

FCC Report (GSM)

Applicant: Dinsafer Innovation Co., Ltd.
Address of Applicant: Room 402/403, Floor 4, Area B, Unit B, West Silicon Valley, No. 5010, Baoan Avenue, Hangcheng Street, Baoan District, Shenzhen, 518128, China
Manufacturer: Dinsafer Innovation Co., Ltd.
Address of Manufacturer: Room 402/403, Floor 4, Area B, Unit B, West Silicon Valley, No. 5010, Baoan Avenue, Hangcheng Street, Baoan District, Shenzhen, 518128, China

Equipment Under Test (EUT)

Product Name: Wireless Smart Alarm System
Model No.: A4(*4,*=A-Z)(A*,*=1-9)
FCC ID: 2ASON-A4
Applicable standards: FCC CFR Title 47 Part 2
FCC CFR Title 47 Part22 Subpart H
FCC CFR Title 47 Part24 Subpart E
Date of sample receipt: March 22, 2019
Date of Test: March 22~ April 1, 2019
Date of report issued: April 2, 2019
Test Result : PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

A handwritten signature of Robinson Lo is written over a circular blue stamp. The stamp contains the text "GTS TECHNOLOGY SERVICES LTD." around the perimeter and "GLOBAL TESTING" in the center.

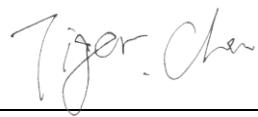
Robinson Lo
Laboratory Manager

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

2 Version

Version No.	Date	Description
00	April 2, 2019	Original

Prepared By:

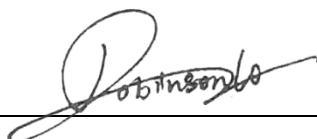


Date:

April 2, 2019

Project Engineer

Check By:



Date:

April 2, 2019

Reviewer

3 Contents

	Page
2 VERSION	2
3 CONTENTS	3
4 TEST SUMMARY	4
5 GENERAL INFORMATION	5
5.1 GENERAL DESCRIPTION OF EUT	5
5.2 RELATED SUBMITTAL(S) / GRANT (S)	7
5.3 TEST METHODOLOGY	7
5.4 TEST FACILITY	7
5.5 TEST LOCATION	7
6 TEST INSTRUMENTS LIST	8
7 SYSTEM TEST CONFIGURATION	9
7.1 TEST MODE	9
7.2 CONFIGURATION OF TESTED SYSTEM	9
7.3 CONDUCTED OUTPUT POWER	10
7.4 PEAK-TO-AVERAGE RATIO	11
7.5 OCCUPY BANDWIDTH	12
7.6 MODULATION CHARACTERISTIC	16
7.7 OUT OF BAND EMISSION AT ANTENNA TERMINALS	16
7.8 ERP, EIRP MEASUREMENT	23
7.9 FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT	26
7.10 FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT	30
7.11 FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT	33
8 TEST SETUP PHOTO	35
9 EUT CONSTRUCTIONAL DETAILS	35

4 Test Summary

Test Item	Section in CFR 47	Result
RF Exposure (SAR)	Part 1.1307 Part 2.1093	Pass* (Please refer to MPE Report)
RF Output Power	Part 2.1046 Part 22.913 (a)(2) Part 24.232 (c)	Pass
Peak-to-Average Ratio	Part 2.1046 Part 24.232 (d)	Pass
Modulation Characteristics	Part 2.1047	Pass
99% & -26 dB Occupied Bandwidth	Part 2.1049 Part 22.917 Part 24.238	Pass
Spurious Emissions at Antenna Terminal	Part 2.1051 Part 22.917 (a) Part 24.238 (a)	Pass
Field Strength of Spurious Radiation	Part 2.1053 Part 22.917 (a) Part 24.238 (a)	Pass
Out of band emission, Band Edge	Part 22.917 (a) Part 24.238 (a)	Pass
Frequency stability vs. temperature	Part 2.1055(a)(1)(b)	Pass
Frequency stability vs. voltage	Part 2.1055(d)(1)(2)	Pass

Pass: The EUT complies with the essential requirements in the standard.

5 General Information

5.1 General Description of EUT

Product Name:	Wireless Smart Alarm System
Model No.:	A4(*4,*=A-Z)(A*,*=1-9)
Test model:	A4
<i>Remark: All above models are identical in the same PCB layout, interior structure and electrical circuits. The only difference is model name for commercial purpose.</i>	
Serial No.:	2019-NOVA Pro A4
Hardware version:	Y005-F4
Software version:	Y005F4_V0.9.1.2019.04.01
Test sample(s) ID:	GTS201903000166-1
Sample(s) Status	Engineer sample
Support Networks:	GPRS, EGPRS
Support Bands:	GSM850, PCS1900,
TX Frequency:	GSM850: 824.20MHz-848.80MHz PCS1900: 1850.20MHz-1909.80MHz
Release	R99
Modulation type:	GPRS: GMSK EGPRS: GMSK/8PSK
Antenna type:	Integral antenna
Antenna gain:	1.5dBi
Power supply:	DC3.7V 2300mAh 8.51Wh battery Or DC 5V/2A adapter

Operation Frequency List:

GSM 850		PCS1900	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
128	824.20	512	1850.20
129	824.40	513	1850.40
⋮	⋮	⋮	⋮
189	836.40	660	1879.80
190	836.60	661	1880.00
191	836.80	662	1880.20
⋮	⋮	⋮	⋮
250	848.60	809	1909.60
251	848.80	810	1909.80

Regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Final test channel:

GSM 850		PCS1900	
Channel	Frequency (MHz)	Channel	Frequency (MHz)
128	824.20	512	1850.20
190	836.60	661	1880.00
251	848.80	810	1909.80

5.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is filing to comply with Section Part 22 subpart H and Part 24 subpart E of the FCC CFR 47 Rules.

5.3 Test Methodology

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

5.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **FCC —Registration No.: 381383**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 381383.

- **Industry Canada (IC) —Registration No.: 9079A-2**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2.

- **NVLAP (LAB CODE:600179-0)**

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP). LAB CODE:600179-0

5.5 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.

Address: No. 301-309, 3/F., Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102

Tel: 0755-27798480

Fax: 0755-27798960

6 Test Instruments list

Radiated Emission:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July. 03 2015	July. 02 2020
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	June. 27 2018	June. 26 2019
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 27 2018	June. 26 2019
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 27 2018	June. 26 2019
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 27 2018	June. 26 2019
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 27 2018	June. 26 2019
9	Coaxial Cable	GTS	N/A	GTS211	June. 27 2018	June. 26 2019
10	Coaxial cable	GTS	N/A	GTS210	June. 27 2018	June. 26 2019
11	Coaxial Cable	GTS	N/A	GTS212	June. 27 2018	June. 26 2019
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 27 2018	June. 26 2019
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 27 2018	June. 26 2019
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 27 2018	June. 26 2019
15	Band filter	Amindeon	82346	GTS219	June. 27 2018	June. 26 2019
16	Power Meter	Anritsu	ML2495A	GTS540	June. 27 2018	June. 26 2019
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 27 2018	June. 26 2019
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 27 2018	June. 26 2019
19	Splitter	Agilent	11636B	GTS237	June. 27 2018	June. 26 2019
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 27 2018	June. 26 2019
21	Breitband hornantenne	SCHWARZBECK	BBHA 9170	GTS579	Oct. 20 2018	Oct. 19 2019
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 20 2018	Oct. 19 2019
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 20 2018	Oct. 19 2019
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June. 27 2018	June. 26 2019

General used equipment:						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 27 2018	June. 26 2019
2	Barometer	ChangChun	DYM3	GTS255	June. 27 2018	June. 26 2019

