FCC TEST REPORT

Test report
On Behalf of
Shenzhen Omni Intelligent Technology Co,.Ltd
For
Bicycle Smart Lock
Model No.: OC30

FCC ID: 2AI2O-OC30

Prepared for : **Shenzhen Omni Intelligent Technology Co,.Ltd**
5th. Floor Block 4, Lianchuang Technical Zone, 21th. Bulan Road, Longgang, Shenzhen, China

Prepared By : **Laboratory of Shenzhen United Testing Technology Co., Ltd**
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Date of Test: **May. 18, 2017 ~ May. 24, 2017**
Date of Report: **May. 24, 2017**
Report Number: **UNI1700518037-E**

TEST RESULT CERTIFICATION

Applicant's name	:	Shenzhen Omni Intelligent Technology Co,.Ltd
Address	:	5th. Floor Block 4, Lianchuang Technical Zone, 21th. Bulan Road, Longgang, Shenzhen, China
Manufacture's Name............	:	Shenzhen Omni Intelligent Technology Co,.Ltd
Address	:	5th. Floor Block 4, Lianchuang Technical Zone, 21th. Bulan Road, Longgang, Shenzhen, China
Product description		
Trade Mark:		Omni
Product name	:	Bicycle Smart Lock
Model and/or type reference	:	OC30
Standards	:	FCC Part 22H and 24E ANSI C63.10: 2013

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Date of Test	:	
Date (s) of performance of tests	:	**May. 18, 2017 ~ May. 24, 2017**
Date of Issue..	:	**May. 24, 2017**
Test Result..	:	**Pass**

Testing Engineer : Eric Xie

(Eric Xie)

Technical Manager : Dora Qin

(Dora Qin)

Authorized Signatory :

(Kait Chen)

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1. TEST SUMMARY

1.1 TEST PROCEDURES AND RESULTS

DESCRIPTION OF TEST	RESULT
Conducted Output power	COMPLIANT
Radiated Output power(erp/eirp)	COMPLIANT
Peak-to-average Ratio (PAR) of Transmitter	COMPLIANT
Occupied bandwidth	COMPLIANT
Frequency stability	COMPLIANT
Conducted spurious emission (Antenna terminal)	COMPLIANT
Radiated spurious emissions	COMPLIANT
Block edge compliance	COMPLIANT
Power Line Conducted Emission Test	COMPLIANT
Conducted Output power	COMPLIANT

1.2 TEST FACILITY

Test Firm	:	QTC Certification & Testing Co., Ltd. Certificated by FCC, Registration No.: 588523
Address		2nd Floor,B1 Building,Fengyeyuan Industrial Plant, Liuxian 2st. Road, Xin'an Street, Bao'an District, Shenzhen, China

1.3 MEASUREMENT UNCERTAINTY

Measurement Uncertainty		
Conducted Emission Expanded Uncertainty	=	2.23dB, k=2
Radiated emission expanded uncertainty(9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty(30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty(Above 1GHz)	=	4.06dB, k=2

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	Bicycle Smart Lock
Model Name	OC30
Serial No	N/A
Model Difference	N/A
FCC ID	**2AI2O-OC30**
Antenna Type	Integral Antenna
Antenna Gain	2 dBi
Operation frequency	GSM850, PCS1900
Number of Channels	GSM/PCS: Band 850 and Band 1900;
Modulation Type	GMSK for GSM/GPRS
Power Source	DC 6V form Adapter with AC 120V/60Hz
Power Rating	DC 6V form Adapter with AC 120V/60Hz or DC 6V from battery

Equipment	Bicycle Smart Lock
Model Name	OC30
Serial No	N/A
Model Difference	N/A
FCC ID	**2AI2O-OC30**
Antenna Type	PCB Antenna
Antenna Gain	0 dBi
Operation frequency	2402-2480Mhz
Number of Channels	40CH
Modulation Type	GFSK
Power Source	DC 6V form Adapter with AC 120V/60Hz
Power Rating	DC 6V form Adapter with AC 120V/60Hz or DC 6V from battery

Note: This report only GSM test report, BT transmitters see the other test report.

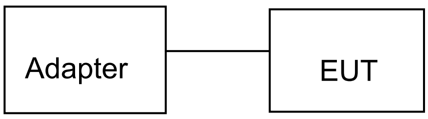
2.1.1 Carrier Frequency of Channels

During all testing, EUT is in link mode with base station emulator at maximum power level in each test mode and channel as below:

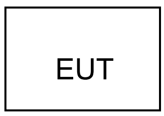
Mode	Channel	Frequency(MHz)
GSM/ GPRS 850	128	824.2
	190	836.6
	251	848.8
PCS/ GPRS 1900	512	1850.2
	661	1880.0
	810	1909.8

2.2 DESCRIPTION OF TEST SETUP

Operation of EUT during conducted testing:



Operation of EUT during Radiation testing:



2.3 MEASUREMENT INSTRUMENTS LIST

Item	Equipment	Manufacturer	Model No.	Serial No.	Cal Date	Due Date
1.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Feb. 18, 2017	Feb. 17, 2018
2.	LISN	SchwarzBeck	NSLK 8126	8126377	Feb. 18, 2017	Feb. 17, 2018
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Feb. 18, 2017	1 Year
4.	EMI Test Software ES-K1	Rohde & Schwarz	N/A	N/A	N/A	N/A
5.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Feb. 18, 2017	Feb. 17, 2018
6.	Trilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Feb. 18, 2017	Feb. 17, 2018
7.	Pre-amplifier	Compliance Direction	PAP-0203	22008	Feb. 18, 2017	Feb. 17, 2018
8.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A
9.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Feb. 18, 2017	Feb. 17, 2018
10.	LISN	SchwarzBeck	NSLK 8126	8126377	Feb. 18, 2017	Feb. 17, 2018
11.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Feb. 18, 2017	Feb. 17, 2018
12.	EMI Test Software ES-K1	Rohde & Schwarz	N/A	N/A	N/A	N/A
13.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Feb. 18, 2017	Feb. 17, 2018
14.	EMI Receiver	Rohde & Schwarz	ESCI	100627	Feb. 18, 2017	Feb. 17, 2018
15.	LISN	SchwarzBeck	NSLK 8126	8126377	Feb. 18, 2017	Feb. 17, 2018
16.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Feb. 18, 2017	Feb. 17, 2018
17.	EMI Test Software ES-K1	Rohde & Schwarz	N/A	N/A	N/A	N/A
18.	Power Meter	R&S	NRVD	SEL0069	Feb. 18, 2017	Feb. 17, 2018
19.	Power Sensor	R&S	URV5-Z2	SEL0071	Feb. 18, 2017	Feb. 17, 2018
20.	Power Sensor	R&S	URV5-Z2	SEL0072	Feb. 18, 2017	Feb. 17, 2018
21.	Software EMC32	R&S	EMC32-S	SEL0082	N/A	N/A
22.	Log-periodic Antenna	Amplifier Reasearch	APT1.580	SEL0073	Feb. 18, 2017	Feb. 17, 2018
23.	Loop Antenna	Schwarz beck	FMZB 1516	9773	Feb. 18, 2017	Feb. 17, 2018
24.	Broadband Antenna	Schwarz beck	VULB9163	9163-333	Feb. 18, 2017	Feb. 17, 2018
25.	Horn Antenna	ETS	3117	00086197	Feb. 18, 2017	Feb. 17, 2018
26.	Horn Antenna	Schwarzbeck	BBHA9170	BBHA91705 82	Feb. 18, 2017	Feb. 17, 2018
27.	Antenna Tripod	Amplifier Reasearch	TP1000A	SEL0074	Feb. 18, 2017	Feb. 17, 2018
28.	High Gain Horn Antenna	Amplifier Reasearch	AT4002A	SEL0075	Feb. 18, 2017	Feb. 17, 2018
29.	Spectrum analyzer	Agilent	N9020A	MY49911004 8	Feb. 18, 2017	Feb. 17, 2018
30.	Spectrum analyzer	Agilent	E4407B	MY46184326	Feb. 18, 2017	Feb. 17, 2018
31.	Spectrum analyzer	R&S	FSP30	836079/035	Feb. 18, 2017	Feb. 17, 2018
32.	RF Cable	Micable	C10-01-01-1	100309	Feb. 18, 2017	Feb. 17, 2018

33.	Cable(9KHz-2GHz)	Resenberger	SUCOFLEX 104	309972/2	Feb. 18, 2017	Feb. 17, 2018
34.	Cable(1GHz-40GHz)	Resenberger	SUCOFLEX 104	329112/2	Feb. 18, 2017	Feb. 17, 2018

3. CONDUCTED EMISSIONS TEST

3.1 Conducted Power Line Emission Limit

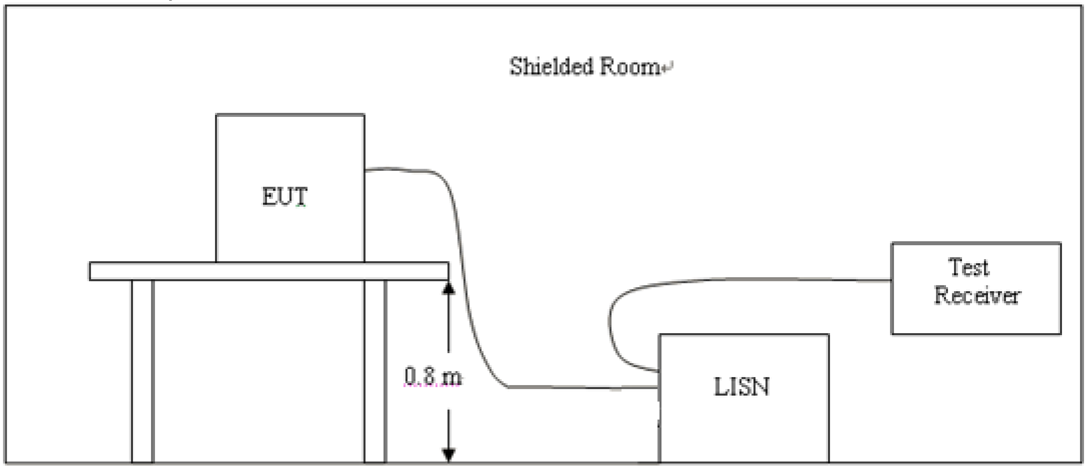
For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following

Frequency (MHz)	Maximum RF Line Voltage (dBμV)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

* Decreasing linearly with the logarithm of the frequency

For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

3.2 Test Setup



3.3 Test Procedure

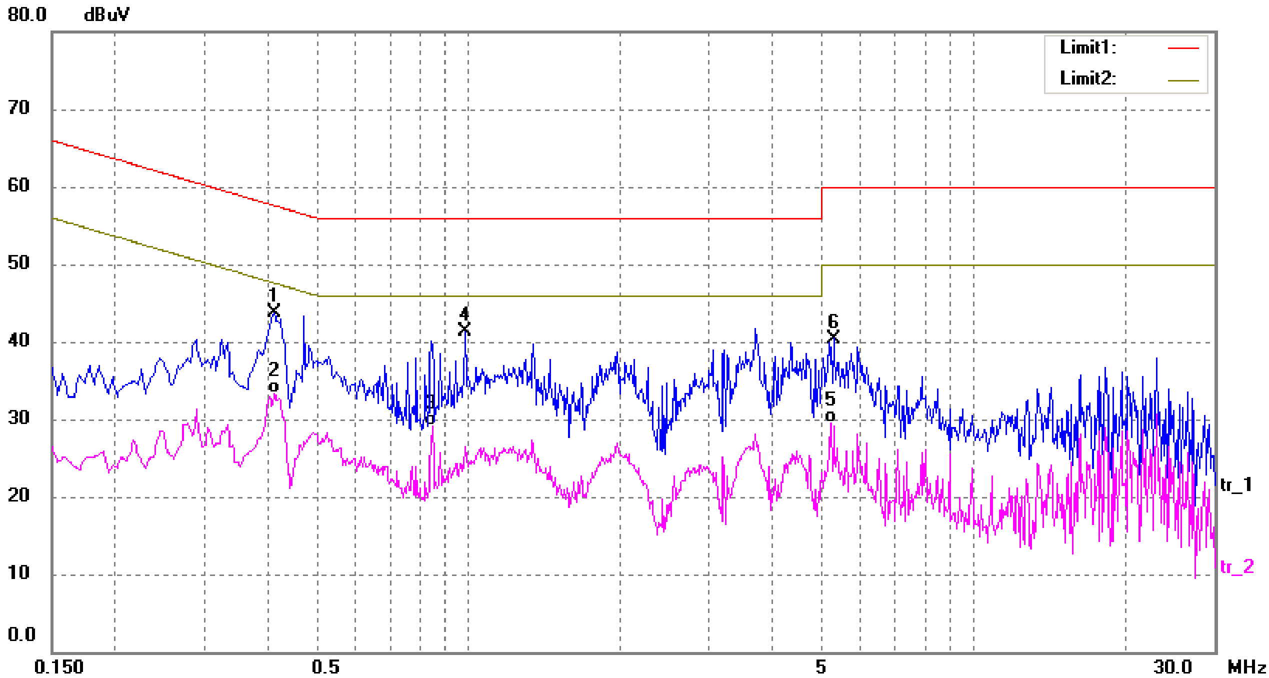
1, The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10.
2, Support equipment, if needed, was placed as per ANSI C63.10.
3, All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4, If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5, All support equipments received AC power from a second LISN, if any.
6, The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7, Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.

3.4 Test Result

PASS

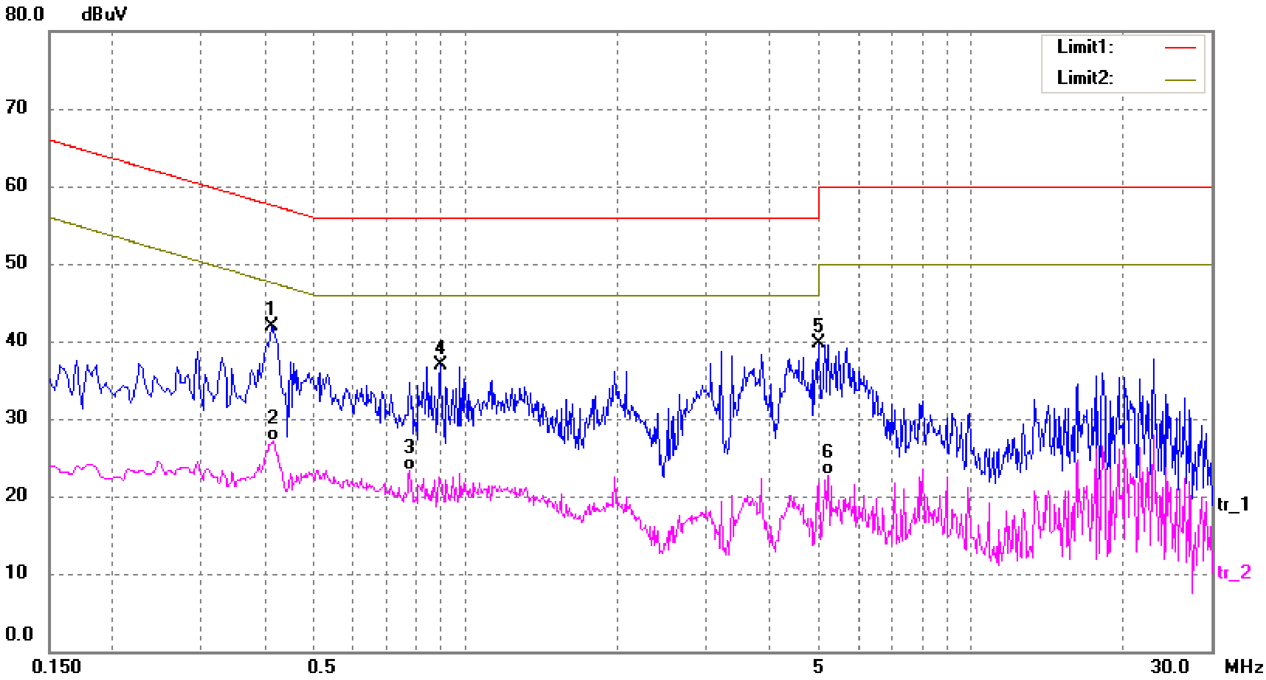
All the test modes completed for test.

Line



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.4140	33.86	9.80	43.66	57.57	-13.91	peak
2	0.4140	23.56	9.80	33.36	47.57	-14.21	AVG
3	0.8500	19.37	9.77	29.14	46.00	-16.86	AVG
4	0.9860	31.59	9.76	41.35	56.00	-14.65	peak
5	5.2380	19.89	9.65	29.54	50.00	-20.46	AVG
6	5.2980	30.75	9.65	40.40	60.00	-19.60	peak

Neutral



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.4140	32.02	9.80	41.82	57.57	-15.75	peak
2	0.4180	17.36	9.80	27.16	47.49	-20.33	AVG
3	0.7780	13.47	9.78	23.25	46.00	-22.75	AVG
4	0.8900	27.20	9.77	36.97	56.00	-19.03	peak
5	5.0220	29.97	9.66	39.63	60.00	-20.37	peak
6	5.2380	13.04	9.65	22.69	50.00	-27.31	AVG

4 Conducted Output power

4.1 Test Limit

Cellular Telephone 850MHz	PCS 1900MHz
/	/

4.2 Test Procedure

1 The EUT’s RF output port was connected to base station.
2 A call is set up by the SS according to the generic call set up procedure
3 Set EUT at maximum power level through base station by power level command
4 Measure the maximum output power of EUT at each frequency band and mode by base station.

4.3 Measurement Equipment Used

Same as Radiated Emission Measurement

4.4 Test Result

PASS. All the test modes completed for test.

GSM850 Mode			
Test Channel	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)	LIMIT dBm
128	824.2	32.31	/
190	836.6	32.25	/
251	848.8	32.28	/
PCS 1900 Mode			
512	1850.2	28.27	/
661	1880	28.45	/
810	1909.8	28.58	/
GPRS 850 Mode			
128	824.2	32.49	/
190	836.6	32.32	/
251	848.8	32.83	/
GPRS 1900 Mode			
512	1850.2	28.39	/
661	1880	28.56	/
810	1909.8	28.89	/

5 Radiated Output power

5.1 Test Limit

This is the test for the maximum radiated power from the EUT. Rule Part 24.232(b) specifies, “Mobile/portable stations are limited to 2 watts e.i.r.p. Peak power” and 24.232(c) specifies that "Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.” Rule Part 22.913(a) specifies “Maximum ERP. The effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 Watts. The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.”

Mode	Nominal Peak Power
GSM 850	<=38.45 dBm (7W)
PCS 1900	<=33 dBm (2W)
UMTS BAND V	<=38.45 dBm (7W)
UMTS BAND II	<=33 dBm (2W)

5.2 Test Procedure

1. The EUT was placed on an non-conductive rotating platform with 0.8 meter height in an anechoic chamber. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and a spectrum analyzer with RBW= 3MHz,VBW= 3MHz and peak detector settings.
2. During the measurement, the EUT was enforced in maximum power and linked with a base station. The highest emission was recorded from analyzer power level (LVL) from the 360 degrees rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations
3. Effective Isotropic Radiated Power (EIRP) was measured by substitution method according to TIA/EIA-603-C. The EUT was replaced by dipole antenna (for frequency lelow 1GHz) or Horn antenna(for frequecny above 1GHz) at same location with same polarize of reveiver antenna and then a known power of each measure frequency from S.G. was applied into the dipole antenna or Horn antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. - Tx Cable loss + Substitution antenna gain –Substitution antenna Loss(only for Dipole antenna) - Analyzer reading. Then the EUT’s EIRP was calculated with the correction factor, EIRP= LVL + Correction factor and ERP = EIRP – 2.15

5.3 Measurement Equipment Used

Same as Radiated Emission Measurement

5.4 Test Result

Conclusion: **PASS**					
Mode	Channel	LVL (dBm)	Correction factor(dB)	ERP (dBm)	EIRP (dBm)
GSM 850	128	3.84	30.42	32.11	/
	190	4.06	30.21	32.12	/
	251	4.15	30.05	32.05	/
PCS 1900	512	-18.75	46.80	/	28.05
	661	-18.12	46.45	/	28.33
	810	-18.16	46.58	/	28.42
ERP=LVL + Correction factor -2.15 EIRP=LVL+ Correction factor					

Conclusion: **PASS**					
Mode	Channel	LVL (dBm)	Correction factor(dB)	ERP (dBm)	EIRP (dBm)
GPRS 850	128	4.01	30.42	32.28	/
	190	4.06	30.21	32.12	/
	251	4.88	30.05	32.78	/
GPRS 1900	512	-18.47	46.80	/	28.33
	661	-17.99	46.45	/	28.46
	810	-17.89	46.58	/	28.69
ERP=LVL + Correction factor -2.15 EIRP=LVL+ Correction factor					

6 PEAK-TO- AVERAGE RATIO(PAR) OF TRANSMITTER

6.1 Test Limit

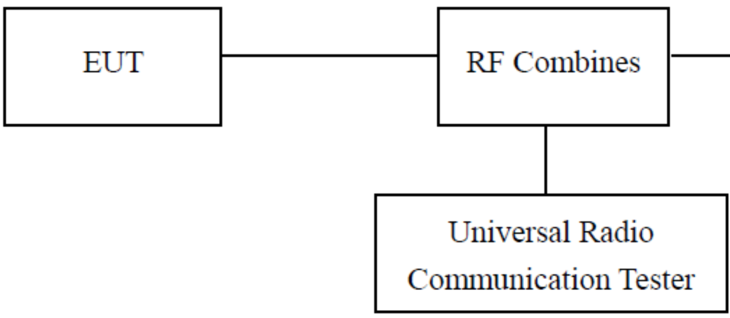
According to §24.232(d), Power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

According to §27.50(B), the peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for more than 0.1 percent of the time or other Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

6.2 Test Procedure

The RF output terminal of the transmitter was connected to the input of the spectrum analyzer via a suitable attenuation. The RBW of the spectrum analyzer was set to 30kHz and the peak-to-average ratio (PAR) of the transmission was recorded. Record the maximum PAPR level associated with a probability of 0.1%.

