



# PCTEST ENGINEERING LABORATORY, INC.

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<http://www.pctestlab.com>



## CERTIFICATE OF COMPLIANCE FCC Part 24 Certification

**Applicant Name:**  
MOTO-TEX INC  
2068 East 18 Street  
Brooklyn, NY 11229

**Date of Testing:**  
January 4 - 5, 2007  
**Test Site/Location:**  
PCTEST Lab., Columbia, MD. USA  
**Test Report Serial No.:**  
0611301083

<b>FCC ID:</b>	<b>UWQ-W6180</b>
<b>APPLICANT:</b>	<b>MOTO-TEX INC</b>

**Application Type:** Certification  
**FCC Classification:** PCS Licensed Transmitter Held to Ear (PCE)  
**FCC Rule Part(s):** §2; §24(E)  
**EUT Type:** PCS GSM/GPRS Phone  
**Model(s):** W6180  
**Tx Frequency Range:** 1850.20 - 1909.80MHz (PCS GSM)  
**Rx Frequency Range:** 1930.20 - 1989.80MHz (PCS GSM)  
**Max. RF Output Power:** 1.648 W EIRP PCS GSM (32.170 dBm)  
**Max. SAR Measurement:** 1.11 W/kg PCS GSM Head SAR; 0.894 W/kg PCS GPRS Body SAR  
**Emission Designator(s):** 292KGXW (PCS GSM)  
**Test Device Serial No.:** *identical prototype* [S/N: N/A]

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in §2.947.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

**Grant Conditions:** Power output listed is EIRP for Part 24. SAR compliance for body-worn operating configuration is based on a separation distance of 1.5 cm between the back of the unit and the body of the user. End-users must be informed of the body-worn operating requirements for satisfying RF exposure compliance. Belt clips or holsters may not contain metallic components. This device also contains functions that are not operational in U.S. Territories. This filing is only applicable to U.S. operations only.

PCTEST certifies that no party to this application has been denied the FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 862.


Randy Ortanez  
President



FCC ID: UWQ-W6180	<b>FCC Pt. 24 GSM/GPRS MEASUREMENT REPORT (CERTIFICATION)</b>		<b>MOTO-TEX</b>	<b>Reviewed by:</b> Quality Manager
<b>Test Report S/N:</b> 0611301083	<b>Test Dates:</b> January 4 - 5, 2007	<b>EUT Type:</b> PCS GSM/GPRS Phone		Page 1 of 26

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## MEASUREMENT REPORT



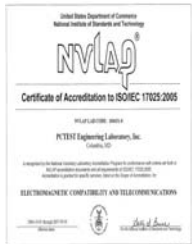
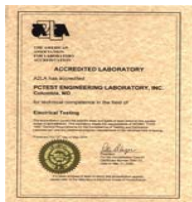
### FCC Part 24

#### A. §2.1033 General Information

**APPLICANT:** MOTO-TEX INC  
**APPLICANT ADDRESS:** 2068 East 18 Street  
 Brooklyn, NY 11229  
**TEST SITE:** PCTEST ENGINEERING LABORATORY, INC.  
**TEST SITE ADDRESS:** 6660-B Dobbin Road, Columbia, MD 21045 USA  
**FCC RULE PART(S):** §2; §24(E)  
**MODEL NAME:** W6180  
**FCC ID:** UWQ-W6180  
**FCC CLASSIFICATION:** PCS Licensed Transmitter Held to Ear (PCE)  
**EMISSION DESIGNATOR(S):** 292KGXW (PCS GSM)  
**MODE:** GSM/GPRS  
**FREQUENCY TOLERANCE:**  $\pm 0.00025\%$  (2.5 ppm)  
**Test Device Serial No.:** N/A ☐ Production ☒ Pre-Production ☐ Engineering  
**DATE(S) OF TEST:** January 4 - 5, 2007  
**TEST REPORT S/N:** 0611301083

#### A.1 Test Facility / Accreditations

Measurements were performed at PCTEST Engineering Lab located in Columbia, MD 21045, U.S.A.



- PCTEST facility is an FCC registered (PCTEST Reg. No. 90864) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules and Industry Canada (IC-2451).
- PCTEST Lab is accredited to ISO 17025 by U.S. National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP Lab code: 100431-0) in EMC, FCC and Telecommunications.
- PCTEST Lab is accredited to ISO 17025-2005 by the American Association for Laboratory Accreditation (A2LA) in Specific Absorption Rate (SAR) testing, Hearing Aid Compatibility (HAC) testing, CTIA Test Plans, and wireless testing for FCC and Industry Canada Rules.
- PCTEST Lab is a recognized U.S. Conformity Assessment Body (CAB) in EMC and R&TTE (n.b. 0982) under the U.S.-EU Mutual Recognition Agreement (MRA).
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC Guide 65 by the American National Standards Institute (ANSI) in all scopes of FCC Rules and Industry Canada Standards (RSS).
- PCTEST facility is an IC registered (IC-2451) test laboratory with the site description on file at Industry Canada.
- PCTEST is a CTIA Authorized Test Laboratory (CATL) for AMPS, CDMA, and EvDO wireless devices and for Over-the-Air (OTA) Antenna Performance testing for AMPS, CDMA, GSM, GPRS, EGPRS, UMTS (W-CDMA), CDMA 1xEVDO, and CDMA 1xRTT.

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## 1.0 INTRODUCTION

### 1.1 Measurement Procedure

The radiated spurious measurements were made outdoors at a 3-meter test range (see Figure 1-1). The equipment under test is placed on a wooden turntable 3-meters from the receive antenna. The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. This level is recorded. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic antenna are taken into consideration.

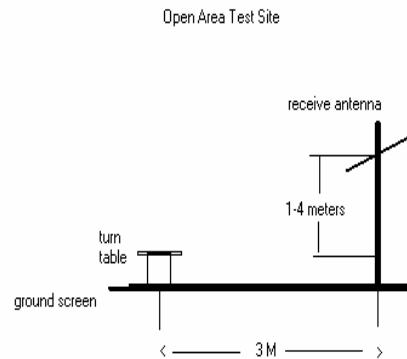


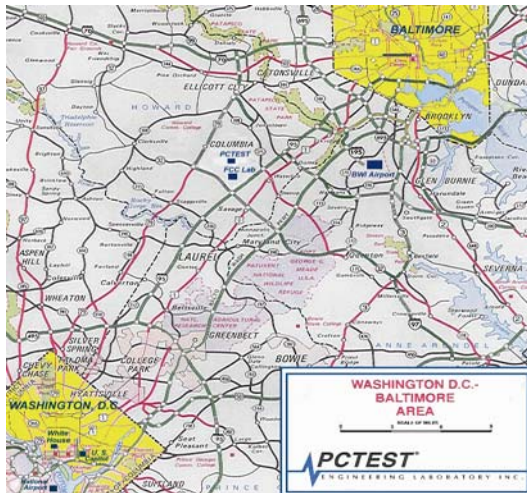
Figure 1-1. Diagram of 3-meter outdoor test range

Deviation from Measurement Procedure.....None

### 1.2 Scope

Measurement and determination of electromagnetic emissions (EME) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission.

