FCC Test Report

(PART 22)

Report No.:	RF151110C01-5
FCC ID:	XGK-C-ONE-E-ID
Test Model:	C-One e-ID
Series Model:	MR 2250, C-One e-ID NR, MR 2150 (refer to item 3.1 for more details)
Received Date:	Nov. 10, 2015
Test Date:	Dec. 02 ~ Dec. 18, 2015
Issued Date:	Dec. 22, 2015
Applicant:	Coppernic
Address:	185 avenue Archimede Aix en Provence France 13857
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)

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Release Control Record

Issue No.	Description	Date Issued
RF151110C01-5	Original release	Dec. 22, 2015

1 Certificate of Conformity

Product:	Mobile Terminal
Brand:	COPPERNIC, Morpho
Test Model:	C-One e-ID
Series Model:	MR 2250, C-One e-ID NR, MR 2150 (refer to item 3.1 for more details)
Sample Status:	ENGINEERING SAMPLE
Applicant:	Coppernic
Test Date:	Dec. 02 ~ Dec. 18, 2015
Standards:	FCC Part 22, Subpart H

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

Prepared by : _____ , **Date:** Dec. 22, 2015

Pettie Chen / Senior Specialist

Approved by : _____ , **Date:** Dec. 22, 2015

Dylan Chiou / Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 22 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 22.913 (a)	Effective radiated power	PASS	Meet the requirement of limit.
---	Peak To Average Ratio	PASS	Meet the requirement of limit.
2.1055 22.355	Frequency Stability	PASS	Meet the requirement of limit.
2.1049	Occupied Bandwidth	PASS	Meet the requirement of limit.
22.917	Band Edge Measurements	PASS	Meet the requirement of limit.
2.1051 22.917	Conducted Spurious Emissions	PASS	Meet the requirement of limit.
2.1053 22.917	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -15.27dB at 869.76MHz.

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	Expended Uncertainty (k=2) (±)
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	3.59 dB
	200MHz ~1000MHz	3.60 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Test Site and Instruments

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Oct. 12, 2015	Oct. 11, 2016
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Jul. 08, 2015	Jul. 07, 2016
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Feb. 06, 2015	Feb. 05, 2016
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-1170	Feb. 05, 2015	Feb. 04, 2016
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Feb. 09, 2015	Feb. 08, 2016
Preamplifier Agilent	8449B	3008A01960	Aug. 09, 2015	Aug. 08, 2016
Preamplifier Agilent	8447D	2944A10631	Aug. 09, 2015	Aug. 08, 2016
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-02(295012+309220)	Aug. 09, 2015	Aug. 08, 2016
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-03(250724)	Aug. 09, 2015	Aug. 08, 2016
Software BV ADT	ADT_Radiated_V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021703	NA	NA
Turn Table BV ADT	TT100	TT93021703	NA	NA
Turn Table Controller BV ADT	SC100.	SC93021703	NA	NA
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 08, 2015	Jun. 07, 2016
Mini-Circuits Power Splitter	ZN2PD-9G	NA	Jun. 09, 2015	Jun. 08, 2016
JFW 20dB attenuation	50HF-020-SMA	NA	NA	NA

NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HwaYa Chamber 4.

3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.

4. The FCC Site Registration No. is 460141.

5. The IC Site Registration No. is IC7450F-4.

3 General Information

3.1 General Description of EUT

Product	Mobile Terminal
Brand	COPPERNIC, Morpho (Refer to Note for more details)
Test Model	C-One e-ID
Series Model	MR 2250, C-One e-ID NR, MR 2150
Model Difference	Refer to note
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	3.7Vdc (Battery) 5.35Vdc (Adapter)
Modulation Type	GSM, GPRS, EDGE: GMSK WCDMA, HSDPA: BPSK
Operating Frequency	GSM, GPRS, EDGE: 824.2MHz ~ 848.8MHz WCDMA, HSDPA, HSUPA: 826.4MHz ~ 846.6MHz
Max. ERP Power	GSM: 0.76384W (28.83dBm) GPRS: 0.72444W (28.6dBm) EDGE: 0.16596W (22.2dBm) WCDMA: 0.08318W (19.2dBm)
Emission Designator	GSM: 255KGXW GPRS: 260KG7W EDGE: 255KG7W WCDMA: 4M18F9W
Antenna Type	GSM 850: PIFA antenna with -4dBi gain WCDMA: PIFA antenna with -4dBi gain
Accessory Device	Refer to note
Data Cable Supplied	Refer to note

Note:

1. The following models are provided to this EUT. The model of the C-One e-ID was chosen for final test.

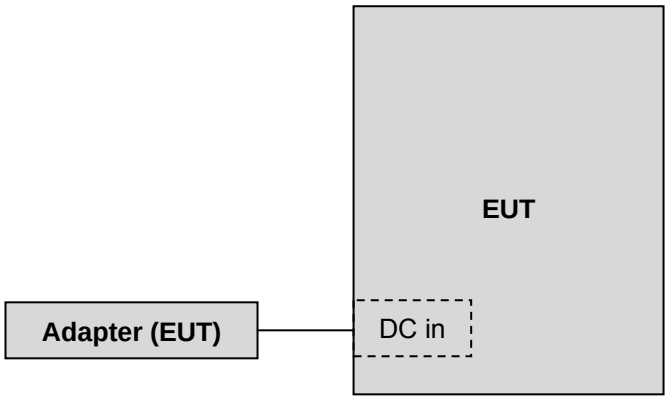
Brand	Model	Difference
COPPERNIC	C-One e-ID	1) With RF ID function (Model: C-One e-ID With RF ID function via software control) 2) The difference of brand and model between C-One e-ID and MR 2250 is for marketing
	C-One e-ID NR	1) Without RF ID function (disabled via software) 2) The difference of brand and model between C-One e-ID NR and MR 2150 is for marketing
Morpho	MR 2250	1) With RF ID function (With RF ID function via software control) 2) The difference of brand and model between C-One e-ID and MR 2250 is for marketing
	MR 2150	1) Without RF ID function (disabled via software) 2) The difference of brand and model between C-One e-ID NR and MR 2150 is for marketing

2. The EUT contains the following accessories.

No.	Product	Brand	Model	Description	Remark
1	Adapter	PHIHONG	PSAI10R-050Q	Input: 100-240Vac, 0.3A, 50-60Hz, 25-34VA Output: 5.35Vdc / 2.0A	Accessory
2	Battery 1	ETI CA Battery inc.	BP13-001080	Rating: 3.7Vdc Capacity, 3450mA	Accessory
3	Battery 2		BP14-001160		Accessory
4	USB cable	-	-	1m shielded USB cable without core	Accessory

*Battery 1 & Battery 2 are electrically identical, different model names are for marketing purpose. Battery 1 was chosen for final test.

3.2 Configuration of System under Test



3.2.1 Description of Support Units

The EUT has been tested as an independent unit.

3.3 Test Mode Applicability and Tested Channel Detail

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

GSM MODE

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	ERP	128 to 251	128, 189, 251	GSM, GPRS, EDGE
-	Frequency Stability	128 to 251	189	GSM
-	Occupied Bandwidth	128 to 251	128, 189, 251	GSM, GPRS, EDGE
-	Band Edge	128 to 251	128, 251	GSM, GPRS, EDGE
-	Peak To Average Ratio	128 to 251	128, 189, 251	GSM, GPRS, EDGE
-	Condcudeted Emission	128 to 251	128, 189, 251	GSM, GPRS, EDGE
-	Radiated Emission Below 1GHz	128 to 251	189	GSM
-	Radiated Emission Above 1GHz	128 to 251	128, 189, 251	GSM

WCDMA MODE

EUT Configure 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, HSDPA, HSUPA
-	Band Edge	4132 to 4233	4132, 4233	WCDMA, HSDPA, HSUPA
-	Peak To Average Ratio	4132 to 4233	4132, 4182, 4233	WCDMA, HSDPA, HSUPA
-	Condcudeted Emission	4132 to 4233	4132, 4182, 4233	WCDMA, HSDPA, HSUPA
-	Radiated Emission Below 1GHz	4132 to 4233	4182	WCDMA
-	Radiated Emission Above 1GHz	4132 to 4233	4132, 4182, 4233	WCDMA

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
ERP	25deg. C, 65%RH	120Vac, 60Hz	Jones Chang
Frequency Stability	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
Occupied Bandwidth	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
Band Edge	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
Peak To Average Ratio	24deg. C, 64%RH	120Vac, 60Hz	Match Tsui
Condcudeted Emission	25deg. C, 65%RH	120Vac, 60Hz	Jones Chang
Radiated Emission	25deg. C, 65%RH	120Vac, 60Hz	Jones Chang

3.4 EUT Operating Conditions

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

3.5 General Description of Applied Standards

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

FCC 47 CFR Part 2

FCC 47 CFR Part 22

KDB 971168 D01 Power Meas License Digital Systems v02r02

ANSI/TIA/EIA-603-C 2004

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

Note: The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

4 Test Types and Results

4.1 Output Power Measurement

4.1.1 Limits of Output Power Measurement

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

4.1.2 Test Procedures

EIRP / ERP Measurement:

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

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

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

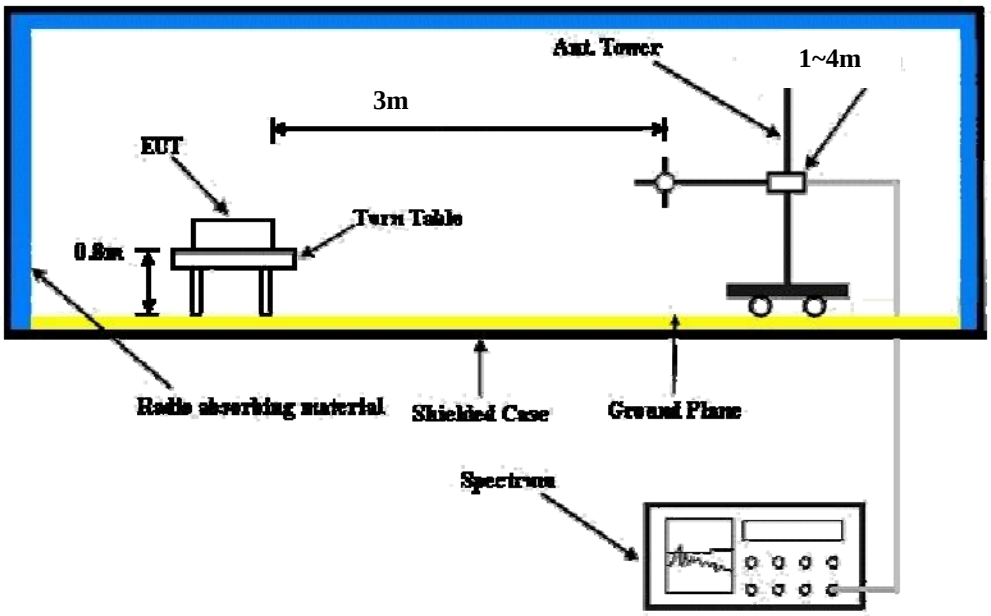
d. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15dBi.

Conducted Power Measurement:

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

4.1.3 Test Setup

EIRP / ERP MEASUREMENT:



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

CONDUCTED POWER MEASUREMENT:

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

4.1.4 Test Results

CONDUCTED OUTPUT POWER (dBm)

Band	GSM850		
Channel	128	189	251
Frequency (MHz)	824.2	836.4	848.8
GSM	32.08	**32.13**	31.45
GPRS 8	32.06	32.11	31.43
GPRS 10	31.91	31.96	31.28
GPRS 11	31.81	31.86	31.18
GPRS 12	31.67	31.72	31.04
GPRS 30	32.05	32.10	31.42
GPRS 31	31.95	32.00	31.32
GPRS 32	31.87	31.92	31.24
GPRS 33	31.63	31.68	31.00
DTM 9 (GPRS)	31.94	31.99	31.31
DTM 11 (GPRS)	31.85	31.90	31.22
EDGE 8 (MCS9)	25.73	25.78	25.10
EDGE 10 (MCS9)	25.62	25.67	24.99
EDGE 11 (MCS9)	25.53	25.58	24.90
EDGE 12 (MCS9)	25.38	25.43	24.75
EDGE 30 (MCS9)	25.62	25.67	24.99
EDGE 31 (MCS9)	25.56	25.61	24.93
EDGE 32 (MCS9)	25.48	25.53	24.85
EDGE 33 (MCS9)	25.36	25.41	24.73
DTM 9 (EDGE)	25.58	25.63	24.95
DTM 11 (EDGE)	25.51	25.56	24.88

Band	WCDMA V		
Channel	4132	4182	4233
Frequency (MHz)	826.4	836.4	846.6
RMC 12.2K	22.73	22.78	**22.92**
HSDPA Subtest-1	22.71	22.76	22.90
HSDPA Subtest-2	22.65	22.70	22.84
HSDPA Subtest-3	22.17	22.22	22.36
HSDPA Subtest-4	22.21	22.26	22.40
HSUPA Subtest-1	21.92	21.97	22.11
HSUPA Subtest-2	20.91	20.96	21.10
HSUPA Subtest-3	21.24	21.29	21.43
HSUPA Subtest-4	20.82	20.87	21.01
HSUPA Subtest-5	22.64	22.69	22.83

ERP Power (dBm)

For GSM Mode:

MODE	TX channel 128						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.20	-4.57	27.76	0.01	27.77	38.45	-10.68
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.20	-8.45	24.91	0.01	24.92	38.45	-13.53

MODE	TX channel 189						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.40	-3.68	28.54	0.29	**28.83**	38.45	-9.62
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.40	-8.33	24.70	0.29	24.99	38.45	-13.46

MODE	TX channel 251						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	848.80	-4.22	27.40	0.51	27.91	38.45	-10.54
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	848.80	-8.43	24.08	0.51	24.59	38.45	-13.86

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

For GPRS Mode:

MODE	TX channel 128						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.20	-3.5	27.6	0.0	27.6	38.5	-10.9
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.20	-7.3	24.7	0.0	24.7	38.5	-13.8

MODE	TX channel 189						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.40	-2.8	28.4	0.2	**28.6**	38.5	-9.9
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.40	-7.2	24.6	0.2	24.8	38.5	-13.7

MODE	TX channel 251						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	848.80	-3.3	27.2	0.5	27.7	38.5	-10.8
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	848.80	-7.5	23.9	0.5	24.4	38.5	-14.1

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

For EDGE Mode:

MODE		TX channel 128					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.20	-11.1	21.3	0.0	21.3	38.5	-17.2
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	824.20	-15.0	18.4	0.0	18.4	38.5	-20.1