Test Configuration for the emission bandwidth testing:



6.3 Measurement Equipment Used

Same as Radiated Emission Measurement

6.4 Test Result

Conclusion: **PASS**

GSM850 Mode			
Test Channel	Frequency (MHz)	PAR (dB)	LIMIT dB
128	824.2	1.52	13
190	836.6	1.27	13
251	848.8	1.29	13
PCS 1900 Mode			
512	1850.2	2.89	13
661	1880	2.70	13
810	1909.8	2.59	13
GPRS 850 Mode			
128	824.2	1.48	13
190	836.6	1.47	13
251	848.8	1.66	13
GPRS 1900 Mode			
512	1850.2	2.82	13
661	1880	2.84	13
810	1909.8	2.78	13

7 OCCUPIED BANDWIDTH MEASUREMENT

7.1 Test Limit

N/A

7.2 Test Procedure

1. The EUT' RF output port was connected to Spectrum Analyzer and Base Station via power divider.
2. Spectrum analyzer's occupied bandwidth measure function was used to measure 99% bandwidth and -26dBc bandwidth

7.3 Measurement Equipment Used

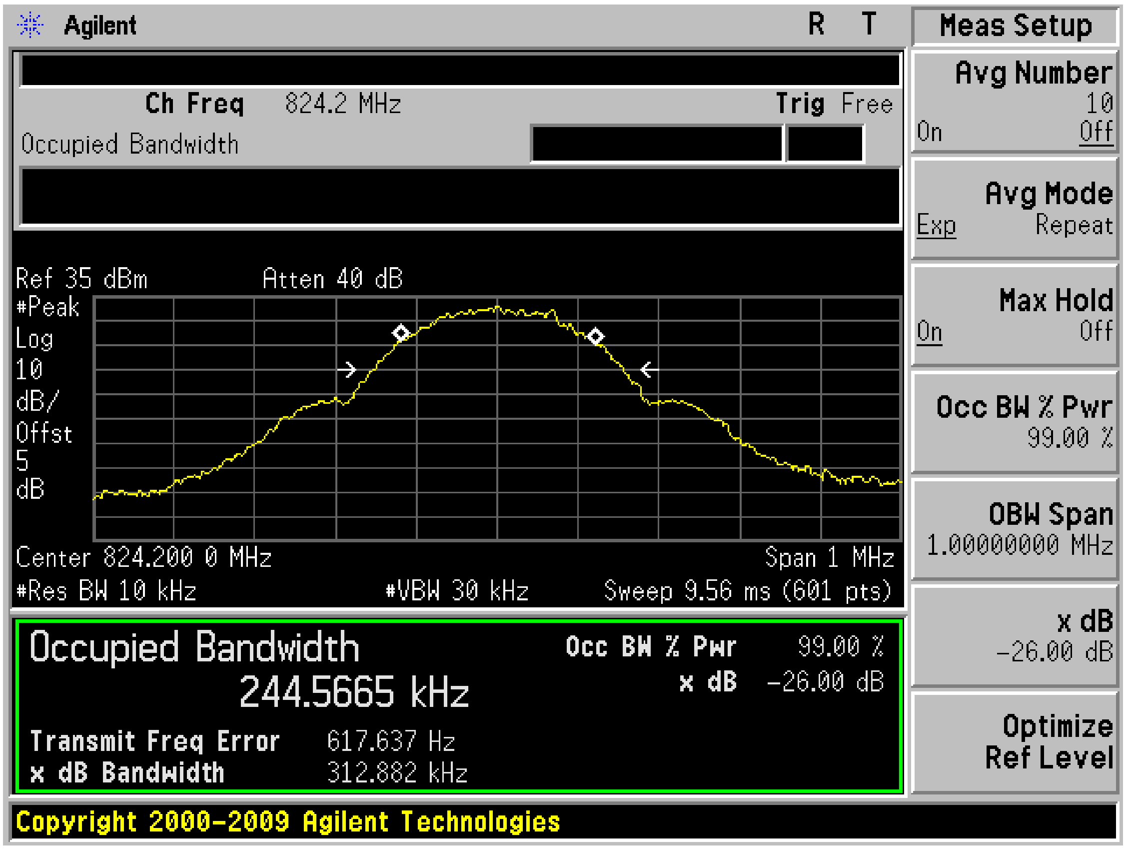
Same as Radiated Emission Measurement

7.4 Test Result

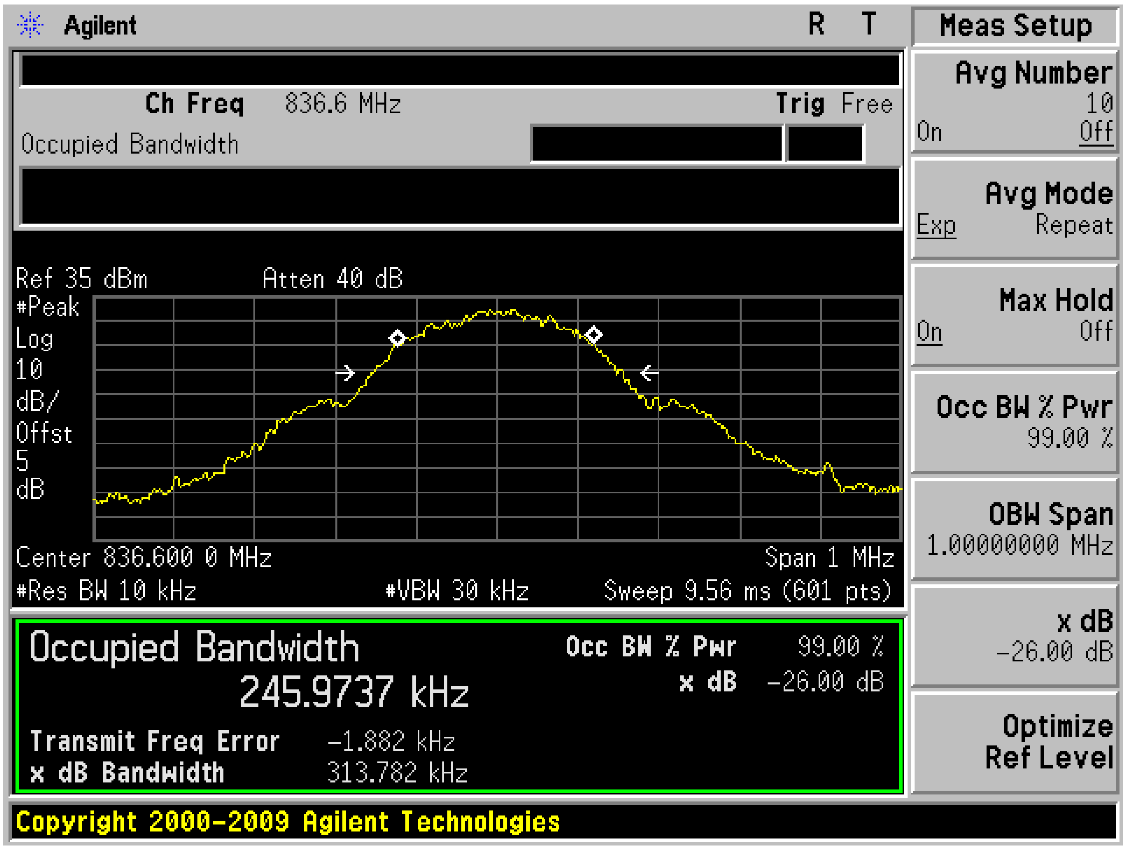
PASS
All the test modes completed for test.

GSM850 Mode			
Frequency (MHz)	**26dB Bandwidth (KHz)**	**99% bandwidth (KHz)**	**Result**
824.2	312.88	244.57	**PASS**
836.6	313.78	245.97	**PASS**
848.8	320.09	246.35	**PASS**

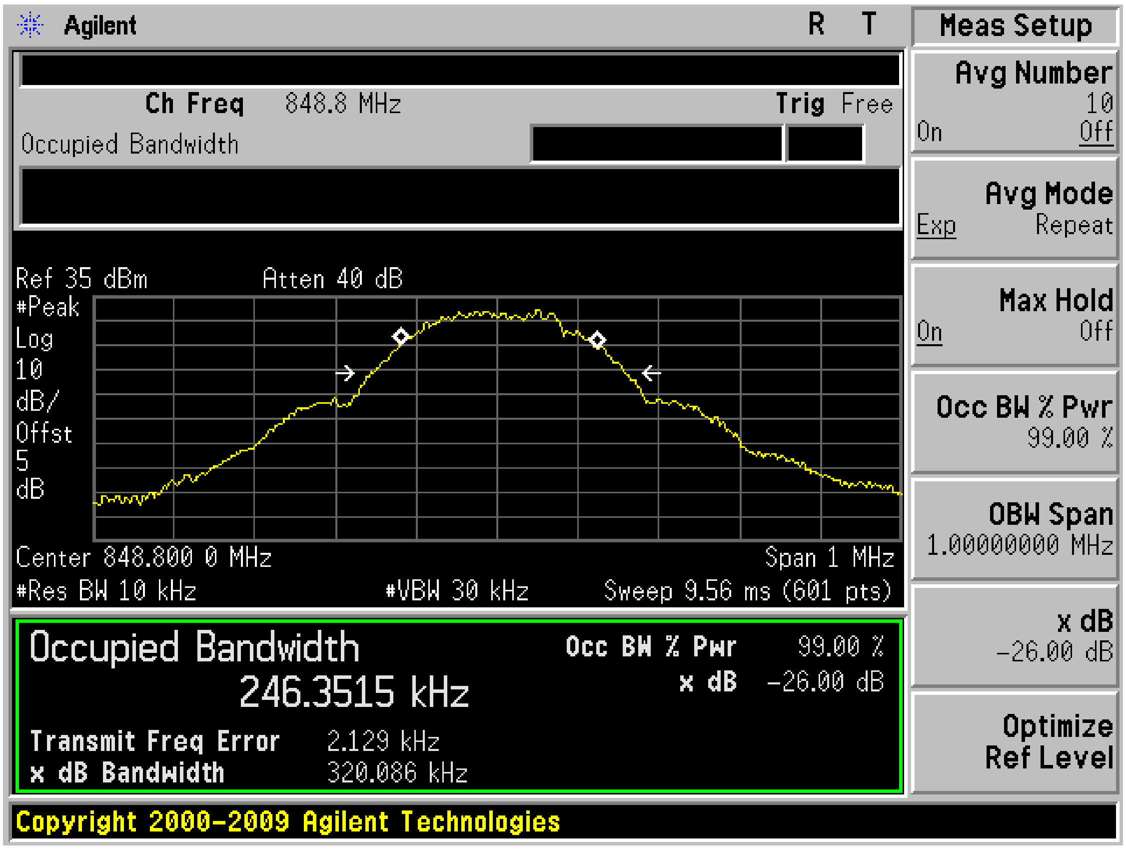
GSM 850 CH128



GSM 850 CH190

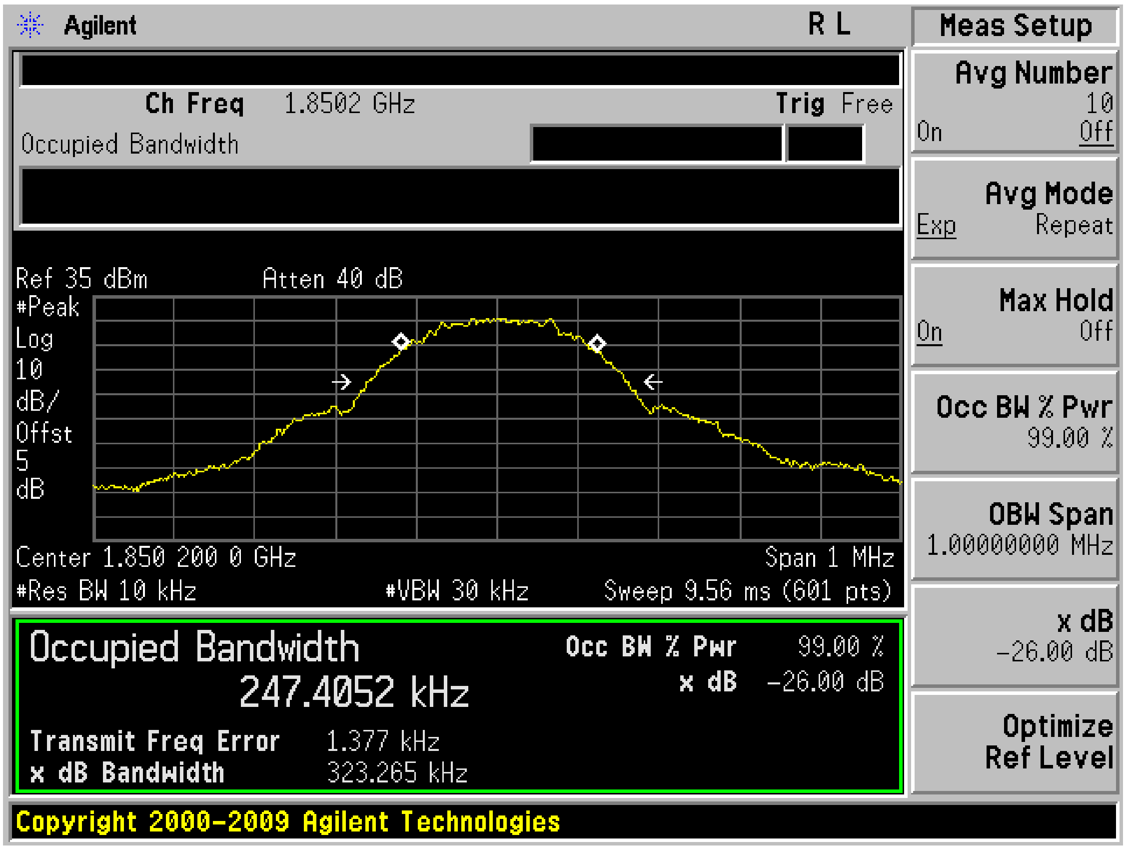


GSM 850 CH251

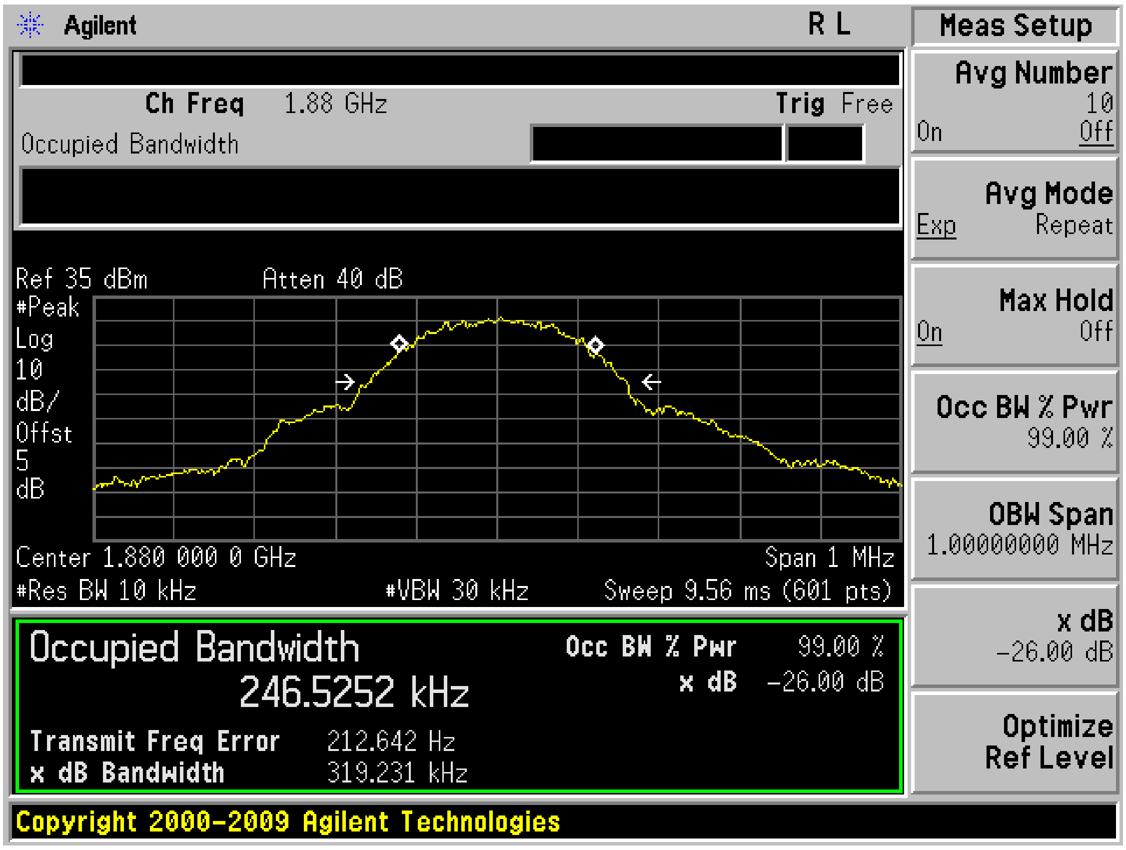


PCS1900 Mode			
Frequency (MHz)	**26dB Bandwidth (KHz)**	**99% bandwidth (KHz)**	**Result**
1850.2	323.27	247.41	**PASS**
1880	319.23	246.53	**PASS**
1909.8	316.53	245.92	**PASS**

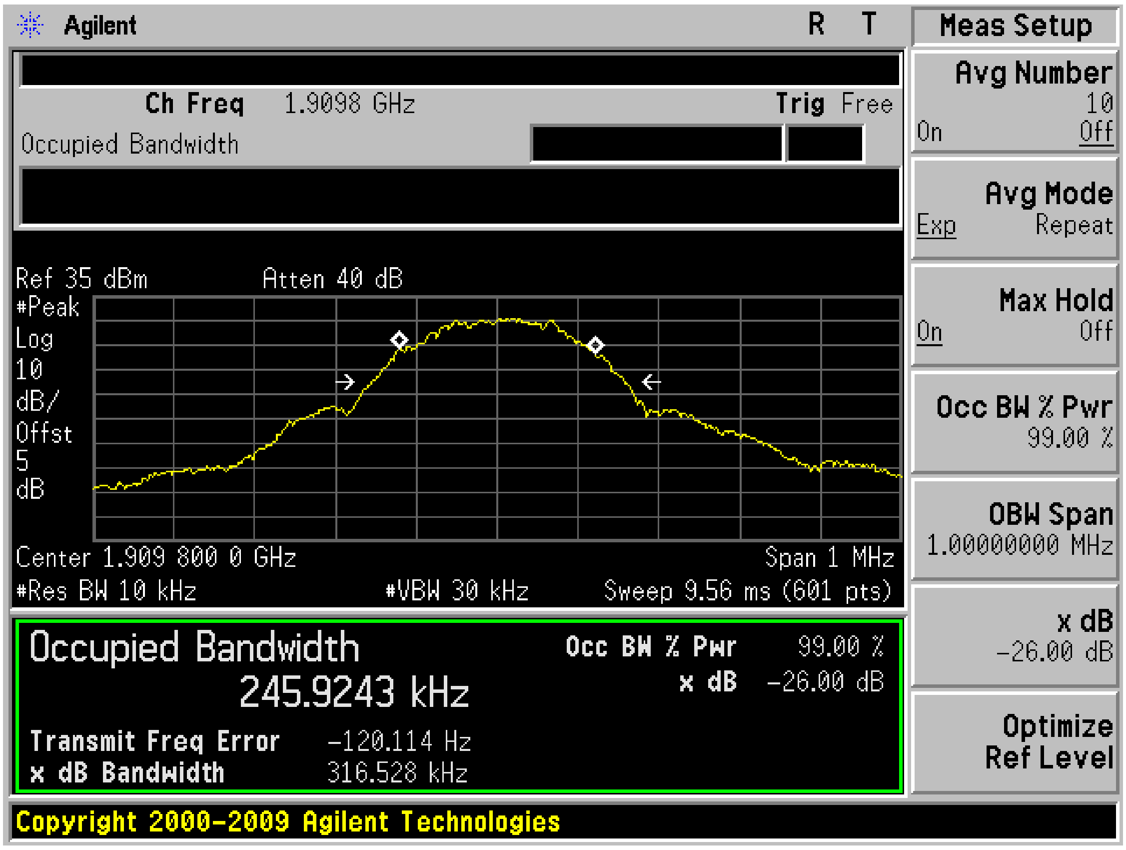
PCS 1900 CH512



PCS 1900 CH661

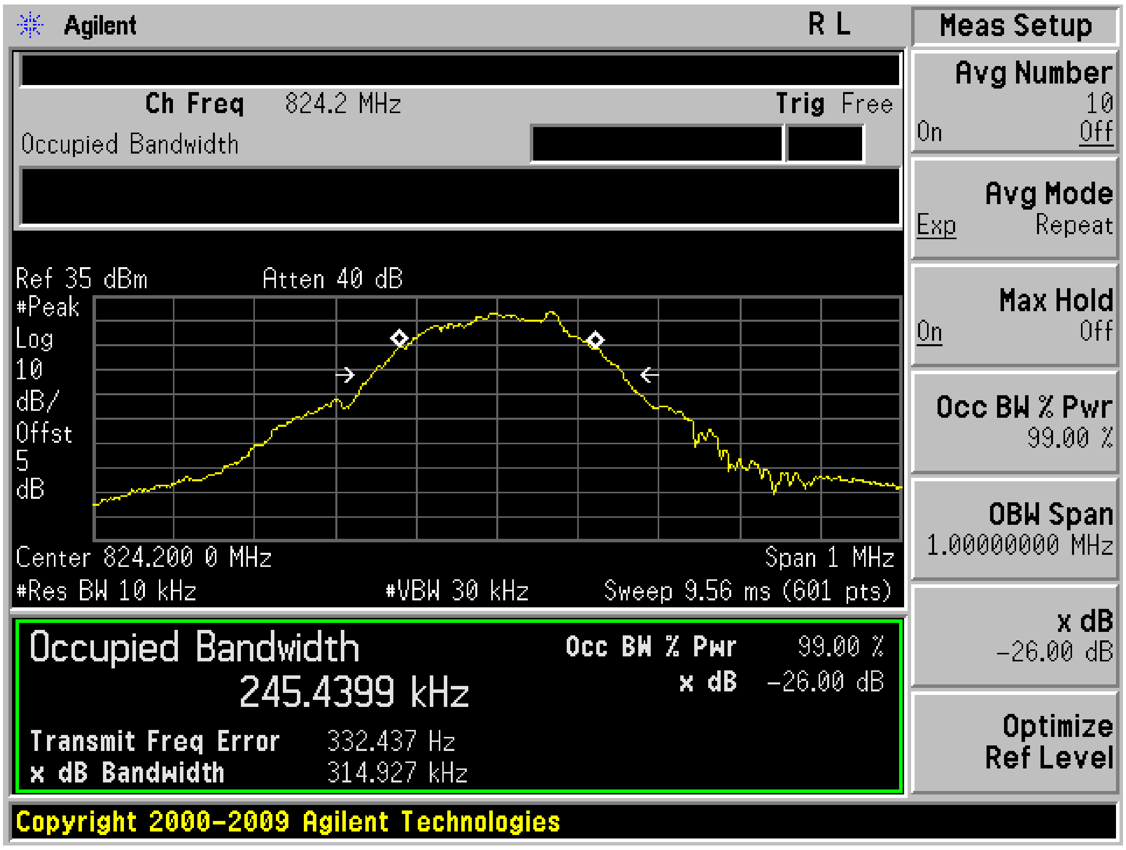


PCS 1900 CH810

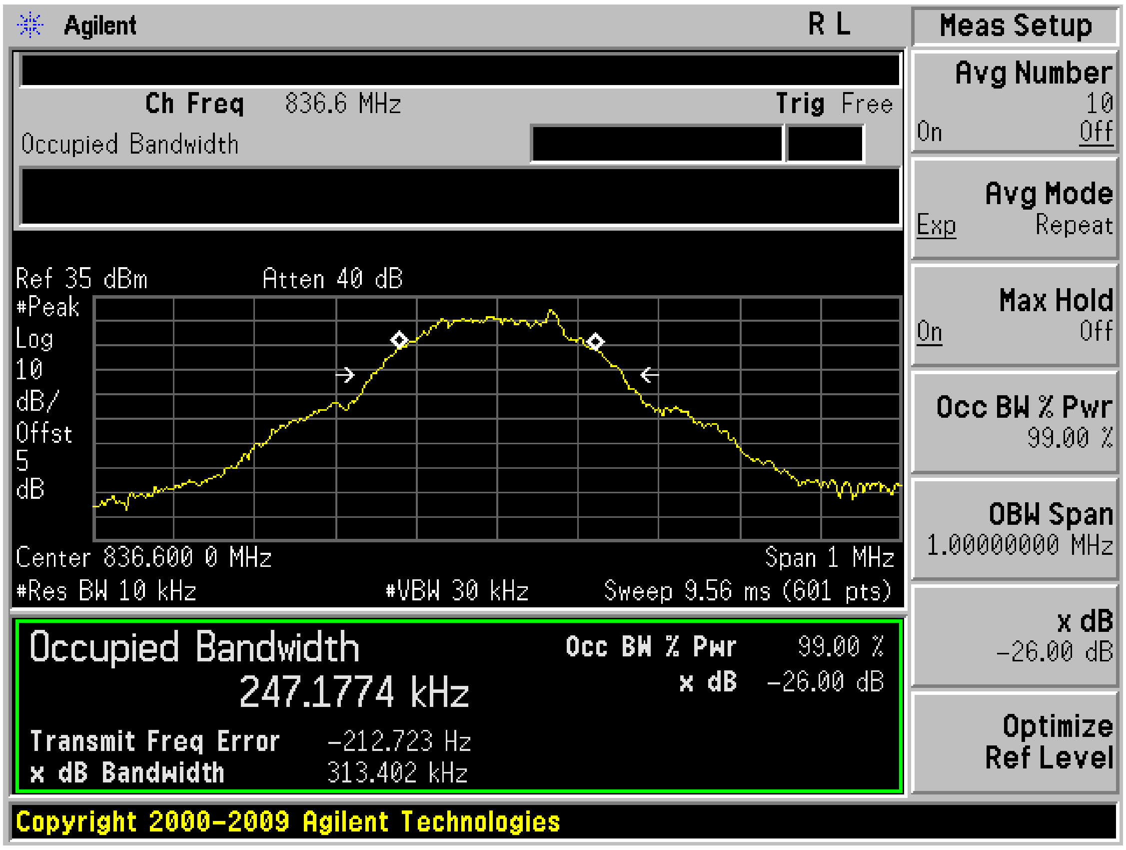


GPRS 850 Mode			
Frequency (MHz)	**26dB Bandwidth (KHz)**	**99% bandwidth (KHz)**	**Result**
824.2	314.93	245.44	**PASS**
836.6	313.40	247.18	**PASS**
848.8	319.66	247.78	**PASS**

