FCC Test Report

(PART 24)

Report No.: RF130805C06F-1

FCC ID: RID-TR300A

Test Model: TR-300A (Refer to item 3.1 for more details)

Received Date: Apr. 29, 2015

Test Date: Jul. 15 ~ Aug. 11, 2015

Issued Date: Aug. 17, 2015

Applicant: GlobalSat WorldCom Corporation

Address: 16F., No.186, Jian 1st Rd., Zhonghe Dist., New Taipei City 235, Taiwan (R.O.C.)

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.

Test Location: No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

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Table of Contents

Release Control Record **3**

1 Certificate of Conformity **4**

2 Summary of Test Results **5**

2.1 Measurement Uncertainty 5
2.2 Test Site And Instruments 6

3 General Information **7**

3.1 General Description of EUT 7
3.2 Configuration Of System Under Test 8
3.2.1 Description Of Support Units 9
3.3 Test Mode Applicability and Tested Channel Detail 10
3.4 EUT Operating Conditions 11
3.5 General Description of Applied Standards 11

4 Test Types and Results **12**

4.1 Output Power Measurement 12
4.1.1 Limits of Output Power Measurement 12
4.1.2 Test Procedures 12
4.1.3 Test Setup 13
4.1.4 Test Results 14
4.2 Frequency Stability Measurement 18
4.2.1 Limits of Frequency Stabiliity Measurement 18
4.2.2 Test Procedure 18
4.2.3 Test Setup 18
4.2.4 Test Results 19
4.3 Occupied Bandwidth Measurement 20
4.3.1 Test Procedure 20
4.3.2 Test Setup 20
4.3.3 Test Result 21
4.4 Band Edge Measurement 22
4.4.1 Limits of Band Edge Measurement 22
4.4.2 Test Setup 22
4.4.3 Test Procedures 22
4.4.4 Test Results 23
4.5 Peak To Average Ratio 25
4.5.1 Limits of Peak To Average Ratio Measurement 25
4.5.2 Test Setup 25
4.5.3 Test Procedures 25
4.5.4 Test Results 26
4.6 Conducted Spurious Emissions 27
4.6.1 Limits of Conducted Spurious Emissions Measurement 27
4.6.2 Test Setup 27
4.6.3 Test Procedure 27
4.6.4 Test Results 28
4.7 Radiated Emission Measurement 43
4.7.1 Limits of Radiated Emission Measurement 43
4.7.2 Test Procedure 43
4.7.3 Deviation from Test Standard 43
4.7.4 Test Setup 44
4.7.5 Test Results 45

5 Pictures of Test Arrangements **60**

Appendix – Information on the Testing Laboratories **61**

Release Control Record

Issue No.	Description	Date Issued
RF130805C06F-1	Original release	Aug. 17, 2015

1 Certificate of Conformity

Product: Personal Tracker

Brand: GlobalSat (Refer to item 3.1 for more details)

Test Model: TR-300A (Refer to item 3.1 for more details)

Sample Status: ENGINEERING SAMPLE

Applicant: GlobalSat WorldCom Corporation

Test Date: Jul. 15 ~ Aug. 11, 2015

Standards: FCC Part 24, Subpart E

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:** Aug. 17, 2015

Pettie Chen / Senior Specialist

Approved by : Jeremy . Lin , **Date:** Aug. 17, 2015

Jeremy Lin / Project Engineer

2 Summary of Test Results

Applied Standard: FCC Part 24 & Part 2			
FCC Clause	Test Item	Result	Remarks
2.1046 24.232	Effective Radiated Power	PASS	Meet the requirement of limit.
2.1046 24.232(d)	Peak To Average Ratio	PASS	Meet the requirement of limit.
2.1055 24.235	Frequency Stability	PASS	Meet the requirement of limit.
2.1049 24.238(b)	Occupied Bandwidth	PASS	Meet the requirement of limit.
24.238(b)	Band Edge Measurements	PASS	Meet the requirement of limit.
2.1051 24.238	Conducted Spurious Emissions	PASS	Meet the requirement of limit.
2.1053 24.238	Radiated Spurious Emissions	PASS	Meet the requirement of limit. Minimum passing margin is -24.4dB at 80.44MHz.

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	3.63 dB
	200MHz ~1000MHz	3.64 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	ESCS30	100289	Dec. 01, 2014	Nov. 30, 2015
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Mar. 30, 2015	Mar. 29, 2016
BILOG Antenna SCHWARZBECK	VULB9168	9168-156	Feb. 06, 2015	Feb. 05, 2016
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1169	Feb. 09, 2015	Feb. 08, 2016
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Feb. 09, 2015	Feb. 08, 2016
Preamplifier Agilent	8447D	2944A10629	Oct. 18, 2014	Oct. 17, 2015
Preamplifier Agilent	8449B	3008A01961	Oct. 18, 2014	Oct. 17, 2015
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	MWX322+MWX 2211308S0295	Nov. 06, 2014	Nov. 05, 2015
RF signal cable Worken	8D-FB	NA	Mar. 22, 2015	Mar. 21, 2016
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower &Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Turn Table Controller BV ADT	SC100	SC93021705	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	Personal Tracker
Brand	GlobalSat (Refer to Note for more details)
Test Model	TR-300A (Refer to Note for more details)
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	3.7Vdc (Battery) 5.0Vdc (Cradle or Charging Clip)
Modulation Type	GSM, GPRS, EDGE: GMSK WCDMA, HSDPA: BPSK
Modulation Technology	GSM, GPRS, EDGE: 1850.2MHz ~ 1909.8MHz WCDMA, HSDPA: 1852.4MHz ~ 1907.6MHz
Max. EIRP Power	GSM: 0.2398W (23.8dBm) EDGE: 0.0933W (19.7dBm) WCDMA: 0.05623W (17.5dBm)
Emission Designator	GSM: 255KGXW GPRS: 255KG7W EDGE: 255KG7W WCDMA: 4M22F9W
Multi-Slots Class	10
WCDMA Release Version	5
Antenna Type	PIFA antenna with -7.5dBi gain
Accessory Device	Cradle, Charging Clip, Neck Lanyard, Belt Pouch
Data Cable Supplied	1.05m non-shielded USB cable without core 1.00m non-shielded USB cable without core

Note:

1. The following models are provided to this EUT.

Brand	Model	Description
GlobalSat	TR-300A	Main model
GlobalSat	TR-300AE	The color is different from TR-300A for marketing purpose
SecuraTrac	TR300-MDS	Speaker with black paint, and the appearance's color is different from TR-300A
GlobalSat	TR-300AR	The color is different from TR300-MDS for marketing purpose

2. The EUT is powered by the following battery, adapters, cradle and charging clip.

Battery	
Brand:	Hangzhou Future Power Technology CO., LTD
Model:	FT503548PA
Input:	3.7V, 820mAh

Adapter 1	
Brand:	PHIHONG
Model:	PSAI05R-050Q
Input:	100-240V, 50-60Hz, 0.3A 12-17VA
Output:	5Vdc, 1A

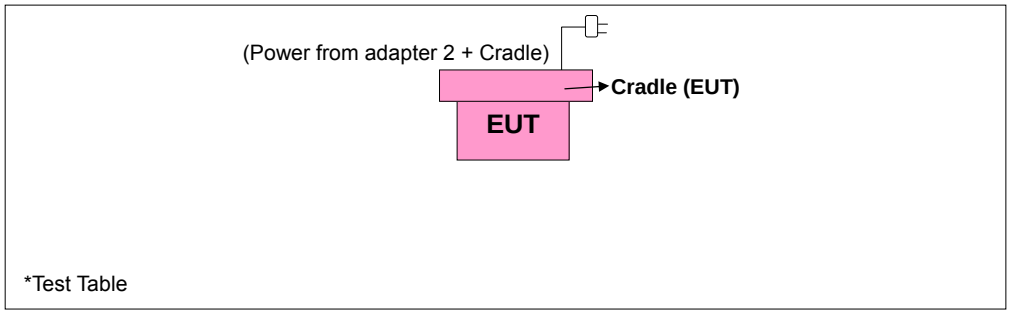
Adapter 2	
Brand:	Powertron Electronics Corp.
Model:	PA 1005-050SUB100
Input:	100-240V, 50-60Hz, 0.3A
Output:	5Vdc, 1A

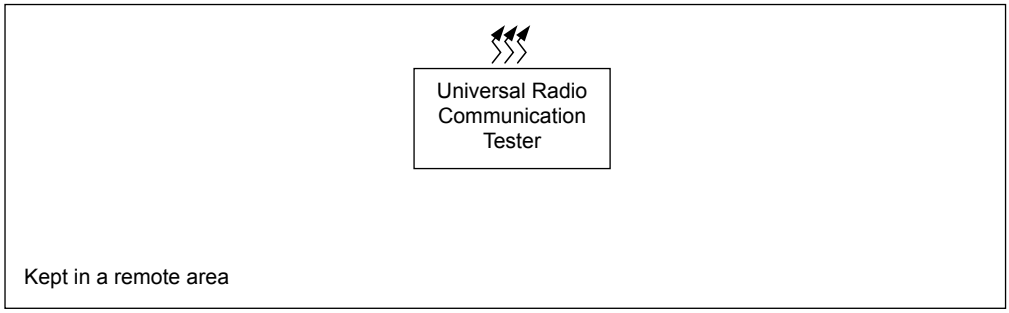
Cradle	
Brand:	GlobalSat
Model:	TR-313
Rating:	5Vdc, 0.5A

Charging Clip	
Brand:	GlobalSat
Model:	TR-300
Rating:	5Vdc, 0.5A

*After pretesting, “Power from adapter 2 + Cradle” was the worst for the final tests.

3.2 Configuration Of System Under Test





3.2.1 Description Of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1	Universal Radio Communication Tester	R&S	CMU200	117260	NA

NO.	Signal Cable Description Of The Above Support Units
1	NA

NOTE:

1. Item 1 acted as a communication partner to transfer data.

3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates 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
-	EIRP	512 to 810	512, 661, 810	GSM, EDGE
-	Frequency Stability	512 to 810	661	GSM
-	Occupied Bandwidth	512 to 810	512, 661, 810	GSM, GPRS, EDGE
-	Band Edge	512 to 810	512, 810	GSM, GPRS, EDGE
-	Peak To Average Ratio	512 to 810	512, 661, 810	GSM, GPRS, EDGE
-	Condcudeted Emission	512 to 810	512, 661, 810	GSM, GPRS, EDGE
-	Radiated Emission Below 1GHz	512 to 810	512, 661, 810	GSM, EDGE
-	Radiated Emission Above 1GHz	512 to 810	512, 661, 810	GSM, EDGE

WCDMA MODE

EUT Configure Mode	Test Item	Available Channel	Tested Channel	Mode
-	EIRP	9262 to 9538	9262, 9400, 9538	WCDMA
-	Frequency Stability	9262 to 9538	9400	WCDMA
-	Occupied Bandwidth	9262 to 9538	9262, 9400, 9538	WCDMA, HSDPA
-	Band Edge	9262 to 9538	9262, 9538	WCDMA, HSDPA
-	Peak To Average Ratio	9262 to 9538	9262, 9400, 9538	WCDMA, HSDPA
-	Condcudeted Emission	9262 to 9538	9262, 9400, 9538	WCDMA, HSDPA
-	Radiated Emission Below 1GHz	9262 to 9538	9262, 9400, 9538	WCDMA
-	Radiated Emission Above 1GHz	9262 to 9538	9262, 9400, 9538	WCDMA

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
EIRP	25deg. C, 65%RH	120Vac, 60Hz	Tank Wu
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	Tank Wu
Radiated Emission	25deg. C, 65%RH	120Vac, 60Hz	Tank Wu

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 24

KDB 971168 D01 Power Meas License Digital Systems v02r02

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 2 watts e.i.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, GPRS 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

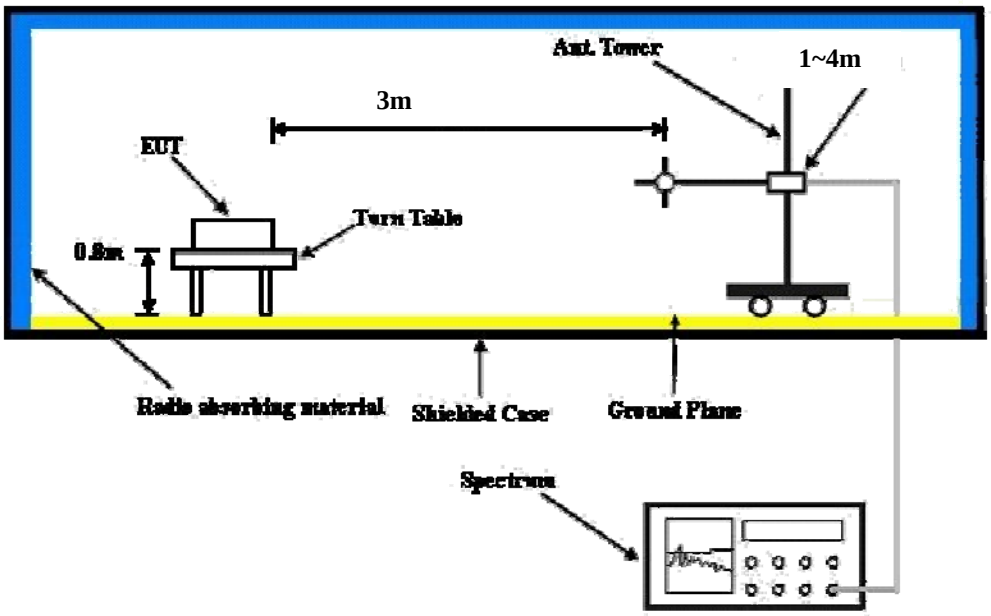
d. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15dBi.