MODE		TX channel 189					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.40	-10.4	22.0	0.2	**22.2**	38.5	-16.3
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.40	-15.0	18.2	0.2	18.4	38.5	-20.1

MODE		TX channel 251					
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	848.80	-9.8	20.7	0.5	21.2	38.5	-17.3
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	848.80	-14.0	17.4	0.5	17.9	38.5	-20.6

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

For WCDMA Mode:

MODE	TX channel 4132						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	826.4	-13.6	18.6	0.0	18.6	38.5	-19.9
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	826.4	-15.6	17.8	0.0	17.8	38.5	-20.7

MODE	TX channel 4182						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.4	-13.4	19.0	0.2	**19.2**	38.5	-19.3
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	836.4	-15.6	17.6	0.2	17.8	38.5	-20.7

MODE	TX channel 4233						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	846.6	-14.3	17.4	0.4	17.8	38.5	-20.7
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	846.6	-16.5	16.2	0.4	16.6	38.5	-21.9

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

4.2 Frequency Stability Measurement

4.2.1 Limits of Frequency Stabiliity Measurement

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

4.2.2 Test Procedure

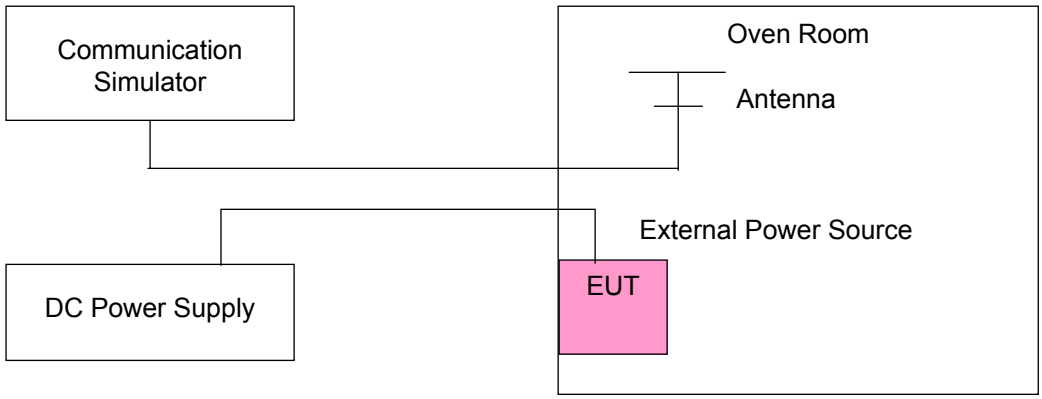
a. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.

b. EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.

c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ±0.5 ℃ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

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

4.2.3 Test Setup



4.2.4 Test Results

Frequency Error vs. Voltage

Voltage (Volts)	Frequency Error (ppm)		Limit (ppm)
	GSM	WCDMA	
4.15	-0.018	-0.023	2.5
3.7	-0.019	-0.019	2.5
3.67	-0.020	-0.020	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.67Vdc to 4.15Vdc.

Frequency Error vs. Temperature.

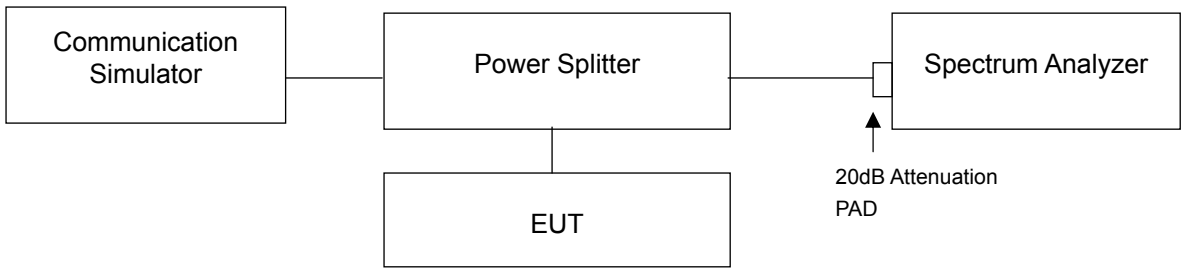
TEMP. (℃)	Frequency Error (ppm)		Limit (ppm)
	GPRS	WCDMA	
60	-0.033	-0.033	2.5
50	-0.035	-0.035	2.5
40	-0.029	-0.035	2.5
30	-0.023	-0.029	2.5
20	-0.019	-0.019	2.5
10	-0.025	-0.023	2.5
0	-0.031	-0.035	2.5
-10	-0.035	-0.039	2.5
-20	-0.041	-0.037	2.5

4.3 Occupied Bandwidth Measurement

4.3.1 Test Procedure

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

4.3.2 Test Setup

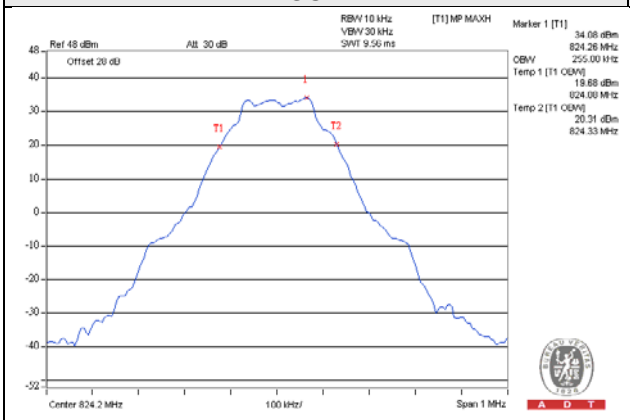


4.3.3 Test Result

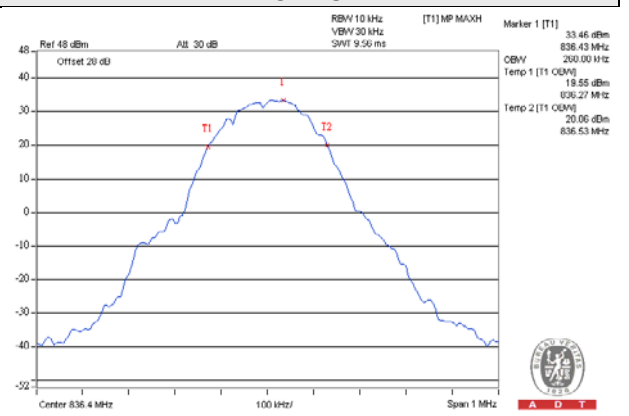
Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)			Channel	FREQ. (MHz)	99% Occupied Bandwidth (MHz)		
		GSM	GPRS	EDGE			WCDMA	HSDPA	HSUPA
128	824.2	255.0	255.0	255.0	4132	826.4	4.17	4.15	4.15
190	836.6	255.0	260.0	255.0	4182	836.4	4.18	4.18	4.17
251	848.8	255.0	255.0	255.0	4233	846.6	4.17	4.17	4.17

Spectrum Plot Of Worst Value

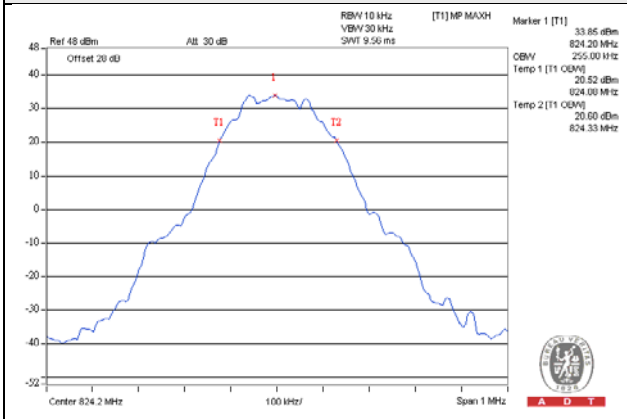
GSM



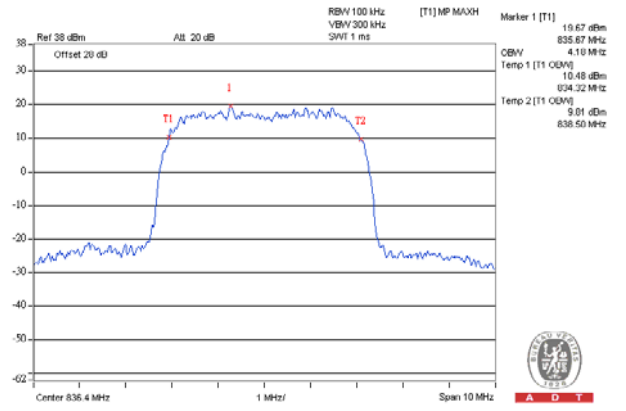
GPRS



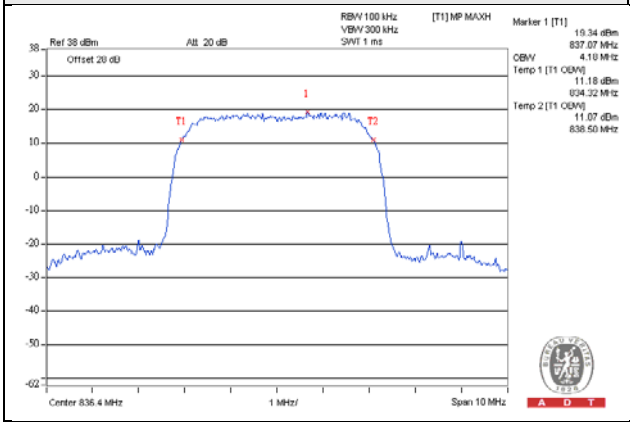
EDGE



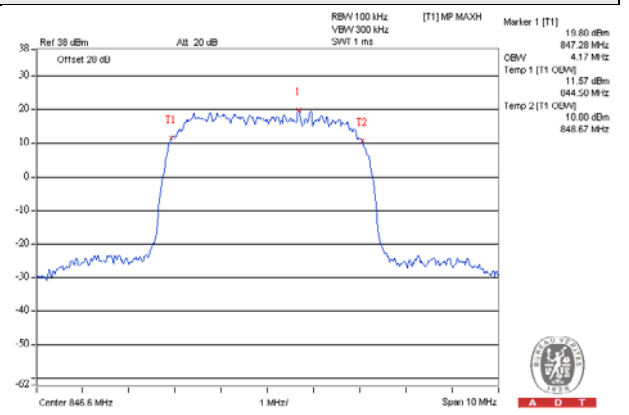
WCDMA



HSDPA



HSUPA

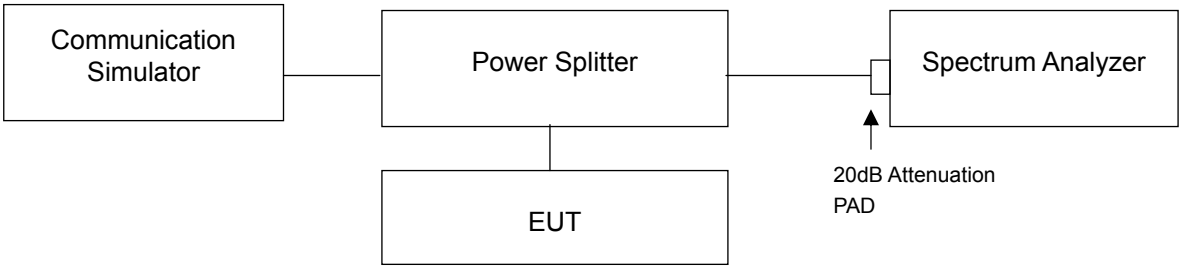


4.4 Band Edge Measurement

4.4.1 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.

4.4.2 Test Setup



4.4.3 Test Procedures

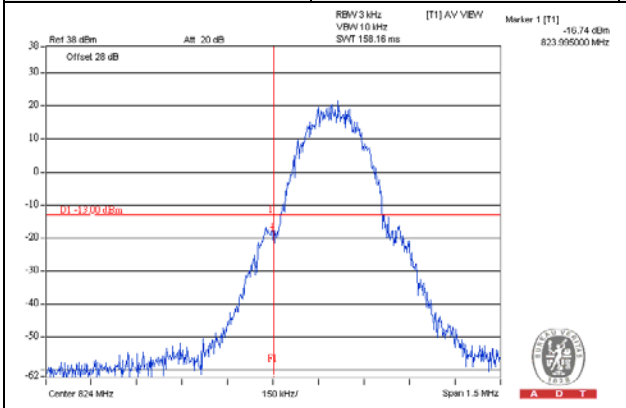
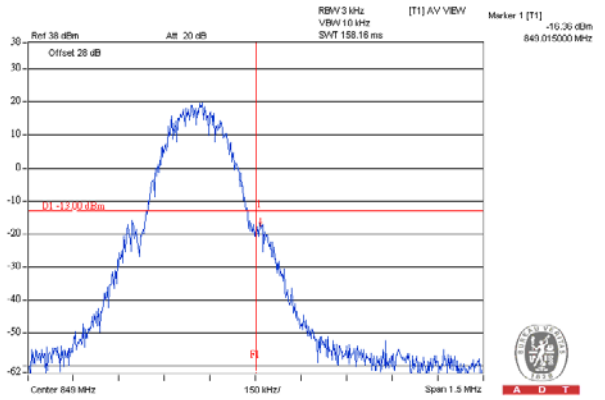
a. All measurements were done at low and high operational frequency range.

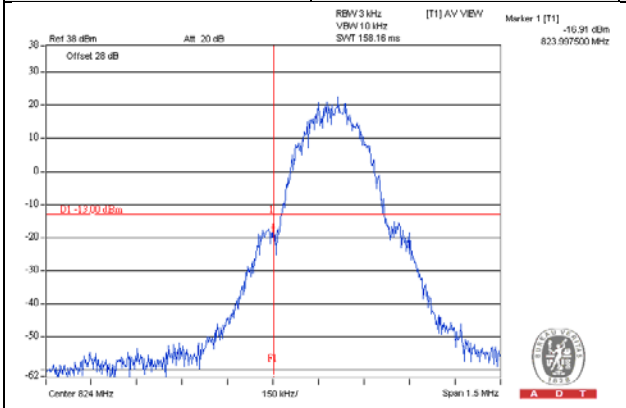
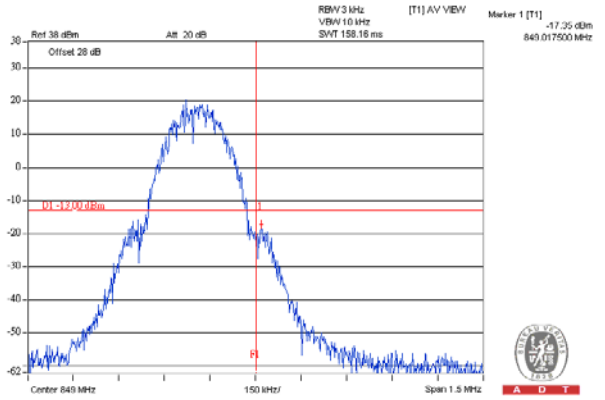
b. The center frequency of spectrum is the band edge frequency and span is 1.5MHz. RB of the spectrum is 3kHz and VB of the spectrum is 10kHz (GSM/GPRS/EDGE).

