FCC Test Report

FCC ID: 2AKSAMOVIC-S

Product Name:	Mobile Phone
Trademark:	N/A
Model Name:	S4001 S4002, S4003, S4004, S4005, S4501, S4502, S4503, S4504, S4505, S5001, S5002, S5003, S5004, S5005, S5501, S5502, S5503, S5504, S5505, S6001, S6002, S6003, S6004, S6005
Prepared For: Address:	Shenzhen YLWD Technology co.,LTD RM1002.A, Haisong BLD.RDTairan, FuTian District, Shenzhen, China
Prepared By: Address:	Shenzhen BCTC Technology Co., Ltd. NO.101, Yousong Road, Longhua New District, Shenzhen, Guangdong, P.R.China
Test Date:	May 10, - May 28, 2017
Date of Report:	May 28, 2017
Report No.:	BCTC-LH170810370-3E

VERIFICATION OF COMPLIANCE

Applicant's name ..... :	Shenzhen YLWD Technology co.,LTD
Address ..... :	RM1002.A, Haisong BLD.RDTairan, FuTian District, Shenzhen, China
Manufacture's Name ..... :	Shenzhen YLWD Technology co.,LTD
Address ..... :	RM1002.A, Haisong BLD.RDTairan, FuTian District, Shenzhen, China
Product description	
Product name ..... :	Mobile Phone
Trademark:	N/A
Model Name:	S4001 S4002, S4003, S4004, S4005, S4501, S4502, S4503, S4504, S4505, S5001, S5002, S5003, S5004, S5005, S5501, S5502, S5503, S5504, S5505, S6001, S6002, S6003, S6004, S6005
Test procedure	FCC CFR Title 47 Part 2: 2015 FCC CFR Title 47 Part22 Subpart H: 2015 FCC CFR Title 47 Part24 Subpart E: 2015 ANSI/ TIA/ EIA-603-D-2010 FCC KDB 971168 D01 Power Meas. License Digital Systems v02v02

This device described above has been tested by BCTC, and the test results show that the equipment under test (EUT) is in compliance with the requirements. And it is applicable only to the tested sample identified in the report.

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Test Result : **Pass**

Testing Engineer : Eric Yang

Eric Yang

Reviewer Supervisor : Jade Yang

Jade Yang

Approved & Authorized Manager : Carson Zhang

Carson Zhang

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1.TEST SUMMARY

Test Items	Test Requirement	Result
RF Exposure (SAR)	Part 1.1307 Part 2.1093	Passed* (Please refer to SAR Report)
Conducted RF Output Power	2.1046	PASS
Peak to Average Radio	2.1055,22.355 24.235,27.54	PASS
99% & -26 dB Occupied Bandwidth	2.1049, 22.917 24.238,	PASS
Frequency Stability	2.1055, 22.355 24.235,	PASS
Conducted Out of Band Emissions	2.1051,2.1057 22.917, 24.238	PASS
Band Edge	2.1051,2.1057 22.917, 24.238	PASS
Transmitter Radiated Power (EIPR/ERP)	22.913, 24.232	PASS
Radiated Out of Band Emissions	2.1053,2.1057 22.917, 24.238	PASS

2.GENERAL PRODUCT INFORMATION

2.1. Product Function

Refer to Technical Construction Form and User Manual.

2.2. Description of Device (EUT)

Product Name:	Mobile Phone
Trademark	N/A
Model No.:	S4001 S4002, S4003, S4004, S4005, S4501, S4502, S4503, S4504, S4505, S5001, S5002, S5003, S5004, S5005, S5501, S5502, S5503, S5504, S5505, S6001, S6002, S6003, S6004, S6005
Model Difference	The product's different for model number.
Operation Frequency:	Bluetooth:2402~2480MHz WIFI:2412MHz~2462MHz (802.11b/802.11g/802.11n(H20)) 2422MHz~2452MHz (802.11n(H40)) GSM 850MHz: Tx: 824.20 - 848.80MHz (at intervals of 200kHz); Rx: 869.20 - 893.80MHz (at intervals of 200kHz) GSM 1900MHz: Tx: 1850.20 - 1909.80MHz (at intervals of 200kHz); Rx: 1930.20 - 1989.80MHz (at intervals of 200kHz) WCDMA Band II: TX: 1852.4MHz - 1907.6MHz, RX: 1932.4MHz - 1987.6MHz
Channel numbers:	Bluetooth:40 Channels WIFI:11 Channel for 802.11b/g/n(HT20), 9 Channel for 802.11n(HT40)
Channel separation:	Bluetooth:1M WIFI:5M
Modulation technology:	Bluetooth: GFSK WIFI:DBPSK/ DQPSK/CCK/BPSK/ QPSK/ 16QAM/ 64QAM GSM/GPRS/EGPRS Mode with GMSK Modulation WCDMA Mode with BPSK Modulation HSDPA Mode with QPSK, 16QAM Modulation HSUPA Mode with QPSK, 16QAM Modulation
Antenna Type:	Internal Antenna
Antenna gain:	1.5dBi (BT &WIFI) 2.0dBi（GSM&WCDMA）
Power supply:	DC 3.7V DC 5V from adapter
Multislot Class:	12
EGPRS Class:	12

2.3. Difference between Model Numbers

The product's different for model number.

2.4. Independent Operation Modes

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	**n** GSM link **n** EGPRS 8 link	**n** GSM link **n** EGPRS 8 link
PCS 1900	**n** GSM link **n** EGPRS 8 link	**n** GSM link **n** EGPRS 8 link
WCDMA Band II	**n** RMC 12.2Kbps link	**n** RMC 12.2Kbps link

Note: The maximum power levels are GSM 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 average power tables are as follows:

Conducted Average Power (dBm)						
Band	GSM850			PCS1900		
Channel	128	190	251	512	661	810
Frequency (MHz)	824.20	836.60	848.80	1850.20	1880.00	1909.80
GSM	31.96	32.15	32.37	28.95	29.10	29.57

3. TEST SITES

3.1. Test Facilities

Site Description

Name of Firm : Shenzhen BCTC Technology Co., Ltd.

Site Location : NO.101, Yousong Road, Longhua New District, Shenzhen, Guangdong, P.R.China

Lab Qualifications : Certificated by Industry Canada
Registration No.: 12655A
Date of registration: January 19, 2015

Certificated by FCC, USA
Registration No.: 187086
Date of registration: November 28, 2014

Certificated by CNAS China
Registration No.: CNAS L6046
Date of registration: February 3, 2013

3.1.1. Measurement Uncertainty

The reported uncertainty of measurement **y ± U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95** %。

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%

3.2. List of Test and Measurement Instruments

3.2.1. For conducted emission at the mains terminals test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
843 Shielded Room	ChengYu	843 Room	843	2016.08.24	2017.08.23
EMI Receiver	R&S	ESCI	101421	2016.08.24	2017.08.23
LISN	Schwarzbeck	NSLK8127	8127739	2016.08.24	2017.08.23
Attenuator	R&S	ESH3-Z2	BCTC021E	2016.08.24	2017.08.23
843 Cable 1#	FUJIKURA	843C1#	001	2016.08.24	2017.08.23

3.2.2. For radiated test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Test Receiver	R&S	ESPI	101318	2016.07.06	2017.07.05
System Simulator	Agilent	E5515C	GB43130252	2016.07.06	2017.07.05
Power Splitter	Weinschel	1506A	NW534	2016.07.06	2017.07.05
Bilog Antenna	TESEQ	CBL6111D	31216	2016.07.06	2017.07.05
Bilog Antenna	TESEQ	CBL6111D	31217	2016.06.07	2017.06.06
Loop antenna	ARA	PLA-1030/B	1029	2016.06.07	2017.06.06
Spectrum Analyzer	Agilent	E4411B	MY4511235	2016.07.06	2017.07.05
Signal Amplifier	SONOMA	313	187022	2016.07.06	2017.07.05
Signal Amplifier	Agilent	8449B	3008A00213	2016.07.06	2017.07.05
RF Cable	R&S	R203	R20X	2016.07.06	2017.07.05
MULTI-DEVICE Controller	ETS-LINDGREEN	31250	126821	N/A	N/A
Horn Antenna	EM	EM-AH-10180	2011071402	2016.07.06	2017.07.05
Horn Antenna	EM	EM-AH-10180	2011071401	2016.07.06	2017.07.05
Horn Antenna	Schwarzbeck	BBHA 9170	9170-181	2016.07.06	2017.07.05
Spectrum Analyzer	Agilent	8593E	3911A03928	2016.07.06	2017.07.05
Spectrum Analyzer	Agilent	E4407B	MY45108040	2016.07.06	2017.07.05
Signal Amplifier	DAZE	ZN3380B	11235	2016.07.06	2017.07.05
High Pass filter	KANGMAI	WHKX1.0/1.5G-10SS	40	2016.07.06	2017.07.05
Filter	COM-MW	ZBSF-C836.5-25-X	BCTC042	2016.07.06	2017.07.05
Filter	COM-MW	ZBSF-C1747.5-75-X2	BCTC045	2016.07.06	2017.07.05
Filter	COM-MW	ZBSF-C1880-60-X2	BCTC047	2016.07.06	2017.07.05
Universal radio communication tester	R&S	CMU200	115295	2016.06.07	2017.06.06
Splitter	Agilent	11435B	1125162	2016.06.07	2017.06.06
RF CONDUCTED TEST					
System Simulator	Agilent	E5515C	GB43130252	2016.07.06	2017.07.05
Spectrum Analyzer	Agilent	E4407B	MY45108040	2016.07.06	2017.07.05
DC Power Supply	LongWei	PS-305D	010965682	2016.06.07	2017.06.06
Constant temperature and humidity box	GF	GTH-800-40-2P	MAA9906-012	2016.06.07	2017.06.06
Universal radio communication tester	R&S	CMU200	115295	2016.06.07	2017.06.06

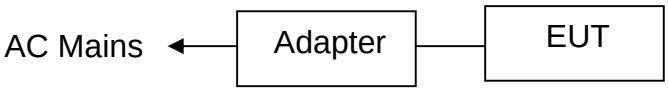
4. TEST SET-UP AND OPERATION MODES

4.1. Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

4.2. Block Diagram of Test Set-up

System Diagram of Connections between EUT and Simulators



(EUT: Mobile Phone)

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4.3. Test Environment:

Ambient conditions in the test laboratory:

Items	Actual
Temperature (℃)	21~23
Humidity (%RH)	50~65

5. EMISSION TEST RESULTS

5.1. Conducted RF Output Power

5.1.1. Limit

According to FCC section 2.1046(a) , FCC part22.913(a) and FCC part24.232(b) ,for transmitters other than single sideband, independent sideband and controlled carrier radiotelephone, power output shall be measured at the RF output terminals when the transmitter is adjusted in accordance with the tune-up procedure to give the values of current and voltage on the circuit elements specified in FCC section 2.1033(c)(8).

5.1.2. Test Setup

The EUT, which is powered by the adapter, is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power.

5.1.3. Test Result

Here the lowest, middle and highest channels are selected to perform testing to verify the conducted RF output power of the EUT.

Measurement data

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)	31.96	32.15	32.37	28.95	29.10	29.57
GPRS (GMSK, 1 TX slot)	31.94	32.14	32.34	28.93	29.09	29.55
GPRS (GMSK, 2 TX slot)	31.19	31.39	31.59	28.16	28.34	28.80
GPRS (GMSK, 3 TX slot)	29.22	29.42	29.62	26.19	26.37	26.83
GPRS (GMSK, 4 TX slot)	27.12	27.32	27.52	24.09	24.27	24.73
EGPRS(GMSK, 1 TX slot)	31.90	32.10	32.30	28.87	29.05	29.51
EGPRS(GMSK, 2 TX slot)	31.17	31.37	31.57	28.14	28.32	28.78
EGPRS(GMSK, 3 TX slot)	29.17	29.37	29.57	26.14	26.32	26.78
EGPRS(GMSK, 4 TX slot)	27.13	27.33	27.53	24.10	24.28	24.74
EGPRS (8PSK, 1 TX slot)	26.54	26.75	26.93	24.28	24.53	24.89
EGPRS (8PSK, 2 TX slot)	25.18	25.48	25.79	23.10	23.31	23.63
EGPRS (8PSK, 3 TX slot)	23.05	23.34	23.52	21.85	21.98	22.25
EGPRS (8PSK, 4 TX slot)	22.11	22.27	22.49	20.95	21.02	21.34

Conducted Power			
Band	WCDMA Band II		
Channel	9262	9400	9538
Frequency	1852.4	1880.0	1907.6
RMC 12.2Kbps	24.13	24.65	23.26
RMC 64Kbps	24.09	24.59	23.22
RMC 144Kbps	24.10	24.61	23.19
RMC 384Kbps	24.07	24.57	23.17
HSDPA Subtest-1	24.11	24.64	23.24
HSDPA Subtest-2	24.1	24.62	23.23
HSDPA Subtest-3	24.08	24.61	23.21
HSDPA Subtest-4	24.07	24.59	23.19
HSUPA Subtest-1	24.12	24.63	23.25
HSUPA Subtest-2	24.09	24.62	23.23
HSUPA Subtest-3	24.07	24.61	23.22

Note: Measurement Uncertainty: ±2.6 dB.

5.2. -26dB and 99% Occupied Bandwidth

5.2.1. Limit

According to FCC section 2.1049 and FCC part22.913(a) and FCC part24.232(b), the occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

Occupied bandwidth is also known as the 99% emission bandwidth,

5.2.2. Test Setup

The EUT, which is powered by the adapter, is coupled to the Spectrum Analyzer (SA) and the System Simulator (SS) with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the SS to operate at the maximum output power.

5.2.3. Test Result

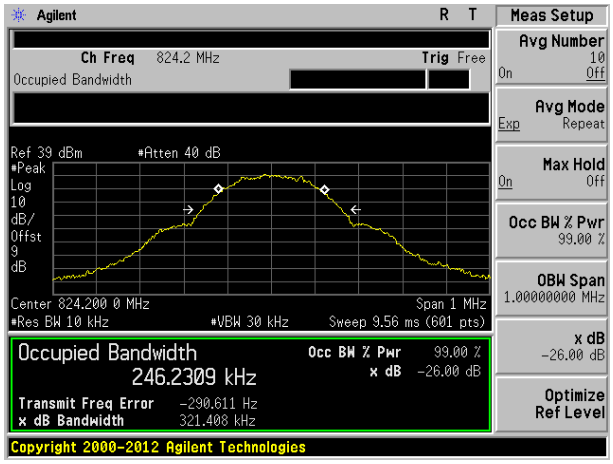
Measurement Data

EUT Mode	Channel	Frequency (MHz)	99% Occupy bandwidth (KHz)	-26dB bandwidth (KHz)
GSM 850 (GSM link)	128	824.20	246.23	321.41
	190	836.60	243.04	313.94
	251	848.80	245.03	321.99
GSM 850 (GPRS 8 link)	128	824.20	245.57	321.05
	190	836.60	245.50	322.28
	251	848.80	245.74	320.71
GSM 850 (EGPRS 8 link)	128	824.20	243.54	319.62
	190	836.60	243.44	318.74
	251	848.80	243.99	322.83
PCS 1900 (GSM link)	512	1850.20	243.99	322.09
	661	1880.00	243.62	320.10
	810	1909.80	243.15	313.11
PCS 1900 (GPRS 8 link)	512	1850.20	242.79	320.90
	661	1880.00	243.02	321.86
	810	1909.80	242.90	315.57
PCS 1900 (EGPRS 8 link)	512	1850.20	243.82	324.45
	661	1880.00	243.44	322.14
	810	1909.80	243.18	322.40
WCDMA Band II (RMC 12.2Kbps link)	9262	1852.4	4203.00	4748.00
	9400	1880.0	4146.70	4673.00
	9538	1907.6	4192.30	4743.00

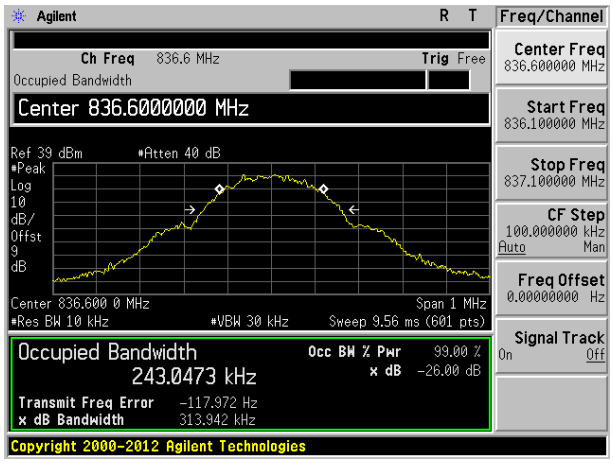
Note: Measurement Uncertainty: ±20Hz.

Test plot as follows:

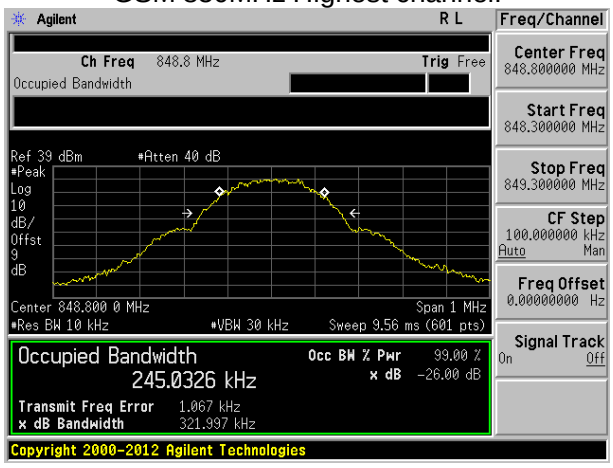
GSM 850MHz Lowest channel



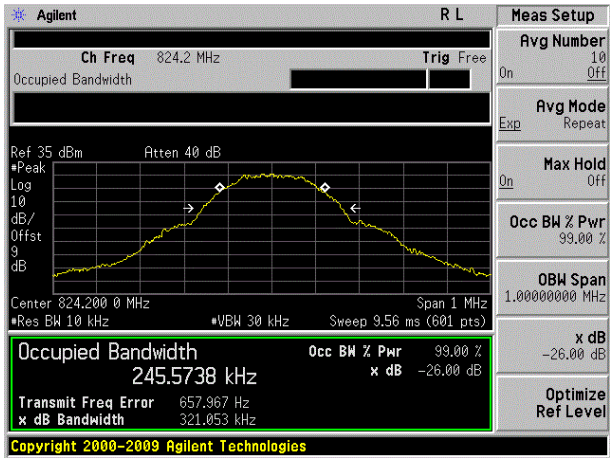
GSM 850MHz Middle channel



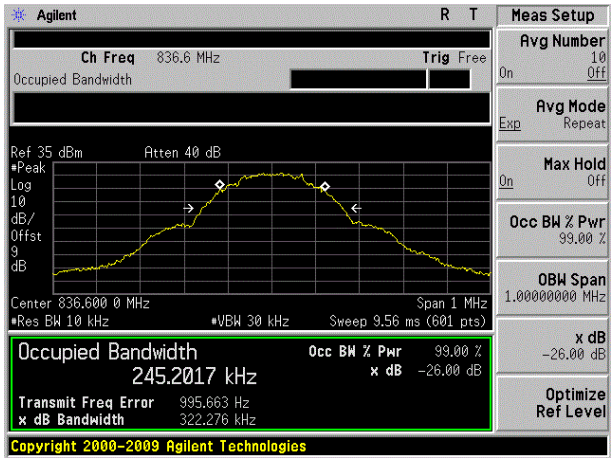
GSM 850MHz Highest channel:



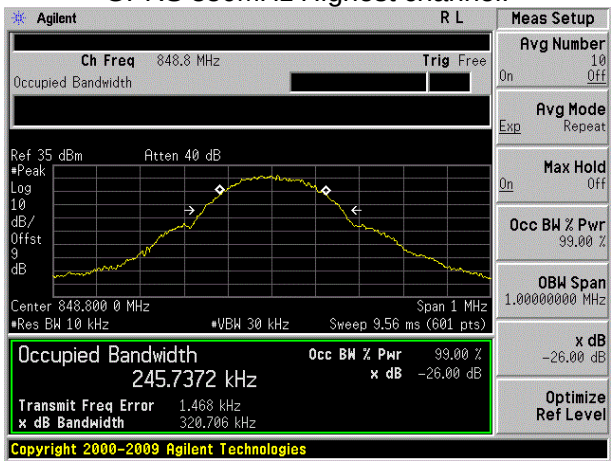
GPRS 850MHz Lowest channel



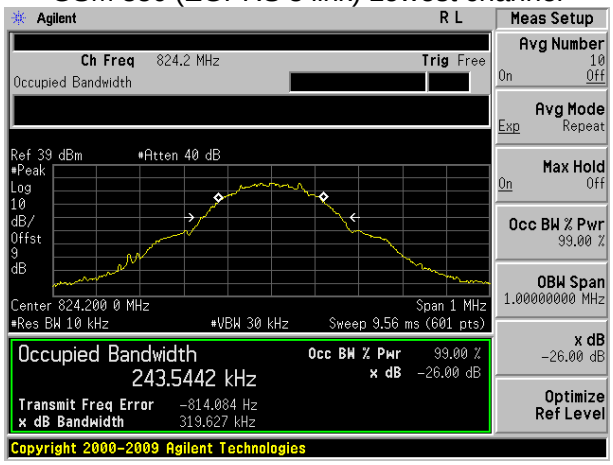
GPRS 850MHz Middle channel



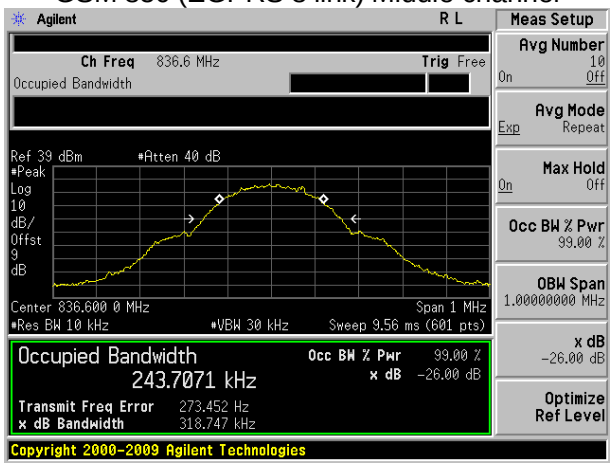
GPRS 850MHz Highest channel:



