

FCC ID: E2KV03B002

Report No.: EH/2010/70029-30 Issue Date: Sep. 15, 2010 Page: 1 of 82

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 22 SUBPART H, PART 24 SUBPART E and PART 27

	OF
Product Name:	Smart Phone
Brand Name:	DELL
Model Name:	V03B002
Model Difference:	N/A
FCC ID:	E2KV03B002
Report No.:	EH/2010/70029-30
Issue Date:	Sep. 15, 2010
FCC Rule Part:	2 , 22H & 24E & 27
Prepared for:	DELL Inc.
	One Dell Way, Round Rock, Tx 78682Austin, Tx 78753
Prepared by:	SGS Taiwan Ltd.
	Electronics & Communication Laboratory
	No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei County, Taiwan.

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FCC ID: E2KV03B002

Report No.: EH/2010/70029-30 Issue Date: Sep. 15, 2010 Page: 2 of 82

VERIFICATION OF COMPLIANCE

Applicant:	DELL Inc. One Dell Way, Round Rock, Tx 78682Austin, Tx 78753
Product Name:	Smart Phone
Brand Name:	DELL
Model No.:	V03B002
Model Difference:	N/A
FCC ID:	E2KV03B002
File Number:	EH/2010/70029-30
Date of test:	Jul. 15, 2010 ~ Sep. 10, 2010
Date of EUT Received:	Jul. 15, 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:	Jazz Huang	Date:	Sep. 15, 2010
	Jazz Huang / Engineer		
Prepared By:	Alex Hsieh	Date:	Sep. 15, 2010
Approved By:	Alex Hsieh / Sr. Engineer ALWO HSieh	Date:	Sep. 15, 2010
-			

Arno Hsieh /Asst. Supervisor

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Version

Version No.	Date	Description
00	Sep. 15, 2010	Initial creation of document



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1. GENERAL PRODUCT INFORMATION

General:	1			
Product Name	Smart Phone	Smart Phone		
Brand Name	DELL			
Model Name	V03B002			
Model Difference	N/A			
Data Cable (USB)	Model No.: 5K.16R01.001 / CU04C04U05-K66-EF, Supplier: HELM			
Simple Hands free (SUE)	Model No.: 525283/TY.2C190.003, Supplier: Foster			
Simple Hands-free (SHF)	Model No.: C055T/TY.2C190.001, Supplier: PCH			
	3.7 Vdc re-cl	hargeable battery or 5Vdc by AC/DC power adapter		
Power Supply	Battery:	Model: 214L0/2C.214L0.001, Supplier: CHENG UEI PRECISION INDUSTRY CO.,LTD.		
	Adapter:	Model No.: 32HD9/ 0005ADUUS, Supplier: PCH		

GSM and WCDMA:

	Operating Frequency	Rated Power	
	GSM/GPRS 850 Class 12 824 MHz– 849MHz		32.5 dBm
Cellular Phone Standards Frequency Range and	GSM/GPRS 1900 Class 12	1850MHz – 1910MHz	30 dBm
Power:	EDGE 850, Class 12	824 MHz- 849MHz	27 dBm
	EDGE 1900, Class 12	1850MHz – 1910MHz	26 dBm
	WCDMA/HSUPA/HSDPA Band IV 1712.4MHz –1752.6MHz		23 dBm
Hardware Version:	N/A		
Software Version:	N/A		
Type of Emission	GSM 850: 246KGXW, GSM 1900 :244KGXW EDGE 850: 250KG7W, EDGE 1900:247KG7W WCDMA Band IV: 4M17F9W,HSDPA Band IV: 4M18F9W		
IMEI:	01212000005980		



WLAN:

Wi-Fi	Frequency Range	Channels	Rated Power	Modulation Technology	Type of Emission
11b/g	2412-2462	11	b : 14.57dBm g : 18.70dBm	DSSS, OFDM	b : 8M15G1D g : 15M23G1D
11n	HT20 2412-2462	11	n : 16.23Bm	OFDM	15M23G1D
Antenna	Antenna Designation:		PIFA Antenna with 1.25dBi peak gain		
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 802.11 n 20MHz: 6.5 – 72.2Mbps			

The EUT is compliance with IEEE 802.11 b/g/n Standard.

Bluetooth:

Bluetooth Version:	$ \begin{array}{ c c c c c } \hline & V1.1 (GFSK) \\ \hline & V1.2 (GFSK) \\ \hline & V2.0 (GFSK) \\ \hline & V2.0 + EDR (GFSK + \pi/4DQPSK + 8DPSK) \\ \hline & V2.1 + EDR (GFSK + \pi/4DQPSK + 8DPSK) \end{array} $		
Channel number:	79 channels		
Modulation type:	$GFSK + \pi/4DQPSK + 8DPSK$		
Output Power:	8.21 dBm (Max. EDR mode)		
Frequency Range:	2.402GHz – 2.480GHz		
Dwell Time:	<= 0.4s		
Operating Mode:	Point-to-Point		
Antenna Designation:	PIFA Antenna with 1.25dBi peak gain		
Type of Emission:	1M29F1D		

The EUT is compliance with Bluetooth 2.1 + EDR Standard.



Test Mode	DC voltage (V)	DC current (mA)	
GSM 850	3.7Vdc	470	
DCS 1900	3.7Vdc	440	
EDGE 850	3.7Vdc	360	
EDGE 1900	3.7Vdc	270	
WCDMA B4	3.7Vdc	520	
HSUPA B4	3.7Vdc	630	

Final Amplifier Voltage and Current Information:

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

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

This submittal(s) (test report) is intended for FCC ID: <u>**E2KV03B002**</u> filing to comply with Section Part 22 subpart H, Part 24 subpart E 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.



2.4. Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT MFR MOD			SERIAL	LAST	CAL DUE.
TYPE		NUMBER	NUMBER	CAL.	
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2010	04/18/2012
Spectrum Analyzer	Agilent	E4440A	US41160416	01/23/2010	01/22/2012
Radio Communication Analyzer	R&S	CMU200	102189	05/13/2010	05/13/2012
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	04/14/2010	04/13/2012
Temperature Chamber	GIANT FORCE	GTH-150-40- CP-AR	MAA0512-018	02/05/2010	02/04/2012
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	HP	6038A	2929A-07548	06/27/2010	06/26/2011
DC Power Supply	Topward	3303D	981327	10/26/2009	10/25/2010



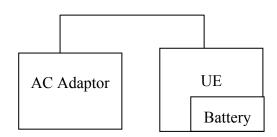
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ERP, E	ERP, EIRP MEASUREMENT EQUIPMENT List 966 Chamber							
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.			
ТҮРЕ		NUMBER	NUMBER	CAL.				
Spectrum Analyzer	R&S	FSP 40	100034	02/12/2010	02/11/2012			
Bilog Antenna	SCHWAZBECK	VULB9160	9160-3136	11/15/2009	11/14/2010			
Dipole Antenna	SCHWAZBECK	VHAP	908/909	07/10/2010	07/09/2012			
Dipole Antenna	SCHWAZBECK	UHAP	891/892	07/10/2010	07/09/2012			
Horn antenna	SCHWAZBECK	BBHA 9120D	309	01/22/2010	01/21/2012			
Horn antenna	SCHWAZBECK	BBHA 9120D	9120D-673	05/09/2010	05/08/2012			
Signal Generator	R&S	SMR40	100210	01/22/2010	01/21/2012			
Signal Generator	Agilent	E4438C	MY45093613	06/11/2010	06/10/2011			
Pre-Amplifier	Agilent	8447D	1937A02834	11/30/2009	11/29/2010			
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	102189	05/13/2010	05/12/2012			
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			
3m Site	SGS	966 chamber	N/A	11/08/2009	11/09/2010			



2.5. Configuration of Tested System

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



Remote Side



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



3. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§2.1046(a)	RF Power Output	Compliant
<pre> §2.1046(a) §22.913(a)(2) §24.232(c) §27.50(d)(2)</pre>	ERP/ EIRP measurement	Compliant
§2.1049(h)	99% Occupied Bandwidth	Compliant
\$2.1051 \$22.917(a) \$24.238(a) \$27.53(g)	Out of Band Emissions at Antenna Terminals and Band Edge	Compliant
\$2.1053 \$22.917(a) \$24.238(a) \$27.53(g)	Field Strength of Spurious Radiation	Compliant
\$2.1055(a)(1) \$22.355 \$24.235 \$27.54	Frequency Stability vs. Temperature	Compliant
\$2.1055(d)(2) \$22.355 \$24.235 \$27.54	Frequency Stability vs. Voltage	Compliant

Max ERP/EIRP measurement result:

	dBm		W
GSM 850 Band	32.28	ERP	1.690
GSM 1900 Band	32.37	EIRP	1.726
EDGE 850 Band	29.93	ERP	0.984
EDGE 1900 Band	30.65	EIRP	1.161
WCDMA Band IV	24.36	EIRP	0.273
HSUPA Band IV	24.61	EIRP	0.289



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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 (E1 mode) and lie down position (E1, E2 mode) for GSM/GPRS/EDGE and WCDMA Band IV with power adaptors. The worst-case of H position for GSM 850 band, E2 position for GSM 1900, E2 position WCDMA/HSUPA Band IV were reported.



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 ta-	Power	Class 3	Power Class 4		
ble C.10.1.4	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

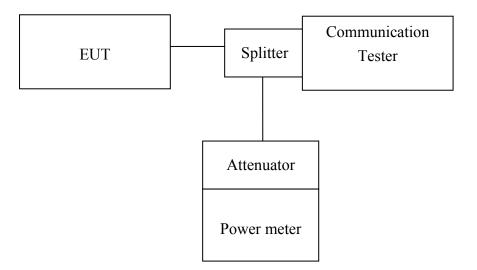
Sub-test in table	Power	Class 3	Power Class 4		
C.11.1.3	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)	
1	+24	+1.7/-6.7	+21	+2.7/-5.7	
2	+22	+3.7/-5.2	+19	+4.7/-4.2	
3	+23	+2.7/-5.2	+20	+3.7/-4.2	
4	+22	+3.7/-5.2	+19	+4.7/-4.2	
5	+24	+1.7/-6.7	+21	+2.7/-5.7	

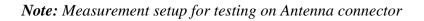
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5.2 Test Set-up:





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



5.5 Measurement Result:

5.1 **RF** Conducted Output Power

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

Result:

EUT Mode	Frequency (MHz)	СН	Peak Power (1TS) (dBm)	Average Power (1TS) (dBm)
GSM 850	824.2	128	32.90	32.80
	836.6	190	32.80	32.70
	848.8	251	32.70	32.60

EUT Mode	Frequency (MHz)	СН	Peak Power (1TS) (dBm)	Peak Power (2TS) (dBm)	Peak Power (3TS) (dBm)	Peak Power (4TS) (dBm)
	824.2	128	33.00	32.80	30.80	29.70
GPRS 850	836.6	190	32.80	32.70	30.70	29.70
	848.8	251	32.70	32.60	30.60	29.60

EUT Mode	Frequency (MHz)	СН	Average Power (1TS) (dBm)	Average Power (2TS) (dBm)	Average Power (3TS) (dBm)	Average Power (4TS) (dBm)
	824.2	128	32.90	32.70	30.70	29.60
GPRS 850	836.6	190	32.70	32.60	30.60	29.60
	848.8	251	32.60	32.50	30.50	29.50