Conducted Power Measurement:

The EUT was set up for the maximum power with GSM, GPRS & 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	GSM1900		
Channel	512	661	810
Frequency (MHz)	1850.2	1880.0	1909.8
GSM	**29.21**	28.75	28.19
GPRS 8	29.20	28.74	28.18
GPRS 10	27.65	27.19	26.63
GPRS 11	25.65	25.19	24.63
GPRS 12	27.52	27.06	26.50
DTM 9 (GPRS)	27.58	27.12	26.56
DTM 11 (GPRS)	25.58	25.12	24.56
EDGE 8 (MCS9)	24.60	24.14	23.58
EDGE 10 (MCS9)	24.59	24.13	23.57
EDGE 11 (MCS9)	23.58	23.12	22.56
EDGE 12 (MCS9)	22.59	22.13	21.57
DTM 9 (EDGE)	24.53	24.07	23.51
DTM 11 (EDGE)	23.55	23.09	22.53

Band	WCDMA II		
Channel	9262	9400	9538
Frequency (MHz)	1852.4	1880.0	1907.6
RMC 12.2K	21.26	21.08	**21.30**
HSDPA Subtest-1	21.14	20.96	21.18
HSDPA Subtest-2	21.23	21.05	21.27
HSDPA Subtest-3	21.21	21.03	21.25
HSDPA Subtest-4	21.14	20.96	21.18

EIRP Power (dBm)

For GSM Mode:

MODE	TX channel 512						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1850.20	-17.5	22.7	0.1	22.8	33.0	-10.2
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1850.20	-23.9	16.5	0.1	16.6	33.0	-16.4

MODE	TX channel 661						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-17.0	23.5	0.0	23.5	33.0	-9.5
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-25.5	15.1	0.0	15.1	33.0	-17.9

MODE	TX channel 810						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1909.80	-16.7	23.9	-0.1	23.8	33.0	-9.2
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1909.80	-25.4	15.4	-0.1	15.3	33.0	-17.7

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

For EDGE Mode:

MODE	TX channel 512						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1850.20	-21.6	18.6	0.1	18.7	33.0	-14.3
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1850.20	-28.3	12.1	0.1	12.2	33.0	-20.8

MODE	TX channel 661						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-20.9	19.6	0.0	19.6	33.0	-13.4
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-29.5	11.1	0.0	11.1	33.0	-21.9

MODE	TX channel 810						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1909.80	-20.8	19.8	-0.1	**19.7**	33.0	-13.3
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1909.80	-29.5	11.3	-0.1	11.2	33.0	-21.8

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

For WCDMA Mode:

MODE	TX channel 9262						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1852.40	-23.5	16.7	0.1	16.8	33.0	-16.2
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1852.40	-28.2	12.2	0.1	12.3	33.0	-20.7

MODE	TX channel 9400						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-23.1	17.4	0.0	17.4	33.0	-15.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1880.00	-28.8	11.8	0.0	11.8	33.0	-21.2

MODE	TX channel 9538						
Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1907.60	-23.1	17.6	-0.1	**17.5**	33.0	-15.5
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	1907.60	-29.7	11.1	-0.1	11.0	33.0	-22.0

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

4.2 Frequency Stability Measurement

4.2.1 Limits of Frequency Stabiliity Measurement

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

4.2.2 Test Procedure

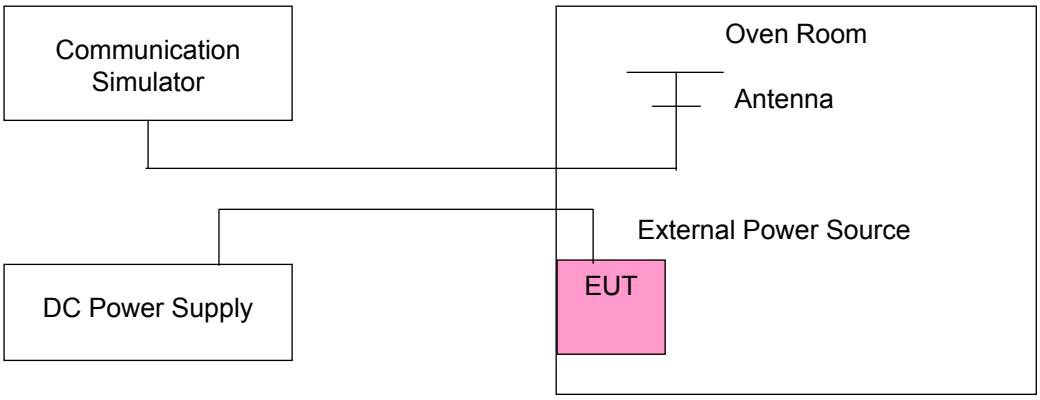
a. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.

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	
4.8	-0.007	-0.012	2.5
4.2	-0.007	-0.012	2.5
3.6	-0.008	-0.011	2.5

NOTE: The applicant defined the normal working voltage of the battery is from 3.6Vdc to 4.8Vdc.

Frequency Error vs. Temperature.

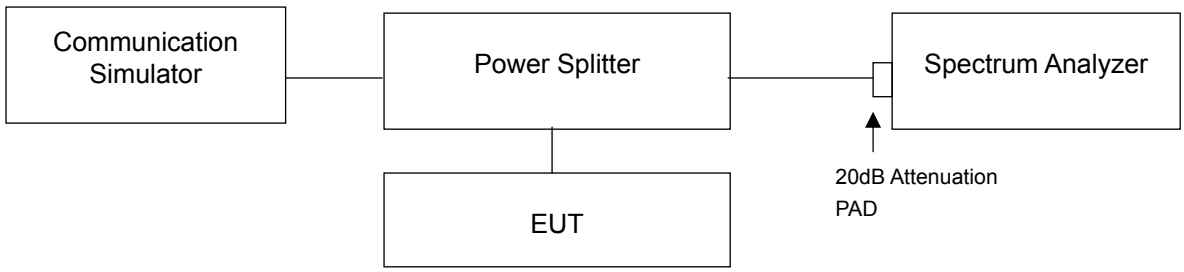
TEMP. (℃)	Frequency Error (ppm)		Limit (ppm)
	GSM	WCDMA	
60	-0.013	-0.022	2.5
50	-0.011	-0.021	2.5
40	-0.011	-0.018	2.5
30	-0.009	-0.015	2.5
20	-0.007	-0.012	2.5
10	-0.010	-0.016	2.5
0	-0.014	-0.020	2.5
-10	-0.016	-0.023	2.5
-20	-0.015	-0.022	2.5

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

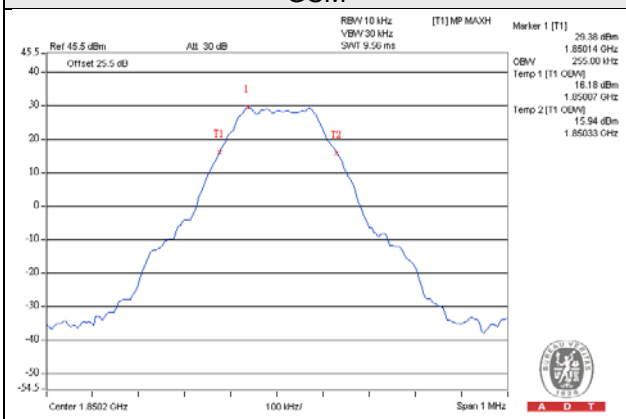


4.3.3 Test Result

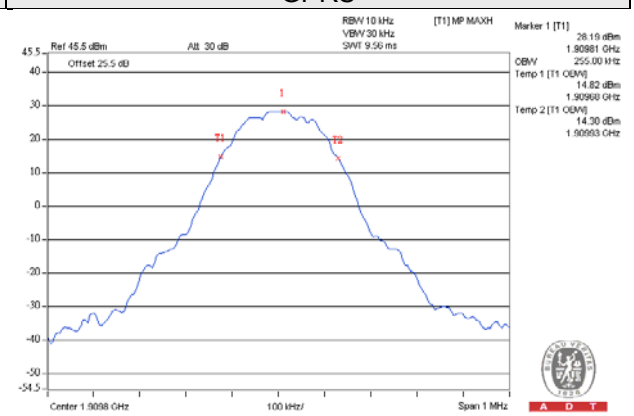
Channel	Frequency (MHz)	99% Occupied Bandwidth (kHz)			Channel	FREQ. (MHz)	99% Occupied Bandwidth (MHz)	
		GSM	GPRS	EDGE			WCDMA	HSDPA
512	1850.2	255.0	255.0	255.0	9262	1852.4	4.22	4.20
661	1880.0	255.0	255.0	255.0	9400	1880.0	4.18	4.25
810	1909.8	250.0	255.0	255.0	9538	1907.6	4.20	4.25