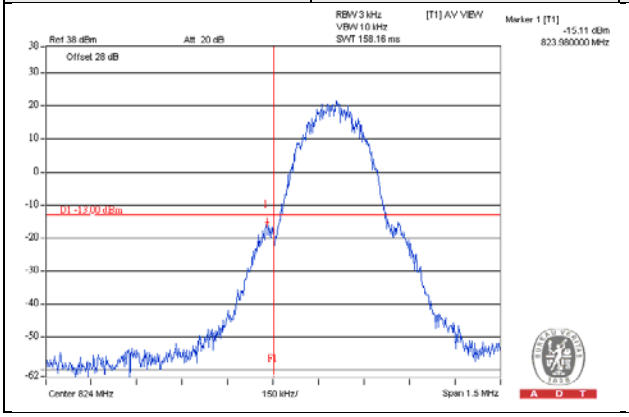
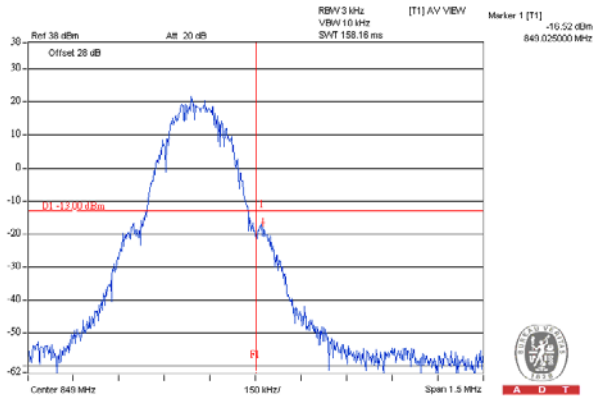
c. The center frequency of spectrum is the band edge frequency and span is 10MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (WCDMA/HSDPA/HSUPA).

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

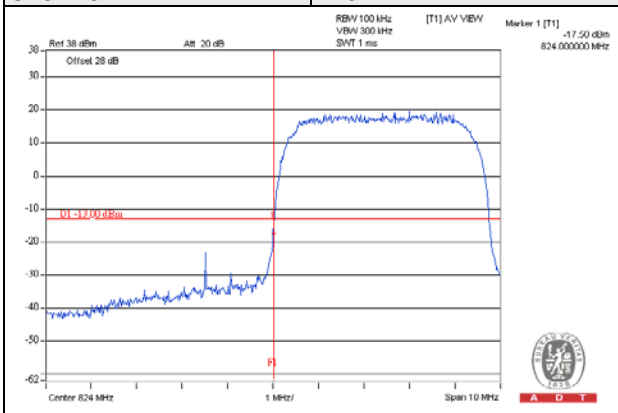
4.4.4 Test Results

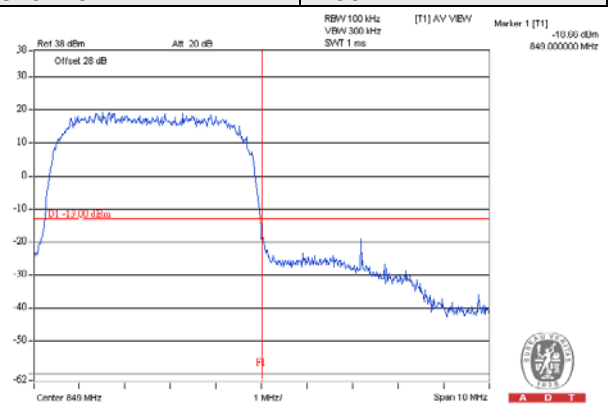
GSM			
Channel	128	Channel	251
			

GPRS			
Channel	128	Channel	251
			

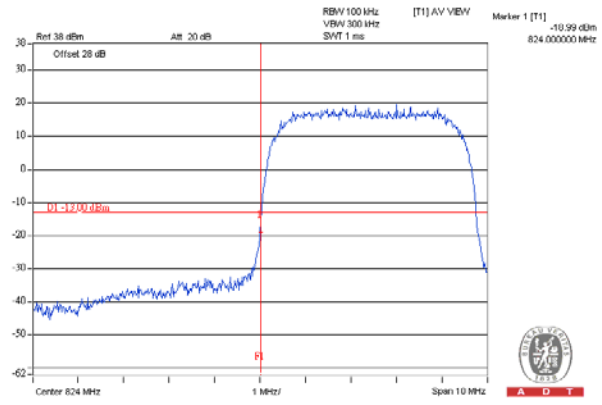
EDGE			
Channel	128	Channel	251
			

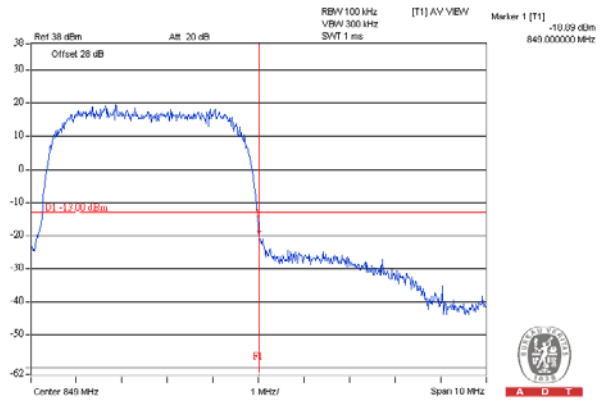
WCDMA			
Channel	4132	Channel	4233



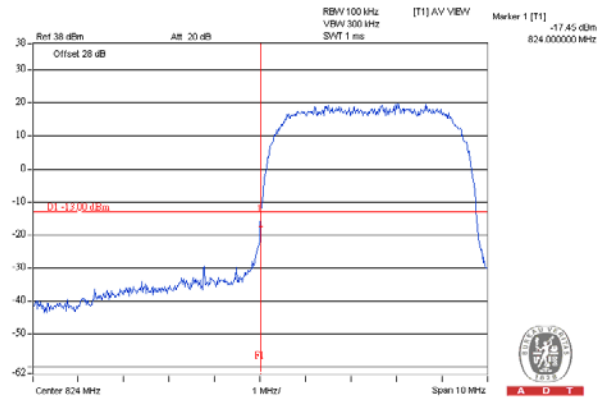


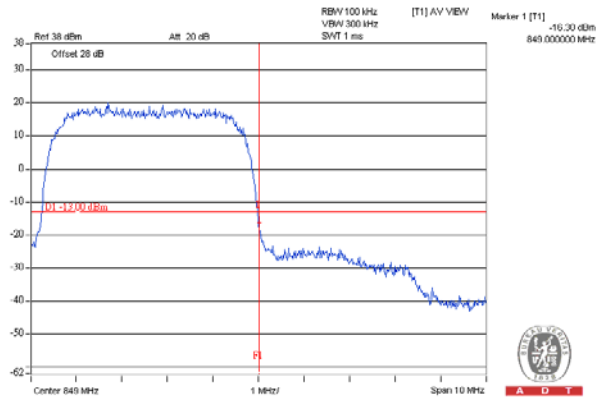
HSDPA			
Channel	4132	Channel	4233





HSUPA			
Channel	4132	Channel	4233



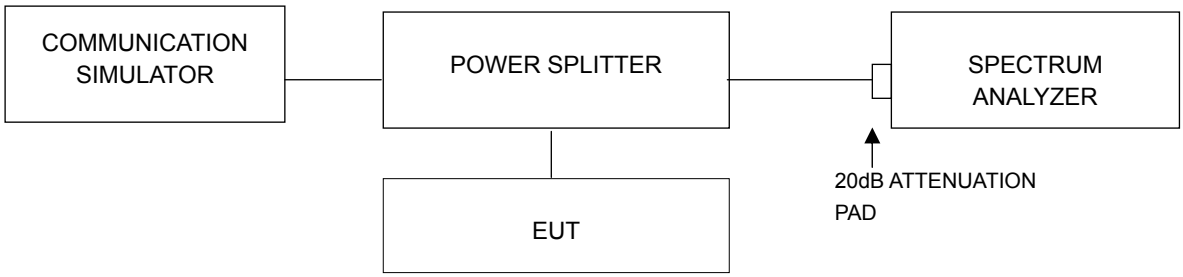


4.5 Peak to Average Ratio

4.5.1 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

4.5.2 Test Setup



4.5.3 Test Procedures

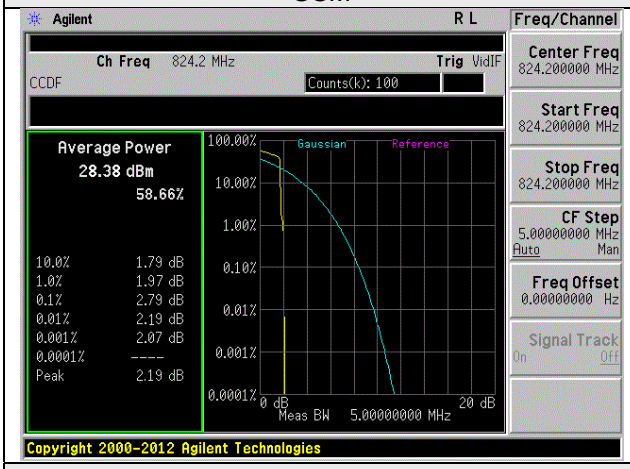
1. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.

4.5.4 Test Results

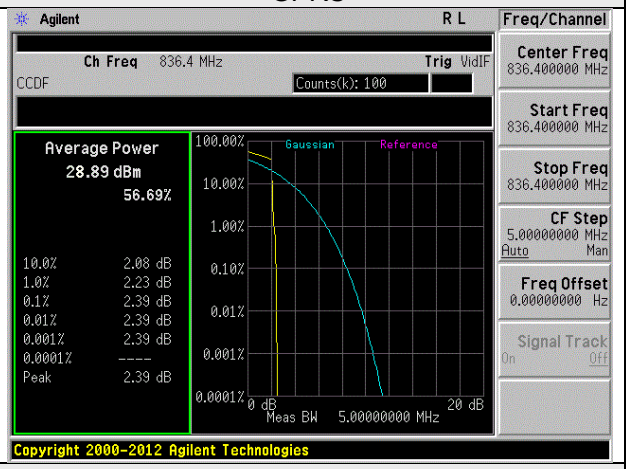
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			Channel	Freq. (MHz)	Peak To Average Ratio (dB)		
		GSM	GPRS	EDGE			WCDMA	HSDPA	HSUPA
128	824.2	2.79	2.07	2.34	4132	826.4	3.10	3.08	3.08
189	836.4	2.39	2.39	3.01	4182	836.4	3.07	3.06	3.06
251	848.8	2.29	2.27	3.30	4233	846.6	3.07	3.08	3.08

Spectrum Plot Of Worst Value

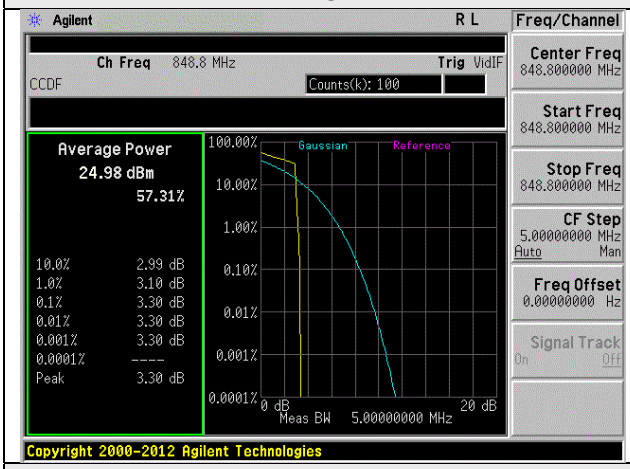
GSM



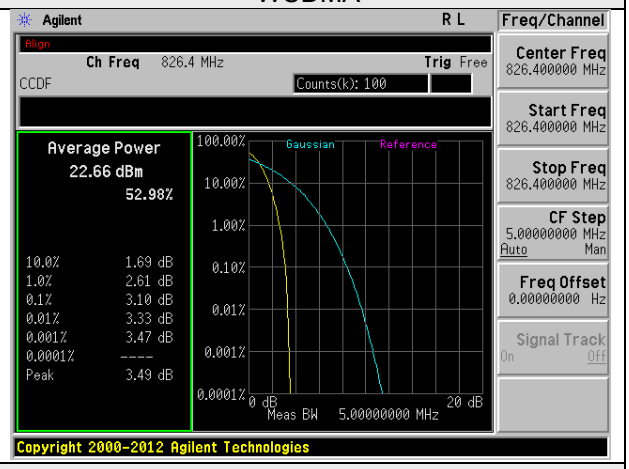
GPRS



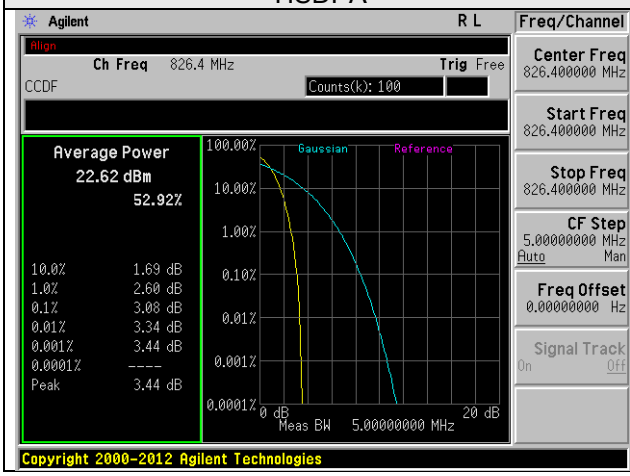
EDGE



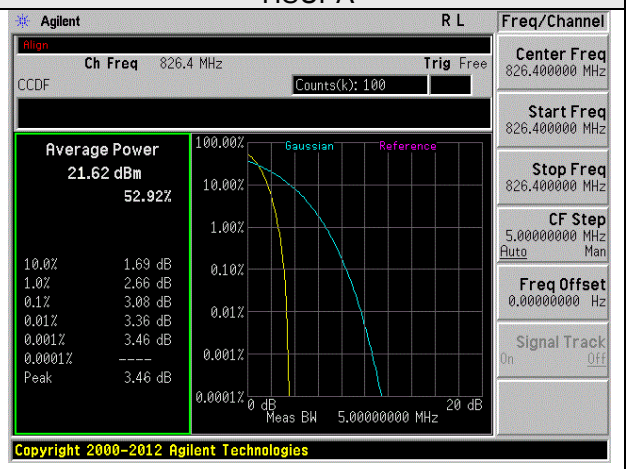
WCDMA



HSDPA



HSUPA

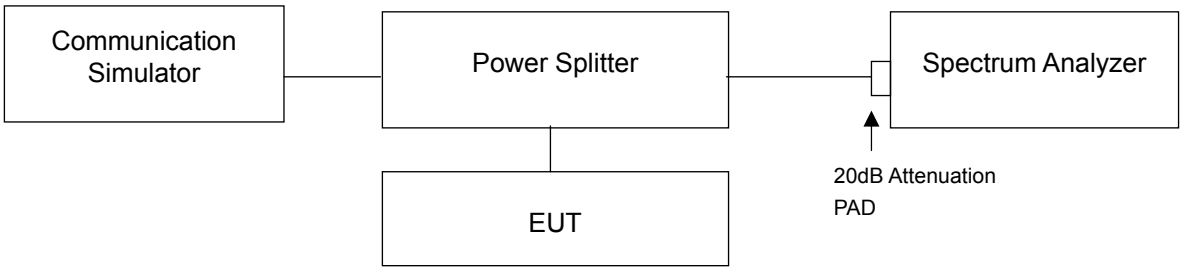


4.6 Conducted Spurious Emissions

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 equal to –13dBm.

