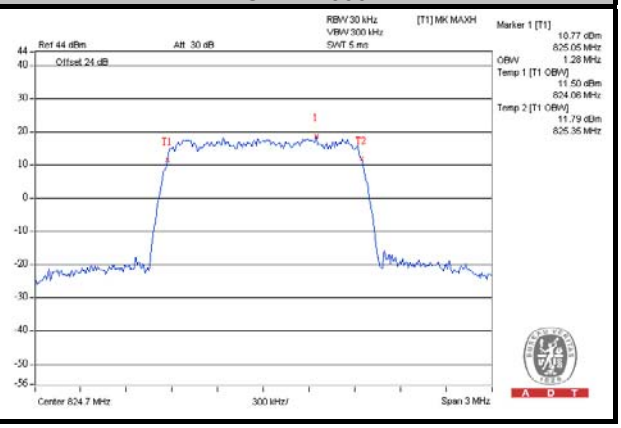
EDGE



WCDMA



CDMA2000

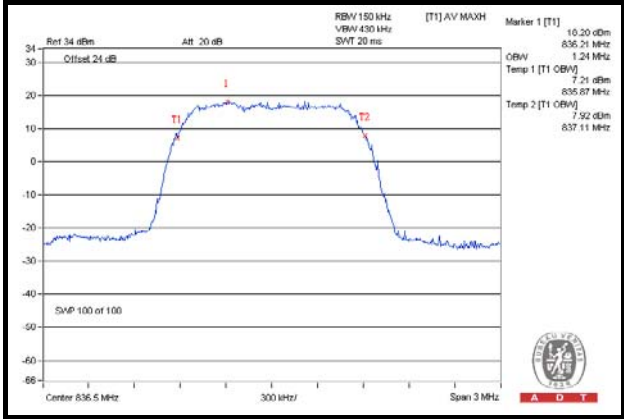


LTE BAND 5							
CHANNEL BANDWIDTH: 1.4MHz				CHANNEL BANDWIDTH: 3MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
20407	824.7	1.23	1.21	20415	825.5	2.74	2.73
20525	836.5	1.24	1.23	20525	836.5	2.74	2.72
20643	848.3	1.23	1.23	20635	847.5	2.72	2.73

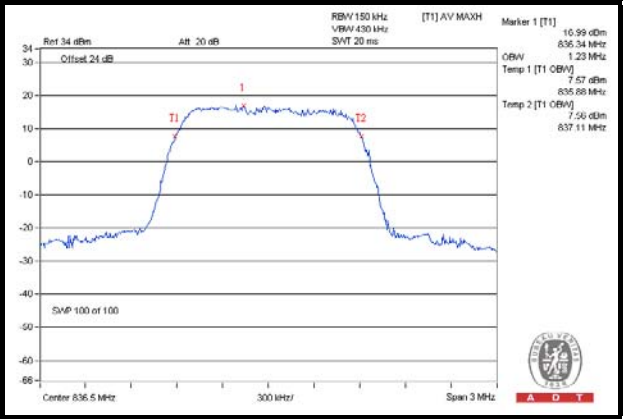
LTE BAND 5							
CHANNEL BANDWIDTH: 5MHz				CHANNEL BANDWIDTH: 10MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
20425	826.5	4.48	4.48	20450	829.0	9.00	8.97
20525	836.5	4.50	4.48	20525	836.5	9.03	9.00
20625	846.5	4.48	4.48	20600	844.0	8.97	8.97

SPECTRUM PLOT OF WORST VALUE

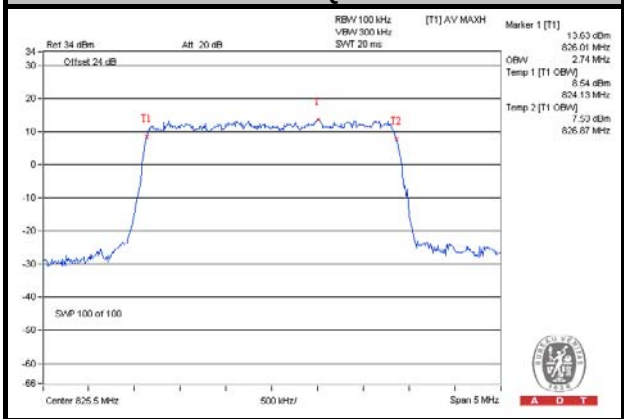
1.4MHz / QPSK



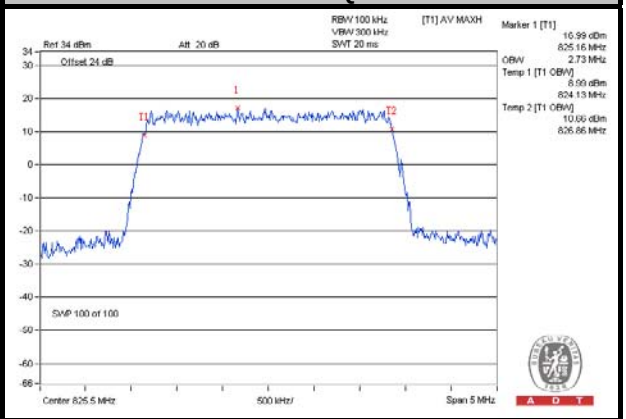
1.4MHz / 16QAM



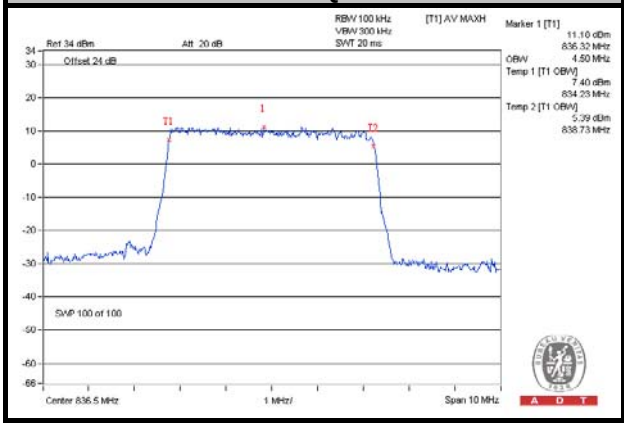
3MHz / QPSK



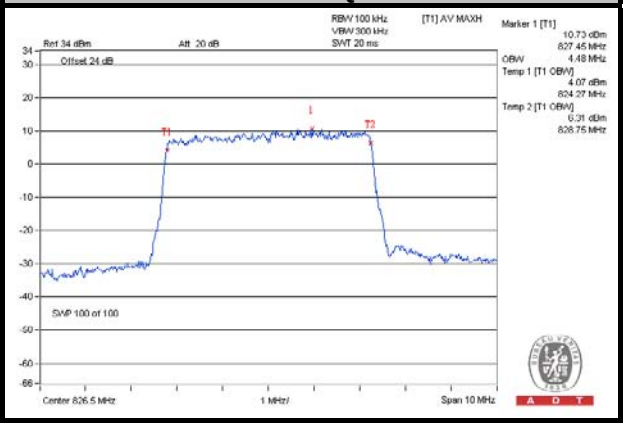
3MHz / 16QAM

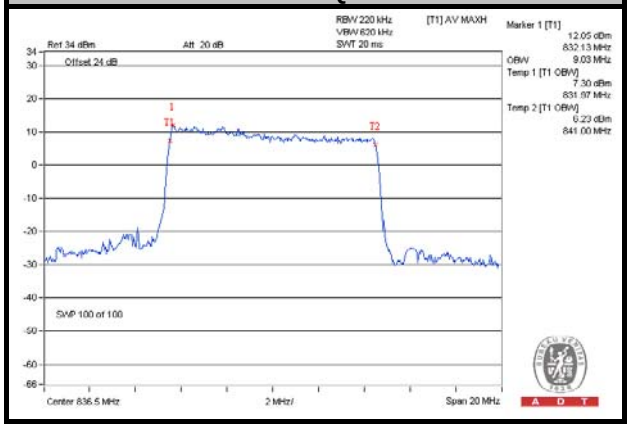
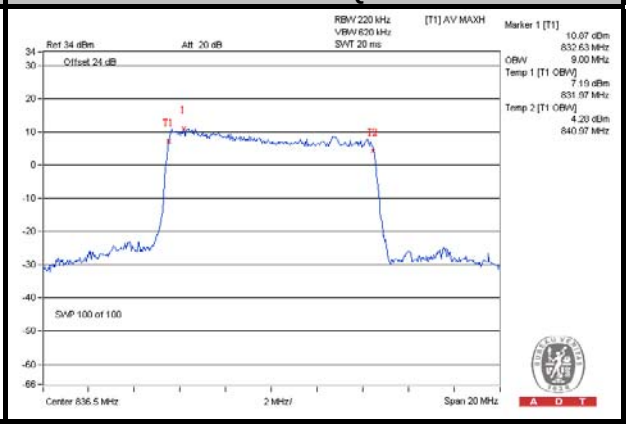


5MHz / QPSK



5MHz / 16QAM



10MHz / QPSK	10MHz / 16QAM
	

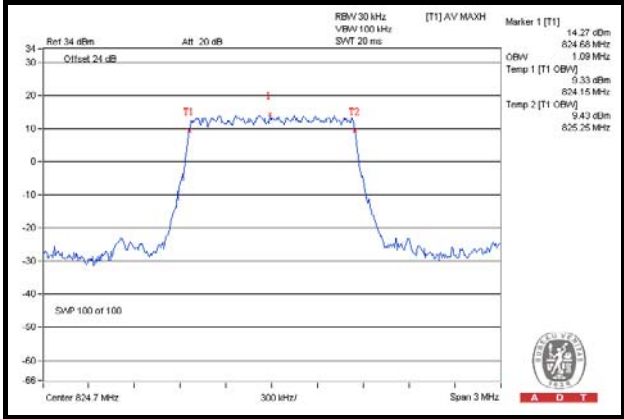
LTE BAND 26							
CHANNEL BANDWIDTH: 1.4MHz				CHANNEL BANDWIDTH: 3MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
26797	824.7	1.09	1.09	26805	825.5	2.73	2.73
26915	836.5	1.09	1.09	26915	836.5	2.73	2.73
27033	848.3	1.09	1.09	27025	847.5	2.73	2.73

LTE BAND 26							
CHANNEL BANDWIDTH: 5MHz				CHANNEL BANDWIDTH: 10MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)		CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM			QPSK	16QAM
26815	826.5	4.50	4.48	26840	829.0	8.93	8.93
26915	836.5	4.48	4.48	26915	836.5	9.00	9.00
27015	846.5	4.47	4.48	26990	844.0	8.93	8.93

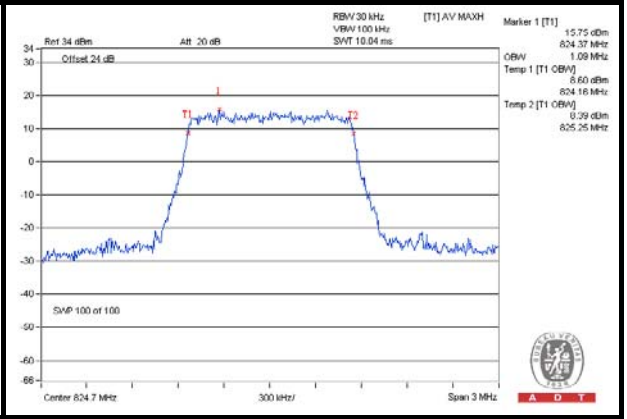
LTE BAND 26			
CHANNEL BANDWIDTH: 15MHz			
CHANNEL	FREQUENCY (MHz)	99% OCCUPIED BANDWIDTH (MHz)	
		QPSK	16QAM
26865	831.5	13.30	13.30
26915	836.5	13.43	13.43
26965	841.5	13.37	13.40

SPECTRUM PLOT OF WORST VALUE

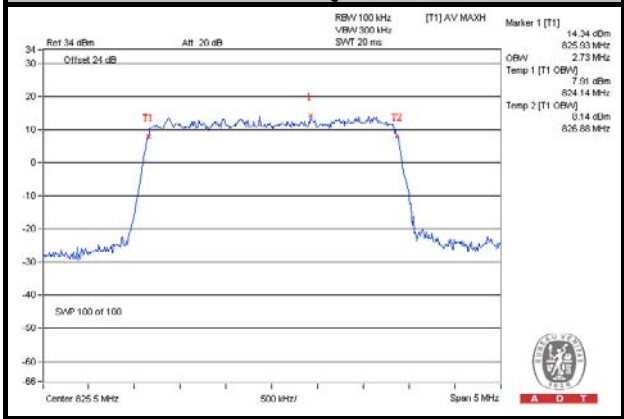
1.4MHz / QPSK



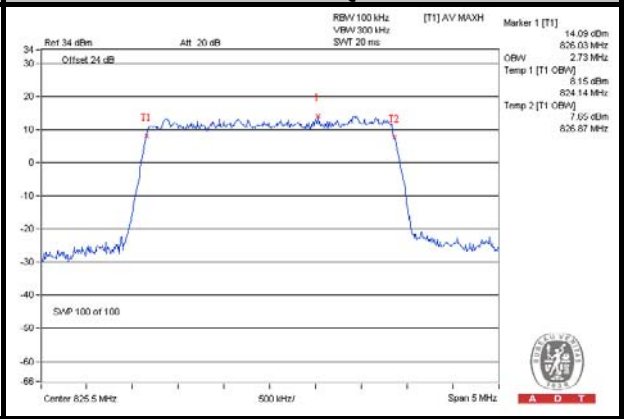
1.4MHz / 16QAM



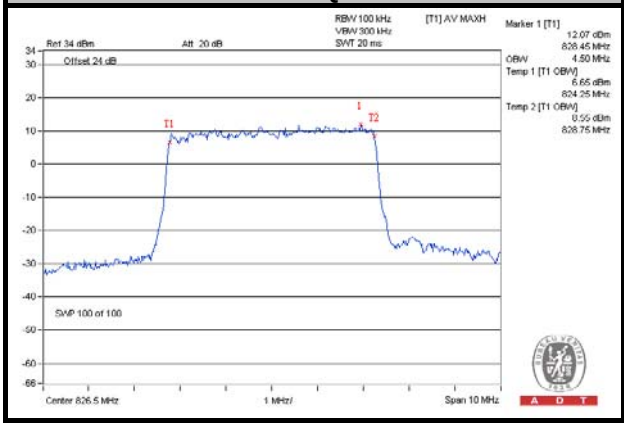
3MHz / QPSK



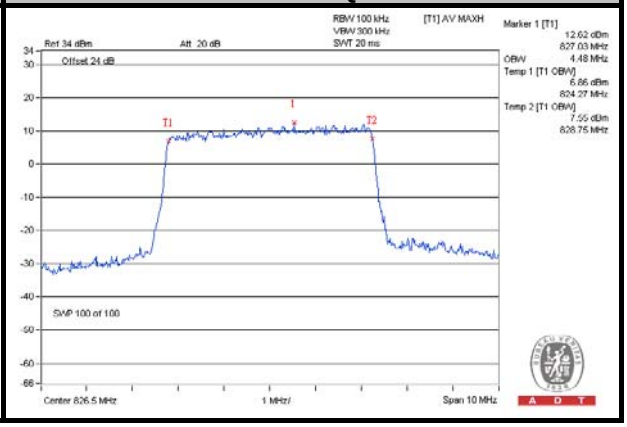
3MHz / 16QAM

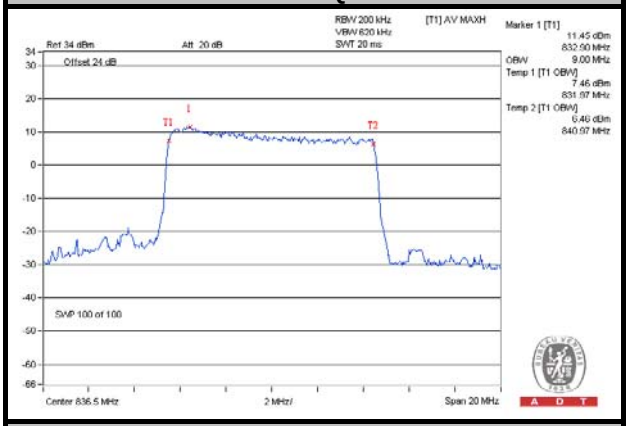
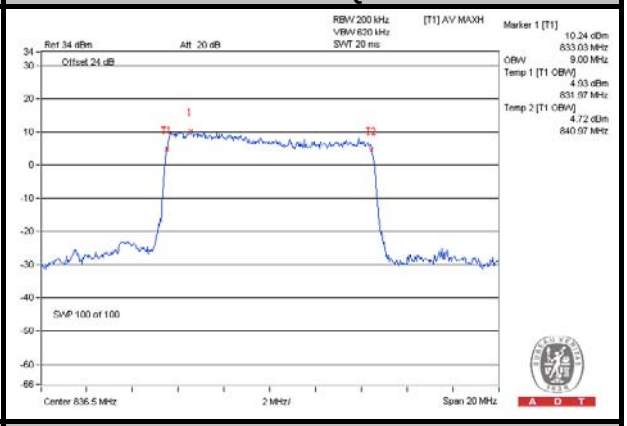
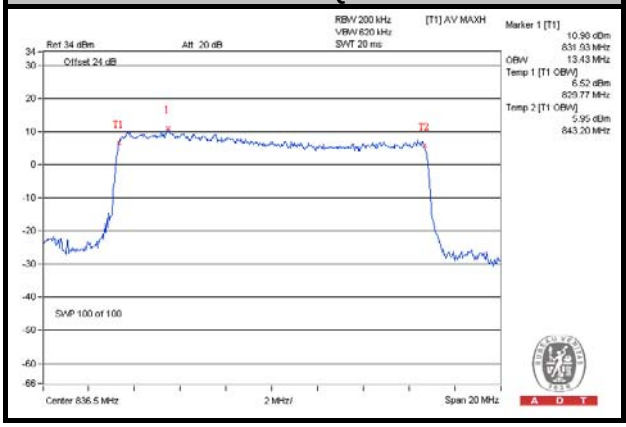
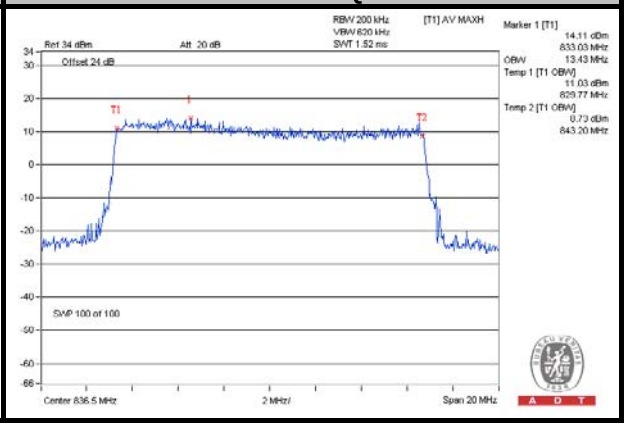


