



## Compliance Test Report For FCC Part 15B Certification

Product Name : Cellular PCS CDMA Phone with EVDO and  
Bluetooth (BT2.0 + EDR)

Model No. : RM-384

FCC ID : QMNRN-384

FCC Rule Part(s) : FCC CFR Title 47 Part 15 Subpart B: 2007

FCC Classification : B

Filing Type : Certification

Test Procedure : ANSI C63.4-2003

Applicant : Nokia Inc.

Address : 12278 Scripps Summit Dr. San Diego CA  
92131 USA

Date of Receipt : 2008/09/08

Issued Date : 2008/10/06

Report No. : 088352R-HPUSP02V01

Report Version : V1.0

The test results relate only to the samples tested.

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This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

# Test Report Certification

Issued Date: 2008/10/06

Report No.: 088352R-HPUSP02V01

**QuiTek**

Product Name : Cellular PCS CDMA Phone with EVDO and Bluetooth (BT2.0 + EDR)  
Applicant : Nokia Inc.  
Address : 12278 Scripps Summit Dr. San Diego CA 92131 USA  
Manufacturer : Foxconn International Holdings Limited  
Manufacturer Address : No.2, 2nd Donghuan Road, 10th Yousong Industrial District, Longhua, Baoan, Shenzhen, China  
Model No. : RM-384  
FCC ID. : QMNRM-384  
Rated Voltage : AC 100-240 V / 50-60 Hz  
EUT Voltage : DC 3.7V  
Trade Name : Nokia  
Applicable Standard : FCC CFR Title 47 Part 15 Subpart B: 2007  
FCC Classification : B  
Test Result : Complied



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## History of Test Report

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**1. General Information****1.1. EUT Description**

Product Name	Cellular PCS CDMA Phone with EVDO and Bluetooth (BT2.0 + EDR)
Trade Name	Nokia
Model No.	RM-384
MEID	A000000126D674
Antenna Type	Fixed Internal
Hardware version	2500
Software version	CB_1103T_FCC_151
Battery Pack	BL-4C: DC 3.7V
Data Cable	M/N: CA-101, Shielded 1.2m
Earphone Cable	M/N: HS-48, Non-Shielded 1.7m

## 1.2. Test mode

Quie Tek has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Pre-Test Mode	
EMI	Mode 1: Data Link
Final Test Mode	
CE	Mode 1: Data Link
RE	Mode 1: Data Link

## 1.3. Tested System Details

The types for all equipments, plus descriptions of all cables used in the tested system (including inserted cards) are:

	Product	Brand	Model No.	Serial No.	Cable	Power Cord
1	Notebook	Dell	PP18L	42649348672	N/A	N/A
2	Dell AC Adapter	Dell	LA90PS0-00	CN-0DF266-716 15-7BQ-DDDE	N/A	1.2m, Unshielded AC Power Cord 1.8m, Unshielded DC Power Cord
3	Mouse	Logitech	M-BE58	HCA30103107	1.8m ,Shielded	N/A
4	Earphone	NOKIA	HS-48	0694581803 633100184	1.7m , Non-Shielded	N/A