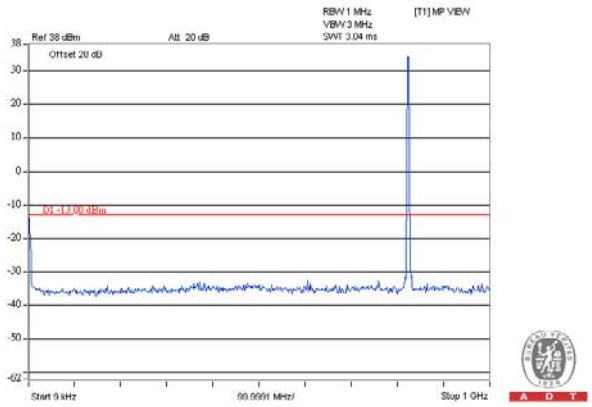
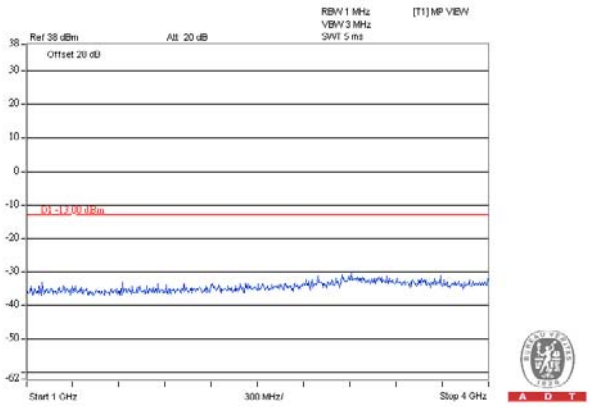
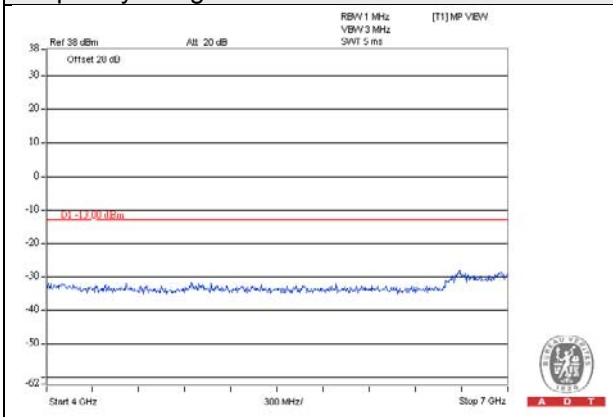
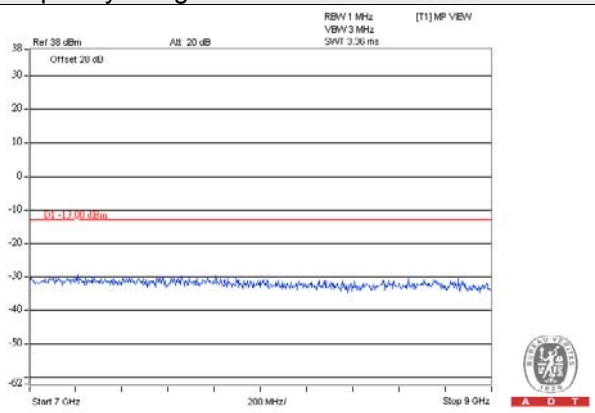
4.6.2 Test Setup

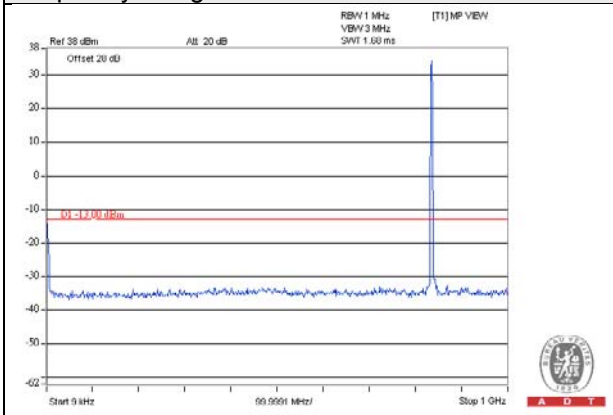
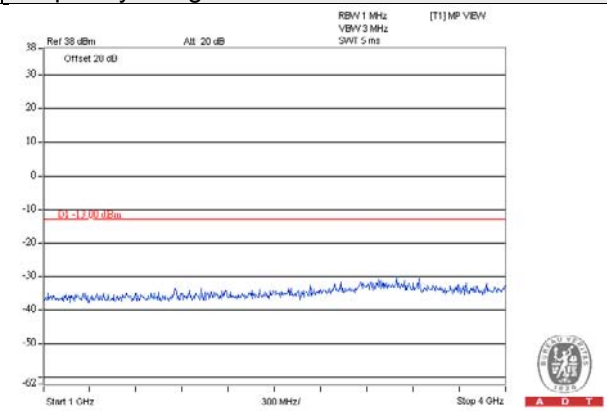
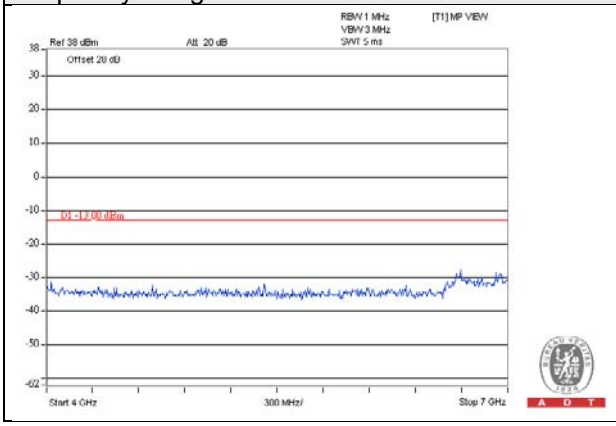
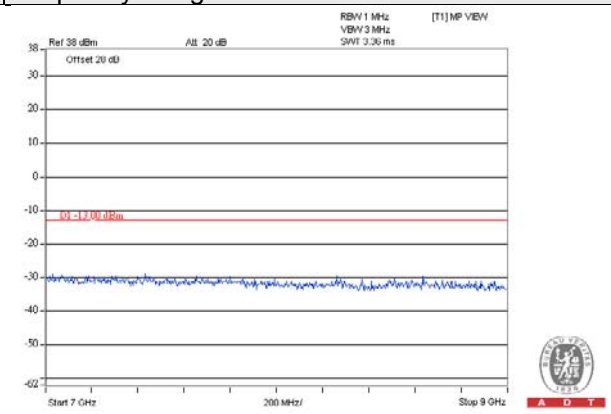


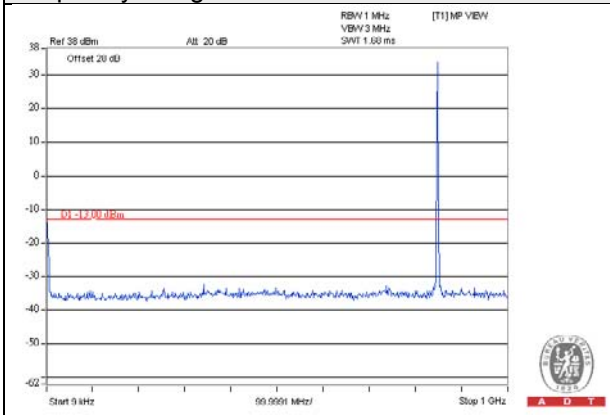
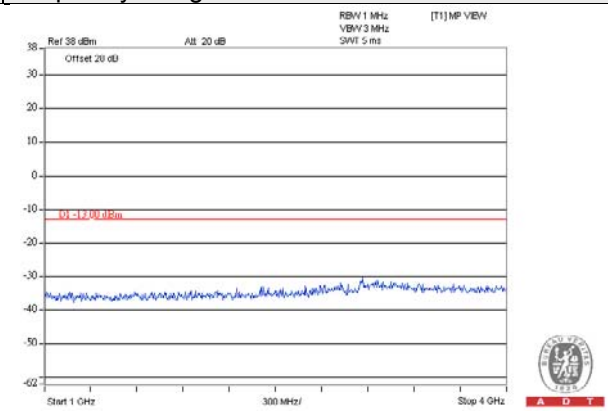
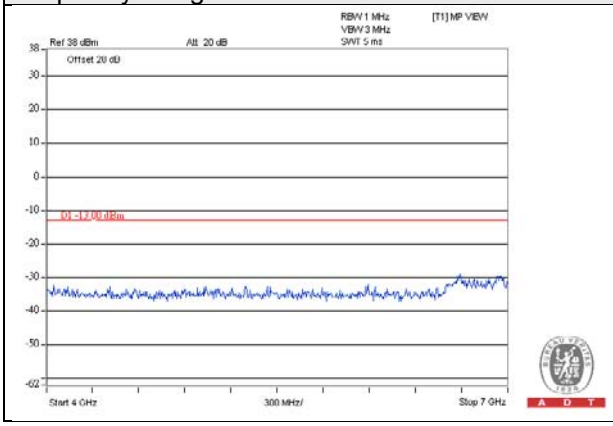
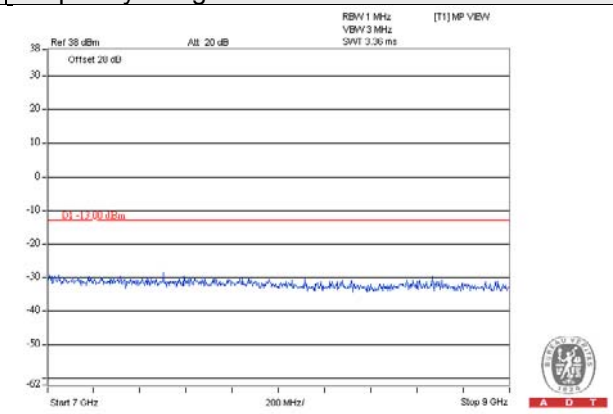
4.6.3 Test Procedure

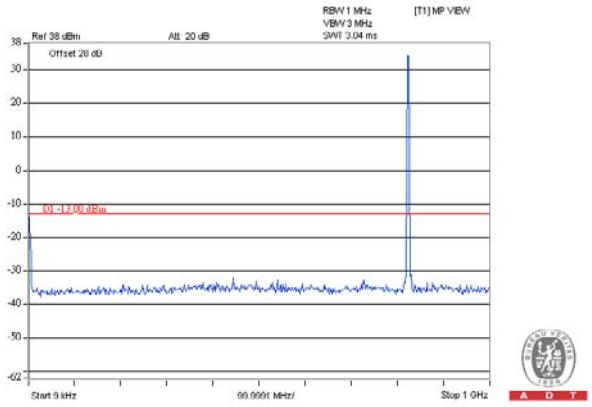
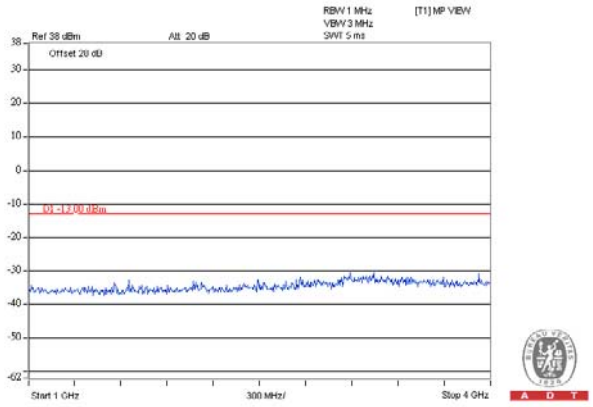
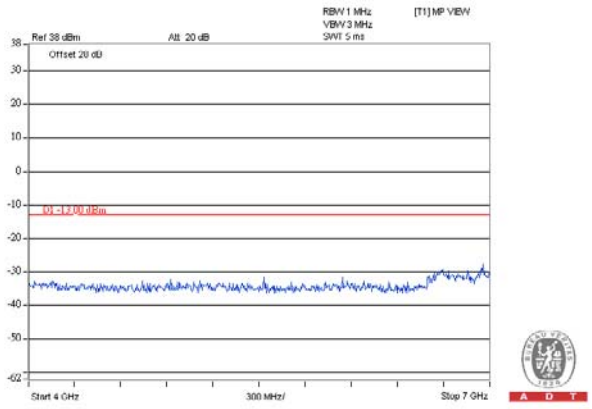
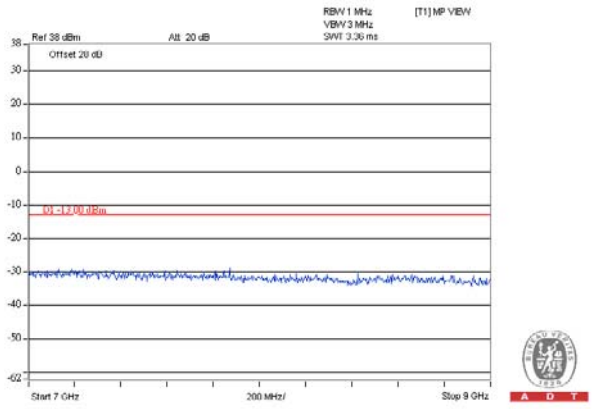
a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
b. Measuring frequency range is from 9 kHz to 9GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

