FCC TEST REPORT

For

Trackimo LLC.

GPS Tracker

Model No.: TRKM002

Additional Model No.: TRKM003, TRKM004, TRKM005

TRKM006, TRKM007, TRKM008

Prepared for	:	Trackimo LLC.
Address	:	350NE 24th Street, Unit 104, Miami, Florida 33137, USA
Prepared by	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Address	:	1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen, Guangdong, China
Date of receipt of test sample	:	June 10, 2013
Number of tested samples	:	1
Serial number	:	Prototype
Date of Test	:	June 10, 2013 – September 10, 2013
Date of Report	:	September 10, 2013

FCC TEST REPORT
FCC CFR 47 PART 22 SUBPART H AND PART 24 SUBPART E

Report Reference No.	**:**	**LCS130610202TF**
Date of Issue	:	September 10, 2013
Testing Laboratory Name.....	**:**	**Shenzhen LCS Compliance Testing Laboratory Ltd.**
Address	:	1/F., Xingyuan Industrial Park, Tongda Road, Bao'an Avenue, Bao'an District, Shenzhen, Guangdong, China
Testing Location/ Procedure.....	:	Full application of Harmonised standards ■ Partial application of Harmonised standards ☐ Other standard testing method ☐
Applicant's Name.....	**:**	**Trackimo LLC.**
Address	:	350NE 24th Street, Unit 104, Miami, Florida 33137, USA
Test Specification		
Standard	:	FCC CFR 47 PART 2, FCC CFR 47 PART 22 SUBPART H AND PART 24 SUBPART E
Test Report Form No.....	**:**	LCSEMC-1.0
TRF Originator	:	Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF	:	Dated 2011-03

Test Item Description.	**:**	**GPS Tracker**
Trade Mark	:	trackimo .com
Model/ Type reference.....	:	TRKM002
Ratings	:	DC 3.7V by battery(600mAh) Adapter parameters: Input: AC 100~240V, 50/60Hz, 0.15A Output: DC 5.0V, 500mA
Result	:	**Positive**

Compiled by:	**Supervised by:**	**Approved by:**
Leo Lee	Fox Zhang	Gavin Liang
Leo Lee/ File administrators	Fox Zhang/ Technique principal	Gavin Liang/ Manager

FCC -- TEST REPORT

Test Report No. : LCS130610202TF	September 10, 2013 Date of issue

Type / Model.....	: TRKM002
EUT.....	: GPS Tracker
Applicant.....	**: Trackimo LLC.**
Address.....	: 350NE 24th Street, Unit 104, Miami, Florida 33137, USA
Telephone.....	: /
Fax.....	: /
Manufacturer.....	**: Huizhou Light of Science Technology Co., Ltd.**
Address.....	: 2/F., 2 Songyang Road, Songshan Industry Park, Zhongkai High Tech Development Zones, Huizhou City, Guangdong, China
Telephone.....	: /
Fax.....	: /
Factory.....	**: Huizhou Light of Science Technology Co., Ltd.**
Address.....	: 2/F., 2 Songyang Road, Songshan Industry Park, Zhongkai High Tech Development Zones, Huizhou City, Guangdong, China
Telephone.....	: /
Fax.....	: /

Test Result	Positive

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	:	GPS Tracker
Test Model	:	TRKM002
Power Supply	:	DC 3.7V by battery(600mAh) Adapter parameters: Input: AC 100~240V, 50/60Hz, 0.15A Output: DC 5.0V, 500mA
2G	:	
Support Band	:	☒GSM 900 (EU-Band) ☒DCS 1800 (EU-Band) ☒GSM 850 (U.S.-Band) ☒PCS 1900 (U.S.-Band)
Release Ver.	:	R99
GPRS Class	:	Class 10
Uplink	:	GPRS 850: 824.2MHz ~ 848.8MHz GPRS 1900: 1850.2MHz ~ 1909.8MHz
Downlink	:	GPRS 850: 869.2MHz ~ 893.8MHz GPRS 1900: 1930.2MHz ~ 1989.8MHz
Number of Channels	:	GPRS 850: 128 / 190 / 251 GPRS 1900: 512 / 661 / 810
Type Of Modulation	:	GMSK for GPRS
Antenna Description	:	Integral Antenna, Antenna Gain: 2.0dBi
Test PCL/Class	:	GPRS 850: Level 5 / Class 4 GPRS 1900: Level 0 / Class 1
Maximum RF Output Power	:	30.66dBm for GPRS 850 28.39dBm for GPRS 1900
GPS Receiver	:	
Receive Frequency	:	1575.42MHz
Channel Number	:	1
Rx Antenna	:	Integral Antenna

1.2. Host System Configuration List and Details

Manufacturer	Description	Model	Serial Number	Certificate
Huizhou Light of Science Technology Co., Ltd.	Adapter	TRKM002	--	VOC

1.3. External I/O Cable

I/O Port Description	Quantity	Cable
USB Port	1	1.3m, unshielded

1.4. Description of Test Facility

Site Description EMC Lab. : Accredited by CNAS, June 04, 2010

The Certificate Registration Number. is L4595.

Accredited by FCC, July 14, 2011

The Certificate Registration Number. is 899208.

Accredited by Industry Canada, May. 02, 2011

The Certificate Registration Number. is 9642A-1

1.5. Statement of The Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

1.6. Measurement Uncertainty

Test Item		Frequency Range	Uncertainty	Note
Radiation Uncertainty	:	9KHz~30MHz	±3.10dB	(1)
		30MHz~200MHz	±2.96dB	(1)
		200MHz~1000MHz	±3.10dB	(1)
		1GHz~26.5GHz	±3.80dB	(1)
Conduction Uncertainty	:	150kHz~30MHz	±1.63dB	(1)
Power disturbance	:	30MHz~300MHz	±1.60dB	(1)

(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

1.7. Test environment

All tests were performed under the following environmental conditions:

Condition	**Minimum value**	**Maximum value**
Barometric pressure	86kPa	106kPa
Temperature	15°C	30°C
Relative Humidity	20 %	75 %
Power supply range	±5% of rated voltages	

2. TEST METHODOLOGY

All tests and measurements indicated in this document were performed in accordance with FCC CFR 47 part 2, FCC CFR 47 part 22 subpart H and part 24 subpart E.

Applicable Standards: TIA/EIA603-C, ANSI C63.4-2003.The radiated testing was performed at an antenna-to-EUT distance of 3 meters. All radiated and conducted emissions measurement was performed at Shenzhen LCS Compliance Testing Laboratory Ltd..

2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

2.2. Objective

This type approval report is prepared on behalf of **Trackimo LLC.** in accordance with FCC CFR 47 part 2, FCC CFR 47 part 22 subpart H and part 24 subpart E.

The objective is to determine compliance with FCC rules for RF output power, modulation characteristics, occupied bandwidth, spurious emissions at antenna terminal, field strength of spurious radiation, frequency stability, band edge, and conducted and radiated margin.

2.3. General Test Procedures

2.3.1 Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using Quasi-peak and average detector modes.

2.3.2 Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4

2.4. Test Mode

GPRS 850: Channel Low (CH128), Channel Mid (CH190) and Channel High (CH251) were chosen for full testing. The test PCL(Power Control Level)/Class is

level 5/class 4.

GPRS 1900: Channel Low (CH512), Channel Mid (CH661) and Channel High (CH810) were chosen for full testing. The test PCL(Power Control Level)/Class is

level 0/class 1.

The EUT is designed to supports GPRS Class 10 but not support voice function.

During the testing, the EUT was controlled via Rhode & Schwarz Digital Radio Communication Tester (CMU 200) to ensure max power transmission and proper modulation. Three channels (The top channel, the middle channel and the bottom channel) were chosen for testing. The worst condition was recorded in the test report if no other modes test data.

This test was performed with EUT in X, Y, Z position and the worse case was found when EUT in X position.

3. SYSTEM TEST CONFIGURATION

3.1. Justification

The EUT had been tested under operating condition. EUT staying in continuous transmitting mode.

3.2. EUT Exercise Software

N/A.

3.3. Special Accessories

N/A.

3.4. Block Diagram/Schematics

Please refer to the related document

3.5. Equipment Modifications

Shenzhen LCS Compliance Testing Laboratory Ltd. has not done any modification on the EUT.

3.6. Test Setup

Please refer to the test setup photo.

4. SUMMARY OF TEST RESULTS

Applied Standard: 47 CFR FCC Part 22 Subpart H, Part 24 Subpart E			
FCC Rules	**Description of Test**		**Result**
§2.1046, §22.913 / §24.232	RF Output Power	Conducted Output Power	Compliant
		Radiated Output Power	
§24.232(d)	Peak-to-Average Ratio		Compliant
§2.1049, §22.905 §2.917, §24.238	Occupied Bandwidth		Compliant
§2.1053 §2.917, §24.238	Spurious Radiated Emissions		Compliant
§2.1051 §2.917, §24.238	Spurious Emissions at Antenna Terminals		Compliant
§2.917, §24.238	Band Edge		Compliant
§2.1055 §22.355, §24.235	Frequency Stability		Compliant
§15.107 / §15.207	AC power line conducted emissions		Compliant
§1.1310, §2.1091	RF Exposure Information		Compliant

5. TEST RESULT

5.1. RF OUTPUT POWER

5.1.1. Standard Applicable

According to FCC §2.1046 and §22.913, the maximum effective radiated power (ERP) of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

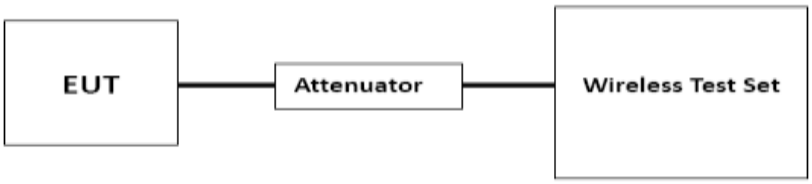
According to FCC §2.1046 and §22.232, mobile and portable stations are limited to 2 Watts and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

5.1.2. Measuring Instruments

Please refer to section 6 of equipments list in this report.

5.1.3. Test Procedures

Conducted method:



Radiated method:

TIA 603-D section 2.2.17

5.1.4. Test Results

Temperature	25°C	Humidity	60%
ATM Pressure:	101.4kPa	Test Engineer	Leo

Conducted Power:

Mode	Channel	Frequency (MHz)	Peak Output Power (dBm)	Limit (dBm)
GPRS 850 (Slot 1)	128	824.2	30.45	38.45
	190	836.6	30.66	38.45
	251	848.8	30.51	38.45
GPRS 850 (Slot 2)	128	824.2	28.63	38.45
	190	836.6	28.72	38.45
	251	848.8	28.57	38.45

Mode	Channel	Frequency (MHz)	Peak Output Power (dBm)	Limit (dBm)
GPRS 1900 (Slot 1)	512	1850.2	28.32	33
	661	1880.0	28.39	33
	810	1909.8	28.34	33
GPRS 1900 (Slot 2)	512	1850.2	27.47	33
	661	1880.0	27.61	33
	810	1909.8	27.53	33

Radiated Power:

The worst test data as follow:

Mode	Channel	Frequency (MHz)	Test Result		Limit (dBm)
			Max. Peak ERP (dBm)	Polarization	
GPRS 850	128	824.2	29.31	H	38.45
	190	836.6	29.42	H	38.45
	251	848.8	29.36	H	38.45
	128	824.2	26.74	V	38.45
	190	836.6	26.87	V	38.45
	251	848.8	26.81	V	38.45

Mode	Channel	Frequency (MHz)	Test Result		Limit (dBm)
			Max. Peak EIRP (dBm)	Polarization	
GPRS 1900	512	1850.2	27.83	H	33
	661	1880.0	27.94	H	33
	810	1909.8	27.87	H	33
	512	1850.2	25.67	V	33
	661	1880.0	25.78	V	33
	810	1909.8	25.71	V	33

5.2. PEAK-TO-AVERAGE RATIO

5.2.1. Standard Applicable

According to FCC §2.1046 and §24.232(d), the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

5.2.2. Measuring Instruments

Please refer to section 6 of equipments list in this report.

5.2.3. Test Procedures

The following steps outline the procedure used to measure the Peak-to-Average Ratio from the EUT.

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.

2. For GSM/EGPRS operating modes:

a. Set the RBW = 1MHz, VBW = 1MHz, Peak detector in spectrum analyzer.

b. Set EUT in maximum power output, and triggered the burst signal.

c. Measured respectively the Peak level and Mean level, and the deviation was recorded as Peak to Average Ratio.

3. For UMTS operating modes:

a. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.

b. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.

5.2.4. Test Results

Modes	GPRS 1900		
Channel	512	661	810
	Low	Mid	High
Frequency(MHz)	1850.2	1880	1909.8
Peak-To-Average Ratio (dB)	1.13	1.09	1.11

5.3. OCCUPIED BANDWIDTH

5.3.1. Standard Applicable

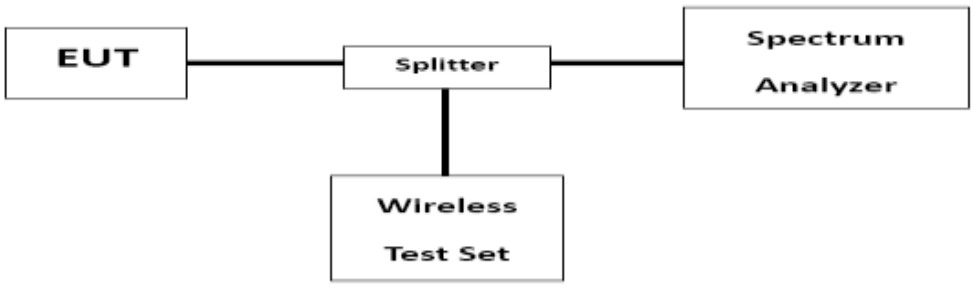
FCC §2.1049, §22.917, §22.905 and §24.238.

5.3.2. Measuring Instruments

Please refer to section 6 of equipments list in this report.

5.3.3. Test Procedures

The RF output of the transmitter was connected to the wireless communication tester and spectrum analyzer through attenuation.



The -26dB & 99% bandwidth was recorded.