### 1.3 Testing Facility



These measurement tests were conducted at PCTEST Engineering Laboratory, Inc. facility in New Concept Business Park, Guilford Industrial Park, Columbia, Maryland. The site address is 6660-B Dobbin Road, Columbia, MD 21045. The test site is one of the highest points in the Columbia area with an elevation of 390 feet above mean sea level. The site coordinates are 39° 11'15" N latitude and 76° 49'38" W longitude. The facility is 1.5 miles North of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. There are no FM or TV transmitters within 15 miles of the site. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2003 on January 27, 2006 and Industry Canada.

Figure 1-3. Map of the Greater Baltimore and Metropolitan Washington, D.C. area.

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## 2.0 PRODUCT INFORMATION

### 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Moto-Tex PCS GSM/GPRS Phone W6180**. The EUT consisted of the following component(s):

**FCC ID: UWQ-**


Manufacturer / Description	FCC ID	Serial Number
Moto-Tex PCS GSM/GPRS Phone	UWQ-W6180	N/A

Table 2-1. EUT Equipment Description

### 2.2 EMI Suppression Device(s)/Modifications

EMI suppression device(s) added and/or modifications made during testing.

- None

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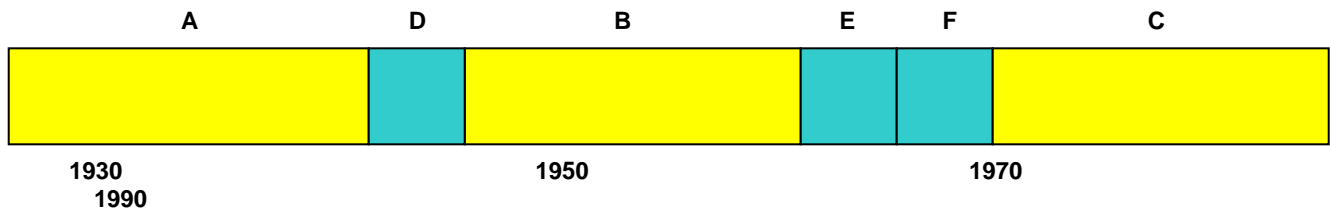
## 3.0 DESCRIPTION OF TESTS

### 3.1 Occupied Bandwidth Emission Limits

#### §2.1049, 24.238(a)

- On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) by at least  $43 + 10 \log(P)$  dB.
- Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emission are attenuated at least 26 dB below the transmitter power.
- When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the licensee's frequency block edges, both upper and lower, as the design permits.
- The measurement of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power.

### 3.2 PCS - Base Frequency Blocks



BLOCK 1: 1930 – 1945 MHz (A)

BLOCK 4: 1965 – 1970 MHz (E)

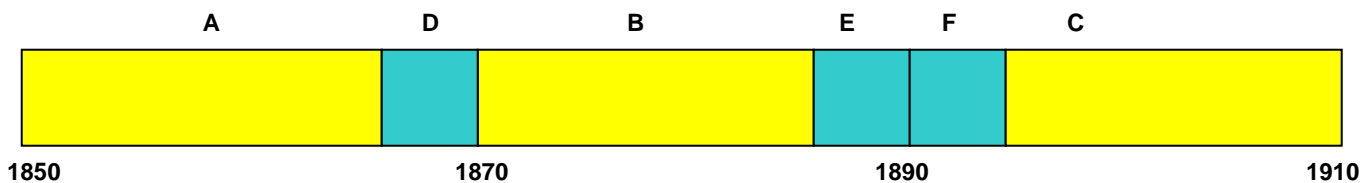
BLOCK 2: 1945 – 1950 MHz (D)

BLOCK 5: 1970 – 1975 MHz (F)

BLOCK 3: 1950 – 1965 MHz (B)

BLOCK 6: 1975 – 1990 MHz (C)

### 3.3 PCS - Mobile Frequency Blocks



BLOCK 1: 1850 – 1865 MHz (A)

BLOCK 4: 1885 – 1890 MHz (E)

BLOCK 2: 1865 – 1870 MHz (D)

BLOCK 5: 1890 – 1895 MHz (F)

BLOCK 3: 1870 – 1885 MHz (B)

BLOCK 6: 1895 – 1910 MHz (C)

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### **3.4 Spurious and Harmonic Emissions at Antenna Terminal**

**§2.1051, 24.238(a); RSS-133 (6.5.1)**

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10<sup>th</sup> harmonic.

### **3.5 Radiated Spurious and Harmonic Emissions**

**§2.1053, 24.238(a); RSS-133 (6.5.1(i))**

Spurious and harmonic radiated emissions are measured outdoors at our 3-meter test range. The equipment under test is placed on a wooden turntable 3-meters from the receive antenna. The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10<sup>th</sup> harmonic. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator with the level of the signal generator being adjusted to obtain the same receive spectrum analyzer reading. This level is recorded. For readings above 1 GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration. This device was tested using a Power Control Level of "0" in the PCS Band.

### **3.6 Frequency Stability / Temperature Variation**

**§2.1055, 24.235; RSS-133 (6.3)**

The frequency stability of the transmitter is measured by:

- a.) **Temperature:** The temperature is varied from -30°C to +50°C in 10°C increments using an environmental chamber.
- b.) **Primary Supply Voltage:** The primary supply voltage is varied from 85% to 115% of the nominal value for non hand-carried battery equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

*Specification – The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within  $\pm 0.00025\%$  ( $\pm 2.5$  ppm) of the center frequency.*

#### **Time Period and Procedure:**

1. The carrier frequency of the transmitter and the individual oscillators is measured at room temperature (20°C to provide a reference).
2. The equipment is subjected to an overnight "soak" at -30°C without any power applied.
3. After the overnight "soak" at -30°C (usually 14-16 hours) the equipment is turned on in a "standby" condition for one minute before applying power to the transmitter. Measurement of the carrier frequency of the transmitter and the individual oscillators is made within one minute after applying power to the transmitter.
4. Frequency measurements are made at 10°C intervals ranging from -30°C to +50°C. At least a period of one half-hour is provided to allow stabilization of the equipment at each temperature level.

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## 4.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST).