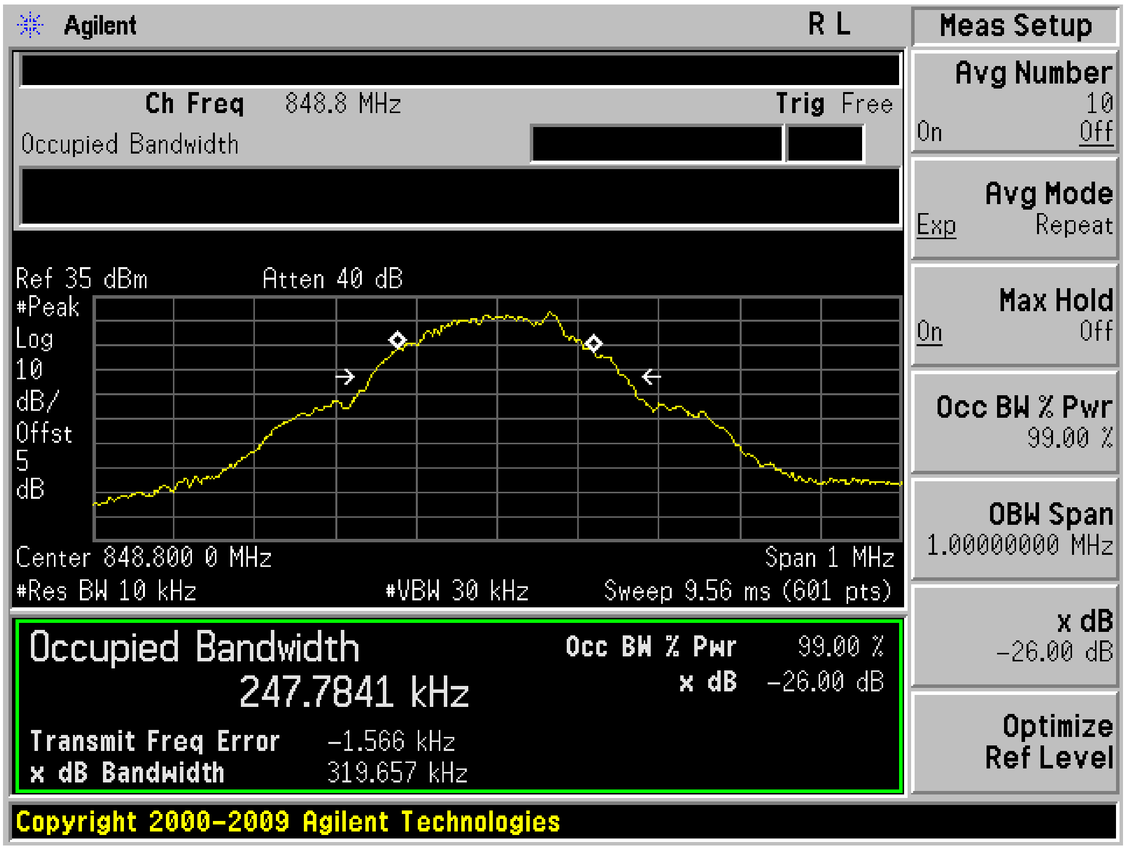
GPRS 850 CH128



GPRS 850 CH190

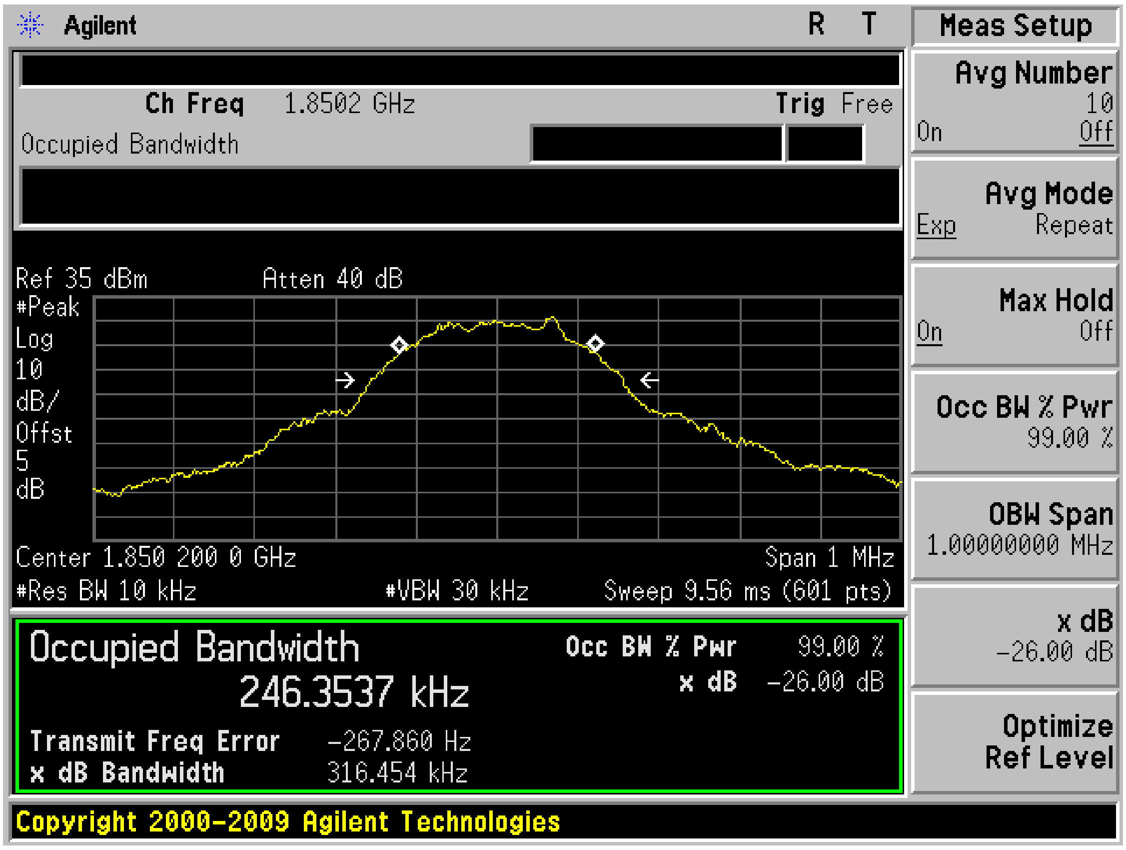


GPRS 850 CH251

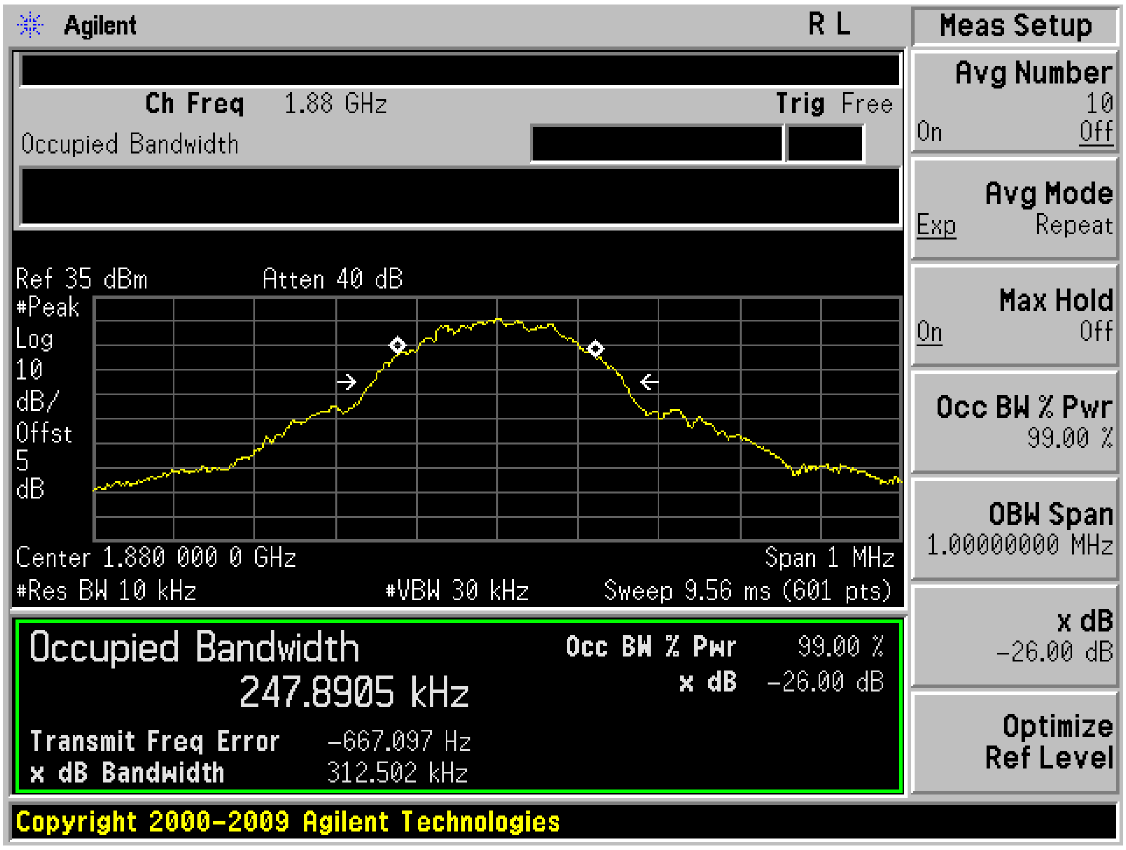


GPRS 1900 Mode			
Frequency (MHz)	**26dB Bandwidth (KHz)**	**99% bandwidth (KHz)**	**Result**
1850.2	316.45	246.35	**PASS**
1880	312.50	247.89	**PASS**
1909.8	317.26	247.33	**PASS**

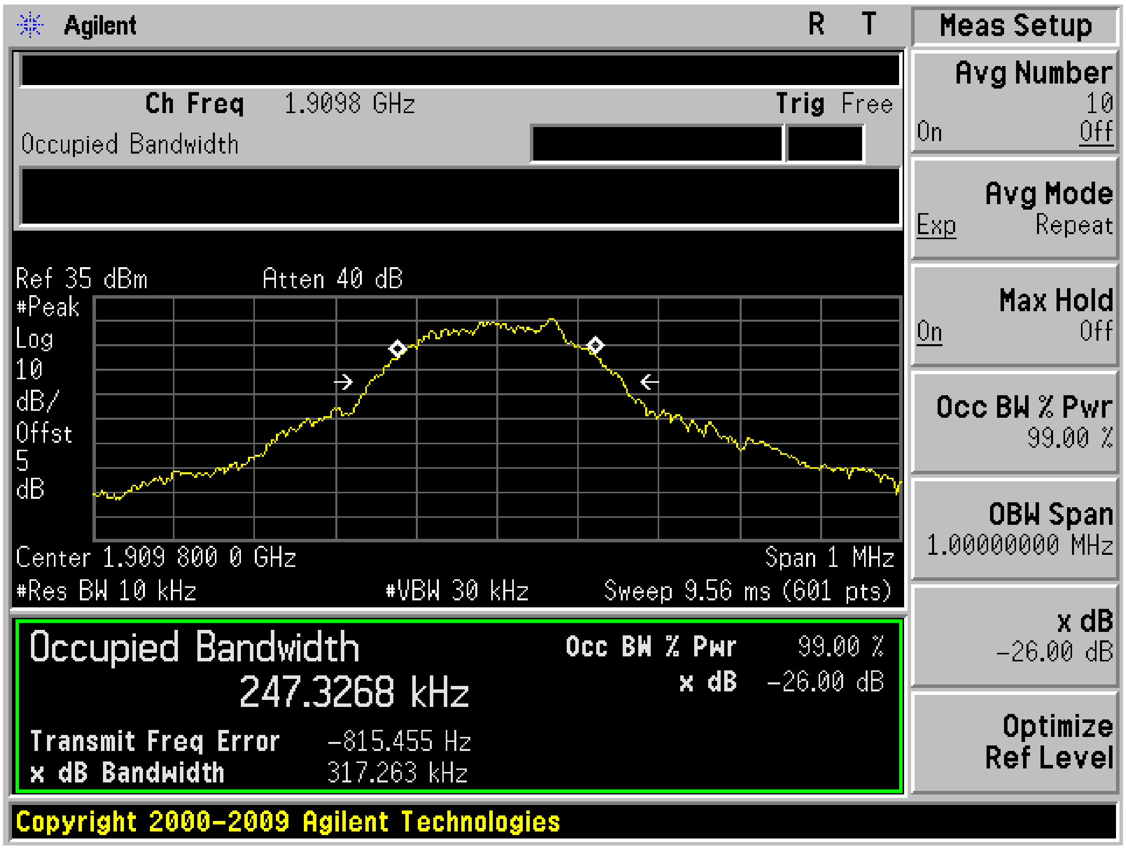
GPRS 1900 CH512



GPRS 1900 CH661



GPRS 1900 CH810



8 Frequency stability

8.1 Test Limit

GSM 850MHz	PCS 1900MHz
± 2.5 ppm	Must stay within the authorized frequency block

8.2 Test Procedure

Test Procedures for Temperature Variation:

1. The EUT was set up in the thermal chamber and connected with the base station.
2. With power OFF, the temperature was decreased to -10°C and the EUT was stabilized for three hours. Power was applied and the maximum change in frequency was recorded within one minute.
3. With power OFF, the temperature was raised in 10°C step up to 45°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.
4. If the EUT can not be turned on at -10°C, the testing lowest temperature will be raised in 10°C step until the EUT can be turned on.

Test Procedures for Voltage Variation:

1. The EUT was placed in a temperature chamber at 25±5° C and connected with the base station.
2. The power supply voltage to the EUT was varied from DC 5V to 3V
3. The variation in frequency was measured for the worst case.

8.3 Measurement Equipment Used

Same as Radiated Emission Measurement

8.4 Test Result

PASS
All the test modes completed for test.

Mode	Voltage (V)	Frequency error (Hz)	frequency error (ppm)
GSM 850 CH190	5V	19.50	0.023
	4.5V	24.37	0.029
	4V	23.33	0.028
	3.5V	21.85	0.026
	3V	23.41	0.028
PCS 1900 CH661	5V	38.65	0.021
	4.5V	37.03	0.020
	4V	38.56	0.021
	3.5V	34.19	0.018
	3V	37.02	0.020
Conclusion: **PASS**			

Mode	Temperature (℃)	Frequency error (Hz)	frequency error (ppm)
GSM 850 CH190	-30	37.88	0.045
	-20	37.57	0.045
	-10	28.40	0.034
	0	27.71	0.033
	10	28.33	0.034
	20	36.32	0.043
	30	34.61	0.041
	40	25.20	0.013
	50	45.16	0.024
PCS 1900 CH661	-30	68.25	0.036
	-20	69.73	0.037
	-10	70.58	0.038
	0	66.24	0.035
	10	69.87	0.037
	20	69.64	0.037
	30	72.23	0.038
	40	69.77	0.037
	50	69.04	0.037
Conclusion: **PASS**			

Mode	Voltage (V)	Frequency error (Hz)	frequency error (ppm)
GPRS 850 CH190	5V	20.94	0.025
	4.5V	24.55	0.029
	4V	20.81	0.025
	3.5V	25.76	0.031
	3V	19.96	0.024
GPRS 1900 CH661	5V	34.38	0.018
	4.5V	37.92	0.020
	4V	36.88	0.020
	3.5V	35.46	0.019
	3V	33.85	0.018
Conclusion: **PASS**			

Mode	Temperature (℃)	Frequency error (Hz)	frequency error (ppm)
GPRS 850 CH190	-30	37.76	0.045
	-20	34.90	0.042
	-10	26.98	0.032
	0	25.60	0.031
	10	28.43	0.034
	20	35.20	0.042
	30	33.34	0.04
	40	36.49	0.019
	50	27.51	0.015
GPRS 1900 CH661	-30	71.11	0.038
	-20	80.57	0.043
	-10	69.94	0.037
	0	67.12	0.036
	10	68.30	0.036
	20	73.13	0.039
	30	74.59	0.040
	40	68.98	0.037
	50	73.25	0.039
Conclusion: **PASS**			

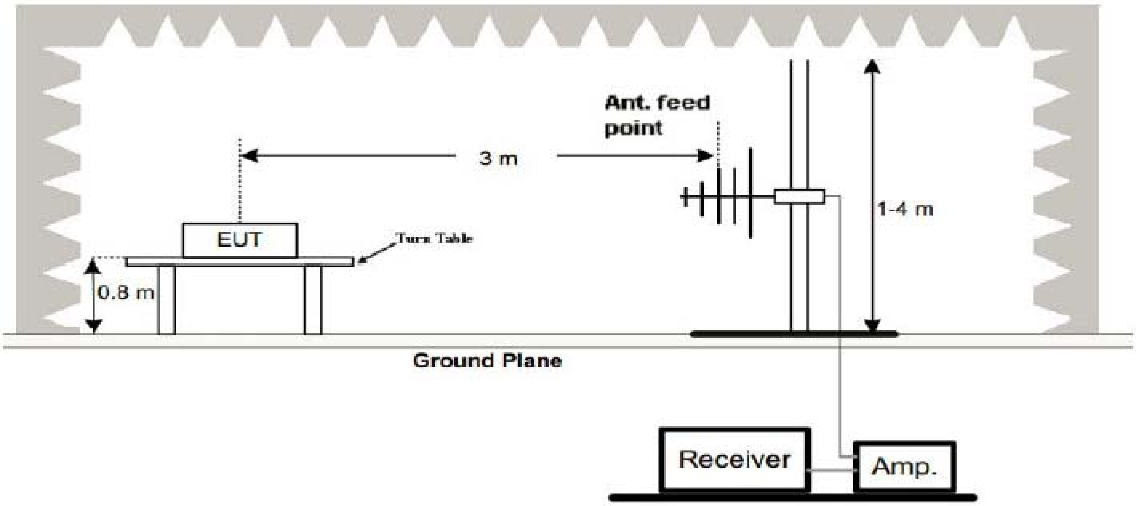
9 RADIATED EMISSION TEST

9.1 Radiation Limit

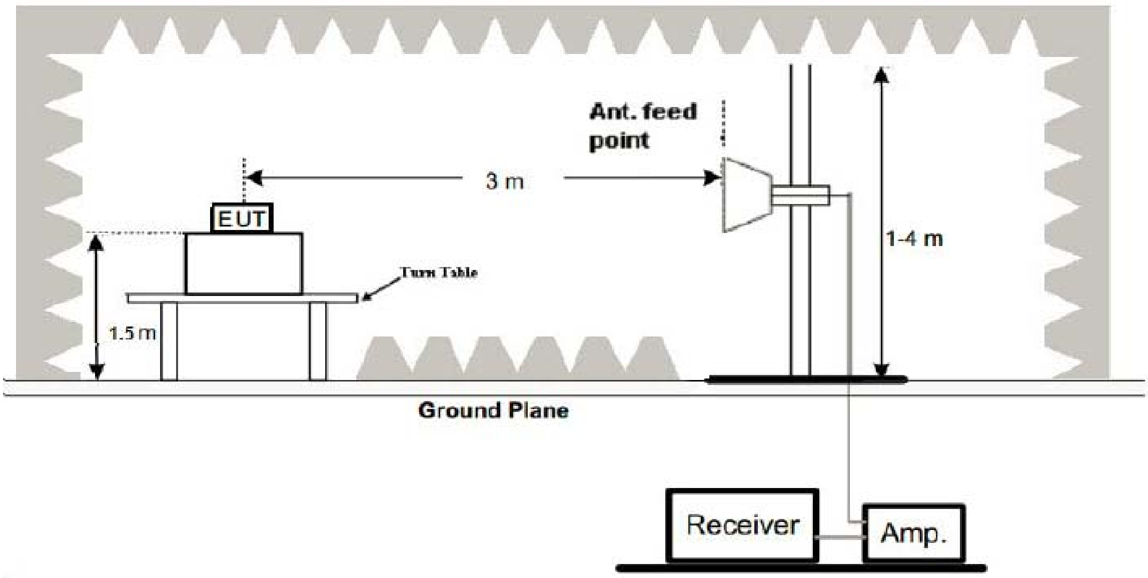
The mean power of emissions must be attenuated below the mean power of the unmodulated carrier (P) on any frequency outside the frequency band by at least (43 + 10 log P) dB, in this case, -13dBm.