5.3.4. Test Results

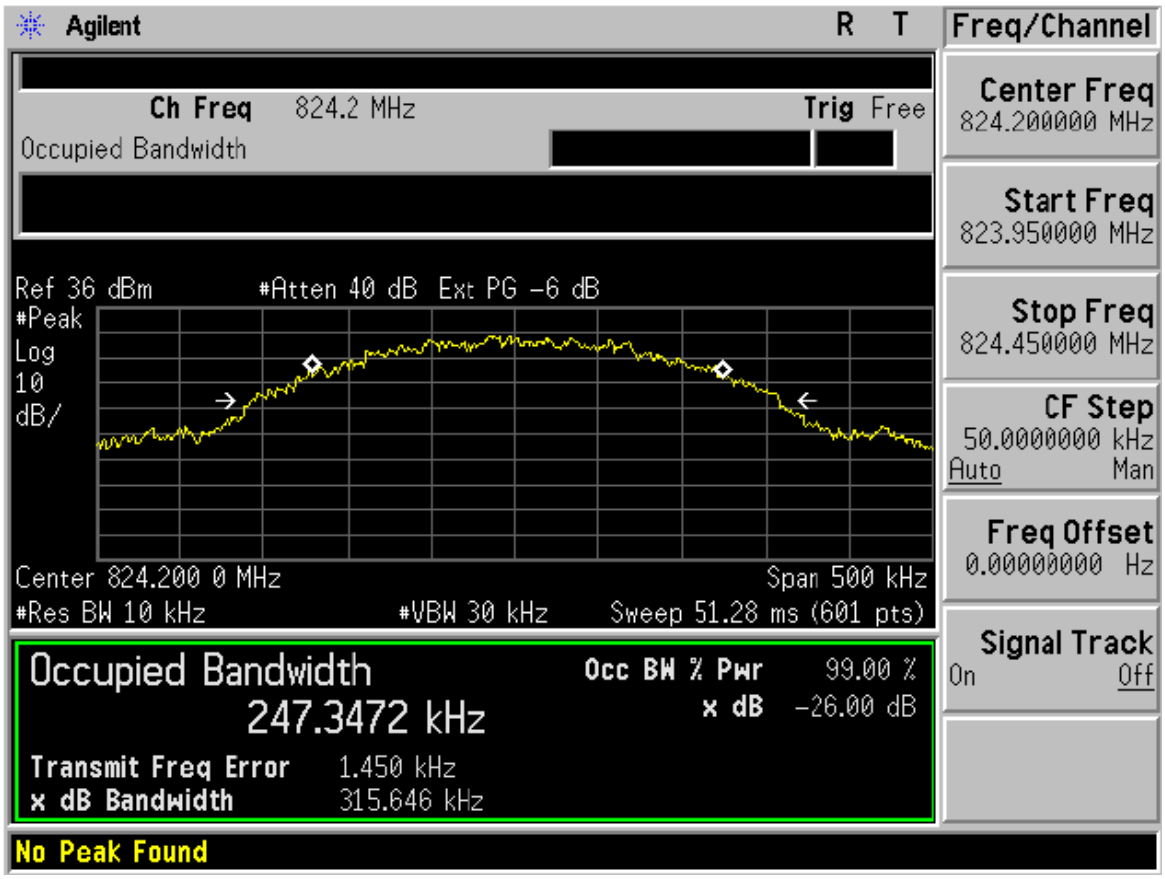
Temperature	25°C	Humidity	60%
ATM Pressure:	101.4kPa	Test Engineer	Leo

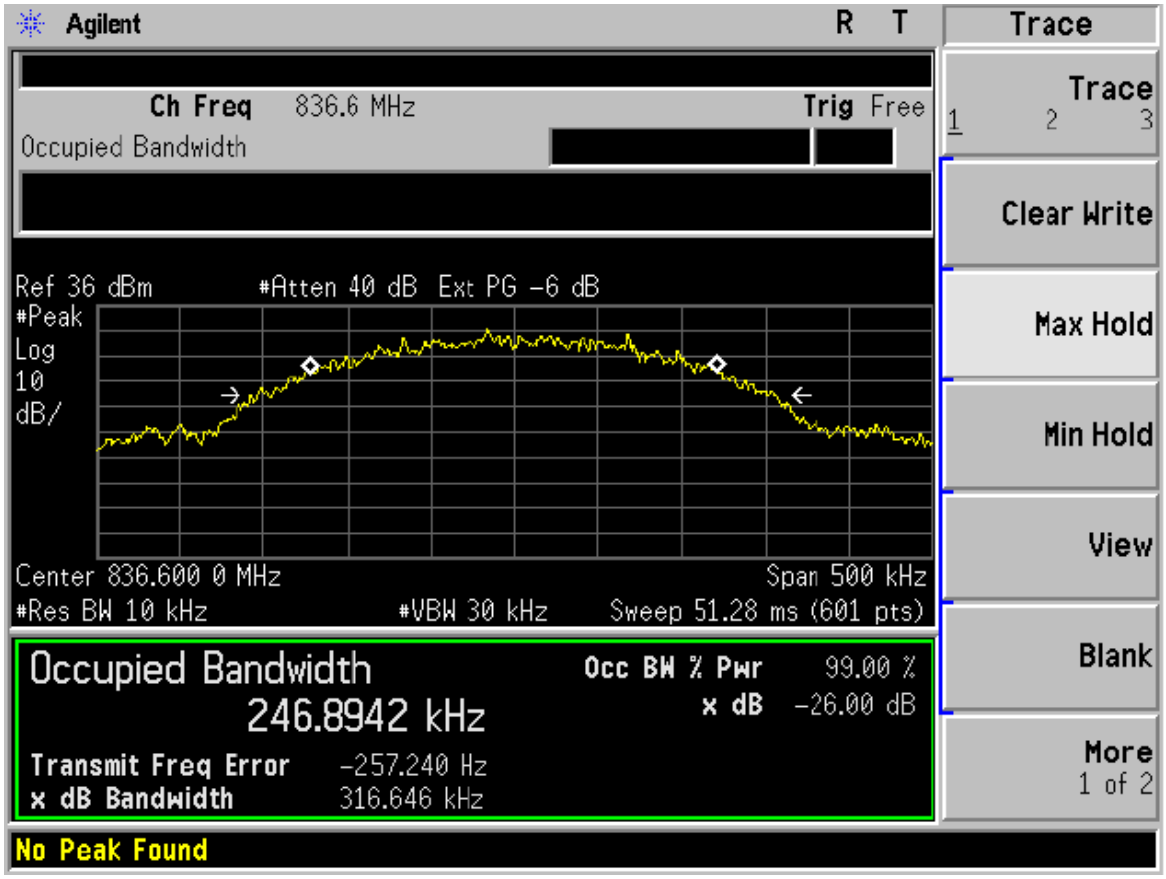
The worst test data as follow:

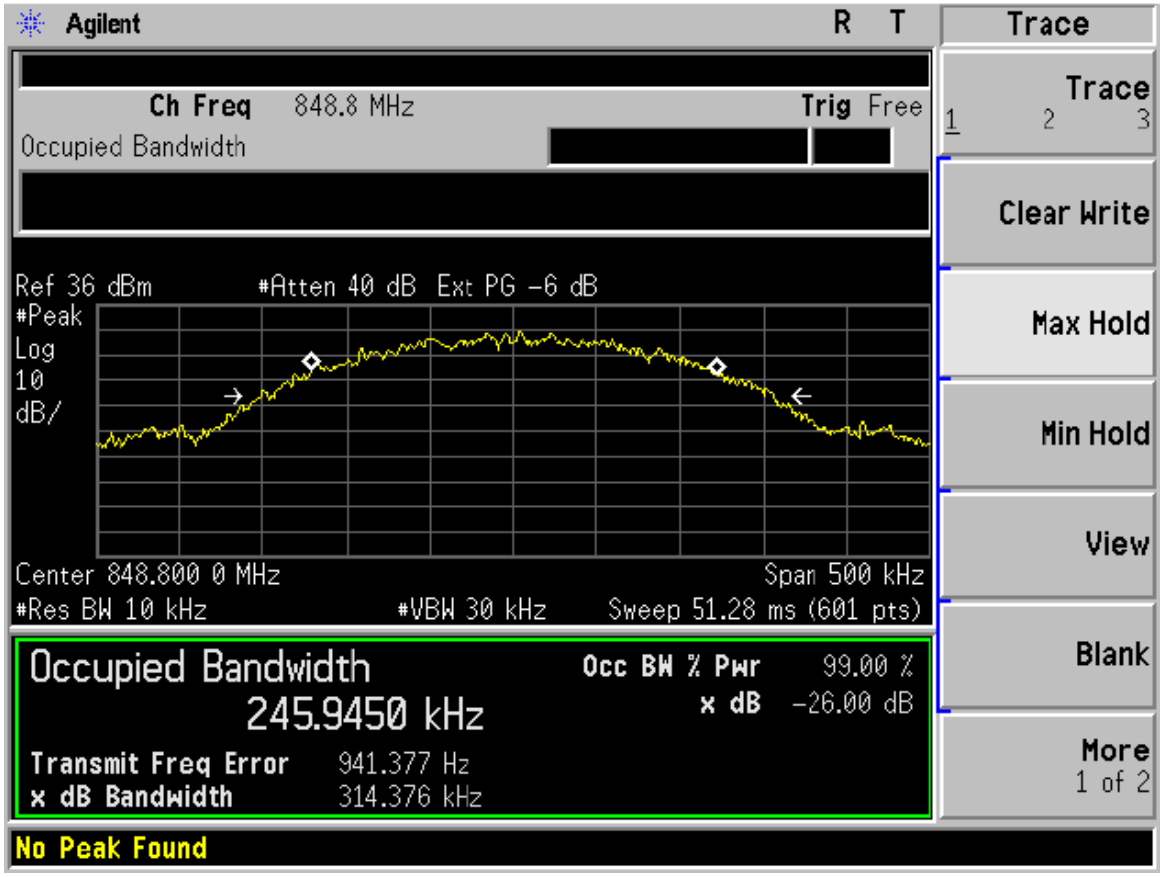
Mode	Channel	Frequency (MHz)	Emission Bandwidth (-26dBc) (kHz)	Occupied Bandwidth (99%) (kHz)
GPRS 850	128	824.2	315.65	247.35
	190	836.6	316.65	246.89
	251	848.8	314.38	245.95

Mode	Channel	Frequency (MHz)	Emission Bandwidth (-26dBc) (kHz)	Occupied Bandwidth (99%) (kHz)
GPRS 1900	512	1850.2	315.47	247.08
	661	1880.0	316.56	245.49
	810	1909.8	315.94	245.35

