ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 22 SUBPART H and PART 24 SUBPART E AND INDUSTRY CANADA RSS-132 and RSS-133 CLASS II PC REPORT REQUIREMENT

OF

Product Name:	**Offender Tracking Device (OTD)**
Brand Name:	**SecureAlert TrackerPAL-II**
Marketing Name:	**TrackerPAL-II**
Model Name:	**34D**
Model Difference:	**N/A**
FCC ID:	**TPO-OTD34**
IC Number:	**6512A-OTD34**
Report No.:	**EH/2008/70011-04**
Issue Date:	**Oct. 20, 2009**
FCC Rule Part:	**2 , 22H & 24E**
IC Rule Part:	**RSS 132, Issue 2 and RSS 133, Issue 5**
Prepared for:	**RemoteMDx Inc**
	150 West Civic Center Drive, Sandy, Utah 84070, USA
Prepared by:	**SGS Taiwan Ltd.**
	Electronics & Communication Laboratory
	No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei County, Taiwan.

Testing Laboratory 0513

VERIFICATION OF COMPLIANCE

Applicant:	RemoteMDx Inc 150 West Civic Center Drive, Sandy, Utah 84070, USA
Product Name:	Offender Tracking Device (OTD)
FCC ID:	TPO-OTD34
IC Number:	6512A-OTD34
Brand Name:	SecureAlert TrackerPAL-II
Marketing Name:	TrackerPAL-II
Model No.:	34D
Model Difference:	N/A
File Number:	EH/2008/70011-04
Date of test:	Oct. 09, 2009 ~ Oct. 20, 2009
Date of EUT Received:	Oct. 09, 2009

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, Issue 2 of RSS-Gen 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 PART 22 subpart H, PART 24 subpart E and IC standards Issue 2 of RSS-132, Issue 5 of RSS-133.

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

Test By:		***Date***	Oct. 20, 2009
	Jason Su / Asst. Supervisor		
Prepared By:		***Date***	Oct. 20, 2009
	Eva Kao / Asst. Supervisor		
Approved By:		***Date***	Oct. 20, 2009
	Vincent Su / Manager		

Version

Version No.	Date	Description
00	Oct. 20, 2009	Initial creation of document

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1 GENERAL INFORMATION

Product Name:	Offender Tracking Device (OTD)	
Brand Name:	SecureAlert TrackerPAL-II	
Marketing Name:	TrackerPAL-II	
Model Name:	34D	
Model Difference:	N/A	
Power Supply	7.4 Vdc re-chargeable battery or 12Vdc by AC/DC power adapter	
	Battery:	Model: N/A, Supplier: EXCELL
	Adapter:	Model: HK-H1-A12

GSM:

	Operating Frequency		Rated Power
Cellular Phone Standards Frequency Range and Power	GSM/GPRS 850, Class 12	824.2 MHz– 848.8 MHz	33 dBm
	GSM/GPRS 1900, Class 12	1850.2MHz – 1909.8MHz	30 dBm
Type of Emission	300KGXW		
IMEI	010652000486840		

This test report applies for GPRS/GPRS 850, GPRS/GPRS 1900.

1.1 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: TPO-OTD34** filing to comply with Section Part 22 subpart H, Part 24 subpart E of the FCC CFR 47 Rules.
And **IC: 6512A-OTD34** filing to comply with issue 2 of RSS-132, Issue 5 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 47 CFR 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, issue 2 of RSS-129, issue 4 of RSS-133, issue 1 of RSS-139 and Issue 2 of RSS-Gen.

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.

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

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.

2.3.2 Conducted Measurement at Antenna Port:

According to measurement procured TIA/EIA 603C and RSS-Gen, 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 con- nect the antenna port of EUT to measurement equipment.

2.3.3 Radiated Emissions (ERP/EIRP):

According to measurement procured TIA/EIA 603C, issue 2 of RSS-Gen and TIA/EIA IS-98 for Mobile stations. The EUT is placed on a 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 according to the requirements.

A standard antenna was used to replace the EUT and connect to the SG. Adjust the SG output level to reach the max emission level which were measured above.

2.4 Measurement Equipment Used:

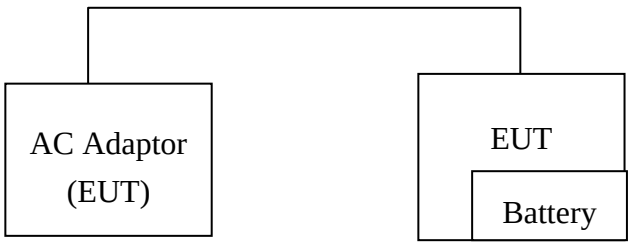
AC POWER LINE CONDUCTED EMISSION EQUIPMENT List					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESCS30	828985/004	09/16/2009	09/15/2010
LISN	Rolf-Heine	NNB-2/16Z	99012	02/18/2009	02/17/2010
LISN	FCC	FCC-LISN-50 /250-25-2-01	04034	02/18/2009	02/17/2010
Coaxial Cables	N/A	WK CE Cable	N/A	10/30/2008	10/29/2009

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2008	04/18/2010
Spectrum Analyzer	Agilent	E4440A	US41160416	01/23/2008	01/22/2010
Radio Communication Analyzer	R&S	CMU200	102189	05/13/208	05/12/2010
800 – 1000MHz Filter	Micro-Tronics	BRM13462	001	01/05/2009	01/04/2010
1800 – 2000MHz Filter	Micro-Tronics	BRM13463	001	01/05/2009	01/04/2010
Temperature Chamber	TERCHY	MHG-120LF	911009	04/14/2008	04/13/2010
Temperature Chamber	GIANT FORCE	GTH-150-40-CP-AR	MAA0512-018	02/05/2008	02/04/2010
Attenuator	Mini-Circuit	BW-S20W5	N/A	07/05/2009	07/04/2010
Attenuator	Mini-Circuit	BW-S10W5	N/A	07/05/2009	07/04/2010
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2009	07/04/2010
Splitter	Agilent	11636B	N/A	07/05/2009	07/04/2010
DC Power Supply	Topward	3303D	981327	10/26/2007	10/25/2009

