

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

## INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 22 SUBPART H, PART 24 SUBPART E and PART 27 CLASS II PC REPORT

OF

**Product Name:** Smart Phone

**Brand Name:** DELL

**Model Name:** V02S002

**Model Difference:** N/A

**FCC ID:** E2KV02S002

**Report No.:** EH/2010/70044-01

**Issue Date:** Dec. 30, 2010

**FCC Rule Part:** 2 , 22H & 24E & 27

**Prepared for:** DELL Inc.  
One Dell Way, Round Rock, Tx 78682

**Prepared by:** SGS Taiwan Ltd.  
Electronics & Communication Laboratory  
No. 134, Wu Kung Rd., Wuku Industrial  
Zone, Taipei County, Taiwan.

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## VERIFICATION OF COMPLIANCE

**Applicant:** DELL Inc.  
 One Dell Way, Round Rock, Tx 78682

**Product Name:** Smart Phone

**Brand Name:** DELL

**Model No.:** V02S002

**Model Difference:** N/A

**FCC ID:** E2KV02S002

**File Number:** EH/2010/70044-01

**Date of test:** Dec. 21, 2010 ~ Dec. 30, 2010

**Date of EUT Received:** Dec. 21, 2010

### We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in TIA/EIA-603-C-2004 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rule FCC PART 22 subpart H, PART 24 subpart E and PART 27.

The test results of this report relate only to the tested sample identified in this report.

**Test By:** Jason Wu **Date:** Dec. 30, 2010

*Jason Wu / Asst. Supervisor*

**Prepared By:** Eva Kao **Date:** Dec. 30, 2010

*Eva Kao / Asst. Supervisor*

**Approved By:** Willis Chen **Date:** Dec. 30, 2010

*Willis Chen /Asst. Manager*

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## Version

Version No.	Date	Description
00	Dec. 30, 2010	Initial creation of document

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## 1. GENERAL PRODUCT INFORMATION

General:

Product Name	Smart Phone	
Brand Name	DELL	
Model Name	V02S002	
Model Difference	N/A	
Micro USB Cable	Model No.: 5K.16R01.001 / CU04C04U05-K66-EF, Supplier: HELM	
Simple Hands-free (SHF)	1. Model No.: 525283 / TY.2C190.003, Supplier: Foster 2. Model No.: C055T / TY.2C190.001, Supplier: PCH	
Power Supply	3.7 Vdc re-chargeable battery or 5Vdc by AC/DC power adapter	
	Battery:	Model: 214L0 / 2C.214L0.001, Supplier: CHENG UEI
	Adapter:	Model No.: 32HD9/ 0005ADUUS, Supplier: PCH
	Car Charge:	Model No.: DT933 / LD5V50-00, Supplier: PCH

Final Amplifier Voltage and Current Information:

Test Mode	DC voltage (V)	DC current (mA)
GPRS 850	3.3V	450
GPRS 1900	3.3V	380
EDGE 850	3.3V	360
EDGE 1900	3.3V	320
WCDMA Band 4	3.3V	660
HSUPA Band 4	3.3V	660

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GSM and WCDMA:

	Operating Frequency		Rated Power
Cellular Phone Standards Frequency Range and Power:	GSM/GPRS 850, Class 12	824.2 MHz– 848.8MHz	32.5 dBm
	EDGE 850, Class 12	824.2 MHz– 848.8MHz	26.5 dBm
	GSM/GPRS 1900, Class 12	1850.2MHz–1909.8MHz	29.5 dBm
	EDGE 1900, Class 12	1850.2MHz–1909.8MHz	25.5 dBm
	WCDMA/HSUPA/HSDPA Band IV	1712.4MHz–1752.6MHz	23.5 dBm
Hardware Version:	N/A		
Software Version:	N/A		
IMEI:	01228700XXXXXX		
Type of Emission:	22H(GMSK): 824.2 - 848.8 MHz: 300KGXW 24E(GMSK): 1850.2 – 1909.8 MHz: 300KGXW 22H(8PSK): 824.2 - 848.8 MHz: 300KG7W 24E(8PSK): 1850.2 – 1909.8 MHz: 300KG7W 24E(WCDMA): 1712.4 – 1752.6 MHz: 4M20F9W		
Transmit power (Conducted Power) Listed in Test Report/Original Grant:	22H(GMSK): 824.2 - 848.8 MHz: 2.04W 24E(GMSK): 1850.2 – 1909.8 MHz: 0.87W 22H(8PSK): 824.2 - 848.8 MHz: 1.09W 24E(8PSK): 1850.2 – 1909.8 MHz: 0.82W 24E(WCDMA): 1852.4 – 1907.5 MHz: 0.185W		

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WLAN: 802.11 b/g

Frequency Range:	2412 – 2462MHz
Channel number:	11 channels
Max. Output Power:	802.11 b: 17.38 dBm 802.11 g: 13.84 dBm
Modulation Technology:	DSSS, OFDM
Modulation type:	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Transition Rate:	802.11 b: 1/2/5.5/11 Mbps; 802.11 g: 6/9/12/18/24/36/48/54 Mbps
Antenna Designation:	PIFA Antenna, -0.02dBi.

Bluetooth:

Bluetooth Version:	V2.1 + EDR (GFSK + $\pi/4$ DQPSK + 8DPSK)
Channel number:	79 channels
Modulation type:	Frequency Hopping Spread Spectrum
Transmit Power:	6.76 dBm
Frequency Range:	2.402GHz – 2.480GHz
Dwell Time:	$\leq 0.4s$
Operating Mode:	Point-to-Point
Antenna Designation:	PIFA Antenna, -0.02dBi.

This test report applies for GSM/GPRS/EDGE 850/1900, WCDMA/HSDPA/HSUPA band IV.

This is a C2PC report, the difference between the new version and original version is:

1. Changed WWAN Antenna pattern.

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### 1.1. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **E2KV02S002** filing to comply with Section Part 22 subpart H, Part 24 subpart E and Part 27 of the FCC CFR 47 Rules.

### 1.2. Test Methodology

Both conducted and radiated testing were performed according to the procedures document of TIA/EIA 603C and FCC CFR 47.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057.

The Output power Procedure of KDB941225 (SAR Measurement Procedures for 3G devices, WCDMA / HSDPA) was used for EUT and Base station setting.

### 1.3. Test Facility

The measurement facilities used to collect the 3m Radiated Emission and AC power line conducted data are located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei Country, Taiwan which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003. FCC Registration Number are: 990257 and 236194, Canada Registration Number: 4620A-4.

The 10 m Open Area Test Sites located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory No. 29, Pau-Tou-Tsuo Valley Chia-Pau Tsuen, Linkou Hsiang, Taipei county, which is constructed and calibrated to meet the CISPR 22/EN 55022 requirements. SGS Site No. 1(3 & 10 meters) and FCC Registration Number: 94644.

All equipment is calibrated externally and traceable to SI (International System of Unit).

### 1.4. Special Accessories

Not available for this EUT intended for grant.

### 1.5. Equipment Modifications

Not available for this EUT intended for grant.

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## 2. SYSTEM TEST CONFIGURATION

### 2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

### 2.2. EUT Exercise

The EUT (Transmitter) was operated in the engineering mode to fix the Tx frequency which was for the purpose of the measurements.

### 2.3. Test Procedure

#### 2.3.1 AC Power Line Conducted Emissions

The EUT is placed on a turn table which is 0.8 m above ground plane. According to the requirements in Section 7 and 13 of ANSI C63.4: 2003. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and Average detector mode.