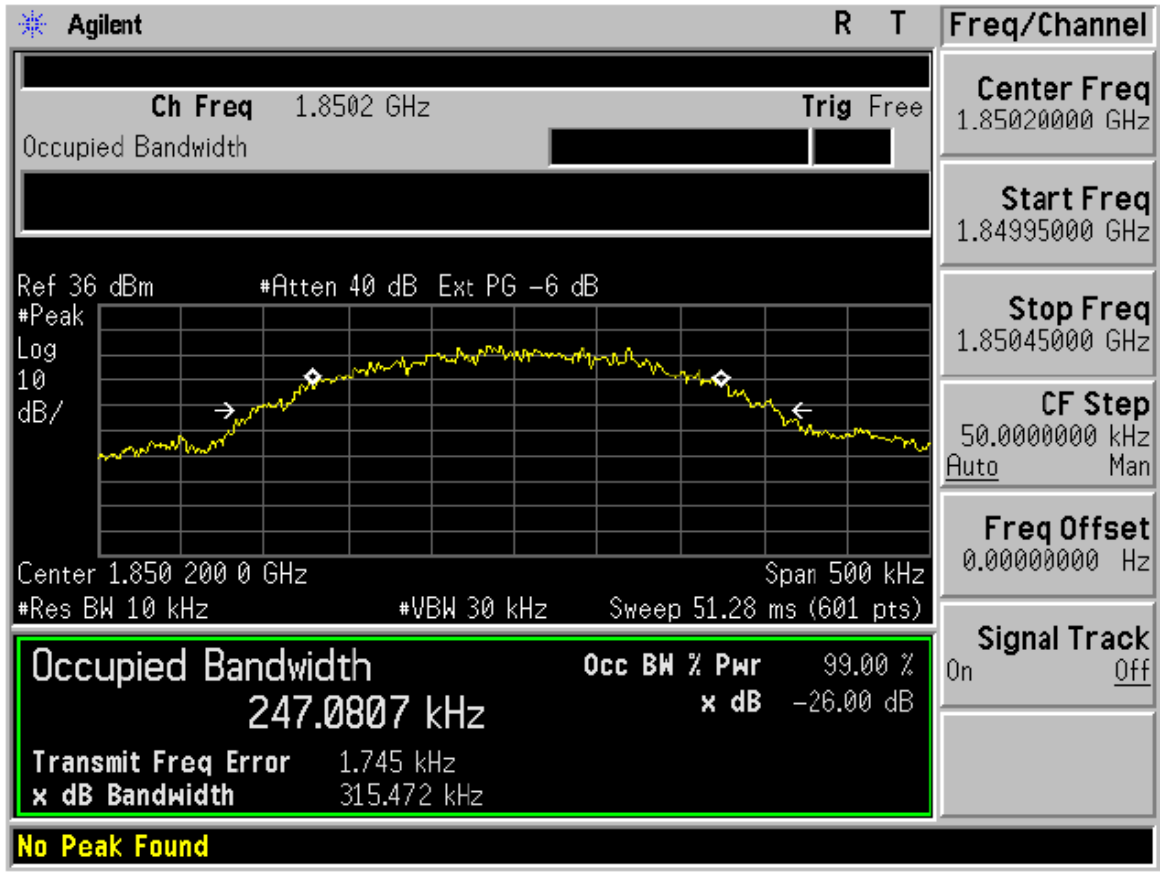
Test Plots For GPRS 850

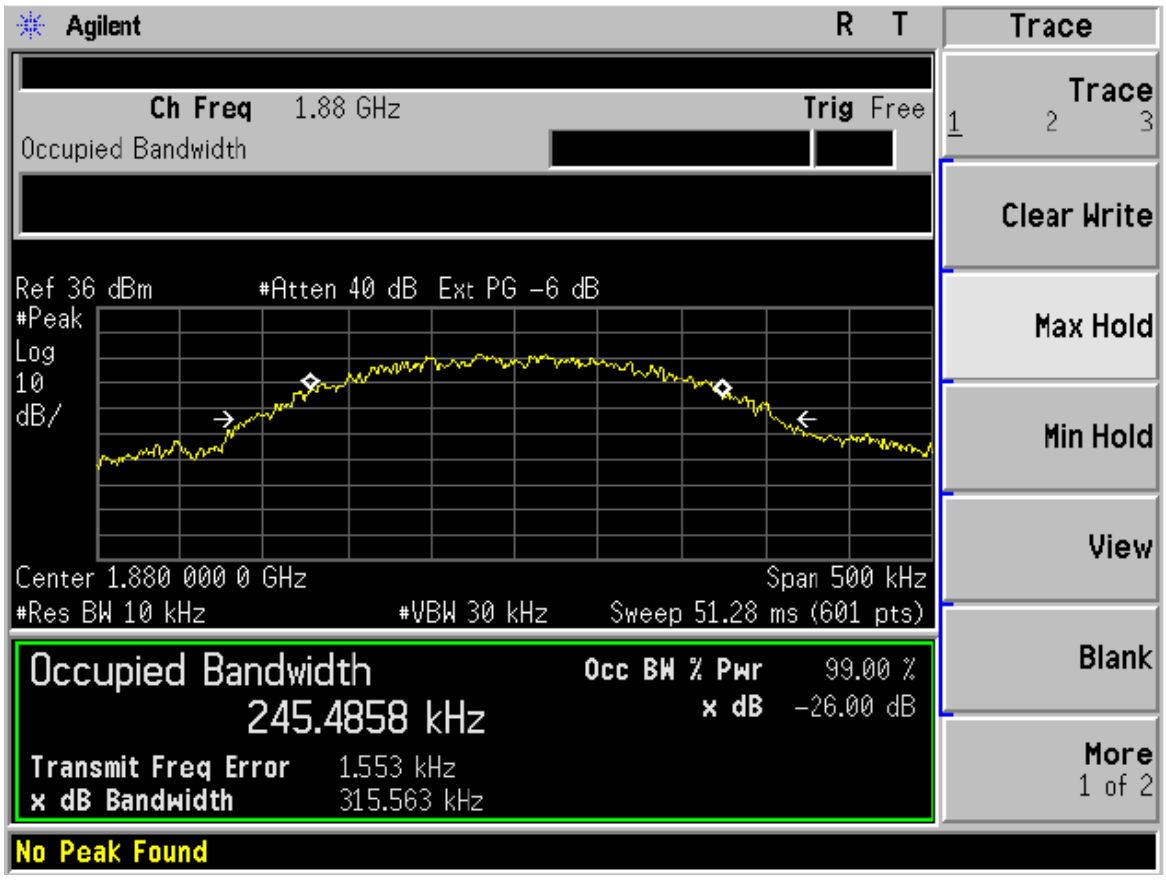


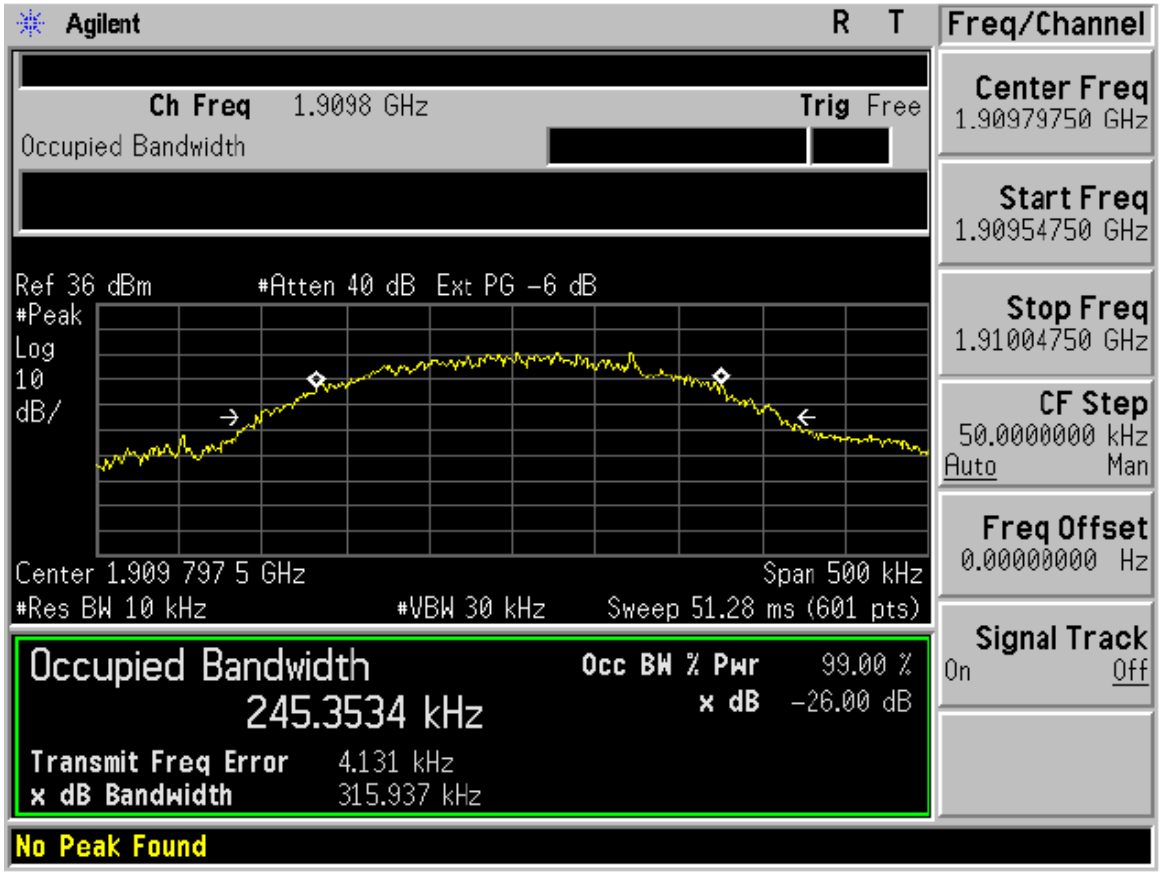




Test Plots For GPRS 1900




Agilent
R T
Trace
Ch Freq 1.88 GHz
Trig Free
Occupied Bandwidth
Trace
1 2 3
Clear Write
Ref 36 dBm
#Atten 40 dB Ext PG -6 dB
#Peak
Log
10
dB/
Max Hold
Min Hold
View
Center 1.880 000 0 GHz
Span 500 kHz
#Res BW 10 kHz
#VBW 30 kHz
Sweep 51.28 ms (601 pts)
Blank
Occupied Bandwidth
245.4858 kHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error 1.553 kHz
x dB Bandwidth 315.563 kHz
More
1 of 2
No Peak Found


Agilent
R T
Freq/Channel
Ch Freq 1.9098 GHz
Trig Free
Occupied Bandwidth
Center Freq
1.90979750 GHz
Start Freq
1.90954750 GHz
Ref 36 dBm
#Atten 40 dB Ext PG -6 dB
#Peak
Log
10
dB/
Stop Freq
1.91004750 GHz
CF Step
50.0000000 kHz
Auto Man
Freq Offset
0.00000000 Hz
Center 1.909 797 5 GHz
Span 500 kHz
#Res BW 10 kHz
#VBW 30 kHz
Sweep 51.28 ms (601 pts)
Signal Track
On Off
Occupied Bandwidth
245.3534 kHz
Occ BW % Pwr 99.00 %
x dB -26.00 dB
Transmit Freq Error 4.131 kHz
x dB Bandwidth 315.937 kHz
No Peak Found

5.4. SPURIOUS AND HARMONIC EMISSION AT ANTENNA TERMINAL

5.4.1. Standard Applicable

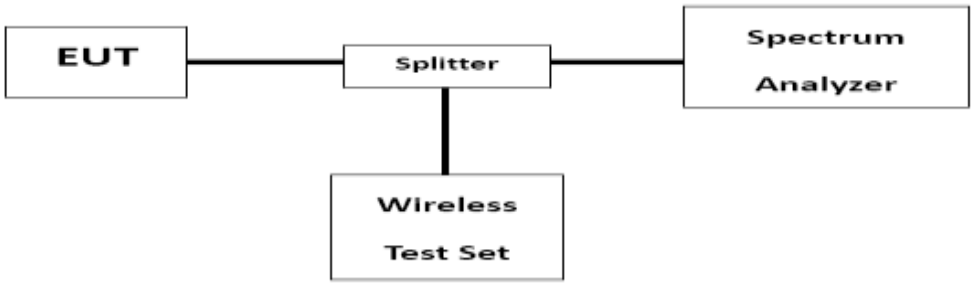
FCC §2.1051, §22.917 and §24.238.

5.4.2. Measuring Instruments

Please refer to section 6 of equipments list in this report.

5.4.3. Test Procedures

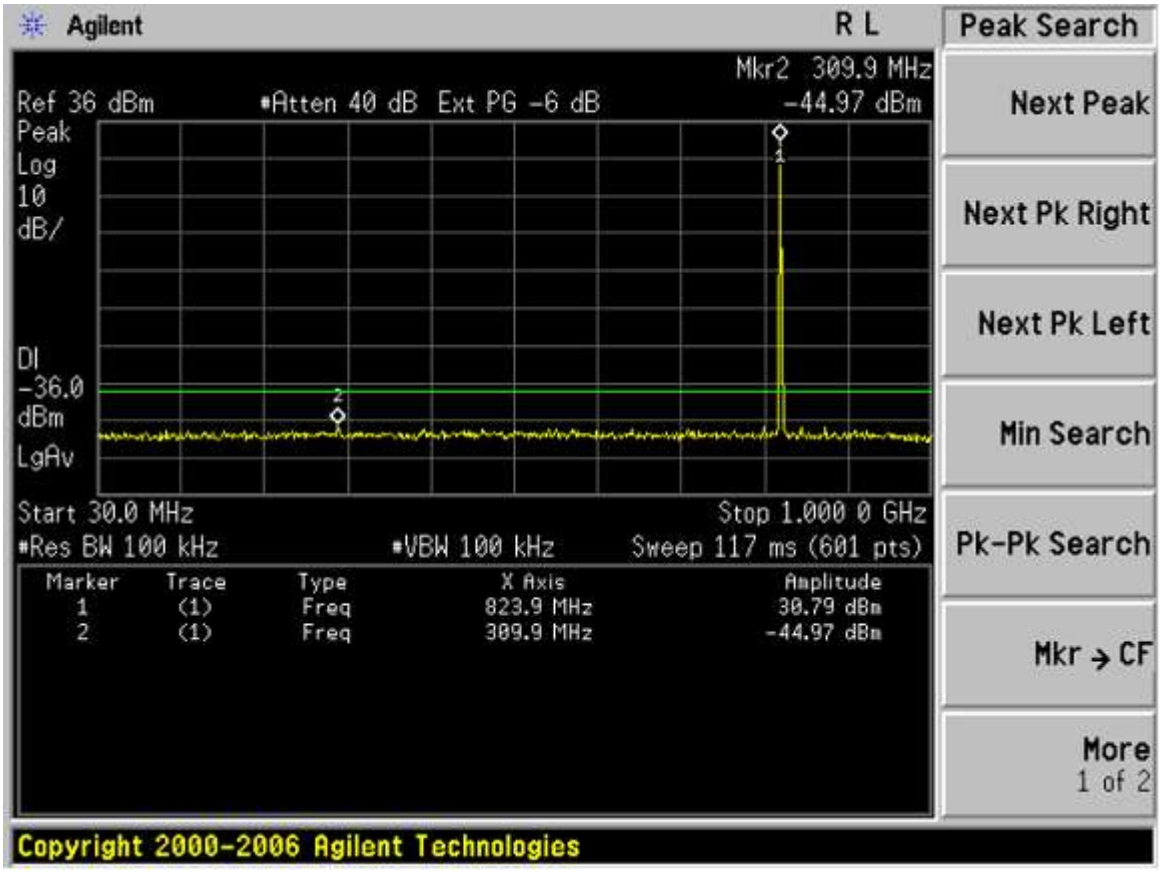
The RF output of the transmitter was connected to the wireless communication tester and spectrum analyzer through attenuation.

