



MOTOROLA

PERSONAL COMMUNICATIONS SECTOR

**PRODUCT SAFETY AND COMPLIANCE
EMC LABORATORY**

EMC TEST REPORT - Addendum

Test Report Number -14622 -1BT

Report Date - September 9, 2004

Revised - September 24, 2004

The test results contained herein relate only to the model(s) identified. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics.

As the responsible EMC Engineer, I hereby declare that the equipment tested as specified in this report conforms to the requirements indicated.

A handwritten signature in blue ink that reads "Michael E. Hill".

Signature:

Name: Michael E. Hill

Title: Senior Electrical Engineer

Date: September 9, 2004

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THIS REPORT MUST NOT BE USED TO CLAIM PRODUCT ENDORSEMENT BY A2LA OR ANY AGENCY OF THE U.S. GOVERNMENT.

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Test Report Details

Tests Performed By: Motorola Personal Communications Sector
Product Safety and Compliance Group
600 North US Hwy 45
Libertyville, IL 60048
PH (847) 523-6167 Fax (847) 523-4538
Motorola PCS FRN: 0004321311
FCC Registration Number: 316588
Industry Canada Number: IC3908

Radiated Emissions Performed By: Underwriters Laboratories
International EMC Services
333 Pfingsten RD
Northbrook, IL 60062
Contact: Lubomir Madjarov
(Tel) 847/664-3957
(Fax) 847/313-3957

Tests Requested By: Motorola Inc.
Personal Communications Sector
600 North US Hwy 45
Libertyville, IL 60048

Product Type: Cellular Phone

Signaling Capability: GSM 1900, Bluetooth

Model Number: E1000

Serial Numbers: 004400004260905, 004400004260939

Testing Complete Date: August 23, 2004

Applicable Standards

All tests and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part J as well as the following parts:

- Part 15 Subpart C – Intentional Radiators
- Part 22 Subpart H - Public Mobile Services
- Part 24 - Personal Communications Services
- Part 90 - Private Land Mobile Radio Service

Applicable Standards: TIA EIA 137-A, TIA EIA 98-C, ANSI 63.4 2001, RSS-118 (AMPS), RSS-128 (TDMA), RSS-129 (CDMA), RSS-133 (PCS)

DA 00-705, "Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum Systems" published by the Federal Communications Commission was also used in the testing of this product.

Summary of Testing

| Test | Test Name | Pass/Fail |
|------|--------------------------------------|-----------|
| 1 | Carrier Frequency Separation | Pass |
| 2 | Number of Hopping Frequencies | Pass |
| 3 | Time of Occupancy (Dwell Time) | Pass |
| 4 | 20 dB Bandwidth | Pass |
| 5 | Spurious RF Conducted Emissions | Pass |
| 6 | Field Strength of Spurious Emissions | Pass |
| 7 | Max Power | N/A |
| 8 | Band Edges | See plots |
| 9 | Conducted Spurious Emissions | Pass |

| Test | Test Name | Results |
|------|--------------------------------------|-------------|
| 1 | Carrier Frequency Separation | 1.00MHz |
| 2 | Number of Hopping | 79 |
| 3 | Time of Occupancy (Dwell Time) | 2.92 ms |
| 4 | 20 dB Bandwidth | 999 kHz |
| 5 | Spurious RF Conducted Emissions | See plots |
| 6 | Field Strength of Spurious Emissions | See plots |
| 7 | Max Power | -0.1875 dBm |
| 8 | Band Edges | See plots |
| 9 | Conducted Spurious Emissions | See plots |

The margin with respect to the limit is the minimum margin for all modes and bands. () indicates the margin at which the product exceeds the limit.

General and Special Conditions

The EUT was tested using a fully charged battery when applicable. Where a battery could not be used due to the need for a controlled variation of input voltage, an external power supply was utilized.

All testing was done in an indoor controlled environment with an average temperature of 22° C and relative humidity of 50%.

Equipment and Cable Configurations

The EUT was tested in a stand-alone configuration that is representative of typical use.

Measuring Equipment and Calibration Information

| Manufacturer | Equipment Type | Model No. | Serial Number | Cal. Due Date |
|---------------------|--------------------------|------------------|----------------------|----------------------|
| Rohde & Schwarz | Receiver | ESI26 | 838786/010 | 5/17/2005 |
| Hewlett-Packard | EMC Analyzer | 8593EM | 3536A00118 | 10/2/2004 |
| Hewlett-Packard | EMC Analyzer | 7405 | US39440191 | 11/13/2004 |
| Miteq | Preamplifier 0.1-26.5GHz | NSP2650-NF-S | 966350 | 1/8/2005 |
| ETS | DRG Horn Antenna | 3115 | 6222 | 9/29/2004 |
| A.H. Systems Inc. | DRG Horn Antenna | SAS-2--/571 | 365 | 12/17/2004 |
| ETS | Log-Periodic Antenna | 3148 | 1188 | 3/5/2005 |
| ETS | Biconical Antenna | 3110B | 3370 | 11/14/2004 |
| Attenuator | Weinschel | AS-6 | 6675 | 10/14/2004 |
| Attenuator | Weinschel | AS-6 | 6677 | 11/4/2004 |
| Rohde & Schwarz | Mobile Test Set | CMD 80 | DE29008 | N/A |
| Hewlett-Packard | Signal Generator | 83623B | 3844A01195 | 6/20/2005 |
| Thermotron | Environmental Chamber | S-4 | 31580 | 1/5/2005 |
| Hewlett-Packard | Pre-Amplifier | 8347A | 3307A02001 | 11/4/2004 |
| Agilent | Power Meter | EE4418B | GB40206388 | 12/5/2004 |
| Agilent | Power Sensor | E4412B | US38486321 | 11/23/2004 |
| Hewlett-Packard | Pre-Amplifier | 8447F | 2805A03419 | 5/19/2005 |

U.L. Equipment

| | | | | |
|-----------------|--------------------------|----------|------------|-----------|
| Hewlett Packard | QP Adapter | 85650A | 2811A01069 | 1/8/2005 |
| Hewlett Packard | S/A Display | 8566B | 2542A12974 | 1/8/2005 |
| Hewlett Packard | S/A | 8566B | 2637A03376 | 1/8/2005 |
| Hewlett Packard | RF Preselector | 85685A | 2810A00692 | 1/8/2005 |
| Rohde & Schwarz | S/A | FSEK20 | DE2525315 | 1/9/2005 |
| EMCO | Horn Antenna 1-18GHz | 3115 | 2638 | 7/10/2005 |
| EMCO | Horn Antenna 18-26.5GHz | 3160-09 | 9904-1165 | N/A* |
| Chase | Bi-Con Antenna 30-300MHz | VBA6106A | 1246 | 6/23/2005 |
| Chase | Log-Periodic Antenna | UPA6108 | 1120 | 6/23/2005 |

All equipment is on a one-year calibration cycle.

Description of Bluetooth Transmitter

The E1000 cell phone offers Bluetooth as a feature. The Bluetooth spread-spectrum, frequency hopping transceiver is designed to operate between 2400 and 2483 MHz. The Bluetooth antenna is mounted on the PCB inside of the EUT. The antenna installation is permanent. For a more thorough description of the functionality please refer to Exhibit 12 of this package.

As a Bluetooth transmitter, it is designed operate with other Bluetooth devices as defined by industrial standard. In this application, the device is battery-operated. Therefore conducted AC line emissions testing as described in CFR47, Part 15.207 was not necessary.

Measurement Procedures and Data

CARRIER FREQUENCY SEPARATION

CFR 47 Part 15.247

Measurement Procedure

The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage.

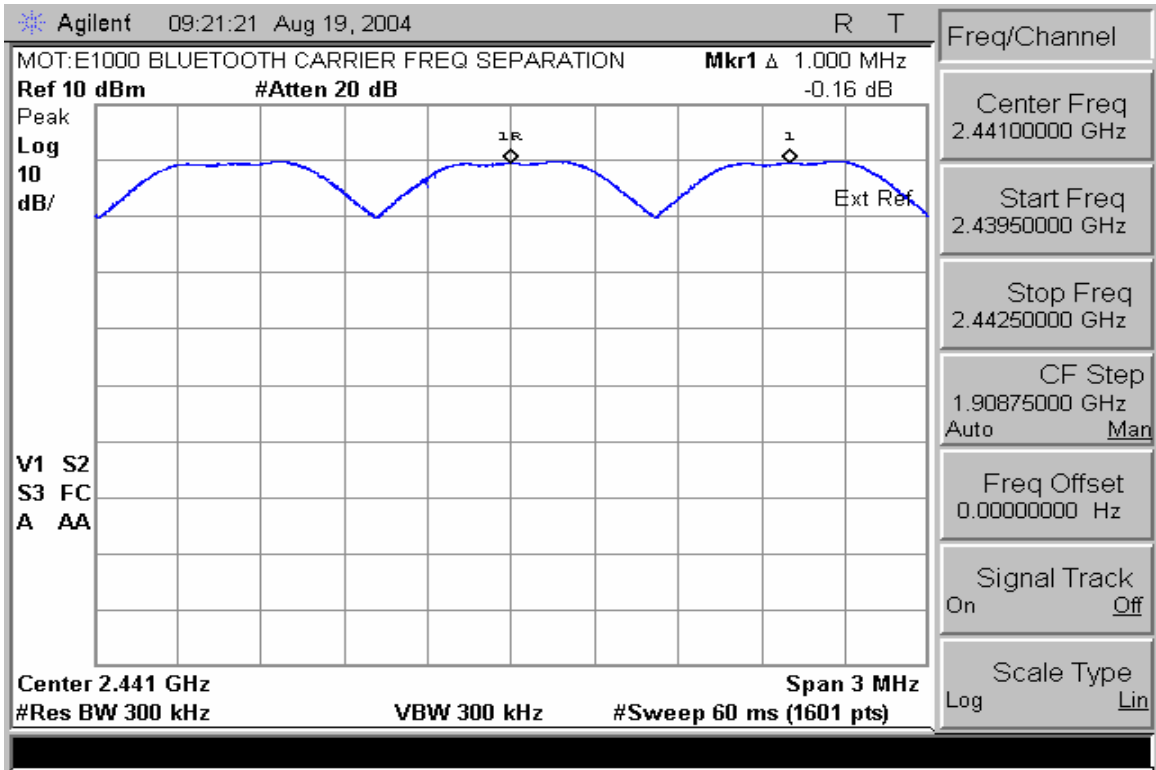
The Bluetooth transmitter of the E1000 had its hopping function enabled. The following spectrum analyzer settings were used:

1. Span = wide enough to capture the peaks of two adjacent channels
2. Resolution (or IF) Bandwidth (RBW) \geq 1% of the span
3. Video (or Average) Bandwidth (VBW) \geq RBW
4. Sweep = auto
5. Detector function = peak
6. Trace = max hold

The trace was allowed to stabilize. The marker-delta function was used to determine the separation between the peaks of the adjacent channels.

Measurement Results

See attached.



Carrier Frequency Separation

NUMBER OF HOPPING FREQUENCIES

CFR 47 Part 15.247

Measurement Procedure

The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage.

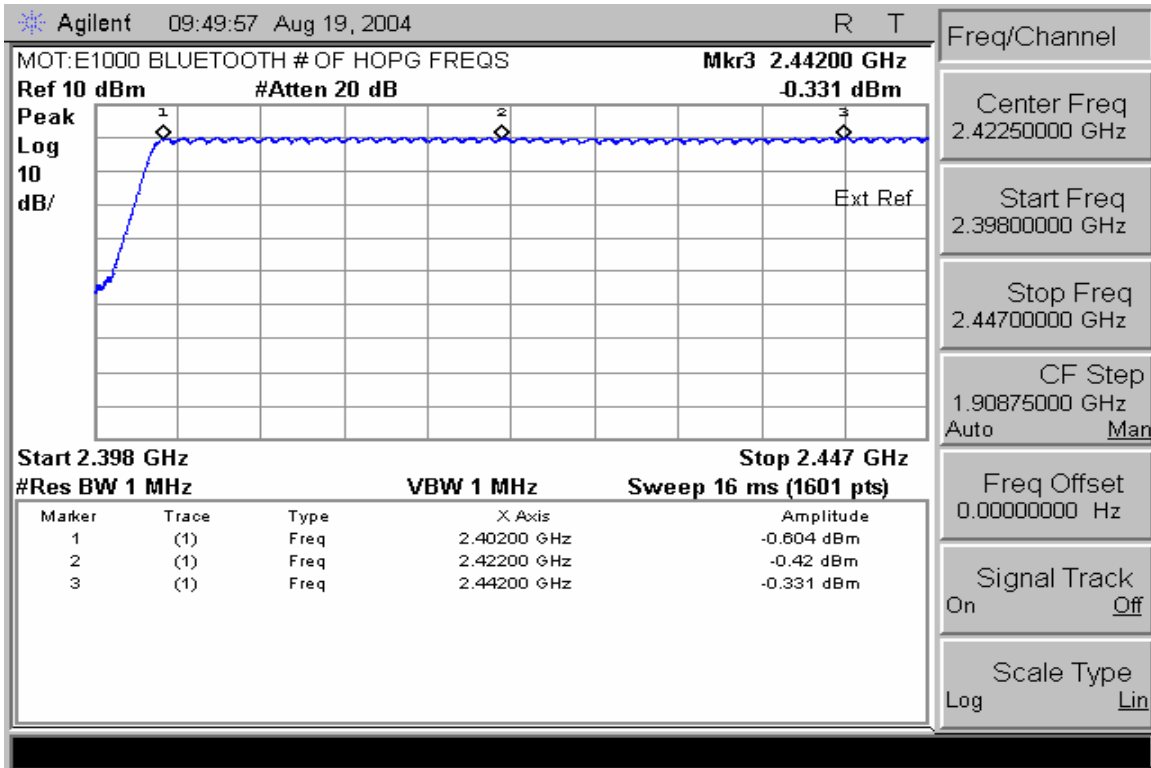
The Bluetooth frequency hopping function of the EUT was enabled. The spectrum analyzer used the following settings:

1. Span = the frequency band of operation
2. RBW \geq 1% of the span
3. VBW \geq RBW
4. Sweep = auto
5. Detector function = peak
6. Trace = max hold

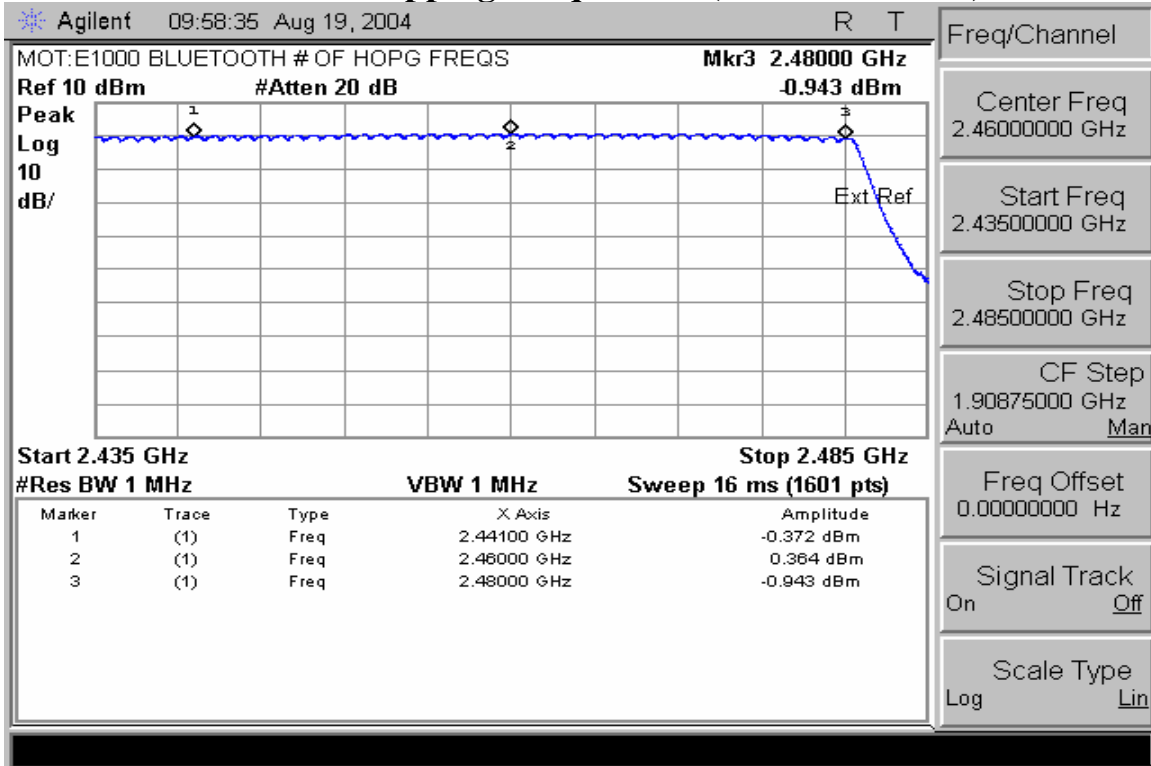
The trace was allowed to stabilize.

Measurement Results

See attached.



Number of Hopping Frequencies (Channels 2 – 42)



Number of Hopping Frequencies (Channels 42 – 80)

TIME OF OCCUPANCY (DWELL TIME)

CFR47 Part 15.247

Measurement Procedure

The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage.