ERP, EIRP MEASUREMENT EQUIPMENT List 966 Chamber					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Spectrum Analyzer	R&S	FSP 40	100034	02/12/2009	02/11/2010
Bilog Antenna	SCHWAZBECK	VULB9160	9160-3136	11/15/2008	11/14/2009
Dipole Antenna	SCHWAZBECK	VHAP	908/909	07/10/2008	07/09/2010
Dipole Antenna	SCHWAZBECK	UHAP	891/892	07/10/2008	07/09/2010
Hor.n antenna	SCHWAZBECK	BBHA 9120D	309	01/22/2008	01/21/2010
Horn antenna	SCHWAZBECK	BBHA 9120D	9120D-673	05/09/2008	05/08/2010
Signal Generator	R&S	SMR40	100210	01/22/2008	01/21/2010
Signal Generator	Agilent	E4438C	MY45093613	06/11/2009	06/10/2010
Pre-Amplifier	Agilent	8447D	1937A02834	11/30/2008	11/29/2009
Pre-Amplifier	Agilent	8449B	3008A01973	01/05/2009	01/04/2010
Attenuator	Mini-Circuit	BW-S20W5	001	07/05/2009	07/04/2010
Attenuator	Mini-Circuit	BW-S10W5	001	07/05/2009	07/04/2010
Attenuator	Mini-Circuit	BW-S6W5	001	07/05/2009	07/04/2010
Radio Communication Analyzer	R&S	CMU200	102189	05/13/208	05/12/2010
Turn Table	HD	DT420	N/A	N.C.R	N.C.R
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R
Controller	HD	HD100	N/A	N.C.R	N.C.R
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-10M	10m	01/05/2009	01/04/2010
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	01/05/2009	01/04/2010
Filter 800-1000	Micro-Tronics	BRM13462	1	01/05/2009	01/04/2010
Filter 1800-2000	Micro-Tronics	BRM13463	1	01/05/2009	01/04/2010
3m Site	SGS	966 chamber	N/A	11/08/2008	11/09/2009

2.5 Configuration of Tested System

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



Remote Side

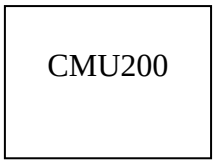


Table 2-1 Equipment Used in Tested System

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

3 SUMMARY OF TEST RESULTS

FCC Rules	IC Rules	Description Of Test	Result
§2.1046(a) §22.913(a)(2) §24.232(c) §27.50(d)(2)	§4.8 (RSS-Gen) §4.4 (RSS-132) §6.4 (RSS-133)	ERP/ EIRP measurement	Compliant
§2.1053 §22.917(a) §24.238(a) §27.53(g)	§4.9 (RSS-Gen) §4.5 (RSS-132) §6.5 (RSS-133)	Field Strength of Spurious Radiation (TX)	Compliant

4 DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

The Channel Low, Mid and High for each type of bands with rated data rate were chosen for above testing.

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

5 ERP, EIRP MEASUREMENT

5.1 Standard Applicable

According to FCC §2.1046

FCC 22.913(a)(2) Mobile station are limited to 7W ERP.

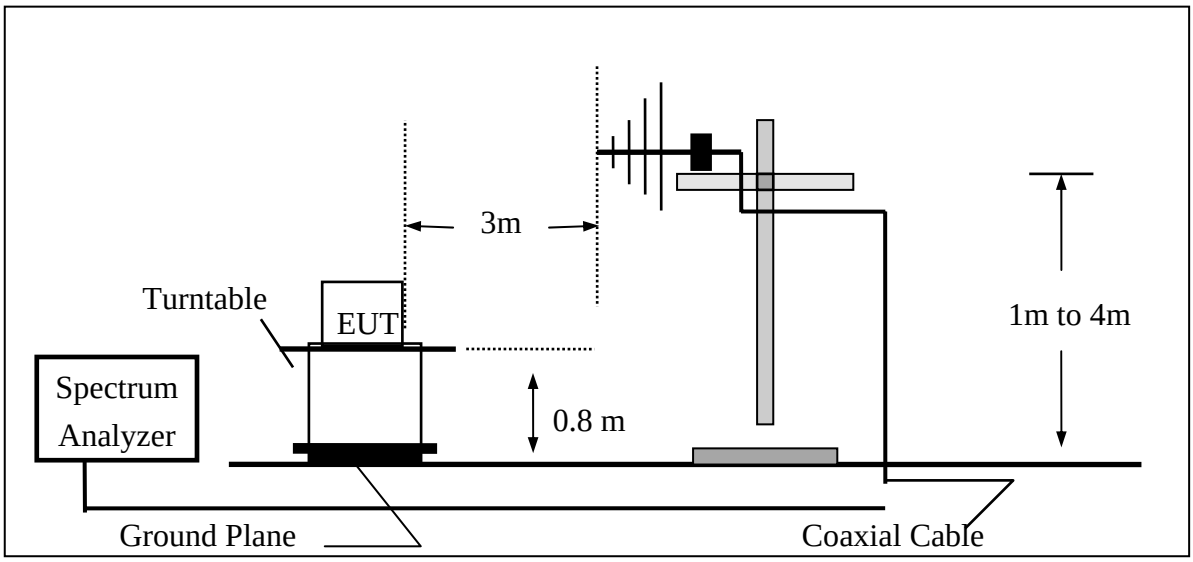
FCC 24.232(c) Mobile station are limited to 2W EIRP.