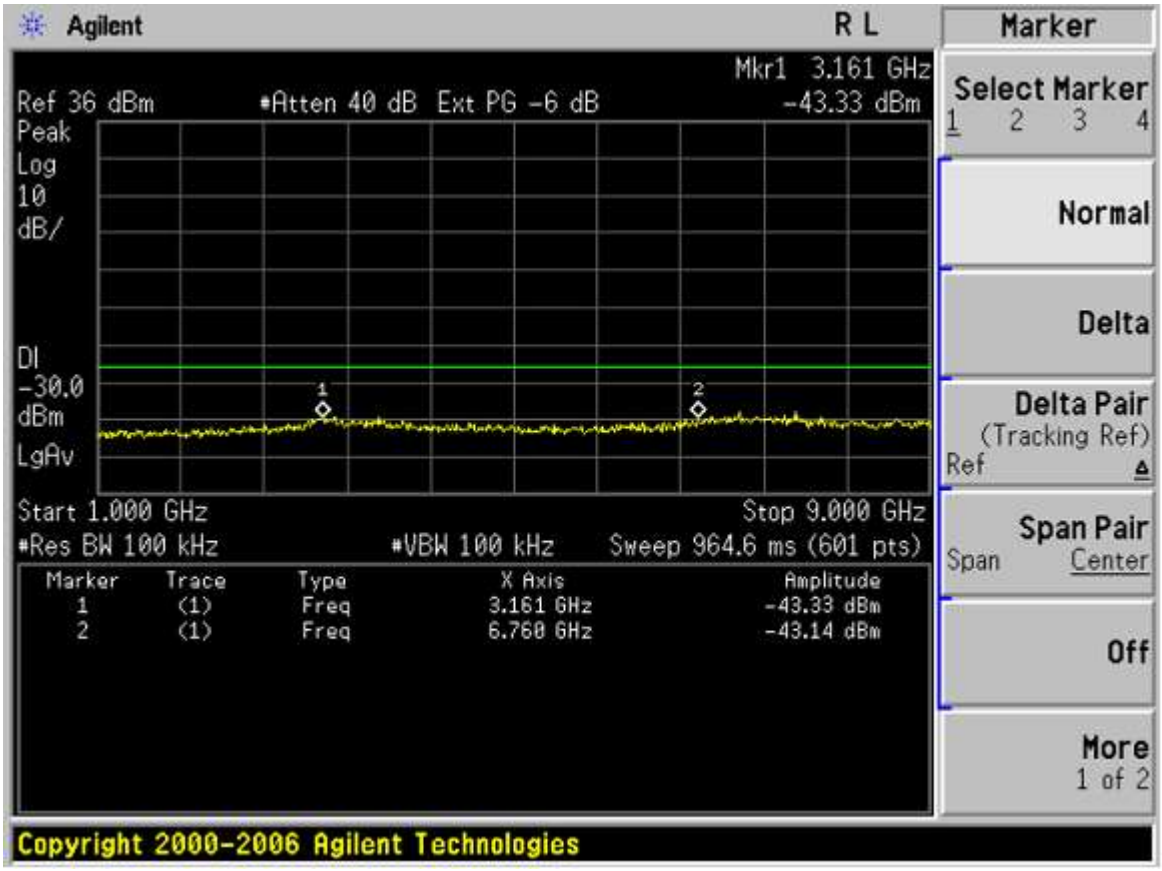


5.4.4. Test Results

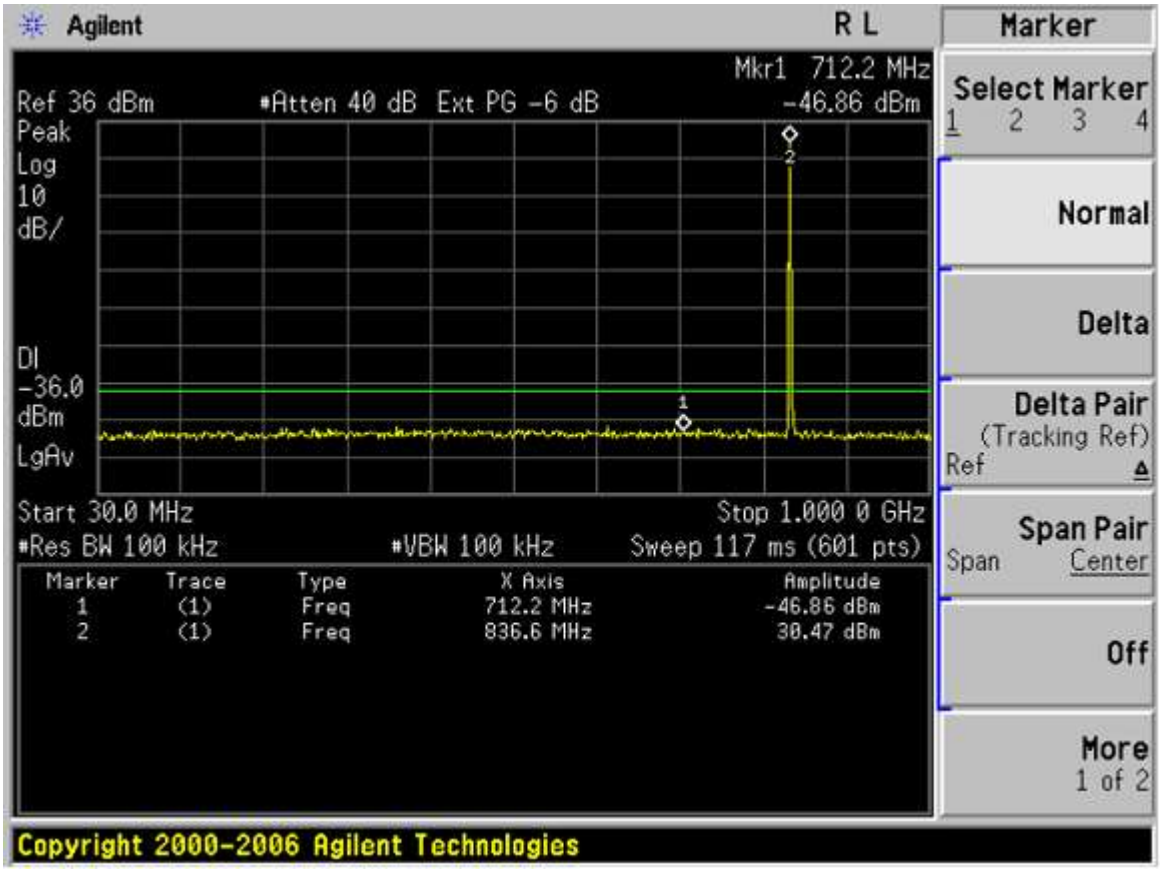
Please refer to the following plots.