Spectrum Plot Of Worst Value

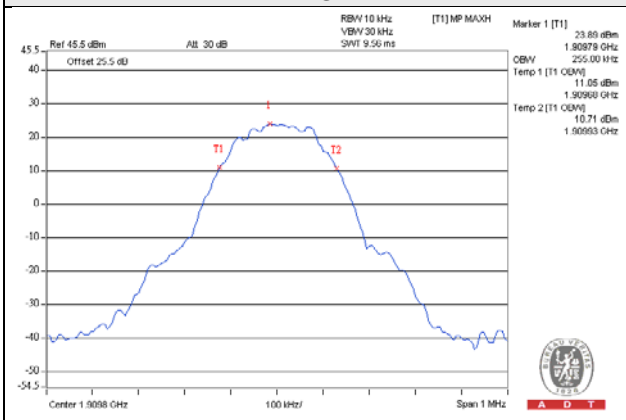
GSM



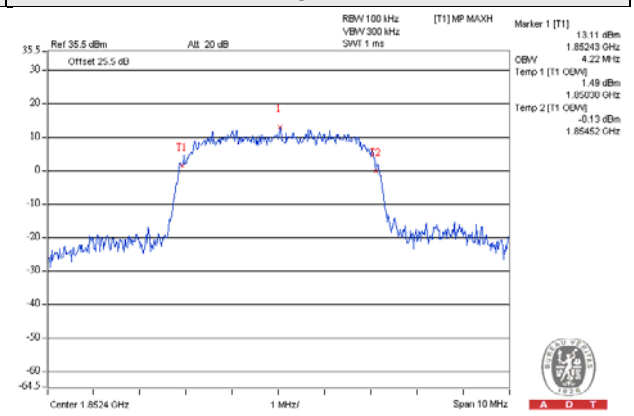
GPRS



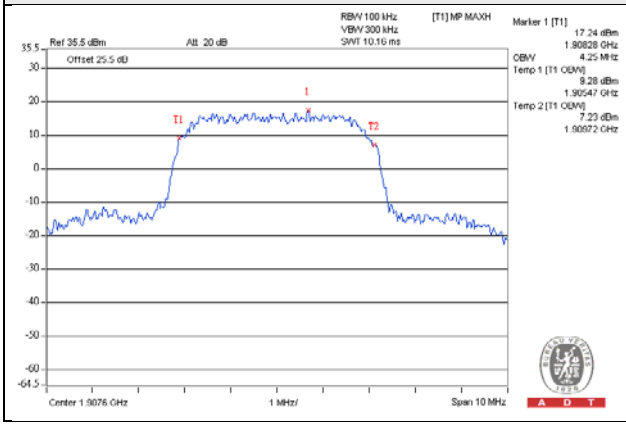
EDGE



WCDMA



HSDPA

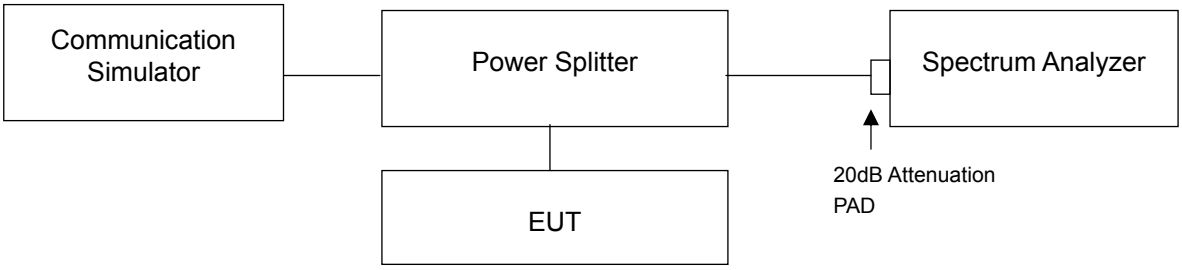


4.4 Band Edge Measurement

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

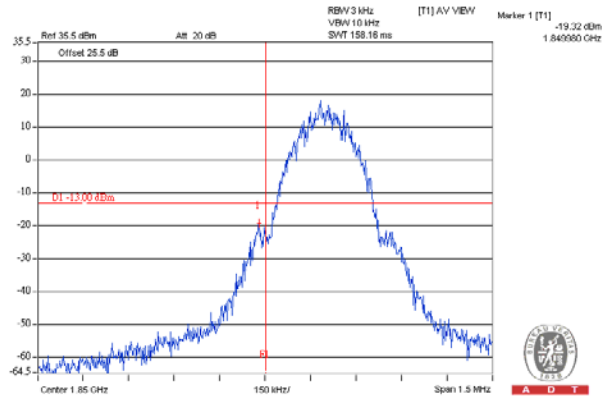
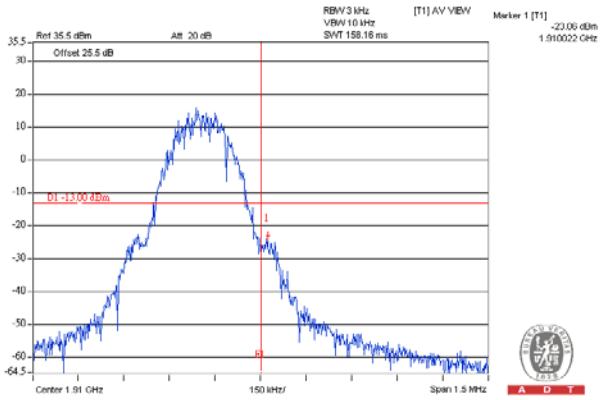
a. All measurements were done at low and high operational frequency range.

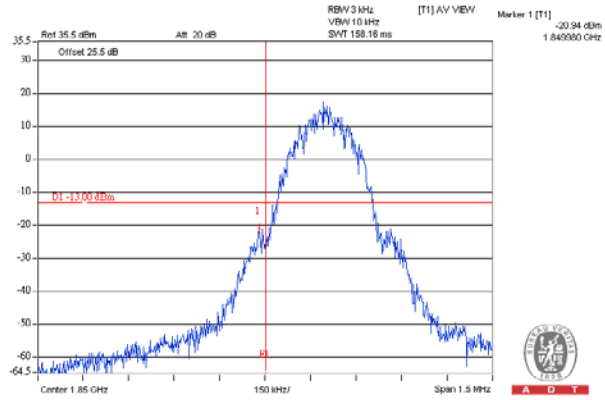
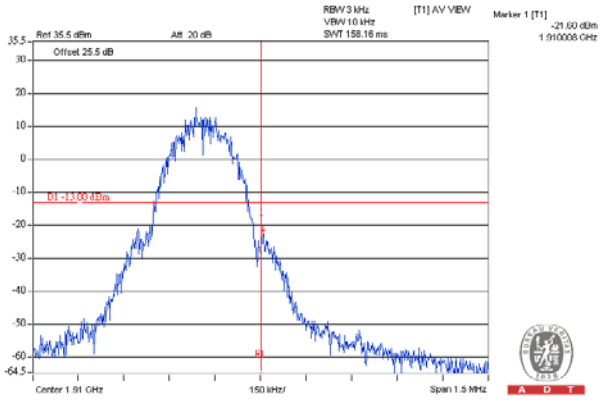
b. The center frequency of spectrum is the band edge frequency and span is 1.5MHz. RB of the spectrum is 3kHz and VB of the spectrum is 10kHz (GSM/GPRS/EDGE).

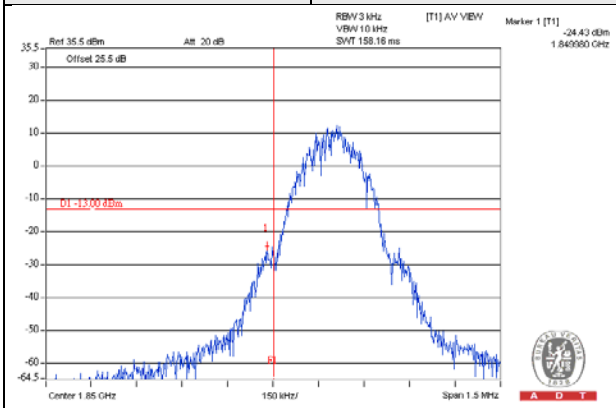
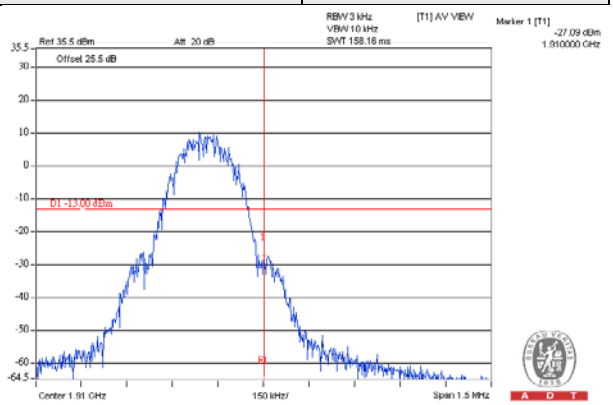
c. The center frequency of spectrum is the band edge frequency and span is 10MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (WCDMA/HSDPA).

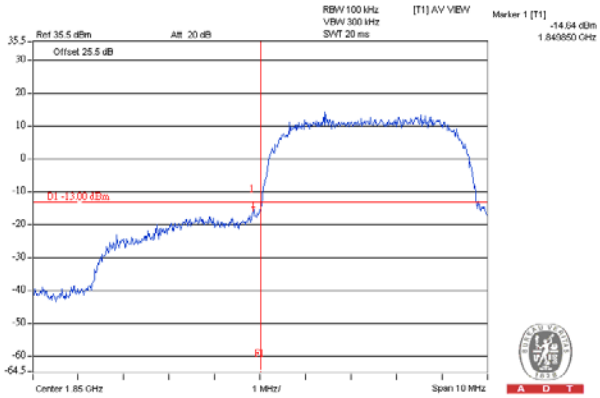
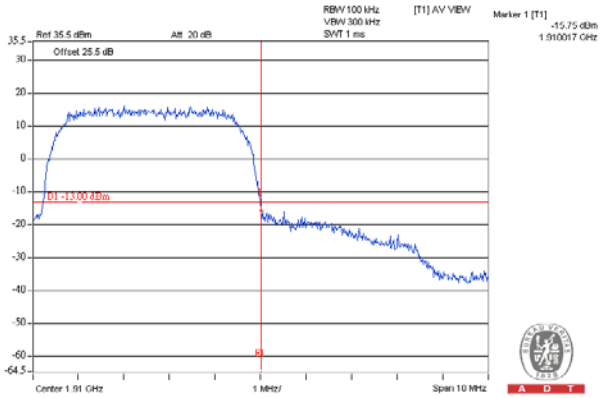
d. Record the max trace plot into the test report.

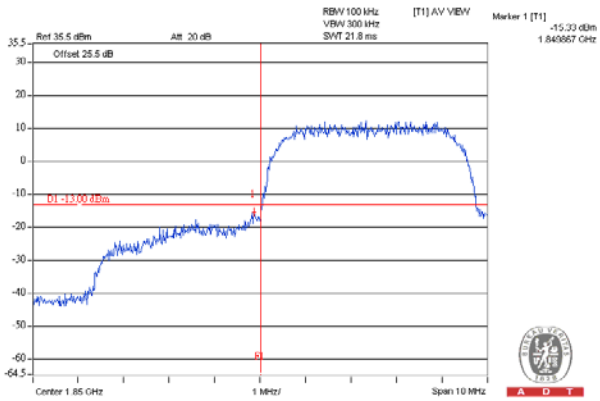
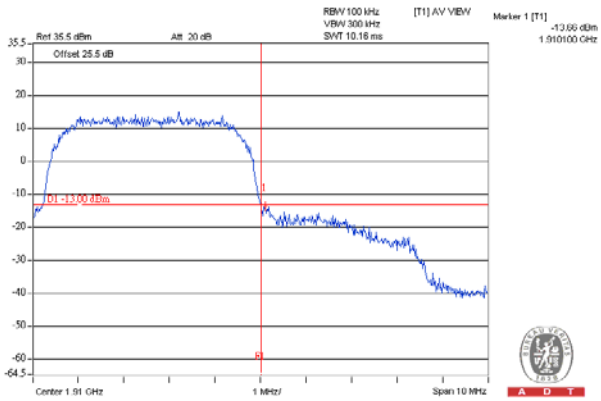
4.4.4 Test Results

GSM			
Channel	512	Channel	810
			

GPRS			
Channel	512	Channel	810
			

EDGE			
Channel	512	Channel	810
			

WCDMA			
Channel	9261	Channel	9538
			

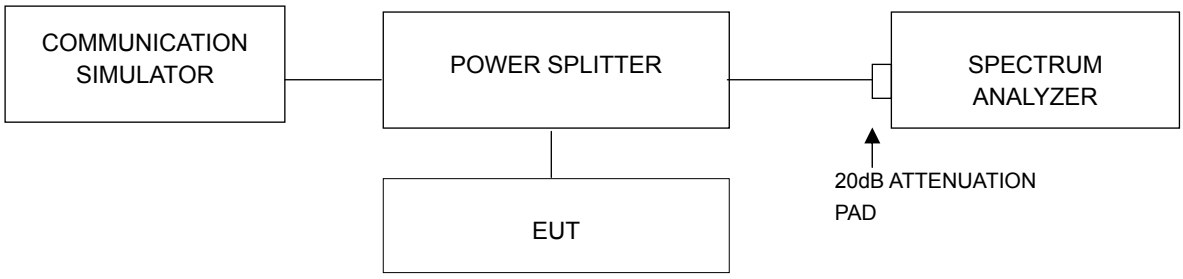
HSDPA			
Channel	9261	Channel	9538
			

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

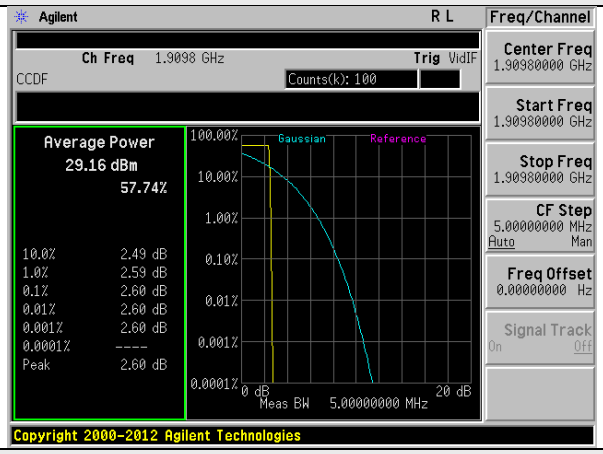
1. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
2. Set the number of counts to a value that stabilizes the measured CCDF curve;
3. Record the maximum PAPR level associated with a probability of 0.1%.