5MHz / QPSK



5MHz / 16QAM



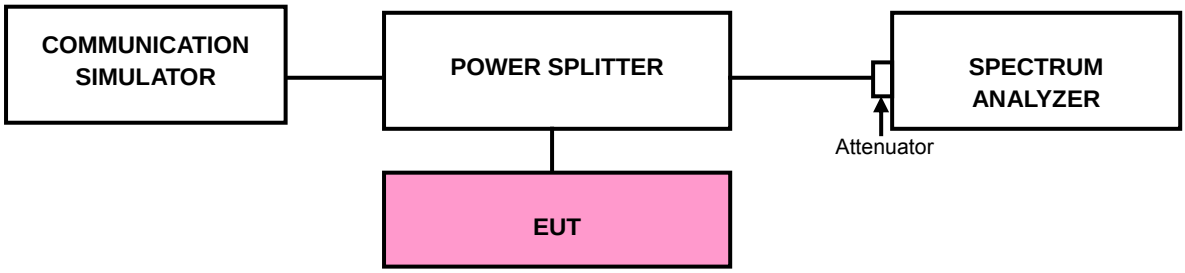
10MHz / QPSK	10MHz / 16QAM
	
15MHz / QPSK	**15MHz / 16QAM**
	

4.5 BAND EDGE MEASUREMENT

4.5.1 LIMITS OF BAND EDGE MEASUREMENT

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

4.5.2 TEST SETUP



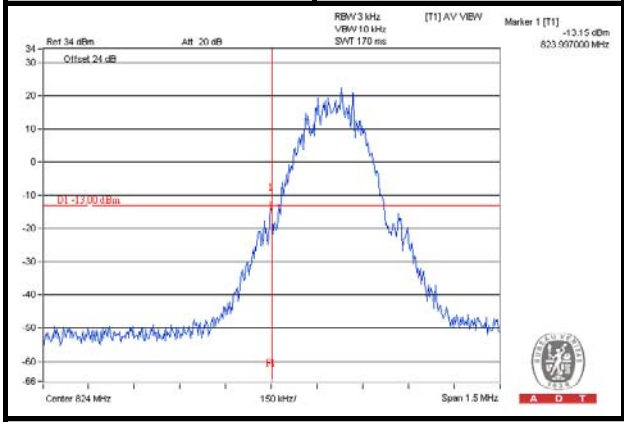
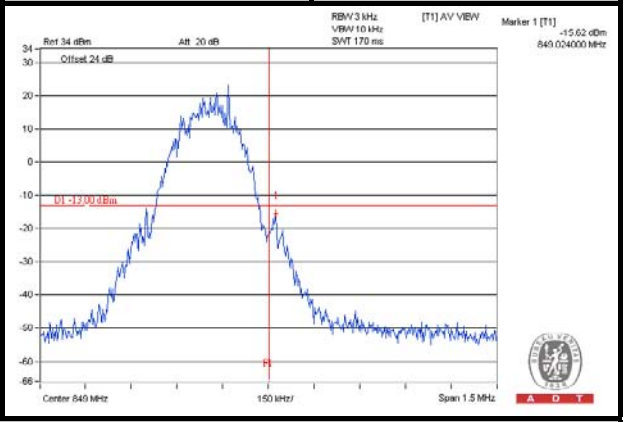
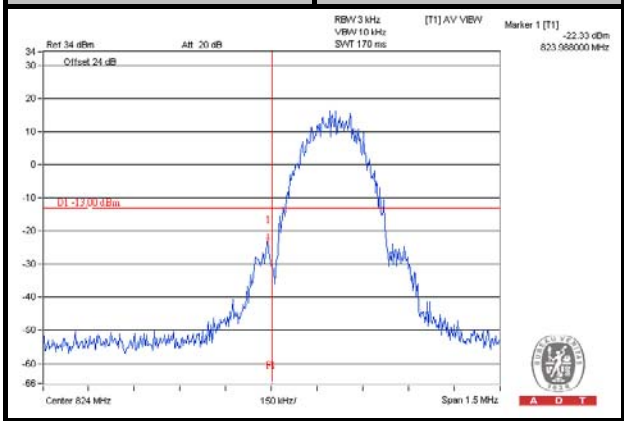
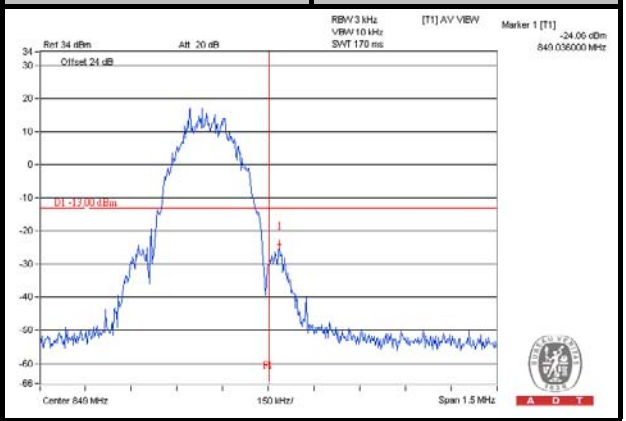
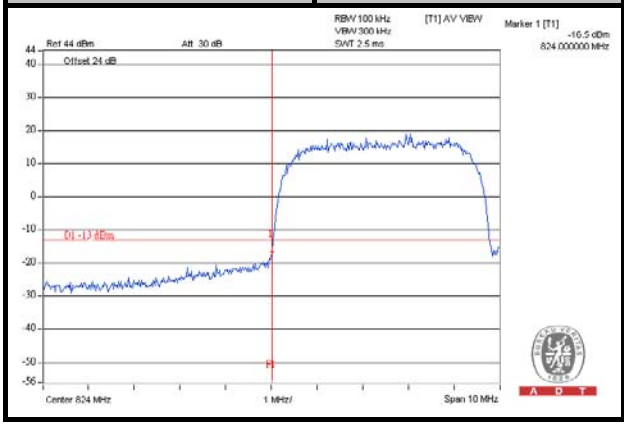
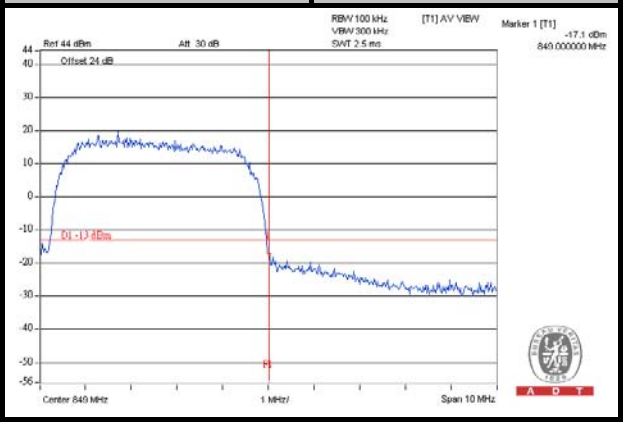
4.5.3 TEST PROCEDURES

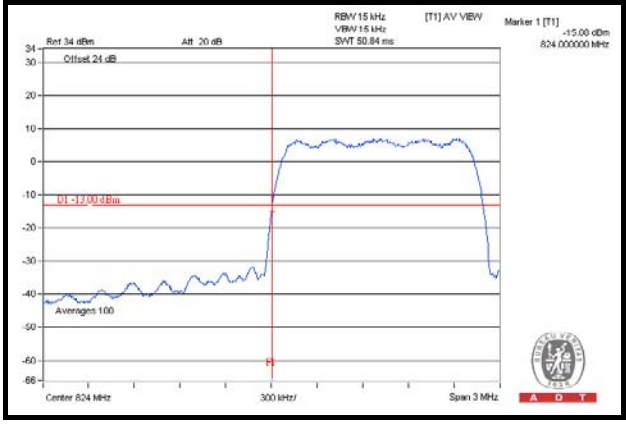
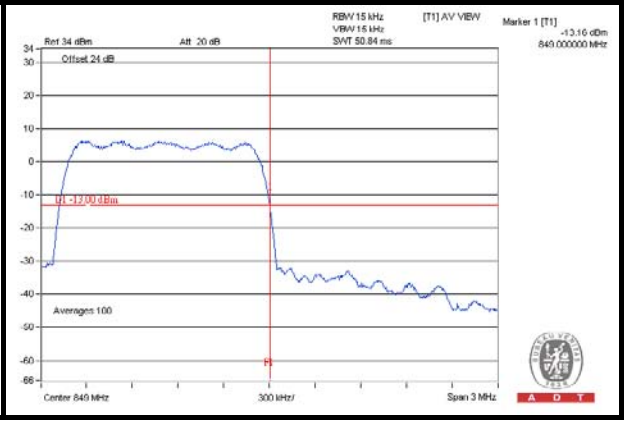
a. All measurements were done at low and high operational frequency range.

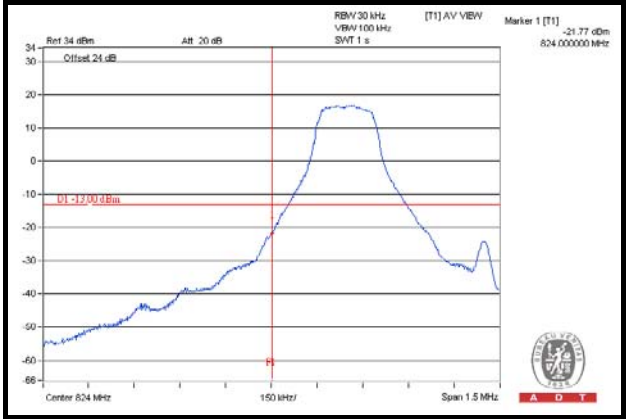
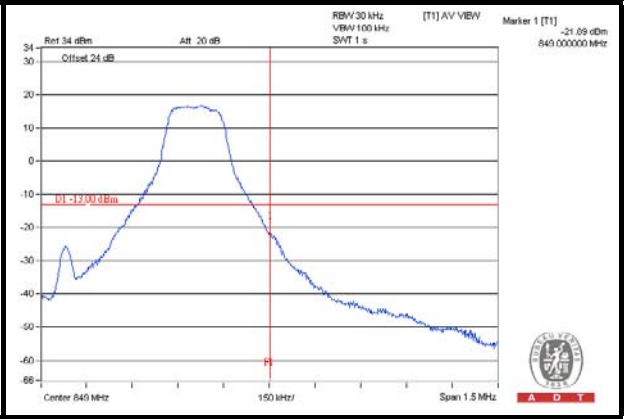
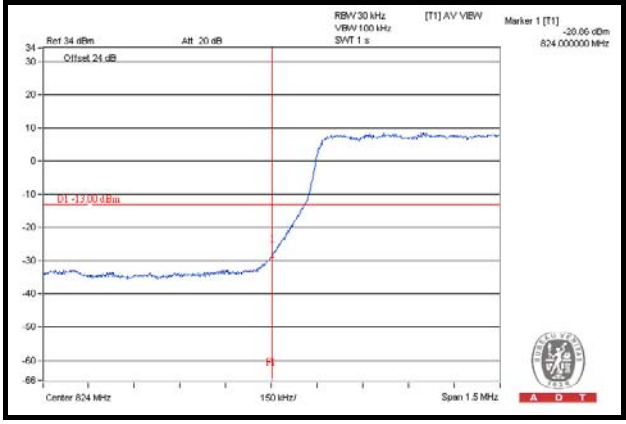
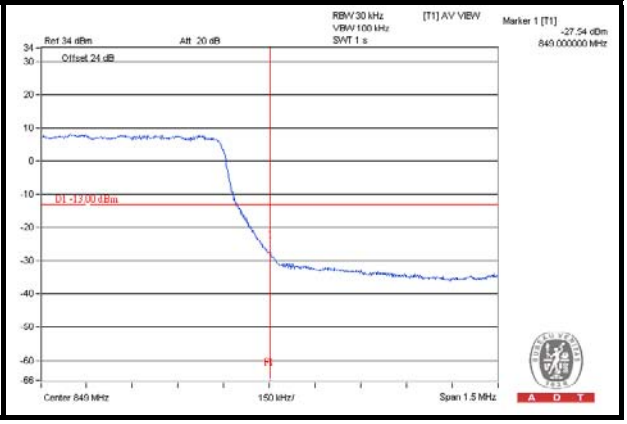
b. The center frequency of spectrum is the band edge frequency and s RB of the spectrum is >1% OCCUPIED BANDWIDTH and VB of the spectrum is ≧ 3*RB.

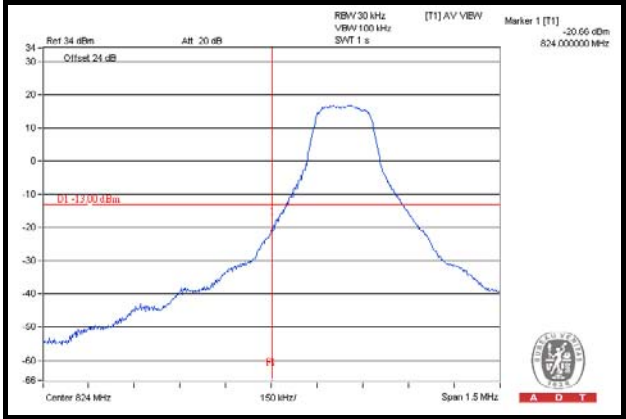
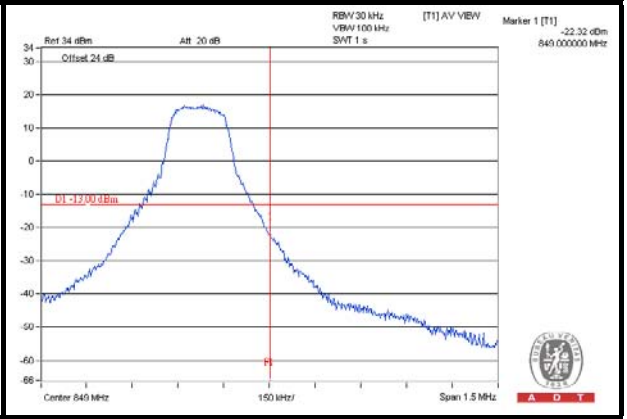
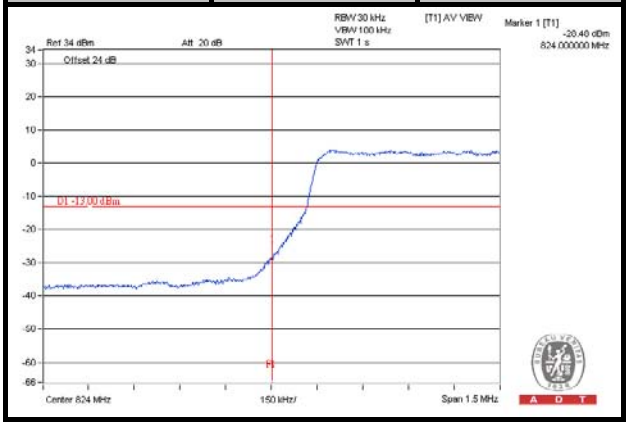
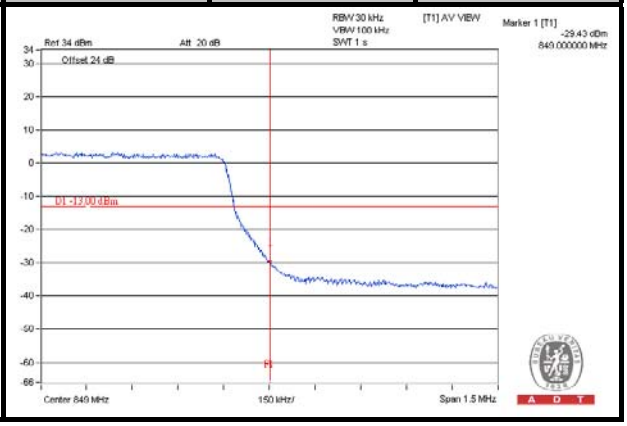
c. Record the max trace plot into the test report.