9.2 Test Setup

（1）Radiated Emission Test-Up Frequency 30MHz~1GHz



（2）Radiated Emission Test-Up Frequency Above 1GHz



9.3 Test Procedure

1. The EUT was placed on an non-conductive rotating platform with 0.8 meter height in an anechoic chamber. The radiated spurious emissions from 30MHz to 10th harmonious of fundamental frequency were measured at 3m with a test antenna and a spectrum analyzer with RBW= 1MHz,VBW= 1MHz ,peak detector settings.
2. During the measurement, the EUT was enforced in maximum power and linked with a base station. All the spurious emissions (record as LVL) at 3m were measured by rotation of the turntable and the test antenna raised and lowered over a range from 1 to 4 meters in both horizontally and vertically polarized orientations.
3. Final spurious emissions levels were measured by substitution method according to TIA/EIA-603-C. The EUT was replaced by dipole antenna (for frequency below 1GHz) or Horn antenna (for frequency above 1GHz) at same location with same polarize of receiver antenna and then a known power of each measure frequency from S.G. was applied into the dipole antenna or Horn antenna through a Tx cable, and then recorded the maximum Analyzer reading through raised and lowered the test antenna. The correction factor (in dB) = S.G. - Tx Cable loss + Substitution antenna gain –Substitution antenna Loss(only for Dipole antenna) - Analyzer reading. Then final spurious emissions were calculated with the correction factor, EIRP= LVL + Correction factor and ERP = EIRP – 2.15

9.4 Test Result

PASS

All the test modes completed for test. The worst case of Radiated Emission; the test data of this mode was reported.

GSM 850:

The Worst Test Results Channel 128/824.2 MHz					
Frequency(MHz)	Power(dBm)	A_{Rpl} (dBm)	P_{Mea}(dBm)	Limit(dBm)	Polarity
1648.379	-20.86	-4.65	-25.51	-13.00	Horizontal
2471.322	-20.14	-2.10	-22.24	-13.00	Horizontal
4118.454	-29.58	11.80	-17.78	-13.00	Horizontal
1648.379	-20.55	-4.65	-25.20	-13.00	Vertical
2471.322	-19.34	-2.10	-21.44	-13.00	Vertical
4118.454	-29.54	11.80	-17.74	-13.00	Vertical
The Worst Test Results Channel 190/836.6 MHz					
Frequency(MHz)	Power(dBm)	A_{Rpl} (dBm)	P_{Mea}(dBm)	Limit(dBm)	Polarity
1673.317	-21.35	-4.97	-26.32	-13.00	Horizontal
2506.234	-19.87	-2.10	-21.97	-13.00	Horizontal
3339.401	-20.77	3.46	-17.31	-13.00	Horizontal
1673.317	-23.78	-4.97	-28.75	-13.00	Vertical
2506.234	-21.52	-2.10	-23.62	-13.00	Vertical
3339.401	-19.8	3.46	-16.34	-13.00	Vertical
The Worst Test Results Channel 251/848.8 MHz					
Frequency(MHz)	Power(dBm)	A_{Rpl} (dBm)	P_{Mea}(dBm)	Limit(dBm)	Polarity
1698.254	-22.88	-4.94	-27.82	-13.00	Horizontal
2541.147	-19.64	-2.02	-21.66	-13.00	Horizontal
3384.835	-20.88	3.49	-17.39	-13.00	Horizontal
1698.254	-22.2	-4.94	-27.14	-13.00	Vertical
2541.147	-19.42	-2.02	-21.44	-13.00	Vertical
3384.835	-21.28	3.49	-17.79	-13.00	Vertical

PCS 1900:

The Worst Test Results for Channel 512/1850.2MHz					
Frequency(MHz)	Power(dBm)	A_{Rpl} (dBm)	P_{Mea}(dBm)	Limit(dBm)	Polarity
1793.017	-24.31	-3.54	-27.85	-13.00	Horizontal
3720.698	-35.79	13.01	-22.78	-13.00	Horizontal
5543.641	-32.43	14.7	-17.73	-13.00	Horizontal
1793.017	-24.11	-3.54	-27.65	-13.00	Vertical
3720.698	-34.57	13.01	-21.56	-13.00	Vertical
5543.641	-33.96	14.7	-19.26	-13.00	Vertical
The Worst Test Results for Channel 661/1880.0MHz					
Frequency(MHz)	Power(dBm)	A_{Rpl} (dBm)	P_{Mea}(dBm)	Limit(dBm)	Polarity
1822.943	-22.95	-3.48	-26.43	-13.00	Horizontal
3763.092	-37.78	13.8	-23.98	-13.00	Horizontal
5628.429	-34.92	15.4	-19.52	-13.00	Horizontal
1822.943	-22.01	-3.48	-25.49	-13.00	Vertical
3763.092	-36.66	13.8	-22.86	-13.00	Vertical
5628.429	-31.75	15.4	-16.35	-13.00	Vertical
The Worst Test Results for Channel 810/1909.8MHz					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit (dBm)	Polarity
1967.581	-22.64	-3.26	-25.90	-13.00	Horizontal
3847.880	-36.23	12.4	-23.83	-13.00	Horizontal
5713.217	-35.04	15.75	-19.29	-13.00	Horizontal
1967.581	-22.71	-3.26	-25.97	-13.00	Vertical
3847.880	-34.73	12.4	-22.33	-13.00	Vertical
5713.217	-31.9	15.75	-16.15	-13.00	Vertical

GPRS 850:

The Worst Test Results Channel 128/824.2 MHz					
Frequency(MHz)	Power(dBm)	A_{Rpl} (dBm)	P_{Mea}(dBm)	Limit(dBm)	Polarity
1648.379	-22.31	-4.65	-26.96	-13.00	Horizontal
2471.322	-20.19	-2.10	-22.29	-13.00	Horizontal
4118.454	-28.43	11.80	-16.63	-13.00	Horizontal
1648.379	-24.07	-4.65	-28.72	-13.00	Vertical
2471.322	-21.82	-2.10	-23.92	-13.00	Vertical
4118.454	-28.13	11.80	-16.33	-13.00	Vertical
The Worst Test Results Channel 190/836.6 MHz					
Frequency(MHz)	Power(dBm)	A_{Rpl} (dBm)	P_{Mea}(dBm)	Limit(dBm)	Polarity
1673.317	-22.39	-4.97	-27.36	-13.00	Horizontal
2506.234	-21.06	-2.10	-23.16	-13.00	Horizontal
3339.401	-21.08	3.46	-17.62	-13.00	Horizontal
1673.317	-20.71	-4.97	-25.68	-13.00	Vertical
2506.234	-19.17	-2.10	-21.27	-13.00	Vertical
3339.401	-20.2	3.46	-16.74	-13.00	Vertical
The Worst Test Results Channel 251/848.8 MHz					
Frequency(MHz)	Power(dBm)	A_{Rpl} (dBm)	P_{Mea}(dBm)	Limit(dBm)	Polarity
1698.254	-20.62	-4.94	-25.56	-13.00	Horizontal
2541.147	-21.55	-2.02	-23.57	-13.00	Horizontal
3384.835	-21.43	3.49	-17.94	-13.00	Horizontal
1698.254	-20.32	-4.94	-25.26	-13.00	Vertical
2541.147	-20.72	-2.02	-22.74	-13.00	Vertical
3384.835	-20.26	3.49	-16.77	-13.00	Vertical

GPRS 1900:

The Worst Test Results for Channel 512/1850.2MHz					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit(dBm)	Polarity
1793.017	-24.24	-3.54	-27.78	-13.00	Horizontal
3720.698	-34.39	13.01	-21.38	-13.00	Horizontal
5543.641	-30.89	14.7	-16.19	-13.00	Horizontal
1793.017	-23.78	-3.54	-27.32	-13.00	Vertical
3720.698	-35.96	13.01	-22.95	-13.00	Vertical
5543.641	-34.26	14.7	-19.56	-13.00	Vertical
The Worst Test Results for Channel 661/1880.0MHz					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit(dBm)	Polarity
1822.943	-23.92	-3.48	-27.40	-13.00	Horizontal
3763.092	-36.95	13.8	-23.15	-13.00	Horizontal
5628.429	-34.35	15.4	-18.95	-13.00	Horizontal
1822.943	-24.79	-3.48	-28.27	-13.00	Vertical
3763.092	-37.72	13.8	-23.92	-13.00	Vertical
5628.429	-33.52	15.4	-18.12	-13.00	Vertical
The Worst Test Results for Channel 810/1909.8MHz					
Frequency(MHz)	Power(dBm)	ARpl (dBm)	PMea(dBm)	Limit (dBm)	Polarity
1967.581	-24.41	-3.26	-27.67	-13.00	Horizontal
3847.880	-34.82	12.4	-22.42	-13.00	Horizontal
5713.217	-32.32	15.75	-16.57	-13.00	Horizontal
1967.581	-24.36	-3.26	-27.62	-13.00	Vertical
3847.880	-35.03	12.4	-22.63	-13.00	Vertical
5713.217	-31.9	15.75	-16.15	-13.00	Vertical

10 BAND EDGE

10.1 Limits

The mean power of emissions must be attenuated below the mean power of the unmodulated carrier (P) on any frequency outside the frequency band by at least (43 + 10 log P) dB, in this case, -13dBm.

10.2 Test Procedure

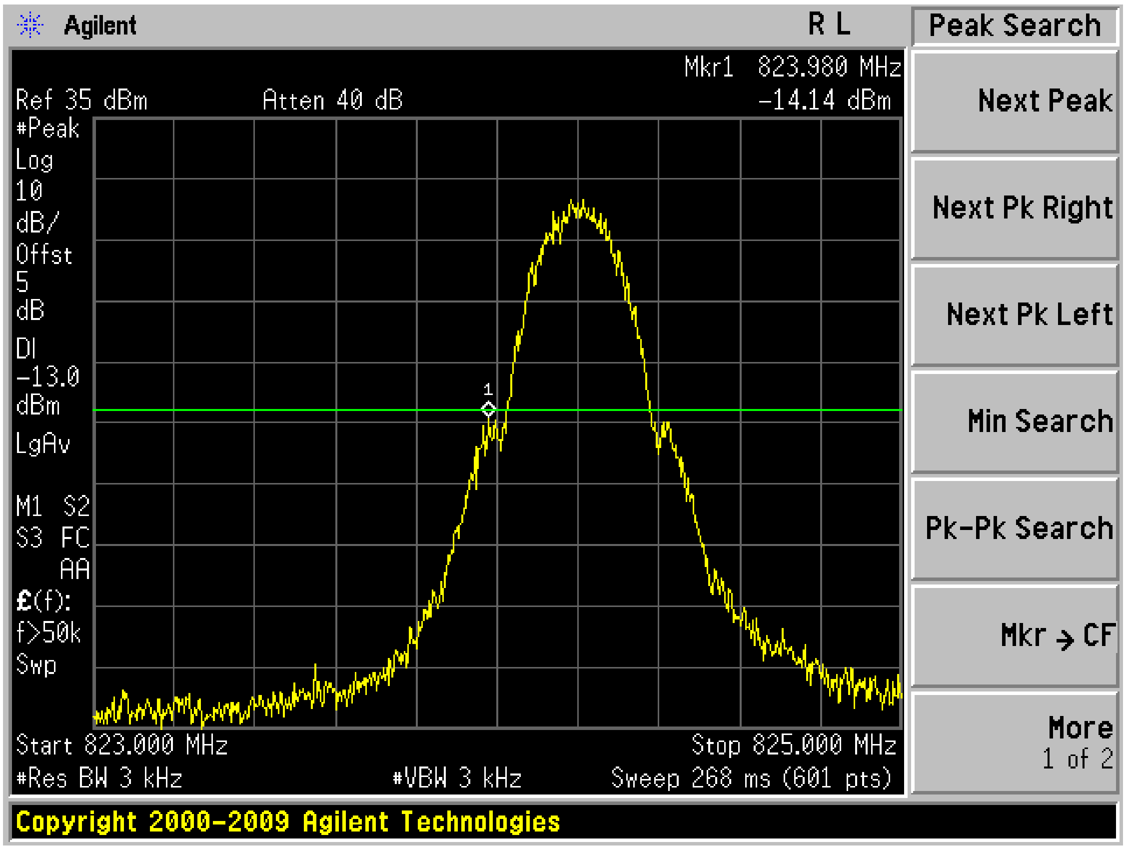
1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The band edges of low and high channels for the highest RF powers were measured.

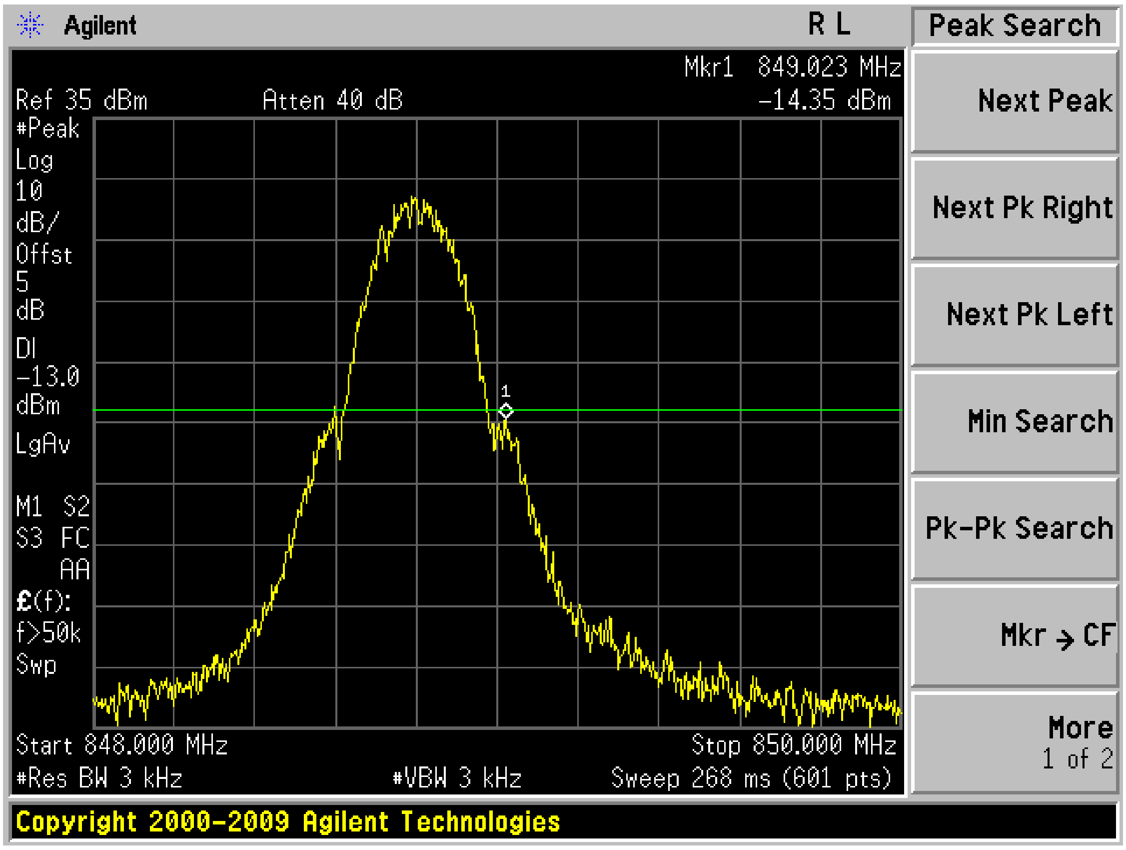
10.3 Test Result

PASS

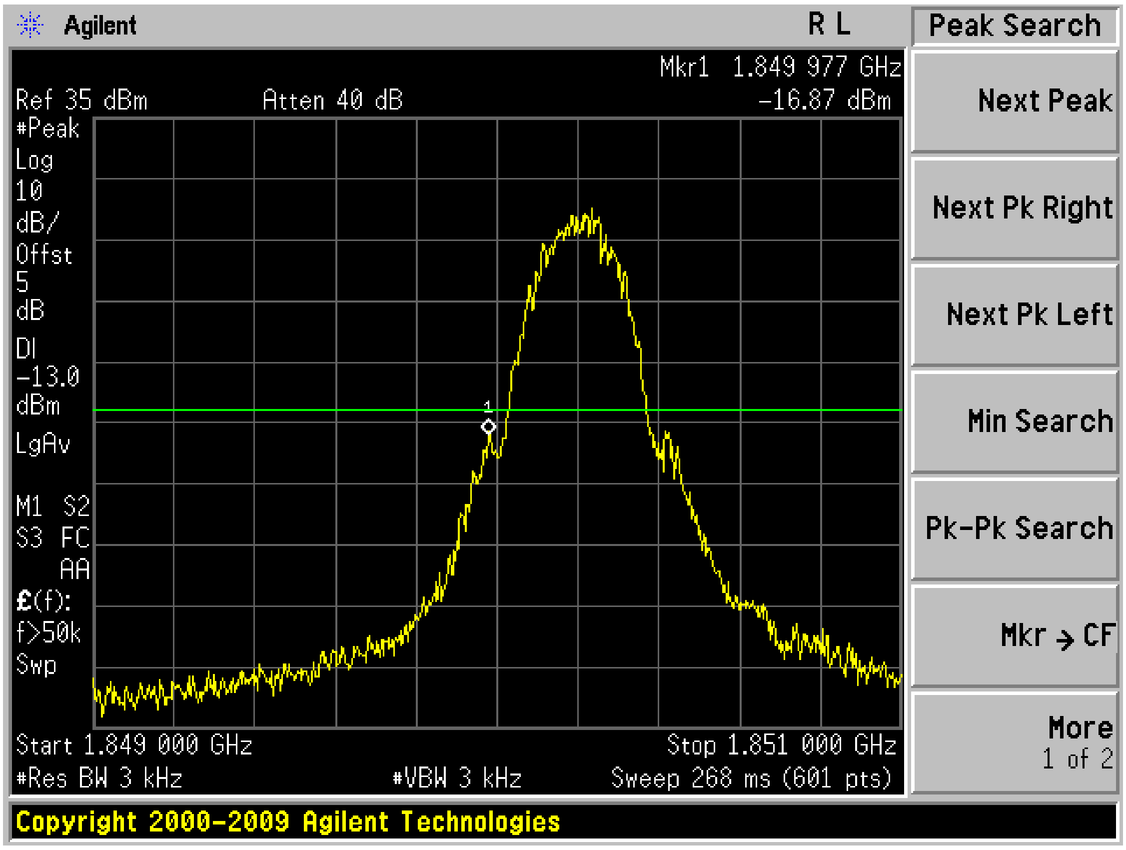
All the test modes completed for test. The test data of this mode was reported.

