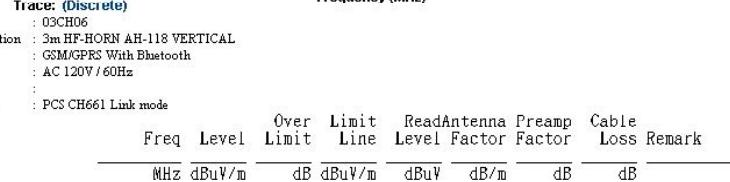
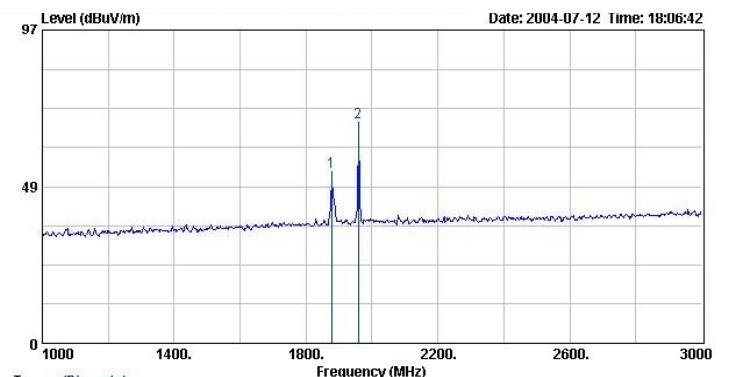
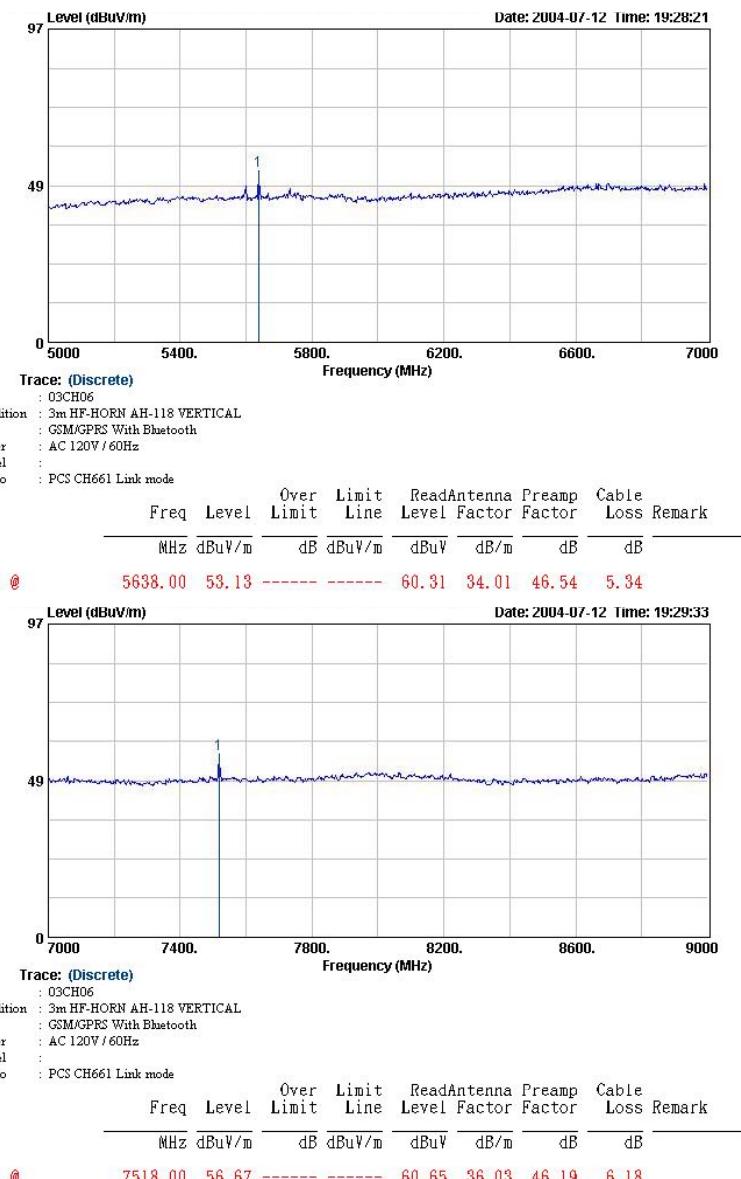
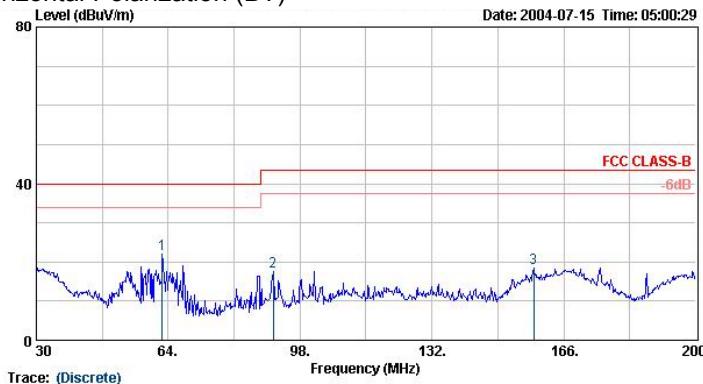