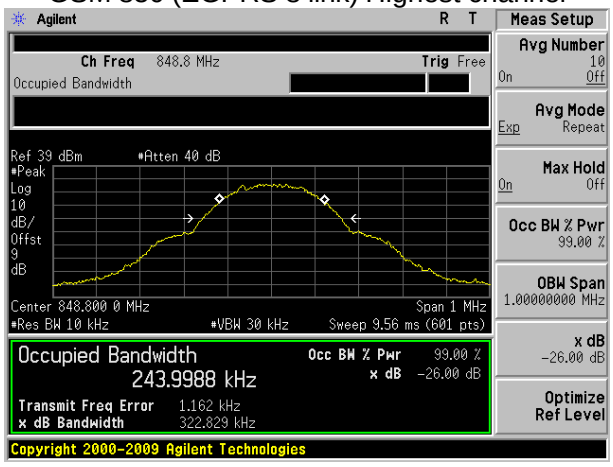
GSM 850 (EGPRS 8 link) Lowest channel



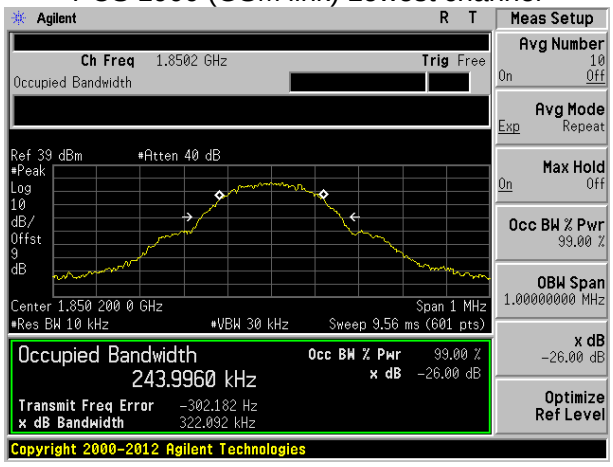
GSM 850 (EGPRS 8 link) Middle channel



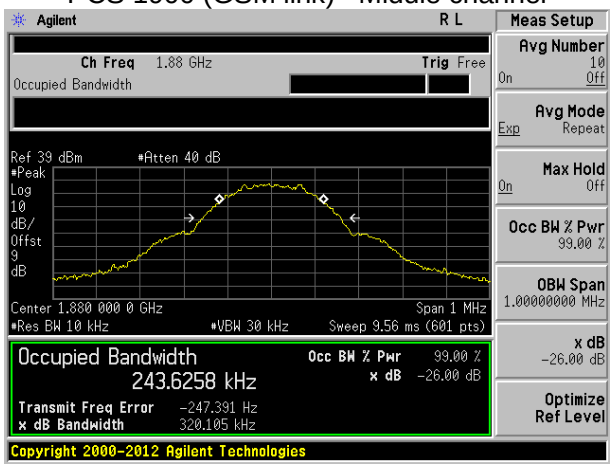
GSM 850 (EGPRS 8 link) Highest channel



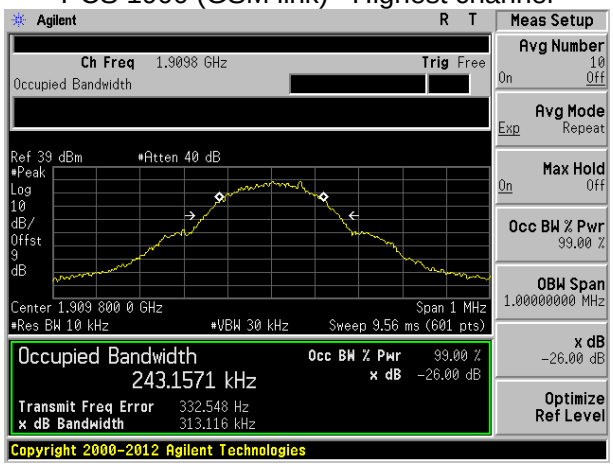
PCS 1900 (GSM link) Lowest channel



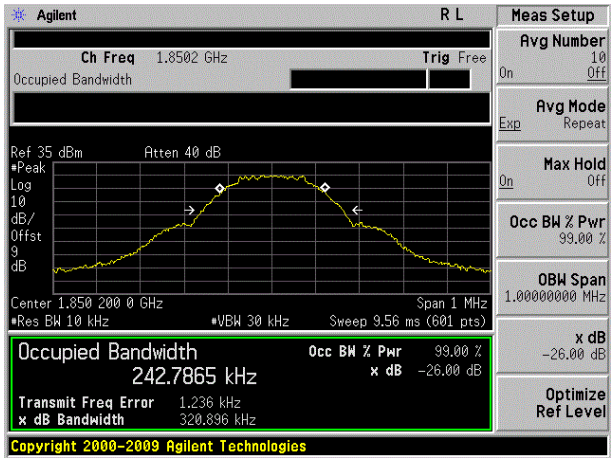
PCS 1900 (GSM link) Middle channel



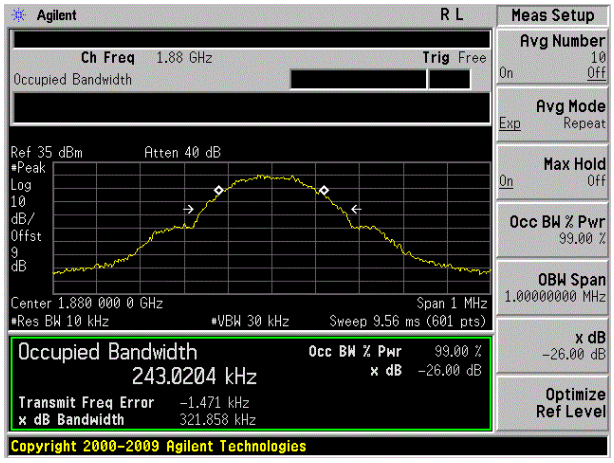
PCS 1900 (GSM link) Highest channel



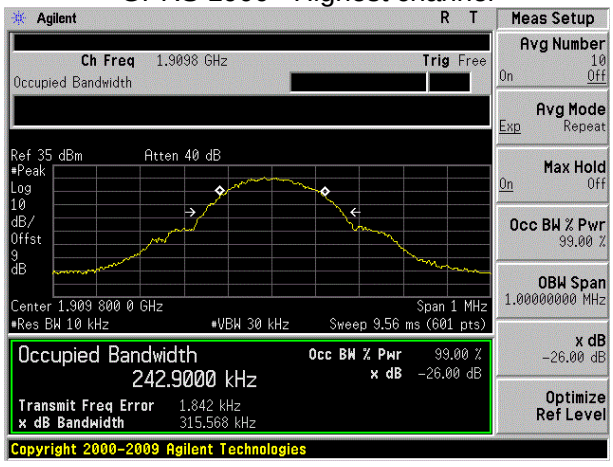
GPRS 1900 Lowest channel



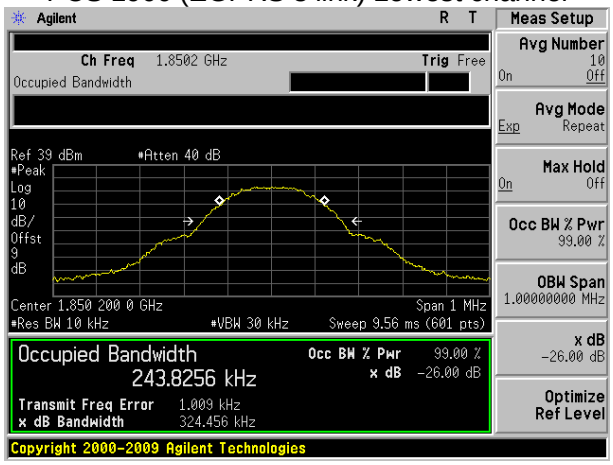
GPRS 1900 Middle channel



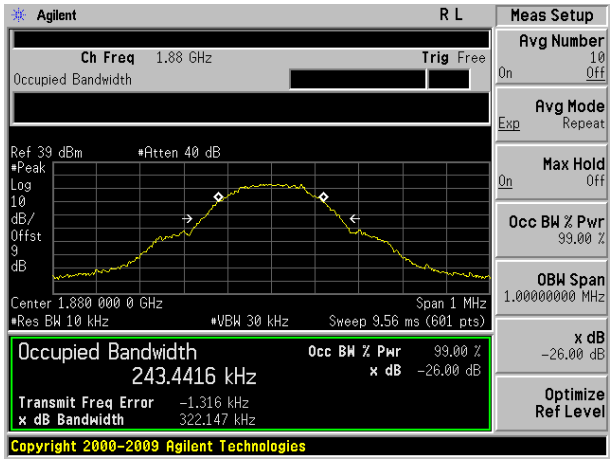
GPRS 1900 Highest channel



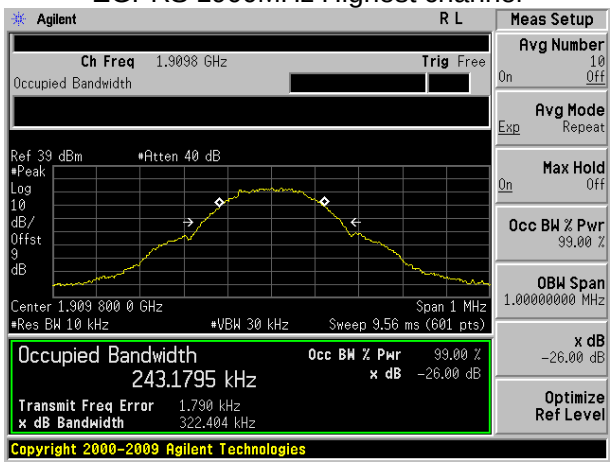
PCS 1900 (EGPRS 8 link) Lowest channel



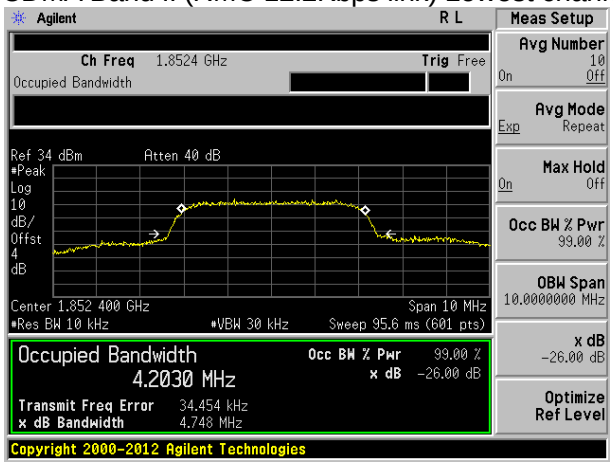
EGPRS 1900MHz Middle channel



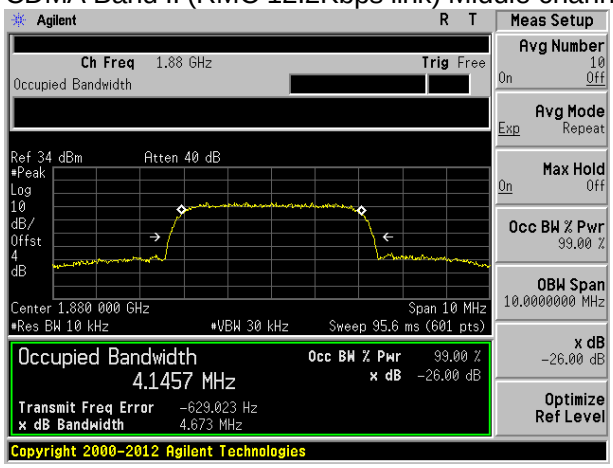
EGPRS 1900MHz Highest channel



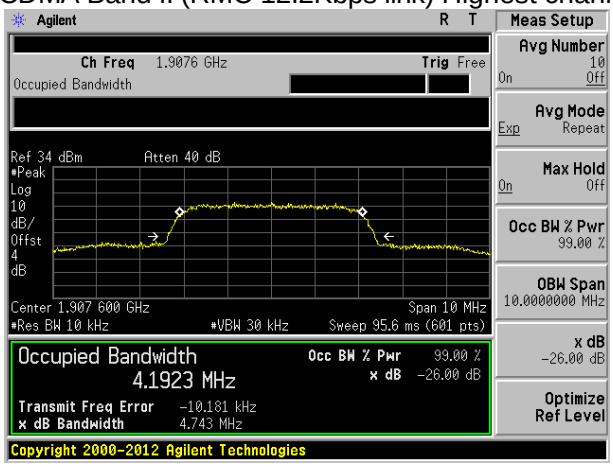
WCDMA Band II (RMC 12.2Kbps link) Lowest channel



WCDMA Band II (RMC 12.2Kbps link) Middle channel



WCDMA Band II (RMC 12.2Kbps link) Highest channel



5.3. Peak to Average Radio

5.3.1. Limit

According to FCC section 27.50(d)(5) , the peak to average ratio(PAR) of the transmission may not exceed 13dB.

5.3.2. Test Setup

According with KDB 971168 v02r02 5.7.2 Alternate procedure for PAPR

Peak power measurements with a peak power meter

The total peak output power may be measured using a broadband peak RF power meter. The power meter must have a video bandwidth that is greater than or equal to the emission bandwidth and utilize a fast-responding diode detector. Average power measurement with average power meter

As an alternative to the use of a spectrum/signal analyzer or EMI receiver to perform a measurement of the total in-band average output power, a wideband RF average power meter with a thermocouple detector or equivalent can be used under certain conditions

If the EUT can be configured to transmit continuously (i.e., the burst duty cycle $\geqslant$ 98%) and at all times the EUT is transmitting at is maximum output power level, then a conventional wide-band RF power meter can be used.

If the EUT cannot be configured to transmit continuously (i.e., the burst duty cycle < 98%), then there are two options for the use of an average power meter. First, a gated average power meter can be used to perform the

measurement if the gating parameters can be adjusted such that the power is measured only over active transmission bursts at maximum output power levels. A conventional average power meter can also be used if the measured burst duty cycle is constant (i.e., duty cycle variations are less than $\pm$ 2 percent) by performing the measurement over the on/off burst cycles and then correcting (increasing) the measured level by a factor equal to 10log(1/duty cycle)

5.3.3. Test Result

Measurement data as follows:

Band		Frequency	Conducted power(dBm)		Peak-to average ratio
		MHz	Peak	Average	(dB)
PCS1900	Low	1850.20	30.19	28.95	1.24
	Middle	1880.00	30.23	29.10	1.13
	High	1909.8	30.92	29.57	1.35
EGPRS 1900	Low	1850.20	30.55	28.87	1.68
	Middle	1880.00	30.11	29.05	1.06
	High	1909.8	30.80	29.51	1.29
WCDMA Band II	Low	1852.4	25.38	24.13	1.25
	Middle	1880.0	25.83	24.65	1.18
	High	1907.6	24.32	23.26	1.06

Note: Measurement Uncertainty: ±0.2 dB.

5.4. Frequency Stability

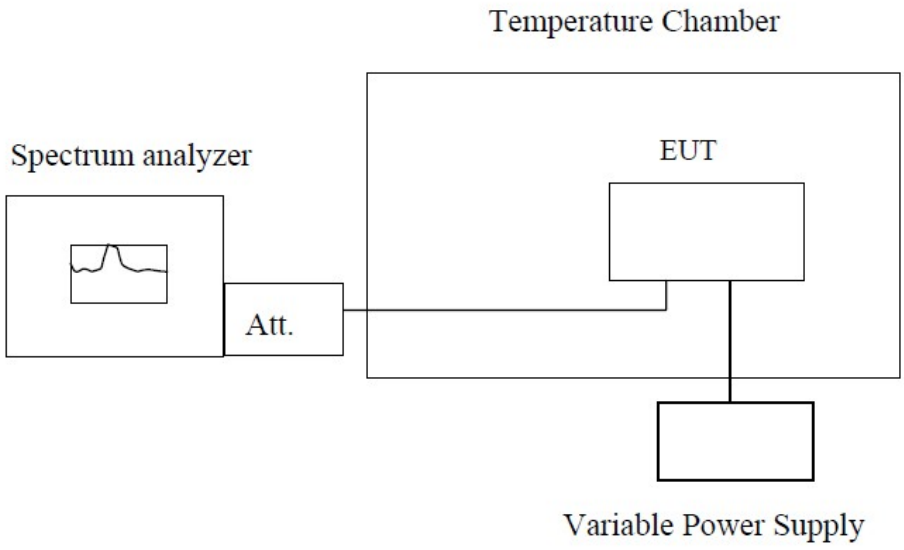
5.4.1. Limit

According to FCC section 22.355 and FCC section 24.235, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. According to FCC section 2.1055, the test conditions are:

(a) The temperature is varied from -30℃ to +50℃ at intervals of not more than 10℃.

(b) For hand carried battery powered equipment, the primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacture. The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided.

5.4.2. Test Setup



Note : Measurement setup for testing on Antenna connector

The EUT, which is powered by the DC Power Supply directly, is located in the Temperature Chamber.

The EUT is commanded by the System Simulator (SS) to operate at the maximum output power

5.4.3. Test Result

The nominal, highest and lowest extreme voltages are separately 3.8VDC, 4.25VDC and 3.6VDC which are specified by the applicant; the normal temperature here used is 25℃. The frequency deviation limit of 850MHz band is ±2.5ppm, and 1900MHz is ±1ppm

Test Conditions			Frequency Deviation			Result
Band	Power(Vdc)	Temperature(℃)	Frequency Error(Hz)	ppm	Limit	
GSM850 (GSM link) Middle channel=190 channel=836.6MHz	3.7	-30	47	0.0562	±2.5	PASS
	3.7	-20	44	0.0526		
	3.7	-10	39	0.0466		
	3.7	0	38	0.0454		
	3.7	10	36	0.0430		
	3.7	20	33	0.0394		
	3.7	30	36	0.0430		
	3.7	40	41	0.0490		
	3.7	50	41	0.0490		
	4.25	25	17	0.0203		
	3.70	25	15	0.0179		
	3.40	25	20	0.0239		
GPRS850 (Middle channel=190 channel=836.6MHz	3.7	-30	25	0.0299	±2.5	PASS
	3.7	-20	23	0.0275		
	3.7	-10	24	0.0287		
	3.7	0	15	0.0179		
	3.7	10	17	0.0203		
	3.7	20	12	0.0143		
	3.7	30	14	0.0167		
	3.7	40	22	0.0263		
	3.7	50	21	0.0251		
	4.25	25	26	0.0311		
	3.70	25	15	0.0179		
	3.40	25	17	0.0203		
GSM850 (EGPRS 8 link) Middle channel=190 channel=836.6MHz	3.7	-30	28	0.0335	±2.5	PASS
	3.7	-20	25	0.0299		
	3.7	-10	22	0.0263		
	3.7	0	21	0.0251		
	3.7	10	19	0.0227		
	3.7	20	17	0.0203		
	3.7	30	21	0.0251		
	3.7	40	23	0.0275		
	3.7	50	24	0.0287		
	4.25	25	19	0.0227		
	3.70	25	17	0.0203		
	3.40	25	20	0.0239		
PCS1900 (GSM link) Middle channel=661 channel=1880MHz	3.7	-30	51	0.0271	±2.5	PASS
	3.7	-20	48	0.0255		
	3.7	-10	42	0.0223		
	3.7	0	40	0.0213		
	3.7	10	39	0.0207		
	3.7	20	35	0.0186		
	3.7	30	40	0.0213		
	3.7	40	44	0.0234		
	3.7	50	42	0.0223		
	4.25	25	39	0.0207		

	3.70	25	35	0.0186		
	3.40	25	37	0.0197		
GPRS1900 Middle channel=661 channel=1880MHz	3.7	-30	45	0.0239	±2.5	PASS
	3.7	-20	38	0.0202		
	3.7	-10	27	0.0144		
	3.7	0	26	0.0138		
	3.7	10	41	0.0218		
	3.7	20	24	0.0128		
	3.7	30	28	0.0149		
	3.7	40	31	0.0165		
	3.7	50	33	0.0176		
	4.25	25	26	0.0138		
	3.70	25	19	0.0101		
	3.40	25	34	0.0181		
PCS1900 (EGPRS 8 link) Middle channel=661 channel=1880MHz	3.7	-30	47	0.0250	±2.5	PASS
	3.7	-20	44	0.0234		
	3.7	-10	39	0.0207		
	3.7	0	38	0.0202		
	3.7	10	36	0.0191		
	3.7	20	33	0.0176		
	3.7	30	36	0.0191		
	3.7	40	41	0.0218		
	3.7	50	41	0.0218		
	4.25	25	36	0.0191		
	3.70	25	33	0.0176		
	3.40	25	35	0.0186		
WCDMA Band II Middle channel=9400 channel=1880.0MHz	3.7	-30	49	0.0261	±2.5	PASS
	3.7	-20	44	0.0234		
	3.7	-10	38	0.0202		
	3.7	0	36	0.0191		
	3.7	10	33	0.0176		
	3.7	20	29	0.0154		
	3.7	30	36	0.0191		
	3.7	40	40	0.0213		
	3.7	50	38	0.0202		
	4.25	25	34	0.0181		
	3.70	25	29	0.0154		
	3.40	25	32	0.0170		

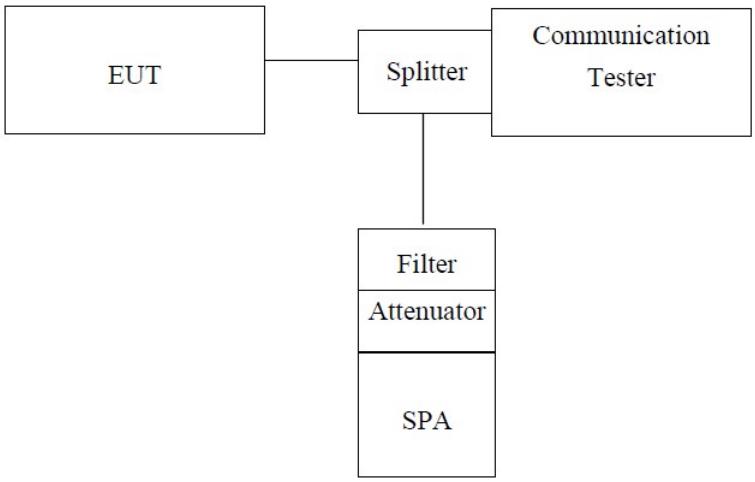
Note: Measurement Uncertainty: ±20Hz.

5.5. Conducted Spurious Emissions

5.5.1. Limit

According to FCC section 22.917(a) and FCC section 24.238(a), the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43+10*log(P)dB. This calculated to be -13dBm.

5.5.2. Test Setup



Note: *Measurement setup for testing on Antenna connector*

5.5.3. Measurement Procedure

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

For the out of band: Set the RBW, VBW = 100KHz, Start=30MHz, Stop= 10th harmonic.

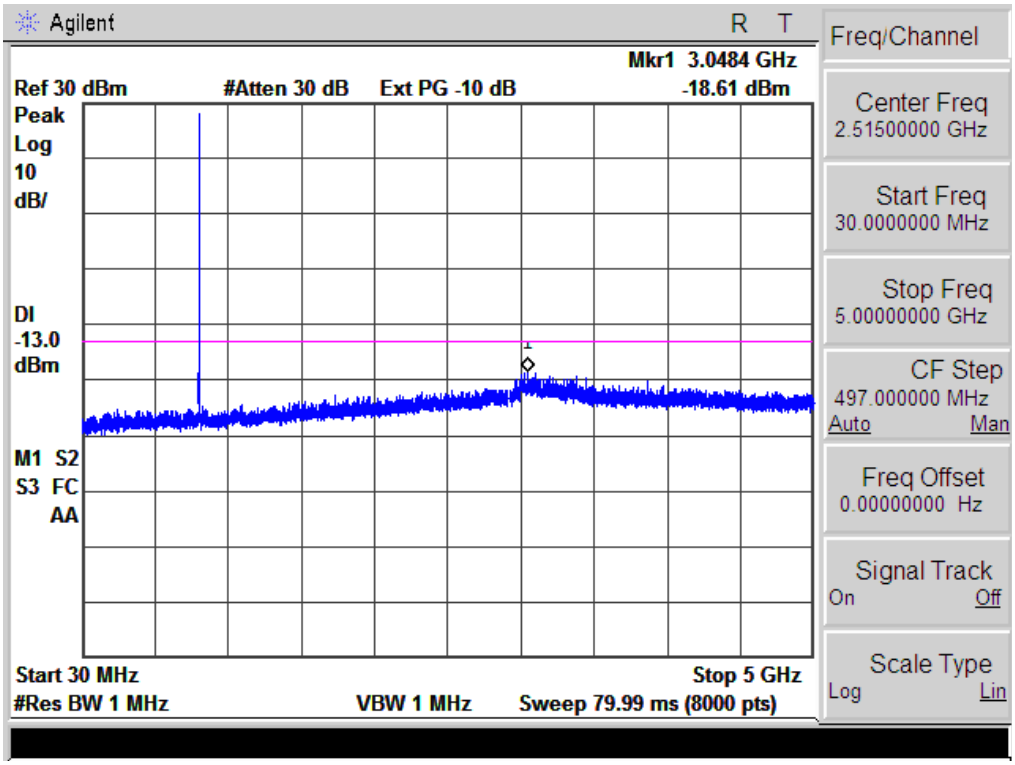
Limit = -13dBm

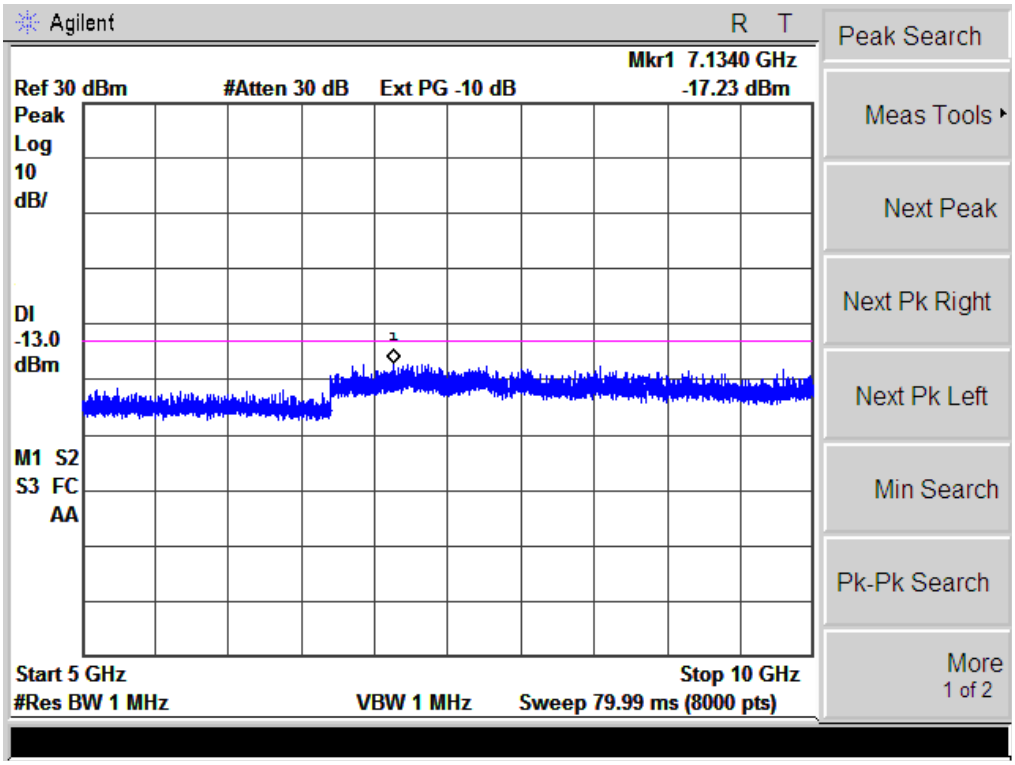
5.5.4. Test Result

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the out of band emissions.