EUT Mode	Frequency (MHz)	СН	Peak Power (1TS) (dBm)	Peak Power (2TS) (dBm)	Peak Power (3TS) (dBm)	Peak Power (4TS) (dBm)
EDGE 850	824.2	128	30.70	30.70	30.30	29.10
	836.6	190	30.60	30.60	30.30	29.00
	848.8	251	30.50	30.40	30.30	28.90

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EUT Mode	Frequency (MHz)	СН	Average Power (1TS) (dBm)	Average Power (2TS) (dBm)	Average Power (3TS) (dBm)	Average Power (4TS) (dBm)
	824.2	128	27.50	27.50	27.20	25.90
EDGE 850	836.6	190	27.50	27.50	27.10	25.80
	848.8	251	27.40	27.30	27.20	25.70

EUT Mode	Frequency (MHz)	СН	Peak Power (1TS) (dBm)	Average Power (1TS) (dBm)
	1850.2	512	30.10	30.00
GSM 1900	1880.0	661	30.10	30.00
	1909.8	810	30.10	30.00

EUT Mode	Frequency (MHz)	СН	Peak Power (1TS) (dBm)	Peak Power (2TS) (dBm)	Peak Power (3TS) (dBm)	Peak Power (4TS) (dBm)
	1850.2	512	29.90	29.80	29.70	27.30
GPRS 1900	1880.0	661	29.90	29.90	29.80	27.30
	1909.8	810	30.00	29.80	29.90	27.40

EUT Mode	Frequency (MHz)	СН	Average Power (1TS) (dBm)	Average Power (2TS) (dBm)	Average Power (3TS) (dBm)	Average Power (4TS) (dBm)
	1850.2	512	29.80	29.70	29.60	27.20
GPRS 1900	1880.0	661	29.80	29.70	29.70	27.20
	1909.8	810	29.90	29.70	29.80	27.30



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EUT Mode	Frequency (MHz)	СН	Peak Power (1TS) (dBm)	Peak Power (2TS) (dBm)	Peak Power (3TS) (dBm)	Peak Power (4TS) (dBm)
	1850.2	512	29.40	29.40	29.30	27.80
EDGE 1900	1880.0	661	29.50	29.40	29.30	27.80
	1909.8	810	29.50	29.40	29.40	27.90

EUT Mode	Frequency (MHz)	СН	Average Power (1TS) (dBm)	Average Power (2TS) (dBm)	Average Power (3TS) (dBm)	Average Power (4TS) (dBm)
	1850.2	512	26.30	26.10	26.10	24.60
EDGE 1900	1880.0	661	26.40	26.10	26.10	24.60
	1909.8	810	26.40	26.10	26.20	24.70



FCC ID: E2KV03B002

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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)	СН	Peak Power (dBm)	AVG. Power (dBm)
	1712.4	1312	25.84	22.71
WCDMA Band IV	1732.6	1413	26.40	22.88
Dana I v	1752.6	1513	26.10	22.93

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



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: β values for transmitter characteristics tests with HS-DPCCH(FOR HSDPA)

Sub-test	βc	βd	β _d (SF)	βc/βd	<mark>βнs</mark> (Note1, 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	Transmi	tter Powe	r (dBm)	Power Class 3 Limita-	Comments
			Channel		tion (dBm)	
		1312	1413	1513		
HSDPA(B4)	1	22.54	22.77	22.79	20.3dBm - 25.7dBm	Pass
	2	22.59	22.74	22.78	20.3dBm - 25.7dBm	Pass
	3	22.06	22.32	22.26	19.8dBm – 25.7dBm	Pass
	4	22.13	22.33	22.38	19.8dBm – 25.7dBm	Pass

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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

HSPA SUB-TEST Setting

Results:

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

Sub- test	βc	βa	β _d (SF)	β _c /β _d	$\beta_{\rm HS}$	β _{ec}	β_{ed}	β _{ed} (SF)	$\begin{array}{c} \beta_{ed} \\ (Codes) \end{array}$	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	209/22 5	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	β_{ed} 1: 47/15 β_{ed} 2: 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.

Mode	Sub-test	TX	Power (dl	Bm)	Power Class 3 Limita-	Comments	
		1312	Channel 1413	1513	tion (dBm)		
HSUPA(B4)	1	22.63	22.86	22.87	18.8dBm – 25.7dBm	Pass	
	2	20.68	20.68 20.93		16.8dBm – 25.7dBm	Pass	
	3	21.69	21.88	21.95	17.8dBm – 25.7dBm	Pass	
	4	20.81	20.81 20.98		16.8dBm – 25.7dBm	Pass	
	5	22.52	22.72	22.78	18.8dBm – 25.7dBm	Pass	



6. ERP, EIRP MEASUREMENT

6.1. Standard Applicable:

According to FCC §2.1046

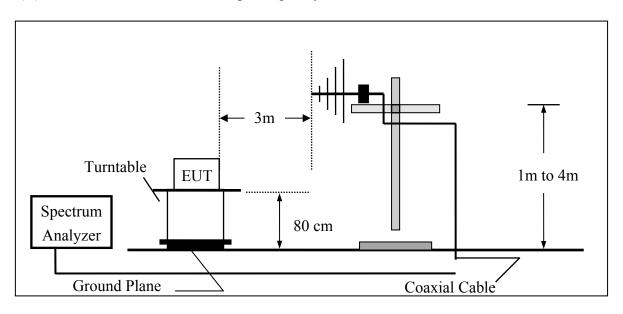
FCC 22.913(a) Mobile station are limited to 7W ERP.

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.

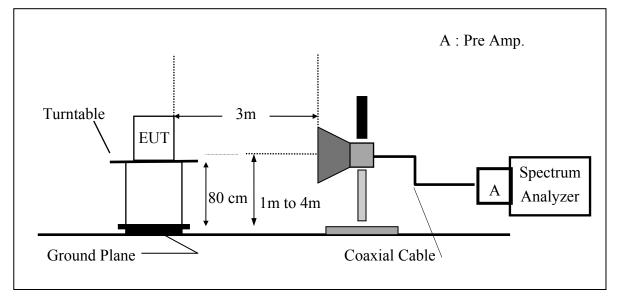
6.2. Test SET-UP (Block Diagram of Configuration):

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



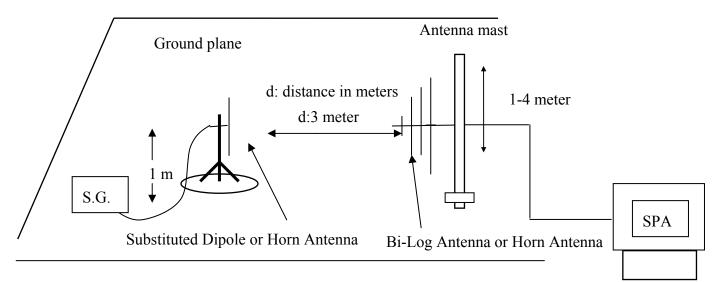


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(B) Radiated Emission Test Set-UP Frequency Over 1 GHz

(C) Substituted Method Test Set-UP



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6.3. Measurement Procedure:

The EUT was placed on an 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 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 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:

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

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

6.4. Measurement Equipment Used:

Refer to section 2.4 in this report



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)
			Н	V	128.78	42.39	-7.87	3.62	30.89	38.45
				Н	116.97	30.70	-7.87	3.62	19.20	38.45
	824.20	128	E1	V	117.76	31.37	-7.87	3.62	19.87	38.45
	024.20	120		Н	128.76	42.49	-7.87	3.62	30.99	38.45
			E2	V	116.94	30.55	-7.87	3.62	19.05	38.45
			E2	Н	128.02	41.75	-7.87	3.62	30.25	38.45
		190	Н	V	129.78	43.53	-7.88	3.65	32.00	38.45
	836.60		п	Н	117.80	31.57	-7.88	3.65	20.04	38.45
GSM 850			E1 E2	V	118.03	31.78	-7.88	3.65	20.25	38.45
USWI 850	850.00			Н	129.34	43.11	-7.88	3.65	31.58	38.45
				V	116.23	29.98	-7.88	3.65	18.45	38.45
			E2	Н	128.43	42.20	-7.88	3.65	30.67	38.45
			Н	V	129.96	43.84	-7.88	3.68	32.28	38.45
			11	Н	117.76	31.57	-7.88	3.68	20.01	38.45
	848.80	251	E1	V	118.31	32.19	-7.88	3.68	20.63	38.45
	040.00	251		Н	129.60	43.41	-7.88	3.68	31.85	38.45
			E2	V	114.99	28.87	-7.88	3.68	17.31	38.45
				Н	128.61	42.42	-7.88	3.68	30.86	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)	СН	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
			Н	V	123.42	19.03	9.90	5.56	23.37	33.00
			11	Н	124.89	20.71	9.90	5.56	25.05	33.00
	1850.20	512	E1	V	129.79	25.40	9.90	5.56	29.74	33.00
	1050.20	512		Н	126.08	21.90	9.90	5.56	26.24	33.00
			E2	V	114.83	10.44	9.90	5.56	14.78	33.00
			E2	Н	131.63	27.45	9.90	5.84	31.51	33.00
	1880.00	661	Н	V	123.73	19.37	9.99	5.61	23.75	33.00
			11	Н	124.84	20.70	9.99	5.61	25.07	33.00
GSM 1900			E1 E2	V	129.91	25.55	9.99	5.61	29.93	33.00
USIVI 1900	1000.00			Н	126.54	22.40	9.99	5.61	26.77	33.00
				V	115.18	10.82	9.99	5.61	15.20	33.00
			E2	Н	132.14	28.00	9.99	5.61	32.37	33.00
			Н	V	122.77	18.44	10.08	5.66	22.86	33.00
			11	Н	123.75	19.64	10.08	5.66	24.06	33.00
	1909.80	810	E1	V	130.05	25.72	10.08	5.66	30.14	33.00
	1707.00	810		Н	126.46	22.35	10.08	5.66	26.77	33.00
			E2	V	111.84	7.51	10.08	5.66	11.93	33.00
				Н	131.40	27.29	10.08	5.66	31.71	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)	СН	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
			Н	V	126.45	40.06	-7.87	3.62	28.56	38.45
			11	Н	116.10	29.83	-7.87	3.62	18.33	38.45
	824.20	128	E1	V	114.90	28.51	-7.87	3.62	17.01	38.45
	024.20	120		Н	126.15	39.88	-7.87	3.62	28.38	38.45
			E2	V	115.65	29.26	-7.87	3.62	17.76	38.45
			E2	Н	125.46	39.19	-7.87	3.62	27.69	38.45
		190	Н	V	127.35	41.10	-7.88	3.65	29.57	38.45
				Н	115.42	29.19	-7.88	3.65	17.66	38.45
EDGE 850	836.60		E1	V	115.75	29.50	-7.88	3.65	17.97	38.45
EDGE 850	050.00			Н	126.90	40.67	-7.88	3.65	29.14	38.45
			E2	V	115.21	28.96	-7.88	3.65	17.43	38.45
				Н	125.85	39.62	-7.88	3.65	28.09	38.45
			Н	V	127.61	41.49	-7.88	3.68	29.93	38.45
			11	Н	115.49	29.30	-7.88	3.68	17.74	38.45
	848.80	251	E1	V	116.00	29.88	-7.88	3.68	18.32	38.45
	0-0.00	231		Н	127.12	40.93	-7.88	3.68	29.37	38.45
			E2	V	113.86	27.74	-7.88	3.68	16.18	38.45
				Н	126.17	39.98	-7.88	3.68	28.42	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)	СН	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
			Н	V	116.05	11.66	9.90	5.56	16.00	33.00
			11	Н	129.94	25.76	9.90	5.56	30.10	33.00
	1850.20	512	E1	V	128.68	24.29	9.90	5.56	28.63	33.00
	1650.20	512		Н	124.74	20.56	9.90	5.56	24.90	33.00
			E2	V	113.66	9.27	9.90	5.56	13.61	33.00
			EZ	Н	129.89	25.71	9.90	5.84	29.77	33.00
			Н	V	122.29	17.93	9.99	5.61	22.31	33.00
				Н	124.24	20.10	9.99	5.61	24.47	33.00
EDGE 1900	1880.00	661	E1	V	129.33	24.97	9.99	5.61	29.35	33.00
EDGE 1900	1000.00			Н	125.89	21.75	9.99	5.61	26.12	33.00
			E2	V	113.68	9.32	9.99	5.61	13.70	33.00
				Н	130.42	26.28	9.99	5.61	30.65	33.00
			Н	V	121.21	16.88	10.08	5.66	21.30	33.00
			11	Н	122.99	18.88	10.08	5.66	23.30	33.00
	1909.80	810	E1	V	128.86	24.53	10.08	5.66	28.95	33.00
	1909.00	810		Н	125.03	20.92	10.08	5.66	25.34	33.00
			E2	V	111.90	7.57	10.08	5.66	11.99	33.00
				Н	129.66	25.55	10.08	5.66	29.97	33.00