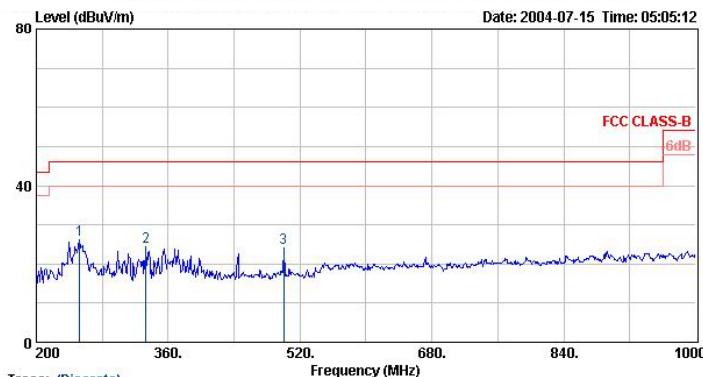
**FCC TEST REPORT****Report No. : F462917**



➤ Mark:  
Frequency from 9GHz to 19GHz, the emission emitted by the EUT is too low to be measured.

**FCC TEST REPORT****Report No. : F462917****PCS 1900 + BT, Horizontal Polarization (BT)**

Freq MHz	Level dBuV/m	Over Limit		Read Level dBuV	Antenna Factor dB	Preamp Factor dB	Cable Loss dB	Remark
		Line dB	Limit dBuV/m					
1 @ 62.47	22.11	-17.89	40.00	48.64	5.23	32.43	0.67	
2 @ 91.03	17.45	-26.05	43.50	39.96	8.86	32.23	0.85	
3 @ 158.18	18.33	-25.17	43.50	39.82	9.60	32.17	1.08	



Freq MHz	Level dBuV/m	Over Limit		Read Level dBuV	Antenna Factor dB	Preamp Factor dB	Cable Loss dB	Remark
		Line dB	Limit dBuV/m					
1 @ 252.80	26.18	-19.82	46.00	44.35	12.27	31.85	1.41	
2 @ 332.80	24.30	-21.70	46.00	40.77	13.89	31.97	1.60	
3 @ 500.00	23.97	-22.03	46.00	36.01	17.30	31.42	2.09	

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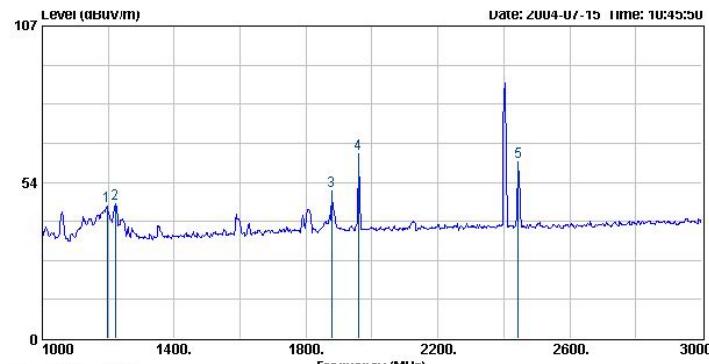
FCC ID QDJ-0406CHAI