According to issue 5 of RSS-133 §6.4. The peak e.i.r.p. for transmitters operating in the band 1850-1910 MHz shall not exceed the limits given in SRSP-510.

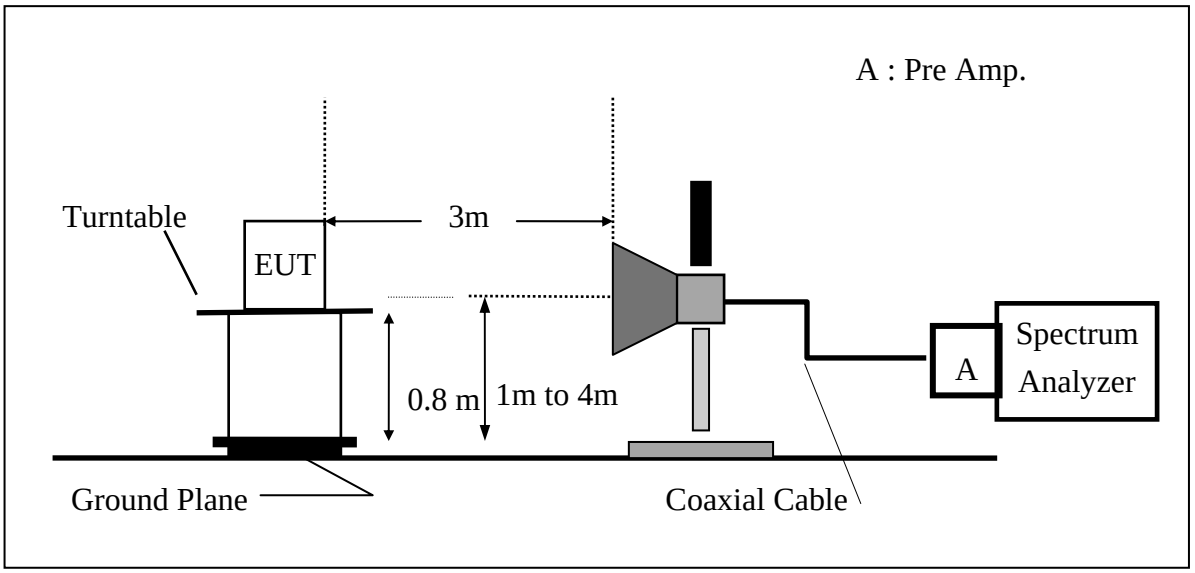
According to issue 2 of RSS 132, section 4.4. The transmitter output power shall not exceed the limits given in SRSP-503.

5.2 Test SET-UP (Block Diagram of Configuration)

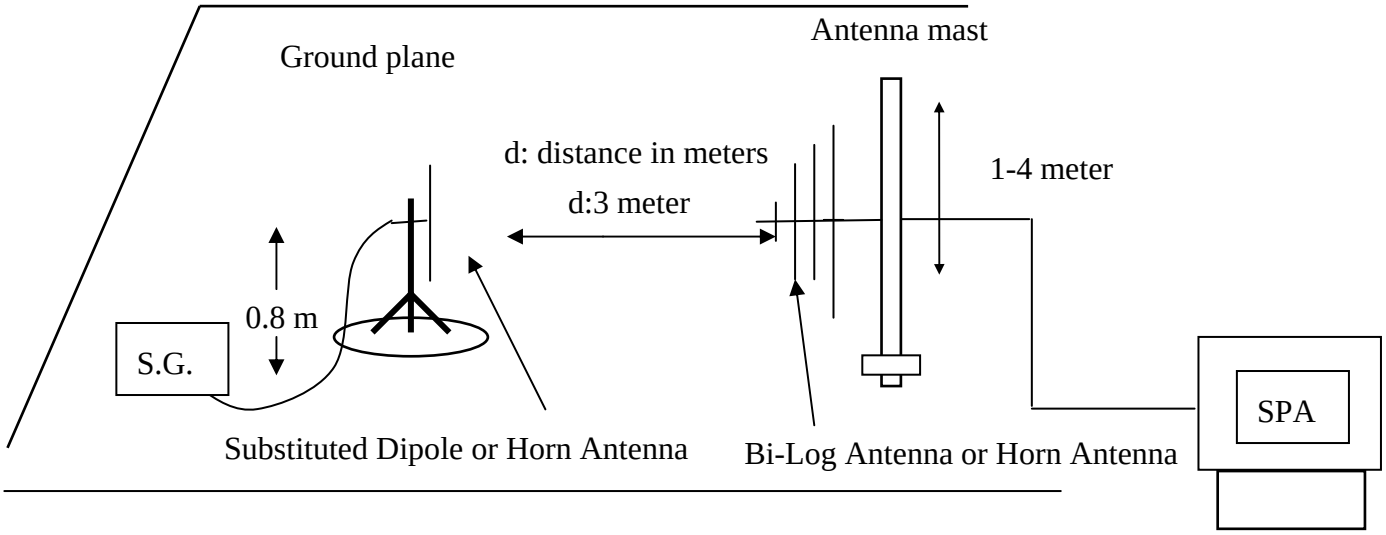
(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



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



(C) Substituted Method Test Set-UP



5.3 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 –848.80.8MHz 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)