#### 1.4. Configuration of tested System

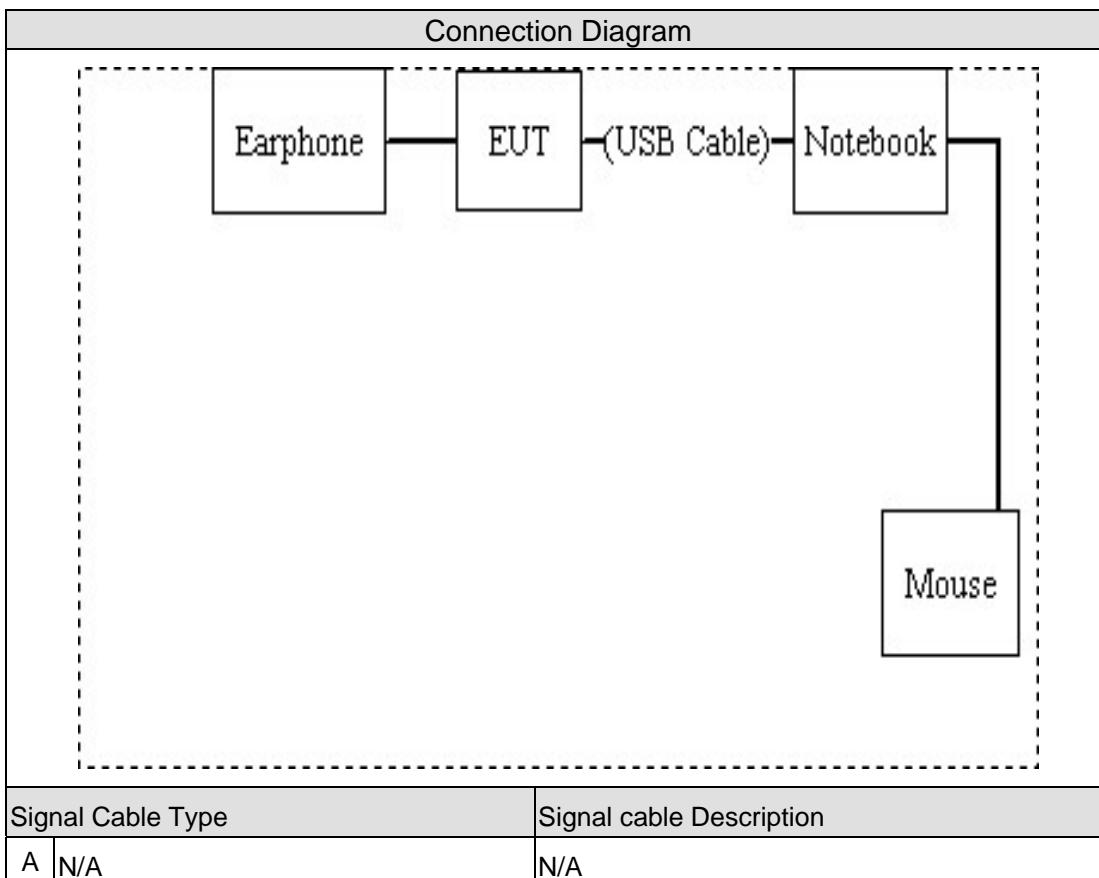


Fig. 1-1 Test setup.

#### 1.5. EUT Exercise Software

1	Setup the EUT and other peripheral as shown on Fig.1-1. The Nokia CDMA Phone (RM-384), FCC ID: QMNRM-384, was connected to a notebook computer via USB interface port.
2	Turn on the power of all equipments.
3	Perform test software " WINTHRAX.EXE" to establish a data link mode.

## 1.6. Test Facility

Ambient conditions in the laboratory:

Items	Test Item	Required (IEC 68-1)	Actual
Temperature (°C)	ANSI C63.4 CE	15-35	22
Humidity (%RH)		30-60	56
Barometric pressure (mbar)		860-1060	950-1000
Temperature (°C)	ANSI C63.4 RE	15-35	22
Humidity (%RH)		30-60	56
Barometric pressure (mbar)		860-1060	950-1000

Site Description: File on

Federal Communications Commission  
FCC Engineering Laboratory  
7435 Oakland Mills Road  
Columbia, MD 21046  
FCC Registration Number :92195



Certification and Engineering Bureau  
3701 Carling Ave., Building 94  
P.O. Box 11490, Station "H"  
Ottawa, Ontario K2H 8S2  
IC Recognized No. : 4075A



Accreditation on NVLAP  
NVLAP Lab Code: 200533-0



NVLAP Lab Code: 200533-0

Site Name: Quie Tek Corporation  
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E-Mail : [service@quietek.com](mailto:service@quietek.com)



### 1.7. Summary

Product Name : Cellular PCS CDMA Phone with EVDO and Bluetooth (BT2.0 + EDR)  
Model No. : RM-384  
FCC ID : QMNRM-384

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
§ 15.107(a)	Conducted Emission	< § 15.107(a) limits	Line Conducted	Pass	Sec. 2
§ 15.109(a)	Radiated Emission	< § 15.109(a) limits	Radiated	Pass	Sec. 3

## 2. Conducted Emission

### 2.1. Test Equipment List

The following test equipment are used during the conducted emission test:

Item	Instrument	Manufacturer	Type No./ Serial No	Calibration Date	Calibration Due	Remark
1	Test Receiver	R & S	ESCS 30/ 100366	18. Oct, 2007	17. Oct, 2008	
2	L.I.S.N.	R & S	ESH3-Z5/ 836679	15. Jul, 2008	14. Jul, 2009	EUT
3	L.I.S.N.	R & S	ENV4200/ 833209	11. Aug, 2008	10 Aug, 2009	Peripherals
4	Pulse Limiter	R & S	ESH3-Z2/ 357.8810.52	04. Sep, 2008	03. Sep, 2009	
5	No. 1 Shielded Room			N/A	N/A	

