TEST REPORT

SUBMITTED MEASURED DATA INDEX

EXHIBIT 6A RF Output Power

Exhibit Summary:

Exhibit 6A contains both average and peak output powers for the mobile station. In all cases, the peak output power is within the required mask (this mask is specified in the JTC standards, TIA PN3389 Vol. 1, Chap. 7, and is not an FCC requirement).

Contents:

Method of Measurement
Measurement Limit
Average Output Powers
EIRP

Method of Measurement:

1. Setup the mobile station for maximum output power with pseudo random data modulation.

2. Use HP 8991A Peak Power Analyzer to obtain peak and average output power levels.

3. Repeat measurements for carrier frequencies at 1850.2 MHz, 1880 MHz, and 1909.8 MHz. Channels 512, 661, and 810 respectively (bottom, middle, and top of operational frequency range).

Measurement Limits:

Power Step	Nominal Peak Output Power (dBm)	Tolerance (dB)
0	29.00	+/- 1.0

Conducted Power Measurements:

Frequency (MHz)	Power Step	Peak Output Power (dBm)	Average Output Power (dBm)
1850.2	0	29.05	20.53
1880	0	29.1	20.57
1909.8	0	29.02	20.51

EXHIBIT 6B EIRP Test

The phone was tested in a 16' cubical anechoic chamber with a 2-axis position system that permits taking complete spherical scans of the AUT's radiation patterns. For all tests, the phone was supported in a free-space type environment, vertically oriented in the chamber. Tests were done on three PCS frequencies (1850.2, 1880.0 and 1909.8 Mhz) with antenna fixed.

GSM measurements were made with the phone placed in a call using the HP8922M mobile station test set. The phone was weakly coupled to the test set and configured to transmit in full data rate mode, with a nominal output power setting of 29.5 dBm for 1900. Radiated power was measured at every 15 degree step from theta=0 to 165 degrees and phi=0 to 360 degrees. The radiated power was measured using a Gigatronics 8542C power meter in "Burst Avg" mode. From these measurements, the software calculates the angle at which maximum radiated power occurs for each case, and the radiated power at this angle was extracted from the data. The max radiated power results for IHDT6BC1 follows, as EIRP in dBm. To get ERP (effective radiated power referenced to a half-wave dipole), subtract 2.1 dB from these numbers.

EIRP data for PCS 1900:

Channel 512	1850.2 Mhz:	< 32.74 dBm
Channel 661	**1880.0 Mhz:**	**<32.89 dBm**
Channel 810	1909.8 Mhz	<32.79 dBm

For all measurement, calibration was performed via gain substitution with a half-wave dipole.

Result:
Maximum EIRP is 32.89 dBm in PCS 1900 mode

EXHIBIT 6C Voltages and Currents into Final Amplifying Devices

Exhibit Summary:

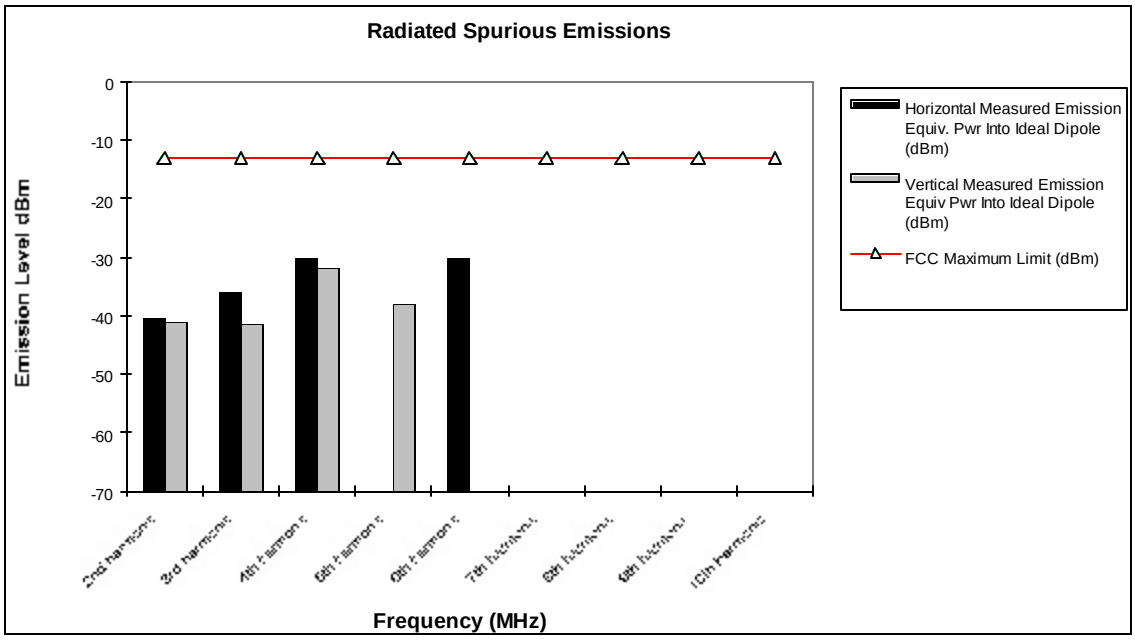
Exhibit 6C contains the voltages and currents applied to the TX Driver and TX Final Power Amplifier for the entire mobile station operating power range.

