

Report No.: ER/2008/50016~17 Issue Date: May. 27, 2008 Page: 1 of 78

# **ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT**

# INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 22 SUBPART H and PART 24 SUBPART E

# INDUSTRY CANADA RSS-132 and RSS-133 FULL MODULE APPROVED REQUIREMENT

OF

Product Name:	3.5G module
Brand Name:	Flex
Model Name:	MC8775
Market Name:	N/A
FCC ID:	ID48775
IC ID:	5248N-8775
Report No.:	ER/2008/50016~17
Issue Date:	May. 27, 2008
Rule Part:	2 , 22H & 24E RSS 132, Issue 2 and RSS 133, Issue 3
Prepared for:	Flextronics International (Taiwan) Ltd. 6F., No.758, Sec.4, Bade Rd., Songshan District, Taipei City 10567, Taiwan, R.O.C.
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:	Flextronics International (Taiwan) Ltd. 6F., No.758, Sec.4, Bade Rd., Songshan District, Taipei City 10567, Tai- wan, R.O.C.
Product Name:	3.5G module
FCC ID Number:	ID48775
IC ID Number:	5248N-8775
Brand Name:	Flex
Model No.:	MC8775
Market name:	N/A
Module FCC ID:	N7NMC8775
Model Difference:	N/A
File Number:	ER/2008/50016~17
Date of test:	May. 09, 2008 ~ May 20, 2008
Date of EUT Received:	May. 08, 2008

# We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. 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-B-2002 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 and FCC PART 24 subpart E, Issue 2 of RSS-132 and Issue 3 of RSS-133.

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

Test By:	Sky Wang	Date	May. 27, 2008
_	Sky Wang / Asst. Supervisor	-	
Prepared By:	Alex Hsieh	Date	May. 27, 2008
-	Alex Hsieh / Sr. Engineer	_	
Approved By:	Vinent du	Date	May. 27, 2008
-	Vincent Su / Manager	-	
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Report No.: ER/2008/50016~17 Issue Date: May. 27, 2008 Page: 3 of 78

# **Report Version**

Version No.	Date
00	May. 27, 2008

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# **1. GENERAL INFORMATION**

Product Name:	3.5G module		
Model Name:	MC8775		
Market name:	N/A		
Model Difference:	N/A		
Brand Name:	Flex		
	3.7 Vdc		
Power Supply:	Battery Model:	N/A	
	Adapter Model:	N/A	

### GSM and WCDMA:

	GSM/GPRS 850, class 10	824 MHz- 849MHz	33 dBm		
	EDGE 850	824 MHz- 849MHz	27 dBm		
Cellular Phone Standards	GSM/GPRS 1900, class 10	1850MHz – 1910MHz	30 dBm		
Frequency Range and Power	EDGE 1900	1850MHz – 1910MHz	26 dBm		
	WCDMA/HSDPA Band II	1852MHz – 1908MHz	24 dBm		
	WCDMA/HSDPA Band V	826 MHz- 847MHz	24 dBm		
	GSM: 300KGXW				
Type of Emission	EDGE: 300KG7W				
	WCDMA: 4M20F9W				
IMEI	352678013333643				

#### Antenna Specification

Item no.	Model/Type		
	Antenna Type	PIFA Antenna	
Antenna	Manufacture:	YAGEO	
	Frequency Range:	850 / 900 / 1800 / 1900 / 2100	
	Antenna Gain:	850MHz: -1.4dBi ; 1900MHz: 1.35dBi	

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

This submittal(s) (test report) is intended for FCC ID:ID48775 and IC ID:5248N-8775 filing to comply with Section Part 22 subpart H and Part 24 subpart E of the FCC CFR 47 Rules.and issue 2 of RSS-132 and issue 3 of RSS-133

# **1.2.** Test Methodology

Both conducted and radiated testing were performed according to the procedures document on chapter 13 of ANSI C63.4 (2003) and FCC CFR 47.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, issue 2 of RSS-132 and issue 3 of RSS-133.

# **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-1

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.

# **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 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 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m 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 8 and 13 and Subclause 8.3.1.2 of ANSI C63.4-2003.

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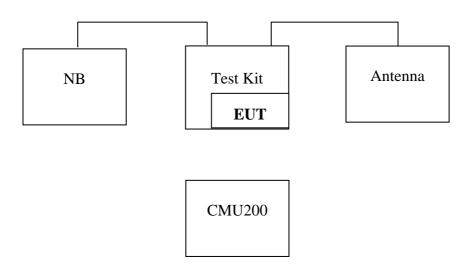
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# 2.4. Configuration of Tested System





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

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1	Universal Radio Commu- nication Tester	R&S	CMU200	102189	shielded	Un-shielded
2	Test Kit	FLEX	N/A	N/A	N/A	N/A
3	Antenna	N/A	N/A	N/A	Un-shielded	Un-shielded
4	Notebook	IBM	T43	L3LHHN6	N/A	Un-shielded
5	Test software	Sierra	N/A	N/A	N/A	N/A

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# 3. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result	
§2.1046(a)			
§22.913(a)	RF Power Output	Compliant	
§24.232(a)			
§2.1046(a)			
§22.913(a)			
§24.232(a)	ERP/ EIRP measurement	Compliant	
§4.4 (RSS-132)			
§6.4 (RSS-133)			
§2.1049	99% Occupied Bandwidth	Compliant	
§2.1051			
§22.917(a)	Out of Band Emissions at Antenna		
§24.238(a)	Terminals and	N/A	
§4.5(RSS-132)	Band Edge		
§6.5(RSS-133)			
§2.1053		Compliant	
§22.917(a)			
§24.238(a)	Field Strength of Spurious Radiation		
§4.5(RSS-132)			
§6.5(RSS-133)			
§2.1055(a)(1)(b)			
§4.6(RSS-132)	Frequency Stability vs. Temperature	N/A	
§6.7(RSS-133)			
§2.1055(d)(1)(2)			
§4.3(RSS-132)	Frequency Stability vs. Voltage	N/A	
§6.3(RSS-133)			
§15.107;§15.207	AC Power Line Conducted Emission	N/A	
§4.6(RSS-132)	Dessiver Spurious Emissions	Compliant	
§6.7(RSS-133)	Receiver Spurious Emissions	Compliant	

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#### DESCRIPTION OF TEST MODES 4.

The EUT has been tested under operating condition.

The module was pre-approved and the FCC ID number is N7NMC8775. Thus, the output power, ERP/EIRP, Field Strength of Spurious Radiation were tested at GSM, EDGE and WCDMA modes.

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

The field strength of spurious radiation emission was measured with antenna for both GSM850/GSM1900 and WCDMA Band II /V at channel Low, Mid and High were reported.

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#### **RF POWER OUTPUT MEASUREMENT** 5.

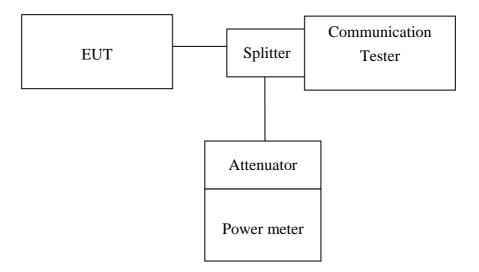
# 5.1. Standard Applicable

According to FCC §2.1046.

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

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

# 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.

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# 5.4. Measurement Equipment Used:

	Conducte	ed Emission T	'est Site		
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
ТҮРЕ		NUMBER	NUMBER	CAL.	
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/27/2008	04/26/2009
Spectrum Analyzer	Agilent	E7405A	US41160416	06/28/2007	06/27/2008
Spectrum Analyzer	R&S	FSP 40	100034	11/09/2007	11/10/2008
Communication Test	unication Test R&S SMU200		N/A	N/A	N/A
Power Sensor	Anritsu	MA2490A	31431	06/28/2007	06/27/2008
Power Meter	Anritsu	ML2487A	6K00002070	06/28/2007	06/27/2008
Temperature Chamber	TERCHY	MHG-120LF	911009	10/14/2007	10/13/2008
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	N/A	N/A
Attenuator	Mini-Circuit	BW-S10W5	N/A	09/23/2007	09/22/2008
Attenuator	Mini-Circuit	BW-S6W5	N/A	09/23/2007	09/22/2008
Splitter	Agilent	11636B	51728	09/23/2007	09/22/2008
DC Power Supply	TOPWARD	3303A	N/A	N/A	N/A

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# 5.5. Measurement Result

EUT Mode	Frequency (MHz)	СН	Power meter Reading (dBm)	Path Loss (dB)	Peak Power (dBm)
	824.20	128	32.08	0.00	32.08
GSM 850	836.60	190	32.02	0.00	32.02
	848.80	251	31.96	0.00	31.96

#### \*Offset 17.8dB

EUT Mode	Frequency (MHz)	СН	Power Meter Reading (dBm)	Path Loss (dB)	Peak Power (dBm)
	1850.20	512	28.80	0.00	29.60
PCS 1900	1880.00	661	28.66	0.00	29.70
	1909.80	810	28.57	0.00	29.60

#### \*Offset 17.8dB

EUT Mode	Frequency (MHz)	СН	Power meter Reading (dBm)	Path Loss (dB)	Peak Power (dBm)
	824.20	128	25.85	0.00	26.88
EDGE 850	836.60	190	25.88	0.00	26.80
	848.80	251	25.74	0.00	26.79

\*Offset 17.8dB

EUT Mode	Frequency (MHz)	СН	Power Meter Reading (dBm)	Path Loss (dB)	Peak Power (dBm)
	1850.20	512	25.74	0.00	25.54
EDGE 1900	1880.00	661	25.54	0.00	25.36
	1909.80	810	25.48	0.00	25.28

\*Offset 17.8dB

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EUT Mode	Frequency (MHz)	СН	Power Meter Reading (dBm)	Path Loss (dB)	Peak Power (dBm)
	1852.40	9262	22.84	0.00	22.84
WCDMA Band II	1880.00	9400	22.86	0.00	22.86
Dund II	1907.60	9538	22.10	0.00	22.10

\*Offset 17.8dB

EUT Mode	Mode Frequency (MHz) CH		Power meter Reading (dBm)	Path Loss (dB)	Peak Power (dBm)	
	826.40	4132	22.75	0.00	22.75	
WCDMA Band V	836.00	4180	22.73	0.00	22.73	
	846.60	4233	22.49	0.00	22.49	

\*Offset 17.8dB

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#### **ERP, EIRP MEASUREMENT** 6.