4.5.4 Test Results

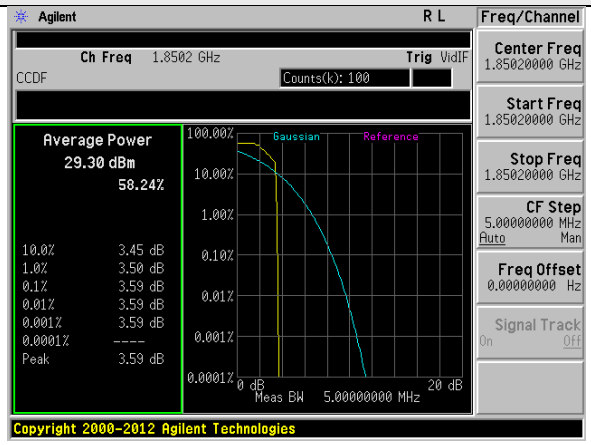
Channel	Frequency (MHz)	Peak To Average Ratio (dB)			Channel	Freq. (MHz)	Peak To Average Ratio (dB)	
		GSM	GPRS	EDGE			WCDMA	HSDPA
512	1850.2	2.25	3.59	3.47	9262	1852.4	2.59	2.46
661	1880.0	1.74	1.67	1.80	9400	1880.0	2.70	2.42
810	1909.8	2.60	2.59	1.67	9538	1907.6	2.61	2.39

Spectrum Plot Of Worst Value

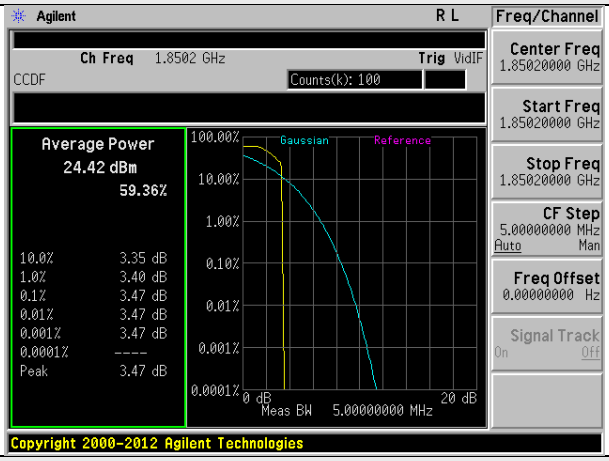
GSM



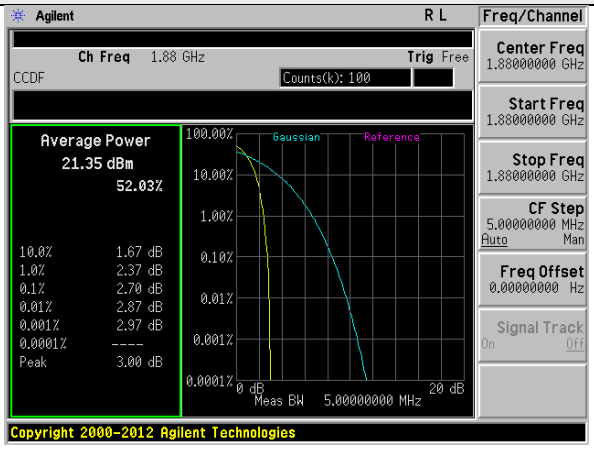
GPRS



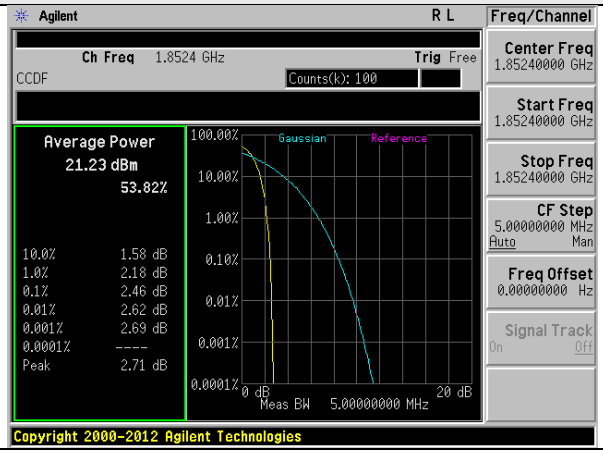
EDGE



WCDMA



HSDPA

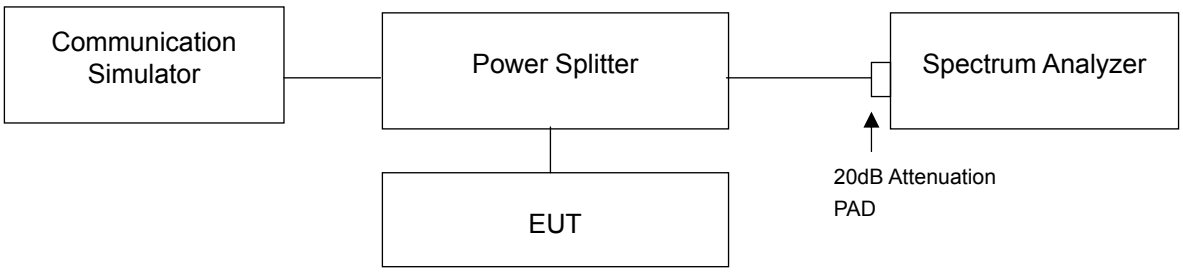


4.6 Conducted Spurious Emissions

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.

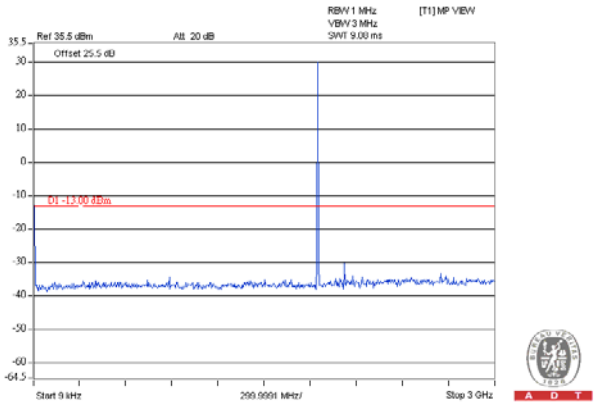
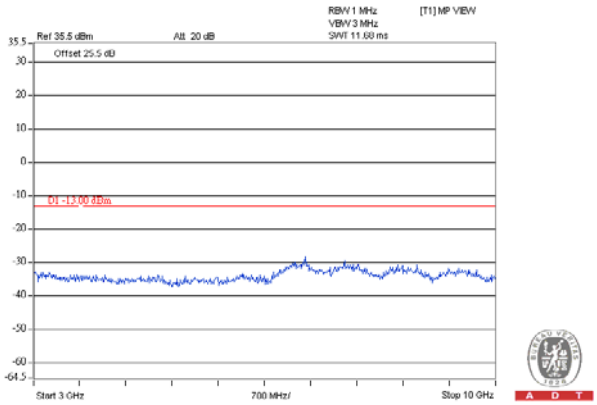
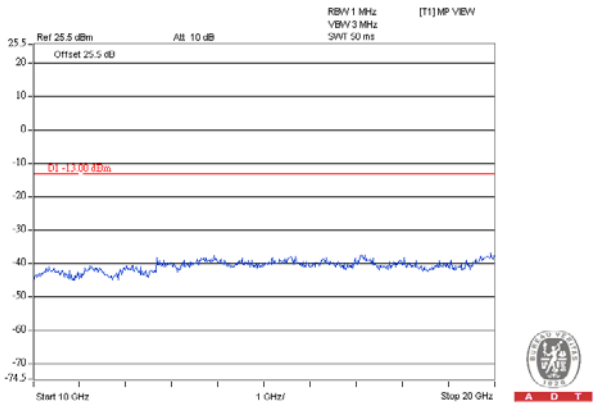
4.6.2 Test Setup

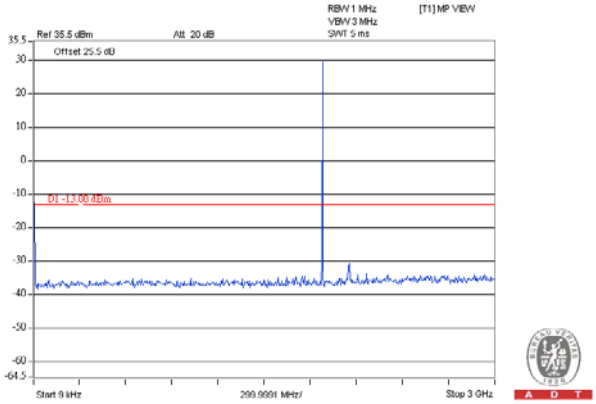
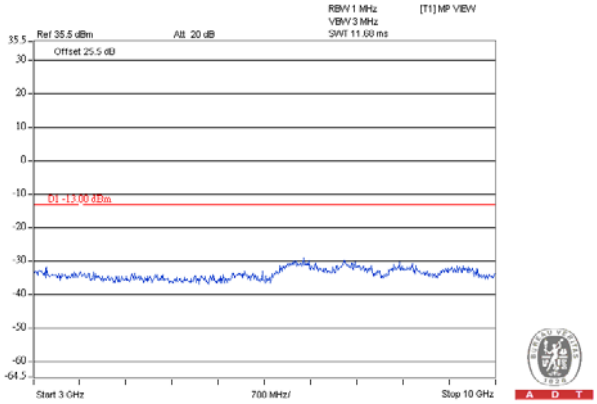
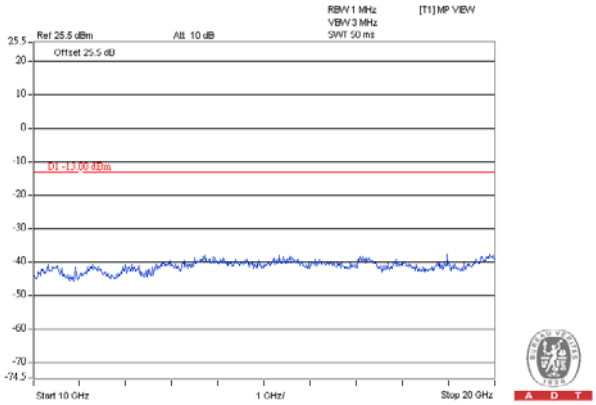


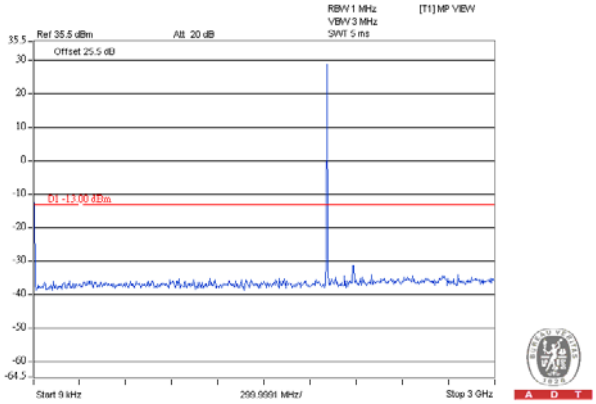
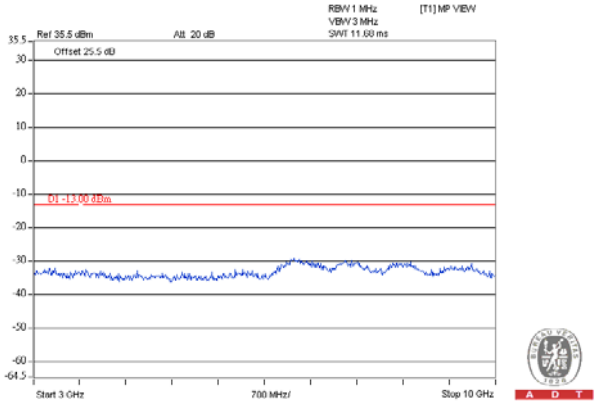
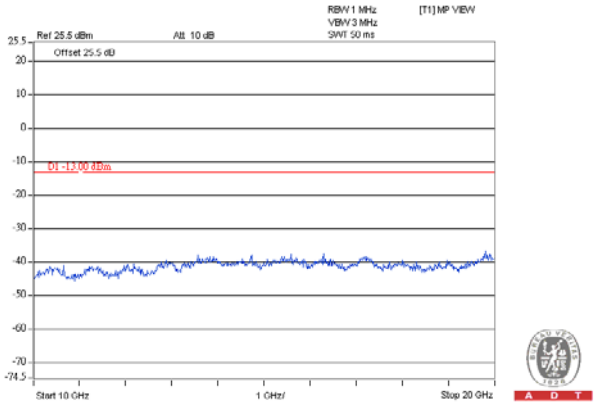
4.6.3 Test Procedure