7 System test configuration

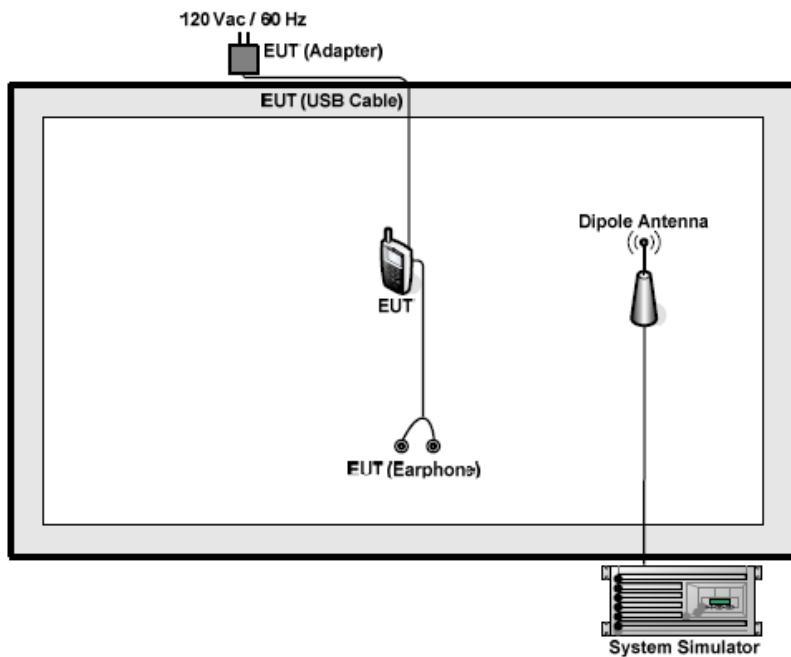
7.1 Test mode

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

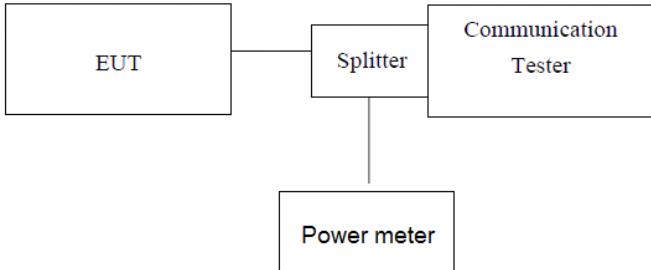
Test modes		
Band	Radiated	Conducted
GSM 850	<ul style="list-style-type: none">■ GPRS 1 link■ EPRS 1 link	<ul style="list-style-type: none">■ GPRS 1 link■ EGPRS 1 link
PCS 1900	<ul style="list-style-type: none">■ GPRS 1 link■ EGPRS 1 link	<ul style="list-style-type: none">■ GPRS 1 link■ EGPRS 1 link

Note: The maximum power levels are GPRS multi-slot class 10 mode for GMSK link, EGPRS multi-slot class 12 mode for 8PSK link, only these modes was used for all tests.

7.2 Configuration of Tested System



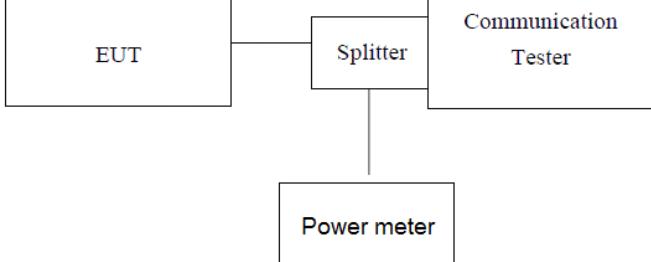
7.3 Conducted Output Power

Test Requirement:	FCC part22.913(a) and FCC part24.232(b)
Test Method:	FCC part2.1046
Limit:	GSM850: 7W PCS1900: 2W
Test setup:	 <p><i>Note: Measurement setup for testing on Antenna connector</i></p>
Test Procedure:	<ol style="list-style-type: none"> 1. The transmitter output port was connected to base station. 2. The RF output of EUT was connected to the power meter by RF cable and attenuator, the path loss was compensated to the results for each measurement. 3. Set EUT at maximum power through base station. 4. Select lowest, middle, and highest channels for each band and different modulation. 5. Measure the maximum burst power.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Measurement Data

Band	Conducted Power (dBm)					
	GSM850			PCS1900		
Channel	128	190	251	512	661	810
Frequency	824.20	836.60	848.80	1850.20	1880.00	1909.80
GPRS (GMSK, 1 TX slot)	33.11	32.72	33.50	30.11	30.96	30.81
GPRS (GMSK, 2 TX slot)	32.08	30.73	31.47	29.12	29.86	29.83
GPRS (GMSK, 3 TX slot)	31.42	31.60	31.88	28.76	28.92	28.69
GPRS (GMSK, 4 TX slot)	28.45	28.19	28.82	27.65	27.74	27.17
EGPRS (8PSK, 1 TX slot)	27.41	26.77	27.46	23.99	24.38	24.54
EGPRS (8PSK, 2 TX slot)	27.26	26.74	28.12	23.17	23.15	22.84
EGPRS (8PSK, 3 TX slot)	25.98	24.98	25.73	22.17	22.41	22.29
EGPRS (8PSK, 4 TX slot)	25.41	24.85	26.08	21.10	21.51	20.58

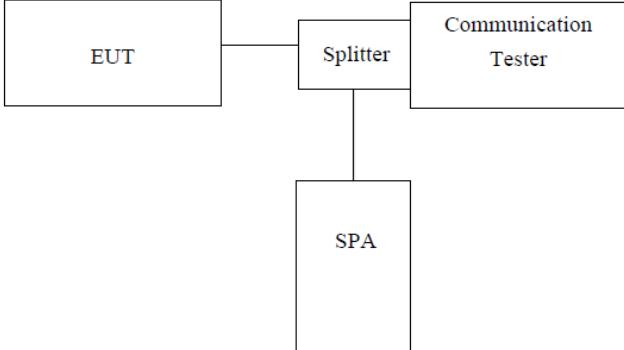
7.4 Peak-to-Average Ratio

Test Requirement:	FCC part24.232(d)
Test Method:	FCC part2.1046
Limit:	13db
Test setup:	 <p><i>Note: Measurement setup for testing on Antenna connector</i></p>
Test Procedure:	<ol style="list-style-type: none"> 1. The transmitter output port was connected to base station. 2. The RF output of EUT was connected to the power meter by RF cable and attenuator, the path loss was compensated to the results for each measurement. 3. Set EUT at maximum power through base station. 4. Select lowest, middle, and highest channels for each band and different modulation. 5. Measure the maximum burst average power. 6. Record the maximum peak-to-average ratio value.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Measurement data

Test Band	Test mode	Peak to Average Ratio (dB)			Limit (dB)	Result
		Low Ch.	Middle Ch.	High Ch.		
GSM 850	GPRS	7.74	7.77	7.73	13	PASS
	EGPRS	7.72	7.74	7.39	13	PASS
GSM 1900	GPRS	7.81	8.03	7.82	13	PASS
	EGPRS	7.73	7.75	7.68	13	PASS

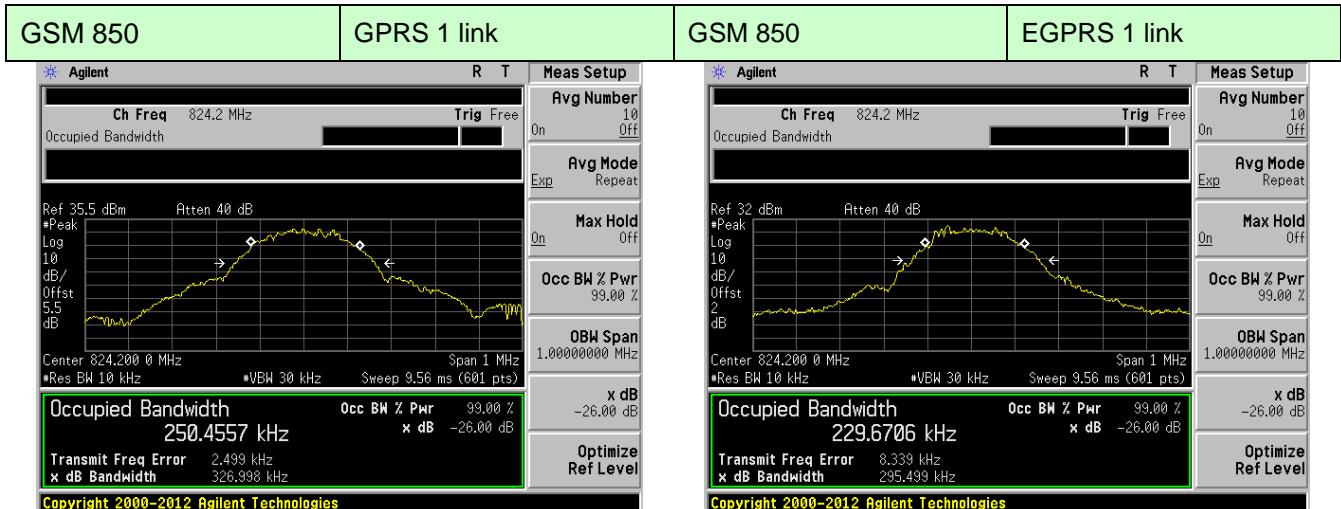
7.5 Occupy Bandwidth

Test Requirement:	FCC part22.913(a) and FCC part24.232(b)
Test Method:	FCC part2.1049
Test setup:	 <p><i>Note: Measurement setup for testing on Antenna connector</i></p>
Test Procedure:	<ol style="list-style-type: none"> 1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer 2. RBW was set to about 1% of emission BW, VBW= 3 times RBW. 3. -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.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Measurement Data

EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (KHz)	-26dB bandwidth (KHz)
GSM 850 (GPRS 1 link)	128	824.20	250.4557	326.998
	190	836.60	241.1749	311.411
	251	848.80	247.0496	317.605
GSM 850 (EGPRS 1 link)	128	824.20	229.6706	295.499
	190	836.60	244.5645	299.946
	251	848.80	241.8964	303.481
PCS 1900 (GPRS 1 link)	512	1850.20	250.9086	319.396
	661	1880.00	250.2499	320.213
	810	1909.80	245.3491	322.561
PCS 1900 (EGPRS 1 link)	512	1850.20	252.5161	317.357
	661	1880.00	249.4889	318.819
	810	1909.80	239.5317	314.786

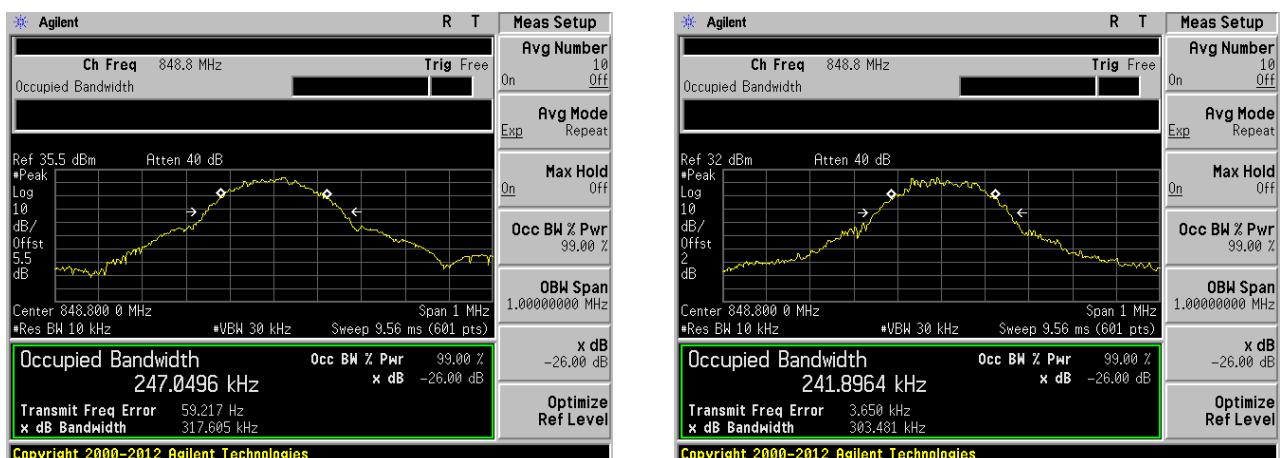
Test plot as follows:



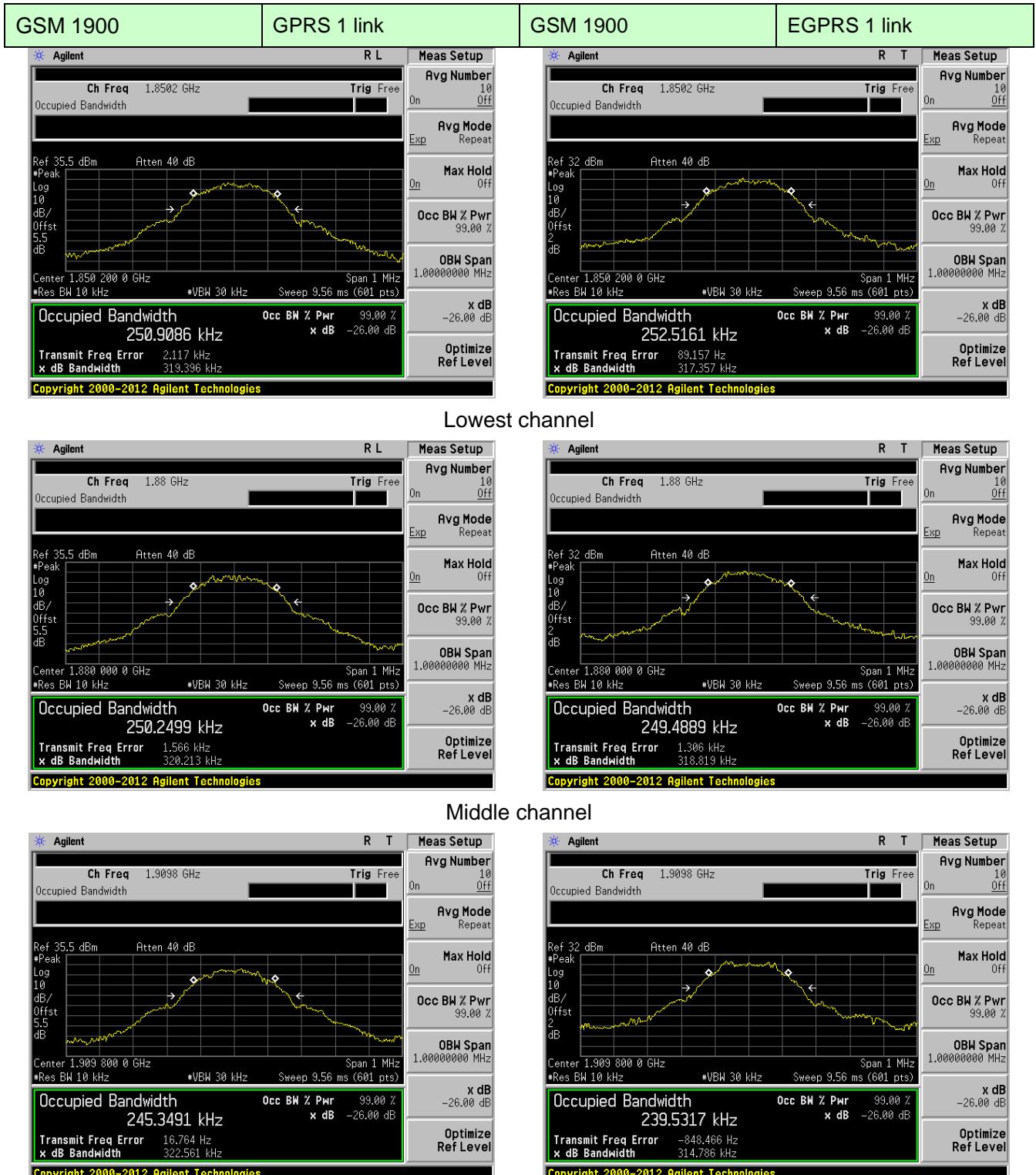
Lowest channel



Middle channel



Highest channel



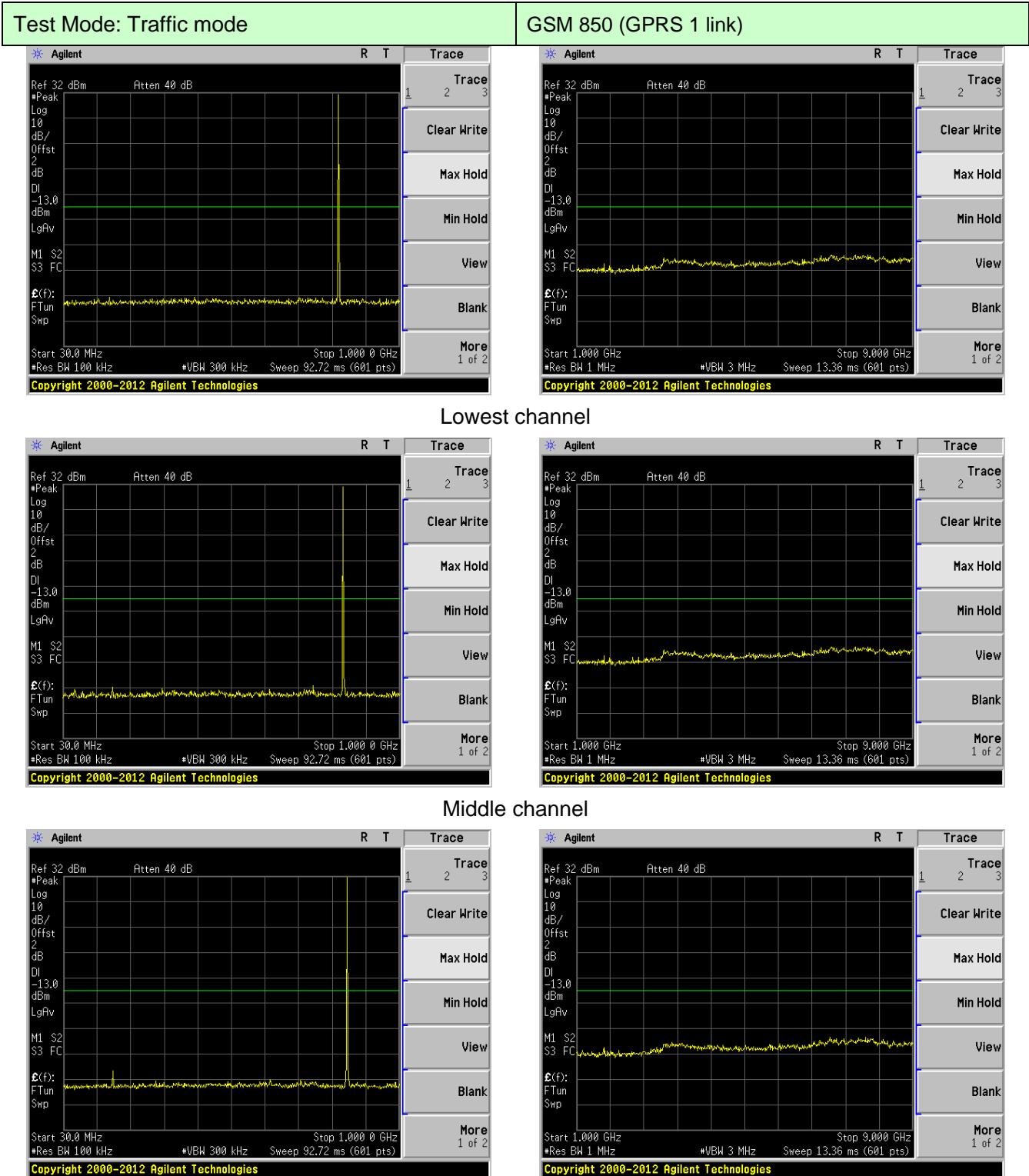
7.6 MODULATION CHARACTERISTIC

According to FCC § 2.1047(d), Part 22H & 24E there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

7.7 Out of band emission at antenna terminals

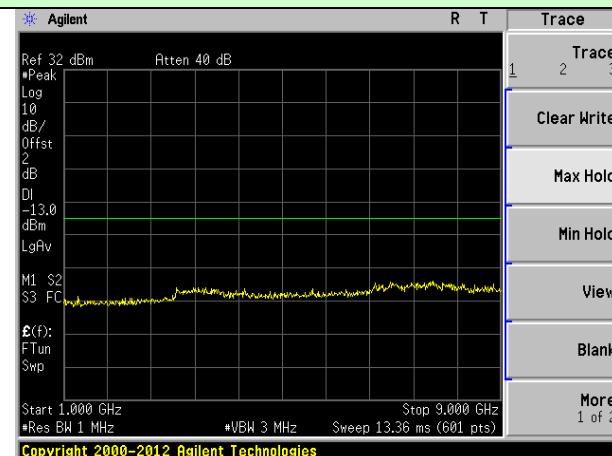
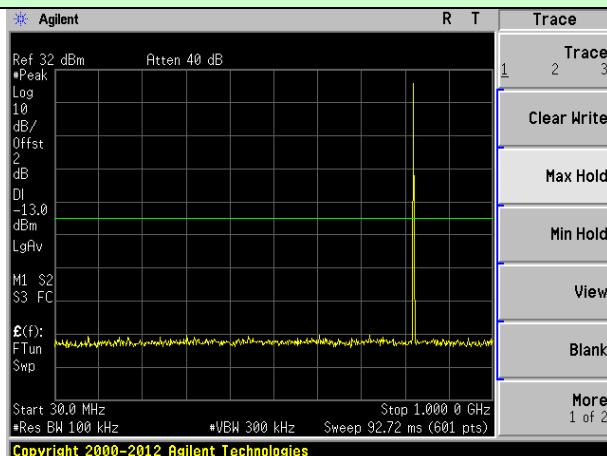
Test Requirement:	FCC part22.917(a) and FCC part24.238(a)
Test Method:	FCC part2.1051
Limit:	-13dBm
Test setup:	<pre> graph LR EUT[EUT] --- Splitter[Splitter] Splitter --- CommTester[Communication Tester] Splitter --- Filter[Filter] Filter --- SPA[SPA] </pre>
<p><i>Note: Measurement setup for testing on Antenna connector</i></p>	
Test Procedure:	<ol style="list-style-type: none"> 1 The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. 2 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. 3 For the out of band: Set the RBW, VBW = 1MHz, Start=30MHz, Stop= 10th harmonic. 4 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.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Test plot as follows:

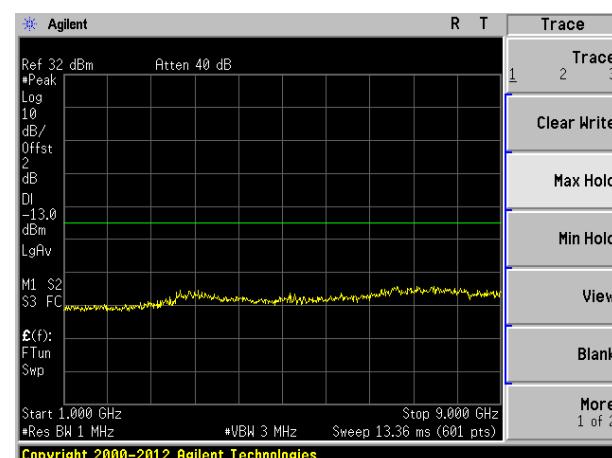
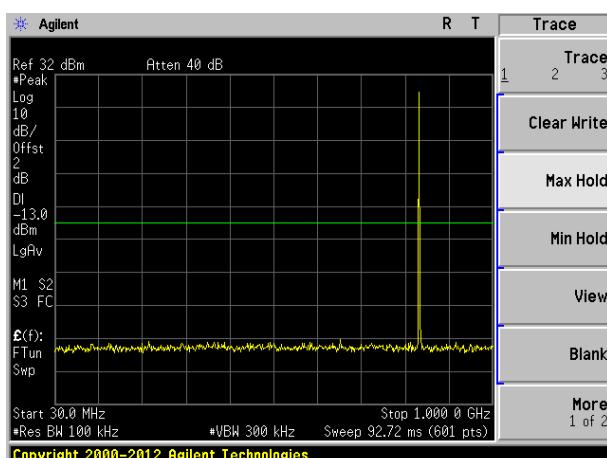