5.4 Measurement Equipment Used:

Refer to section 2.4 in this report

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
GSM 850	824.20	128	H	V	116.09	29.70	-7.87	3.62	18.20	38.45
				H	125.12	38.85	-7.87	3.62	27.35	38.45
			E1	V	124.33	37.94	-7.87	3.62	26.44	38.45
				H	122.60	36.33	-7.87	3.62	24.83	38.45
			E2	V	123.62	37.23	-7.87	3.62	25.73	38.45
				H	124.82	38.55	-7.87	3.62	27.05	38.45
	836.60	190	H	V	117.34	31.09	-7.88	3.65	19.56	38.45
				H	125.71	39.48	-7.88	3.65	27.95	38.45
			E1	V	124.52	38.27	-7.88	3.65	26.74	38.45
				H	123.38	37.15	-7.88	3.65	25.62	38.45
			E2	V	122.08	35.83	-7.88	3.65	24.30	38.45
				H	123.35	37.12	-7.88	3.65	25.59	38.45
	848.80	251	H	V	118.54	32.42	-7.88	3.68	20.86	38.45
				H	126.17	39.98	-7.88	3.68	**28.42**	38.45
			E1	V	123.95	37.83	-7.88	3.68	26.27	38.45
				H	123.30	37.11	-7.88	3.68	25.55	38.45
			E2	V	123.16	37.04	-7.88	3.68	25.48	38.45
				H	123.25	37.06	-7.88	3.68	25.50	38.45

Remark：

(1) The RBW,VBW of SPA for frequency

RBW=300 KHz, VBW=1MHz

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
GSM 1900	1850.20	512	H	V	119.81	15.42	9.90	5.56	19.76	33.00
				H	127.70	23.52	9.90	5.56	27.86	33.00
			E1	V	121.55	17.16	9.90	5.56	21.50	33.00
				H	124.22	20.04	9.90	5.56	24.38	33.00
			E2	V	128.03	23.64	9.90	5.56	**27.98**	33.00
				H	124.96	20.78	9.90	5.84	24.84	33.00
	1880.00	661	H	V	119.15	14.79	9.99	5.61	19.17	33.00
				H	126.26	22.12	9.99	5.61	26.49	33.00
			E1	V	120.98	16.62	9.99	5.61	21.00	33.00
				H	123.25	19.11	9.99	5.61	23.48	33.00
			E2	V	126.48	22.12	9.99	5.61	26.50	33.00
				H	122.95	18.81	9.99	5.61	23.18	33.00
	1909.80	810	H	V	119.90	15.57	10.08	5.66	19.99	33.00
				H	124.91	20.80	10.08	5.66	25.22	33.00
			E1	V	119.34	15.01	10.08	5.66	19.43	33.00
				H	121.03	16.92	10.08	5.66	21.34	33.00
			E2	V	124.96	20.63	10.08	5.66	25.05	33.00
				H	121.44	17.33	10.08	5.66	21.75	33.00

Remark：

(1) The RBW, VBW of SPA for frequency

RBW=300kHz, VBW=1MHz

6 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT (TX)

6.1 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-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

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 all 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 analyzer 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.

6.2 EUT Setup (Block Diagram of Configuration)

Refer to section 5.2 in this report

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 –848.80.8MHz 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)

6.4 Measurement Equipment Used:

Refer to section 2.4 in this report

6.5 Measurement Result:

Refer to attach tabular data sheets.

Radiated Spurious Emission Measurement Result: GPRS 850 Mode

Operation Mode	: TX CH Low Mode	Test Date:	Oct. 12, 2009
Fundamental Frequency	: 824.20 MHz	Test By:	Jason
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)
92.08	60.86	V	-42.07	-7.75	1.29	-51.11	-13.00	-38.11
145.43	58.79	V	-38.92	-7.80	1.57	-48.29	-13.00	-35.29
206.54	58.99	V	-42.54	-7.85	1.75	-52.14	-13.00	-39.14
256.98	57.64	V	-42.02	-7.89	2.02	-51.93	-13.00	-38.93
824.00	71.13	V	-15.26	-7.87	3.62	-26.76	-13.00	-13.76
1648.40	76.96	V	-27.62	9.29	5.23	-23.56	-13.00	-10.56
2472.60	70.95	V	-30.06	10.08	6.53	-26.51	-13.00	-13.51
3296.80	66.06	V	-32.81	12.17	7.71	-28.36	-13.00	-15.36
4121.00	53.88	V	-42.24	12.61	8.86	-38.49	-13.00	-25.49
4945.20	50.13	V	-42.34	12.65	9.74	-39.43	-13.00	-26.43
5769.40	47.72	V	-42.48	13.55	10.54	-39.46	-13.00	-26.46
6593.60	38.70	V	-46.83	12.05	11.30	-46.08	-13.00	-33.08
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 (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GPRS 850 Mode

Operation Mode	: TX CH Low Mode	Test Date:	Oct. 12, 2009
Fundamental Frequency	: 824.20 MHz	Test By:	Jason
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)
104.69	54.37	H	-48.14	-7.76	1.38	-57.28	-13.00	-44.28
153.19	53.84	H	-44.18	-7.80	1.60	-53.58	-13.00	-40.58
203.63	58.28	H	-43.19	-7.84	1.73	-52.77	-13.00	-39.77
255.04	62.70	H	-36.36	-7.89	2.01	-46.26	-13.00	-33.26
824.00	78.07	H	-8.20	-7.87	3.62	-19.70	-13.00	-6.70
1648.40	85.14	H	-19.26	9.29	5.23	-15.20	-13.00	-2.20
2472.60	71.83	H	-29.08	10.08	6.53	-25.53	-13.00	-12.53
3296.80	61.93	H	-37.17	12.17	7.71	-32.71	-13.00	-19.71
4121.00	49.90	H	-46.35	12.61	8.86	-42.60	-13.00	-29.60
4945.20	55.16	H	-37.48	12.65	9.74	-34.56	-13.00	-21.56
5769.40	43.47	H	-46.84	13.55	10.54	-43.83	-13.00	-30.83
6593.60	---	H		12.05	11.30		-13.00	
7417.80	---	H		11.49	12.10		-13.00	
8242.00	---	H		11.48	12.71		-13.00	