# 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.

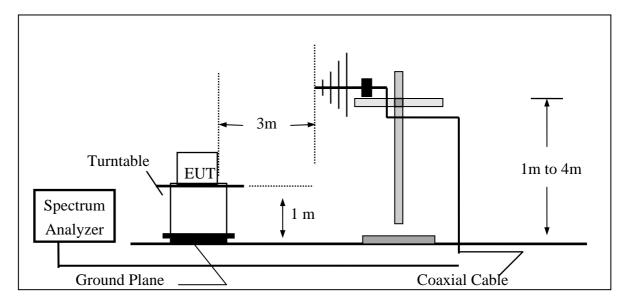
According to IC RSS-133 §6.4

The peak e.i.r.p. for transmitters operating in the band 1850-1910 MHz shall not exceed the limits 2W which given in SRSP-510.

According to issue 2 of RSS 132, section 4.4. The transmitter output power shall not exceed the limits given in SRSP-503.

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

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



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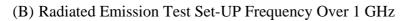
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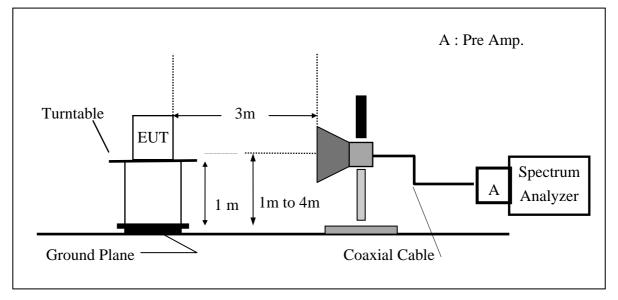
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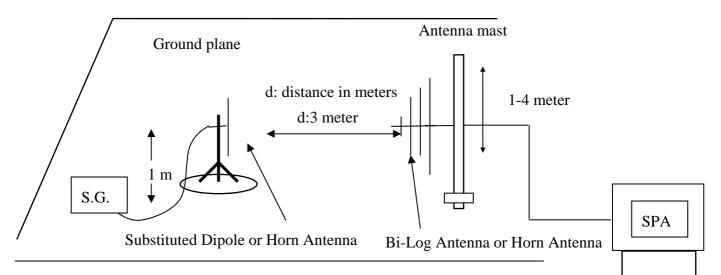


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# (C) Substituted Method Test Set-UP



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# 6.3. 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.

During the measurement, the EUT was 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. And Peak detector was used during this test.

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

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

ERP = S.G. output (dBm) + Antenna Gain (dBd) – Cable Loss (dB)

EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable Loss (dB)

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# 6.4. Measurement Equipment Used:

EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
ТҮРЕ		NUMBER	NUMBER	CAL.	
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/27/2008	04/26/2009
Spectrum Analyzer	Agilent	7405A	US41160416	06/28/2007	06/27/2008
Spectrum Analyzer	R&S	FSP 40	100034	11/09/2007	11/10/2008
Communication Test	R&S	SMU200	N/A	N/A	N/A
Bi-log Antenna	SCHWAZBECK	VULB9160	3224	11/14/2007	11/13/2008
Horn antenna	SCHWAZBECK	BBHA 9120D	309/320	08/16/2007	08/15/2008
Pre-Amplifier	HP	8447D	2944A09469	07/19/2007	07/18/2008
Pre-Amplifier	HP	8494B	3008A00578	02/26/2008	02/25/2009
Signal Generator	R&S	SMR40	100210	02/09/2008	02/10/2009
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	10/09/2007	10/08/2008
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	10/09/2007	10/08/2008
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-0.5M	0.5m	10/09/2007	10/08/2008
Site NSA	SGS	966 chamber	N/A	11/17/2007	11/16/2008
Attenuator	Mini-Circuit	BW-S10W5	N/A	09/23/2007	09/22/2008
Dipole Antenna	SCHWAZBECK	VHAP	908/909	06/10/2006	06/09/2008
Dipole Antenna	SCHWAZBECK	UHAP	891/892	06/10/2006	06/09/2008
Horn antenna	SCHWAZBECK	BBHA 9120D	N/A	08/16/2007	08/15/2008

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# 6.5. Measurement Result

EUT Mode	Frequency (MHz)	СН	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
	824.20 1	128	Н	V	126.11	38.79	-7.87	3.64	27.27	38.45
824.20	824.20	120	11	Н	128.53	40.87	-7.87	3.64	29.36	38.45
GSM 850	836.60	190	90 Н	V	126.97	39.94	-7.88	3.70	28.37	38.45
GSM 850	830.00			Н	128.15	40.81	-7.88	3.70	29.24	38.45
	848.80	251	Н	V	128.37	41.63	-7.88	3.75	30.00	38.45
	040.80			Н	128.11	41.09	-7.88	3.75	29.46	38.45

EUT Mode	Frequency (MHz)	СН	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
1850.20	512	Н	V	123.29	16.33	9.90	5.41	20.82	33.00	
	1650.20	512	11	Н	126.42	19.53	9.90	5.41	24.02	33.00
PCS 1900	1880.00	((1	1 H	V	125.63	18.68	9.99	5.46	23.21	33.00
PCS 1900	1880.00	661		Н	127.37	20.50	9.99	5.46	25.03	33.00
1909	1000.80	810	Н	V	124.60	17.66	10.08	5.51	22.23	33.00
	1909.80	010	11	Н	127.26	20.41	10.08	5.51	24.97	33.00

#### **Remark** :

(1)The RBW, VBW of SPA for frequency

Below 1GHz was RBW=100 KHz, VBW=300KHz,

Above 1GHz was RBW= 1MHz, VBW= 3MHz

(2) Peak detector was used during test.

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# 6.6. Measurement Result

EUT Mode	Frequency (MHz)	СН	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
	824.20 12	128	Н	V	121.24	33.92	-7.87	3.64	22.40	38.45
024.20	824.20	120	11	Н	120.10	32.44	-7.87	3.64	20.93	38.45
EDGE 850	836.60	190	) H	V	120.83	33.80	-7.88	3.70	22.23	38.45
EDGE 850	830.00			Н	120.52	33.18	-7.88	3.70	21.61	38.45
84	848.80	251	Н	V	121.35	34.61	-7.88	3.75	22.98	38.45
	040.00			Н	122.21	35.19	-7.88	3.75	23.56	38.45

EUT Mode	Frequency (MHz)	СН	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
	1850.20	512	Н	V	122.12	15.16	9.90	5.41	19.65	33.00
	1850.20	512	11	Н	125.41	18.52	9.90	5.41	23.01	33.00
EDGE 1900	1880.00	661	Н	V	124.62	17.67	9.99	5.46	22.20	33.00
EDGE 1900	1880.00			Н	126.61	19.74	9.99	5.46	24.27	33.00
	1909.80	810	Н	V	126.12	19.18	10.08	5.51	23.75	33.00
	1909.80			Н	123.46	16.61	10.08	5.51	21.17	33.00

#### **Remark** :

(1)The RBW, VBW of SPA for frequency

Below 1GHz was RBW=100 KHz, VBW=300KHz,

Above 1GHz was RBW= 1MHz, VBW= 3MHz

(2) Peak detector was used during test.

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# 6.7. Measurement Result

EUT Mode	Frequency (MHz)	СН	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
1852	1852.40	9262	Н	V	118.01	11.05	9.90	5.41	15.54	33.00
	1652.40	9202	11	Н	120.00	13.11	9.90	5.41	17.60	33.00
WCDMA	1880.00	9400	Н	V	119.16	12.21	9.99	5.46	16.74	33.00
Band II	9400	п	Н	120.91	14.04	9.99	5.46		33.00	
	1907.60	9538	Н	V	119.36	12.42	10.08	5.51	16.99	33.00
				Н	121.69	14.84	10.08	5.51	19.40	33.00

EUT Mode	Frequency (MHz)	СН	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
	826.40	4132	Н	V	115.85	28.53	-7.87	3.64	17.01	38.45
				Н	118.59	30.93	-7.87	3.64	19.42	38.45
WCDMA	836.00	4180	Н	V	115.98	28.95	-7.88	3.70	17.38	38.45
Band V	830.00 4			Н	117.95	30.61	-7.88	3.70	19.04	38.45
	846.60	4233	Н	V	117.88	31.14	-7.88	3.75	19.51	38.45
				Н	117.23	30.21	-7.88	3.75	18.58	38.45

#### **Remark** :

(1)The RBW, VBW of SPA for frequency

Below 1GHz was RBW=100 KHz, VBW=300KHz,

Above 1GHz was RBW= 1MHz, VBW= 3MHz

(2) Peak detector was used during test.

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# 7 99% OCCUPIED BANDWIDTH MEASUREMENT

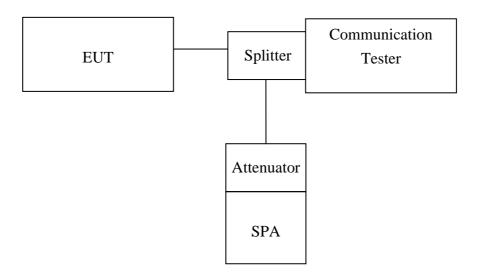
# 7.1 Standard Applicable

According to FCC§2.1049.

According to IC RSS-132 §4.2

According to IC RSS-133 §2.6

# 7.2 Test Set-up:



Note: Measurement setup for testing on Antenna connector

# 7.3 Measurement Procedure

The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW (10KHz) was set to about 1% of emission BW, VBW= 30KHz, -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.

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# 7.4 Measurement Equipment Used:

Conducted Emission Test Site							
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.		
ТҮРЕ		NUMBER	NUMBER	CAL.			
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/27/2008	04/26/2009		
Spectrum Analyzer	Agilent	E7405A	US41160416	07/04/2007	07/03/2008		
Power Sensor	Anritsu	MA2490A	31431	07/07/2007	07/06/2008		
Power Meter	Anritsu	ML2487A	6K00002070	07/07/2007	07/06/2008		
Communication Test	R&S	CMU200	N/A	N/A	N/A		
Temperature Chamber	TERCHY	MHG-120LF	911009	04/26/2007	04/25/2008		
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	N/A	N/A		
Attenuator	Mini-Circuit	BW-S10W5	N/A	07/05/2008	07/04/2009		
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2007	07/04/2008		
Splitter	Agilent	11636B	51728	09/23/2007	09/22/2008		
Signal Generator	R&S	SMR40	100210	12/20/2007	12/19/2008		
DC Power Supply	Agilent	6038A	2929A-07548	01/06/2008	01/05/2009		

# 7.5 Measurement Result:.

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
GSM 850	824.20	128	0.2460
	836.60	190	0.2403
	848.80	251	0.2404

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
PCS 1900	1850.20	512	0.2396
	1880.00	661	0.2382
	1909.80	810	0.2412

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EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
EDGE 850	824.20	128	0.2473
	836.60	190	0.2440
	848.80	251	0.2433

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
EDGE 1900	1850.20	512	0.2494
	1880.00	661	0.2448
	1909.80	810	0.2445

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
WCDMA Band II	1852.40	9262	4.1519
	1880.00	9400	4.1341
	1907.60	9538	4.1589

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
WCDMA Band V	826.40	4132	4.1436
	836.00	4180	4.1524
	846.60	4233	4.1456