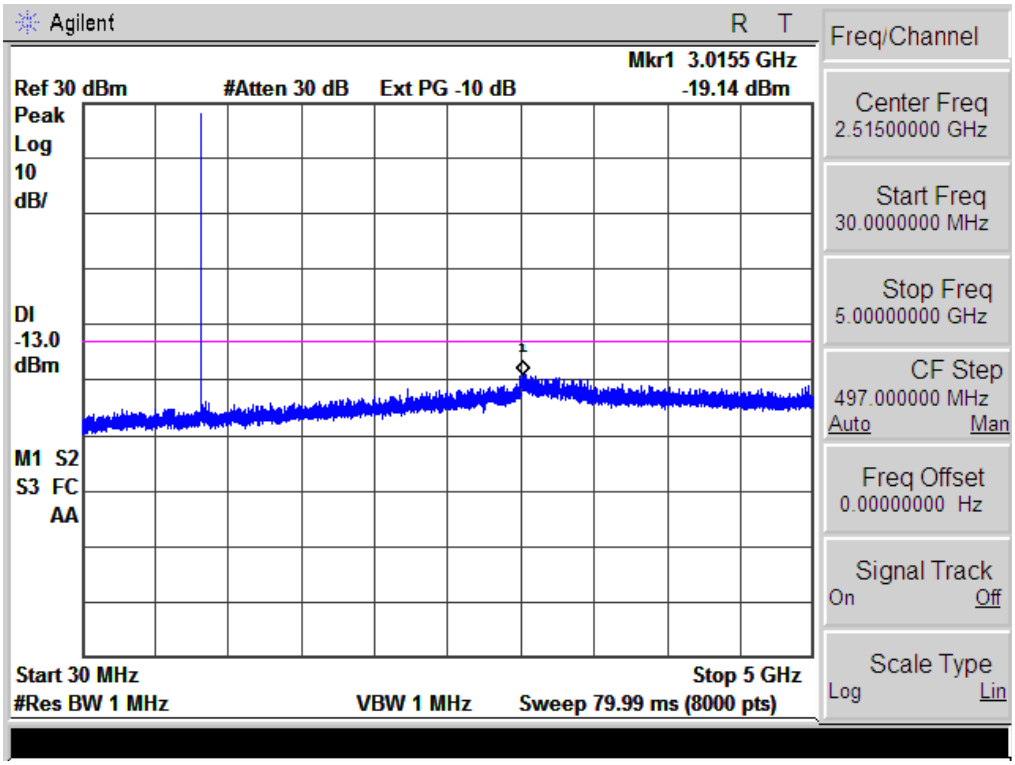
Test plot as follows:

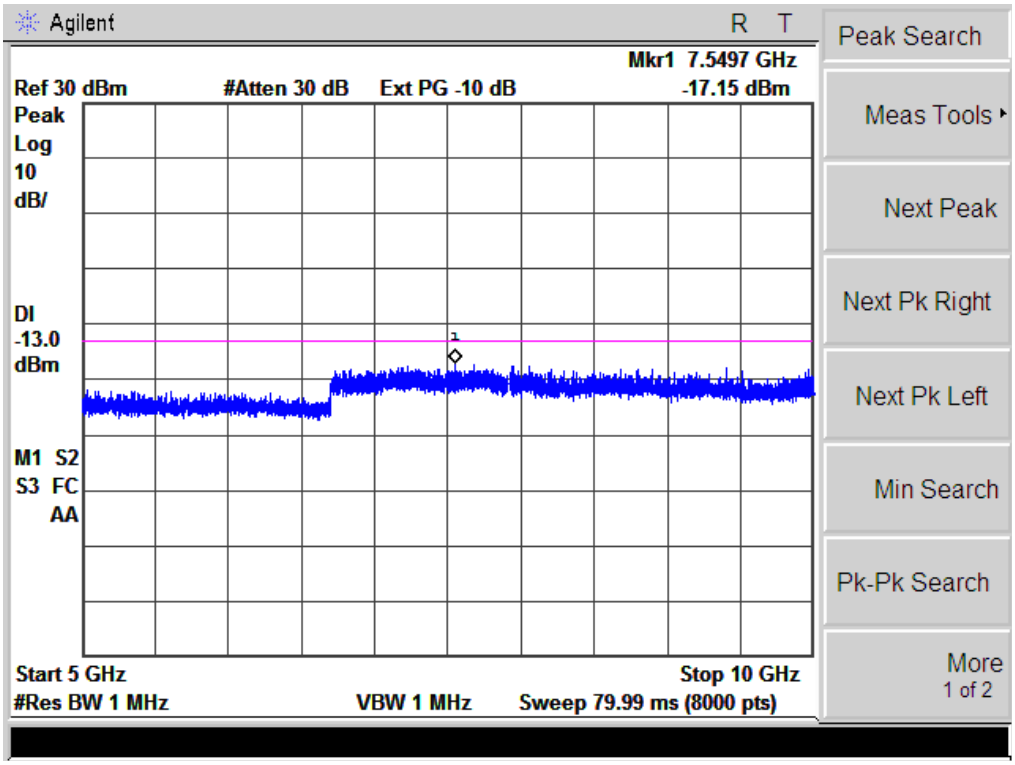
GSM 850MHz Lowest channel



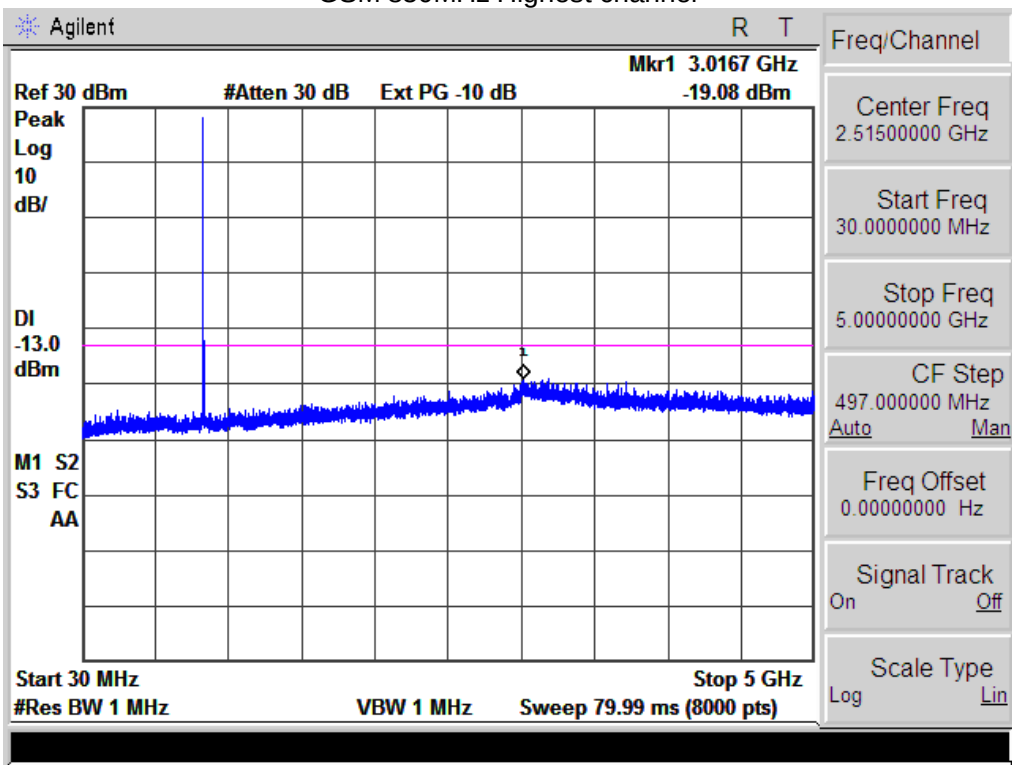


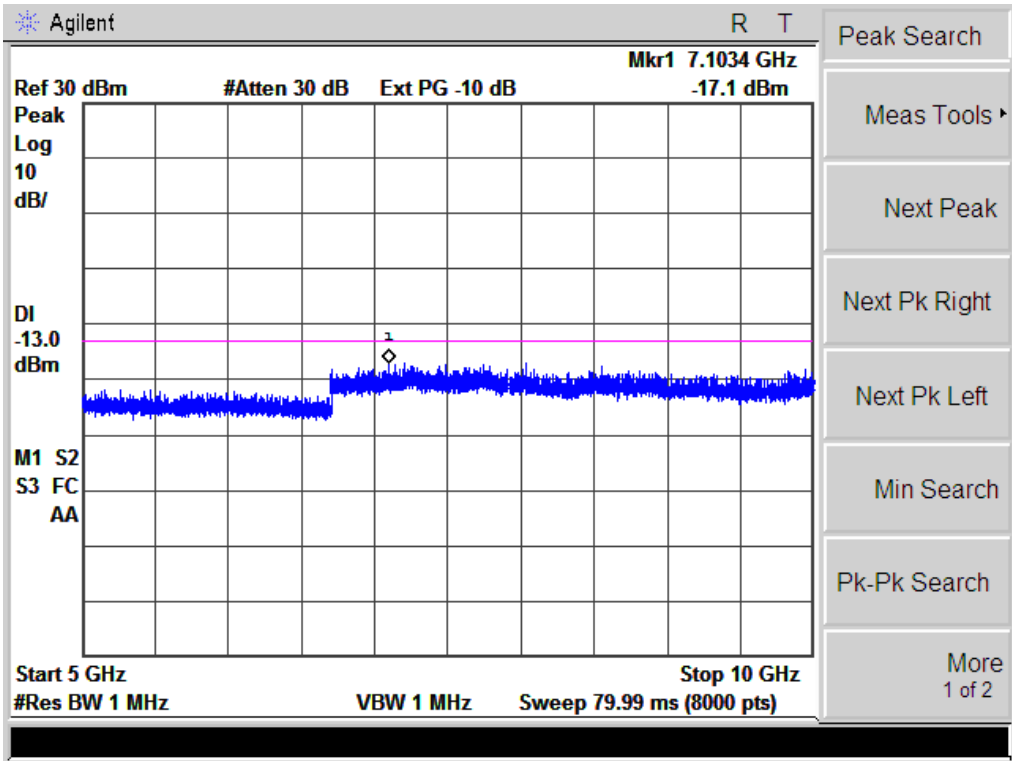
GSM 850MHz Middle channel



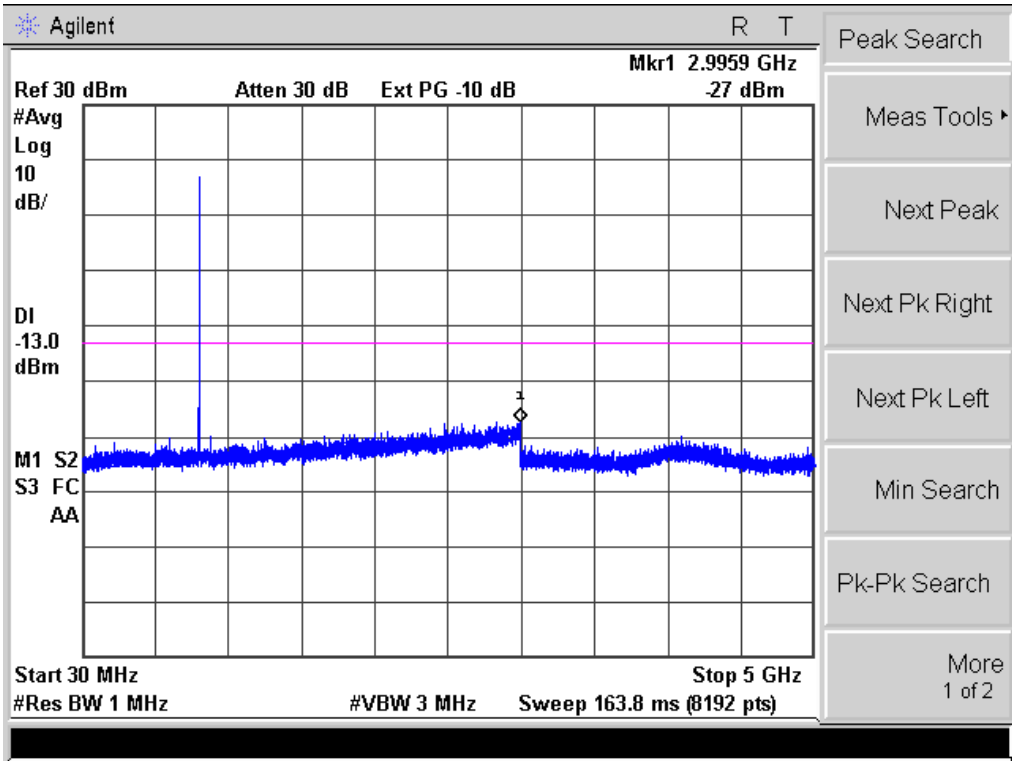


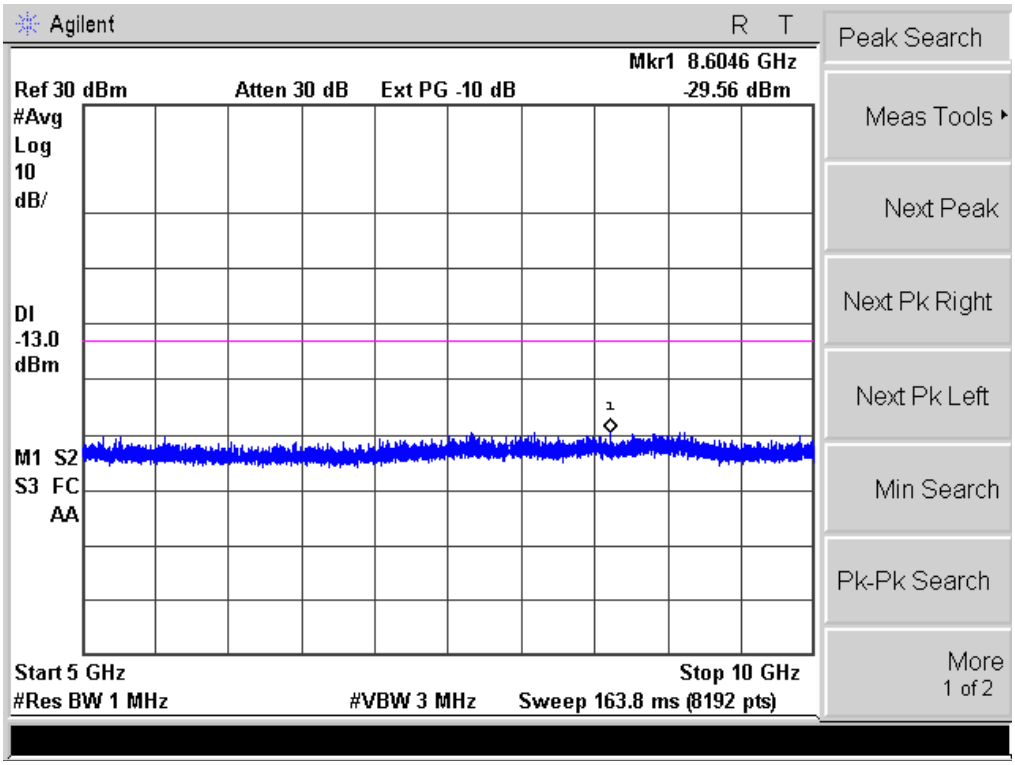
GSM 850MHz Highest channel



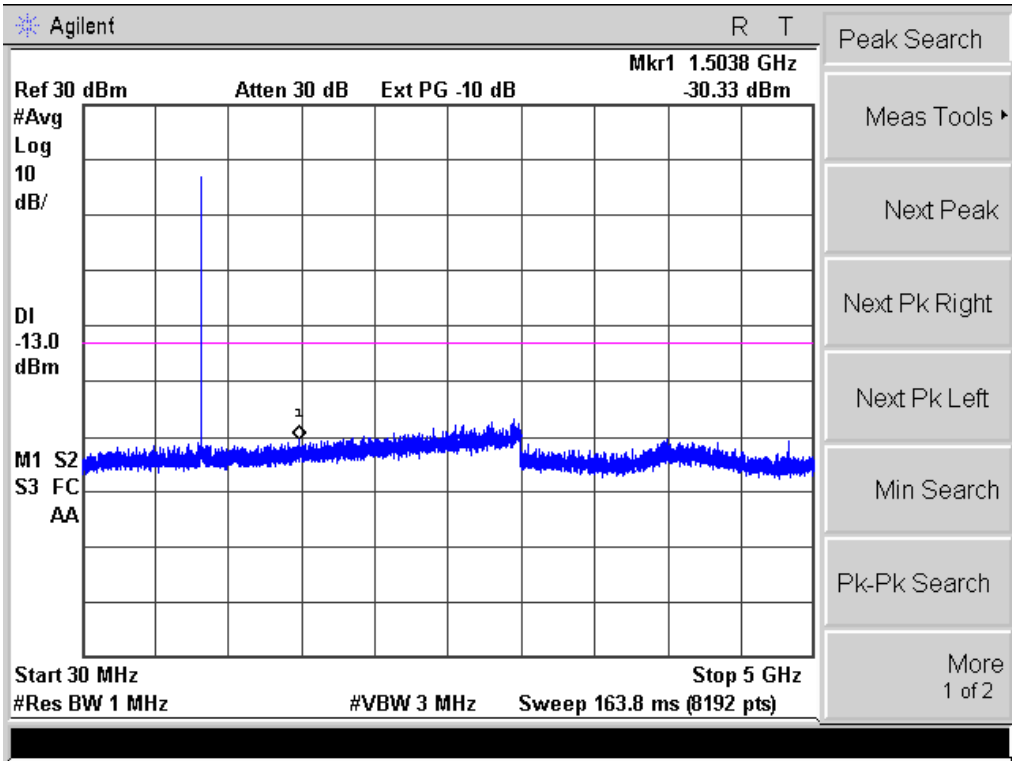


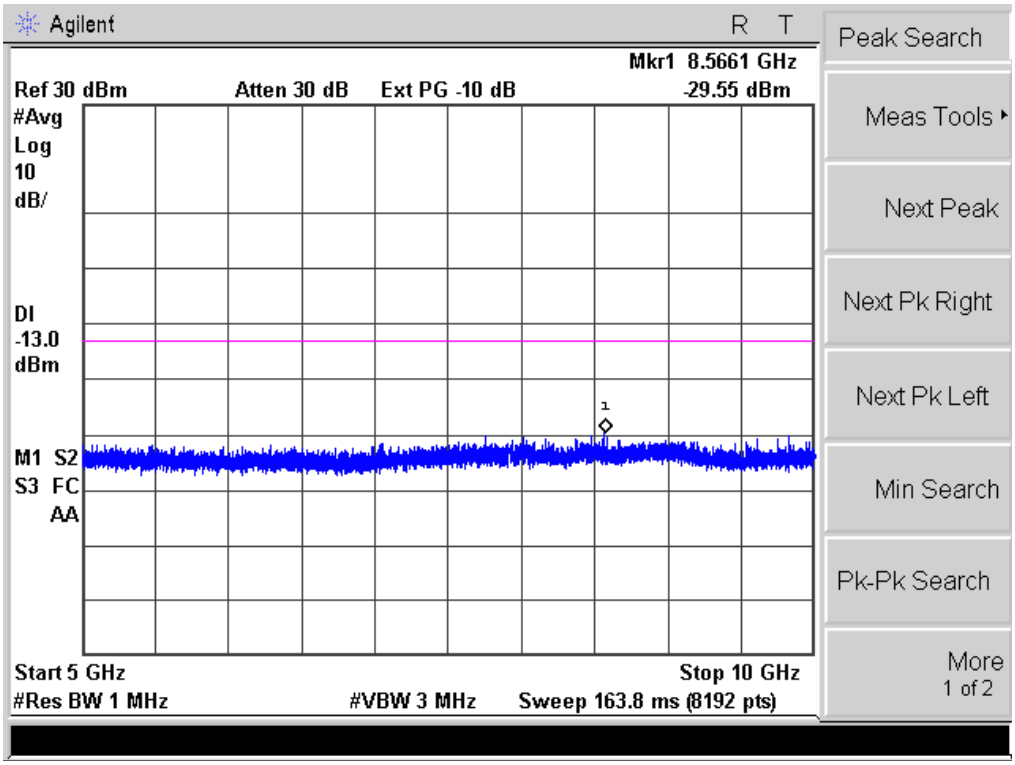
GPRS 850MHz Lowest channel



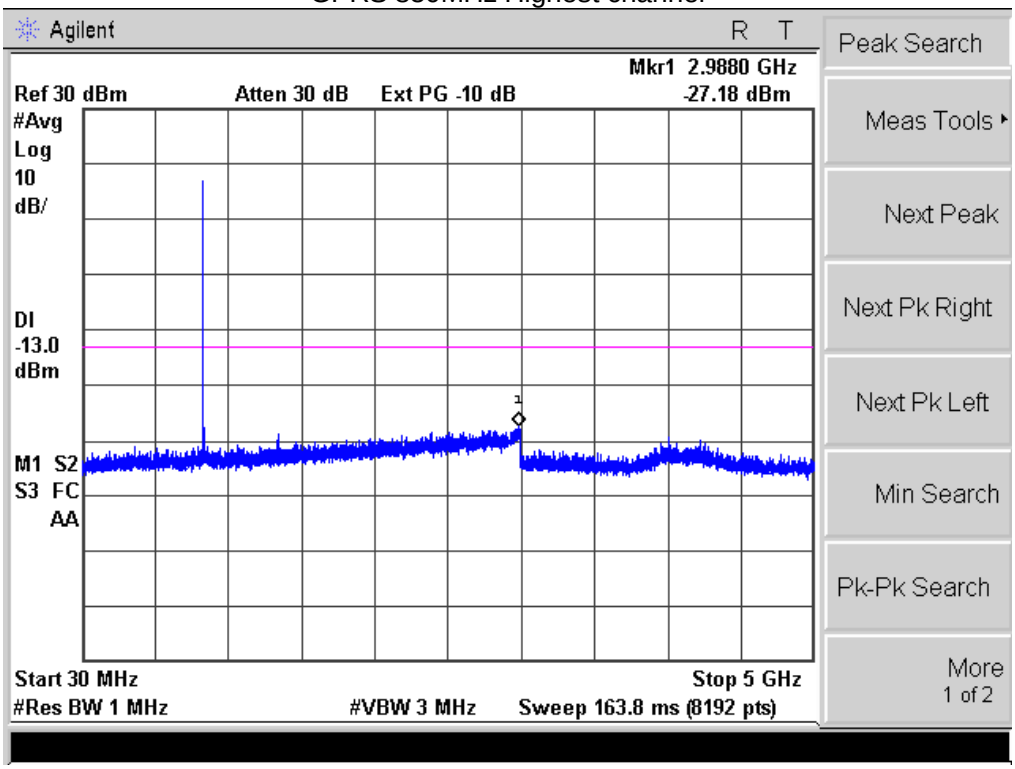


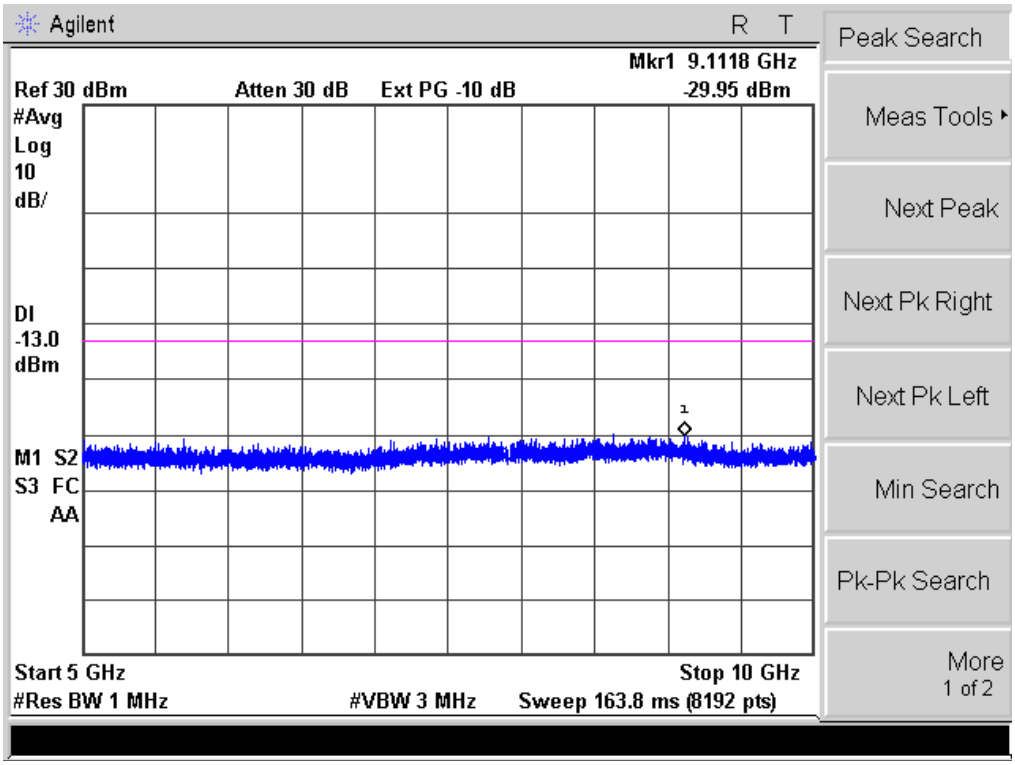
GPRS 850MHz Middle channel



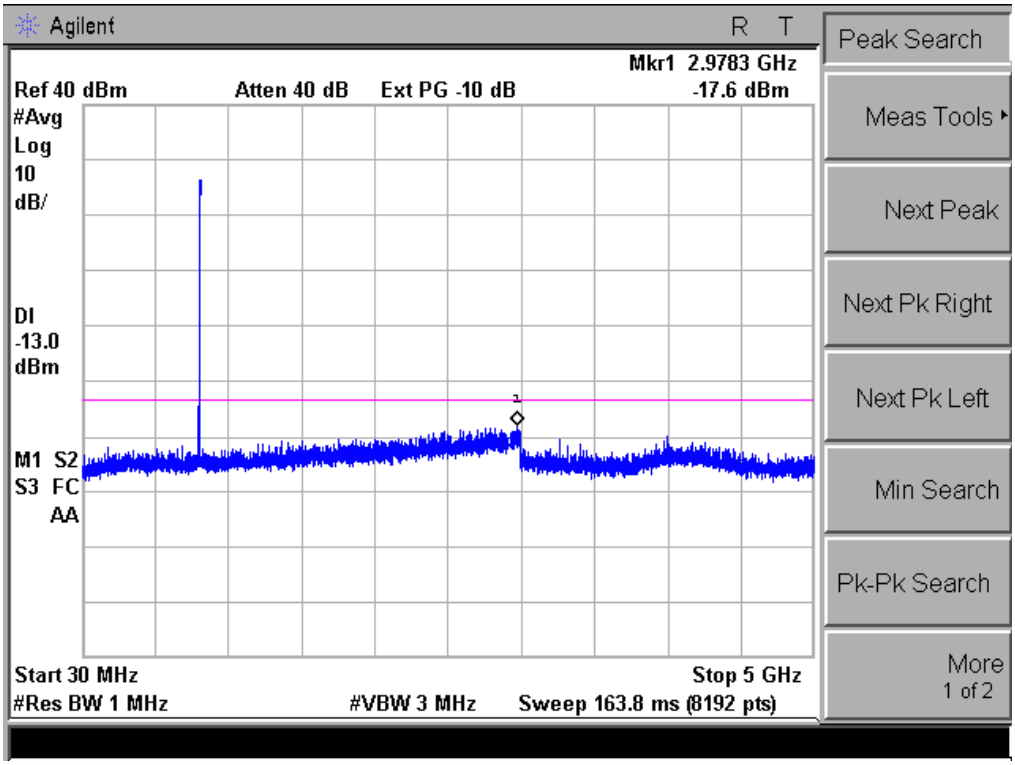


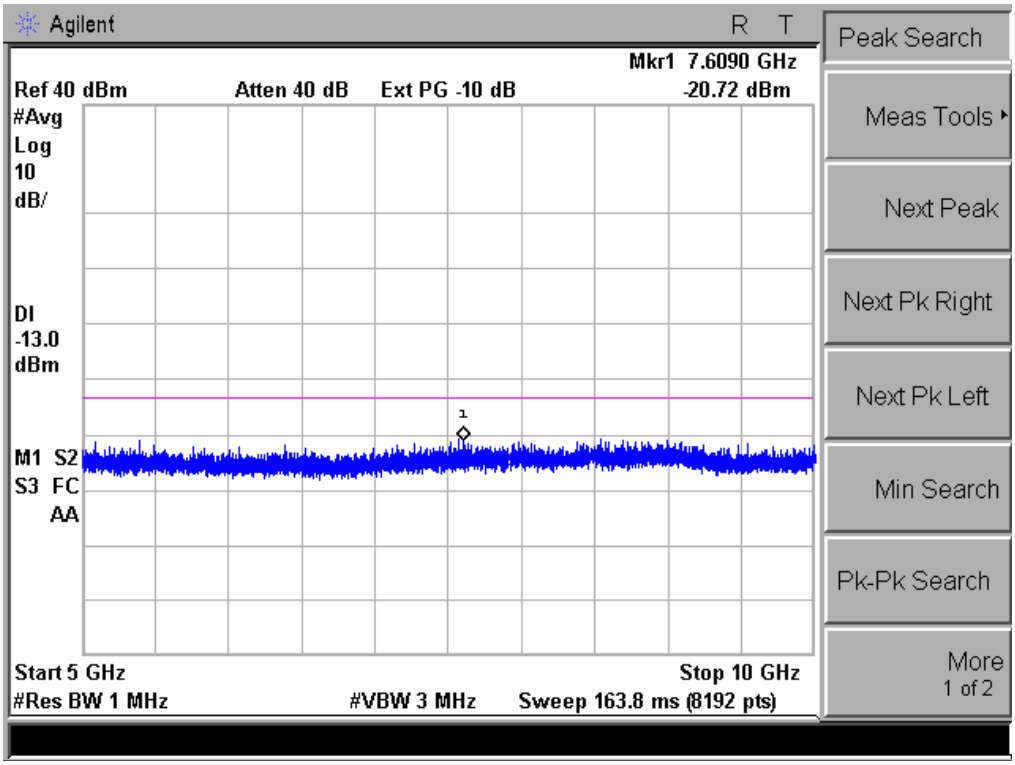
GPRS 850MHz Highest channel



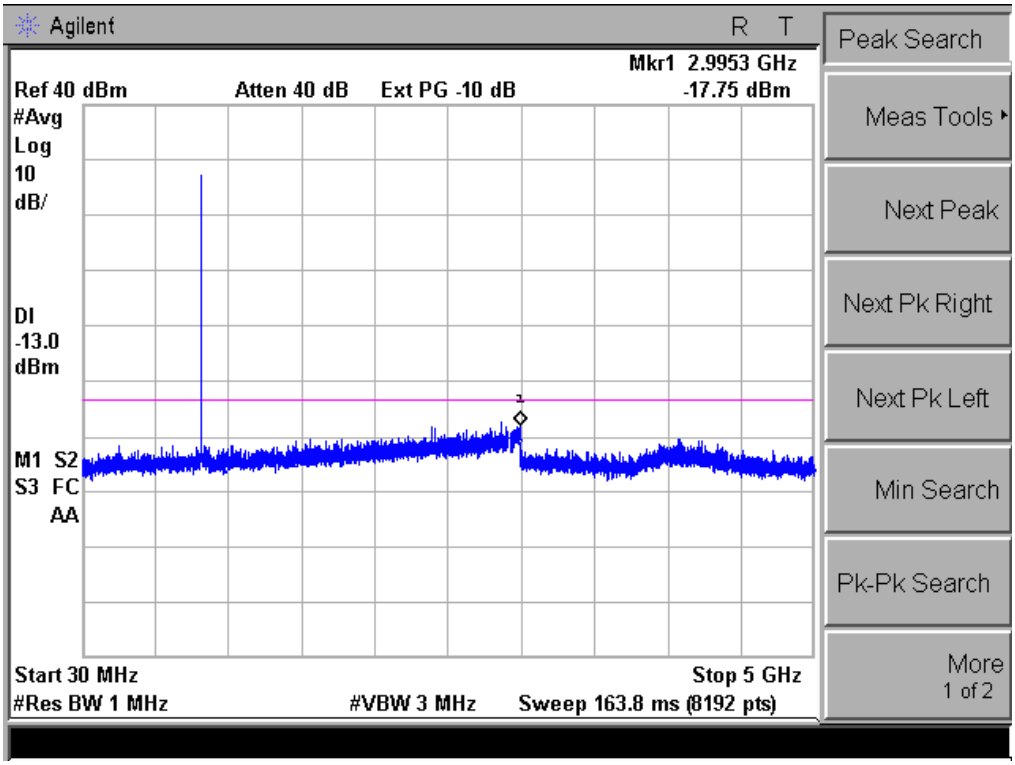


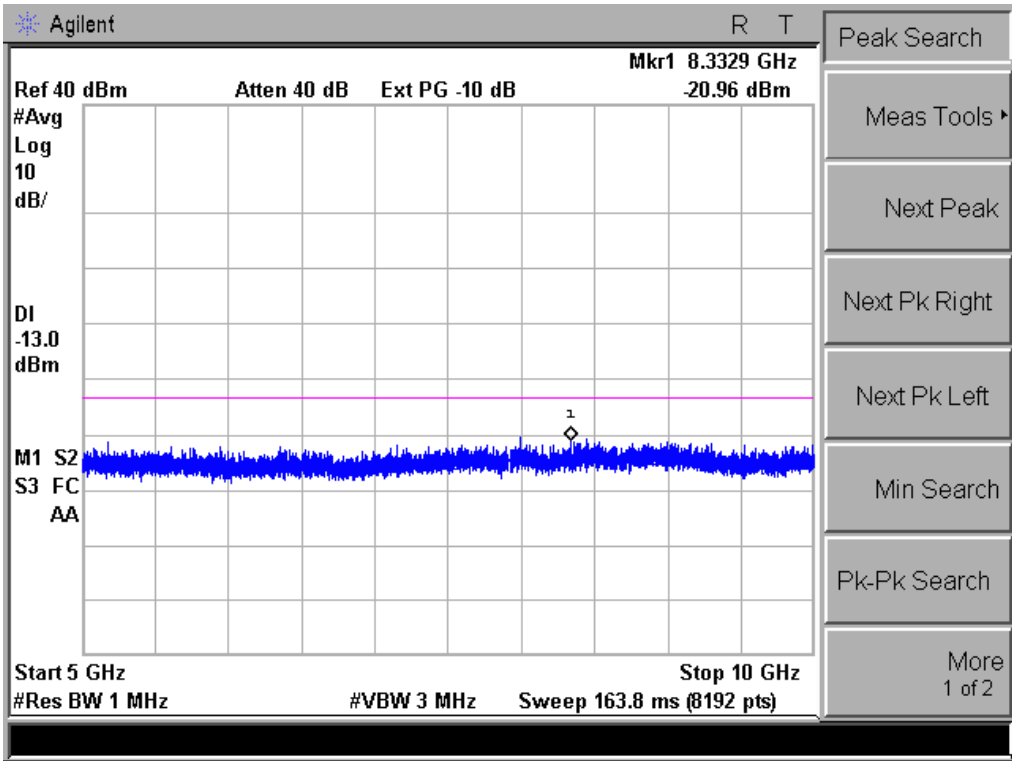
EGPRS 850MHz Lowest channel



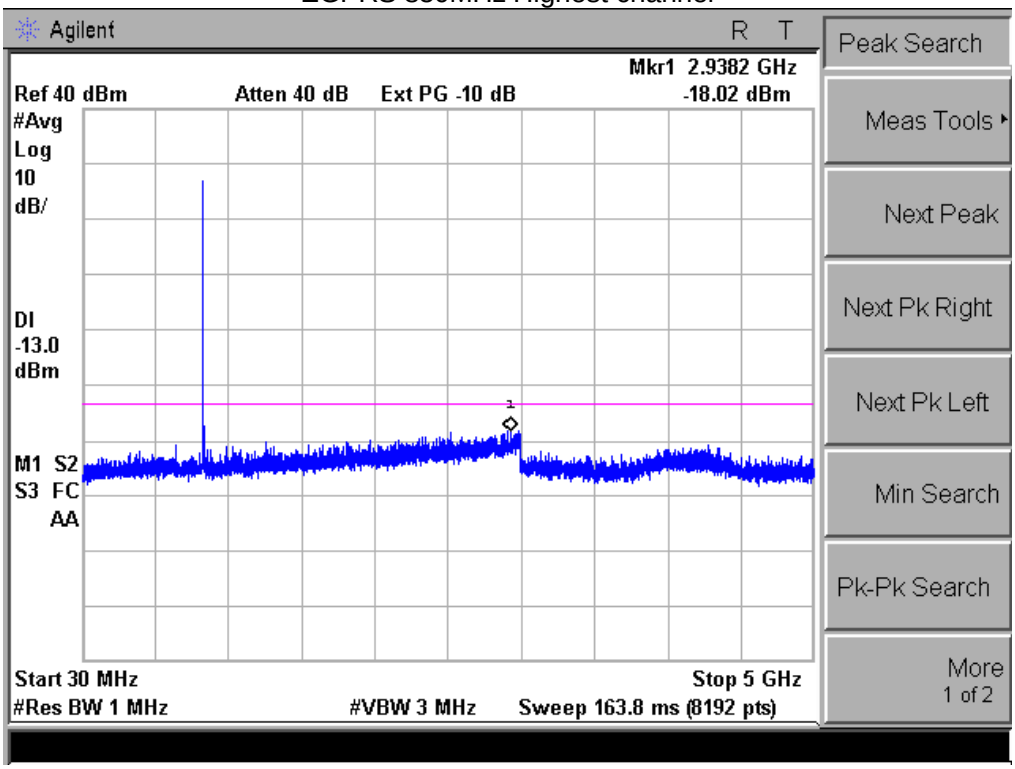


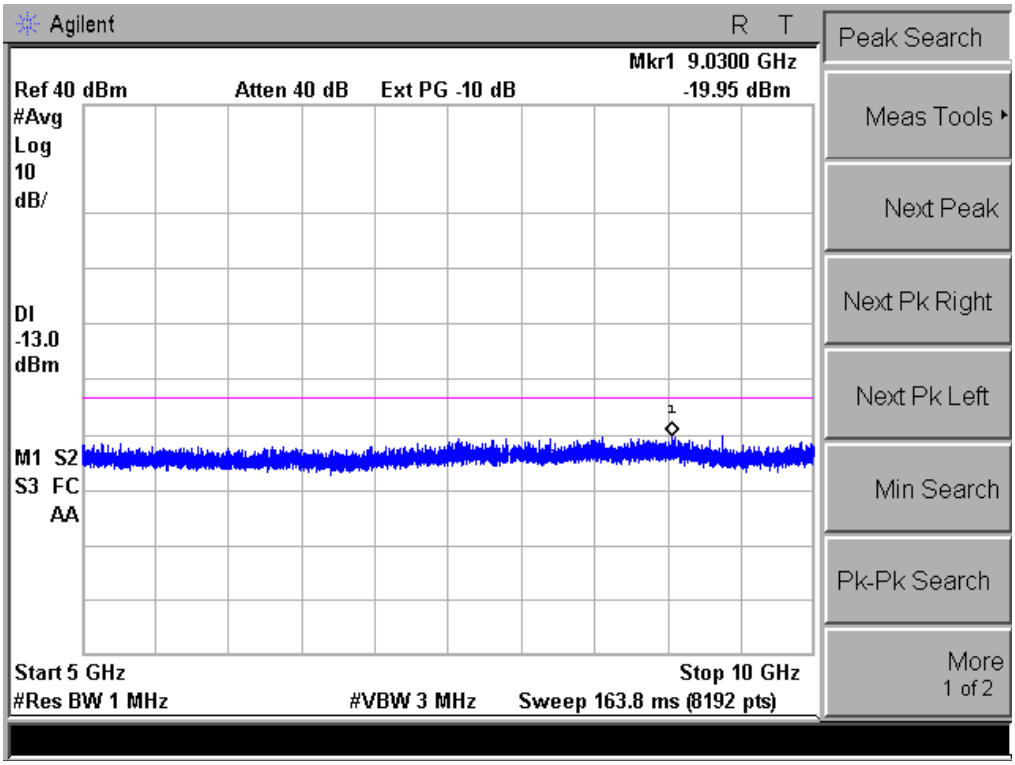
EGPRS 850MHz Middle channel



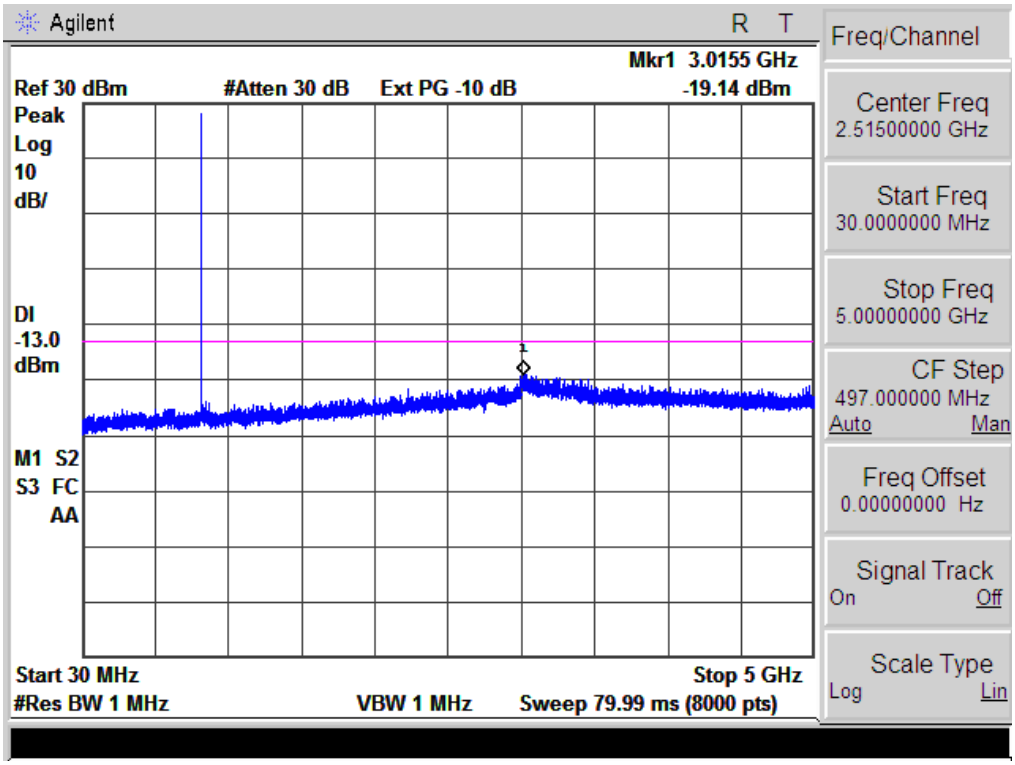


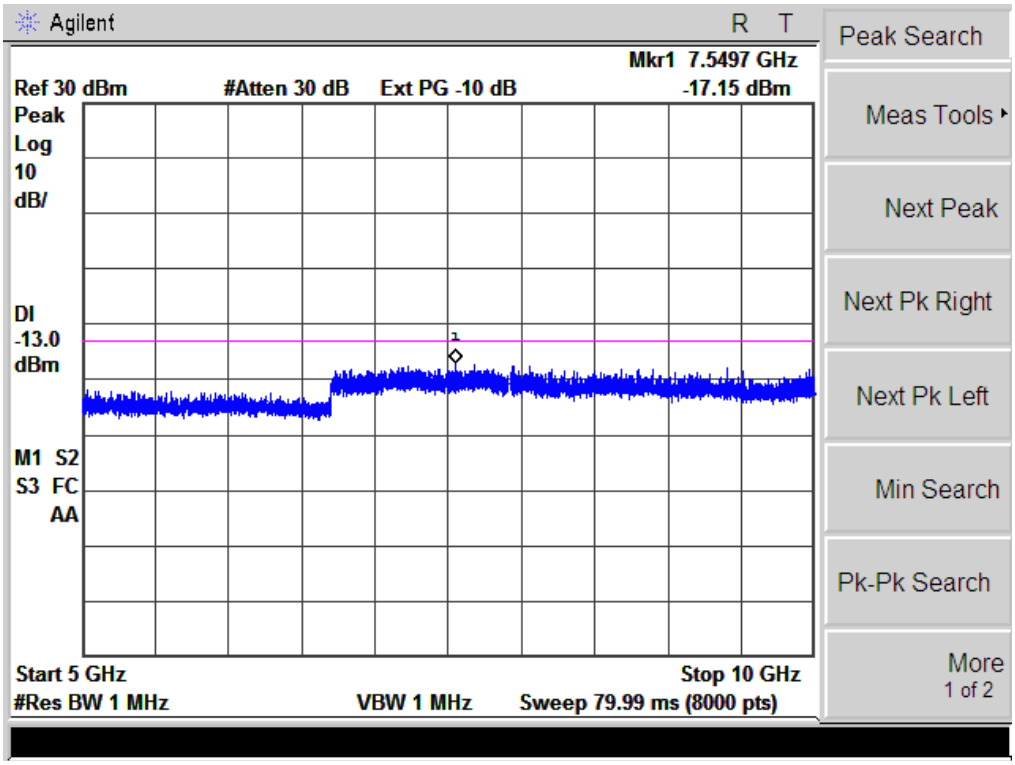
EGPRS 850MHz Highest channel



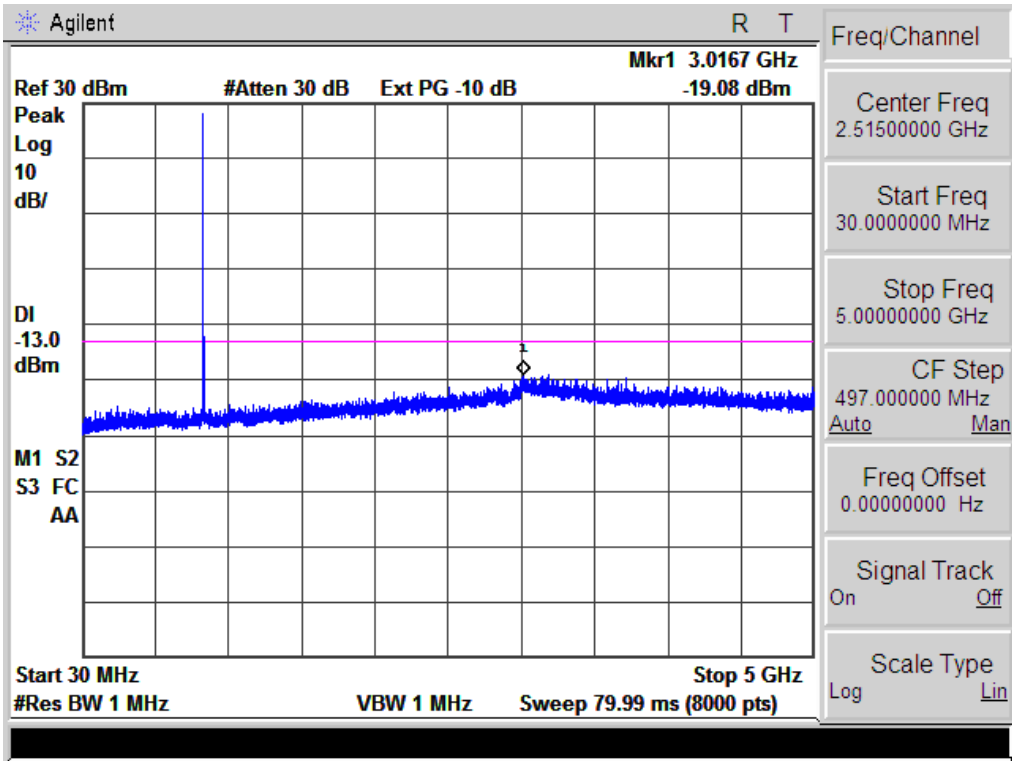


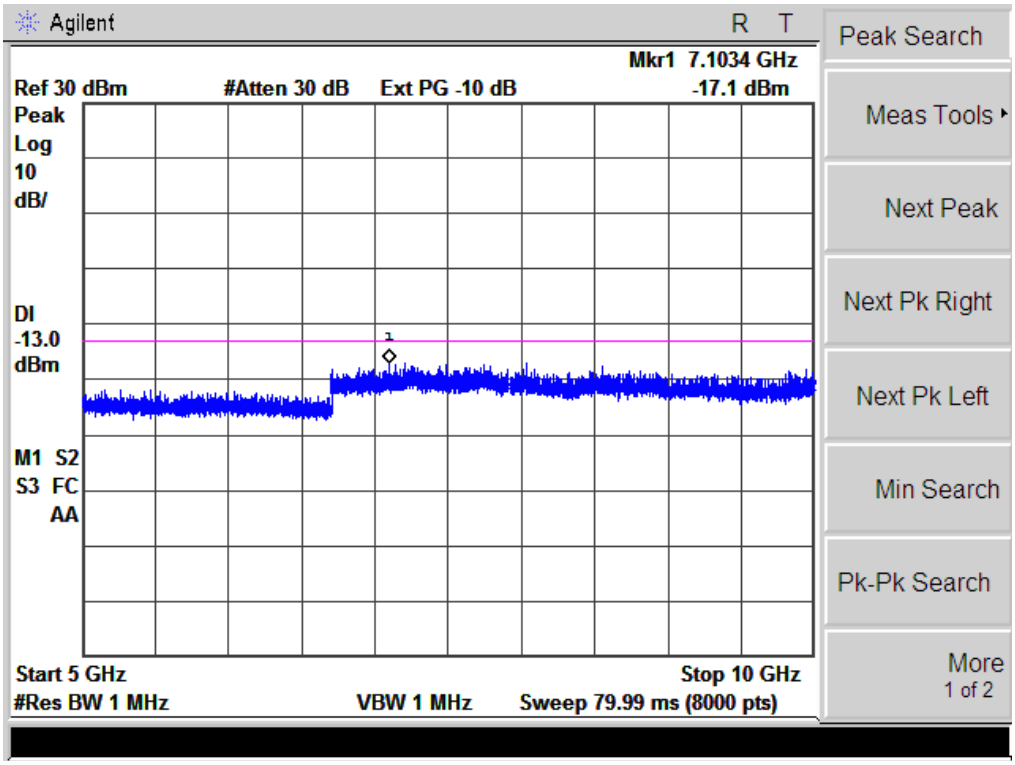
GSM 1900MHz Lowest channel



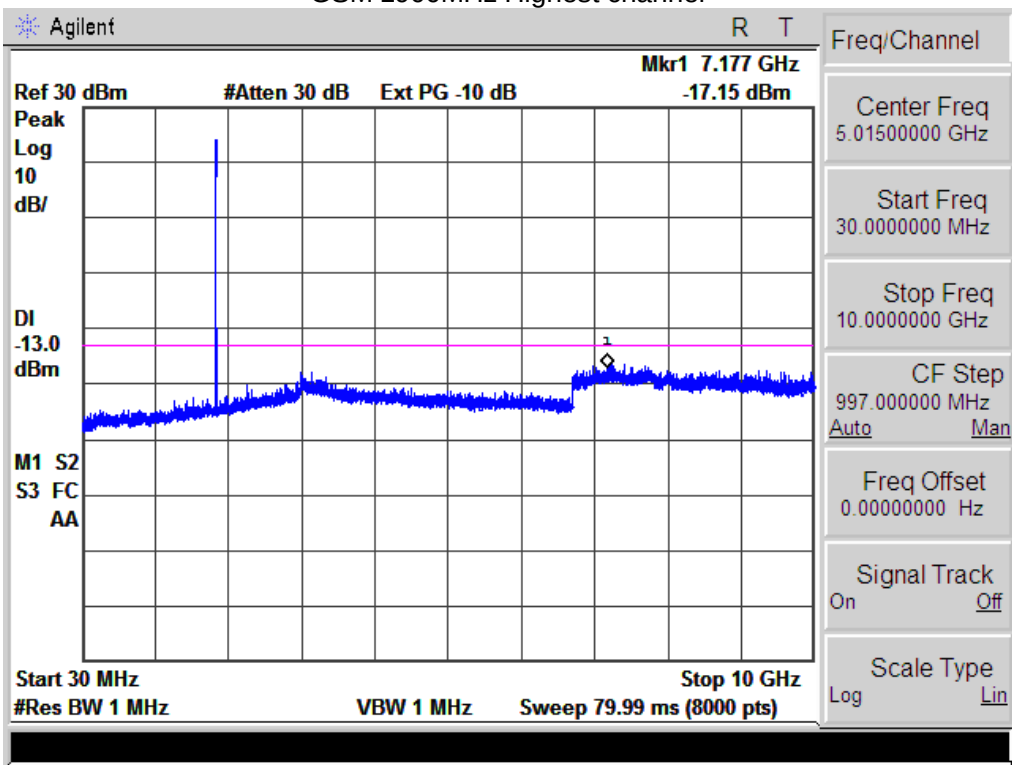