Remark :

(1) The RBW, VBW of SPA for frequency

RBW=300 KHz, VBW=1MHz,



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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)
			Н	V	114.58	7.62	9.90	5.41	12.12	33.00
			11	Н	120.59	13.70	9.90	5.41	18.20	33.00
	1712.40	1312	E1	V	123.22	16.26	9.90	5.41	20.76	33.00
	1/12.40	1312	LI	Н	116.86	9.97	9.90	5.41	14.47	33.00
			E2	V	109.89	2.93	9.90	5.41	7.43	33.00
			ĽŹ	Н	125.72	18.83	9.90	5.84	22.89	33.00
		(0. 1412	H 413 E1	V	117.16	10.21	9.99	5.46	14.74	33.00
				Н	120.30	13.43	9.99	5.46	17.96	33.00
WCDMA	1732.60			V	124.59	17.64	9.99	5.46	22.17	33.00
Band IV	1752.00	1413		Н	118.85	11.98	9.99	5.46	16.51	33.00
			E2	V	110.91	3.96	9.99	5.46	8.49	33.00
			ΕZ	Н	126.70	19.83	9.99	5.46	24.36	33.00
			Н	V	116.49	9.55	10.07	5.51	14.12	33.00
		1513	п	Н	118.99	12.13	10.07	5.51	16.70	33.00
	1752.60 151		E1	V	124.94	18.00	10.07	5.51	22.57	33.00
			EI	Н	119.51	12.65	10.07	5.51	17.22	33.00
			E2	V	110.73	3.79	10.07	5.51	8.36	33.00
			E2	Н	126.12	19.26	10.07	5.51	23.83	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)	СН	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
			Н	V	116.63	9.67	9.90	5.41	14.17	33.00
				Н	120.37	13.48	9.90	5.41	17.98	33.00
	1712.40	1312	E1	V	124.46	17.50	9.90	5.41	22.00	33.00
	1/12.40	1312	LI	Н	117.50	10.61	9.90	5.41	15.11	33.00
			E2	V	109.05	2.09	9.90	5.41	6.59	33.00
			ĽŹ	Н	125.51	18.62	9.90	5.84	22.68	33.00
			H 1413 E1	V	118.00	11.05	9.99	5.46	15.58	33.00
				Н	120.09	13.22	9.99	5.46	17.75	33.00
HSUPA	1732.60	1/12		V	125.66	18.71	9.99	5.46	23.24	33.00
Band IV	1/32.00	1413		Н	119.56	12.69	9.99	5.46	17.22	33.00
			ED	V	110.82	3.87	9.99	5.46	8.40	33.00
			E2	Н	126.95	20.08	9.99	5.46	24.61	33.00
			Н	V	118.12	11.18	10.07	5.51	15.75	33.00
		1513	п	Н	118.85	11.99	10.07	5.51	16.56	33.00
	1752.60		E1	V	126.41	19.47	10.07	5.51	24.04	33.00
	1752.00 151		EI	Н	119.88	13.02	10.07	5.51	17.59	33.00
			E2	V	110.54	3.60	10.07	5.51	8.17	33.00
			EZ	Н	126.83	19.97	10.07	5.51	24.54	33.00

Remark:

(1) The RBW, VBW of SPA for frequency

RBW= 5MHz , VBW= 8MHz



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7. 99% OCCUPIED BANDWIDTH MEASUREMENT

7.1. Standard Applicable:

According to §FCC 2.1049.

7.2. Test Set-up:

Refer to section 5.2 in this report

7.3. Measurement Procedure:

The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW (10/30KHz) was set to about 1% of emission BW, VBW= 3 times RBW(30/100KHz), -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.

7.4. Measurement Equipment Used:

Refer to section 2.4 in this report



7.5. Measurement Result:

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
	824.20	128	0.2459
GSM 850	836.60	190	0.2440
	848.80	251	0.2445

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
GSM 1900	1850.20	512	0.2437
	1880.00	661	0.2437
	1909.80	810	0.2412

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
EDGE 850	824.20	128	0.2476
	836.60	190	0.2406
	848.80	251	0.2506

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
EDGE 1900	1850.20	512	0.2408
	1880.00	661	0.2405
	1909.80	810	0.2468

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
WCDMA Band IV	1712.40	1312	4.1658
	1732.60	1413	4.1658
	1752.60	1513	4.1606

EUT Mode	Frequency (MHz)	СН	99% Bandwidth (MHz)
	1712.40	1312	4.1829
HSUPA IV	1732.60	1413	4.1701
	1752.60	1513	4.1623

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Figure 7-1: GSM 850 Channel Low

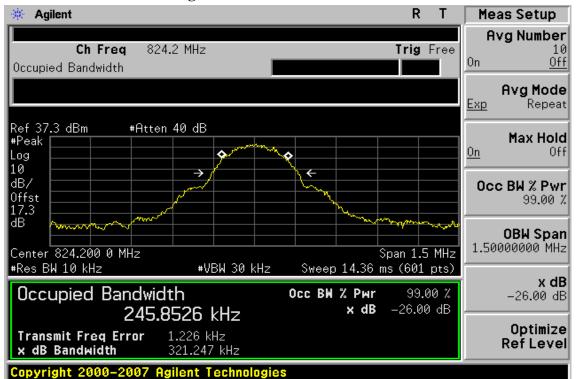
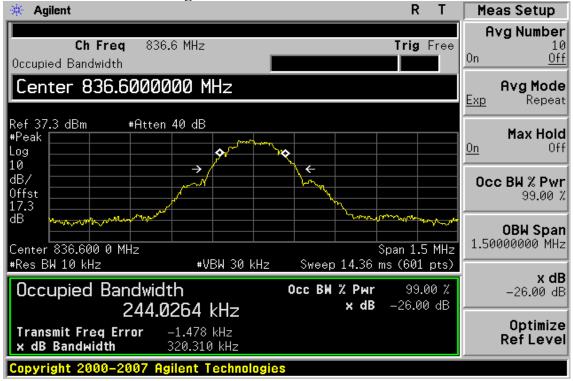


Figure 7-2 GSM 850 Channel Mid





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Figure 7-3: GSM 850 Channel High

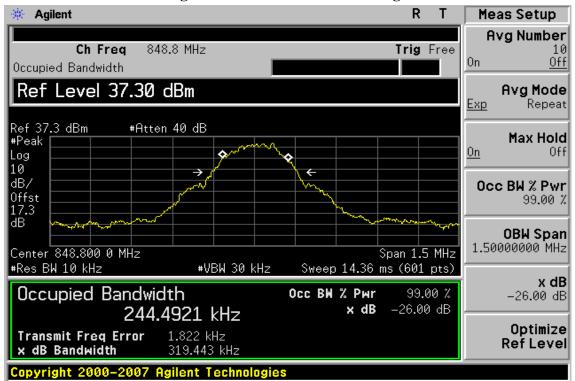


Figure 7-4: GSM 1900 Channel Low



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Figure 7-5 GSM 1900 Channel Mid

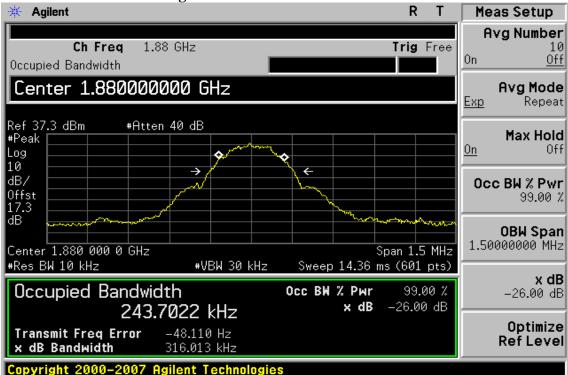
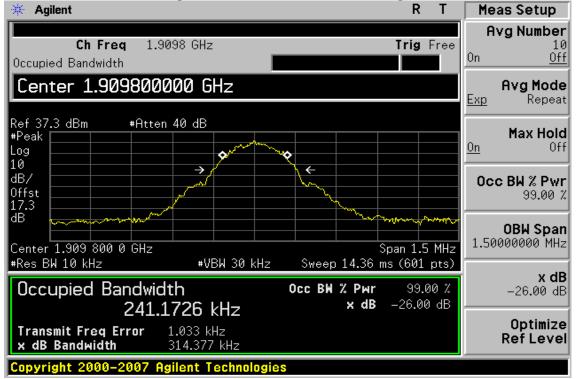


Figure 7-6: GSM 1900 Channel High





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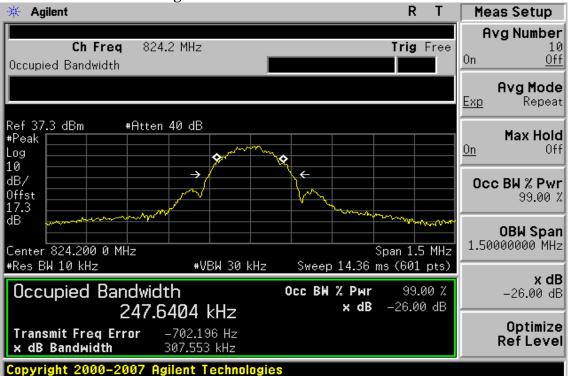


Figure 7-8 EDGE 850 Channel Mid



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Figure 7-9 EDGE 850 Channel High

