FCC Report (Mobile Phone)

Applicant:	NEG TECHNOLOGY CO., LIMITED
Address of Applicant:	Rm 1406, Block B, Jinsejiari, Jingtian south road, Futian district, Shenzhen, China

Equipment Under Test (EUT)

Product Name:	Mobile Phone
Model No.:	S3030D
Trade Mark:	OWN
FCC ID:	2AAZ8-S3030D
Applicable standards:	FCC CFR Title 47 Part 2: 2013 FCC CFR Title 47 Part22 Subpart H: 2013 FCC CFR Title 47 Part24 Subpart E: 2013
Date of sample receipt:	August 04, 2014
Date of Test:	August 04-07, 2014
Date of report issued:	August 08, 2014
Test Result :	PASS *

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

Authorized Signature:

Robinson Lo
Laboratory Manager

2 Version

Version No.	Date	Description
00	*August 08, 2014*	*Original*

Prepared By: Edward.Pan ***Date:*** *August 08, 2014*

Project Engineer

Check By: hank.yan ***Date:*** *August 08, 2014*

Reviewer

3 Contents

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4 Test Summary

Test Item	Section in CFR 47	Result
RF Exposure (SAR)	Part 1.1307 Part 2.1093	Pass* (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.

5 General Information

5.1 Client Information

Applicant:	NEG TECHNOLOGY CO., LIMITED
Address of Applicant:	Rm 1406, Block B, Jinsejiari, Jingtian south road, Futian district, Shenzhen, China
Manufacturer:	NEG TECHNOLOGY CO., LIMITED
Address of Manufacturer:	Rm 1406, Block B, Jinsejiari, Jingtian south road, Futian district, Shenzhen, China

5.2 General Description of EUT

Product Name:	Mobile Phone
Model No.:	S3030D
Support Networks:	GSM, GPRS, EGPRS, WCDMA
Support Bands:	GSM850, PCS1900, WCDMA Band II
TX Frequency:	GSM850: 824.20MHz-848.80MHz PCS1900: 1850.20MHz-1909.80MHz WCDMA Band II: 1852.40MHz -1907.60MHz
GPRS Class:	12
EGPRS Class:	12
Modulation type:	GSM/GPRS: GMSK EGPRS: GMSK/8PSK WCDMA Band II: QPSK
IMEI:	869789331021103 869789331023448
Hardware Version:	Q707-V1.1
Software Version:	A22_S3030D_OWN_Q707_V11_82_V15_WG_COE_b28_32+4_V01_20140719
Antenna type:	PIFA antenna
Antenna gain:	-0.8dBi(GSM850) -0.8dBi(DCS1900) -0.8dBi(WCDMA1900)
AC adapter:	Model No.: ZHY-NV050100USB01 Input: AC 100-240V, 50/60Hz, 0.2A Output: DC 5.0V, 1A DC 3.7V Li-ion Battery, 1300mAh

Operation Frequency List:

GSM 850		PCS1900		WCDMA Band II	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
128	824.20	512	1850.20	9262	1852.40
129	824.40	513	1850.40	9263	1852.60
· · ·	· · ·	· · ·	· · ·	· · ·	· · ·
189	836.40	660	1879.80	9399	1879.80
190	836.60	661	1880.00	9400	1880.00
191	836.80	662	1880.20	9401	1880.20
· · ·	· · ·	· · ·	· · ·	· · ·	· · ·
250	848.60	809	1909.60	9537	1907.40
251	848.80	810	1909.80	9538	1907.60

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		WCDMA Band II	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
128	824.20	512	1850.20	9262	1852.40
190	836.60	661	1880.00	9400	1880.00
251	848.80	810	1909.80	9538	1907.60

5.3 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.

5.4 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

5.5 Test Facility

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

● **CNAS —Registration No.: CNAS L5775**

CNAS has accredited Global United Technology Services Co., Ltd. To ISO/IEC 17025 General Requirements for the competence of testing and calibration laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

● **FCC —Registration No.: 600491**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fuly described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 600491, June 28, 2013.

● **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, June 26, 2013.

5.6 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

6 Test Instruments list

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. 28 2014	Mar. 27 2015
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	July 01 2014	June 30 2015
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	July 01 2014	June 30 2015
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS208	June 27 2014	June 26 2015
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	Mar. 28 2014	Mar. 27 2015
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	Mar. 29 2014	Mar. 28 2015
9	Coaxial Cable	GTS	N/A	GTS211	Mar. 29 2014	Mar. 28 2015
10	Coaxial cable	GTS	N/A	GTS210	Mar. 29 2014	Mar. 28 2015
11	Coaxial Cable	GTS	N/A	GTS212	Mar. 29 2014	Mar. 28 2015
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	July 01 2014	June 30 2015
13	Amplifier(2GHz-20GHz)	HP	8349B	GTS206	July 01 2014	June 30 2015
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 27 2014	June 26 2015
15	Band filter	Amindeon	82346	GTS219	Mar. 29 2014	Mar. 28 2015
16	Universal radio communication tester	Rohde & Schwarz	CMU200	GTS235	May 09 2014	May 08 2015
17	Signal Generator	Rohde & Schwarz	SML03	GTS236	May 09 2014	May 08 2015
18	Temp. Humidity/ Barometer	Oregon Scientific	BA-888	GTS248	May 09 2014	May 08 2015
19	D.C. Power Supply	Instek	PS-3030	GTS232	NA	NA
20	Splitter	Agilent	11636B	GTS237	May 09 2014	May 08 2015
21	Power meter	Rohde & Schwarz	NRVS	GTS238	May 09 2014	May 08 2015
22	Spectrum Analyzer	Agilent	E4440A	GTS533	Dec. 5, 2013	Dec. 4 2014

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	■ GSM link ■ GPRS 1 link ■ EGPRS 1 link	■ GSM link ■ GPRS 1 link ■ EGPRS 1 link
PCS 1900	■ GSM link ■ GPRS 1 link ■ EGPRS 1 link	■ GSM link ■ GPRS 1 link ■ EGPRS 1 link
WCDMA Band II	■ RMC 12.2Kbps link	■ RMC 12.2Kbps link

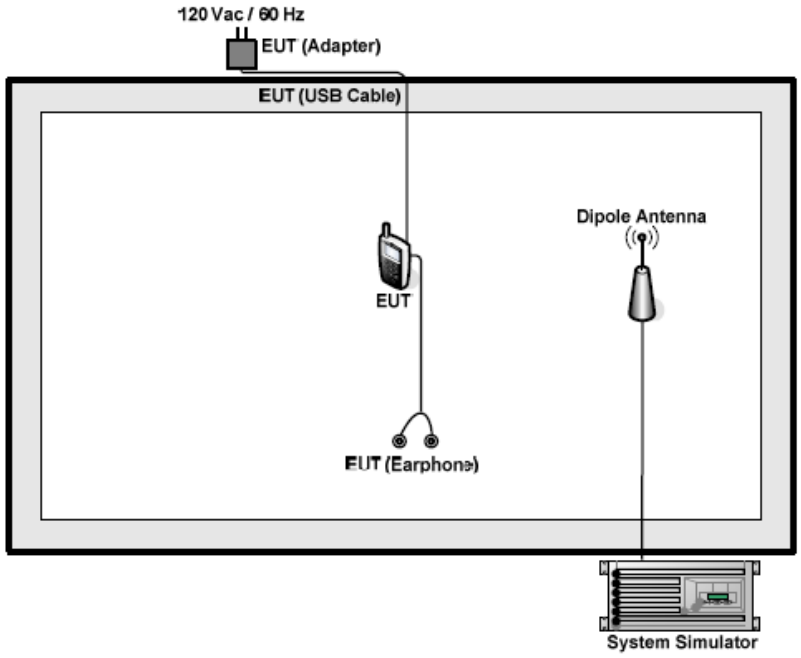
Note: The maximum power levels are GSM mode for GMSK link, GPRS multi-slot class 8 mode for GMSK link, EGPRS multi-slot class 8 mode for 8PSK link, RMC12.2Kbps mode for WCDMA Band II. Only these modes were used for all tests.

The conducted power tables are as follows:

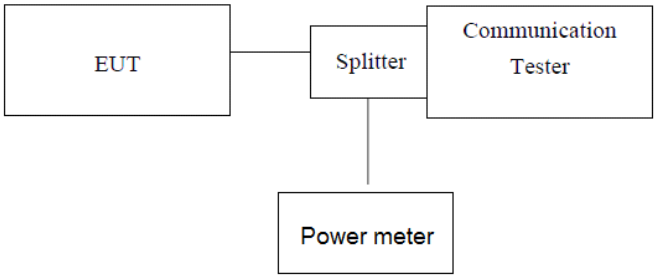
Conducted Power (dBm)						
Band	GSM850			PCS1900		
Channel	128	190	251	512	661	810
Frequency	824.20	836.60	848.80	1850.20	1880.00	1909.80
GSM (GMSK, 1 TX slot)	32.49	32.57	32.64	29.66	29.51	29.48
GPRS (GMSK, 1 TX slot)	32.48	32.56	32.63	29.59	29.45	29.44
GPRS (GMSK, 2 TX slot)	31.76	31.84	31.92	28.95	28.77	28.70
GPRS (GMSK, 3 TX slot)	29.97	30.09	30.22	27.28	27.01	26.92
GPRS (GMSK, 4 TX slot)	28.96	29.09	29.20	26.24	26.00	25.88
EGPRS (8PSK, 1 TX slot)	27.47	27.52	27.57	24.77	24.48	24.22
EGPRS (8PSK, 2 TX slot)	27.48	27.51	27.54	24.39	24.08	23.89
EGPRS (8PSK, 3 TX slot)	27.38	27.42	27.40	23.51	23.25	22.99
EGPRS (8PSK, 4 TX slot)	27.27	27.28	27.20	22.72	22.45	22.30

Conducted Power (dBm)			
Band	WCDMA Band II		
Channel	9262	9400	9538
Frequency	1852.4	1880.0	1907.6
RMC 12.2Kbps	25.63	25.59	25.06
RMC 64Kbps	25.56	25.53	25.02
RMC 144Kbps	25.51	25.45	24.95
RMC 384Kbps	25.43	25.36	24.88
HSDPA Subtest-1	25.21	25.14	24.89
HSDPA Subtest-2	24.25	24.12	23.98
HSDPA Subtest-3	24.18	24.09	23.83
HSDPA Subtest-4	24.84	24.75	24.52
HSUPA Subtest-1	25.19	25.13	24.78
HSUPA Subtest-2	24.96	24.83	24.59
HSUPA Subtest-3	24.91	24.81	24.66
HSUPA Subtest-4	24.25	24.06	23.73
HSUPA Subtest-5	24.36	24.25	24.01
AMR	25.54	25.51	25.03

7.2 Configuration of Tested System



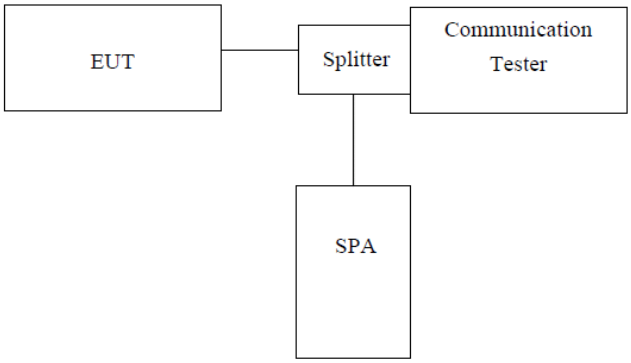
7.3 Conducted Peak Output Power

Test Requirement:	FCC part22.913(a) and FCC part24.232(b)
Test Method:	FCC part2.1046
Limit:	GSM850,: 7W PCS1900, WCDMA Band V: 2W
Test setup:	 *Note: Measurement setup for testing on Antenna connector*
Test Procedure:	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.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data

EUT Mode	Channel	Frequency (MHz)	PK power (dBm)	Limit (dBm)	Result
GSM 850 (GSM link)	128	824.20	32.49	38.45	Pass
	190	836.60	32.57		
	251	848.80	32.64		
GSM 850 (GPRS 1 link)	128	824.20	32.48	38.45	Pass
	190	836.60	32.56		
	251	848.80	32.63		
GSM 850 (EGPRS 1 link)	128	824.20	27.47	38.45	Pass
	190	836.60	27.52		
	251	848.80	27.57		
PCS 1900 (GSM link)	512	1850.20	29.66	33.01	Pass
	661	1880.00	29.51		
	810	1909.80	29.48		
PCS 1900 (GPRS 1 link)	512	1850.20	29.59	33.01	Pass
	661	1880.00	29.45		
	810	1909.80	29.44		
PCS 1900 (EGPRS 1 link)	512	1850.20	24.77	33.01	Pass
	661	1880.00	24.48		
	810	1909.80	24.22		
WCDMA Band II (RMC 12.2Kbps link)	9262	1852.4	25.63	33.01	Pass
	9400	1880.0	25.59		
	9538	1907.6	25.06		

7.4 Occupy Bandwidth

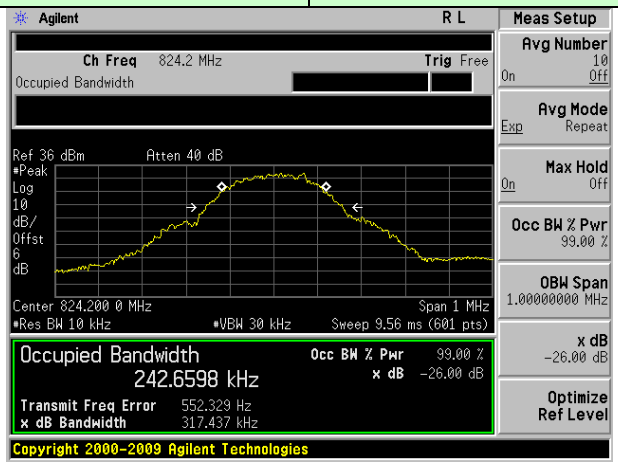
Test Requirement:	FCC part22.913(a) and FCC part24.232(b)
Test Method:	FCC part2.1049
Test setup:	 *Note: Measurement setup for testing on Antenna connector*
Test Procedure:	1. The EUT's output RF connector was connected with a short cable to the spectrum analyzer 2. RBW was set to about 1% of emission 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 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data

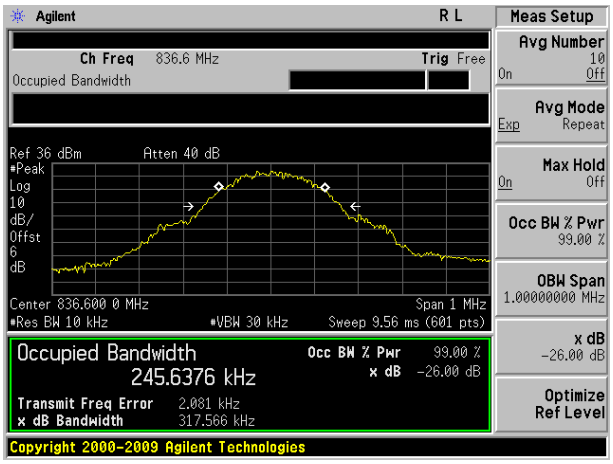
EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (KHz)	-26dB bandwidth (KHz)
GSM 850 (GSM link)	128	824.20	242.660	317.437
	190	836.60	245.638	317.566
	251	848.80	248.057	310.488
GSM 850 (GPRS 1 link)	128	824.20	242.376	318.772
	190	836.60	246.524	324.444
	251	848.80	246.847	314.747
GSM 850 (EGPRS 1 link)	128	824.20	245.346	321.443
	190	836.60	247.036	324.852
	251	848.80	241.982	324.220
PCS 1900 (GSM link)	512	1850.20	249.362	320.911
	661	1880.00	241.417	314.166
	810	1909.80	243.096	320.844
PCS 1900 (GPRS 1 link)	512	1850.20	244.038	323.114
	661	1880.00	245.897	313.838
	810	1909.80	243.720	313.392
PCS 1900 (EGPRS 1 link)	512	1850.20	250.047	323.164
	661	1880.00	243.391	317.808
	810	1909.80	243.578	321.051
WCDMA Band II (RMC 12.2Kbps link)	9262	1852.4	4165.30	4721.00
	9400	1880.0	4127.60	4715.00
	9538	1907.6	4172.20	4758.00