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Issued Date July 17, 2004

# FCC TEST REPORT

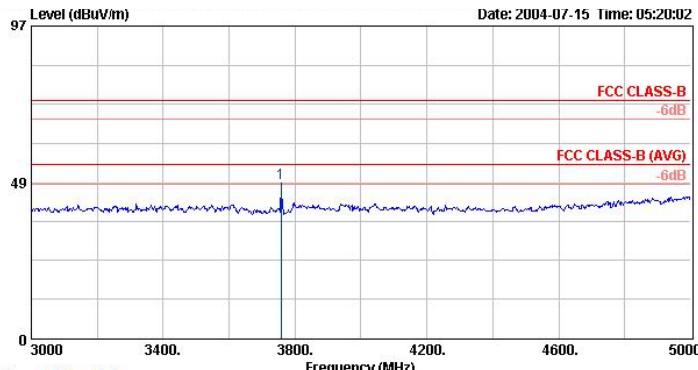
Report No. : F462917



Trace: (Discrete)

Site : 03CH06  
 Condition : 3m HF-HORN AH-118 HORIZONTAL  
 eut : GSM/GPRS With Bluetooth  
 power : AC 110V / 60Hz  
 model :  
 memo : PCS CH661 Link mode  
 : BT CH00 2402MHz

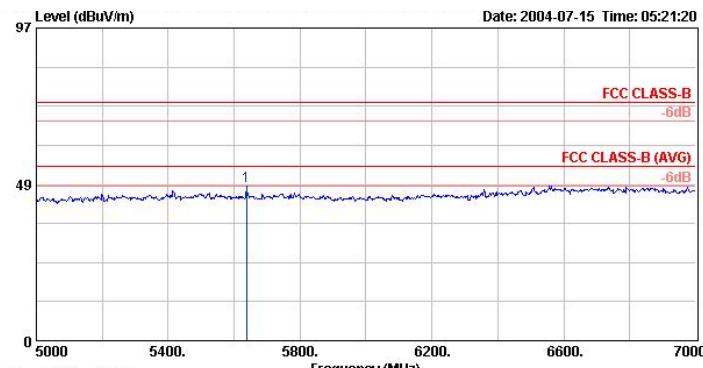
Freq MHz	Level dBuV/m	Over Limit		Read Level dBuV	Antenna Factor dB/m	Preamp Factor dB	Cable Loss dB	Remark
		Line dB	Limit dBuV/m					
1 1196.00	45.17	-----	-----	61.98	24.62	43.75	2.31	
2 1222.00	46.20	-----	-----	62.97	24.67	43.77	2.33	
3 1878.00	50.60	-----	-----	64.64	27.42	44.41	2.95	
4 1958.00	63.41	-----	-----	77.12	27.75	44.46	3.00	
5 2444.00	60.58	-----	-----	73.08	28.45	44.32	3.37	



Trace: (Discrete)

Site : 03CH06  
 Condition : FCC CLASS-B 3m HF-HORN AH-118 HORIZONTAL  
 eut : GSM/GPRS With Bluetooth  
 power : AC 120V / 60Hz  
 model :  
 memo : PCS CH661 Link mode  
 : BT CH00 2402MHz

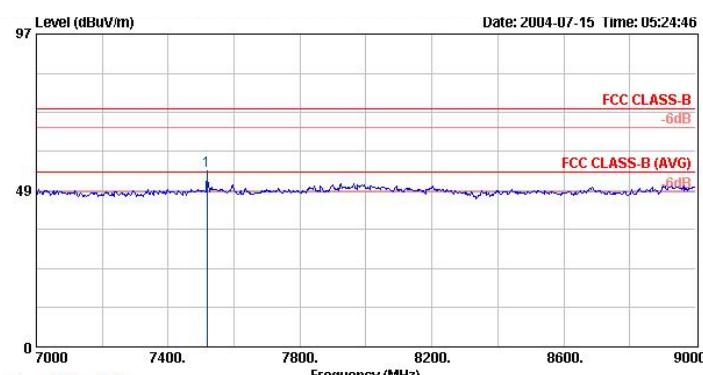
Freq MHz	Level dBuV/m	Over Limit		Read Level dBuV	Antenna Factor dB/m	Preamp Factor dB	Cable Loss dB	Remark
		Line dB	Limit dBuV/m					
1 @ 3758.00	48.16	-25.84	74.00	58.44	30.26	44.76	4.21	

**FCC TEST REPORT****Report No. : F462917**

Trace: (Discrete)