#### 2.3.2 Conducted Measurement at Antenna Port:

According to measurement procured TIA/EIA 603C, the EUT is placed on a turn table which is 0.8 m above ground plane. A low loss of RF cable was used to connect the antenna port of EUT to measurement equipment.

#### 2.3.3 Radiated Emissions (ERP/EIRP):

The EUT is a placed on as turn table which is 80 cm above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both Horizontal and Vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made “while keeping the antenna in the ‘cone of radiation’ from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.” is still within the 3dB illumination BW of the measurement antenna according to the requirements in Section 2 of TIA/EIA 603C.

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## 2.4. Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2010	04/18/2012
Spectrum Analyzer	Agilent	E4440A	US41160416	01/25/2010	01/24/2011
Radio Communication Analyzer	R&S	CMU200	111787	10/31/2010	10/30/2012
800 – 1000MHz Filter	Micro-Tronics	BRM13462	001	01/05/2010	01/04/2011
1800 – 2000MHz Filter	Micro-Tronics	BRM13463	001	01/05/2010	01/04/2011
Temperature Chamber	TERCHY	MHG-120LF	911009	04/30/2010	04/29/2012
Temperature Chamber	GIANT FORCE	GTH-150-40-CP-AR	MAA0512-018	02/24/2010	02/23/2012
DC Block	Agilent	BLK-18	155452	07/05/2010	07/04/2011
Attenuator	Mini-Circuit	BW-S20W5	N/A	07/05/2010	07/04/2011
Attenuator	Mini-Circuit	BW-S10W5	N/A	07/05/2010	07/04/2011
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2010	07/04/2011
Splitter	Agilent	11636B	N/A	07/05/2010	07/04/2011
DC Power Supply	Chroma	41901	777188	04/15/2010	04/14/2012

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ERP, EIRP MEASUREMENT EQUIPMENT List 966 Chamber					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	R&S	FSP 40	100034	02/12/2010	02/11/2011
Bilog Antenna	SCHWAZBECK	VULB9160	3136	11/27/2009	11/26/2011
Dipole Antenna	SCHWAZBECK	VHAP	908/909	07/17/2010	07/16/2012
Dipole Antenna	SCHWAZBECK	UHAP	891/892	07/17/2010	07/16/2012
Horn antenna	SCHWAZBECK	BBHA 9120D	309/320	03/09/2009	03/08/2011
Signal Generator	R&S	SMR40	100210	02/10/2010	02/09/2012
Signal Generator	Agilent	E4438C	MY45093613	07/08/2010	07/07/2011
Pre-Amplifier	Agilent	8447D	1937A02834	11/28/2009	11/27/2010
Pre-Amplifier	Agilent	8449B	3008A01973	01/05/2010	01/04/2011
Attenuator	Mini-Circuit	BW-S20W5	001	07/05/2010	07/04/2011
Attenuator	Mini-Circuit	BW-S10W5	001	07/05/2010	07/04/2011
Attenuator	Mini-Circuit	BW-S6W5	001	07/05/2010	07/04/2011
Radio Communication Analyzer	R&S	CMU200	111787	10/31/2008	10/30/2010
Turn Table	HD	DT420	N/A	N.C.R	N.C.R
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R
Controller	HD	HD100	N/A	N.C.R	N.C.R
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-10M	10m	01/05/2010	01/04/2011
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	01/05/2010	01/04/2011
Filter 800-1000	Micro-Tronics	BRM13462	1	01/05/2010	01/04/2011
Filter 1800-2000	Micro-Tronics	BRM13463	1	01/05/2010	01/04/2011
3m Site	SGS	966 chamber	N/A	11/08/2009	11/09/2010

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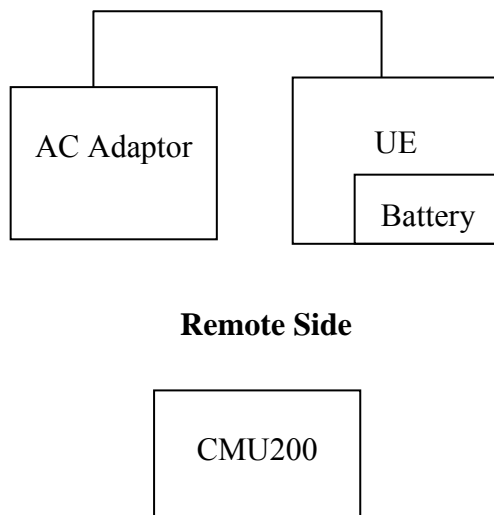
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## 2.5. Configuration of Tested System

**Fig. 2-1 Configuration of Tested System (Fixed Channel)**



**Table 2-1 Equipment Used in Tested System**

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1.	Universal Radio Communication Tester	R&S	CMU200	102189	shielded	Un-shielded

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### 3. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§2.1046(a)	RF Power Output	Compliant
§2.1046(a) §22.913(a)(2) §24.232(c) §27.50(d)(2)	ERP/ EIRP measurement	Compliant
§2.1051 §22.917(a) §24.238(a) §27.53(g)	Out of Band Emissions at Antenna Terminals and Band Edge	Compliant

Max ERP/EIRP measurement result:

	dBm		W
GPRS 850 Band	30.66	ERP	1.164
PCS 1900 Band	28.82	ERP	0.762
EDGE 850 Band	28.27	EIRP	0.671
EDGE 1900 Band	28.78	EIRP	0.755
WCDMA Band IV	20.10	EIRP	0.102
HSUPA Band IV	22.00	EIRP	0.158

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#### 4. DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

EUT staying in continuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing.

The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for GSM/GPRS/EDGE and WCDMA Band IV with power adaptors. The worst-case of E2 position for GPRS 850 band, E1 position for GPRS 1900 were reported.

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## 5. RF POWER OUTPUT MEASUREMENT

### 5.1. Standard Applicable:

According to FCC §2.1046.

FCC 22.913(a) Mobile station are limited to 7W.

FCC 24.232(c) Peak Power Measurement

3GPP Power limitation for HSDPA and HSUPA

#### Maximum Output Powers for HSDPA

Sub-test in table C.10.1.4	Power Class 3		Power Class 4	
	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)
1	+24	+1.7/-3.7	+21	+2.7/-2.7
2	+24	+1.7/-3.7	+21	+2.7/-2.7
3	+23.5	+2.2/-3.7	+20.5	+3.2/-2.7
4	+23.5	+2.2/-3.7	+20.5	+3.2/-2.7

#### Maximum Output Powers for HSUPA

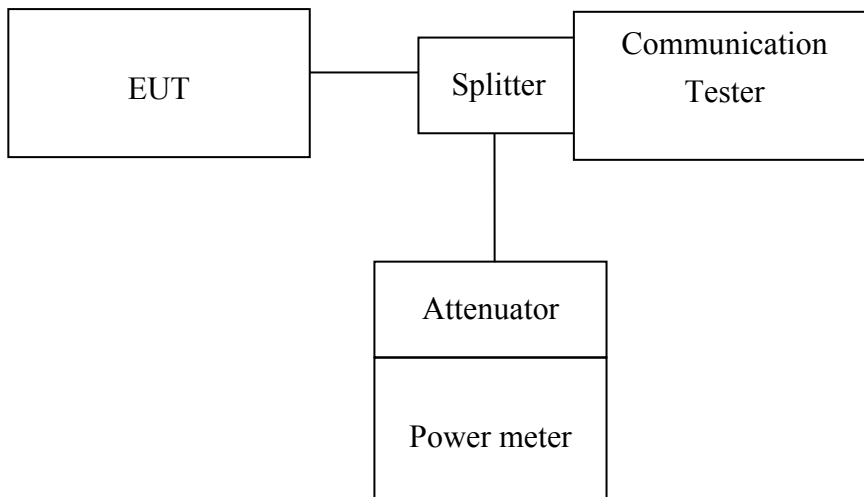
Sub-test in table C.11.1.3	Power Class 3		Power Class 4	
	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)
1	+24	+1.7/-6.7	+21	+2.7/-5.7
2	+22	+3.7/-5.2	+19	+4.7/-4.2
3	+23	+2.7/-5.2	+20	+3.7/-4.2
4	+22	+3.7/-5.2	+19	+4.7/-4.2
5	+24	+1.7/-6.7	+21	+2.7/-5.7