### 2.2. Test Setup

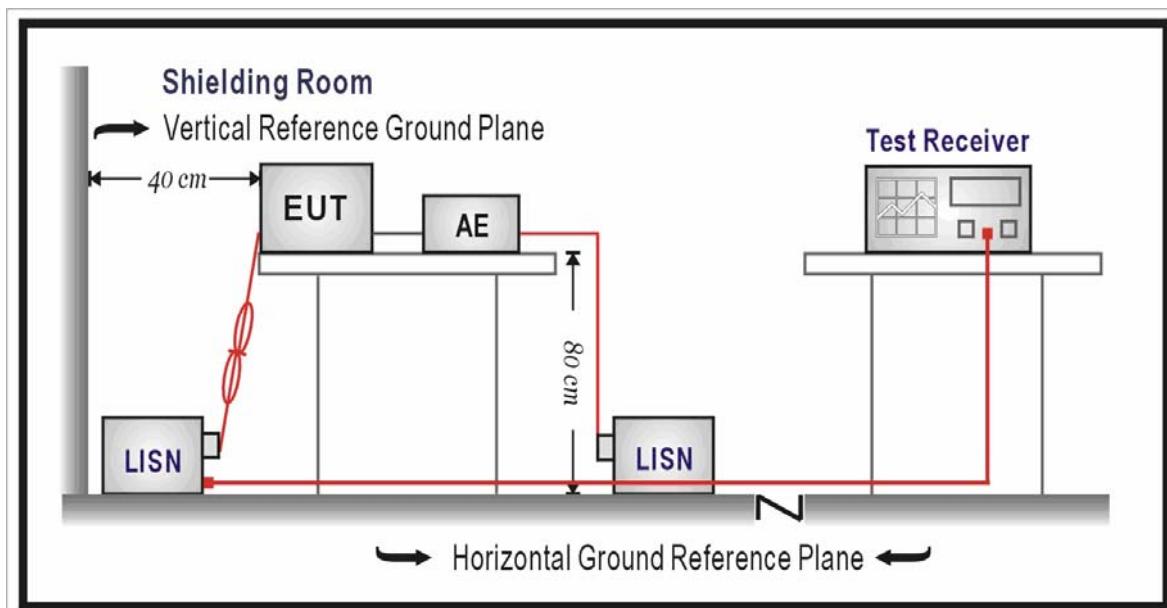


Fig. 2-1 Test arrangement for conducted disturbance at the mains port.

### 2.3. Limits

FCC Part 15 Subpart B Paragraph § 15.107(a) Limits (dBuV)		
Frequency MHz	Class B	
	QP	AV
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

Remarks: In the above table, the tighter limit applies at the band edges

### 2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

## 2.5. Uncertainty

The measurement uncertainty is defined as  $\pm 2.26$  dB.

Contributions		Probability Distribution	Standard Uncertainty $u_i$ (dB)
LISN Factor Calibration	$U_1$	Rectangular	0.693
Receiver : absolute level	$U_2$	Rectangular	0.577
Site Imperfection	$U_3$	U-shaped	0.591
Cable Loss	$U_4$	Normal	0.208
System Repeatability	$U_5$	Normal	0.260
Combined Standard Uncertainty, $U$			1.13
Expanded Uncertainty (for a 95 % confidence level, $k=2$ )			2.26

## 2.6. Test Results

Product	Cellular PCS CDMA Phone with EVDO and Bluetooth (BT2.0 + EDR)			
Test Mode	Mode 1: Data Link			
Date of Test	2008/09/09		Test Site	No.1 Shielded Room
Test Condition	Conducted Emission		Test Range	0.15-30MHz

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
<b>LINE 1</b>					
<b>Quasi-Peak</b>					
0.205	9.825	32.050	41.875	-22.554	64.429
0.295	9.830	31.870	41.700	-20.157	61.857
0.380	9.820	30.600	40.420	-19.009	59.429
0.502	9.820	27.640	37.460	-18.540	56.000
0.834	9.830	25.380	35.210	-20.790	56.000
0.998	9.830	23.880	33.710	-22.290	56.000
<b>Average</b>					
0.205	9.825	23.810	33.635	-20.794	54.429
0.295	9.830	24.410	34.240	-17.617	51.857
0.380	9.820	18.720	28.540	-20.889	49.429
0.502	9.820	14.680	24.500	-21.500	46.000
0.834	9.830	16.440	26.270	-19.730	46.000
0.998	9.830	14.700	24.530	-21.470	46.000

Note:

1. All Modes of operation were investigated and the worst-case emissions are supports.
2. All Reading Levels are Quasi-Peak and average value.
3. "  ", means this data is the worst emission level.
4. Line 1 = Phase, Line 2 = Neutral.
5. Measurement Level = Reading Level + Correct Factor.