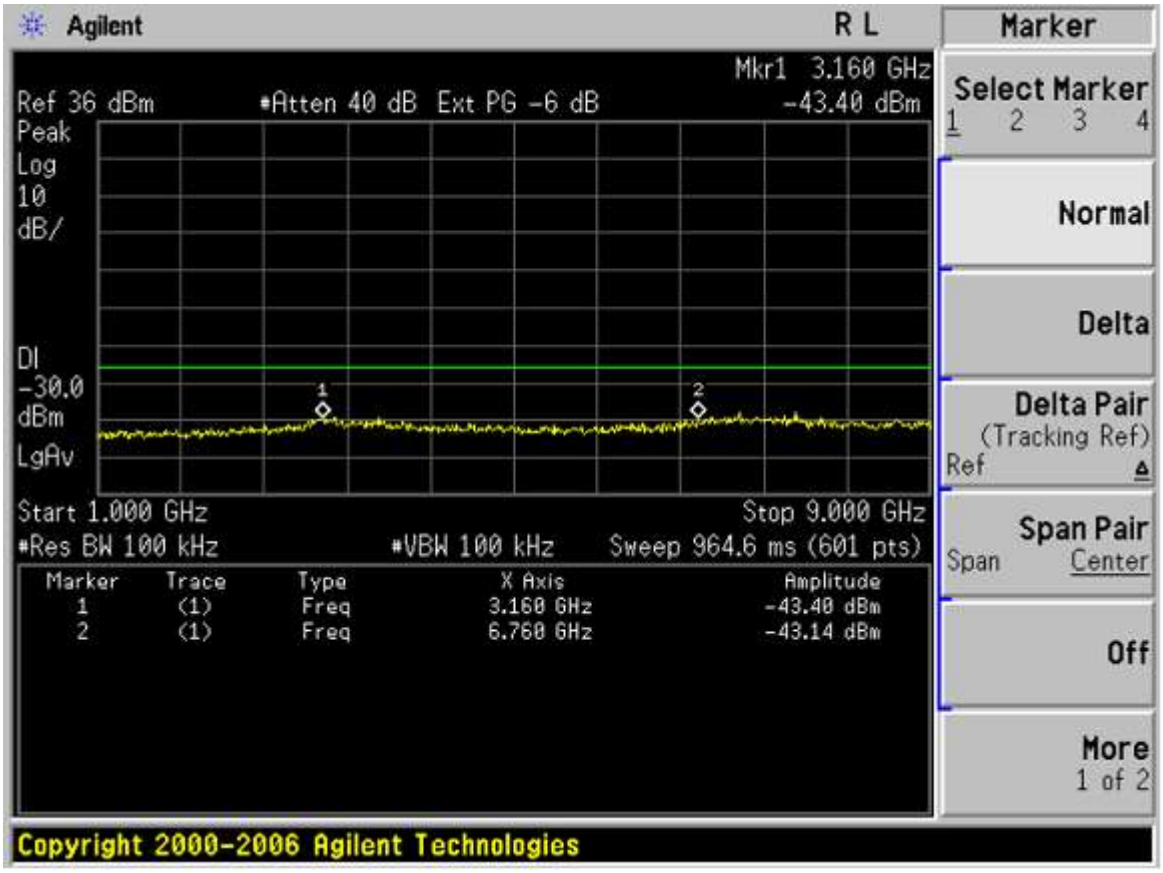
Transmitting Mode, CH 128, GPRS 850



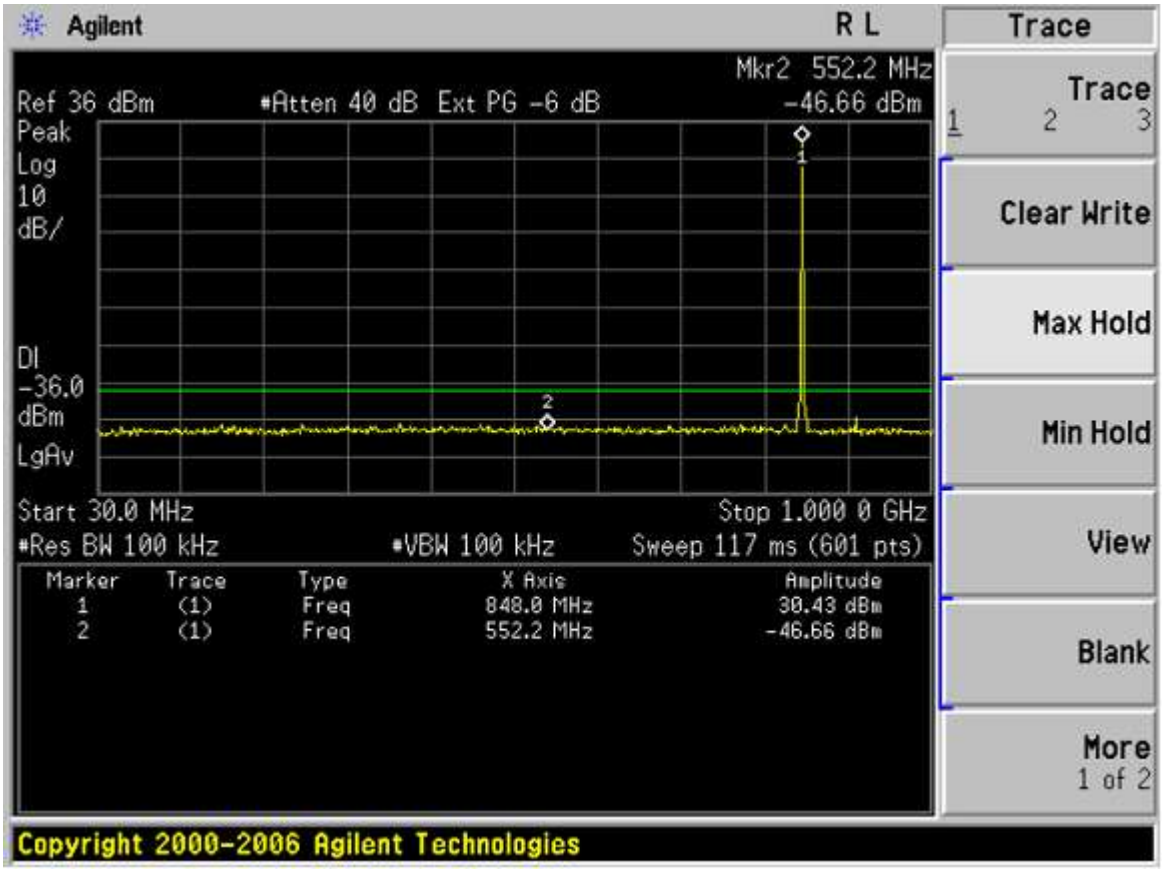


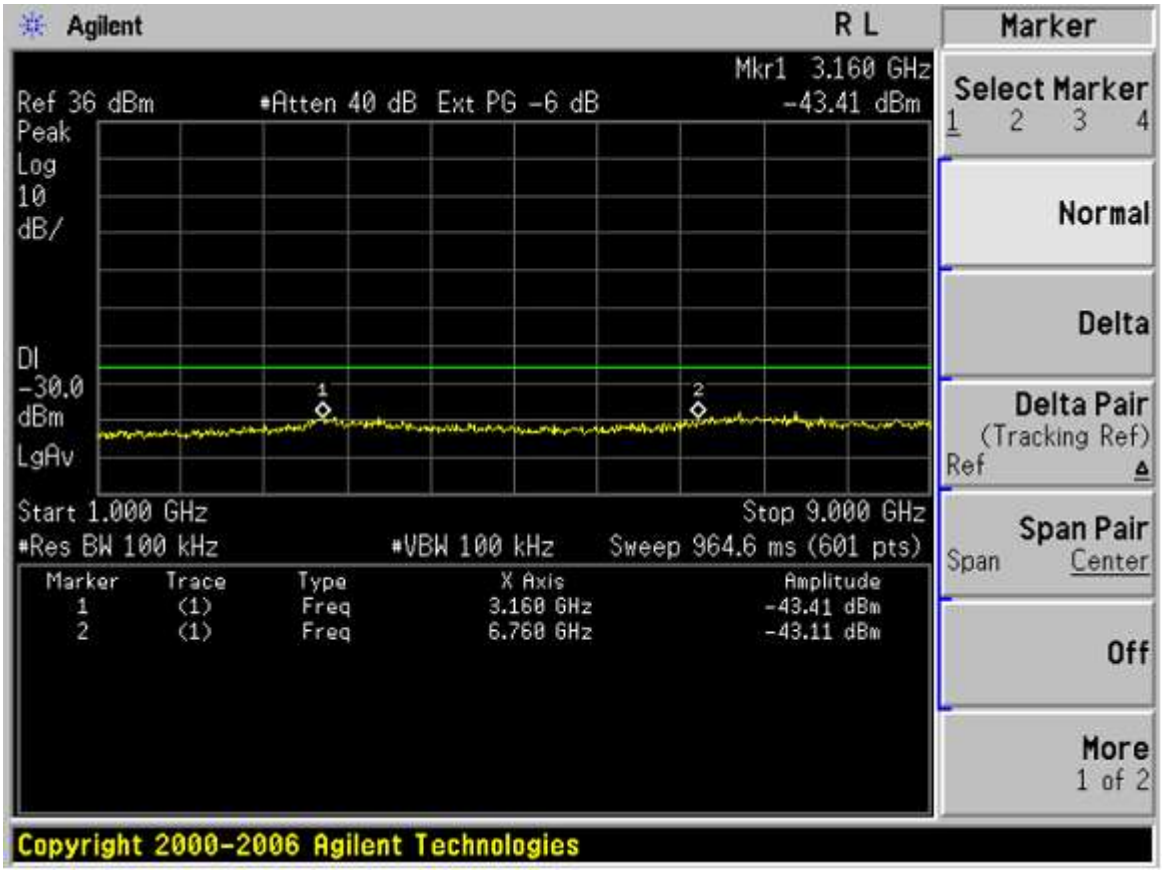
Transmitting Mode, CH 190, GPRS 850



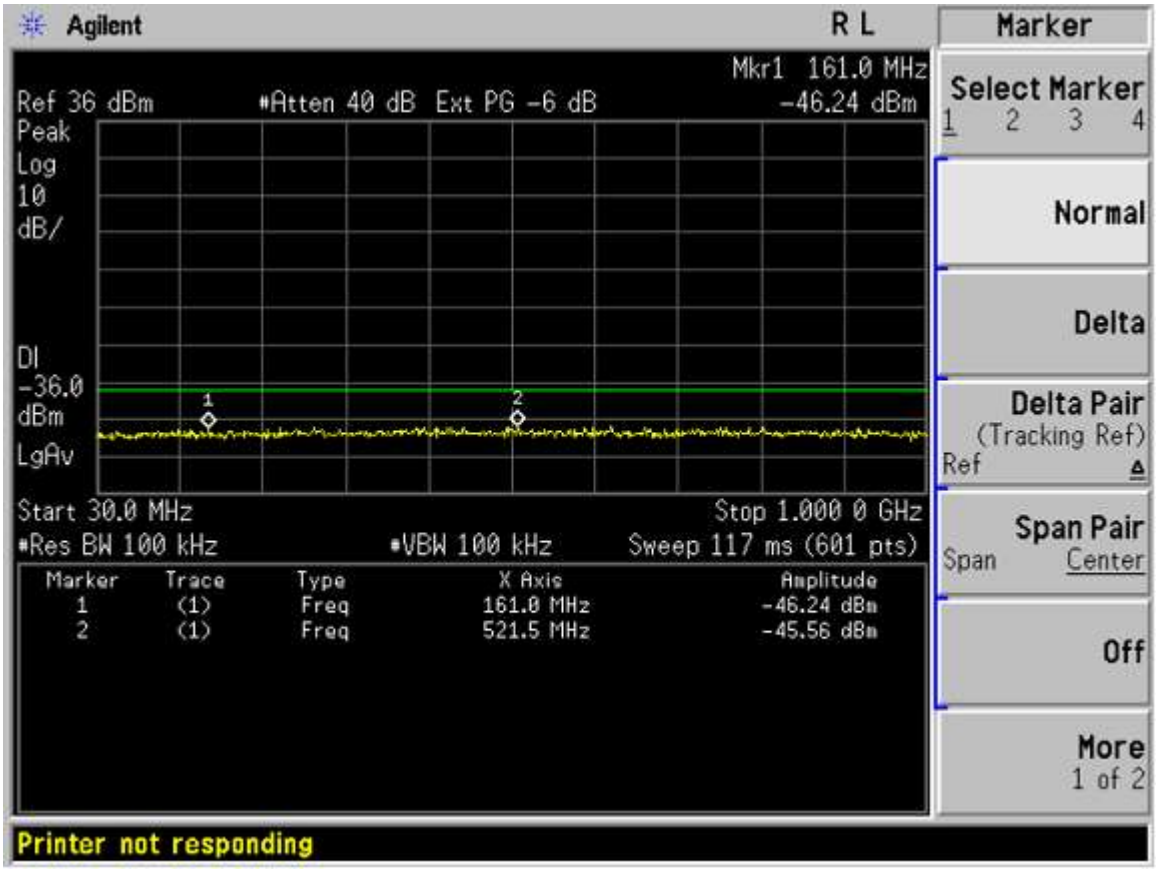


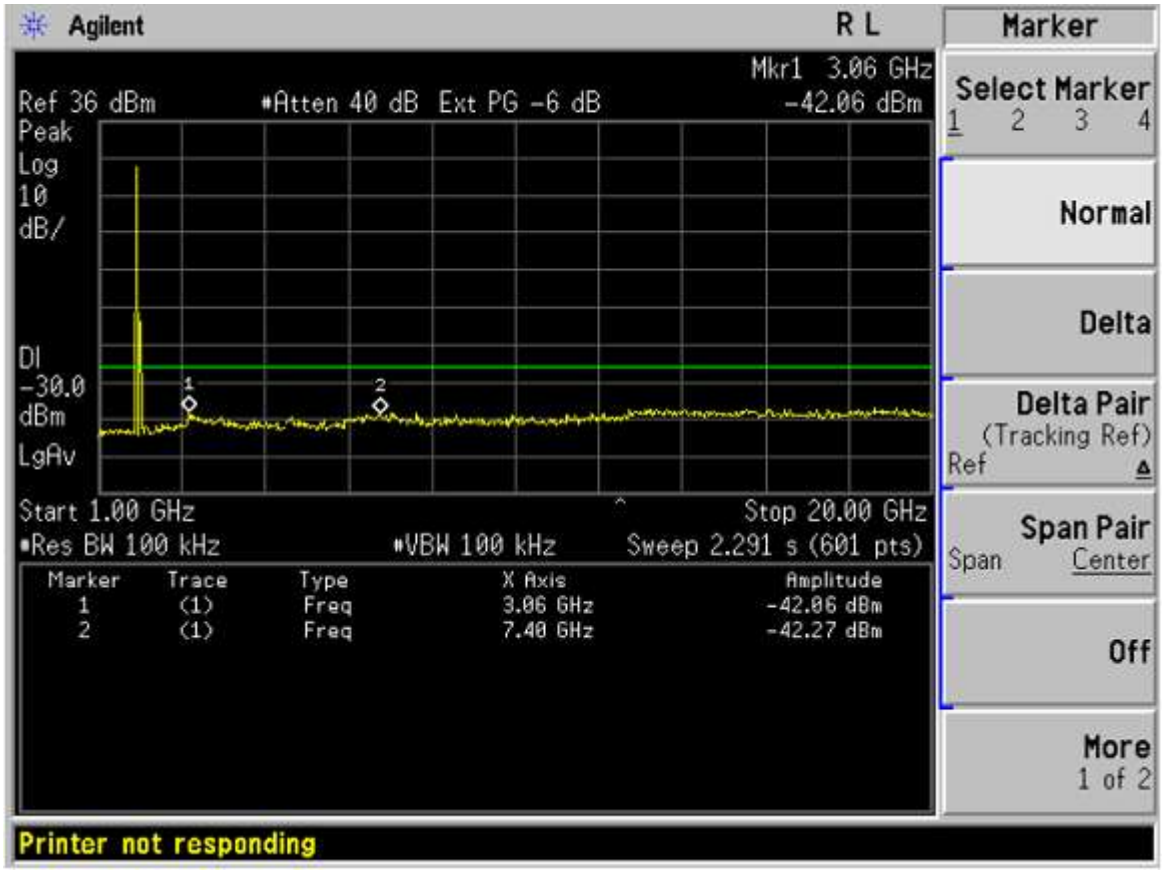
Transmitting Mode, CH 251, GPRS 850



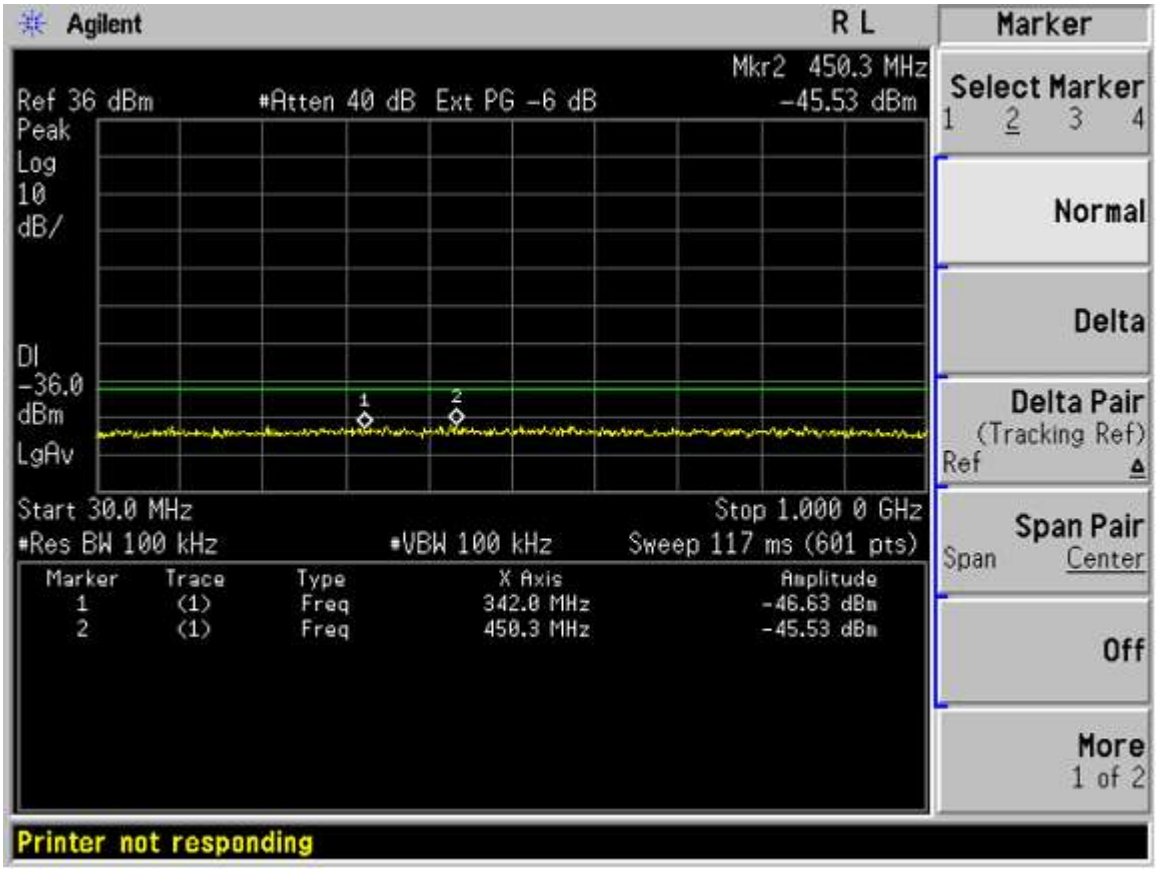


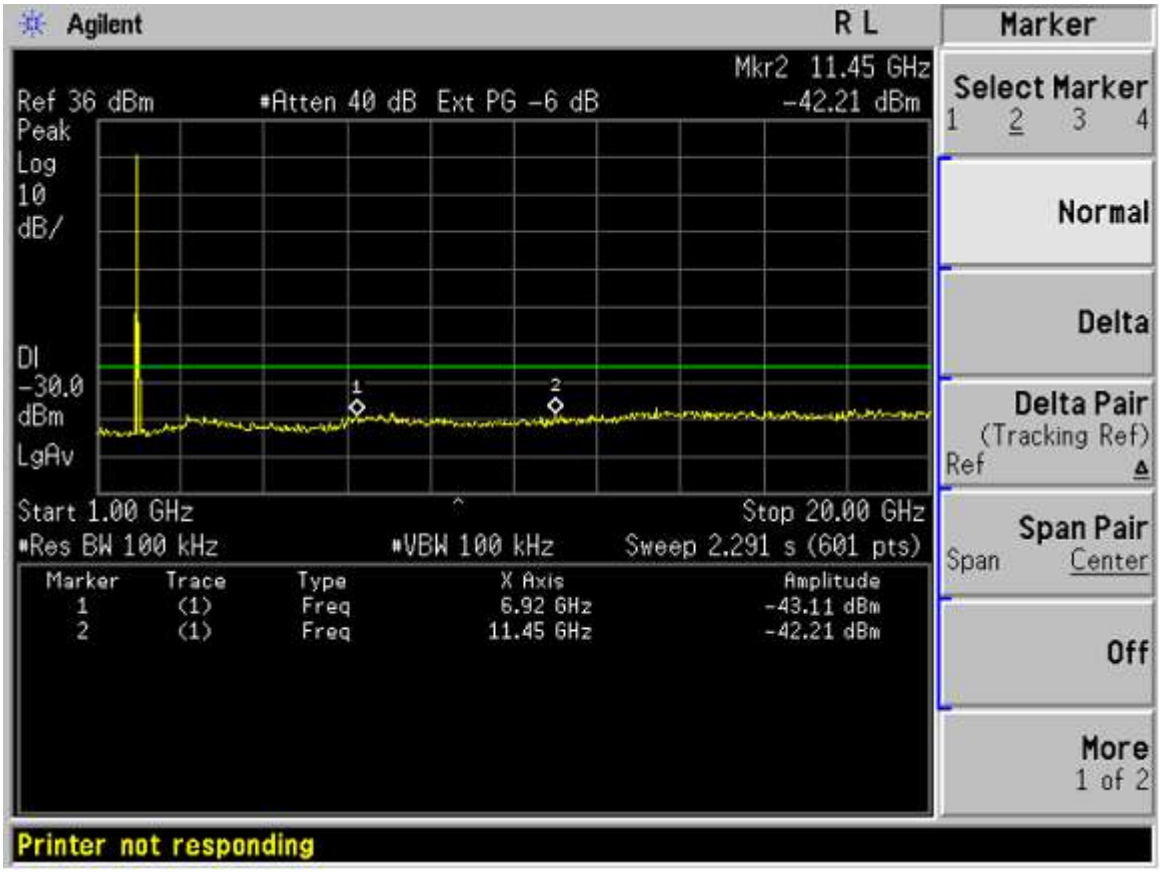
Transmitting Mode, CH 512, GPRS 1900



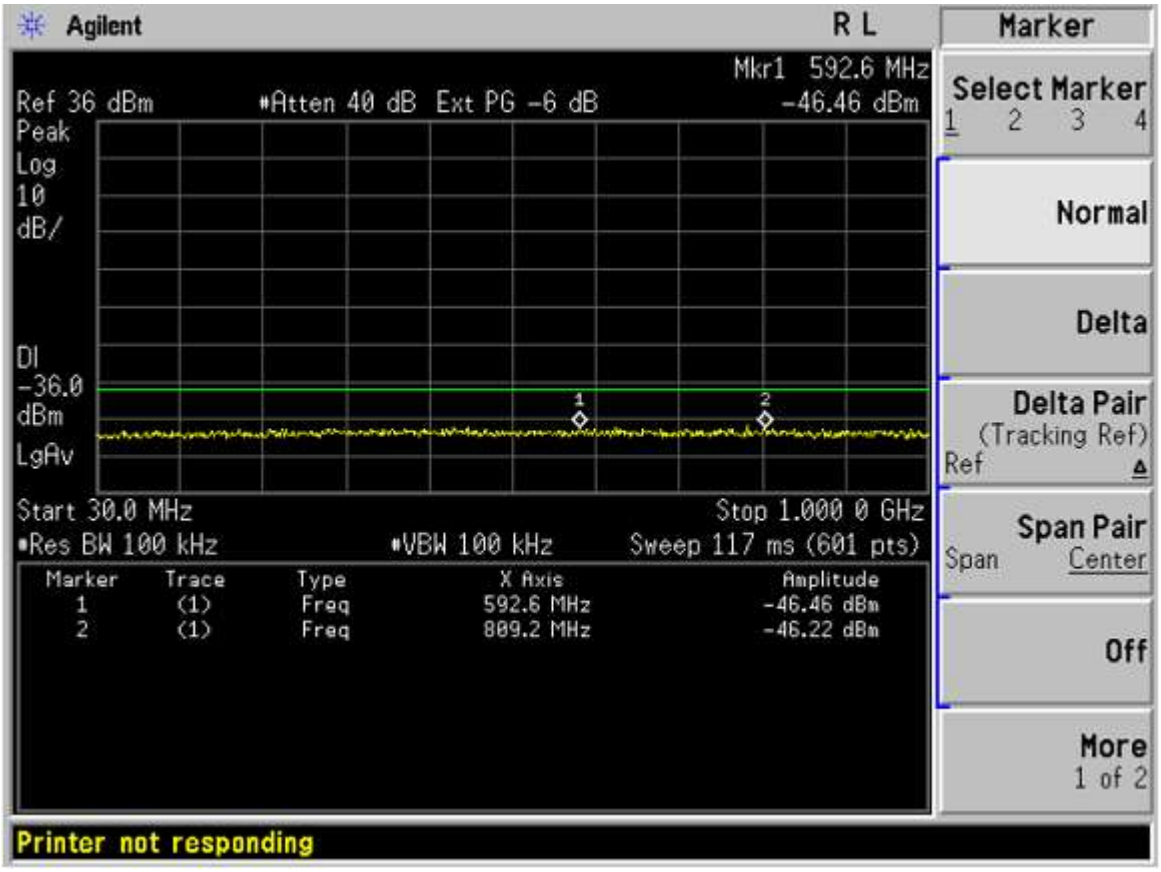


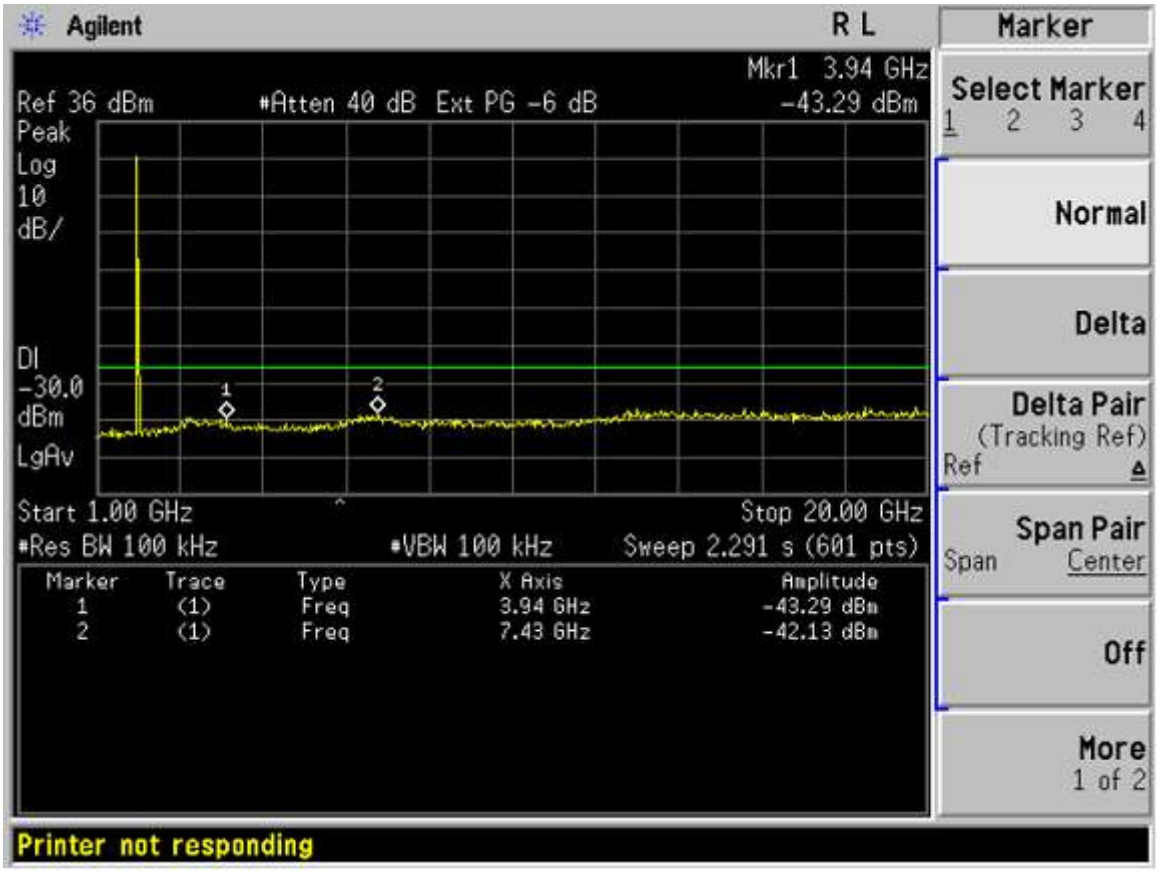
Transmitting Mode, CH 661, GPRS 1900



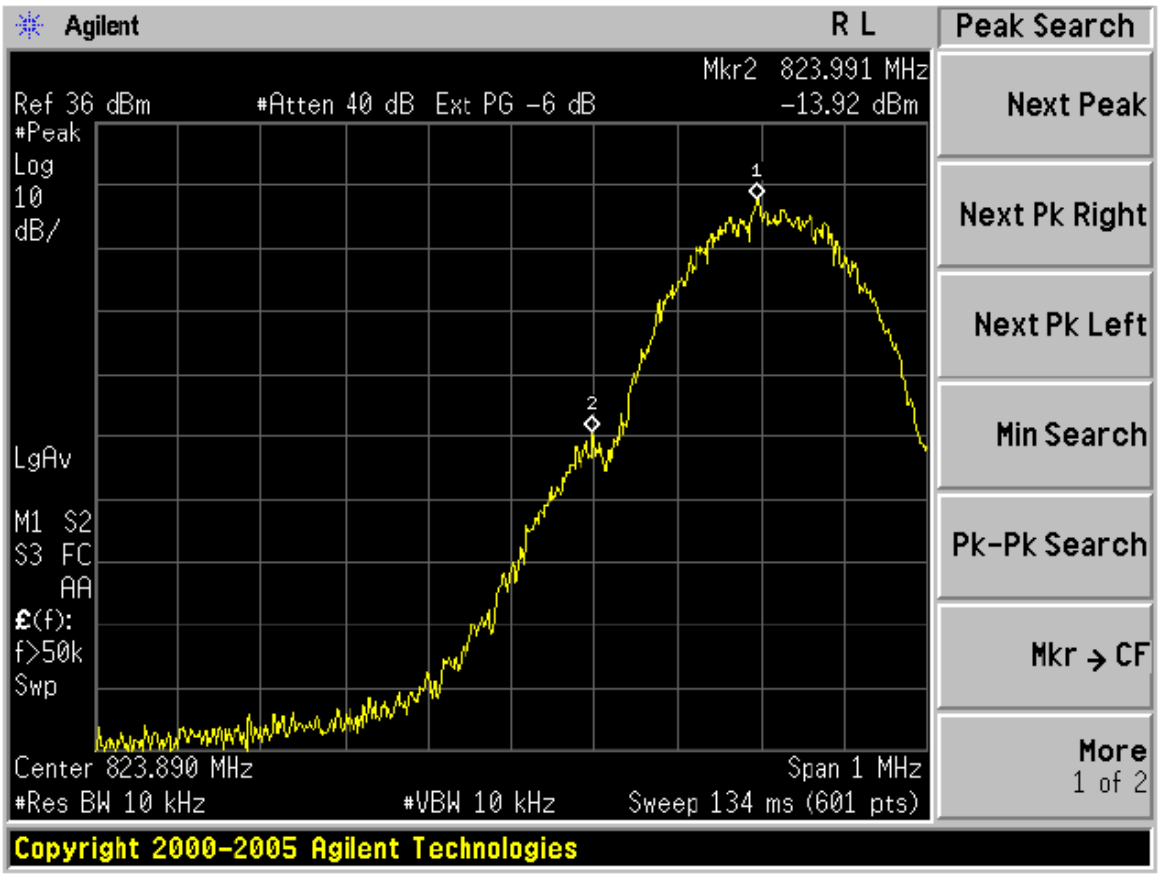


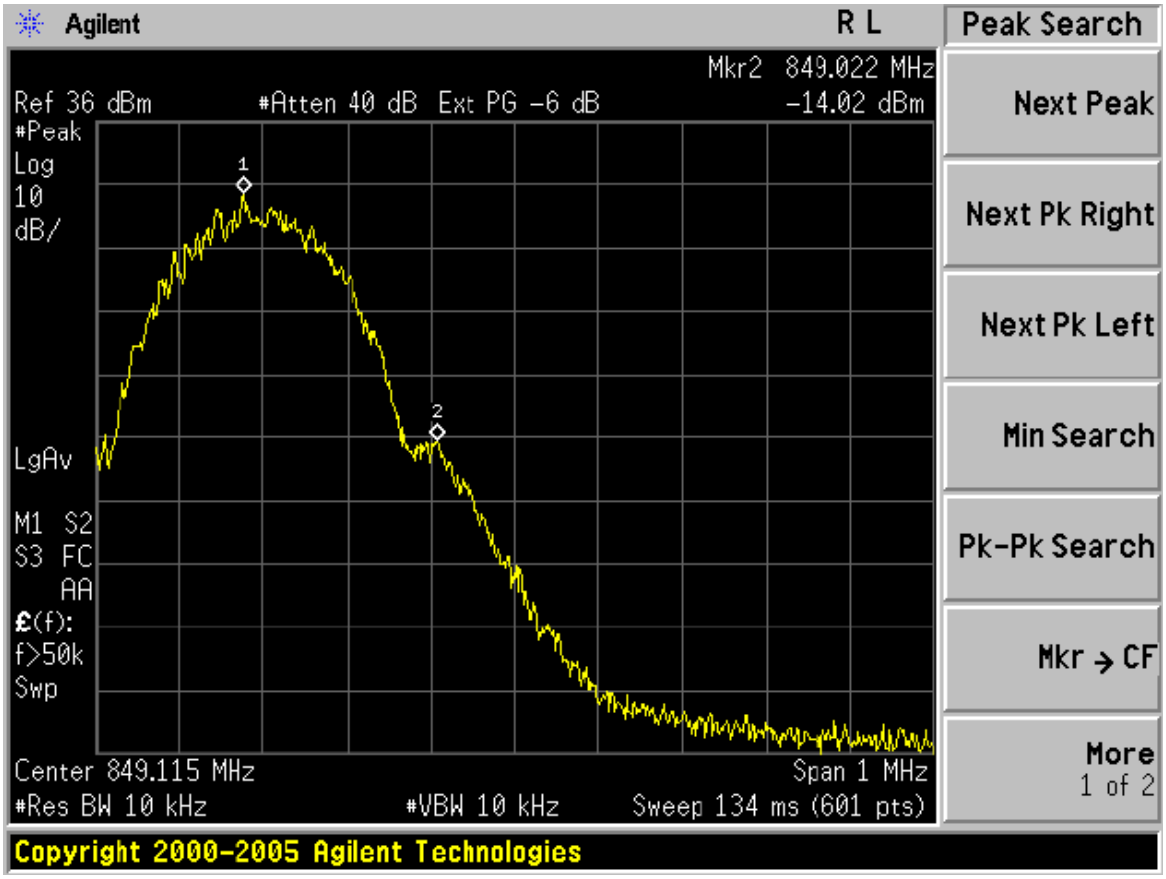
Transmitting Mode, CH 810, GPRS 1900



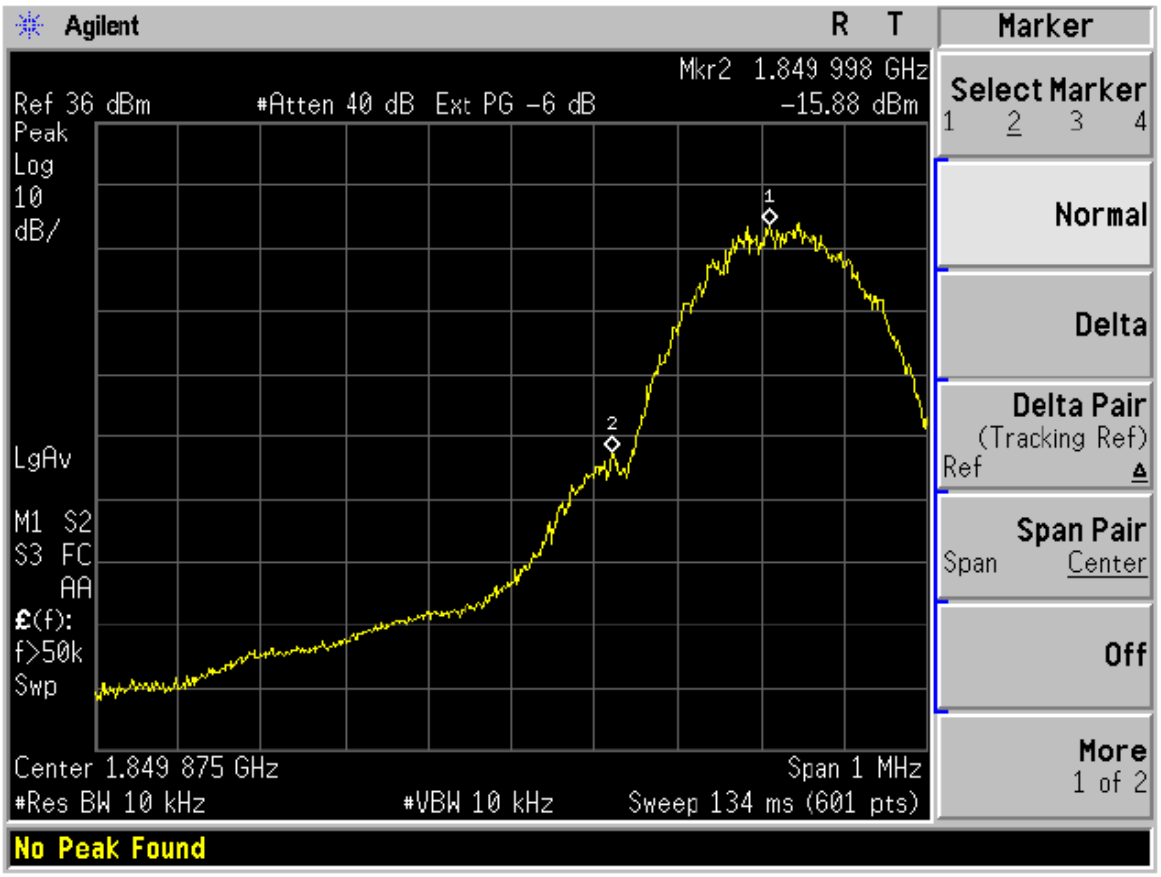


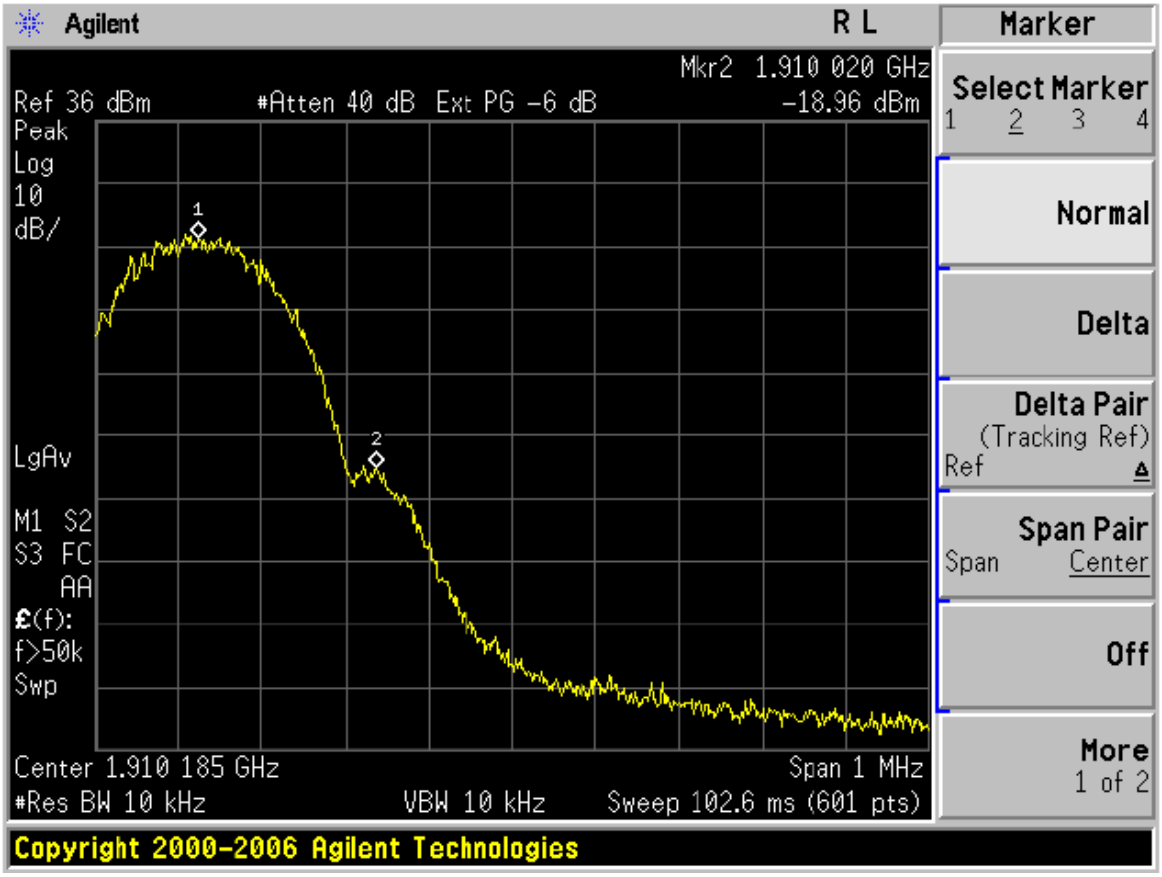
Test Result of Band Edge Emissions, GPRS 850





Test Result of Band Edge Emissions, GPRS 1900





5.5. RADIATED SPURIOUS EMISSIONS MEASUREMENT

5.5.1. Standard Applicable

FCC §2.1053, §22.917 and §24.238.

5.5.2. Measuring Instruments

Please refer to section 6 of equipments list in this report.

5.5.3. Test Procedures

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.

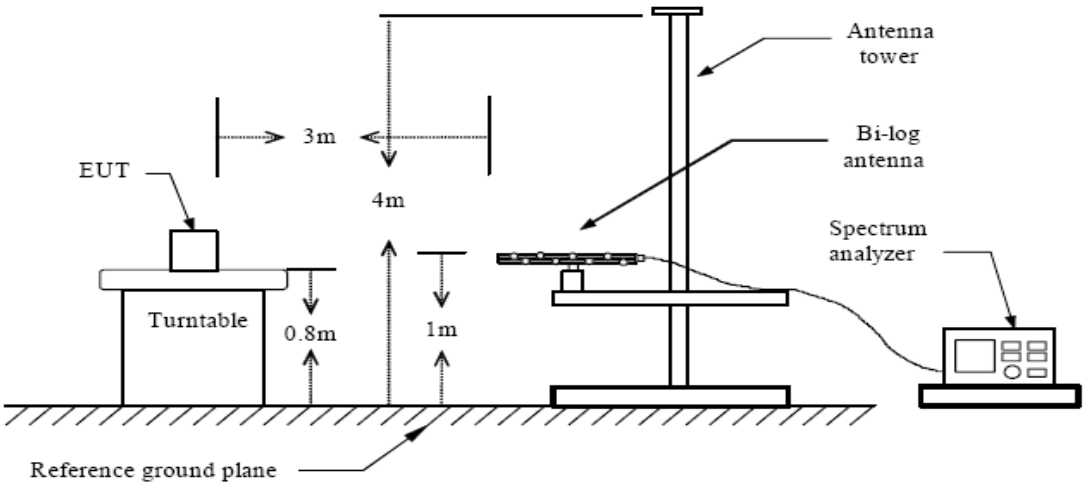
The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission were identified, the power of the emission was determined using the substitution method.