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**5.2. Test Set-up:**



*Note: Measurement setup for testing on Antenna connector*

**5.3. Measurement Procedure:**

The transmitter output was connected to a calibrated attenuator, the other end of which was connected to a power meter. Transmitter output was read off the power meter in dBm. The power output at the transmitter antenna port was determined by adding the value of the attenuator to the power meter reading. The Procedure of KDB941225(SAR Measurement Procedures for 3G devices, WCDMA/HSDPA) was used for EUT and Base station setting.RMC 12.2kps is used for this testing

**5.4. Measurement Equipment Used:**

Refer to section 2.4 in this report

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**5.5. Measurement Result:**

**5.1.1.: GSM/EDGE (GMSK; 8-PSK)**

**Result:**

Fre- quency (MHz)	CH	1 Time Slot				2 Time Slot			
		GMSK Mode		8-PSK Mode		GMSK Mode		8-PSK Mode	
		Peak Power (dBm)	AV Power (dBm)	Peak Power (dBm)	AV Power (dBm)	Peak Power (dBm)	AV Power (dBm)	Peak Power (dBm)	AV Power (dBm)
824.2	128	32.35	32.25	29.95	26.65	32.30	32.20	30.00	26.70
836.6	190	32.30	32.20	30.05	26.75	32.30	32.20	30.05	26.75
848.8	251	32.35	32.25	30.00	26.70	32.20	32.10	30.00	26.70
1850.2	512	29.05	28.95	28.75	25.45	28.95	28.75	28.65	25.45
1880.0	661	29.10	29.00	28.80	25.50	29.00	28.90	28.70	25.40
1909.8	810	29.05	28.95	28.85	25.55	29.05	28.95	28.75	25.50

Fre- quency (MHz)	CH	3 Time Slot				4 Time Slot			
		GMSK Mode		8-PSK Mode		GMSK Mode		8-PSK Mode	
		Peak Power (dBm)	AV Power (dBm)	Peak Power (dBm)	AV Power (dBm)	Peak Power (dBm)	AV Power (dBm)	Peak Power (dBm)	AV Power (dBm)
824.2	128	30.70	30.60	27.75	24.50	28.65	28.55	25.70	22.50
836.6	190	30.60	30.50	27.90	24.60	28.60	28.50	25.80	22.60
848.8	251	30.70	30.60	27.85b	24.55	28.55	28.45	25.65	22.45
1850.2	512	28.80	28.70	28.60	25.40	28.85	28.65	28.60	25.30
1880.0	661	28.95	28.85	28.75	25.45	28.90	28.70	28.65	25.40
1909.8	810	29.05	28.90	28.70	25.40	28.95	28.80	28.70	25.55

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**5.5.1.2: WCDMA mode**

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 V8.4.0 specification. The EUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7). RMC 12.2kps is used for this testing.

**Results:**

EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	AVG. Power (dBm)
WCDMA Band IV	1712.4	1312	26.65	23.35
	1732.6	1413	26.25	23.28
	1752.6	1513	26.24	23.14

Note: The results above reflect max power with all up bits.

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**5.5.13: HSDPA Release 6 mode**

The following 4 Sub-Tests were completed according to the test requirements outlined in section 5.2A of the 3GPP TS34.121-1 V8.4.0 specification. All TX power requirements for Power Class 3 were met according to table 5.2AA.5 and 5.2B.5 All UE channels and power ratio's are set according to table C10.1.4 & C11.1.3 in the 3GPP TS34.121-1 V8.4.0. RMC 12.2kps is used for this testing

**HSDPA SUB-TEST Setting**

**Table C.10.1.4:  $\beta$  values for transmitter characteristics tests with HS-DPCCH(FOR HSDPA)**

Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_c/\beta_d$	$\beta_{HS}$ (Note 1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)	RMC (Kbps)
1	2/15	15/15	64	2/15	4/15	0.0	0.0	12.2
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0	12.2
3	15/15	8/15	64	15/8	30/15	1.5	0.5	12.2
4	15/15	4/15	64	15/4	30/15	1.5	0.5	12.2

**Note: The recommended HSDPA MPRs are implemented as per following sub-tests.**

**Results:**

Mode	Sub-test	Transmitter Power (dBm)			Power Class 3 Limita- tion (dBm)	Comments
		Channel				
		1312	1413	1513		
HSDPA(B4)	1	23.64	23.54	22.41	20.3dBm – 25.7dBm	Pass
	2	23.23	23.14	22.99	20.3dBm – 25.7dBm	Pass
	3	22.31	22.29	22.10	19.8dBm – 25.7dBm	Pass
	4	22.42	22.39	22.32	19.8dBm – 25.7dBm	Pass

**5.5.1.4: HSPA (HSDPA & HSUPA) Release 6 mode**

The following 5 Sub-Tests were completed according to the test requirements outlined in section 5.2A of the 3GPP TS34.121-1 V8.4.0 specification. All TX power requirements for Power Class 3 were met according to table 5.2AA.5 and 5.2B.5 All UE channels and power ratio's are set according to table C11.1.3 in the 3GPP TS34.121-1 V8.4.0. RMC 12.2kps is used for this testing

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**HSPA SUB-TEST Setting**

**Table C.11.1.3:  $\beta$  values for transmitter characteristics tests with HS-DPCCH and E-DCH(FOR HSUPA)**

Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_c/\beta_d$	$\beta_{HS}$	$\beta_{ec}$	$\beta_{ed}$	$\beta_{ed}$ (SF)	$\beta_{ed}$ (Codes)	CM (dB)	MPR (dB)	AG Index	E-TFCI	RMC (Kbps)
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75	12.2
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67	12.2
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed1}: 47/15$ $\beta_{ed2}: 47/15$	4 4	2	2.0	1.0	15	92	12.2
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71	12.2
5	15/15 (Note 4)	15/15 (Note 4)	64	15/15 (Note 4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81	12.2

**Note: The recommended HSUPA are implemented as per following sub-tests.**

**Results:**

Mode	Sub-test	TX Power (dBm)			Power Class 3 Limitation (dBm)	Comments
		1312	1413	1513		
HSUPA(B4)	1	23.27	23.26	23.08	18.8dBm – 25.7dBm	Pass
	2	21.32	21.33	21.12	16.8dBm – 25.7dBm	Pass
	3	22.33	22.28	22.16	17.8dBm – 25.7dBm	Pass
	4	21.45	21.38	21.16	16.8dBm – 25.7dBm	Pass
	5	23.11	23.16	22.99	18.8dBm – 25.7dBm	Pass

