#### 5.1 Transmitter RF Power Output

#### 5.1.1 Conducted RF Power Output

The conducted RF power output is tested per Part 2.1046(a). The RF output power was measured using a HP 8594E Spectrum Analyzer that has the CDMA spectrum analyzer option. The antenna cable of the equipment is terminated to a 50 ohms resistive load of the Spectrum Analyzer.

The nominal maximum power from the CDMA phone module is 251mW or 24 dBm. The unit was configured to transmit as close to 24 dBm conducted power as the test software would allow. Production units incorporate a precision calibration process to achieve 24 dBm conducted power for all channels in the transmit band.

Taking account the cable loss, the power level measured represents the power from the RF port of the equipment. Table 5-1 and Fig. 5-1 to Fig. 5-3 show the measured data and waveform.

Transmission Channel	Carrier frequency (MHz)	RF power in CDMA mode
25	1851.25	0.243
600	1880	0.245
1175	1908.75	0.235

Table 5–1. Conducted RF power output (W)

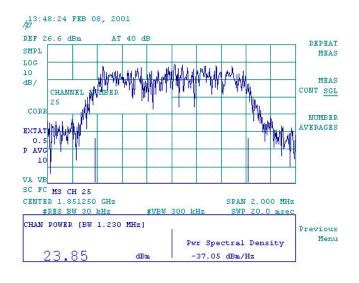


Figure 5-1. Power level on channel 25

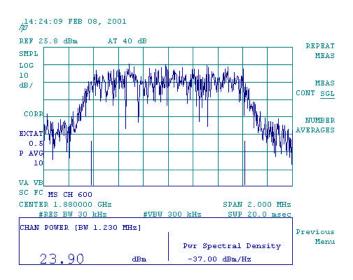


Figure 5–2. Power level on channel 600

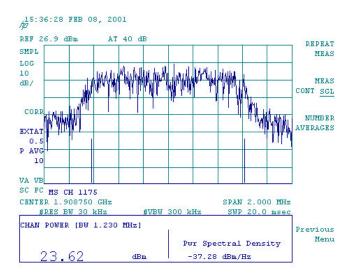


Figure 5–3. Power level on channel 1175

#### 5.1.2 Radiated RF Power Output

The radiated power was measured using the method of substitution at an open air test side (TUV). Test code was used to configure the unit to transmit at a power level higher then the desired grant level of 0.490 W EIRP to represent the worst case transmit harmonic emissions from the unit.

Refer to TUV Product Service Test Report for the measured EIRP for the high, mid, and low channels.

## 5.2 Occupied Bandwidth

Occupied Bandwidth of the equipment was tested pursuant to FCC Part 2.1049. The measurement was conducted using HP 8594E spectrum analyzer with CDMA feature option. The measured data is shown in Table 5-4 and Fig.5-4 through Fig.5-6.

		_	
Transmission Channel		Carrier frequency (MHz)	Occupied bandwidth (MHz)
	25	1851.25	1.247
	600	1880	1.247
	1175	1908.75	1.266

Table 5-2. Occupied Bandwidth (99%)

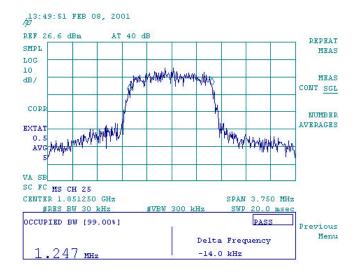


Figure 5-4. Occupied bandwidth on channel 25

FCC ID: J9CHDR1

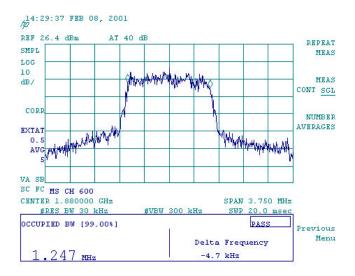


Figure 5-5. Occupied bandwidth on channel 600

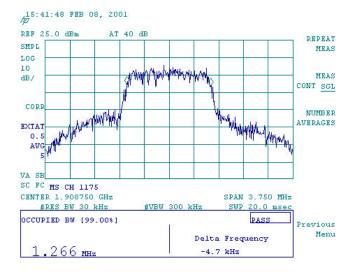


Figure 5-6. Occupied bandwidth on channel 1175

### 5.3 Conducted Spurious Emission

Conducted emission from the equipment was tested pursuant to FCC Part 2.1046 and 24.238. The emissions were tested in reference to the limit specified by Part 24.238. Power of any emission shall be atteunated below the transmitter power by at least:  $43 + 10 \log P(watts) = -13dBm$ .

For measurements of the transmit harmonics, a broad band high pass filter was used to attenuate the fundamental transmit spike to prevent overdriving of the spectrum analyzer front end.