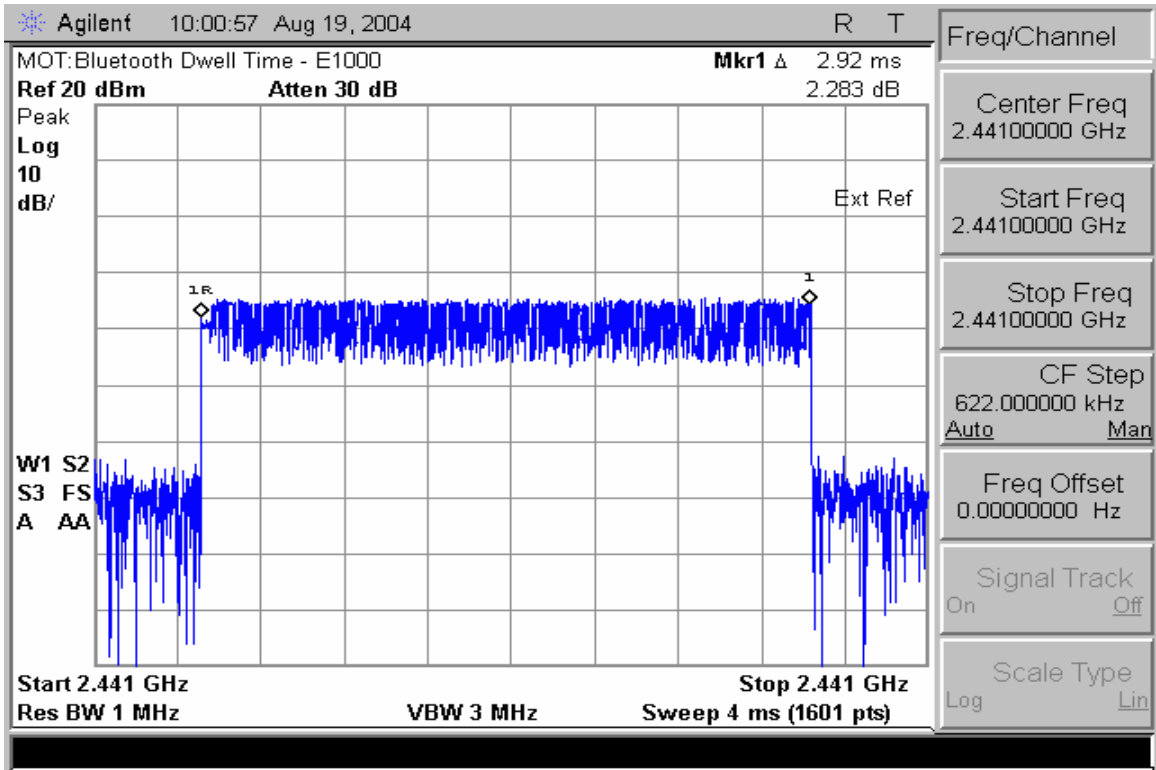
The Bluetooth hopping function of the EUT was enabled. The following spectrum analyzer settings were used:

1. Span = zero span, centered on a hopping channel
2. RBW = 1 MHz
3. VBW \geq RBW
4. Sweep = as necessary to capture the entire dwell time per hopping channel
5. Detector function = peak
6. Trace = max hold

The marker-delta function was used to determine the dwell time.

Measurement Results

Attached



Dwell Time

20dB Bandwidth

CFR 47 Part 15.247

Measurement Procedure

The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage.

The Bluetooth frequency hopping function of the EUT was enabled. The spectrum analyzer used the following settings:

1. Span = approx. 2 to 3 times the 20dB bandwidth, centered on a hopping frequency
2. RBW \geq 1% of the 20dB span
3. VBW \geq RBW
4. Sweep = auto
5. Detector function = peak
6. Trace = max hold

The trace was allowed to stabilize. The EUT was transmitting at its maximum data rate. The marker-to-peak function was used to set the marker to the peak of the emission. The marker-delta function was used to measure 20dB down one side of the emission. The marker-delta function and marker was moved to the other side of the emission until it was even with the reference marker. The marker-delta reading at this point was the 20dB bandwidth of the emission.

Measurement Results

Attached

FIELD STRENGTH OF SPURIOUS EMISSIONS

CFR Part 2.1053, 15.249

Measurement Procedure

The Equipment-Under-Test is placed inside the semi-anechoic chamber on a wooden table at the turntable center. For each spurious frequency, the antenna mast is raised and lowered from 1 to 4 meters and the turntable is rotated 360 degrees to obtain a maximum reading on the spectrum analyzer. This is repeated for both horizontal and vertical polarizations of the receive antenna.

The Equipment-Under-Test is then replaced with a substitution antenna fed by a signal generator. With the signal generator tuned to a particular spurious frequency, the antenna mast is raised and lowered from 1 to 4 meters to obtain a maximum reading at the spectrum analyzer. The output of the signal generator is then adjusted until a reading identical to that obtained with the actual transmitter is achieved.

The power in dBm of each spurious emission is calculated by correcting the signal generator level for cable loss and gain of the substitution antenna referenced to a dipole.

The field strength of each radiated emission is calculated by correcting the EMI receiver level for cable loss, amplifier gain, and antenna correction factors.

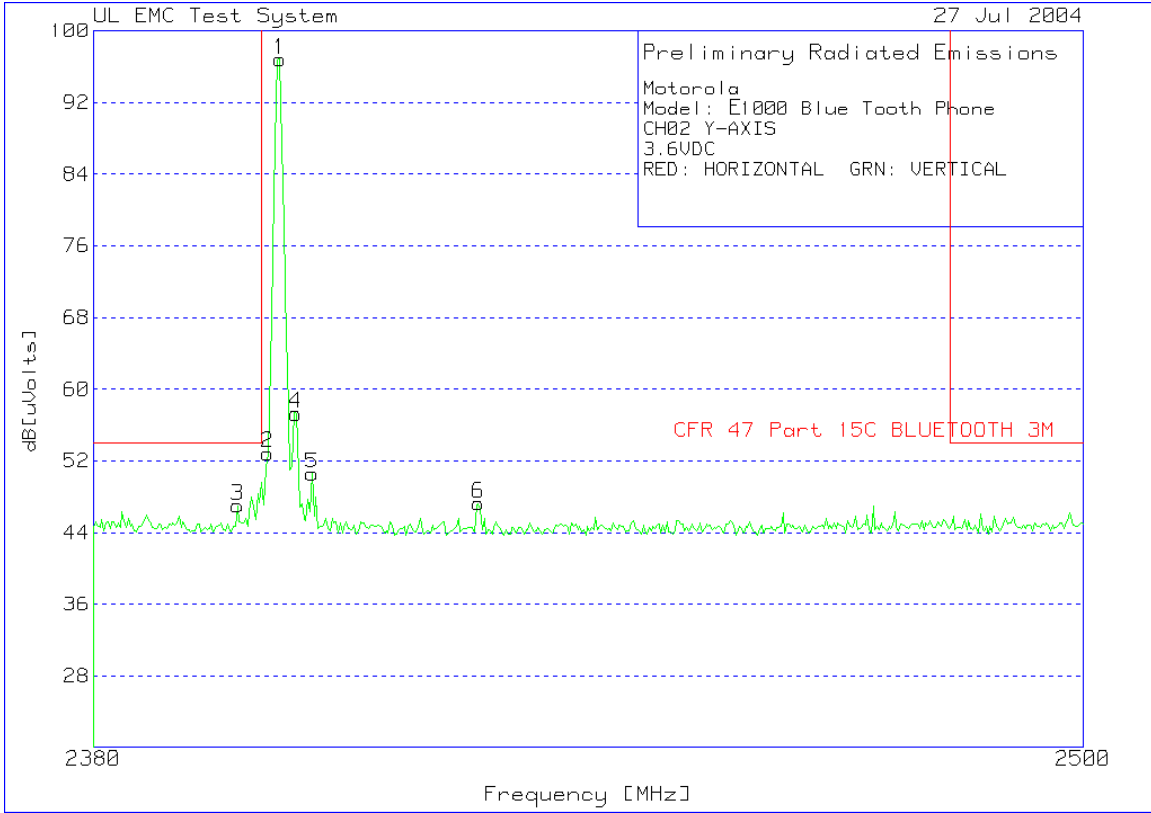
Field Strength (dBuV/m) = EMI Receiver Level (dBuV) + Cable Loss (dB) -
Amplifier Gain (dB) + Antenna Correction Factor (1/m)

A fully charged battery was used for the supply voltage.

This data was taken at Underwriter's Laboratories.

Measurement Results

Attached

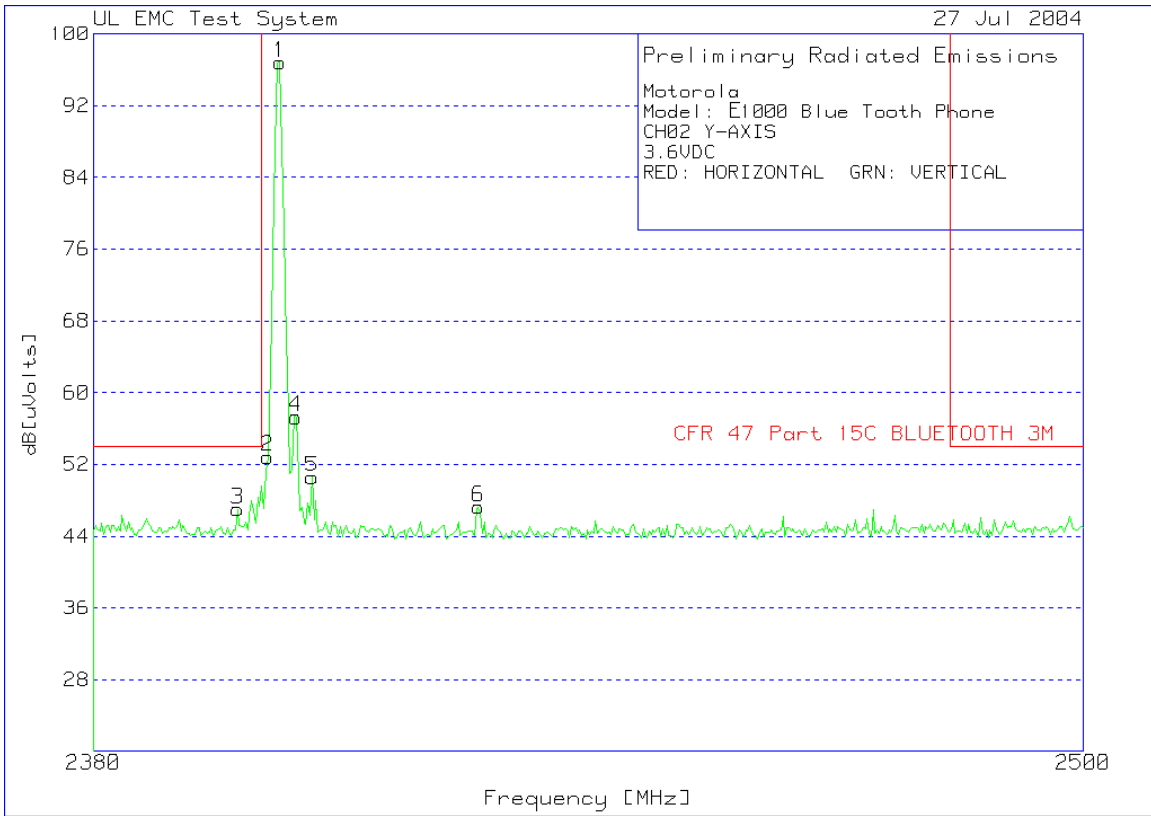


Inband High Channel

Motorola
 Model: E1000 Blue Tooth Phone
 CH78 Y-AXIS
 3.6VDC
 RED: HORIZONTAL GRN: VERTICAL

| Marker Number | Test Frequency [MHz] | Meter Reading [dB(uV)] | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dB[uVolts] | Limit 1 | Margin 1[dB] | Height [cm] | Polarity |
|--------------------------------|----------------------|------------------------|---------------|-----------------------|------------------------|------------------|---------|--------------|-------------|----------|
| 2 - 4GHz 2380 - 2500MHz | | | | | | | | | | |
| 1 | 2478.838 | 26.61 | pk | 3.3 | 22 | 51.91 | 999 | -947.09 | 100 | Vert |
| 2 | 2480.04 | 70.86 | pk | 3.3 | 22 | 96.16 | 999 | -902.84 | 100 | Vert |
| 3 | 2483.647 | 26.72 | pk | 3.3 | 22.1 | 52.12 | 54 | -1.88 | 100 | Vert |
| 4 | 2484.609 | 25.49 | pk | 3.3 | 22.1 | 50.89 | 54 | -3.11 | 100 | Vert |
| 5 | 2482.204 | 26.22 | pk | 3.3 | 22 | 51.52 | 999 | -947.48 | 100 | Vert |
| 6 | 2384.088 | 24.61 | pk | 3.2 | 21.8 | 49.61 | 54 | -4.39 | 100 | Vert |

LIMIT 1: CFR 47 Part 15C BLUETOOTH 3M
 LIMIT 2: NONE

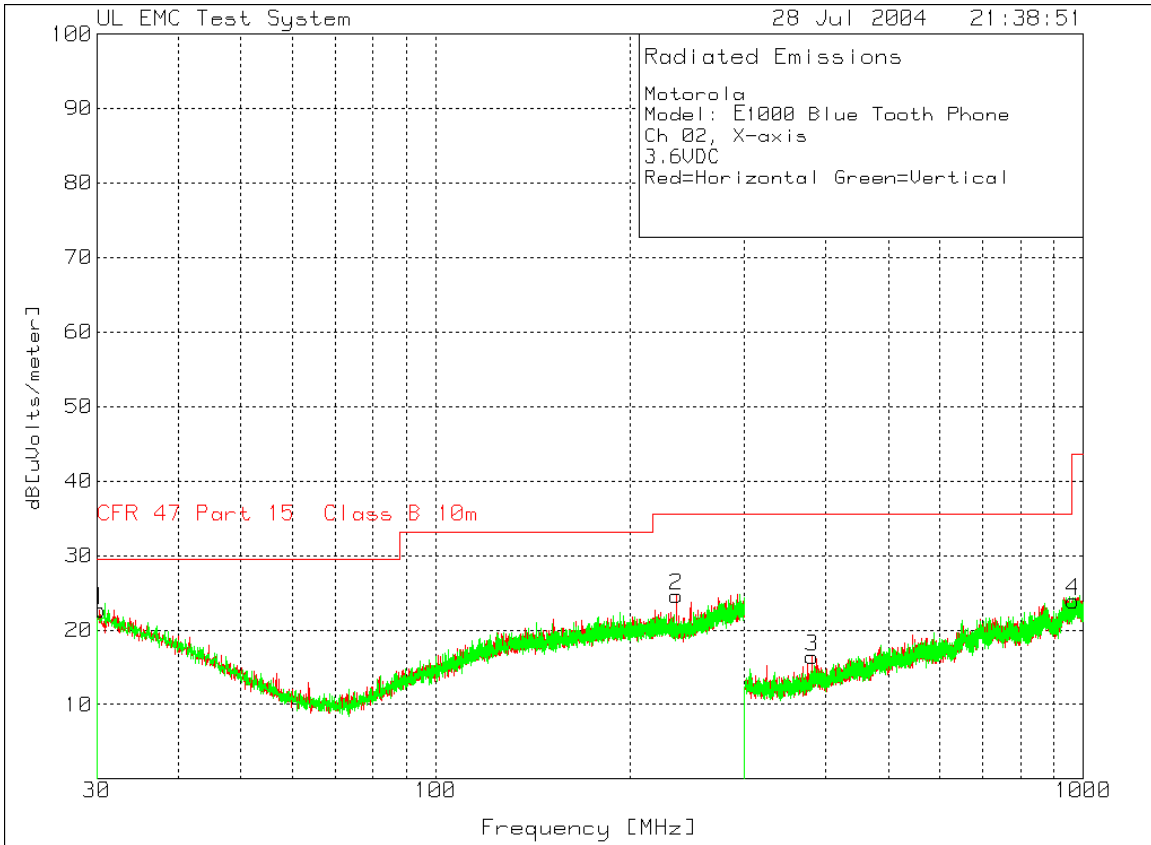


Inband Low Channel

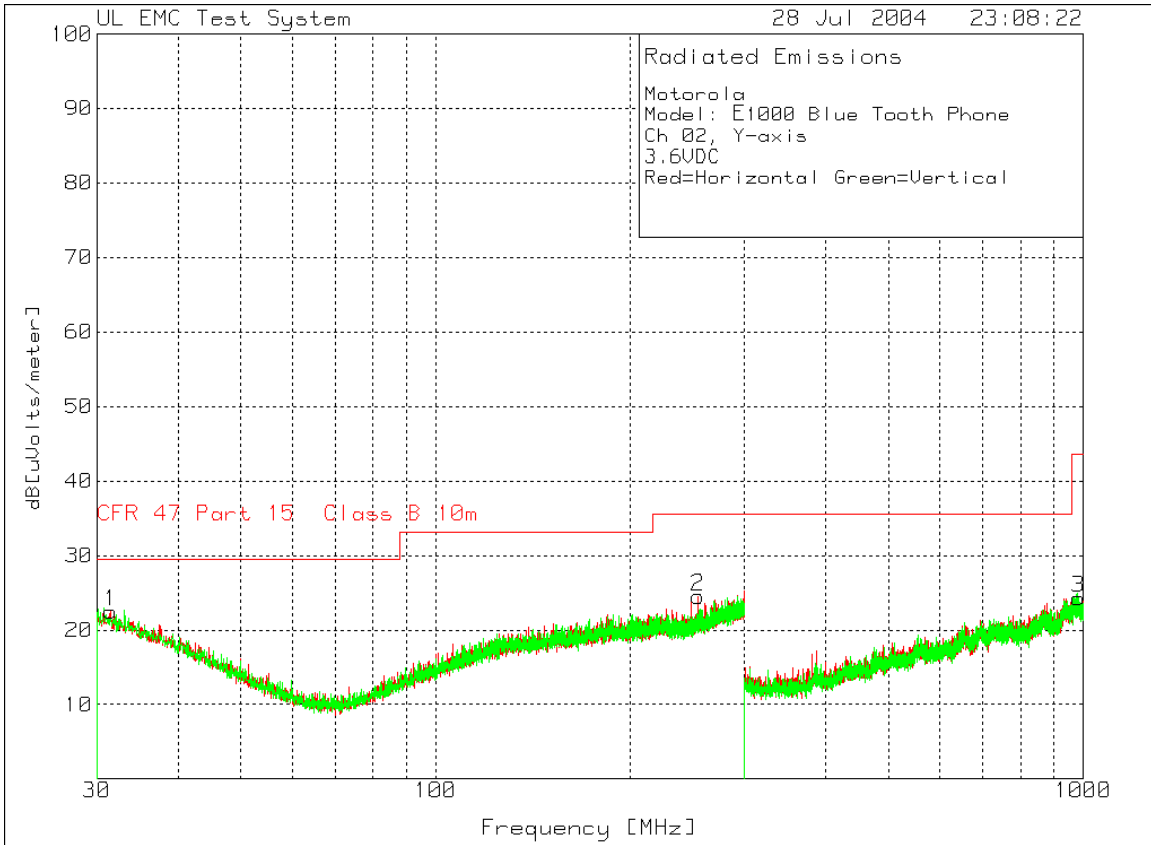
Motorola
Model: E1000 Blue Tooth Phone
CH02 Y-AXIS
3.6VDC
RED: HORIZONTAL GRN: VERTICAL

| Marker Number | Test Frequency [MHz] | Meter Reading [dB[uV]] | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dB[uVolts] | Limit 1 | Margin 1[dB] | Height [cm] | Polarity |
|--------------------------------|----------------------|------------------------|---------------|-----------------------|------------------------|------------------|---------|--------------|-------------|----------|
| 2 - 4GHz 2380 - 2500MHz | | | | | | | | | | |
| 1 | 2402.124 | 71.72 | pk | 3.3 | 21.8 | 96.82 | 999 | -902.18 | 100 | Vert |
| 2 | 2400.681 | 27.75 | pk | 3.3 | 21.8 | 52.85 | 999 | -946.15 | 150 | Vert |
| 3 | 2397.074 | 21.9 | pk | 3.3 | 21.8 | 47 | 54 | -7 | 100 | Vert |
| 4 | 2404.048 | 32.2 | pk | 3.3 | 21.8 | 57.3 | 999 | -941.7 | 100 | Vert |
| 5 | 2405.972 | 25.48 | pk | 3.3 | 21.8 | 50.58 | 999 | -948.42 | 100 | Vert |
| 6 | 2425.932 | 22.07 | pk | 3.3 | 21.9 | 47.27 | 999 | -951.73 | 100 | Vert |