Product	Cellular PCS CDMA Phone with EVDO and Bluetooth (BT2.0 + EDR)				
Test Mode	Mode 1: Data Link				
Date of Test	2008/09/09		Test Site	No.1 Shielded Room	
Test Condition	Conducted Emission		Test Range	0.15-30MHz	

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV	Margin dB	Limit dBuV
<b>LINE 2</b>					
<b>Quasi-Peak</b>					
0.166	9.868	40.020	49.888	-15.655	65.543
0.224	9.860	37.560	47.420	-16.466	63.886
0.295	9.850	33.830	43.680	-18.177	61.857
0.384	9.840	28.710	38.550	-20.764	59.314
0.496	9.830	26.520	36.350	-19.764	56.114
0.766	9.830	22.820	32.650	-23.350	56.000
<b>Average</b>					
0.166	9.868	28.660	38.528	-17.015	55.543
0.224	9.860	24.470	34.330	-19.556	53.886
0.295	9.850	28.720	38.570	-13.287	51.857
0.384	9.840	16.420	26.260	-23.054	49.314
0.496	9.830	13.320	23.150	-22.964	46.114
0.766	9.830	12.910	22.740	-23.260	46.000

**Note:**

1. All Modes of operation were investigated and the worst-case emissions are supports.
2. All Reading Levels are Quasi-Peak and average value.
3. "   ", means this data is the worst emission level.
4. Line 1 = Phase, Line 2 = Neutral.
5. Measurement Level = Reading Level + Correct Factor.

Product	Cellular PCS CDMA Phone with EVDO and Bluetooth (BT2.0 + EDR)		
Test Mode	Mode 1: Data Link		
Date of Test	2008/09/09	Test Site	No.1 Shielded Room
Test Condition	Conducted Emission	Test Range	0.15-30MHz

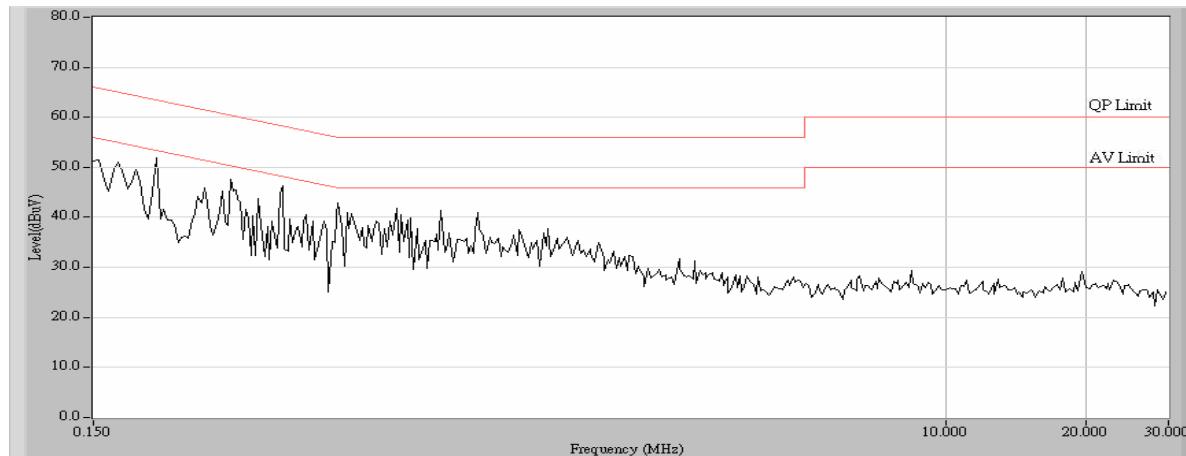
**LINE 1 = Phase**

Fig. 2-2 Conducted emission measurements for mode 1.