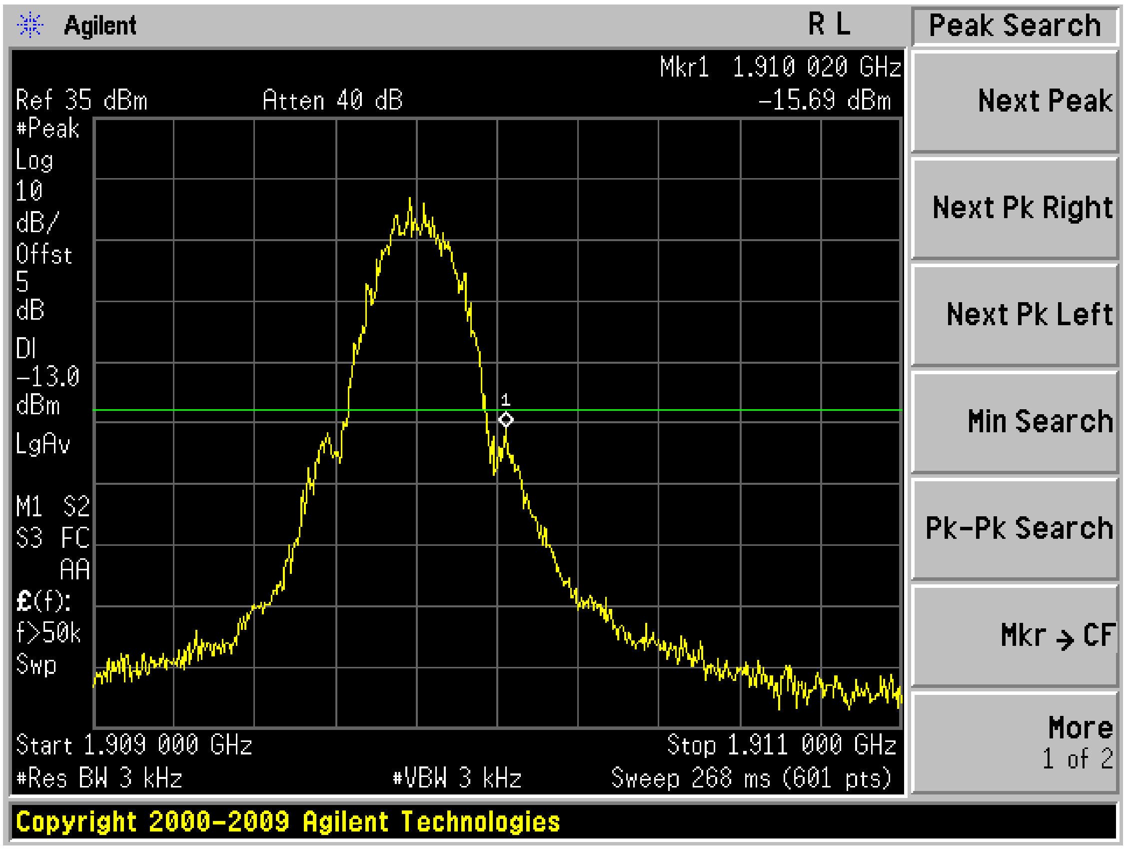
Test Mode: GSM 850



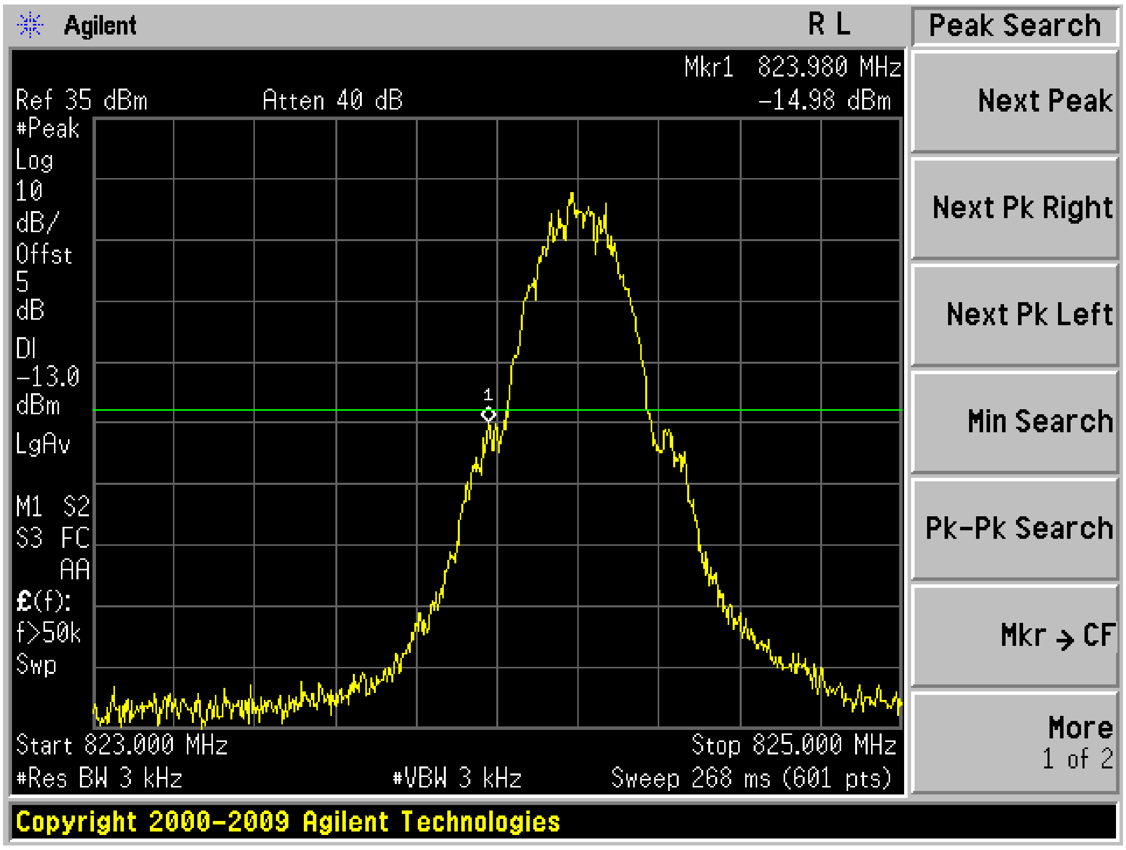


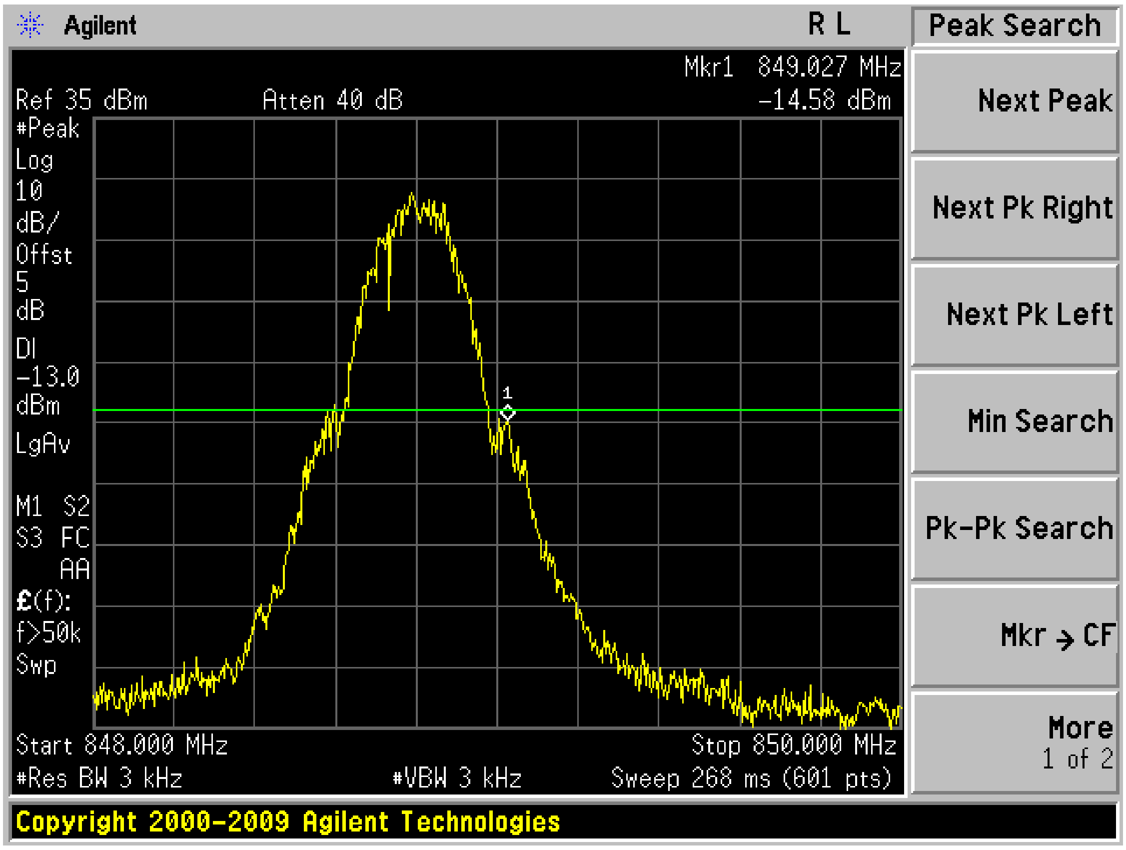
Test Mode: GSM 1900



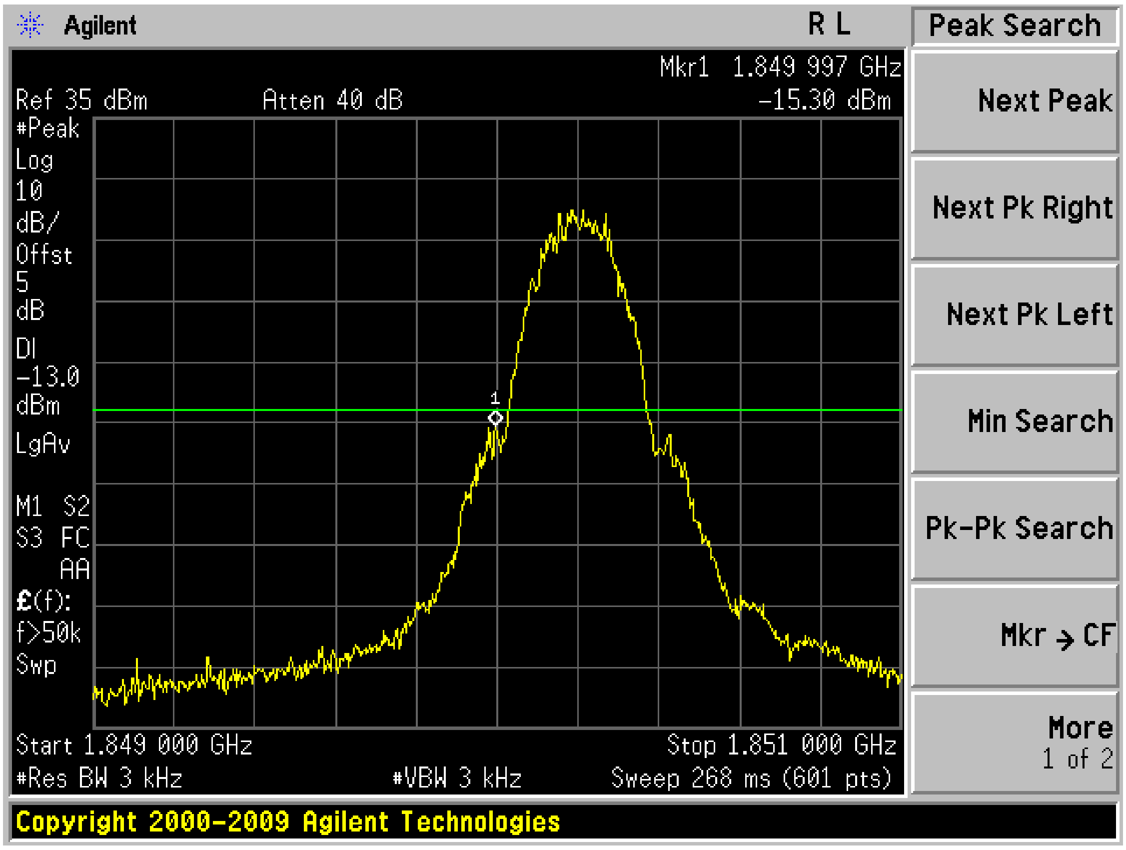


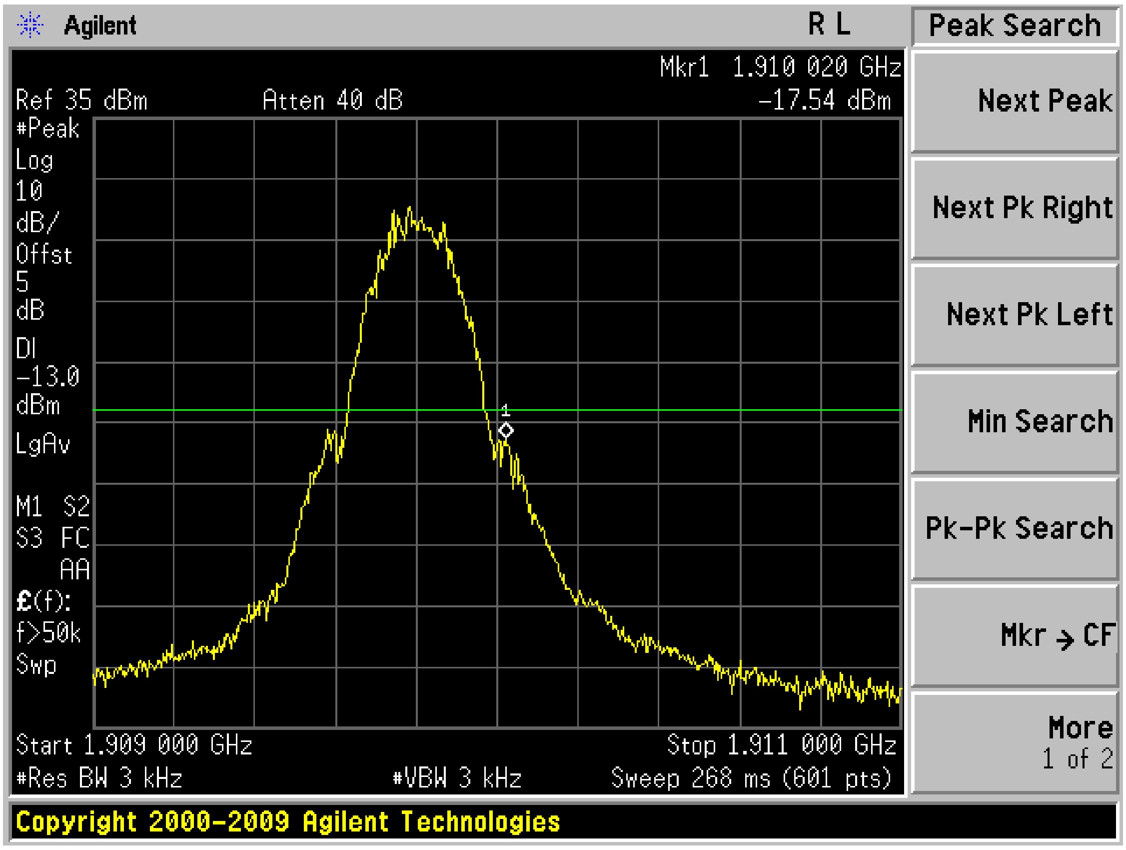
Test Mode: GPRS 850





Test Mode: GPRS 1900





11 Conducted spurious emissions

11.1 Test Limit

The mean power of emissions must be attenuated below the mean power of the unmodulated carrier (P) on any frequency outside the frequency band by at least (43 + 10 log P) dB, in this case, -13dBm.

11.2 Test Procedure

1. The EUT was connected to spectrum analyzer and base station via power divider.
2. The low, middle and high channels of each band and mode's spurious emissions for 30MHz to 10th Harmonic were measured by Spectrum analyzer.

11.3 Measurement Equipment Used

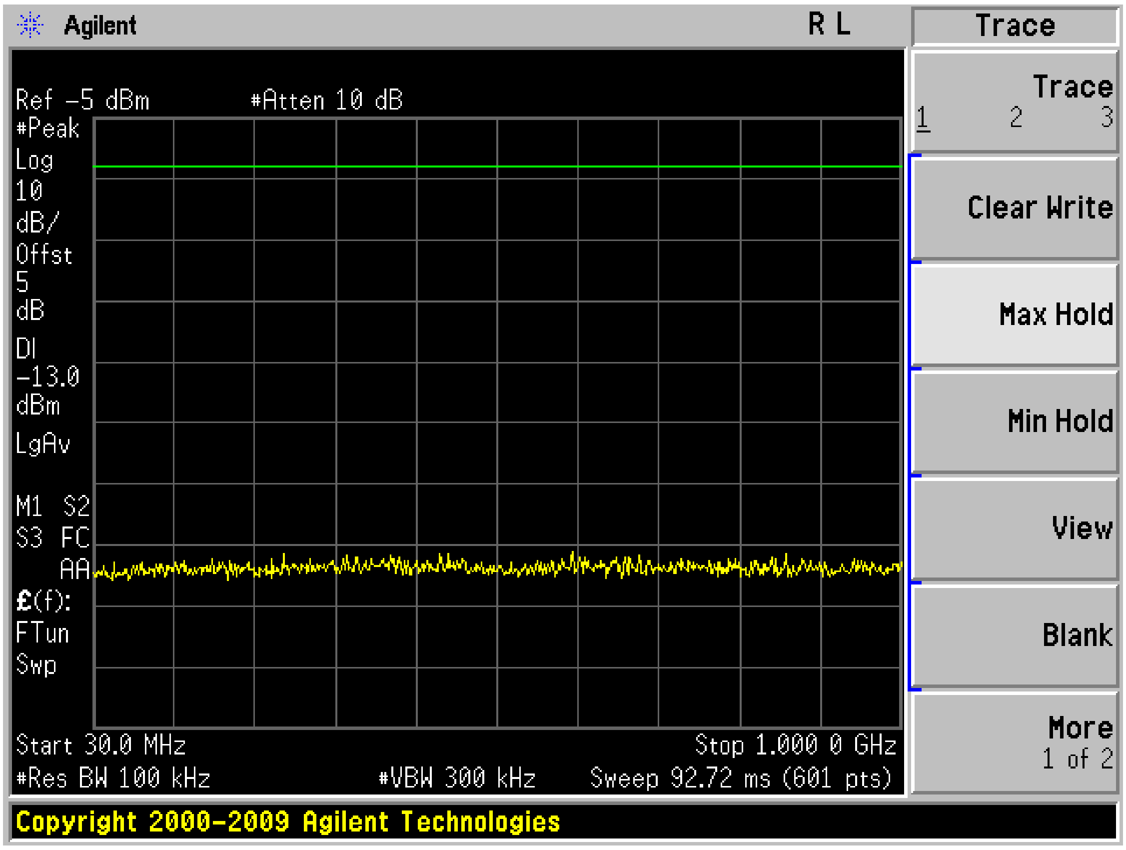
Same as Radiated Emission Measurement

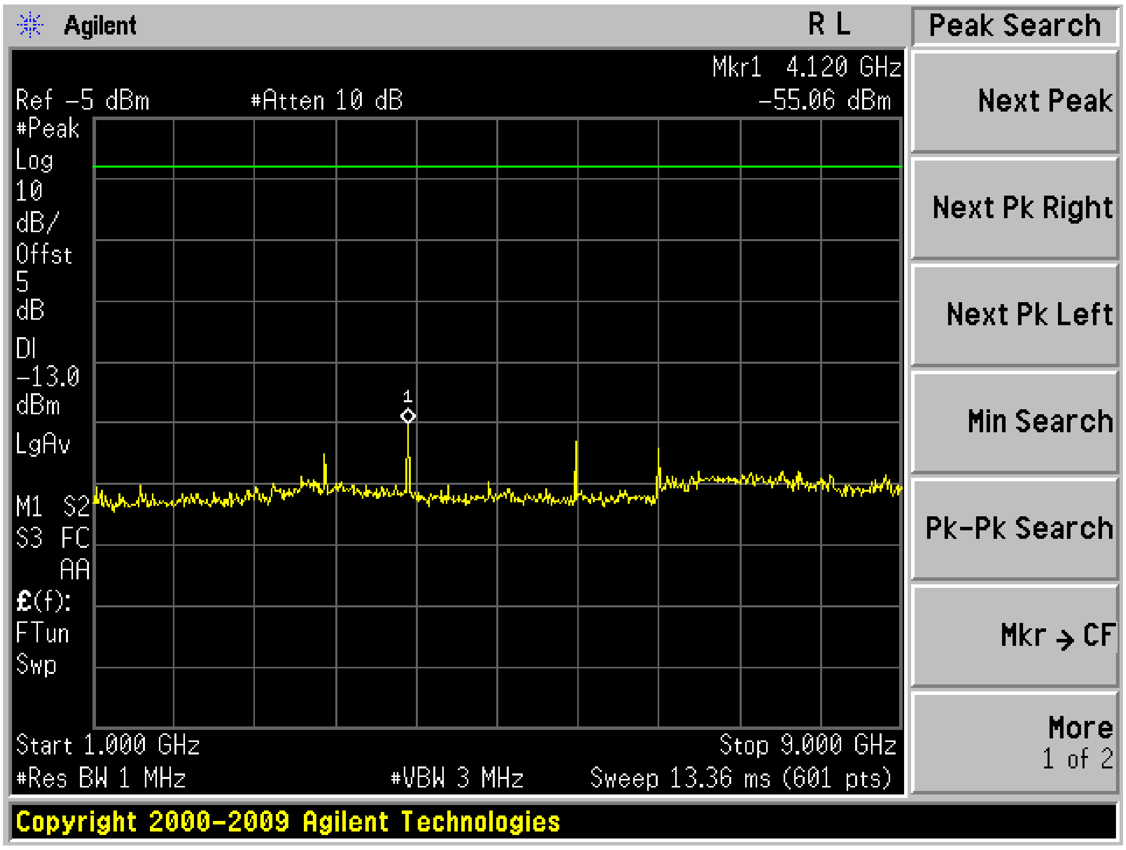
11.4 Test Result

PASS

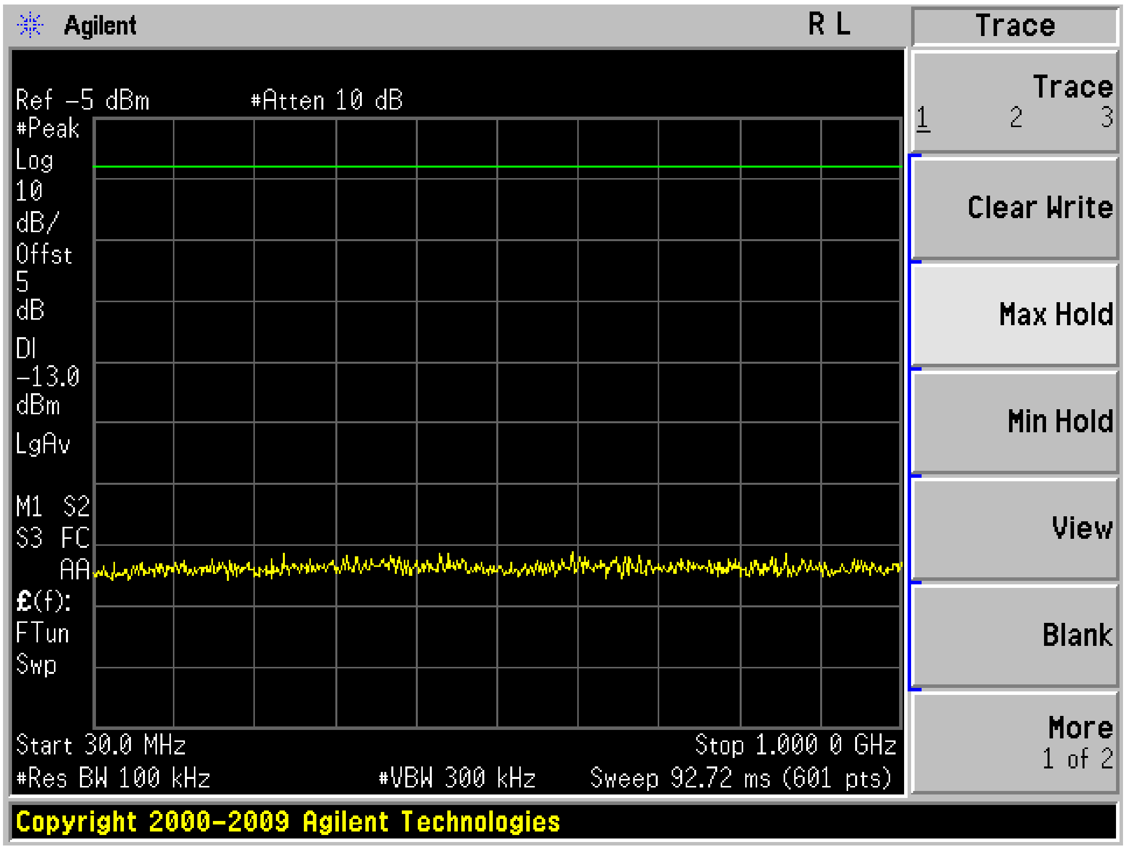
All the test modes completed for test.