Test Mode: Traffic mode

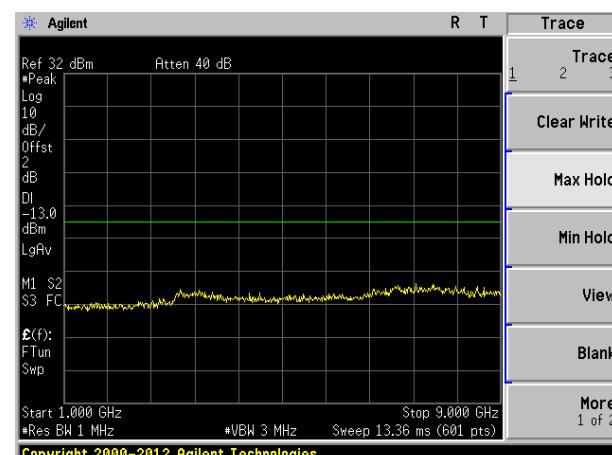
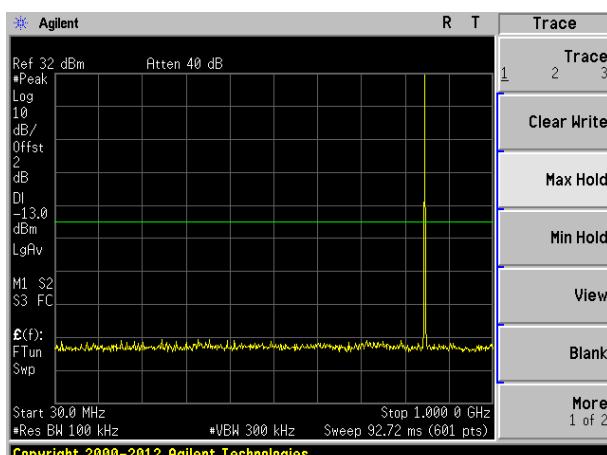
GSM 850 (EGPRS 1 link)