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

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark “---” means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GPRS 850 Mode

Operation Mode	: TX CH Mid Mode	Test Date:	Oct. 12, 2009
Fundamental Frequency	: 836.60 MHz	Test By:	Jason
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)
92.08	59.55	V	-43.38	-7.75	1.29	-52.42	-13.00	-39.42
155.13	58.52	V	-39.23	-7.80	1.60	-48.64	-13.00	-35.64
201.69	58.99	V	-42.73	-7.84	1.72	-52.29	-13.00	-39.29
256.98	57.31	V	-42.35	-7.89	2.02	-52.26	-13.00	-39.26
1673.20	78.70	V	-25.86	9.36	5.27	-21.76	-13.00	-8.76
2509.80	65.65	V	-35.13	10.09	6.58	-31.63	-13.00	-18.63
3346.40	69.42	V	-29.44	12.28	7.79	-24.96	-13.00	-11.96
4183.00	60.76	V	-35.13	12.62	8.93	-31.44	-13.00	-18.44
5019.60	48.52	V	-43.63	12.67	9.81	-40.77	-13.00	-27.77
5856.20	53.74	V	-36.20	13.68	10.62	-33.14	-13.00	-20.14
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 (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GPRS 850 Mode

Operation Mode : TX CH Mid Mode
Fundamental Frequency : 836.60 MHz
Temperature : 25℃
Humidity : 65%

Test Date: Oct. 12, 2009
Test By: Jason
Pol: Hor

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
94.99	54.27	H	-49.10	-7.75	1.31	-58.17	-13.00	-45.17
138.64	54.56	H	-44.40	-7.79	1.54	-53.73	-13.00	-40.73
201.69	57.97	H	-43.60	-7.84	1.72	-53.16	-13.00	-40.16
256.98	62.82	H	-36.18	-7.89	2.02	-46.09	-13.00	-33.09
1673.20	85.61	H	-18.77	9.36	5.27	-14.67	-13.00	-1.67
2509.80	68.92	H	-31.78	10.09	6.58	-28.28	-13.00	-15.28
3346.40	64.86	H	-34.20	12.28	7.79	-29.72	-13.00	-16.72
4183.00	59.96	H	-36.07	12.62	8.93	-32.38	-13.00	-19.38
5019.60	46.16	H	-46.16	12.67	9.81	-43.29	-13.00	-30.29
5856.20	45.75	H	-44.27	13.68	10.62	-41.21	-13.00	-28.21
6692.80	---	H		11.95	11.39		-13.00	
7529.40	---	H		11.45	12.20		-13.00	
8366.00	---	H		11.59	12.81		-13.00	

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

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark “---” means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GPRS 850 Mode

Operation Mode	: TX CH High Mode	Test Date:	Oct. 12, 2009
Fundamental Frequency	: 848.80 MHz	Test By:	Jason
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)
104.69	59.02	V	-42.47	-7.76	1.38	-51.61	-13.00	-38.61
150.28	57.76	V	-39.56	-7.80	1.59	-48.95	-13.00	-35.95
203.63	58.64	V	-43.00	-7.84	1.73	-52.58	-13.00	-39.58
255.04	57.82	V	-41.90	-7.89	2.01	-51.81	-13.00	-38.81
850.00	72.96	V	-13.15	-7.88	3.68	-24.71	-13.00	-11.71
1697.60	77.82	V	-26.72	9.44	5.31	-22.59	-13.00	-9.59
2546.40	68.72	V	-31.92	10.20	6.63	-28.36	-13.00	-15.36
3395.20	68.49	V	-30.36	12.38	7.87	-25.85	-13.00	-12.85
4244.00	65.60	V	-30.06	12.63	9.00	-26.43	-13.00	-13.43
5092.80	60.24	V	-31.74	12.74	9.88	-28.87	-13.00	-15.87
5941.60	44.09	V	-45.60	13.81	10.70	-42.49	-13.00	-29.49
6790.40	40.75	V	-43.78	11.86	11.48	-43.41	-13.00	-30.41
7639.20	---	V		11.40	12.27		-13.00	
8488.00	---	V		11.70	12.91		-13.00	

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

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark “---” means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GPRS 850 Mode

Operation Mode	: TX CH High Mode	Test Date:	Oct. 12, 2009
Fundamental Frequency	: 848.80 MHz	Test By:	Jason
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)
92.08	54.88	H	-48.71	-7.75	1.29	-57.75	-13.00	-44.75
143.49	53.86	H	-44.59	-7.79	1.56	-53.95	-13.00	-40.95
198.78	58.39	H	-43.17	-7.84	1.71	-52.71	-13.00	-39.71
271.53	61.73	H	-36.82	-7.90	2.07	-46.79	-13.00	-33.79
850.00	80.38	H	-5.81	-7.88	3.68	-17.37	-13.00	-4.37
1697.60	82.72	H	-21.63	9.44	5.31	-17.50	-13.00	-4.50
2546.40	69.15	H	-31.45	10.20	6.63	-27.89	-13.00	-14.89
3395.20	63.35	H	-35.68	12.38	7.87	-31.16	-13.00	-18.16
4244.00	64.33	H	-31.48	12.63	9.00	-27.86	-13.00	-14.86
5092.80	55.97	H	-36.18	12.74	9.88	-33.32	-13.00	-20.32
5941.60	45.80	H	-43.94	13.81	10.70	-40.83	-13.00	-27.83
6790.40	41.49	H	-43.03	11.86	11.48	-42.66	-13.00	-29.66
7639.20	39.16	H	-41.27	11.40	12.27	-42.14	-13.00	-29.14
8488.00	---	H		11.70	12.91		-13.00	