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## 6. ERP, EIRP MEASUREMENT

### 6.1. Standard Applicable:

According to FCC §2.1046

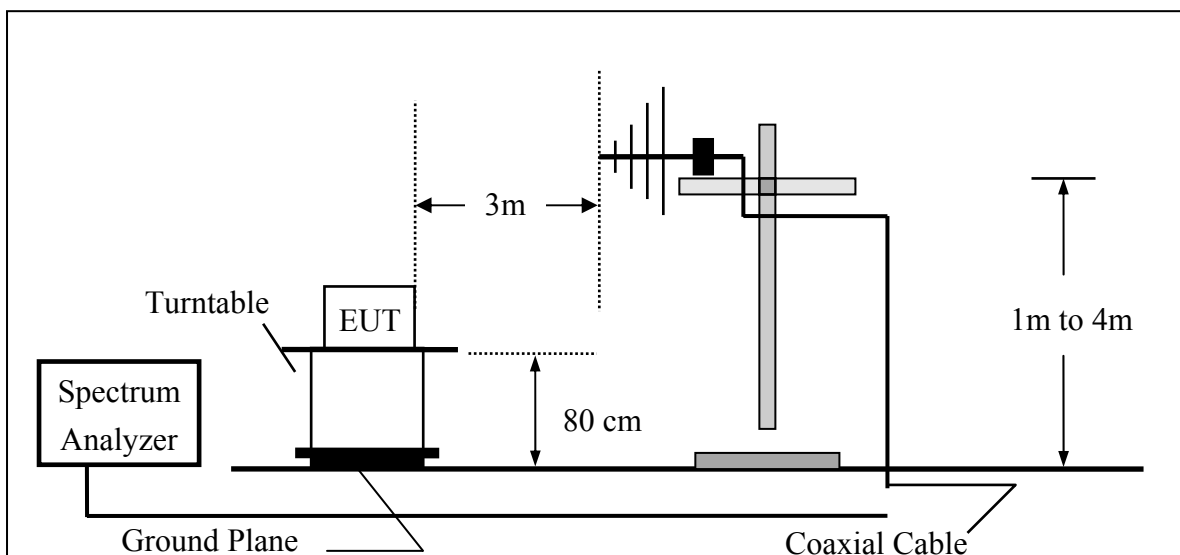
FCC 22.913(a) Mobile station are limited to 7W ERP.

FCC 24.232(b) Mobile station are limited to 2W EIRP.

FCC 27.50(d)(2) Fixed, mobile, and portable (hand-held) stations are limited to 1W EIRP.

### 6.2. Test SET-UP (Block Diagram of Configuration):

(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz

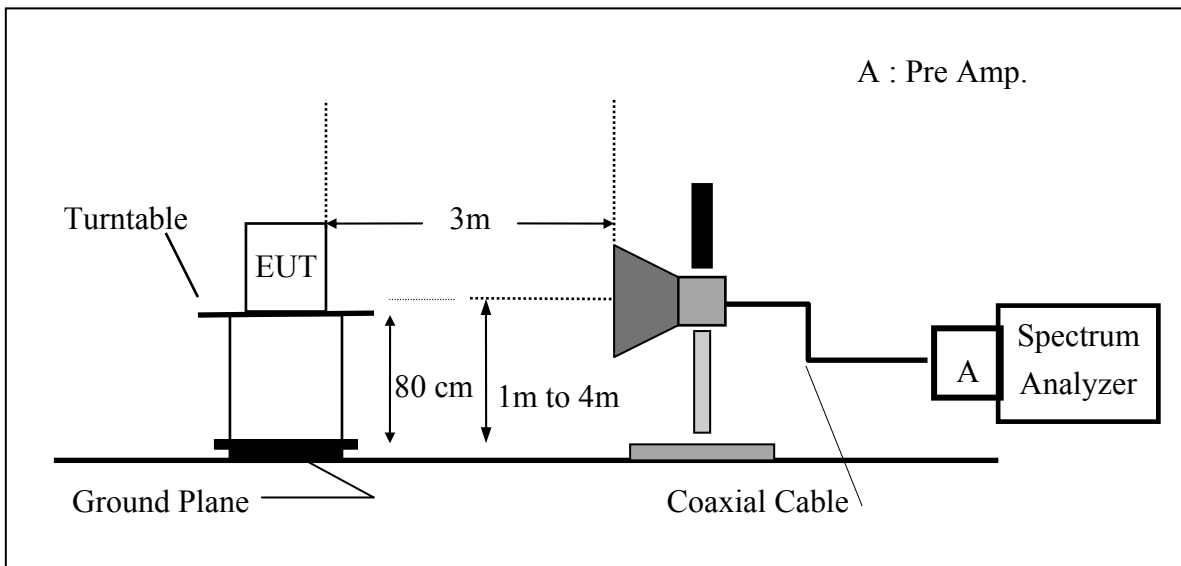


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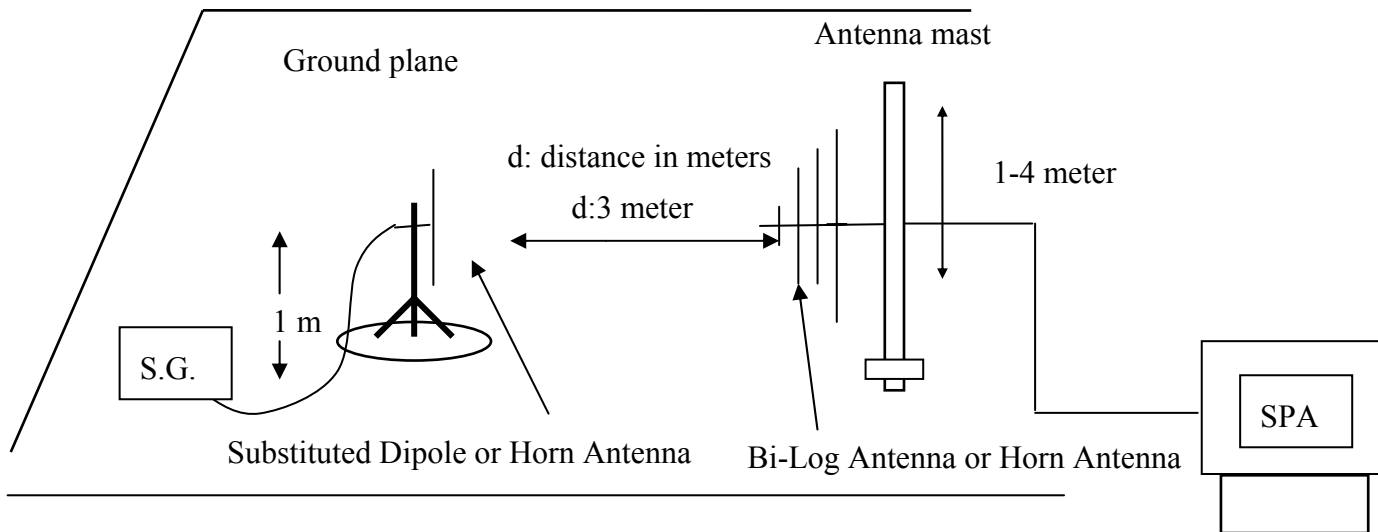
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(B) Radiated Emission Test Set-UP Frequency Over 1 GHz



(C) Substituted Method Test Set-UP



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SGS Taiwan Ltd. No.134, Wu Kung Road, Wuku Industrial Zone, Taipei County, Taiwan / 台北縣五股工業區五工路 134 號

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### 6.3. Measurement Procedure:

The EUT was placed on a non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer.