Power Step	Output Power Spec (dBm)	Measured Output Power (dBm)	Vcc for PA IC (VDC)	PA Currect (mA)
0	29+/-1	29.03	3.8	231
1	28+/-2	28.03	3.8	221
2	26+/-2	26	3.8	203
3	24+/-2	24	3.8	188
4	22+/-2	22	3.8	176
5	20+/-3	19.9	3.8	166
6	18+/-3	17.94	3.8	159
7	16+/-3	16.05	3.8	154
8	14+/-3	14.04	3.8	150
9	12+/-4	12.6	3.8	147
10	10+/-4	11.13	3.8	145
11	8+/-4	9.69	3.8	143
12	6+/-4	7.96	3.8	141
13	4+/-4	6.72	3.8	140
14	2+/-4	5.17	3.8	139
15	0+/-4	3.85	3.8	138

EXHIBIT 6D RADIATED SPURIOUS EMISSION

Radiated Spurious and Harmonic Emissions: PCS 1900

Frequency (MHz)	FCC Maximum Limit (dBm)	Horizontal Measured Emission Equiv. Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into Ideal Dipole (dBm)
2nd harmonic	-13	-40.2	-41.0
3rd harmonic	-13	-36.0	-41.5
4th harmonic	-13	-30.2	-31.9
5th harmonic	-13	*	-37.9
6th harmonic	-13	-30.0	*
7th harmonic	-13	*	*
8th harmonic	-13	*	*
9th harmonic	-13	*	*
10th harmonic	-13	*	*



Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 30 kHz to the tenth harmonic of the fundamental.

EXHIBIT 6E OCCUPIED BANDWIDTH

Exhibit Summary:
Exhibit 6E contains measurement data pertaining to occupied bandwidth. For each carrier frequency measured, the plots show the modulation spectrum of the carrier measured by two methods: the 99% power bandwidth, and the -26 dBC bandwidth. The following figures illustrate the results of both bandwidth definitions as measured using a Hewlett Packard spectrum analyzer.

Contents:

Measurement Procedure:
This section describes the procedures used to measure occupied bandwidth. A theoretical occupied bandwidth of approximately 246.0 kHz was determined as described in EXHIBIT 12.

1. Determine the measurement bandwidth: Part 24.238 (a) requires a measurement bandwidth of at least 1% of the occupied bandwidth. For 246.0 kHz, this equates to a resolution bandwidth of at least 2.46 kHz. For this testing, a resolution bandwidth 3.0 kHz was used.

2. Outline measurement frequencies: Table 6E.1 lists the measurement frequencies for the bottom, middle, and top of the PCS frequency band. For each frequency at which an occupied bandwidth measurement is made a transmitter output power was set to Power Step 0 (+30 dBm nominal).

USPCS Channel	Transmitter Frequency
512	1850.2 MHz
670	1881.8 MHz
810	1909.8 MHz

Table 6E.1 Occupied bandwidth measurement frequencies.

3. Connect test set-up: Employing a cable and a 6dB attenuator pad, connect the mobile station to a spectrum analyzer (HP E4404B).

4. Configure the mobile station: Set TX frequency, power level and activate internal pseudo random data sequence. The sequence used in the radio is a part of the CCIT sequence defined by GSM recs. The sequence is stored in RAM and each timeslot that a pseudo random modulation stream is desired, a seed is generated for this table that will pick the byte to start with. The next 116 data bits are then used for the data to be transmitted. The bit rate of the internal test signal is equivalent to the GSM specification of 270.833 kBits/s.