Measurements were conducted using a HP 8593EM spectrum analyzer. The spectrum analyzer has the capability to load cable factors and antenna gain factors so that the spectrum analyzer's output compensates for external attenuation factors. The spectrum analyzer was loaded with cable factors from 10 kHz to 19 GHz. A peak antenna gain of 2.9 dBi was used across the entire spectrum.

The resulting plots shown in Fig 5-7 through 5-12 thus represent maximum EIRP values. The plots are broken up into two plots for each frequency: 0 Hz to 2.7 GHz, and 2.7 GHz to 18 GHz. No emission within 10 dB of the specified limit was observed.

The measurement results are shown in the Table 5-5 through Table 5-7 and Fig.5-7 through Fig.5-12.

,						
Harmonics	Frequency (MHz)	Measured level (dBm)	Limit (dBm)	Measurement attenuation		
1	1851.25	23.85	-	40		
2	3702.50	-68.8	-13	0		
3	5553.75	-73.2	-13	0		
4	7405.00	-52.1	-13	0		
5	9256.25	-82	-13	0		
6	11107.50	<-81	-13	0		
7	12958.75	<-75	-13	0		
8	14810.00	<-77	-13	0		
9	16661.25	<-76	-13	0		
10	18512.50	<-76	-13	0		

Table 5-3. Conducted spurious emission at low-band (channel 25)

Table 5-4. Conducted spurious emission at mid-band (channel 600)

Harmonics	Frequency (MHz)	Measured level (dBm)	Limit (dBm)	Measurement attenuation
1	1880.00	23.85	-	40
2	3760.00	-73.8	-13	0
3	5640.00	-71.8	-13	0
4	7520.00	-43.2	-13	0

5	9400.00	<-81	-13	0
6	11280.00	<-81	-13	0
7	13160.00	<-76	-13	0
8	15040.00	<-78	-13	0
9	16920.00	<-77	-13	0
10	18800.00	<-76	-13	0

Table 5–5. Conducted spurious emission at high-band (channel 1175)

Harmonics	Frequency (MHz)	Measured level (dBm)	Limit (dBm)	Measurement attenuation
1	1908.75	23.62	-	40
2	3817.50	-77.8	-13	0
3	5726.25	-69	-13	0
4	7635.00	-47.2	-13	0
5	9543.75	82	-13	0
6	11452.50	<-78	-13	0
7	13361.25	<-78	-13	0
8	15270.00	<-77	-13	0
9	17178.75	<-76	-13	0
10	19087.50	<-76	-13	0

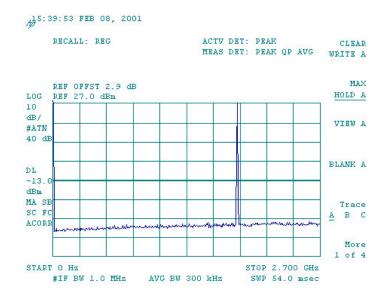


Figure 5–7. Overall profile under channel 25 (0-2.9GHz)

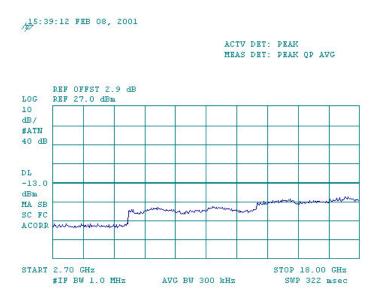


Figure 5-8. Overall profile under channel 25 (2.8-20GHz)

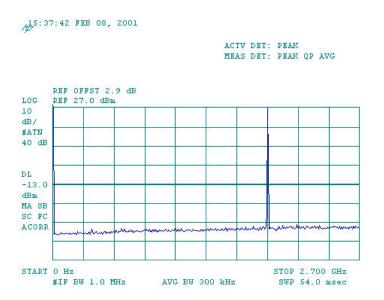


Figure 5-9. Overall profile under channel 600 (0-2.9GHz)

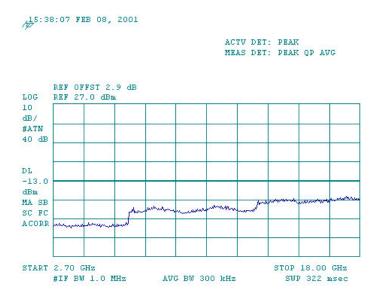


Figure 5–10. Overall profile under channel 600 (2.8-20GHz)