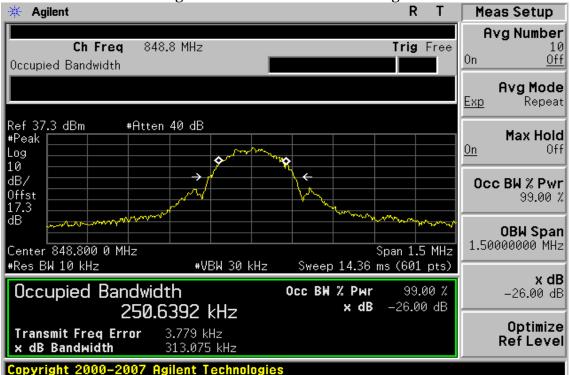
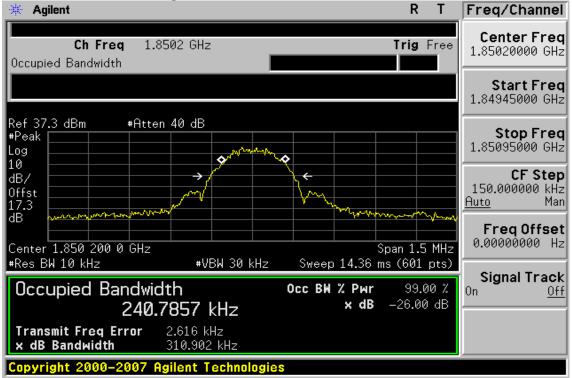


Figure 7-10 EDGE 1900 Channel Low





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Figure 7-11 EDGE 1900 Channel Mid

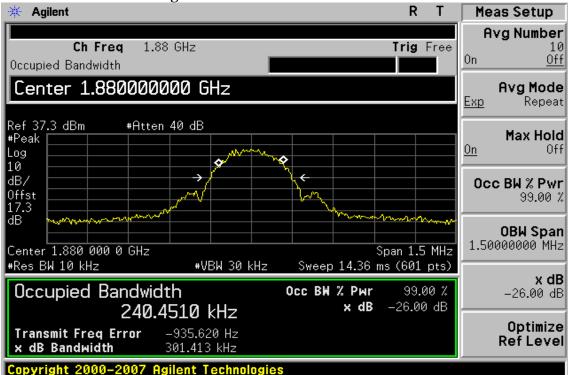
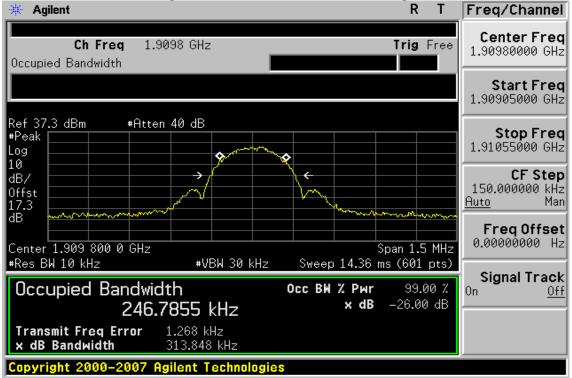


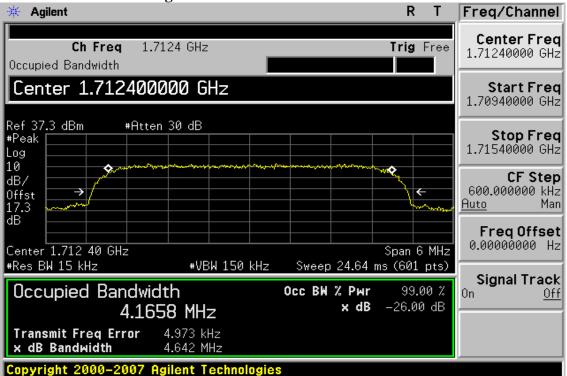
Figure 7-12 EDGE 1900 Channel High

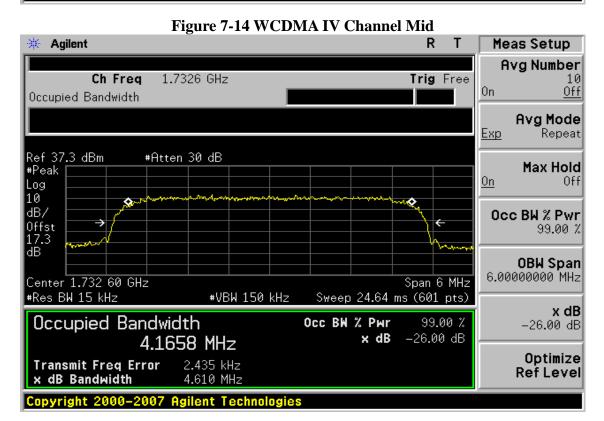




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Figure 7-13 WCDMA IV Channel Low





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Figure 7-15 WCDMA IV Channel High

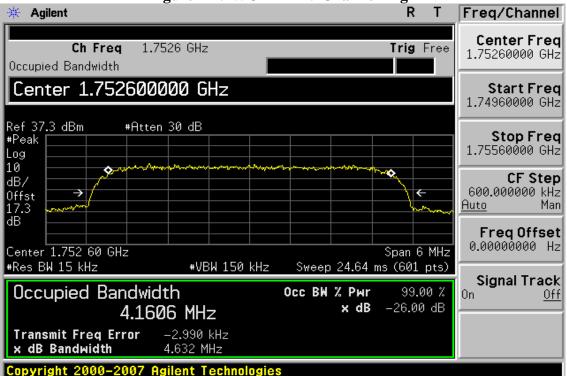
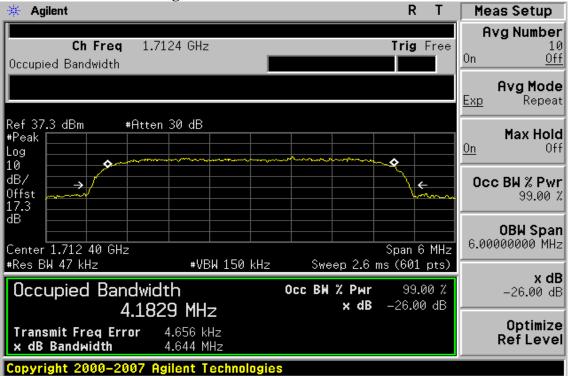


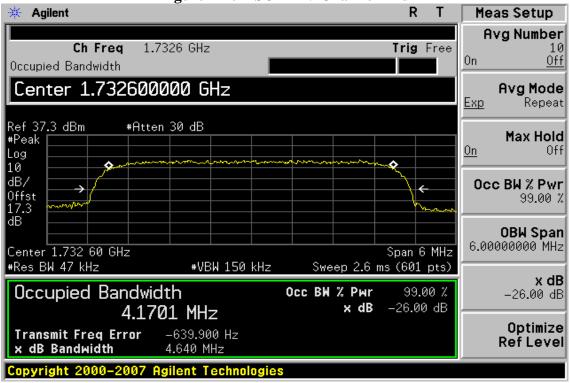
Figure 7-19 HSUPA IV Channel Low



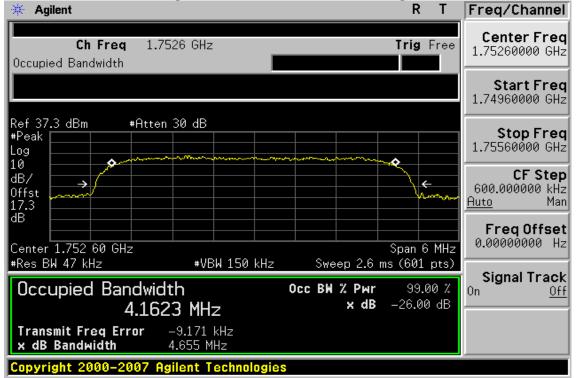


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Figure 7-20 HSUPA IV Channel Mid









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8. OUT OF BAND EMISSION AT ANTENNA TERMINALS

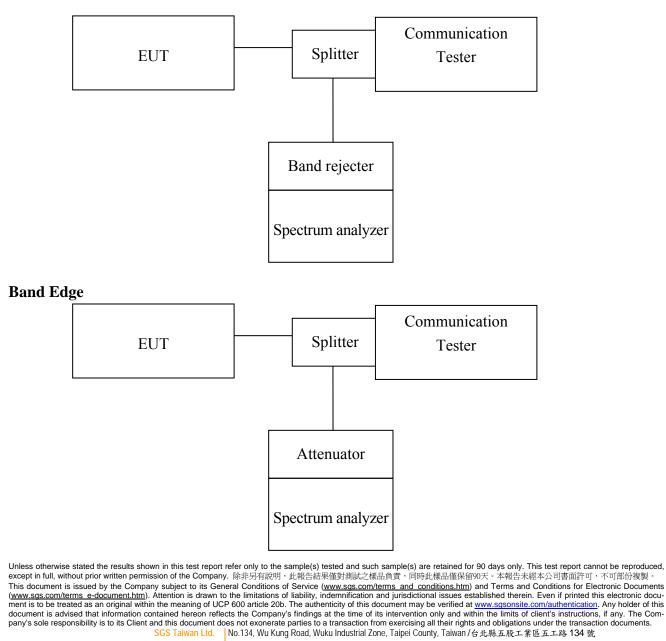
8.1. Standard Applicable:

According to FCC §2.1051.

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)

8.2. Test SET-UP:

Out of band emission



cation. Any holder of this



8.3. Measurement Procedure:

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation The resolution bandwidth of the spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.

For the out of band: Set the RBW, VBW = 1MHz, Start=30MHz, Stop= 10 th harmonic. Limit = -13dBm

Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions. Limit, -13dBm.

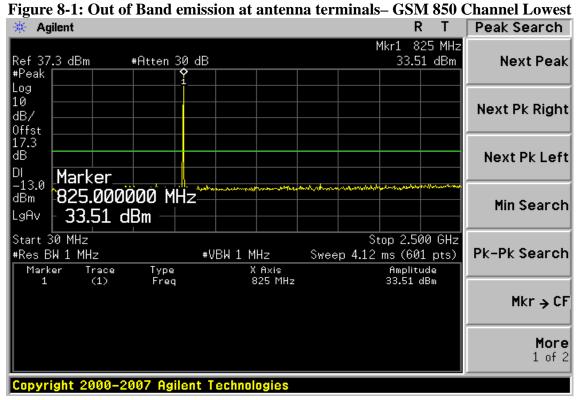
8.4. Measurement Equipment Used:

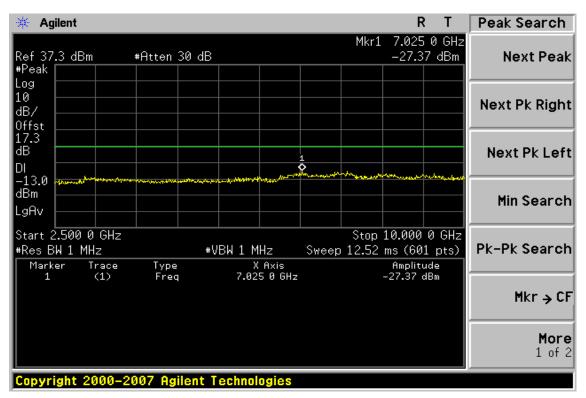
Refer to section 2.4 in this report



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8.5. Measurement Result:







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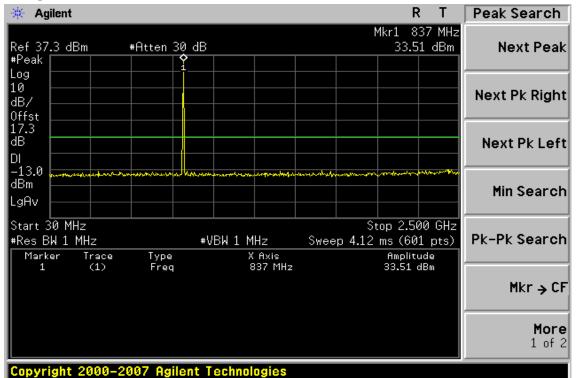
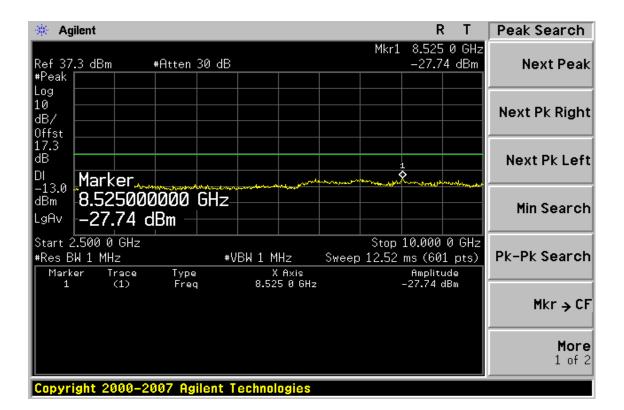


Figure 8-2: Out of Band emission at antenna terminals –GSM 850 Channel Mid





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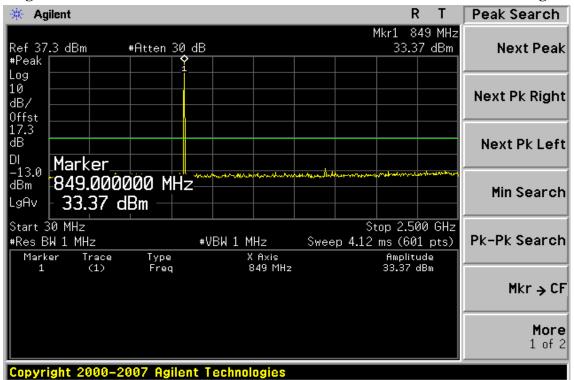
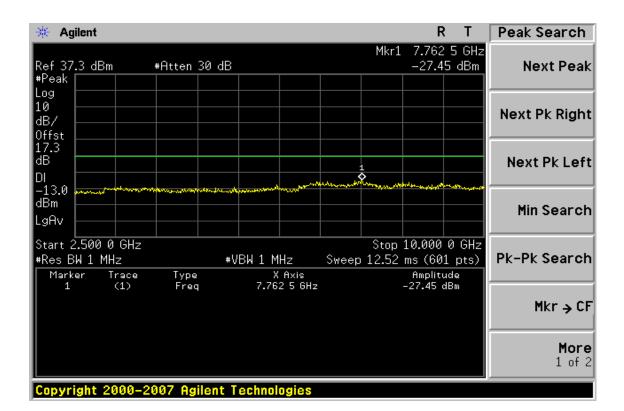


Figure 8-3: Out of Band emission at antenna terminals-GSM 850 Channel Highest



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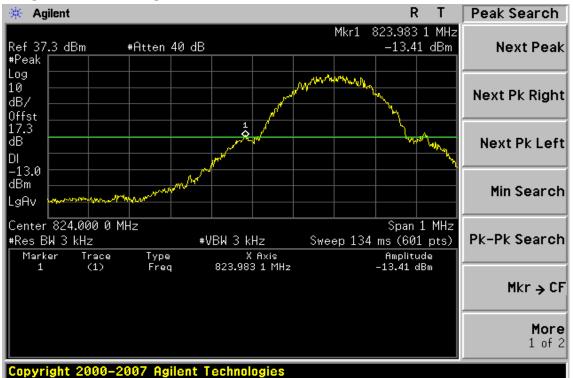
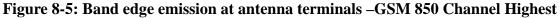
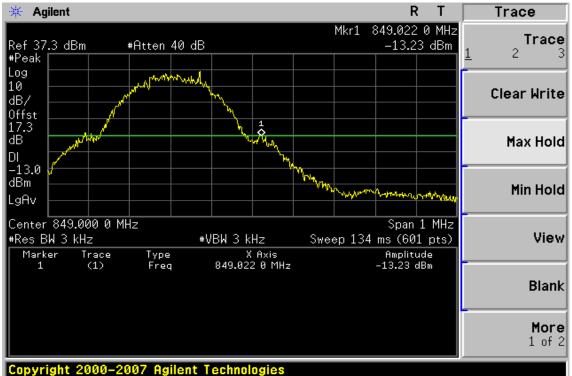


Figure 8-4: Band edge emission at antenna terminals -GSM 850 Channel Lowest





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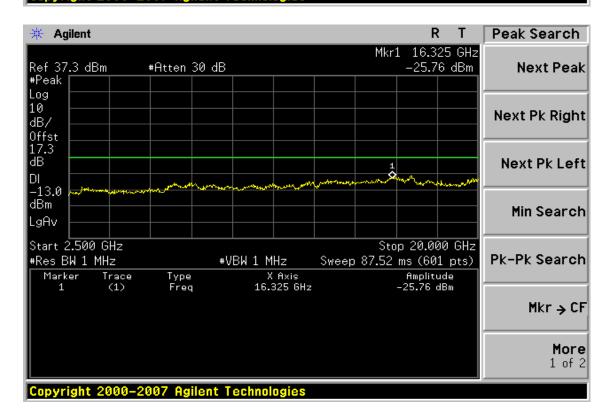
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🔆 Agilent				R	Т	Peak Search
Ref 37.3 dBm	#Atten 30 dB		Mk	r1 1.85 29.84		Next Peak
#Peak Log 10 dB/						Next Pk Right
Offst 17.3 dB DI						Next Pk Left
dBm LgAv	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		*	Min Search
Start 30 MHz #Res BW 1 MHz Marker Trace 1 (1)	#V Type Freg	BW 1 MHz X Axis 1.850 GHz	St Sweep 4.12	op 2.500 ms (601 Amplitud 29.84 dE	pts) le	Pk-Pk Search
1 (1)	rreq	1.650 6HZ		29.84 05	5m	Mkr → CF
						More 1 of 2
Copyright 2000-2	007 Agilent T	echnologies				

Figure 8-6: Out of Band emission at antenna terminals-GSM 1900 Channel Lowest





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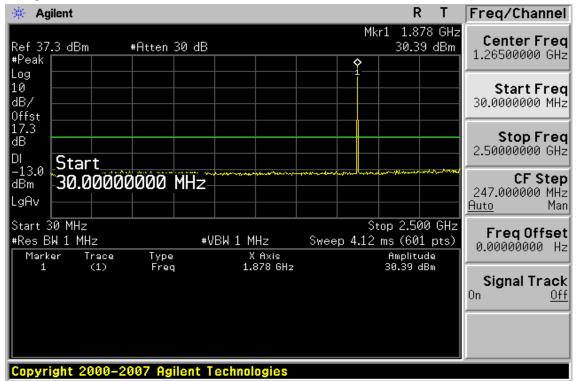
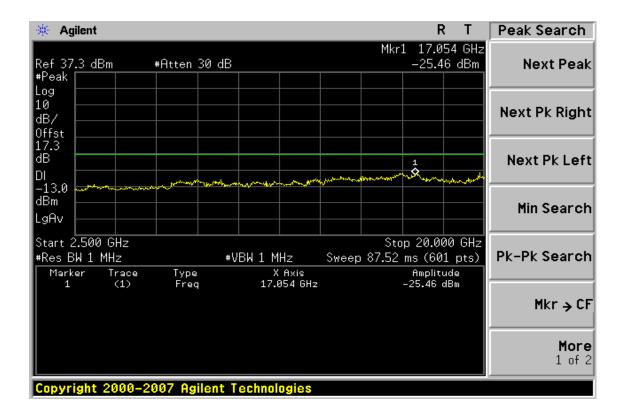


Figure 8-7: Out of Band emission at antenna terminals -GSM 1900 Channel Mid



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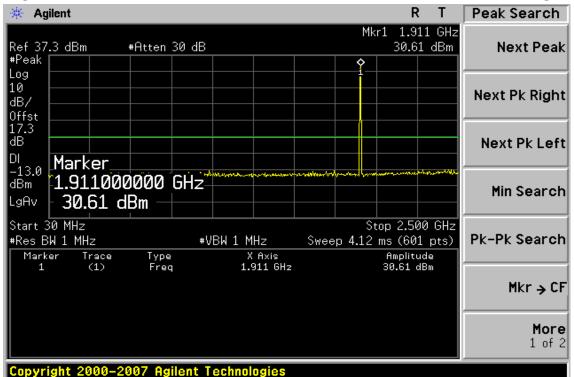
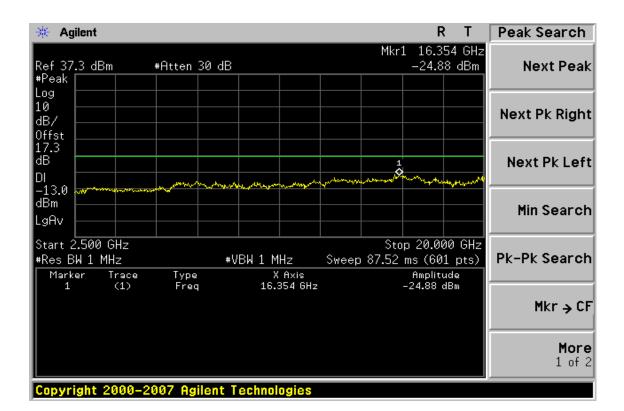


Figure 8-8: Out of Band emission at antenna terminals-GSM 1900 Channel Highest

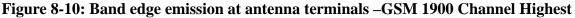


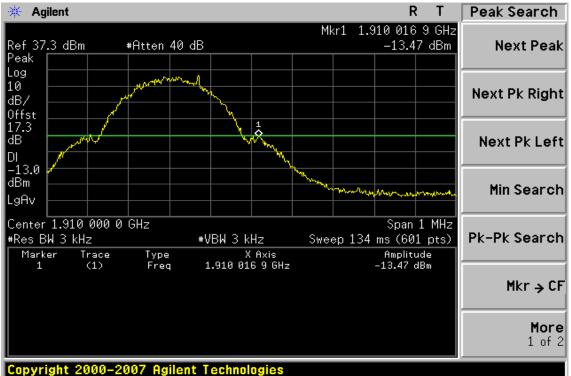


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Figure 8-9: Bad edge emission at antenna terminals -GSM 1900 Channel Lowest





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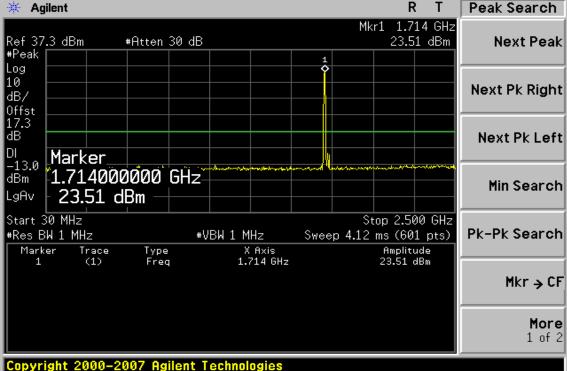
 台灣檢驗科技股份有限公司
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 f (886-2) 2298-0488
 www.tw.sgs.com