During the measurement, the EUT was in communication with the station. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated.

ERP in frequency band 824.2 –848.80MHz were measured using a substitution method. The EUT was replaced by a dipole antenna connected, the S.G. output was recorded and ERP was calculated as follows:

EIRP in frequency band 1710-1755MHz and 1850.2 –1909.8MHz were measured using a substitution method. The EUT was replaced by a horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows:

$$\text{ERP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBd)} - \text{Cable Loss (dB)}$$

$$\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable Loss (dB)}$$

### 6.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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6.5. Measurement Result:

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
GSM 850	824.20	128	H	V	128.44	42.05	-7.87	3.62	30.55	38.45
				H	115.66	29.39	-7.87	3.62	17.89	38.45
			E1	V	114.08	27.69	-7.87	3.62	16.19	38.45
				H	127.81	41.54	-7.87	3.62	30.04	38.45
			E2	V	116.71	30.32	-7.87	3.62	18.82	38.45
				H	128.43	42.16	-7.87	3.62	<b>30.66</b>	38.45
	836.60	190	H	V	128.35	42.10	-7.88	3.65	30.57	38.45
				H	115.05	28.82	-7.88	3.65	17.29	38.45
			E1	V	112.97	26.72	-7.88	3.65	15.19	38.45
				H	127.79	41.56	-7.88	3.65	30.03	38.45
			E2	V	116.06	29.81	-7.88	3.65	18.28	38.45
				H	127.42	41.19	-7.88	3.65	29.66	38.45
	848.80	251	H	V	128.31	42.19	-7.88	3.68	30.63	38.45
				H	113.95	27.76	-7.88	3.68	16.20	38.45
			E1	V	112.28	26.16	-7.88	3.68	14.60	38.45
				H	127.50	41.31	-7.88	3.68	29.75	38.45
			E2	V	115.33	29.21	-7.88	3.68	17.65	38.45
				H	126.94	40.75	-7.88	3.68	29.19	38.45

Remark :

- (1) The RBW,VBW of SPA for frequency  
RBW=300 KHz, VBW=1MHz,

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**Measurement Result:**

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
EDGE 850	824.20	128	H	V	126.16	39.77	-7.87	3.62	<b>28.27</b>	38.45
				H	113.15	26.88	-7.87	3.62	15.38	38.45
			E1	V	111.87	25.48	-7.87	3.62	13.98	38.45
				H	125.54	39.27	-7.87	3.62	27.77	38.45
			E2	V	111.61	25.22	-7.87	3.62	13.72	38.45
				H	125.10	38.83	-7.87	3.62	27.33	38.45
	836.60	190	H	V	126.00	39.75	-7.88	3.65	28.22	38.45
				H	112.52	26.29	-7.88	3.65	14.76	38.45
			E1	V	111.22	24.97	-7.88	3.65	13.44	38.45
				H	125.53	39.30	-7.88	3.65	27.77	38.45
			E2	V	110.64	24.39	-7.88	3.65	12.86	38.45
				H	125.07	38.84	-7.88	3.65	27.31	38.45
	848.80	251	H	V	124.42	38.30	-7.88	3.68	26.74	38.45
				H	111.31	25.12	-7.88	3.68	13.56	38.45
			E1	V	110.42	24.30	-7.88	3.68	12.74	38.45
				H	125.88	39.69	-7.88	3.68	28.13	38.45
			E2	V	110.41	24.29	-7.88	3.68	12.73	38.45
				H	124.73	38.54	-7.88	3.68	26.98	38.45

**Remark :**

- (1) The RBW,VBW of SPA for frequency  
RBW=300 KHz, VBW=1MHz,

**Measurement Result:**

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
PCS 1900	1850.20	512	H	V	122.93	18.54	9.90	5.56	22.88	33.00
				H	122.54	18.36	9.90	5.56	22.70	33.00
			E1	V	127.50	23.11	9.90	5.56	27.45	33.00
				H	121.20	17.02	9.90	5.56	21.36	33.00
			E2	V	112.14	7.75	9.90	5.56	12.09	33.00
				H	125.75	21.57	9.90	5.84	25.63	33.00
	1880.00	661	H	V	123.24	18.88	9.99	5.61	23.26	33.00
				H	123.77	19.63	9.99	5.61	24.00	33.00
			E1	V	128.80	24.44	9.99	5.61	<b>28.82</b>	33.00
				H	120.57	16.43	9.99	5.61	20.80	33.00
			E2	V	112.02	7.66	9.99	5.61	12.04	33.00
				H	126.59	22.45	9.99	5.61	26.82	33.00
	1909.80	810	H	V	122.96	18.63	10.08	5.66	23.05	33.00
				H	123.47	19.36	10.08	5.66	23.78	33.00
			E1	V	128.55	24.22	10.08	5.66	28.64	33.00
				H	119.83	15.72	10.08	5.66	20.14	33.00
			E2	V	111.27	6.94	10.08	5.66	11.36	33.00
				H	127.07	22.96	10.08	5.66	27.38	33.00

**Remark :**

(1) The RBW,VBW of SPA for frequency

RBW=300 KHz, VBW=1MHz,

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**Measurement Result:**

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
EDGE 1900	1850.20	512	H	V	121.05	16.66	9.90	5.56	21.00	33.00
				H	122.41	18.23	9.90	5.56	22.57	33.00
			E1	V	128.07	23.68	9.90	5.56	28.02	33.00
				H	121.71	17.53	9.90	5.56	21.87	33.00
			E2	V	116.19	11.80	9.90	5.56	16.14	33.00
				H	127.25	23.07	9.90	5.84	27.13	33.00
	1880.00	661	H	V	123.33	18.97	9.99	5.61	23.35	33.00
				H	123.12	18.98	9.99	5.61	23.35	33.00
			E1	V	128.76	24.40	9.99	5.61	<b>28.78</b>	33.00
				H	121.41	17.27	9.99	5.61	21.64	33.00
			E2	V	115.56	11.20	9.99	5.61	15.58	33.00
				H	128.20	24.06	9.99	5.61	28.43	33.00
	1909.80	810	H	V	122.65	18.32	10.08	5.66	22.74	33.00
				H	124.07	19.96	10.08	5.66	24.38	33.00
			E1	V	128.38	24.05	10.08	5.66	28.47	33.00
				H	120.34	16.23	10.08	5.66	20.65	33.00
			E2	V	114.25	9.92	10.08	5.66	14.34	33.00
				H	128.14	24.03	10.08	5.66	28.45	33.00

**Remark :**

(1) The RBW,VBW of SPA for frequency

RBW=300 KHz, VBW=1MHz,

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**Measurement Result:**

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
WCDMA IV	1712.40	1312	H	V	121.59	14.57	9.48	5.17	18.89	33.00
				H	120.08	13.11	9.48	5.17	17.42	33.00
			E1	V	121.48	14.46	9.48	5.17	18.78	33.00
				H	120.22	13.25	9.48	5.17	17.56	33.00
			E2	V	111.96	4.94	9.48	5.17	9.26	33.00
				H	122.81	15.84	9.90	5.84	19.90	33.00
	1732.60	1413	H	V	120.48	13.47	9.54	5.20	17.81	33.00
				H	119.24	12.28	9.54	5.20	16.62	33.00
			E1	V	121.04	14.03	9.54	5.20	18.37	33.00
				H	119.01	12.05	9.54	5.20	16.39	33.00
			E2	V	111.66	4.65	9.54	5.20	8.99	33.00
				H	121.51	14.55	9.54	5.20	18.89	33.00
	1752.60	1513	H	V	119.43	12.43	9.60	5.24	16.80	33.00
				H	119.98	13.03	9.60	5.24	17.40	33.00
			E1	V	122.56	15.56	9.60	5.24	19.93	33.00
				H	119.25	12.30	9.60	5.24	16.67	33.00
			E2	V	110.95	3.95	9.60	5.24	8.32	33.00
				H	122.68	15.73	9.60	5.24	<b>20.10</b>	33.00