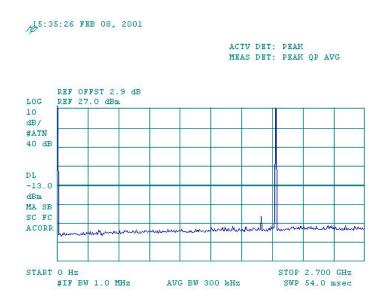


Figure 5-11. Overall profile under channel 1175 (0-2.9GHz)

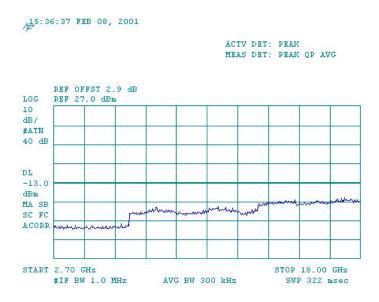


Figure 5-12. Overall profile under channel 1175 (2.8-20GHz)

## 5.4 Radiated Spurious Emissions

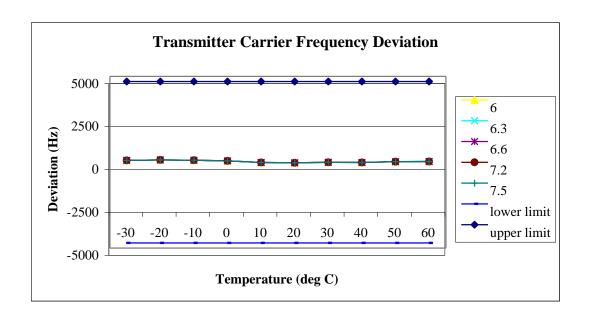
Refer to Exhibit 10: TUV Product Service Test Report.

### 5.5 Frequency Stability

Frequency stability of the equipment versus temperature and power supply change was tested pursuant to FCC Part 2.1055. Measurement was conducted in CDMA channel 600 transmitting mode without modulation on the carrier frequency (1880MHz). CSZ Dimension Series 60 Chamber was used to stabilize a specific temperature and HP 8563E spectrum analyzer was used to monitor frequency stability.

Table 5-6. Offset (Hz) from carrier frequency of channel 600

								Specification			
Temperature	6	6.3	6.6	7.2	7.5	7.9	8.5	lower limit	upper		
(C)									limit		
-30	107	107	108	108	108	108	107	-4700	4700		
-20	135	134	134	135	134	135	134	-4700	4700		
-10	113	112	113	113	112	112	112	-4700	4700		
0	82.2	82.4	82.6	83	81.9	82.6	82.5	-4700	4700		
10	-12	-12	-13	-12	-13	-12	-13	-4700	4700		
20	-31	-31	-31	-30	-31	-30	-31	-4700	4700		
30	-0.6	-1	-0.9	0	-0.4	-1.2	-1.2	-4700	4700		
40	-13	-13	-13	-12	-13	-13	-12	-4700	4700		
50	34.5	33.8	34.5	35	34.6	34.6	33.9	-4700	4700		
60	39.5	39.3	39	40	39	39.8	39.6	-4700	4700		



Report No. 100712-03



**RADIATED EMISSIONS** 

DATA

**FOR** 

QUALCOMM, INC. 10300 Campus Point Drive San Diego, CA 92121

Prepared by

TÜV PRODUCT SERVICE 10040 Mesa Rim Road San Diego, CA 92121-2912 Report No. 100712-03



## **Emissions Test Conditions: SPURIOUS RADIATED EMISSIONS**

Roof (small open area test site)

# The Spurious Radiated Emissions measurements were performed using the following equipment:

T4		:		11	٠ لـ
Test	Eau	IDIT	ient	use	a :

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Cal Date
8566B	720/721	Spectrum Analyzer & Display	Hewlett Packard	2311A02209	03/01
3115	251	Double Ridge Antenna	EMCO	2495	10/01
3115	453	Double Ridge Antenna	EMCO	9412-4363	10/01
FF6549-2	782	High Pass Filter	Sage Laboratories	007	N/A*
FF6549-1	778/732	900 MHz HPF	Sage	006	N/A*
AFD3-0208-40-ST	367	Preamplifier	Miteq	155382	N/A*
AFS4-08001800-70-10P-4	368	Preamplifier	Miteq	167	N/A*

Remarks: (\*) Verified

Report No. 100712-03



# FCC Part 2, Paragraph 2.1053 and Part 24, Paragraph 24.238

# **PCS CDMA Wireless Modem, Model PCS Hornet**

Low, mid and high channels tested. All emissions (spurious and harmonics) were greater than 20 dB below the limit. Frequency range investigated from lowest RF frequency generated up to the 10th harmonic.

Operating Mode: Transmit Full Power

RBW and VBW = 1 MHz for peak for fundamental and harmonics. RBW and VBW = 30 kHz 20 video samples for average for fundamental.