Test plot as follows:

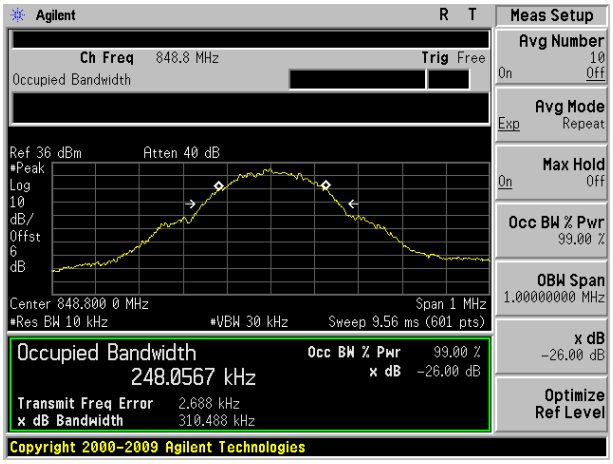
Test band:	GSM 850 (GSM link)



Lowest channel

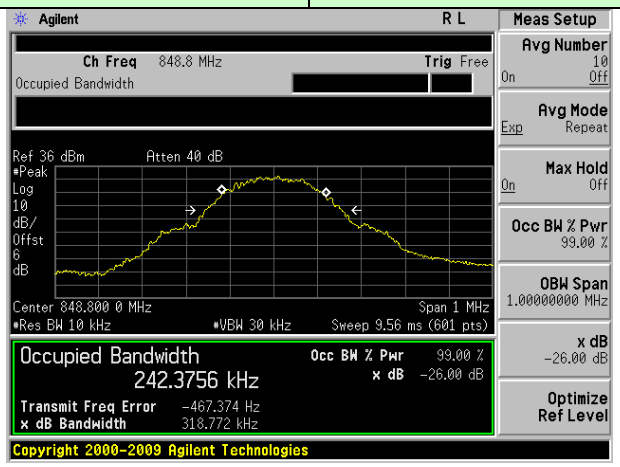


Middle channel

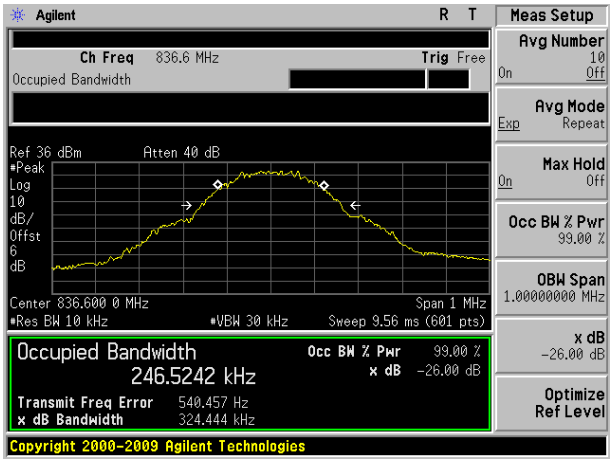


Highest channel:

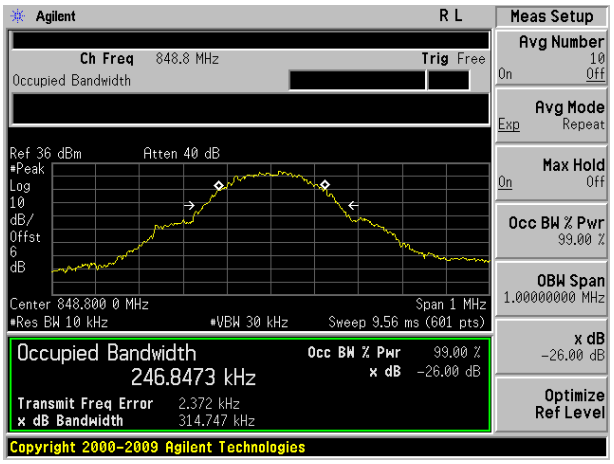
Test band:	GSM 850 (GPRS 1 link)



Lowest channel

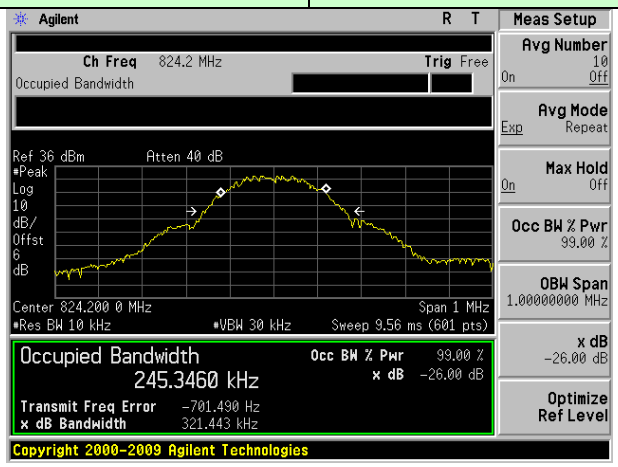


Middle channel



Highest channel:

Test band:	GSM 850 (EGPRS 1 link)



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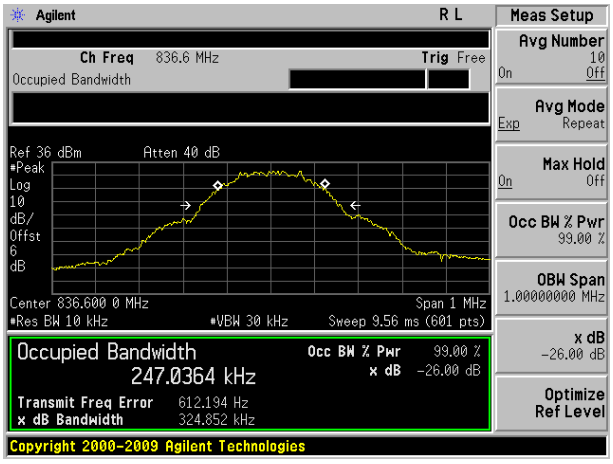

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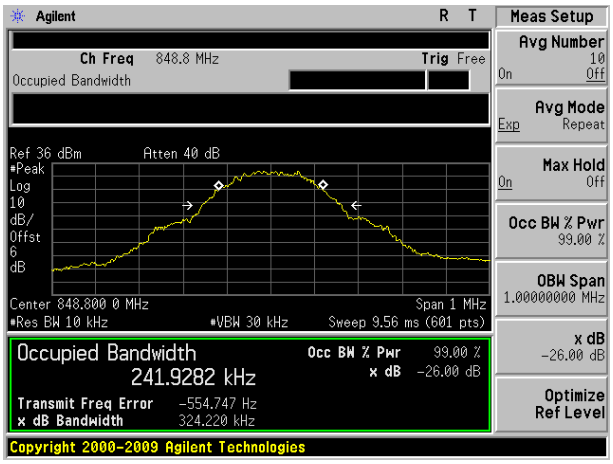
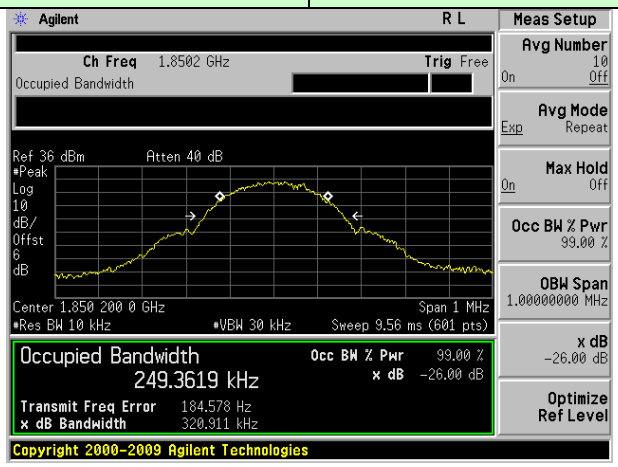


Highest channel:

Test band:	PCS 1900 (GSM link)



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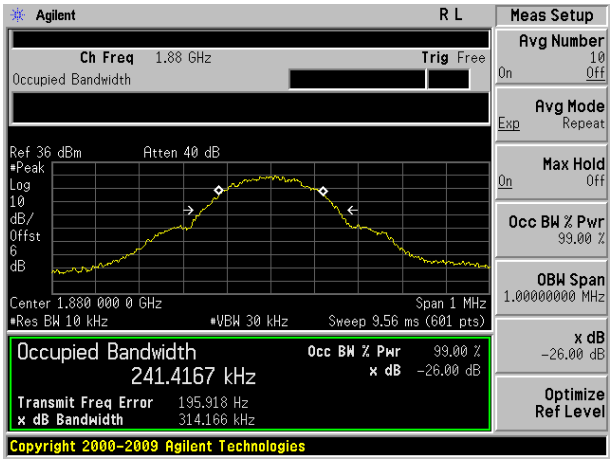
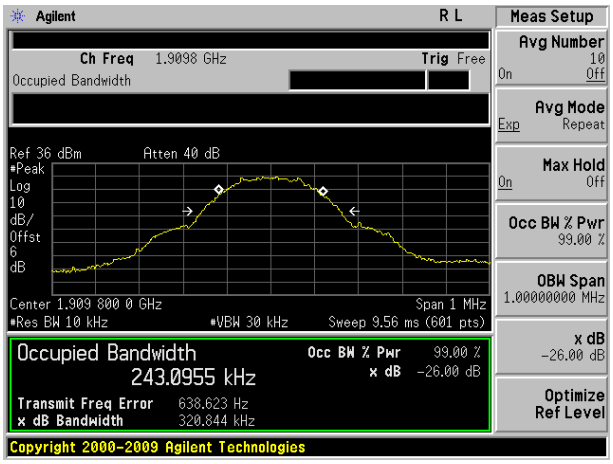
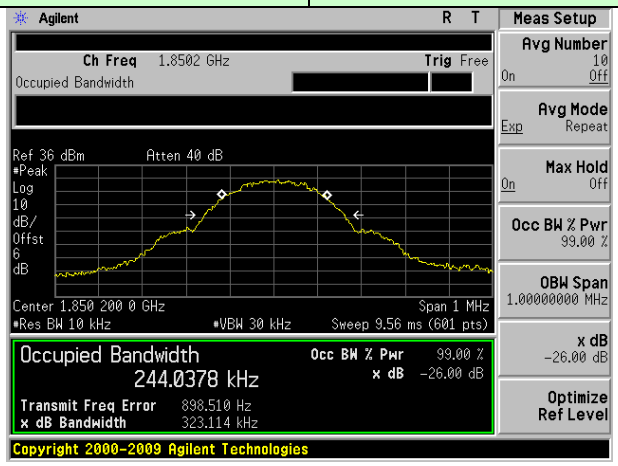


Middle channel

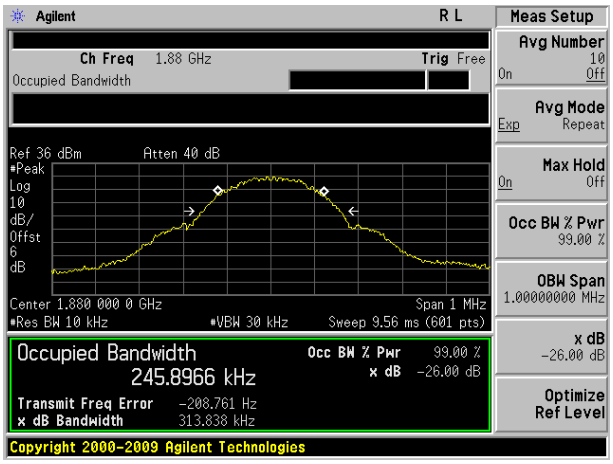


Highest channel:

Test band:	PCS 1900 (GPRS 1 link)



Lowest channel



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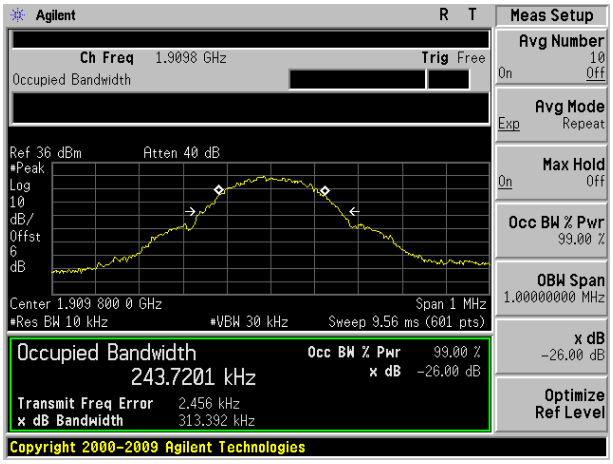
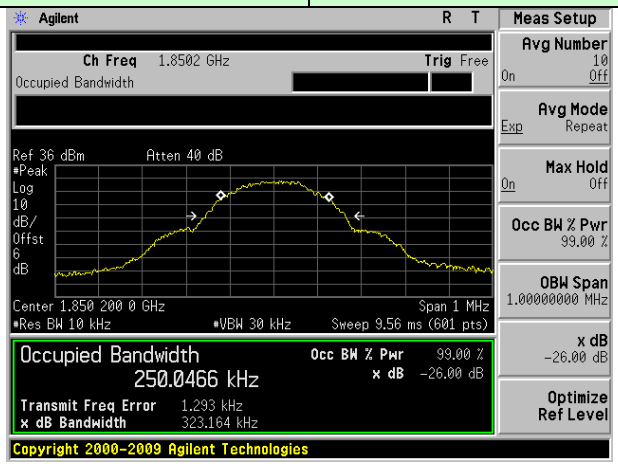
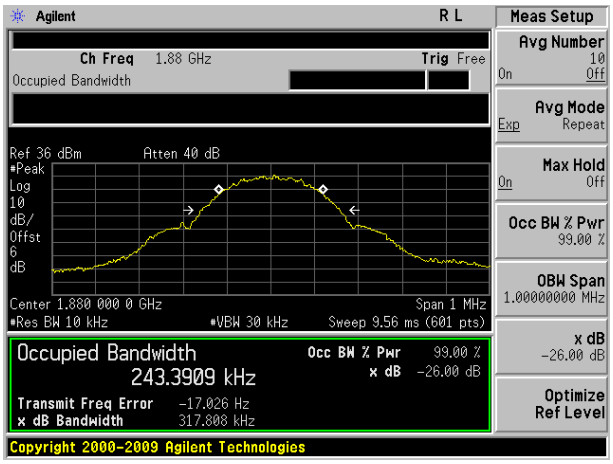


Highest channel:

Test band:	PCS 1900 (EGPRS 1 link)