5. Use the built in Power Bandwidth function of the spectrum analyzer to create a measured plot of the spectrum yielding the 99% occupied bandwidth.

6. Repeat for all required frequencies adjusting the spectrum analyzer as necessary.

7. Set the markers to the points above and below the carrier frequency which are 26dB down from the peak level and record the bandwidth between the markers.

8. Repeat for all required frequencies adjusting the spectrum analyzer as necessary.

Occupied Bandwidth Results

Similar to conducted emissions, occupied bandwidth measurements are only provided for selected frequencies in order to reduce the amount of submitted data. Data were taken at the extreme and mid frequencies of the USPCS frequency band. Table 6E.2 lists the measured 99% power and -26dBC occupied bandwidths. Spectrum analyzer plots are included on the following pages.

Frequency	99% Occupied BW	-26dBC Bandwidth
1850.2 MHz	241.2 kHz	328 kHz
1880.0 MHz	242.9 kHz	333 kHz
1909.8 MHz	254.6 kHz	323 kHz

Table 6E.2 Occupied bandwidth results.

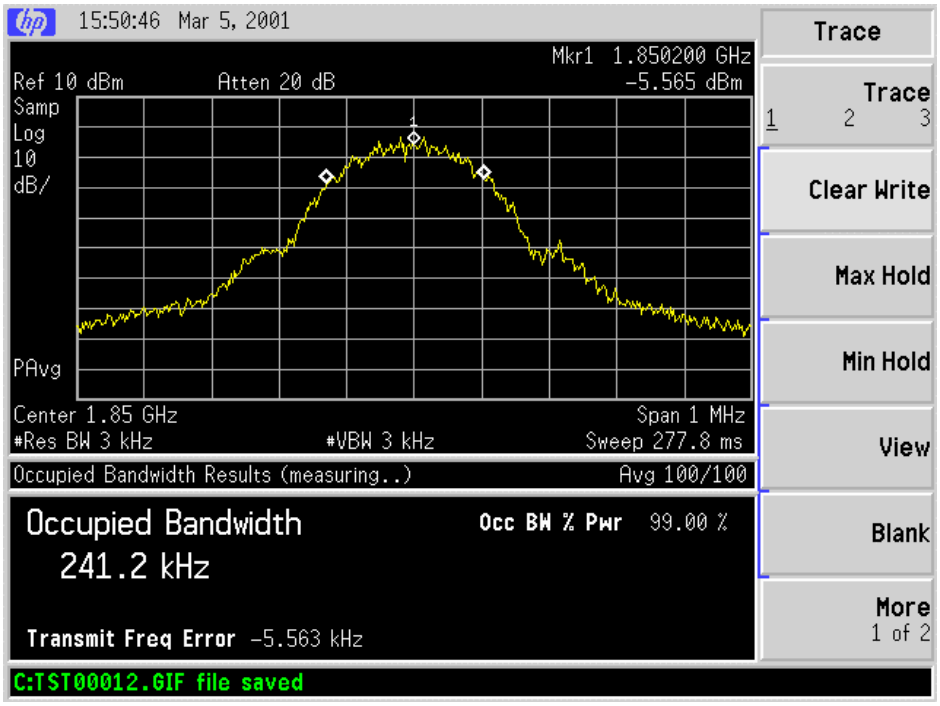


Figure 6E.1 Channel 512, 99% Power Bandwidth

