GTS

Global United Technology Services Co., Ltd.

FCC REPORT (Mobile Phone)

Applicant:	HUAWEI TECHNOLOGIES CO., LTD
Address of Applicant:	Administration Building, Huawei Base, Bantian, Longgang District, Shenzhen 518129

Equipment Under Test (EUT)

Product Name:	GSM Mobile Phone
Model No.:	HUAWEI G7300
Trade Mark:	HUAWEI
FCC ID:	QISG7300A
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:	03 Jan., 2012
Date of Test:	03-17 Jan., 2012
Date of report issued:	17 Jan., 2012
Test Result :	PASS *

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

Authorized Signature:

Stephen Guo
Laboratory Manage

2   Version

Version No.	Date	Description
00	*10 Jan., 2012*	*Original*

Prepared By: *Collin. He*   **Date:**   *10 Jan., 2012*

Project Engineer

Check By: *Hans.Hu*   **Date:**   *10 Jan., 2012*

Reviewer

Global United Technology Services Co., Ltd.   Project No.: CCIS111200012RF
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4 Test Summary

Test Item	Section in CFR 47	Result
RF Exposure (SAR)	Part 1.1307 Part 2.1093	Passed* (Please refer to SAR Report)
RF Output Power	Part 2.1046 Part 22.913 (a)(2) Part 24.232 (c)	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.

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5 General Information

5.1 Client Information

Applicant:	HUAWEI TECHNOLOGIES CO., LTD
Address of Applicant:	Administration Building, Huawei Base, Bantian, Longgang District, Shenzhen 518129
Manufacturer :	HUAWEI TECHNOLOGIES CO., LTD
Address of Manufacturer :	Administration Building, Huawei Base, Bantian, Longgang District, Shenzhen 518129

5.2 General Description of E.U.T.

Product Name:	GSM Mobile Phone
Model No.:	HUAWEI G7300
Operation Frequency range:	GSM 850: 824~849MHz(TX) 869~894MHz(RX) PCS1900:1850-1910MHz(TX) 1930~1990MHz(RX)
IMEI:	861132000822089
Software Version:	HUAWEI_G7300_S_WIFI_V100R001B201C200SP02 (Single SIM Card) HUAWEI_G7300_S_WIFI_V100R001B201C00SP07 (Double SIM Card)
Hardware Version:	P2
Data cable(USB):	Length 1.0 m
Earphone line:	Length 1.2 m
Adapter:	Trade Mark:HUAWEI Model :HS-050040U6 Input :100-240V~50/60Hz 0.2A Output: 5.0V DC,400mA
Power supply:	Li-ion Battery Trade Mark:HUA WEI Model: HBG7300 Voltage and Rated Capacity:3.7 V DC, 1300mAh

Remarks:

The different between HUAWEI G7300 single SIM card mobile phone and HUAWEI G7300 double SIM card mobile phone are the number of SIM card and the colour of appearance. The others are the same, which includes circuit design, PCB board, structure and all components. Only double SIM card mobile phone was performed for this test.

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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:

GSM850			PCS1900		
	Channel	Frequency(MHz)		Channel	Frequency(MHz)
Lowest channel	128	824.20	Lowest channel	512	1850.20
Middle channel	190	836.60	Middle channel	661	1880.00
Highest channel	251	848.80	Highest channel	810	1909.80

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5.3 Test mode:

Communicate mode (GSM850)	Keep the EUT in communicating mode on GSM850 band.
Communicate mode (PCS1900)	Keep the EUT in communicating mode on PCS1900 band.
Data mode (GPRS850)	Keep the EUT in data mode on GPRS850 band.
Data mode (GPRS1900)	Keep the EUT in data mode on GPRS1900 band.
Data mode (EDGE850)	Keep the EUT in data mode on EDGE850 band.
Data mode (EDGE1900)	Keep the EUT in data mode on EDGE1900 band.

5.4 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.

5.5 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

5.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:
● FCC —Registration No.: 600491
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 600491, July 20, 2010.
● Industry Canada (IC)
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-1.

5.7 Test Location

All tests were performed at:
Global United Technology Services Co., Ltd.
Address: 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China
Tel: 0755-27798480
Fax: 0755-27798960

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5.8 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	Mar. 30 2011	Mar. 29 2012
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	Jul. 04 2011	Jul. 03 2012
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	Feb. 26 2011	Feb. 25 2012
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June 30 2011	June 29 2012
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 30 2011	Mar. 29 2012
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	Apr. 01 2011	Mar. 31 2012
9	Coaxial Cable	GTS	N/A	GTS211	Apr. 01 2011	Mar. 31 2012
9	Coaxial cable	GTS	N/A	GTS210	Apr. 01 2011	Mar. 31 2012
11	Coaxial Cable	GTS	N/A	GTS212	Apr. 01 2011	Mar. 31 2012
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	Jul. 04 2011	Jul. 03 2012
13	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	Jul. 04 2011	Jul. 03 2012
14	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	Apr. 01 2011	Mar. 31 2012
15	Band filter	Amindeon	82346	GTS219	Apr. 01 2011	Mar. 31 2012
16	Universal radio communication tester	Rohde & Schwarz	CMU200	GTS235	May 11 2011	May 11 2012
17	Signal Generator	Rohde & Schwarz	SML03	GTS236	May 11 2011	May 11 2012
18	Temp. Humidity/ Barometer	Oregon Scientific	BA-888	GTS248	May 11 2011	May 11 2012
19	D.C. Power Supply	Instek	PS-3030	GTS232	NA	NA
20	Splitter	Agilent	11636B	GTS237	May 11 2011	May 11 2012
21	Power meter	Giga-tronics	8541C	1831177	06.04.2011	06.04.2012
22	Power sensor	Giga-tronics	80601A	1831785	06.04.2011	06.04.2012

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6 System test configuration

6.1 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.

6.2 EUT Exercise

The EUT (Transmitter) was operated in the engineering mode to fix the Tx frequency which was for the purpose of the measurements.
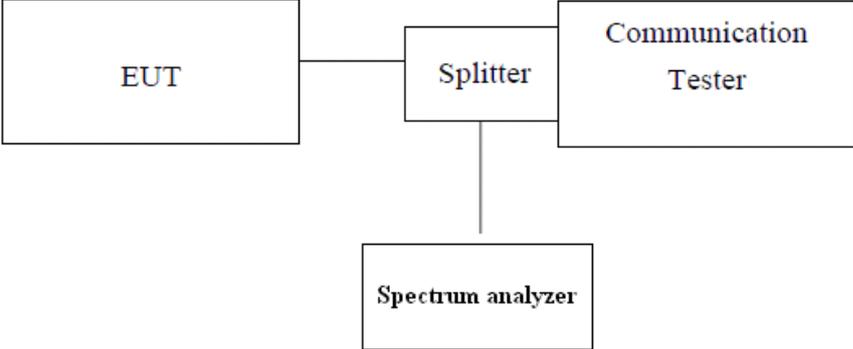
6.3 Configuration of Tested System
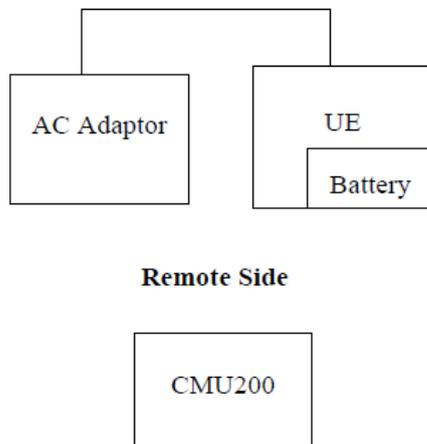
6.4 DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.
EUT staying in continuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing.
The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for both GSM/PCS with power adaptors, earphone and Data cable. The worst-case H mode for GSM 850 band, PCS1900 band.
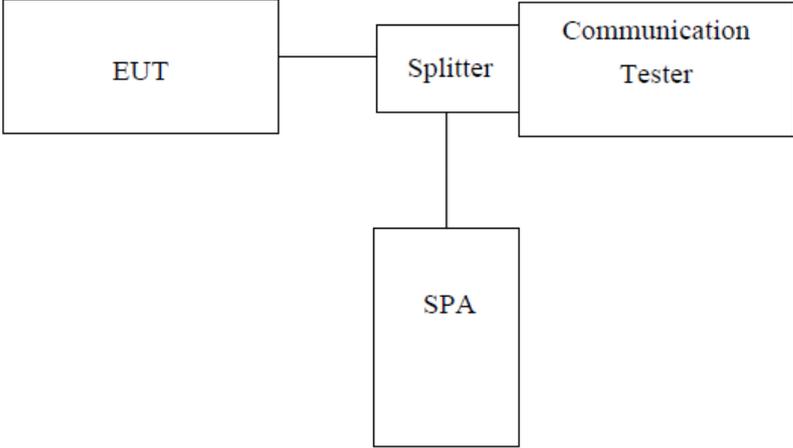
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6.5 Conducted Peak Output Power