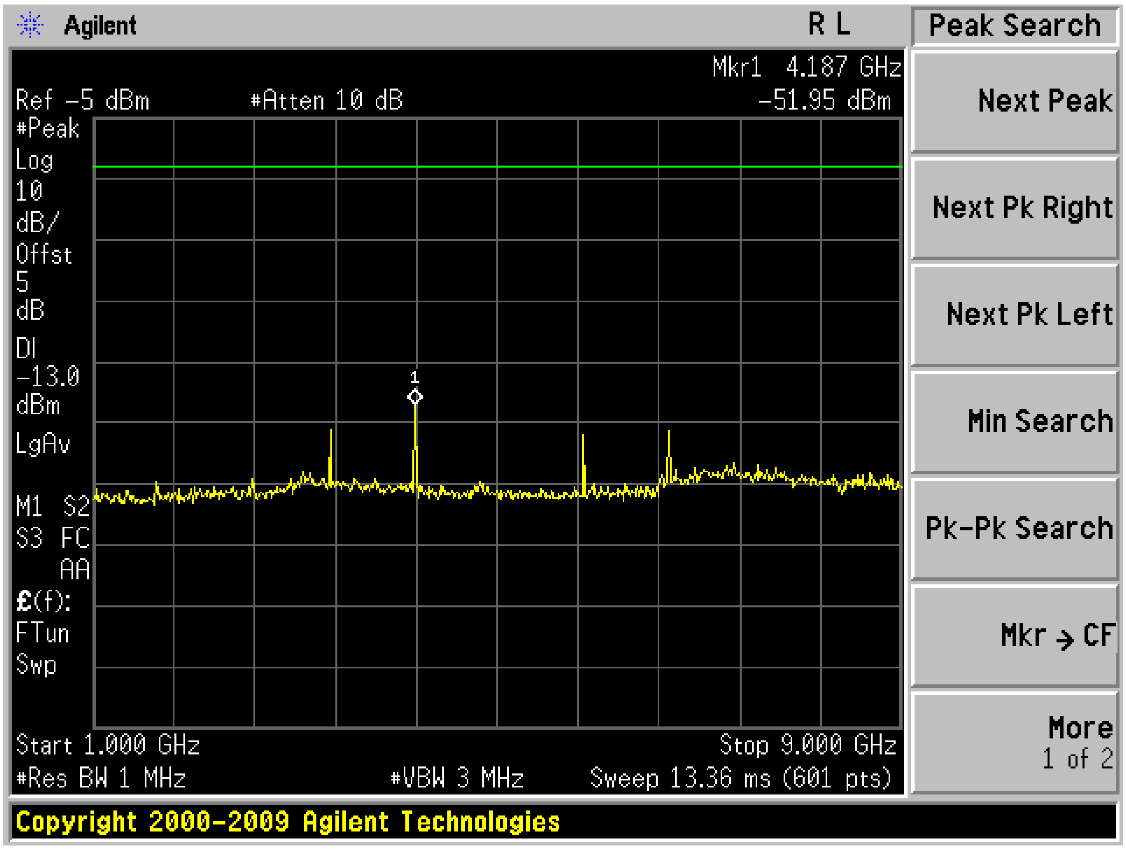
Test Mode: GSM 850 CH 128



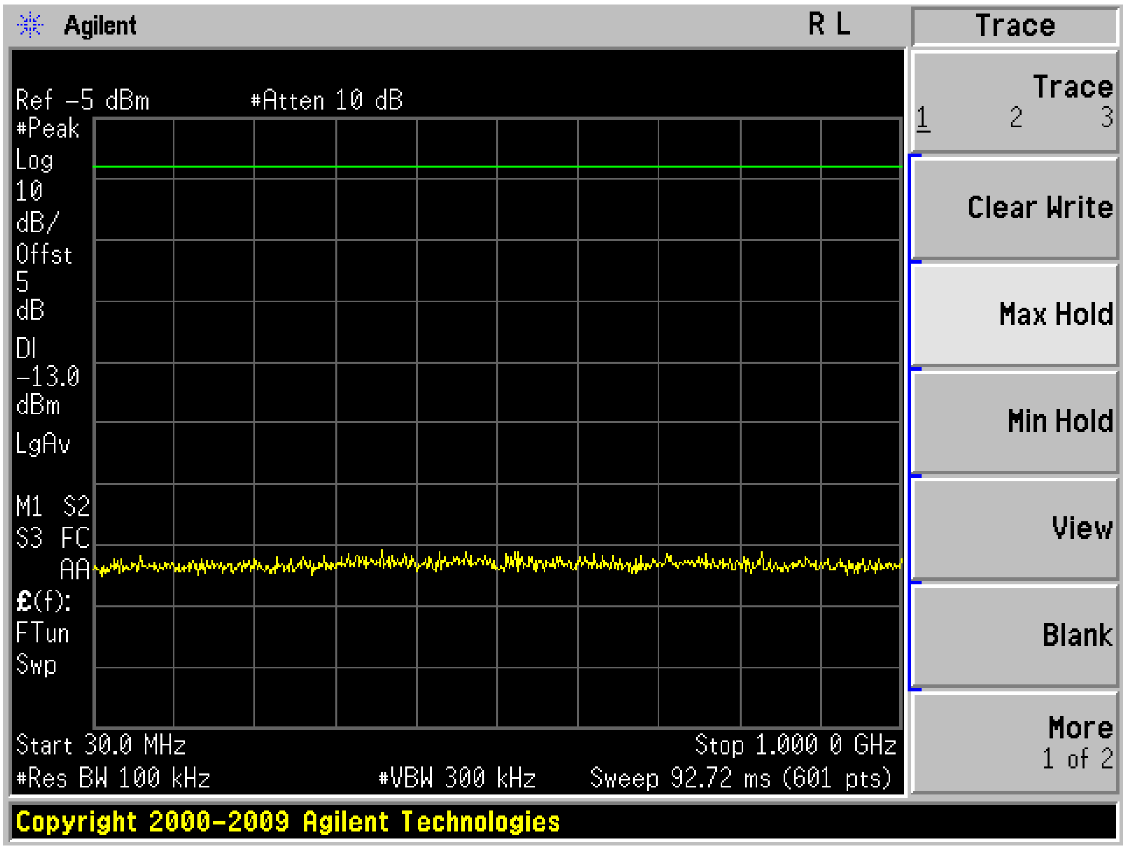


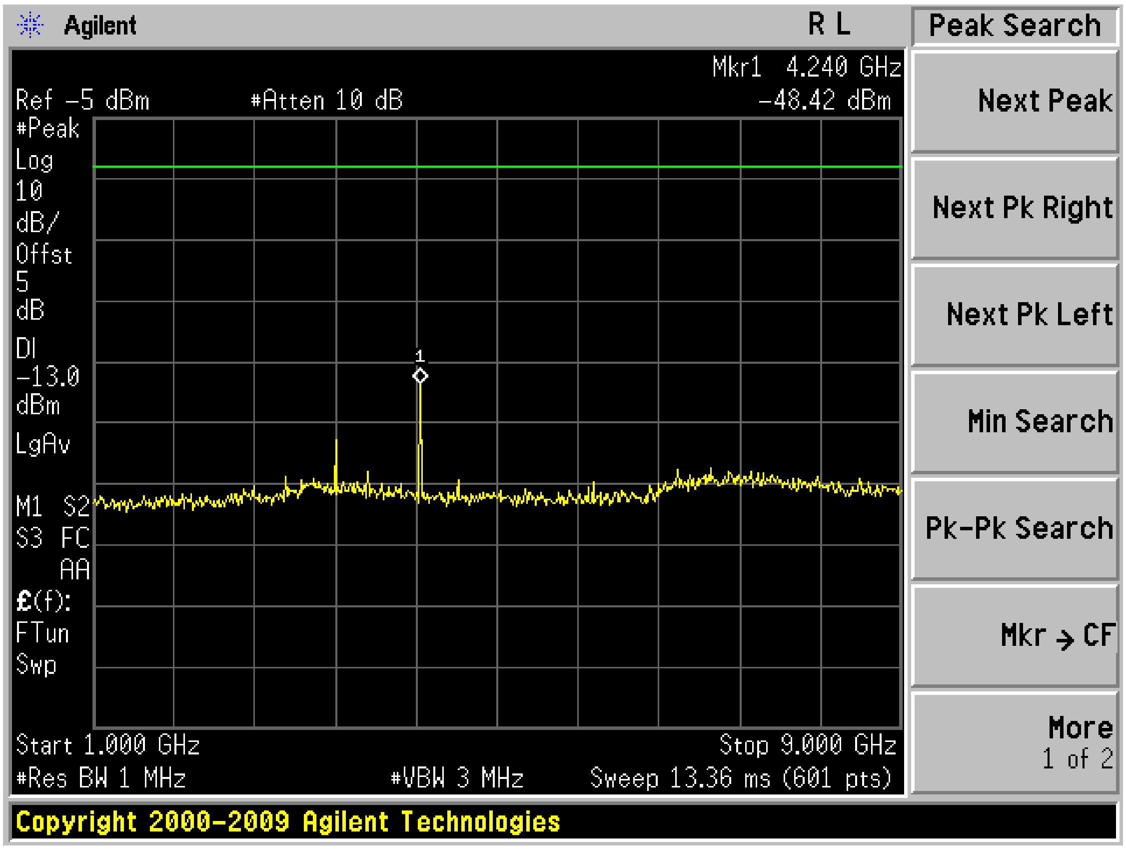
Test Mode: GSM 850 CH 190



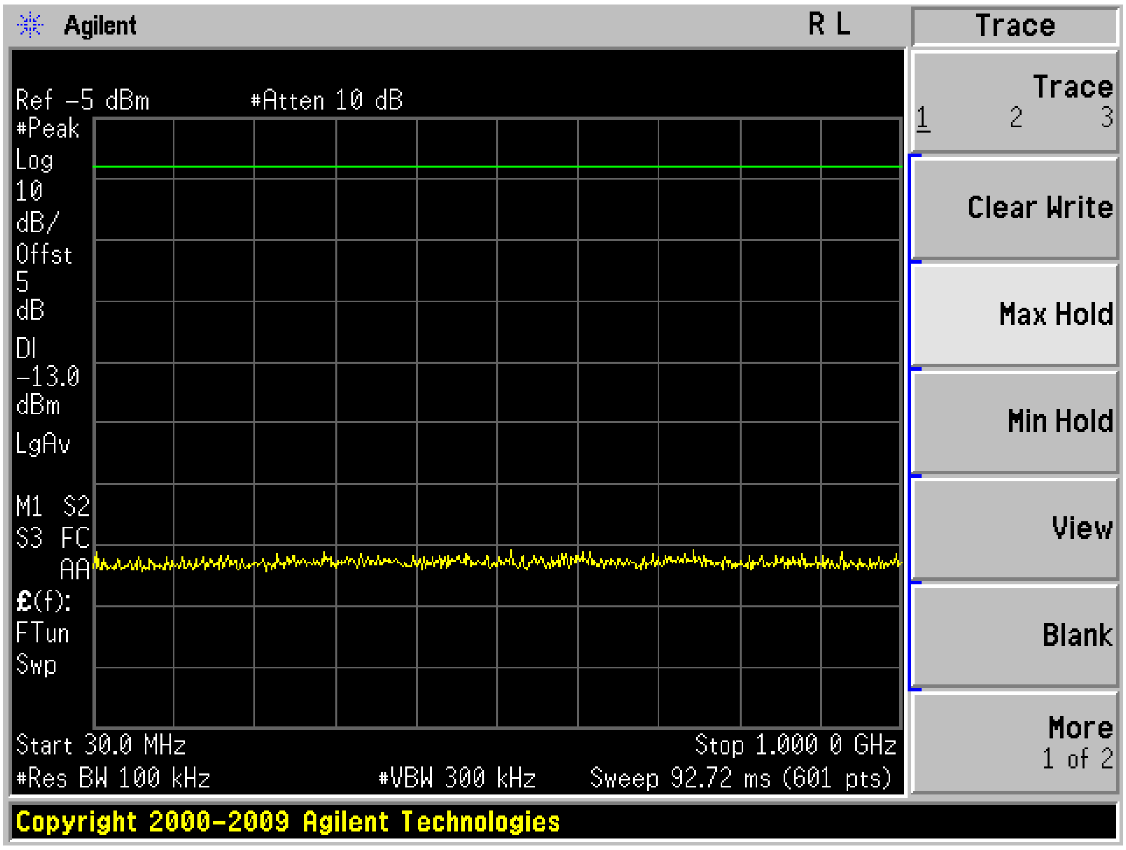


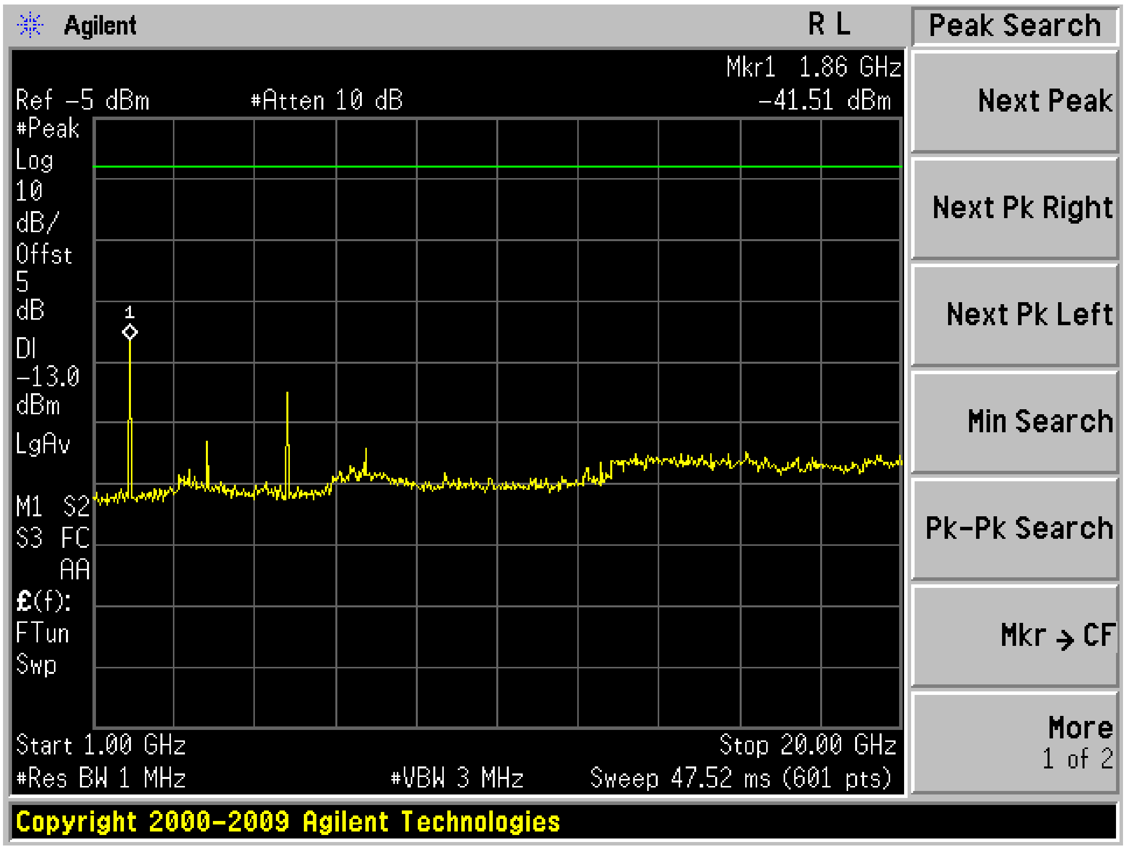
Test Mode: GSM 850 CH 251



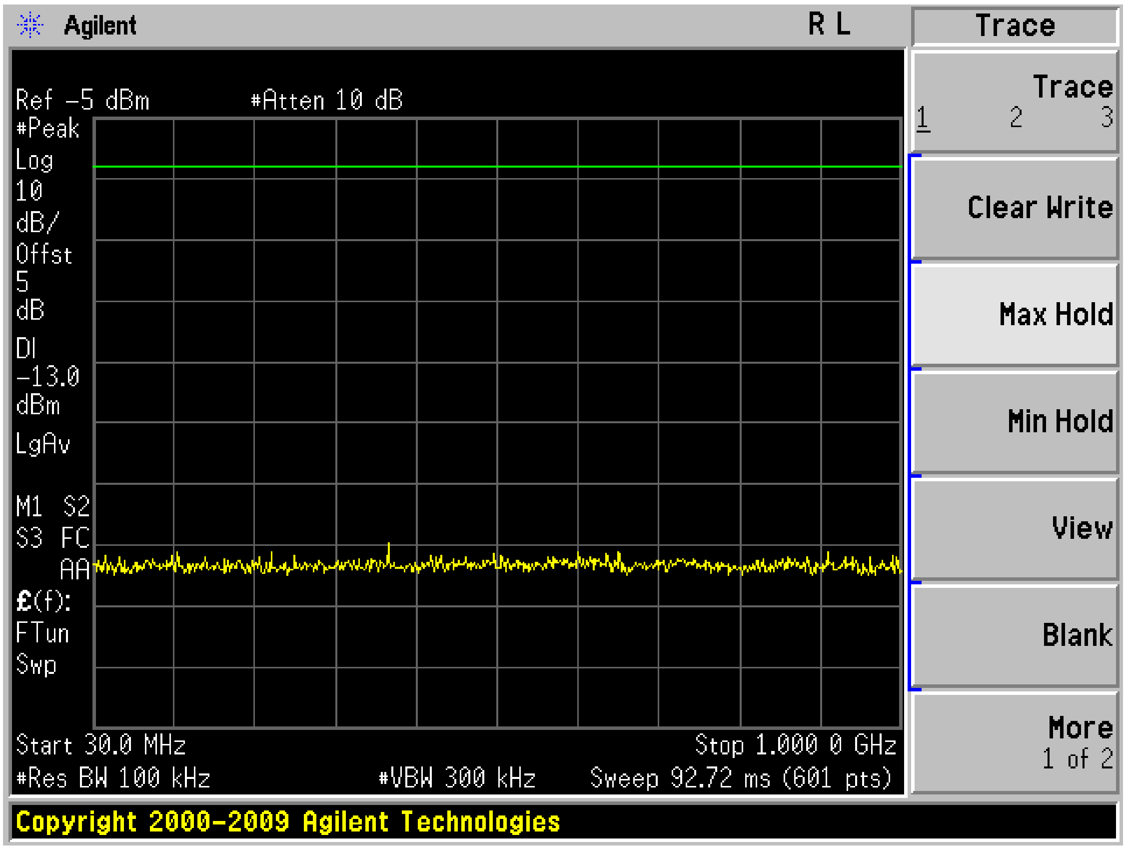


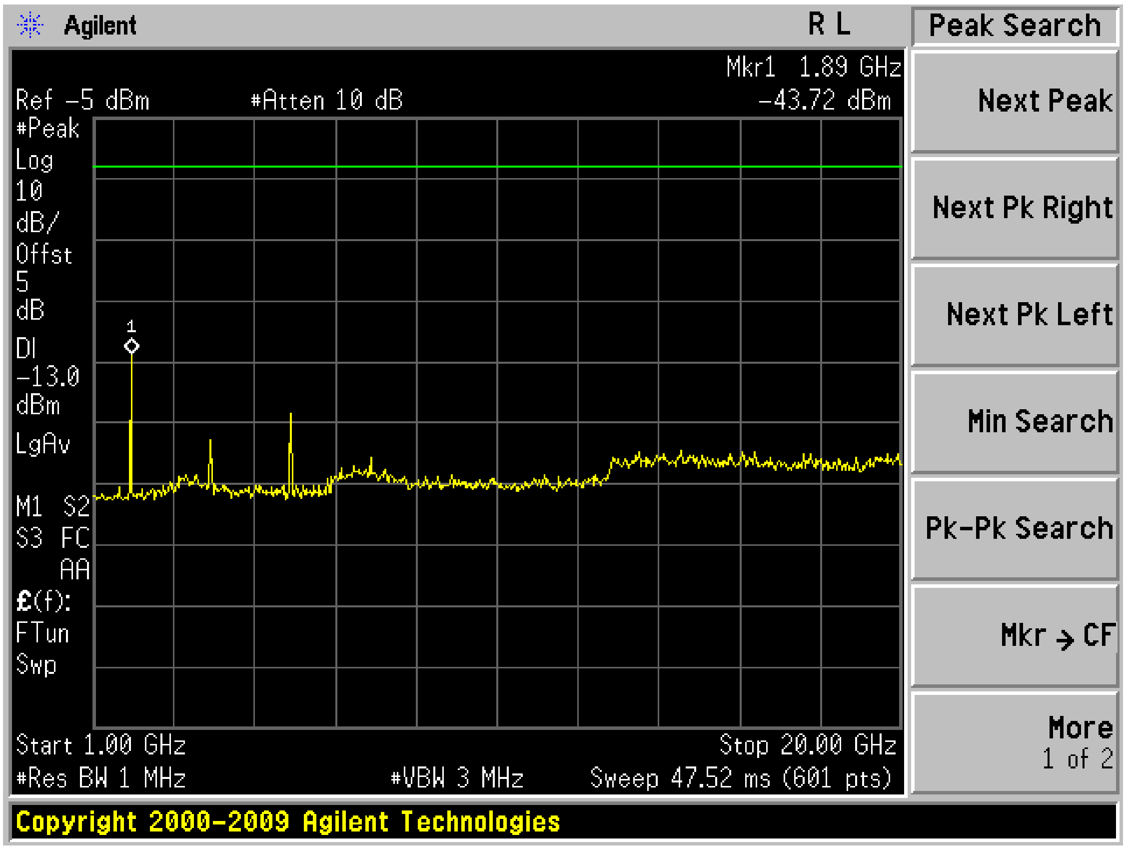
Test Mode: PCS 1900 CH 512



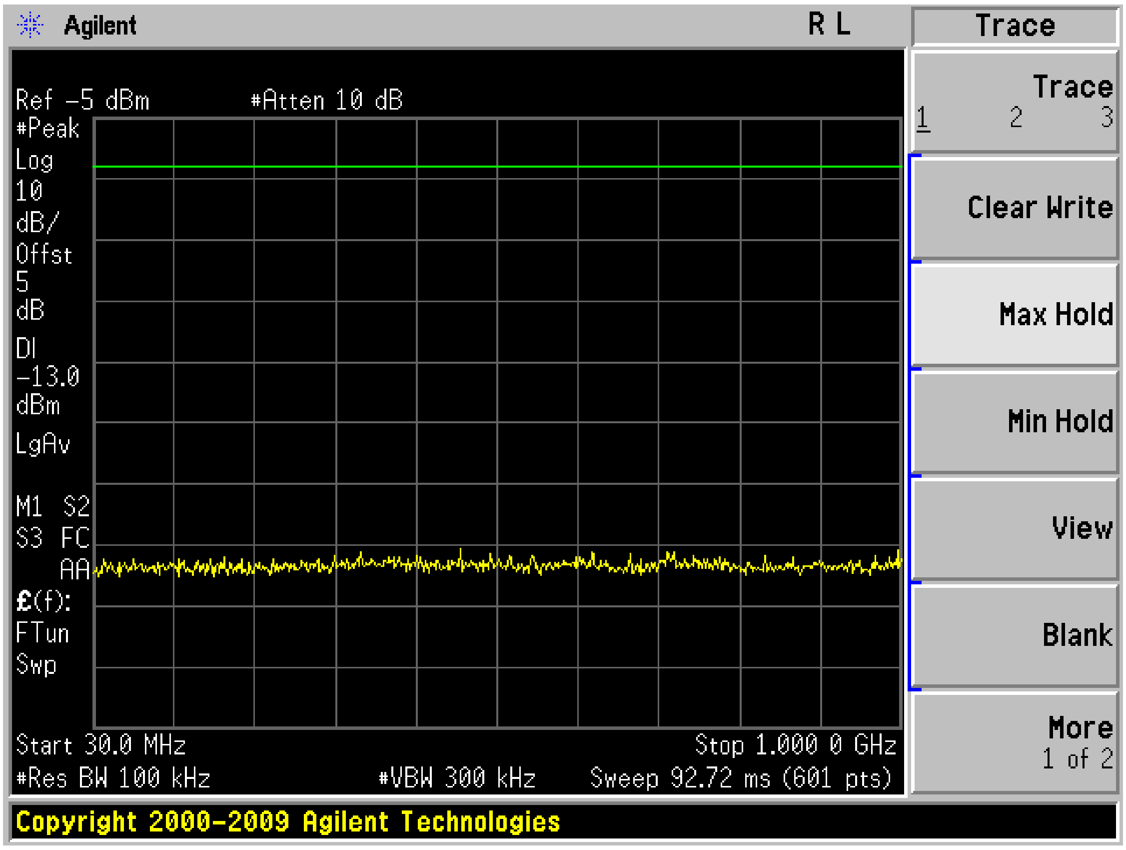