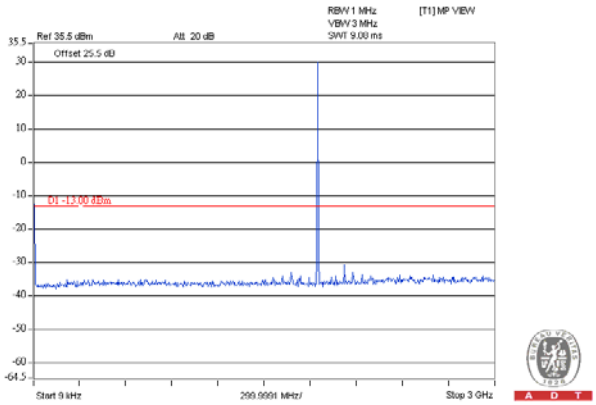
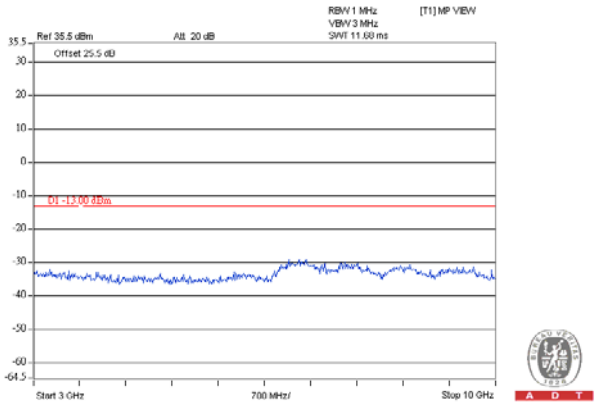
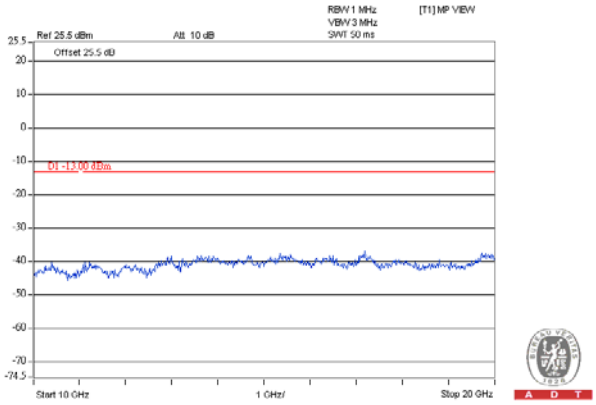
a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
b. Measuring frequency range is from 9 kHz to 20GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

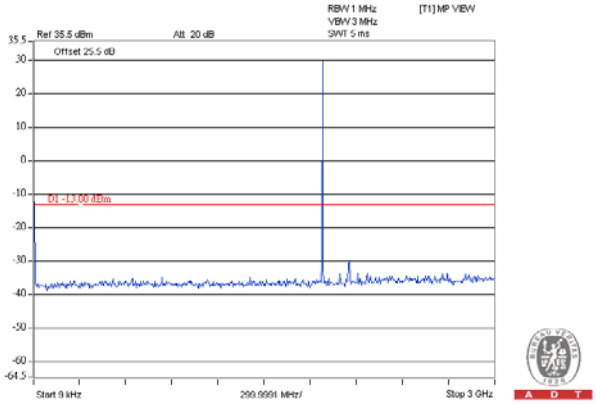
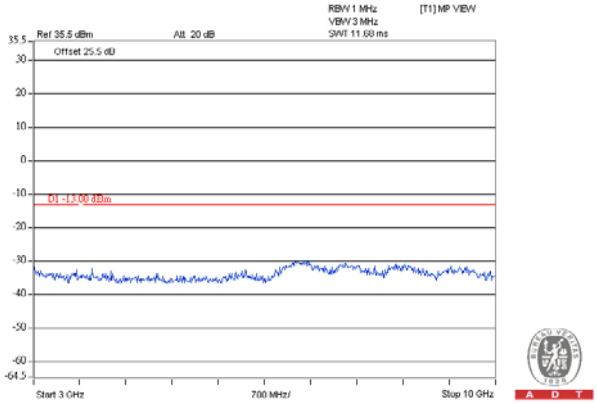
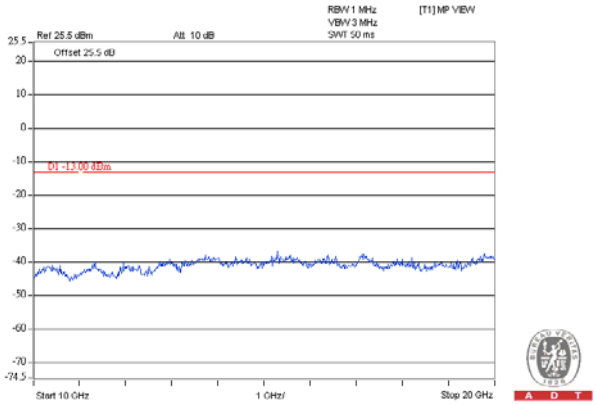
4.6.4 Test Results

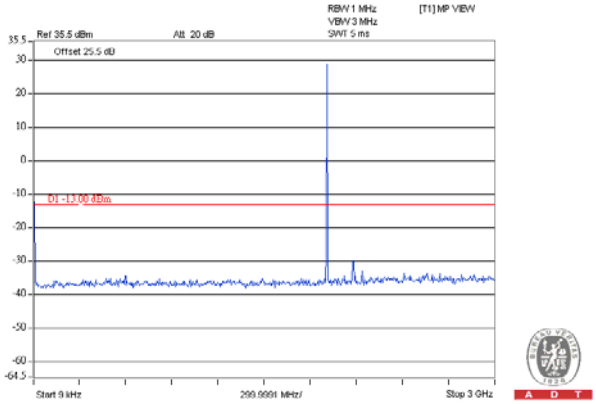
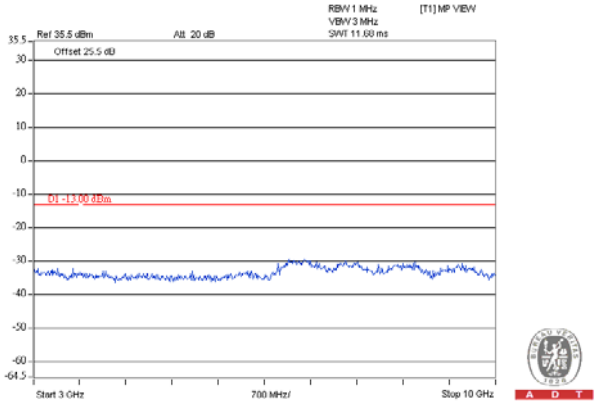
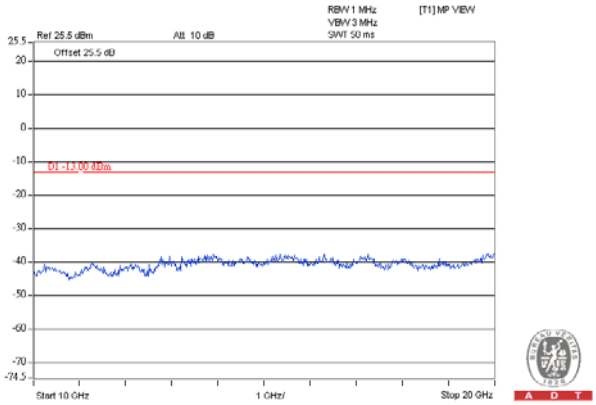
GSM	
Channel 512	
Frequency Range : 9kHz~3GHz	Frequency Range : 3GHz~10GHz
	
Frequency Range : 10GHz~20GHz	
	

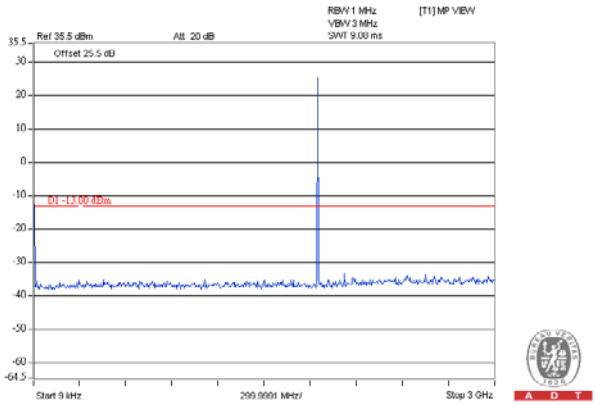
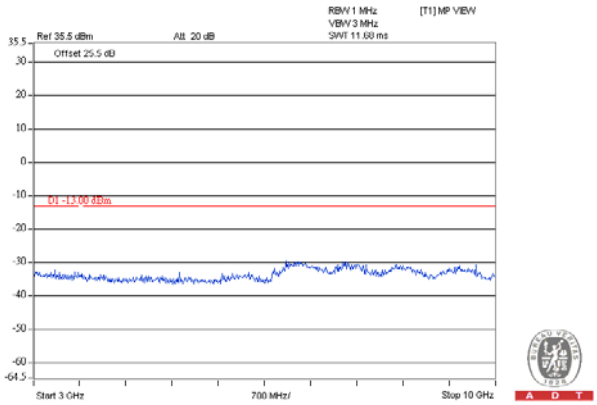
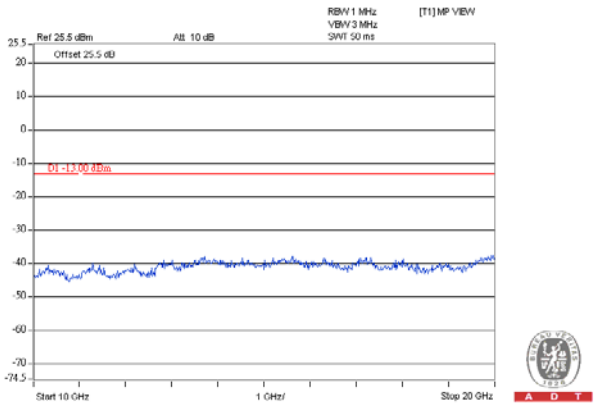
GSM	
Channel 661	
Frequency Range : 9kHz~3GHz	Frequency Range : 3GHz~10GHz
	
Frequency Range : 10GHz~20GHz	
	

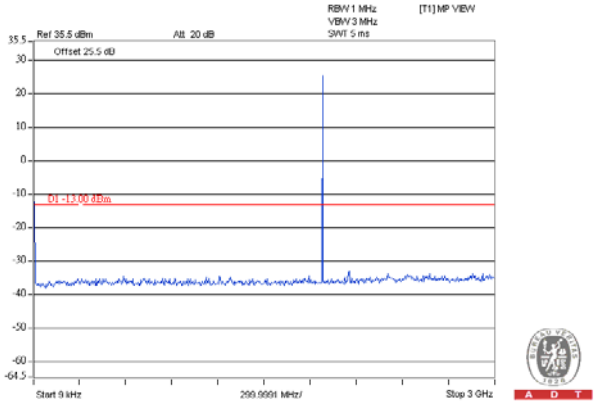
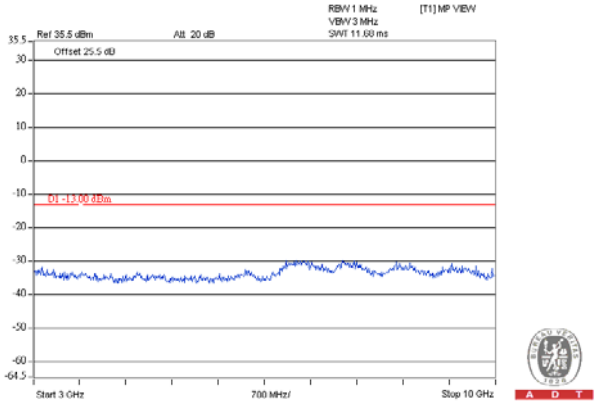
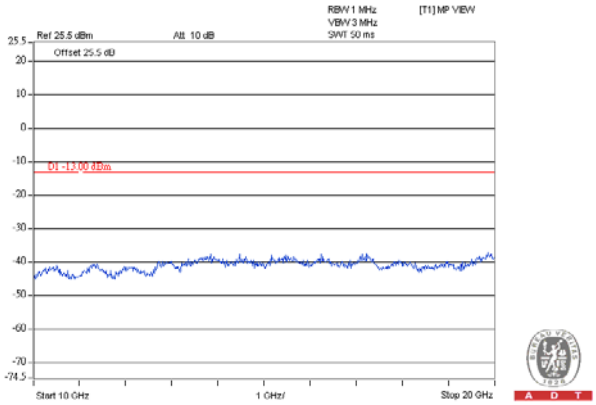
GSM	
Channel 810	
Frequency Range : 9kHz~3GHz	Frequency Range : 3GHz~10GHz
	