Manufacturer	Model / Equipment	Calibration Date	Cal Interval	Calibration Due	Serial No.
Agilent	E4404B/E4407B ESA Spectrum Analyzer	04/20/06	Annual	04/20/07	US39210313
Agilent	E5515C Wireless Communications Test Set	07/27/06	Annual	07/27/07	GB41450275
Agilent	E5515C Wireless Communications Test Set	10/06/06	Annual	10/06/07	GB43193972
Agilent	E4432B ESG-D Series Signal Generator	08/08/06	Annual	08/08/07	US40053896
Agilent	8648D (9kHz-4GHz) Signal Generator	10/01/06	Annual	10/01/07	3613A00315
EMCO	Model 3115 (1-18GHz) Horn Antenna	08/24/06	Biennial	08/23/08	9203-2178
EMCO	Model 3115 (1-18GHz) Horn Antenna	08/25/06	Biennial	08/24/08	9704-5182
Gigatronics	8657A Universal Power Meter	04/07/06	Annual	04/07/07	8650319
Gigatronics	80701A (0.05-18GHz) Power Sensor	04/11/06	Annual	04/11/07	1833460
Rohde & Schwarz	NRVS Power Meter	06/01/05	Biennial	06/01/07	835360/079
Rohde & Schwarz	NRV-Z53 Power Sensor	06/01/05	Biennial	06/01/07	846076/007
Rohde & Schwarz	CMU200 Base Station Simulator	11/08/06	Annual	11/08/07	107826
Rohde & Schwarz	CMU200 Base Station Simulator	07/26/06	Annual	07/26/07	833855/010
Rohde & Schwarz	CMU200 Base Station Simulator	04/20/06	Annual	04/20/07	836371/079
Agilent	HP 8566B (100Hz-22GHz)	12/21/06	Annual	12/21/07	3638A08713
Agilent	E4448A (3Hz-50GHz)	09/22/06	Annual	09/22/07	US42510244
Agilent	E8257D (250kHz-20GHz) Signal Generator	02/11/06	Annual	02/11/07	MY45470194
Agilent	E8257D (250kHz-20GHz) Signal Generator	03/30/06	Annual	03/30/07	MY44320964
Gigatronics	8651A (50MHz-18GHz)	07/28/06	Annual	07/28/07	1834052
Gigatronics	80701A (0.05-18GHz) Power Sensor	08/04/06	Annual	08/04/07	1835299
Agilent	HP 85650A Quasi-Peak Adapter	12/21/06	Annual	12/21/07	2043A00301
Agilent	HP 8449B (1-26.5GHz) Pre-Amplifier	12/12/06	Annual	12/12/07	3008A00985
Agilent	HP 11713A Attenuation/Switch Driver	12/12/06	Annual	12/12/07	N/A
Agilent	HP 85685A (20Hz-2GHz) Preselector	12/12/06	Annual	12/12/07	N/A
Agilent	HP 8566B Opt. 462 Impulse Bandwidth	12/12/06	Annual	12/12/07	3701A22204
EMCO	3115 (1-18GHz) Horn Antenna	04/04/05	Biennial	04/04/07	9205-3874
Compliance Design	A100 Roberts Dipoles	08/31/05	Biennial	08/31/07	5118
EMCO	Dipole Pair	09/21/06	Biennial	09/20/08	23951
SOLAR	8012-50 LISN (2)	11/18/05	Biennial	11/18/07	0313233, 0310234
Agilent	HP 8901A Modulation Analyzer	06/05/06	Annual	06/05/07	2432A03467
Agilent	HP 8903 B Audio Analyzer	06/01/06	Annual	06/01/07	3011A09025
K & L	11SH10 Band Pass Filter	N/A	Annual	N/A	1300/4000
K & L	11SH10 Band Pass Filter	N/A	Annual	N/A	4000/12000
Agilent	HP 8495A (0-70dB) DC-4GHz Attenuator	N/A		N/A	N/A
-	263-10dB (DC-18GHz) 10 dB Attenuator	N/A		N/A	N/A
Pasternack	PE2208-6 Bidirectional Coupler	N/A		N/A	N/A
-	No.165 (30MHz - 1000MHz) RG58 Coax Cable	N/A		N/A	N/A
-	No.166 (1000-26500MHz) Microwave RF Cable	N/A		N/A	N/A
-	No.167 (100kHz - 100MHz) RG58 Coax Cable	N/A		N/A	N/A

Table 4-1. Test Equipment

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## 5.0 SAMPLE CALCULATIONS

### Emission Designator

**Emission Designator = 250KGXW**

GSM BW = 250 kHz

G = Phase Modulation


X = Cases not otherwise covered

W = Combination (Audio/Data)

### Spurious Radiated Emission - PCS Band

**Example: Channel 512 PCS Mode 2<sup>nd</sup> Harmonic (3700.40 MHz)**

The receive analyzer reading at 3 meters with the EUT on the turntable was -81.0 dBm. The gain of the substituted antenna is 8.1 dBi. The signal generator connected to the substituted antenna terminals is adjusted to produce a reading of -81.0 dBm on the receive analyzer. The loss of the cable between the signal generator and the terminals of the substituted antenna is 2.0 dB at 3700.40 MHz. So 6.1 dB is added to the signal generator reading of -30.9 dBm yielding -24.80 dBm. The fundamental EIRP was 25.501 dBm so this harmonic was 25.501 dBm - (-24.80) = 50.3 dBc.

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## 6.0 TEST RESULTS

### Summary


The intentional radiator has been tested in a simulated typical installation to demonstrate compliance with the relevant FCC performance and procedural standards. The radio was transmitting at full power on the specified channels. The channels tested are high, middle and low of the allocated bands. Final system data was gathered in a mode that tended to maximize emissions by varying the orientation of the EUT, orientation of power and I/O cabling, antenna search height, and antenna polarization. This device was tested using a Power Control Level of "0" in the PCS Band.

Method/System: PCS Licensed Transmitter Held to Ear (PCE)

Mode(s): GSM/GPRS

FCC Part Section(s)	RSS Section	Test Description	Test Limit	Test Condition	Test Result
<b>TRANSMITTER MODE (TX)</b>					
2.1049, 24.238(a)	N/A	Occupied Bandwidth	N/A	CONDUCTED	N/A
2.1051, 24.238(a)	RSS-133 (6.5.1)	Band Edge / Conducted Spurious Emissions	< 43 + log <sub>10</sub> (P[Watts]) at Band Edge / for all out-of-band emissions		PASS
2.1046	N/A	Transmitter Conducted Output Power	N/A		N/A
24.232(c)	RSS-133 (6.4) [SRSP-510 (5.1.2)]	Equivalent Isotropic Radiated Power	< 2 Watts max. EIRP	RADIATED	PASS
2.1053, 24.238(a)	RSS-133 (6.5.1)	Undesirable Emissions	< 43 + log <sub>10</sub> (P[Watts]) for all out-of-band emissions		PASS
2.1055, 24.235	RSS-133 (6.3)	Frequency Stability	< 2.5 ppm		PASS
<b>RECEIVER MODE (RX)</b>					
15.107	RSS-Gen (7.2.2)	AC Conducted Emissions 150kHz – 30MHz	< FCC 15.207 limits or < RSS-Gen table 2 limits	LINE CONDUCTED	PASS
15.109	RSS-133(6.7(a) / [RSS-Gen (7.2.2)] / RSS-210 (7.3)	General Field Strength Limits (Restricted Bands and Radiated Emissions Limits)	< FCC 15.209 limits or < RSS-210 table 3 limits	RADIATED (30MHz-1GHz) (1-25 GHz)	PASS
<b>RF EXPOSURE (SAR)</b>					
2.1093	RSS-102	SAR Test or MPE	1.6 W/kg (SAR Limit)	3 Channels	PASS

**Table 6-1. Summary of Test Results**

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## 6.1 Conducted Output Power

### §2.1046

A base station simulator (Rhode and Schwartz Model: CMU200) was used to establish communication with the **Moto-Tex PCS GSM/GPRS Phone**. The base station simulator parameters were set to produce the maximum power from the EUT. This device was tested using a Power Control Level of "0" in the PCS Band. The powers are reported below.