**Remark:**

- (1) The RBW,VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz

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**Measurement Result:**

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
HSUPA IV	1712.40	1312	H	V	121.84	14.82	9.48	5.17	19.14	33.00
				H	119.99	13.02	9.48	5.17	17.33	33.00
			E1	V	123.04	16.02	9.48	5.17	20.34	33.00
				H	122.66	15.69	9.48	5.17	20.00	33.00
			E2	V	114.25	7.23	9.48	5.17	11.55	33.00
				H	124.01	17.04	9.90	5.84	21.10	33.00
	1732.60	1413	H	V	120.97	13.96	9.54	5.20	18.30	33.00
				H	120.57	13.61	9.54	5.20	17.95	33.00
			E1	V	122.84	15.83	9.54	5.20	20.17	33.00
				H	120.96	14.00	9.54	5.20	18.34	33.00
			E2	V	113.02	6.01	9.54	5.20	10.35	33.00
				H	123.39	16.43	9.54	5.20	20.77	33.00
	1752.60	1513	H	V	121.24	14.24	9.60	5.24	18.61	33.00
				H	121.01	14.06	9.60	5.24	18.43	33.00
			E1	V	123.75	16.75	9.60	5.24	21.12	33.00
				H	121.97	15.02	9.60	5.24	19.39	33.00
			E2	V	113.56	6.56	9.60	5.24	10.93	33.00
				H	124.58	17.63	9.60	5.24	<b>22.00</b>	33.00

**Remark:**

- (1) The RBW,VBW of SPA for frequency  
RBW= 5MHz , VBW= 8MHz

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## 7. FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

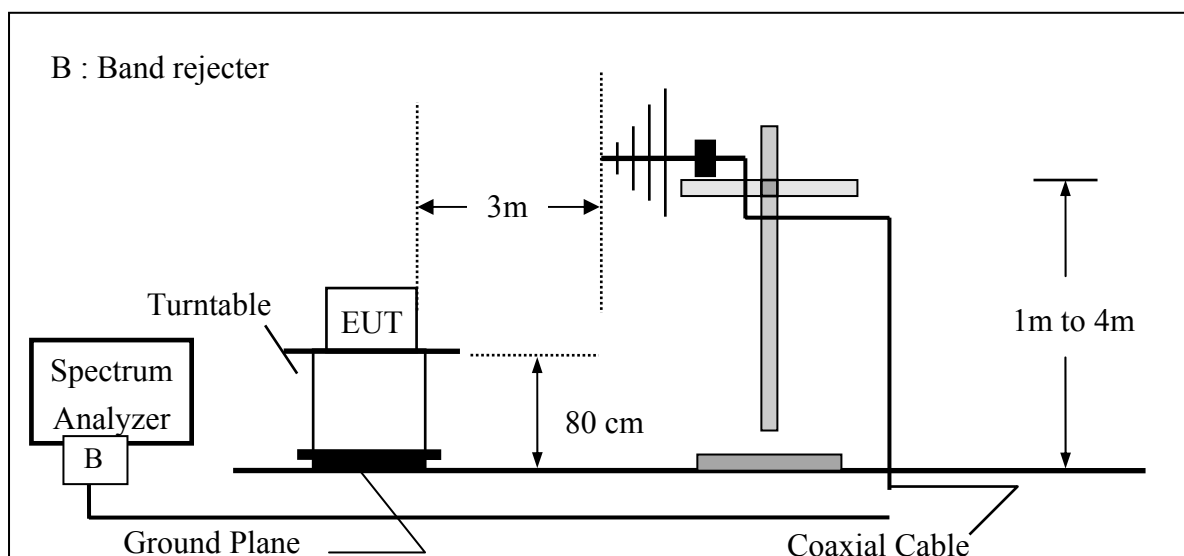
### 7.1. Standard Applicable:

According to FCC §2.1053,

FCC §22.917(a), §24.238(a), §27.53(g) the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specified in the instruction manual and/ or alignment procedure, shall not be less than  $43 + 10 \log$  (mean output power in watts) dBc below the mean power output outside a license's frequency block (-13dBm)

### 7.2. EUT Setup (Block Diagram of Configuration):

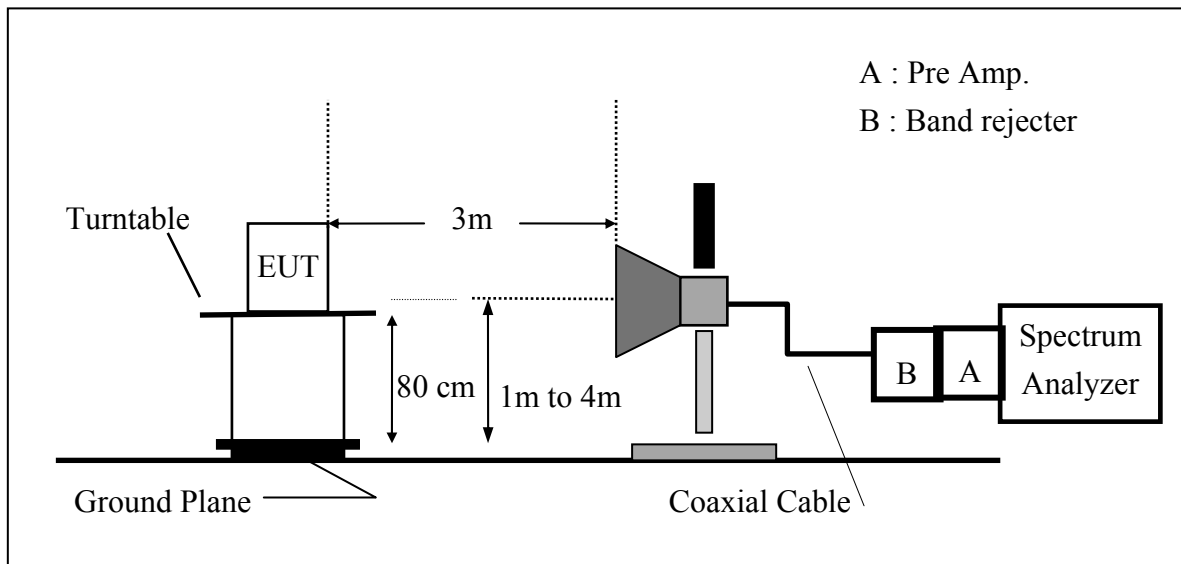
(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



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(B) Radiated Emission Test Set-UP Frequency Over 1 GHz



**7.3. Measurement Procedure:**

The EUT was placed on a non-conductive; The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method.

The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency.

$$ERP = S.G. \text{ output (dBm)} + \text{Antenna Gain (dBd)} - \text{Cable Loss (dB)}$$

$$EIRP = S.G. \text{ output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable Loss (dB)}$$

**7.4. Measurement Equipment Used:**

Refer to section 2.4 in this report

**7.5. Measurement Result:**

Refer to attach tabular data sheets.