Lowest channel



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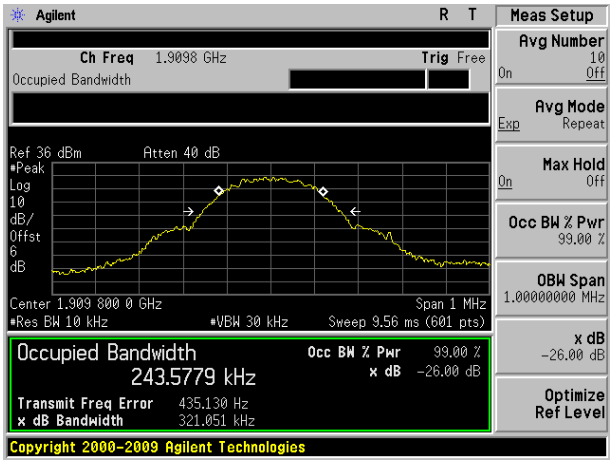
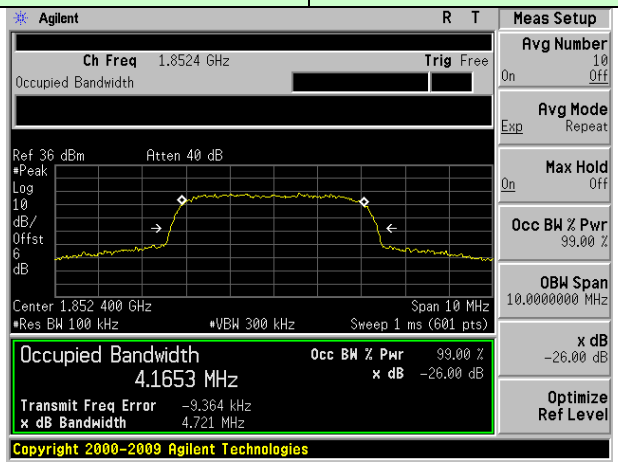
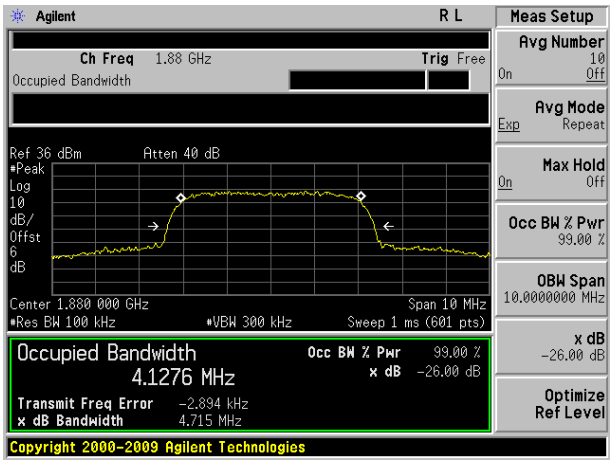


Highest channel:

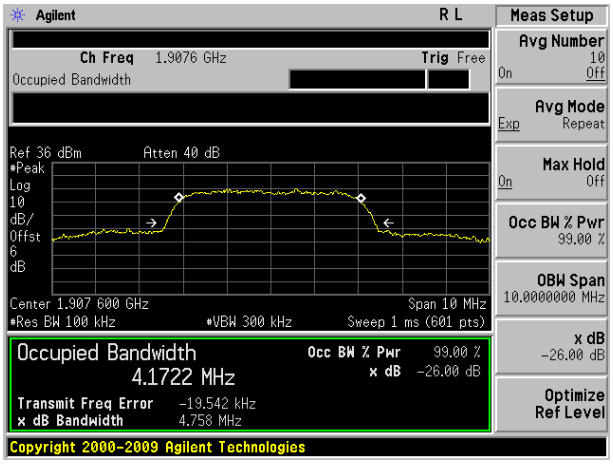
Test band:	WCDMA Band II (RMC 12.2Kbps link)



Lowest channel



Middle channel

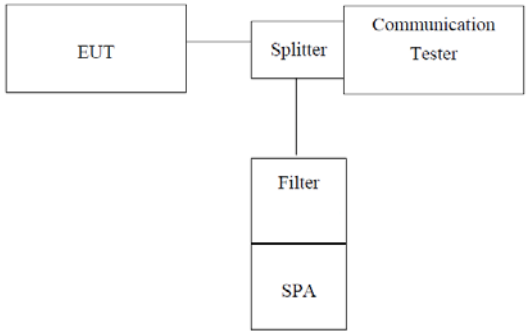


Highest channel:

7.5 MODULATION CHARACTERISTIC

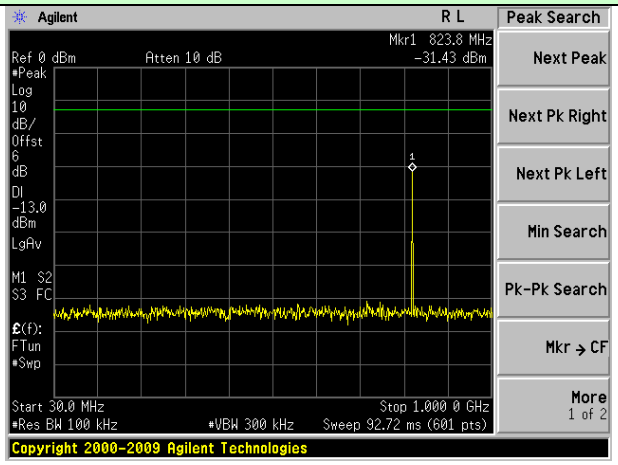
According to FCC § 2.1047(d), Part 22H & 24E there is no specific requirement for digital modulation, therefore modulation characteristic is not presented.

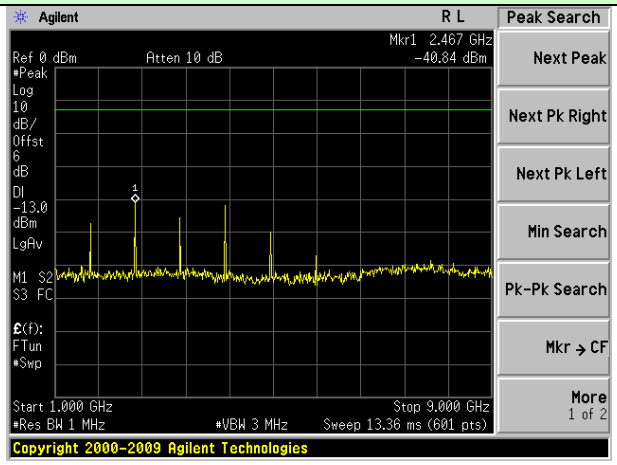
7.6 Out of band emission at antenna terminals

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 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

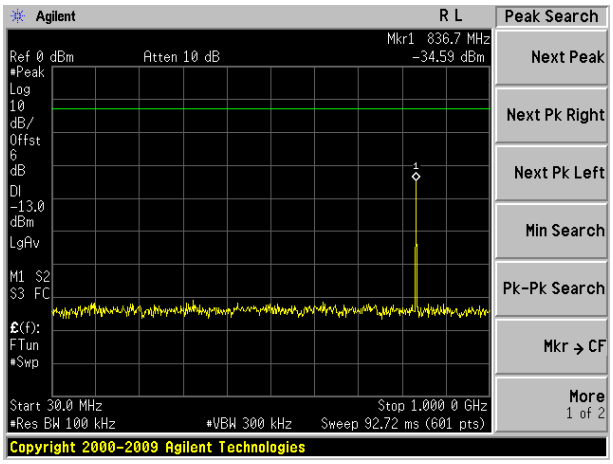
Test plot as follows:

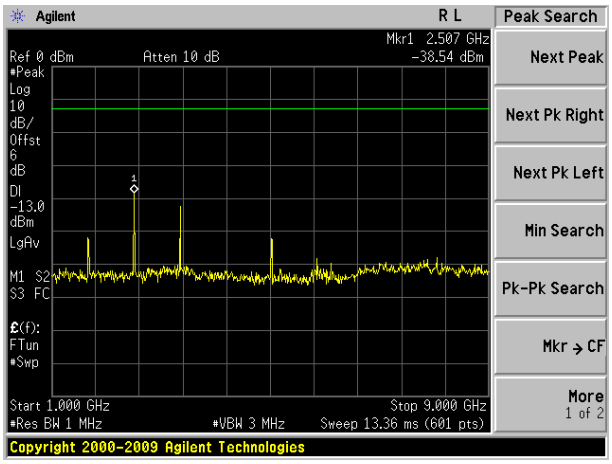
Test Mode: Traffic mode	GSM 850 (GSM link)



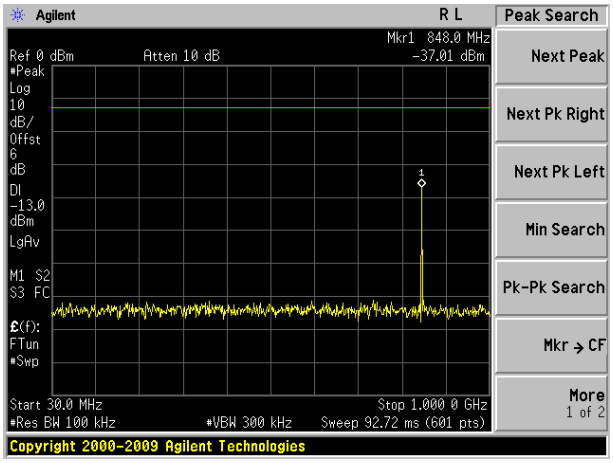


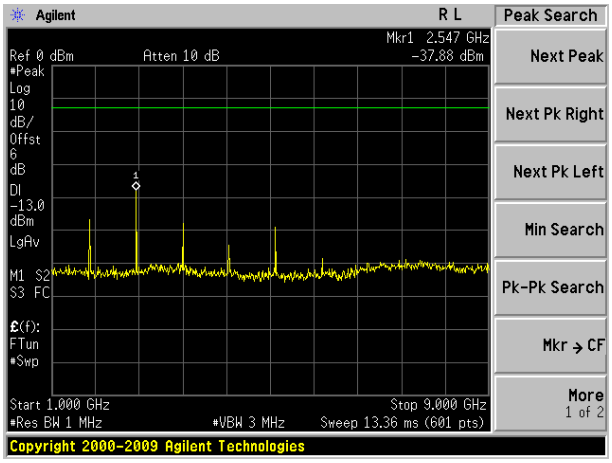
Lowest channel





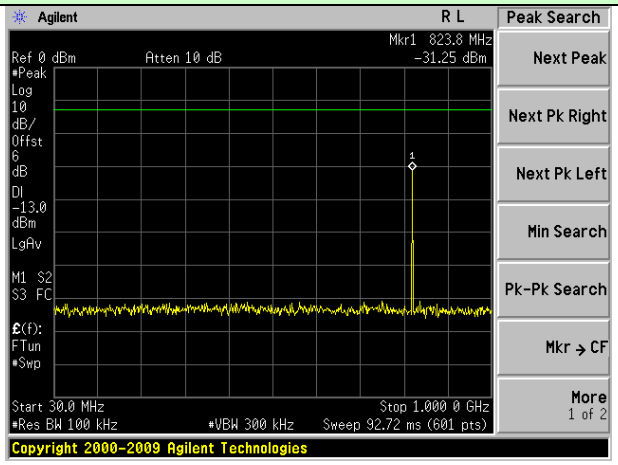
Middle channel

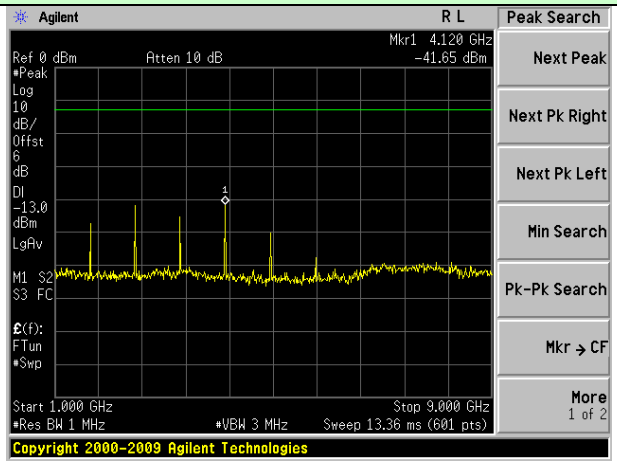




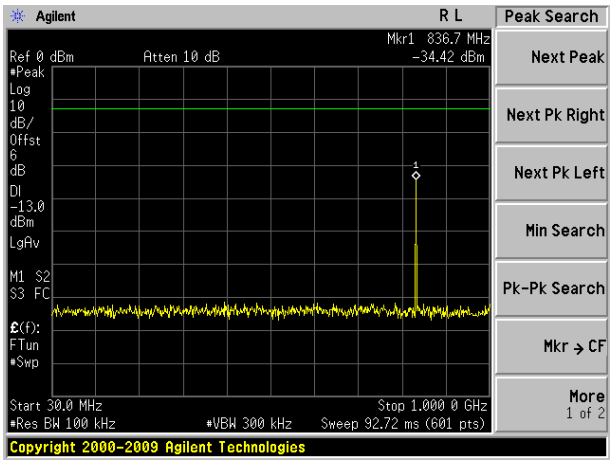
Highest channel

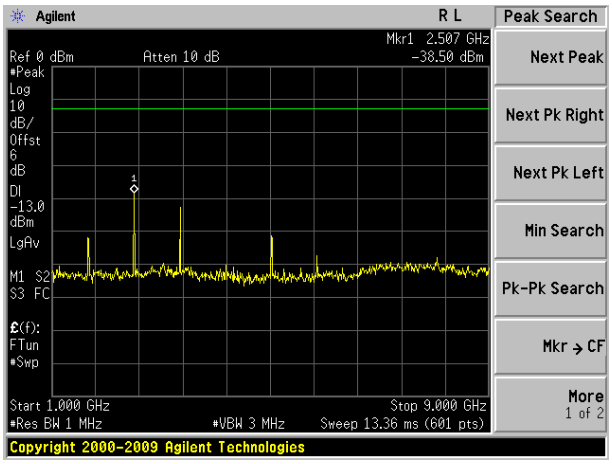
Test Mode: Traffic mode	GSM 850 (GPRS 1 link)