Band	Channel	GSM / GPRS	
		Power Control Level	Conducted Power
			[dBm]
PCS	512	0	29.56
	661	0	29.44
	810	0	28.63

Table 6-2. GSM Conducted Output Powers

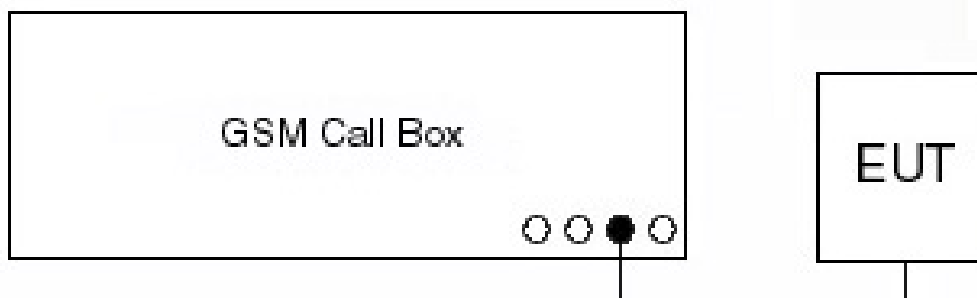



Figure 6-1. GSM Conducted Power Test Setup Diagram

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## 6.2 Equivalent Isotropic Radiated Power Output Data

§24.232(c); RSS-133 (6.4) [SRSP-510 (5.1.2)]

### Radiated measurements at 3 meters

Supply Voltage: 3.7 VDC

Modulation: PCS GSM

FREQ. (MHz)	REF. LEVEL (dBm)	Mode	POL (H/V)	Azimuth (o angle)	EIRP (dBm)	EIRP (W)	Battery
1850.20	-12.071	GSM	H	95	31.010	1.262	Standard
1880.00	-11.081	GSM	H	95	32.170	1.648	Standard
1909.80	-12.771	GSM	H	95	30.650	1.162	Standard


Table 6-3. Equivalent Isotropic Radiated Power Output Data

### NOTES:

Equivalent Isotropic Radiated Power Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For CDMA signals, a peak detector is used, with RBW = VBW = 3 MHz. For WCDMA signals, a peak detector is used, with RBW = VBW = 5 MHz. For AMPS, GSM, and NADC TDMA signals, a peak detector is used, with RBW = VBW = 1 MHz. A Horn antenna was substituted in place of the EUT. This Horn antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminals of the Horn antenna is measured. The difference between the gain of the horn and an isotropic antenna is taken into consideration and the EIRP is recorded.

This device was tested using a Power Control Level of "0" in the PCS Band. This unit was tested with its standard battery.

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### 6.3 PCS GSM Radiated Measurements

§2.1053, 24.238(a); RSS-133 (6.5.1)

#### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1850.20 MHz  
 CHANNEL: 512  
 MEASURED OUTPUT POWER: 32.170 dBm = 1.648 W  
 MODULATION SIGNAL: GSM  
 DISTANCE: 3 meters  
 LIMIT:  $43 + 10 \log_{10}(W) =$  45.17 dBc

FREQ. (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
3700.40	-74.20	6.10	-68.10	H	100.3
5550.60	-69.05	6.70	-62.35	H	94.5
7400.80	-62.37	6.80	-55.57	H	87.7
9251.00	-85.68	6.50	-79.18	H	111.3
11101.20	-84.38	7.00	-77.38	H	109.5


Table 6-4. Radiated Spurious Data (PCS GSM Mode – Ch. 512)

#### NOTES:

Radiated Spurious Emission Measurements by Substitution Method  
 according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For CDMA signals, a peak detector is used, with RBW = VBW = 3 MHz. For WCDMA signals, a peak detector is used, with RBW = VBW = 5 MHz. For AMPS, GSM, and NADC TDMA signals, a peak detector is used, with RBW = VBW = 1 MHz. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. This spurious level is recorded. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This device was tested using a Power Control Level of "0" in the PCS Band.  
 This unit was tested with its standard battery.

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## PCS GSM Radiated Measurements (Cont'd)

§2.1053, 24.238(a); RSS-133 (6.5.1)

### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1880.00 MHz  
CHANNEL: 661  
MEASURED OUTPUT POWER: 32.170 dBm = 1.648 W  
MODULATION SIGNAL: GSM  
DISTANCE: 3 meters  
LIMIT:  $43 + 10 \log_{10}(W) =$  45.17 dBc

FREQ. (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
3760.00	-77.25	6.10	-71.15	H	103.3
5640.00	-62.03	6.70	-55.33	H	87.5
7520.00	-60.92	6.80	-54.12	H	86.3
9400.00	-85.78	6.50	-79.28	H	111.4
11280.00	-83.78	7.00	-76.78	H	108.9

Table 6-5. Radiated Spurious Data (PCS GSM Mode – Ch. 661)

#### NOTES:

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For CDMA signals, a peak detector is used, with RBW = VBW = 3 MHz. For WCDMA signals, a peak detector is used, with RBW = VBW = 5 MHz. For AMPS, GSM, and NADC TDMA signals, a peak detector is used, with RBW = VBW = 1 MHz. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. This spurious level is recorded. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This device was tested using a Power Control Level of "0" in the PCS Band.  
This unit was tested with its standard battery.

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## PCS GSM Radiated Measurements (Cont'd)

§2.1053, 24.238(a); RSS-133 (6.5.1)

### Field Strength of SPURIOUS Radiation

OPERATING FREQUENCY: 1909.80 MHz  
CHANNEL: 810  
MEASURED OUTPUT POWER: 32.170 dBm = 1.648 W  
MODULATION SIGNAL: GSM  
DISTANCE: 3 meters  
LIMIT:  $43 + 10 \log_{10} (W) =$  45.17 dBc

FREQ. (MHz)	LEVEL @ ANTENNA TERMINALS (dBm)	SUBSTITUTE ANTENNA GAIN (dBd)	CORRECT GENERATOR LEVEL (dBm)	POL (H/V)	(dBc)
3819.60	-76.19	6.10	-70.09	H	102.3
5729.40	-56.57	6.70	-49.87	H	82.0
7639.20	-59.65	6.80	-52.85	H	85.0
9549.00	-85.68	6.50	-79.18	H	111.3
11458.80	-83.98	7.00	-76.98	H	109.1

Table 6-6. Radiated Spurious Data (PCS GSM Mode – Ch. 810)

#### NOTES:

Radiated Spurious Emission Measurements by Substitution Method according to ANSI/TIA/EIA-603-C-2004, Aug. 17, 2004:

The EUT was placed on a wooden turn table 3-meters from the receive antenna. The receive antenna height and turntable rotation was adjusted for the highest reading on the receive spectrum analyzer. For CDMA signals, a peak detector is used, with RBW = VBW = 3 MHz. For WCDMA signals, a peak detector is used, with RBW = VBW = 5 MHz. For AMPS, GSM, and NADC TDMA signals, a peak detector is used, with RBW = VBW = 1 MHz. A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. This spurious level is recorded. For readings above 1GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn and an isotropic or dipole antenna are taken into consideration.

This device was tested using a Power Control Level of "0" in the PCS Band.  
This unit was tested with its standard battery.