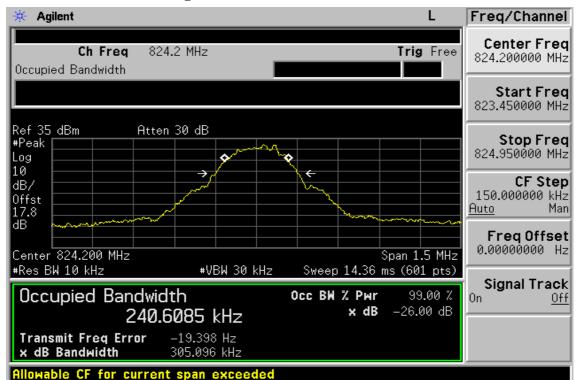
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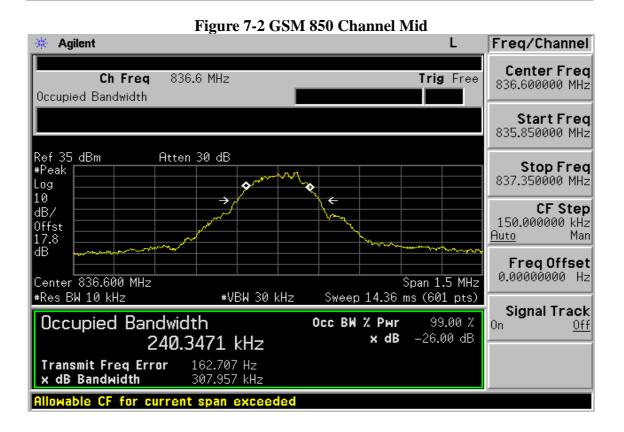
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#### Figure 7-1: GSM 850 Channel Low



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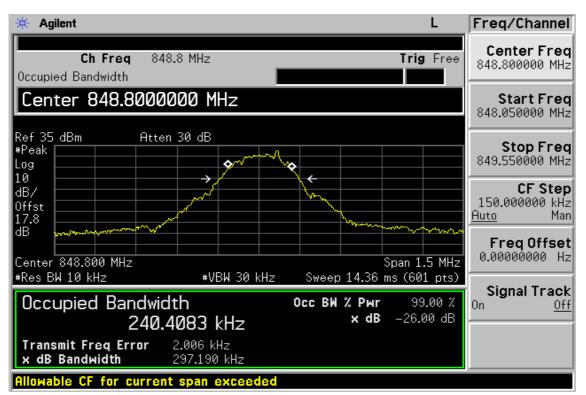
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### Figure 7-3: GSM 850 Channel High

#### Figure 7-4: GSM 1900 Channel Low



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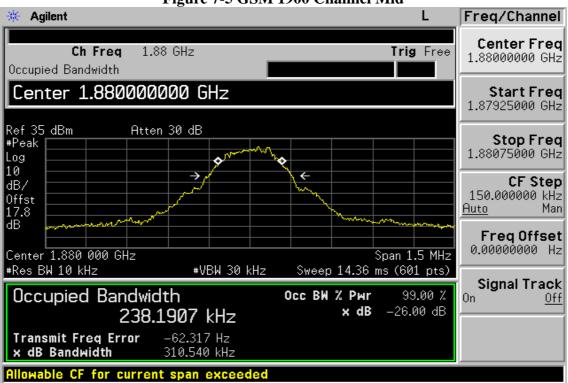
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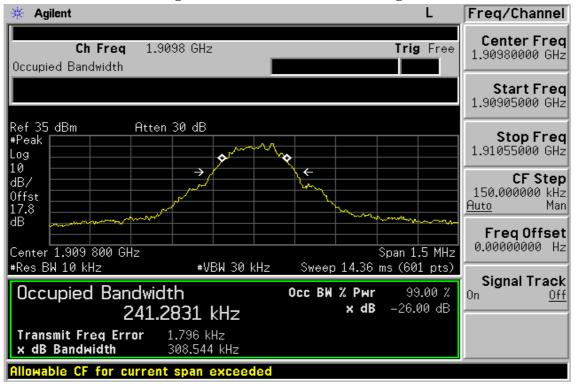


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#### Figure 7-5 GSM 1900 Channel Mid

#### Figure 7-6: GSM 1900 Channel High



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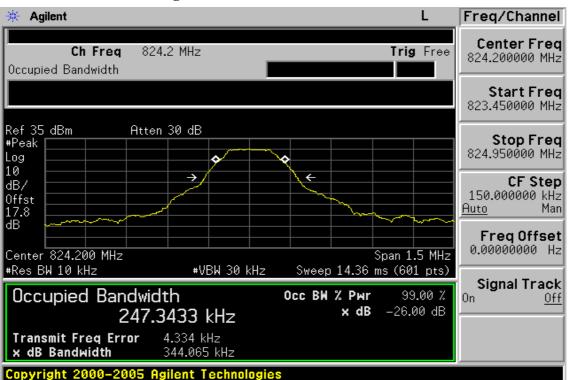
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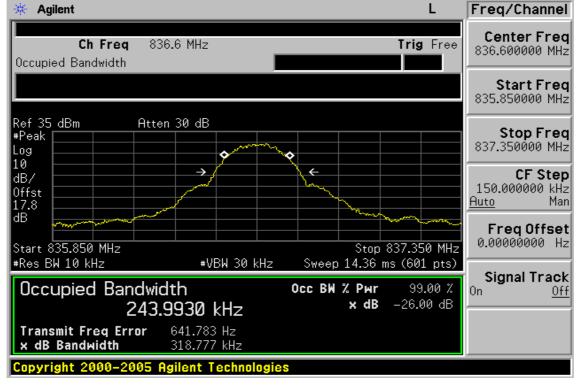


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#### Figure 7-7: EDGE 850 Channel Low

Figure 7-8 EDGE 850 Channel Mid

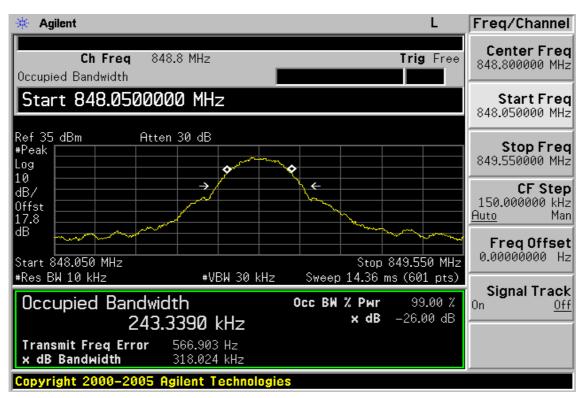


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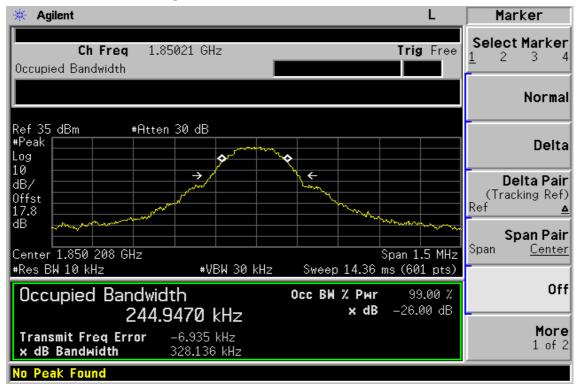


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### Figure 7-9: EDGE 850 Channel High

Figure 7-10: EDGE 1900 Channel Low

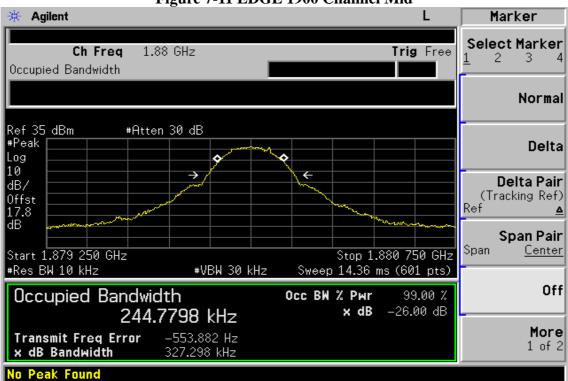


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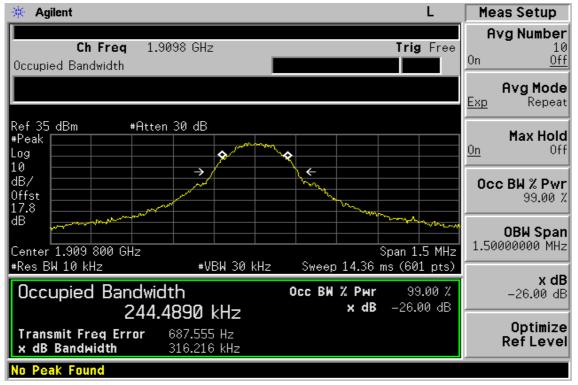


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# Figure 7-11 EDGE 1900 Channel Mid

Figure 7-12: EDGE 1900 Channel High

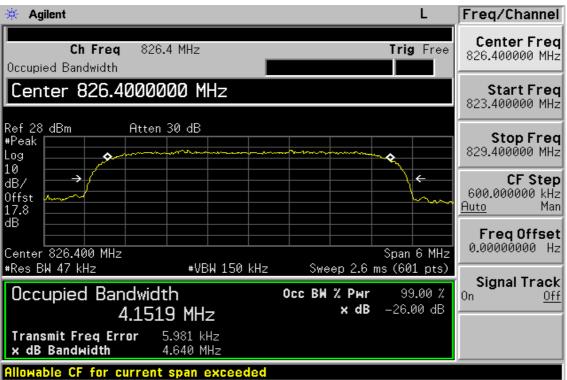


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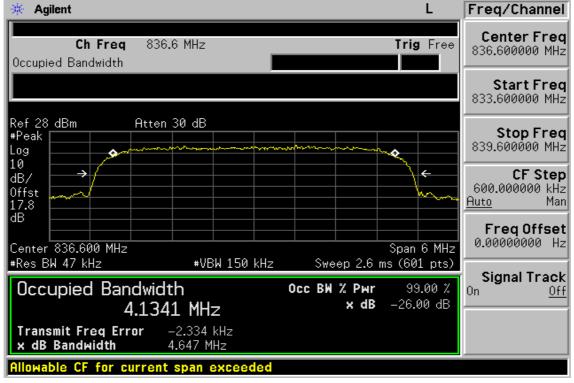


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#### Figure 7-13: WCDMA Band V 850 Channel Low