Frequency Range : 10GHz~20GHz	
	

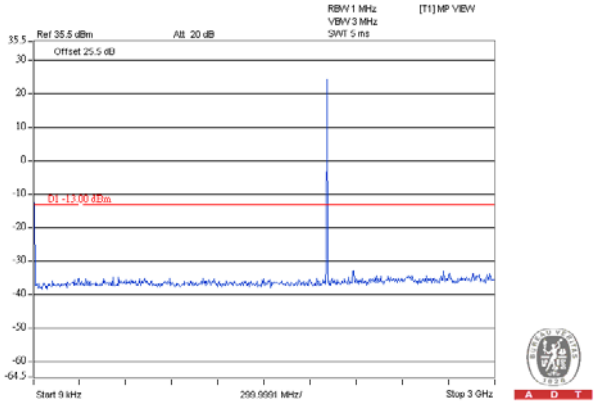
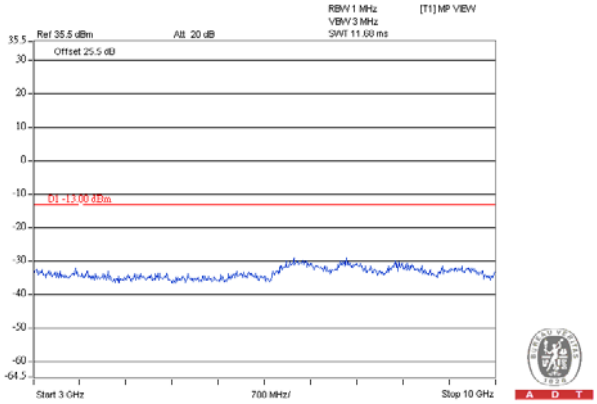
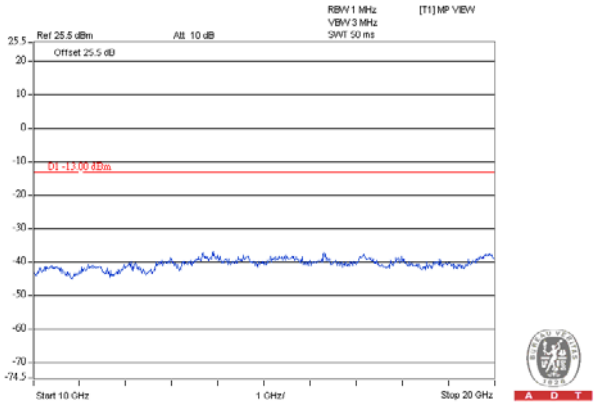
GPRS	
Channel 512	
Frequency Range : 9kHz~3GHz	Frequency Range : 3GHz~10GHz
	
Frequency Range : 10GHz~20GHz	
	

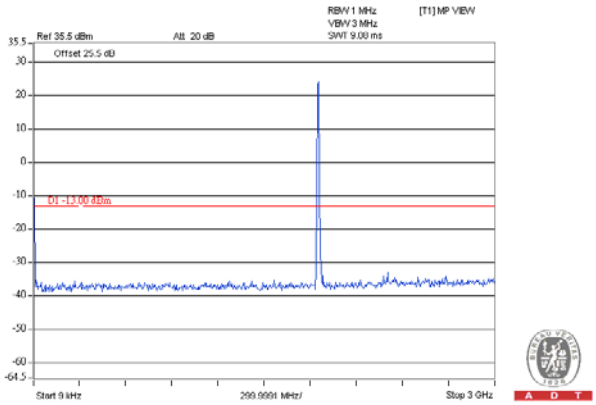
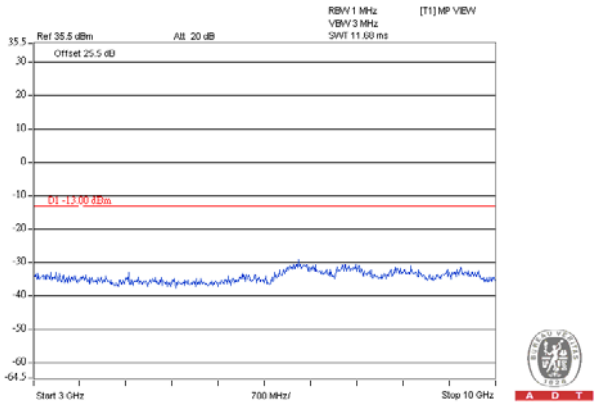
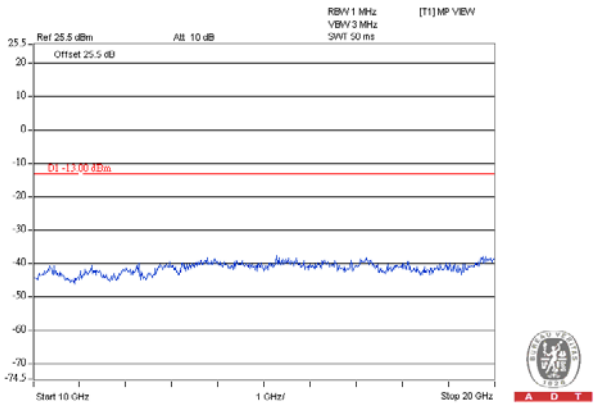
GPRS	
Channel 661	
Frequency Range : 9kHz~3GHz	Frequency Range : 3GHz~10GHz
	
Frequency Range : 10GHz~20GHz	
	

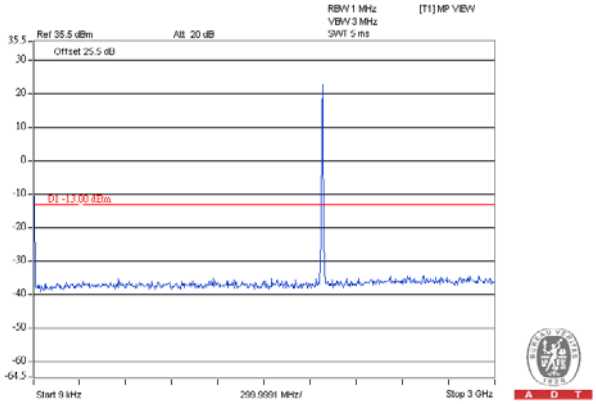
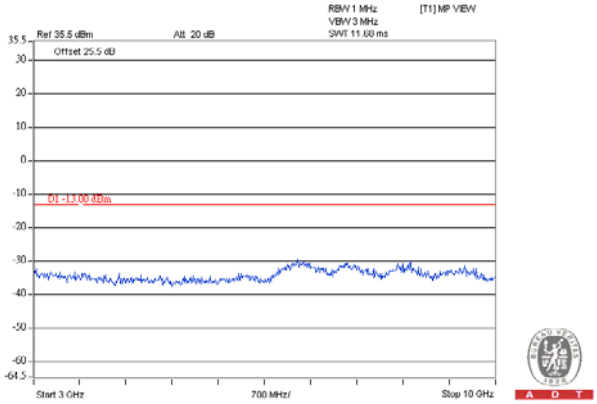
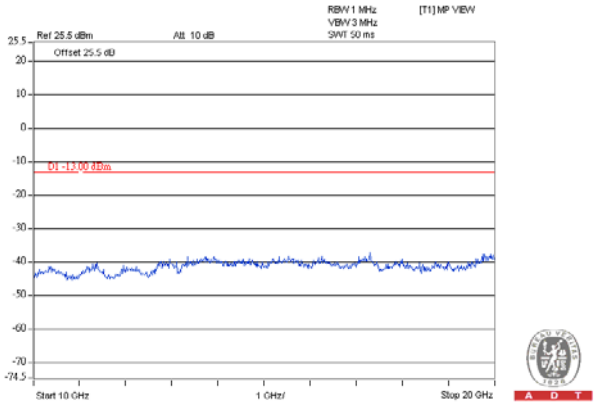
GPRS	
Channel 810	
Frequency Range : 9kHz~3GHz	Frequency Range : 3GHz~10GHz
	
Frequency Range : 10GHz~20GHz	
	

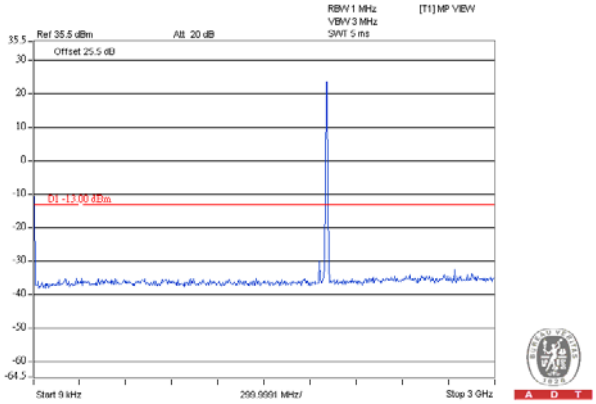
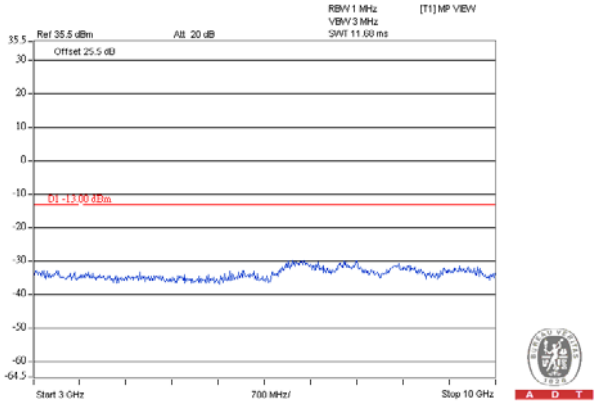
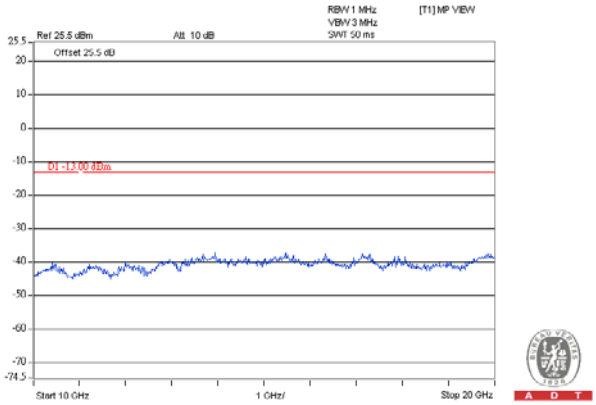
EDGE	
Channel 512	
Frequency Range : 9kHz~3GHz	Frequency Range : 3GHz~10GHz
	