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**Radiated Spurious Emission Measurement Result: GPRS 850 Mode**

Operation Mode	: TX CH Low E2 Mode	Test Date:	Dec. 29, 2010
Fundamental Frequency	: 824.20 MHz	Test By:	Jason
Temperature	: 25°C	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA Reading (dBuV)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
31.94	43.57	V	-60.57	-6.43	0.94	-67.94	-13.00	-54.94
93.05	43.42	V	-59.39	-7.75	1.30	-68.44	-13.00	-55.44
107.60	46.28	V	-54.94	-7.77	1.39	-64.10	-13.00	-51.10
824.00	84.38	V	-2.01	-7.87	3.62	-13.51	-13.00	-0.51
1648.40	41.45	V	-63.13	9.29	5.23	-59.07	-13.00	-46.07
2472.60	43.11	V	-57.90	10.08	6.53	-54.35	-13.00	-41.35
3296.80	---	V		12.17	7.71		-13.00	
4121.00	---	V		12.61	8.86		-13.00	
4945.20	42.51	V	-49.96	12.65	9.74	-47.05	-13.00	-34.05
5769.40	---	V		13.55	10.54		-13.00	
6593.60	---	V		12.05	11.30		-13.00	
7417.80	---	V		11.49	12.10		-13.00	
8242.00	---	V		11.48	12.71		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark”---“ means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG \text{ Setting}(dBm) + Antenna \text{ Gain} (dB/dBi) - Cable \text{ loss} (dB)$

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**Radiated Spurious Emission Measurement Result: GPRS 850 Mode**

Operation Mode	: TX CH Low E2 Mode	Test Date:	Dec. 29, 2010
Fundamental Frequency	: 824.20 MHz	Test By:	Jason
Temperature	: 25°C	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA Reading (dBuV)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
39.70	37.86	H	-65.03	-2.79	0.89	-68.72	-13.00	-55.72
93.05	39.72	H	-63.79	-7.75	1.30	-72.84	-13.00	-59.84
107.60	43.47	H	-58.74	-7.77	1.39	-67.90	-13.00	-54.90
534.40	33.66	H	-58.60	-7.75	2.91	-69.26	-13.00	-56.26
824.00	73.72	H	-12.55	-7.87	3.62	-24.05	-13.00	-11.05
1648.40	54.06	H	-50.34	9.29	5.23	-46.28	-13.00	-33.28
2472.60	42.85	H	-58.06	10.08	6.53	-54.51	-13.00	-41.51
3296.80	---	H		12.17	7.71		-13.00	
4121.00	35.13	H	-61.12	12.61	8.86	-57.37	-13.00	-44.37
4945.20	43.87	H	-48.77	12.65	9.74	-45.85	-13.00	-32.85
5769.40	---	H		13.55	10.54		-13.00	
6593.60	---	H		12.05	11.30		-13.00	
7417.80	---	H		11.49	12.10		-13.00	
8242.00	---	H		11.48	12.71		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz - 1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark"---" means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG \text{ Setting}(dBm) + Antenna \text{ Gain} (dB/dBi) - Cable \text{ loss} (dB)$

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**Radiated Spurious Emission Measurement Result: GPRS 850 Mode**

Operation Mode	: TX CH Mid E2 Mode	Test Date:	Dec. 29, 2010
Fundamental Frequency	: 836.60 MHz	Test By:	Jason
Temperature	: 25°C	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBUV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
90.14	42.60	V	-60.58	-7.75	1.27	-69.60	-13.00	-56.60
107.60	46.48	V	-54.74	-7.77	1.39	-63.90	-13.00	-50.90
148.34	35.61	V	-61.83	-7.80	1.58	-71.21	-13.00	-58.21
707.06	33.84	V	-55.27	-7.86	3.32	-66.45	-13.00	-53.45
1673.20	39.82	V	-64.74	9.36	5.27	-60.64	-13.00	-47.64
2509.80	41.10	V	-59.68	10.09	6.58	-56.18	-13.00	-43.18
3346.40	---	V		12.28	7.79		-13.00	
4183.00	---	V		12.62	8.93		-13.00	
5019.60	40.82	V	-51.33	12.67	9.81	-48.47	-13.00	-35.47
5856.20	---	V		13.68	10.62		-13.00	
6692.80	---	V		11.95	11.39		-13.00	
7529.40	---	V		11.45	12.20		-13.00	
8366.00	---	V		11.59	12.81		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belongs to narrowband spurious emission.
- 2 Remark”---“ means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG \text{ Setting}(dBm) + Antenna \text{ Gain} (dB/dBi) - Cable \text{ loss} (dB)$

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**Radiated Spurious Emission Measurement Result: GPRS 850 Mode**

Operation Mode : TX CH Mid E2 Mode  
 Fundamental Frequency : 836.60 MHz  
 Temperature : 25°C  
 Humidity : 65%

Test Date: Dec. 29, 2010  
 Test By: Jason  
 Pol: Hor

Freq. (MHz)	SPA Reading (dBUV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
93.05	39.60	H	-63.91	-7.75	1.30	-72.96	-13.00	-59.96
107.60	42.23	H	-59.98	-7.77	1.39	-69.14	-13.00	-56.14
148.34	33.83	H	-64.11	-7.80	1.58	-73.49	-13.00	-60.49
607.15	32.57	H	-57.99	-7.79	3.05	-68.83	-13.00	-55.83
1673.20	48.84	H	-55.54	9.36	5.27	-51.44	-13.00	-38.44
2509.80	38.97	H	-61.73	10.09	6.58	-58.23	-13.00	-45.23
3346.40	---	H		12.28	7.79		-13.00	
4183.00	---	H		12.62	8.93		-13.00	
5019.60	47.37	H	-44.95	12.67	9.81	-42.08	-13.00	-29.08
5856.20	---	H		13.68	10.62		-13.00	
6692.80	---	H		11.95	11.39		-13.00	
7529.40	---	H		11.45	12.20		-13.00	
8366.00	---	H		11.59	12.81		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark”---“ means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG \text{ Setting}(dBm) + Antenna \text{ Gain} (dB/dBi) - Cable \text{ loss} (dB)$

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**Radiated Spurious Emission Measurement Result: GPRS 850 Mode**

Operation Mode	: TX CH High E2 Mode	Test Date:	Dec. 29, 2010
Fundamental Frequency	: 848.80 MHz	Test By:	Jason
Temperature	: 25°C	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA Reading (dBUV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
31.94	42.17	V	-61.97	-6.43	0.94	-69.34	-13.00	-56.34
93.05	42.46	V	-60.35	-7.75	1.30	-69.40	-13.00	-56.40
107.60	46.65	V	-54.57	-7.77	1.39	-63.73	-13.00	-50.73
747.80	32.56	V	-54.65	-7.87	3.46	-65.98	-13.00	-52.98
849.00	83.93	V	-2.19	-7.88	3.68	-13.75	-13.00	-0.75
1697.60	39.49	V	-65.05	9.44	5.31	-60.92	-13.00	-47.92
2546.40	40.84	V	-59.80	10.20	6.63	-56.24	-13.00	-43.24
3395.20	---	V		12.38	7.87		-13.00	
4244.00	---	V		12.63	9.00		-13.00	
5092.80	38.62	V	-53.36	12.74	9.88	-50.49	-13.00	-37.49
5941.60	---	V		13.81	10.70		-13.00	
6790.40	---	V		11.86	11.48		-13.00	
7639.20	---	V		11.40	12.27		-13.00	
8488.00	---	V		11.70	12.91		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark"---" means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG \text{ Setting}(dBm) + Antenna \text{ Gain} (dB/dBi) - Cable \text{ loss} (dB)$