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

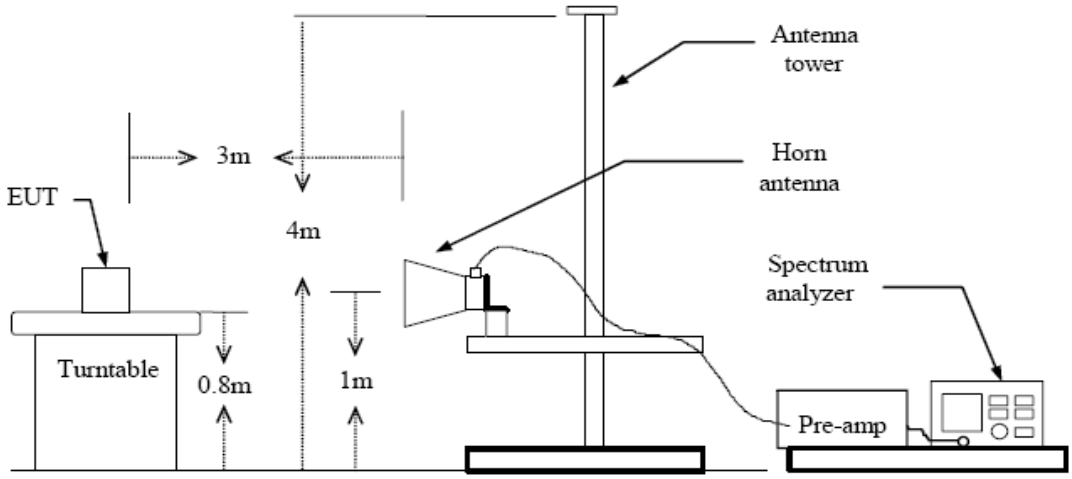
ERP = S.G. output (dBm) + Antenna Gain (dBd) – Cable (dB)

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

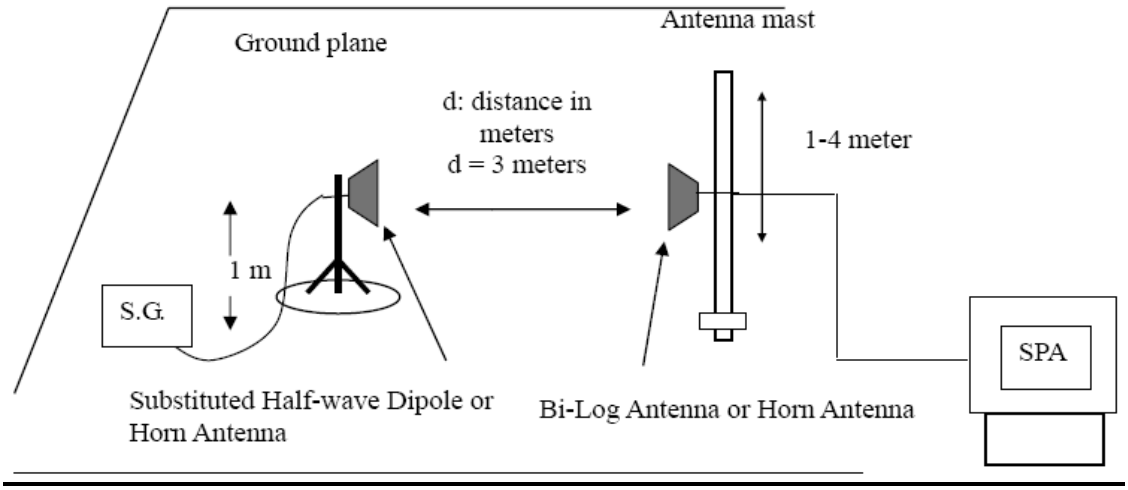
For radiated spurious emissions below 1GHz



For radiated spurious emissions above 1GHz



Substituted Method



5.5.4. Test Results

The worst test data as follow:
30MHz~10GHz

The Worst Test Result For GPRS 850, CH 128				
Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Polarity
80.60	-65.77	-13	-52.86	H
188.09	-74.51	-13	-63.50	H
698.74	-78.59	-13	-66.99	H
1780.53	-21.63	-13	-7.34	H
2498.68	-31.89	-13	-18.80	H
82.70	-65.24	-13	-54.01	V
187.79	-67.51	-13	-54.43	V
717.58	-74.49	-13	-63.10	V
1650.61	-24.66	-13	-12.37	V
2474.51	-41.47	-13	-28.25	V

The Worst Test Result For GPRS 850, CH 190				
Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Polarity
83.30	-65.67	-13	-52.52	H
181.81	-74.56	-13	-61.49	H
671.23	-80.08	-13	-66.40	H
1674.06	-21.97	-13	-10.89	H
2510.38	-31.76	-13	-17.62	H
81.96	-65.50	-13	-51.05	V
195.18	-66.92	-13	-53.40	V
468.16	-75.12	-13	-61.98	V
1671.14	-24.26	-13	-10.19	V
2510.56	-39.48	-13	-28.37	V

The Worst Test Result For GPRS 850, CH 251				
Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Polarity
91.06	-66.74	-13	-54.30	H
187.94	-73.51	-13	-61.14	H
721.11	-77.86	-13	-65.13	H
1599.03	-22.73	-13	-8.27	H