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

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark “---” means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GPRS 1900 Mode

Operation Mode : TX CH Low Mode
Fundamental Frequency : 1850.20MHz
Temperature : 25℃
Humidity : 65%

Test Date: Oct. 12, 2009
Test By: Jason
Pol: Ver

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
90.14	61.23	V	-41.95	-7.75	1.27	-50.97	-13.00	-37.97
164.83	59.32	V	-39.30	-7.81	1.63	-48.74	-13.00	-35.74
259.89	57.15	V	-42.42	-7.90	2.03	-52.34	-13.00	-39.34
300.63	53.13	V	-45.11	-7.92	2.17	-55.20	-13.00	-42.20
1850.00	80.29	V	-24.10	9.90	5.56	-19.76	-13.00	-6.76
3700.40	57.07	V	-40.86	12.61	8.31	-36.56	-13.00	-23.56
5550.60	39.70	V	-51.14	13.23	10.33	-48.24	-13.00	-35.24
7400.80	39.09	V	-42.15	11.50	12.08	-42.73	-13.00	-29.73
9251.00	---	V		11.92	13.50		-13.00	
11101.20	---	V		11.66	15.11		-13.00	
12951.40	---	V		13.63	16.60		-13.00	
14801.60	---	V		12.76	17.95		-13.00	
16651.80	---	V		15.92	19.14		-13.00	
18502.00	---	V		18.75	10.40		-13.00	

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

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark “---” means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GPRS 1900 Mode

Operation Mode : TX CH Low Mode
Fundamental Frequency : 1850.20MHz
Temperature : 25℃
Humidity : 65%

Test Date: Oct. 12, 2009
Test By: Jason
Pol: Hor

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
114.39	54.53	H	-46.96	-7.77	1.43	-56.16	-13.00	-43.16
158.04	53.56	H	-44.83	-7.81	1.61	-54.25	-13.00	-41.25
1969.84	59.53	H	-44.51	10.26	5.76	-40.01	-13.00	-27.01
255.04	61.84	H	-37.22	-7.89	2.01	-47.12	-13.00	-34.12
1850.00	77.99	H	-26.19	9.90	5.56	-21.85	-13.00	-8.85
3700.40	53.01	H	-45.03	12.61	8.31	-40.73	-13.00	-27.73
5550.60	37.88	H	-53.17	13.23	10.33	-50.27	-13.00	-37.27
7400.80	44.01	H	-37.22	11.50	12.08	-37.80	-13.00	-24.80
9251.00	---	H		11.92	13.50		-13.00	
11101.20	---	H		11.66	15.11		-13.00	
12951.40	---	H		13.63	16.60		-13.00	
14801.60	---	H		12.76	17.95		-13.00	
16651.80	---	H		15.92	19.14		-13.00	
18502.00	---	H		18.75	10.40		-13.00	

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

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark “---” means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GPRS 1900 Mode

Operation Mode : TX CH Mid Mode
Fundamental Frequency : 1880MHz
Temperature : 25℃
Humidity : 65%

Test Date: Oct. 12, 2009
Test By: Jason
Pol: Ver

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
99.84	59.95	V	-41.99	-7.76	1.36	-51.11	-13.00	-38.11
150.28	58.44	V	-38.88	-7.80	1.59	-48.27	-13.00	-35.27
203.63	59.50	V	-42.14	-7.84	1.73	-51.72	-13.00	-38.72
250.19	56.38	V	-43.50	-7.89	1.99	-53.38	-13.00	-40.38
3760.00	58.76	V	-38.90	12.60	8.39	-34.68	-13.00	-21.68
5640.00	41.05	V	-49.53	13.36	10.41	-46.58	-13.00	-33.58
7520.00	37.22	V	-43.44	11.45	12.19	-44.18	-13.00	-31.18
9400.00	---	V		11.93	13.61		-13.00	
11280.00	---	V		11.92	15.27		-13.00	
13160.00	---	V		13.33	16.71		-13.00	
15040.00	---	V		13.76	18.15		-13.00	
16920.00	---	V		15.27	19.32		-13.00	
18800.00	---	V		18.68	16.58		-13.00	

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

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark “---” means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GPRS 1900 Mode

Operation Mode	: TX CH Mid Mode	Test Date:	Oct. 12, 2009
Fundamental Frequency	: 1880MHz	Test By:	Jason
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)
99.84	54.71	H	-48.30	-7.76	1.36	-57.42	-13.00	-44.42
143.49	53.24	H	-45.21	-7.79	1.56	-54.57	-13.00	-41.57
198.78	58.87	H	-42.69	-7.84	1.71	-52.23	-13.00	-39.23
256.98	61.03	H	-37.97	-7.89	2.02	-47.88	-13.00	-34.88
3079.00	42.20	H	-57.05	11.69	7.37	-52.73	-13.00	-39.73
3760.00	59.02	H	-38.75	12.60	8.39	-34.54	-13.00	-21.54
5640.00	---	H		13.36	10.41		-13.00	
7520.00	39.45	H	-41.19	11.45	12.19	-41.94	-13.00	-28.94
9400.00	---	H		11.93	13.61		-13.00	
11280.00	---	H		11.92	15.27		-13.00	
13160.00	---	H		13.33	16.71		-13.00	
15040.00	---	H		13.76	18.15		-13.00	
16920.00	---	H		15.27	19.32		-13.00	
18800.00	---	H		18.68	16.58		-13.00	