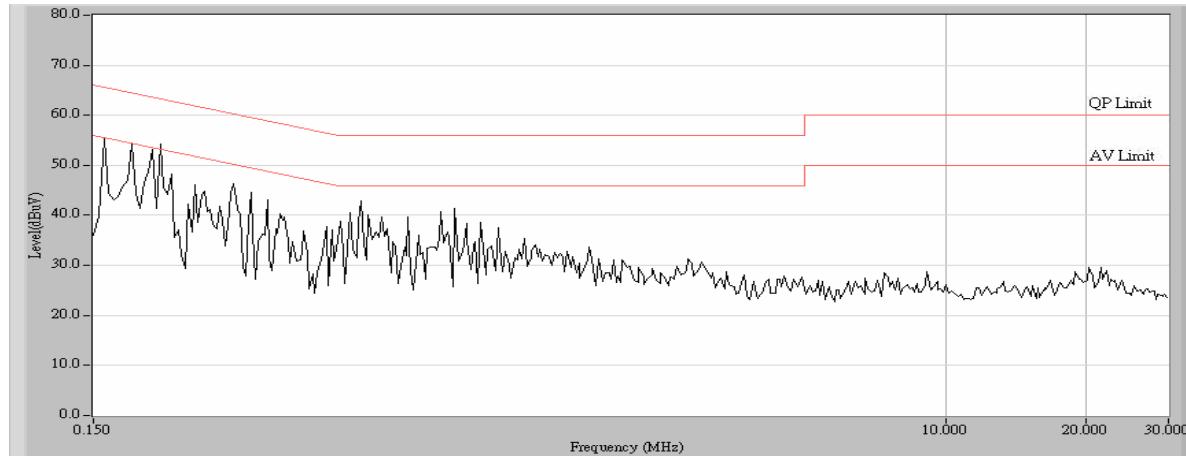
**LINE 2 = Neutral**

Fig. 2-3 Conducted emission measurements for mode 1.

**Note :**

1. All Modes of operation were investigated and the worst-case emissions are supports.
2. The limits for class B devices from 150kHz to 30 MHz are specified in section 15.107(a) of the title 47CFR.
3. Line 1 = Phase, Line 2 = Neutral.
4. Traces shown in above figures are made using a peak detector.

### 3. Radiated Emission

#### 3.1. Test Equipment List

The following test equipment are used during the radiated emission test:

Item	Equipment	Manufacturer	Model No./ Serial No.	Calibration Date	Calibration Due
1	Bilog Antenna	Schaffner Chase	CBL6112B/2921	08. Aug, 2008	07. Aug, 2009
2	Broadband Horn Antenna	Schwarzbeck	BBHA9170/497	05. Sep, 2008	04. Sep, 2009
3	EMI Test Receiver	R&S	ESCS 30/100123	06. May, 2008	05. May, 2009
4	Horn Antenna	Schwarzbeck	BBHA9120D/305	04. Sep, 2008	03. Sep, 2009
5	Pre-Amplifier	QTK	N/A	N/A	
6	Microwave Amplifier (0.5GHZ-26.5GHZ)	Agilent	83017A/ MY39500682	08. Aug, 2008	07. Aug, 2009
7	Spectrum Analyzer	Advantest	R3162/01700040	13. Nov, 2007	12. Nov, 2008
8	Spectrum Analyzer (9K-40GHz)	R&S	FSP40/100339	06. Nov, 2007	05. Nov, 2008

#### 3.2. Test Setup

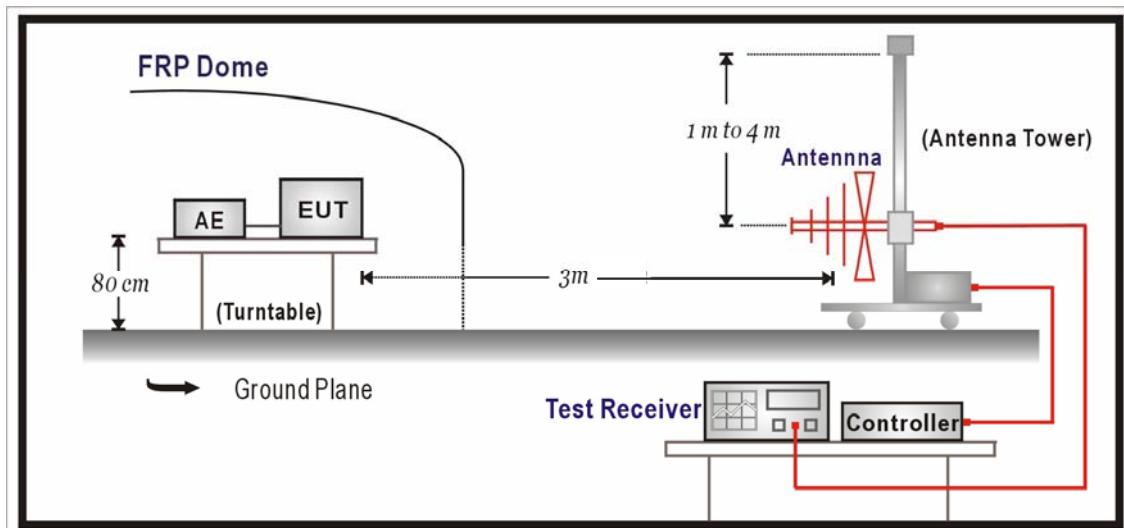


Fig. 3-1 Test arrangement for radiated emission under 1GHz.