Site	: 03CH06
Condition	: FCC CLASS-B 3m HF-HORN AH-118 HORIZONTAL
eut	: GSM/GPRS With Bluetooth
power	: AC 120V / 60Hz
model	:
memo	: PCS CH661 Link mode : BT CH00 2402MHz

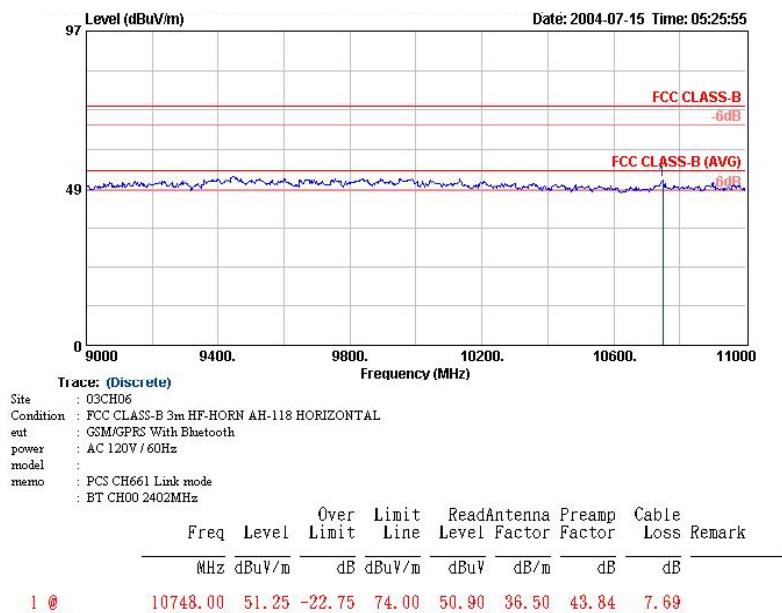
Freq	Level	Over Limit	Limit Line	ReadAntenna	Preamp	Cable	Loss	Remark
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	5638.00	48.06	-25.94	74.00	55.25	34.01	46.54	5.34



Trace: (Discrete)

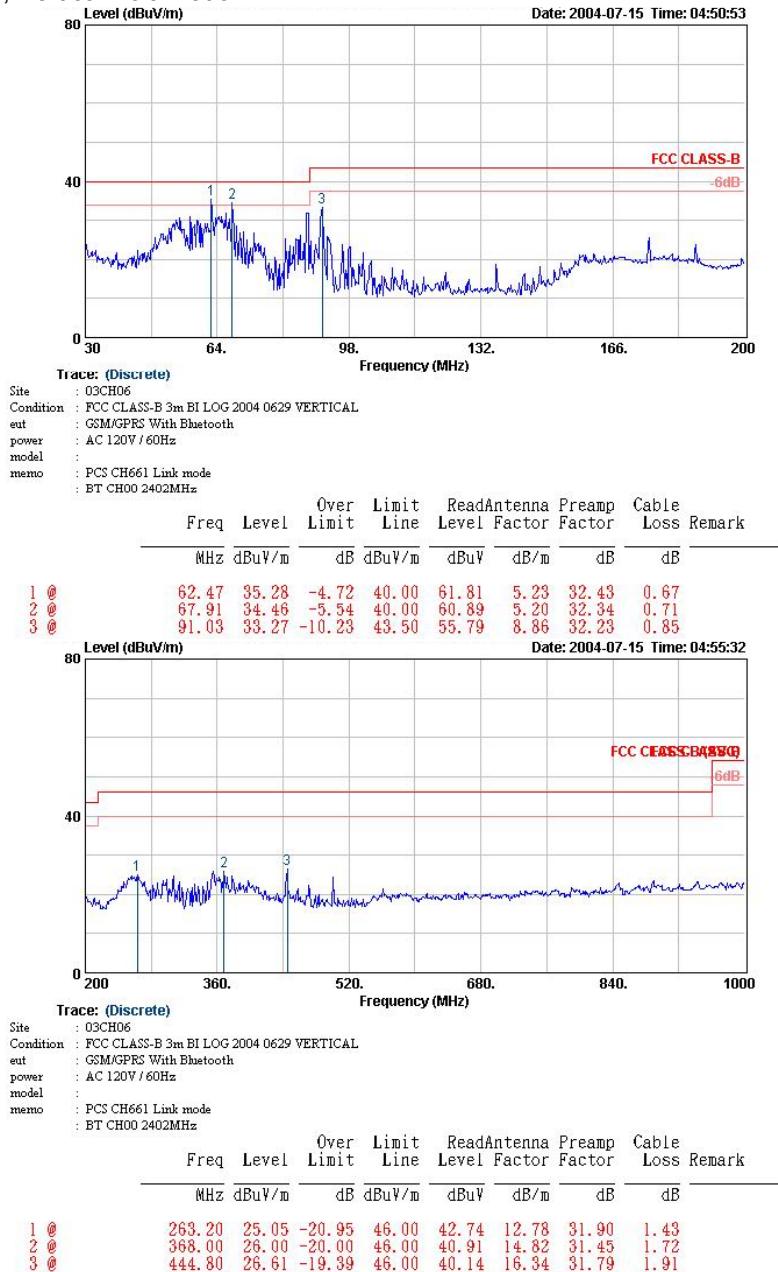
Site	: 03CH06
Condition	: FCC CLASS-B 3m HF-HORN AH-118 HORIZONTAL
eut	: GSM/GPRS With Bluetooth
power	: AC 120V / 60Hz
model	:
memo	: PCS CH661 Link mode : BT CH00 2402MHz