Frequency Range : 10GHz~20GHz	
	

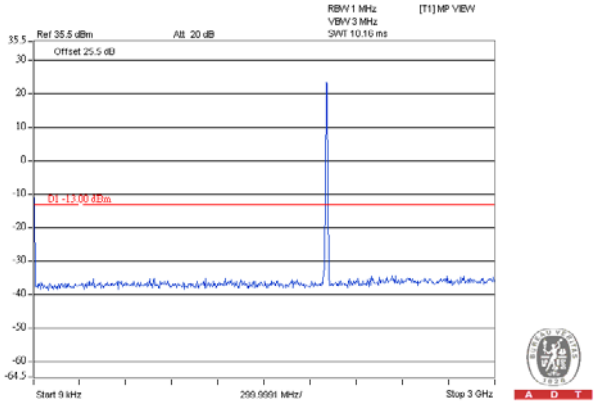
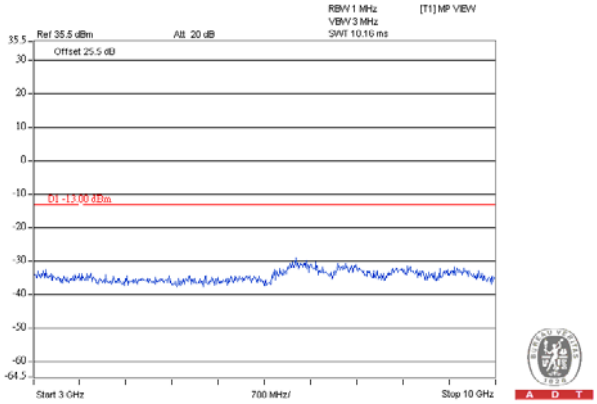
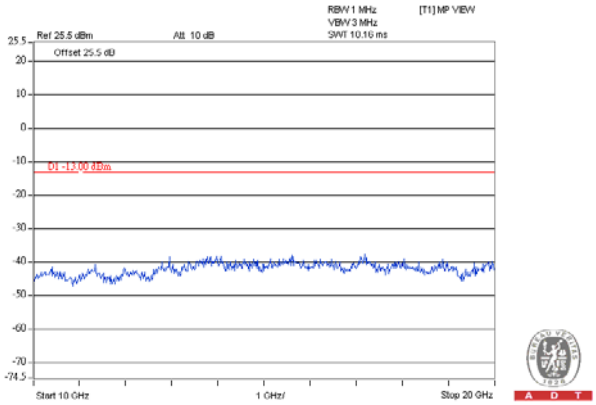
EDGE	
Channel 661	
Frequency Range : 9kHz~3GHz	Frequency Range : 3GHz~10GHz
	
Frequency Range : 10GHz~20GHz	
	

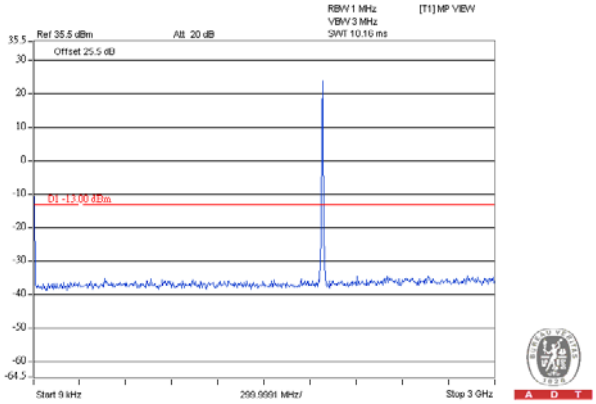
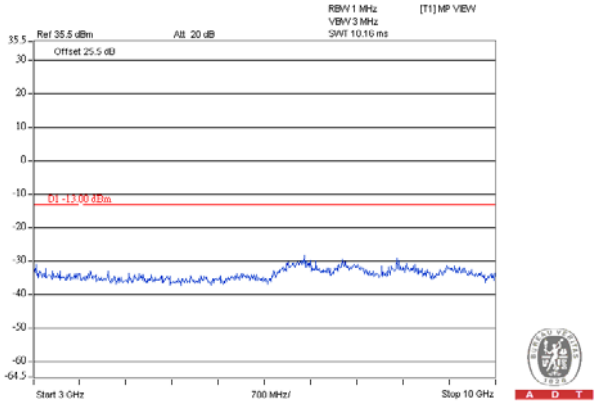
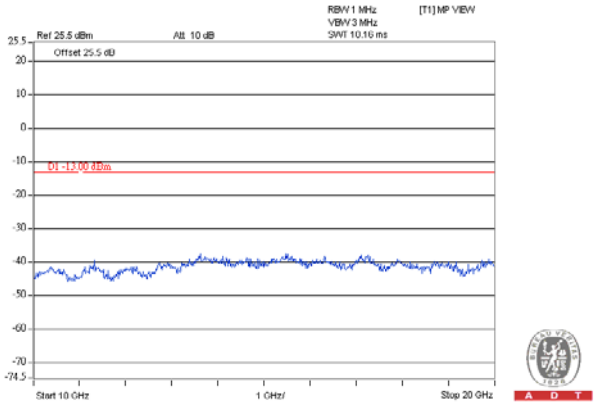
EDGE	
Channel 810	
Frequency Range : 9kHz~3GHz	Frequency Range : 3GHz~10GHz
	
Frequency Range : 10GHz~20GHz	
	

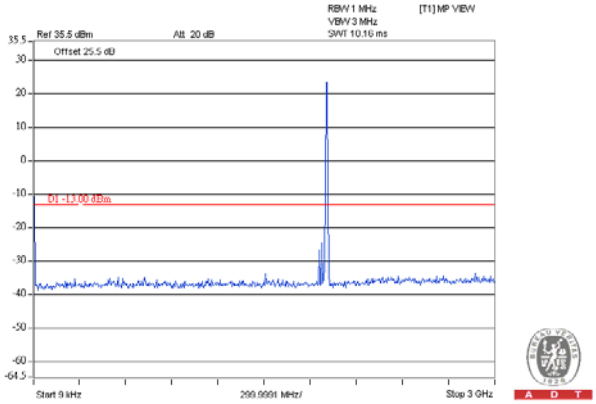
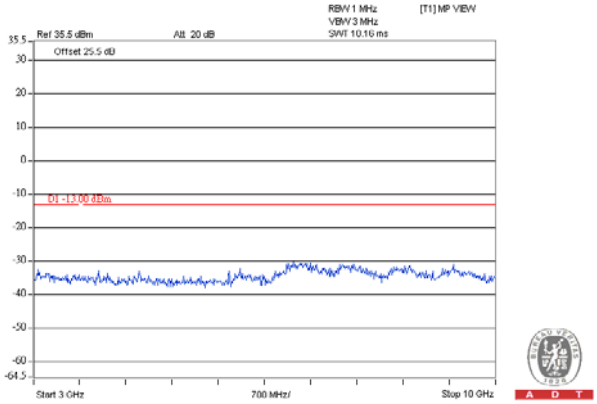
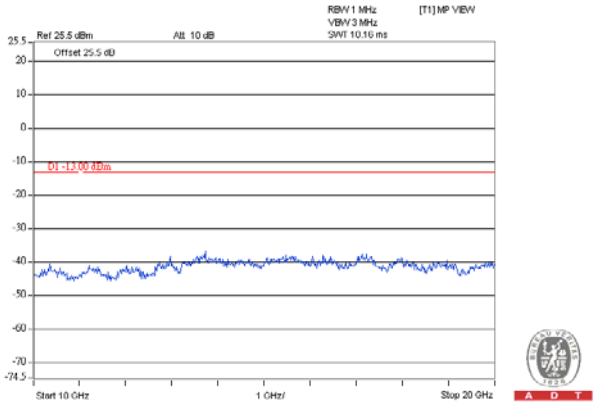
WCDMA	
Channel 9262	
Frequency Range : 9kHz~3GHz	Frequency Range : 3GHz~10GHz
	
Frequency Range : 10GHz~20GHz	
	

WCDMA	
Channel 9400	
Frequency Range : 9kHz~3GHz	Frequency Range : 3GHz~10GHz
	
Frequency Range : 10GHz~20GHz	
	

WCDMA	
Channel 9538	
Frequency Range : 9kHz~3GHz	Frequency Range : 3GHz~10GHz
	
Frequency Range : 10GHz~20GHz	
	

HSDPA	
Channel 9262	
Frequency Range : 9kHz~3GHz	Frequency Range : 3GHz~10GHz
	
Frequency Range : 10GHz~20GHz	
	

HSDPA	
Channel 9400	
Frequency Range : 9kHz~3GHz	Frequency Range : 3GHz~10GHz
	
Frequency Range : 10GHz~20GHz	
	

HSDPA	
Channel 9538	
Frequency Range : 9kHz~3GHz	Frequency Range : 3GHz~10GHz
	
Frequency Range : 10GHz~20GHz	
	

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.

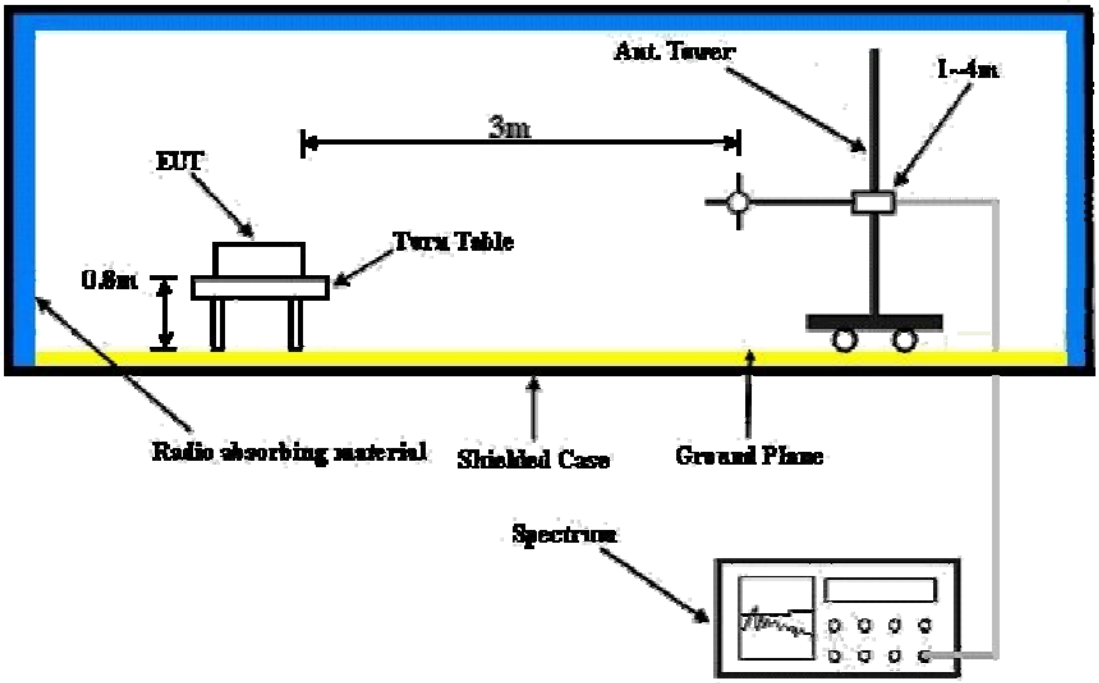
d. E.R.P power can be calculated form E.I.R.P power by subtracting the gain of dipole, E.R.P power = E.I.R.P power - 2.15dBi.