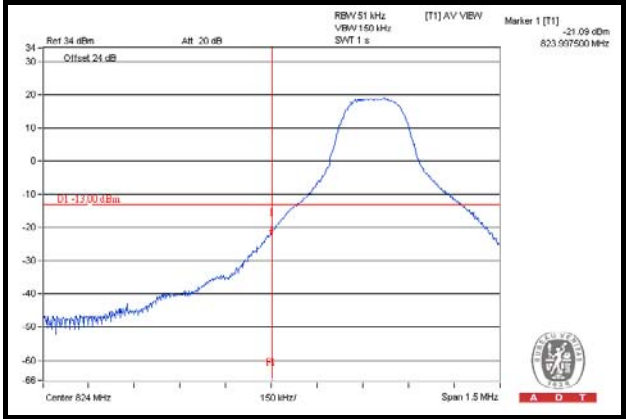
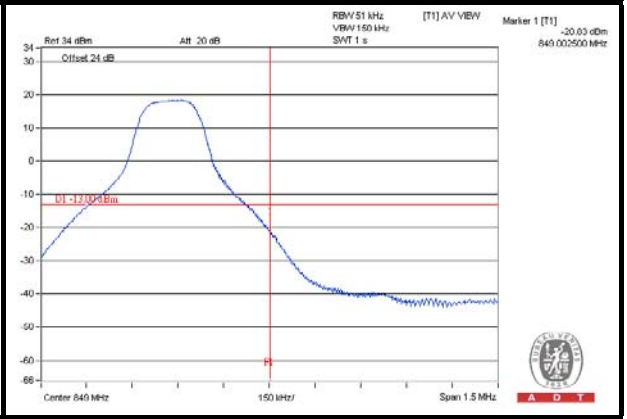
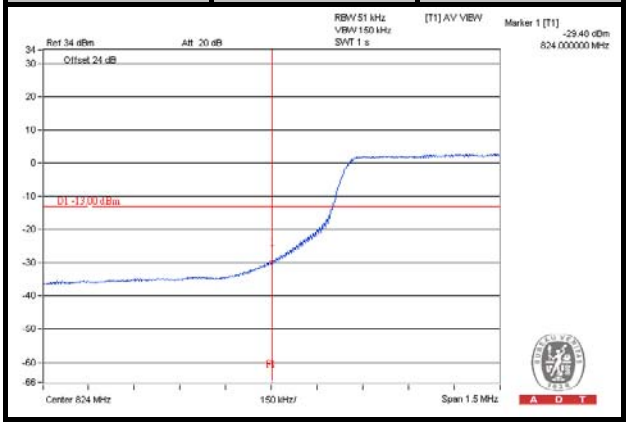
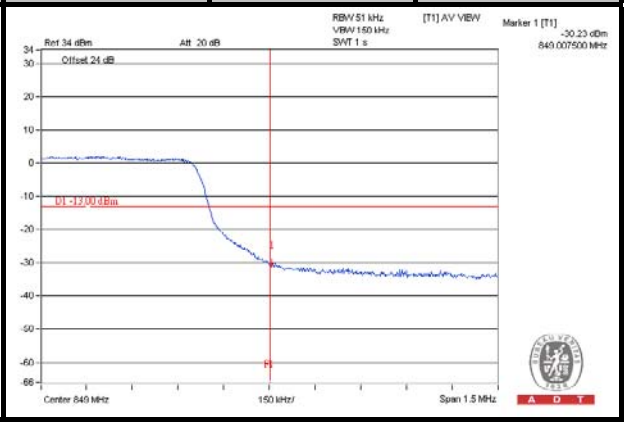
4.5.4 TEST RESULTS

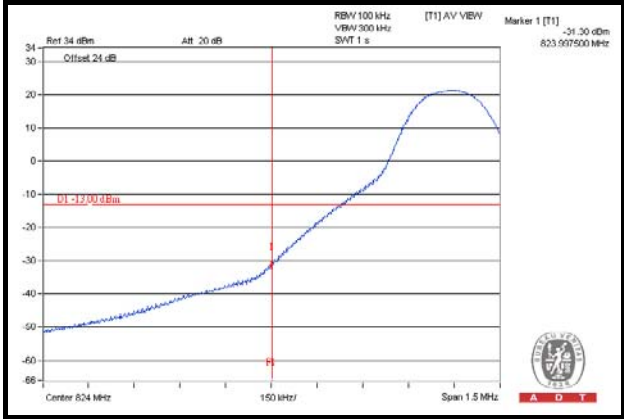
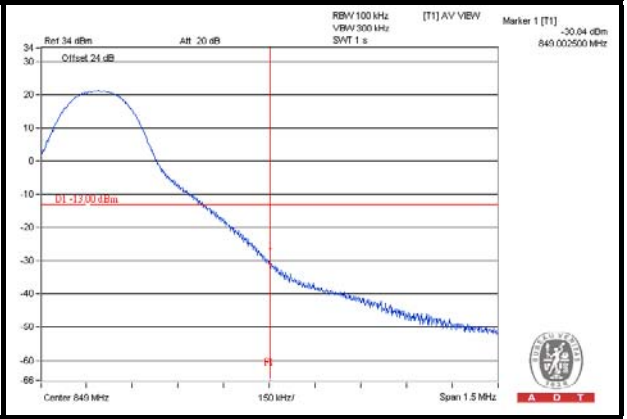
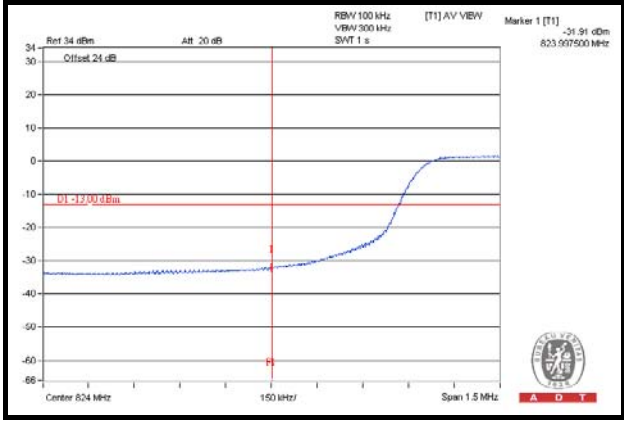
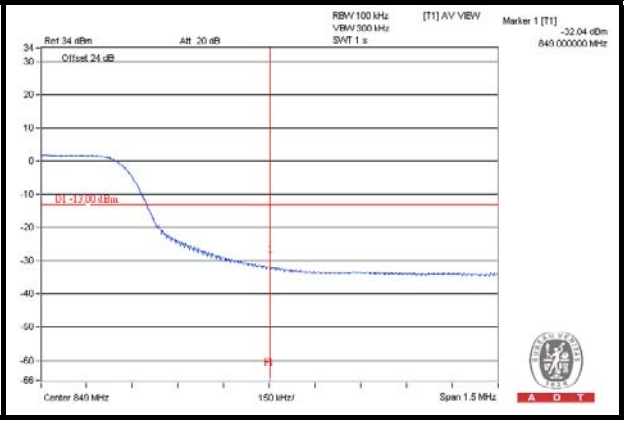
GPRS			
CHANNEL	128	CHANNEL	251
			
EDGE			
CHANNEL	128	CHANNEL	251
			
WCDMA			
CHANNEL	4132	CHANNEL	4233
			

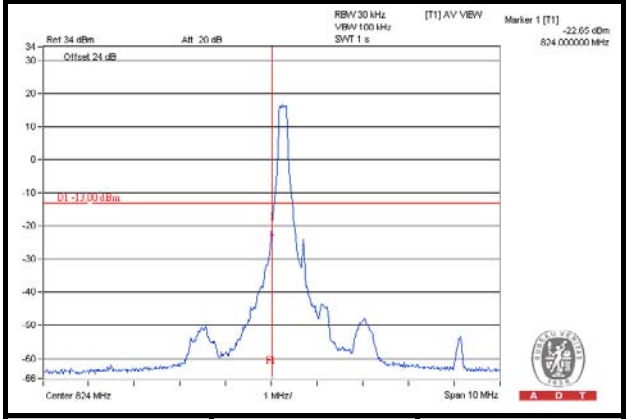
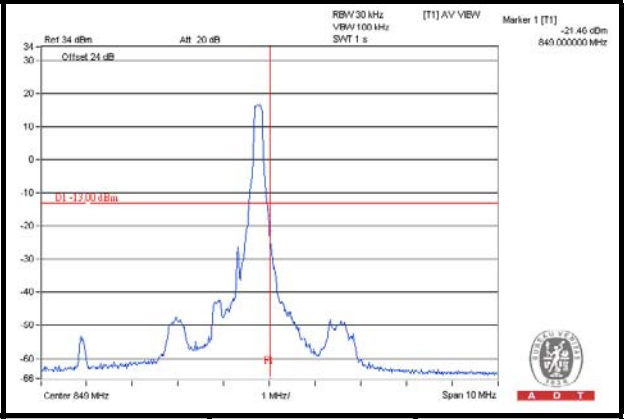
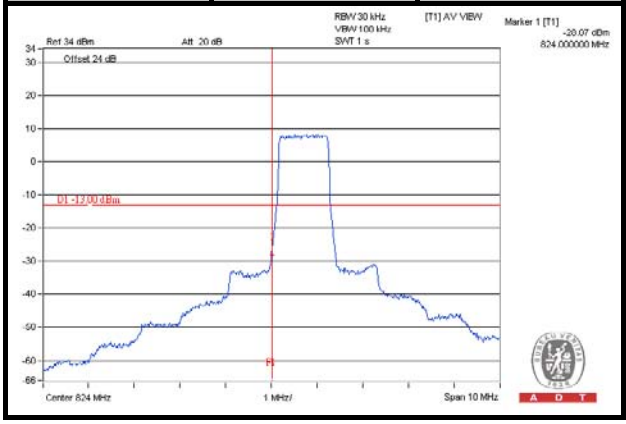
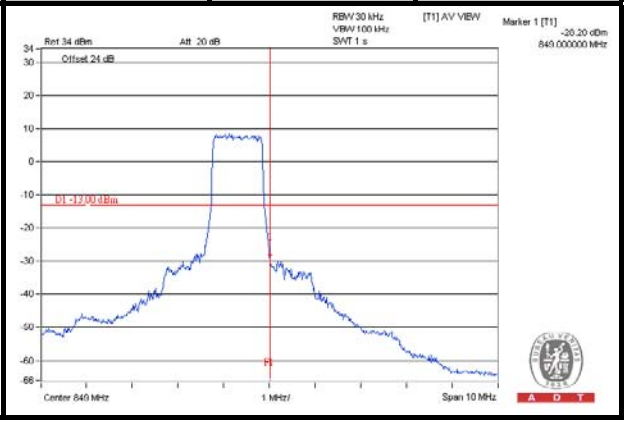
CDMA2000			
CHANNEL	1013	CHANNEL	777
			

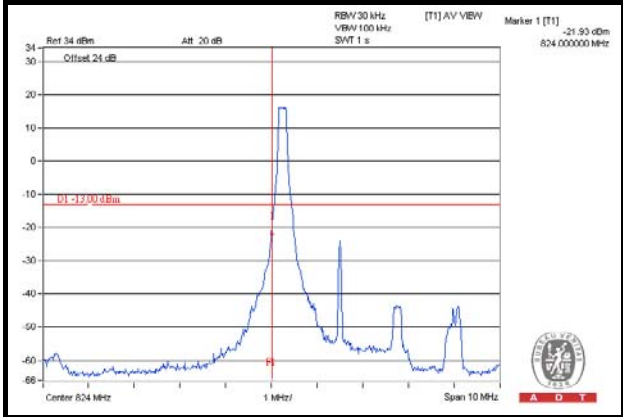
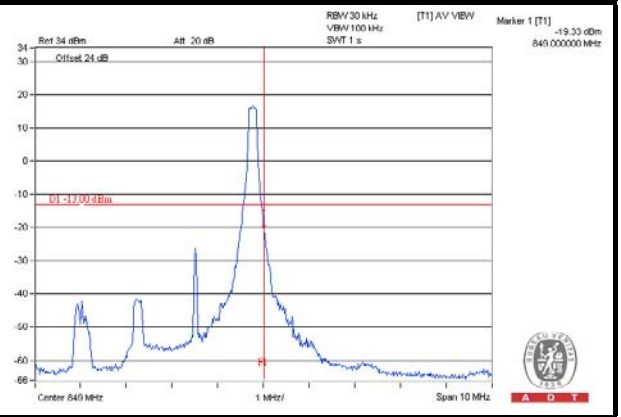
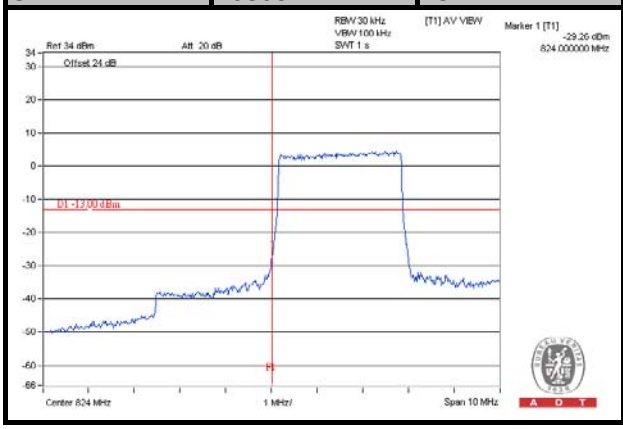
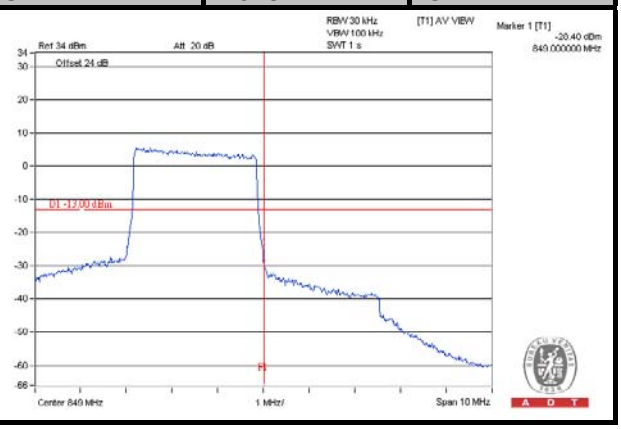
LTE BAND 5					
CHANNEL BANDWIDTH: 1.4MHz					
CHANNEL	20407	1 RB	CHANNEL	20643	1 RB
					
CHANNEL	20407	6 RB	CHANNEL	20643	6 RB
					

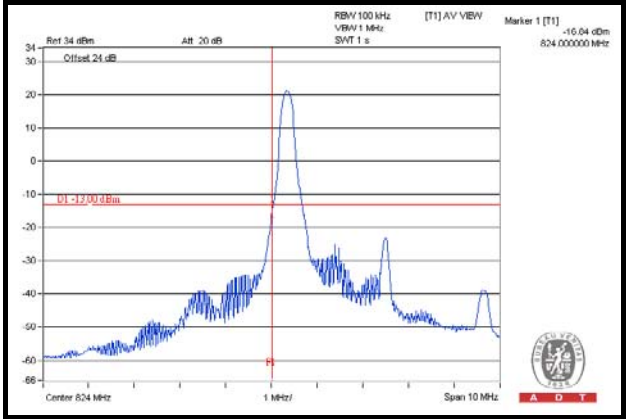
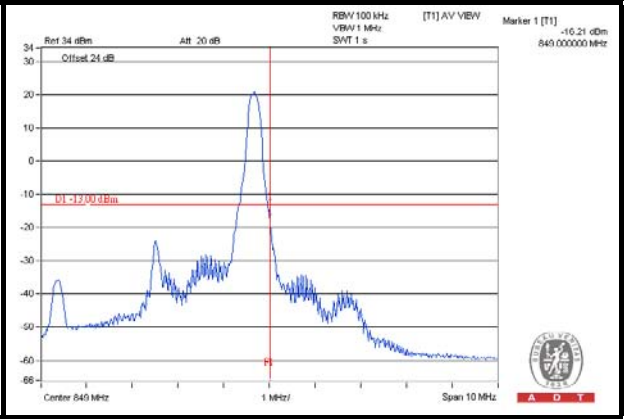
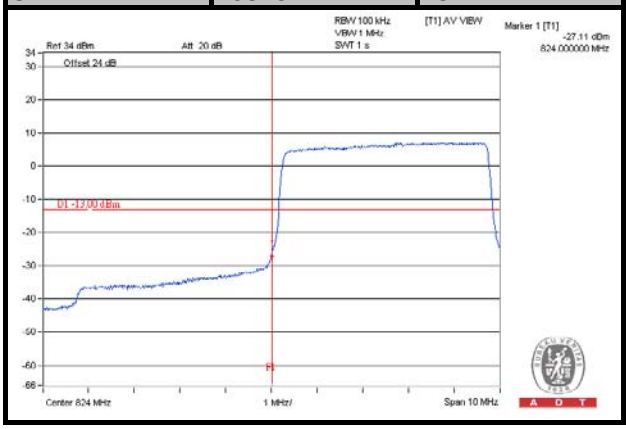
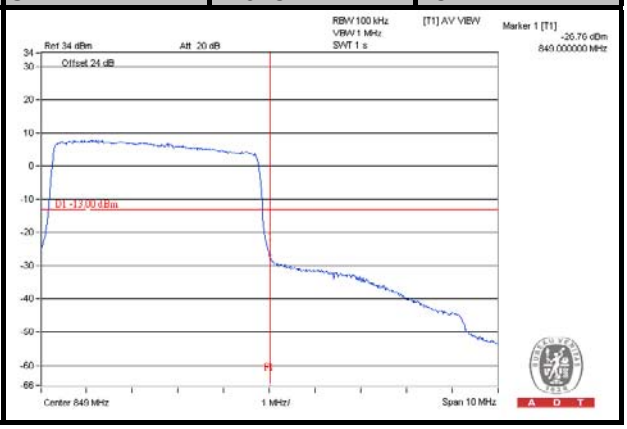
LTE BAND 5					
CHANNEL BANDWIDTH: 3MHz					
CHANNEL	20145	1 RB	CHANNEL	20635	1 RB
					