2559.49	-33.01	-13	-20.68	H
86.04	-67.21	-13	-55.54	V
191.24	-66.84	-13	-55.72	V
716.42	-77.36	-13	-65.48	V
1698.59	-27.76	-13	-13.37	V
2508.69	-38.57	-13	-24.38	V

30MHz~20GHz

The Worst Test Result For GPRS 1900, CH 512				
Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Polarity
73.61	-66.36	-13	-53.92	H
185.18	-73.87	-13	-62.50	H
691.07	-77.24	-13	-64.38	H
3649.88	-27.51	-13	-13.54	H
5435.21	-34.04	-13	-21.08	H
67.28	-66.87	-13	-52.69	V
168.27	-67.34	-13	-53.08	V
655.21	-79.07	-13	-67.91	V
3610.98	-27.31	-13	-13.34	V
5750.92	-35.29	-13	-23.09	V

The Worst Test Result For GPRS 1900, CH 661				
Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Polarity
88.07	-65.94	-13	-52.78	H
186.45	-75.44	-13	-62.83	H
641.05	-79.52	-13	-66.74	H
3818.54	-25.86	-13	-12.22	H
5730.70	-32.99	-13	-21.45	H
84.20	-67.77	-13	-54.79	V
194.39	-68.50	-13	-54.92	V
453.01	-77.72	-13	-63.73	V
3818.51	-28.16	-13	-15.73	V
5727.43	-34.41	-13	-21.64	V

The Worst Test Result For GPRS 1900, CH 810				
Frequency (MHz)	Emission Level (dBm)	Limit (dBm)	Margin (dB)	Polarity
103.40	-61.33	-13	-50.07	H
189.67	-73.47	-13	-59.73	H
668.58	-76.52	-13	-63.39	H
3810.04	-27.79	-13	-14.10	H
5728.96	-33.05	-13	-21.26	H
98.48	-60.41	-13	-46.24	V
186.82	-68.56	-13	-55.18	V
675.62	-73.84	-13	-62.91	V
3779.21	-29.15	-13	-16.39	V
5678.88	-34.49	-13	-20.21	V

Note: Only recorded the worst test data.