Freq	Level	Over Limit	Limit Line	ReadAntenna	Preamp	Cable	Loss	Remark
MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	
1 @	7518.00	54.48	-19.52	74.00	58.46	36.03	46.19	6.18



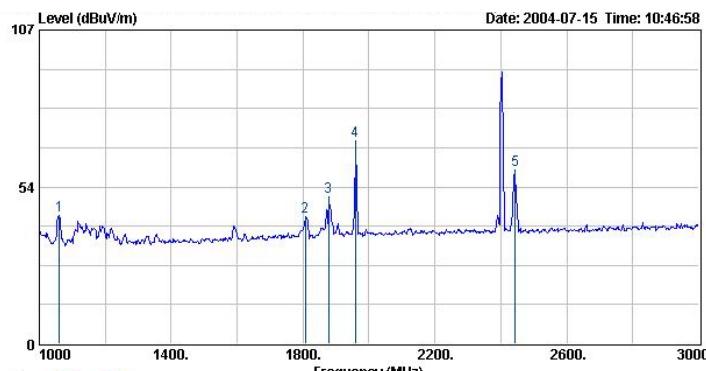
➤ Mark:  
Frequency from 11GHz to 19GHz, the emission emitted by the EUT is too low to be measured.

## PCS 1900 + BT, Vertical Polarization

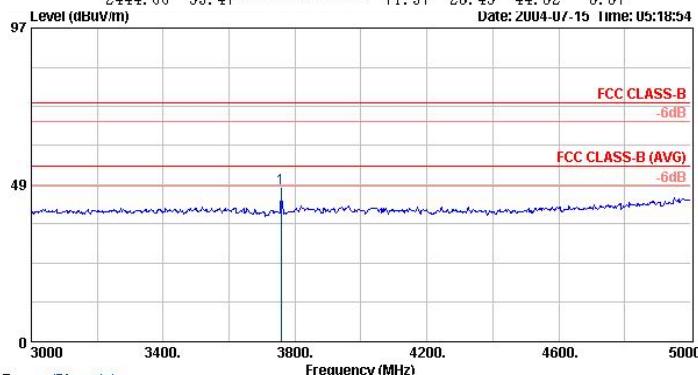


# FCC TEST REPORT

Report No. : F462917



	Freq MHz	Level dBuV/m	Over Limit		Read Level dBuV	Antenna Factor dB/m	Preamp Factor dB	Cable Loss dB	Remark
			Line dB	Limit dBuV/m					
1	1060.00	43.79	-----	-----	61.00	24.21	43.58	2.16	
2	1806.00	43.26	-----	-----	57.72	27.00	44.34	2.88	
3	1878.00	50.11	-----	-----	64.15	27.42	44.41	2.95	
4 @	1958.00	69.16	-----	-----	82.87	27.75	44.46	3.00	
5	2444.00	59.47	-----	-----	71.97	28.45	44.32	3.37	



	Freq MHz	Level dBuV/m	Over Limit		Read Level dBuV	Antenna Factor dB/m	Preamp Factor dB	Cable Loss dB	Remark
			Line dB	Limit dBuV/m					
1 @	3758.00	47.12	-26.88	74.00	57.40	30.26	44.76	4.21	