CHANNEL	20145	15 RB	CHANNEL	20635	15 RB
					

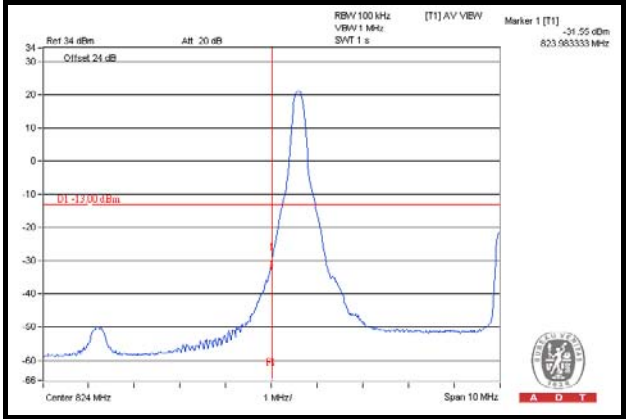
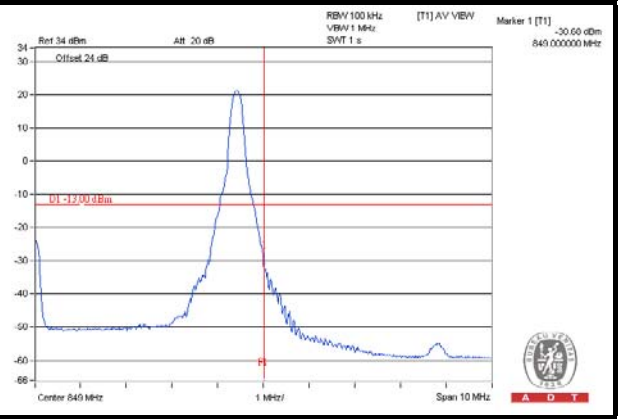
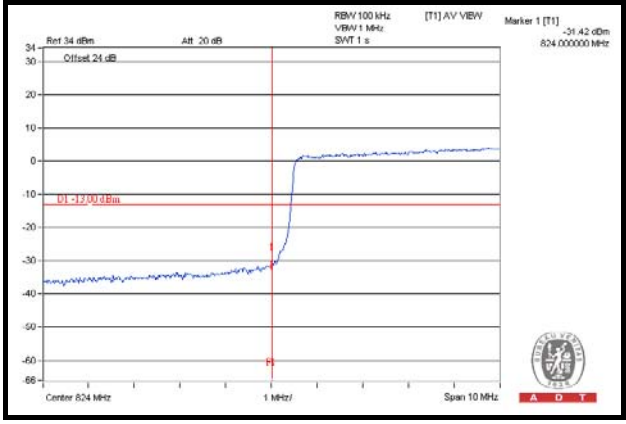
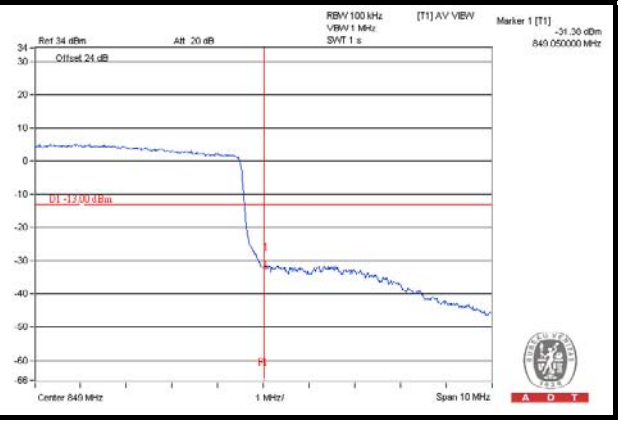
LTE BAND 5					
CHANNEL BANDWIDTH: 5MHz					
CHANNEL	20425	1 RB	CHANNEL	20625	1 RB
					
CHANNEL	20425	25 RB	CHANNEL	20625	25 RB
					

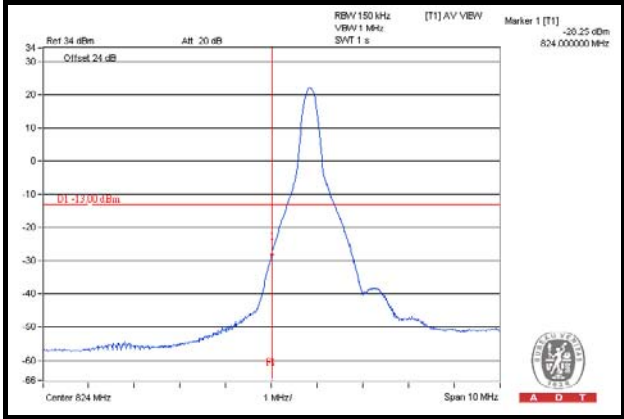
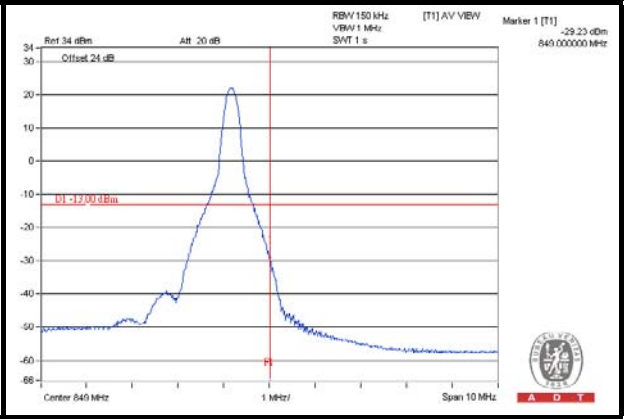
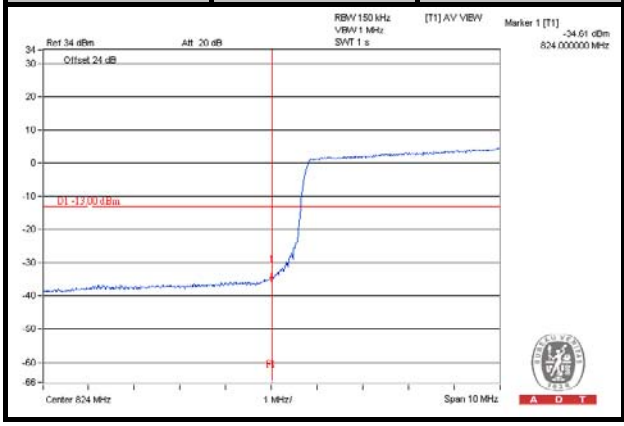
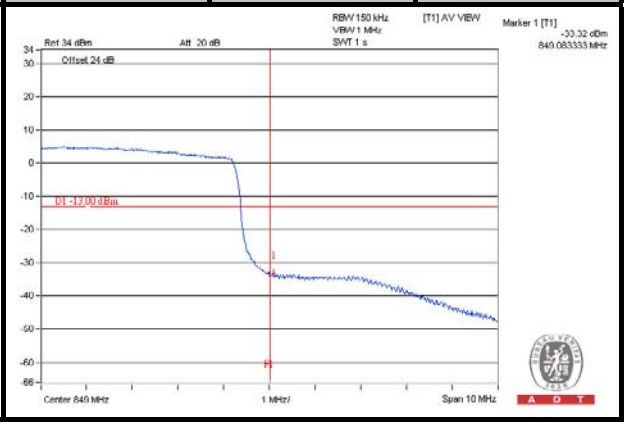
LTE BAND 5					
CHANNEL BANDWIDTH: 10MHz					
CHANNEL	20450	1 RB	CHANNEL	20600	1 RB
					
CHANNEL	20450	50 RB	CHANNEL	20600	50 RB
					

LTE BAND 26					
CHANNEL BANDWIDTH: 1.4MHz					
CHANNEL	26797	1 RB	CHANNEL	27033	1 RB
					
CHANNEL	26797	6 RB	CHANNEL	27033	6 RB
					

LTE BAND 26					
CHANNEL BANDWIDTH: 3MHz					
CHANNEL	26805	1 RB	CHANNEL	27025	1 RB
					
CHANNEL	26805	15 RB	CHANNEL	27025	15 RB
					

LTE BAND 26					
CHANNEL BANDWIDTH: 5MHz					
CHANNEL	26815	1 RB	CHANNEL	27015	1 RB
					
CHANNEL	26815	25 RB	CHANNEL	27015	25 RB
					

LTE Band 26					
CHANNEL BANDWIDTH: 10MHz					
CHANNEL	26840	1 RB	CHANNEL	26990	1 RB
					
CHANNEL	26840	50 RB	CHANNEL	26990	50 RB
					

LTE Band 26					
CHANNEL BANDWIDTH: 15MHz					
CHANNEL	26865	1 RB	CHANNEL	26965	1 RB
					
CHANNEL	26865	75 RB	CHANNEL	26965	75 RB
					

4.6 CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

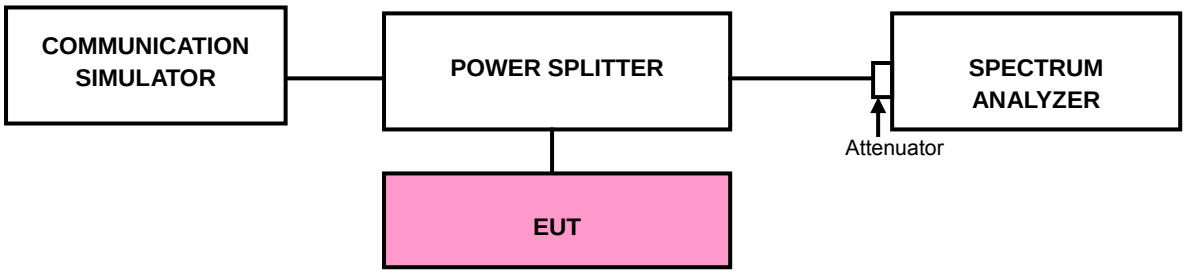
4.6.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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 is equal to -13dBm.

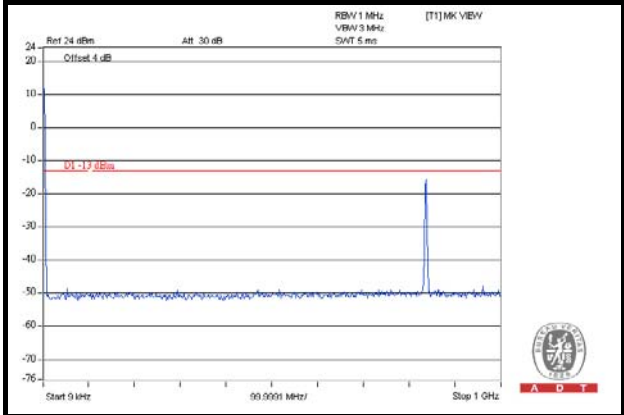
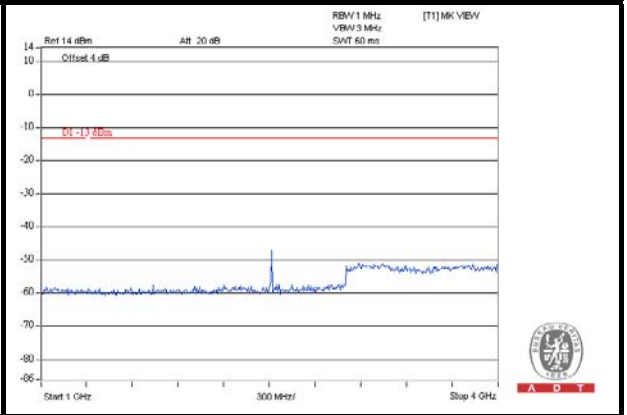
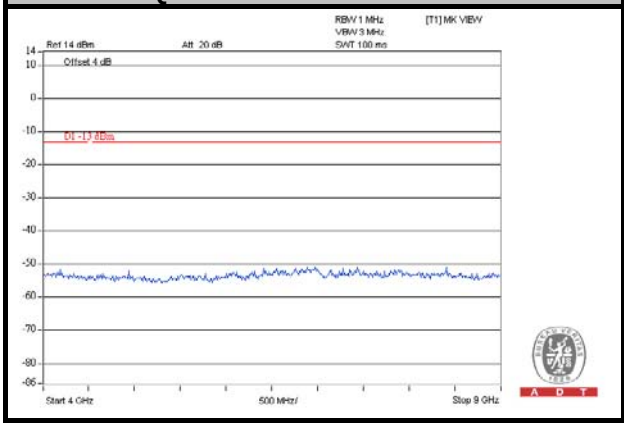
4.6.2 TEST PROCEDURE

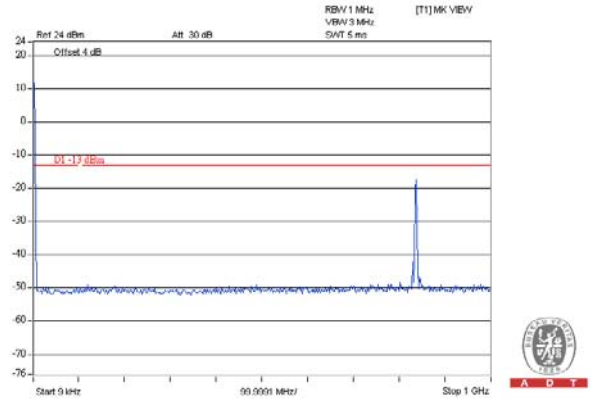
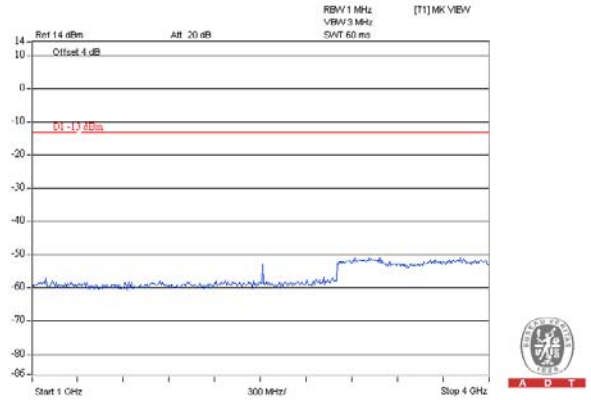
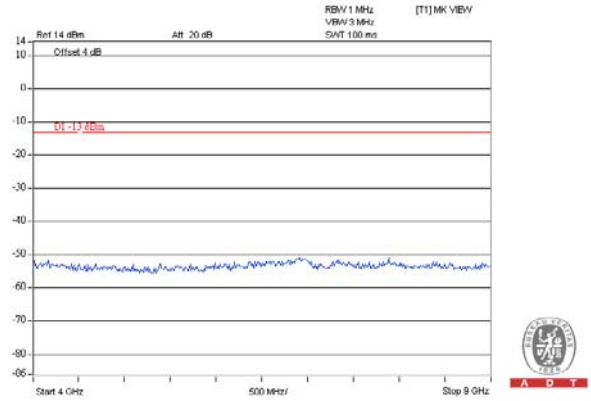
a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
b. Measuring frequency range is from 9kHz to 9GHz. Attenuator is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

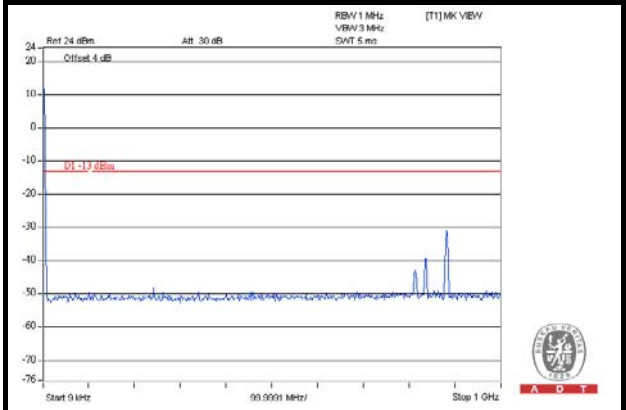
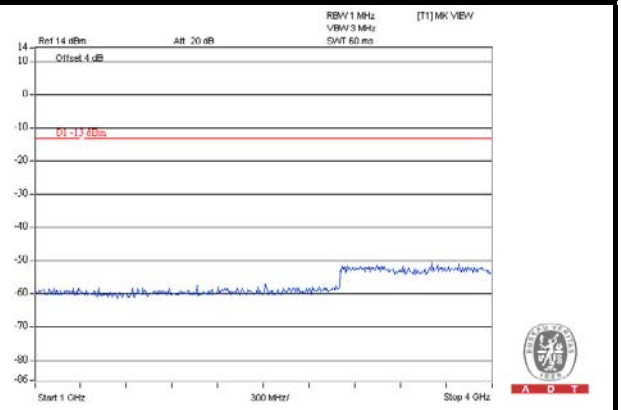
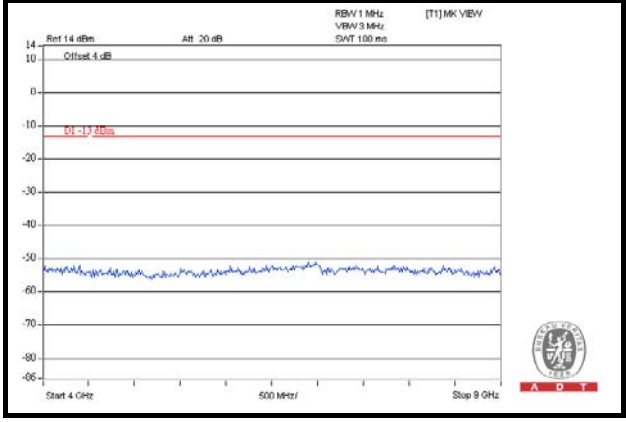
4.6.3 TEST SETUP

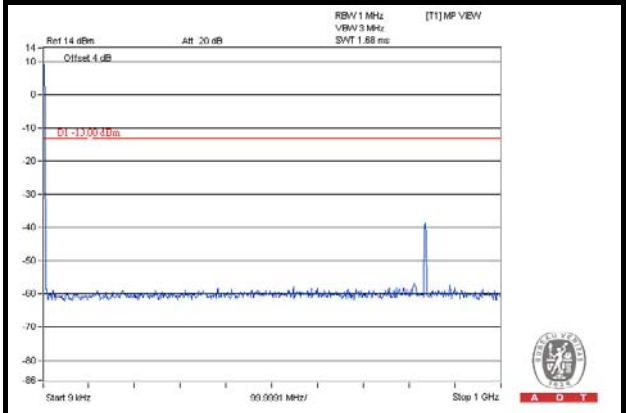
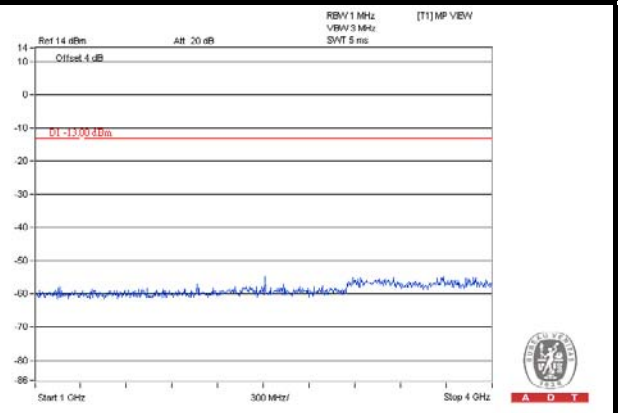
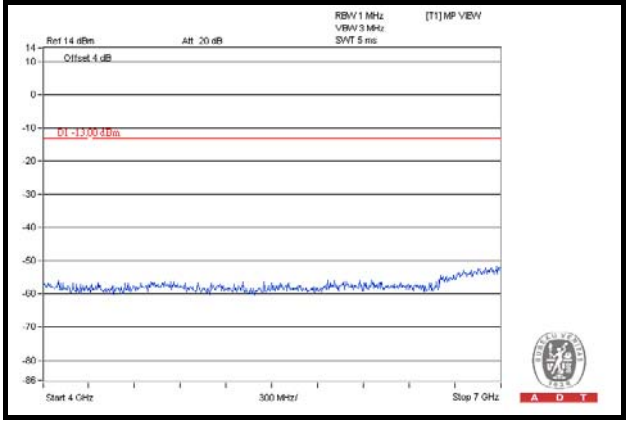
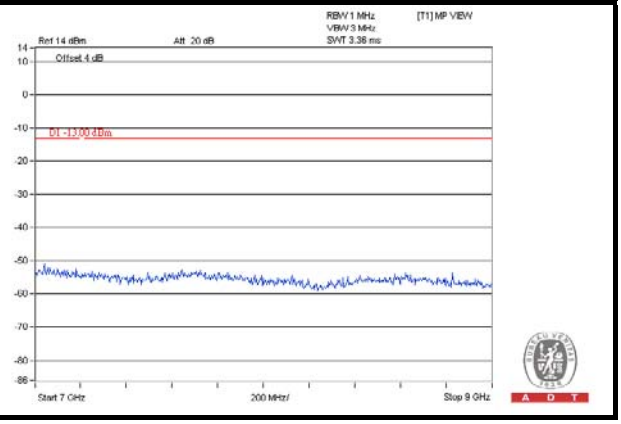