#### Figure 7-14 WCDMA Band V 850 Channel Mid

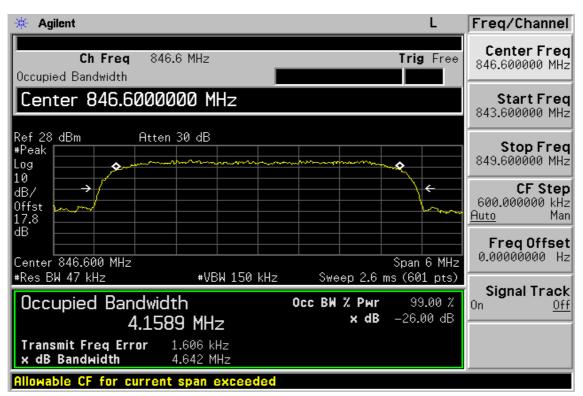


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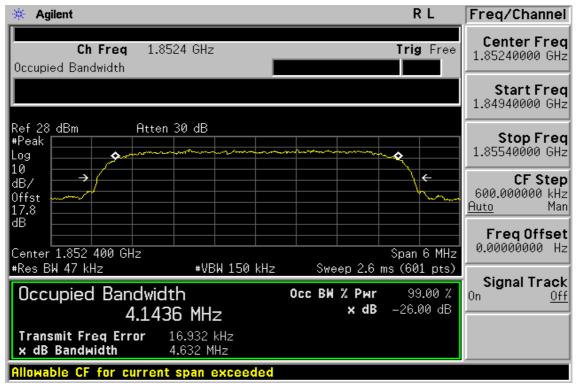


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### Figure 7-15: WCDMA Band V 850 Channel High

Figure 7-16: WCDMA Band II 1900 Channel Low



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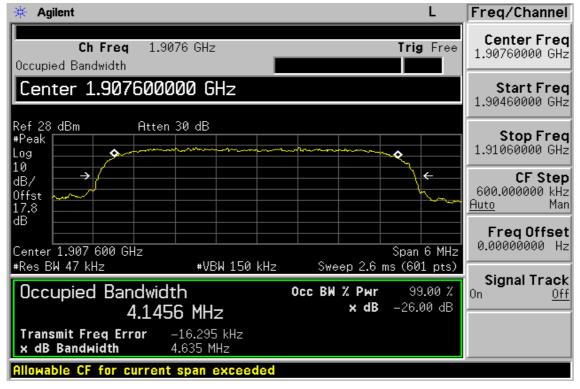


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### Figure 7-17 WCDMA Band II 1900 Channel Mid

#### Figure 7-18: WCDMA Band II 1900 Channel High



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#### FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT 8.

# 8.1. Standard Applicable

According to FCC §2.1053,

FCC §22.917(a),§24.238(a), 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)

FCC §24.238(a), 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)

According to RSS-133 §6.5

6.5.1 Out-of-Block Emissions

a. Mobile stations must comply with subsection i. below.

In the first 1.0MHz band immediately outside and adjacent to the licensee's frequency block. the power of emissions per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in watts) by at least  $43 + 10 \log (P)$ , dB.

b. After the first 1.0 MHz (for equipment that complies with a.i. of this subsection) or 1.5 MHz (for equipment that complies with a.ii.of this subsection), the power of emissions shall be attenuated below the transmitter output power by at least  $43 + 10 \log (P)$ , dB, per any MHz of bandwidth.

(Note: If the test result using 1% of the emission bandwidth is used, then power integration over 1.0 MHz is required; alternatively, the spectrum analyser resolution and video bandwidths can be increased to 1.0 MHz for this measurement).

#### 6.5.2 Out-of-Sub-band Emissions

Outside the sub-bands 1850-1910 MHz and 1930-1990 MHz, the attenuation shall be equal to or greater than the out-of-block emission limits in Section 6.5.1.

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According to RSS-132 §4.5

4.5.1 Out-of-block Emissions

Mobile and base station equipment with emission bandwidth less than or equal to 4 MHz shall comply with 4.5.1.1. Mobile station equipment with emission bandwidth greater than 4 MHz shall comply with 4.5.1.2. Base station equipment with emission bandwidth greater than 4 MHz shall comply with either 4.5.1.2 or 4.5.1.3.

4.5.1.1 In the first 1.0 MHz band immediately outside and adjacent to the licensee's frequency block, the power of emissions per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in watts) by at least  $43 + 10 \log (P)$ , dB. After the first 1.0 MHz, the power of emissions shall be attenuated below the transmitter output power by at least

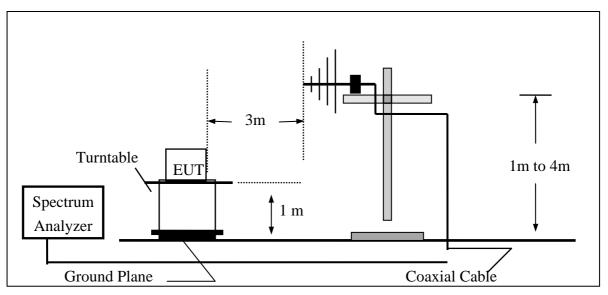
 $43 + 10 \log (P)$ , dB, in any 100 kHz bandwidth.

4.5.1.2 In the first 1.0 MHz band immediately outside and adjacent to the licensee's frequency block, the power of emissions per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in watts) by at least  $43 + 10 \log (P)$ , dB. After the first 1.0 MHz, the power of emissions shall be attenuated below the transmitter output power by at least

 $43 + 10 \log (P)$ , dB, in any 1 MHz bandwidth

# 8.2. EUT Setup (Block Diagram of Configuration)

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

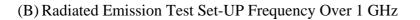


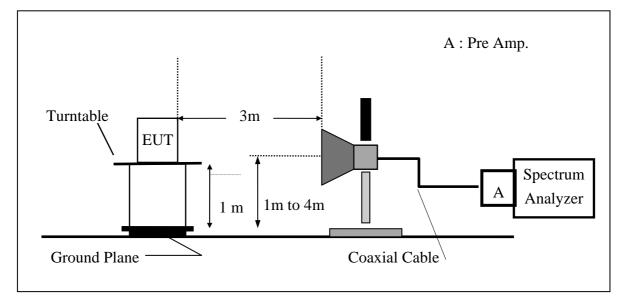
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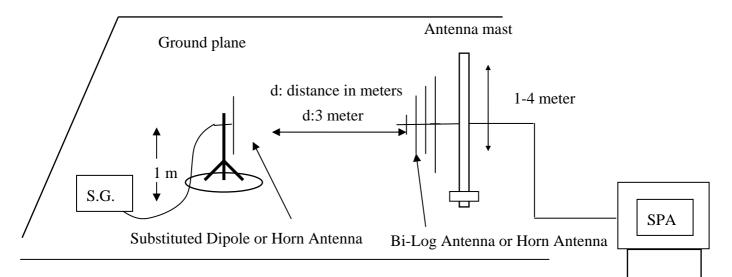


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(C) Substituted Method Test Set-UP



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# **8.3.** 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.

During the measurement, the EUT was 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. And Peak detector was used during this test.

When 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.

ERP was measured using a substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follows:

EIRP was measured using a substitution method. The EUT was replaced by or horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows:

ERP = S.G. output (dBm) + Antenna Gain (dBd) – Cable Loss (dB) EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable Loss (dB)

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# 8.4. Measurement Equipment Used:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/27/2008	04/26/2009
Spectrum Analyzer	Agilent	E7405A	US41160416	08/27/2007	08/26/2008
Bi-log Antenna	SCHWAZBECK	VULB9160	3224	11/14/2007	11/13/2008
Horn antenna	SCHWAZBECK	BBHA 9120D	309/320	08/16/2007	08/15/2008
Pre-Amplifier	HP	8447D	2944A09469	07/19/2007	07/18/2008
Pre-Amplifier	HP	8494B	3008A00578	02/26/2008	02/25/2009
Signal Generator	R&S	SMR40	100210	02/09/2008	02/10/2009
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	10/09/2007	10/08/2008
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	10/09/2007	10/08/2008
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-0.5M	0.5m	10/09/2007	10/08/2008
Site NSA	SGS	966 chamber	N/A	11/17/2007	11/16/2008
Attenuator	Mini-Circuit	BW-S10W5	N/A	10/07/2007	10/06/2008
Temperature Chamber	TERCHY	MHG-120LF	911009	10/14/2007	10/13/2008
Dipole Antenna	SCHWAZBECK	VHAP	908/909	06/10/2006	06/09/2008
Dipole Antenna	SCHWAZBECK	UHAP	891/892	06/10/2006	06/09/2008
Horn antenna	SCHWAZBECK	BBHA 9120D	N/A	08/16/2007	08/15/2008

# 8.5. Measurement Result

Refer to attach tabular data sheets.

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### **Radiated Spurious Emission Measurement Result: GSM 850 Mode**

Operation Mode	: TX CH Low Mode	Test Date:	May. 16, 2008
Fundamental Frequency	: 824.20 MHz	Test By:	Sky
Temperature	: 25	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)
213.33	51.37	V	-50.36	-7.85	1.68	-59.89	-13.00	-46.89
240.49	50.88	V	-50.09	-7.88	1.91	-59.87	-13.00	-46.87
266.68	47.28	V	-53.05	-7.90	1.99	-62.93	-13.00	-49.93
368.53	46.04	V	-51.20	-7.65	2.45	-61.30	-13.00	-48.30
453.89	41.13	V	-53.49	-7.70	2.58	-63.77	-13.00	-50.77
824.00	74.29	V	-13.04	-7.87	3.64	-24.56	-13.00	-11.56
1648.40	49.90	V	-57.14	9.29	5.06	-52.91	-13.00	-39.91
2463.00	58.59	V	-45.53	10.08	6.28	-41.74	-13.00	-28.74
3296.80		V		12.17	7.26		-13.00	
4121.00	37.46	V	-62.32	12.61	8.33	-58.03	-13.00	-45.03
4945.20		V		12.65	9.19		-13.00	
5769.40		V		13.55	9.80		-13.00	
6593.60		V		12.05	10.61		-13.00	
7417.80		V		11.49	11.28		-13.00	
8242.00		V		11.48	12.26		-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 Setting(dBm) + Antenna Gain (dB/dBi) Cable loss (dB)
- 5 Peak detector was used during test.

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### **Radiated Spurious Emission Measurement Result: GSM 850 Mode**

Operation Mode	: TX CH Low Mode	Test Date:	May. 16, 2008
Fundamental Frequency	: 824.20 MHz	Test By:	Sky
Temperature	: 25	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)
216.24	54.45	Н	-47.06	-7.86	1.70	-56.61	-13.00	-43.61
240.49	49.42	Н	-51.65	-7.88	1.91	-61.44	-13.00	-48.44
266.68	47.30	Н	-53.17	-7.90	1.99	-63.06	-13.00	-50.06
368.53	51.91	Н	-44.95	-7.65	2.45	-55.05	-13.00	-42.05
431.58	39.79	Н	-55.96	-7.69	2.51	-66.15	-13.00	-53.15
824.00	81.36	Н	-6.30	-7.87	3.64	-17.82	-13.00	-4.82
1648.40	58.38	Н	-48.63	9.29	5.06	-44.40	-13.00	-31.40
2463.00	51.51	Н	-52.60	10.08	6.28	-48.81	-13.00	-35.81
3296.80		Н		12.17	7.26		-13.00	
4121.00	39.02	Н	-60.63	12.61	8.33	-56.34	-13.00	-43.34
4945.20		Н		12.65	9.19		-13.00	
5769.40		Н		13.55	9.80		-13.00	
6593.60		Н		12.05	10.61		-13.00	
7417.80		Н		11.49	11.28		-13.00	
8242.00		Н		11.48	12.26		-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 Setting(dBm) + Antenna Gain (dB/dBi) Cable loss (dB)
- 5 Peak detector was used during test.