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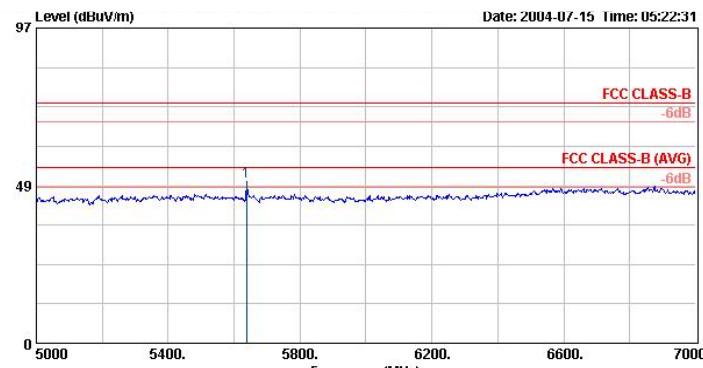
TEL : 886-2-2696-2468

FAX : 886-2-2696-2255

FCC ID QDJ-0406CHAI

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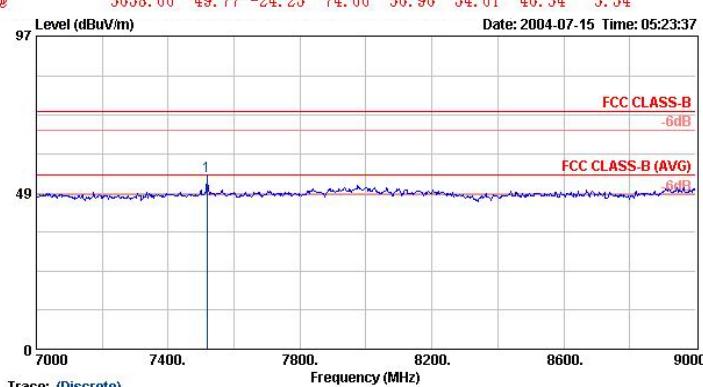
Issued Date July 17, 2004

**FCC TEST REPORT****Report No. : F462917**

Trace: (Discrete)

Site : 03CH06  
Condition : FCC CLASS-B 3m HF-HORN AH-118 VERTICAL  
eut : GSM/GPRS With Bluetooth  
power : AC 120V / 60Hz  
model :  
memo : PCS CH661 Link mode  
: BT CH00 2402MHz

Freq MHz	Level dBuV/m	Over	Limit	Read	Antenna	Preamp	Cable	Remark
		Line	dB	dBuV/m	dBuV	dB/m	dB	
5638.00	49.77	-24.23	74.00	56.96	34.01	46.54	5.34	



Trace: (Discrete)

Site : 03CH06  
Condition : FCC CLASS-B 3m HF-HORN AH-118 VERTICAL  
eut : GSM/GPRS With Bluetooth  
power : AC 120V / 60Hz  
model :  
memo : PCS CH661 Link mode  
: BT CH00 2402MHz

Freq MHz	Level dBuV/m	Over	Limit	Read	Antenna	Preamp	Cable	Remark
		Line	dB	dBuV/m	dBuV	dB/m	dB	
7518.00	53.67	-20.33	74.00	57.65	36.03	46.19	6.18	

➤ Mark:  
Frequency from 9GHz to 19GHz, the emission emitted by the EUT is too low to be measured.

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Issued Date July 17, 2004

**Name of Test:** Frequency Stability (Temperature Variation)

**Specification:** 47 CFR 2.1055(a)(1)

**Test Conditions:** As Indicated

**Test Equipment:** As per previous page

**Measurement Procedure**

1. The EUT and test equipment were set up as shown on the following page.
2. With all power removed, the temperature was decreased to  $-30^{\circ}\text{C}$  and permitted to stabilize for three hours. Power was applied and the maximum change in frequency was noted within one minute.
3. With power OFF, the temperature was raised in  $10^{\circ}\text{C}$  steps. The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency change was noted within one minute.
4. The temperature tests were performed for the worst case.
5. Measurement Results: Attached