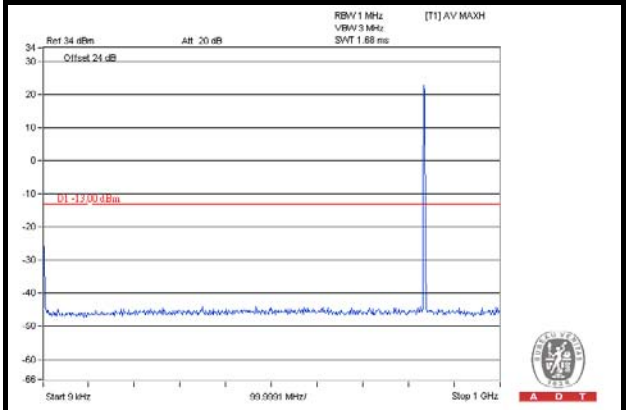
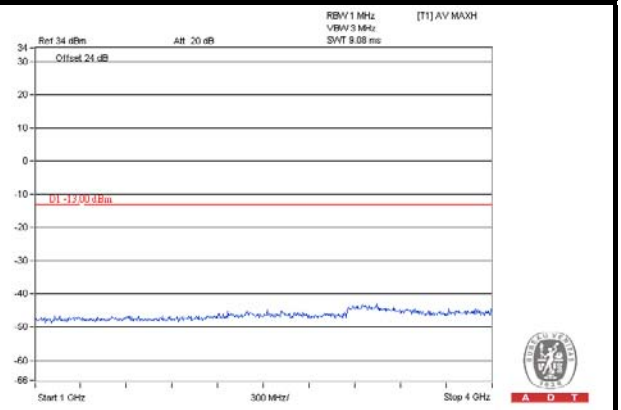
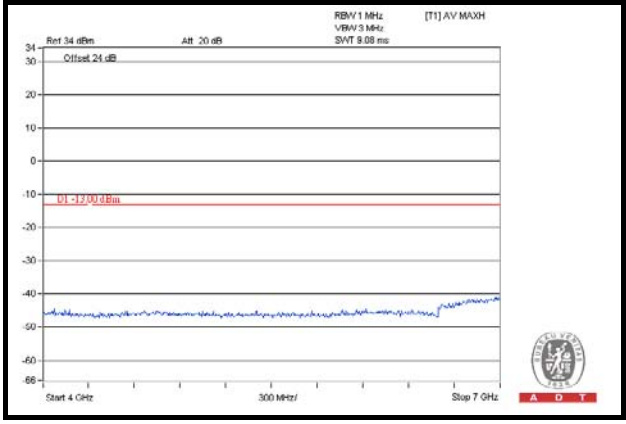
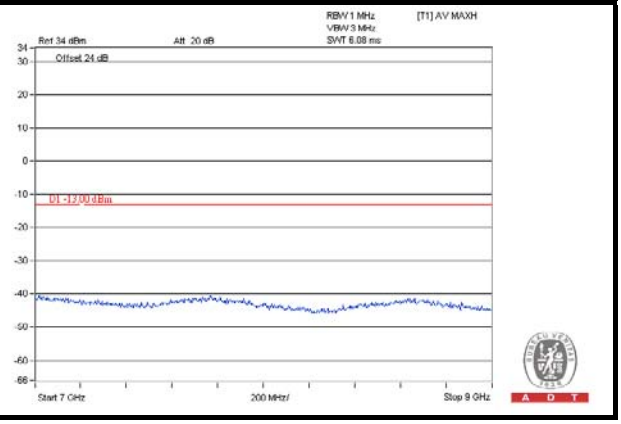
4.6.4 TEST RESULTS

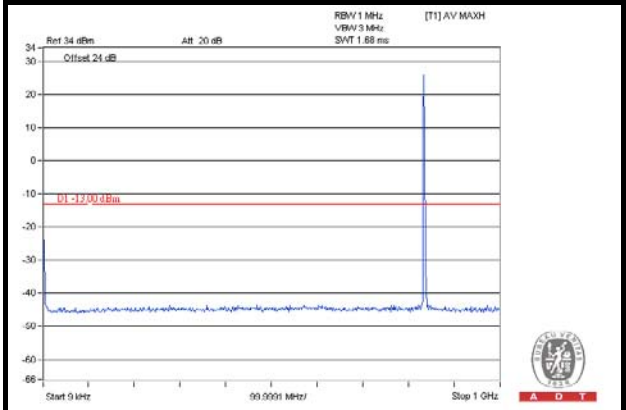
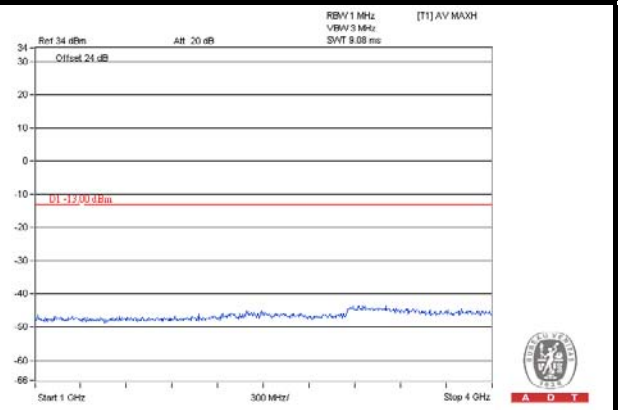
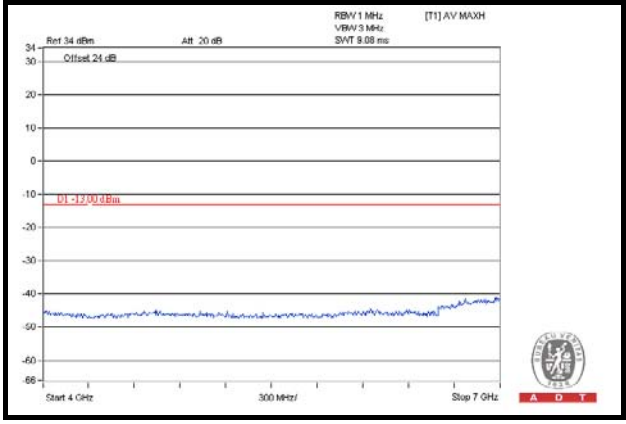
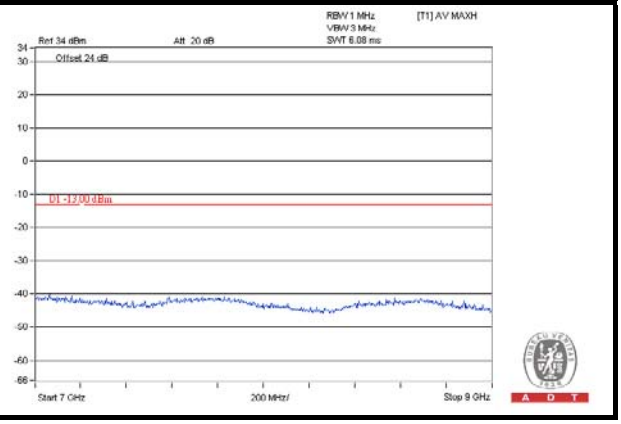
GPRS	
CHANNEL 189	
FREQUENCY RANGE: 9kHz~1GHz	FREQUENCY RANGE: 1GHz~4GHz
	
FREQUENCY RANGE: 4GHz~9GHz	
	

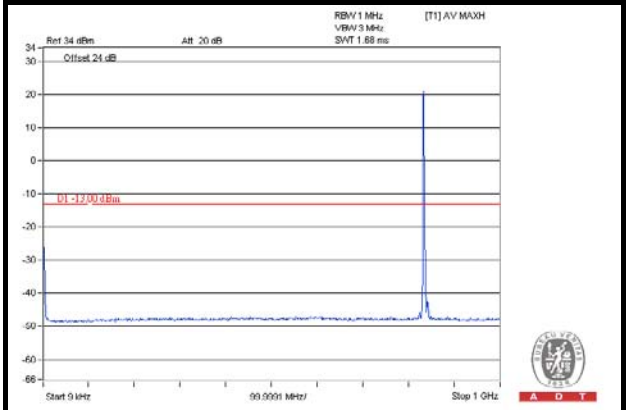
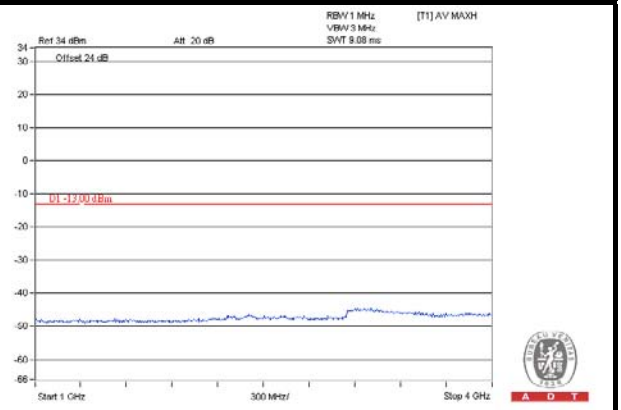
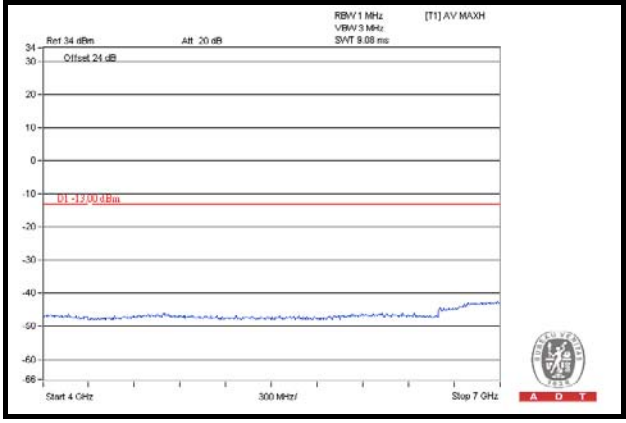
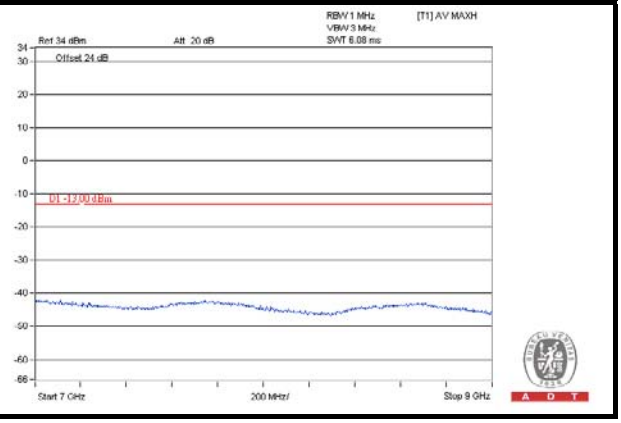
EDGE	
CHANNEL 189	
FREQUENCY RANGE: 9kHz~1GHz	FREQUENCY RANGE: 1GHz~4GHz
	
FREQUENCY RANGE: 4GHz~9GHz	
	

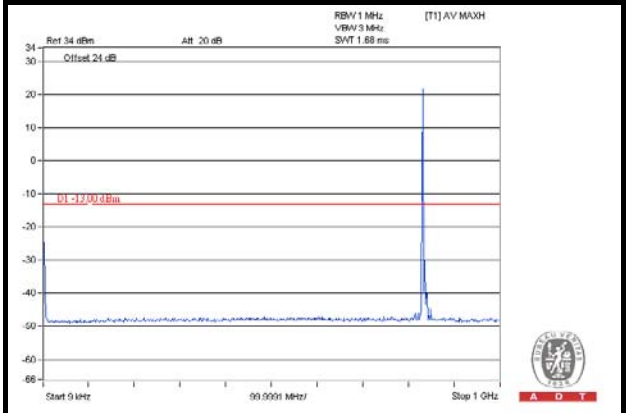
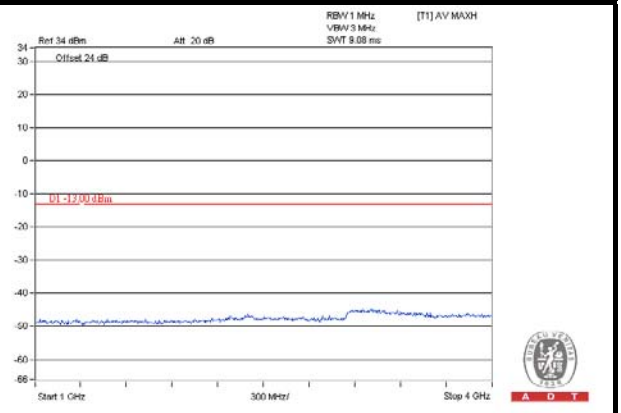
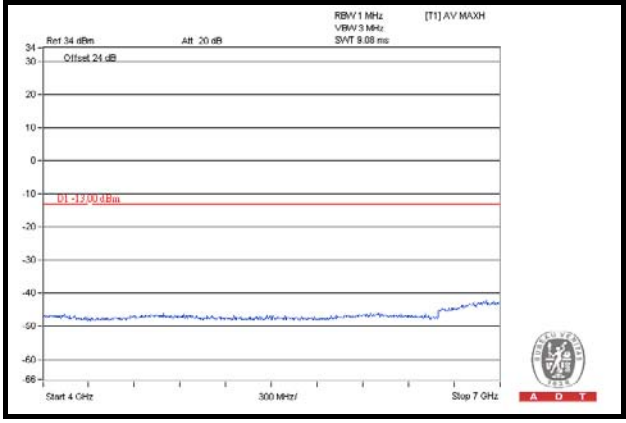
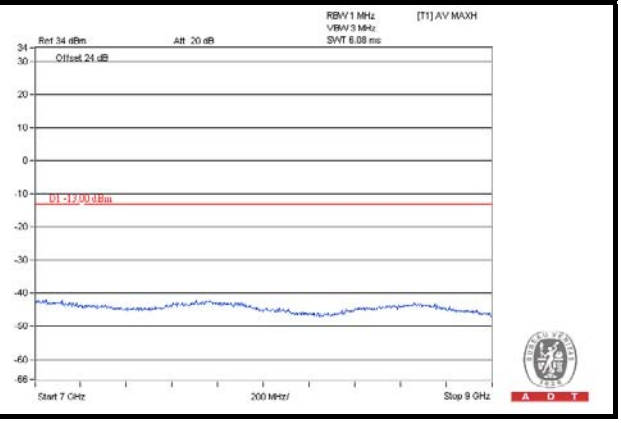
WCDMA	
CHANNEL 4182	
FREQUENCY RANGE: 9kHz~1GHz	FREQUENCY RANGE: 1GHz~4GHz
	
FREQUENCY RANGE: 4GHz~9GHz	
	

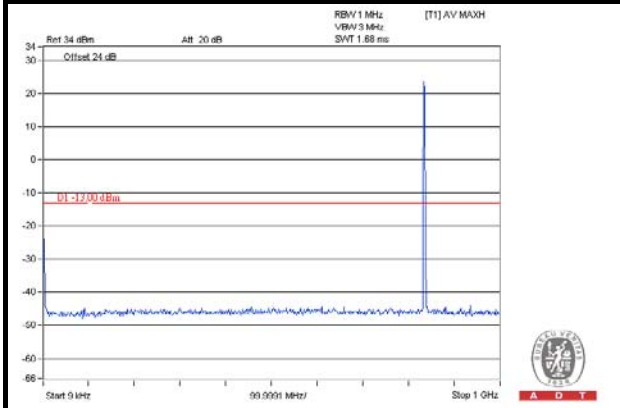
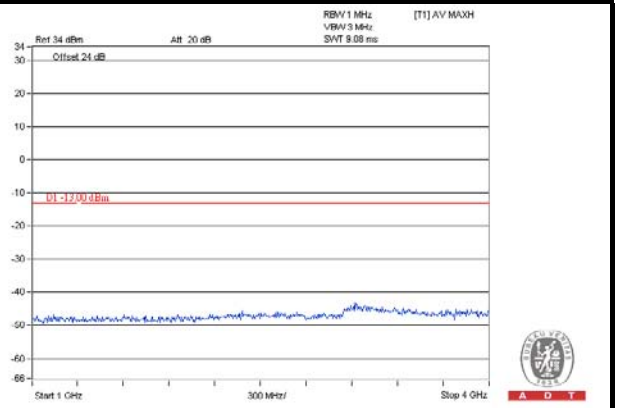
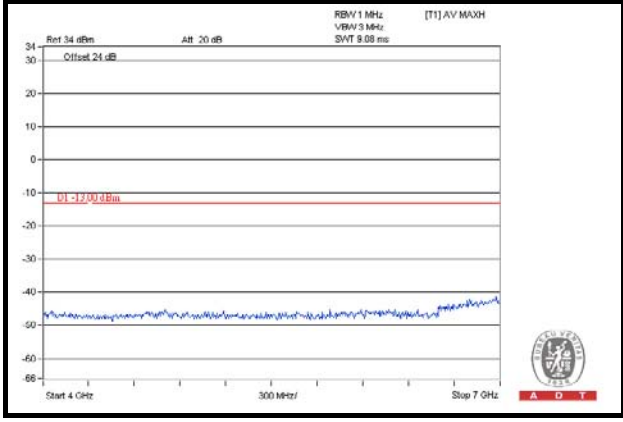
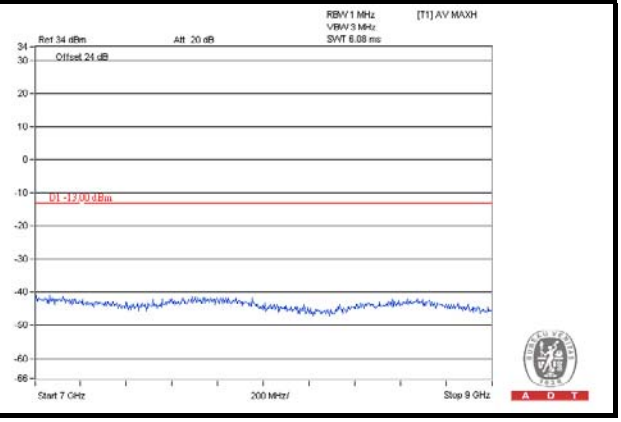
CDMA2000	
CHANNEL 384	
FREQUENCY RANGE: 9kHz~1GHz	FREQUENCY RANGE: 1GHz~4GHz
	