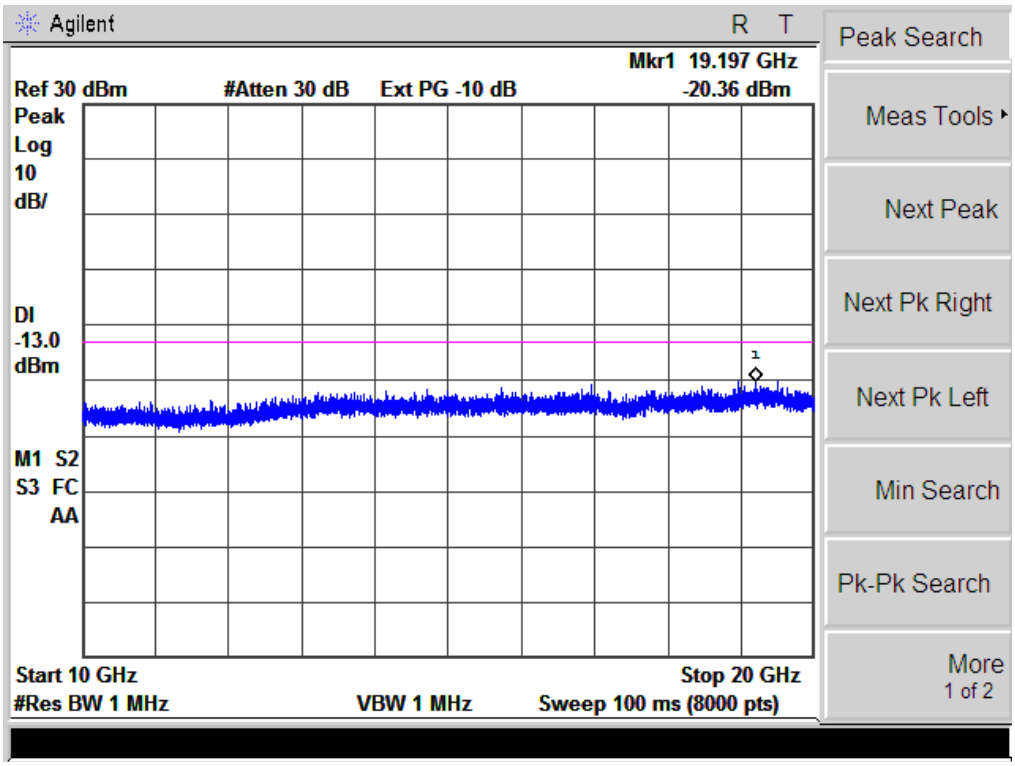
GSM 1900MHz Middle channel



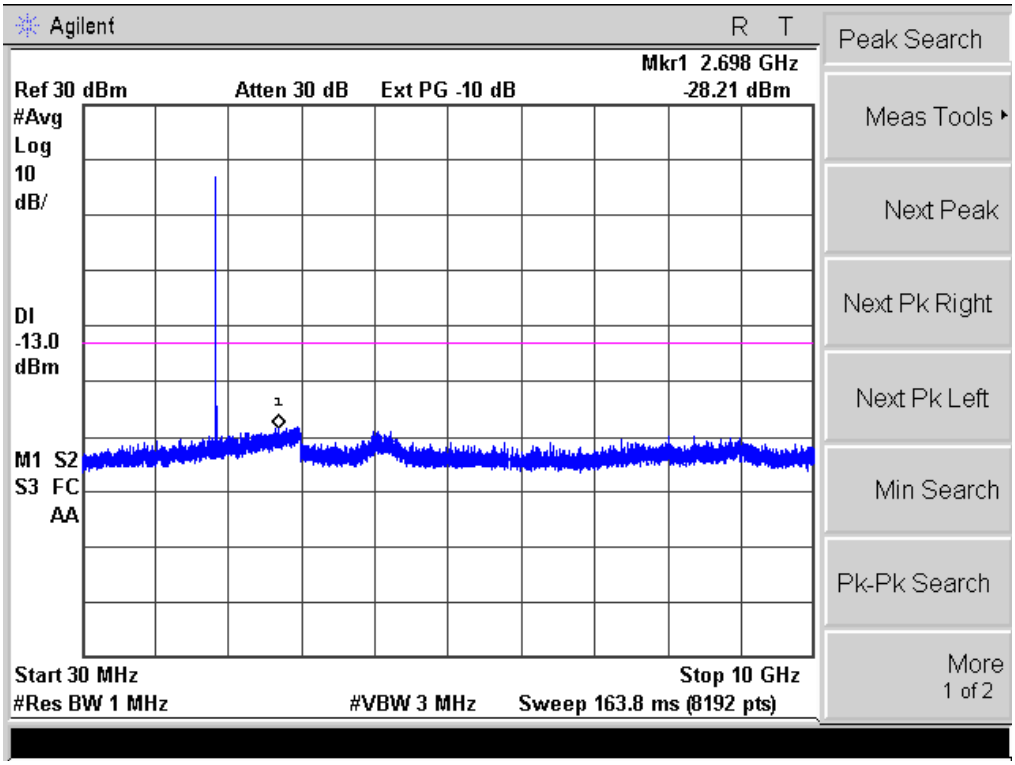


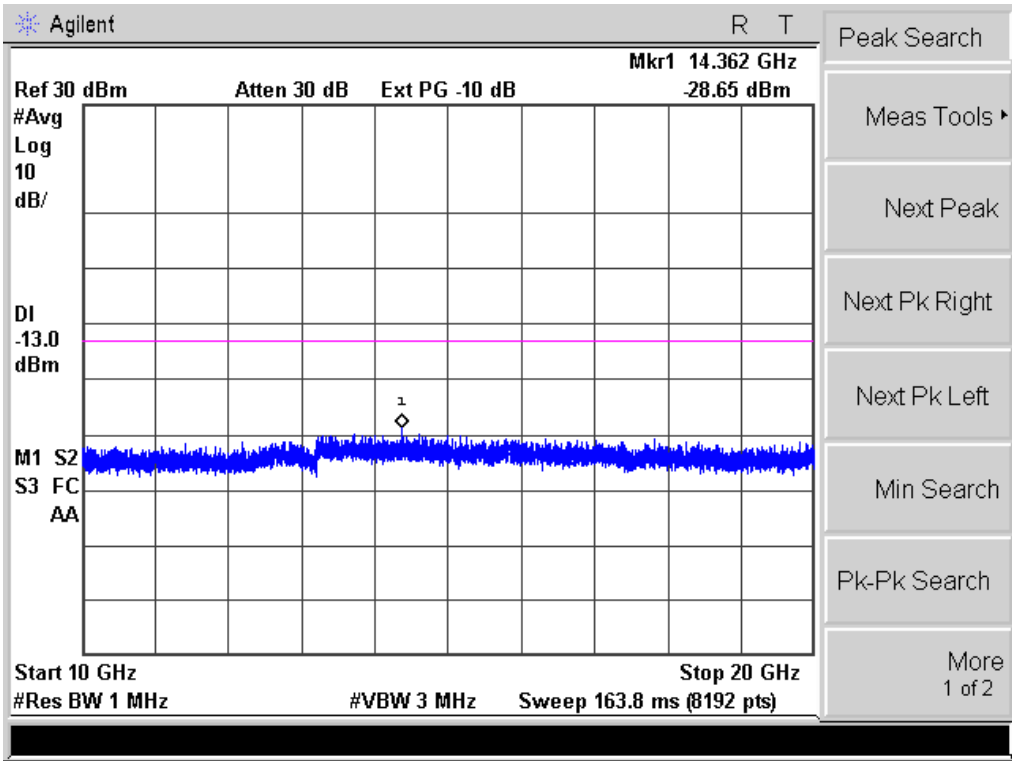
GSM 1900MHz Highest channel



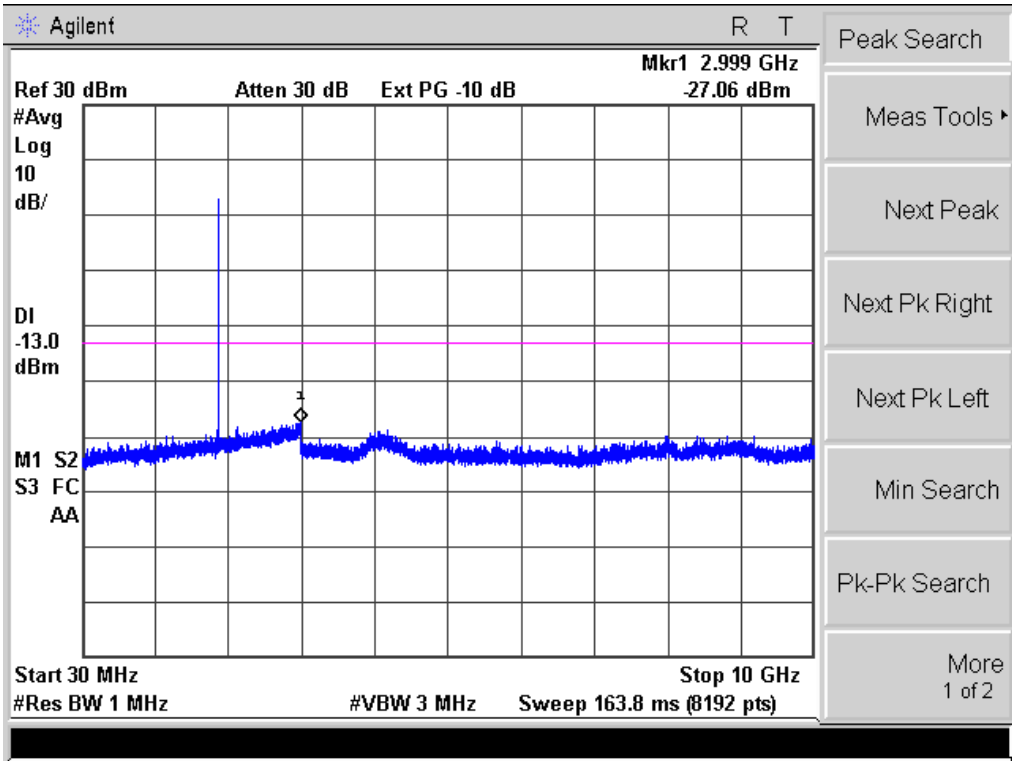


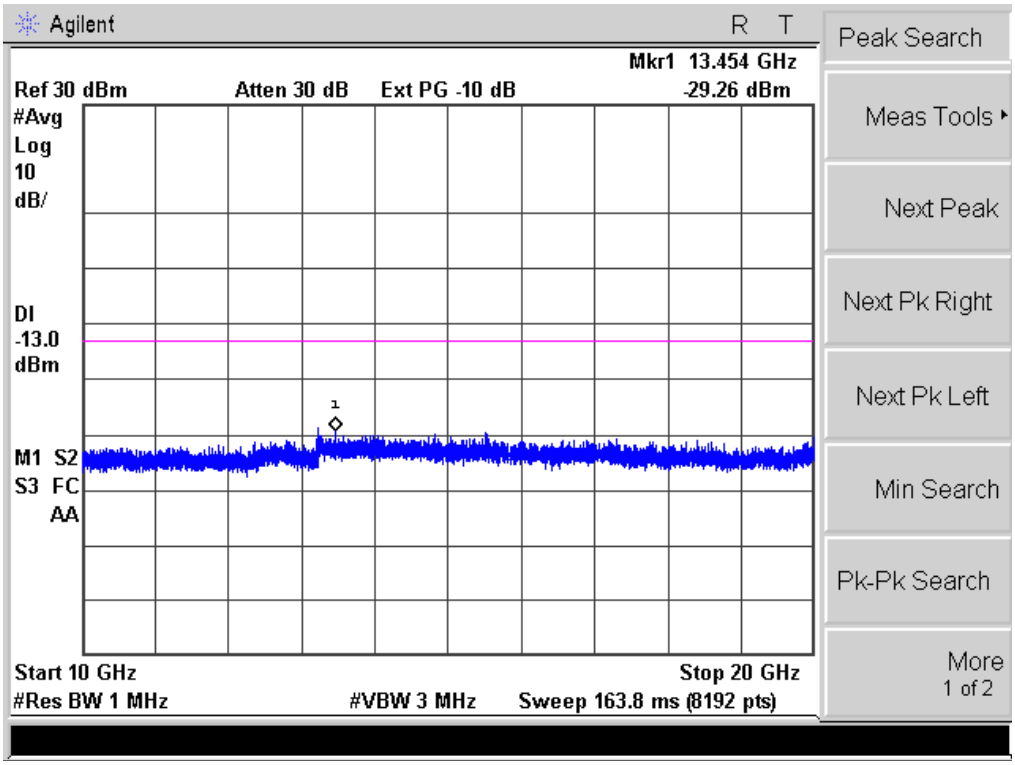
GPRS 1900MHz Lowest channel



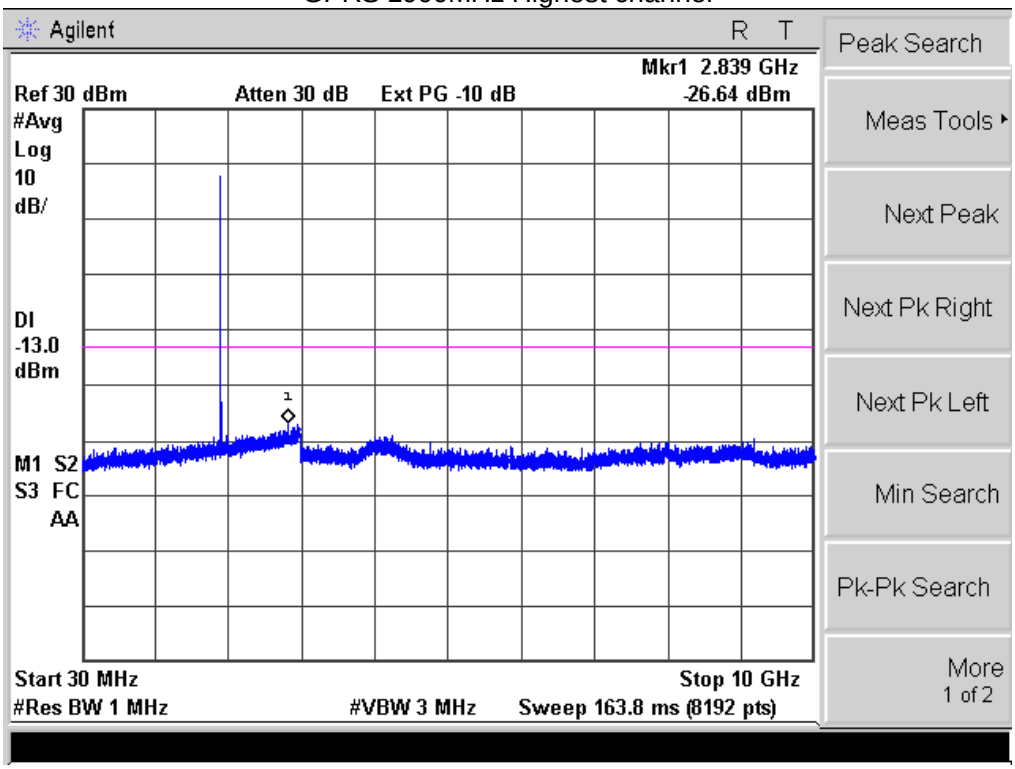


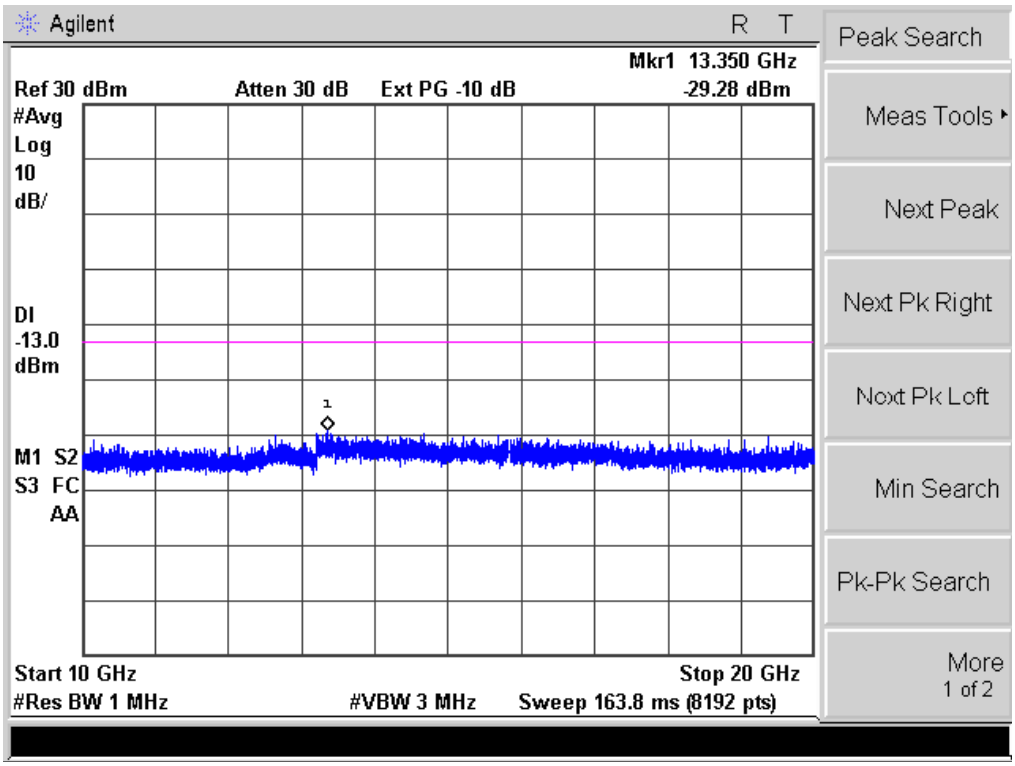
GPRS 1900MHz Middle channel



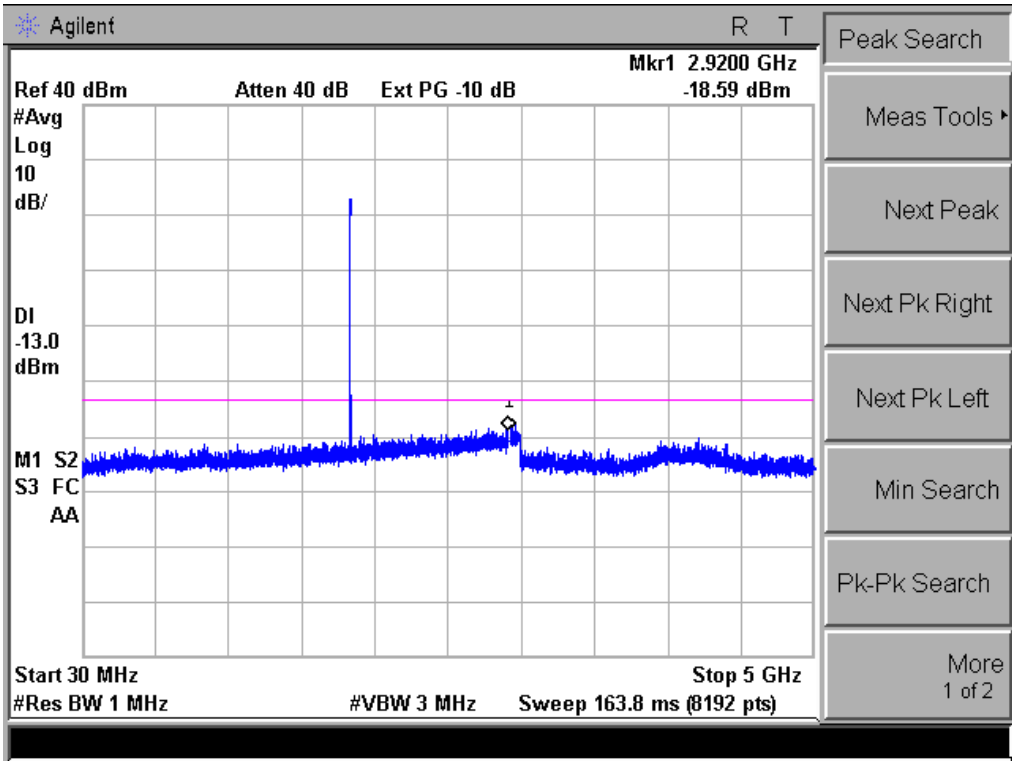


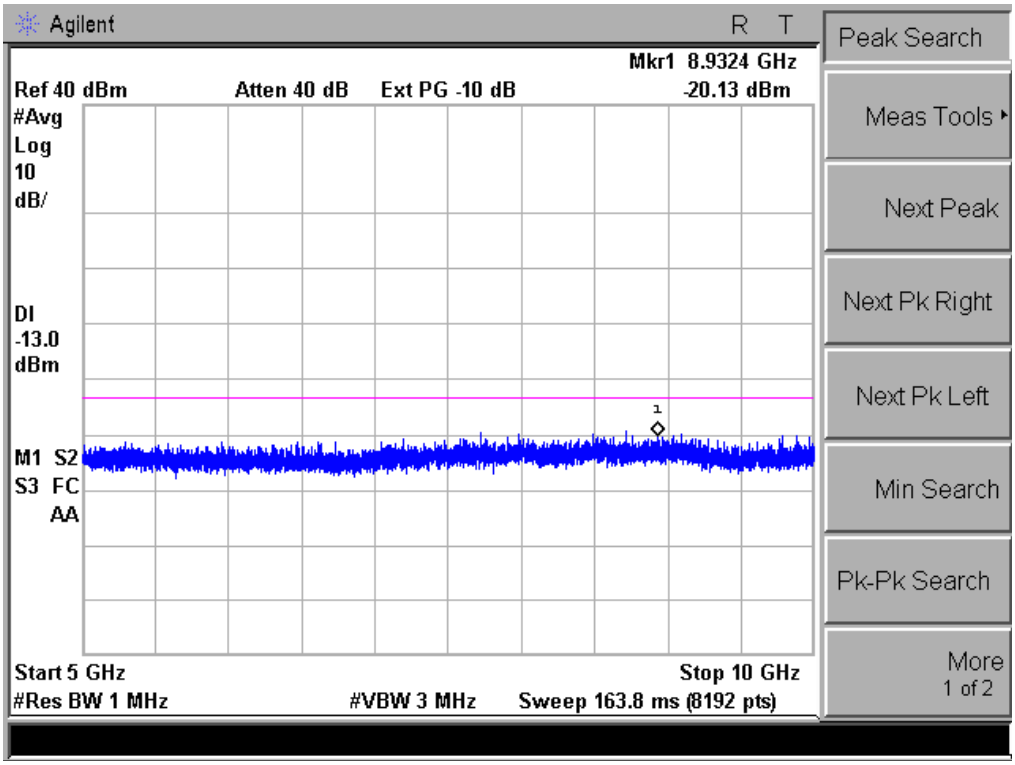
GPRS 1900MHz Highest channel



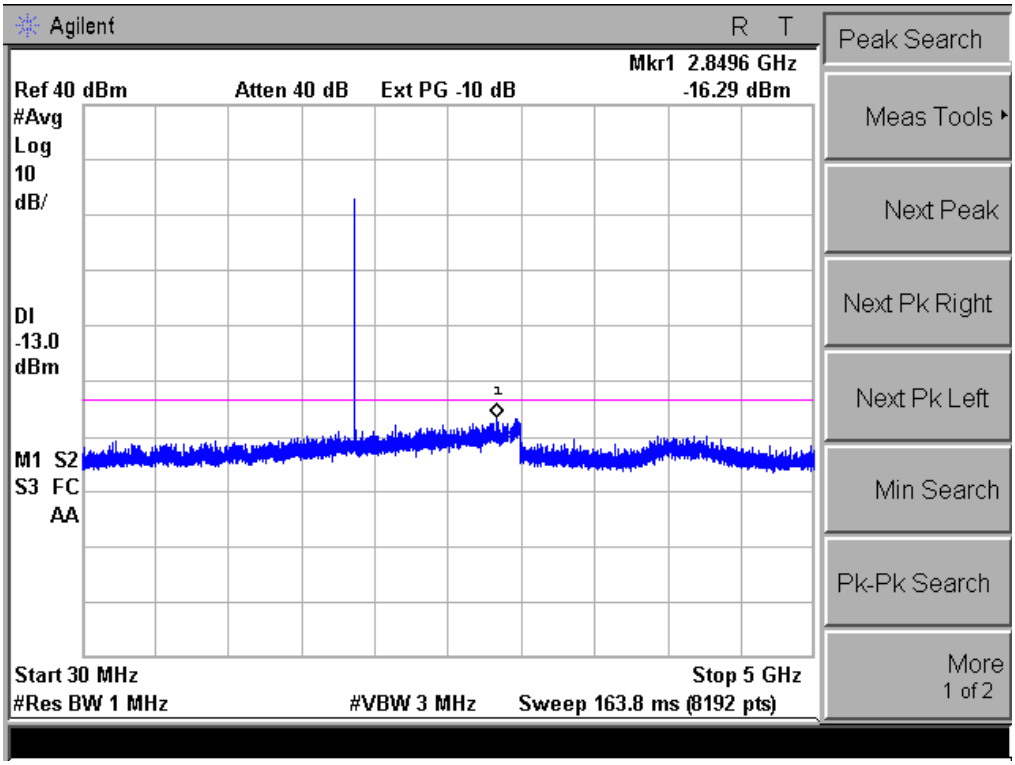


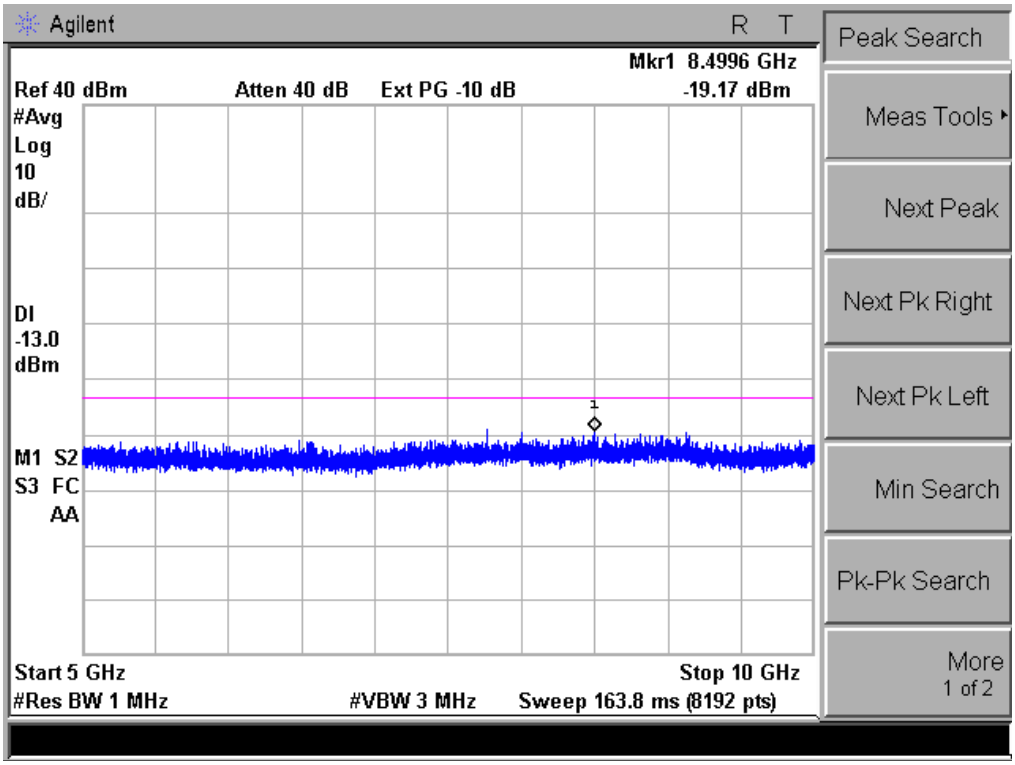
EGPRS 1900MHz Lowest channel



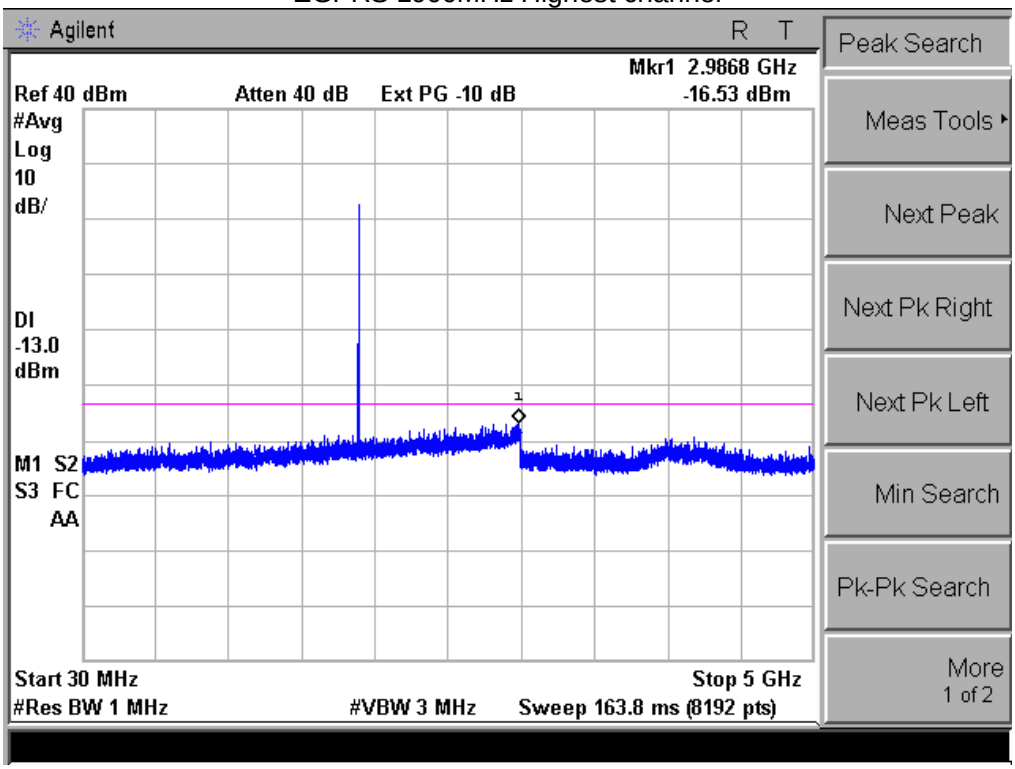


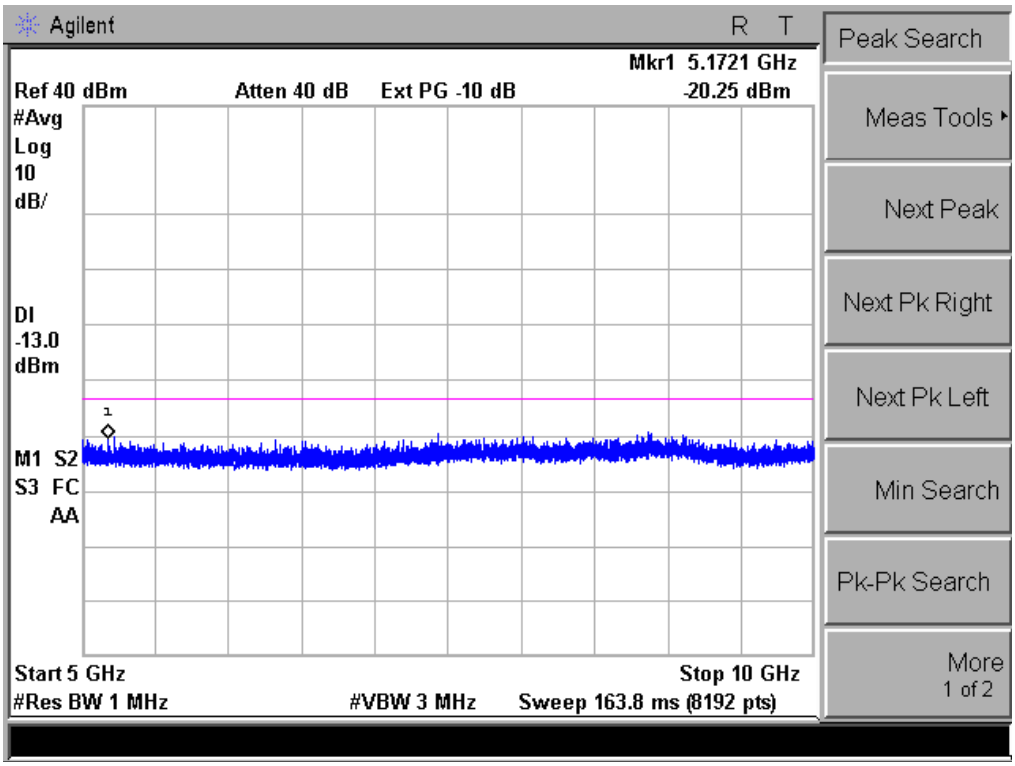
EGPRS 1900MHz Middle channel



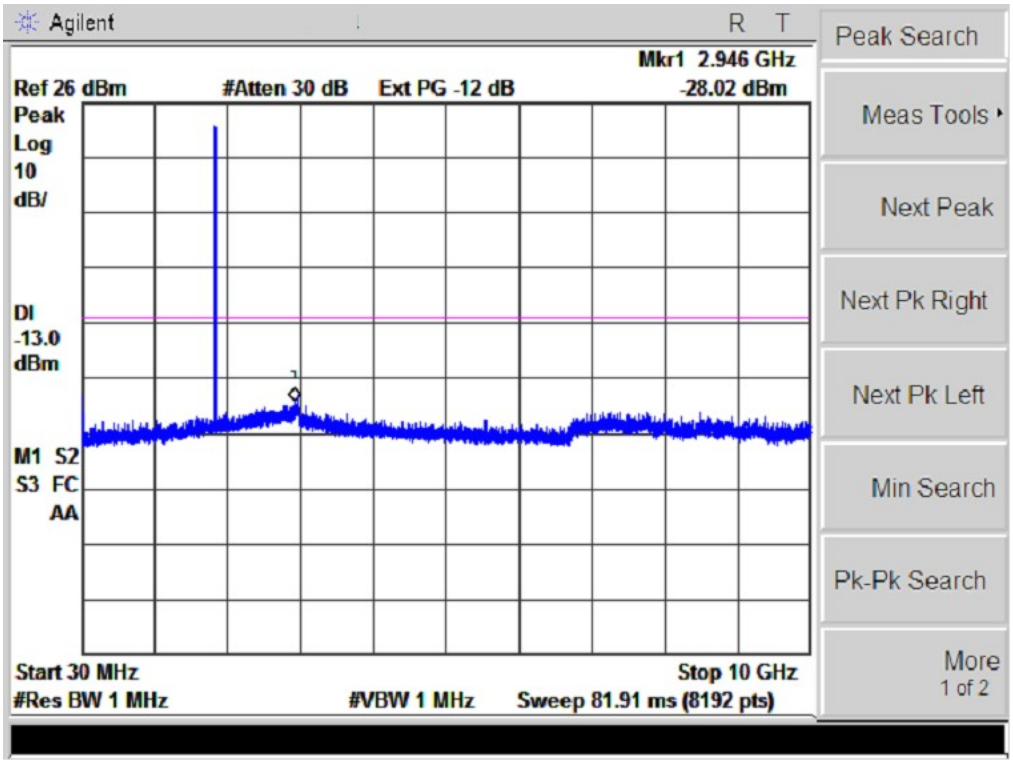


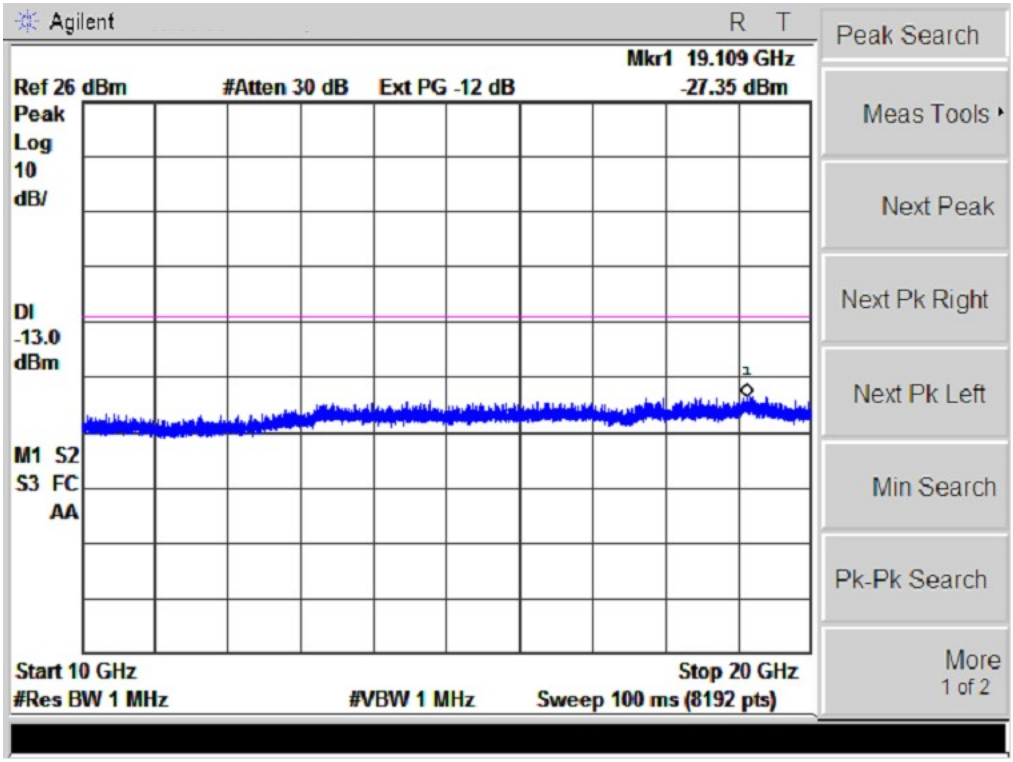
EGPRS 1900MHz Highest channel



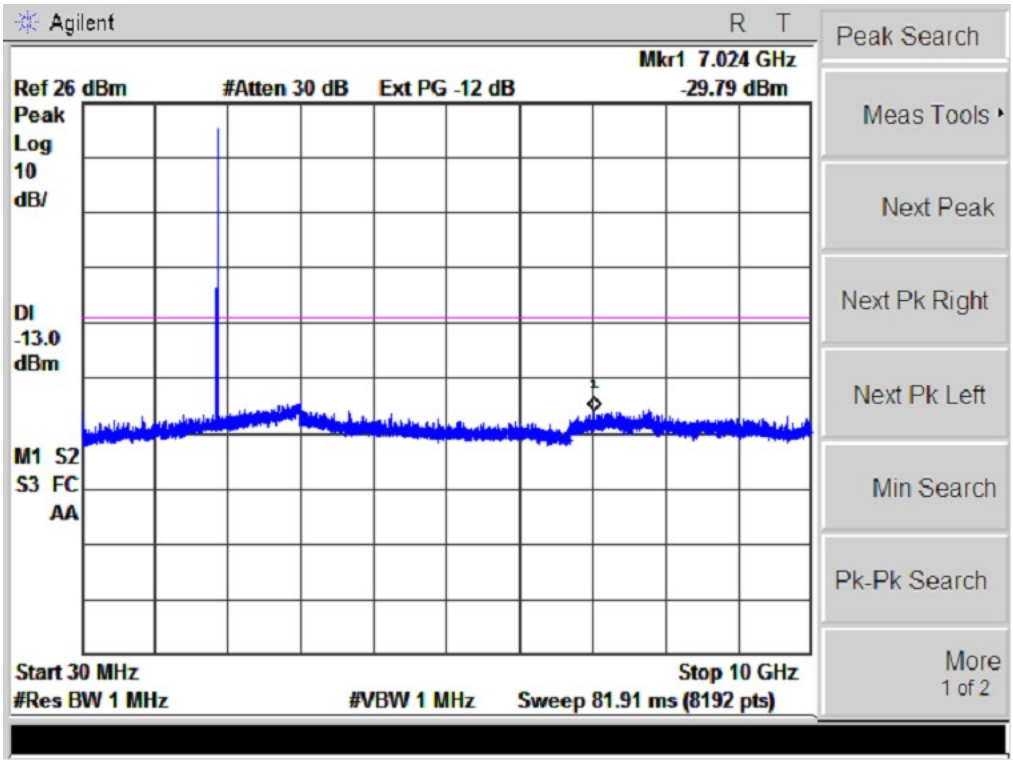


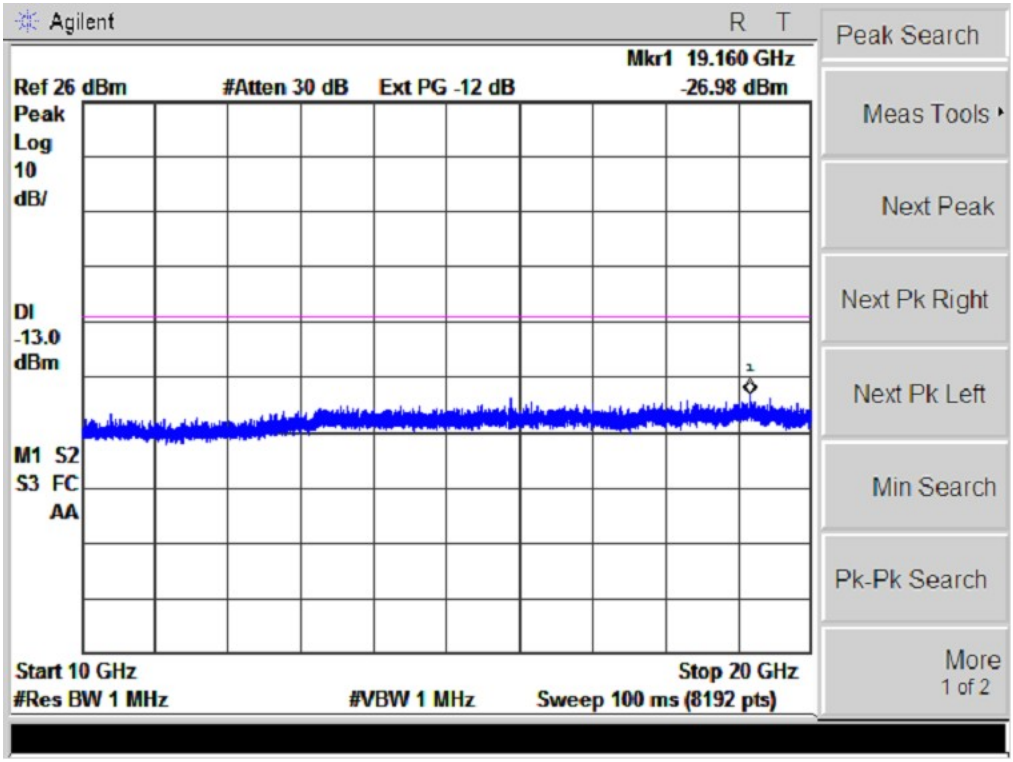
WCDMA Band II Lowest channel



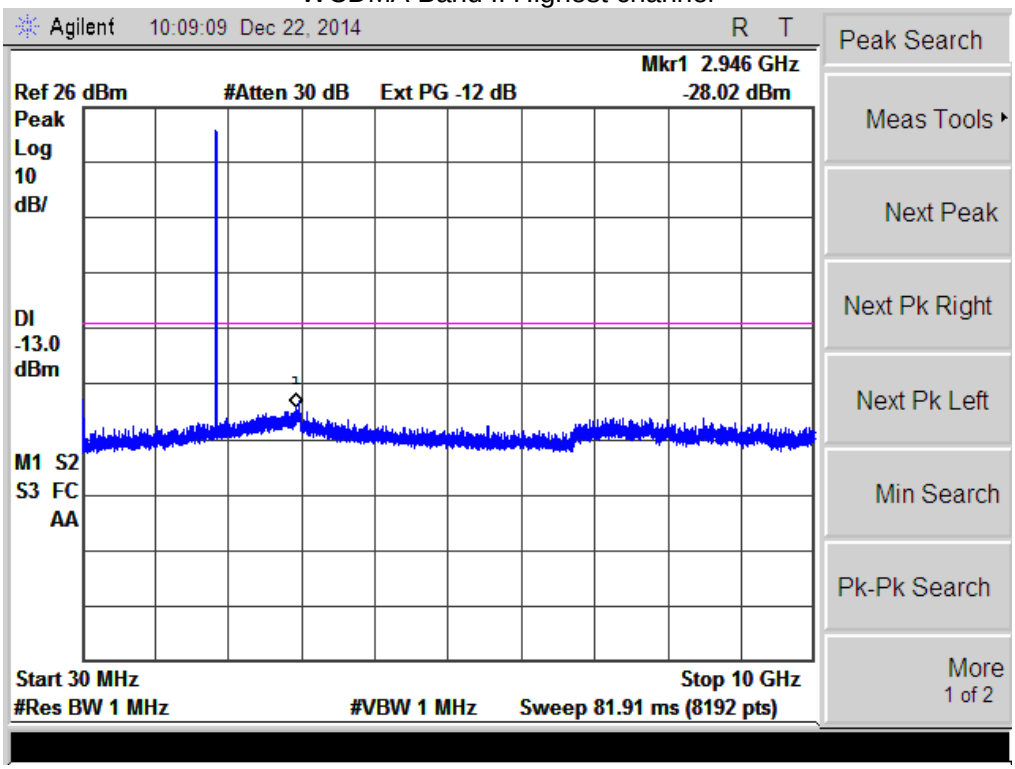


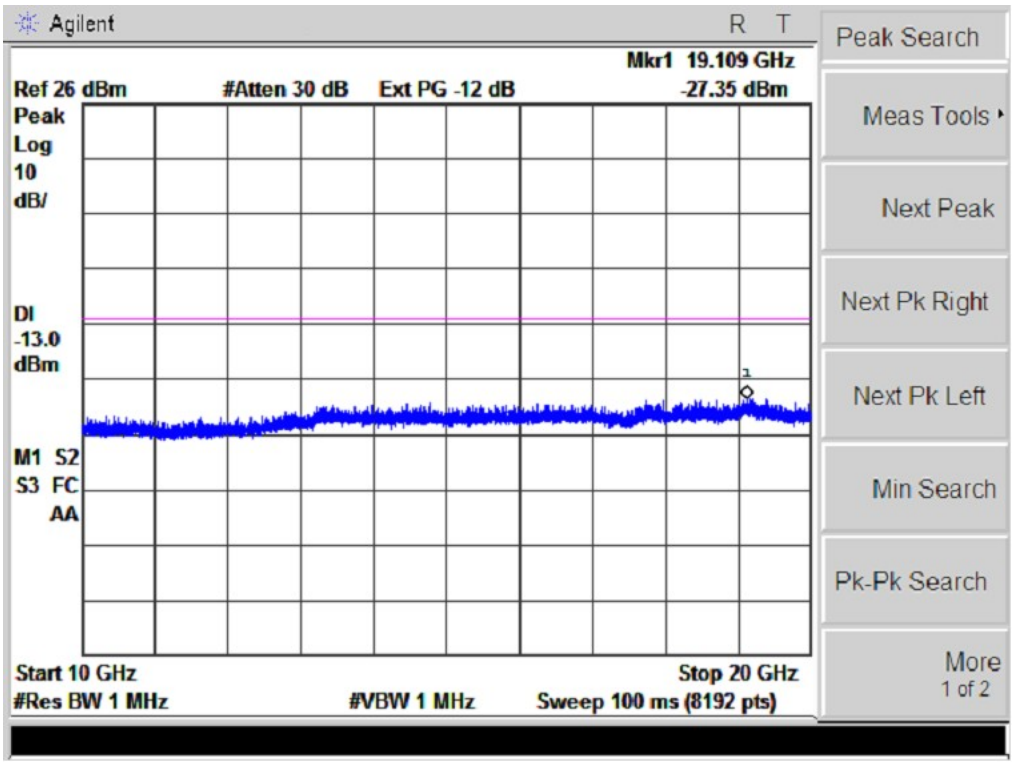
WCDMA Band II Middle channel