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# **Radiated Spurious Emission Measurement Result: GSM 850 Mode**

Operation Mode	: TX CH Mid Mode	Test Date:	May. 16, 2008
Fundamental Frequency	: 836.60 MHz	Test By:	Sky
Temperature	: 25	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)
240.49	51.39	V	-49.58	-7.88	1.91	-59.36	-13.00	-46.36
266.68	45.54	V	-54.79	-7.90	1.99	-64.67	-13.00	-51.67
368.53	47.04	V	-50.20	-7.65	2.45	-60.30	-13.00	-47.30
453.89	41.68	V	-52.94	-7.70	2.58	-63.22	-13.00	-50.22
499.48	37.63	V	-56.98	-7.72	2.73	-67.43	-13.00	-54.43
1673.20	49.37	V	-57.66	9.36	5.10	-53.40	-13.00	-40.40
2498.00	61.19	V	-42.72	10.06	6.33	-38.99	-13.00	-25.99
3346.40		V		12.28	7.29		-13.00	
4183.00	36.96	V	-62.60	12.62	8.40	-58.38	-13.00	-45.38
5019.60		V		12.67	9.26		-13.00	
5856.20		V		13.68	9.85		-13.00	
6692.80		V		11.95	10.74		-13.00	
7529.40		V		11.45	11.35		-13.00	
8366.00		V		11.59	12.43		-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 Setting(dBm) + Antenna Gain (dB/dBi) Cable loss (dB)
- 5 Peak detector was used during test.

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# **Radiated Spurious Emission Measurement Result: GSM 850 Mode**

Operation Mode	: TX CH Mid Mode	Test Date:	May. 16, 2008
Fundamental Frequency	: 836.60 MHz	Test By:	Sky
Temperature	: 25	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)
218.18	51.99	Н	-49.48	-7.86	1.72	-59.06	-13.00	-46.06
240.49	49.58	Н	-51.49	-7.88	1.91	-61.28	-13.00	-48.28
264.74	46.48	Н	-54.04	-7.90	1.99	-63.92	-13.00	-50.92
368.53	52.17	Н	-44.69	-7.65	2.45	-54.79	-13.00	-41.79
431.58	38.97	Н	-56.78	-7.69	2.51	-66.97	-13.00	-53.97
1673.20	55.21	Н	-51.79	9.36	5.10	-47.52	-13.00	-34.52
2498.00	58.33	Н	-45.58	10.06	6.33	-41.85	-13.00	-28.85
2509.80		Н		10.09	6.35		-13.00	
3346.40	44.72	Н	-57.60	12.28	7.29	-52.62	-13.00	-39.62
4183.00		Н		12.62	8.40		-13.00	
5019.60		Н		12.67	9.26		-13.00	
5856.20		Н		13.68	9.85		-13.00	
6692.80		Н		11.95	10.74		-13.00	
7529.40		Н		11.45	11.35		-13.00	
8366.00		Н		11.59	12.43		-13.00	

	30MHz - 80MHz: 5.04dB
Measurement uncertainty	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 Setting(dBm) + Antenna Gain (dB/dBi) Cable loss (dB)
- 5 Peak detector was used during test.

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### **Radiated Spurious Emission Measurement Result: GSM 850 Mode**

Operation Mode	: TX CH High Mode	Test Date:	May. 16, 2008
Fundamental Frequency	: 848.80 MHz	Test By:	Sky
Temperature	: 25	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)
240.49	51.47	V	-49.50	-7.88	1.91	-59.28	-13.00	-46.28
298.69	43.10	V	-56.51	-7.92	1.99	-66.41	-13.00	-53.41
368.53	48.58	V	-48.66	-7.65	2.45	-58.76	-13.00	-45.76
453.89	41.71	V	-52.91	-7.70	2.58	-63.19	-13.00	-50.19
499.48	37.62	V	-56.99	-7.72	2.73	-67.44	-13.00	-54.44
850.00	77.49	V	-9.22	-7.88	3.75	-20.85	-13.00	-7.85
1697.60	55.27	V	-51.75	9.44	5.14	-47.46	-13.00	-34.46
2533.00	64.23	V	-39.59	10.16	6.38	-35.81	-13.00	-22.81
2546.40		V		10.20	6.40		-13.00	
3395.20		V		12.38	7.33		-13.00	
4244.00	38.29	V	-61.06	12.63	8.46	-56.89	-13.00	-43.89
5092.80		V		12.74	9.32		-13.00	
5941.60		V		13.81	9.89		-13.00	
6790.40		V		11.86	10.87		-13.00	
7639.20		V		11.40	11.48		-13.00	
8488.00		V		11.70	12.59		-13.00	

	30MHz - 80MHz: 5.04dB			
Measurement uncertainty	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 Setting(dBm) + Antenna Gain (dB/dBi) Cable loss (dB)
- 5 Peak detector was used during test.

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### **Radiated Spurious Emission Measurement Result: GSM 850 Mode**

Operation Mode	: TX CH High Mode	Test Date:	May. 16, 2008
Fundamental Frequency	: 848.80 MHz	Test By:	Sky
Temperature	: 25	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)
216.24	53.02	Н	-48.49	-7.86	1.70	-58.04	-13.00	-45.04
252.13	47.87	Н	-52.98	-7.89	1.99	-62.85	-13.00	-49.85
298.69	43.46	Н	-56.18	-7.92	1.99	-66.09	-13.00	-53.09
368.53	52.22	Н	-44.64	-7.65	2.45	-54.74	-13.00	-41.74
455.83	38.17	Н	-57.05	-7.70	2.58	-67.34	-13.00	-54.34
850.00	79.42	Н	-7.57	-7.88	3.75	-19.20	-13.00	-6.20
1697.60	55.69	Н	-51.29	9.44	5.14	-47.00	-13.00	-34.00
2533.00	62.31	Н	-41.50	10.16	6.38	-37.73	-13.00	-24.73
2546.40		Н		10.20	6.40		-13.00	
3395.20		Н		12.38	7.33		-13.00	
4244.00	40.15	Н	-59.04	12.63	8.46	-54.87	-13.00	-41.87
5092.80		Н		12.74	9.32		-13.00	
5941.60		Н		13.81	9.89		-13.00	
6790.40		Н		11.86	10.87		-13.00	
7639.20		Н		11.40	11.48		-13.00	
8488.00		Н		11.70	12.59		-13.00	

	30MHz - 80MHz: 5.04dB			
Measurement uncertainty	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 Setting(dBm) + Antenna Gain (dB/dBi) Cable loss (dB)
- 5 Peak detector was used during test.

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#### **Radiated Spurious Emission Measurement Result: PCS 1900 Mode**

Operation Mode	: TX CH Low Mode	Test Date	May. 16, 2008
Fundamental Frequency	: 1850.20MHz	Test By:	Sky
Temperature	: 25	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)
240.49	51.19	V	-49.78	-7.88	1.91	-59.56	-13.00	-46.56
266.68	45.27	V	-55.06	-7.90	1.99	-64.94	-13.00	-51.94
368.53	46.47	V	-50.77	-7.65	2.45	-60.87	-13.00	-47.87
455.83	44.20	V	-50.42	-7.70	2.58	-60.70	-13.00	-47.70
499.48	39.35	V	-55.26	-7.72	2.73	-65.71	-13.00	-52.71
1850.00	76.55	V	-30.41	9.90	5.41	-25.92	-13.00	-12.92
3700.40	52.41	V	-49.17	12.61	7.73	-44.29	-13.00	-31.29
5550.60	41.86	V	-53.35	13.23	9.68	-49.81	-13.00	-36.81
7400.80		V		11.50	11.28		-13.00	
9251.00		V		11.92	13.10		-13.00	
11101.20		V		11.66	14.33		-13.00	
12951.40		V		13.63	15.98		-13.00	
14801.60		V		12.76	17.27		-13.00	
16651.80		V		15.92	19.04		-13.00	
18502.00		V		18.75	21.21		-13.00	

	30MHz - 80MHz: 5.04dB			
Measurement uncertainty	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 Setting(dBm) + Antenna Gain (dB/dBi) Cable loss (dB)
- 5 Peak detector was used during test.

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#### **Radiated Spurious Emission Measurement Result: PCS 1900 Mode**

Operation Mode	: TX CH Low Mode	Test Date	May. 16, 2008
Fundamental Frequency	: 1850.20MHz	Test By:	Sky
Temperature	: 25	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)
216.24	51.72	Н	-49.79	-7.86	1.70	-59.34	-13.00	-46.34
240.49	48.90	Н	-52.17	-7.88	1.91	-61.96	-13.00	-48.96
368.53	52.45	Н	-44.41	-7.65	2.45	-54.51	-13.00	-41.51
455.83	40.10	Н	-55.12	-7.70	2.58	-65.41	-13.00	-52.41
613.49	39.22	Н	-52.07	-7.80	2.96	-62.82	-13.00	-49.82
1850.00	78.20	Н	-28.69	9.90	5.41	-24.20	-13.00	-11.20
3700.40	44.21	Н	-57.15	12.61	7.73	-52.27	-13.00	-39.27
5550.60	47.22	Н	-47.91	13.23	9.68	-44.36	-13.00	-31.36
7400.80		Н		11.50	11.28		-13.00	
9251.00		Н		11.92	13.10		-13.00	
11101.20		Н		11.66	14.33		-13.00	
12951.40		Н		13.63	15.98		-13.00	
14801.60		Н		12.76	17.27		-13.00	
16651.80		Н		15.92	19.04		-13.00	
18502.00		Н		18.75	21.21		-13.00	

	30MHz - 80MHz: 5.04dB			
Measurement uncertainty	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 Setting(dBm) + Antenna Gain (dB/dBi) Cable loss (dB)
- 5 Peak detector was used during test.