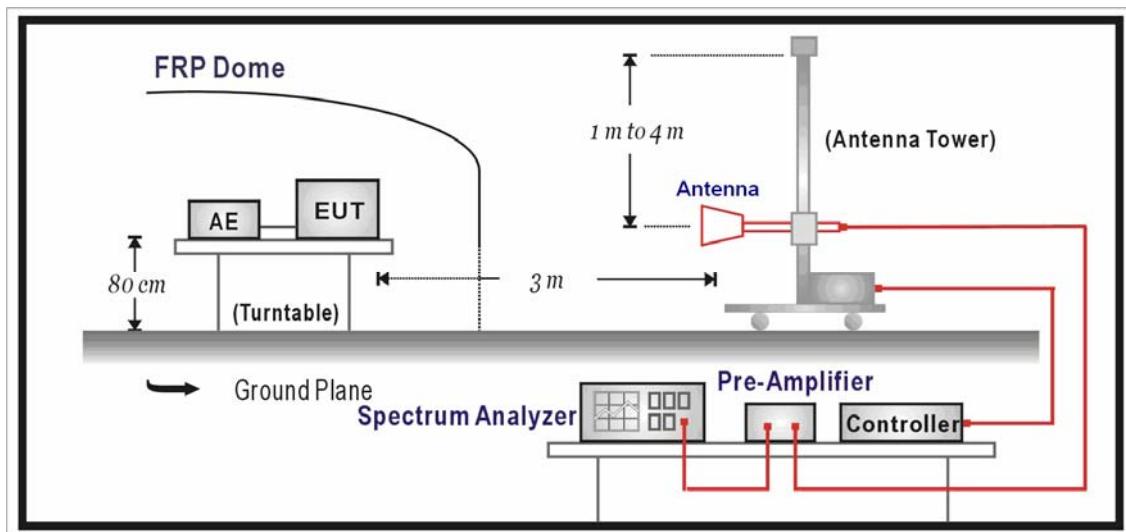


Fig. 3-2 Test arrangement for radiated emission above 1GHz.

### 3.3. Limits

The test shall not exceed the following value:

FCC Part 15 Subpart B Paragraph § 15.109(a) Limits (dBuV/m)		
Frequency MHz	Class B	
	Distance (m)	dBuV/m
30-88	3	40
88-216	3	43.5
216-960	3	46
Above 960	3	54

Remarks : 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)

2. In the Above Table, the tighter limit applies at the band edges.
3. Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

### 3.4. Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground.

The turn table can rotate 360 degrees to determine the position of the maximum emission level and the antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated on radiated measurement.

For an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705 – 108	1000
108 – 500	2000
500 – 1000	5000
Above 1000	5 <sup>th</sup> harmonic of the highest frequency or 40 GHz, whichever is lower

On any frequency or frequencies below or equal to 1000 MHz, the radiated limits shown are based on measuring equipment employing a quasi-peak detector function and above 1000 MHz, the radiated limits shown are based measuring equipment employing an average detector function.

When average radiated emission measurement are included emission measurement Above 1000 MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

For class B, the measurement distance between the EUT and antenna is 3 meters.

### 3.5. Uncertainty

The measurement uncertainty is evaluated as  $\pm 4.22$  dB from 30MHz to 1000 MHz.

Contributions	Probability Distribution	Standard Uncertainty $u_i$ (dB)
Mismatch: receiving part	$U_{01}$	U-shaped
Insertion loss: Measurement Antenna cable	$U_{02}$	Normal
Gain of the Pre-Amplifier	$U_{03}$	Rectangular
Receiving device: absolute level	$U_{04}$	Rectangular
EUT: influence of setting the power supply	$U_{05}$	Normal
Position of the phase centre: within the EUT volume	$U_{06}$	Rectangular
Positioning of the phase centre: within the EUT over the axis of rotation of the turntable	$U_{07}$	Rectangular
EUT: influence of the ambient temperature	$U_{08}$	Normal
Correction: measurement distance	$U_{09}$	Normal
Antenna: gain of the Measurement Antenna	$U_{10}$	Normal
Reflectivity of absorbing material: EUT to the test antenna	$U_{11}$	Normal
Correction: off bore-sight angle in the elevation plane	$U_{12}$	Normal
EUT: mutual coupling to the power leads	$U_{13}$	Normal
Mutual coupling: amplitude effect of the test antenna on the EUT	$U_{14}$	Normal
Mutual coupling: EUT to its images in the absorbing material	$U_{15}$	Normal
Mutual coupling: EUT to its image in the ground plane	$U_{16}$	Normal
Mutual coupling: measuring antenna to its image in the absorbing material	$U_{17}$	Normal
Mutual coupling: measuring antenna to its image in the ground plane	$U_{18}$	Normal
Mutual coupling: interpolation of mutual coupling and mismatch loss correction factors	$U_{19}$	Normal
Random: System Repeatability	$U_{20}$	Standard Deviation
Combined Standard Uncertainty, $U$		2.11
Expanded Uncertainty (for a 95 % confidence level, $k=2$ )		4.22