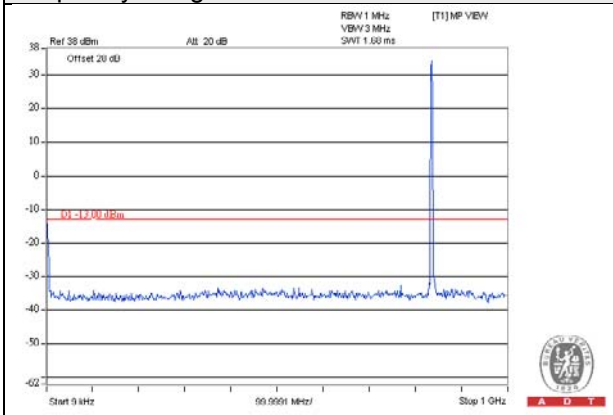
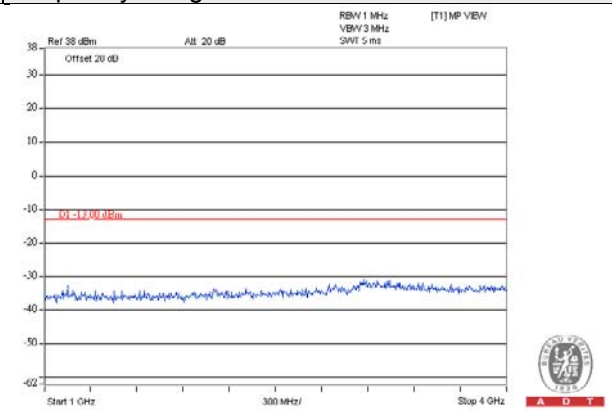
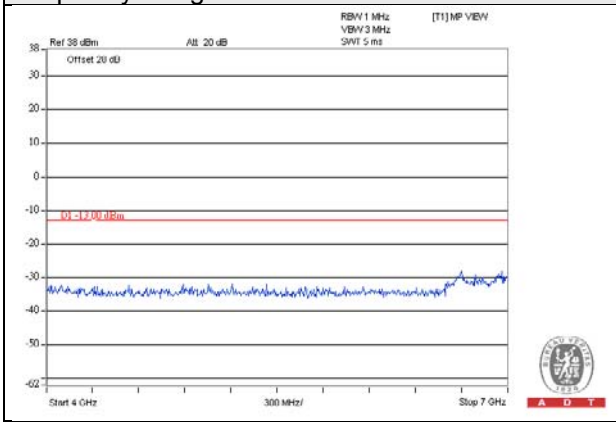
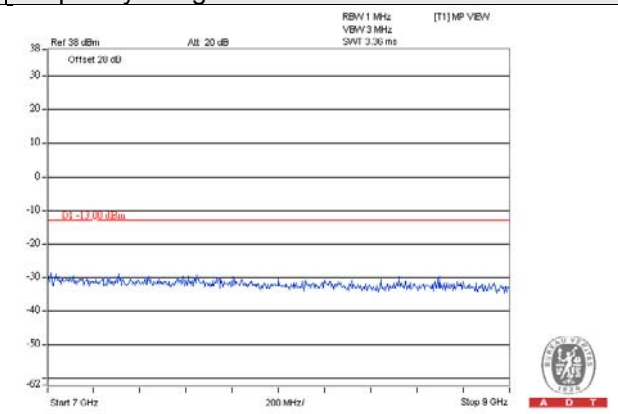
4.6.4 Test Results

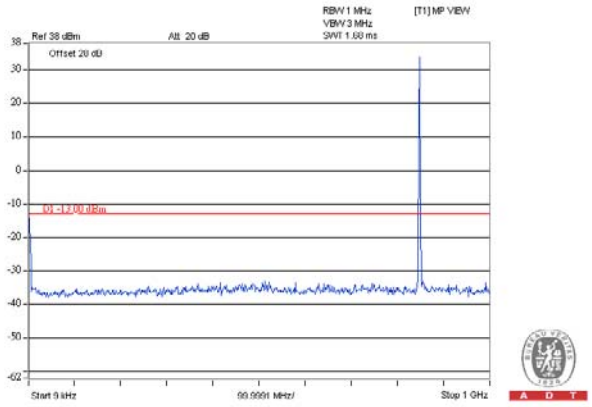
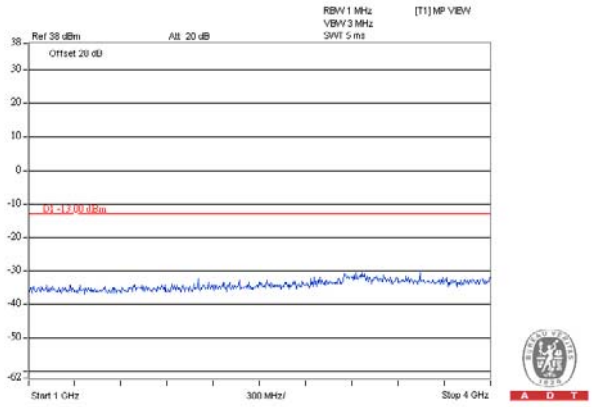
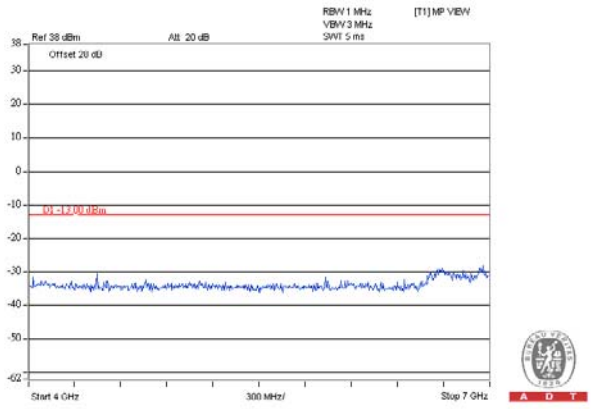
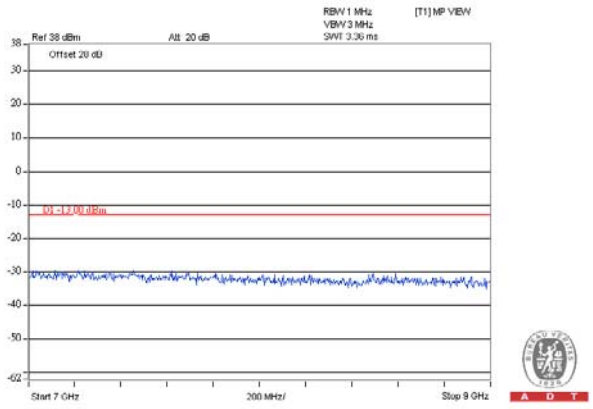
GSM	
Channel 128	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~4GHz
	
Frequency Range : 4GHz~7GHz	Frequency Range : 7GHz~9GHz
	

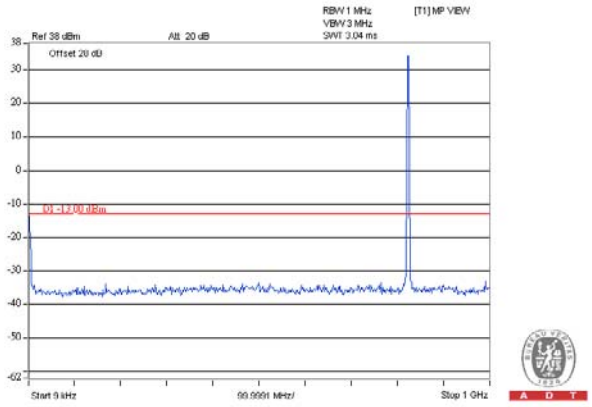
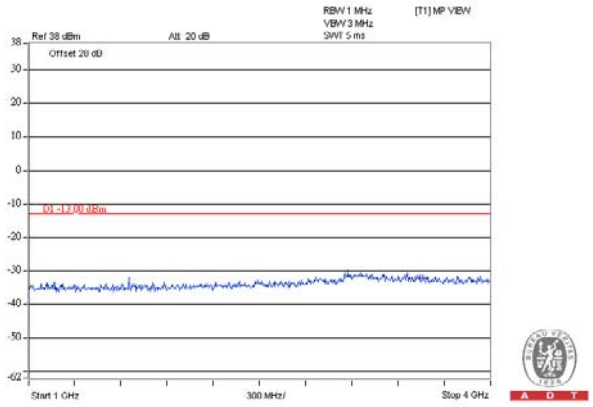
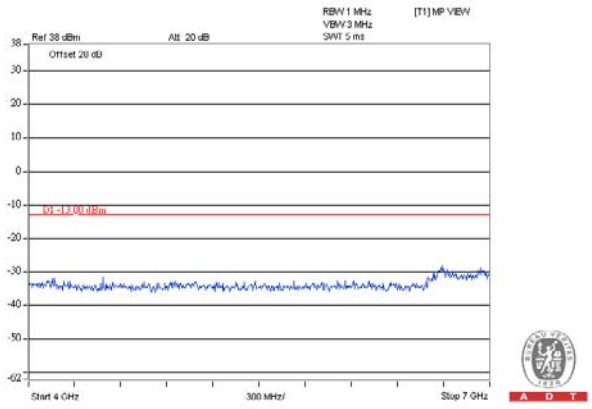
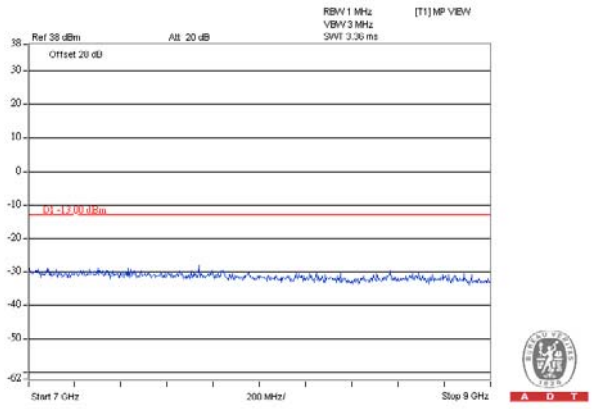
GSM	
Channel 189	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~4GHz
	
Frequency Range : 4GHz~7GHz	Frequency Range : 7GHz~9GHz
	

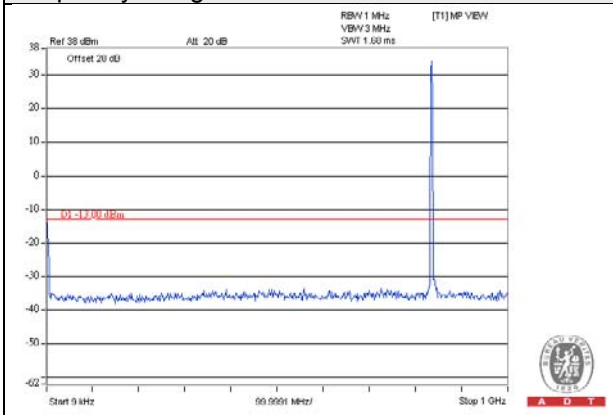
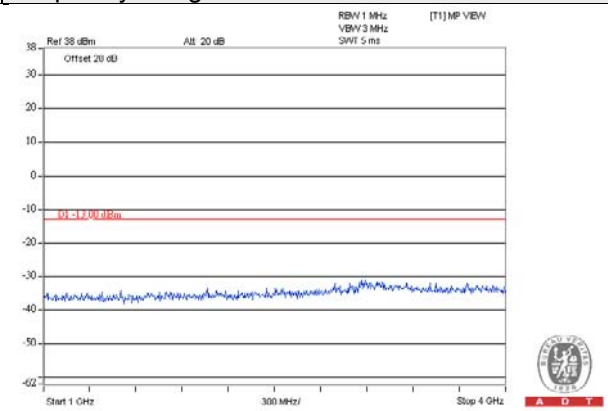
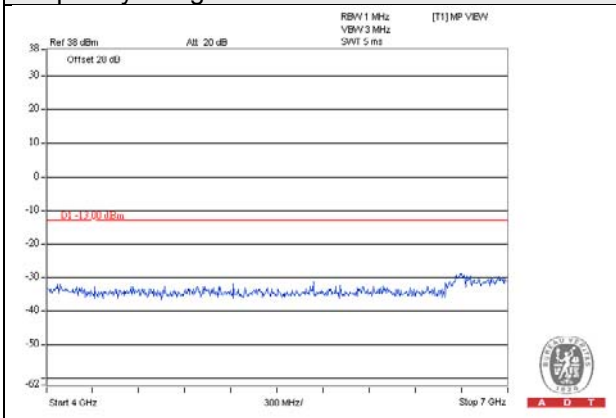
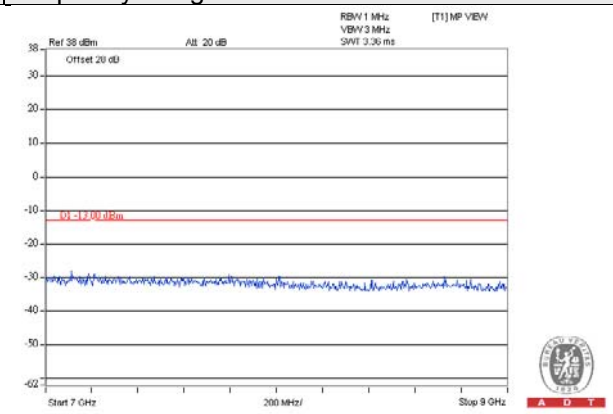
GSM	
Channel 251	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~4GHz
	