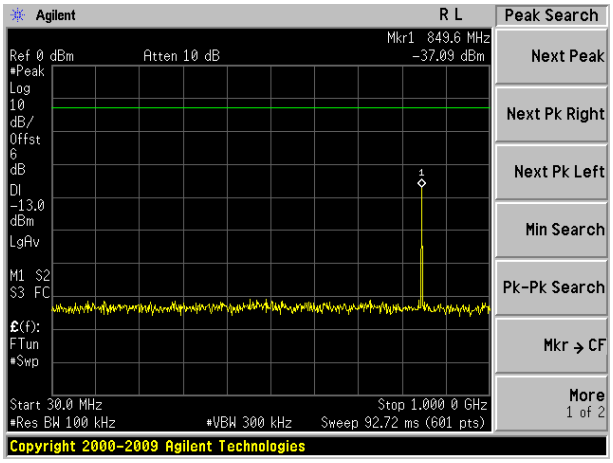


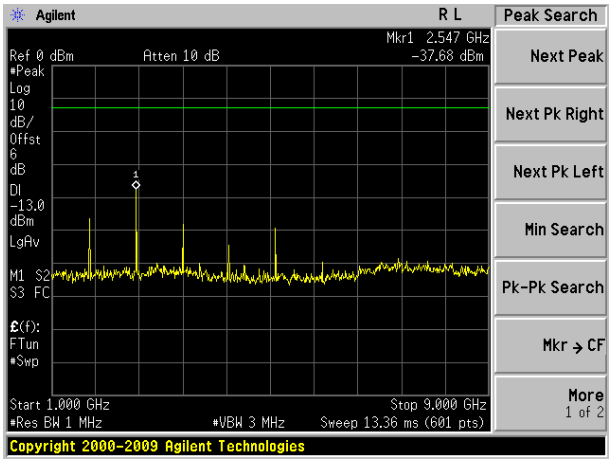
Lowest channel





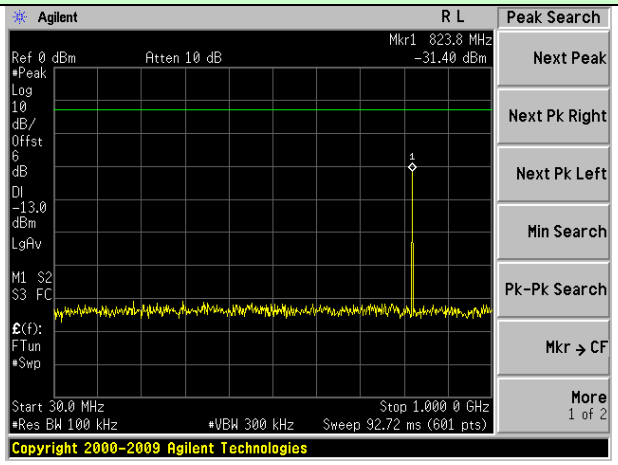
Middle channel

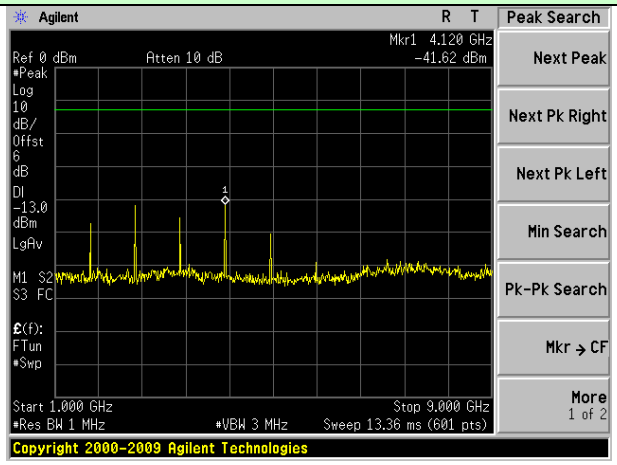




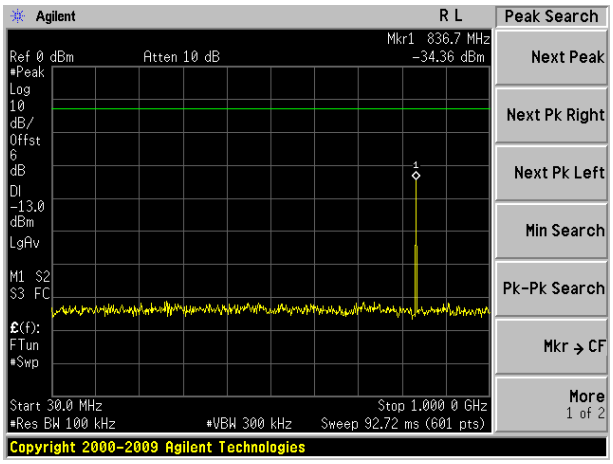
Highest channel

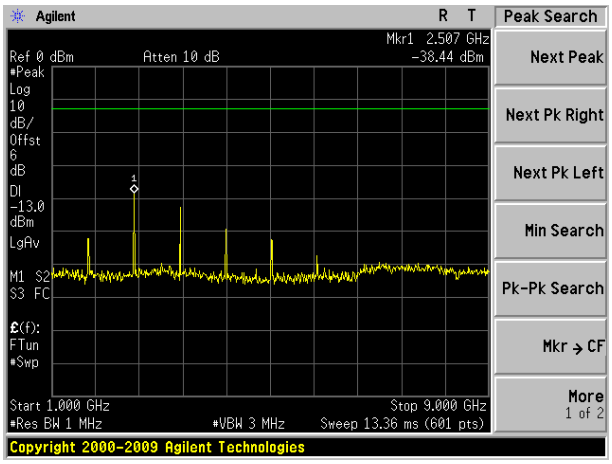
Test Mode: Traffic mode	GSM 850 (EGPRS 1 link)



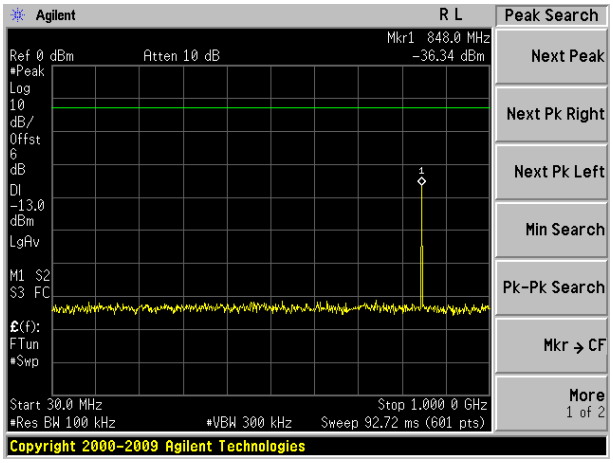


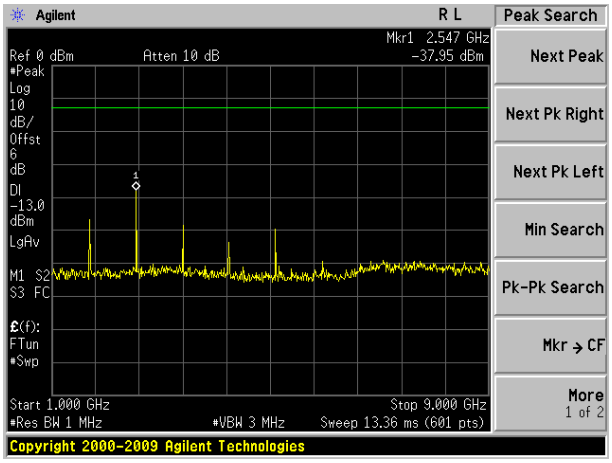
Lowest channel





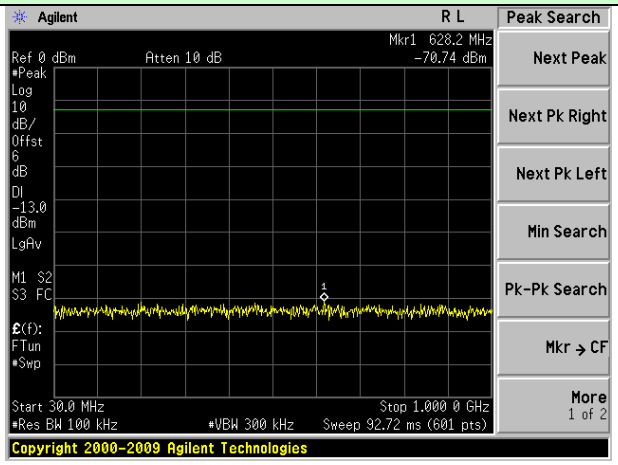
Middle channel

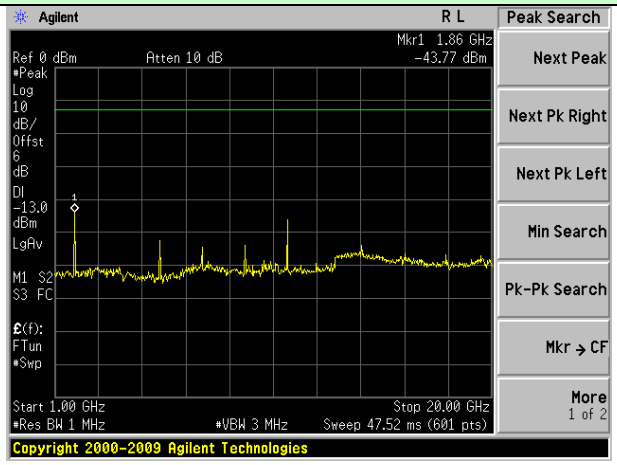




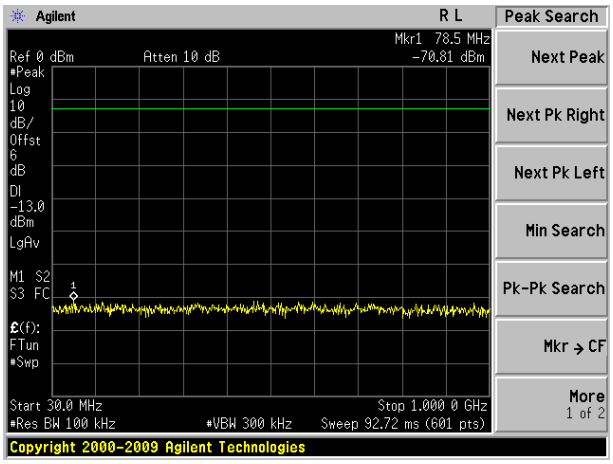
Highest channel

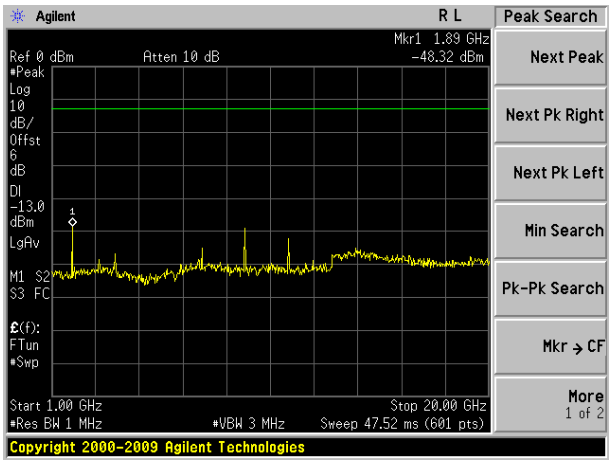
Test Mode: Traffic mode	PCS1900 (GSM link)



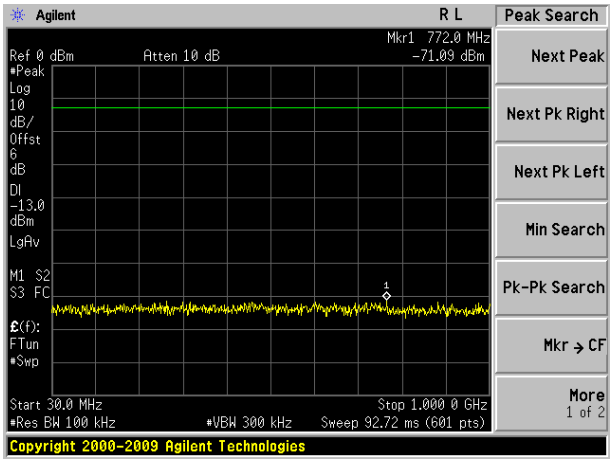


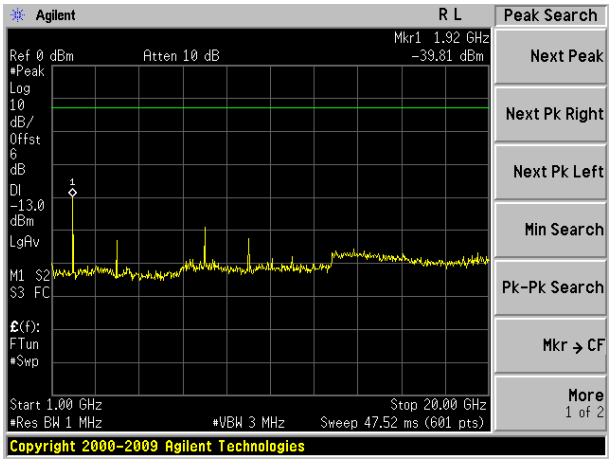
Lowest channel





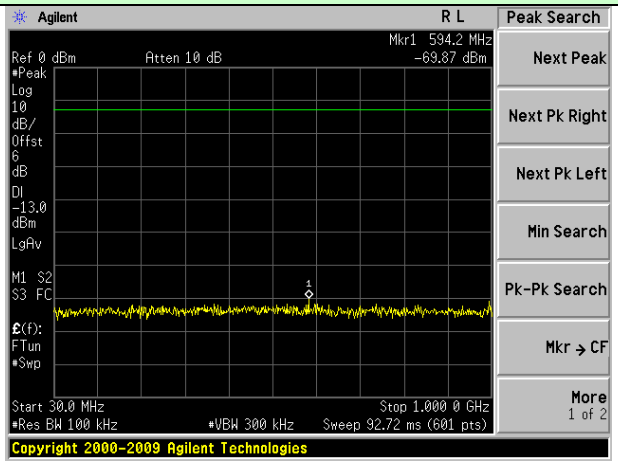
Middle channel

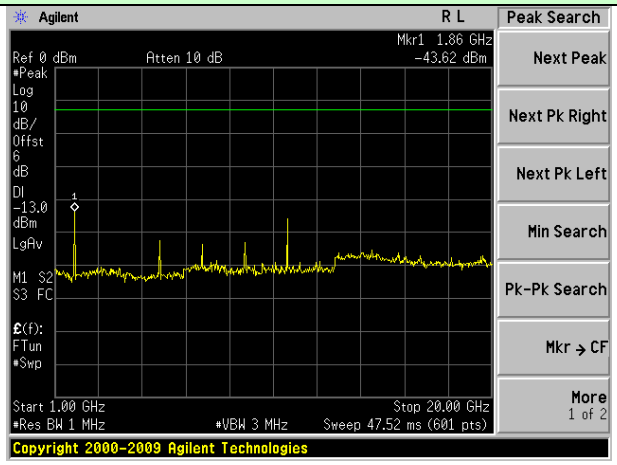




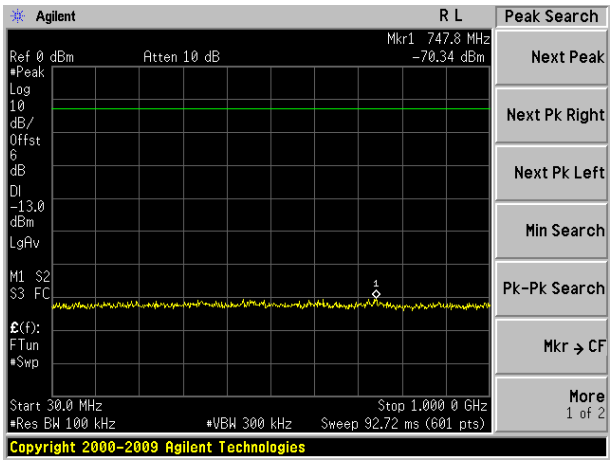
Highest channel

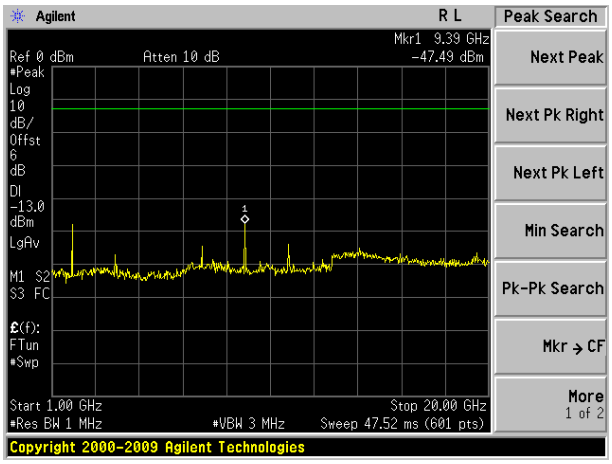
Test Mode: Traffic mode	PCS1900 (GPRS 1 link)