The measurement uncertainty is evaluated as  $\pm 4.06$  dB from 1 GHz to 10 GHz.

Contributions	Probability Distribution	Standard Uncertainty $u_i$ (dB)	
Mismatch: receiving part	$U_{01}$	U-shaped	0.182
Insertion loss: Measurement Antenna cable	$U_{02}$	Normal	0.50
Gain of the Pre-Amplifier	$U_{03}$	Rectangular	0.29
Receiving device: absolute level	$U_{04}$	Rectangular	0.58
EUT: influence of setting the power supply	$U_{05}$	Normal	0.03
Position of the phase centre: within the EUT volume	$U_{06}$	Rectangular	0.12
Positioning of the phase centre: within the EUT over the axis of rotation of the turntable	$U_{07}$	Rectangular	0.08
EUT: influence of the ambient temperature	$U_{08}$	Normal	0.10
Correction: measurement distance	$U_{09}$	Normal	1.26
Antenna: gain of the Measurement Antenna	$U_{10}$	Normal	0.60
Reflectivity of absorbing material: EUT to the test antenna	$U_{11}$	Normal	0.50
Correction: off bore-sight angle in the elevation plane	$U_{12}$	Normal	0.50
EUT: mutual coupling to the power leads	$U_{13}$	Normal	0.50
Mutual coupling: amplitude effect of the test antenna on the EUT	$U_{14}$	Normal	0.50
Mutual coupling: EUT to its images in the absorbing material	$U_{15}$	Normal	0.50
Mutual coupling: EUT to its image in the ground plane	$U_{16}$	Normal	0.15
Mutual coupling: measuring antenna to its image in the absorbing material	$U_{17}$	Normal	0.50
Mutual coupling: measuring antenna to its image in the ground plane	$U_{18}$	Normal	0.15
Mutual coupling: interpolation of mutual coupling and mismatch loss correction factors	$U_{19}$	Normal	0.00
Random: System Repeatability	$U_{20}$	Standard Deviation	0.40
Combined Standard Uncertainty, $U$		2.03	
Expanded Uncertainty (for a 95 % confidence level, $k=2$ )		4.06	

### 3.6. Test Results

Product	Cellular PCS CDMA Phone with EVDO and Bluetooth (BT2.0 + EDR)		
Test Mode	Mode 1: Data Link		
Date of Test	2008/09/18	Test Site	SITE-1
Test Condition	Radiated Emission	Test Range	30M –10GHz

Frequency MHz	Correct Factor dB	Reading Level dBuV	Measurement Level dBuV/m	Margin dB	Limit dBuV/m
<b>Horizontal</b>					
37.276	15.122	18.954	34.076	-5.924	40.000
117.300	13.513	22.300	35.813	-7.687	43.500
216.725	11.373	19.527	30.900	-15.100	46.000
270.075	15.846	18.278	34.124	-11.876	46.000
384.050	19.493	16.734	36.227	-9.773	46.000
927.250	28.324	9.892	38.216	-7.784	46.000

Note:

1. All Modes of operation were investigated and the worst-case emissions are supports.
2. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
3. "  ", means this data is the worst emission level.
4. For measurement over 1 GHz, noise level is more than 10 dB below the limit.
5. Measurement Level = Reading Level + Correct Factor.