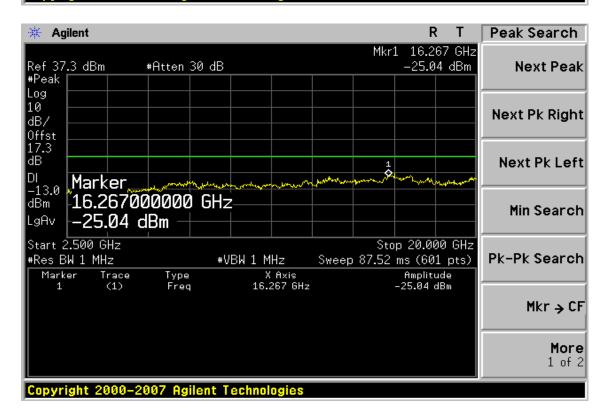
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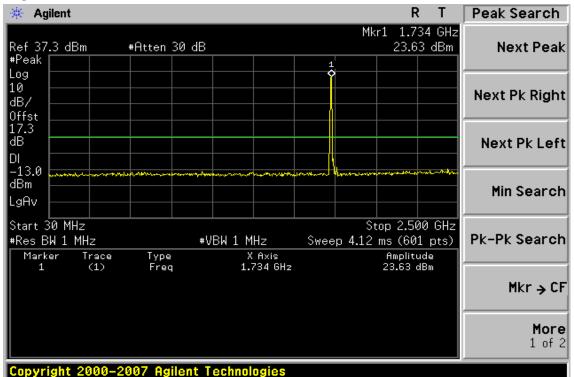
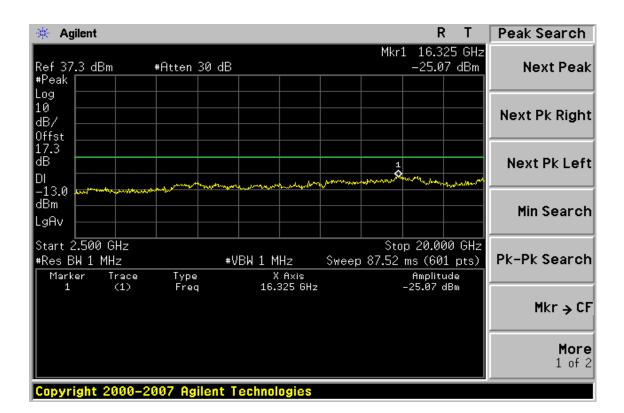
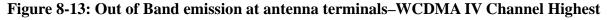


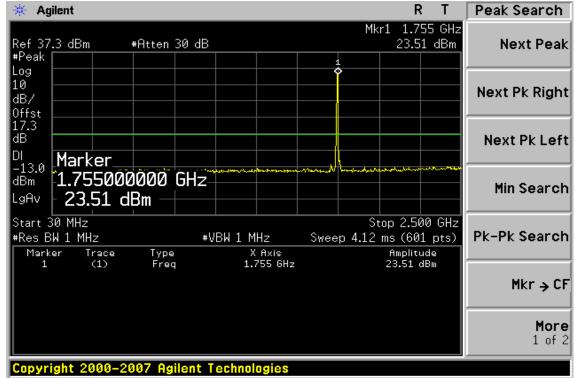
Figure 8-12: Out of Band emission at antenna terminals –WCDMA IV Channel Mid

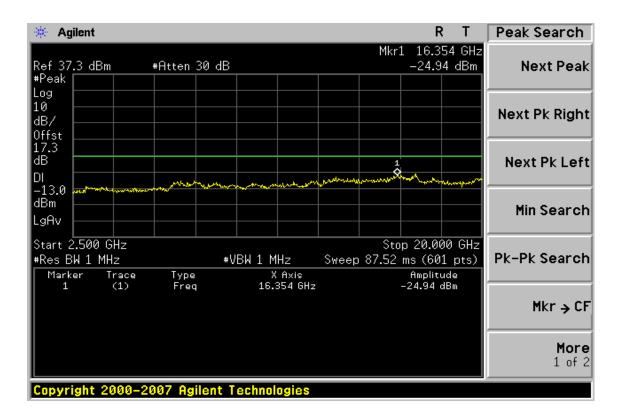




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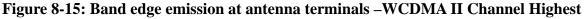




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Figure 8-14: Bad edge emission at antenna terminals –WCDMA IV Channel Lowest





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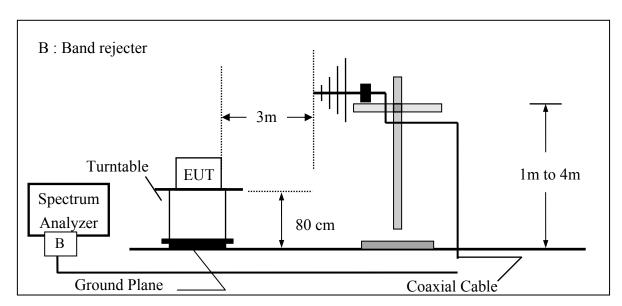
9. FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

9.1. 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)

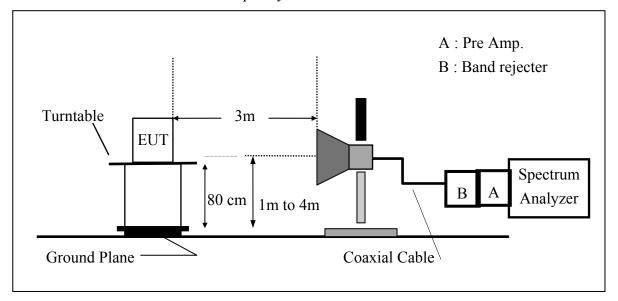
9.2. EUT Setup (Block Diagram of Configuration):



Radiated Emission Test Set-Up, Frequency Below 1000MHz



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Radiated Emission Test Set-UP Frequency Over 1 GHz

9.3. 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. output (dBm) + Antenna Gain (dBd) – Cable Loss (dB)

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

9.4. Measurement Equipment Used:

Refer to section 2.4 in this report

9.5. 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 H Mode	Test Date:	Jul. 23, 2010
Fundamental Frequency	: 824.20 MHz	Test By:	Jazz
Temperature	: 25°C	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
101.78	42.88	V	-58.88	-7.76	1.37	-68.00	-13.00	-55.00
133.79	36.96	V	-61.83	-7.79	1.52	-71.13	-13.00	-58.13
153.19	33.69	V	-63.89	-7.80	1.60	-73.29	-13.00	-60.29
385.99	32.53	V	-63.57	-7.65	2.47	-73.69	-13.00	-60.69
823.98	84.31	V	-2.08	-7.87	3.62	-13.58	-13.00	-0.58
1648.40	48.97	V	-55.61	9.29	5.23	-51.55	-13.00	-38.55
2472.60	41.45	V	-59.56	10.08	6.53	-56.01	-13.00	-43.01
3296.80		V		12.17	7.71		-13.00	
4121.00		V		12.61	8.86		-13.00	
4945.20		V		12.65	9.74		-13.00	
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 Setting(dBm) + Antenna Gain (dBd/dBi) Cable loss (dB)



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Radiated Spurious Emission Measurement Result: GSM 850 Mode

Operation Mode	: TX CH Low H Mode	Test Date:	Jul. 23, 2010
Fundamental Frequency	: 824.20 MHz	Test By:	Jazz
Temperature	: 25°C	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
90.14	46.67	Н	-57.06	-7.75	1.27	-66.08	-13.00	-53.08
155.13	33.19	Н	-64.98	-7.80	1.60	-74.38	-13.00	-61.38
295.78	32.20	Н	-65.59	-7.92	2.15	-75.66	-13.00	-62.66
450.98	32.22	Н	-61.66	-7.70	2.66	-72.02	-13.00	-59.02
570.29	32.63	Н	-58.68	-7.77	2.99	-69.44	-13.00	-56.44
823.98	71.51	Н	-14.76	-7.87	3.62	-26.26	-13.00	-13.26
1648.40	43.39	Н	-61.01	9.29	5.23	-56.95	-13.00	-43.95
2472.60	37.92	Н	-62.99	10.08	6.53	-59.44	-13.00	-46.44
3296.80		Н		12.17	7.71		-13.00	
4121.00		Н		12.61	8.86		-13.00	
4945.20		Н		12.65	9.74		-13.00	
5769.40		Н		13.55	10.54		-13.00	
6593.60		Н		12.05	11.30		-13.00	
7417.80		Н		11.49	12.10		-13.00	
8242.00		Н		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 Setting(dBm) + Antenna Gain (dBd/dBi) – Cable loss (dB)



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Radiated Spurious Emission Measurement Result: GSM 850 Mode

Operation Mode	: TX CH Mid H Mode	Test Date:	Jul. 23, 2010
Fundamental Frequency	: 836.60 MHz	Test By:	Jazz
Temperature	: 25°C	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
101.78	44.83	V	-56.93	-7.76	1.37	-66.05	-13.00	-53.05
133.79	48.51	V	-50.28	-7.79	1.52	-59.58	-13.00	-46.58
172.59	32.56	V	-66.76	-7.82	1.64	-76.22	-13.00	-63.22
334.58	32.96	V	-64.86	-7.73	2.30	-74.89	-13.00	-61.89
1673.20	40.19	V	-64.37	9.36	5.27	-60.27	-13.00	-47.27
2509.80	41.40	V	-59.38	10.09	6.58	-55.88	-13.00	-42.88
3346.40		V		12.28	7.79		-13.00	
4183.00		V		12.62	8.93		-13.00	
5019.60		V		12.67	9.81		-13.00	
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 Setting(dBm) + Antenna Gain (dBd/dBi) Cable loss (dB)



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Radiated Spurious Emission Measurement Result: GSM 850 Mode

Operation Mode	: TX CH Mid H Mode	Test Date:	Jul. 23, 2010
Fundamental Frequency	: 836.60 MHz	Test By:	Jazz
Temperature	: 25°C	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
92.08	45.62	Н	-57.97	-7.75	1.29	-67.01	-13.00	-54.01
130.88	39.68	Н	-60.09	-7.78	1.50	-69.38	-13.00	-56.38
342.34	32.10	Н	-65.17	-7.68	2.33	-75.18	-13.00	-62.18
431.58	33.07	Н	-61.76	-7.69	2.60	-72.05	-13.00	-59.05
606.18	33.33	Н	-57.25	-7.79	3.05	-68.09	-13.00	-55.09
1673.20	37.61	Н	-66.77	9.36	5.27	-62.67	-13.00	-49.67
2509.80	40.15	Н	-60.55	10.09	6.58	-57.05	-13.00	-44.05
3346.40		Н		12.28	7.79		-13.00	
4183.00		Н		12.62	8.93		-13.00	
5019.60		Н		12.67	9.81		-13.00	
5856.20		Н		13.68	10.62		-13.00	
6692.80		Н		11.95	11.39		-13.00	
7529.40		Н		11.45	12.20		-13.00	
8366.00		Н		11.59	12.81		-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 (dBd/dBi) – Cable loss (dB)



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Radiated Spurious Emission Measurement Result: GSM 850 Mode