WCDMA Band II Highest channel



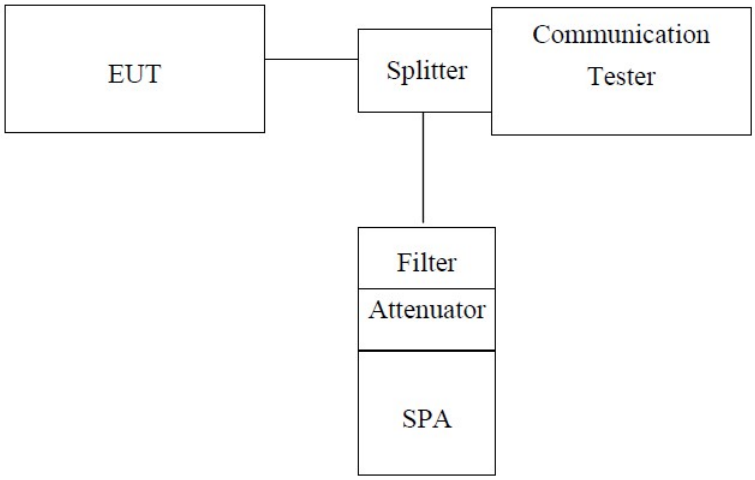


5.6. Conducted Out of Band Emissions

5.6.1. Limit

According to FCC section 22.917(b) and FCC section 24.238(b), 27.53(g)(h) in the 1MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth (26dB emission bandwidth) of the fundamental emission of the transmitter may be employed.

5.6.2. Test Setup



Note: *Measurement setup for testing on Antenna connector*

5.6.3. Measurement Procedure

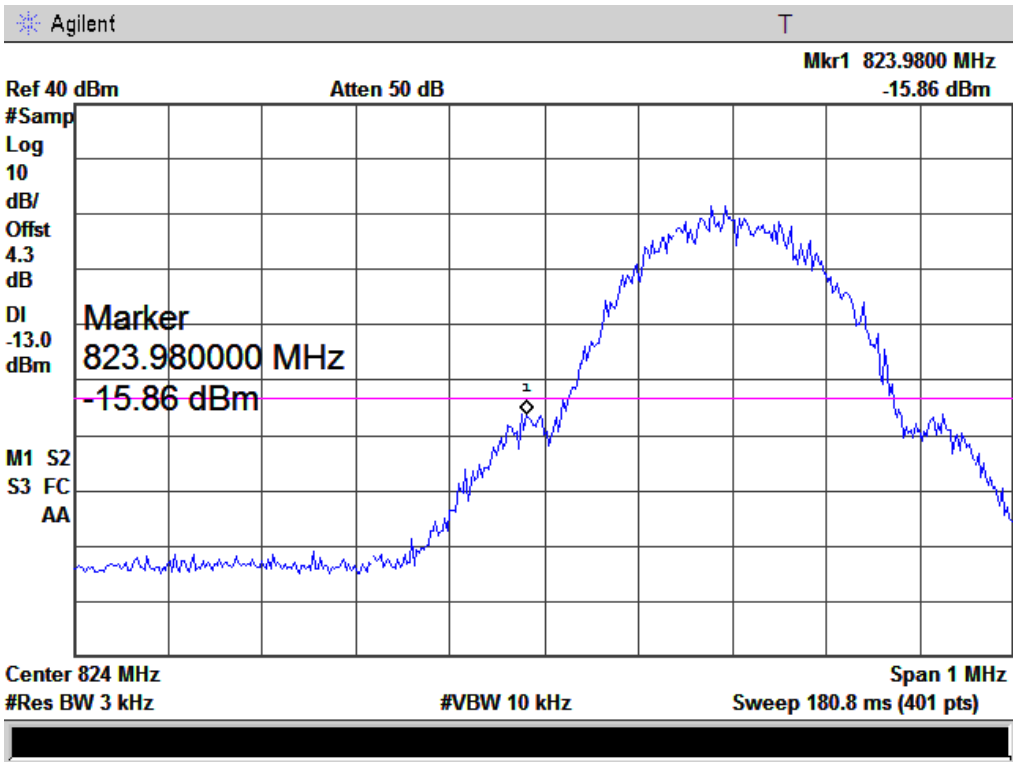
The EUT, which is powered by the adapter, is coupled to the Spectrum Analyzer and the System Simulator with Attenuators through the Power Splitter; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. The EUT is commanded by the System Simulator to operate at the maximum output power i.e. Power Control Level (PCL) = 5 and Power Class = 4. A call is established between the EUT and the System Simulator.

5.6.4. Test Result

The measurement frequency range is from 30MHz to the 10th harmonic of the fundamental frequency. The lowest, middle and highest channels are tested to verify the out of band emissions.