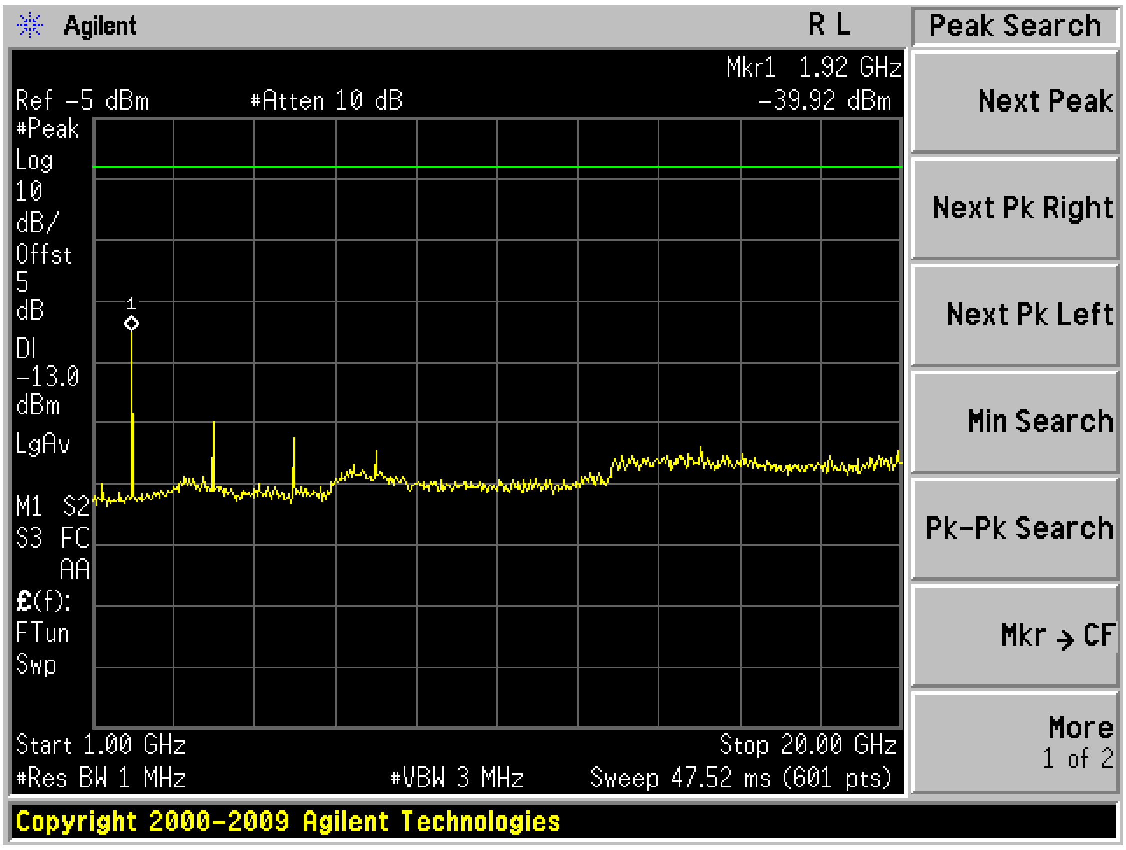
Test Mode: PCS 1900 CH 661



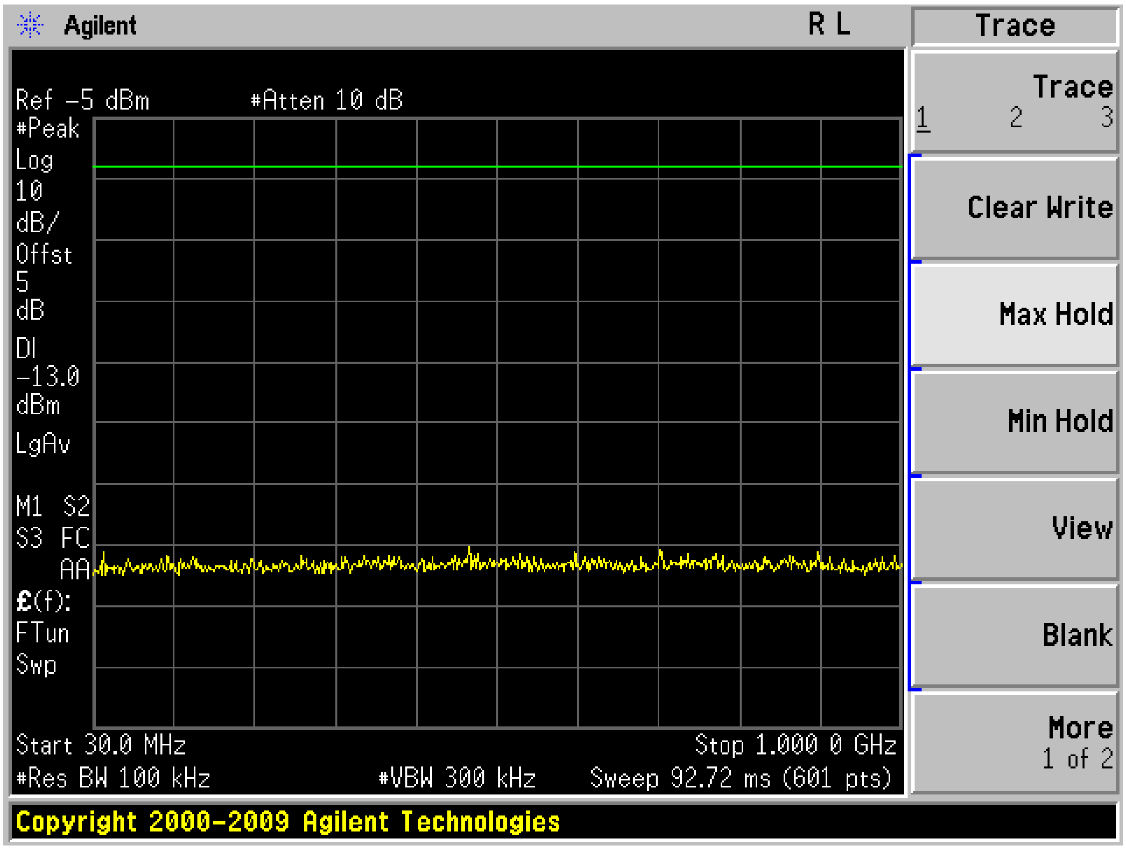


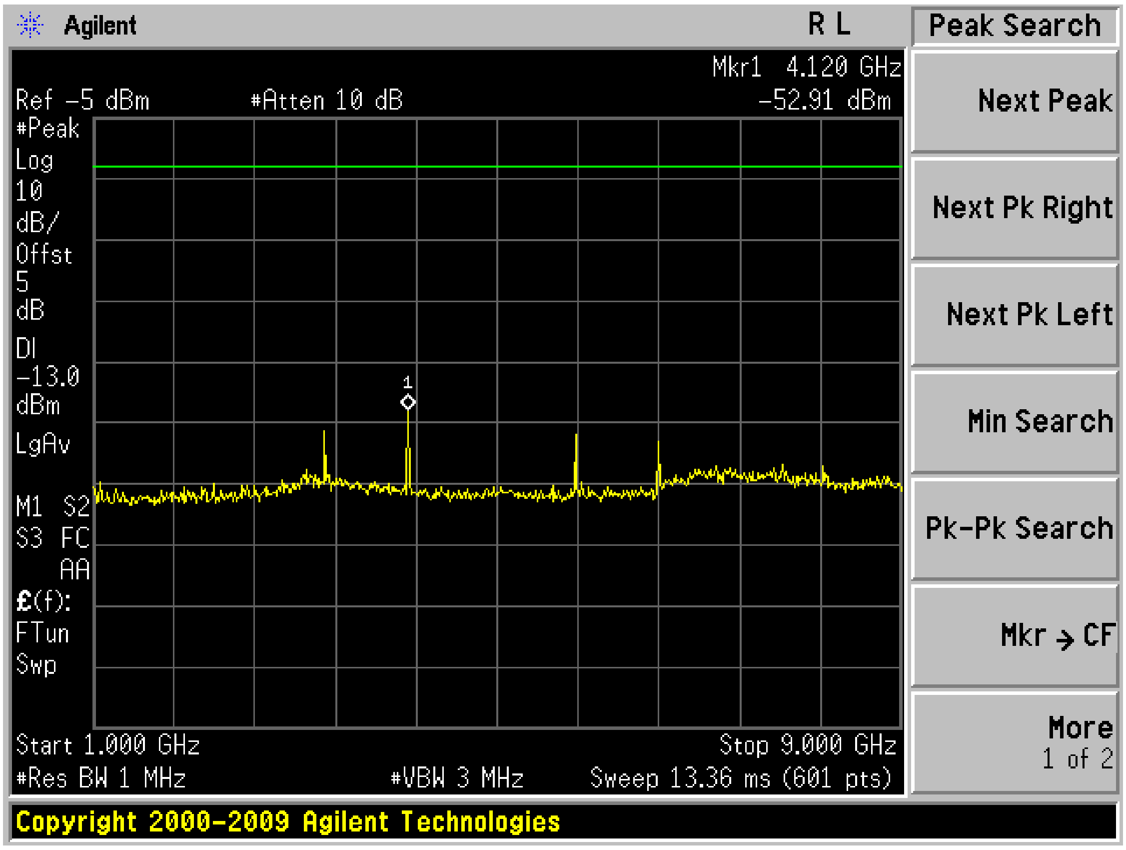
Test Mode: PCS 1900 CH 810



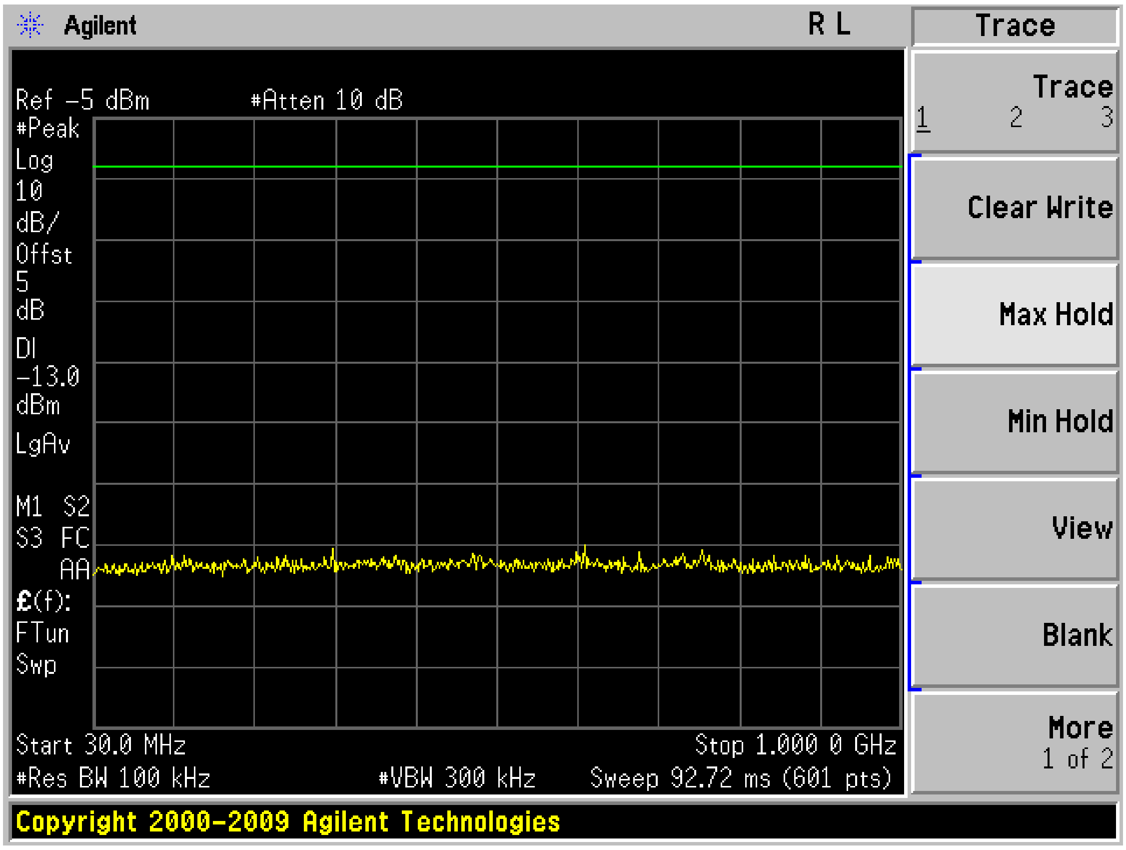


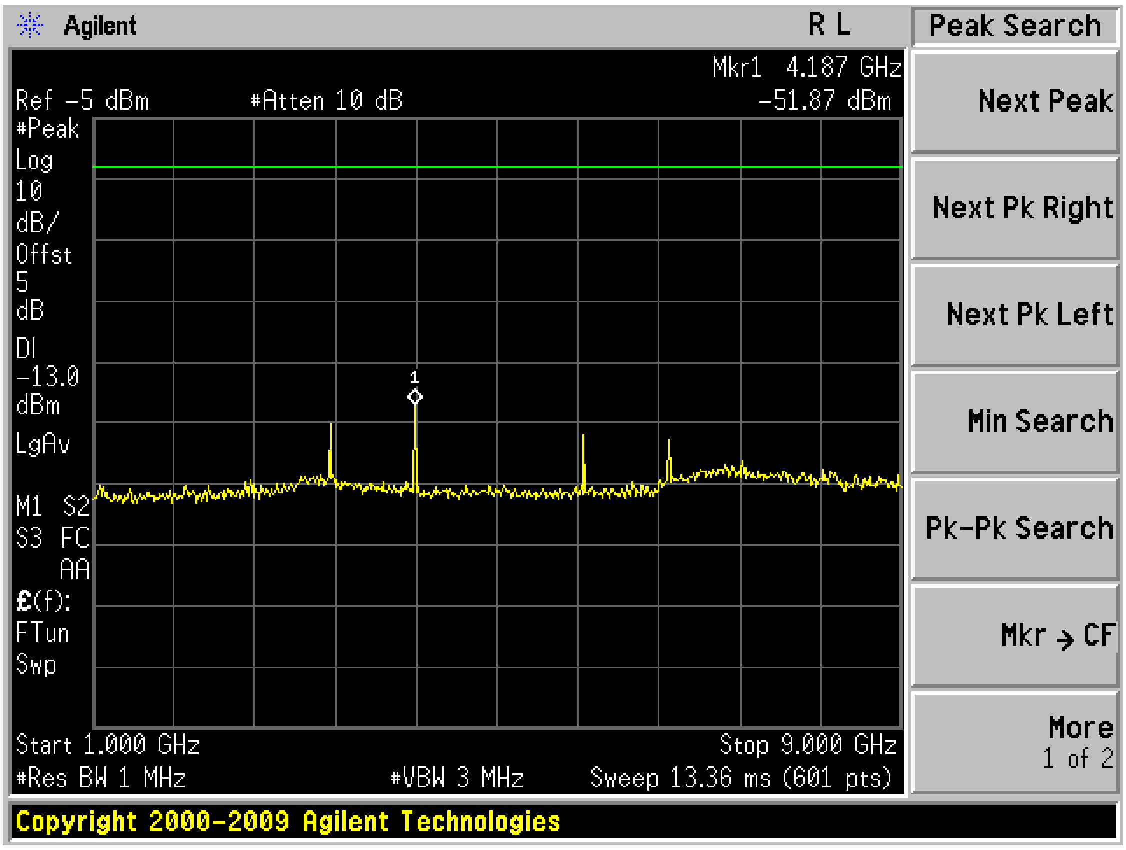
Test Mode: GPRS 850 CH 128



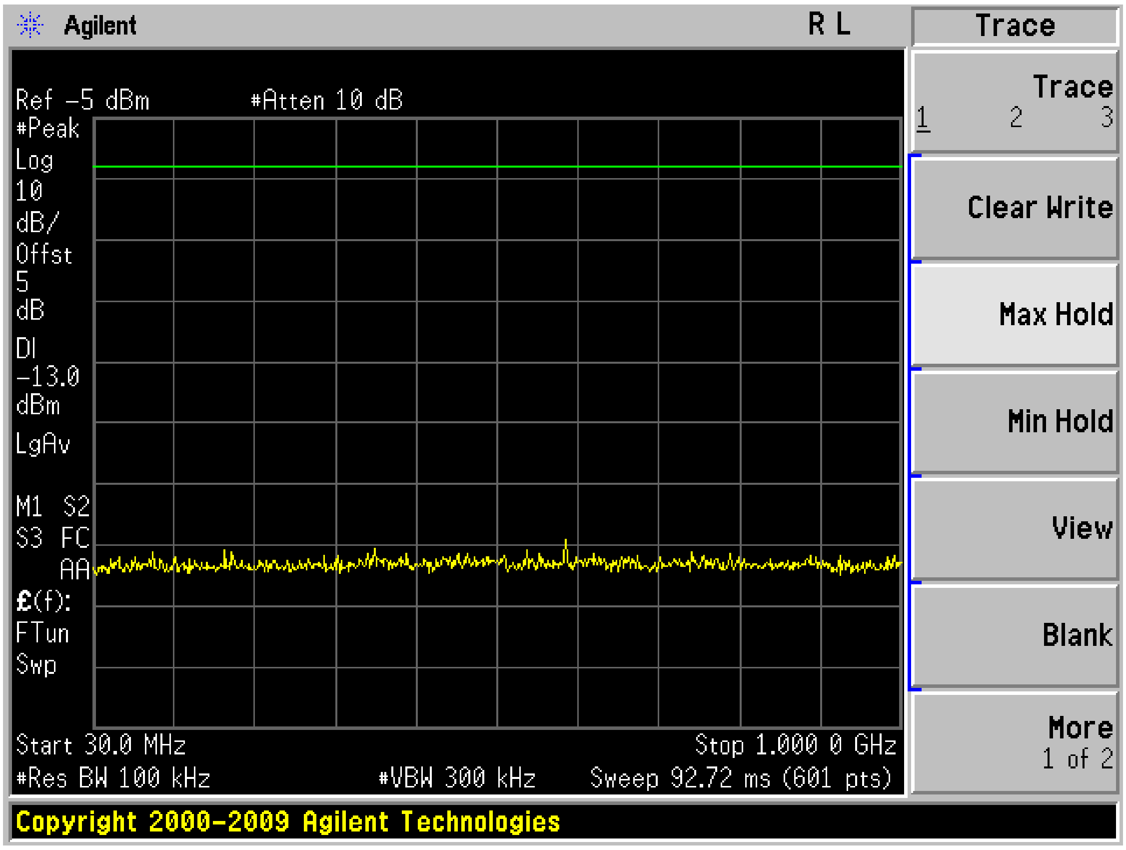


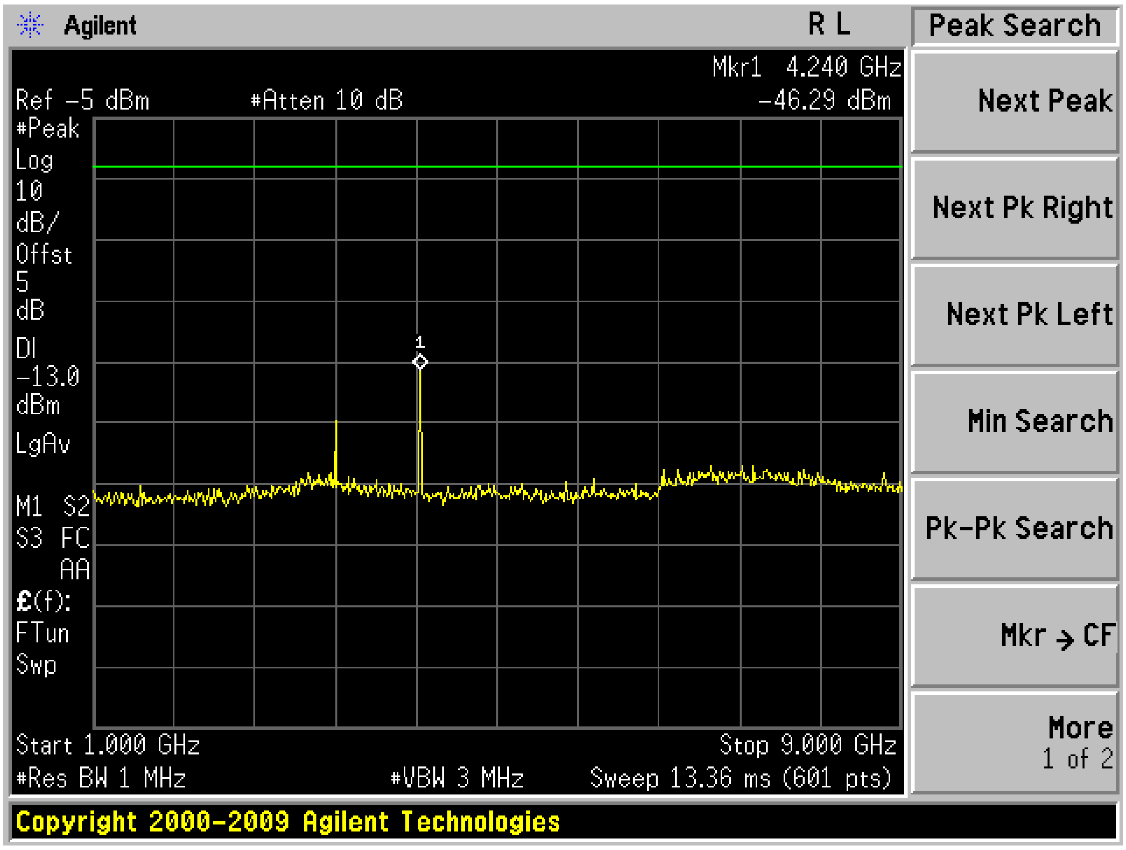
Test Mode: GPRS 850 CH 190



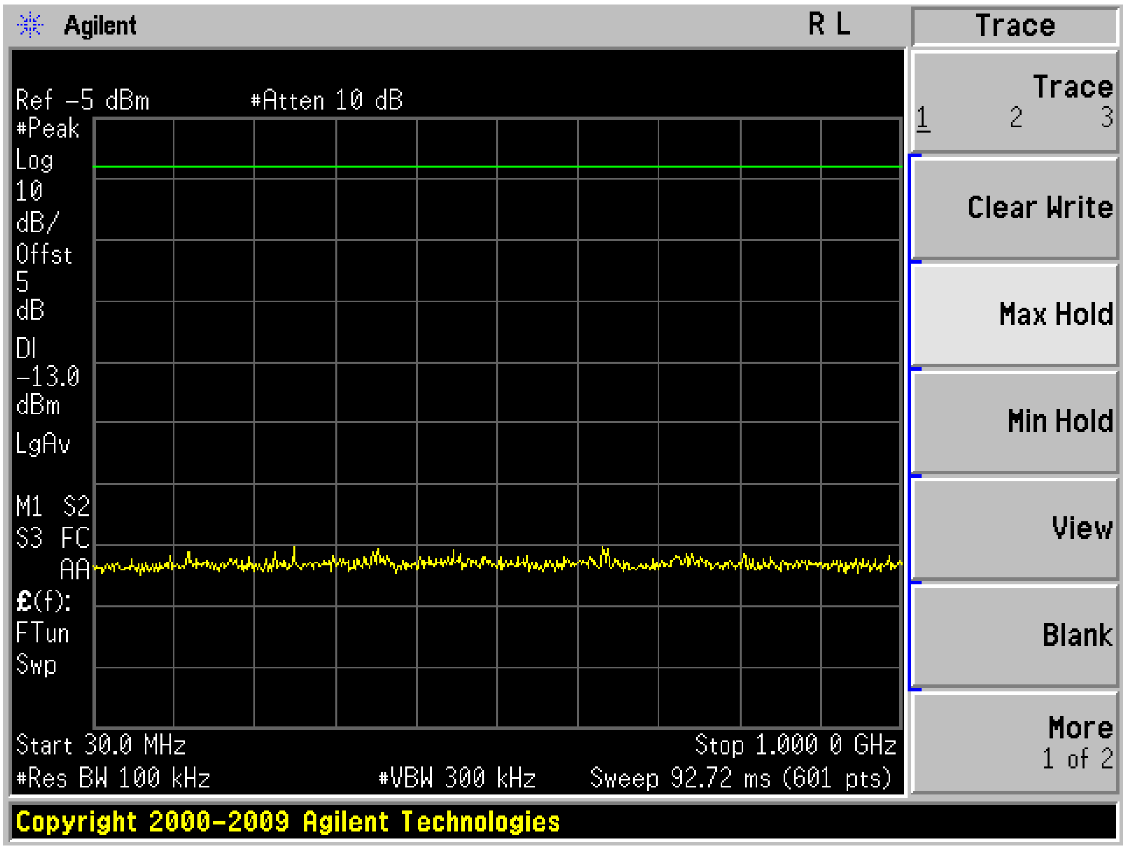


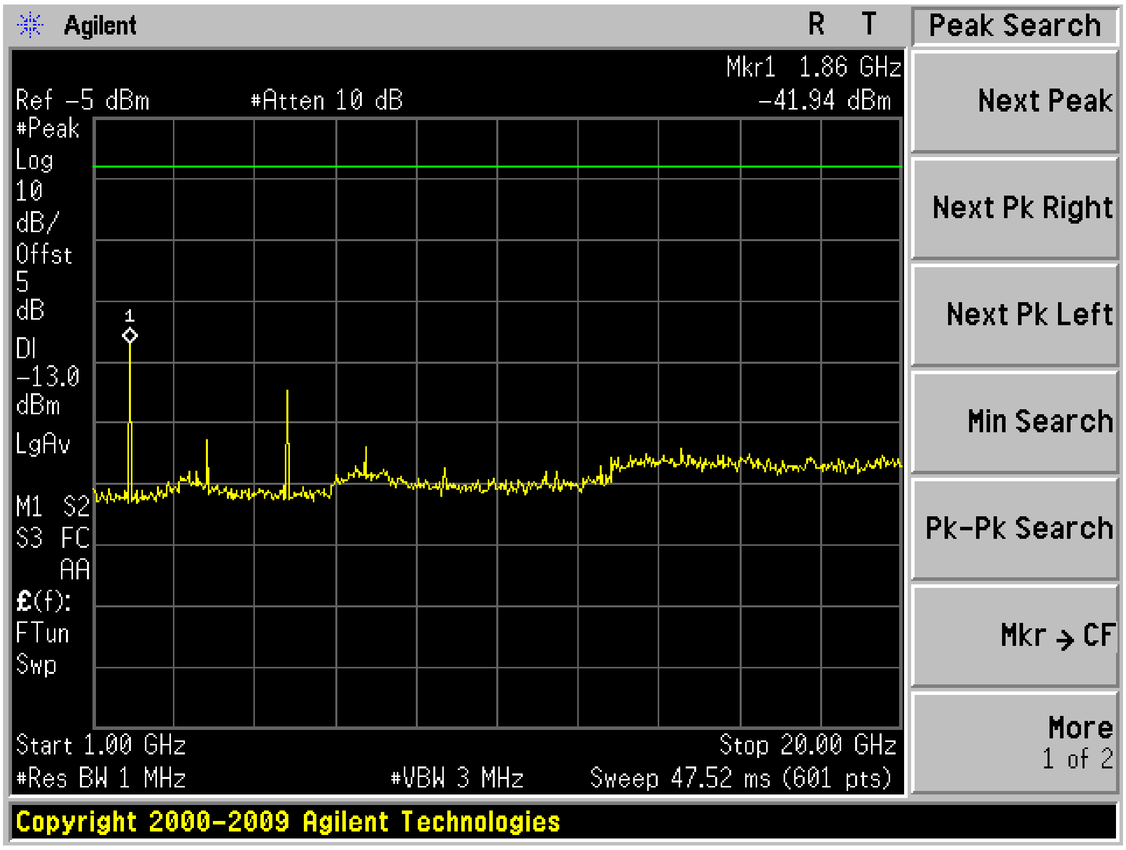