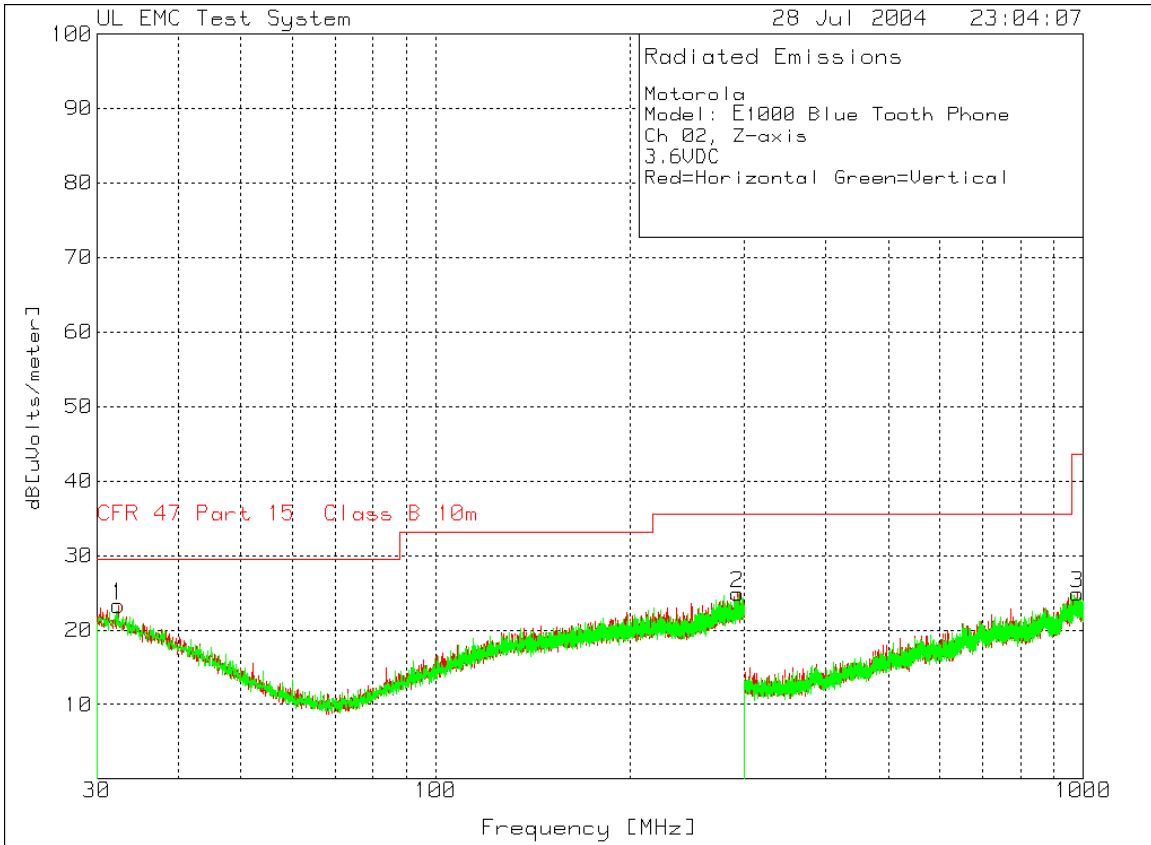
LIMIT 1: CFR 47 Part 15C BLUETOOTH 3M
 LIMIT 2: NONE



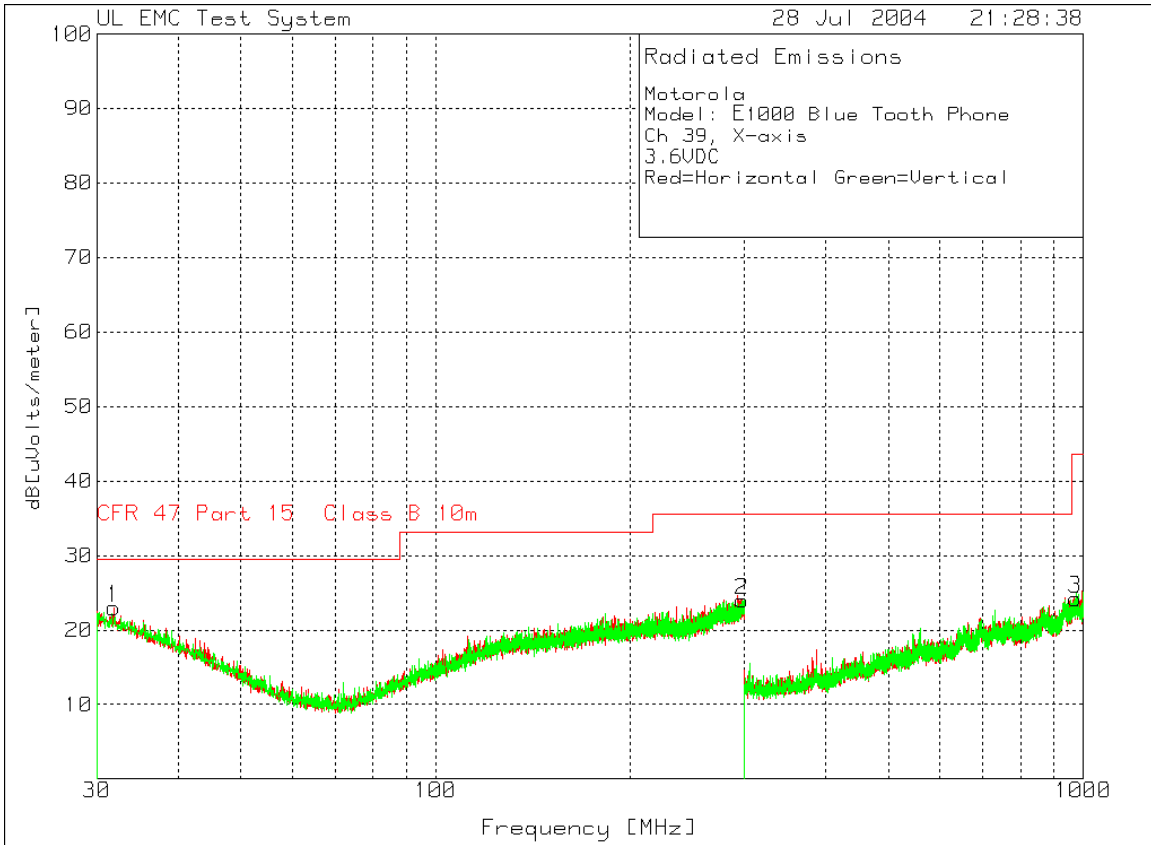
30 -1000MHz Low Channel Dual Polarization X-Axis



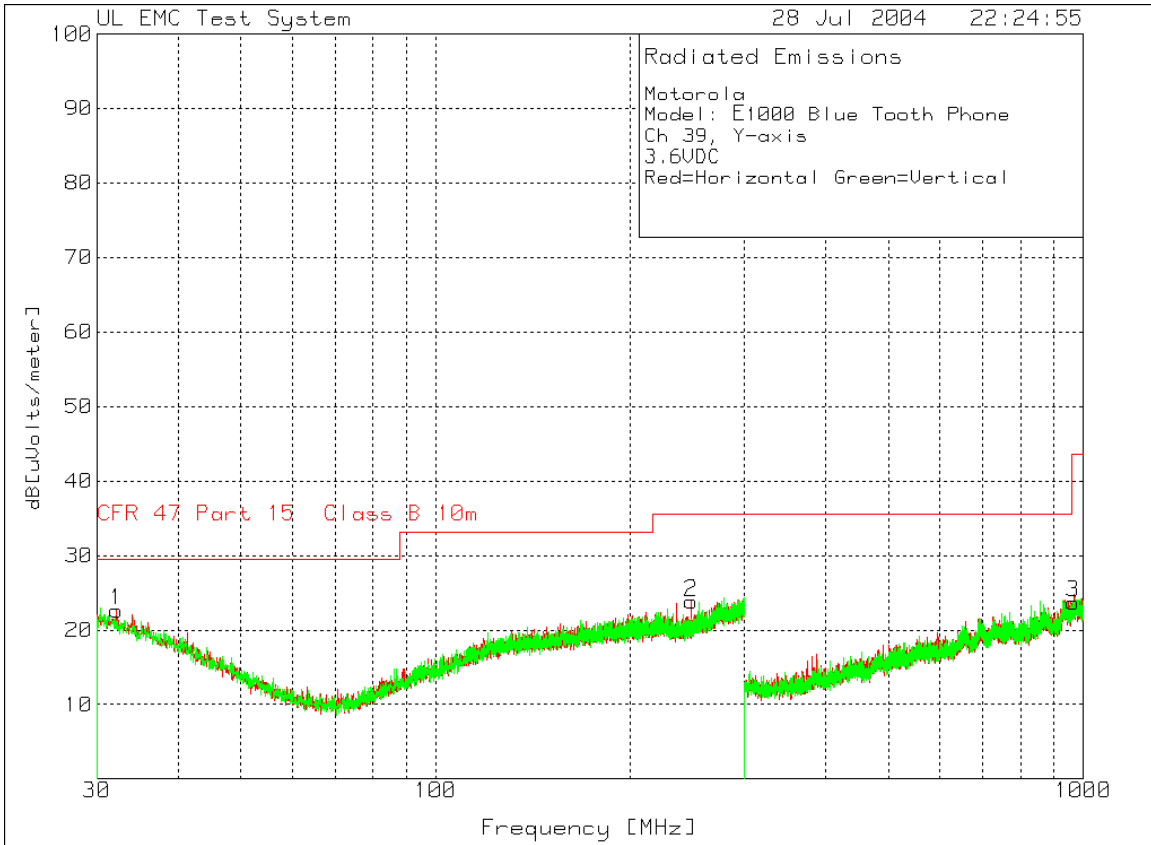
30 -1000MHz Low Channel Dual Polarization Y-Axis



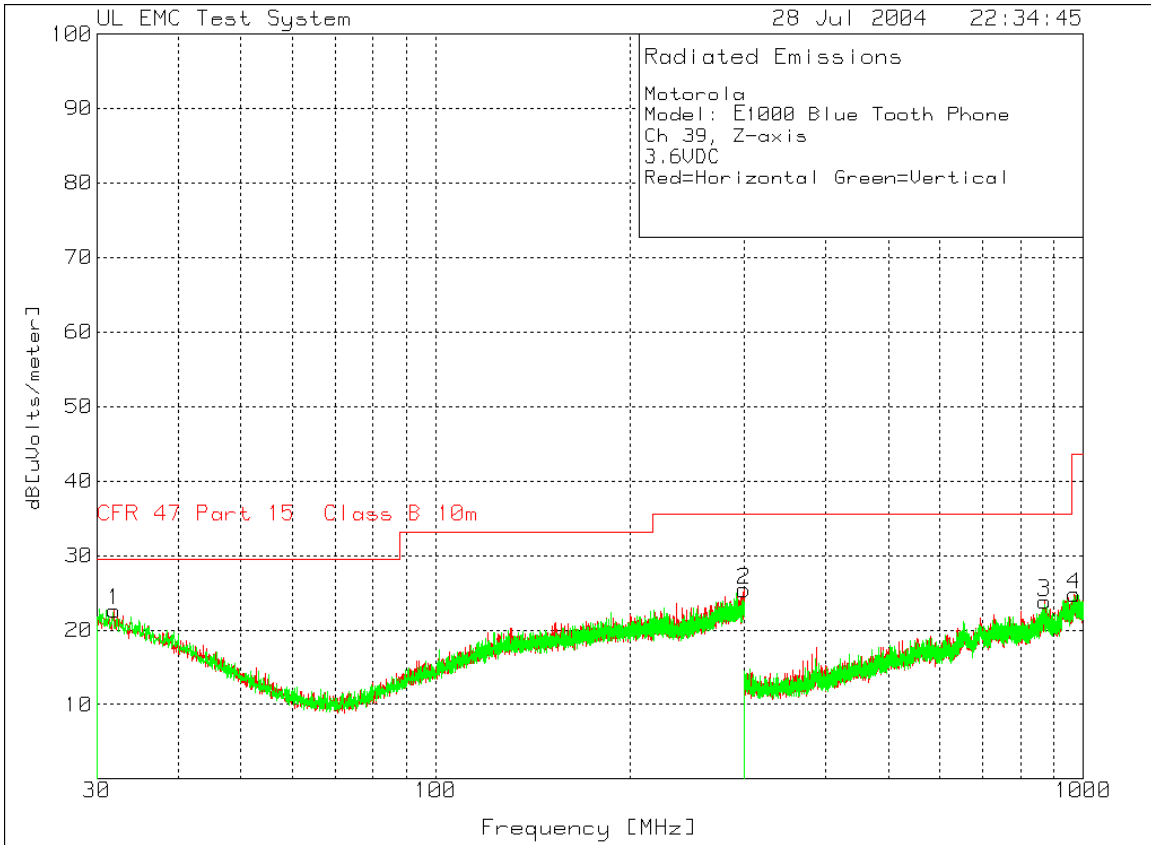
30 -1000MHz Low Channel Dual Polarization Z-Axis



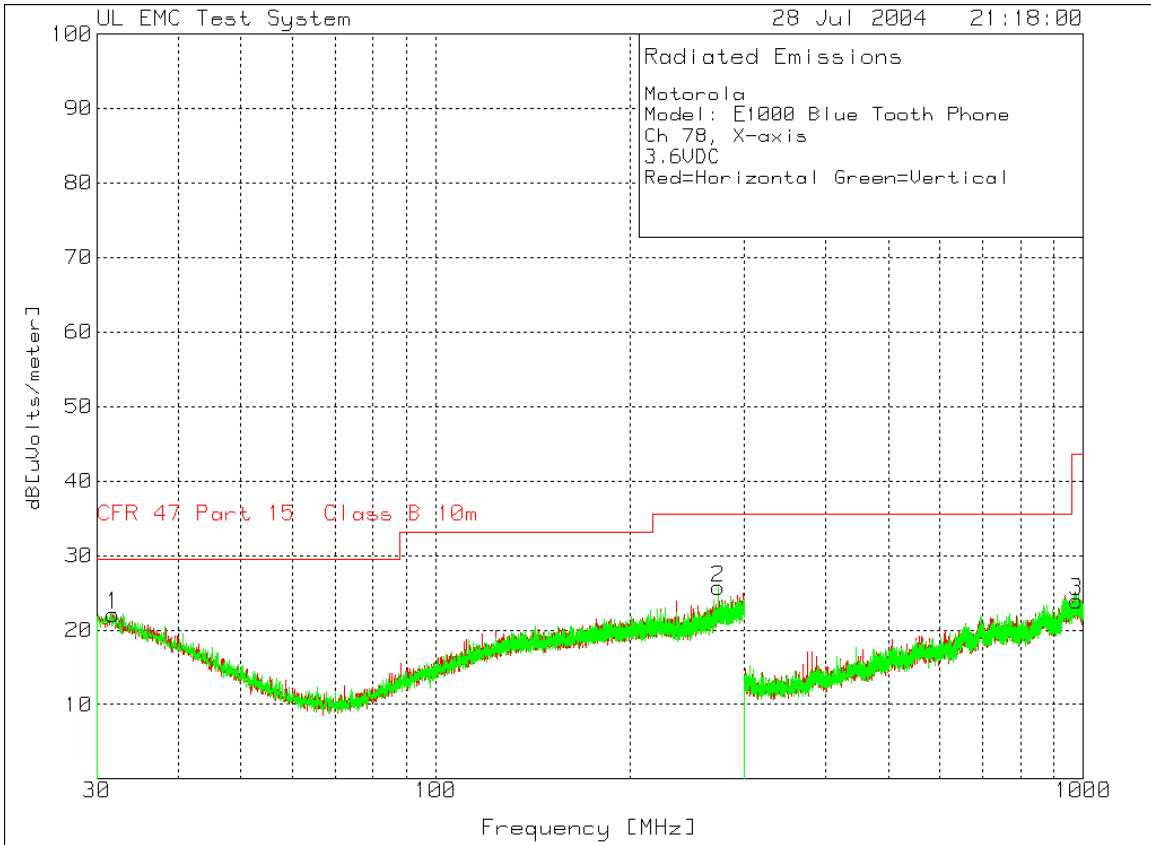
30-1000MHz Mid Channel Dual Polarization X-Axis