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# **Radiated Spurious Emission Measurement Result: PCS 1900 Mode**

Operation Mode	: TX CH Mid Mode	Test Date	May. 16, 2008
Fundamental Frequency	: 1880MHz	Test By	Sky
Temperature	: 25	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)
240.49	51.70	V	-49.27	-7.88	1.91	-59.05	-13.00	-46.05
266.68	46.13	V	-54.20	-7.90	1.99	-64.08	-13.00	-51.08
368.53	47.77	V	-49.47	-7.65	2.45	-59.57	-13.00	-46.57
455.83	44.68	V	-49.94	-7.70	2.58	-60.22	-13.00	-47.22
497.54	37.08	V	-57.53	-7.72	2.72	-67.97	-13.00	-54.97
3760.00	42.41	V	-58.89	12.60	7.82	-54.11	-13.00	-41.11
5640.00	41.89	V	-53.07	13.36	9.73	-49.44	-13.00	-36.44
7520.00		V		11.45	11.33		-13.00	
9400.00		V		11.93	13.15		-13.00	
11280.00		V		11.92	14.56		-13.00	
13160.00		V		13.33	16.11		-13.00	
15040.00		V		13.76	17.57		-13.00	
16920.00		V		15.27	19.66		-13.00	
18800.00		V		18.68	21.34		-13.00	

	30MHz - 80MHz: 5.04dB		
Measurement uncertainty	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 Setting(dBm) + Antenna Gain (dB/dBi) Cable loss (dB)

5 Peak detector was used during test.

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# **Radiated Spurious Emission Measurement Result: PCS 1900 Mode**

Operation Mode	: TX CH Mid Mode	Test Date	May. 16, 2008
Fundamental Frequency	: 1880MHz	Test By	Sky
Temperature	: 25	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)
213.33	51.47	Н	-50.09	-7.85	1.68	-59.62	-13.00	-46.62
240.49	48.91	Н	-52.16	-7.88	1.91	-61.95	-13.00	-48.95
368.53	52.46	Н	-44.40	-7.65	2.45	-54.50	-13.00	-41.50
455.53	39.82	Н	-55.41	-7.70	2.58	-65.70	-13.00	-52.70
613.94	39.43	Н	-51.84	-7.80	2.96	-62.60	-13.00	-49.60
3760.00	43.22	Н	-57.89	12.60	7.82	-53.10	-13.00	-40.10
5640.00	44.54	Н	-50.35	13.36	9.73	-46.72	-13.00	-33.72
7520.00		Н		11.45	11.33		-13.00	
9400.00		Н		11.93	13.15		-13.00	
11280.00		Н		11.92	14.56		-13.00	
13160.00		Н		13.33	16.11		-13.00	
15040.00		Н		13.76	17.57		-13.00	
16920.00		Н		15.27	19.66		-13.00	
18800.00		Н		18.68	21.34		-13.00	

	30MHz - 80MHz: 5.04dB			
Measurement uncertainty	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 Setting(dBm) + Antenna Gain (dB/dBi) Cable loss (dB)
- 5 Peak detector was used during test.

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### **Radiated Spurious Emission Measurement Result: PCS 1900 Mode**

Operation Mode	: TX CH High Mode	Test Date	May. 16, 2008
Fundamental Frequency	: 1909.8 MHz	Test By	Sky
Temperature	: 25	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)
240.49	51.29	V	-49.68	-7.88	1.91	-59.46	-13.00	-46.46
266.68	44.94	V	-55.39	-7.90	1.99	-65.27	-13.00	-52.27
368.53	47.91	V	-49.33	-7.65	2.45	-59.43	-13.00	-46.43
453.89	44.35	V	-50.27	-7.70	2.58	-60.55	-13.00	-47.55
644.98	35.87	V	-54.57	-7.81	2.99	-65.37	-13.00	-52.37
1910.00	77.06	V	-29.88	10.08	5.51	-25.31	-13.00	-12.31
3981.60	41.23	V	-59.05	12.60	8.17	-54.63	-13.00	-41.63
5972.40	43.51	V	-50.51	13.86	9.91	-46.56	-13.00	-33.56
7963.20		V		11.27	11.88		-13.00	
9954.00		V		12.08	13.43		-13.00	
11944.80		V		13.08	15.21		-13.00	
13935.60		V		11.82	16.86		-13.00	
15926.40		V		17.08	18.33		-13.00	
17917.20		V		9.63	20.12		-13.00	
19908.00		V		18.88	20.85		-13.00	

	30MHz - 80MHz: 5.04dB			
Measurement uncertainty	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 Setting(dBm) + Antenna Gain (dB/dBi) Cable loss (dB)
- 5 Peak detector was used during test.

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### **Radiated Spurious Emission Measurement Result: PCS 1900 Mode**

Operation Mode	: TX CH High Mode	Test Date	May. 16, 2008
Fundamental Frequency	: 1909.8 MHz	Test By	Sky
Temperature	: 25	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)
213.33	51.64	Н	-49.92	-7.85	1.68	-59.45	-13.00	-46.45
240.49	49.14	Н	-51.93	-7.88	1.91	-61.72	-13.00	-48.72
368.53	51.69	Н	-45.17	-7.65	2.45	-55.27	-13.00	-42.27
613.94	38.96	Н	-52.31	-7.80	2.96	-63.07	-13.00	-50.07
676.99	40.60	Н	-49.40	-7.84	3.17	-60.41	-13.00	-47.41
1910.00	80.75	Н	-26.10	10.08	5.51	-21.54	-13.00	-8.54
3981.60	38.97	Н	-61.21	12.60	8.17	-56.78	-13.00	-43.78
5972.40	37.26	Н	-56.75	13.86	9.91	-52.80	-13.00	-39.80
7963.20		Н		11.27	11.88		-13.00	
9954.00		Н		12.08	13.43		-13.00	
11944.80		Н		13.08	15.21		-13.00	
13935.60		Н		11.82	16.86		-13.00	
15926.40		Н		17.08	18.33		-13.00	
17917.20		Н		9.63	20.12		-13.00	
19908.00		Н		18.88	20.85		-13.00	

	30MHz - 80MHz: 5.04dB		
Measurement uncertainty	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 Setting(dBm) + Antenna Gain (dB/dBi) Cable loss (dB)
- 5 Peak detector was used during test.

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# **Radiated Spurious Emission Measurement Result: WCDMA BAND II Mode**

Operation Mode	: TX CH Low Mode	Test Date:	May. 16, 2008
Fundamental Frequency	: 1852.40MHz	Test By:	Sky
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)
167.74	48.66	V	-50.54	-7.81	1.50	-59.86	-13.00	-46.86
216.24	49.00	V	-52.65	-7.86	1.70	-62.20	-13.00	-49.20
240.49	48.69	V	-52.28	-7.88	1.91	-62.06	-13.00	-49.06
1850.00	72.29	V	-34.67	9.90	5.41	-30.18	-13.00	-17.18
3704.80	37.11	V	-64.45	12.61	7.73	-59.58	-13.00	-46.58
5557.20		V		13.24	9.69		-13.00	
7409.60		V		11.49	11.28		-13.00	
9262.00		V		11.92	13.10		-13.00	
11114.40		V		11.68	14.35		-13.00	
12966.80		V		13.62	16.00		-13.00	
14819.20		V		12.83	17.30		-13.00	
16671.60		V		15.87	19.09		-13.00	
18524.00		V		18.74	21.22		-13.00	

	30MHz - 80MHz: 5.04dB
Measurement uncertainty	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 Setting(dBm) + Antenna Gain (dB/dBi) Cable loss (dB)

5 Peak detector was used during test.

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# **Radiated Spurious Emission Measurement Result: WCDMA BAND II Mode**

Operation Mode	: TX CH Low Mode	Test Date:	May. 16, 2008
Fundamental Frequency	: 1852.40MHz	Test By:	Sky
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)
216.24	51.97	Н	-49.54	-7.86	1.70	-59.09	-13.00	-46.09
252.13	48.74	Н	-52.11	-7.89	1.99	-61.98	-13.00	-48.98
368.53	54.89	Н	-41.97	-7.65	2.45	-52.07	-13.00	-39.07
1850.00	69.75	Н	-37.14	9.90	5.41	-32.65	-13.00	-19.65
3704.80	36.43	Н	-64.91	12.61	7.73	-60.04	-13.00	-47.04
5557.20		Н		13.24	9.69		-13.00	
7409.60		Н		11.49	11.28		-13.00	
9262.00		Н		11.92	13.10		-13.00	
11114.40		Н		11.68	14.35		-13.00	
12966.80		Н		13.62	16.00		-13.00	
14819.20		Н		12.83	17.30		-13.00	
16671.60		Н		15.87	19.09		-13.00	
18524.00		Н		18.74	21.22		-13.00	

	30MHz - 80MHz: 5.04dB
Measurement uncertainty	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 Setting(dBm) + Antenna Gain (dB/dBi) Cable loss (dB)

5 Peak detector was used during test.

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# **Radiated Spurious Emission Measurement Result: WCDMA BAND II Mode**

Operation Mode	: TX CH Mid Mode	Test Date:	May. 16, 2008
Fundamental Frequency	: 1880MHz	Test By:	Sky
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)
216.24	48.49	V	-53.16	-7.86	1.70	-62.71	-13.00	-49.71
240.49	48.07	V	-52.90	-7.88	1.91	-62.68	-13.00	-49.68
368.53	47.59	V	-49.65	-7.65	2.45	-59.75	-13.00	-46.75
3760.00	37.55	V	-63.75	12.60	7.82	-58.97	-13.00	-45.97
5640.00		V		13.36	9.73		-13.00	
7520.00		V		11.45	11.33		-13.00	
9400.00		V		11.93	13.15		-13.00	
11280.00		V		11.92	14.56		-13.00	
13160.00		V		13.33	16.11		-13.00	
15040.00		V		13.76	17.57		-13.00	
16920.00		V		15.27	19.66		-13.00	
18800.00		V		18.68	21.34		-13.00	

	30MHz - 80MHz: 5.04dB	
Measurement uncertainty	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 Setting(dBm) + Antenna Gain (dB/dBi) Cable loss (dB)
- 5 Peak detector was used during test.