Test Mode: GPRS 850 CH 251



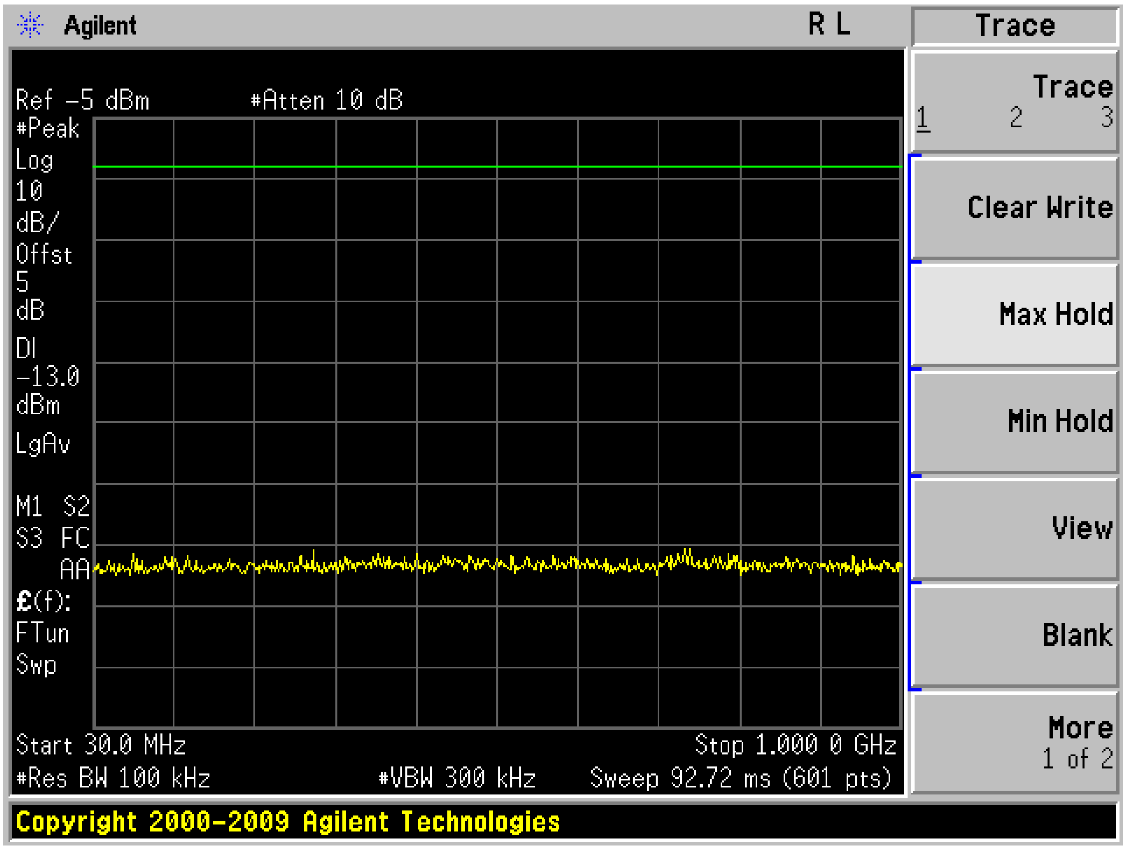


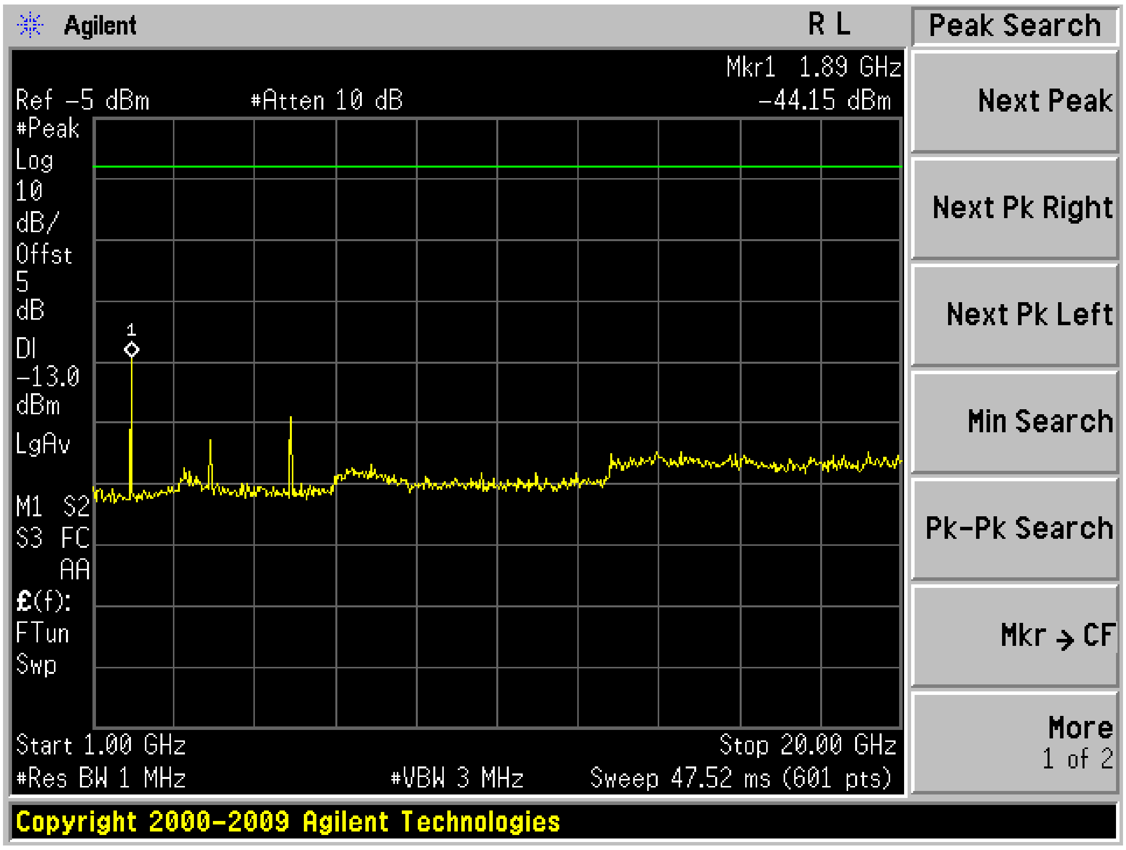
Test Mode: GPRS 1900 CH 512



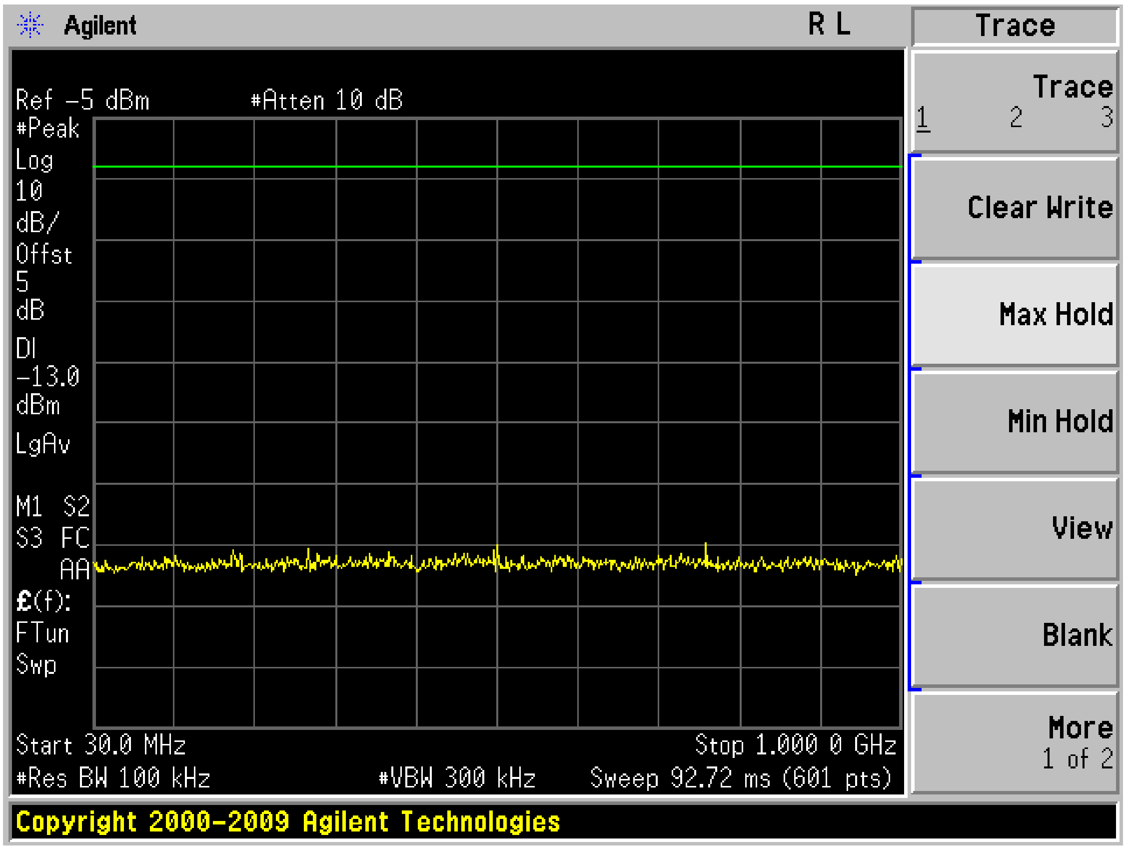


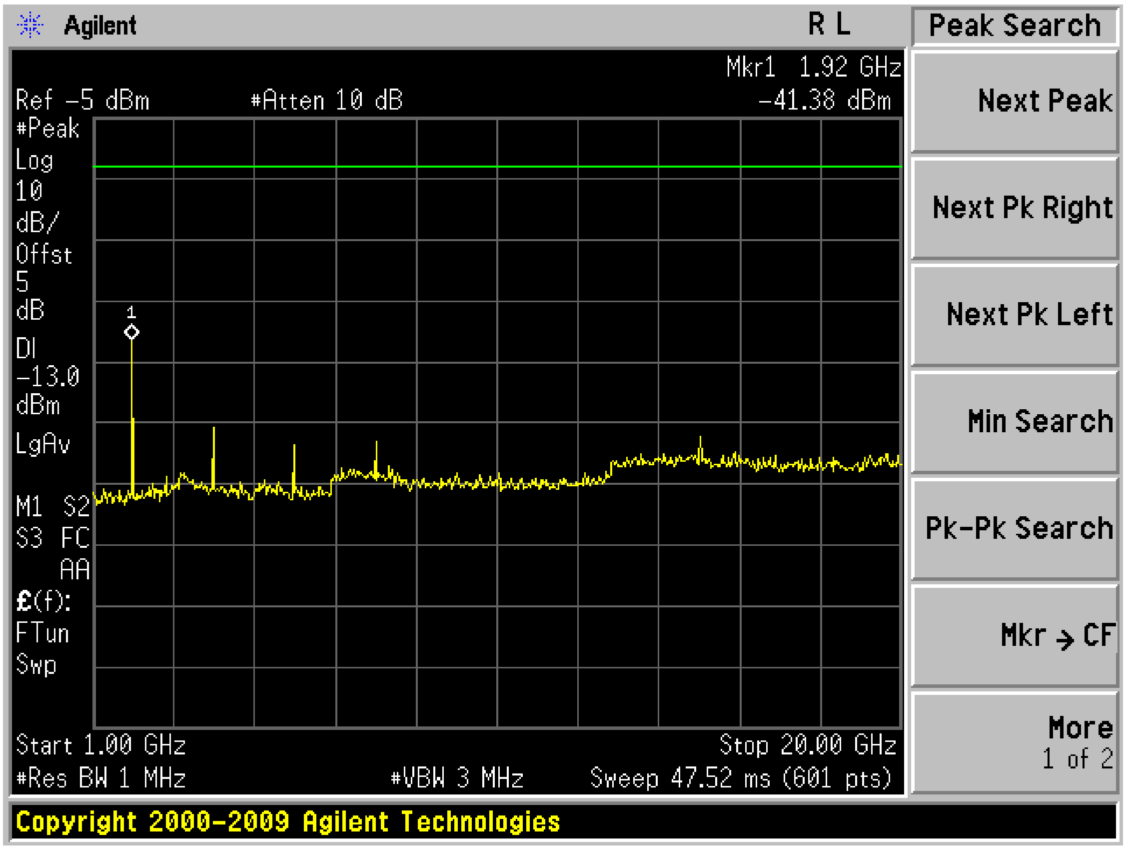
Test Mode: GPRS 1900 CH 661





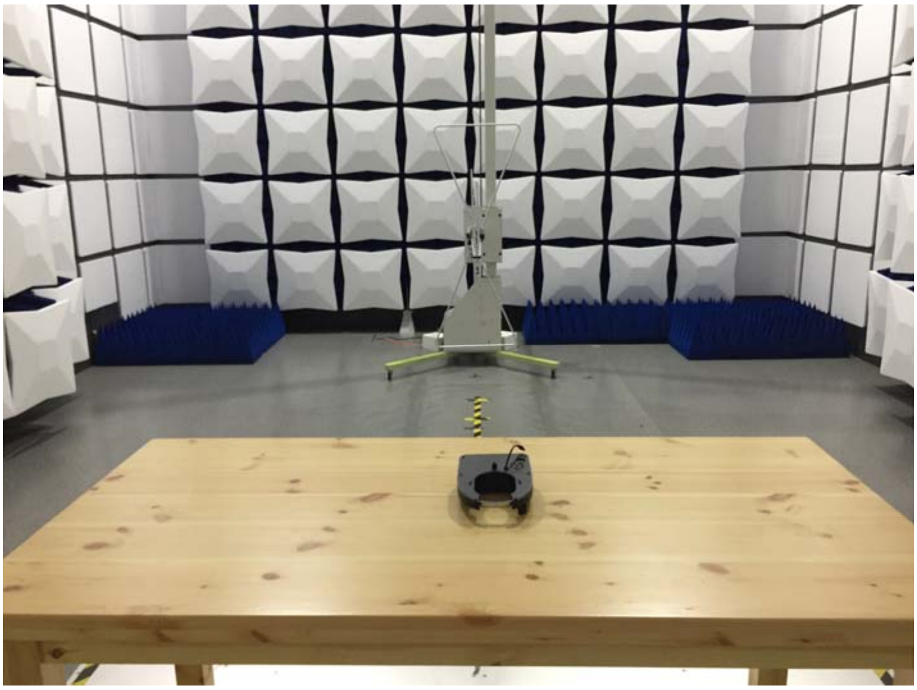
Test Mode: GPRS 1900 CH 810

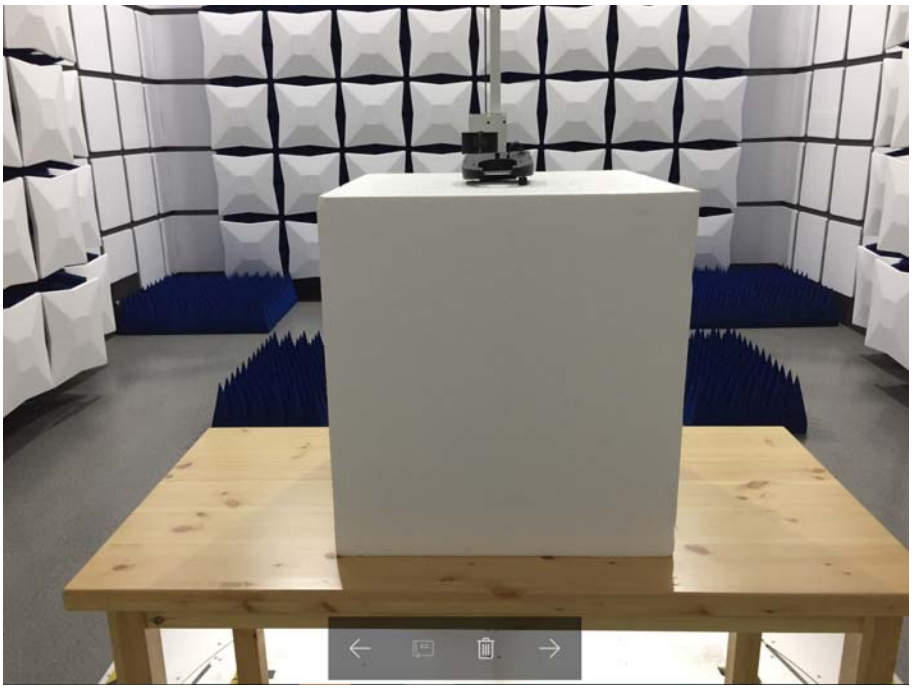




12 PHOTOGRAPH OF TEST

12.1 Radiated Emission





12.2 Conducted Emission