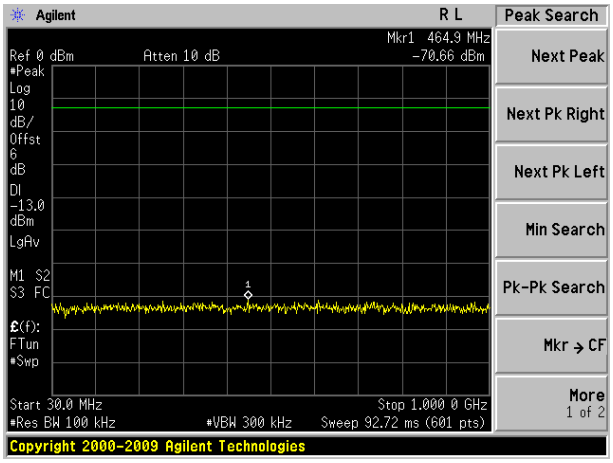


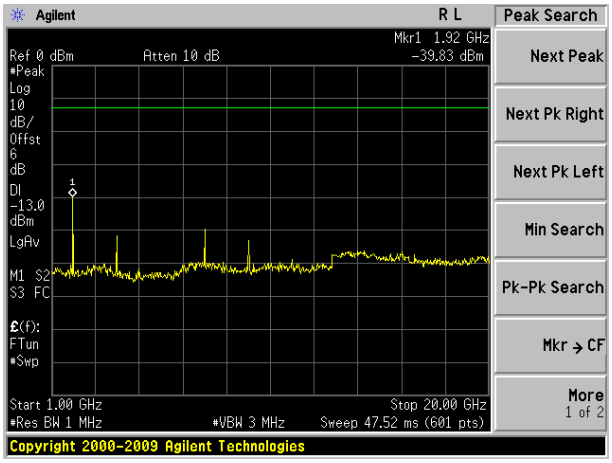
Lowest channel





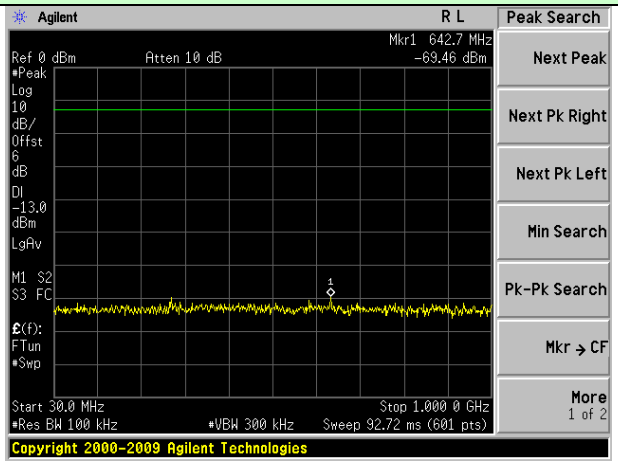
Middle channel

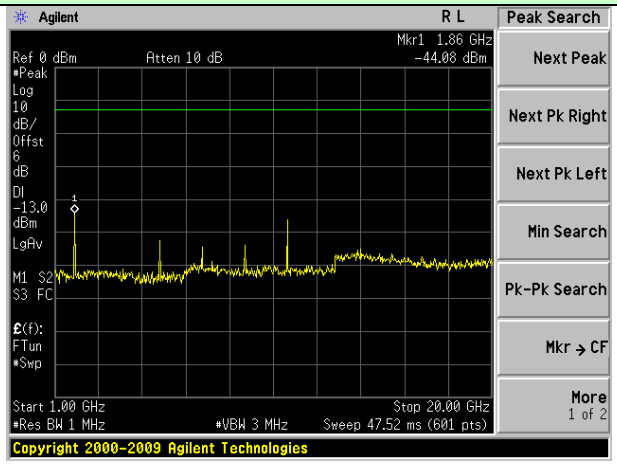




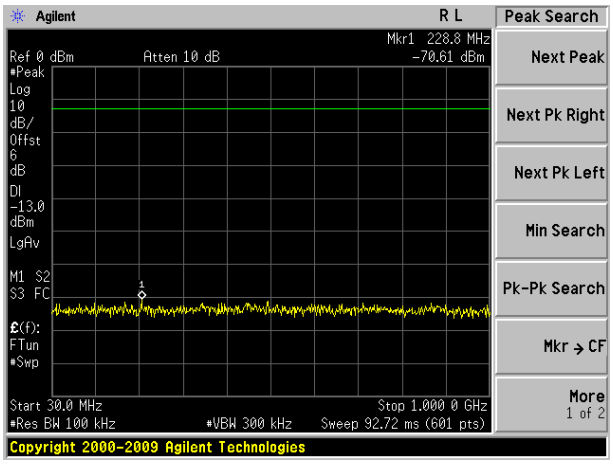
Highest channel

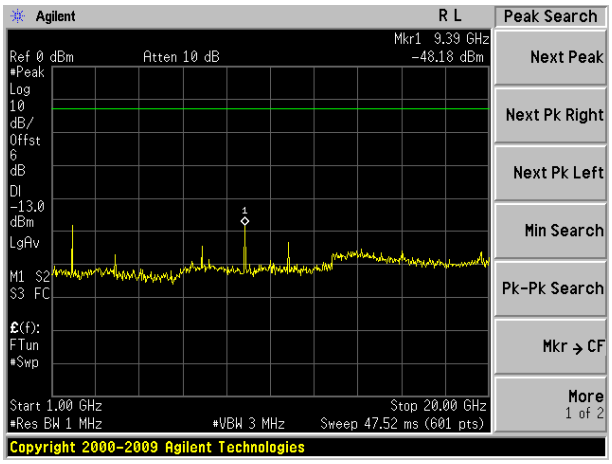
Test Mode: Traffic mode	PCS1900 (EGPRS 1 link)



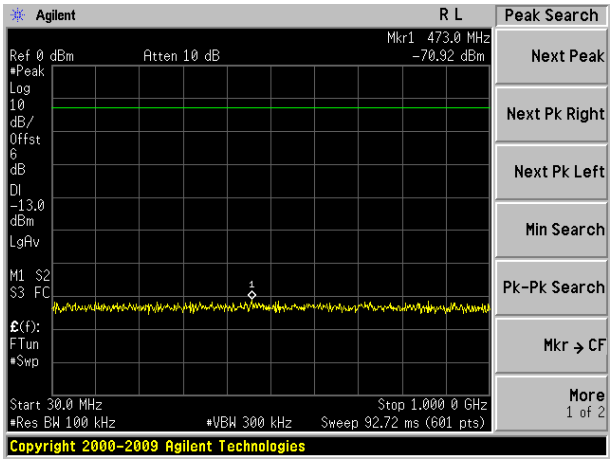


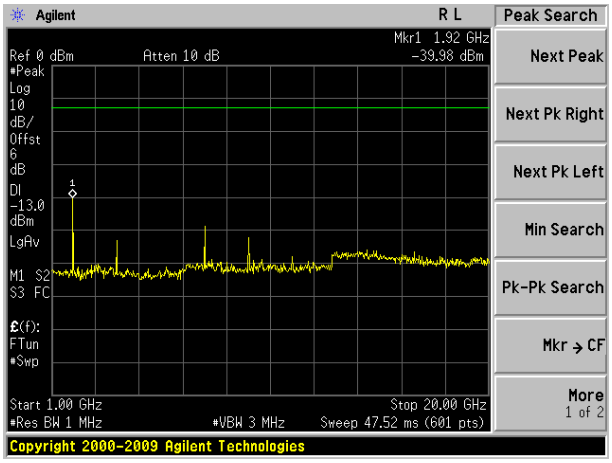
Lowest channel





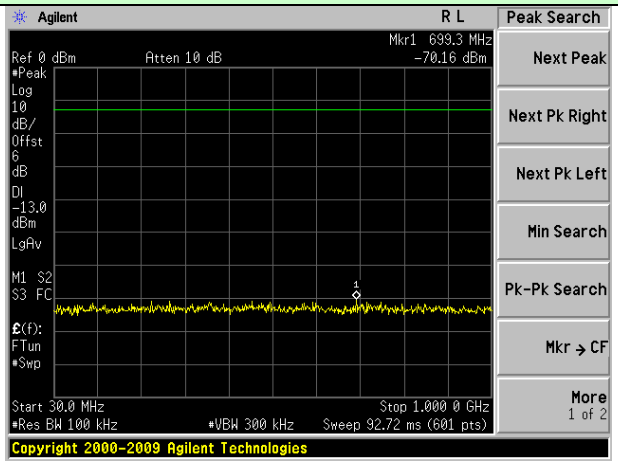
Middle channel

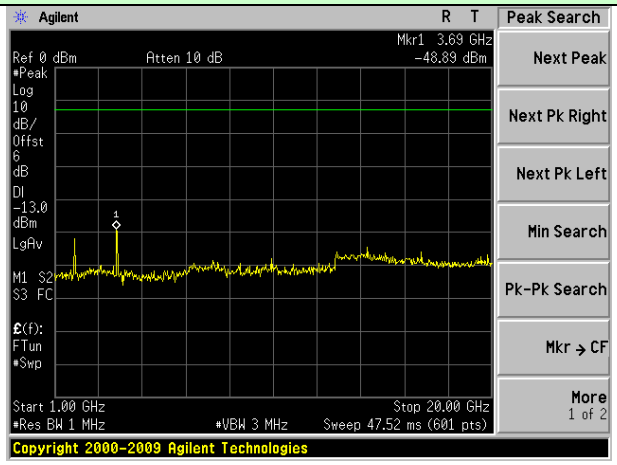




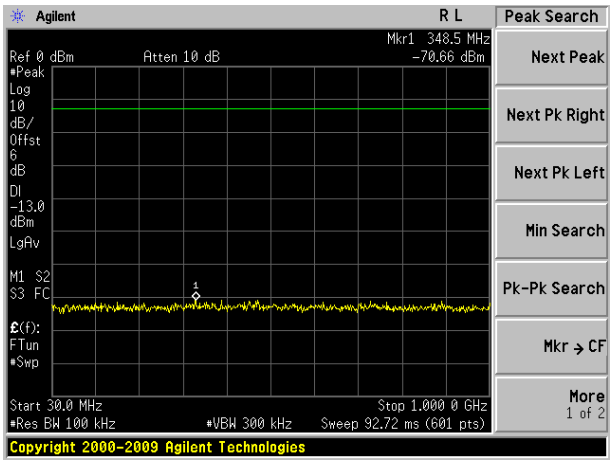
Highest channel

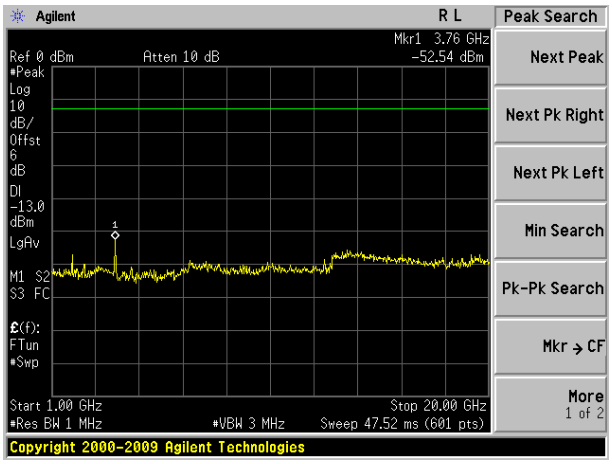
Test Mode: Traffic mode	WCDMA Band II (RMC 12.2Kbps link)



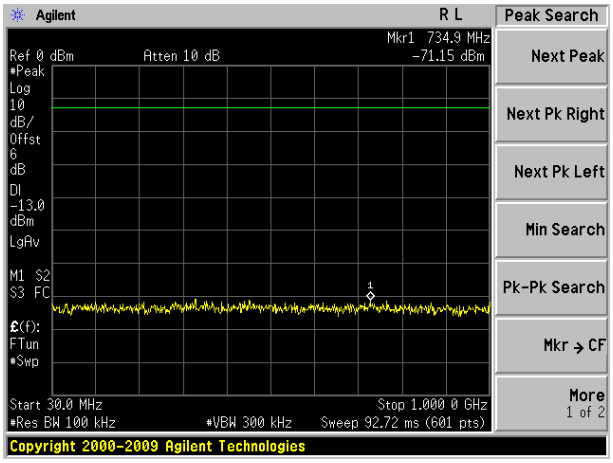


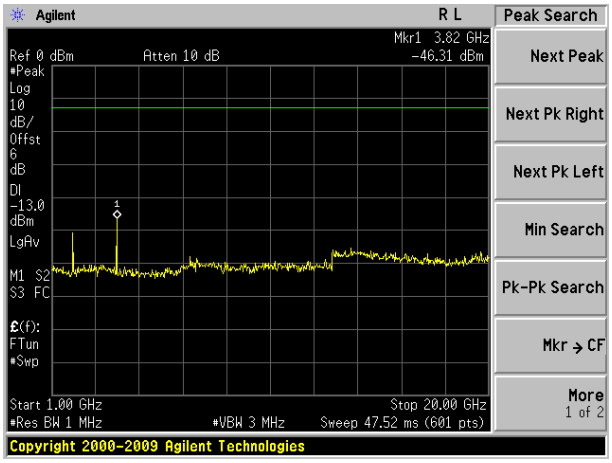
Lowest channel





Middle channel

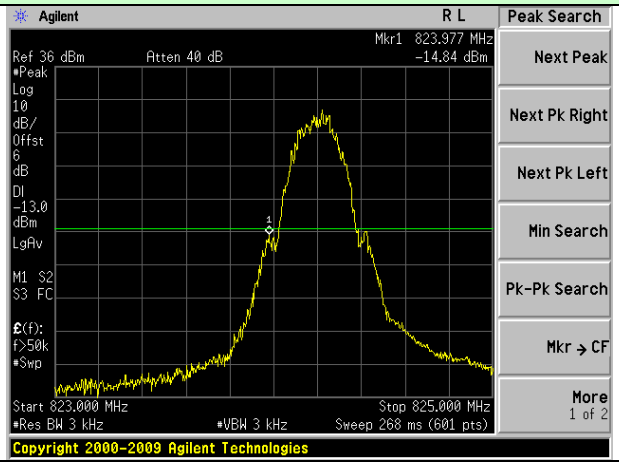




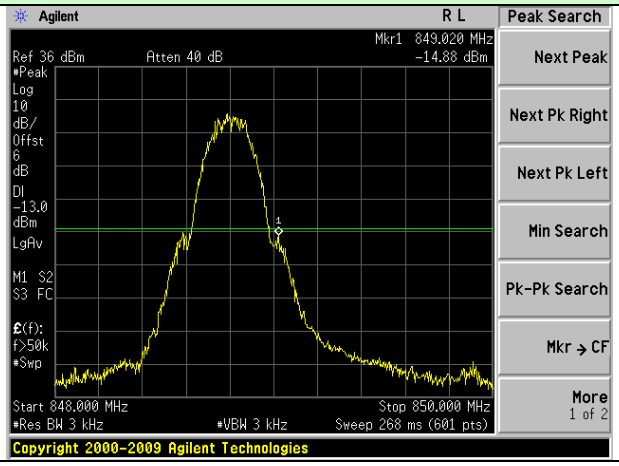
Highest channel

Band Edge:

Test Mode: Traffic mode	GSM850 (GSM link)