Product	Cellular PCS CDMA Phone with EVDO and Bluetooth (BT2.0 + EDR)				
Test Mode	Mode 1: Data Link				
Date of Test	2008/09/18		Test Site	SITE-1	
Test Condition	Radiated Emission		Test Range	30M –10GHz	

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBuV	dBuV/m	dB	dBuV/m
<b>Vertical</b>					
37.275	15.122	10.997	26.119	-13.881	40.000
129.425	13.792	19.114	32.906	-10.594	43.500
156.100	12.140	17.192	29.332	-14.168	43.500
216.725	11.373	22.939	34.312	-11.688	46.000
665.350	24.865	7.183	32.048	-13.952	46.000
927.250	28.324	9.791	38.115	-7.885	46.000

**Note:**

1. All Modes of operation were investigated and the worst-case emissions are supports.
2. All Readings below 1GHz are Quasi-Peak, above are performed with peak and/or average measurements as necessary.
3. "  ", means this data is the worst emission level.
4. For measurement over 1 GHz, noise level is more than 10 dB below the limit.
5. Measurement Level = Reading Level + Correct Factor.

Product	Cellular PCS CDMA Phone with EVDO and Bluetooth (BT2.0 + EDR)		
Test Mode	Mode 1: Data Link		
Date of Test	2008/09/18	Test Site	SITE-1
Test Condition	Radiated Emission	Test Range	30M –10GHz

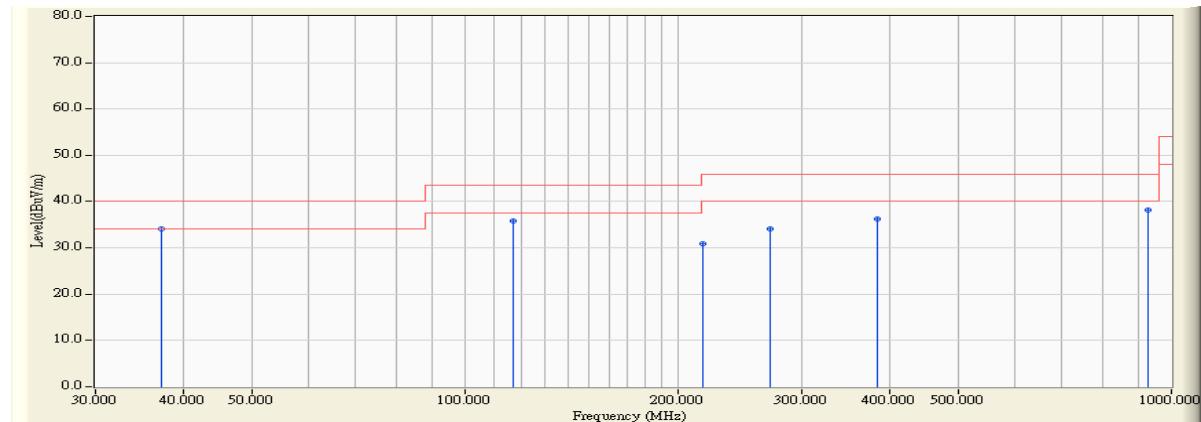
**Horizontal**

Fig. 3-3 Radiated emission measurements for mode 1.

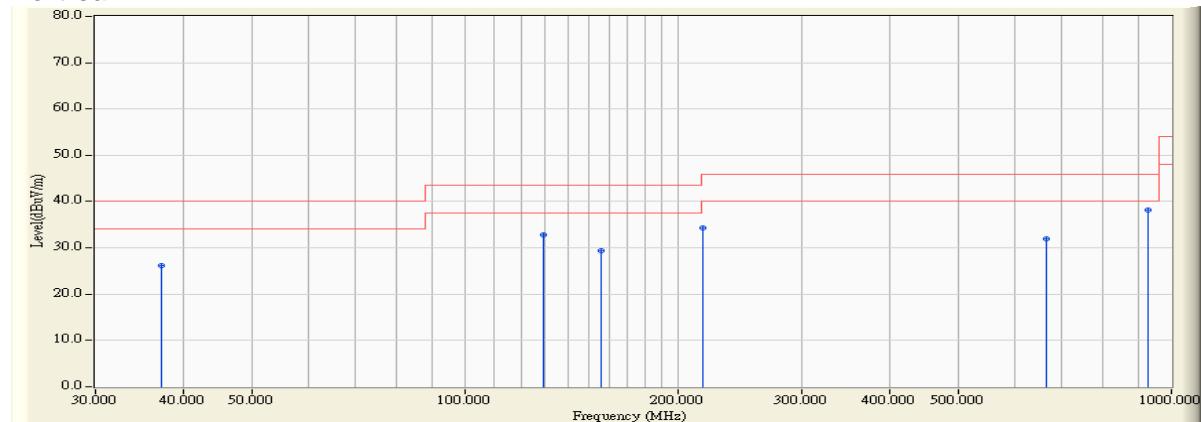
**Vertical**

Fig. 3-4 Radiated emission measurements for mode 1.