Frequency Range : 4GHz~7GHz	Frequency Range : 7GHz~9GHz
	

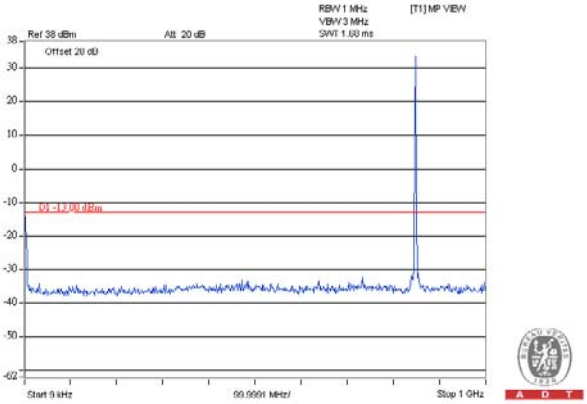
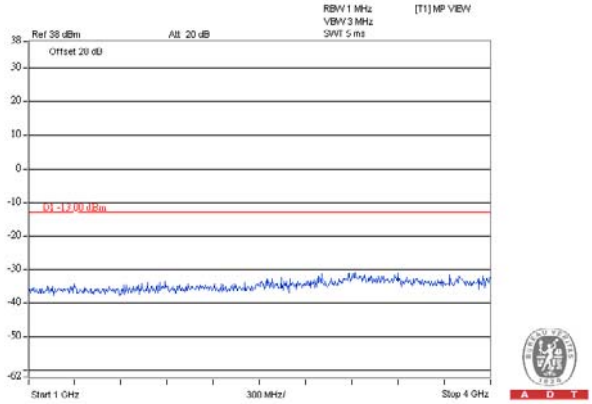
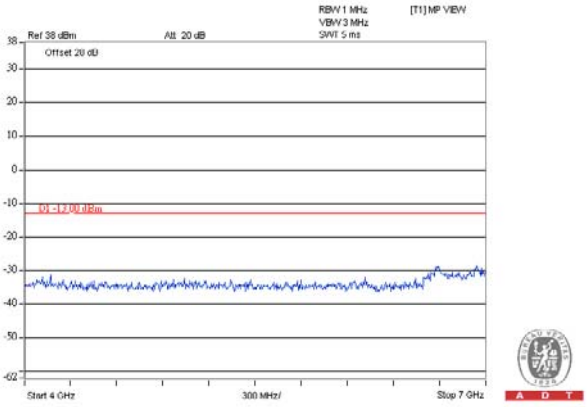
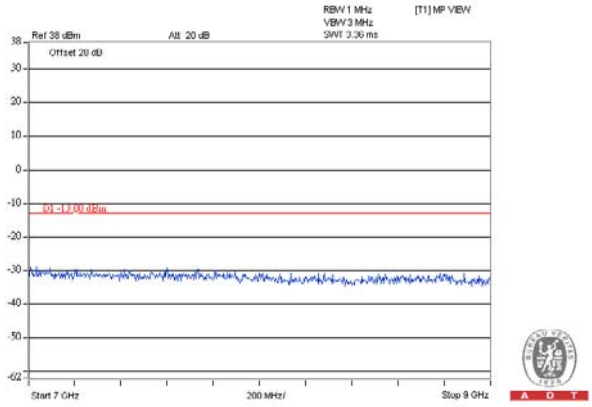
GPRS	
Channel 128	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~4GHz
	
Frequency Range : 4GHz~7GHz	Frequency Range : 7GHz~9GHz
	

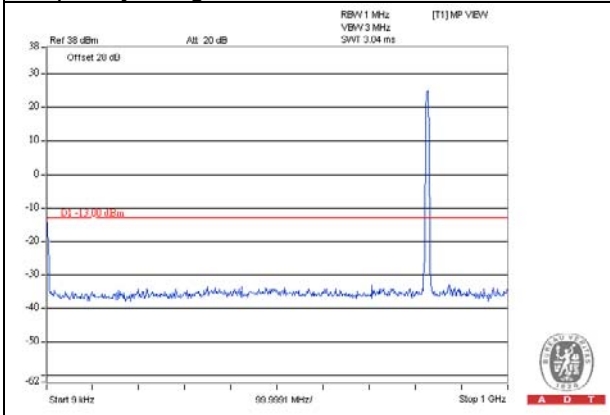
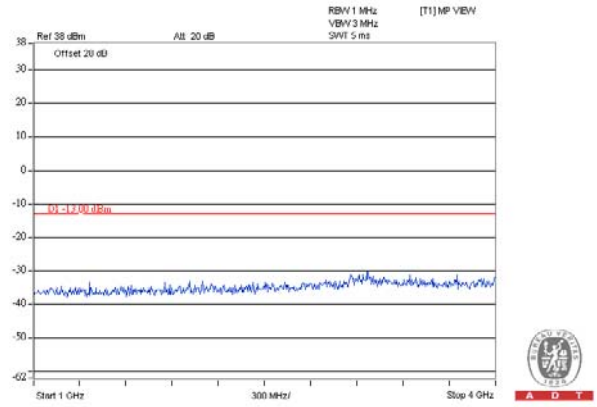
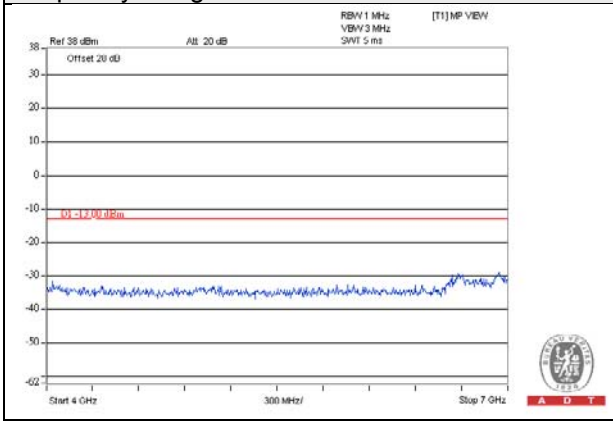
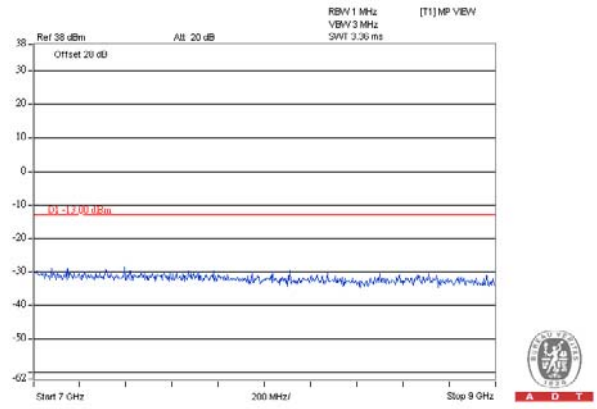
GPRS	
Channel 189	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~4GHz
	
Frequency Range : 4GHz~7GHz	Frequency Range : 7GHz~9GHz
	

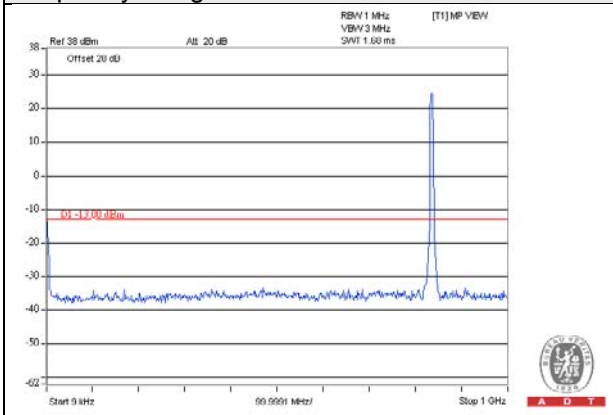
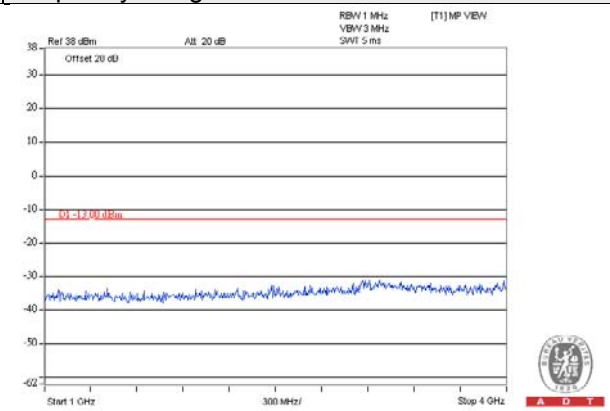
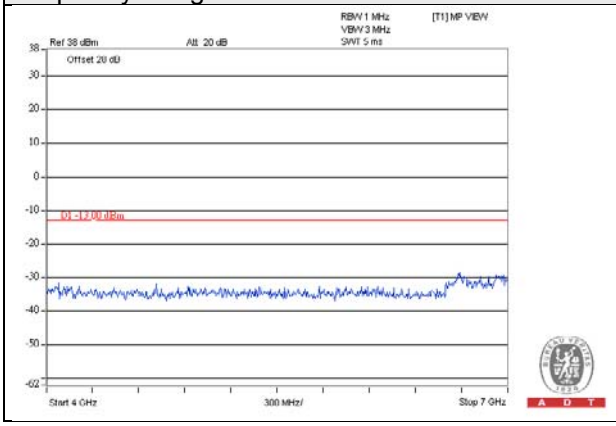
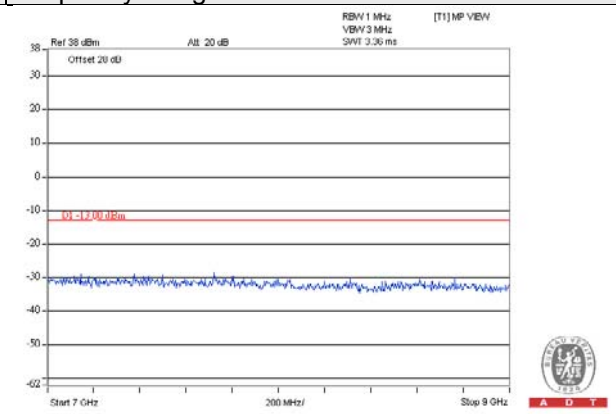
GPRS	
Channel 251	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~4GHz
	
Frequency Range : 4GHz~7GHz	Frequency Range : 7GHz~9GHz
	

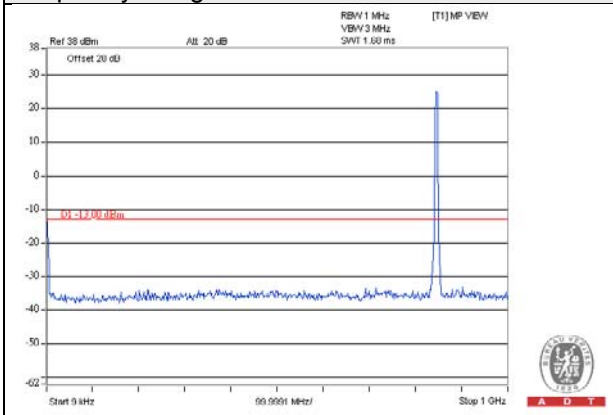
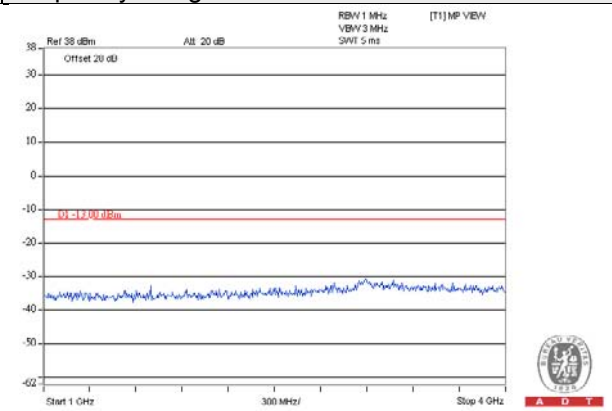
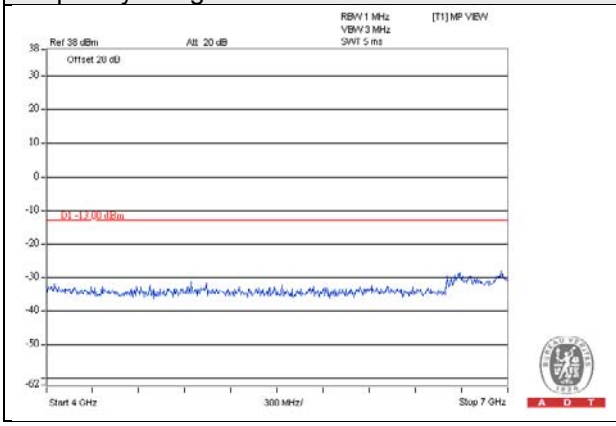
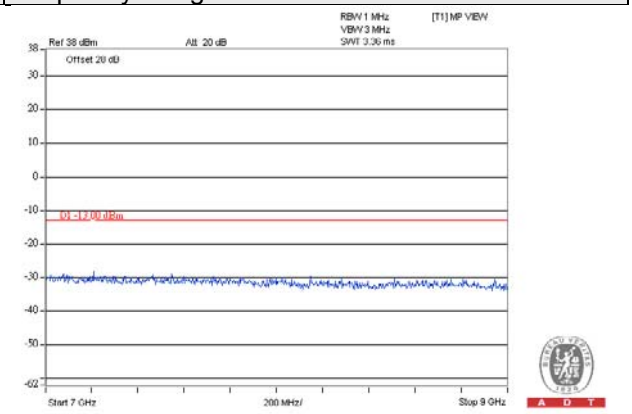
EDGE	
Channel 128	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~4GHz
	