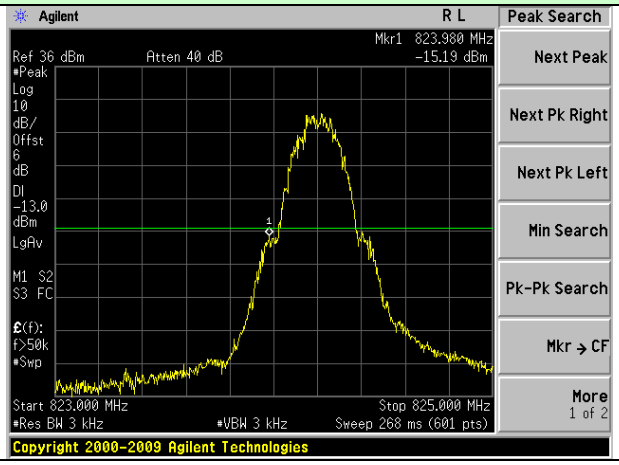


Lowest channel

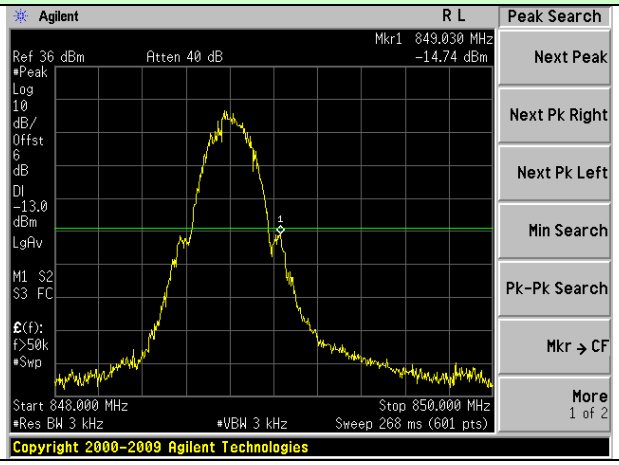


Highest channel

Test Mode: Traffic mode	GSM850 (GPRS 1 link)

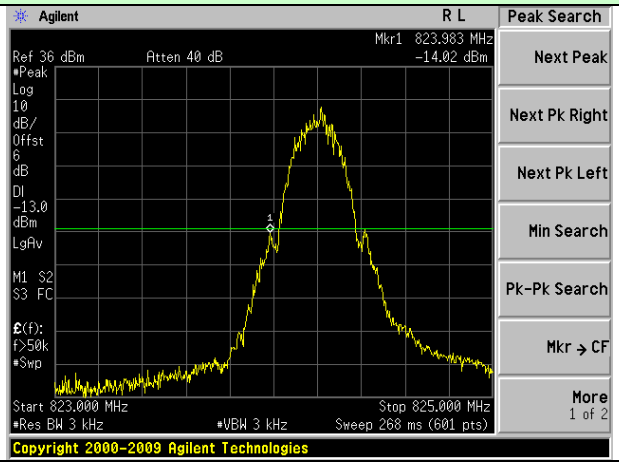


Lowest channel

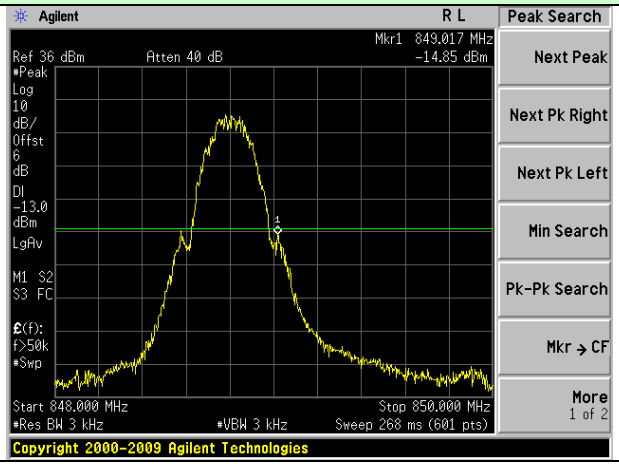


Highest channel

Test Mode: Traffic mode	GSM850 (EGPRS 1 link)

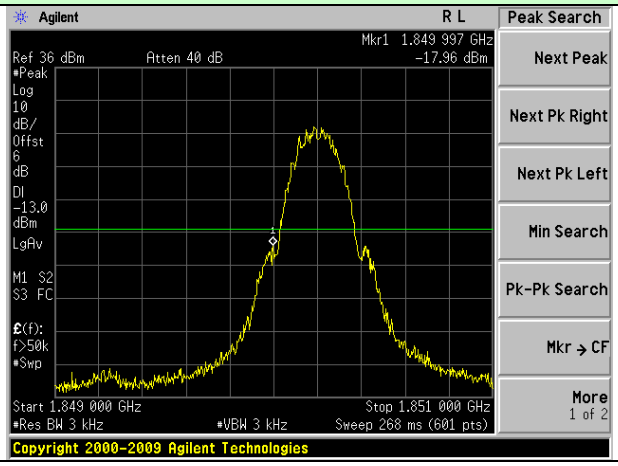


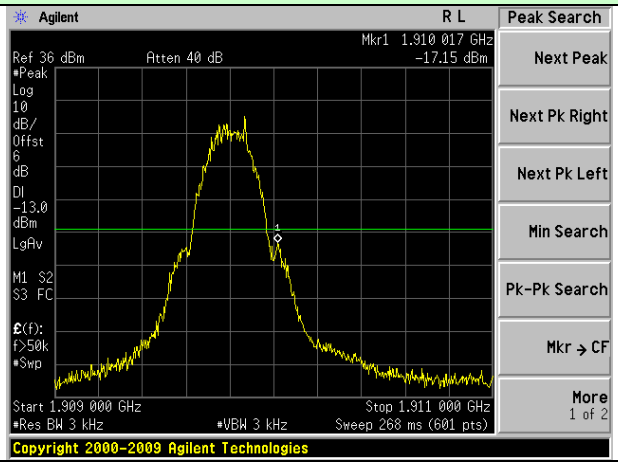
Lowest channel



Highest channel

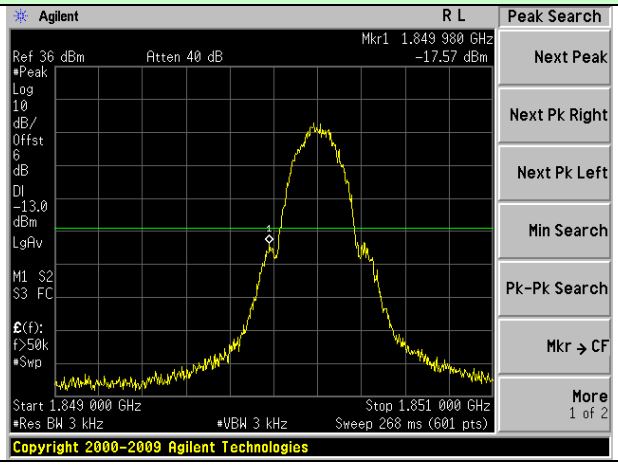
Test Mode: Traffic mode	PCS1900 (GSM link)

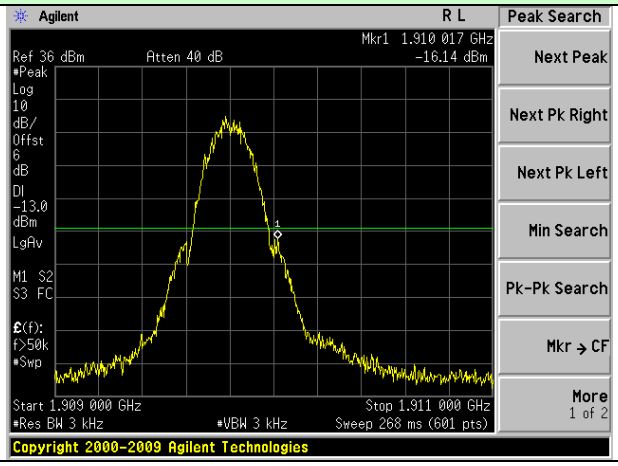




Lowest channel | Highest channel

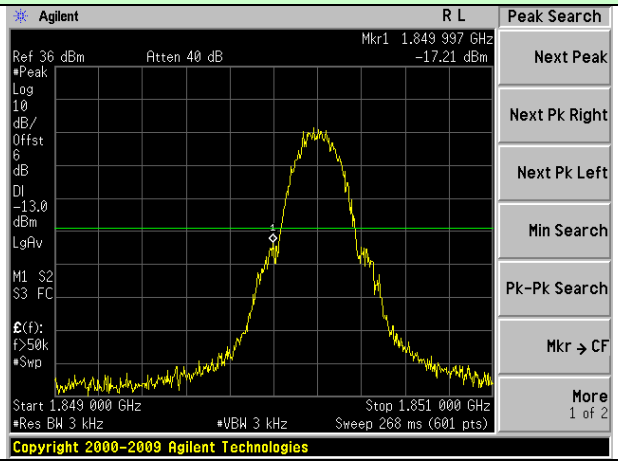
Test Mode: Traffic mode	PCS1900 (GPRS 1 link)

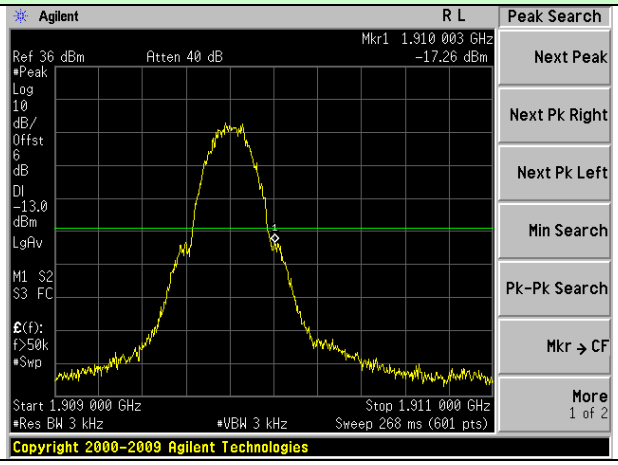




Lowest channel | Highest channel

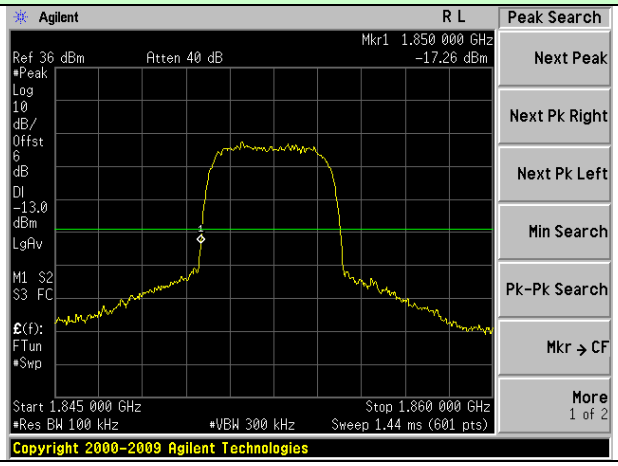
Test Mode: Traffic mode	PCS1900 (EGPRS 1 link)



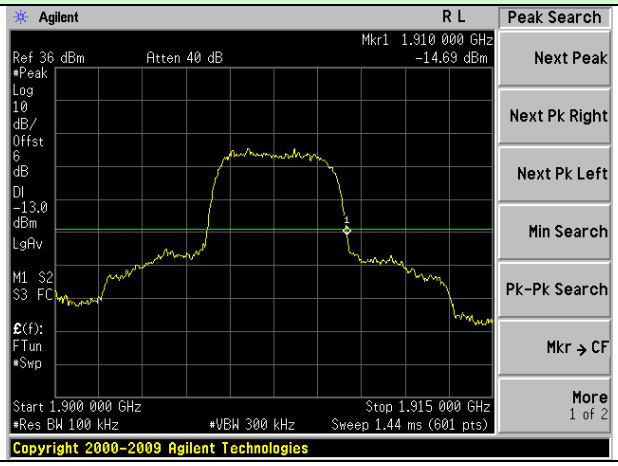


Lowest channel | Highest channel

Test Mode: Traffic mode	WCDMA Band II (RMC 12.2Kbps link)

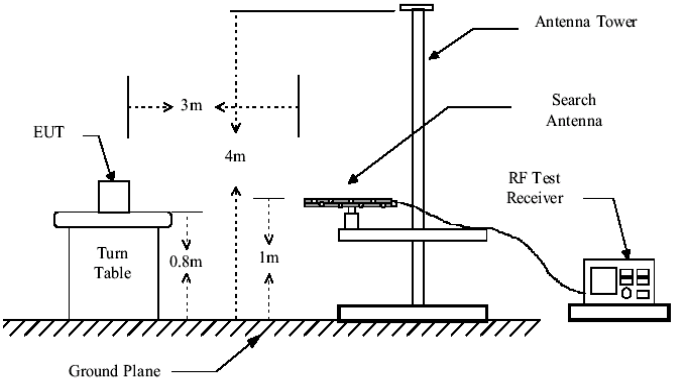
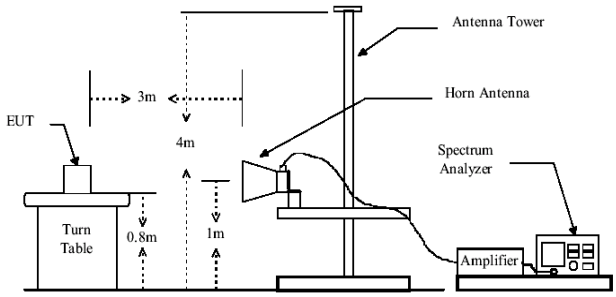
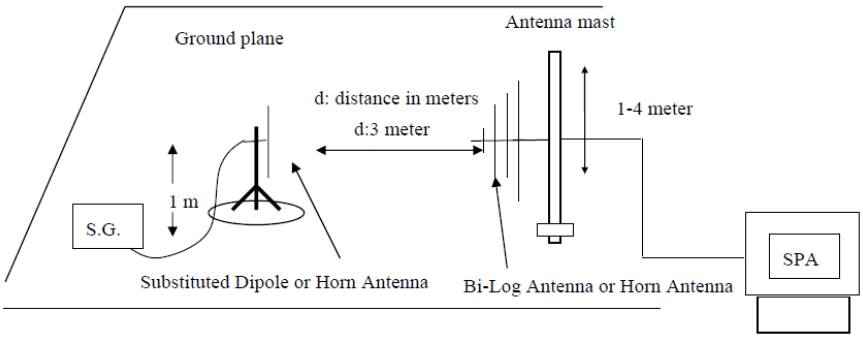


Lowest channel



Highest channel

7.7 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: 

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 6.0 for details
Test mode:	Refer to section 5.3 for details
Test results:	Pass

Measurement Data

EUT mode	Channel	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
GSM850 (GSM link)	Lowest	H	V	32.05	38.45	Pass
			H	28.94		
		E1	V	23.59		
			H	29.14		
		E2	V	22.68		
			H	26.78		
	Middle	H	V	31.97	38.45	Pass
			H	28.84		
		E1	V	23.57		
			H	29.16		
		E2	V	24.31		
			H	27.33		
	Highest	H	V	32.39	38.45	Pass
			H	28.64		
		E1	V	23.59		
			H	28.12		
		E2	V	22.55		
			H	27.94		

EUT mode	Channel	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
GSM850 (GPRS 1 link)	Lowest	H	V	31.64	38.45	Pass
			H	28.50		
		E1	V	23.12		
			H	28.63		
		E2	V	22.14		
			H	26.22		
	Middle	H	V	31.45	38.45	Pass
			H	28.25		
		E1	V	22.95		
			H	28.50		
		E2	V	23.73		
			H	26.72		
	Highest	H	V	31.88	38.45	Pass
			H	28.10		
		E1	V	23.02		
			H	27.52		
		E2	V	22.09		
			H	27.45		

EUT mode	Channel	EUT Pol.	Antenna Pol.	ERP(dBm)	Limit (dBm)	Result
GSM850 (EGPRS 1 link)	Lowest	H	V	27.56	38.45	Pass
			H	24.52		
		E1	V	19.15		
			H	25.05		
		E2	V	18.54		
			H	22.94		
	Middle	H	V	27.85	38.45	Pass
			H	24.99		
		E1	V	19.76		
			H	25.69		
		E2	V	20.27		
			H	23.56		
	Highest	H	V	27.53	38.45	Pass
			H	24.35		
		E1	V	19.30		
			H	24.15		
		E2	V	17.66		
			H	23.40		