FREQUENCY RANGE: 4GHz~7GHz	FREQUENCY RANGE: 7GHz~9GHz
	

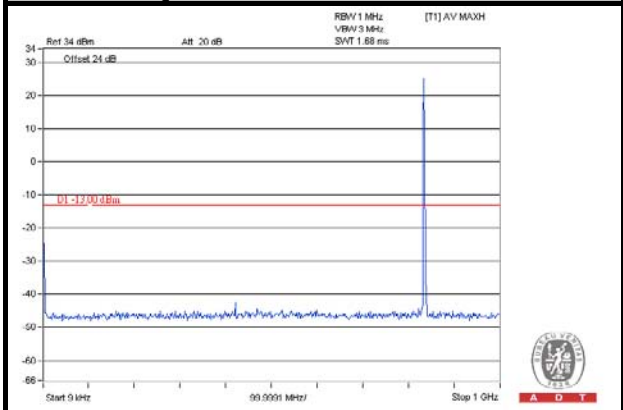
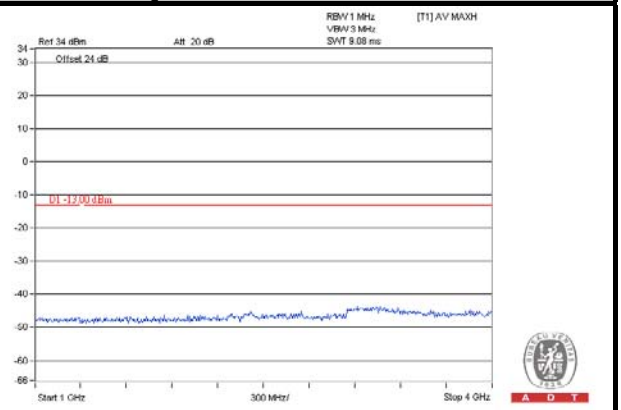
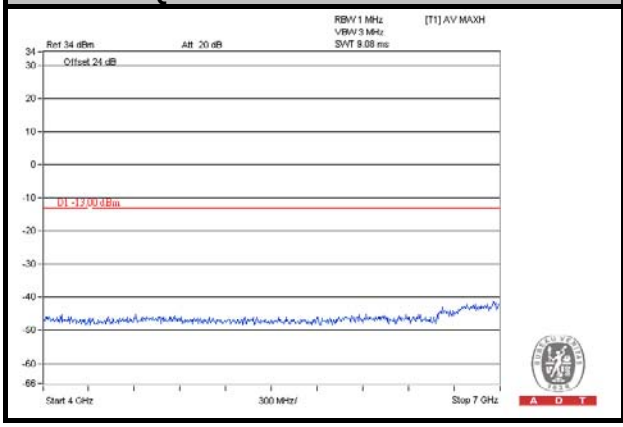
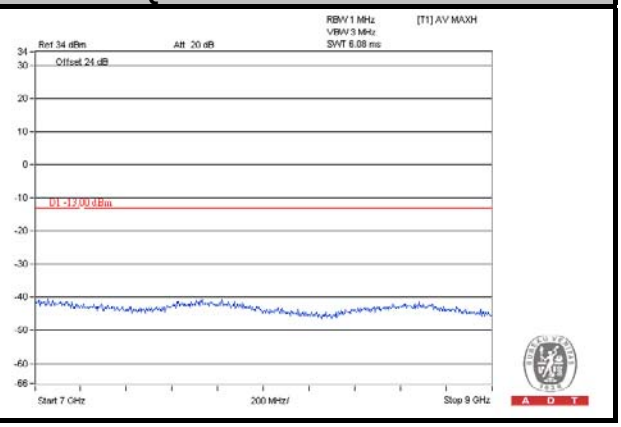
LTE BAND 5 (Channel Bandwidth: 1.4MHz)	
CHANNEL 20525	
FREQUENCY RANGE: 9kHz~1GHz	FREQUENCY RANGE: 1GHz~4GHz
	
FREQUENCY RANGE: 4GHz~7GHz	FREQUENCY RANGE: 7GHz~9GHz
	

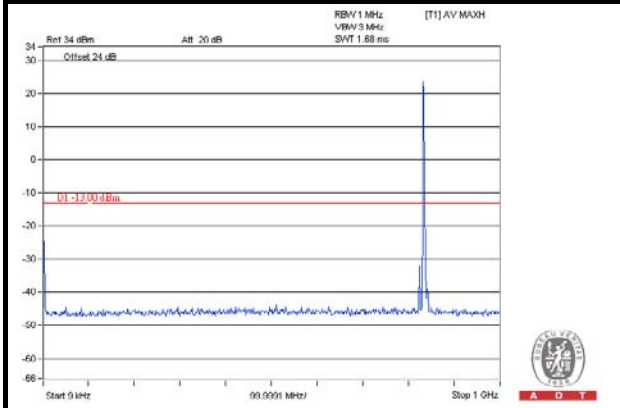
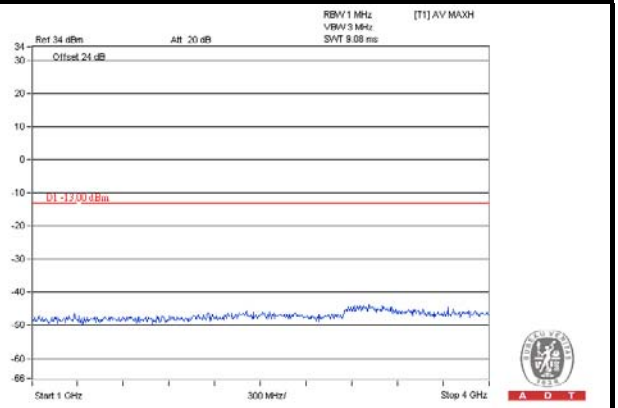
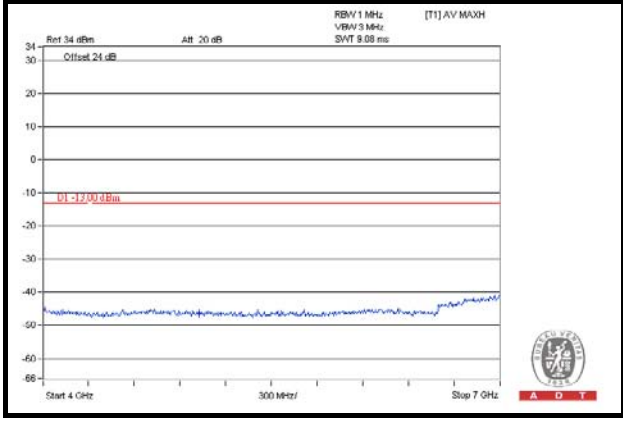
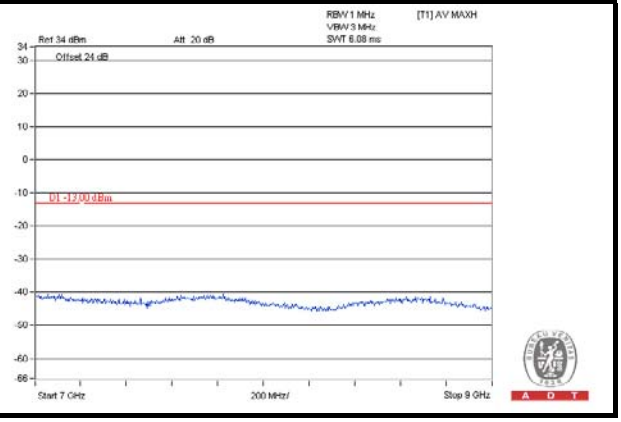
LTE BAND 5 (Channel Bandwidth: 3MHz)	
CHANNEL 20525	
FREQUENCY RANGE: 9kHz~1GHz	FREQUENCY RANGE: 1GHz~4GHz
	
FREQUENCY RANGE: 4GHz~7GHz	FREQUENCY RANGE: 7GHz~9GHz
	

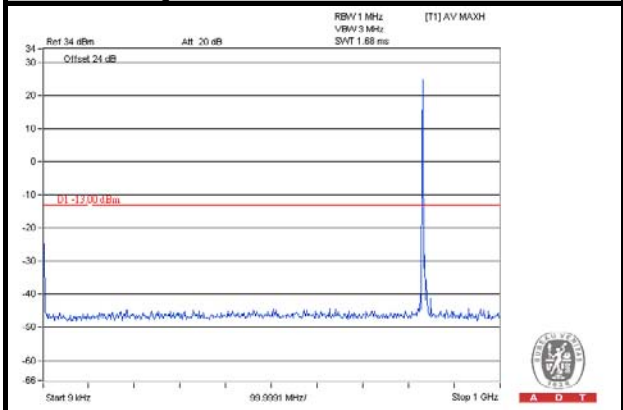
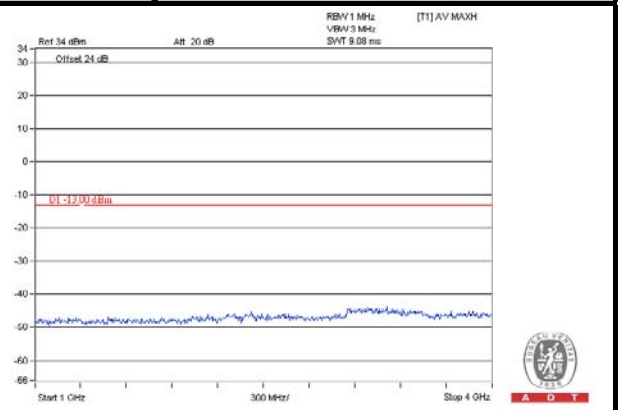
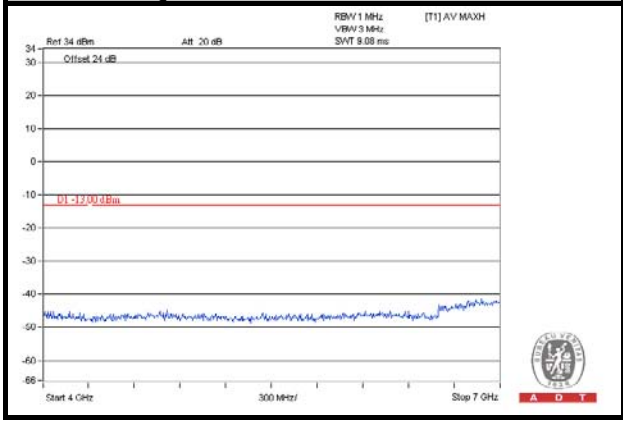
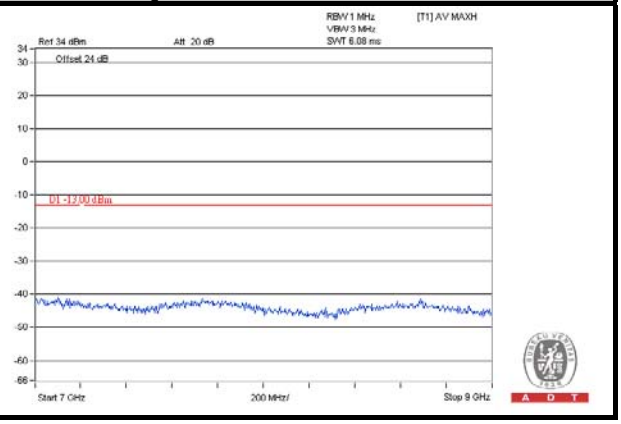
LTE BAND 5 (Channel Bandwidth: 5MHz)	
CHANNEL 20525	
FREQUENCY RANGE: 9kHz~1GHz	FREQUENCY RANGE: 1GHz~4GHz
	
FREQUENCY RANGE: 4GHz~7GHz	FREQUENCY RANGE: 7GHz~9GHz
	

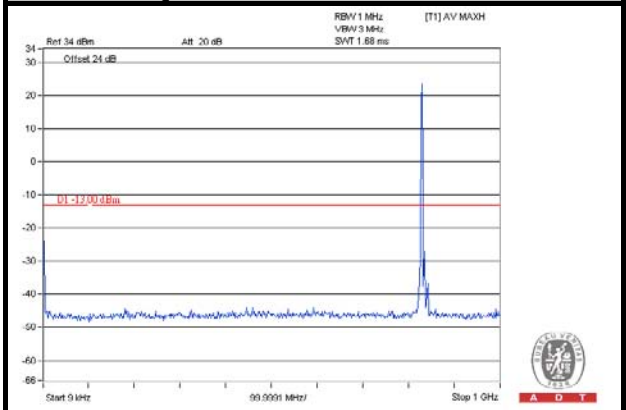
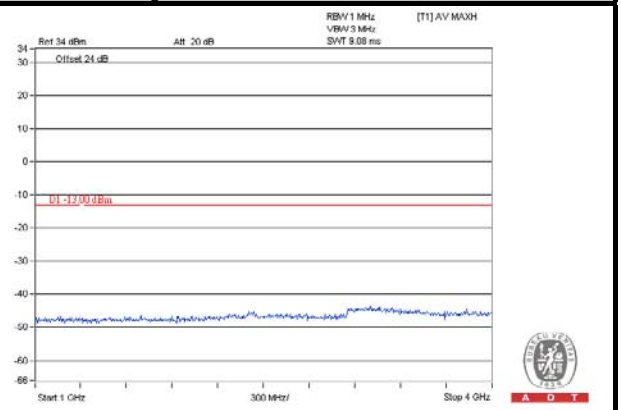
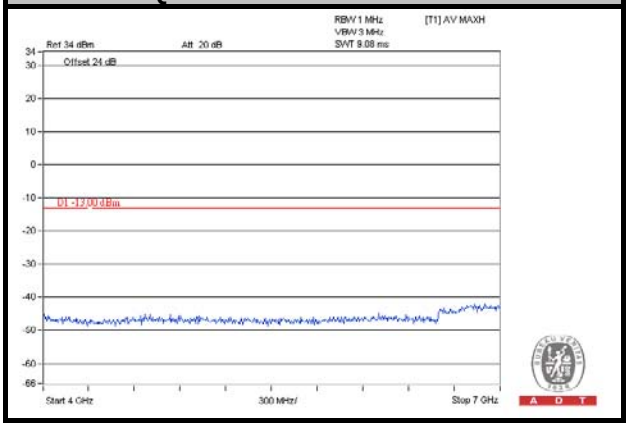
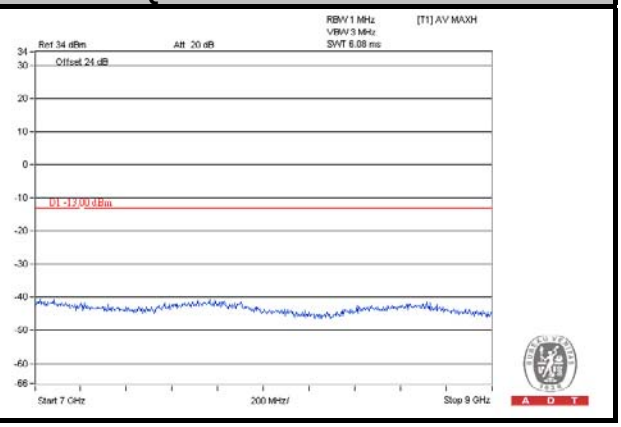
LTE BAND 5 (Channel Bandwidth: 10MHz)	
CHANNEL 20525	
FREQUENCY RANGE: 9kHz~1GHz	FREQUENCY RANGE: 1GHz~4GHz
	
FREQUENCY RANGE: 4GHz~7GHz	FREQUENCY RANGE: 7GHz~9GHz
	

LTE BAND 26 (Channel Bandwidth: 1.4MHz)	
CHANNEL 26915	
FREQUENCY RANGE: 9kHz~1GHz	FREQUENCY RANGE: 1GHz~4GHz
	
FREQUENCY RANGE: 4GHz~7GHz	FREQUENCY RANGE: 7GHz~9GHz
	

LTE BAND 26 (Channel Bandwidth: 3MHz)	
CHANNEL 26915	
FREQUENCY RANGE: 9kHz~1GHz	FREQUENCY RANGE: 1GHz~4GHz
	
FREQUENCY RANGE: 4GHz~7GHz	FREQUENCY RANGE: 7GHz~9GHz
	

LTE BAND 26 (Channel Bandwidth: 5MHz)	
CHANNEL 26915	
FREQUENCY RANGE: 9kHz~1GHz	FREQUENCY RANGE: 1GHz~4GHz
	
FREQUENCY RANGE: 4GHz~7GHz	FREQUENCY RANGE: 7GHz~9GHz
	

LTE BAND 26 (Channel Bandwidth: 10MHz)	
CHANNEL 26915	
FREQUENCY RANGE: 9kHz~1GHz	FREQUENCY RANGE: 1GHz~4GHz
	
FREQUENCY RANGE: 4GHz~7GHz	FREQUENCY RANGE: 7GHz~9GHz
	

LTE BAND 26 (Channel Bandwidth: 15MHz)	
CHANNEL 26915	
FREQUENCY RANGE: 9kHz~1GHz	FREQUENCY RANGE: 1GHz~4GHz
	
FREQUENCY RANGE: 4GHz~7GHz	FREQUENCY RANGE: 7GHz~9GHz
	

4.7 RADIATED SPURIOUS EMISSION MEASUREMENT

4.7.1 LIMITS OF RADIATED SPURIOUS 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 is equal to -13dBm.

4.7.2 TEST PROCEDURES

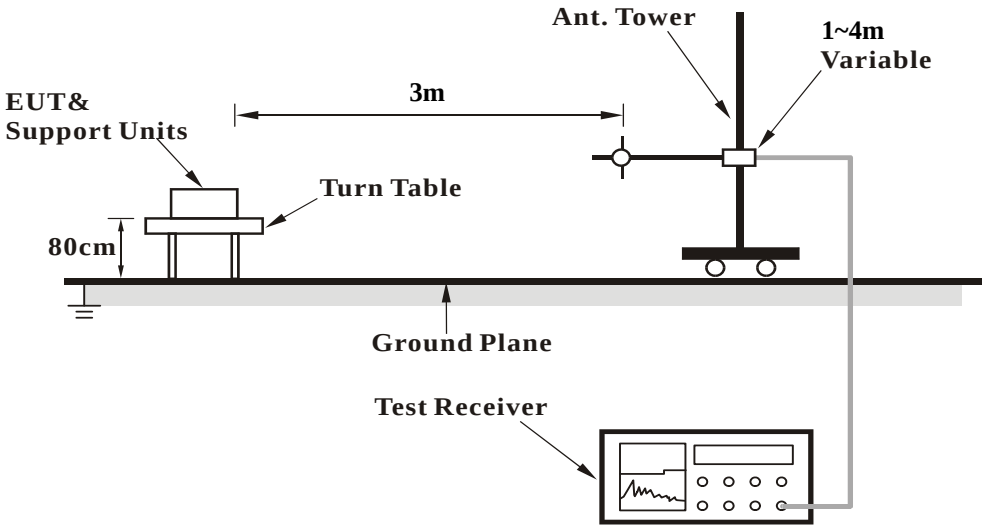
a. Substitution method is used for EIRP measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value” of step a. Record the power level of S.G
c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.
d. ERP power can be calculated form EIRP power by subtracting the gain of dipole, ERP power = EIRP power - 2.15dBi.