Test Requirement:	FCC part22.913(a) and FCC part24.232(b)
Test Method:	FCC part2.1046
Limit:	GSM850 7W PCS1900 2W
Test setup:	 *Note: Measurement setup for testing on Antenna connector*
Test Procedure:	The transmitter output was connected to a calibrated attenuator, the other end of which was connected to the power meter. Transmitter output was read off the power meter in dBm.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

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Measurement Data

EUT Mode	Channel	Frequency (MHz)	PK power (dBm)	Limit(dBm)	Result
GSM 850	128	824.20	32.42	38.45	Pass
	190	836.60	32.12		
	251	848.80	32.12		
PCS 1900	512	1850.20	29.81	33.00	Pass
	661	1880.00	29.66		
	810	1909.80	29.46		
GPRS 850 (1 up slot)	128	824.20	31.96	38.45	Pass
	190	836.60	31.89		
	251	848.80	31.94		
GPRS 1900 (1 up slot)	512	1850.20	29.00	33.00	Pass
	661	1880.00	29.01		
	810	1909.80	28.93		
GPRS 850 (2 up slot)	128	824.20	31.38	38.45	Pass
	190	836.60	31.16		
	251	848.80	31.14		
GPRS 1900 (2 up slot)	512	1850.20	28.55	33.00	Pass
	661	1880.00	28.45		
	810	1909.80	28.29		
GPRS 850 (3 up slot)	128	824.20	29.73	38.45	Pass
	190	836.60	29.51		
	251	848.80	29.46		
GPRS 1900 (3 up slot)	512	1850.20	26.98	33.00	Pass
	661	1880.00	26.85		
	810	1909.80	26.67		
GPRS 850 (4 up slot)	128	824.20	28.87	38.45	Pass
	190	836.60	28.66		
	251	848.80	28.63		
GPRS 1900 (4 up slot)	512	1850.20	26.11	33.00	Pass
	661	1880.00	26.01		
	810	1909.80	25.87		
EDGE 850 (1 up slot)	128	824.20	26.89	38.45	Pass
	190	836.60	26.63		

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	251	848.80	26.62		
EDGE 1900 (1 up slot)	512	1850.20	25.75	33.00	Pass
	661	1880.00	25.75		
	810	1909.80	25.53		
EDGE 850 (2 up slot)	128	824.20	26.85	38.45	Pass
	190	836.60	26.61		
	251	848.80	26.52		
EDGE 1900 (2 up slot)	512	1850.20	25.65	33.00	Pass
	661	1880.00	25.62		
	810	1909.80	25.43		
EDGE 850 (3 up slot)	128	824.20	26.83	38.45	Pass
	190	836.60	26.58		
	251	848.80	26.51		
EDGE 1900 (3 up slot)	512	1850.20	25.58	33.00	Pass
	661	1880.00	25.57		
	810	1909.80	25.41		
EDGE 850 (4 up slot)	128	824.20	26.81	38.45	Pass
	190	836.60	26.56		
	251	848.80	26.50		
EDGE 1900 (4 up slot)	512	1850.20	25.54	33.00	Pass
	661	1880.00	25.53		
	810	1909.80	25.40		

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6.6 Occupy Bandwidth

Test Requirement:	FCC part22.913(a) and FCC part24.232(b)
Test Method:	FCC part2.1049
Test setup:	*Note: Measurement setup for testing on Antenna connector*
Test Procedure:	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 5.8 for details
Test mode:	Refer to section 5.3 for details. Base on the conducted power and Technical characteristics, we just selected the GSM mode and EDGE mode to perform the other test items.
Test results:	Passed

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Measurement Data

EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (kHz)	-26dB bandwidth (kHz)
GSM 850	128	824.20	246	320
	190	836.60	248	322
	251	848.80	248	320
PCS 1900	512	1850.20	248	326
	661	1880.00	246	324
	810	1909.80	248	320
EDGE 850	128	824.20	250	316
	190	836.60	246	326
	251	848.80	246	322
EDGE 1900	512	1850.20	246	324
	661	1880.00	244	322
	810	1909.80	244	318

Test plot as follows:

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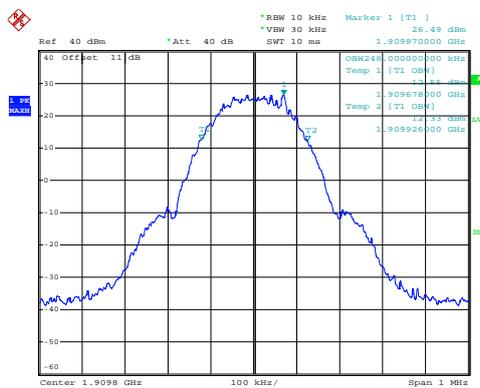| Test Item:	99% Occupy bandwidth	Test Mode:	GSM850
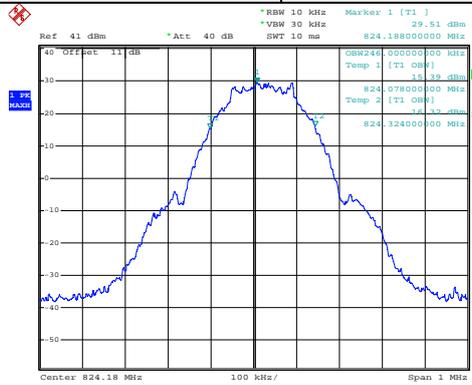
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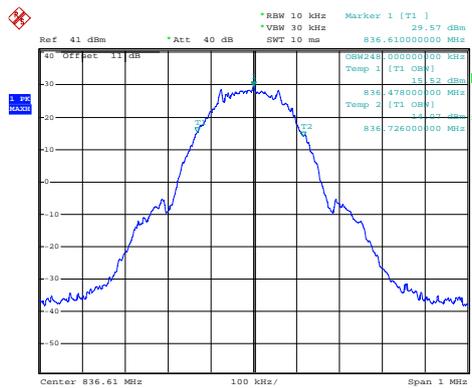
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Middle channel

Date: 27.DEC.2011 07:59:13

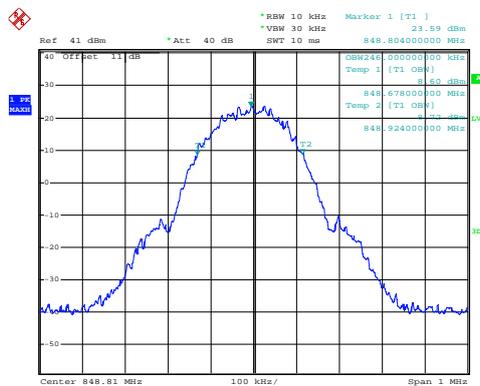## Highest channel:

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Test Item:	99% Occupy bandwidth	Test Mode:	PCS1900
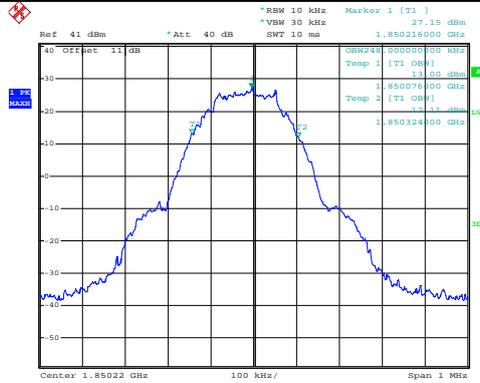
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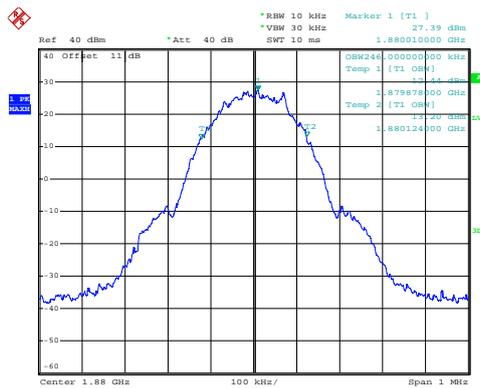
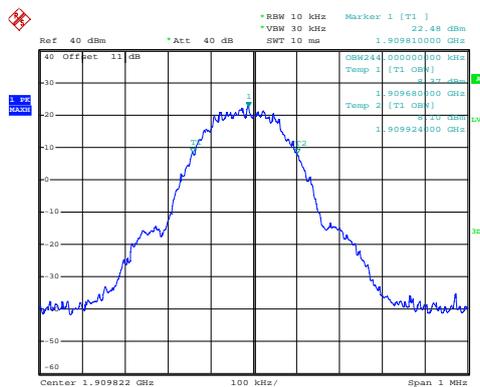Date: 27.DEC.2011 04:23:16

Middle channel

Date: 27.DEC.2011 04:24:49

Highest channel:

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Test Item:	99% Occupy bandwidth	Test Mode:	EDGE850
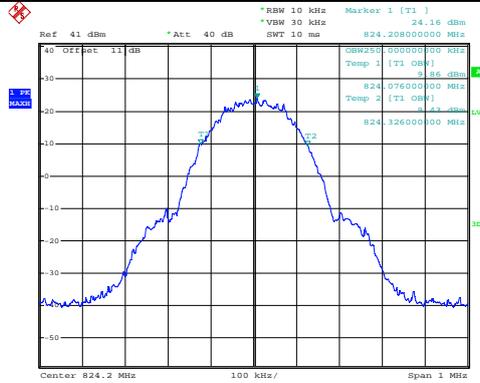
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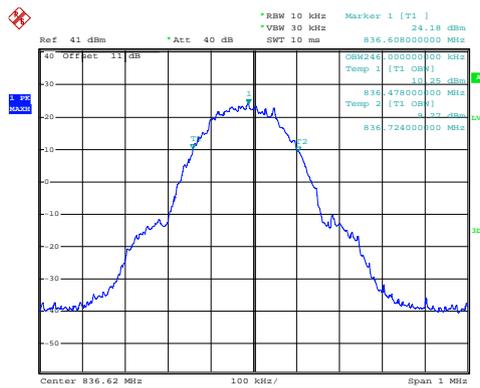
Date: 27.DEC.2011 10:03:12

Middle channel

Date: 27.DEC.2011 10:10:40

Highest channel:

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Test Item:	99% Occupy bandwidth	Test Mode:	EDGE1900

Date: 27.DEC.2011 10:57:17

Lowest channel
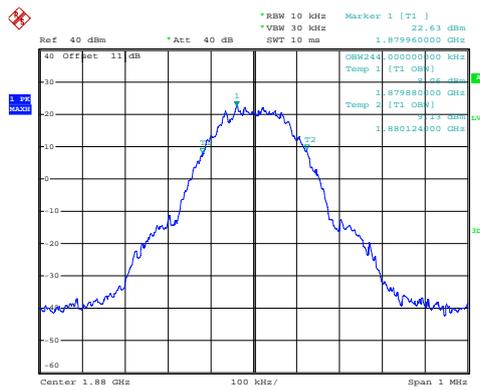
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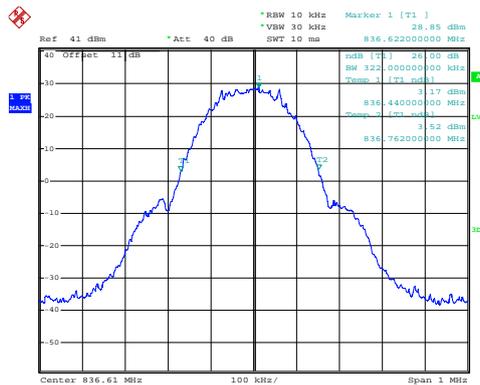
Middle channel

Date: 27.DEC.2011 11:04:46

Highest channel:

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Test Item:	-26dB bandwidth	Test Mode:	GSM850

Date: 27.DEC.2011 05:00:41

Lowest channel

Date: 27.DEC.2011 07:55:30

Middle channel
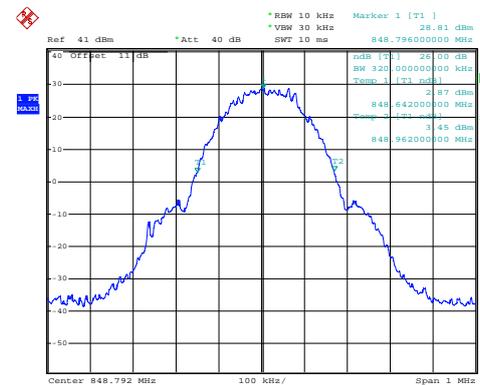
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Highest channel:

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Test Item:	-26dB bandwidth	Test Mode:	PCS1900

Date: 27.DEC.2011 04:11:48

Lowest channel

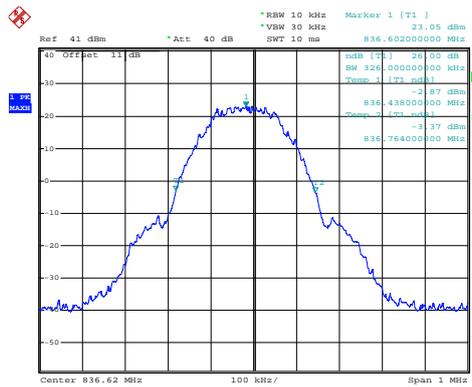Date: 27.DEC.2011 04:22:19

Middle channel
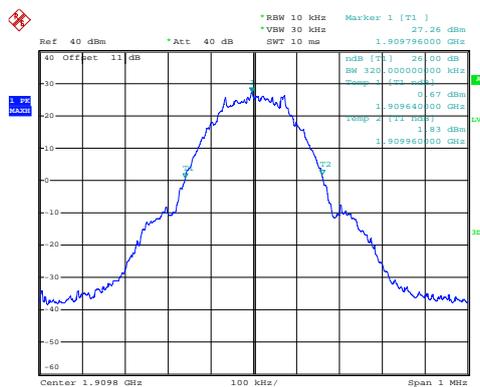
Date: 27.DEC.2011 04:26:21

Highest channel:

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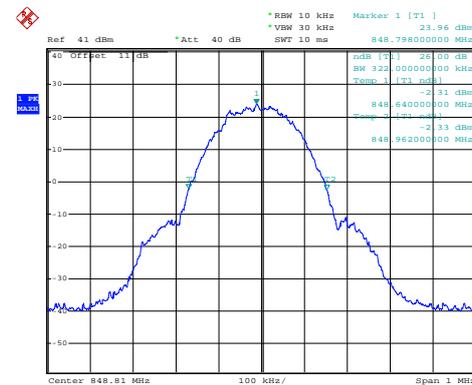| Test Item:	-26dB bandwidth	Test Mode:	EDGE850
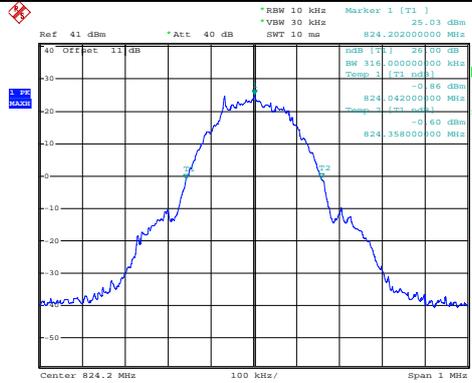
Date: 27.DEC.2011 09:57:32

Lowest channel

Date: 27.DEC.2011 10:04:00

Middle channel

Date: 27.DEC.2011 10:07:07

Highest channel:

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Test Item:	-26dB bandwidth	Test Mode:	EDGE1900
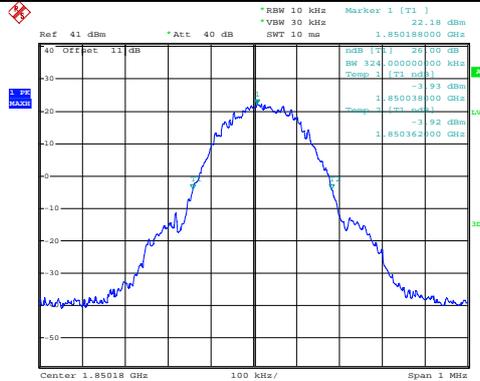
Date: 27.DEC.2011 10:57:53