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**Radiated Spurious Emission Measurement Result: GPRS 1900 Mode**

Operation Mode	: TX CH Low E2 Mode	Test Date:	Dec. 29, 2010
Fundamental Frequency	: 1850.20MHz	Test By:	Jason
Temperature	: 25°C	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
93.05	49.41	V	-53.40	-7.75	1.30	-62.45	-13.00	-49.45
105.66	48.12	V	-53.28	-7.76	1.39	-62.43	-13.00	-49.43
425.76	34.85	V	-59.84	-7.68	2.59	-70.11	-13.00	-57.11
898.15	37.15	V	-47.65	-7.95	3.79	-59.38	-13.00	-46.38
1850.00	85.79	V	-18.60	9.90	5.56	-14.26	-13.00	-1.26
3700.40	35.31	V	-62.62	12.61	8.31	-58.32	-13.00	-45.32
5550.60	36.67	V	-54.17	13.23	10.33	-51.27	-13.00	-38.27
7400.80	---	V		11.50	12.08		-13.00	
9251.00	---	V		11.92	13.50		-13.00	
11101.20	---	V		11.66	15.11		-13.00	
12951.40	---	V		13.63	16.60		-13.00	
14801.60	---	V		12.76	17.95		-13.00	
16651.80	---	V		15.92	19.14		-13.00	
18502.00	---	V		18.75	10.40		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark"---" means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG \text{ Setting}(dBm) + Antenna \text{ Gain} (dB/dBi) - Cable \text{ loss} (dB)$

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**Radiated Spurious Emission Measurement Result: GPRS 1900 Mode**

Operation Mode	: TX CH Low E1 Mode	Test Date:	Dec. 29, 2010
Fundamental Frequency	: 1850.20MHz	Test By:	Jason
Temperature	: 25°C	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA Reading (dBUV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
39.70	43.26	H	-59.63	-2.79	0.89	-63.32	-13.00	-50.32
93.05	42.47	H	-61.04	-7.75	1.30	-70.09	-13.00	-57.09
105.66	43.48	H	-58.93	-7.76	1.39	-68.08	-13.00	-55.08
612.00	32.82	H	-57.64	-7.79	3.06	-68.50	-13.00	-55.50
1850.00	75.53	H	-28.65	9.90	5.56	-24.31	-13.00	-11.31
3700.40	34.64	H	-63.40	12.61	8.31	-59.10	-13.00	-46.10
5550.60	36.05	H	-55.00	13.23	10.33	-52.10	-13.00	-39.10
7400.80	---	H		11.50	12.08		-13.00	
9251.00	---	H		11.92	13.50		-13.00	
11101.20	---	H		11.66	15.11		-13.00	
12951.40	---	H		13.63	16.60		-13.00	
14801.60	---	H		12.76	17.95		-13.00	
16651.80	---	H		15.92	19.14		-13.00	
18502.00	---	H		18.75	10.40		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark"---" means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG \text{ Setting}(dBm) + Antenna \text{ Gain} (dB/dBi) - Cable \text{ loss} (dB)$

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**Radiated Spurious Emission Measurement Result: GPRS 1900 Mode**

Operation Mode : TX CH Mid E1 Mode  
 Fundamental Frequency : 1880MHz  
 Temperature : 25°C  
 Humidity : 65%

Test Date: Dec. 29, 2010  
 Test By: Jason  
 Pol: Ver

Freq. (MHz)	SPA Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
31.94	48.91	V	-55.23	-6.43	0.94	-62.60	-13.00	-49.60
90.14	49.93	V	-53.25	-7.75	1.27	-62.27	-13.00	-49.27
105.66	49.97	V	-51.43	-7.76	1.39	-60.58	-13.00	-47.58
3760.00	34.34	V	-63.32	12.60	8.39	-59.10	-13.00	-46.10
5640.00	42.57	V	-48.01	13.36	10.41	-45.06	-13.00	-32.06
7520.00	---	V		11.45	12.19		-13.00	
9400.00	---	V		11.93	13.61		-13.00	
11280.00	---	V		11.92	15.27		-13.00	
13160.00	---	V		13.33	16.71		-13.00	
15040.00	---	V		13.76	18.15		-13.00	
16920.00	---	V		15.27	19.32		-13.00	
18800.00	---	V		18.68	16.58		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz - 1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark"---" means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG \text{ Setting}(dBm) + Antenna \text{ Gain} (dB/dBi) - Cable \text{ loss} (dB)$

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**Radiated Spurious Emission Measurement Result: GPRS 1900 Mode**

Operation Mode : TX CH Mid E1 Mode  
 Fundamental Frequency : 1880MHz  
 Temperature : 25°C  
 Humidity : 65%

Test Date: Dec. 29, 2010  
 Test By: Jason  
 Pol: Hor

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
31.94	44.18	H	-61.12	-6.43	0.94	-68.49	-13.00	-55.49
93.05	42.89	H	-60.62	-7.75	1.30	-69.67	-13.00	-56.67
105.66	43.21	H	-59.20	-7.76	1.39	-68.35	-13.00	-55.35
3760.00	34.19	H	-63.58	12.60	8.39	-59.37	-13.00	-46.37
5640.00	38.80	H	-51.95	13.36	10.41	-49.00	-13.00	-36.00
7520.00	---	H		11.45	12.19		-13.00	
9400.00	---	H		11.93	13.61		-13.00	
11280.00	---	H		11.92	15.27		-13.00	
13160.00	---	H		13.33	16.71		-13.00	
15040.00	---	H		13.76	18.15		-13.00	
16920.00	---	H		15.27	19.32		-13.00	
18800.00	---	H		18.68	16.58		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz - 1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark"---" means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG \text{ Setting}(dBm) + Antenna \text{ Gain} (dB/dBi) - Cable \text{ loss} (dB)$

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**Radiated Spurious Emission Measurement Result: GPRS 1900 Mode**

Operation Mode	: TX CH High E1 Mode	Test Date:	Dec. 29, 2010
Fundamental Frequency	: 1909.8 MHz	Test By:	Jason
Temperature	: 25°C	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
30.00	48.57	V	-56.13	-7.34	0.95	-64.42	-13.00	-51.42
93.05	49.30	V	-53.51	-7.75	1.30	-62.56	-13.00	-49.56
105.66	50.13	V	-51.27	-7.76	1.39	-60.42	-13.00	-47.42
1910.00	84.13	V	-20.20	10.08	5.66	-15.78	-13.00	-2.78
3819.60	34.24	V	-63.15	12.60	8.47	-59.02	-13.00	-46.02
5729.40	33.96	V	-56.36	13.49	10.50	-53.36	-13.00	-40.36
7639.20	---	V		11.40	12.27		-13.00	
9549.00	---	V		11.95	13.74		-13.00	
11458.80	---	V		12.17	15.43		-13.00	
13368.60	---	V		12.97	16.82		-13.00	
15278.40	---	V		15.00	18.29		-13.00	
17188.20	---	V		14.47	19.52		-13.00	
19098.00	---	V		18.66	20.78		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

- 1 The emission behaviors belong to narrowband spurious emission.
- 2 Remark"---" means that the emission level is too low to be measured
- 3 The result basic equation calculation is as follows:
- 4  $ERP/EIRP (dBm) = SG \text{ Setting}(dBm) + Antenna \text{ Gain} (dB/dBi) - Cable \text{ loss} (dB)$

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