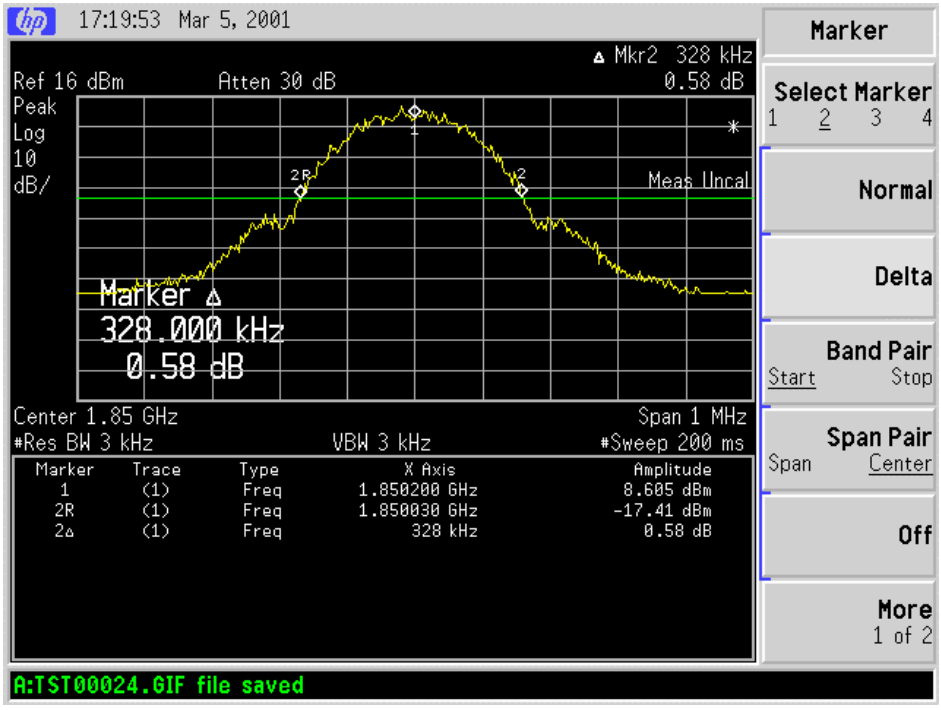


Figure 6E.2 Channel 512, -26dBc Bandwidth

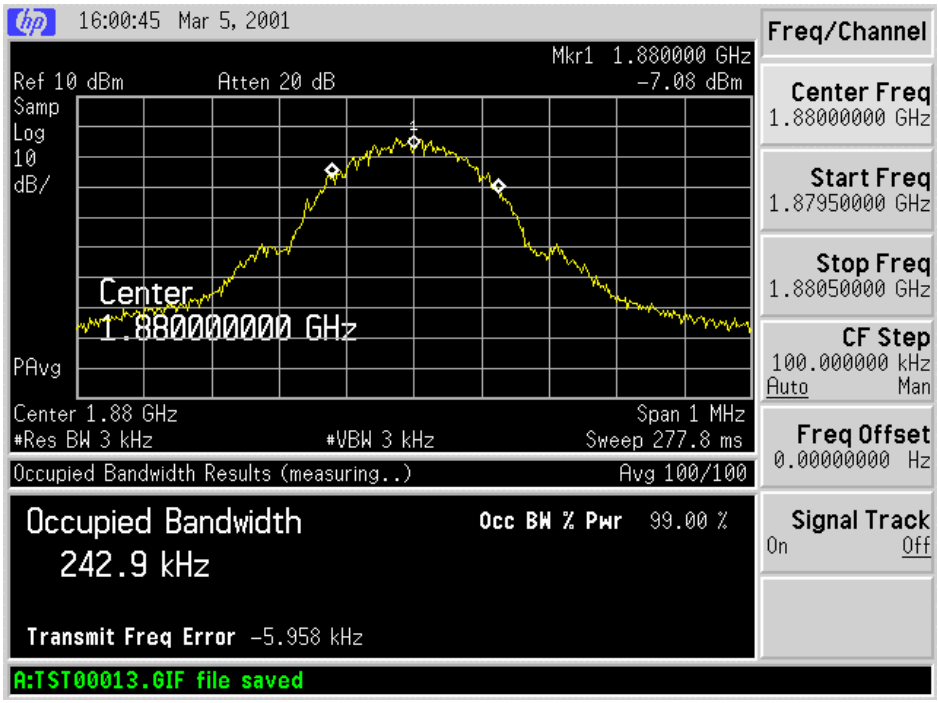


Figure 6E.3 Channel 661, 99% Power Bandwidth

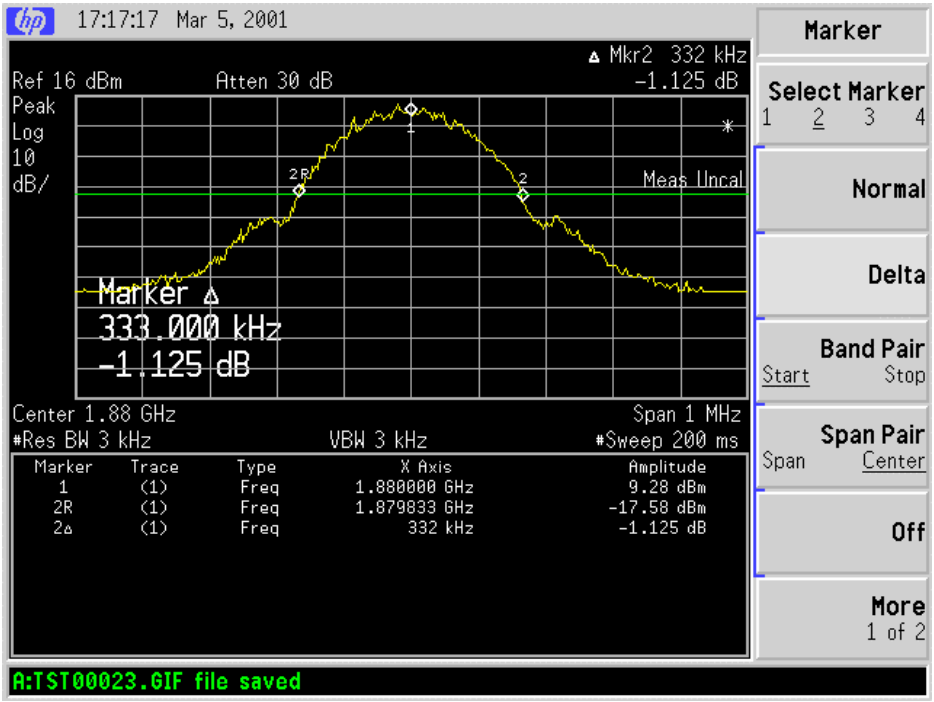


Figure 6E.4 Channel 661, -26dBc Bandwidth

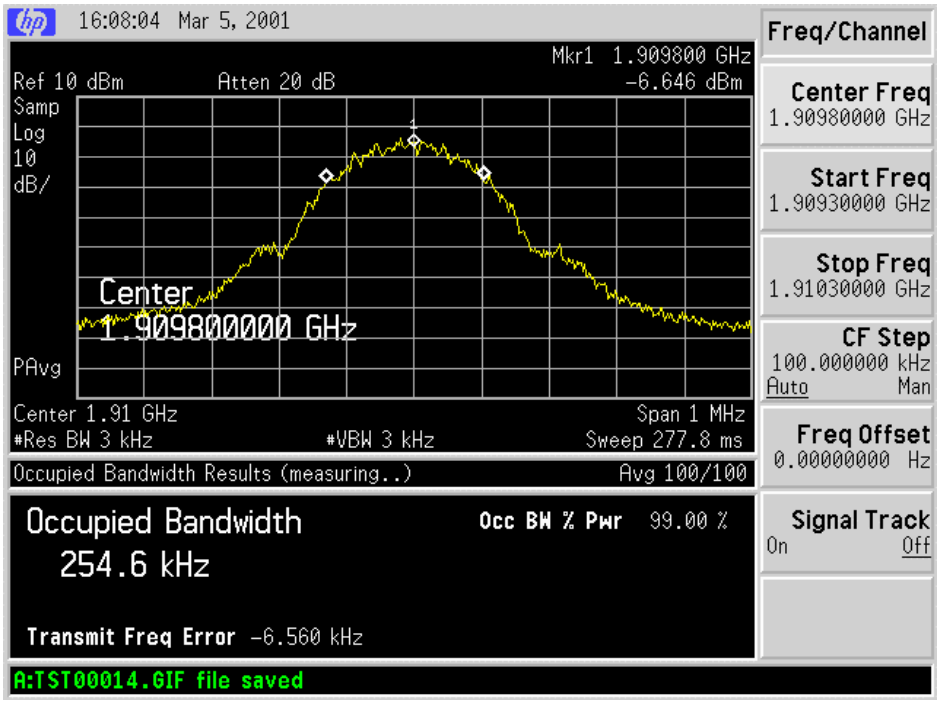


Figure 6E.5 Channel 810, 99% Power Bandwidth

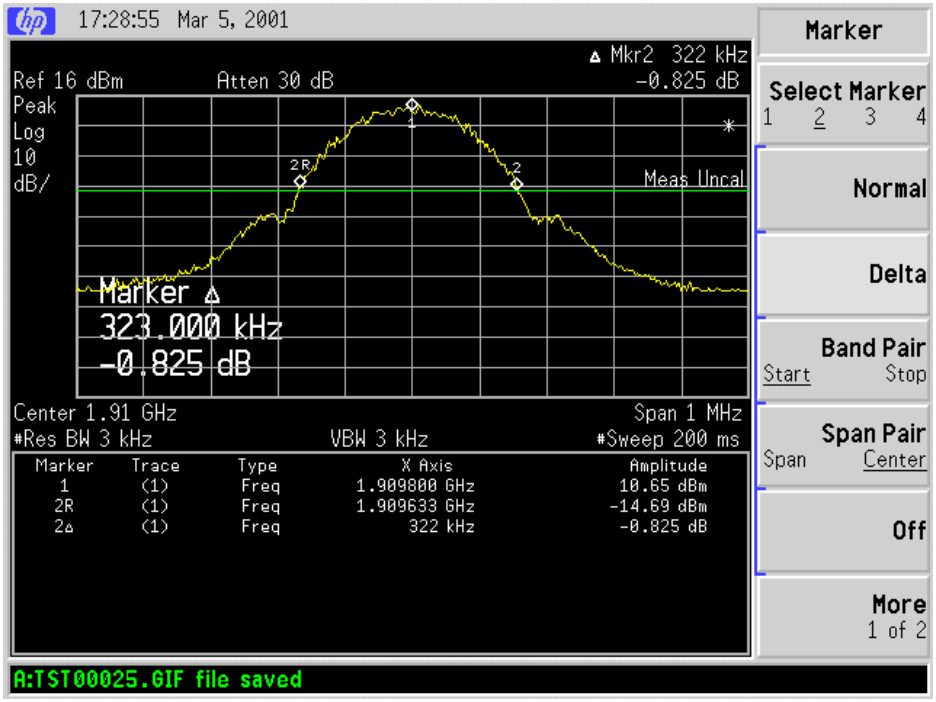
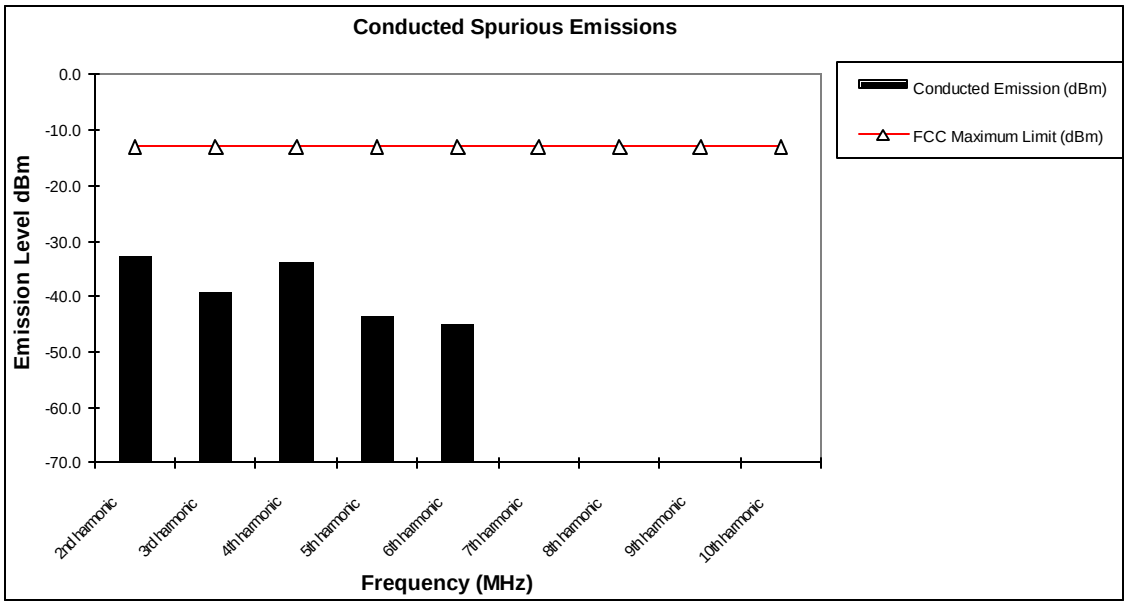


Figure 6E.6 Channel 810, -26dBc Bandwidth

EXHIBIT 6F Conducted Spurious Emissions

Conducted Spurious and Harmonic Emissions: Panther2 GSM

Harmonic of Fundamental	FCC Maximum Limit (dBm)	Conducted Emission (dBm)
2nd harmonic	-13	-32.8
3rd harmonic	-13	-39.3
4th harmonic	-13	-33.7
5th harmonic	-13	-43.6
6th harmonic	-13	-45.0
7th harmonic	-13	*
8th harmonic	-13	*
9th harmonic	-13	*
10th harmonic	-13	*



Notes:
1. * Indicates the spurious emission could not be detected due to noise limitations or ambients.
2. Each emission reported reflects the highest absolute level at the specific harmonic for the low, mid, and high channels at maximum power.
3. The Spectrum was investigated from 30 kHz to the tenth harmonic of the fundamental.