Lowest channel

Date: 27.DEC.2011 11:03:05

Middle channel

Date: 27.DEC.2011 11:05:03

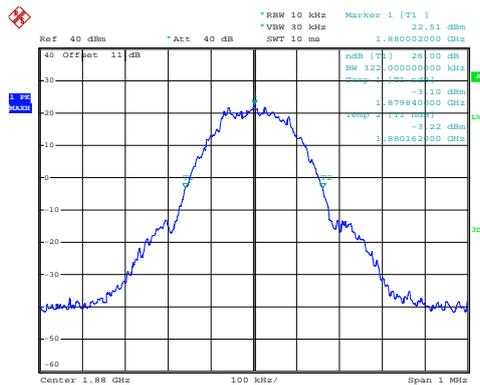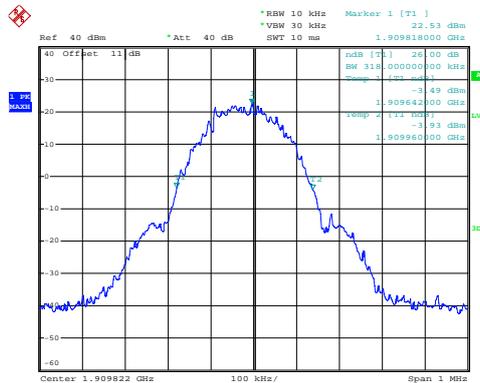## Highest channel:

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6.7 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.
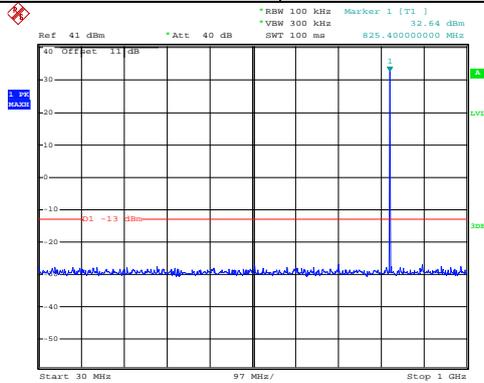
6.8 Out of band emission at antenna terminals

Test Requirement:	FCC part22.917(a) and FCC part24.238(a)
Test Method:	FCC part2.1051
Limit:	-13dBm
Test setup:	 *Note: Measurement setup for testing on Antenna connector*
Test Procedure:	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 5.8 for details
Test mode:	Refer to section 5.3 for details. Base on the conducted power and Technical characteristics, we just selected the GSM mode and EDGE mode to perform the other test items.
Test results:	Passed

Test plot as follows:

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Spurious emission

Test Mode:	GSM850	Test Channel:	Lowest channel

Date: 27.DEC.2011 05:08:09

30MHz~1GHz
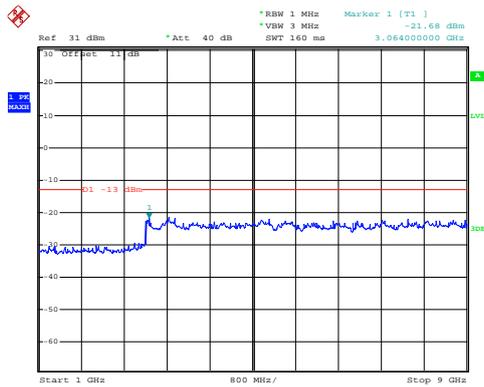
Date: 27.DEC.2011 05:09:03

1GHz~9GHz

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Test Mode:	GSM850	Test Channel:	Middle channel
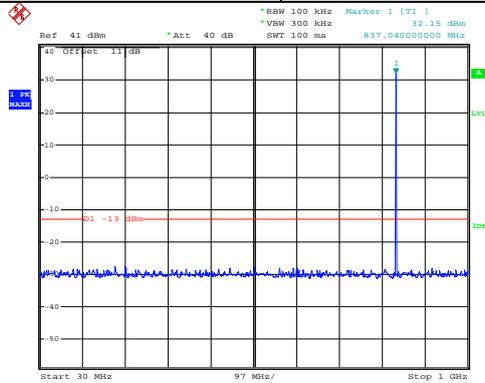
Date: 27.DEC.2011 07:56:27

30MHz~1GHz
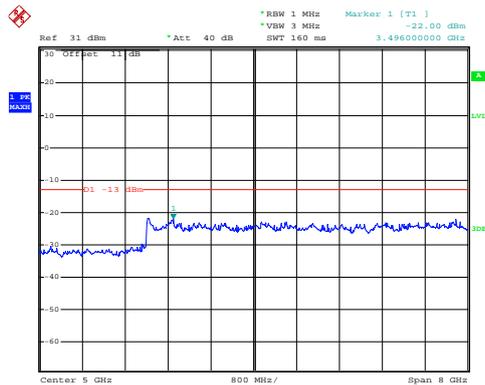
Date: 27.DEC.2011 05:10:03

1GHz~9GHz

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Test Mode:	GSM850	Test Channel:	Highest channel
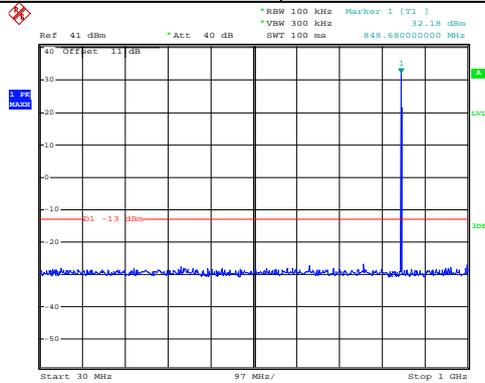
Date: 27.DEC.2011 07:57:24

30MHz~1GHz
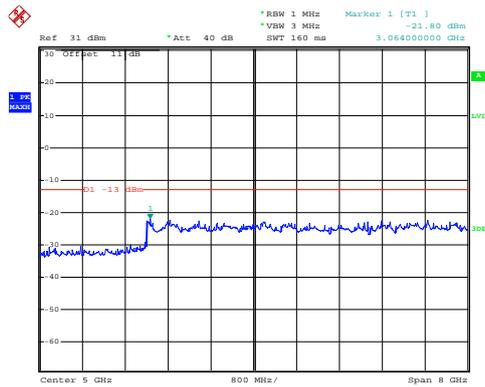
Date: 27.DEC.2011 05:09:50

1GHz~9GHz

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Test Mode:	PCS1900	Test Channel:	Lowest channel
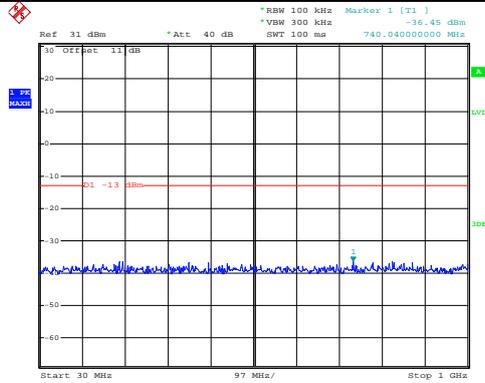
Date: 27.DEC.2011 04:16:31
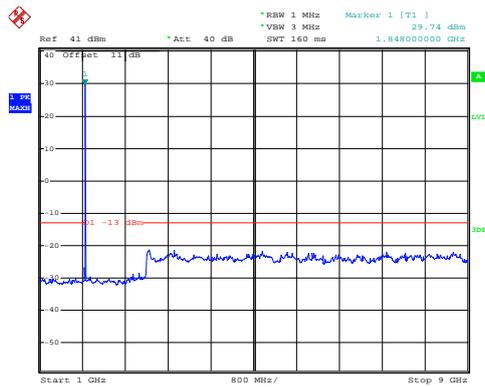
30MHz~1GHz