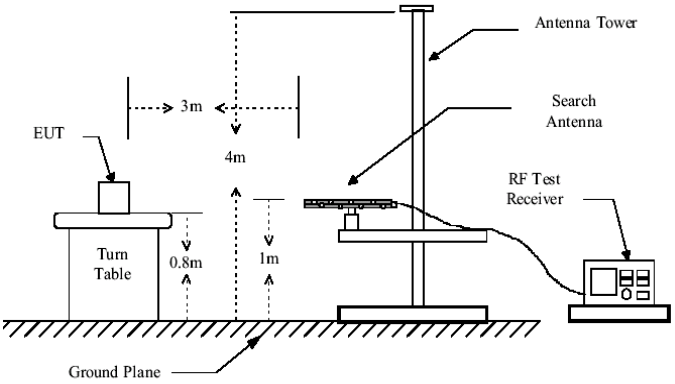
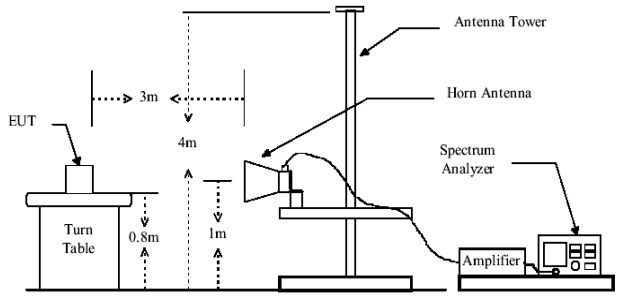
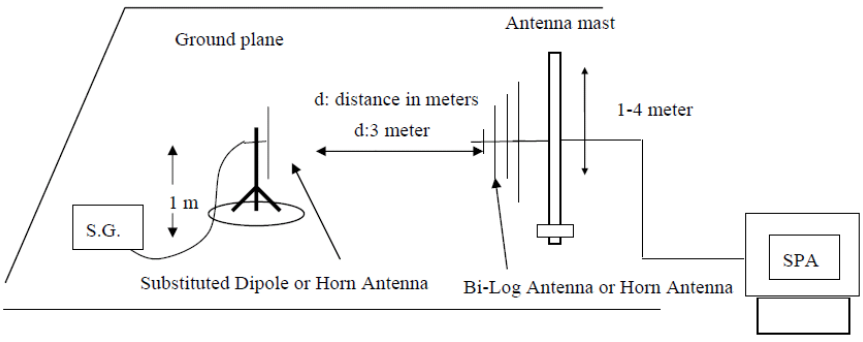
EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP (dBm)	Limit (dBm)	Result
PCS1900 (GSM link)	Lowest	H	V	28.37	33.01	Pass
			H	25.59		
		E1	V	20.81		
			H	25.80		
		E2	V	20.01		
			H	23.70		
	Middle	H	V	28.39	33.01	Pass
			H	25.61		
		E1	V	20.91		
			H	25.92		
		E2	V	21.55		
			H	24.27		
	Highest	H	V	28.86	33.01	Pass
			H	25.51		
		E1	V	21.00		
			H	25.07		
		E2	V	20.03		
			H	24.88		

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP (dBm)	Limit (dBm)	Result
PCS1900 (GPRS 1 link)	Lowest	H	V	27.89	33.01	Pass
			H	25.07		
		E1	V	20.25		
			H	25.19		
		E2	V	19.37		
			H	23.01		
	Middle	H	V	27.77	33.01	Pass
			H	24.89		
		E1	V	20.14		
			H	25.12		
		E2	V	20.85		
			H	23.52		
	Highest	H	V	27.25	33.01	Pass
			H	24.85		
		E1	V	20.31		
			H	24.34		
		E2	V	19.48		
			H	24.29		

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP (dBm)	Limit (dBm)	Result
PCS1900 (EGPRS 1 link)	Lowest	H	V	23.49	33.01	Pass
			H	18.98		
		E1	V	13.06		
			H	18.85		
		E2	V	11.74		
			H	15.98		
	Middle	H	V	21.77	33.01	Pass
			H	18.03		
		E1	V	12.17		
			H	17.99		
		E2	V	13.20		
			H	16.29		
	Highest	H	V	22.22	33.01	Pass
			H	18.01		
		E1	V	12.43		
			H	17.13		
		E2	V	11.90		
			H	17.54		

EUT mode	Channel	EUT Pol.	Antenna Pol.	EIRP(dBm)	Limit (dBm)	Result
WCDMA Band II	Lowest	H	V	24.43	33.01	Pass
			H	22.42		
		E1	V	18.97		
			H	22.49		
		E2	V	18.34		
			H	20.94		
	Middle	H	V	24.43	33.01	Pass
			H	22.38		
		E1	V	18.98		
			H	22.52		
		E2	V	19.48		
			H	21.39		
	Highest	H	V	23.32	33.01	Pass
			H	20.90		
		E1	V	17.64		
			H	20.52		
		E2	V	17.07		
			H	20.49		

7.8 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: 

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 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. ERP / EIRP = S.G. output (dBm) + Antenna Gain(dB/dBi) – Cable Loss (dB)
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.3 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	-35.97	-13.00	Pass
2472.60	V	-38.70		
3296.80	V	-40.97		
4121.00	V	-43.13		
4945.20	V	---		
1648.40	Horizontal	-41.21	-13.00	Pass
2472.60	H	-45.07		
3296.80	H	-46.64		
4121.00	H	-49.38		
4945.20	H	---		
Test mode:	**GSM850**		**Test channel:**	**Middle**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1673.20	Vertical	-37.33	-13.00	Pass
2509.80	V	-39.61		
3346.40	V	-41.50		
4183.00	V	-43.30		
5019.60	V	---		
1673.20	Horizontal	-41.70	-13.00	Pass
2509.80	H	-44.92		
3346.40	H	-46.23		
4183.00	H	-48.51		
5019.60	H	---		
Test mode:	**GSM850**		**Test channel:**	**Highest**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
1697.60	Vertical	-37.56	-13.00	Pass
2546.40	V	-39.59		
3395.20	V	-41.26		
4244.00	V	-42.88		
5092.80	V	---		
1697.60	Horizontal	-41.45	-13.00	Pass
2546.40	H	-44.32		
3395.20	H	-45.48		
4244.00	H	-47.51		
5092.80	H	---		

Remark：

1. The emission behaviour belongs to narrowband spurious emission.
2. Remark"---" means that the emission level is too low to be measured
3. 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	-37.24	-13.00	Pass
5550.60	V	-39.61		
7400.80	V	-41.57		
9251.00	V	-43.46		
11101.20	V	---		
3700.40	Horizontal	-41.79	-13.00	Pass
5550.60	H	-45.16		
7400.80	H	-46.50		
9251.00	H	-48.86		
11101.20	H	---		
Test mode:	**PCS1900**		**Test channel:**	**Middle**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3760.00	Vertical	-35.06	-13.00	Pass
5640.00	V	-37.51		
7520.00	V	-39.53		
9400.00	V	-41.49		
11280.00	V	---		
3760.00	Horizontal	-39.77	-13.00	Pass
5640.00	H	-43.23		
7520.00	H	-44.63		
9400.00	H	-47.06		
11280.00	H	---		
Test mode:	**PCS1900**		**Test channel:**	**Highest**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3819.60	Vertical	-36.18	-13.00	Pass
5729.40	V	-38.56		
7639.20	V	-40.52		
9549.00	V	-42.41		
11458.80	V	---		
3819.60	Horizontal	-40.75	-13.00	Pass
5729.40	H	-44.11		
7639.20	H	-45.46		
9549.00	H	-47.82		
11458.80	H	---		

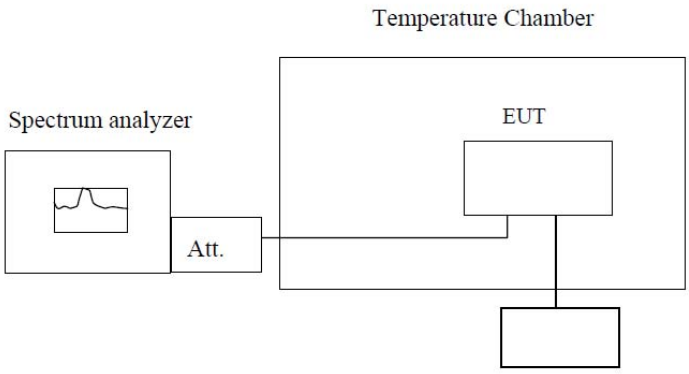
Remark：

1. The emission behaviour belongs to narrowband spurious emission.
2. Remark"---" means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

Test mode:	WCDMA Band II		Test channel:	Lowest
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3704.46	Vertical	-39.04	-13.00	Pass
5556.86	V	-42.11		
7409.26	V	-44.64		
9261.66	V	-47.09		
11114.4	V	---		
3704.46	Horizontal	-44.93	-13.00	Pass
5556.86	H	-49.27		
7409.26	H	-51.03		
9261.66	H	-54.08		
11114.4	H	---		
Test mode:	**WCDMA Band II**		**Test channel:**	**Middle**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3759.83	Vertical	-39.75	-13.00	Pass
5639.83	V	-42.66		
7519.83	V	-45.06		
9399.83	V	-47.39		
11280	V	---		
3759.83	Horizontal	-45.34	-13.00	Pass
5639.83	H	-49.47		
7519.83	H	-51.12		
9399.83	H	-54.02		
11280	H	---		
Test mode:	**WCDMA Band II**		**Test channel:**	**Highest**
Frequency (MHz)	Spurious Emission		Limit (dBm)	Result
	Polarization	Level (dBm)		
3815.03	Vertical	-38.96	-13.00	Pass
5722.63	V	-41.68		
7630.23	V	-43.91		
9537.83	V	-46.09		
11445.6	V	---		
3815.03	Horizontal	-44.18	-13.00	Pass
5722.63	H	-48.02		
7630.23	H	-49.56		
9537.83	H	-52.26		
11445.6	H	---		

Remark：
1. The emission behaviour belongs to narrowband spurious emission.
2. Remark"---" means that the emission level is too low to be measured
3. The emission levels of below 1 GHz are very lower than the limit and not show in test report.

7.9 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°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 5.3 for details
Test results:	Pass

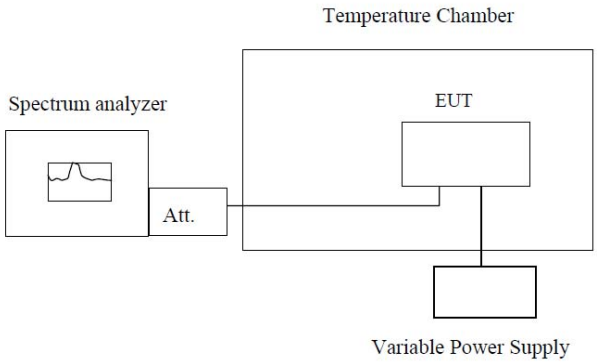
Measurement Data

Reference Frequency: GSM850 (GSM link) Middle channel=190 channel=836.6MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	36	0.0428	2.5	Pass
	-20	40	0.0478		
	-10	34	0.0411		
	0	29	0.0344		
	10	33	0.0394		
	20	29	0.0344		
	30	46	0.0545		
	40	41	0.0495		
	50	40	0.0478		
Reference Frequency: GSM850 (GPRS 1 link) Middle channel=190 channel=836.6MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	27	0.0328	2.5	Pass
	-20	30	0.0359		
	-10	26	0.0312		
	0	24	0.0281		
	10	25	0.0296		
	20	22	0.0265		
	30	37	0.0436		
	40	31	0.0374		
	50	30	0.0359		
Reference Frequency: GSM850 (EGPRS 1 link) Middle channel=190 channel=836.6MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	67	0.0795	2.5	Pass
	-20	77	0.0917		
	-10	64	0.0770		
	0	56	0.0671		
	10	63	0.0750		
	20	55	0.0655		
	30	92	0.1096		
	40	80	0.0956		
	50	76	0.0906		

Reference Frequency: PCS1900 (GSM link) Middle channel=661 channel=1880MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error			Result
		Hz	ppm		
3.70	-30	50	0.0265	2.5	Pass
	-20	58	0.0310		
	-10	50	0.0265		
	0	43	0.0228		
	10	50	0.0265		
	20	44	0.0235		
	30	68	0.0362		
	40	60	0.0317		
	50	60	0.0317		
Reference Frequency: PCS1900 (GPRS 1 link) Middle channel=661 channel=1880MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error			Result
		Hz	ppm		
3.70	-30	44	0.0236	2.5	Pass
	-20	51	0.0270		
	-10	42	0.0222		
	0	35	0.0187		
	10	43	0.0229		
	20	35	0.0187		
	30	57	0.0305		
	40	48	0.0256		
	50	51	0.0270		
Reference Frequency: PCS1900 (EGPRS 1 link) Middle channel=661 channel=1880MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error			Result
		Hz	ppm		
3.70	-30	118	0.0626	2.5	Pass
	-20	138	0.0732		
	-10	113	0.0602		
	0	94	0.0501		
	10	115	0.0609		
	20	97	0.0515		
	30	154	0.0818		
	40	130	0.0689		
	50	136	0.0722		

Reference Frequency: WCDMA Band II Middle channel=9400 channel=1880.0MHz					
Power supplied (Vdc)	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
3.70	-30	106	0.0565	2.5	Pass
	-20	96	0.0513		
	-10	85	0.0454		
	0	81	0.0431		
	10	76	0.0402		
	20	68	0.0361		
	30	81	0.0431		
	40	89	0.0472		
	50	85	0.0454		

7.10 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:	 **Note :** Measurement setup for testing on Antenna connector
Test procedure:	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 5.3 for details
Test results:	Pass

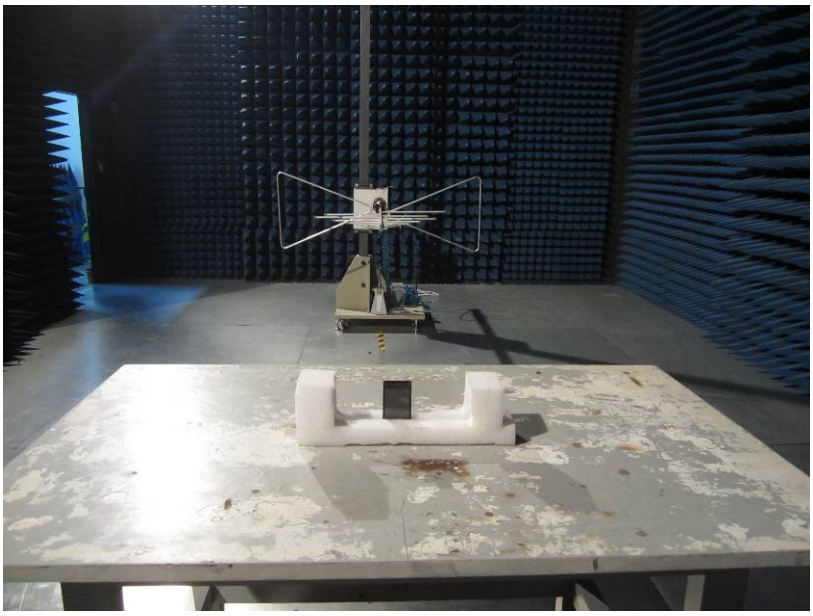
Measurement Data

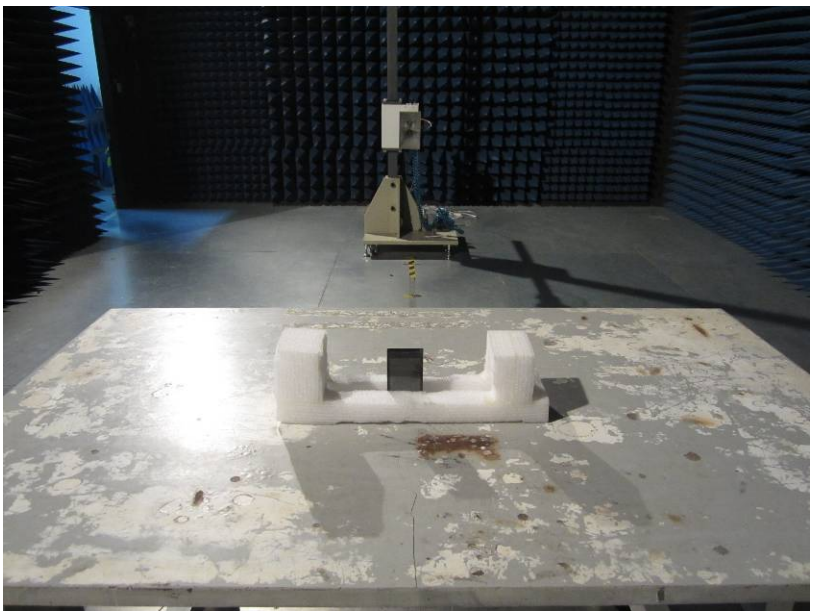
Reference Frequency: GSM850 (GSM link) Middle channel=190 channel=836.6MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	23	0.0275	2.5	Pass
	3.70	26	0.0311		
	3.40	29	0.0347		
Reference Frequency: GSM850 (GPRS 1 link) Middle channel=190 channel=836.6MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	35	0.0422	2.5	Pass
	3.70	28	0.0329		
	3.40	30	0.0360		
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	4.25	40	0.0473	2.5	Pass
	3.70	44	0.0526		
	3.40	48	0.0578		