EXHIBIT 6G Frequency Stability

Exhibit Summary:

EXHIBIT 6G contains measurement data pertaining to frequency stability.

Contents:

Method of Measurement
Measurement Limit
Frequency Stability Plots
Carrier Stability Over Temperature
Carrier Stability Over Voltage

Method of Measurement:

In order to measure the carrier frequency under the condition of AFC lock, see EXHIBIT 12, it is necessary to make measurements with the mobile station in a " call mode" . This is accomplished with the use of a Hewlett Packard 8922P Digital Radio Communication Tester.

1. Measure the carrier frequency at room temperature.

2. Subject the mobile station to overnight soak at -30 C.

3. With the mobile station, powered via 3.7 Volts, connected to the HP8922P and in a simulated call on channel 661 (center channel), measure the carrier frequency. These measurements should be made within 2 minutes of powering up the mobile station, to prevent significant self-warming.

4. Repeat the above measurements at 10 C increments from -30 C to +60 C. Allow at least 1 1/2 hours at each temperature, un-powered, before making measurements.

5. Re-measure carrier frequency at room temperature with nominal 3.7 Volts. Vary supply voltage from minimum 3.5 Volts to maximum 3.9 Volts, in 0.2 Volt increments, re-measuring carrier frequency at each voltage. Pause at 3.7 Volts for 1 1/2 hours un-powered, to allow any self-heating to stabilize, before continuing.

6. Subject the mobile station to overnight soak at +60 C.

7. With the mobile station, powered via 3.7 Volts, connected to the HP8922P and in a simulated call on channel 661 (center channel), measure the carrier frequency. These measurements should be made within 2 minutes of powering up the mobile station, to prevent significant self-warming.

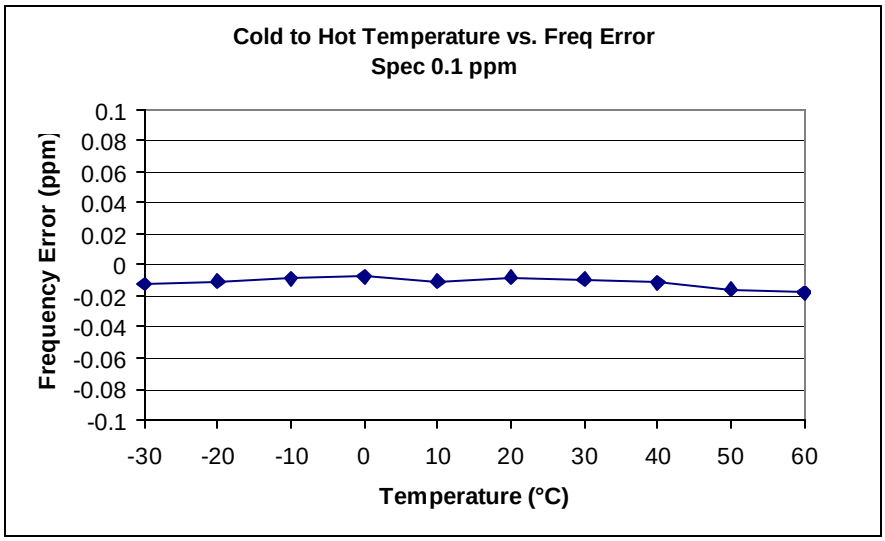
8. Repeat the above measurements at 10 C increments from +60 C to -30 C. Allow at least 1 1/2 hours at each temperature, un-powered, before making measurements.