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# **Radiated Spurious Emission Measurement Result: WCDMA BAND II Mode**

Operation Mode	: TX CH Mid Mode	Test Date:	May. 16, 2008
Fundamental Frequency	: 1880MHz	Test By:	Sky
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)
216.24	51.73	Н	-49.78	-7.86	1.70	-59.33	-13.00	-46.33
252.13	49.69	Н	-51.16	-7.89	1.99	-61.03	-13.00	-48.03
368.53	54.37	Н	-42.49	-7.65	2.45	-52.59	-13.00	-39.59
3760.00	36.70	Н	-64.41	12.60	7.82	-59.62	-13.00	-46.62
5640.00		Н		13.36	9.73		-13.00	
7520.00		Н		11.45	11.33		-13.00	
9400.00		Н		11.93	13.15		-13.00	
11280.00		Н		11.92	14.56		-13.00	
13160.00		Н		13.33	16.11		-13.00	
15040.00		Н		13.76	17.57		-13.00	
16920.00		Н		15.27	19.66		-13.00	
18800.00		Н		18.68	21.34		-13.00	

	30MHz - 80MHz: 5.04dB
Measurement uncertainty	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 Setting(dBm) + Antenna Gain (dB/dBi) Cable loss (dB)

5 Peak detector was used during test.



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# **Radiated Spurious Emission Measurement Result: WCDMA BAND II Mode**

Operation Mode	: TX CH High Mode	Test Date:	May. 16, 2008
Fundamental Frequency	: 1907.6 MHz	Test By:	Sky
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)
240.49	48.17	V	-52.80	-7.88	1.91	-62.58	-13.00	-49.58
337.49	39.44	V	-58.91	-7.71	2.35	-68.97	-13.00	-55.97
368.53	49.62	V	-47.62	-7.65	2.45	-57.72	-13.00	-44.72
1910.00	73.33	V	-33.52	10.08	5.51	-28.96	-13.00	-15.96
3815.20	52.82	V	-48.23	12.60	7.91	-43.54	-13.00	-30.54
5722.80		V		13.48	9.78		-13.00	
7630.40		V		11.41	11.47		-13.00	
9538.00		V		11.95	13.21		-13.00	
11445.60		V		12.15	14.77		-13.00	
13353.20		V		13.00	16.21		-13.00	
15260.80		V		14.91	17.86		-13.00	
17168.40		V		14.53	19.76		-13.00	
19076.00		V		18.65	21.37		-13.00	

	30MHz - 80MHz: 5.04dB
Measurement uncertainty	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 Setting(dBm) + Antenna Gain (dB/dBi) Cable loss (dB)
- 5 Peak detector was used during test.



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# **Radiated Spurious Emission Measurement Result: WCDMA BAND II Mode**

Operation Mode	: TX CH High Mode	Test Date:	May. 16, 2008
Fundamental Frequency	: 1907.6 MHz	Test By:	Sky
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)
216.24	52.26	Н	-49.25	-7.86	1.70	-58.80	-13.00	-45.80
368.53	52.53	Н	-44.33	-7.65	2.45	-54.43	-13.00	-41.43
431.58	40.46	Н	-55.29	-7.69	2.51	-65.48	-13.00	-52.48
1910.00	65.28	Н	-41.57	10.08	5.51	-37.01	-13.00	-24.01
3815.20	51.53	Н	-49.35	12.60	7.91	-44.65	-13.00	-31.65
5722.80		Н		13.48	9.78		-13.00	
7630.40		Н		11.41	11.47		-13.00	
9538.00		Н		11.95	13.21		-13.00	
11445.60		Н		12.15	14.77		-13.00	
13353.20		Н		13.00	16.21		-13.00	
15260.80		Н		14.91	17.86		-13.00	
17168.40		Н		14.53	19.76		-13.00	
19076.00		Н		18.65	21.37		-13.00	

	30MHz - 80MHz: 5.04dB
Measurement uncertainty	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 Setting(dBm) + Antenna Gain (dB/dBi) Cable loss (dB)

5 Peak detector was used during test.

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# **Radiated Spurious Emission Measurement Result: WCDMA BAND V Mode**

Operation Mode	: TX CH Low Mode	Test Date:	May. 16, 2008
Fundamental Frequency	: 826.4MHz	Test By:	Sky
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)
216.24	48.65	V	-53.00	-7.86	1.70	-62.55	-13.00	-49.55
240.49	48.82	V	-52.15	-7.88	1.91	-61.93	-13.00	-48.93
368.53	45.23	V	-52.01	-7.65	2.45	-62.11	-13.00	-49.11
824.00	65.29	V	-22.04	-7.87	3.64	-33.56	-13.00	-20.56
1652.80	40.59	V	-66.45	9.30	5.06	-62.21	-13.00	-49.21
2479.20	49.78	V	-54.24	10.07	6.31	-50.48	-13.00	-37.48
3305.60		V		12.19	7.26		-13.00	
4132.00		V		12.62	8.34		-13.00	
4958.40		V		12.65	9.20		-13.00	
5784.80		V		13.58	9.81		-13.00	
6611.20		V		12.03	10.63		-13.00	
7437.60		V		11.48	11.29		-13.00	

	30MHz - 80MHz: 5.04dB
Measurement uncertainty	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 Setting(dBm) + Antenna Gain (dB/dBi) Cable loss (dB)
- 5 Peak detector was used during test.



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# **Radiated Spurious Emission Measurement Result: WCDMA BAND V Mode**

Operation Mode	: TX CH Low Mode	Test Date:	May. 16, 2008
Fundamental Frequency	: 826.4MHz	Test By:	Sky
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)
216.24	50.91	Н	-50.60	-7.86	1.70	-60.15	-13.00	-47.15
240.49	48.72	Н	-52.35	-7.88	1.91	-62.14	-13.00	-49.14
368.53	53.84	Н	-43.02	-7.65	2.45	-53.12	-13.00	-40.12
824.00	63.69	Н	-23.97	-7.87	3.64	-35.49	-13.00	-22.49
1652.80	35.69	Н	-71.32	9.30	5.06	-67.08	-13.00	-54.08
2479.20	47.35	Н	-56.67	10.07	6.31	-52.90	-13.00	-39.90
3305.60		Н		12.19	7.26		-13.00	
4132.00		Н		12.62	8.34		-13.00	
4958.40		Н		12.65	9.20		-13.00	
5784.80		Н		13.58	9.81		-13.00	
6611.20		Н		12.03	10.63		-13.00	
7437.60		Н		11.48	11.29		-13.00	
8264.00		Н		11.50	12.29		-13.00	

	30MHz - 80MHz: 5.04dB
Measurement uncertainty	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 Setting(dBm) + Antenna Gain (dB/dBi) - Cable loss (dB)

5 Peak detector was used during test.

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# Radiated Spurious Emission Measurement Result: WCDMA BAND V Mode

Operation Mode	: TX CH Mid Mode	Test Date:	May. 16, 2008
Fundamental Frequency	: 836.0MHz	Test By:	Sky
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)
216.24	48.98	V	-52.67	-7.86	1.70	-62.22	-13.00	-49.22
240.49	48.75	V	-52.22	-7.88	1.91	-62.00	-13.00	-49.00
264.74	45.97	V	-54.40	-7.90	1.99	-64.28	-13.00	-51.28
1693.20	41.32	V	-65.70	9.42	5.13	-61.41	-13.00	-48.41
2539.80	52.19	V	-51.61	10.18	6.39	-47.83	-13.00	-34.83
3344.00		V		12.27	7.29		-13.00	
4180.00		V		12.62	8.39		-13.00	
5016.00		V		12.67	9.25		-13.00	
5852.00		V		13.68	9.84		-13.00	
7524.00		V		11.45	11.34		-13.00	
8360.00		V		11.58	12.42		-13.00	

	30MHz - 80MHz: 5.04dB	
Measurement uncertainty	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 Setting(dBm) + Antenna Gain (dB/dBi) Cable loss (dB)
- 5 Peak detector was used during test.



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# **Radiated Spurious Emission Measurement Result: WCDMA BAND V Mode**

Operation Mode	: TX CH Mid Mode	Test Date:	May. 16, 2008
Fundamental Frequency	: 836.0MHz	Test By:	Sky
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)
216.24	52.38	Н	-49.13	-7.86	1.70	-58.68	-13.00	-45.68
240.49	49.92	Н	-51.15	-7.88	1.91	-60.94	-13.00	-47.94
368.53	53.61	Н	-43.25	-7.65	2.45	-53.35	-13.00	-40.35
1693.20	39.52	Н	-67.46	9.42	5.13	-63.17	-13.00	-50.17
2539.80	47.39	Н	-56.41	10.18	6.39	-52.62	-13.00	-39.62
3344.00		Н		12.27	7.29		-13.00	
4180.00		Н		12.62	8.39		-13.00	
5016.00		Н		12.67	9.25		-13.00	
5852.00		Н		13.68	9.84		-13.00	
6688.00		Н		11.96	10.73		-13.00	
7524.00		Н		11.45	11.34		-13.00	
8360.00		Н		11.58	12.42		-13.00	

	30MHz - 80MHz: 5.04dB
Measurement uncertainty	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 Setting(dBm) + Antenna Gain (dB/dBi) Cable loss (dB)

5 Peak detector was used during test.



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# **Radiated Spurious Emission Measurement Result: WCDMA BAND V Mode**

Operation Mode	: TX CH High Mode	Test Date:	May. 16, 2008
Fundamental Frequency	: 846.6 MHz	Test By:	Sky
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)
216.24	48.99	V	-52.66	-7.86	1.70	-62.21	-13.00	-49.21
240.49	48.85	V	-52.12	-7.88	1.91	-61.90	-13.00	-48.90
368.53	46.17	V	-51.07	-7.65	2.45	-61.17	-13.00	-48.17
850.00	62.48	V	-24.23	-7.88	3.75	-35.86	-13.00	-22.86
1693.20	40.69	V	-66.33	9.42	5.13	-62.04	-13.00	-49.04
2539.80	52.75	V	-51.05	10.18	6.39	-47.27	-13.00	-34.27
3386.40		V		12.36	7.32		-13.00	
4233.00		V		12.63	8.45		-13.00	
5079.60		V		12.73	9.31		-13.00	
5926.20		V		13.79	9.88		-13.00	
6772.80		V		11.87	10.84		-13.00	
7619.40		V		11.41	11.46		-13.00	
8466.00		V		11.68	12.56		-13.00	

	30MHz - 80MHz: 5.04dB
Measurement uncertainty	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 Setting(dBm) + Antenna Gain (dB/dBi) Cable loss (dB)
- 5 Peak detector was used during test.



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# **Radiated Spurious Emission Measurement Result: WCDMA BAND V Mode**

Operation Mode	: TX CH High Mode	Test Date:	May. 16, 2008
Fundamental Frequency	: 846.60 MHz	Test By:	Sky
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)
216.24	51.89	Н	-49.62	-7.86	1.70	-59.17	-13.00	-46.17
252.13	48.27	Н	-52.58	-7.89	1.99	-62.45	-13.00	-49.45
368.53	52.99	Н	-43.87	-7.65	2.45	-53.97	-13.00	-40.97
850.00	63.25	Н	-23.74	-7.88	3.75	-35.37	-13.00	-22.37
1693.20	36.25	Н	-70.73	9.42	5.13	-66.44	-13.00	-53.44
2539.80	49.06	Н	-54.74	10.18	6.39	-50.95	-13.00	-37.95
3386.40		Н		12.36	7.32		-13.00	
4233.00		Н		12.63	8.45		-13.00	
5079.60		Н		12.73	9.31		-13.00	
5926.20		Н		13.79	9.88		-13.00	
6772.80		Н		11.87	10.84		-13.00	
7619.40		Н		11.41	11.46		-13.00	
8466.00		Н		11.68	12.56		-13.00	

	30MHz - 80MHz: 5.04dB		
Measurement uncertainty	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 Setting(dBm) + Antenna Gain (dB/dBi) Cable loss (dB)
- 5 Peak detector was used during test.