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## 6.4 PCS GSM Frequency Stability Measurements

§2.1055, 24.235; RSS-133 (6.3)

OPERATING FREQUENCY: 1,880,000,000 Hz

CHANNEL: 661


REFERENCE VOLTAGE: 3.7 VDC

DEVIATION LIMIT: ± 0.00025 % or 2.5 ppm

VOLTAGE (%)	POWER (VDC)	TEMP (°C)	FREQ. (Hz)	Freq. Dev. (Hz)	Deviation (%)
100 %	3.70	+ 20 (Ref)	1,880,000,000	0.00	0.000000
100 %		- 30	1,879,999,831	-169.20	-0.000009
100 %		- 20	1,879,999,906	-94.00	-0.000005
100 %		- 10	1,879,999,962	-37.60	-0.000002
100 %		0	1,879,999,868	-131.60	-0.000007
100 %		+ 10	1,879,999,774	-225.60	-0.000012
100 %		+ 20	1,880,000,150	150.40	0.000008
100 %		+ 25	1,879,999,868	-131.60	-0.000007
100 %		+ 30	1,879,999,756	-244.40	-0.000013
100 %		+ 40	1,879,999,718	-282.00	-0.000015
100 %		+ 50	1,880,000,019	18.80	0.000001
115 %	4.26	+ 20	1,880,000,056	56.40	0.000003
BATT. ENDPOINT	3.49	+ 20	1,880,000,113	112.80	0.000006

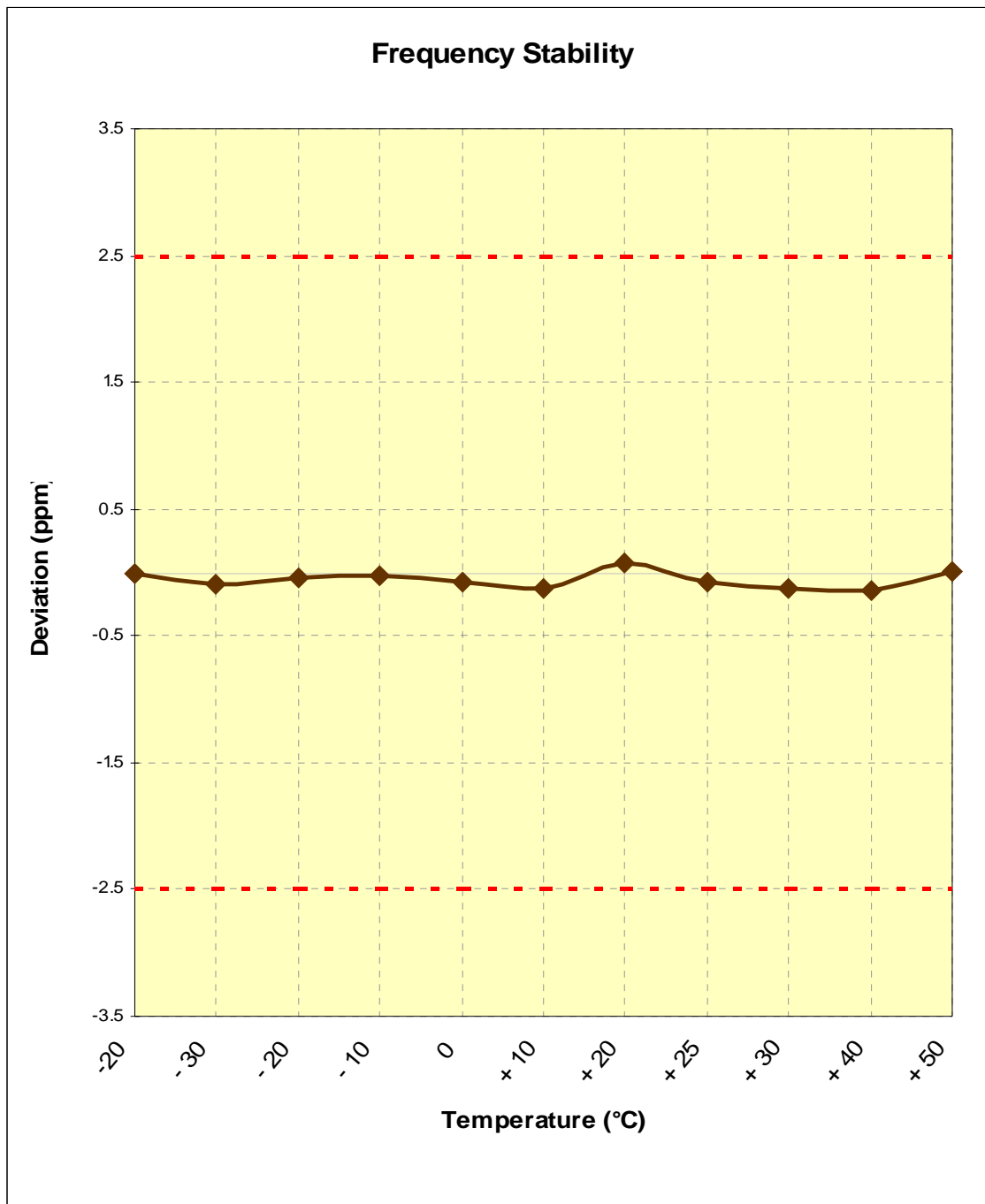
Table 6-7. Frequency Stability Data (PCS GSM Mode – Ch. 661)

**Note:** This unit was tested with its standard battery.

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## PCS GSM Frequency Stability Measurements (Cont'd)

§2.1055, 24.235; RSS-133 (6.3)