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

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark “---” means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GPRS 1900 Mode

Operation Mode	: TX CH High Mode	Test Date:	Oct. 12, 2009
Fundamental Frequency	: 1909.8 MHz	Test By:	Jason
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)
96.93	59.93	V	-42.38	-7.76	1.33	-51.47	-13.00	-38.47
164.83	59.15	V	-39.47	-7.81	1.63	-48.91	-13.00	-35.91
198.78	60.12	V	-41.55	-7.84	1.71	-51.10	-13.00	-38.10
255.04	56.41	V	-43.31	-7.89	2.01	-53.22	-13.00	-40.22
1910.00	79.65	V	-24.68	10.08	5.66	-20.26	-13.00	-7.26
3819.60	62.37	V	-35.02	12.60	8.47	-30.89	-13.00	-17.89
5729.40	38.74	V	-51.58	13.49	10.50	-48.58	-13.00	-35.58
7639.20	37.68	V	-42.80	11.40	12.27	-43.67	-13.00	-30.67
9549.00	---	V		11.95	13.74		-13.00	
11458.80	---	V		12.17	15.43		-13.00	
13368.60	---	V		12.97	16.82		-13.00	
15278.40	---	V		15.00	18.29		-13.00	
17188.20	---	V		14.47	19.52		-13.00	
19098.00	---	V		18.66	20.78		-13.00	

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

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark “---” means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GPRS 1900 Mode

Operation Mode	: TX CH High Mode	Test Date:	Oct. 12, 2009
Fundamental Frequency	: 1909.8 MHz	Test By:	Jason
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)
109.54	52.83	H	-49.17	-7.77	1.40	-58.34	-13.00	-45.34
140.58	54.36	H	-44.40	-7.79	1.55	-53.73	-13.00	-40.73
198.78	58.69	H	-42.87	-7.84	1.71	-52.41	-13.00	-39.41
266.68	58.89	H	-39.81	-7.90	2.05	-49.76	-13.00	-36.76
1910.00	75.42	H	-28.69	10.08	5.66	-24.27	-13.00	-11.27
3079.00	49.87	H	-49.38	11.69	7.37	-45.06	-13.00	-32.06
3819.60	58.87	H	-38.64	12.60	8.47	-34.50	-13.00	-21.50
5729.40	36.35	H	-54.10	13.49	10.50	-51.11	-13.00	-38.11
7639.20	37.19	H	-43.24	11.40	12.27	-44.11	-13.00	-31.11
9549.00	---	H		11.95	13.74		-13.00	
11458.80	---	H		12.17	15.43		-13.00	
13368.60	---	H		12.97	16.82		-13.00	
15278.40	---	H		15.00	18.29		-13.00	
17188.20	---	H		14.47	19.52		-13.00	
19098.00	---	H		18.66	20.78		-13.00	

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

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark “---” means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

7 SPURIOUS RADIATED EMISSION TEST (RX)

7.1 Standard Applicable

According to RSS 132 §4.6, 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 μV/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

According to RSS 133 §6.6, Receiver spurious emissions shall comply with the limits specified in RSS-Gen.

7.2 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 120Vac/60Hz power source.

7.3 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.

7.4 Test SET-UP (Block Diagram of Configuration)

Refer to section 5.2 for details.

7.5 Measurement Equipment Used:

Refer to section 2.4 for details.

7.6 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	

7.7 Measurement Result

Refer to attach tabular data sheets.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode:	GSM 850 CH Low Mode	Test Date:	Oct. 12, 2009
Fundamental Frequency:	824.20 MHz	Test By:	Jason
Temperature:	25 ℃	Pol:	Ver./Hor
Humidity:	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
94.99	V	Peak	55.39	-17.26	38.13	43.50	-5.37
126.03	V	Peak	53.47	-14.78	38.69	43.50	-4.81
164.83	V	Peak	53.71	-13.69	40.02	43.50	-3.48
189.08	V	Peak	56.85	-15.06	41.79	43.50	-1.71
227.88	V	Peak	55.54	-14.54	41.00	46.00	-5.00
293.84	V	Peak	53.50	-13.19	40.31	46.00	-5.69
41.64	H	Peak	45.18	-13.76	31.42	40.00	-8.58
109.54	H	Peak	50.43	-16.25	34.18	43.50	-9.32
158.04	H	Peak	51.57	-13.28	38.29	43.50	-5.21
196.84	H	Peak	58.08	-15.51	42.57	43.50	-0.93
256.01	H	Peak	57.17	-13.68	43.49	46.00	-2.51
300.63	H	Peak	53.71	-13.11	40.60	46.00	-5.40

Remark：

1 Measuring frequencies from 30 MHz to the 1GHz。

2 Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.