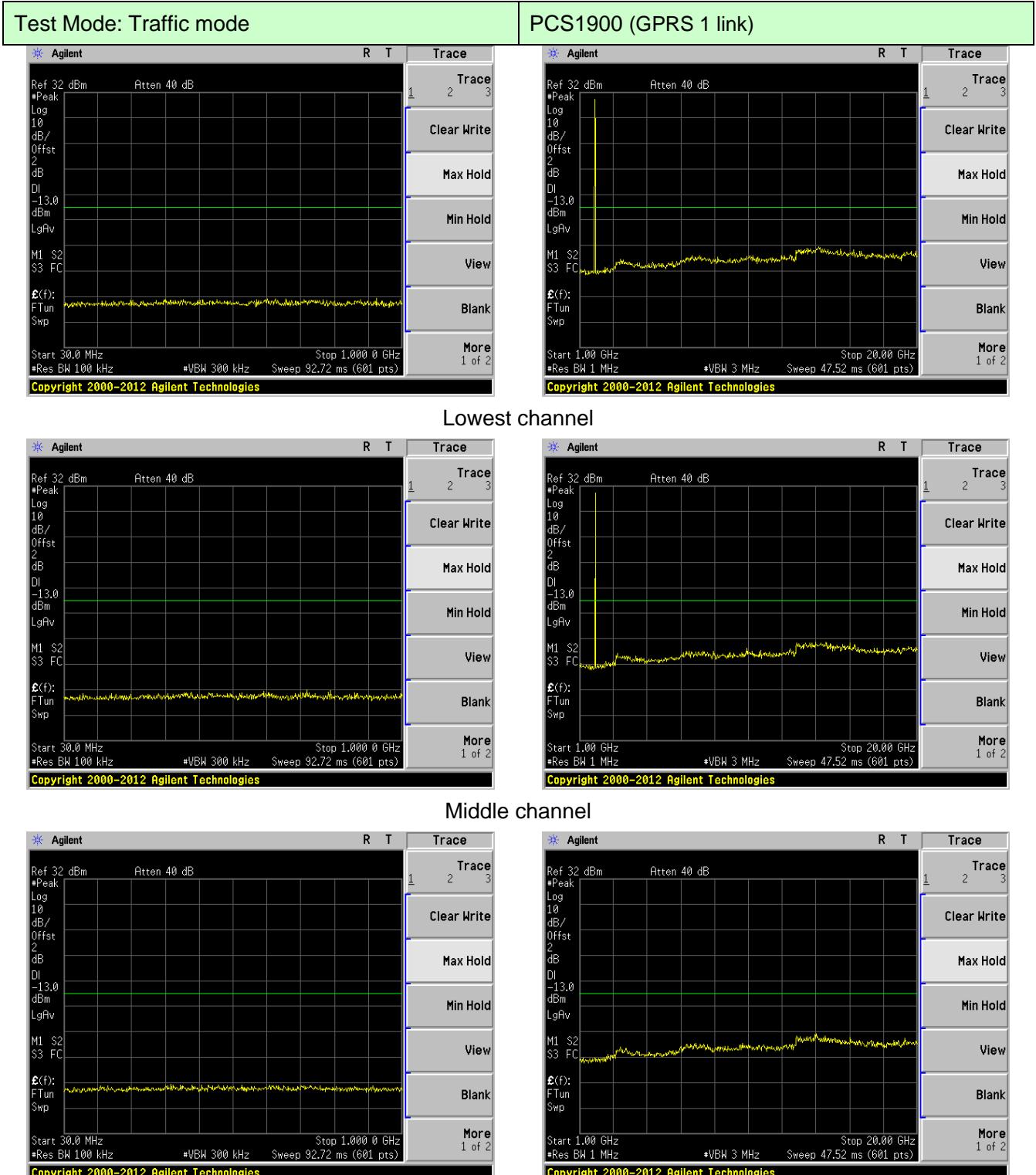
Lowest channel

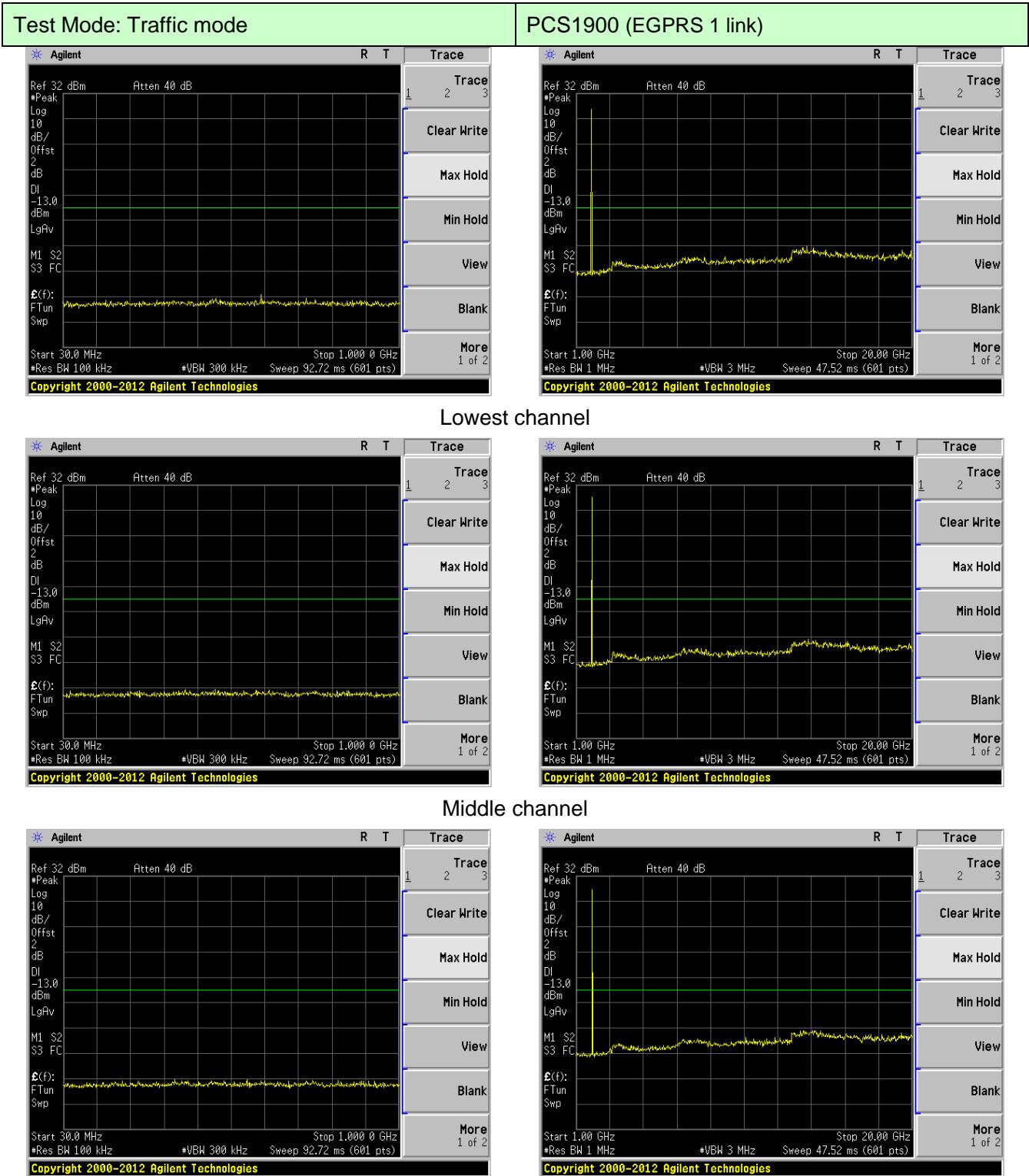


Middle channel

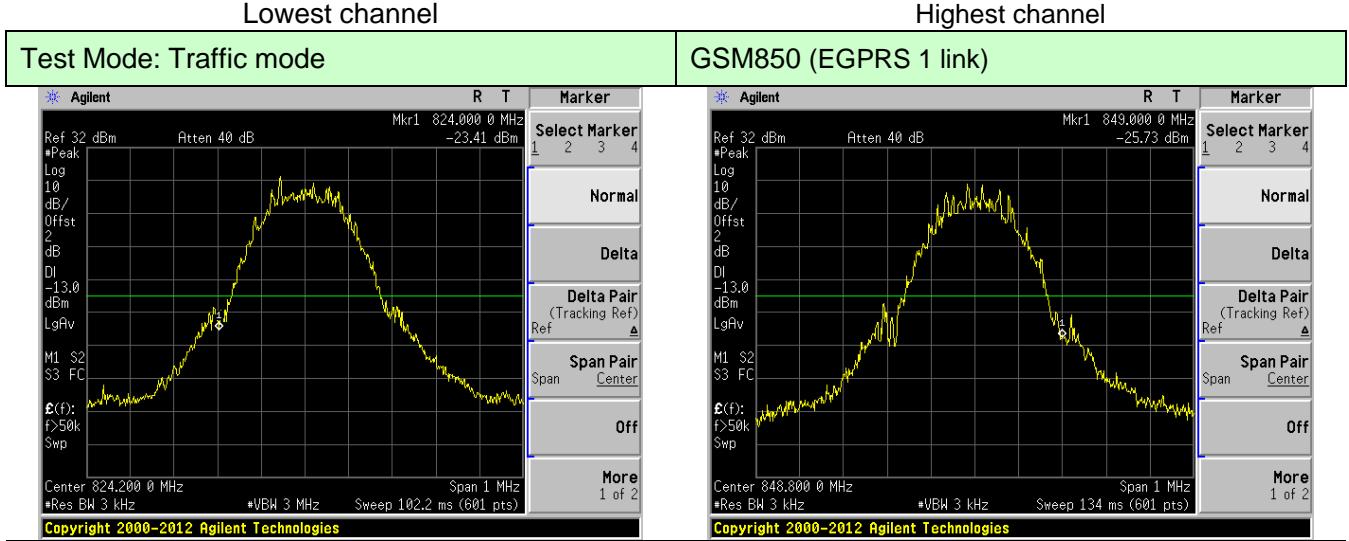
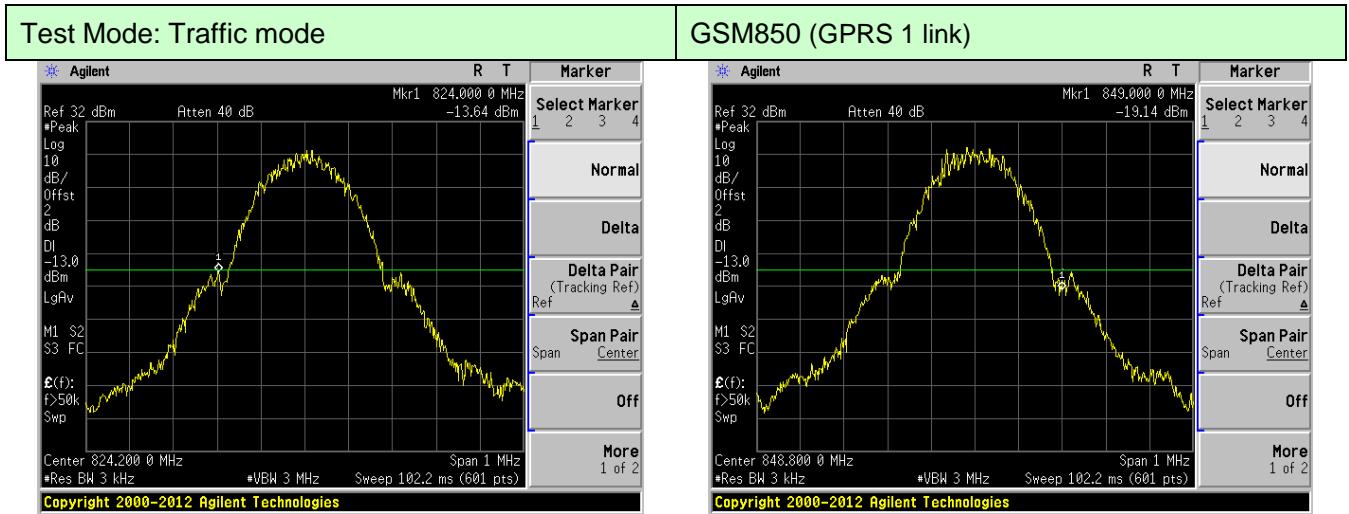