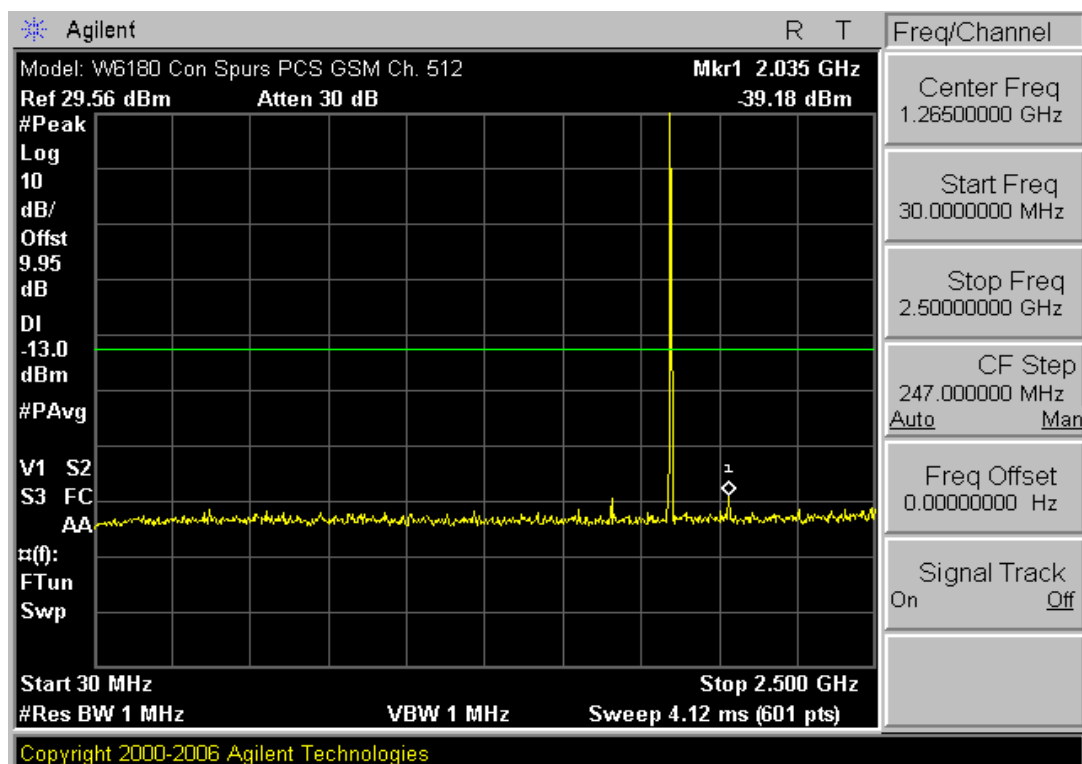


**Plot 6-1. Frequency Stability Graph (PCS GSM Mode – Ch. 661)**

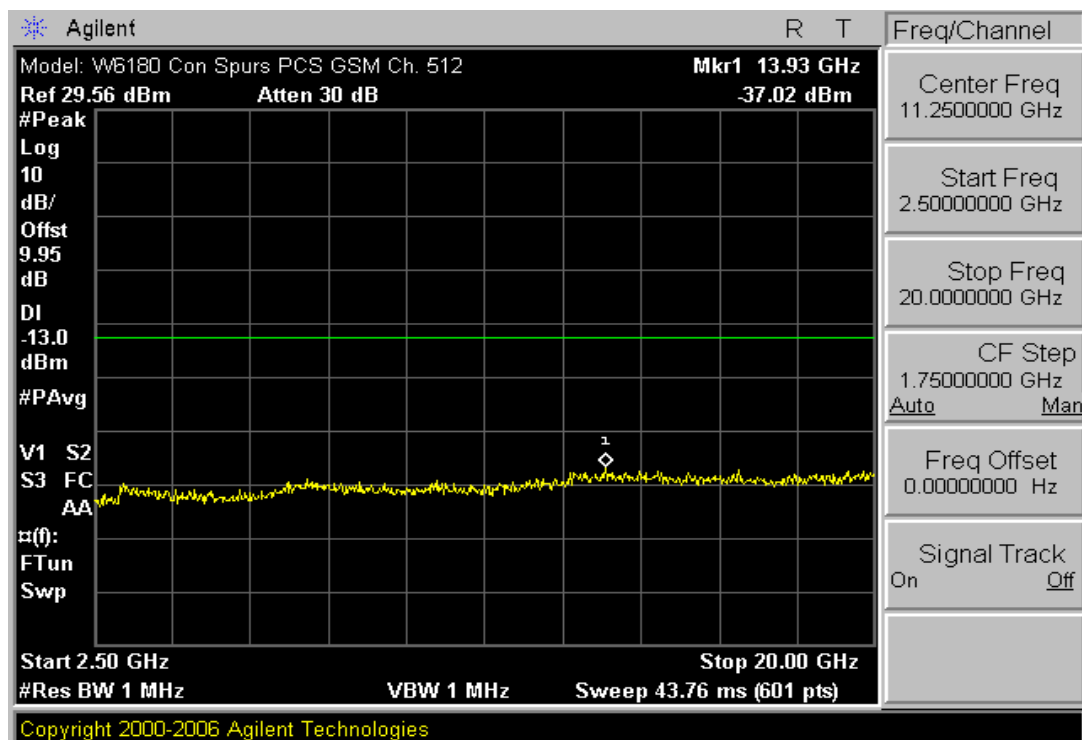
**Note:** This unit was tested with its standard battery.

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## 7.0 PLOTS OF EMISSIONS

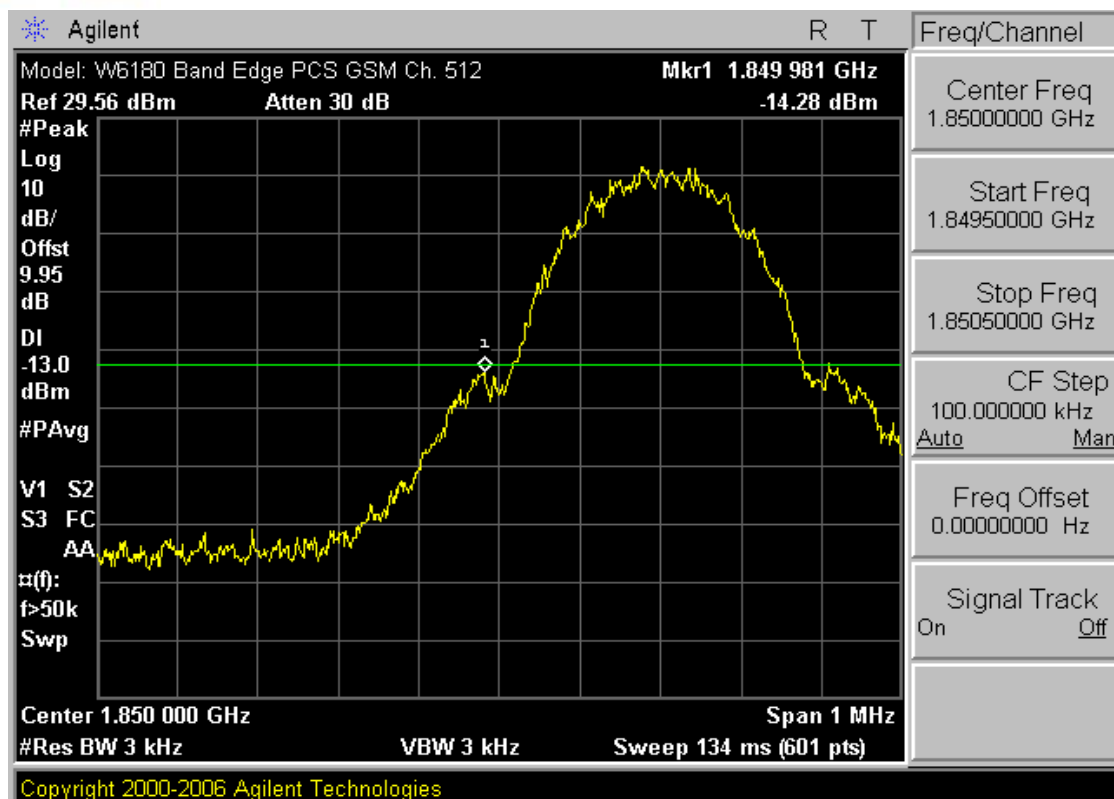


Plot 7-1. Conducted Spurious Plot (PCS GSM Mode – Ch. 512)