Frequency Range : 4GHz~7GHz	Frequency Range : 7GHz~9GHz
	

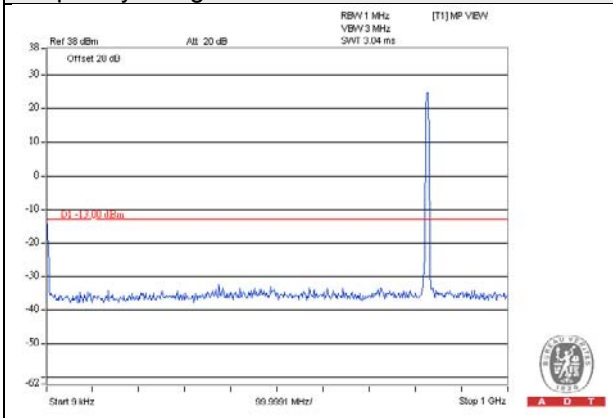
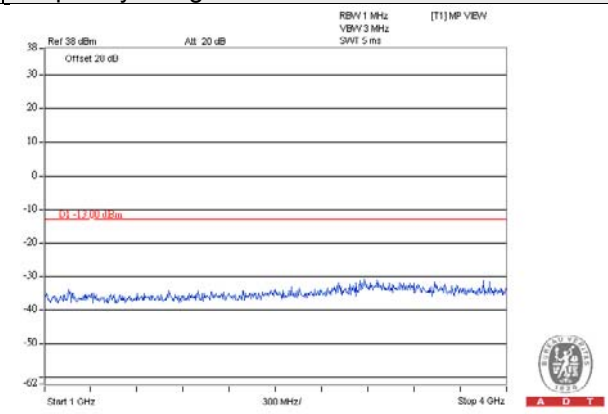
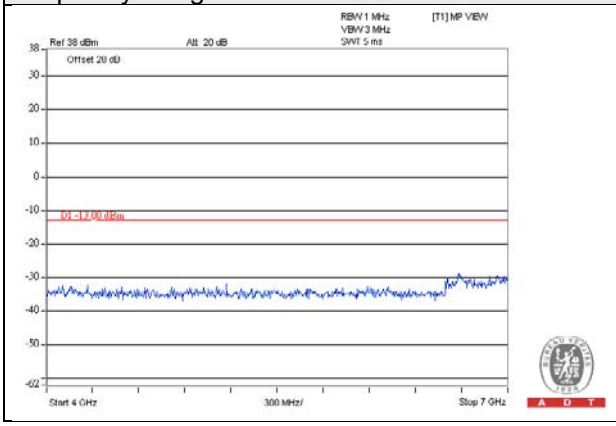
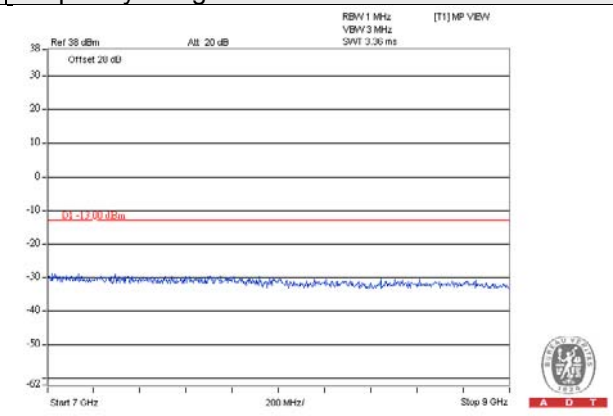
EDGE	
Channel 189	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~4GHz
	
Frequency Range : 4GHz~7GHz	Frequency Range : 7GHz~9GHz
	

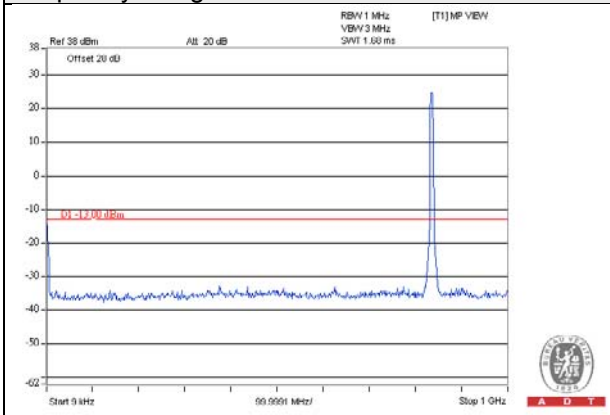
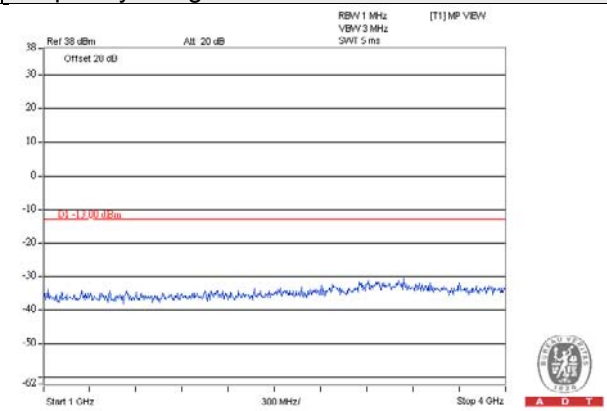
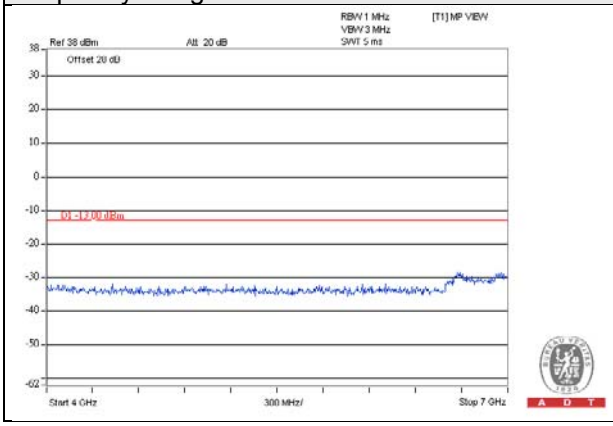
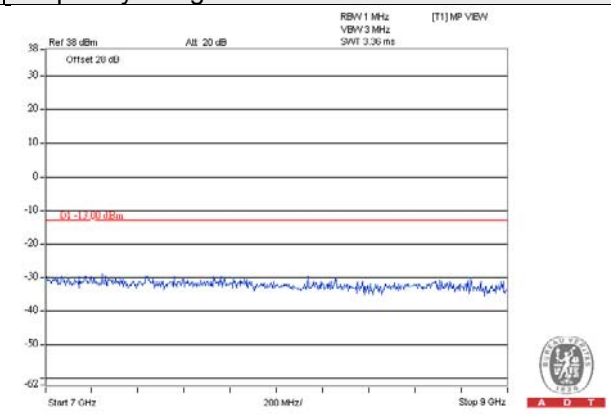
EDGE	
Channel 251	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~4GHz
	
Frequency Range : 4GHz~7GHz	Frequency Range : 7GHz~9GHz
	

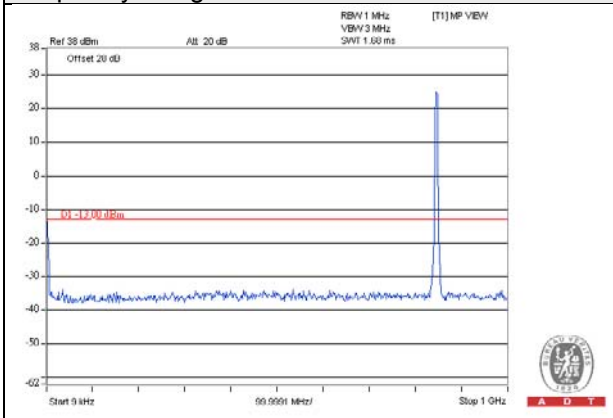
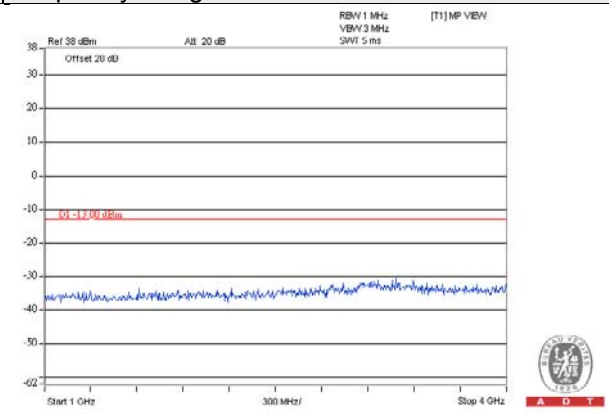
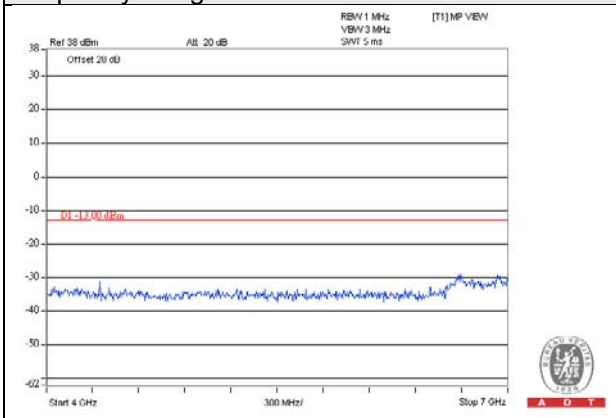
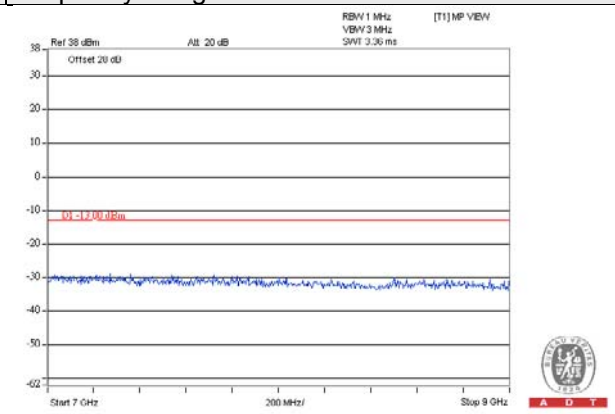
WCDMA	
Channel 4132	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~4GHz
	
Frequency Range : 4GHz~7GHz	Frequency Range : 7GHz~9GHz
	

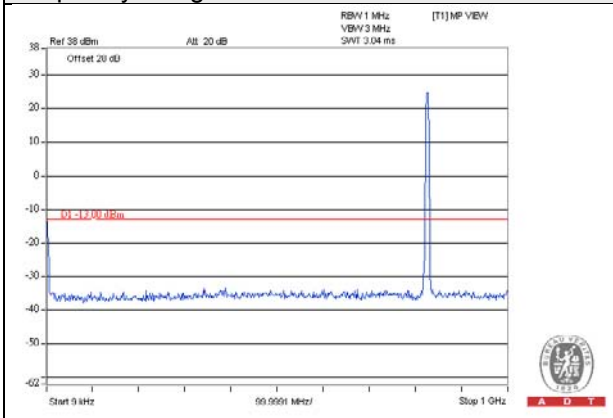
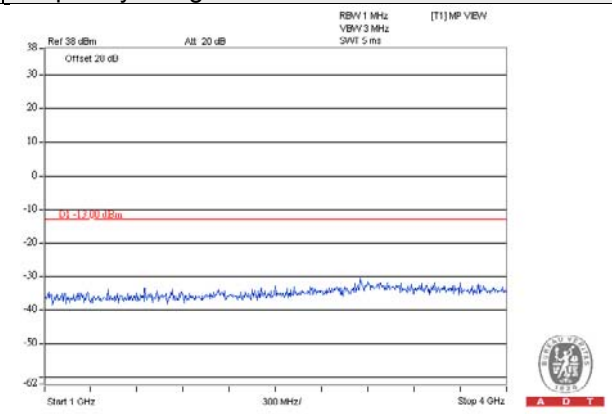
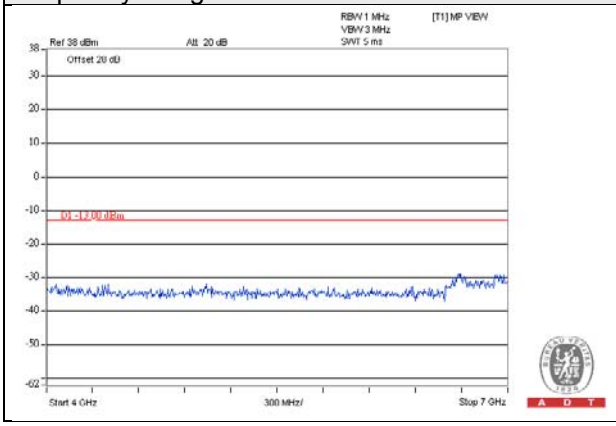
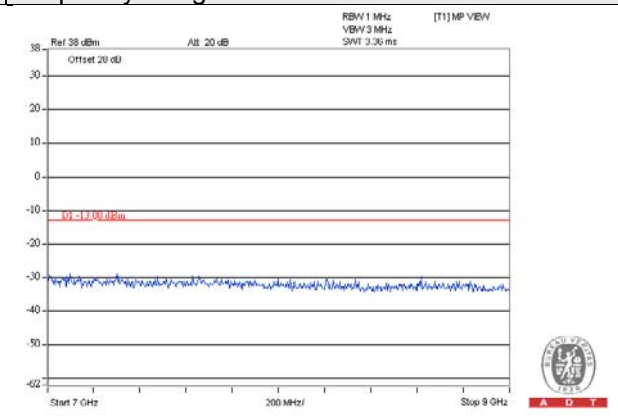
WCDMA	
Channel 4182	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~4GHz
	
Frequency Range : 4GHz~7GHz	Frequency Range : 7GHz~9GHz
	

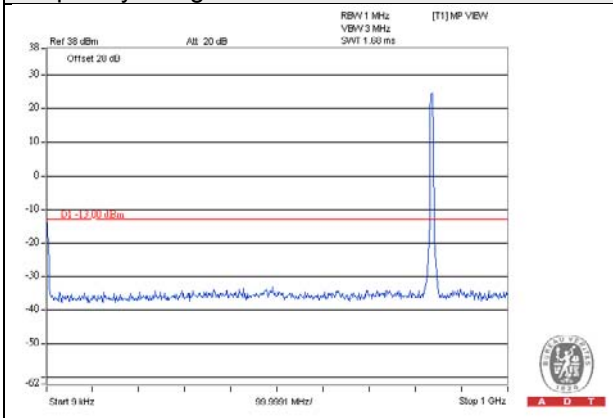
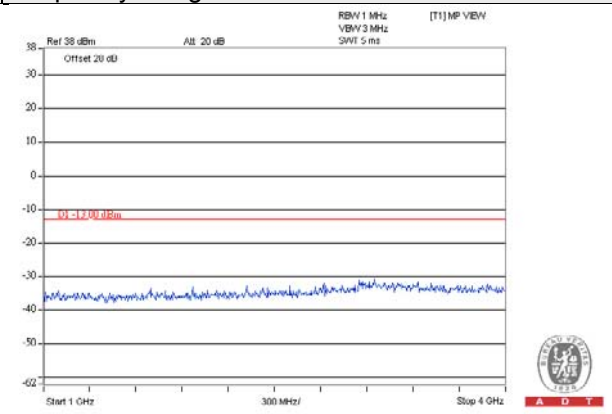
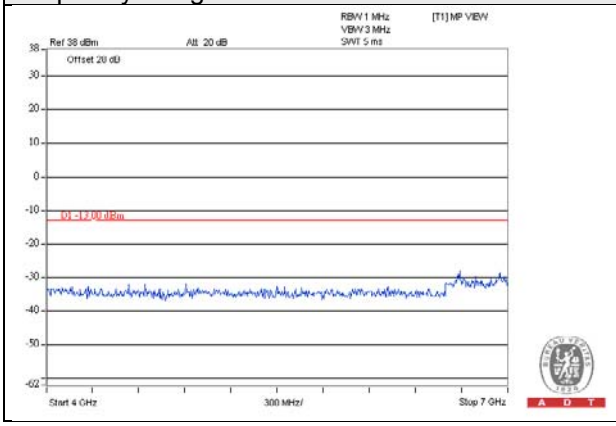
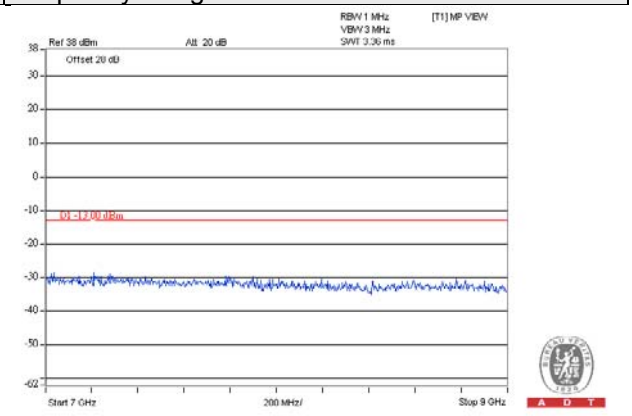
WCDMA	
Channel 4233	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~4GHz
	