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

4.7.3 DEVIATION FROM TEST STANDARD

No deviation

4.7.4 TEST SETUP



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

4.7.5 TEST RESULTS

GPRS:

MODE	TX channel 189	FREQUENCY RANGE	Below 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	52.512	35.78	-13	-44.82	-8.60	-53.42	-40.42
2	162.424	32.34	-13	-55.17	-1.06	-56.22	-43.22
3	228.245	35.31	-13	-60.05	3.82	-56.23	-43.23
4	479.751	29.64	-13	-64.61	4.04	-60.57	-47.57
5	713.64	32.64	-13	-63.97	2.86	-61.12	-48.12
6	849.367	33.51	-13	-62.84	1.40	-61.44	-48.44
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	52.451	36.32	-13	-43.09	-9.41	-52.50	-39.50
2	146.754	28.98	-13	-59.90	-0.35	-60.25	-47.25
3	240.124	28.68	-13	-66.72	3.97	-62.75	-49.75
4	303.645	27.86	-13	-68.77	2.86	-65.91	-52.91
5	480.241	30.65	-13	-65.70	1.40	-64.30	-51.30
6	848.245	32.64	-13	-61.96	1.04	-60.92	-47.92

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

MODE	TX channel 189	FREQUENCY RANGE	Above 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1672.8	73.47	-13	-29.16	6.31	-22.85	-9.85
2	2509.2	57.91	-13	-40.61	6.66	-33.95	-20.95
3	3345.6	59.38	-13	-43.63	7.63	-36.00	-23.00
4	4182	48.4	-13	-56.44	7.44	-49.00	-36.00
5	5018.4	46.18	-13	-58.08	7.01	-51.07	-38.07
6	5854.8	48.11	-13	-56.03	7.02	-49.01	-36.01
7	6691.2	49.26	-13	-54.07	5.56	-48.51	-35.51
8	7527.6	49.95	-13	-52.67	4.52	-48.15	-35.15
9	8364	50.16	-13	-52.39	4.19	-48.20	-35.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1672.8	73.35	-13	-29.28	6.31	-22.97	-9.97
2	2509.2	58.28	-13	-40.24	6.66	-33.58	-20.58
3	3345.6	62.18	-13	-40.83	7.63	-33.20	-20.20
4	4182	49.96	-13	-54.88	7.44	-47.44	-34.44
5	5018.4	50.84	-13	-53.42	7.01	-46.41	-33.41
6	5854.8	49.63	-13	-54.51	7.02	-47.49	-34.49
7	6691.2	50.74	-13	-52.59	5.56	-47.03	-34.03
8	7527.6	50.26	-13	-52.36	4.52	-47.84	-34.84
9	8364	49.81	-13	-52.74	4.19	-48.55	-35.55

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

EDGE:

MODE	TX channel 189	FREQUENCY RANGE	Below 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	52.512	35.72	-13	-44.88	-8.60	-53.48	-40.48
2	162.424	32.26	-13	-55.25	-1.06	-56.30	-43.30
3	228.245	35.25	-13	-60.11	3.82	-56.29	-43.29
4	479.751	29.66	-13	-64.59	4.04	-60.55	-47.55
5	713.64	32.67	-13	-63.94	2.86	-61.09	-48.09
6	849.367	33.55	-13	-62.80	1.40	-61.40	-48.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	52.451	36.37	-13	-43.04	-9.41	-52.45	-39.45
2	146.754	29.03	-13	-59.85	-0.35	-60.20	-47.20
3	240.124	28.63	-13	-66.77	3.97	-62.80	-49.80
4	303.645	27.78	-13	-68.85	2.86	-65.99	-52.99
5	480.241	30.64	-13	-65.71	1.40	-64.31	-51.31
6	848.245	32.73	-13	-61.87	1.04	-60.83	-47.83

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

MODE	TX channel 189	FREQUENCY RANGE	Above 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1672.8	72.96	-13	-29.67	6.31	-23.36	-10.36
2	2509.2	57.82	-13	-40.70	6.66	-34.04	-21.04
3	3345.6	58.90	-13	-44.11	7.63	-36.48	-23.48
4	4182	48.36	-13	-56.48	7.44	-49.04	-36.04
5	5018.4	45.92	-13	-58.34	7.01	-51.33	-38.33
6	5854.8	47.84	-13	-56.30	7.02	-49.28	-36.28
7	6691.2	48.84	-13	-54.49	5.56	-48.93	-35.93
8	7527.6	49.64	-13	-52.98	4.52	-48.46	-35.46
9	8364	49.84	-13	-52.71	4.19	-48.52	-35.52
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1672.8	72.56	-13	-30.06	6.31	-23.76	-10.76
2	2509.2	57.73	-13	-40.78	6.66	-34.12	-21.12
3	3345.6	61.58	-13	-41.43	7.63	-33.80	-20.80
4	4182	49.35	-13	-55.50	7.44	-48.05	-35.05
5	5018.4	50.16	-13	-54.10	7.01	-47.08	-34.08
6	5854.8	48.86	-13	-55.28	7.02	-48.27	-35.27
7	6691.2	49.82	-13	-53.51	5.56	-47.95	-34.95
8	7527.6	49.47	-13	-53.15	4.52	-48.63	-35.63
9	8364	48.98	-13	-53.57	4.19	-49.38	-36.38

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

WCDMA:

MODE	TX channel 4182	FREQUENCY RANGE	Below 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	53.125	34.24	-13	-45.98	-8.86	-54.84	-41.84
2	162.547	31.75	-13	-56.04	-0.91	-56.95	-43.95
3	240.114	35.24	-13	-60.12	3.82	-56.30	-43.30
4	479.754	29.42	-13	-65.61	3.88	-61.73	-48.73
5	713.54	32.14	-13	-64.31	2.86	-61.45	-48.45
6	960.145	36.34	-13	-60.01	1.40	-58.60	-45.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	54.542	28.65	-13	-52.69	-7.95	-60.65	-47.65
2	142.64	26.65	-13	-66.51	-1.23	-67.73	-54.73
3	263.641	27.24	-13	-66.76	4.09	-62.67	-49.67
4	304.675	27.56	-13	-68.08	3.74	-64.34	-51.34
5	479.87	34.64	-13	-61.39	3.70	-57.69	-44.69
6	745.645	28.56	-13	-68.72	1.10	-67.62	-54.62

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

MODE	TX channel 4182	FREQUENCY RANGE	Above 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1672.8	39.70	-13	-62.93	6.31	-56.62	-43.62
2	2509.2	41.10	-13	-57.42	6.66	-50.76	-37.76
3	3345.6	43.20	-13	-59.81	7.63	-52.18	-39.18
4	4182	48.84	-13	-56.00	7.44	-48.56	-35.56
5	5018.4	46.64	-13	-57.62	7.01	-50.61	-37.61
6	5854.8	48.89	-13	-55.25	7.02	-48.23	-35.23
7	6691.2	50.11	-13	-53.22	5.56	-47.66	-34.66
8	7527.6	49.73	-13	-52.89	4.52	-48.37	-35.37
9	8364	50.13	-13	-52.42	4.19	-48.23	-35.23
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1672.8	38.9	-13	-63.73	6.31	-57.42	-44.42
2	2509.2	41.3	-13	-57.22	6.66	-50.56	-37.56
3	3345.6	43.2	-13	-59.81	7.63	-52.18	-39.18
4	4182	49.61	-13	-55.23	7.44	-47.79	-34.79
5	5018.4	50.38	-13	-53.88	7.01	-46.87	-33.87
6	5854.8	50.4	-13	-53.74	7.02	-46.72	-33.72
7	6691.2	50.83	-13	-52.50	5.56	-46.94	-33.94
8	7527.6	50.58	-13	-52.04	4.52	-47.52	-34.52
9	8364	48.83	-13	-53.72	4.19	-49.53	-36.53

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

CDMA2000:

MODE	TX channel 384	FREQUENCY RANGE	Below 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	53.654	34.65	-13	-45.25	-9.08	-54.32	-41.32
2	162.124	31.12	-13	-57.56	-0.75	-58.30	-45.30
3	227.786	34.12	-13	-61.08	3.85	-57.23	-44.23
4	478.624	27.42	-13	-67.69	3.86	-63.83	-50.83
5	712.124	31.31	-13	-65.12	2.86	-62.25	-49.25
6	848.641	31.23	-13	-65.12	1.43	-63.68	-50.68
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	54.254	28.64	-13	-54.35	-7.16	-61.51	-48.51
2	142.342	26.21	-13	-66.15	-1.14	-67.29	-54.29
3	263.75	27.42	-13	-67.56	3.89	-63.67	-50.67
4	304.24	27.52	-13	-68.04	3.73	-64.32	-51.32
5	479.24	34.34	-13	-61.60	3.70	-57.90	-44.90
6	745.24	28.11	-13	-69.32	1.15	-68.17	-55.17

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

MODE	TX channel 384	FREQUENCY RANGE	Above 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1673.08	40.00	-13	-62.63	6.31	-56.32	-43.32
2	2509.62	40.19	-13	-58.33	6.66	-51.67	-38.67
3	3346.16	42.49	-13	-60.52	7.63	-52.89	-39.89
4	4182.7	48.44	-13	-56.40	7.44	-48.96	-35.96
5	5019.24	46.88	-13	-57.38	7.01	-50.37	-37.37
6	5855.78	49.4	-13	-54.74	7.02	-47.72	-34.72
7	6692.32	49.36	-13	-53.97	5.56	-48.41	-35.41
8	7528.86	50.38	-13	-52.24	4.52	-47.72	-34.72
9	8365.4	50.45	-13	-52.10	4.19	-47.91	-34.91
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1673.08	38.54	-13	-64.09	6.31	-57.78	-44.78
2	2509.62	40.96	-13	-57.56	6.66	-50.90	-37.90
3	3346.16	44.14	-13	-58.87	7.63	-51.24	-38.24
4	4182.7	48.77	-13	-56.07	7.44	-48.63	-35.63
5	5019.24	50.27	-13	-53.99	7.01	-46.98	-33.98
6	5855.78	49.52	-13	-54.62	7.02	-47.60	-34.60
7	6692.32	51.75	-13	-51.58	5.56	-46.02	-33.02
8	7528.86	51.37	-13	-51.25	4.52	-46.73	-33.73
9	8365.4	49.05	-13	-53.50	4.19	-49.31	-36.31

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

LTE BAND 5

CHANNEL BANDWIDTH: 1.4MHz / QPSK

MODE	TX channel 20525	FREQUENCY RANGE	Below 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	30.34	27.94	-13	-43.44	-14.82	-58.26	-45.26
2	74.786	20.37	-13	-74.64	-2.08	-76.72	-63.72
3	134.479	23.38	-13	-72.14	-1.48	-73.62	-60.62
4	158.688	23.53	-13	-64.31	-0.89	-65.19	-52.19
5	205.794	25.66	-13	-69.81	4.27	-65.55	-52.55
6	239.955	27.30	-13	-68.06	3.81	-64.24	-51.24
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	30.79	40.10	-13	-31.45	-14.71	-46.15	-33.15
2	126.527	28.93	-13	-62.08	-1.22	-63.31	-50.31
3	158.198	25.58	-13	-62.12	-0.96	-63.08	-50.08
4	168.311	29.13	-13	-61.40	0.50	-60.90	-47.90
5	205.714	26.81	-13	-68.66	4.27	-64.40	-51.40
6	956.401	36.23	-13	-61.72	0.37	-61.35	-48.35

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

MODE	TX channel 20525	FREQUENCY RANGE	Above 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1673	73.61	-13	-29.02	6.31	-22.71	-9.71
2	2509.5	57.14	-13	-41.38	6.66	-34.72	-21.72
3	3346	59.26	-13	-43.75	7.63	-36.12	-23.12
4	4182.5	48.7	-13	-56.14	7.44	-48.70	-35.70
5	5019	47.15	-13	-57.11	7.01	-50.10	-37.10
6	5855.5	48.24	-13	-55.90	7.01	-48.89	-35.89
7	6692	48.53	-13	-54.80	5.56	-49.24	-36.24
8	7528.5	50.26	-13	-52.36	4.52	-47.84	-34.84
9	8365	49.96	-13	-52.59	4.19	-48.40	-35.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1673	72.89	-13	-29.74	6.31	-23.43	-10.43
2	2509.5	57.77	-13	-40.75	6.66	-34.09	-21.09
3	3346	62.83	-13	-40.18	7.63	-32.55	-19.55
4	4182.5	50.07	-13	-54.77	7.44	-47.33	-34.33
5	5019	50.87	-13	-53.39	7.01	-46.38	-33.38
6	5855.5	49.26	-13	-54.88	7.01	-47.87	-34.87
7	6692	49.78	-13	-53.55	5.56	-47.99	-34.99
8	7528.5	49.47	-13	-53.15	4.52	-48.63	-35.63
9	8365	48.96	-13	-53.59	4.19	-49.40	-36.40

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

LTE BAND 5

CHANNEL BANDWIDTH: 3MHz / QPSK

MODE	TX channel 20525	FREQUENCY RANGE	Below 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	30.8	27.07	-13	-44.48	-14.70	-59.18	-46.18
2	74.096	20.53	-13	-74.60	-2.12	-76.71	-63.71
3	134.049	23.78	-13	-71.87	-1.49	-73.36	-60.36
4	158.368	22.59	-13	-65.16	-0.93	-66.09	-53.09
5	206.724	25.52	-13	-69.95	4.25	-65.70	-52.70
6	239.645	26.43	-13	-68.94	3.81	-65.13	-52.13
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	31.19	41.38	-13	-30.31	-14.61	-44.92	-31.92
2	127.387	29.28	-13	-61.92	-1.23	-63.15	-50.15
3	158.748	25.52	-13	-62.33	-0.88	-63.21	-50.21
4	167.401	29.31	-13	-60.96	0.37	-60.59	-47.59
5	207.384	26.36	-13	-69.11	4.25	-64.86	-51.86
6	956.161	34.45	-13	-63.51	0.37	-63.14	-50.14

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

MODE	TX channel 20525	FREQUENCY RANGE	Above 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1673	73.52	-13	-29.11	6.31	-22.80	-9.80
2	2509.5	57.27	-13	-41.25	6.66	-34.59	-21.59
3	3346	58.39	-13	-44.62	7.63	-36.99	-23.99
4	4182.5	48.12	-13	-56.72	7.44	-49.28	-36.28
5	5019	48.15	-13	-56.11	7.01	-49.10	-36.10
6	5855.5	47.67	-13	-56.47	7.01	-49.46	-36.46
7	6692	49.09	-13	-54.24	5.56	-48.68	-35.68
8	7528.5	50.66	-13	-51.96	4.52	-47.44	-34.44
9	8365	49	-13	-53.55	4.19	-49.36	-36.36
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1673	72.17	-13	-30.46	6.31	-24.15	-11.15
2	2509.5	58.38	-13	-40.14	6.66	-33.48	-20.48
3	3346	62.34	-13	-40.67	7.63	-33.04	-20.04
4	4182.5	50.31	-13	-54.53	7.44	-47.09	-34.09
5	5019	51.6	-13	-52.66	7.01	-45.65	-32.65
6	5855.5	48.27	-13	-55.87	7.01	-48.86	-35.86
7	6692	50.19	-13	-53.14	5.56	-47.58	-34.58
8	7528.5	48.92	-13	-53.70	4.52	-49.18	-36.18
9	8365	49.7	-13	-52.85	4.19	-48.66	-35.66