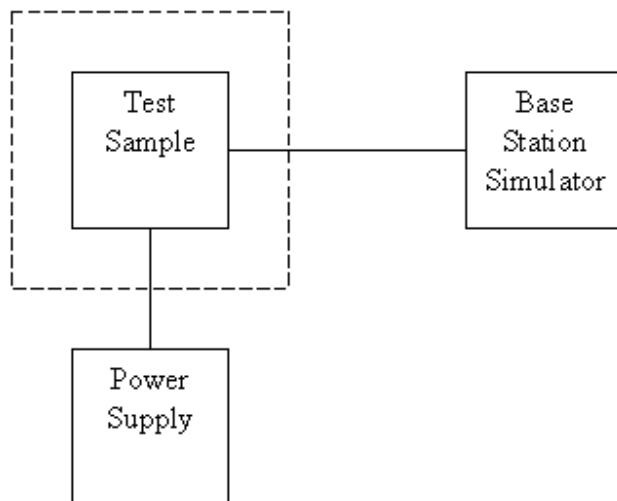
Tested By:

Tim Kao

**Transmitter Test Set-Up**

Frequency Stability: Temperature Variation

Frequency Stability: Voltage Variation



Asset	Model Name	S/N
Temperature & Humidity Controller	P-9000	612
AC/DC Power Source	HPA-500W	HPA0100024
Base Station Simulator	CMU200	102278
Base Station Simulator	E5515C	GB43460754

**Name of Test:** Frequency Stability (Temperature Variation)**GSM 850 (Channel 189)**

Temperature(°C)	Change, Hz	Change, ppm
-30	30	0.02
-20	42	0.02
-10	-38	-0.02
0	-30	-0.02
10	-35	-0.02
20	22	0.01
30	47	0.02
40	-34	-0.02
50	-29	-0.02

**PCS 1900 (Channel 611)**

Temperature(°C)	Change, Hz	Change, ppm
-30	31	0.02
-20	46	0.02
-10	35	0.02
0	-30	-0.02
10	-35	-0.02
20	22	0.01
30	42	0.02
40	-34	-0.02
50	-36	-0.02

**Name of Test:** Frequency Stability (Voltage Variation)**Specification:** 47 CFR 2.1055 (b)(1)**Test Equipment:** As per previous page**Measurement Procedure**

1. The EUT was placed in a temperature chamber at  $25\pm5^{\circ}\text{C}$  and connected as for "Frequency Stability - Temperature Variation" test.
2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

**Results:** Frequency Stability (Voltage Variation)**GSM 850 (Channel 189)**

Nominal Value (Voltage) = 3.7V

Battery End Point = 3.2V

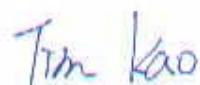
Voltage(Volt)	Change, Hz	Change, ppm
3.7	47	0.02
BEP	51	0.03
4.3	43	0.02

**PCS 1900 (Channel 611)**

Nominal Value (Voltage) = 3.7V

Voltage(Volt)	Change, Hz	Change, ppm
3.7	42	0.02
BEP	38	0.02
4.3	44	0.02

Limit: Must remain within authorized frequency block.



Tested By:

Tim Kao

## Antenna Factor &amp; Cable Loss

Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)	Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)
30	15.35	4.50	1000	24.10	3.92
35	13.63	1.13	2000	27.40	5.66
40	11.11	1.18	3000	30.00	7.20
45	10.59	1.26	4000	32.60	9.36
50	6.47	1.31	5000	33.40	9.16
55	5.83	1.34	6000	34.20	10.70
60	5.18	1.43	7000	35.30	12.16
65	4.81	1.52	8000	36.90	13.12
70	4.43	1.56	9000	38.10	13.81
75	5.10	1.57	10000	39.00	14.83
80	5.91	1.60	11000	38.60	15.83
85	7.33	1.66	12000	39.50	17.11
90	8.74	1.75	13000	39.30	17.62
95	9.05	1.76	14000	41.60	18.37
100	9.36	1.83	15000	40.60	19.10
110	9.65	1.86	16000	37.20	19.72
120	9.97	1.92	17000	40.20	21.98
130	10.51	2.00	18000	48.90	21.22
140	10.32	2.11	19000	37.60	23.90
150	9.42	2.18	20000	37.30	24.07
160	8.09	2.22	21000	37.00	25.49
170	7.43	2.26	22000	38.00	24.92
180	7.60	2.31	23000	38.70	25.60
190	7.43	2.37	24000	38.60	25.70
200	7.26	2.43	25000	24.10	3.92
220	9.11	2.56	14000	27.40	5.66
240	10.88	2.70	15000	30.00	7.20
260	11.75	2.83	16000	32.60	9.36
280	11.55	2.93	17000	33.40	9.16
300	11.36	3.03	18000	34.20	10.70
320	12.03	3.13	19000	35.30	12.16
340	12.69	3.23	20000	36.90	13.12
360	13.33	3.32	21000	38.10	13.81
380	14.00	3.41	22000	39.00	14.83
400	14.63	3.48	23000	38.60	15.83
450	15.33	3.71	24000	39.50	17.11
500	16.03	3.85	25000	39.30	17.62
550	16.65	4.03			
600	17.29	4.32			
650	17.64	4.51			
700	18.00	4.54			
750	18.39	4.90			
800	18.79	5.04			
850	19.10	5.04			
900	19.42	5.20			
950	19.58	5.28			
1000	19.75	5.58			