3 Data 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.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode:	GSM 8500 CH Mid Mode	Test Date:	Oct. 12, 2009
Fundamental Frequency:	836.60 MHz	Test By:	Jason
Temperature:	25 ℃	Pol:	Ver./Hor
Humidity:	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
33.88	V	Peak	48.43	-14.65	33.78	40.00	-6.22
99.84	V	Peak	55.79	-17.01	38.78	43.50	-4.72
149.31	V	Peak	53.57	-12.90	40.67	43.50	-2.83
177.44	V	Peak	55.53	-14.38	41.15	43.50	-2.35
203.63	V	Peak	57.97	-15.48	42.49	43.50	-1.01
259.89	V	Peak	54.84	-13.64	41.20	46.00	-4.80
39.70	H	Peak	45.21	-13.73	31.48	40.00	-8.52
94.99	H	Peak	50.68	-17.26	33.42	43.50	-10.08
158.04	H	Peak	50.39	-13.28	37.11	43.50	-6.39
206.54	H	Peak	56.02	-15.39	40.63	43.50	-2.87
266.68	H	Peak	56.74	-13.57	43.17	46.00	-2.83
276.38	H	Peak	55.19	-13.48	41.71	46.00	-4.29

Remark：

1 Measuring frequencies from 30 MHz to the 1GHz。

2 Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.

3 Data 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.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode:	GSM 8500 CH High Mode	Test Date:	Oct. 12, 2009
Fundamental Frequency:	848.80 MHz	Test By:	Jason
Temperature:	25 ℃	Pol:	Ver./Hor
Humidity:	65 %		

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
35.20	V	Peak	47.43	-14.47	32.96	40.00	-7.04
94.99	V	Peak	55.90	-17.26	38.64	43.50	-4.86
164.83	V	Peak	53.74	-13.69	40.05	43.50	-3.45
187.14	V	Peak	57.05	-14.95	42.10	43.50	-1.40
225.94	V	Peak	55.36	-14.61	40.75	46.00	-5.25
295.78	V	Peak	53.19	-13.17	40.02	46.00	-5.98
90.14	H	Peak	50.06	-17.62	32.44	43.50	-11.06
109.54	H	Peak	50.79	-16.25	34.54	43.50	-8.96
140.58	H	Peak	49.93	-13.65	36.28	43.50	-7.22
164.83	H	Peak	50.46	-13.69	36.77	43.50	-6.73
206.54	H	Peak	56.35	-15.39	40.96	43.50	-2.54
274.44	H	Peak	56.10	-13.50	42.60	46.00	-3.40

Remark：

1 Measuring frequencies from 30 MHz to the 1GHz。

2 Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/QP detector mode.

3 Data 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.

Radiated Spurious Emission Measurement Result (below 1GHz)

Operation Mode	GSM 850 CH Low Mode	Test Date	Oct. 12, 2009
Fundamental Frequency	: 824.20 MHz	Test By	Jason
Temperature	25 ℃	Pol	Ver./Hor
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Factor (dB)	Actual Peak FS (dBuV/m)	Actual AV FS (dBuV/m)	Peak Limit at 3m (dBuV/m)	AV Limit at 3m (dBuV/m)	Margin (dB)	
2472.6	V	--	--			--	74.00	54.00		
3296.8	V	--	--			--	74.00	54.00		
4121.0	V	--	--			--	74.00	54.00		
4808.0	V	36.84	--	6.04	42.88	--	74.00	54.00	-11.12	Peak
4945.2	V	--	--			--	74.00	54.00		
1959.0	H	38.86	--	-3.62	35.24	--	74.00	54.00	-18.76	Peak
2472.6	H	--	--			--	74.00	54.00		
3296.8	H	--	--			--	74.00	54.00		
4121.0	H	--	--			--	74.00	54.00		
4808.0	H	36.84	--	6.04	42.88	--	74.00	54.00	-11.12	Peak
4945.2	H	--	--			--	74.00	54.00		

Remark:

1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency. Data 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
2 strength is too small to be measured.
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
3 column.
4 Spectrum Peak Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
5 Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	GPRS 1900 CH Mid Mode	Test Date	Oct. 12, 2009
Fundamental Frequency	1880 MHz	Test By	Jason
Temperature	25 ℃	Pol	Ver. / Hor.
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Factor (dB)	Actual Peak FS (dBuV/m)	Actual AV FS (dBuV/m)	Peak Limit at 3m (dBuV/m)	AV Limit at 3m (dBuV/m)	Margin (dB)
2509.8	V	--	--			--	74.00	54.00	
3346.4	V	--	--			--	74.00	54.00	
4183.0	V	--	--			--	74.00	54.00	
5019.6	V	--	--			--	74.00	54.00	
2509.8	H	--	--			--	74.00	54.00	
3346.4	H	--	--			--	74.00	54.00	
4183.0	H	--	--			--	74.00	54.00	
5019.6	H	--	--			--	74.00	54.00	

Remark:

1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency.
2 Data 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- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
5 Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

Radiated Spurious Emission Measurement Result (above 1GHz)

Operation Mode	GSM 8500 CH High Mode	Test Date	Oct. 12, 2009
Fundamental Frequency	848.80 MHz	Test By	Jason
Temperature	25 ℃	Pol	Ver. / Hor.
Humidity	65 %		

Freq. (MHz)	Ant.Pol. H/V	Peak Reading (dBuV)	AV Reading (dBuV)	Factor (dB)	Actual Peak FS (dBuV/m)	Actual AV FS (dBuV/m)	Peak Limit at 3m (dBuV/m)	AV Limit at 3m (dBuV/m)	Margin (dB)
2546.4	V	--	--			--	74.00	54.00	
3395.2	V	--	--			--	74.00	54.00	
4244.0	V	--	--			--	74.00	54.00	
5092.8	V	--	--			--	74.00	54.00	
2546.4	H	--	--			--	74.00	54.00	
3395.2	H	--	--			--	74.00	54.00	
4244.0	H	--	--			--	74.00	54.00	
5092.8	H	--	--			--	74.00	54.00	

Remark:

1 Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency. Data 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
2 strength is too small to be measured.
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
3 column.
4 Spectrum Peak Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
5 Spectrum AV Setting: 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.