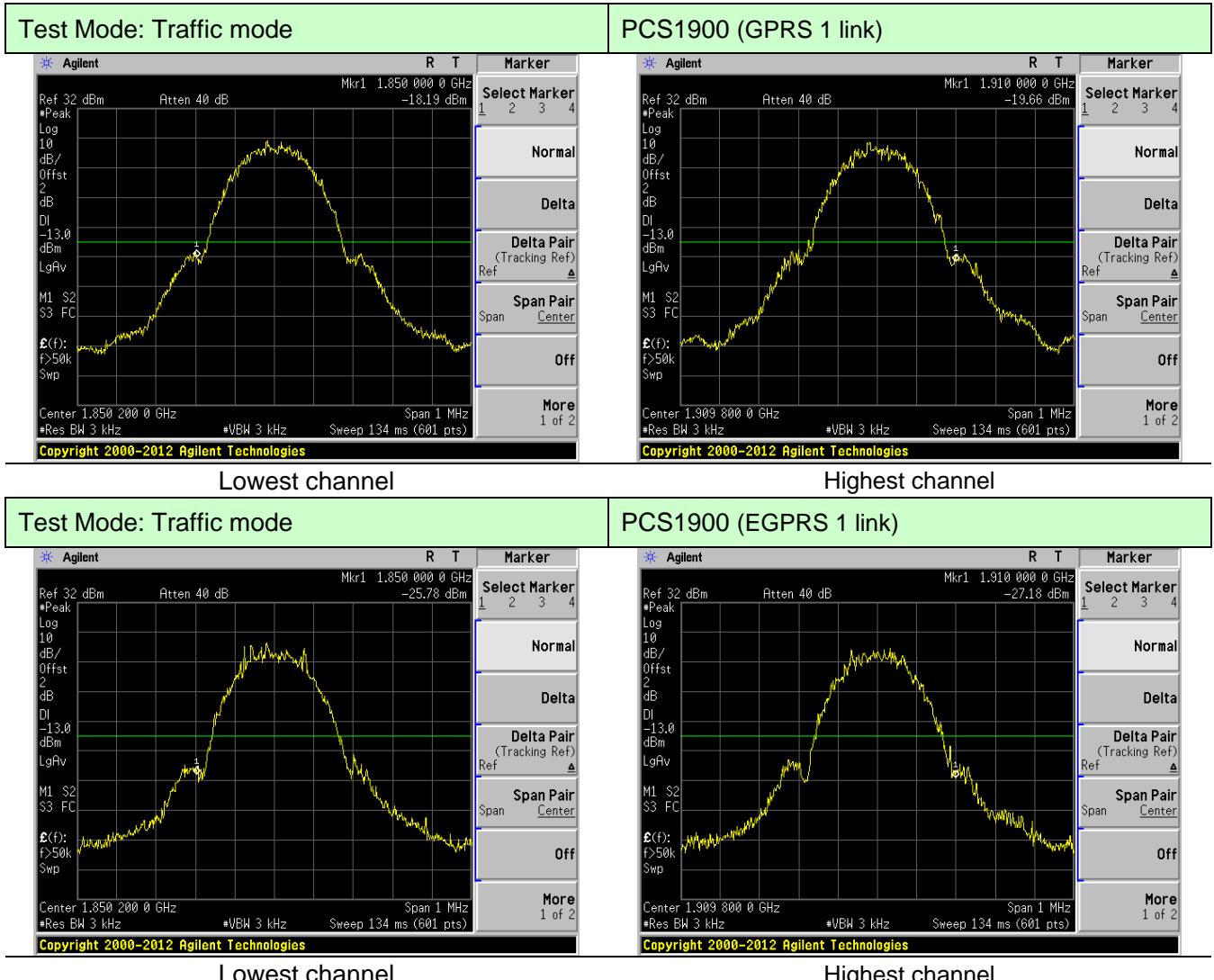
Highest channel



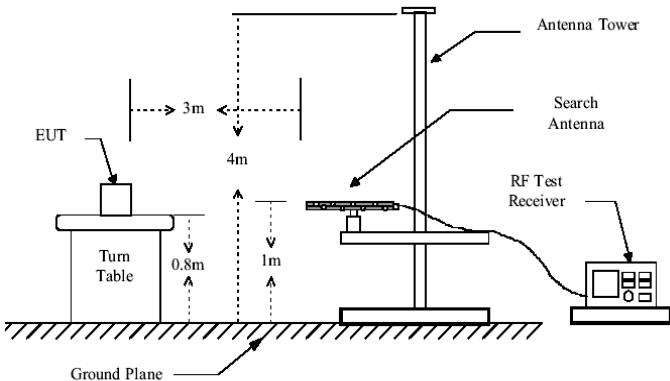
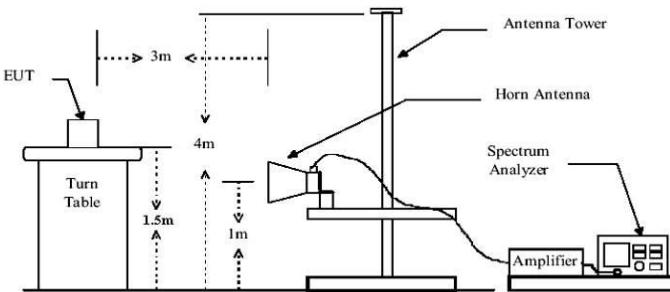
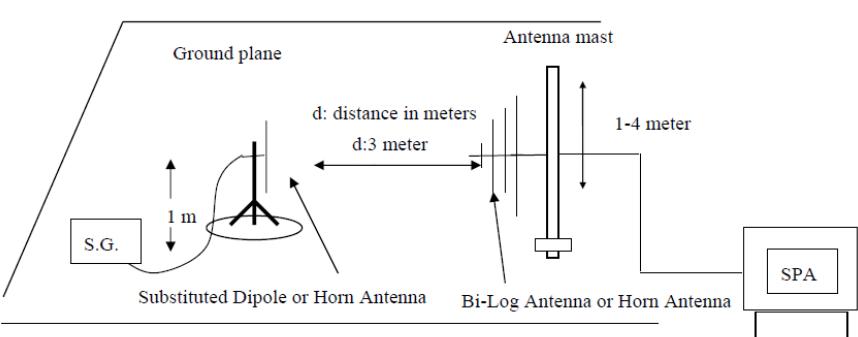


Band Edge:





7.8 ERP, EIRP Measurement

Test Requirement:	FCC part22.913(a) and FCC part24.232(b)
Test Method:	FCC part2.1046
Limit:	GSM850: 7W PCS1900: 2W
Test setup:	<p>Below 1GHz</p>  <p>Above 1GHz</p>  <p>Substituted method:</p> 

Test Procedure:	<ol style="list-style-type: none">1. 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.2. 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.3. 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: $\text{ERP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBd)} - \text{Cable Loss (dB)}$4. 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: $\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable Loss (dB)}$
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Measurement Data

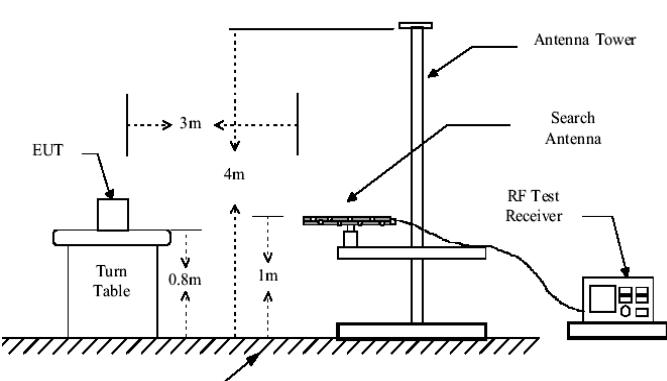
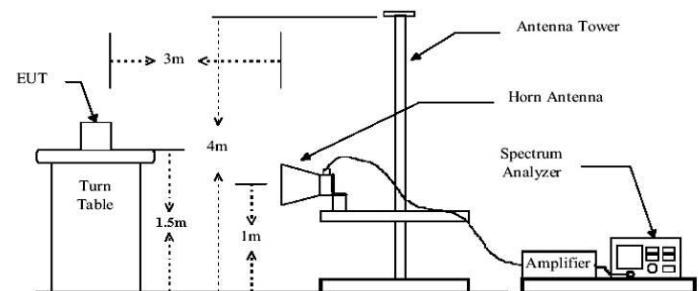
EUT mode	Channel	Modulation	Polarization	SGP [dBm]	Substitution Gain[dBi]	Cable loss[dB]	ERP (dBm)	Limit (dBm)	Result
GSM 850	Lowest	GPRS	H	23.88	-2.08	1.55	23.35	38.45	Pass
	Middle	GPRS	H	22.86	-2.08	1.6	22.38	38.45	Pass
	Highest	GPRS	H	23.60	-2.08	1.65	23.17	38.45	Pass

EUT mode	Channel	Modulation	Polarization	SGP [dBm]	Substitution Gain[dBi]	Cable loss[dB]	ERP (dBm)	Limit (dBm)	Result
GSM 850	Lowest	EGPRS	H	23.37	-2.08	1.55	22.84	38.45	Pass
	Middle	EGPRS	H	23.07	-2.08	1.6	22.59	38.45	Pass
	Highest	EGPRS	H	22.53	-2.08	1.65	22.10	38.45	Pass

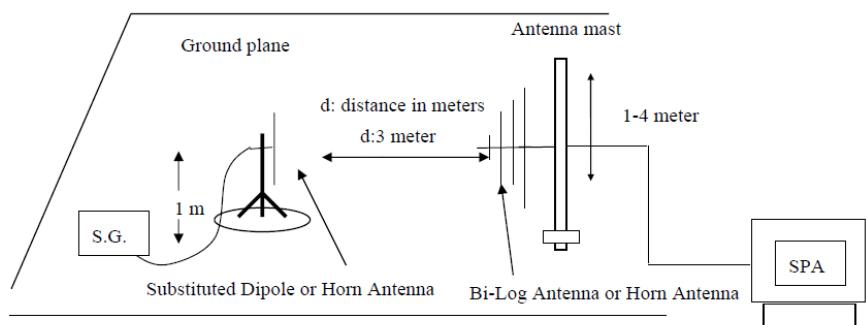
EUT mode	Channel	Modulation	Polarization	SGP [dBm]	Substitution Gain[dBi]	Cable loss[dB]	EIRP (dBm)	Limit (dBm)	Result
PCS 1900	Lowest	GPRS	H	23.74	-1.93	1.13	22.94	33.00	Pass
	Middle	GPRS	H	23.37	-1.93	1.22	22.66	33.00	Pass
	Highest	GPRS	H	22.03	-1.93	1.34	21.44	33.00	Pass

EUT mode	Channel	Modulation	Polarization	SGP [dBm]	Substitution Gain[dBi]	Cable loss[dB]	EIRP (dBm)	Limit (dBm)	Result
PCS 1900	Lowest	EGPRS	H	22.02	-1.93	1.13	21.22	33.00	Pass
	Middle	EGPRS	H	24.47	-1.93	1.22	23.76	33.00	Pass
	Highest	EGPRS	H	24.68	-1.93	1.34	24.09	33.00	Pass