# **9** SPURIOUS RADIATED EMISSION TEST (RX)

# 9.1 Standard Applicable

According to §6.7, all spurious emissions shall comply with the limits of Table 2. The resolution bandwidth of the spectrum analyzer shall be 100 kHz for spurious emissions measurements below 1.0 GHz, and 1.0 MHz for measurements above 1.0 GHz.

Frequency (MHz)	Field strength $\mu V/m$	Distance (m)	Field strength at 3m dBµV/m
30-88	100	3	40
88-216	150	3	43.5
216-960	200	3	46
Above 960	500	3	54

# 9.2 EUT Setup

- 1. The radiated emission tests were performed in the 3 meter open-test site, using the setup in accordance with the ANSI C63.4-2003.
- 2. The EUT was put in the front of the test table. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
- 3. The spacing between the peripherals was 10 centimeters.
- 4. External I/O cables were draped along the edge of the test table and bundle when necessary.
- 5. The host was connected with 110Vac/60Hz power source.

# 9.3 Measurement Procedure

- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 2. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
- 4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 5. Repeat above procedures until all frequency measured were complete.

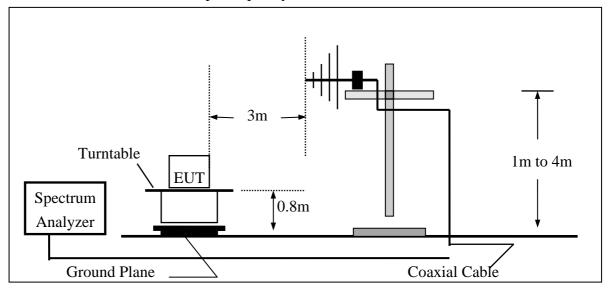
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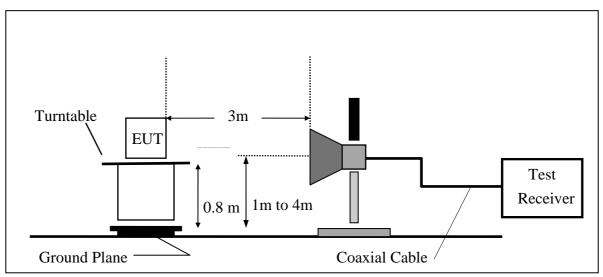
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#### 9.4 **Test SET-UP (Block Diagram of Configuration)**

Radiated Emission Test Set-Up, Frequency Below 1000MHz



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



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9.5 Measurement Equipment Used:								
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.			
ТҮРЕ		NUMBER	NUMBER	CAL.				
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/27/2008	04/26/2009			
Spectrum Analyzer	Agilent	E7405A	US41160416	07/04/2007	07/03/2008			
Communication Test	R&S	CMU200	N/A	N/A	N/A			
Bi-log Antenna	SCHWAZBECK	VULB9160	3224	11/17/2007	11/16/2008			
Horn antenna	SCHWAZBECK	BBHA 9120D	309/320	08/16/2007	08/15/2008			
Pre-Amplifier	HP	8447D	2944A09469	07/19/2007	07/18/2008			
Pre-Amplifier	HP	8494B	3008A00578	02/26/2007	02/25/2008			
Signal Generator	R&S	SMR40	100210	02/09/2007	02/10/2008			
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	10/09/2007	10/08/2008			
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	10/09/2007	10/08/2008			
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-0.5M	0.5m	10/09/2007	10/08/2008			
Site NSA	SGS	966 chamber	N/A	10/02/2006	10/01/2008			
Attenuator	Mini-Circult	BW-S10W5	N/A	09/23/2007	09/22/2008			
Dipole Antenna	SCHWAZBECK	VHAP	908/909	06/09/2007	06/10/2008			
Dipole Antenna	SCHWAZBECK	UHAP	891/892	06/09/2007	06/10/2008			

#### **Measurement Equipment Used:** 95

# 9.6 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

# FS = RA + AF + CL - AG

Where	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude		AG = Amplifier Gain
	AF = Antenna Factor	

#### **Measurement Result** 9.7

Refer to attach tabular data sheets.

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# **Radiated Spurious Emission Measurement Result (below 1GHz)**

Operation Mode	GSM850 H Plan CH High (worst case)	Test Date	May. 16, 2008
Fundamental Frequency	N/A	Test By	Sky
Temperature	25	Pol	Ver./Hor
Humidity	65 %		

	Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin	
_	(MHz)	H/V	(PK/QP)	(dBuV)	( <b>dB</b> )	(dBuV/m)	(dBuV/m)	( <b>dB</b> )	
	128.94	V	Peak	59.12	-16.87	42.25	43.50	-1.25	
	308.39	V	Peak	54.42	-12.36	42.06	46.00	-3.94	
	308.39	Н	Peak	60.49	-17.16	43.33	46.00	-2.67	
	363.68	Н	Peak	53.11	-13.28	39.83	46.00	-6.17	

#### Remark :

- (1) Measuring frequencies from 30 MHz to the 1GHz  $\circ$
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/AV detector mode.
- (3) Datas of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

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# **Radiated Spurious Emission Measurement Result (above 1GHz)**

Operation Mode	GSM850 H Plan CH MID (worst case)	Test Date	May. 16, 2008
Fundamental Frequency	N/A	Test By	Sky
Temperature	25	Pol	Ver
Humidity	65 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	
 (MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	( <b>dB</b> )	
1697.6									
2546.4									
3395.2									
4244.0									

Remark :

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency<sub>o</sub>
- (2) Datas of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (4) Spectrum Peak Setting : 1GHz-13GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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# **Radiated Spurious Emission Measurement Result (above 1GHz)**

Operation Mode	GSM850 H Plan CH MID (worst case)	Test Date	May. 16, 2008
Fundamental Frequency	N/A	Test By	Sky
Temperature	25	Pol	Hor
Humidity	65 %		

	Peak	AV		Actu	al FS	Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	
(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	( <b>dB</b> )	
1697.6									
2546.4									
3395.2									
4244.0									

Remark :

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency<sub>o</sub>
- (2) Datas of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (4) Spectrum Peak Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



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# **Radiated Spurious Emission Measurement Result (below 1GHz)**

Operation Mode	GSM1900 H Plan CH MID (worst case)	Test Date	May. 16, 2008
Fundamental Frequency	N/A	Test By	Sky
Temperature	25	Pol	Ver./Hor
Humidity	65 %		

Freq.	Ant.Pol.	Detector Mode	Reading	Factor	Actual FS	Limit3m	Safe Margin
(MHz)	H/V	(PK/QP)	(dBuV)	( <b>dB</b> )	(dBuV/m)	(dBuV/m)	( <b>dB</b> )
187.14	V	Peak	58.10	-16.87	41.23	43.50	-2.27
232.73	V	Peak	53.73	-10.25	43.48	46.00	-2.52
232.73	Н	Peak	55.39	-17.16	38.23	46.00	-7.77
308.39	Н	Peak	54.66	-12.24	42.42	46.00	-3.58

#### Remark :

- (1) Measuring frequencies from 30 MHz to the 1GHz  $\circ$
- (2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/AV detector mode.
- (3) Datas of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (4) The IF bandwidth of SPA between 30MHz to 1GHz was 100KHz.

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# **Radiated Spurious Emission Measurement Result (above 1GHz)**

Operation Mode	GSM1900 H Plan CH MID (worst case)	Test Date	May. 16, 2008
Fundamental Frequency	N/A	Test By	Sky
Temperature	25	Pol	Ver
Humidity	65 %		

	Peak	AV		Actual FS		Peak	AV		
Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	
(MHz	) (dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dB)	
3819.6	õ								
5729.4	4								
7639.2	2								
9549.(	)								

Remark :

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency<sub>o</sub>
- (2) Datas of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (4) Spectrum Peak Setting : 1GHz-13GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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# **Radiated Spurious Emission Measurement Result (above 1GHz)**

Operation Mode	GSM1900 H Plan CH MID (worst case)	Test Date	May. 16, 2008
Fundamental Frequency	N/A	Test By	Sky
Temperature	25	Pol	Hor
Humidity	65 %		

		Peak	AV		Actual FS		Peak	AV		
	Freq.	Reading	Reading	Ant./CL	Peak	AV	Limit	Limit	Margin	
_	(MHz)	(dBuV)	(dBuV)	CF(dB)	(dBuV/m)	(dBuV/m)	(dBuV/m)	(dBuV/m)	( <b>dB</b> )	
	3819.6									
	5729.4									
	7639.2									
	9549.0									

Remark :

- (1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency<sub>o</sub>
- (2) Datas of measurement within this frequency range shown "-" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
- (3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
- (4) Spectrum Peak Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 1MHz, Sweep time= 200 ms.
- (5) Spectrum AV Setting : 1GHz- 13GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.



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# **APPENDIX 1**

# **PHOTOGRAPHS OF SET UP**

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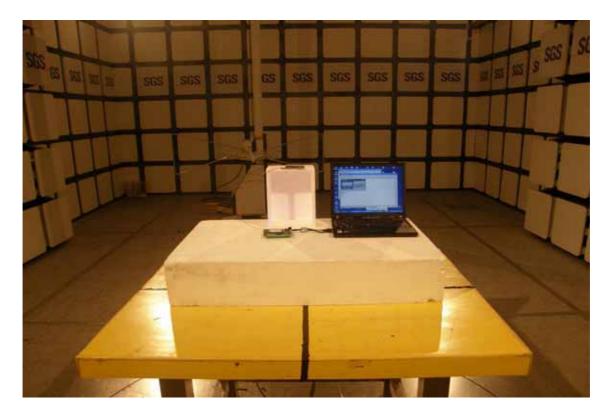
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# **Radiated Emission Set up Photos**



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# **APPENDIX 2 PHOTOGRAPHS OF EUT**

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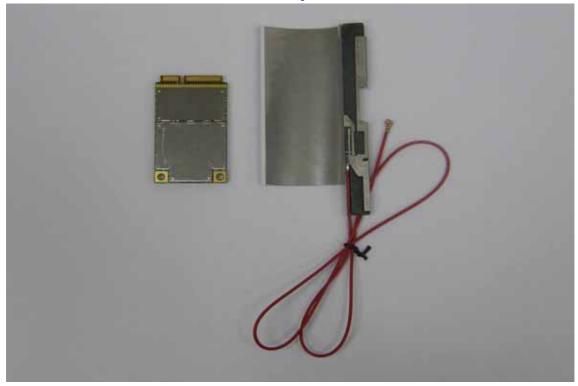
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All View of EUT



Internal View of EUT – 1



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# Internal View of EUT – 2



# Internal View of EUT – 3



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# Internal View of EUT – 4



~ End of Report ~

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