**List of Measuring Equipments**

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum analyzer	R&S	FSP40	100057	9KHz-40GHz	Feb. 26, 2004	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Dec. 18, 2003	Radiation (03CH06-HY)
Horn Antenna	Com-Power	AH118	071025	1G-18G	Feb. 11, 2004	Radiation (03CH06-HY)
PreAmplifier	Com-Power	PA-103	161055	1MHz - 1000MHz	Apr. 26, 2004	Radiation (03CH06-HY)
HF Amplifier	MITEQ	AFS44	973248	0.1G - 26.5G	May. 20, 2004	Radiation (03CH06-HY)

※ Calibration Interval of instruments listed above is one year, except for Horn Antenna, BBHA9170.

※ Calibration Interval of Horn Antenna, BBHA9170, is three years.

## Uncertainty of Test Site

## Uncertainty of Radiated Emission Measurement (30MHz ~ 1000MHz)

Contribution	Uncertainty of $x_i$		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.41	Normal(k=2)	0.21
Antenna factor calibration	0.83	Normal(k=2)	0.42
Cable loss calibration	0.25	Normal(k=2)	0.13
Pre Amplifier Gain calibration	0.27	Normal(k=2)	0.14
RCV/SPA specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site imperfection	1.43	Rectangular	0.83
Mismatch Receiver VSWR $\Gamma 1 = 0.20$ Antenna VSWR $\Gamma 2 = 0.23$ Uncertainty=20log(1- $\Gamma 1 * \Gamma 2$ )	+0.39/-0.41	U-shaped	0.28
<b>combined standard uncertainty <math>U_c(y)</math></b>	<b>1.27</b>		
<b>Measuring uncertainty for a level of confidence of 95% <math>U=2U_c(y)</math></b>	<b>2.54</b>		

## Uncertainty of Radiated Emission Measurement (1GHz ~ 40GHz)

Contribution	Uncertainty of $x_i$		$u(x_i)$	$Ci$	$Ci * u(x_i)$
	dB	Probability Distribution			
Receiver reading	$\pm 0.10$	Normal(k=1)	0.10	1	0.10
Antenna factor calibration	$\pm 1.70$	Normal(k=2)	0.85	1	0.85
Cable loss calibration	$\pm 0.50$	Normal(k=2)	0.25	1	0.25
Receiver Correction	$\pm 2.00$	Rectangular	1.15	1	1.15
Antenna Factor Directional	$\pm 1.50$	Rectangular	0.87	1	0.87
Site imperfection	$\pm 2.80$	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma 1 = 0.197$ Antenna VSWR $\Gamma 2 = 0.194$ Uncertainty=20log(1- $\Gamma 1 * \Gamma 2 * \Gamma 3$ )	+0.34/-0.35	U-shaped	0.244	1	0.244
<b>Combined standard uncertainty <math>U_c(y)</math></b>	<b>2.36</b>				
<b>Measuring uncertainty for a level of confidence of 95% <math>U=2U_c(y)</math></b>	<b>4.72</b>				

$$U = \sqrt{(1/2)^2 + (0.3/2)^2 + (2^2 + 0.5^2 + 2^2 + 0.25^2 + 2^2)/3 + (0.54)^2/2} = 2.2 \text{ for 10m test distance}$$

$$U = \sqrt{(1/2)^2 + (0.3/2)^2 + (2^2 + 3^2 + 2^2 + 0.25^2 + 2^2)/3 + (0.54)^2/2} = 2.7 \text{ for 3m test distance}$$

END OF TEST REPORT