7.9 Field strength of spurious radiation measurement

Test Requirement:	FCC part22.917(a) and FCC part24.238(a)
Test Method:	FCC part2.1053
Limit:	-13dBm
Test setup:	<p>Below 1GHz</p>  <p>Above 1GHz</p> 

Substituted method:



Test Procedure:	<ol style="list-style-type: none">1. 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.2. 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.3. 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.4. The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency. $\text{ERP / EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain(dB/dBi)} - \text{Cable Loss (dB)}$
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Measurement Data

Test mode:	GSM850		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1648.40	Vertical	-56.16	-13.00	Pass
2472.60	V	-54.95		
3296.80	V	-53.27		
4121.00	V	-51.47		
4945.20	V	-49.59		
1648.40	Horizontal	-55.46		
2472.60	H	-54.21		
3296.80	H	-49.87		
4121.00	H	-51.51		
4945.20	H	-48.70		
Test mode:	GSM850		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1673.20	Vertical	-56.09	-13.00	Pass
2509.80	V	-54.33		
3346.40	V	-52.25		
4183.00	V	-54.04		
5019.60	V	-50.43		
1673.20	Horizontal	-55.47		
2509.80	H	-53.68		
3346.40	H	-50.92		
4183.00	H	-52.66		
5019.60	H	-50.05		
Test mode:	GSM850		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1697.60	Vertical	-57.51	-13.00	Pass
2546.40	V	-55.42		
3395.20	V	-52.18		
4244.00	V	-50.79		
5092.80	V	-48.29		
1697.60	Horizontal	-56.38		
2546.40	H	-55.27		
3395.20	H	-50.32		
4244.00	H	-51.06		
5092.80	H	-48.92		

Remark :

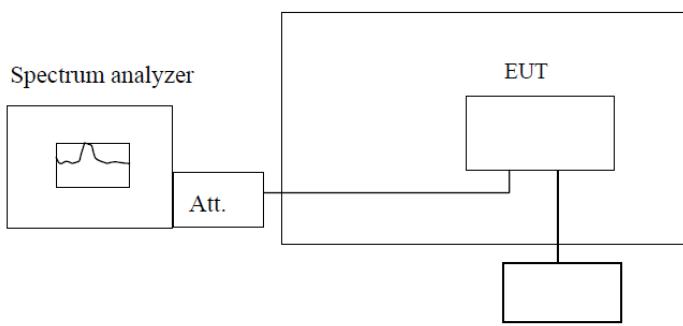
1. The emission behaviour belongs to narrowband spurious emission.
2. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	PCS1900		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3700.40	Vertical	-57.31	-13.00	Pass
5550.60	V	-53.78		
7400.80	V	-51.57		
9251.00	V	-53.54		
11101.20	V	-49.89		
3700.40	Horizontal	-54.69		Pass
5550.60	H	-51.28		
7400.80	H	-52.12		
9251.00	H	-49.93		
11101.20	H	-48.50		
Test mode:	PCS1900		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3760.00	Vertical	-54.94	-13.00	Pass
5640.00	V	-57.29		
7520.00	V	-53.46		
9400.00	V	-51.37		
11280.00	V	-50.14		
3760.00	Horizontal	-55.61		Pass
5640.00	H	-53.04		
7520.00	H	-52.56		
9400.00	H	-52.40		
11280.00	H	-49.23		
Test mode:	PCS1900		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3819.60	Vertical	-56.86	-13.00	Pass
5729.40	V	-53.67		
7639.20	V	-54.22		
9549.00	V	-51.53		
11458.80	V	-47.91		
3819.60	Horizontal	-55.87		Pass
5729.40	H	-55.53		
7639.20	H	-53.59		
9549.00	H	-49.46		
11458.80	H	-46.92		

Remark:

1. The emission behaviour belongs to narrowband spurious emission.
2. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

7.10 Frequency stability V.S. Temperature measurement

Test Requirement:	FCC Part2.1055(a)(1)(b)
Test Method:	FCC Part2.1055(a)(1)(b)
Limit:	2.5ppm
Test setup:	<p style="text-align: right;">Temperature Chamber</p>  <p style="text-align: center;">Note : Measurement setup for testing on Antenna connector</p>
Test procedure:	<ol style="list-style-type: none"> 1. The equipment under test was connected to an external DC power supply and input rated voltage. 2. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. 3. The EUT was placed inside the temperature chamber. 4. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency. 5. Turn EUT off and set the chamber temperature to -20°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. 6. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Measurement Data

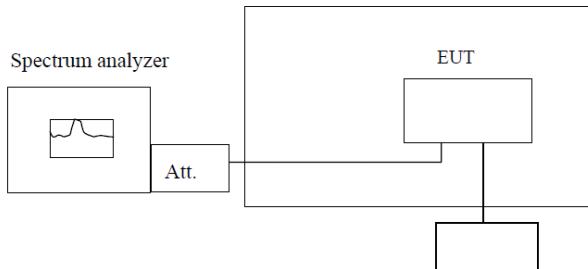
Reference Frequency: GSM850 (GPRS 1 link) Middle channel=190 channel=836.6MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.7	-30	107	0.1281	2.5	Pass
	-20	121	0.1451		
	-10	102	0.1224		
	0	83	0.0996		
	10	98	0.1167		
	20	83	0.0996		
	30	140	0.1679		
	40	126	0.1508		
	50	121	0.1451		

Reference Frequency: GSM850 (EGPRS 1 link) Middle channel=190 channel=836.6MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.7	-30	48	0.0570	2.5	Pass
	-20	52	0.0626		
	-10	45	0.0542		
	0	41	0.0485		
	10	43	0.0514		
	20	38	0.0457		
	30	64	0.0768		
	40	55	0.0655		
	50	52	0.0626		

Reference Frequency: PCS1900 (GPRS 1 link) Middle channel=661 channel=1880MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Result	
		Hz	ppm		
3.7	-30	145	0.1738	2.5	Pass
	-20	168	0.2009		
	-10	141	0.1682		
	0	122	0.1463		
	10	137	0.1639		
	20	119	0.1428		
	30	201	0.2407		
	40	175	0.2096		
	50	166	0.1985		

Reference Frequency: PCS1900 (EGPRS 1 link) Middle channel=661 channel=1880MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Result	
		Hz	ppm		
3.7	-30	64	0.0761	2.5	Pass
	-20	70	0.0841		
	-10	60	0.0721		
	0	54	0.0641		
	10	57	0.0681		
	20	50	0.0601		
	30	87	0.1041		
	40	74	0.0881		
	50	70	0.0841		

7.11 Frequency stability V.S. Voltage measurement

Test Requirement:	FCC Part2.1055(d)(1)(2)
Test Method:	FCC Part2.1055(d)(1)(2)
Limit:	2.5ppm
Test setup:	<p style="text-align: center;">Temperature Chamber</p>  <p style="text-align: center;">Variable Power Supply</p> <p>Note : Measurement setup for testing on Antenna connector</p>
Test procedure:	<ol style="list-style-type: none"> 1. Set chamber temperature to 25°C. Use a variable DC power source to power the EUT and set the voltage to rated voltage. 2. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency. 3. Reduce the input voltage to specified extreme voltage variation (+/- 15%) and endpoint, record the maximum frequency change.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 7.1 for details
Test results:	Pass

Measurement Data

Reference Frequency: GSM850 (GPRS 1 link) Middle channel=190 channel=836.6MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	3.3	22	0.0258	2.5	Pass
	3.7	25	0.0296		
	4.2	28	0.0334		
Reference Frequency: GSM850 (EGPRS 1 link) Middle channel=190 channel=836.6MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	3.3	118	0.1406	2.5	Pass
	3.7	85	0.1017		
	4.2	96	0.1147		
Reference Frequency: PCS1900 (GPRS 1 link) Middle channel=661 channel=1880MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	3.3	115	0.1375	2.5	Pass
	3.7	131	0.1566		
	4.2	147	0.1751		
Reference Frequency: PCS1900 (EGPRS 1 link) Middle channel=661 channel=1880MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	3.3	46	0.0244	2.5	Pass
	3.7	56	0.0298		
	4.2	56	0.0298		

8 Test Setup Photo

Reference to the **appendix I** for details.

9 EUT Constructional Details

Reference to the **appendix II** for details.

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