Date: 27.DEC.2011 04:17:25

1GHz~9GHz
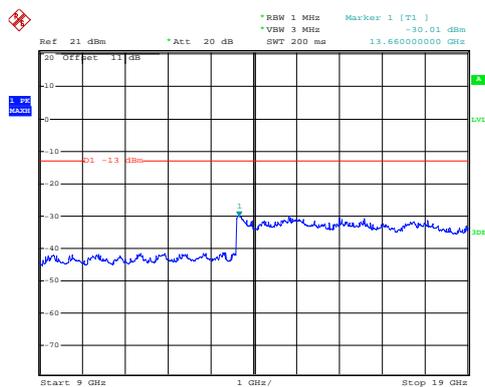
Date: 27.DEC.2011 04:17:51

9GHz~19GHz

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Test Mode:	PCS1900	Test Channel:	Middle channel
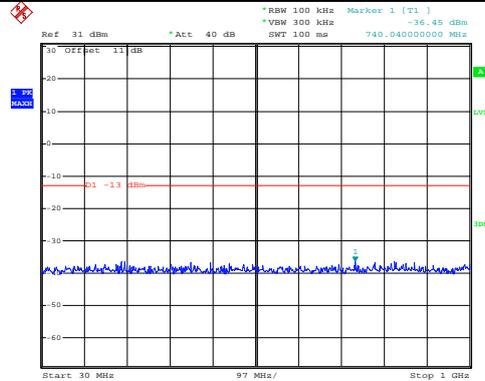
Date: 27.DEC.2011 04:16:31
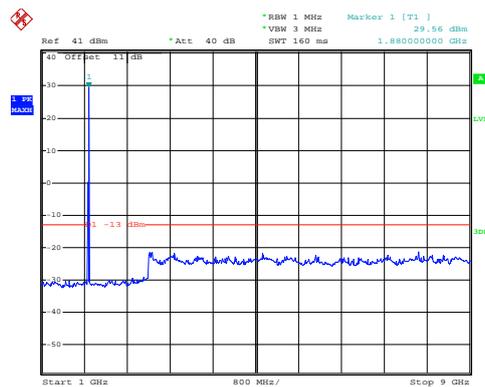
30MHz~1GHz

Date: 27.DEC.2011 04:30:19

1GHz~9GHz
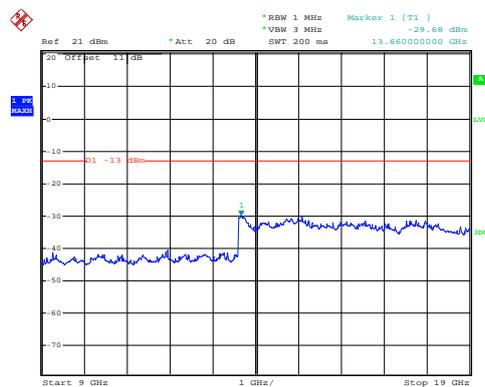
Date: 27.DEC.2011 04:19:30

9GHz~19GHz

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Test Mode:	PCS1900	Test Channel:	Highest channel
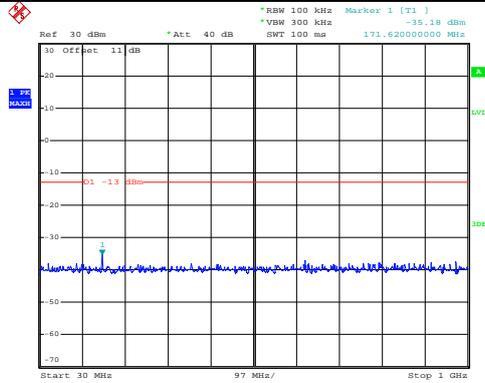
Date: 27.DEC.2011 04:29:07

30MHz~1GHz
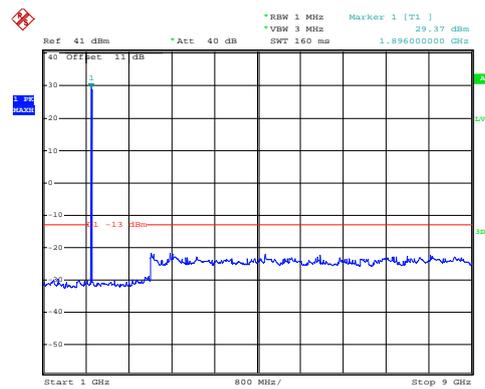
Date: 27.DEC.2011 04:29:39

1GHz~9GHz
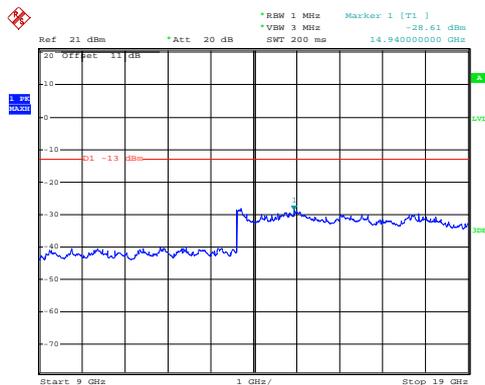
Date: 17.JAN.2012 03:19:24

9GHz~19GHz

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Test Mode:	EDGE850	Test Channel:	Lowest channel
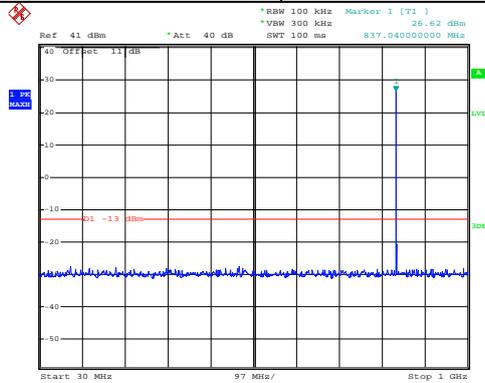
Date: 27.DEC.2011 10:31:13

30MHz~1GHz
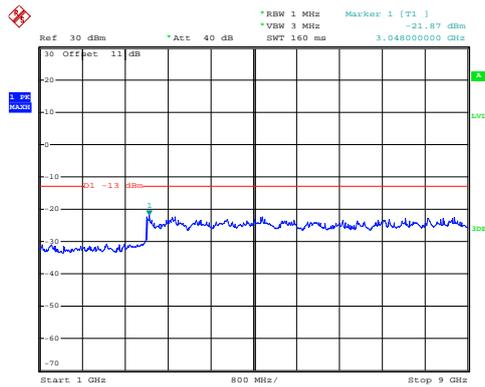
Date: 27.DEC.2011 10:31:36

1GHz~9GHz

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Project No.: CCIS111200012RF

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Test Mode:	EDGE 850	Test Channel:	Middle channel
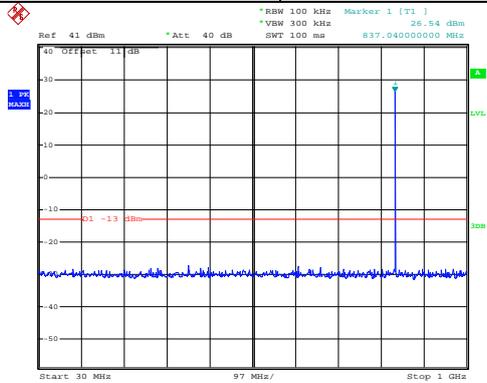
Date: 27.DEC.2011 10:04:25

30MHz~1GHz
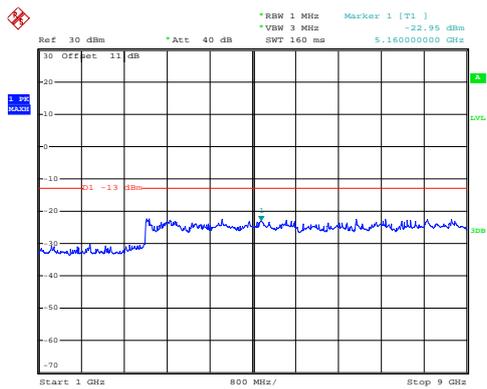
Date: 27.DEC.2011 10:31:52

1GHz~9GHz

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Test Mode:	EDGE 850	Test Channel:	Highest channel
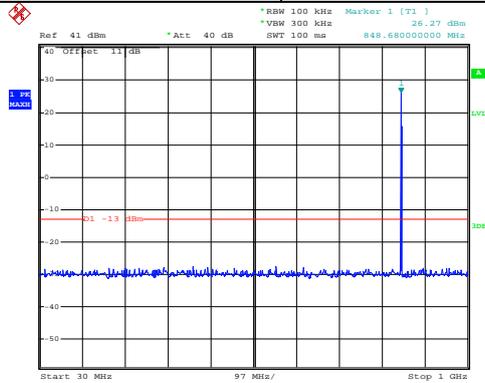
Date: 27.DEC.2011 10:05:23