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



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 512	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Tank Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	35.82	-53.8	-34.4	-15.9	-50.3	-13.0	-37.3
2	49.40	-50.7	-42.8	-8.3	-51.1	-13.0	-38.1
3	74.62	-42.0	-47.9	0.1	-47.8	-13.0	-34.8
4	142.52	-44.2	-46.3	-3.1	-49.4	-13.0	-36.4
5	260.86	-49.7	-52.9	-1.5	-54.4	-13.0	-41.4
6	317.12	-53.4	-61.5	4.1	-57.4	-13.0	-44.4
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	49.40	-37.1	-36.4	-8.3	-44.7	-13.0	-31.7
2	74.62	-33.5	-39.2	0.1	-39.1	-13.0	-26.1
3	136.7	-42.7	-42.7	-3.2	-45.9	-13.0	-32.9
4	196.84	-53.9	-52.3	-2.5	-54.8	-13.0	-41.8
5	260.86	-57.1	-54.6	-1.5	-56.1	-13.0	-43.1
6	838.98	-67.6	-64	3.7	-60.3	-13.0	-47.3

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 661	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Tank Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	33.88	-53.8	-33.8	-17.1	-50.9	-13.0	-37.9
2	47.46	-51.0	-41.6	-9.2	-50.8	-13.0	-37.8
3	74.62	-42.8	-48.7	0.1	-48.6	-13.0	-35.6
4	136.70	-42.9	-45.7	-3.2	-48.9	-13.0	-35.9
5	158.04	-47.8	-50.0	-2.7	-52.7	-13.0	-39.7
6	266.68	-52.2	-54.9	-1.6	-56.5	-13.0	-43.5
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	49.40	-36.8	-36.1	-8.3	-44.4	-13.0	-31.4
2	70.74	-37.9	-43.7	-0.4	-44.1	-13.0	-31.1
3	136.70	-43.5	-43.5	-3.2	-46.7	-13.0	-33.7
4	159.98	-48.2	-48.2	-3.0	-51.2	-13.0	-38.2
5	198.78	-54.8	-53.4	-2.4	-55.8	-13.0	-42.8
6	255.04	-56.4	-54.6	-1.4	-56.0	-13.0	-43.0

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 810	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Tank Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	35.82	-53.4	-34.0	-15.9	-49.9	-13.0	-36.9
2	47.46	-53.0	-43.6	-9.2	-52.8	-13.0	-39.8
3	80.44	-43.5	-48.9	0.5	-48.4	-13.0	-35.4
4	140.58	-45.5	-48.1	-3.0	-51.1	-13.0	-38.1
5	264.74	-50.7	-53.6	-1.6	-55.2	-13.0	-42.2
6	730.34	-58.4	-58.2	3.6	-54.6	-13.0	-41.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-46.4	-36.9	-19.4	-56.3	-13.0	-43.3
2	55.22	-39.5	-41.0	-5.4	-46.4	-13.0	-33.4
3	74.62	-36.5	-42.2	0.1	-42.1	-13.0	-29.1
4	134.76	-45.8	-46.2	-3.2	-49.4	-13.0	-36.4
5	196.84	-55.6	-54.0	-2.5	-56.5	-13.0	-43.5
6	747.8	-61.5	-58.3	3.7	-54.6	-13.0	-41.6

Remarks:

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

EDGE:

Mode	TX channel 512	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Tank Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	35.82	-54.1	-34.7	-15.9	-50.6	-13.0	-37.6
2	51.34	-50.4	-44.3	-7.3	-51.6	-13.0	-38.6
3	86.26	-37.1	-44.0	0.1	-43.9	-13.0	-30.9
4	144.46	-41.7	-43.6	-3.2	-46.8	-13.0	-33.8
5	241.46	-48.6	-54.1	-1.4	-55.5	-13.0	-42.5
6	272.50	-50.1	-52.9	-1.5	-54.4	-13.0	-41.4
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-44.6	-35.1	-19.4	-54.5	-13.0	-41.5
2	51.34	-37.8	-37.7	-7.3	-45.0	-13.0	-32.0
3	80.44	-33.2	-38.4	0.5	-37.9	-13.0	-24.9
4	142.52	-49.6	-48.7	-3.1	-51.8	-13.0	-38.8
5	191.02	-51.7	-50.9	-2.7	-53.6	-13.0	-40.6
6	272.50	-57.8	-53.9	-1.5	-55.4	-13.0	-42.4

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

Mode	TX channel 661	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Tank Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	35.82	-58.8	-39.4	-15.9	-55.3	-13.0	-42.3
2	51.34	-50.8	-44.7	-7.3	-52.0	-13.0	-39.0
3	80.44	-40.9	-46.3	0.5	-45.8	-13.0	-32.8
4	146.40	-43.8	-45.6	-3.0	-48.6	-13.0	-35.6
5	187.14	-47.2	-52.7	-2.7	-55.4	-13.0	-42.4
6	274.44	-50.3	-53.2	-1.6	-54.8	-13.0	-41.8
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	33.88	-42.3	-35.8	-17.1	-52.9	-13.0	-39.9
2	51.34	-36.8	-36.7	-7.3	-44.0	-13.0	-31.0
3	80.44	-33.1	-38.3	0.5	-37.8	-13.0	-24.8
4	140.58	-49.2	-48.8	-3.0	-51.8	-13.0	-38.8
5	191.02	-51.9	-51.1	-2.7	-53.8	-13.0	-40.8
6	260.86	-57.0	-54.5	-1.5	-56.0	-13.0	-43.0

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 810	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Tank Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	31.94	-59.5	-37.8	-18.3	-56.1	-13.0	-43.1
2	51.34	-51.7	-45.6	-7.3	-52.9	-13.0	-39.9
3	80.44	-43.2	-48.6	0.5	-48.1	-13.0	-35.1
4	163.86	-40.4	-43.6	-2.9	-46.5	-13.0	-33.5
5	241.46	-52.0	-57.5	-1.4	-58.9	-13.0	-45.9
6	272.50	-49.8	-52.6	-1.5	-54.1	-13.0	-41.1
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	31.94	-43.9	-36.1	-18.3	-54.4	-13.0	-41.4
2	51.34	-36.3	-36.2	-7.3	-43.5	-13.0	-30.5
3	**80.44**	**-32.7**	**-37.9**	**0.5**	**-37.4**	**-13.0**	**-24.4**
4	146.40	-50.4	-49.4	-3.0	-52.4	-13.0	-39.4
5	192.96	-51.9	-50.8	-2.6	-53.4	-13.0	-40.4
6	268.62	-57.1	-53.9	-1.5	-55.4	-13.0	-42.4

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 9262	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Tank Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	37.76	-59.4	-41.4	-14.7	-56.1	-13.0	-43.1
2	57.16	-56.3	-55.2	-4.7	-59.9	-13.0	-46.9
3	82.38	-52.6	-58.4	0.4	-58.0	-13.0	-45.0
4	156.10	-52.0	-53.8	-2.9	-56.7	-13.0	-43.7
5	260.86	-57.2	-60.4	-1.5	-61.9	-13.0	-48.9
6	745.86	-51.0	-50.8	3.8	-47.0	-13.0	-34.0
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	33.88	-45.9	-39.4	-17.1	-56.5	-13.0	-43.5
2	55.22	-42.4	-43.9	-5.4	-49.3	-13.0	-36.3
3	78.50	-42.5	-48.3	0.6	-47.7	-13.0	-34.7
4	132.82	-49.8	-50.7	-3.3	-54.0	-13.0	-41.0
5	256.98	-61.6	-59.6	-1.5	-61.1	-13.0	-48.1
6	745.86	-52.4	-49.2	3.8	-45.4	-13.0	-32.4

Remarks:

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

Mode	TX channel 9400	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Tank Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	35.82	-57.8	-38.4	-15.9	-54.3	-13.0	-41.3
2	72.68	-53.7	-59.6	-0.1	-59.7	-13.0	-46.7
3	154.16	-50.2	-51.6	-2.9	-54.5	-13.0	-41.5
4	218.18	-55.9	-62.2	-2.1	-64.3	-13.0	-51.3
5	278.32	-59.9	-62.8	-1.6	-64.4	-13.0	-51.4
6	745.86	-52.0	-51.8	3.8	-48.0	-13.0	-35.0
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	30.00	-45.3	-35.8	-19.4	-55.2	-13.0	-42.2
2	66.86	-44.0	-49.7	-1.5	-51.2	-13.0	-38.2
3	82.38	-46.3	-51.2	0.4	-50.8	-13.0	-37.8
4	132.82	-45.9	-46.8	-3.3	-50.1	-13.0	-37.1
5	272.50	-63.1	-59.2	-1.5	-60.7	-13.0	-47.7
6	743.92	-51.3	-48.1	3.7	-44.4	-13.0	-31.4

Remarks:

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

Mode	TX channel 9538	Frequency Range	Below 1000 MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Tank Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	35.82	-57.9	-38.5	-15.9	-54.4	-13.0	-41.4
2	47.46	-52.3	-42.9	-9.2	-52.1	-13.0	-39.1
3	72.68	-55.1	-61.0	-0.1	-61.1	-13.0	-48.1
4	152.22	-50.5	-51.9	-2.8	-54.7	-13.0	-41.7
5	284.14	-60.0	-62.3	-1.6	-63.9	-13.0	-50.9
6	741.98	-53.6	-53.3	3.7	-49.6	-13.0	-36.6
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	35.82	-42.7	-36.5	-15.9	-52.4	-13.0	-39.4
2	68.80	-45.9	-51.7	-0.8	-52.5	-13.0	-39.5
3	132.82	-46.7	-47.6	-3.3	-50.9	-13.0	-37.9
4	194.90	-58.6	-57.1	-2.6	-59.7	-13.0	-46.7
5	276.38	-65.0	-60.1	-1.6	-61.7	-13.0	-48.7
6	745.86	-53.7	-50.5	3.8	-46.7	-13.0	-33.7

Remarks:

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

ABOVE 1GHz

GSM:

Mode	TX channel 512	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Tank Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3700.40	-59.4	-50.9	1.4	-49.5	-13.0	-36.5
2	5550.60	-58.1	-45.3	1.4	-43.9	-13.0	-30.9
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3700.40	-59.6	-51.4	1.4	-50.0	-13.0	-37.0
2	5550.60	-58.4	-46.4	1.4	-45.0	-13.0	-32.0

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 661	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Tank Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3760.00	-59.1	-50.6	1.3	-49.3	-13.0	-36.3
2	5640.00	-60.6	-47.6	1.3	-46.3	-13.0	-33.3
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3760.00	-59.2	-50.9	1.3	-49.6	-13.0	-36.6
2	5640.00	-60.4	-48.5	1.3	-47.2	-13.0	-34.2

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 810	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Tank Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3819.60	-57.8	-49.5	1.4	-48.1	-13.0	-35.1
2	5729.40	-60.5	-47.4	1.2	-46.2	-13.0	-33.2
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3819.60	-57.7	-49.5	1.4	-48.1	-13.0	-35.1
2	5729.40	-61.0	-48.8	1.2	-47.6	-13.0	-34.6

Remarks:

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

EDGE:

Mode	TX channel 512	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Tank Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3700.40	-59.9	-51.4	1.4	-50.0	-13.0	-37.0
2	5550.60	-58.7	-45.9	1.4	-44.5	-13.0	-31.5
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3700.40	-60.7	-52.5	1.4	-51.1	-13.0	-38.1
2	5550.60	-59.1	-47.1	1.4	-45.7	-13.0	-32.7

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 661	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Tank Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3760.00	-59.8	-51.3	1.3	-50.0	-13.0	-37.0
2	5640.00	-60.8	-47.8	1.3	-46.5	-13.0	-33.5
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3760.00	-60.1	-51.8	1.3	-50.5	-13.0	-37.5
2	5640.00	-60.9	-49.0	1.3	-47.7	-13.0	-34.7

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 810	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Tank Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3819.60	-58.6	-50.3	1.4	-48.9	-13.0	-35.9
2	5729.40	-61.1	-48.0	1.2	-46.8	-13.0	-33.8
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3819.60	-58.6	-50.4	1.4	-49.0	-13.0	-36.0
2	5729.40	-61.6	-49.4	1.2	-48.2	-13.0	-35.2

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 9262	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Tank Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3704.80	-55.2	-46.7	1.4	-45.3	-13.0	-32.3
2	5557.20	-58.0	-45.1	1.3	-43.8	-13.0	-30.8
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3704.80	-57.4	-49.2	1.4	-47.8	-13.0	-34.8
2	5557.20	-58.3	-46.2	1.3	-44.9	-13.0	-31.9

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 9400	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Tank Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3760.00	-55.3	-46.8	1.3	-45.5	-13.0	-32.5
2	5640.00	-58.4	-45.4	1.3	-44.1	-13.0	-31.1
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3760.00	-57.9	-49.6	1.3	-48.3	-13.0	-35.3
2	5640.00	-58.5	-46.6	1.3	-45.3	-13.0	-32.3

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 9538	Frequency Range	Above 1000MHz
Environmental Conditions	25deg. C, 65%RH	Input Power	120Vac, 60Hz
Tested By	Tank Wu		

Antenna Polarity & Test Distance: Horizontal at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3815.20	-55.1	-46.8	1.4	-45.4	-13.0	-32.4
2	5722.80	-57.3	-44.2	1.2	-43.0	-13.0	-30.0
Antenna Polarity & Test Distance: Vertical at 3 M							
No.	Freq. (MHz)	Reading (dBm)	S.G Power Value (dBm)	Correction Factor (dB)	EIRP (dBm)	Limit (dBm)	Margin (dB)
1	3815.20	-57.3	-49.1	1.4	-47.7	-13.0	-34.7
2	5722.80	-58.1	-46.0	1.2	-44.8	-13.0	-31.8

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:

Linko EMC/RF Lab
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF Lab/Telecom Lab
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety
Tel: 886-3-3183232
Fax: 886-3-3270892

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

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

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