Reference Frequency: PCS1900 (GSM link) Middle channel=661 channel=1880MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	38	0.0202	2.5	Pass
	3.70	46	0.0242		
	3.40	46	0.0242		
Reference Frequency: PCS1900 (GPRS 1 link) Middle channel=661 channel=1880MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	57	0.0305	2.5	Pass
	3.70	44	0.0236		
	3.40	47	0.0250		
Reference Frequency: PCS1900 (EGPRS 1 link) Middle channel=661 channel=1880MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	69	0.0365	2.5	Pass
	3.70	78	0.0413		
	3.40	78	0.0415		
Reference Frequency: WCDMA Band II Middle channel=940 channel=1880.0MHz					
Temperature (°C)	Power supplied (Vdc)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
25	4.25	92	0.0487	2.5	Pass
	3.70	79	0.0420		
	3.40	86	0.0459		

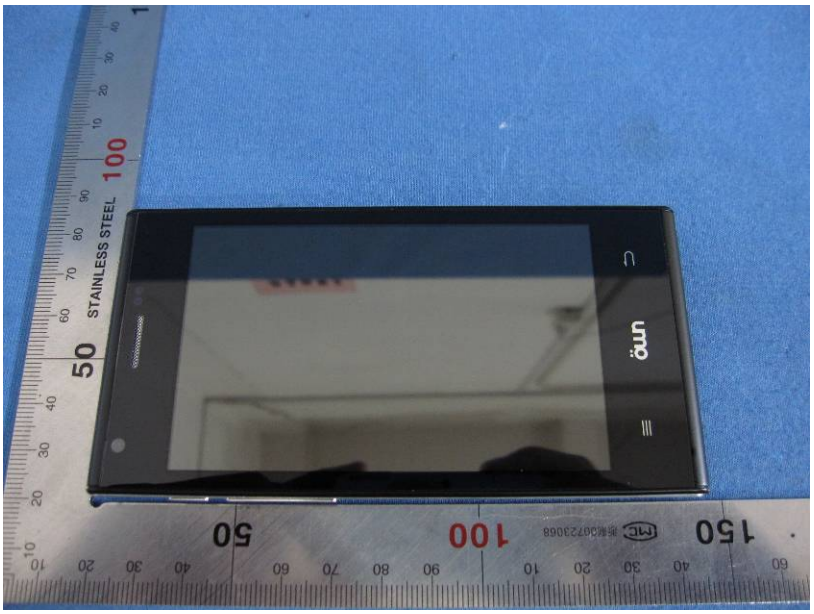
8 Test Setup Photo

Radiated Emission

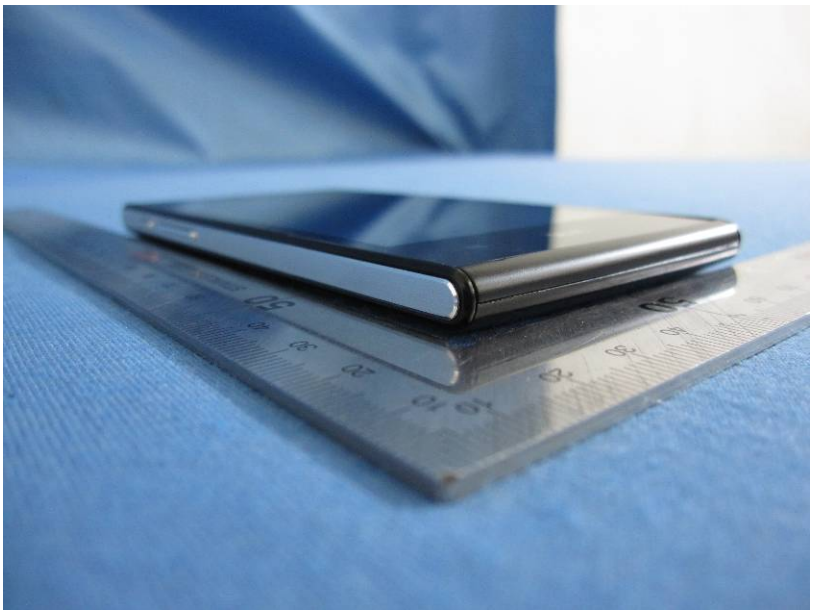


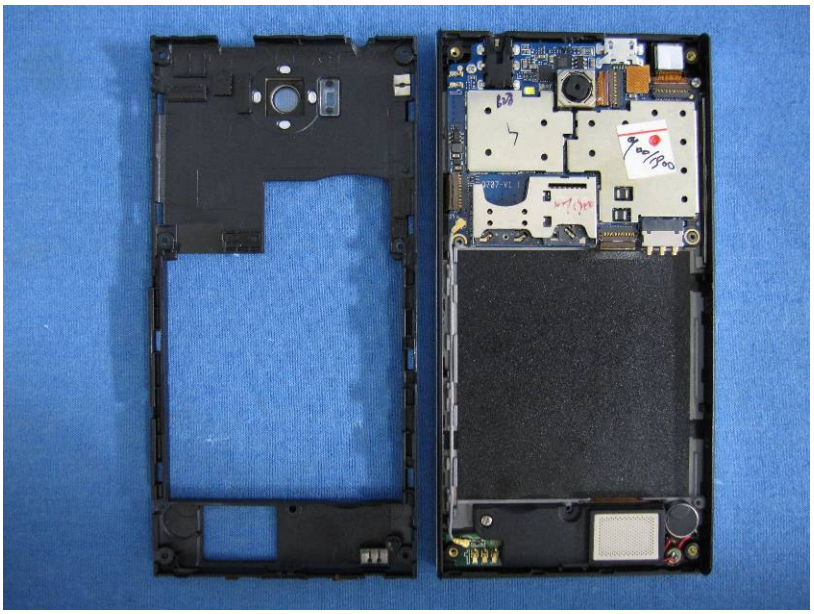


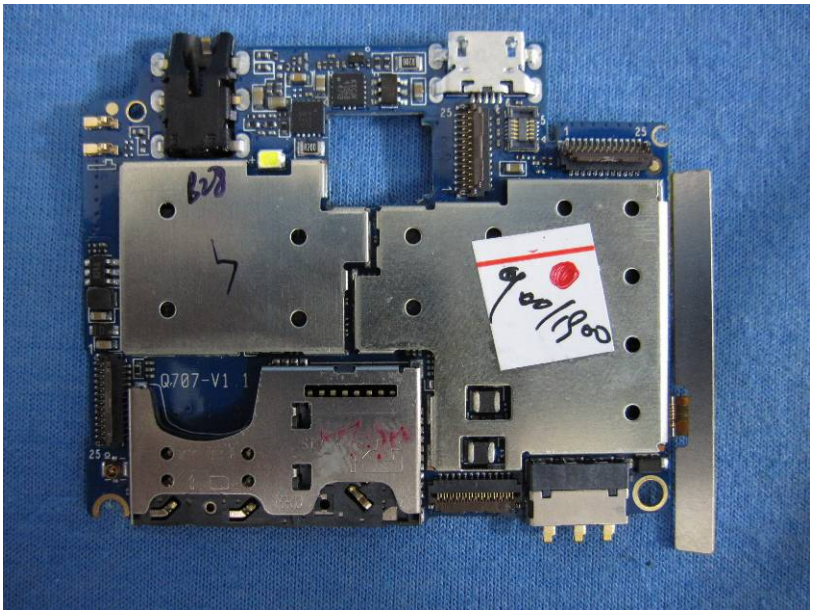
9 EUT Constructional Details

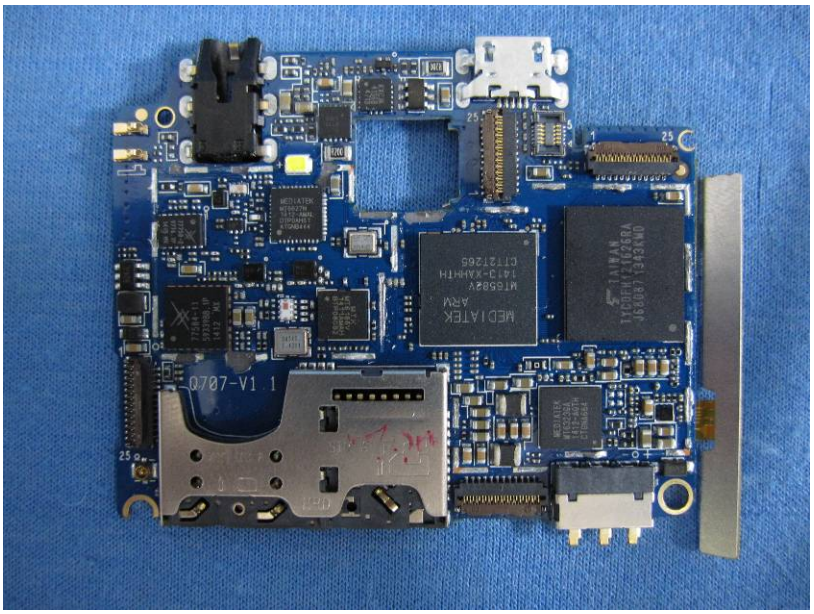



STAINLESS STEEL
50
100
150






Q707-V1.1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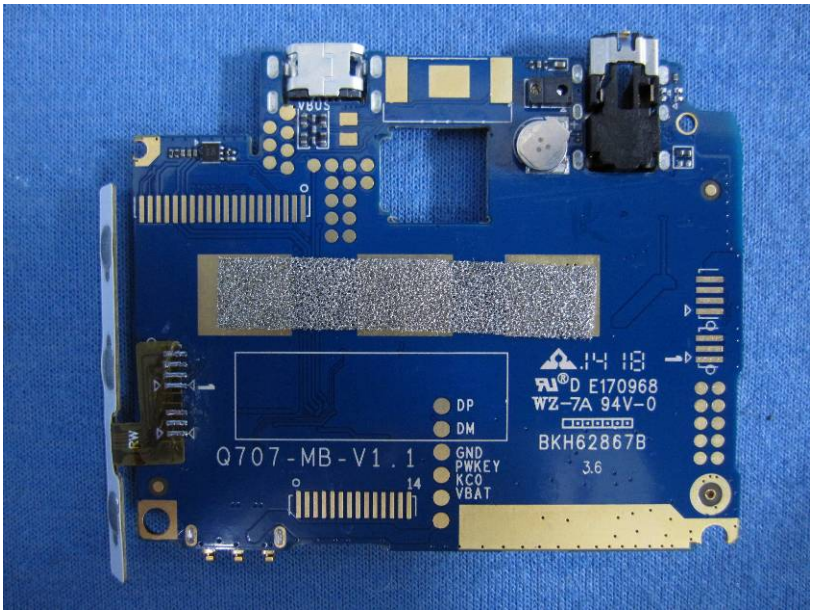
MEDIATEK
ARM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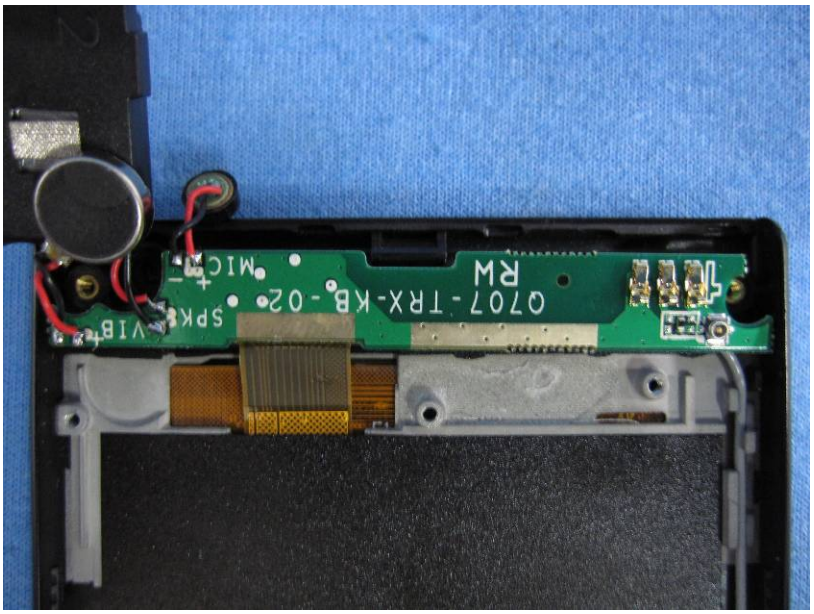
3.6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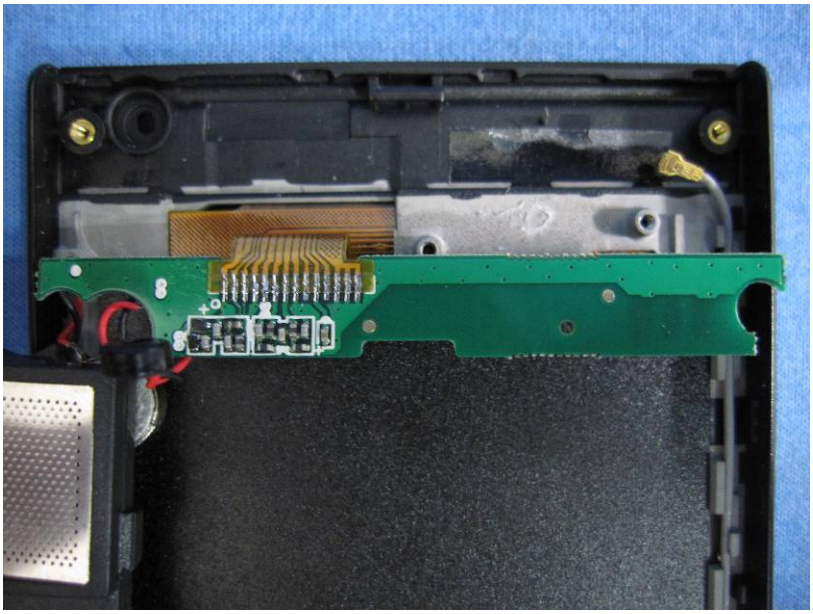
RW



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