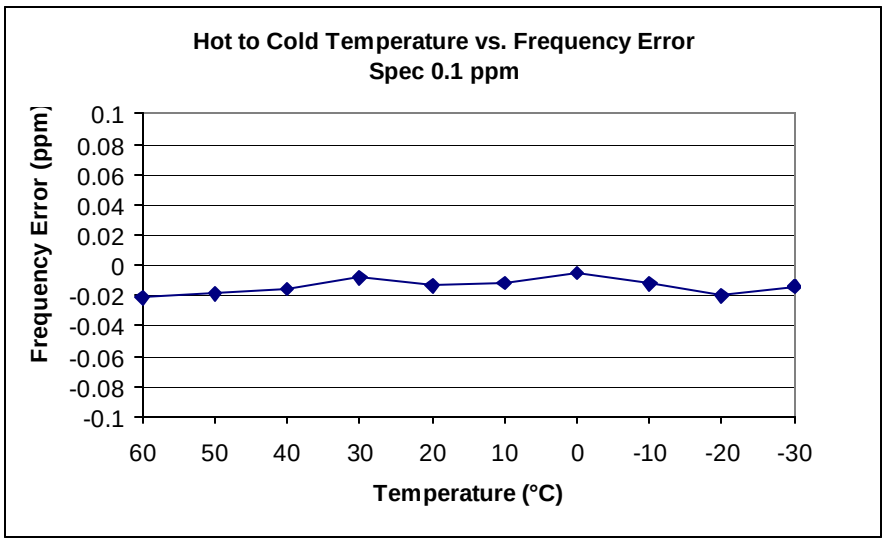
9. At all temperature levels hold the temperature to +/- 0.5 C during the measurement procedure.

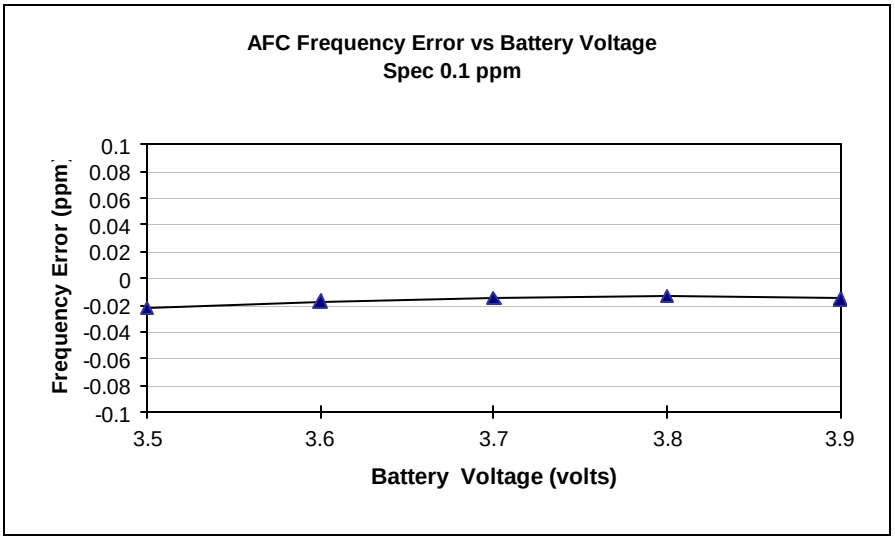
Measurement Limit:

According to the JTC standard, the frequency stability of the carrier shall be accurate to within 0.1 ppm of the received frequency from the base station. This accuracy is sufficient to meet Sec. 24.235, Frequency Stability. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

As this transceiver is considered "Hand carried, battery powered equipment…," Section 2.1055(d)(2) applies. This requires that the lower voltage for frequency stability testing be specified by the manufacturer. This transceiver is specified to operate with an input voltage of between 3.5 Vdc and 3.9 Vdc, with a nominal voltage of 3.7 Vdc (based on operation off of a Li-Ion battery pack). Operation above or below these voltage limits is prohibited by transceiver software in order to prevent improper operation as well as to protect components from overstress. These voltages represent a tolerance of + 5.4 % and – 5.4 %. For the purposes of measuring frequency stability these voltage limits are to be used.


Cold to Hot Temperature vs. Freq Error
Spec 0.1 ppm
Frequency Error (ppm)
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
-30 -20 -10 0 10 20 30 40 50 60
Temperature (°C)


Hot to Cold Temperature vs. Frequency Error
Spec 0.1 ppm
Frequency Error (ppm)
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
60 50 40 30 20 10 0 -10 -20 -30
Temperature (°C)


AFC Frequency Error vs Battery Voltage
Spec 0.1 ppm
Frequency Error (ppm)
0.1
0.08
0.06
0.04
0.02
0
-0.02
-0.04
-0.06
-0.08
-0.1
3.5 3.6 3.7 3.8 3.9
Battery Voltage (volts)