30MHz~1GHz
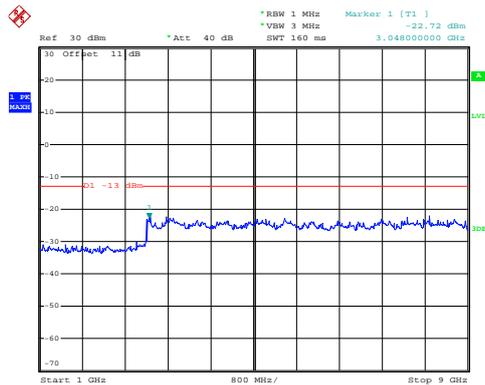
Date: 27.DEC.2011 10:32:00

1GHz~9GHz

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Test Mode:	EDGE 1900	Test Channel:	Lowest channel
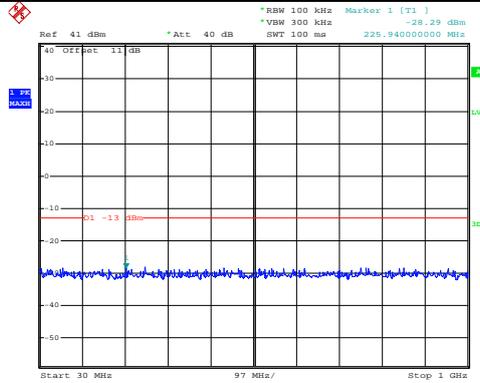
Date: 27.DEC.2011 10:58:49

30MHz~1GHz
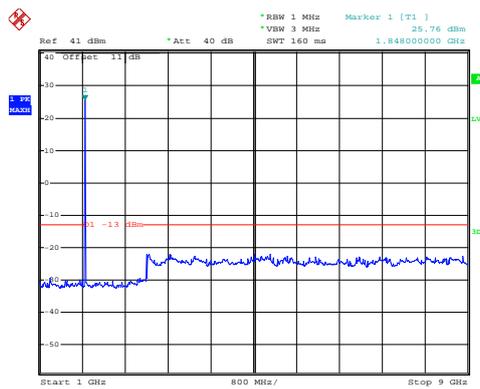
Date: 27.DEC.2011 10:59:29

1GHz~9GHz
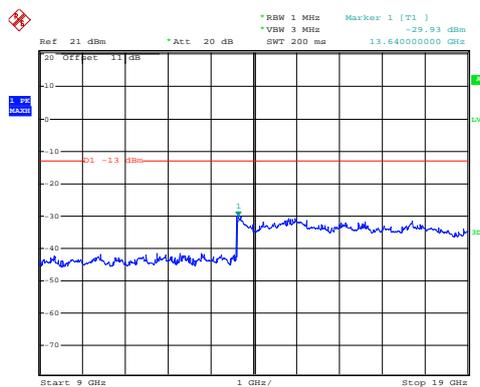
Date: 27.DEC.2011 11:01:10

9GHz~19GHz

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Test Mode:	EDGE 1900	Test Channel:	Middle channel
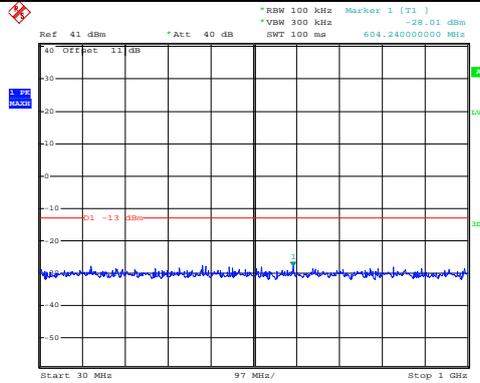
Date: 27.DEC.2011 10:58:56

30MHz~1GHz
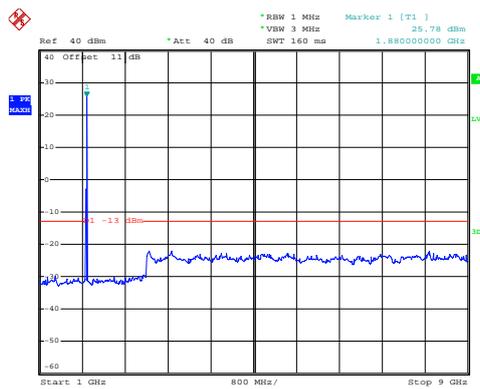
Date: 27.DEC.2011 11:03:47

1GHz~9GHz
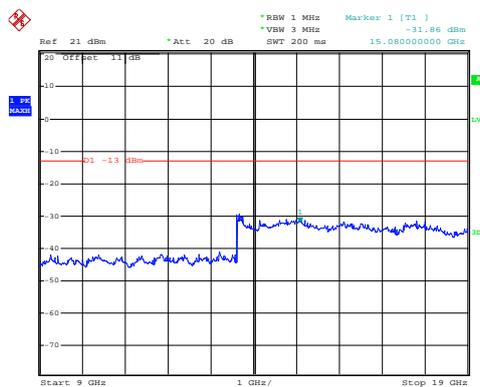
Date: 27.DEC.2011 11:01:24

9GHz~19GHz

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Test Mode:	EDGE 1900	Test Channel:	Highest channel
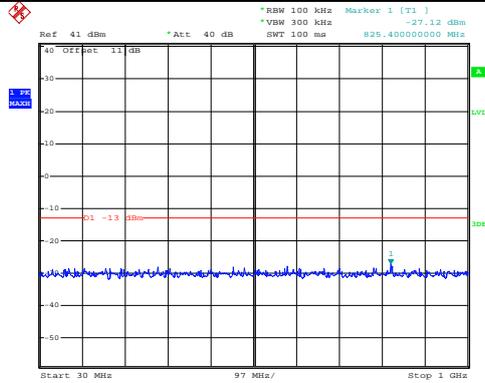
Date: 27.DEC.2011 10:59:04

30MHz~1GHz
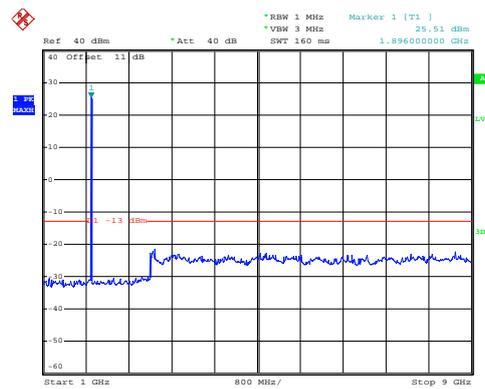
Date: 27.DEC.2011 11:04:04

1GHz~9GHz
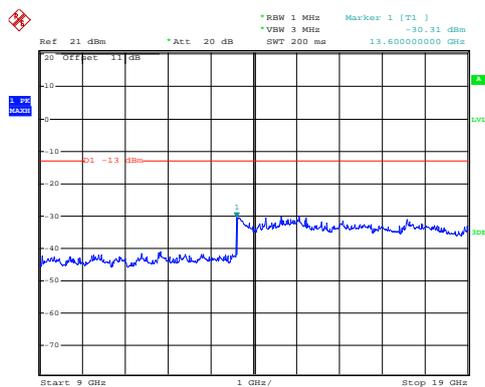
Date: 27.DEC.2011 11:01:42

9GHz~19GHz

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Band edge emission:

Test Mode:	GSM850
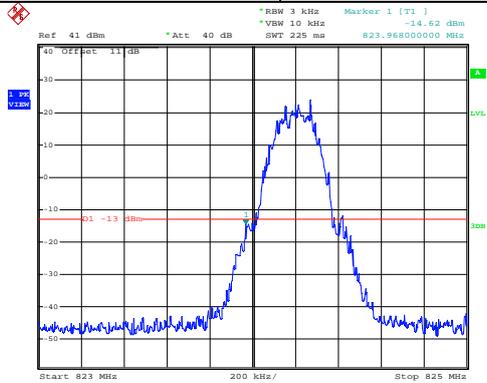
Date: 27.DEC.2011 05:03:33