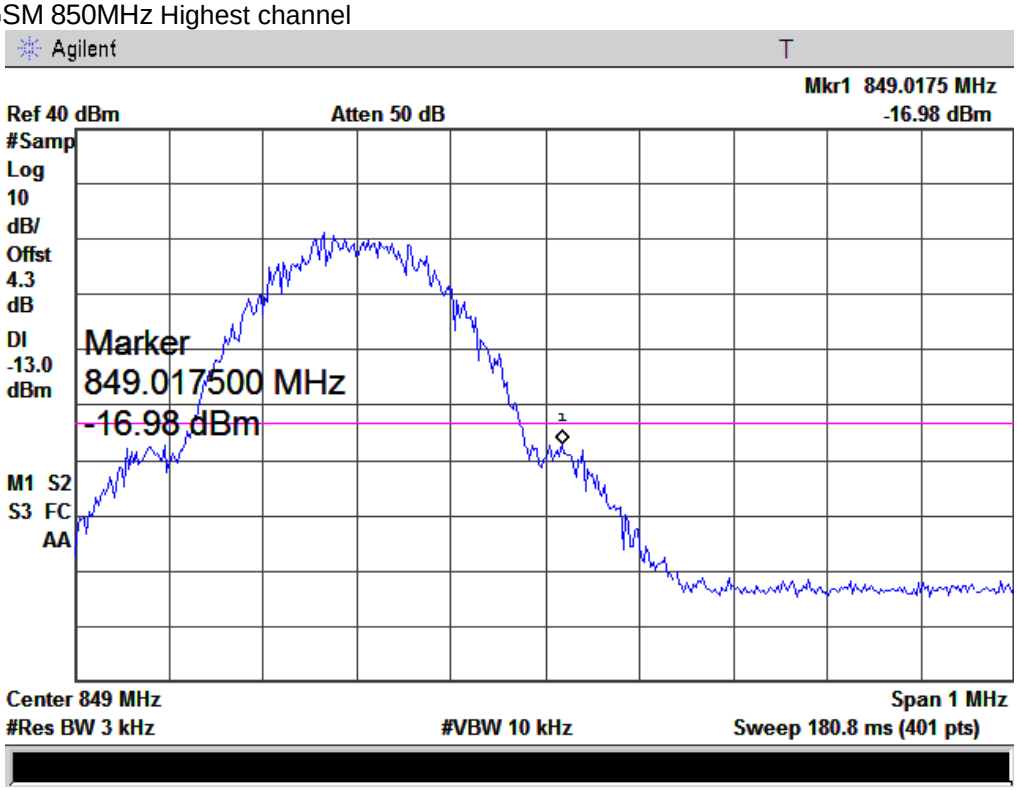
Test plot as follows:

GSM 850MHz Lowest channel



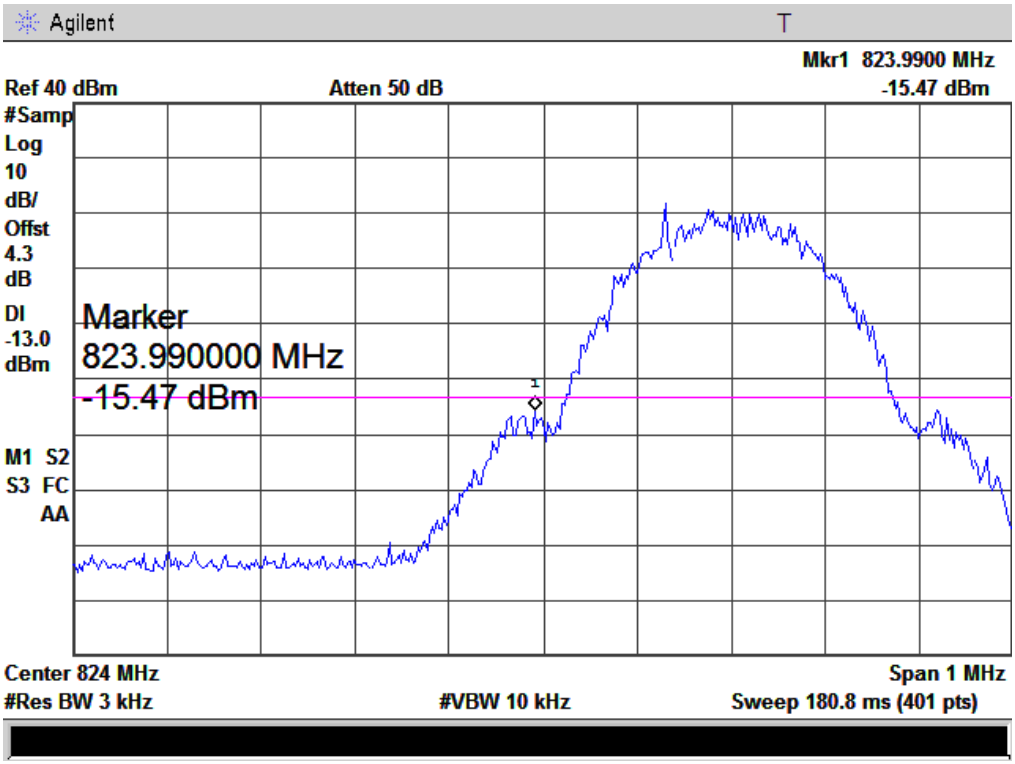
Note: Offset=Cable loss (4.0) + 10log(3.22/3)=4.0+0.3=4.3dB

GSM 850MHz Highest channel



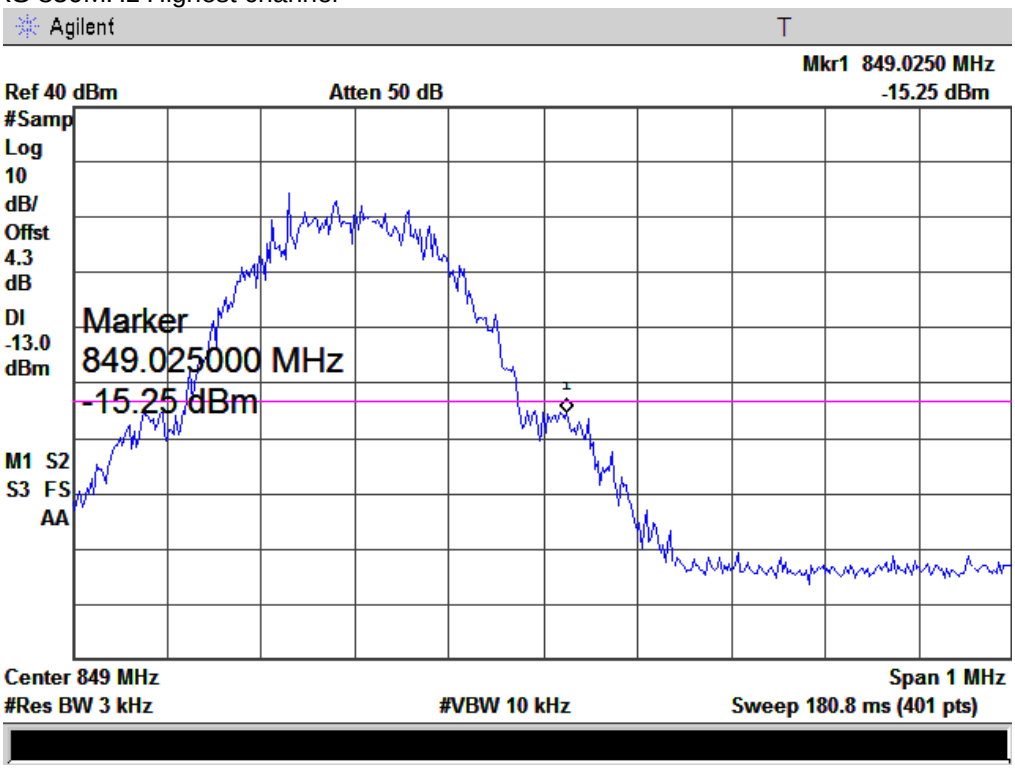
Note: Offset=Cable loss (4.0) + 10log(3.22/3)=4.0+0.3=4.3dB

EGPRS 850MHz Lowest channel



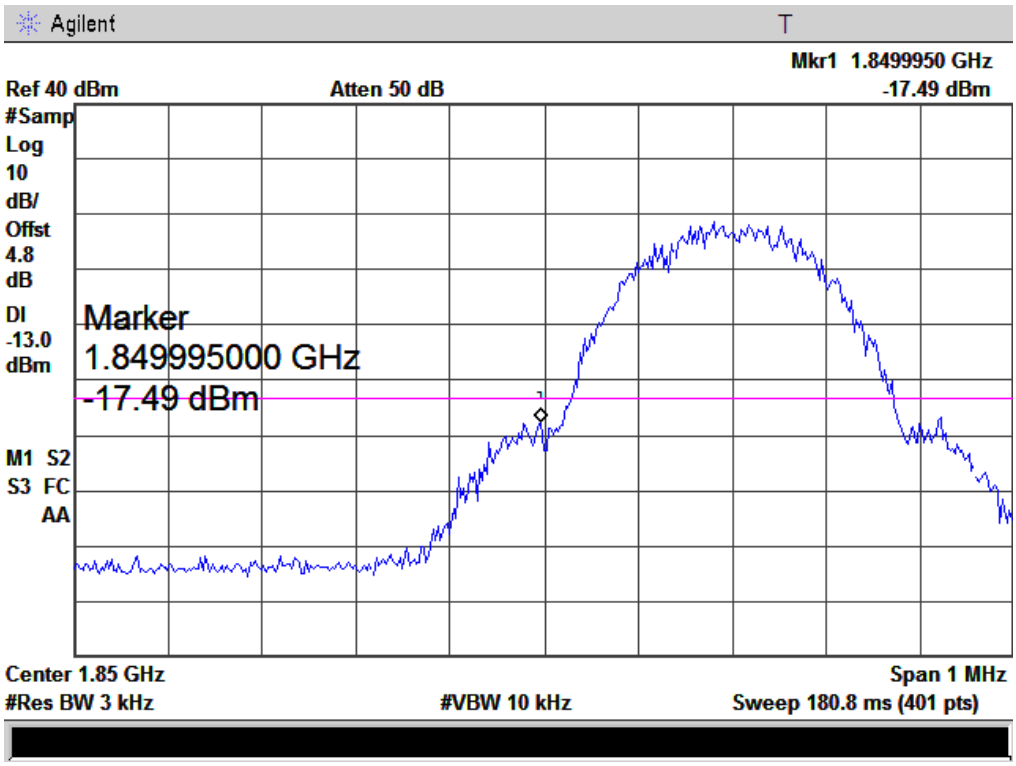
Note: Offset=Cable loss (4.0) + 10log(3.23/3)=4.0+0.3=4.3dB

EGPRS 850MHz Highest channel



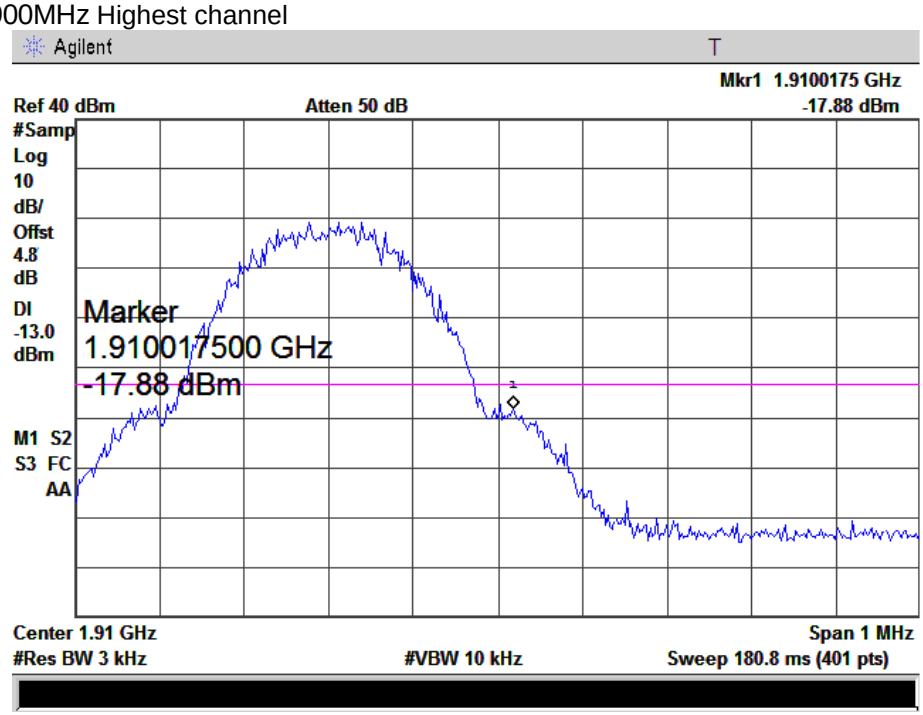
Note: Offset=Cable loss (4.0) + 10log(3.23/3)=4.0+0.3=4.3dB

GSM 1900MHz Lowest channel



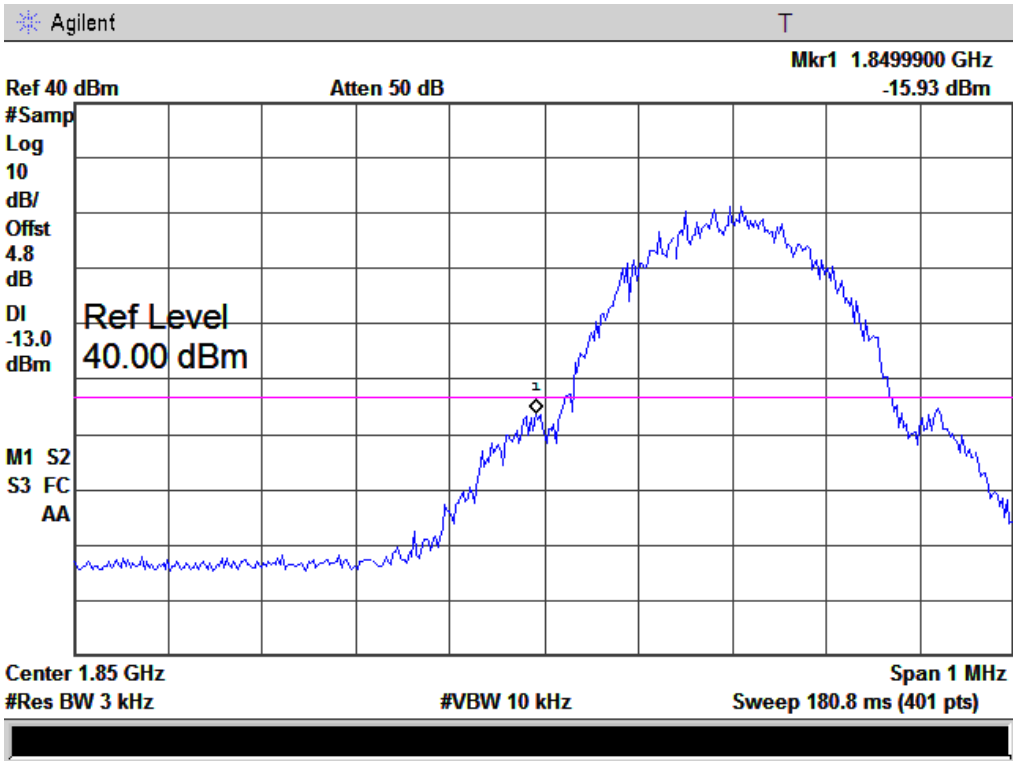
Note: Offset=Cable loss (4.5) + 10log (3.22/3)=4.5+0.3=4.8dB

GSM 1900MHz Highest channel



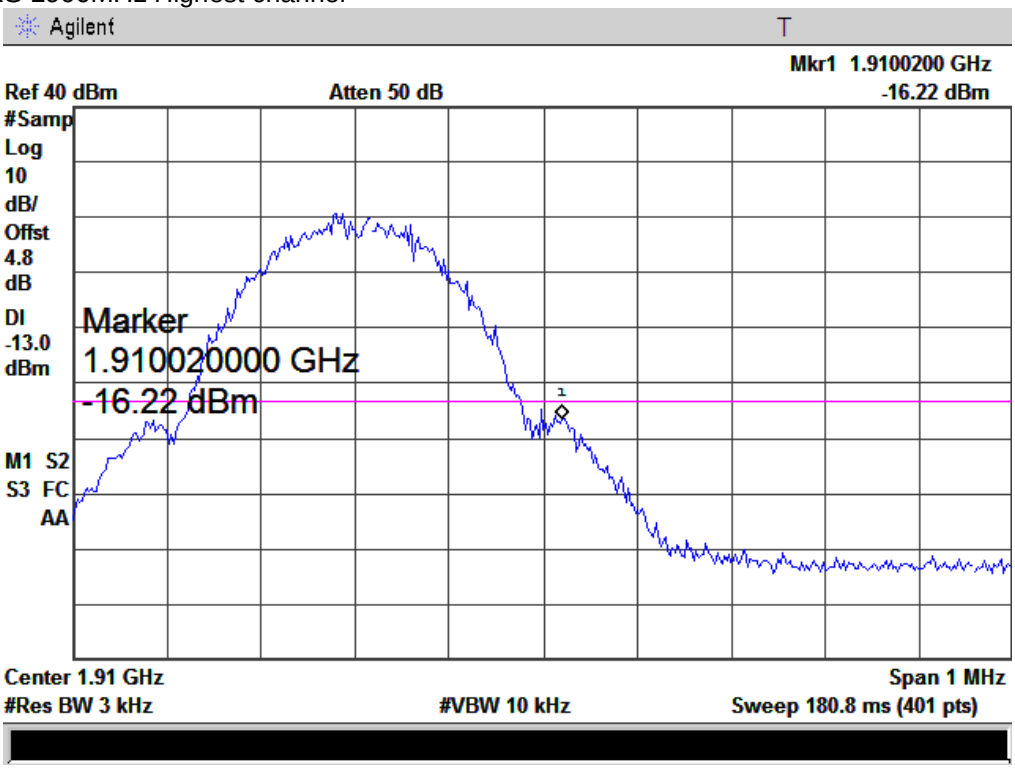
Note: Offset=Cable loss (4.5) + 10log (3.22/3)=4.5+0.3=4.8dB

EGPRS 1900MHz Lowest channel



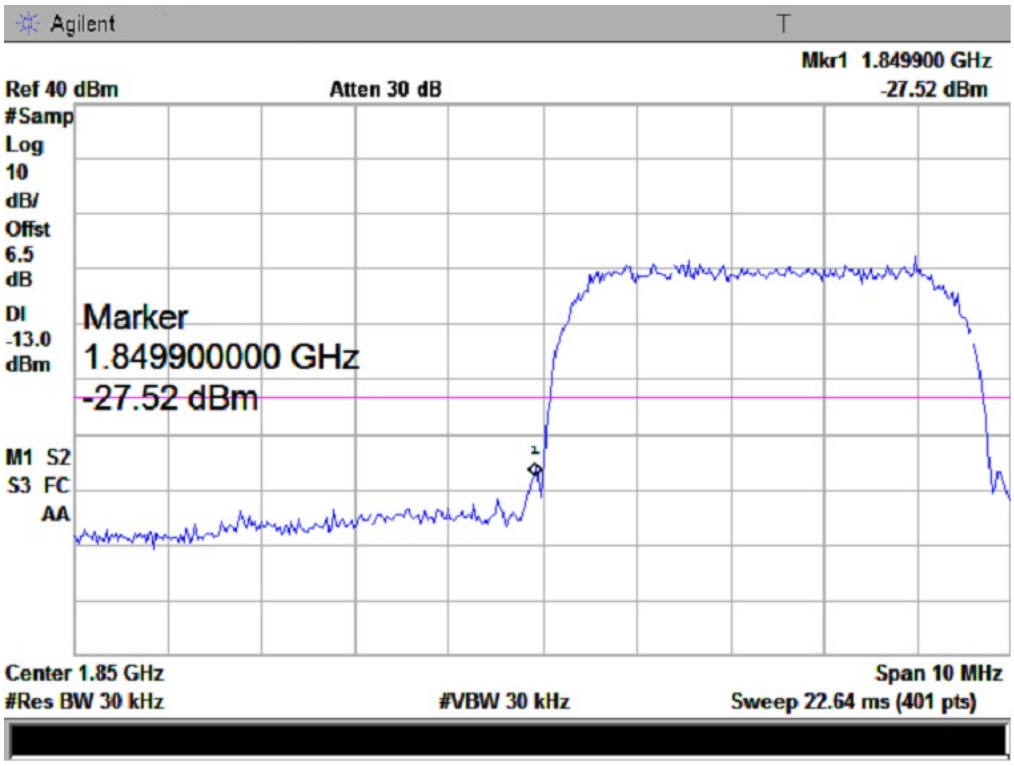
Note: Offset=Cable loss (4.5) + 10log (3.24/3)=4.5+0.3=4.8dB

EGPRS 1900MHz Highest channel



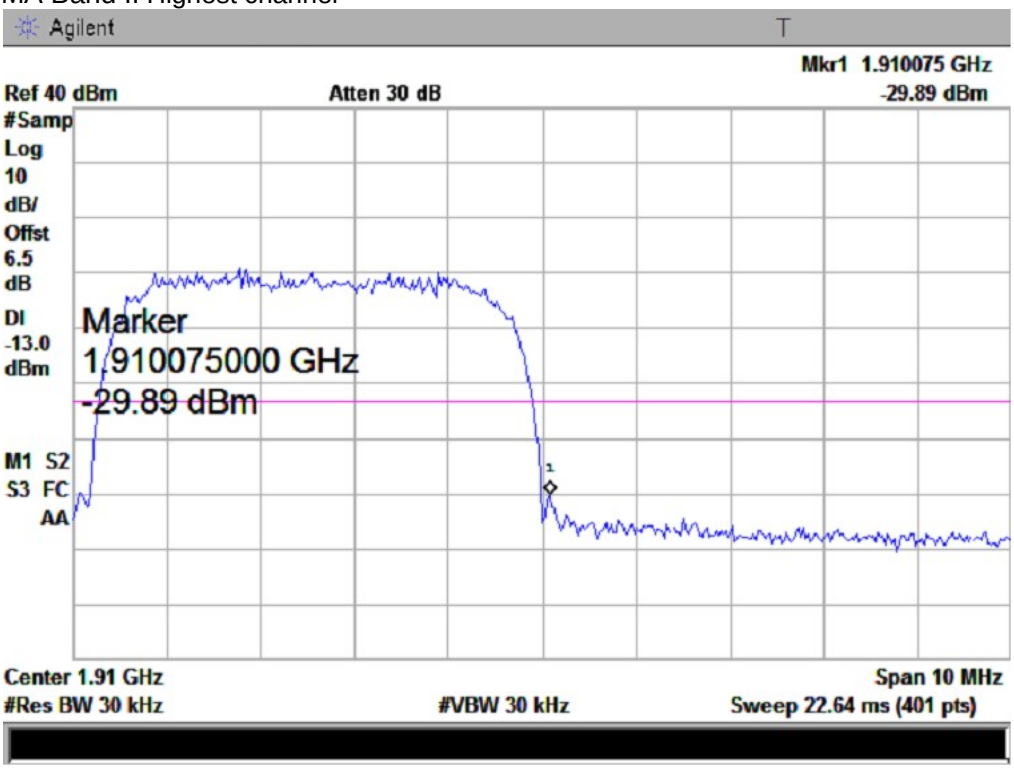
Note: Offset=Cable loss (4.5) + 10log (3.24/3)=4.5+0.3=4.8dB

WCDMA Band II Lowest channel



Note: Offset=Cable loss (4.5) + 10log (47.48/30)=4.5+2.0=6.5 dB

WCDMA Band II Highest channel



Note: Offset=Cable loss (4.5) + 10log (47.48/30)=4.5+2.0=6.5 dB

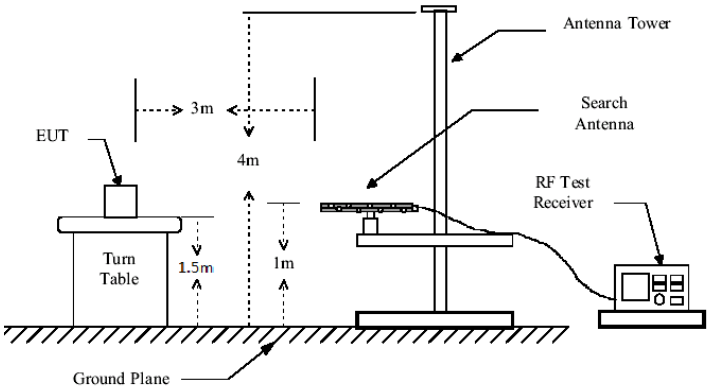
5.7. Transmitter Radiated Power (EIRP/ERP)

5.7.1. Limit

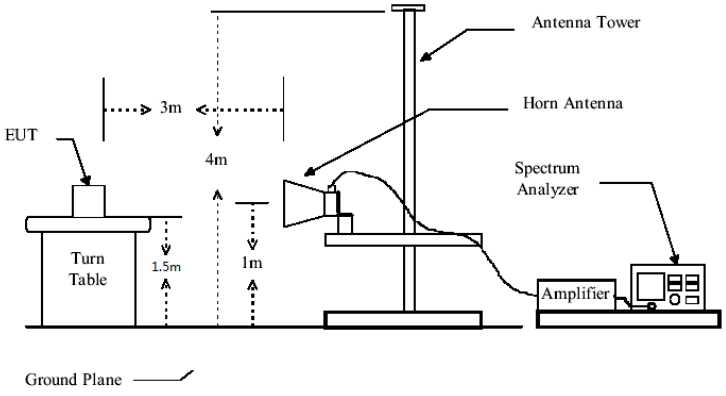
According to FCC section 22.913, the Effective Radiated Power (ERP) of mobile transmitters and auxiliary test transmitters must not exceed 7Watts, and FCC section 24.232, the broadband PCS mobile station is limited to 2 Watts e.i.r.p. peak power.

5.7.2. Test Setup

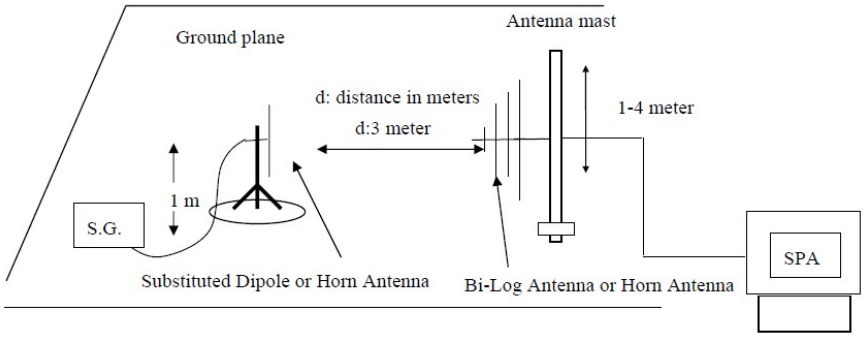
Below 1GHz



Above 1GHz



Substituted method:



5.7.3. Measurement Procedure

The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer. all test in Full-Anechoic Chamber.