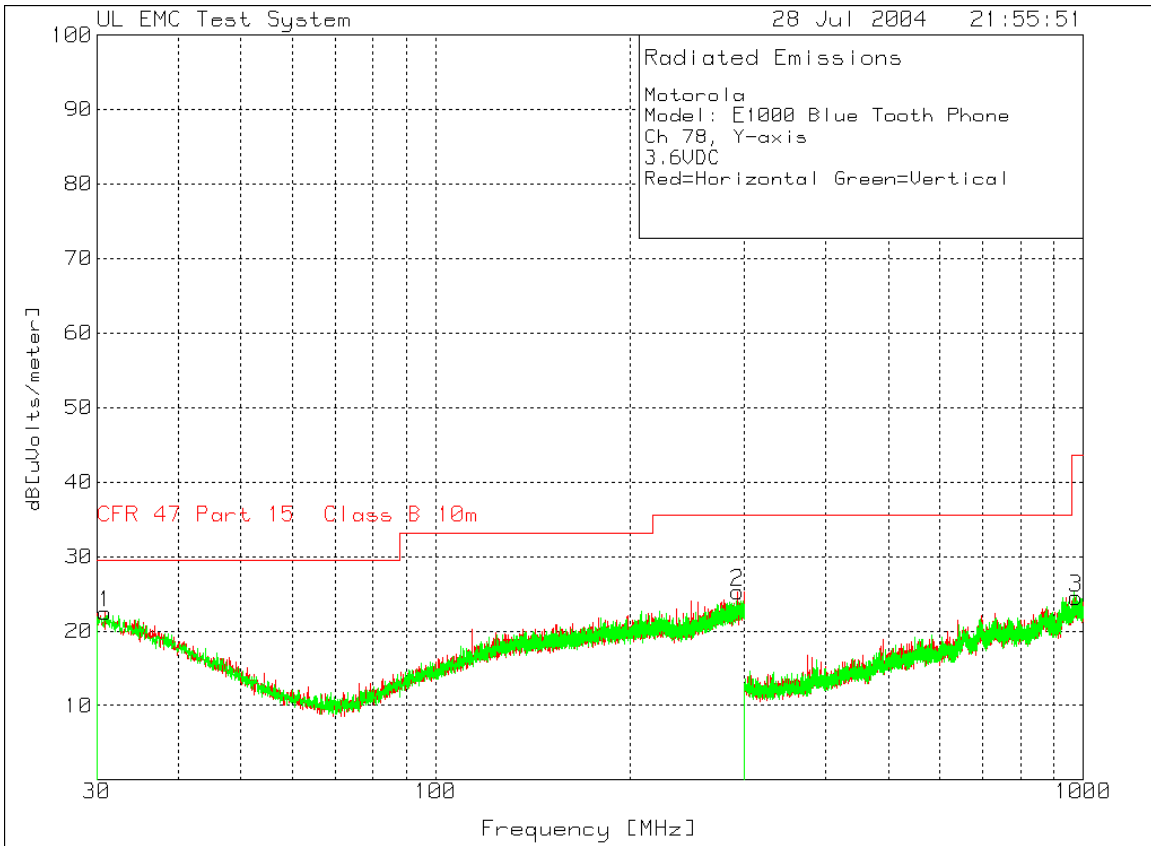
30-1000MHz Mid Channel Dual Polarization Y-Axis



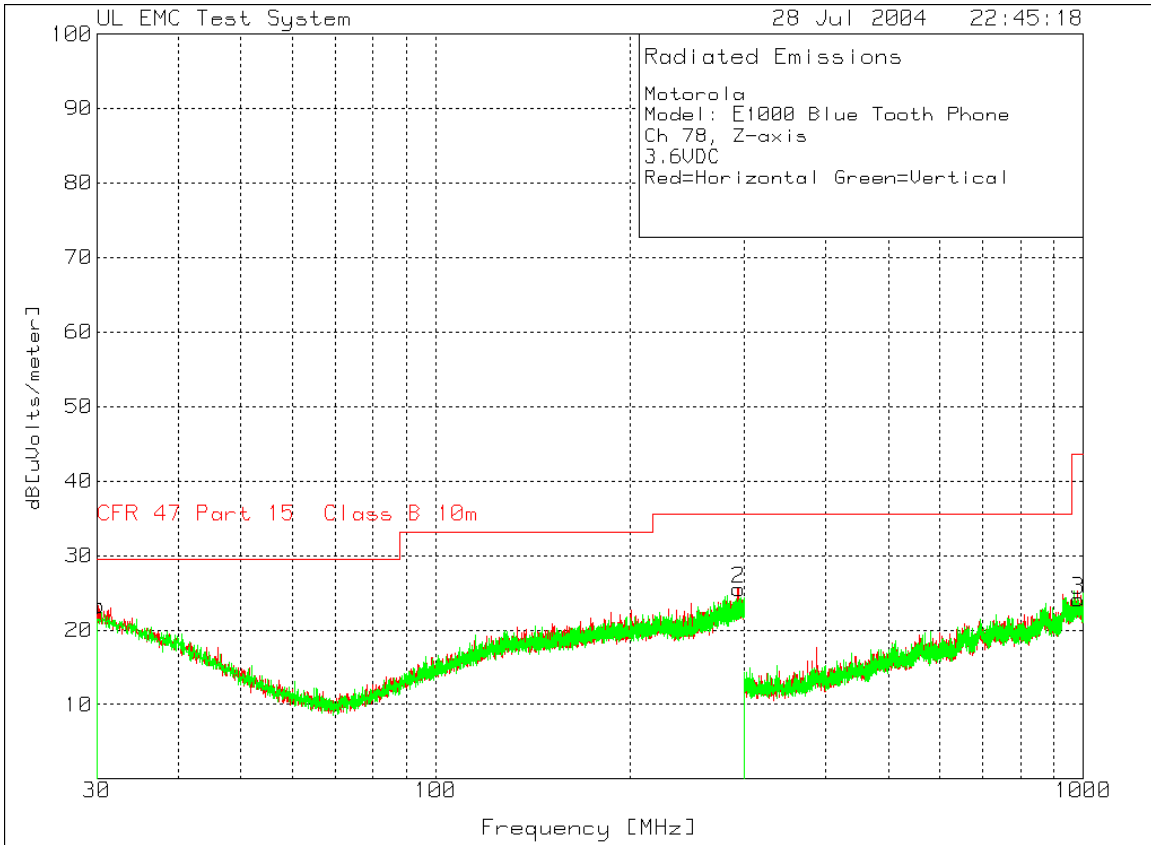
30-1000MHz Mid Channel Dual Polarization Z-Axis



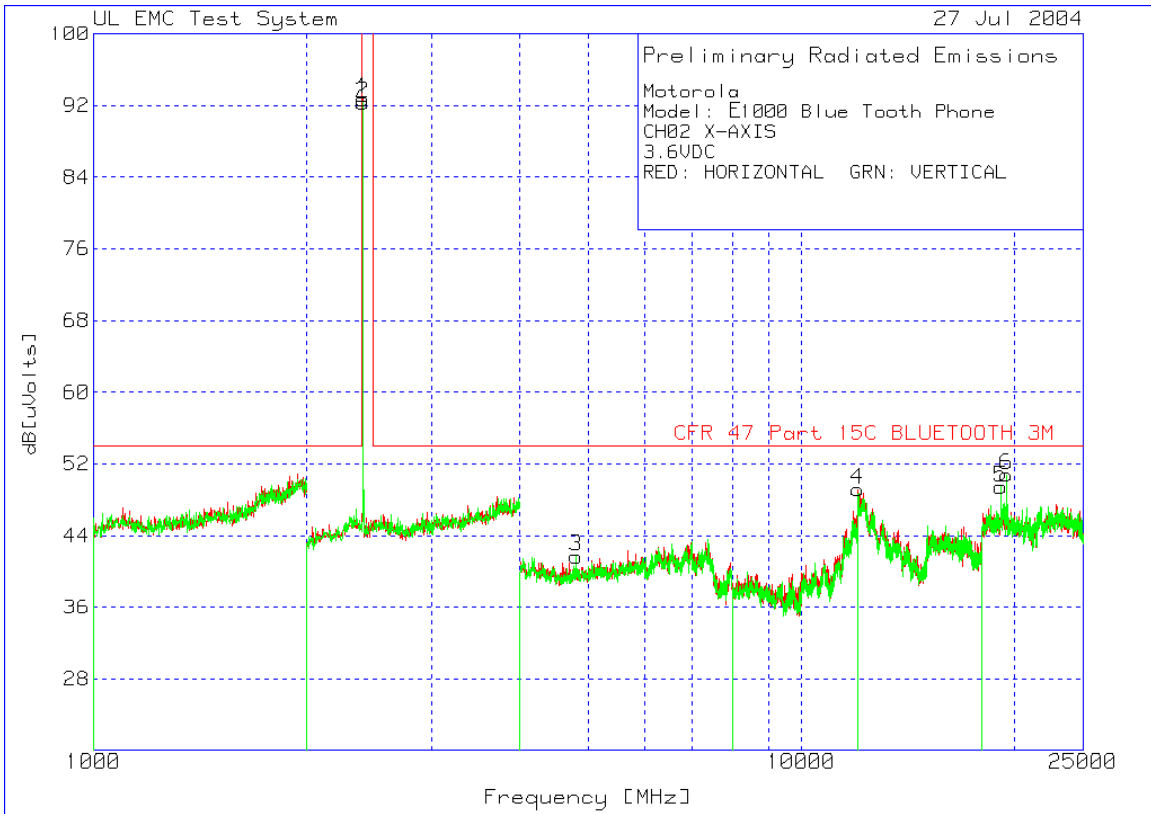
30-1000MHz High Channel Dual Polarization X-Axis



30-1000MHz High Channel Dual Polarization Y-Axis



30-1000MHz High Channel Dual Polarization Z-Axis



1-25GHz Low Channel X-Orientation

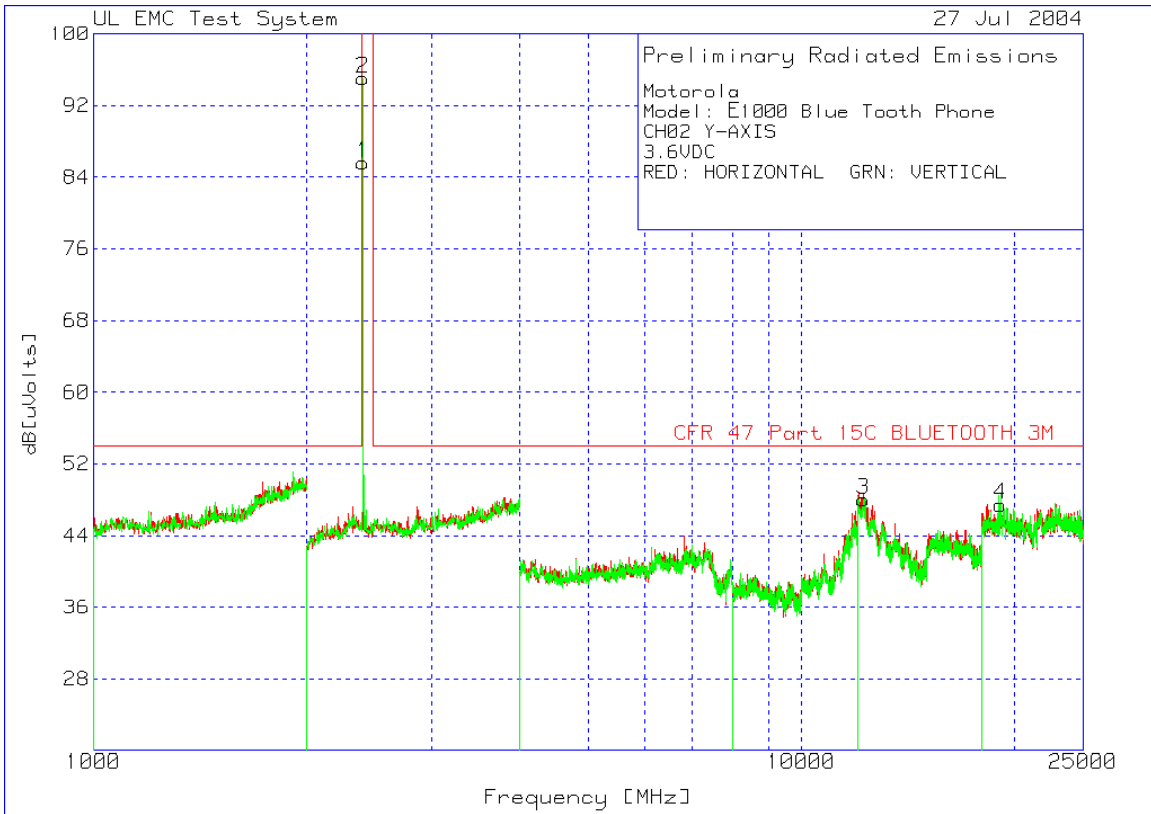
CH02 X-AXIS

3.6VDC

RED: HORIZONTAL GRN: VERTICAL

| Marker Number | Test Frequency [MHz] | Meter Reading [dB(uV)] | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dB[uVolts] | Limit 1 | Margin 1[dB] | Height [cm] | Polarity |
|------------------------------------|----------------------|------------------------|---------------|-----------------------|------------------------|------------------|---------|--------------|-------------|----------|
| 2 - 4GHz 2000 - 4000MHz | | | | | | | | | | |
| 1 | 2400.802 | 67.63 | pk | 3.3 | 21.8 | 92.73 | 999 | -906.27 | 100 | Horz |
| 12 - 18GHz 12000 - 18000MHz | | | | | | | | | | |
| 4 | 12006.006 | 51.06 | pk | -41.3 | 39.4 | 49.16 | 54 | -4.84 | 99 | Horz |
| 2 - 4GHz 2000 - 4000MHz | | | | | | | | | | |
| 2 | 2400.802 | 67.21 | pk | 3.3 | 21.8 | 92.31 | 999 | -906.69 | 150 | Vert |
| 4 - 8GHz 4000 - 8000MHz | | | | | | | | | | |
| 3 | 4804.805 | 65.37 | pk | -51.4 | 27.7 | 41.67 | 54 | -12.33 | 150 | Vert |
| 18-26.5GHz 18000 - 25000MHz | | | | | | | | | | |
| 5 | 19107.107 | 77.52 | pk | -68.3 | 40.2 | 49.42 | 54 | -4.58 | 100 | Vert |
| 6 | 19471.471 | 78.87 | pk | -68.4 | 40.3 | 50.77 | 54 | -3.23 | 100 | Vert |

LIMIT 1: CFR 47 Part 15C BLUETOOTH 3M
 LIMIT 2: NONE

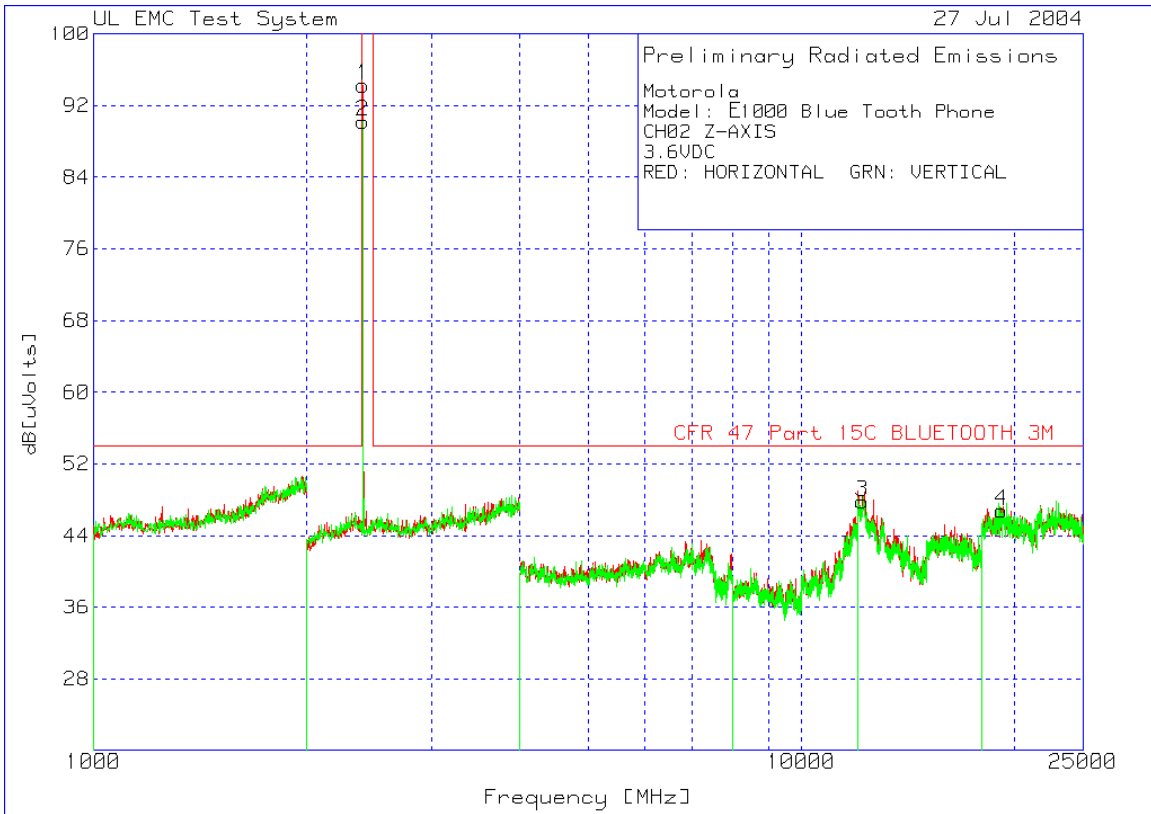


1-25GHz Low Channel Y-Orientation

Motorola
 Model: E1000 Blue Tooth Phone
 CH02 Y-AXIS
 3.6VDC
 RED: HORIZONTAL GRN: VERTICAL

| Marker Number | Test Frequency [MHz] | Meter Reading [dB(uV)] | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dB[uVolts] | Limit 1 | Margin 1[dB] | Height [cm] | Polarity |
|------------------------------------|----------------------|------------------------|---------------|-----------------------|------------------------|------------------|---------|--------------|-------------|----------|
| 2 - 4GHz 2000 - 4000MHz | | | | | | | | | | |
| 1 | 2400.802 | 60.5 | pk | | 3.3 | 21.8 | 85.6 | 999 | -913.4 | 100 Horz |
| 2 | 2400.802 | 69.93 | pk | | 3.3 | 21.8 | 95.03 | 999 | -903.97 | 100 Vert |
| 12 - 18GHz 12000 - 18000MHz | | | | | | | | | | |
| 3 | 12228.228 | 49.52 | pk | | -40.9 | 39.4 | 48.02 | 54 | -5.98 | 100 Vert |
| 18-26.5GHz 18000 - 25000MHz | | | | | | | | | | |
| 4 | 19079.079 | 75.56 | pk | | -68.3 | 40.2 | 47.46 | 54 | -6.54 | 100 Vert |