Operation Mode	: TX CH High H Mode	Test Date:	Jul. 23, 2010
Fundamental Frequency	: 848.80 MHz	Test By:	Jazz
Temperature	: 25°C	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
41.64	40.89	V	-61.76	-2.31	0.93	-65.01	-13.00	-52.01
101.78	45.21	V	-56.55	-7.76	1.37	-65.67	-13.00	-52.67
153.19	32.70	V	-64.88	-7.80	1.60	-74.28	-13.00	-61.28
349.13	32.92	V	-64.72	-7.64	2.36	-74.72	-13.00	-61.72
487.84	32.96	V	-61.13	-7.72	2.77	-71.61	-13.00	-58.61
849.03	84.37	V	-1.75	-7.88	3.68	-13.31	-13.00	-0.31
1697.60	46.75	V	-57.79	9.44	5.31	-53.66	-13.00	-40.66
2546.40	40.39	V	-60.25	10.20	6.63	-56.69	-13.00	-43.69
3395.20		V		12.38	7.87		-13.00	
4244.00		V		12.63	9.00		-13.00	
5092.80		V		12.74	9.88		-13.00	
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	

	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 (dBd/dBi) – Cable loss (dB)



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Radiated Spurious Emission Measurement Result: GSM 850 Mode

Operation Mode	: TX CH High H Mode	Test Date:	Jul. 23, 2010
Fundamental Frequency	: 848.80 MHz	Test By:	Jazz
Temperature	: 25°C	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
90.14	45.48	Н	-58.25	-7.75	1.27	-67.27	-13.00	-54.27
155.13	32.87	Н	-65.30	-7.80	1.60	-74.70	-13.00	-61.70
424.79	32.08	Н	-63.09	-7.68	2.58	-73.35	-13.00	-60.35
502.39	32.32	Н	-61.05	-7.72	2.81	-71.58	-13.00	-58.58
849.00	71.05	Н	-15.14	-7.88	3.68	-26.70	-13.00	-13.70
1697.60	44.80	Н	-59.55	9.44	5.31	-55.42	-13.00	-42.42
2546.40		Н		10.20	6.63		-13.00	
3395.20		Н		12.38	7.87		-13.00	
4244.00		Н		12.63	9.00		-13.00	
5092.80		Н		12.74	9.88		-13.00	
5941.60		Н		13.81	10.70		-13.00	
6790.40		Н		11.86	11.48		-13.00	
7639.20		Н		11.40	12.27		-13.00	
8488.00		Н		11.70	12.91		-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 (dBd/dBi) Cable loss (dB)

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Radiated Spurious Emission Measurement Result: GSM 1900 Mode

Operation Mode	: TX CH Low E2 Mode	Test Date:	Jul. 23, 2010
Fundamental Frequenc	y : 1850.20MHz	Test By:	Jazz
Temperature	: 25°C	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
70.74	44.27	V	-67.49	-1.18	1.16	-69.84	-13.00	-56.84
104.69	44.64	V	-56.85	-7.76	1.38	-65.99	-13.00	-52.99
155.13	32.69	V	-65.06	-7.80	1.60	-74.47	-13.00	-61.47
444.19	32.51	V	-61.60	-7.70	2.64	-71.94	-13.00	-58.94
1850.00	70.83	V	-33.56	9.90	5.56	-29.22	-13.00	-16.22
3700.40	34.37	V	-63.56	12.61	8.31	-59.26	-13.00	-46.26
5550.60		V		13.23	10.33		-13.00	
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	

	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 (dBd/dBi) Cable loss (dB)



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Radiated Spurious Emission Measurement Result: GSM 1900 Mode

Operation Mode	: TX CH Low E2 Mode	Test Date:	Jul. 23, 2010
Fundamental Frequency	: 1850.20MHz	Test By:	Jazz
Temperature	: 25°C	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
56.19	39.70	Н	-69.94	-0.51	1.09	-71.54	-13.00	-58.54
90.14	44.91	Н	-58.82	-7.75	1.27	-67.84	-13.00	-54.84
145.43	33.01	Н	-65.24	-7.80	1.57	-74.60	-13.00	-61.60
322.94	32.69	Н	-64.76	-7.79	2.26	-74.81	-13.00	-61.81
1850.00	83.91	Н	-20.27	9.90	5.56	-15.93	-13.00	-2.93
3700.40	33.89	Н	-64.15	12.61	8.31	-59.85	-13.00	-46.85
5550.60	38.60	Н	-52.45	13.23	10.33	-49.55	-13.00	-36.55
7400.80		Н		11.50	12.08		-13.00	
9251.00		Н		11.92	13.50		-13.00	
11101.20		Н		11.66	15.11		-13.00	
12951.40		Н		13.63	16.60		-13.00	
14801.60		Н		12.76	17.95		-13.00	
16651.80		Н		15.92	19.14		-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 (dBd/dBi) Cable loss (dB)



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Radiated Spurious Emission Measurement Result: GSM 1900 Mode

Operation Mode	: TX CH Mid E2 Mode	Test Date:	Jul. 23, 2010
Fundamental Frequency	: 1880MHz	Test By:	Jazz
Temperature	: 25°C	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
101.78	44.91	V	-56.85	-7.76	1.37	-65.97	-13.00	-52.97
153.19	32.44	V	-65.14	-7.80	1.60	-74.54	-13.00	-61.54
305.48	32.88	V	-65.30	-7.89	2.19	-75.38	-13.00	-62.38
421.88	32.12	V	-62.69	-7.68	2.58	-72.95	-13.00	-59.95
3760.00	34.15	V	-63.51	12.60	8.39	-59.29	-13.00	-46.29
5640.00		V		13.36	10.41		-13.00	
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	

	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 (dBd/dBi) Cable loss (dB)



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Radiated Spurious Emission Measurement Result: GSM 1900 Mode

Operation Mode	: TX CH Mid E2 Mode	Test Date:	Jul. 23, 2010
Fundamental Frequency	: 1880MHz	Test By:	Jazz
Temperature	: 25°C	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
101.78	44.15	Н	-58.66	-7.76	1.37	-67.79	-13.00	-54.79
155.13	32.59	Н	-65.58	-7.80	1.60	-74.98	-13.00	-61.98
407.33	32.07	Н	-63.99	-7.67	2.53	-74.19	-13.00	-61.19
604.24	33.40	Н	-57.22	-7.79	3.04	-68.05	-13.00	-55.05
3760.00	34.27	Н	-63.50	12.60	8.39	-59.29	-13.00	-46.29
5640.00		Н		13.36	10.41		-13.00	
7520.00		Н		11.45	12.19		-13.00	
9400.00		Н		11.93	13.61		-13.00	
11280.00		Н		11.92	15.27		-13.00	
13160.00		Н		13.33	16.71		-13.00	
15040.00		Н		13.76	18.15		-13.00	
16920.00		Н		15.27	19.32		-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 (dBd/dBi) Cable loss (dB)



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Radiated Spurious Emission Measurement Result: GSM 1900 Mode

Operation Mode	: TX CH High E2 Mode	Test Date:	Jul. 23, 2010
Fundamental Frequency	: 1909.8 MHz	Test By:	Jazz
Temperature	: 25°C	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
70.74	42.50	V	-69.26	-1.18	1.16	-71.61	-13.00	-58.61
101.78	45.68	V	-56.08	-7.76	1.37	-65.20	-13.00	-52.20
148.34	32.91	V	-64.53	-7.80	1.58	-73.91	-13.00	-60.91
381.14	33.19	V	-63.11	-7.65	2.45	-73.22	-13.00	-60.22
1910.00	67.29	V	-37.04	10.08	5.66	-32.62	-13.00	-19.62
3819.60	34.04	V	-63.35	12.60	8.47	-59.22	-13.00	-46.22
5729.40		V		13.49	10.50		-13.00	
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	

	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 (dBd/dBi) Cable loss (dB)



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Radiated Spurious Emission Measurement Result: GSM 1900 Mode

Operation Mode	: TX CH High E2 Mode	Test Date:	Jul. 23, 2010
Fundamental Frequency	: 1909.8 MHz	Test By:	Jazz
Temperature	: 25°C	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
56.19	40.37	Н	-69.27	-0.51	1.09	-70.87	-13.00	-57.87
101.78	43.88	Н	-58.93	-7.76	1.37	-68.06	-13.00	-55.06
148.34	33.29	Н	-64.65	-7.80	1.58	-74.03	-13.00	-61.03
383.08	32.80	Н	-63.89	-7.65	2.46	-74.00	-13.00	-61.00
1910.01	84.09	Н	-20.02	10.08	5.66	-15.60	-13.00	-2.60
3819.60	34.28	Н	-63.23	12.60	8.47	-59.09	-13.00	-46.09
5729.40		Н		13.49	10.50		-13.00	
7639.20		Н		11.40	12.27		-13.00	
9549.00		Н		11.95	13.74		-13.00	
11458.80		Н		12.17	15.43		-13.00	
13368.60		Н		12.97	16.82		-13.00	
15278.40		Н		15.00	18.29		-13.00	
17188.20		Н		14.47	19.52		-13.00	
19098.00		Н		18.66	20.78		-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 (dBd/dBi) - Cable loss (dB)



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Radiated Spurious Emission Measurement Result: HSUPA IV Mode

Operation Mode	: TX CH Low E2 Mode	Test Date:	Jul. 23, 2010
Fundamental Frequency	: 1712.40MHz	Test By:	Jazz
Temperature	: 25°C	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
70.74	45.89	V	-65.87	-1.18	1.02	-68.07	-13.00	-55.07
101.78	45.69	V	-57.79	-7.76	1.23	-66.78	-13.00	-53.78
135.73	36.98	V	-62.37	-7.79	1.40	-71.55	-13.00	-58.55
426.73	32.75	V	-62.54	-7.68	2.49	-72.71	-13.00	-59.71
654.68	32.62	V	-57.77	-7.81	3.03	-68.61	-13.00	-55.61
1709.85	57.96	V	-49.06	9.47	5.16	-44.74	-13.00	-31.74
3424.80	34.40	V	-68.13	12.45	7.35	-63.04	-13.00	-50.04
5137.20		V		12.79	9.36		-13.00	
6849.60		V		11.80	10.94		-13.00	
8562.00		V		11.73	12.66		-13.00	
10274.40		V		11.85	13.80		-13.00	
11986.80		V		13.15	15.25		-13.00	
13699.20		V		12.32	16.55		-13.00	
15411.60		V		15.69	18.06		-13.00	
17124.00		V		14.68	19.79		-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 (dBd/dBi) - Cable loss (dB)



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Radiated Spurious Emission Measurement Result: HSUPA IV Mode

Operation Mode	: TX CH Low E2 Mode	Test Date:	Jul. 23, 2010
Fundamental Frequency	: 1712.40MHz	Test By:	Jazz
Temperature	: 25°C	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
34.85	43.35	Н	-61.05	-5.07	0.73	-66.85	-13.00	-53.85
90.14	45.48	Н	-58.21	-7.75	1.16	-67.13	-13.00	-54.13
148.34	33.73	Н	-65.00	-7.80	1.46	-74.26	-13.00	-61.26
402.48	32.42	Н	-63.87	-7.66	2.42	-73.96	-13.00	-60.96
552.83	33.50	Н	-58.72	-7.76	2.75	-69.24	-13.00	-56.24
1709.85	70.79	Н	-36.18	9.47	5.16	-31.87	-13.00	-18.87
3424.80	47.97	Н	-54.29	12.45	7.35	-49.20	-13.00	-36.20
5137.20		Н		12.79	9.36		-13.00	
6849.60		Н		11.80	10.94		-13.00	
8562.00		Н		11.73	12.66		-13.00	
10274.40		Н		11.85	13.80		-13.00	
11986.80		Н		13.15	15.25		-13.00	
13699.20		Н		12.32	16.55		-13.00	
15411.60		Н		15.69	18.06		-13.00	
17124.00		Н		14.68	19.79		-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 (dBd/dBi) - Cable loss (dB)