Lowest channel
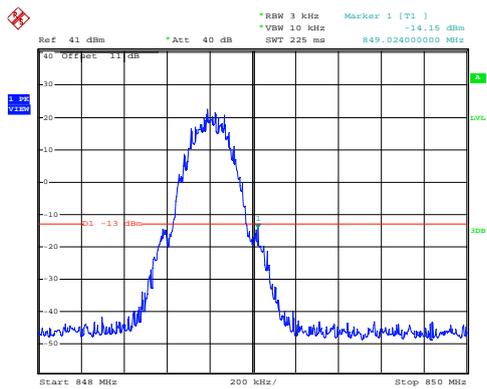
Date: 27.DEC.2011 08:03:02

Highest channel

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Test Mode:	PCS1900
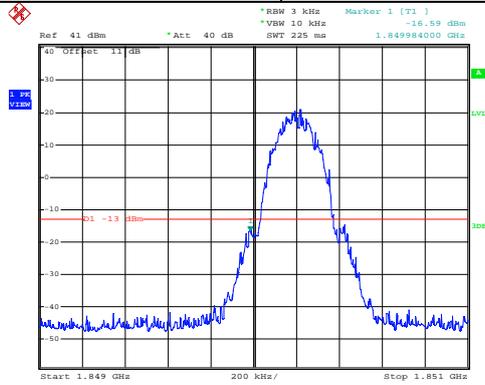
Date: 27.DEC.2011 04:15:30

Lowest channel
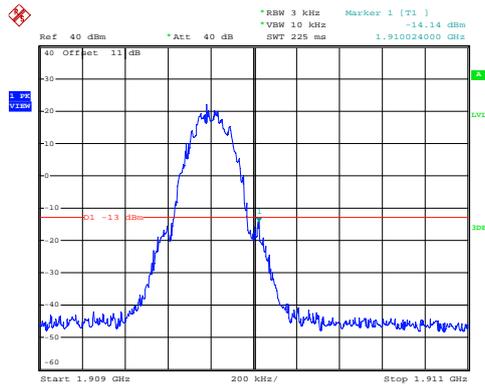
Date: 27.DEC.2011 04:27:22

Highest channel

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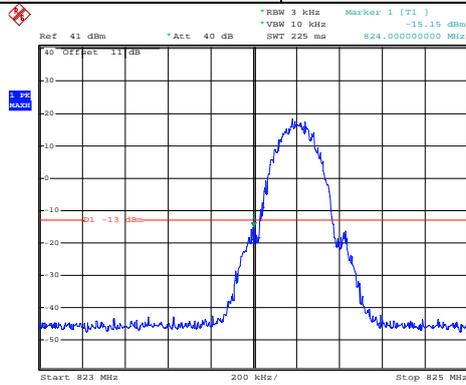
Test Mode:	EDGE850

Date: 27.DEC.2011 10:00:55

Lowest channel
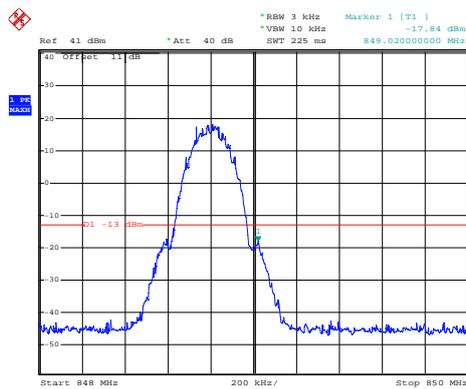
Date: 27.DEC.2011 10:12:05

Highest channel

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Test Mode:	EDGE1900
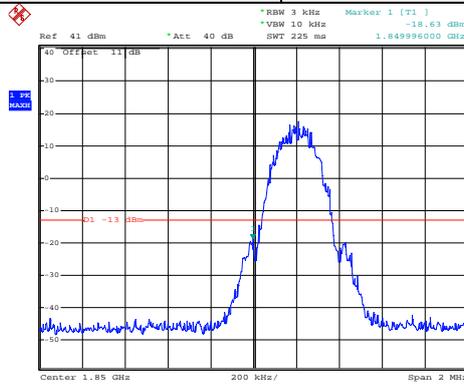
Date: 27.DEC.2011 10:58:33

Lowest channel
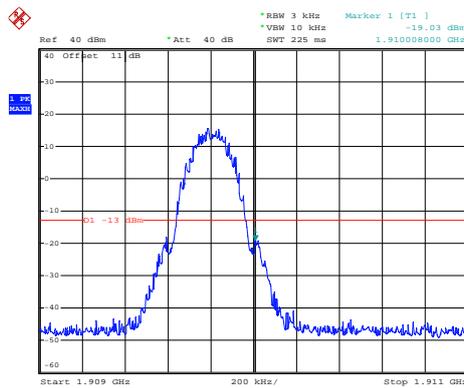
Date: 27.DEC.2011 11:05:52

Highest channel

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6.9 ERP, EIRP Measurement

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

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Test Procedure:	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 asfollows:
	ERP = S.G. output (dBm) + Antenna Gain (dBd) – 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:
	EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable Loss (dB)
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details. Base on the conducted power and Technical characteristics, we just selected the GSM mode and EDGE mode to perform the other test items.
Test results:	Passed

Measurement Data

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EUT mode	Channel	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
GSM850	Lowest	H	V	29.86	38.45	Pass
			H	15.98		
		E1	V	29.79		
			H	15.87		
		E2	V	29.75		
			H	15.84		
	Middle	H	V	29.77	38.45	Pass
			H	15.98		
		E1	V	29.74		
			H	15.91		
		E2	V	29.65		
			H	15.78		
	Highest	H	V	30.88	38.45	Pass
			H	18.43		
		E1	V	30.81		
			H	18.38		
		E2	V	29.15		
			H	18.36		

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EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP (dBm)	Limit (dBm)	Result
PCS1900	Lowest	H	V	14.29	33.00	Pass
			H	30.39		
		E1	V	14.24		
			H	30.30		
		E2	V	14.17		
			H	30.25		
	Middle	H	V	15.80	33.00	Pass
			H	30.01		
		E1	V	15.76		
			H	29.85		
		E2	V	15.69		
			H	29.81		
	Highest	H	V	15.33	33.00	Pass
			H	29.32		
		E1	V	15.32		
			H	29.26		
		E2	V	15.27		
			H	29.20		

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EUT mode	Channel	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
EDGE850	Lowest	H	V	24.53	38.45	Pass
			H	10.30		
		E1	V	24.51		
			H	10.29		
		E2	V	24.48		
			H	10.25		
	Middle	H	V	24.49	38.45	Pass
			H	11.60		
		E1	V	24.38		
			H	11.54		
		E2	V	24.38		
			H	11.52		
	Highest	H	V	25.81	38.45	Pass
			H	10.77		
		E1	V	25.73		
			H	10.68		
		E2	V	25.70		
			H	10.66		

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EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP (dBm)	Limit (dBm)	Result
EDGE1900	Lowest	H	V	12.27	33.00	Pass
			H	26.91		
		E1	V	12.21		
			H	26.07		
		E2	V	12.18		
			H	26.19		
	Middle	H	V	12.03	33.00	Pass
			H	26.76		
		E1	V	12.02		
			H	26.74		
		E2	V	11.97		
			H	26.59		
	Highest	H	V	11.03	33.00	Pass
			H	25.92		
		E1	V	10.99		
			H	25.86		
		E2	V	10.90		
			H	25.74		

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6.10 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:	Below 1GHz Above 1GHz Substituted method:

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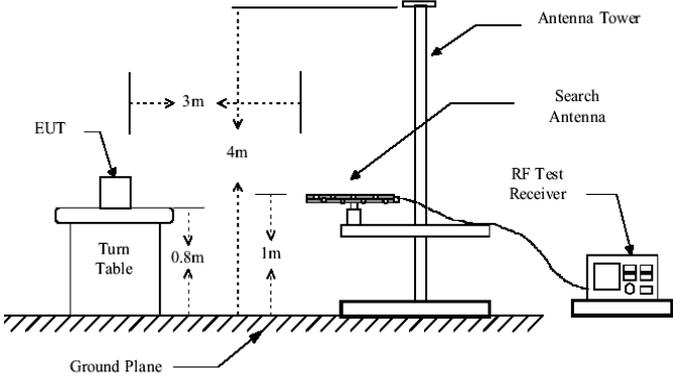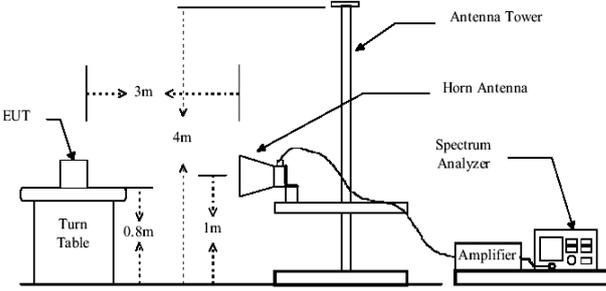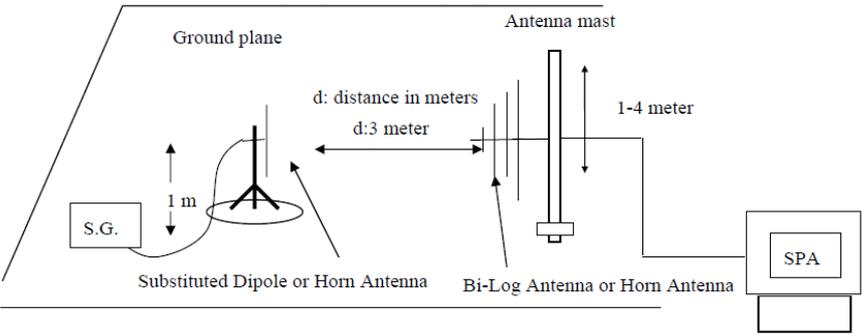| Test Procedure:	1. The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer.
	2. During the tests, the antenna height and the EUT azimuth were varied in order 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 frequencies (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. ERP / EIRP = S.G. output (dBm) + Antenna Gain(dB/dBi) – Cable Loss (dB)
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details. Base on the conducted power and Technical characteristics, we just selected the GSM mode and EDGE mode to perform the other test items.
Test results:	Passed

Measurement Data

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Test mode:	GSM850		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1646.00	Vertical	-46.41	-13.00	Pass
2470.50	V	-57.54		
1646.00	Horizontal	-44.93	-13.00	Pass
2470.50	H	-57.29		
Test mode:	GSM850		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1671.50	Vertical	-45.58	-13.00	Pass
2513.00	V	-44.02		
1671.50	Horizontal	-42.79	-13.00	Pass
2513.00	H	-40.72		
Test mode:	GSM850		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1697.00	Vertical	-42.37	-13.00	Pass
2547.00	V	-42.54		
1697.00	Horizontal	-44.70	-13.00	Pass
2547.00	H	-42.32		

Remark：

1. The emission behavior 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.

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Test mode:	PCS1900		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3703.00	Vertical	-34.43	-13.00	Pass
5547.50	V	-31.10		
3703.00	Horizontal	-39.18	-13.00	Pass
5547.50	H	-32.05		
Test mode:	PCS1900		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3762.50	Vertical	-36.85	-13.00	Pass
5641.00	V	-37.59		
3762.50	Horizontal	-40.66	-13.00	Pass
5641.00	H	-33.57		
Test mode:	PCS1900		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3822.00	Vertical	-39.72	-13.00	Pass
5726.00	V	-36.21		
3822.00	Horizontal	-39.55	-13.00	Pass
5726.00	H	-41.05		

Remark：

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

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Test mode:	EDGE 850		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1646.00	Vertical	-47.24	-13.00	Pass
2470.50	V	-57.76		
1646.00	Horizontal	-49.25	-13.00	Pass
2470.50	H	-57.60		
Test mode:	EDGE 850		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1671.50	Vertical	-50.61	-13.00	Pass
2513.00	V	-53.47		
1671.50	Horizontal	-49.68	-13.00	Pass
2513.00	H	-51.37		
Test mode:	EDGE 850		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1697.00	Vertical	-50.53	-13.00	Pass
2547.00	V	-52.04		
1697.00	Horizontal	-50.10	-13.00	Pass
2547.00	H	-49.04		

Remark：

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

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Test mode:	EDGE1900		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3703.00	Vertical	-37.64	-13.00	Pass
5547.50	V	-42.29		
3703.00	Horizontal	-41.84	-13.00	Pass
5547.50	H	-41.18		
Test mode:	EDGE1900		Test channel:	Middle
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3762.50	Vertical	-36.75	-13.00	Pass
5641.00	V	-46.58		
3762.50	Horizontal	-43.34	-13.00	Pass
5641.00	H	-40.72		
Test mode:	EDGE1900		Test channel:	Highest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3822.00	Vertical	-39.04	-13.00	Pass
5726.00	V	-43.43		
3822.00	Horizontal	-42.57	-13.00	Pass
5726.00	H	-33.75		

Remark：

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

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6.11　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:	Note : Measurement setup for testing on Antenna connector
Test procedure:	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℃ operating frequency as reference frequency. 5. Turn EUT off and set the chamber temperature to −30℃. After the temperature stabilized for approximately 30 minutes recorded the frequency. 6. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.3 for details. Base on the conducted power and Technical characteristics, we just selected the GSM mode and EDGE mode to perform the other test items.
Test results:	Passed

Measurement Data

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Reference Frequency: GSM850 Middle channel=190 channel=836.6MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	-39	-0.0466	± 2.5	Pass
	-20	-41	-0.0490		
	-10	-39	-0.0466		
	0	-33	-0.0394		
	10	-32	-0.0383		
	20	-27	-0.0323		
	30	-34	-0.0406		
	40	-35	-0.0418		
	50	-37	-0.0442		

Reference Frequency: PCS1900 Middle channel=661 channel=1880MHz					
Power supplied (Vdc)	Temperature (℃)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	-40	-0.0213	± 2.5	Pass
	-20	-47	-0.0250		
	-10	-44	-0.0234		
	0	-43	-0.0229		
	10	-40	-0.0213		
	20	-41	-0.0218		
	30	-42	-0.0223		
	40	-45	-0.0239		
	50	-40	-0.0213		

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Reference Frequency: EDGE850 Middle channel=190 channel=836.6MHz					
Power supplied (Vdc)	Temperature（℃）	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	-35	-0.0418	± 2.5	Pass
	-20	-40	-0.0478		
	-10	-38	-0.0454		
	0	-41	-0.0490		
	10	-34	-0.0406		
	20	-35	-0.0418		
	30	-44	-0.0526		
	40	-43	-0.0514		
	50	-40	-0.0478		

Reference Frequency: EDGE1900 Middle channel=661 channel=1880MHz					
Power supplied (Vdc)	Temperature（℃）	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	-41	-0.0218	± 2.5	Pass
	-20	-34	-0.0181		
	-10	-35	-0.0186		
	0	-41	-0.0218		
	10	-40	-0.0213		
	20	-39	-0.0207		
	30	-38	-0.0202		
	40	-32	-0.0170		
	50	-29	-0.0154		

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6.12 Frequency stability V.S. Voltage measurement

Test Requirement:	FCC Part2.1055(d)(1)(2)
Test Method:	FCC Part2.1055(d)(1)(2)
Limit:	$\pm$ 2.5ppm
Test setup:	 Note : Measurement setup for testing on Antenna connector
Test procedure:	1. Set chamber temperature to 25℃. 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 5.8 for details
Test mode:	Refer to section 5.3 for details. Base on the conducted power and Technical characteristics, we just selected the GSM mode and EDGE mode to perform the other test items.
Test results:	Passed

Measurement Data

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Reference Frequency: GSM850 Middle channel=190 channel=836.6MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.20	-26	-0.0311	± 2.5	Pass
	3.70	-28	-0.0335		
	3.40	-30	-0.0359		

Reference Frequency: PCS1900 Middle channel=661 channel=1880MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.20	-37	-0.0197	± 2.5	Pass
	3.70	-42	-0.0223		
	3.40	-39	-0.0207		

Reference Frequency: EDGE850 Middle channel=190 channel=836.6MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.20	-31	-0.0371	± 2.5	Pass
	3.70	-29	-0.0347		
	3.40	-33	-0.0394		

Reference Frequency: EDGE1900 Middle channel=661 channel=1880MHz					
Temperature (℃)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.20	-32	-0.0170	± 2.5	Pass
	3.70	-25	-0.0133		
	3.40	-29	-0.0154		

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