LIMIT 1: CFR 47 Part 15C BLUETOOTH 3M
 LIMIT 2: NONE

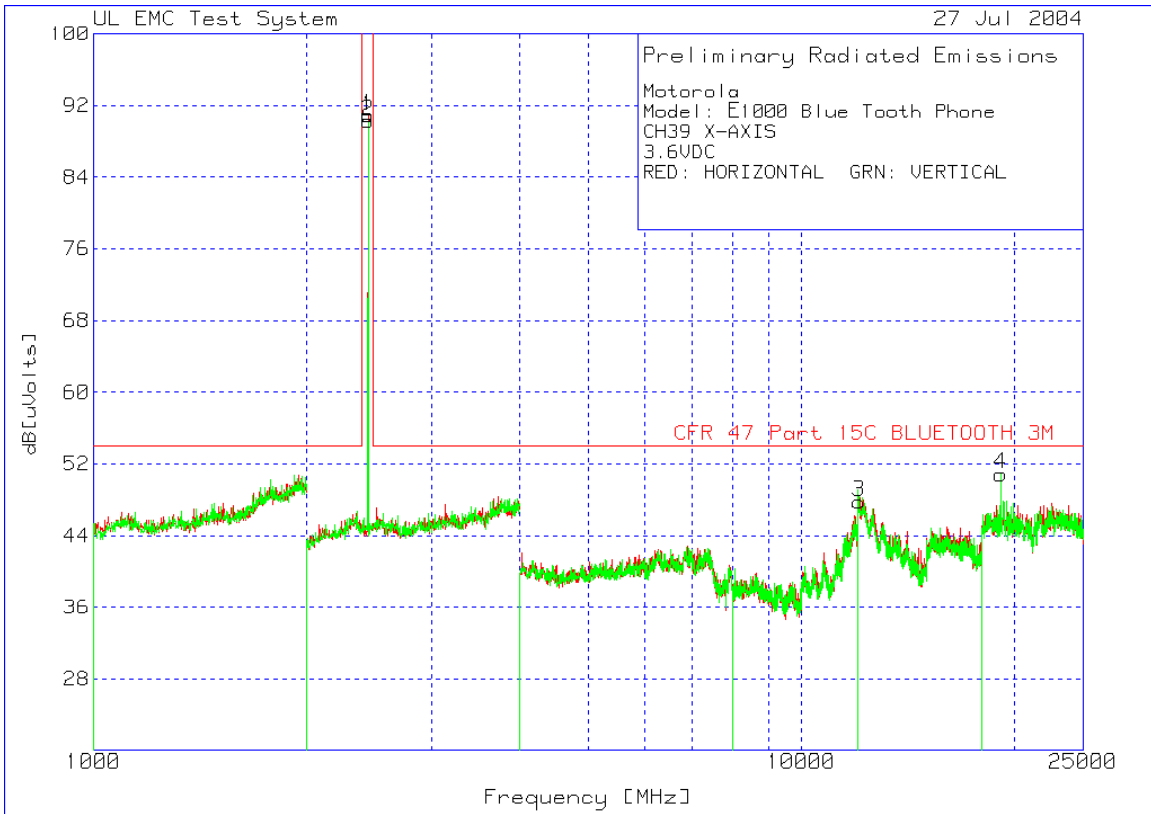


1-25GHz Low Channel Z-Orientation

Motorola
 Model: E1000 Blue Tooth Phone
 CH02 Z-AXIS
 3.6VDC
 RED: HORIZONTAL GRN: VERTICAL

| Marker Number | Test Frequency [MHz] | Meter Reading [dB(uV)] | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dB[uVolts] | Limit 1 | Margin 1[dB] | Height [cm] | Polarity |
|------------------------------------|----------------------|------------------------|---------------|-----------------------|------------------------|------------------|---------|--------------|-------------|----------|
| 2 - 4GHz 2000 - 4000MHz | | | | | | | | | | |
| 1 | 2400.802 | 69.15 pk | | 3.3 | 21.8 | 94.25 | 999 | -904.75 | 100 | Horz |
| 12 - 18GHz 12000 - 18000MHz | | | | | | | | | | |
| 3 | 12180.18 | 50.01 pk | | -41.6 | 39.4 | 47.81 | 54 | -6.19 | 100 | Horz |
| 2 - 4GHz 2000 - 4000MHz | | | | | | | | | | |
| 2 | 2400.802 | 65.1 pk | | 3.3 | 21.8 | 90.2 | 999 | -908.8 | 150 | Vert |
| 18-26.5GHz 18000 - 25000MHz | | | | | | | | | | |
| 4 | 19163.163 | 74.58 pk | | -68.1 | 40.3 | 46.78 | 54 | -7.22 | 100 | Vert |

LIMIT 1: CFR 47 Part 15C BLUETOOTH 3M
 LIMIT 2: NONE

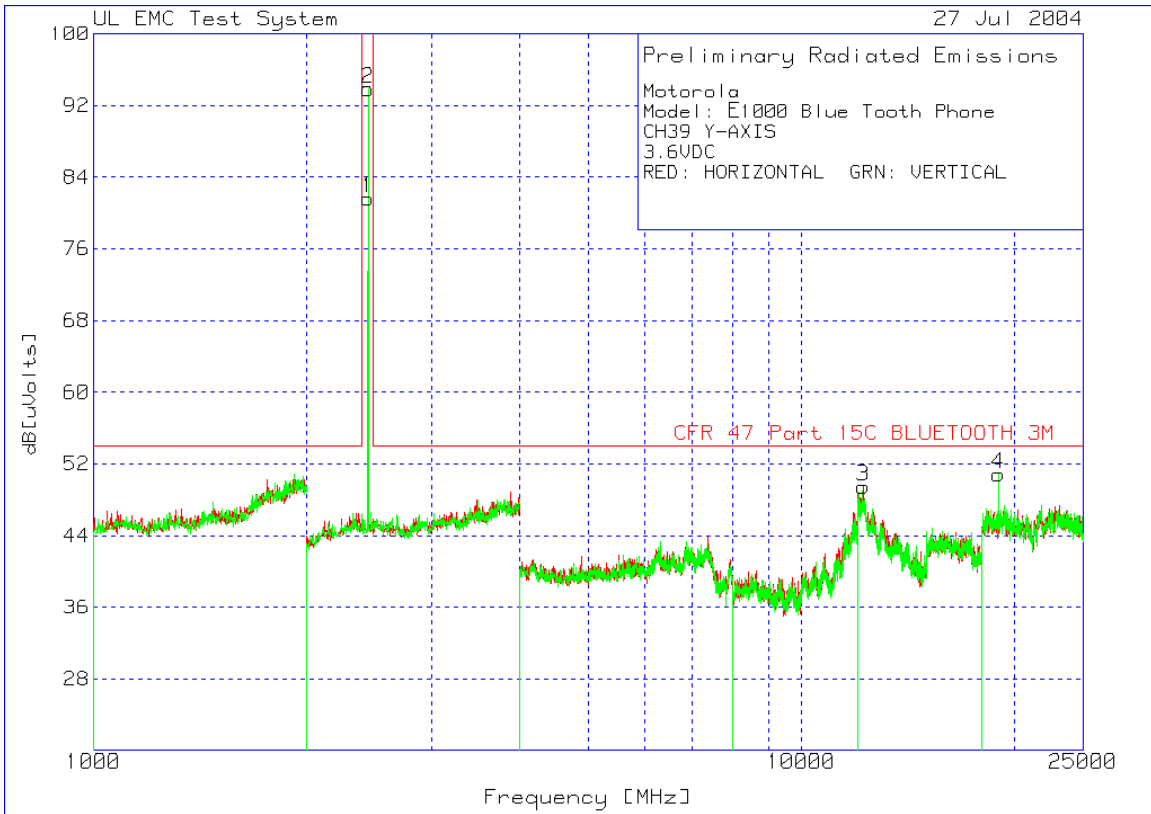


1-25 GHz Mid-Channel X-Orientation

Motorola
 Model: E1000 Blue Tooth Phone
 CH39 X-AXIS
 3.6VDC
 RED: HORIZONTAL GRN: VERTICAL

| Marker Number | Test Frequency [MHz] | Meter Reading [dB(uV)] | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dB[uVolts] | Limit 1 | Margin 1[dB] | Height [cm] | Polarity |
|------------------------------------|----------------------|------------------------|---------------|-----------------------|------------------------|------------------|---------|--------------|-------------|----------|
| 2 - 4GHz 2000 - 4000MHz | | | | | | | | | | |
| 1 | 2440.882 | 65.69 pk | | | 3.3 | 21.9 | 90.89 | 999 | -908.11 | 100 Horz |
| 12 - 18GHz 12000 - 18000MHz | | | | | | | | | | |
| 3 | 12042.042 | 50.37 pk | | | -42 | 39.4 | 47.77 | 54 | -6.23 | 150 Horz |
| 2 - 4GHz 2000 - 4000MHz | | | | | | | | | | |
| 2 | 2440.882 | 65.06 pk | | | 3.3 | 21.9 | 90.26 | 999 | -908.74 | 150 Vert |
| 18-26.5GHz 18000 - 25000MHz | | | | | | | | | | |
| 4 | 19107.107 | 78.95 pk | | | -68.3 | 40.2 | 50.85 | 54 | -3.15 | 100 Vert |

LIMIT 1: CFR 47 Part 15C BLUETOOTH 3M

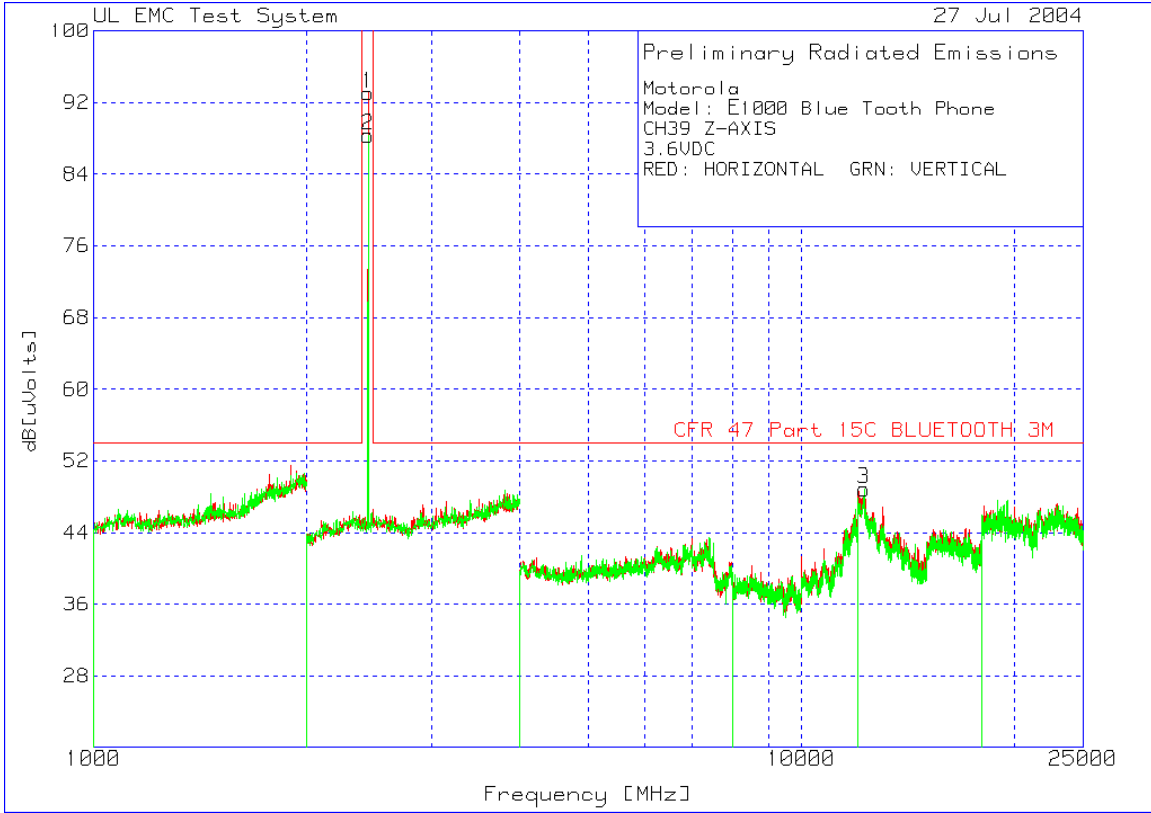


1-25GHz Mid-Channel Y-Orientation

Motorola
 Model: E1000 Blue Tooth Phone
 CH39 Y-AXIS
 3.6VDC
 RED: HORIZONTAL GRN: VERTICAL

| Marker Number | Test Frequency [MHz] | Meter Reading [dB(uV)] | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dB[uVolts] | Limit 1 | Margin 1[dB] | Height [cm] | Polarity |
|------------------------------------|----------------------|------------------------|---------------|-----------------------|------------------------|------------------|---------|--------------|-------------|----------|
| 2 - 4GHz 2000 - 4000MHz | | | | | | | | | | |
| 1 | 2440.882 | 56.47 pk | | 3.3 | 21.9 | 81.67 | 999 | -917.33 | 100 | Horz |
| 12 - 18GHz 12000 - 18000MHz | | | | | | | | | | |
| 3 | 12216.216 | 51.18 pk | | -41.1 | 39.4 | 49.48 | 54 | -4.52 | 150 | Horz |
| 2 - 4GHz 2000 - 4000MHz | | | | | | | | | | |
| 2 | 2440.882 | 68.69 pk | | 3.3 | 21.9 | 93.89 | 999 | -905.11 | 100 | Vert |
| 18-26.5GHz 18000 - 25000MHz | | | | | | | | | | |
| 4 | 18966.967 | 78.44 pk | | -67.8 | 40.2 | 50.84 | 54 | -3.16 | 100 | Vert |

LIMIT 1: CFR 47 Part 15C BLUETOOTH 3M
 LIMIT 2: NONE

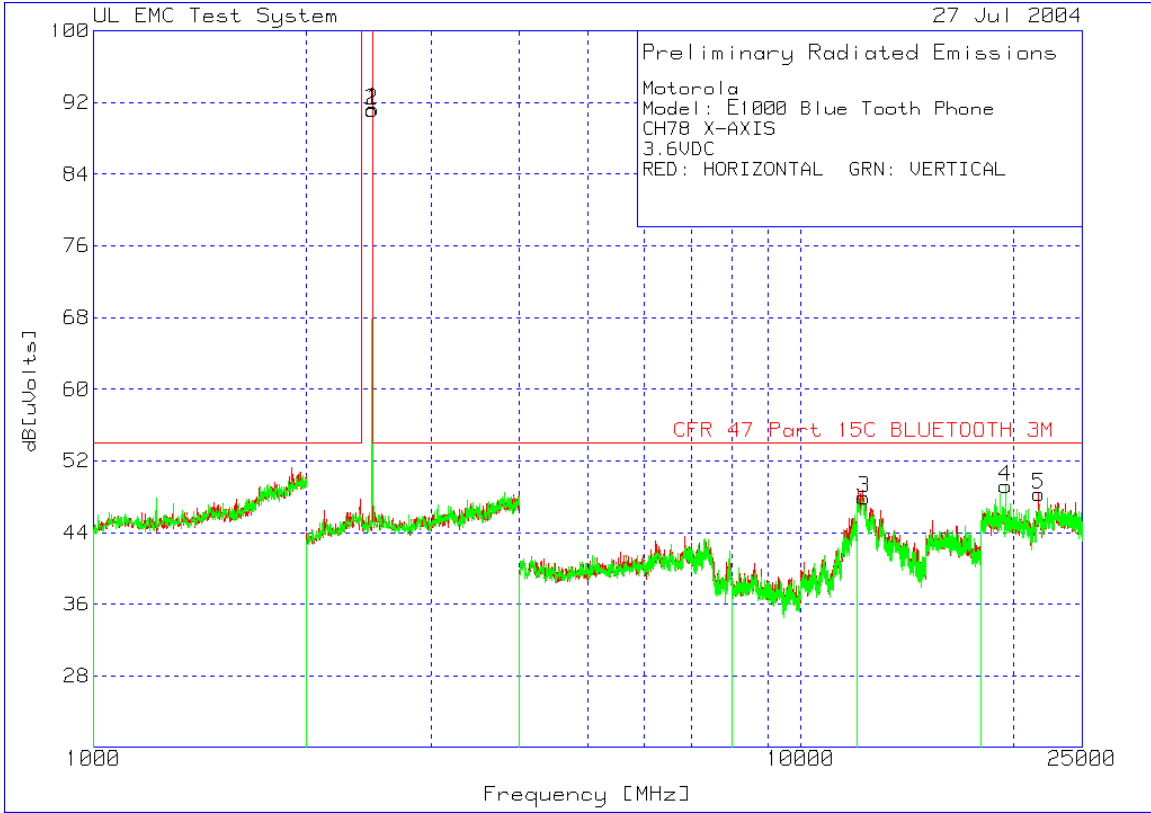


1-25 GHz Mid-Channel Z-Orientation

Motorola
 Model: E1000 Blue Tooth Phone
 CH39 Z-AXIS
 3.6VDC
 RED: HORIZONTAL GRN: VERTICAL

| Marker Number | Test Frequency [MHz] | Meter Reading [dB(uV)] | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dB[uVolts] | Limit 1 | Margin 1[dB] | Height [cm] | Polarity |
|------------------------------------|----------------------|------------------------|---------------|-----------------------|------------------------|------------------|---------|--------------|-------------|----------|
| 2 - 4GHz 2000 - 4000MHz | | | | | | | | | | |
| 1 | 2440.882 | 67.87 pk | | | 3.3 | 21.9 | 93.07 | 999 | -905.93 | 100 Horz |
| 2 - 4GHz 2000 - 4000MHz | | | | | | | | | | |
| 2 | 2440.882 | 63.14 pk | | | 3.3 | 21.9 | 88.34 | 999 | -910.66 | 150 Vert |
| 12 - 18GHz 12000 - 18000MHz | | | | | | | | | | |
| 3 | 12252.252 | 50.17 pk | | | -40.7 | 39.4 | 48.87 | 54 | -5.13 | 100 Vert |