Frequency Range : 4GHz~7GHz	Frequency Range : 7GHz~9GHz
	

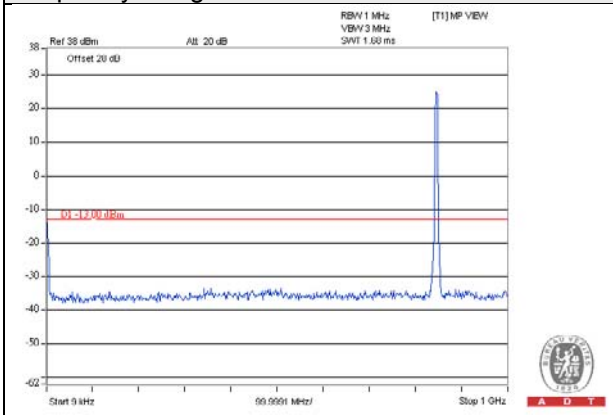
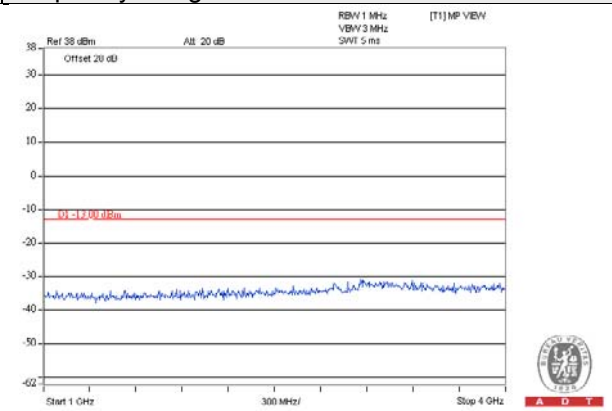
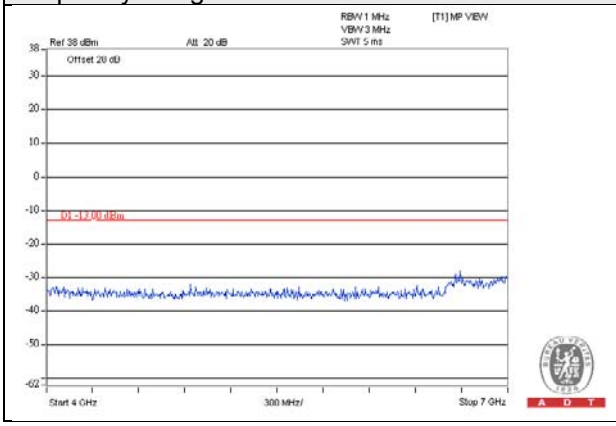
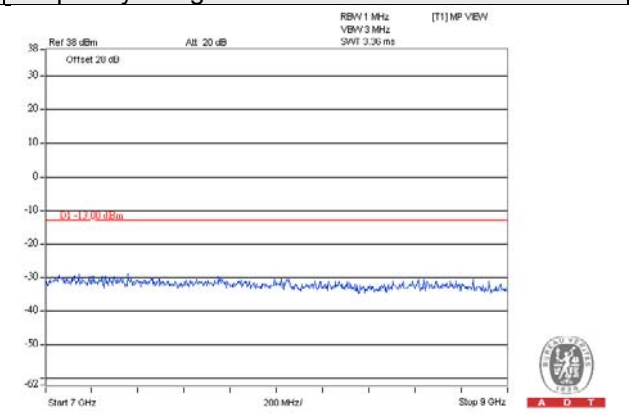
HSDPA	
Channel 4132	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~4GHz
	
Frequency Range : 4GHz~7GHz	Frequency Range : 7GHz~9GHz
	

HSDPA	
Channel 4182	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~4GHz
	
Frequency Range : 4GHz~7GHz	Frequency Range : 7GHz~9GHz
	

HSDPA	
Channel 4233	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~4GHz
	
Frequency Range : 4GHz~7GHz	Frequency Range : 7GHz~9GHz
	

HSUPA	
Channel 4132	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~4GHz
	
Frequency Range : 4GHz~7GHz	Frequency Range : 7GHz~9GHz
	

HSUPA	
Channel 4182	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~4GHz
	
Frequency Range : 4GHz~7GHz	Frequency Range : 7GHz~9GHz
	

HSUPA	
Channel 4233	
Frequency Range : 9kHz~1GHz	Frequency Range : 1GHz~4GHz
	
Frequency Range : 4GHz~7GHz	Frequency Range : 7GHz~9GHz
	

4.7 Radiated Emission Measurement

4.7.1 Limits of Radiated Emission Measurement

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

4.7.2 Test Procedure

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

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

c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.

d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15dBi.

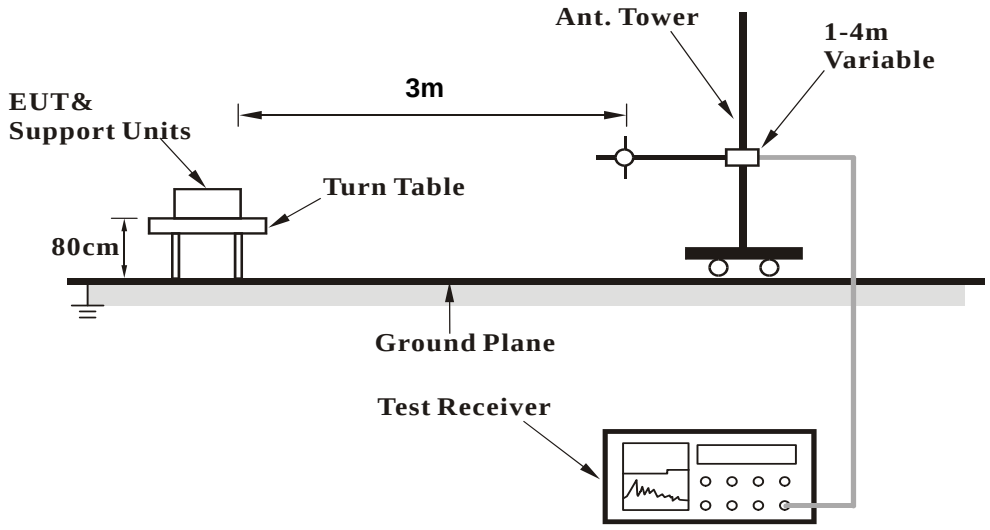
NOTE: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

4.7.3 Deviation from Test Standard

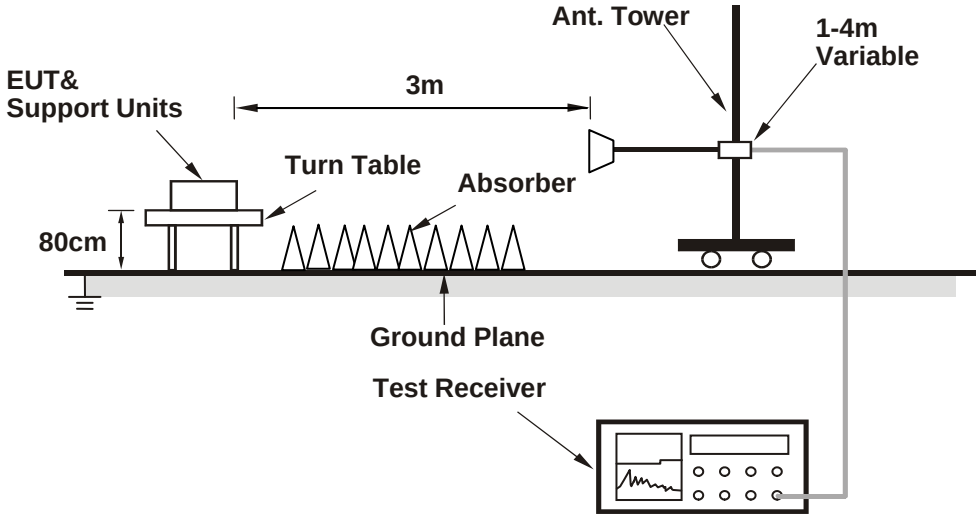
No deviation.

4.7.4 Test Setup

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



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

4.7.5 Test Results

BELOW 1GHz

GSM:

Mode	TX channel 189	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	39.72	-62.10	-51.47	-10.93	-62.40	-13.00	-49.40
2	156.35	-53.42	-60.85	0.19	-60.66	-13.00	-47.66
3	257.43	-60.11	-73.09	5.37	-67.72	-13.00	-54.72
4	366.29	-59.50	-69.23	5.21	-64.02	-13.00	-51.02
5	700.64	-67.35	-71.42	5.24	-66.18	-13.00	-53.18
6	**869.76**	**-33.49**	**-32.22**	**3.95**	**-28.27**	**-13.00**	**-15.27**
Antenna Polarity & Test Distance: Vertical at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	156.35	-56.48	-61.08	0.19	-60.89	-13.00	-47.89
2	249.66	-61.95	-68.38	5.40	-62.98	-13.00	-49.98
3	399.34	-63.89	-71.69	5.28	-66.41	-13.00	-53.41
4	601.50	-65.45	-68.05	4.44	-63.61	-13.00	-50.61
5	700.64	-66.72	-67.68	5.24	-62.44	-13.00	-49.44
6	869.76	-41.44	-39.44	3.95	-35.49	-13.00	-22.49

Remarks:

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

WCDMA:

Mode	TX channel 4182	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-51.12	-38.04	-12.18	-50.22	-13.00	-37.22
2	41.66	-60.54	-48.49	-10.61	-59.10	-13.00	-46.10
3	154.41	-54.30	-61.57	0.09	-61.48	-13.00	-48.48
4	257.43	-59.97	-72.95	5.37	-67.58	-13.00	-54.58
5	370.18	-61.30	-70.65	5.21	-65.44	-13.00	-52.44
6	700.64	-67.12	-71.19	5.24	-65.95	-13.00	-52.95
Antenna Polarity & Test Distance: Vertical at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	59.16	-46.68	-48.07	-7.78	-55.85	-13.00	-42.85
2	156.35	-56.87	-61.47	0.19	-61.28	-13.00	-48.28
3	199.12	-59.00	-68.11	5.35	-62.76	-13.00	-49.76
4	259.38	-63.18	-69.18	5.35	-63.83	-13.00	-50.83
5	700.64	-65.27	-66.23	5.24	-60.99	-13.00	-47.99
6	757.01	-67.09	-66.23	4.55	-61.68	-13.00	-48.68

ABOVE 1GHz

GSM:

Mode	TX channel 128	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1648.40	-47.60	-51.10	5.50	-45.60	-13.00	-32.60
2	3296.80	-64.50	-62.50	6.90	-55.60	-13.00	-42.60
Antenna Polarity & Test Distance: Vertical at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1648.40	-36.90	-39.10	5.50	-33.60	-13.00	-20.60
2	3296.80	-60.20	-58.60	6.90	-51.70	-13.00	-38.70

Remarks:

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

Mode	TX channel 189	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1672.80	-46.80	-50.00	5.50	-44.50	-13.00	-31.50
2	3345.60	-65.20	-63.30	6.90	-56.40	-13.00	-43.40
Antenna Polarity & Test Distance: Vertical at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1672.80	-38.20	-40.30	5.50	-34.80	-13.00	-21.80
2	3345.60	-62.30	-60.70	6.90	-53.80	-13.00	-40.80

Remarks:

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

Mode	TX channel 251	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1697.60	-49.10	-52.20	5.60	-46.60	-13.00	-33.60
2	3395.20	-63.00	-61.00	7.00	-54.00	-13.00	-41.00
Antenna Polarity & Test Distance: Vertical at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1697.60	-37.90	-39.70	5.60	-34.10	-13.00	-21.10
2	3395.20	-61.00	-59.30	7.00	-52.30	-13.00	-39.30

Remarks:

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

WCDMA:

Mode	TX channel 4132	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1652.80	-52.80	-56.30	5.50	-50.80	-13.00	-37.80
2	3305.60	-63.00	-60.90	6.80	-54.10	-13.00	-41.10
Antenna Polarity & Test Distance: Vertical at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1652.80	-57.20	-59.50	5.50	-54.00	-13.00	-41.00
2	3305.60	-66.00	-64.40	6.80	-57.60	-13.00	-44.60

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

Mode	TX channel 4182	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1682.80	-50.80	-53.90	5.50	-48.40	-13.00	-35.40
2	3345.60	-63.60	-61.70	6.90	-54.80	-13.00	-41.80
Antenna Polarity & Test Distance: Vertical at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1682.80	-42.80	-44.70	5.50	-39.20	-13.00	-26.20
2	3345.60	-62.80	-61.10	6.90	-54.20	-13.00	-41.20

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

Mode	TX channel 4233	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Jones Chang		

Antenna Polarity & Test Distance: Horizontal at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1693.20	-52.00	-55.10	5.60	-49.50	-13.00	-36.50
2	3386.40	-63.20	-61.40	7.00	-54.40	-13.00	-41.40
Antenna Polarity & Test Distance: Vertical at 3 m							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	ERP (dBm)	Limit (dBm)	Margin (dB)
1	1693.20	-42.40	-44.40	5.60	-38.80	-13.00	-25.80
2	3386.40	-61.90	-60.30	7.00	-53.30	-13.00	-40.30

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

5 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

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

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.

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