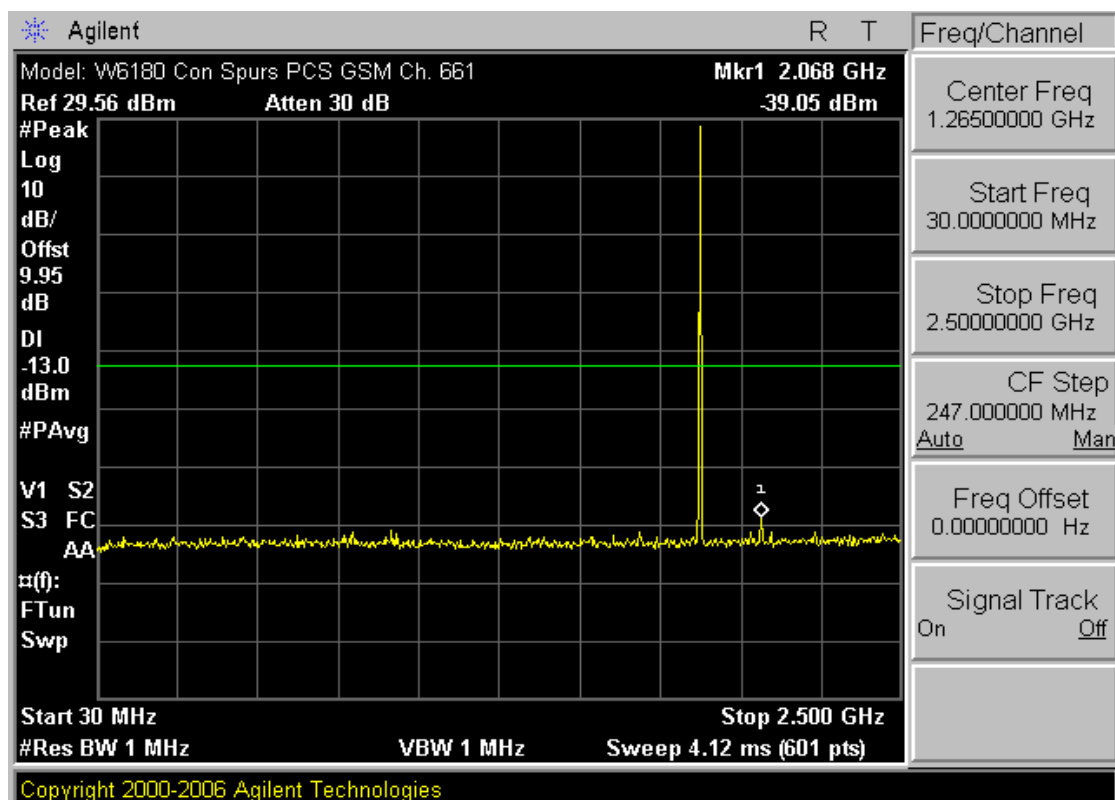


Plot 7-2. Conducted Spurious Plot (PCS GSM Mode – Ch. 512)


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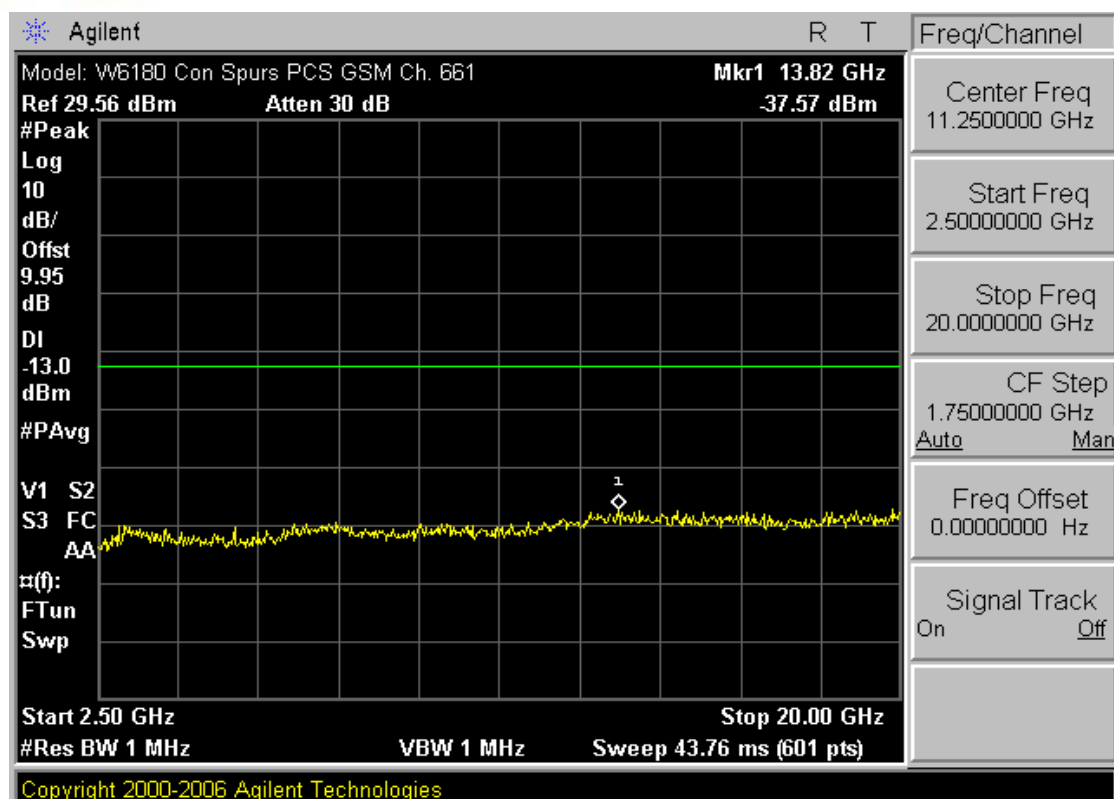


Plot 7-3. Band Edge Plot (PCS GSM Mode – Ch. 512)

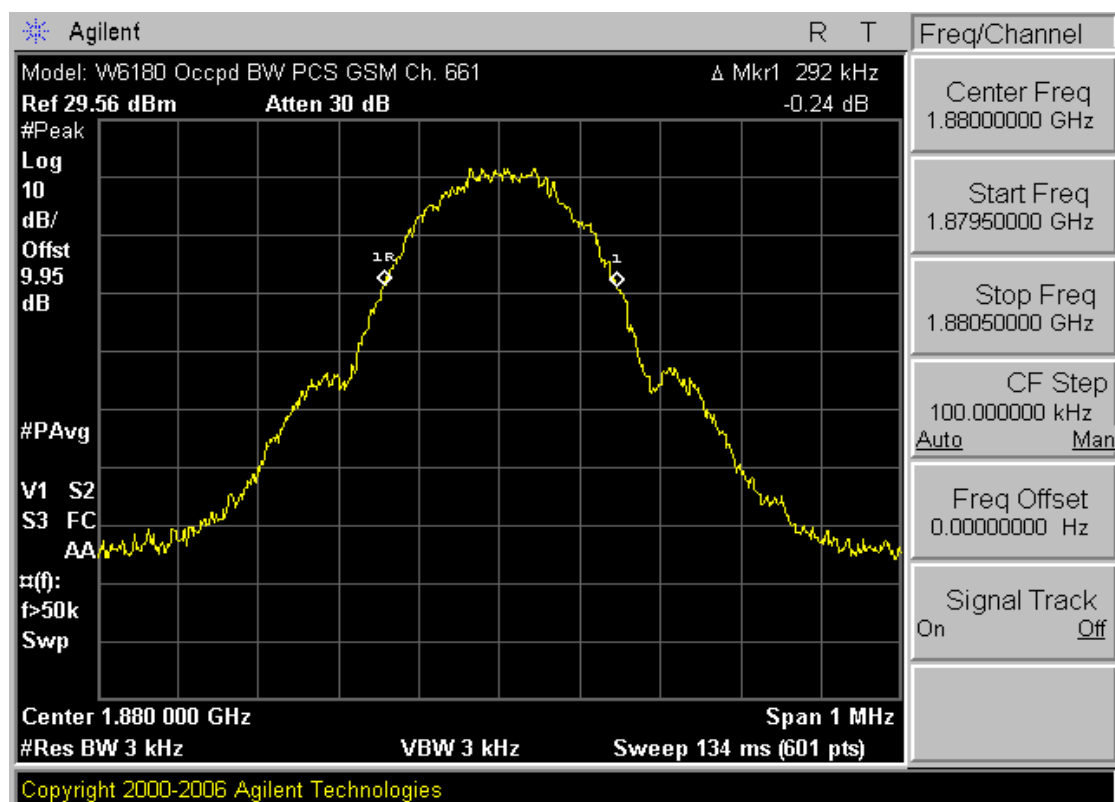


Plot 7-4. Conducted Spurious Plot (PCS GSM Mode – Ch. 661)