LIMIT 1: CFR 47 Part 15C BLUETOOTH 3M
 LIMIT 2: NONE



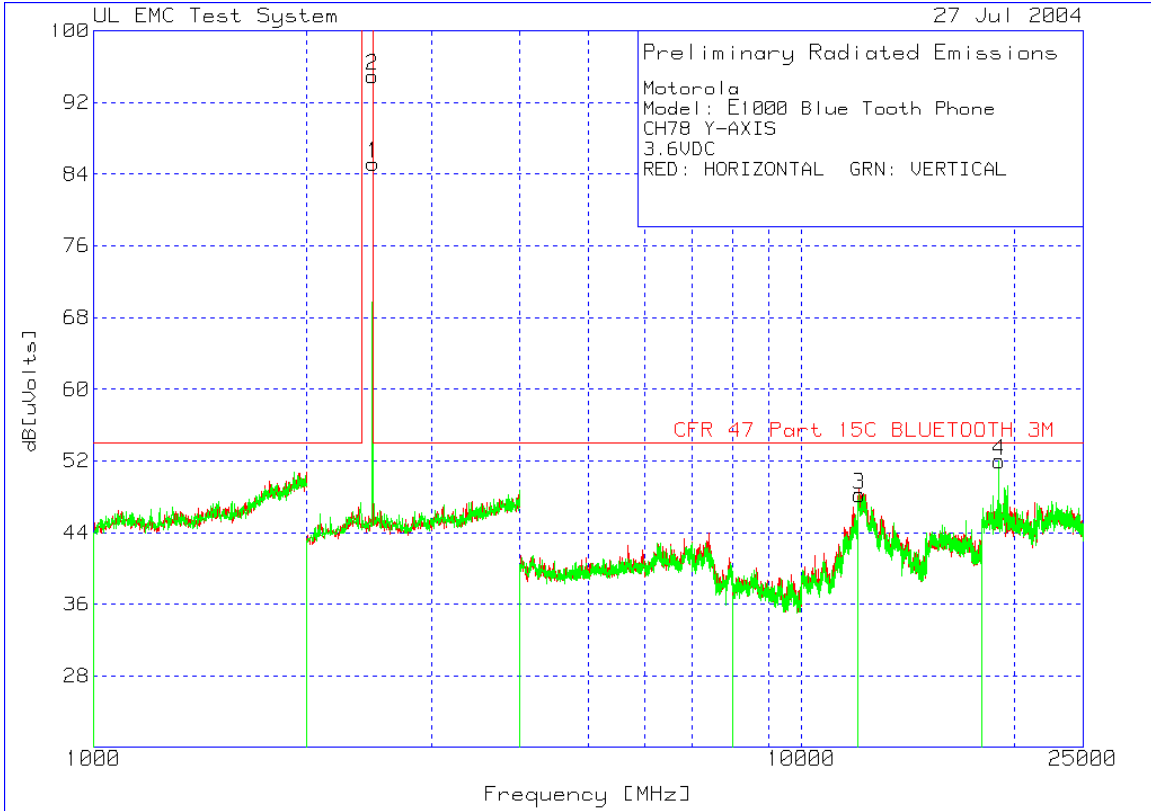
1-25 GHz High-Channel X-Orientation

Motorola
 Model: E1000 Blue Tooth Phone
 CH78 X-AXIS
 3.6VDC

RED: HORIZONTAL GRN: VERTICAL

| Marker Number | Test Frequency [MHz] | Meter Reading [dB(uV)] | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dB[uVolts] | Limit 1 | Margin 1[dB] | Height [cm] | Polarity |
|------------------------------------|----------------------|------------------------|---------------|-----------------------|------------------------|------------------|---------|--------------|-------------|----------|
| 2 - 4GHz 2000 - 4000MHz | | | | | | | | | | |
| 1 | 2480.962 | 65.94 pk | | 3.3 | 22 | 91.24 | 999 | -907.76 | 100 | Horz |
| 12 - 18GHz 12000 - 18000MHz | | | | | | | | | | |
| 3 | 12282.282 | 49.6 pk | | -41.1 | 39.4 | 47.9 | 54 | -6.1 | 149 | Horz |
| 18-26.5GHz 18000 - 25000MHz | | | | | | | | | | |
| 5 | 21699.7 | 68.91 pk | | -61 | 40.4 | 48.31 | 54 | -5.69 | 99 | Horz |
| 2 - 4GHz 2000 - 4000MHz | | | | | | | | | | |
| 2 | 2476.954 | 65.84 pk | | 3.3 | 22 | 91.14 | 999 | -907.86 | 150 | Vert |
| 18-26.5GHz 18000 - 25000MHz | | | | | | | | | | |
| 4 | 19478.478 | 77.27 pk | | -68.4 | 40.3 | 49.17 | 54 | -4.83 | 100 | Vert |

LIMIT 1: CFR 47 Part 15C BLUETOOTH 3M
 LIMIT 2: NONE

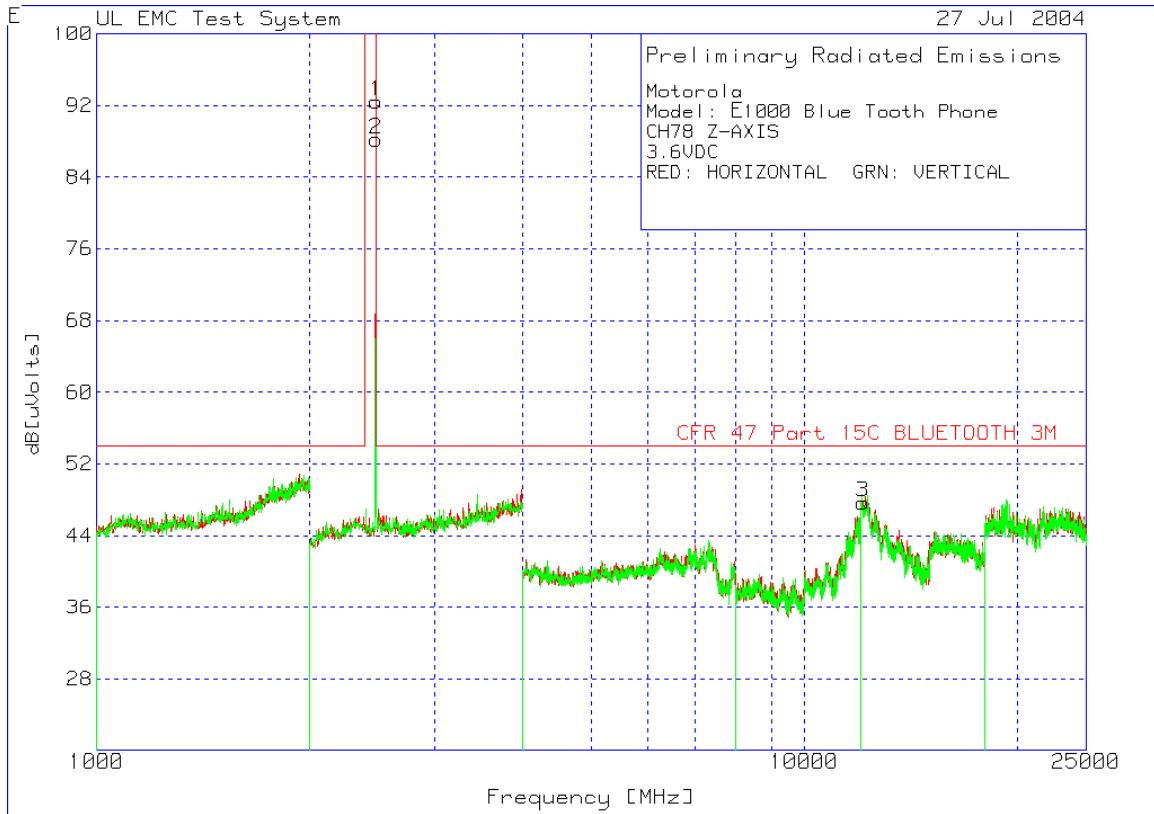


1-25 GHz High-Channel Y-Orientation

Motorola
 Model: E1000 Blue Tooth Phone
 CH78 Y-AXIS
 3.6VDC
 RED: HORIZONTAL GRN: VERTICAL

| Marker Number | Test Frequency [MHz] | Meter Reading [dB(uV)] | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dB[uVolts] | Limit 1 | Margin 1[dB] | Height [cm] | Polarity |
|------------------------------------|----------------------|------------------------|---------------|-----------------------|------------------------|------------------|---------|--------------|-------------|----------|
| 2 - 4GHz 2000 - 4000MHz | | | | | | | | | | |
| 1 | 2480.962 | 59.87 | pk | | 3.3 | 22 | 85.17 | 999 | -913.83 | 149 Horz |
| 12 - 18GHz 12000 - 18000MHz | | | | | | | | | | |
| 3 | 12072.072 | 51.15 | pk | | -42.3 | 39.4 | 48.25 | 54 | -5.75 | 150 Horz |
| 2 - 4GHz 2000 - 4000MHz | | | | | | | | | | |
| 2 | 2476.954 | 69.69 | pk | | 3.3 | 22 | 94.99 | 999 | -904.01 | 100 Vert |
| 18-26.5GHz 18000 - 25000MHz | | | | | | | | | | |
| 4 | 19009.009 | 79.81 | pk | | -68 | 40.2 | 52.01 | 54 | -1.99 | 100 Vert |

LIMIT 1: CFR 47 Part 15C BLUETOOTH 3M
 LIMIT 2: NONE



1-25 GHz High-Channel Z-Orientation

Motorola
 Model: E1000 Blue Tooth Phone
 CH78 Z-AXIS
 3.6VDC
 RED: HORIZONTAL GRN: VERTICAL

| Marker Number | Test Frequency [MHz] | Meter Reading [dB(uV)] | Detector Type | Gain/Loss Factor [dB] | Transducer Factor [dB] | Level dB[uVolts] | Limit 1 | Margin 1[dB] | Height [cm] | Polarity |
|------------------------------------|----------------------|------------------------|---------------|-----------------------|------------------------|------------------|---------|--------------|-------------|----------|
| 2 - 4GHz 2000 - 4000MHz | | | | | | | | | | |
| 1 | 2480.962 | 67.15 pk | | 3.3 | 22 | 92.45 | 999 | -906.55 | 100 | Horz |
| 12 - 18GHz 12000 - 18000MHz | | | | | | | | | | |
| 3 | 12084.084 | 50.69 pk | | -42.4 | 39.4 | 47.69 | 54 | -6.31 | 150 | Horz |
| 2 - 4GHz 2000 - 4000MHz | | | | | | | | | | |
| 2 | 2480.962 | 62.92 pk | | 3.3 | 22 | 88.22 | 999 | -910.78 | 100 | Vert |

LIMIT 1: CFR 47 Part 15C BLUETOOTH 3M
 LIMIT 2: NONE

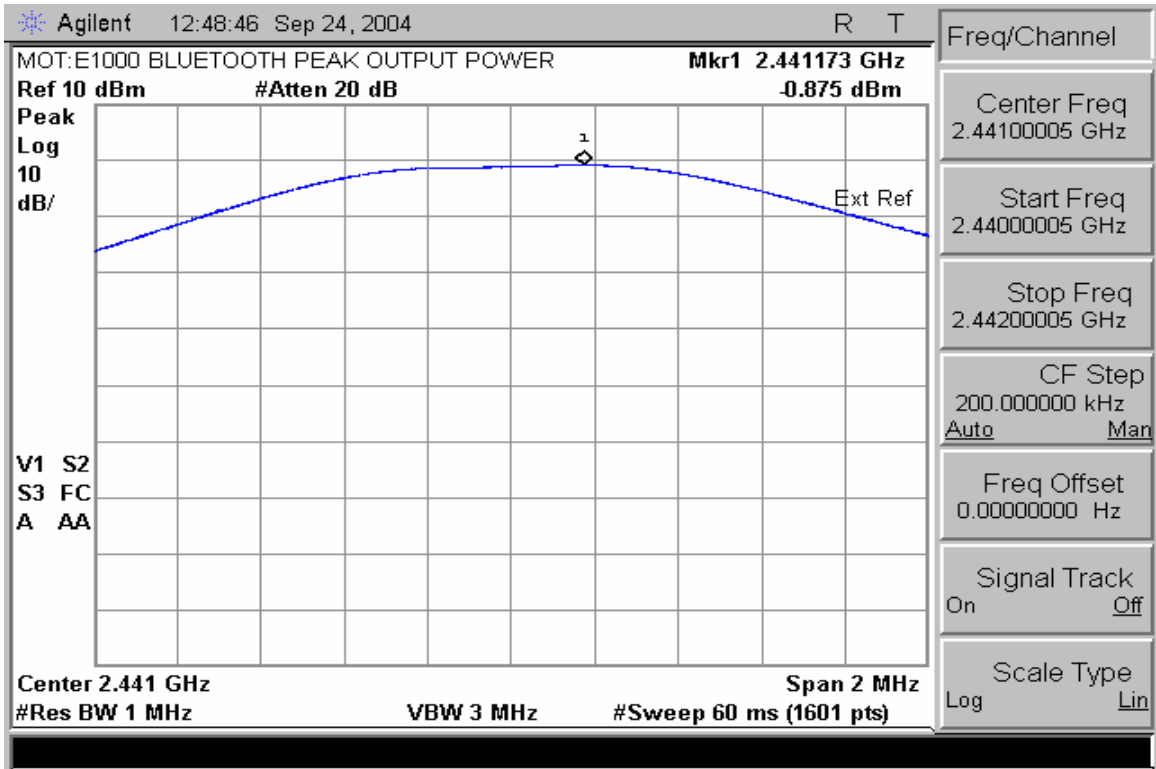
PEAK OUTPUT POWER

CFR 47 Part 15.247

Measurement Procedure

The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage.

Measurement Results



Peak Output Power

BAND-EDGE COMPLIANCE OF RF CONDUCTED EMISSIONS

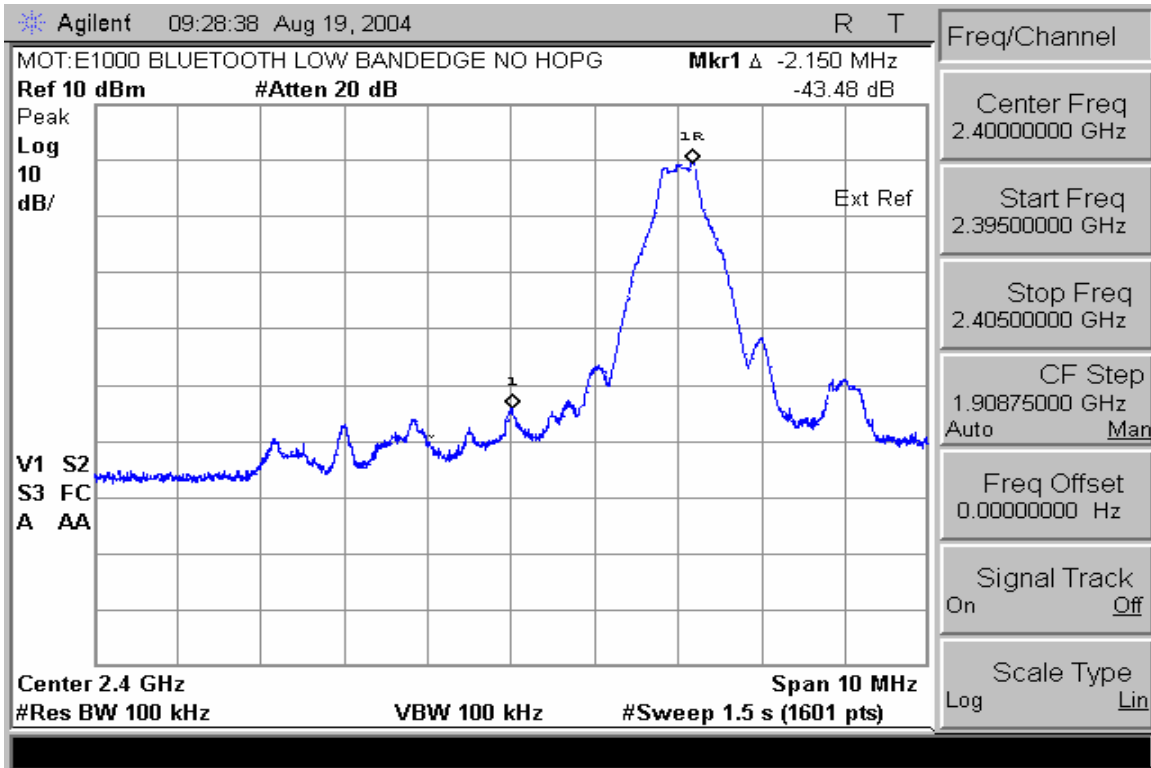
CFR 47 Part 15.247

Measurement Procedure

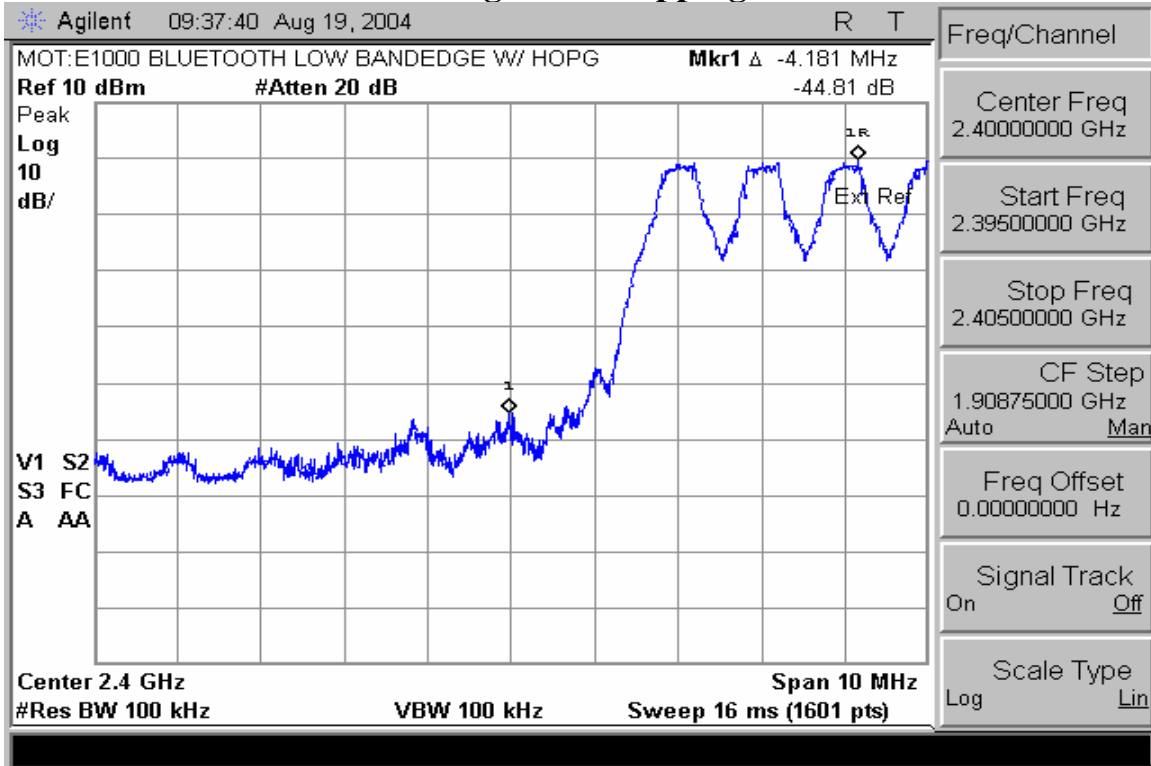
The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage.