During the measurement, the EUT was communication with the station. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated.

ERP in frequency band 824.2 –848.80.8MHz were measured using a substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follows:

EIRP in frequency band 1850.2 –1909.8MHz were measured using a substitution method. The EUT was replaced by or horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows:

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

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

5.7.4. Test Result

EUT mode	Channel	Antenna Pol.	S.G. output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)	Result
GSM850 (GSM link)	Lowest	V	16.98	15.68	1.65	31.01	38.45	Pass
		H	15.01	15.68	1.65	29.04		
	Middle	V	17.54	15.70	1.67	31.57	38.45	Pass
		H	15.42	15.70	1.67	29.45		
	Highest	V	**18.20**	**15.70**	**1.71**	**32.19**	38.45	Pass
		H	14.98	15.70	1.71	28.97		
GPRS850	Lowest	V	16.82	15.68	1.65	30.85	38.45	Pass
		H	14.87	15.68	1.65	28.9		
	Middle	V	17.37	15.70	1.67	31.4	38.45	Pass
		H	15.27	15.70	1.67	29.3		
	Highest	V	**18.03**	**15.70**	**1.71**	**32.02**	38.45	Pass
		H	14.84	15.70	1.71	28.83		
GSM850 (EGPRS 8 link)	Lowest	V	6.93	15.68	1.65	20.96	38.45	Pass
		H	4.97	15.68	1.65	19.00		
	Middle	V	7.49	15.70	1.67	21.52	38.45	Pass
		H	5.38	15.70	1.67	19.41		
	Highest	V	**8.14**	**15.70**	**1.71**	**22.13**	38.45	Pass
		H	4.94	15.70	1.71	18.93		

EUT mode	Channel	Antenna Pol.	S.G. output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)	Result
PCS1900 (GSM link)	Lowest	V	12.57	19.35	2.54	29.38	33.00	Pass
		H	10.65	19.35	2.54	27.46		
	Middle	V	**13.50**	**19.51**	**2.62**	**30.39**	33.00	Pass
		H	11.34	19.51	2.62	28.23		
	Highest	V	12.77	19.96	2.69	30.04	33.00	Pass
		H	9.73	19.96	2.69	27.00		
GPRS1900	Lowest	V	12.45	19.35	2.54	29.26	33.00	Pass
		H	10.55	19.35	2.54	27.36		
	Middle	V	**13.37**	**19.51**	**2.62**	**30.26**	33.00	Pass
		H	11.23	19.51	2.62	28.12		
	Highest	V	12.65	19.96	2.69	29.92	33.00	Pass
		H	9.64	19.96	2.69	26.91		
EGPRS1900 (EGPRS 8 link)	Lowest	V	2.55	19.35	2.54	19.36	33.00	Pass
		H	1.64	19.35	2.54	18.45		
	Middle	V	**3.48**	**19.51**	**2.62**	**20.37**	33.00	Pass
		H	1.33	19.51	2.62	18.22		
	Highest	V	2.75	19.96	2.69	20.02	33.00	Pass
		H	1.72	19.96	2.69	18.99		

EUT mode	Channel	Antenna Pol.	S.G. output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)	Result
WCDMA Band II	Lowest	V	7.14	19.33	2.52	23.95	33.00	Pass
		H	7.30	19.33	2.52	24.11		
	Middle	V	**7.56**	**19.50**	**2.60**	**24.46**	33.00	Pass
		H	**7.39**	19.50	2.60	24.29		
	Highest	V	6.84	19.94	2.71	24.07	33.00	Pass
		H	6.77	19.94	2.71	24.00		

5.8. Radiated Out of Band Emissions

5.8.1. Limit

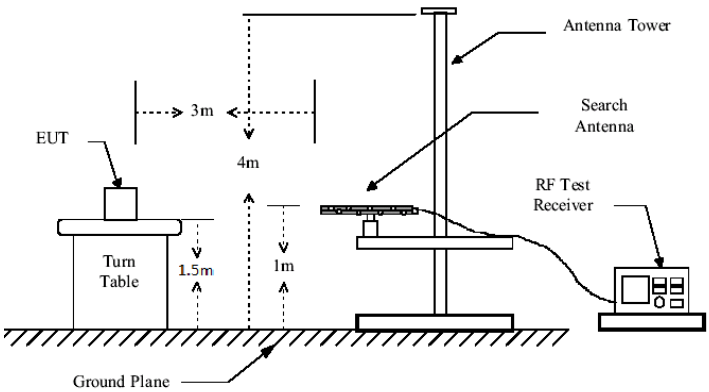
According to FCC section 22.917(a) and section 24.238(a), 27.53(g) the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power

(P) by a factor of at least 43+10*log(P)dB. This calculated to be -13dBm.

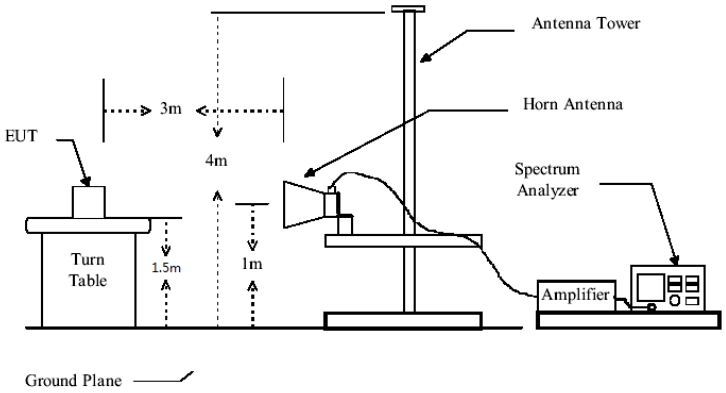
The spurious emission with frequency band 1900 according to FCC section 2.1057.

5.8.2. Test Setup

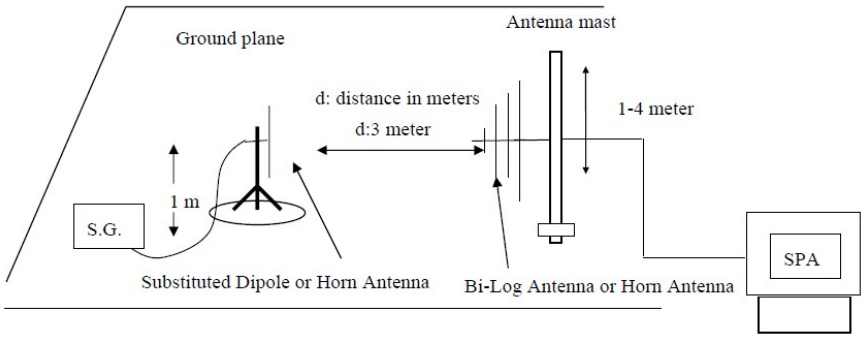
Below 1GHz



Above 1GHz



Substituted method:



5.8.3. Measurement Procedure

The EUT was placed on a non-conductive, The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations. all test in Full-Anechoic Chamber.

The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission was identified, the power of the emission was determined using the substitution method.

The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency.

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

Note: Measurement Uncertainty: ±3.6 dB.

Band	Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
		Polarization	S.G. output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	Level (dBm)		
GSM 850 Lowest	88.12	Vertical	-75.28	3.35	0.38	-72.31	-13	PASS
	1648.40	Vertical	-29.14	6.51	1.35	-23.98		
	2472.60	Vertical	-35.31	6.88	2.53	-30.96		
	3296.80	Vertical	-37.15	7.61	3.67	-33.21		
	4121.00	Vertical	-45.23	8.67	4.06	-40.62		
	4945.20	Vertical	-39.80	9.35	4.38	-34.83		
	138.89	Horizontal	-75.40	4.12	0.51	-71.79		
	2472.40	Horizontal	-33.86	6.88	1.35	-28.33		
	3296.80	Horizontal	-37.09	7.61	3.67	-33.15		
	4121.00	Horizontal	-45.68	8.67	4.06	-41.07		
	4945.20	Horizontal	-48.96	9.35	4.38	-43.99		
	5769.40	Horizontal	-43.21	9.94	4.87	-38.14		

Band	Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
		Polarization	S.G. output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	Level (dBm)		
GSM 850 Middle	88.53	Vertical	-75.23	3.35	0.38	-72.26	-13	PASS
	1648.70	Vertical	-32.07	6.51	1.35	-26.91		
	2472.10	Vertical	-32.61	6.88	2.53	-28.26		
	3296.50	Vertical	-40.06	7.61	3.67	-36.12		
	4121.30	Vertical	-47.59	8.67	4.06	-42.98		
	4945.70	Vertical	-43.12	9.35	4.38	-38.15		
	138.87	Horizontal	-75.72	4.12	0.51	-72.11		
	2472.10	Horizontal	-29.41	6.88	1.35	-23.88		
	3296.20	Horizontal	-32.06	7.61	3.67	-28.12		
	4121.70	Horizontal	-48.28	8.67	4.06	-43.67		
	4945.00	Horizontal	-49.67	9.35	4.38	-44.70		
	5769.60	Horizontal	-39.73	9.94	4.87	-34.66		

Band	Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
		Polarization	S.G. output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	Level (dBm)		
GSM 850 Highest	88.03	Vertical	-74.91	3.35	0.38	-71.94	-13	PASS
	1648.30	Vertical	-30.97	6.51	1.35	-25.81		
	2472.10	Vertical	-32.87	6.88	2.53	-28.52		
	3296.50	Vertical	-36.01	7.61	3.67	-32.07		
	4121.40	Vertical	-41.31	8.67	4.06	-36.70		
	4945.20	Vertical	-46.71	9.35	4.38	-41.74		
	137.92	Horizontal	-75.91	4.12	0.51	-72.30		
	2472.90	Horizontal	-29.80	6.88	1.35	-24.27		
	3296.30	Horizontal	-32.67	7.61	3.67	-28.73		
	4121.20	Horizontal	-38.37	8.67	4.06	-33.76		
	4945.70	Horizontal	-46.96	9.35	4.38	-41.99		
	5769.60	Horizontal	-53.17	9.94	4.87	-48.10		

Band	Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
		Polarization	S.G. output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Level (dBm)		
PCS1900 Lowest	87.69	Vertical	-75.12	3.35	0.38	-72.15	-13	PASS
	3700.40	Vertical	-45.98	7.76	3.75	-41.97		
	5550.60	Vertical	-47.09	9.84	4.94	-42.19		
	7400.80	Vertical	-39.56	10.21	5.32	-34.67		
	9251.00	Vertical	-42.92	11.36	6.02	-37.58		
	11101.20	Vertical	-44.45	14.52	6.68	-36.61		
	138.79	Horizontal	-75.24	4.12	0.51	-71.63		
	3700.40	Horizontal	-48.18	7.76	3.75	-44.17		
	5550.60	Horizontal	-47.45	9.84	4.94	-42.55		
	7400.80	Horizontal	-42.15	10.21	5.32	-37.26		
	9251.00	Horizontal	-47.34	11.36	6.02	-42.00		
	11101.20	Horizontal	-47.13	14.52	6.68	-39.29		

Band	Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
		Polarization	S.G. output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Level (dBm)		
PCS1900 Middle	87.67	Vertical	-75.12	3.35	0.38	-72.15	-13	PASS
	3760.00	Vertical	-47.29	7.76	3.75	-43.28		
	5640.00	Vertical	-46.90	9.84	4.94	-42.00		
	7520.00	Vertical	-42.53	10.21	5.32	-37.64		
	9400.00	Vertical	-41.94	11.36	6.02	-36.60		
	11280.00	Vertical	-45.88	14.52	6.68	-38.04		
	138.89	Horizontal	-75.24	4.12	0.51	-71.63		
	3760.00	Horizontal	-45.73	7.76	3.75	-41.72		
	5640.00	Horizontal	-46.46	9.84	4.94	-41.56		
	7520.00	Horizontal	-39.15	10.21	5.32	-34.26		
	9400.00	Horizontal	-43.02	11.36	6.02	-37.68		
	11280.00	Horizontal	-44.89	14.52	6.68	-37.05		

Band	Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
		Polarization	S.G. output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Level (dBm)		
PCS1900 Highest	87.82	Vertical	-75.16	3.35	0.38	-72.19	-13	PASS
	3819.60	Vertical	-46.95	7.79	3.53	-42.69		
	5729.40	Vertical	-41.42	9.88	5.02	-36.56		
	7639.20	Vertical	-37.64	10.25	5.54	-32.93		
	9549.00	Vertical	-44.47	11.38	6.16	-39.25		
	11458.80	Vertical	-46.90	14.56	6.72	-39.06		
	137.86	Horizontal	-75.28	4.12	0.51	-71.67		
	3819.60	Horizontal	-45.31	7.79	3.53	-41.05		
	5729.40	Horizontal	-41.33	9.88	5.02	-36.47		
	7639.20	Horizontal	-37.01	10.25	5.54	-32.30		
	9549.00	Horizontal	-42.57	11.38	6.16	-37.35		
	11458.80	Horizontal	-44.47	14.56	6.72	-36.63		

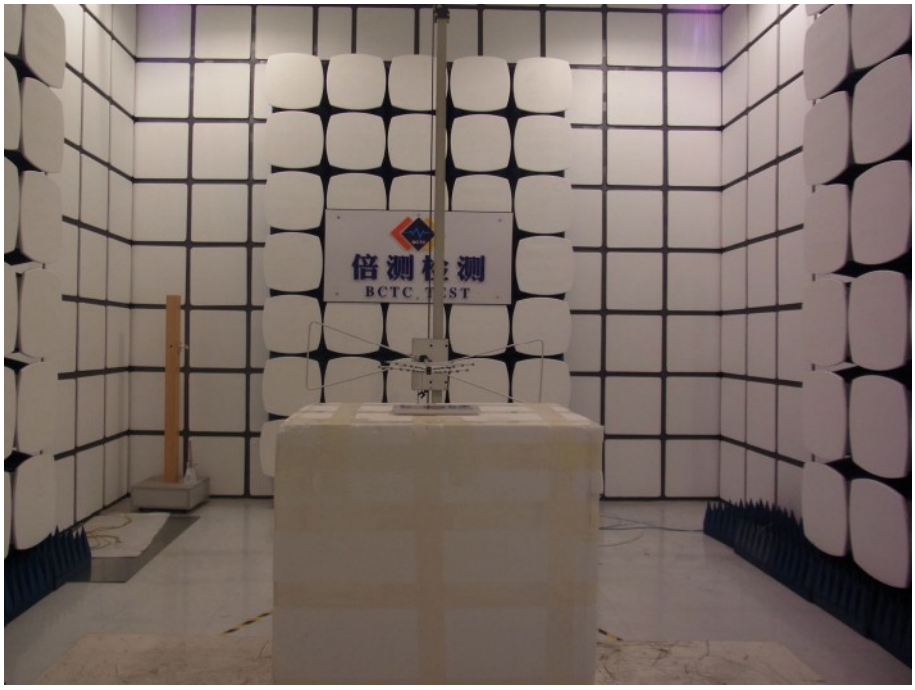
Band	Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
		Polarization	S.G. output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Level (dBm)		
WCDMA Band II Lowest	87.69	Vertical	-75.12	3.35	0.38	-72.15	-13	PASS
	3700.40	Vertical	-45.98	7.76	3.75	-41.97		
	5550.60	Vertical	-47.09	9.84	4.94	-42.19		
	7400.80	Vertical	-39.56	10.21	5.32	-34.67		
	9251.00	Vertical	-42.92	11.36	6.02	-37.58		
	11101.20	Vertical	-44.45	14.52	6.68	-36.61		
	138.79	Horizontal	-75.24	4.12	0.51	-71.63		
	3700.40	Horizontal	-48.18	7.76	3.75	-44.17		
	5550.60	Horizontal	-47.45	9.84	4.94	-42.55		
	7400.80	Horizontal	-42.15	10.21	5.32	-37.26		
	9251.00	Horizontal	-47.34	11.36	6.02	-42.00		
	11101.20	Horizontal	-47.13	14.52	6.68	-39.29		

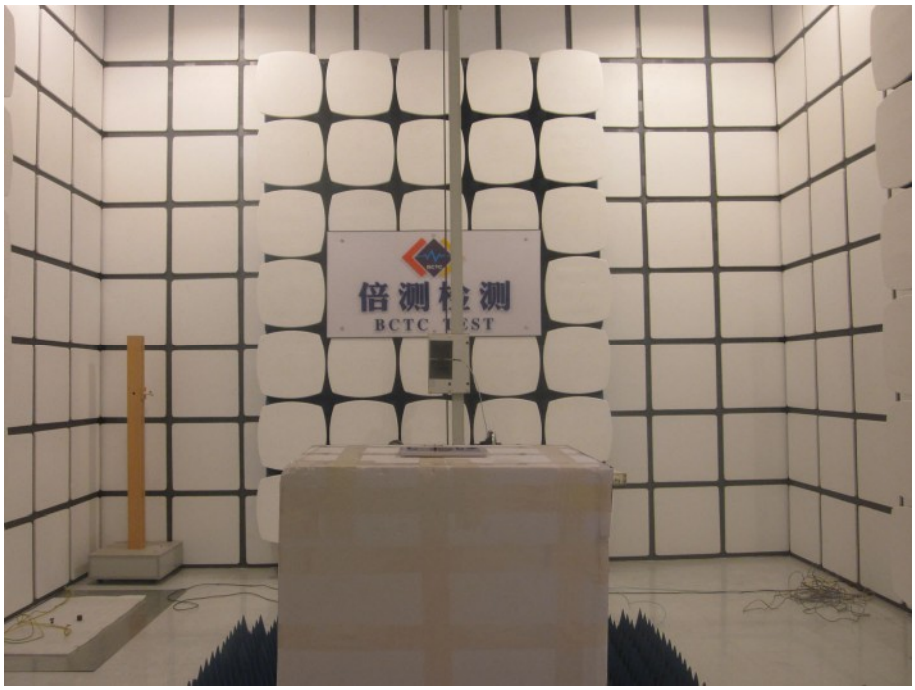
Band	Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
		Polarization	S.G. output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Level (dBm)		
WCDMA Band II Middle	87.67	Vertical	-75.12	3.35	0.38	-72.15	-13	PASS
	3760.00	Vertical	-47.29	7.76	3.75	-43.28		
	5640.00	Vertical	-46.90	9.84	4.94	-42.00		
	7520.00	Vertical	-42.53	10.21	5.32	-37.64		
	9400.00	Vertical	-41.94	11.36	6.02	-36.60		
	11280.00	Vertical	-45.88	14.52	6.68	-38.04		
	138.89	Horizontal	-75.24	4.12	0.51	-71.63		
	3760.00	Horizontal	-45.73	7.76	3.75	-41.72		
	5640.00	Horizontal	-46.46	9.84	4.94	-41.56		
	7520.00	Horizontal	-39.15	10.21	5.32	-34.26		
	9400.00	Horizontal	-43.02	11.36	6.02	-37.68		
	11280.00	Horizontal	-44.89	14.52	6.68	-37.05		

Band	Frequency (MHz)	Spurious Emission					Limit (dBm)	Result
		Polarization	S.G. output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	Level (dBm)		
WCDMA Band II Highest	87.82	Vertical	-75.08	3.35	0.38	-72.11	-13	PASS
	3819.60	Vertical	-46.90	7.79	3.53	-42.64		
	5729.40	Vertical	-41.38	9.88	5.02	-36.52		
	7639.20	Vertical	-37.59	10.25	5.54	-32.88		
	9549.00	Vertical	-44.42	11.38	6.16	-39.20		
	11458.80	Vertical	-46.85	14.56	6.72	-39.01		
	137.86	Horizontal	-75.20	4.12	0.51	-71.59		
	3819.60	Horizontal	-45.26	7.79	3.53	-41.00		
	5729.40	Horizontal	-41.29	9.88	5.02	-36.43		
	7639.20	Horizontal	-36.97	10.25	5.54	-32.26		
	9549.00	Horizontal	-42.53	11.38	6.16	-37.31		
	11458.80	Horizontal	-44.42	14.56	6.72	-36.58		

6. PHOTOGRAPHS OF TEST SET-UP

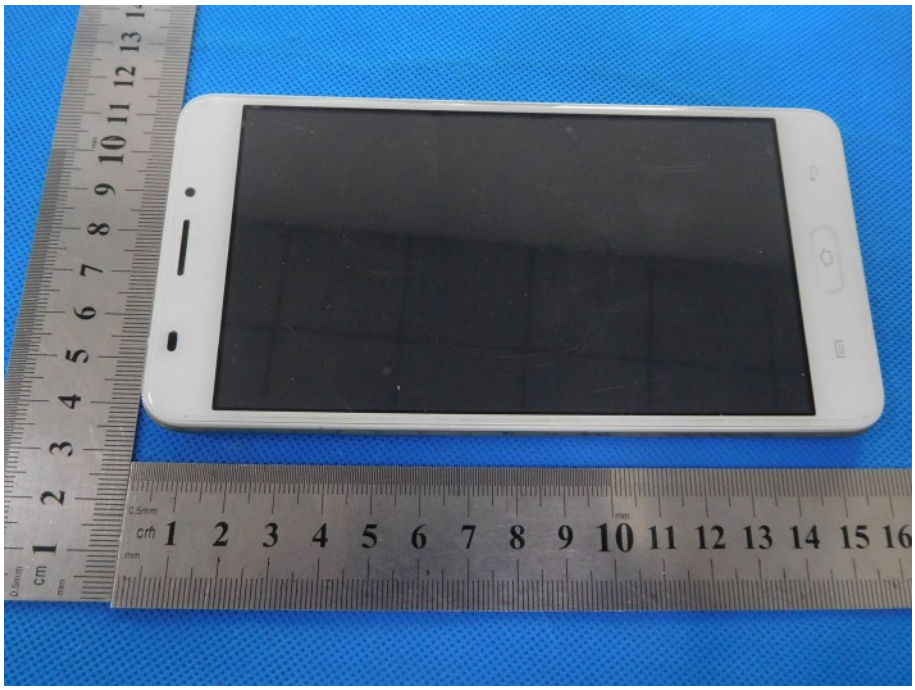
RE





7. PHOTOGRAPHS OF THE EUT

EUT Photo 1



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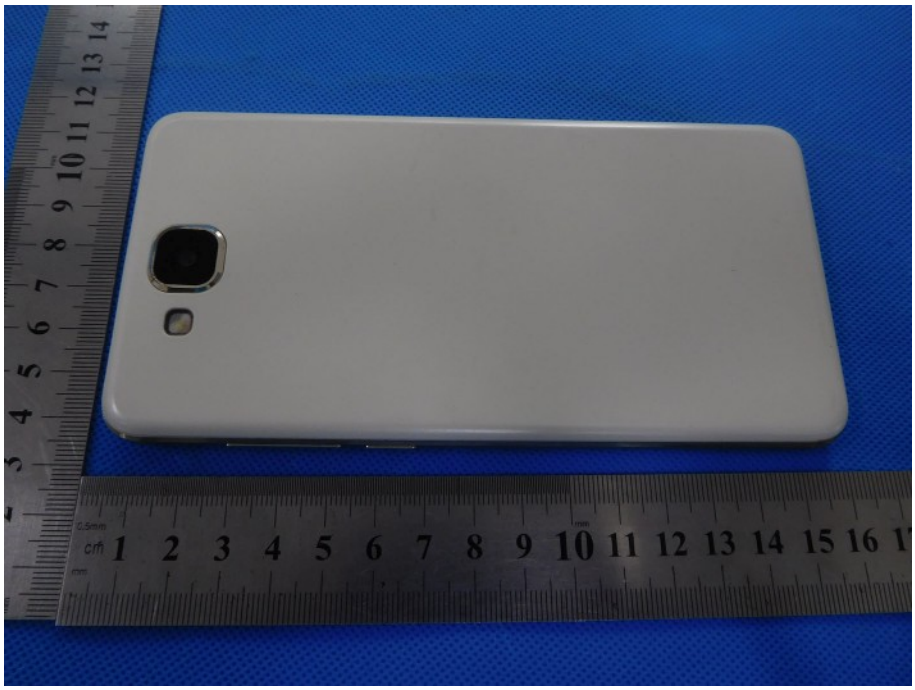
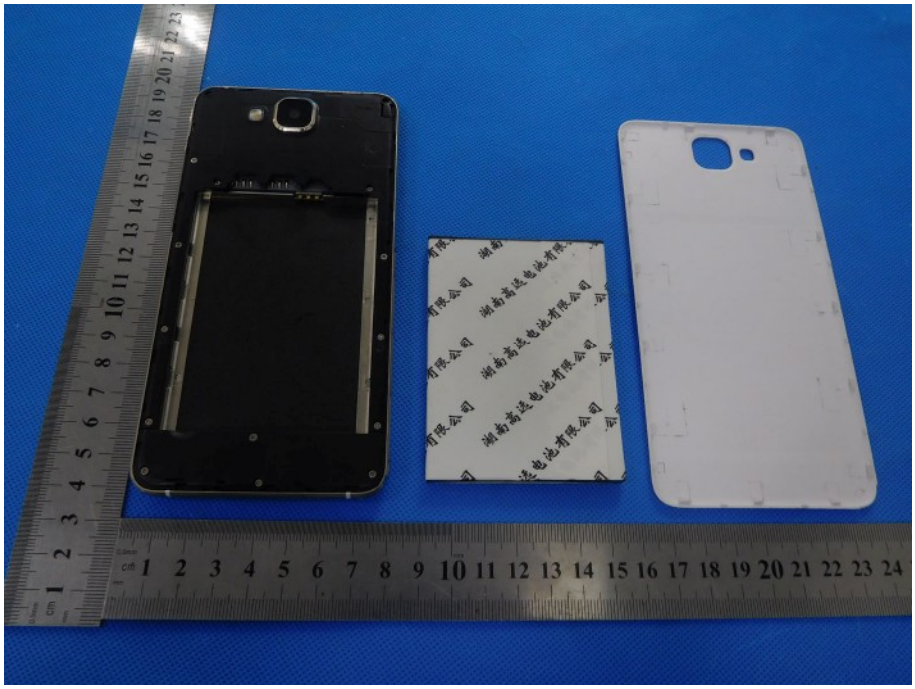


EUT Photo 3



EUT Photo 4

※※※※※ END OF REPORT ※※※※※