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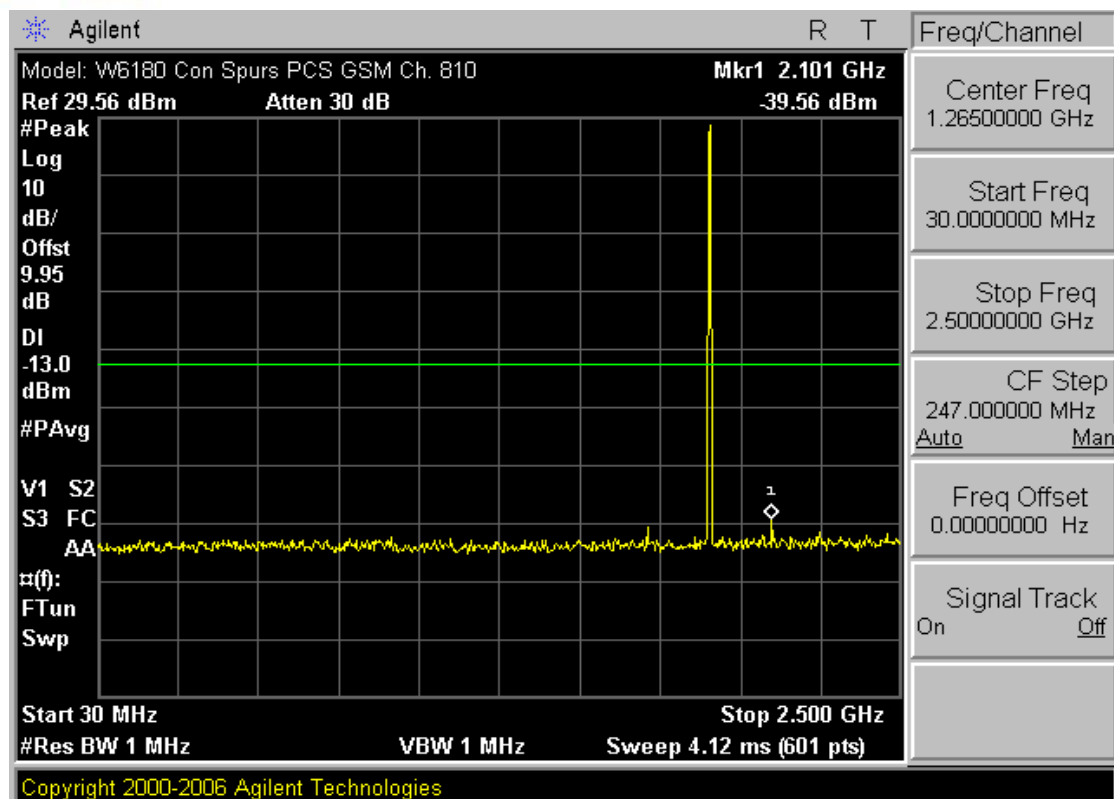


Plot 7-5. Conducted Spurious Plot (PCS GSM Mode – Ch. 661)

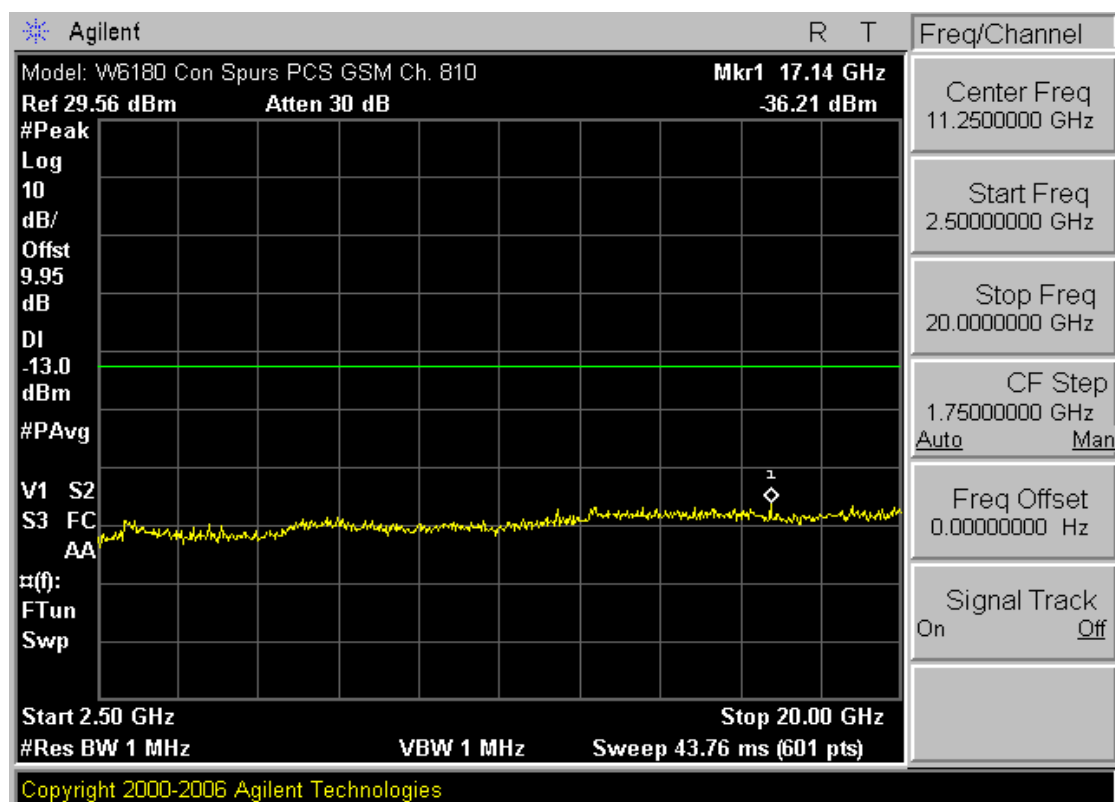


Plot 7-6. Occupied Bandwidth Plot (PCS GSM Mode – Ch. 661)


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Plot 7-7. Conducted Spurious Plot (PCS GSM Mode – Ch. 810)




Plot 7-8. Conducted Spurious Plot (PCS GSM Mode – Ch. 810)

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Plot 7-9. Band Edge Plot (PCS GSM Mode – Ch. 810)


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## 8.0 CONCLUSION


The data collected shows that the **Moto-Tex PCS GSM/GPRS Phone W6180** complies with all the requirements of Parts 2 and 24 of the FCC rules.

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## EXHIBIT A – TEST SETUP PHOTOGRAPHS

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## EXHIBIT B – INTERNAL PHOTOGRAPHS

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## EXHIBIT C – EXTERNAL PHOTOGRAPHS

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