Measurement Results

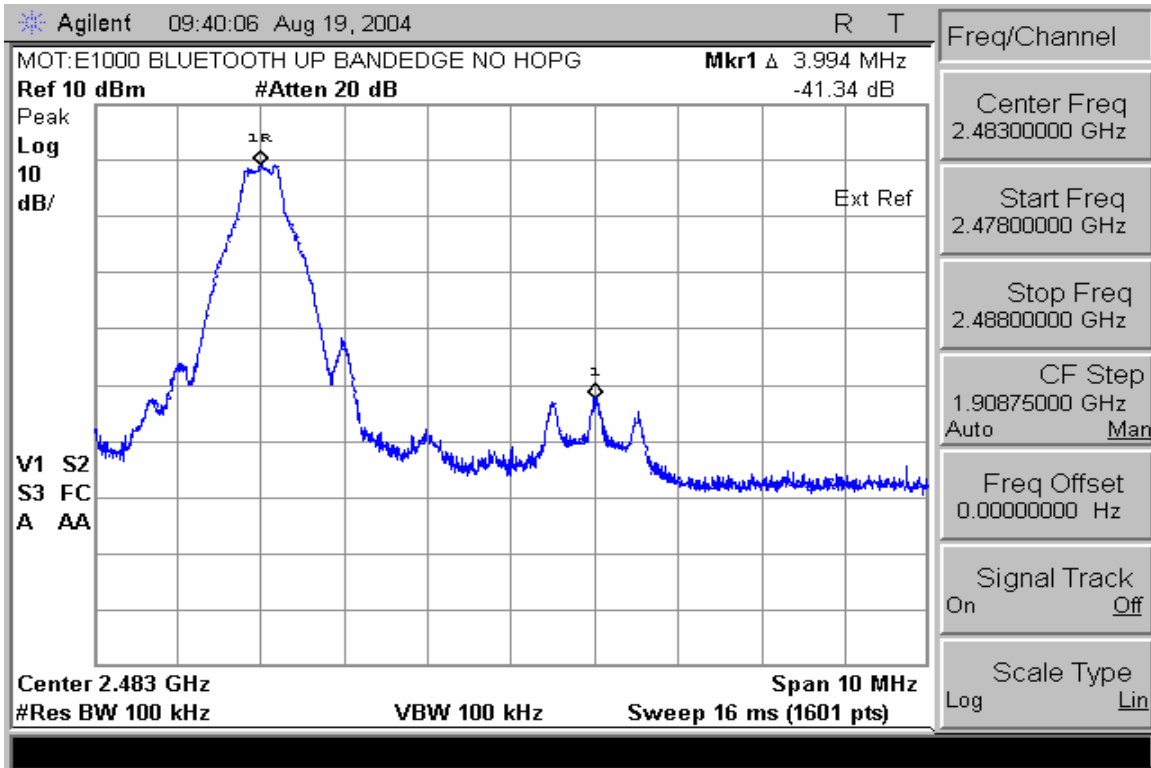
See Attached:



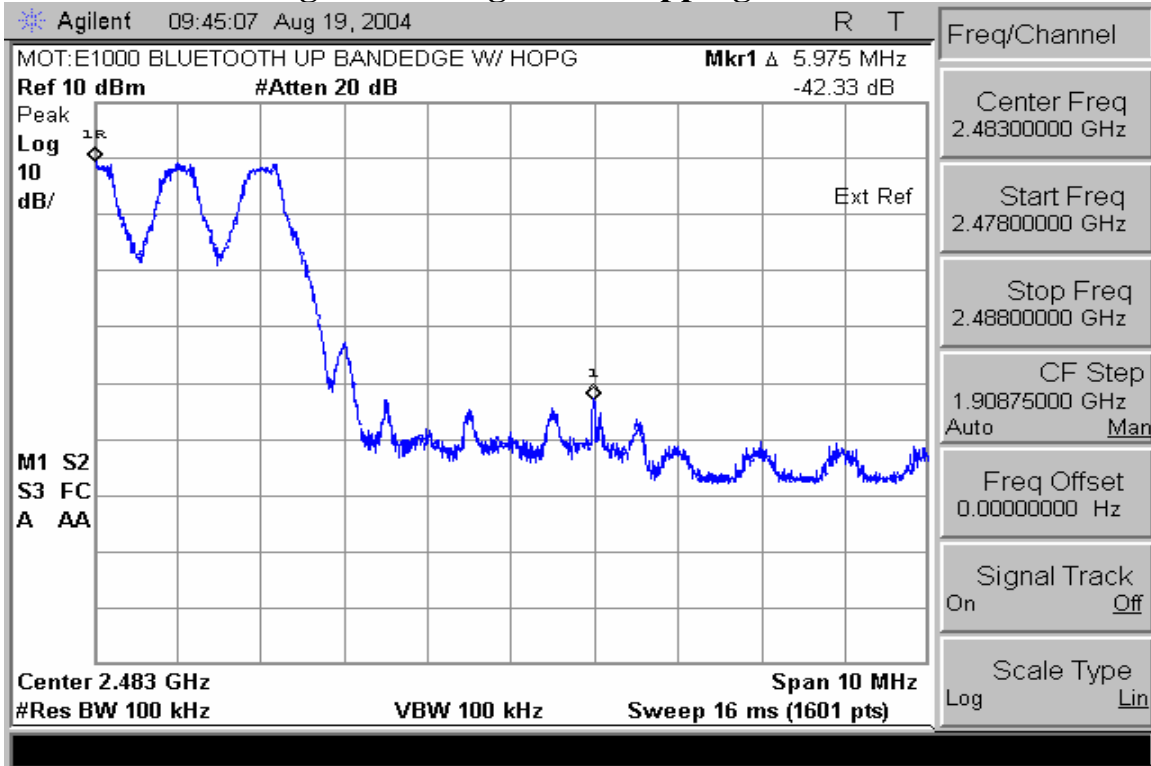
Low Band Edge with Hopping Disabled



Low Band Edge with Hopping Enabled



High Band Edge with Hopping Disabled



High Band Edge with Hopping Enabled

SPURIOUS RF CONDUCTED EMISSIONS

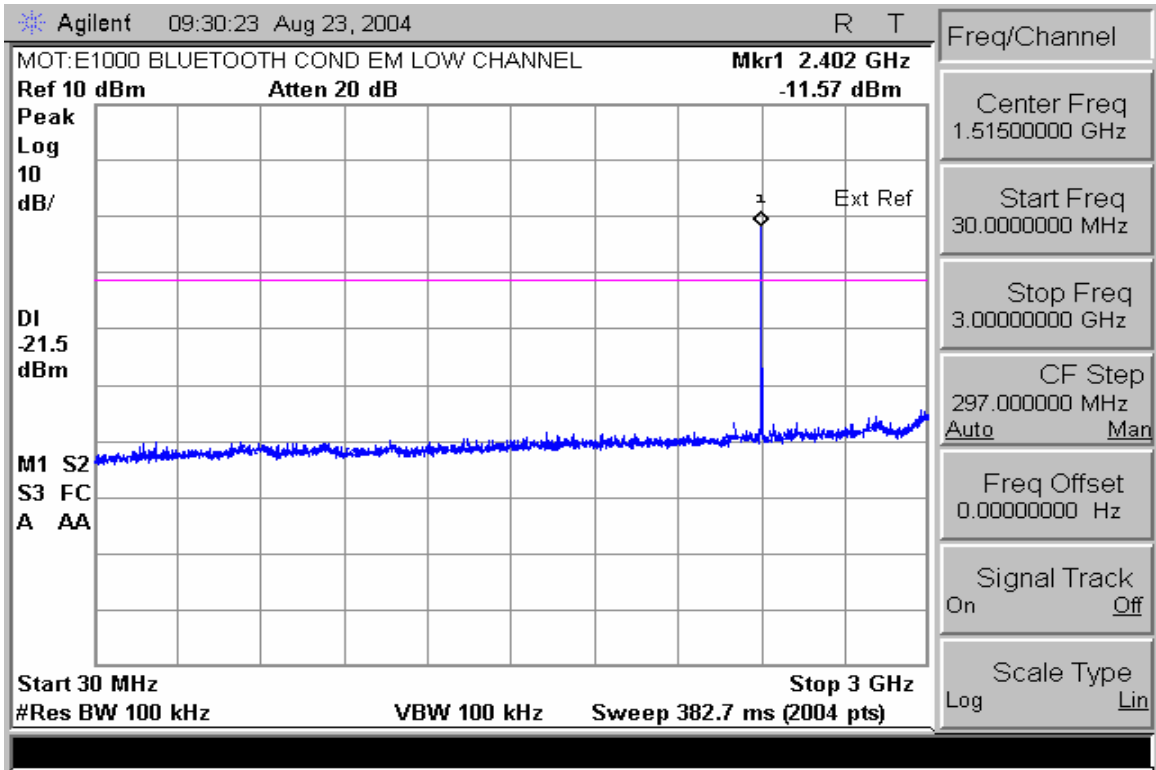
CFR 47 Part 15.247

Measurement Procedure

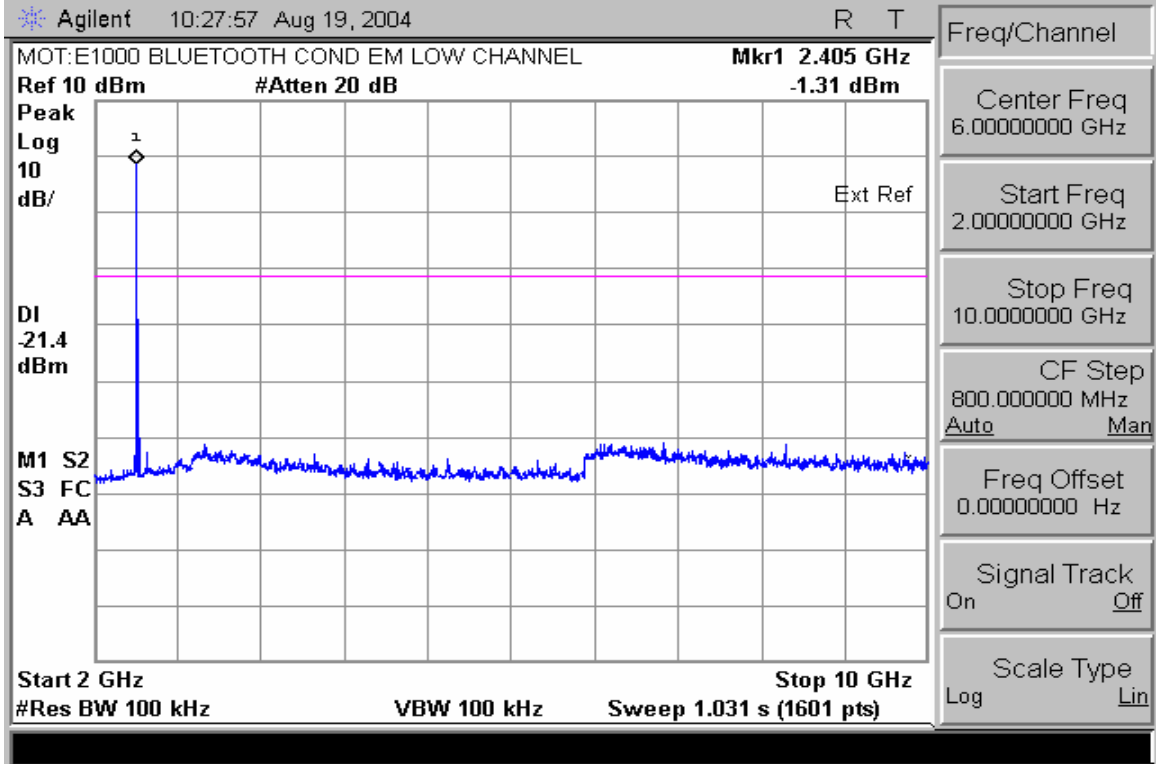
The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage.

Measurement Results

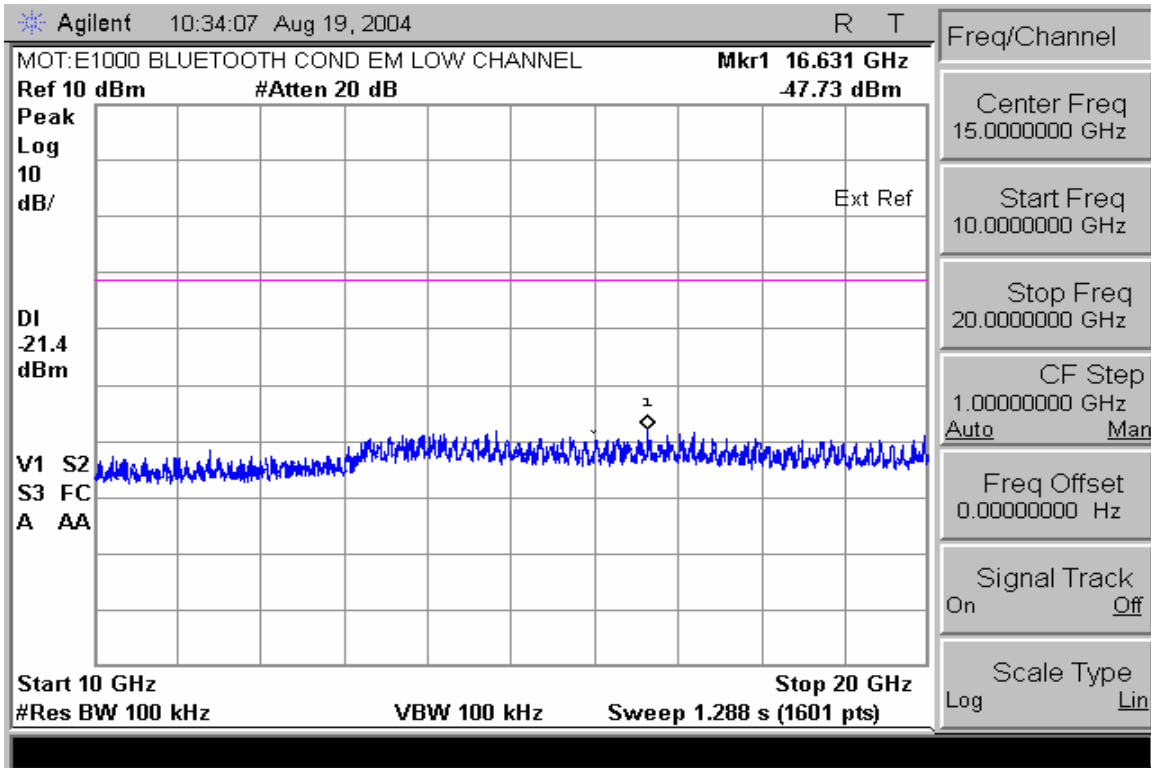
See attached:



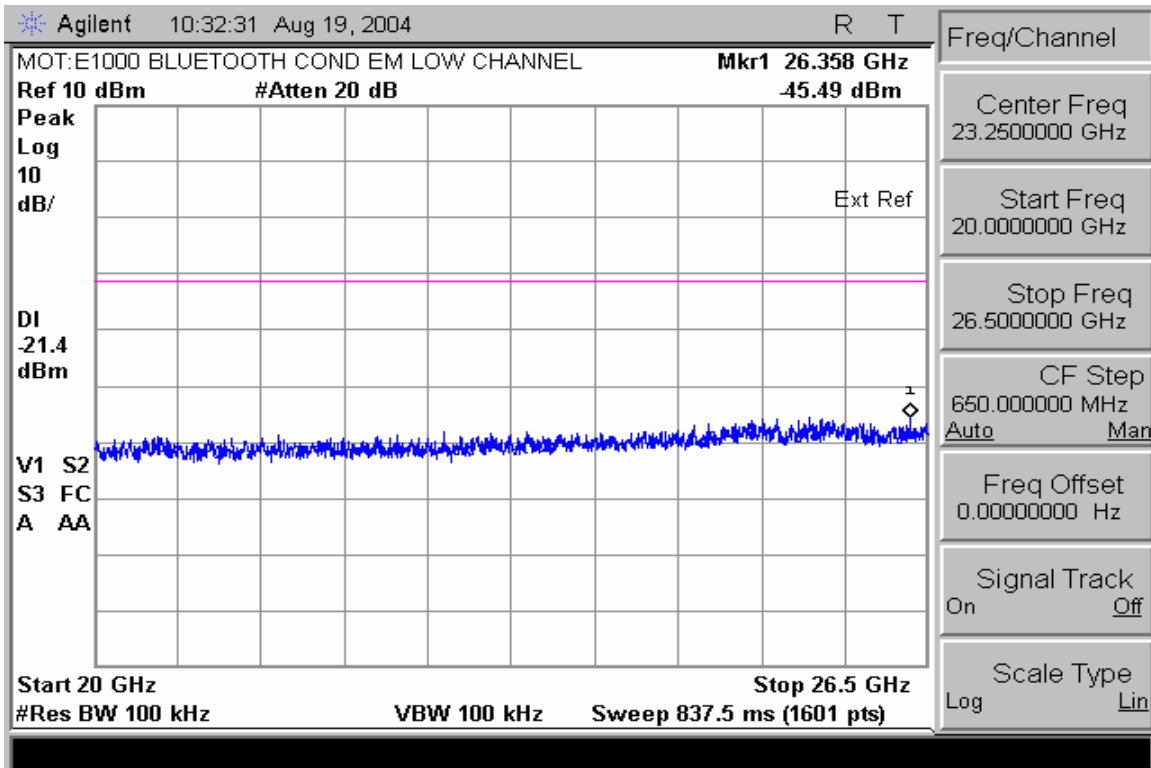
Conducted Spurious Emissions 30-3000MHz (Low Channel Enabled)