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Radiated Spurious Emission Measurement Result: HSUPA IV Mode

Operation Mode	: TX CH Mid E2 Mode	Test Date:	Jul. 23, 2010
Fundamental Frequency	: 1732.60 MHz	Test By:	Jazz
Temperature	: 25°C	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
70.74	44.74	V	-67.02	-1.18	1.02	-69.22	-13.00	-56.22
101.78	44.87	V	-58.61	-7.76	1.23	-67.60	-13.00	-54.60
135.73	36.25	V	-63.10	-7.79	1.40	-72.28	-13.00	-59.28
412.18	32.12	V	-63.59	-7.67	2.45	-73.71	-13.00	-60.71
528.58	32.61	V	-61.11	-7.74	2.74	-71.59	-13.00	-58.59
3465.20	34.06	V	-68.45	12.53	7.38	-63.30	-13.00	-50.30
5197.80		V		12.85	9.41		-13.00	
6930.40		V		11.72	11.05		-13.00	
8663.00		V		11.77	12.74		-13.00	
10395.60		V		11.75	13.95		-13.00	
12128.20		V		13.35	15.32		-13.00	
13860.80		V		11.98	16.77		-13.00	
15593.40		V		16.35	18.21		-13.00	
17326.00		V		14.02	19.68		-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 (dBd/dBi) – Cable loss (dB)

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Radiated Spurious Emission Measurement Result: HSUPA IV Mode

Operation Mode	: TX CH Mid E2 Mode	Test Date:	Jul. 23, 2010
Fundamental Frequency	: 1732.60 MHz	Test By:	Jazz
Temperature	: 25°C	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
35.82	42.95	Н	-61.15	-4.61	0.74	-66.50	-13.00	-53.50
90.14	44.88	Н	-58.81	-7.75	1.16	-67.73	-13.00	-54.73
133.79	35.00	Н	-65.08	-7.79	1.39	-74.25	-13.00	-61.25
436.43	32.65	Н	-63.01	-7.69	2.52	-73.22	-13.00	-60.22
597.45	32.72	Н	-58.95	-7.79	2.93	-69.67	-13.00	-56.67
3465.20	34.81	Н	-67.42	12.53	7.38	-62.27	-13.00	-49.27
5197.80		Н		12.85	9.41		-13.00	
6930.40		Н		11.72	11.05		-13.00	
8663.00		Н		11.77	12.74		-13.00	
10395.60		Н		11.75	13.95		-13.00	
12128.20		Н		13.35	15.32		-13.00	
13860.80		Н		11.98	16.77		-13.00	
15593.40		Н		16.35	18.21		-13.00	
17326.00		Н		14.02	19.68		-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 (dBd/dBi) – Cable loss (dB)

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Radiated Spurious Emission Measurement Result: HSUPA IV Mode

Operation Mode	: TX CH High E2 Mode	Test Date:	Jul. 23, 2010
Fundamental Frequency	:1752.60 MHz	Test By:	Jazz
Temperature	: 25°C	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
70.74	45.18	V	-66.58	-1.18	1.02	-68.78	-13.00	-55.78
101.78	45.15	V	-58.33	-7.76	1.23	-67.32	-13.00	-54.32
155.13	32.99	V	-65.08	-7.80	1.48	-74.36	-13.00	-61.36
424.79	33.29	V	-62.06	-7.68	2.49	-72.22	-13.00	-59.22
567.38	32.96	V	-59.20	-7.77	2.81	-69.78	-13.00	-56.78
1755.06	57.91	V	-49.09	9.61	5.24	-44.72	-13.00	-31.72
3505.20	33.95	V	-68.53	12.61	7.42	-63.33	-13.00	-50.33
5257.80		V		12.91	9.46		-13.00	
7010.40		V		11.65	11.14		-13.00	
8763.00		V		11.80	12.82		-13.00	
10515.60		V		11.66	14.08		-13.00	
12268.20		V		13.54	15.39		-13.00	
14020.80		V		11.67	16.95		-13.00	
15773.40		V		16.75	18.27		-13.00	
17526.00		V		13.21	19.62		-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 (dBd/dBi) - Cable loss (dB)



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Radiated Spurious Emission Measurement Result: HSUPA IV Mode

Operation Mode	: TX CH High E2 Mode	Test Date:	Jul. 23, 2010
Fundamental Frequency	:1752.60 MHz	Test By:	Jazz
Temperature	: 25°C	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
90.14	45.23	Н	-58.46	-7.75	1.16	-67.38	-13.00	-54.38
148.34	32.83	Н	-65.90	-7.80	1.46	-75.16	-13.00	-62.16
324.88	35.95	Н	-62.45	-7.78	2.23	-72.46	-13.00	-59.46
455.83	32.84	Н	-62.38	-7.70	2.58	-72.67	-13.00	-59.67
606.18	34.07	Н	-57.41	-7.79	2.95	-68.15	-13.00	-55.15
1755.06	70.43	Н	-36.52	9.61	5.24	-32.15	-13.00	-19.15
3505.20	33.61	Н	-68.57	12.61	7.42	-63.38	-13.00	-50.38
5257.80		Н		12.91	9.46		-13.00	
7010.40		Н		11.65	11.14		-13.00	
8763.00		Н		11.80	12.82		-13.00	
10515.60		Н		11.66	14.08		-13.00	
12268.20		Н		13.54	15.39		-13.00	
14020.80		Н		11.67	16.95		-13.00	
15773.40		Н		16.75	18.27		-13.00	
17526.00		Н		13.21	19.62		-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 (dBd/dBi) - Cable loss (dB)



10. FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

10.1. Standard Applicable:

According to FCC §2.1055(a) (1)

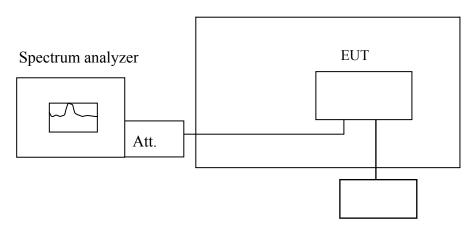
Frequency Tolerance: +/-2.5ppm for 850MHz band

+/-2.5ppm for 1900MHz band

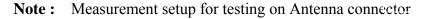
+/-2.5ppm for 1700MHz WCDMA band

10.2. Test Set-up:

Temperature Chamber



Variable DC Power Supply



10.3. Measurement Procedure:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25° C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30° C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10° C increased per stage until the highest temperature of $+50^{\circ}$ C reached.

10.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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10.5. Measurement Result:

Reference Frequency: GPRS 850 Mid Channel 836.6 MHz @ 25°C						
Limit: +/- 2.5 ppm = 2091 Hz						
Power Supply	Environment	Frequency	Dolta (Uz)	Limit (Hz)		
Vdc	Temperature (°C)	(MHz)	Delta (Hz)	Lillint (HZ)		
3.7	-30	836.599985	6.00	2091		
3.7	-20	836.599988	3.00	2091		
3.7	-10	836.599987	4.00	2091		
3.7	0	836.599987	4.00	2091		
3.7	10	836.59999	1.00	2091		
3.7	20	836.599991	0.00	2091		
3.7	30	836.599988	3.00	2091		
3.7	40	836.599986	5.00	2091		
3.7	50	836.599985	6.00	2091		

Refer	Reference Frequency: GPRS 1900 Mid Channel 1880 MHz @ 25°C					
	Limit	$\pm +/-2.5 \text{ ppm} = 470$	00 Hz			
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)		
Vdc	Temperature (°C)	(MHz)	Della (IIZ)	Linint (112)		
3.7	-30	1879.999980	-3.00	4700		
3.7	-20	1879.999983	-6.00	4700		
3.7	-10	1879.999985	-8.00	4700		
3.7	0	1879.999982	-5.00	4700		
3.7	10	1879.999980	-3.00	4700		
3.7	20	1879.999977	0.00	4700		
3.7	30	1879.999983	-6.00	4700		
3.7	40	1879.999981	-4.00	4700		
3.7	50	1879.999969	8.00	4700		

Note: The battery is rated 3.7V dc.



Reference Frequency: WCDMA IV Mid Channel 1732.6(ARFCN1413) MHz @ 25°C							
	Limit: +/- 2.5 ppm = 4331 Hz						
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)			
Vdc	Temperature (°C)	(MHz)	Delta (IIZ)	Linit (112)			
3.7	-30	1732.5999980	0.00	4331			
3.7	-20	1732.5999960	2.00	4331			
3.7	-10	1732.6000010	-3.00	4331			
3.7	0	1732.5999980	0.00	4331			
3.7	10	1732.5999950	3.00	4331			
3.7	20	1732.5999980	0.00	4331			
3.7	30	1732.5999960	2.00	4331			
3.7	40	1732.5999970	1.00	4331			
3.7	50	1732.5999980	0.00	4331			

Note: The battery is rated 3.7V dc.



11. FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT

11.1. Standard Applicable:

According to FCC §2.1055(a) (1)

Frequency Tolerance: +/-2.5ppm for 850MHz band

+/-2.5ppm for 1900MHz band

+/-2.5ppm for 1700MHz WCDMA band

11.2. Test Set-up:

Refer to section 10.2 in this report

11.3. Measurement Procedure:

Set chamber temperature to 25° C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specified extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.

11.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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11.5. Measurement Result:

Reference Frequency: GPRS 850 Mid Channel 836.6 MHz @ 25°C						
	Limit: +/- 2.5 ppm = 2091 Hz					
Power Supply	Environment	Frequency				
Vdc	Temperature (°C)	(MHz)	Delta (Hz)	Limit (Hz)		
4.20	25.00	836.599995	-5.00	2091.00		
3.70	25.00	836.599990	0.00	2091.00		
3.50	25.00	836.599991	4.00	2091.00		
3.0	25.00	026 500007	2 00	2001.00		
(End Point)	25.00	836.599997	-2.00	2091.00		

Reference Frequency: GPRS 1900 Mid Channel 1880 MHz @ 25°C						
	Limit: +/- 2.5 ppm = 4700 Hz					
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)		
Vdc	Temperature (°C)	(MHz)	Della (HZ)	Liiiit (HZ)		
4.2	25	1879.999971	5.00	4700		
3.7	25	1879.999976	0.00	4700		
3.5	25	1879.999990	-19.00	4700		
3.0	25	1970 00005	14.00	4700		
(Endpoint)	25	1879.999985	-14.00	4700		

Reference Frequency: WCDMA IV Mid Channel 1732.6 MHz(ARFCN1413) @ 25°C				
Limit: +/- 2.5 ppm = 4331 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
4.2	25	1732.5999990	-4.00	4331
3.7	25	1732.5999950	0.00	4331
3.5	25	1732.5999970	2.00	4331
3.0	25	1722 (000020	2 00	4331
(Endpoint)	25	1732.6000020	-3.00	4331

Note: The battery is rated 3.7V dc.