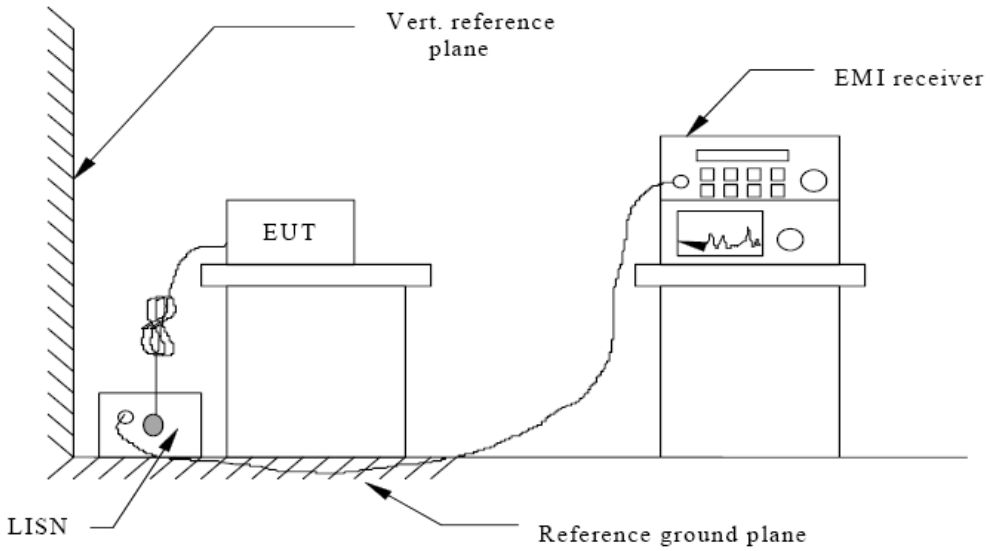
5.6. POWER LINE CONDUCTED EMISSIONS

5.6.1 Standard Applicable

According to§15.107 (a): For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolt (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

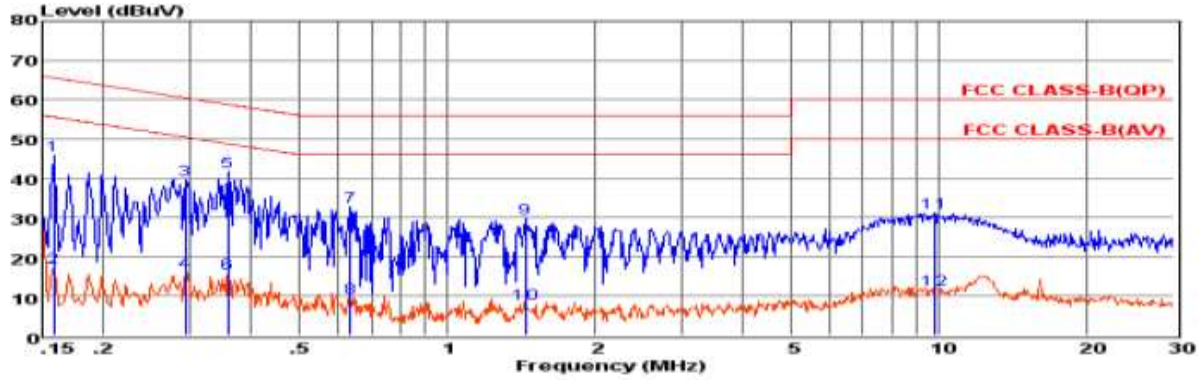
5.6.2 Block Diagram of Test Setup



5.6.3 Test Results

PASS.

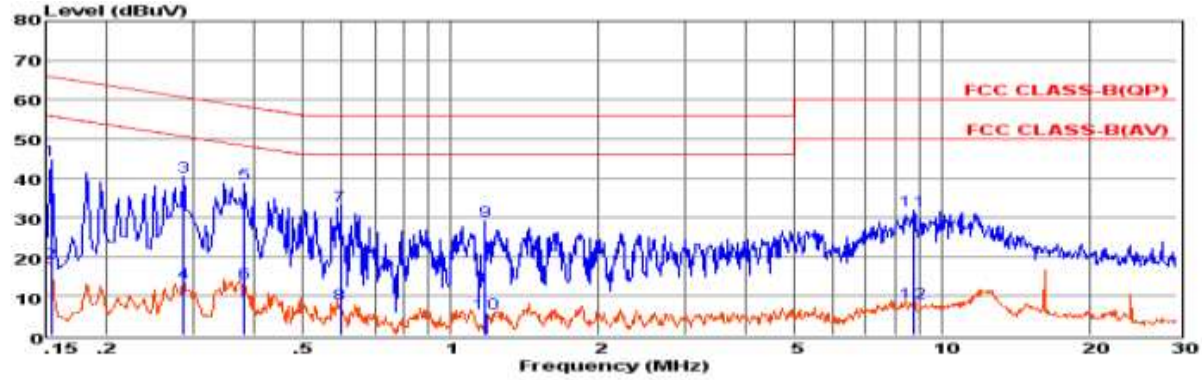
The test data please refer to following page.



Env. Ins: 24*/56%
EUT: GPS Tracker
M/N: TRKM002
Power Rating: AC 120V/60Hz
Test Mode: GPRS 850
Operator: DANNY
Memo:
Pol: LINE

	Freq	Reading	LisnFac	CabLos	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.16	36.13	9.58	0.02	45.73	65.56	-19.83	QP
2	0.16	7.53	9.58	0.02	17.13	55.56	-38.43	Average
3	0.29	30.00	9.63	0.03	39.66	60.41	-20.75	QP
4	0.29	6.51	9.63	0.03	16.17	50.41	-34.24	Average
5	0.36	31.89	9.62	0.03	41.54	58.78	-17.24	QP
6	0.36	6.09	9.62	0.03	15.74	48.78	-33.04	Average
7	0.63	22.90	9.63	0.04	32.57	56.00	-23.43	QP
8	0.63	-0.01	9.63	0.04	9.66	46.00	-36.34	Average
9	1.44	19.94	9.64	0.05	29.63	56.00	-26.37	QP
10	1.44	-1.61	9.64	0.05	8.08	46.00	-37.92	Average
11	9.81	21.33	9.69	0.08	31.10	60.00	-28.90	QP
12	9.81	1.84	9.69	0.08	11.61	50.00	-38.39	Average

Remarks: 1. Measured = Reading + Lisn Factor +Cable Loss.
2. The emission levels that are 20dB below the official limit are not reported.



Env. Ins: 24*/56%
EUT: GPS Tracker
M/N: TRKM002
Power Rating: AC 120V/60Hz
Test Mode: GPRS 850
Operator: DANNY
Memo:
Pol: NEUTRAL

	Freq	Reading	LisnFac	CabLos	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB	dBuV	dBuV	dB	
1	0.15	34.89	9.69	0.02	44.60	65.78	-21.18	QP
2	0.15	8.58	9.69	0.02	18.29	55.78	-37.49	Average
3	0.29	30.72	9.60	0.03	40.35	60.63	-20.28	QP
4	0.29	3.89	9.60	0.03	13.52	50.63	-37.11	Average
5	0.38	28.98	9.61	0.04	38.63	58.25	-19.62	QP
6	0.38	3.61	9.61	0.04	13.26	48.25	-34.99	Average
7	0.60	23.46	9.63	0.04	33.13	56.00	-22.87	QP
8	0.60	-1.51	9.63	0.04	8.16	46.00	-37.84	Average
9	1.18	19.34	9.63	0.05	29.02	56.00	-26.98	QP
10	1.18	-4.07	9.63	0.05	5.61	46.00	-40.39	Average
11	8.78	22.08	9.71	0.08	31.87	60.00	-28.13	QP
12	8.78	-1.43	9.71	0.08	8.36	50.00	-41.64	Average

Remarks: 1. Measured = Reading + Lisn Factor +Cable Loss.
2. The emission levels that are 20dB below the official limit are not reported.

Note: Pre-scan all mode and recorded the worst case results in this report (GPRS 850, Normal Link)

5.7. FREQUENCY STABILITY OVER TEMPERATURE AND VOLTAGE VARIATIONS

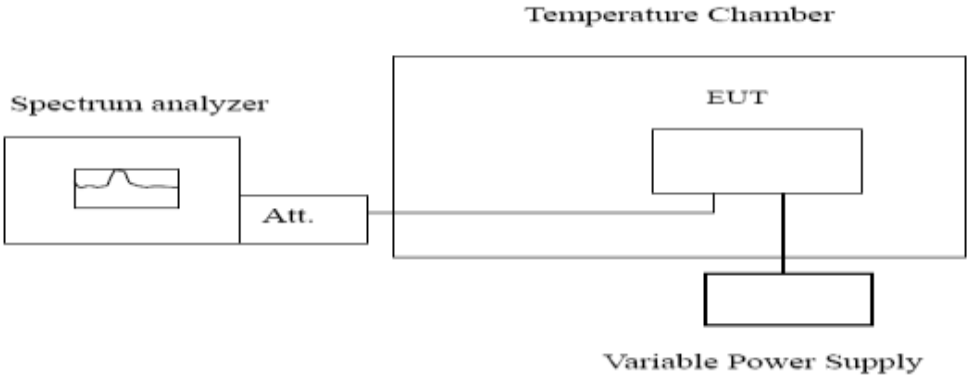
5.7.1. Standard Applicable

FCC §2.1055, §22.355 and §24.235, Frequency Tolerance: ±2.5ppm

5.7.2. Test Procedures

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20℃ operating frequency as reference frequency.

Turn EUT off and set the chamber temperature to –30℃. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10℃ increased per stage until the highest temperature of +50℃ reached.



5.7.3. Test Results

Pass

The worst test data as follow:

The Worst Test Result For GPRS 850, CH 190, f_O = 836.6MHz				
Temperature (℃)	Power Supplied (Vdc)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.7	-32	-0.03825	±2.5
-20		-33	-0.03945	±2.5
-10		-26	-0.03108	±2.5
0		-18	-0.02152	±2.5
10		-30	-0.03586	±2.5
20		-20	-0.02391	±2.5
30		-16	-0.01913	±2.5
40		-23	-0.02749	±2.5
50		-25	-0.02988	±2.5
25	4.07	-19	-0.02271	±2.5
25	3.33	-23	-0.02749	±2.5

The Worst Test Result For GPRS 1900, CH 661, f_O = 1880.0MHz				
Temperature (℃)	Power Supplied (Vdc)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
-30	3.7	18	0.00957	±2.5
-20		17	0.00904	±2.5
-10		21	0.01117	±2.5
0		18	0.00957	±2.5
10		19	0.01011	±2.5
20		24	0.01277	±2.5
30		21	0.01117	±2.5
40		17	0.00904	±2.5
50		26	0.01383	±2.5
25	4.07	29	0.01543	±2.5
25	3.33	24	0.01277	±2.5

6. LIST OF MEASURING EQUIPMENTS

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Cal Date	Due Date
EMC Receiver	R&S	ESCS 30	100174	9kHz – 2.75GHz	June 18,2013	June 17,2014
Signal analyzer	Agilent	E4448A(External mixers to 40GHz)	US44300469	9kHz~40GHz	July 16,2013	July 15,2014
LISN	MESS Tec	NNB-2/16Z	99079	9KHz-30MHz	June 18,2013	June 17,2014
LISN (Support Unit)	EMCO	3819/2NM	9703-1839	9KHz-30MHz	June 18,2013	June 17,2014
RF Cable-CON	UTIFLEX	3102-26886-4	CB049	9KHz-30MHz	June 18,2013	June 17,2014
ISN	SCHAFFNER	ISN ST08	21653	9KHz-30MHz	June 18,2013	June 17,2014
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30M-1GHz 3m	June 18,2013	June 17,2014
Amplifier	SCHAFFNER	COA9231A	18667	9kHz-2GHzz	June 18,2013	June 17,2014
Amplifier	Agilent	8449B	3008A02120	1GHz-26.5GHz	July 16,2013	July 15,2014
Amplifier	MITEQ	AMF-6F-260400	9121372	26.5GHz-40GHz	July 16,2013	July 15,2014
Spectrum Analyzer	Agilent	E4407B	MY41440292	9k-26.5GHz	July 16,2013	July 15,2014
Loop Antenna	R&S	HFH2-Z2	860004/001	9k-30MHz	June 18,2013	June 17,2014
By-log Antenna	SCHWARZBECK	VULB9163	9163-470	30MHz-1GHz	June 10,2013	June 09,2014
Horn Antenna	EMCO	3115	6741	1GHz-18GHz	June 10,2013	June 09,2014
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	15GHz-40GHz	June 10,2013	June 09,2014
RF Cable-R03m	Jye Bao	RG142	CB021	30MHz-1GHz	June 18,2013	June 17,2014
RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	1GHz-40GHz	June 18,2013	June 17,2014
Spectrum Meter	R&S	FSP 30	100023	9kHz-30GHz	July 16,2013	July 15,2014
Power Meter	R&S	NRVS	100444	DC-40GHz	June 18,2013	June 17,2014
Power Sensor	R&S	NRV-Z51	100458	DC-30GHz	June 18,2013	June 17,2014
Power Sensor	R&S	NRV-Z32	10057	30MHz-6GHz	June 18,2013	June 17,2014
AC Power Source	HPC	HPA-500E	HPA-9100024	AC 0~300V	June 18,2013	June 17,2014
DC power Soure	GW	GPC-6030D	C671845	DC 1V-60V	June 18,2013	June 17,2014
Temp. and Humidigy	Giant Force	GTH-225-20-S	MAB0103-00	N/A	June 18,2013	June 17,2014
RF CABLE-1m	JYE Bao	RG142	CB034-1m	20MHz-7GHz	June 18,2013	June 17,2014
RF CABLE-2m	JYE Bao	RG142	CB)35-2m	20MHz-1GHz	June 18,2013	June 17,2014
Vector signal Generator	R&S	SMU200A	102098	100kHz~6GHz	June 18,2013	June 17,2014
Signal Generator	R&S	SMR40	10016	10MHz~40GHz	July 16,2013	July 15,2014
Universal Radio Communication	R&S	CMU200	112012	N/A	July 18,2013	July 17,2014

Note: All equipment through GRGT EST calibration

7. MANUFACTURER/ APPROVAL HOLDER DECLARATION

The following identical model(s):

TRKM003	TRKM004	TRKM005	TRKM006
TRKM007	TRKM008	--	--

Belong to the tested device:

Product description : GPS Tracker

Model name : TRKM002

Remark: PCB board, structure and internal of these model(s) are the same,

So no additional models were tested.

----------THE END OF REPORT----------