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

LTE BAND 5

CHANNEL BANDWIDTH: 5MHz / QPSK

MODE	TX channel 20525	FREQUENCY RANGE	Below 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	30.32	26.51	-13	-44.87	-14.82	-59.69	-46.69
2	74.006	20.47	-13	-74.67	-2.12	-76.79	-63.79
3	133.509	24.29	-13	-68.24	-1.27	-69.51	-56.51
4	157.568	22.08	-13	-65.44	-1.05	-66.49	-53.49
5	206.484	24.95	-13	-70.52	4.26	-66.26	-53.26
6	240.465	27.01	-13	-68.33	3.82	-64.51	-51.51
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	30.53	41.34	-13	-30.11	-14.77	-44.88	-31.88
2	127.617	28.03	-13	-63.22	-1.23	-64.45	-51.45
3	159.068	25.91	-13	-62.03	-0.83	-62.86	-49.86
4	168.521	29.12	-13	-61.47	0.53	-60.93	-47.93
5	206.914	27.07	-13	-68.40	4.25	-64.15	-51.15
6	957.601	36.29	-13	-61.62	0.38	-61.24	-48.24

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

MODE	TX channel 20525	FREQUENCY RANGE	Above 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1673	74.05	-13	-28.58	6.31	-22.27	-9.27
2	2509.5	56.17	-13	-42.35	6.66	-35.69	-22.69
3	3346	59.90	-13	-43.11	7.63	-35.48	-22.48
4	4182.5	48.97	-13	-55.87	7.44	-48.43	-35.43
5	5019	47.96	-13	-56.30	7.01	-49.29	-36.29
6	5855.5	49.01	-13	-55.13	7.01	-48.12	-35.12
7	6692	47.83	-13	-55.50	5.56	-49.94	-36.94
8	7528.5	49.53	-13	-53.09	4.52	-48.57	-35.57
9	8365	49.32	-13	-53.23	4.19	-49.04	-36.04
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1673	73.69	-13	-28.94	6.31	-22.63	-9.63
2	2509.5	57.92	-13	-40.60	6.66	-33.94	-20.94
3	3346	62.14	-13	-40.87	7.63	-33.24	-20.24
4	4182.5	50.49	-13	-54.35	7.44	-46.91	-33.91
5	5019	50.95	-13	-53.31	7.01	-46.30	-33.30
6	5855.5	48.83	-13	-55.31	7.01	-48.30	-35.30
7	6692	50.42	-13	-52.91	5.56	-47.35	-34.35
8	7528.5	49.11	-13	-53.51	4.52	-48.99	-35.99
9	8365	48.9	-13	-53.65	4.19	-49.46	-36.46

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

LTE BAND 5

CHANNEL BANDWIDTH: 10MHz / QPSK

MODE	TX channel 20525	FREQUENCY RANGE	Below 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	31.258	28.08	-13	-43.64	-14.59	-58.23	-45.23
2	75.556	20.47	-13	-74.40	-2.03	-76.44	-63.44
3	133.929	23.86	-13	-71.82	-1.50	-73.32	-60.32
4	158.848	22.02	-13	-65.86	-0.86	-66.72	-53.72
5	205.994	24.54	-13	-70.93	4.26	-66.67	-53.67
6	239.805	26.35	-13	-69.01	3.81	-65.20	-52.20
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	31.57	40.70	-13	-31.13	-14.52	-45.65	-32.65
2	126.897	28.50	-13	-62.60	-1.23	-63.82	-50.82
3	157.968	26.39	-13	-62.40	-0.76	-63.15	-50.15
4	168.861	27.36	-13	-63.32	0.58	-62.74	-49.74
5	206.974	25.68	-13	-69.79	4.25	-65.54	-52.54
6	956.571	35.40	-13	-62.55	0.37	-62.17	-49.17

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

MODE	TX channel 20525	FREQUENCY RANGE	Above 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	**1673**	**74.19**	**-13**	**-28.44**	**6.31**	**-22.13**	**-9.13**
2	2509.5	56.56	-13	-41.96	6.66	-35.30	-22.30
3	3346	58.45	-13	-44.56	7.63	-36.93	-23.93
4	4182.5	48.98	-13	-55.86	7.44	-48.42	-35.42
5	5019	47.84	-13	-56.42	7.01	-49.41	-36.41
6	5855.5	47.87	-13	-56.27	7.01	-49.26	-36.26
7	6692	47.79	-13	-55.54	5.56	-49.98	-36.98
8	7528.5	49.7	-13	-52.92	4.52	-48.40	-35.40
9	8365	49.45	-13	-53.10	4.19	-48.91	-35.91
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1673	72.43	-13	-30.20	6.31	-23.89	-10.89
2	2509.5	57.84	-13	-40.68	6.66	-34.02	-21.02
3	3346	63.49	-13	-39.52	7.63	-31.89	-18.89
4	4182.5	50.04	-13	-54.80	7.44	-47.36	-34.36
5	5019	50.35	-13	-53.91	7.01	-46.90	-33.90
6	5855.5	49.65	-13	-54.49	7.01	-47.48	-34.48
7	6692	49.32	-13	-54.01	5.56	-48.45	-35.45
8	7528.5	49.54	-13	-53.08	4.52	-48.56	-35.56
9	8365	48.97	-13	-53.58	4.19	-49.39	-36.39

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

LTE BAND 26

CHANNEL BANDWIDTH: 1.4MHz / QPSK

MODE	TX channel 26915	FREQUENCY RANGE	Below 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	30.668	27.18	-13	-44.32	-14.74	-59.06	-46.06
2	75.206	20.98	-13	-73.95	-2.05	-76.01	-63.01
3	134.759	22.62	-13	-72.82	-1.47	-74.29	-61.29
4	159.088	24.06	-13	-63.89	-0.83	-64.72	-51.72
5	207.294	25.11	-13	-70.36	4.25	-66.11	-53.11
6	240.135	27.30	-13	-68.05	3.82	-64.23	-51.23
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	32.47	40.70	-13	-31.45	-14.30	-45.75	-32.75
2	126.037	27.09	-13	-63.82	-1.22	-65.04	-52.04
3	158.378	23.98	-13	-63.77	-0.93	-64.70	-51.70
4	169.811	29.47	-13	-61.48	0.72	-60.76	-47.76
5	207.044	27.32	-13	-68.15	4.25	-63.90	-50.90
6	957.271	35.15	-13	-62.77	0.38	-62.40	-49.40

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

MODE	TX channel 26915	FREQUENCY RANGE	Above 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1673	73.17	-13	-29.63	6.24	-23.39	-10.39
2	2509.5	56.59	-13	-41.49	6.61	-34.89	-21.89
3	3346	60.05	-13	-42.88	7.53	-35.35	-22.35
4	4182.5	48.43	-13	-56.50	7.48	-49.02	-36.02
5	5019	47.42	-13	-56.68	6.99	-49.69	-36.69
6	5855.5	48.87	-13	-55.27	7.22	-48.05	-35.05
7	6692	49.39	-13	-54.53	5.83	-48.70	-35.70
8	7528.5	49.92	-13	-52.70	4.66	-48.04	-35.04
9	8365	50.93	-13	-51.52	4.16	-47.36	-34.36
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1673	72.61	-13	-30.19	6.24	-23.95	-10.95
2	2509.5	57.56	-13	-40.52	6.61	-33.92	-20.92
3	3346	63.97	-13	-38.96	7.53	-31.43	-18.43
4	4182.5	50.49	-13	-54.44	7.48	-46.96	-33.96
5	5019	51.24	-13	-52.86	6.99	-45.87	-32.87
6	5855.5	48.53	-13	-55.61	7.22	-48.39	-35.39
7	6692	50.2	-13	-53.72	5.83	-47.89	-34.89
8	7528.5	50.65	-13	-51.97	4.66	-47.31	-34.31
9	8365	49.73	-13	-52.72	4.16	-48.56	-35.56

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

LTE BAND 26

CHANNEL BANDWIDTH: 3MHz / QPSK

MODE	TX channel 26915	FREQUENCY RANGE	Below 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	31.178	26.19	-13	-45.50	-14.61	-60.11	-47.11
2	76.176	21.74	-13	-73.03	-2.00	-75.03	-62.03
3	134.049	23.62	-13	-72.03	-1.49	-73.52	-60.52
4	157.828	21.21	-13	-66.39	-1.01	-67.40	-54.40
5	208.254	23.58	-13	-71.88	4.23	-67.65	-54.65
6	241.905	23.89	-13	-71.39	3.83	-67.56	-54.56
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	32.86	41.15	-13	-31.15	-14.20	-45.35	-32.35
2	125.907	27.52	-13	-63.36	-1.22	-64.58	-51.58
3	160.088	25.71	-13	-62.52	-0.68	-63.20	-50.20
4	169.541	28.66	-13	-62.21	0.68	-61.53	-48.53
5	208.314	26.98	-13	-68.48	4.23	-64.25	-51.25
6	958.311	33.58	-13	-64.31	0.38	-63.93	-50.93

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

MODE	TX channel 26915	FREQUENCY RANGE	Above 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1673	73.81	-13	-28.99	6.24	-22.75	-9.75
2	2509.5	57.28	-13	-40.80	6.61	-34.20	-21.20
3	3346	60.10	-13	-42.83	7.53	-35.30	-22.30
4	4182.5	50.12	-13	-54.81	7.48	-47.33	-34.33
5	5019	47.02	-13	-57.08	6.99	-50.09	-37.09
6	5855.5	47.92	-13	-56.22	7.22	-49.00	-36.00
7	6692	48.29	-13	-55.63	5.83	-49.80	-36.80
8	7528.5	49.62	-13	-53.00	4.66	-48.34	-35.34
9	8365	50.87	-13	-51.58	4.16	-47.42	-34.42
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1673	72.39	-13	-30.41	6.24	-24.17	-11.17
2	2509.5	58.65	-13	-39.43	6.61	-32.83	-19.83
3	3346	62.55	-13	-40.38	7.53	-32.85	-19.85
4	4182.5	49.57	-13	-55.36	7.48	-47.88	-34.88
5	5019	50.16	-13	-53.94	6.99	-46.95	-33.95
6	5855.5	48.61	-13	-55.53	7.22	-48.31	-35.31
7	6692	50.78	-13	-53.14	5.83	-47.31	-34.31
8	7528.5	49.54	-13	-53.08	4.66	-48.42	-35.42
9	8365	49.3	-13	-53.15	4.16	-48.99	-35.99

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

LTE BAND 26

CHANNEL BANDWIDTH: 5MHz / QPSK

MODE	TX channel 26915	FREQUENCY RANGE	Below 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	31.358	27.11	-13	-44.64	-14.57	-59.21	-46.21
2	74.506	20.13	-13	-74.92	-2.10	-77.02	-64.02
3	134.099	23.91	-13	-71.72	-1.49	-73.21	-60.21
4	158.348	23.61	-13	-64.13	-0.93	-65.07	-52.07
5	207.144	24.96	-13	-70.51	4.25	-66.26	-53.26
6	238.745	27.79	-13	-67.61	3.81	-63.81	-50.81
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	32.72	41.24	-13	-31.01	-14.24	-45.24	-32.24
2	127.627	28.35	-13	-62.90	-1.23	-64.14	-51.14
3	160.278	23.76	-13	-64.52	-0.66	-65.18	-52.18
4	166.811	27.67	-13	-62.44	0.28	-62.15	-49.15
5	205.834	27.89	-13	-67.58	4.27	-63.32	-50.32
6	956.531	34.93	-13	-63.02	0.37	-62.65	-49.65

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

MODE	TX channel 26915	FREQUENCY RANGE	Above 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1673	73.49	-13	-29.31	6.24	-23.07	-10.07
2	2509.5	58.47	-13	-39.61	6.61	-33.01	-20.01
3	3346	59.16	-13	-43.77	7.53	-36.24	-23.24
4	4182.5	49.97	-13	-54.96	7.48	-47.48	-34.48
5	5019	47.53	-13	-56.57	6.99	-49.58	-36.58
6	5855.5	48.38	-13	-55.76	7.22	-48.54	-35.54
7	6692	47.94	-13	-55.98	5.83	-50.15	-37.15
8	7528.5	50.73	-13	-51.89	4.66	-47.23	-34.23
9	8365	48.95	-13	-53.50	4.16	-49.34	-36.34
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1673	71.5	-13	-31.30	6.24	-25.06	-12.06
2	2509.5	57.31	-13	-40.77	6.61	-34.17	-21.17
3	3346	63.84	-13	-39.09	7.53	-31.56	-18.56
4	4182.5	50.66	-13	-54.27	7.48	-46.79	-33.79
5	5019	50.8	-13	-53.30	6.99	-46.31	-33.31
6	5855.5	47.59	-13	-56.55	7.22	-49.33	-36.33
7	6692	50.05	-13	-53.87	5.83	-48.04	-35.04
8	7528.5	49.51	-13	-53.11	4.66	-48.45	-35.45
9	8365	49.13	-13	-53.32	4.16	-49.16	-36.16

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

LTE BAND 26

CHANNEL BANDWIDTH: 10MHz / QPSK

MODE	TX channel 26915	FREQUENCY RANGE	Below 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	32.09	26.64	-13	-45.38	-14.39	-59.77	-46.77
2	75.076	21.11	-13	-73.85	-2.06	-75.91	-62.91
3	134.869	24.02	-13	-71.39	-1.47	-72.86	-59.86
4	158.278	22.95	-13	-64.77	-0.94	-65.72	-52.72
5	206.764	23.67	-13	-71.80	4.25	-67.55	-54.55
6	240.055	23.65	-13	-71.70	3.82	-67.89	-54.89
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	30.71	40.33	-13	-31.19	-14.73	-45.91	-32.91
2	126.387	28.02	-13	-62.96	-1.22	-64.19	-51.19
3	158.298	24.31	-13	-63.42	-0.94	-64.36	-51.36
4	167.041	28.78	-13	-61.39	0.32	-61.07	-48.07
5	206.494	27.94	-13	-67.53	4.26	-63.27	-50.27
6	958.571	34.88	-13	-63.00	0.38	-62.62	-49.62

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

MODE	TX channel 26915	FREQUENCY RANGE	Above 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1673	72.96	-13	-29.84	6.24	-23.60	-10.60
2	2509.5	57.08	-13	-41.00	6.61	-34.40	-21.40
3	3346	59.93	-13	-43.00	7.53	-35.47	-22.47
4	4182.5	49.02	-13	-55.91	7.48	-48.43	-35.43
5	5019	49.31	-13	-54.79	6.99	-47.80	-34.80
6	5855.5	49.56	-13	-54.58	7.22	-47.36	-34.36
7	6692	49.87	-13	-54.05	5.83	-48.22	-35.22
8	7528.5	51.03	-13	-51.59	4.66	-46.93	-33.93
9	8365	48.6	-13	-53.85	4.16	-49.69	-36.69
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1673	71.2	-13	-31.60	6.24	-25.36	-12.36
2	2509.5	55.82	-13	-42.26	6.61	-35.66	-22.66
3	3346	63.25	-13	-39.68	7.53	-32.15	-19.15
4	4182.5	50.15	-13	-54.78	7.48	-47.30	-34.30
5	5019	50.46	-13	-53.64	6.99	-46.65	-33.65
6	5855.5	46.92	-13	-57.22	7.22	-50.00	-37.00
7	6692	48.26	-13	-55.66	5.83	-49.83	-36.83
8	7528.5	49.61	-13	-53.01	4.66	-48.35	-35.35
9	8365	47.63	-13	-54.82	4.16	-50.66	-37.66

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

LTE BAND 26

CHANNEL BANDWIDTH: 15MHz / QPSK

MODE	TX channel 26915	FREQUENCY RANGE	Below 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	32.91	26.38	-13	-45.93	-14.19	-60.12	-47.12
2	75.056	19.74	-13	-75.22	-2.06	-77.28	-64.28
3	134.869	24.82	-13	-70.59	-1.47	-72.06	-59.06
4	157.958	23.46	-13	-64.17	-0.99	-65.16	-52.16
5	208.214	24.71	-13	-70.75	4.23	-66.52	-53.52
6	240.665	24.11	-13	-71.22	3.82	-67.40	-54.40
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	30.25	41.02	-13	-30.33	-14.84	-45.17	-32.17
2	126.987	28.07	-13	-63.04	-1.23	-64.27	-51.27
3	158.838	25.88	-13	-62.00	-0.86	-62.86	-49.86
4	167.661	27.88	-13	-62.46	0.41	-62.06	-49.06
5	207.904	28.32	-13	-67.15	4.24	-62.91	-49.91
6	958.941	34.70	-13	-63.17	0.39	-62.78	-49.78

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

MODE	TX channel 26915	FREQUENCY RANGE	Above 1000MHz

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1673	72.92	-13	-29.88	6.24	-23.64	-10.64
2	2509.5	56.58	-13	-41.50	6.61	-34.90	-21.90
3	3346	59.20	-13	-43.73	7.53	-36.20	-23.20
4	4182.5	50.47	-13	-54.46	7.48	-46.98	-33.98
5	5019	47.66	-13	-56.44	6.99	-49.45	-36.45
6	5855.5	48.45	-13	-55.69	7.22	-48.47	-35.47
7	6692	48.35	-13	-55.57	5.83	-49.74	-36.74
8	7528.5	51.94	-13	-50.68	4.66	-46.02	-33.02
9	8365	50.13	-13	-52.32	4.16	-48.16	-35.16
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M							
No.	Freq. (MHz)	Reading (dBu V/m)	Limit (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	Level (dBm)	Margin (dB)
1	1673	71.33	-13	-31.47	6.24	-25.23	-12.23
2	2509.5	57.09	-13	-40.99	6.61	-34.39	-21.39
3	3346	62.24	-13	-40.69	7.53	-33.16	-20.16
4	4182.5	50.43	-13	-54.50	7.48	-47.02	-34.02
5	5019	50.88	-13	-53.22	6.99	-46.23	-33.23
6	5855.5	46.95	-13	-57.19	7.22	-49.97	-36.97
7	6692	49.05	-13	-54.87	5.83	-49.04	-36.04
8	7528.5	49.83	-13	-52.79	4.66	-48.13	-35.13
9	8365	49.02	-13	-53.43	4.16	-49.27	-36.27

REMARKS:

1. Level (dBm) = S.G Power Value (dBm) + Correction Factor (dB).
2. Correction Factor = gain of substitution antenna + cable loss

5 PHOTOGRAPHS OF THE TEST CONFIGURATION

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

6 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.

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

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

7 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications were made to the EUT by the lab during the test.

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