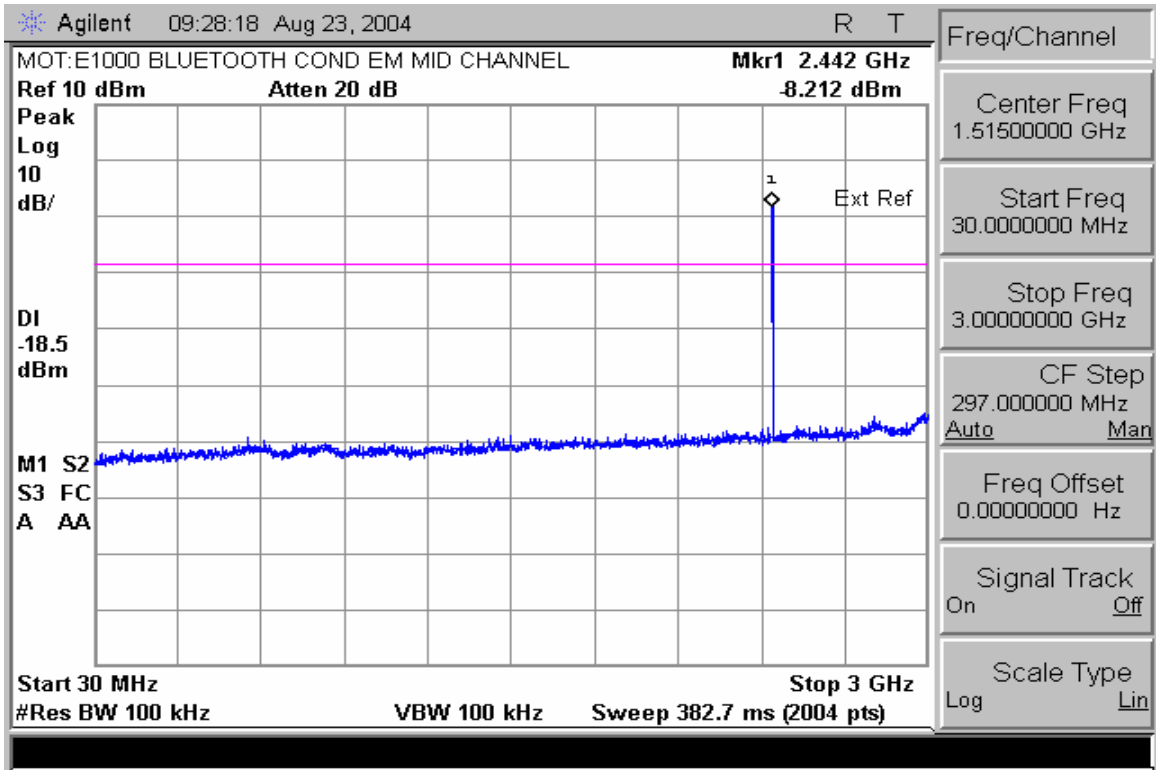
Conducted Spurious Emissions 2-10GHz (Low Channel Enabled)



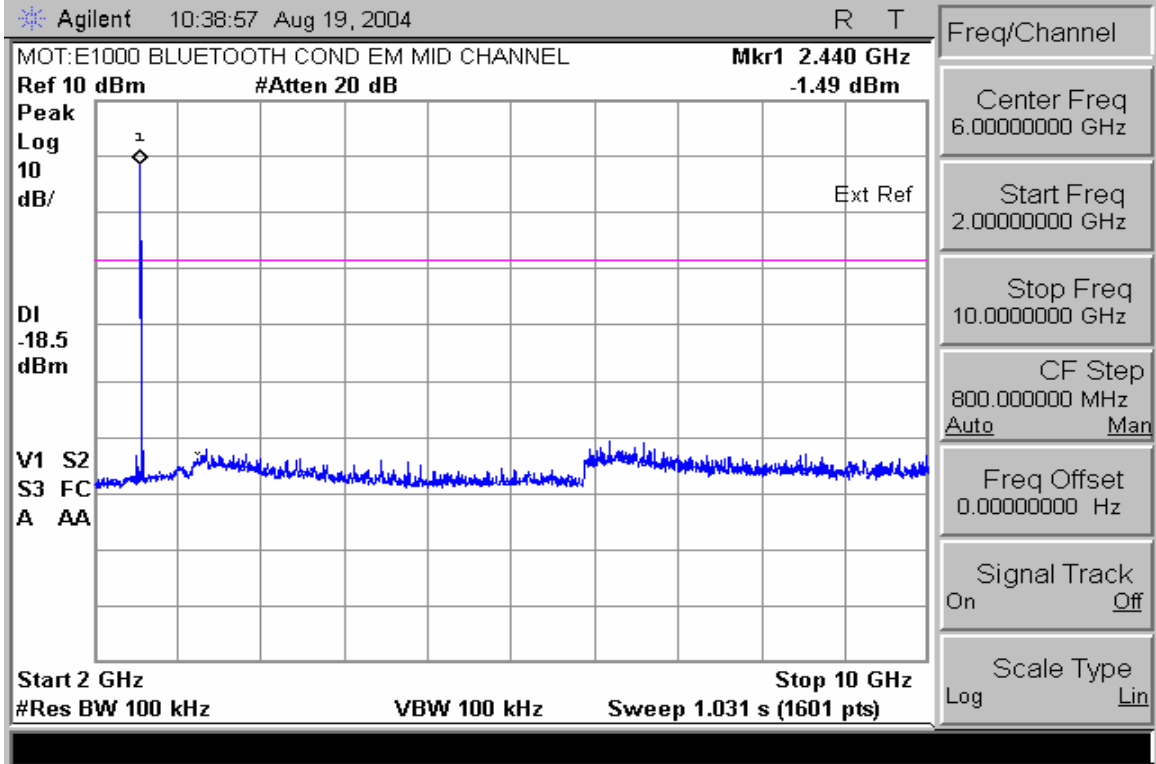
Conducted Spurious Emissions 10-20GHz (Low Channel Enabled)



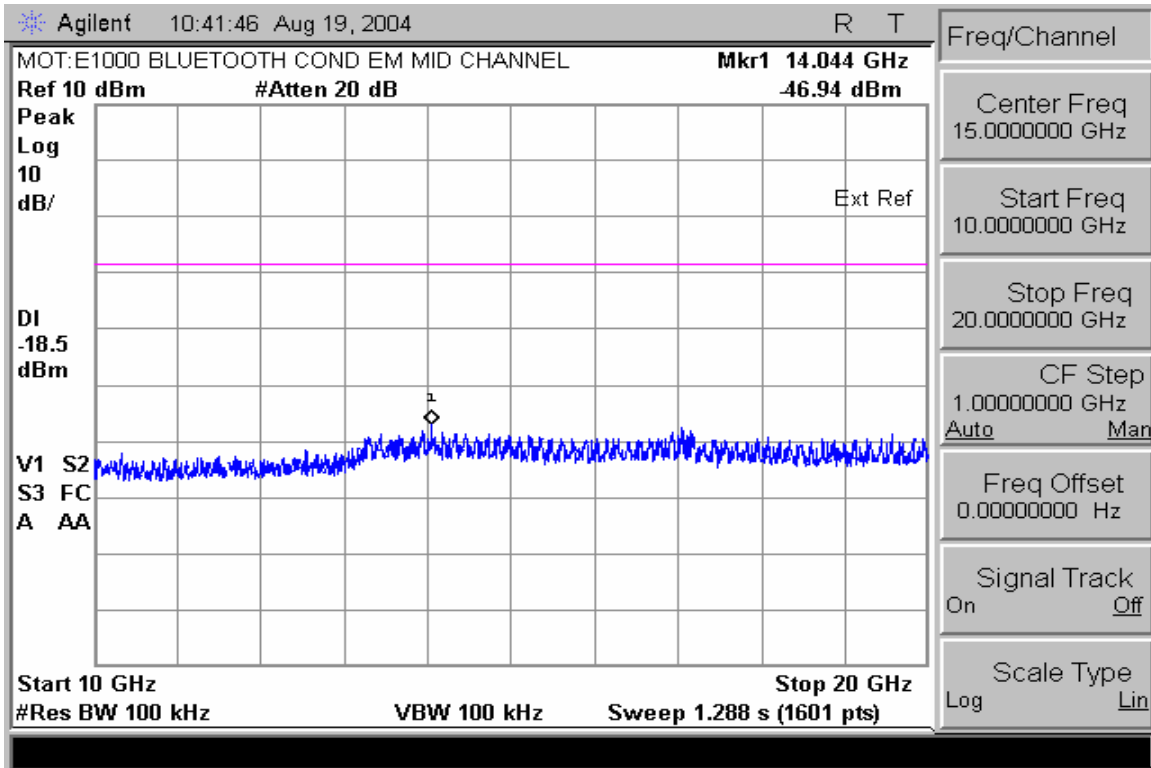
Conducted Spurious Emissions 20-26.5GHz (Low Channel Enabled)



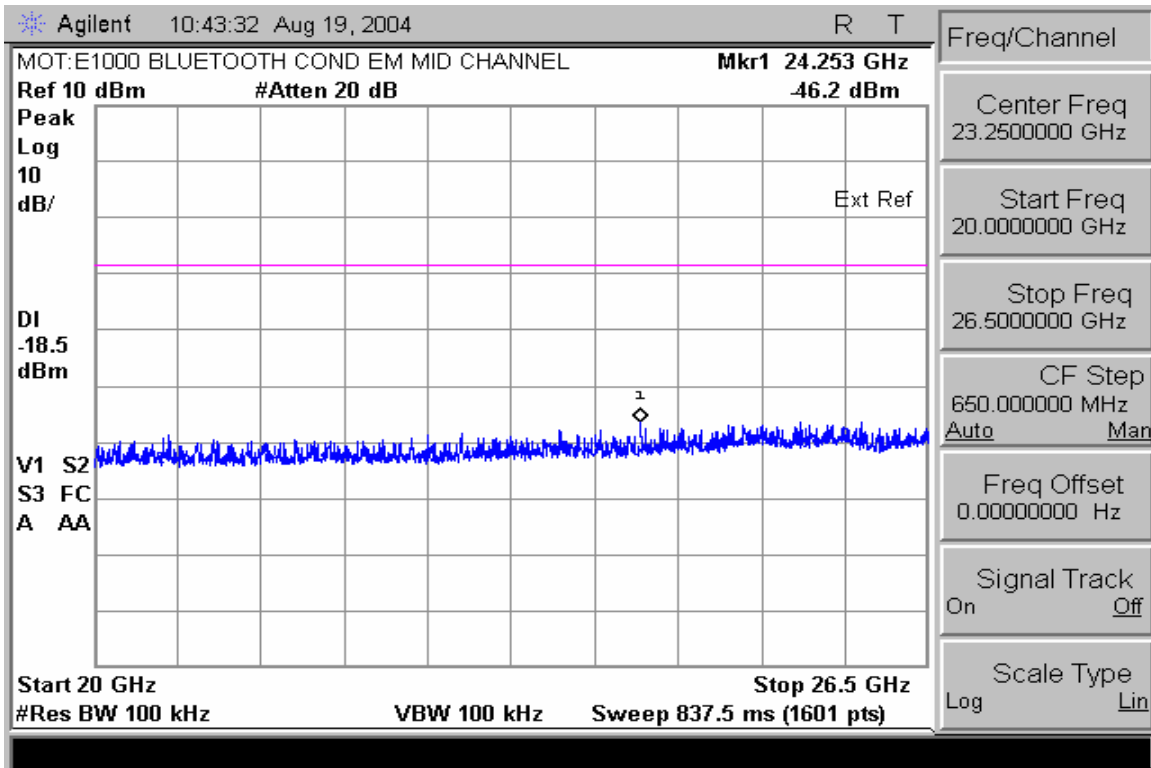
Conducted Spurious Emissions 30-3000MHz (Mid Channel Enabled)



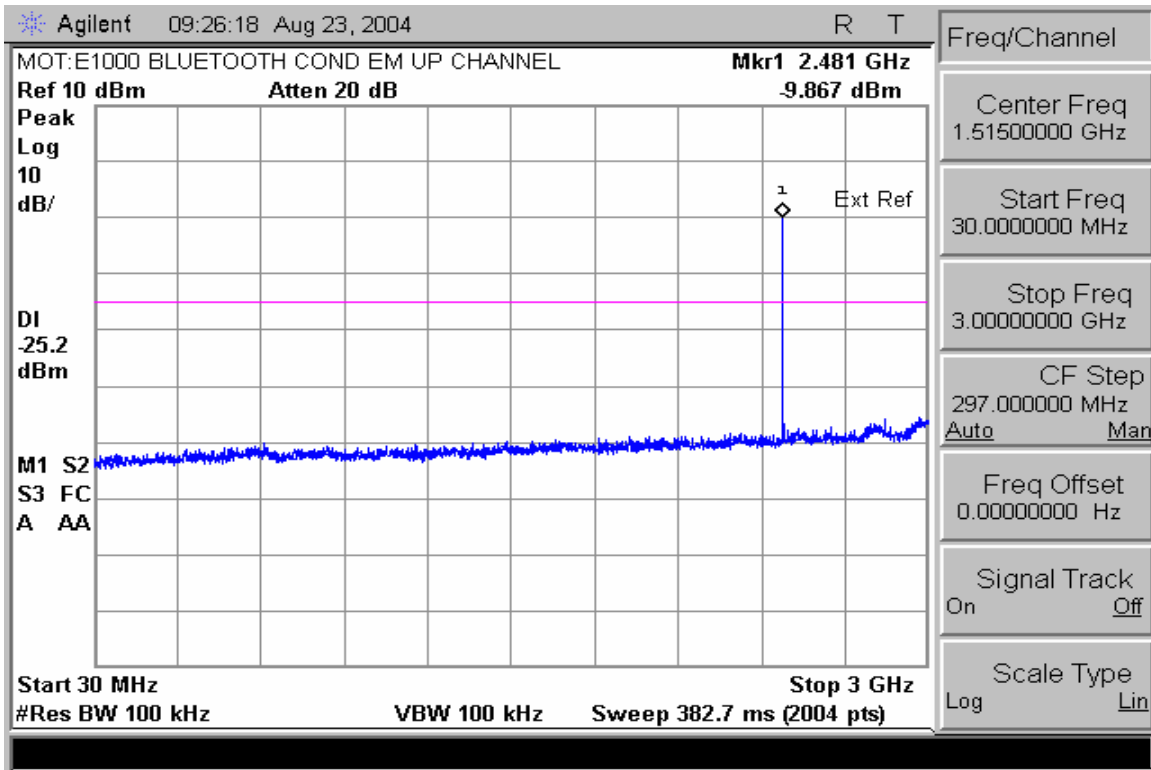
Conducted Spurious Emissions 2-10GHz (Mid Channel Enabled)



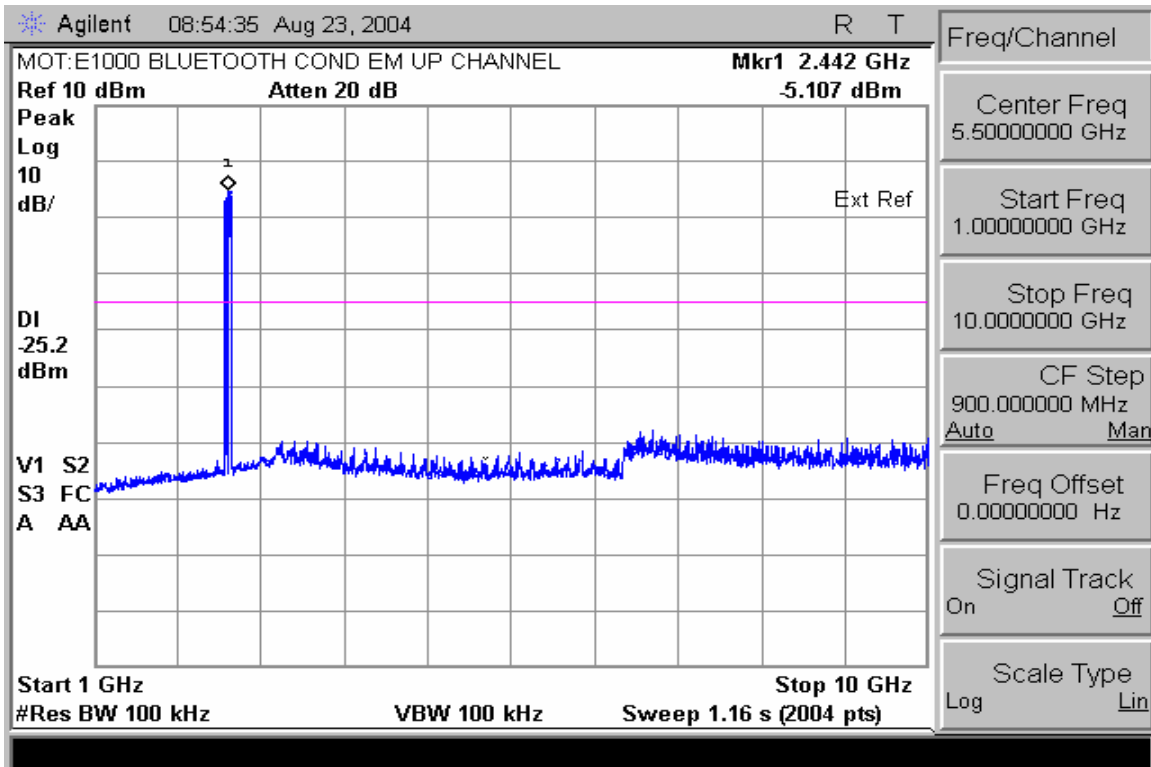
Conducted Spurious Emissions 10-20GHz (Mid Channel Enabled)



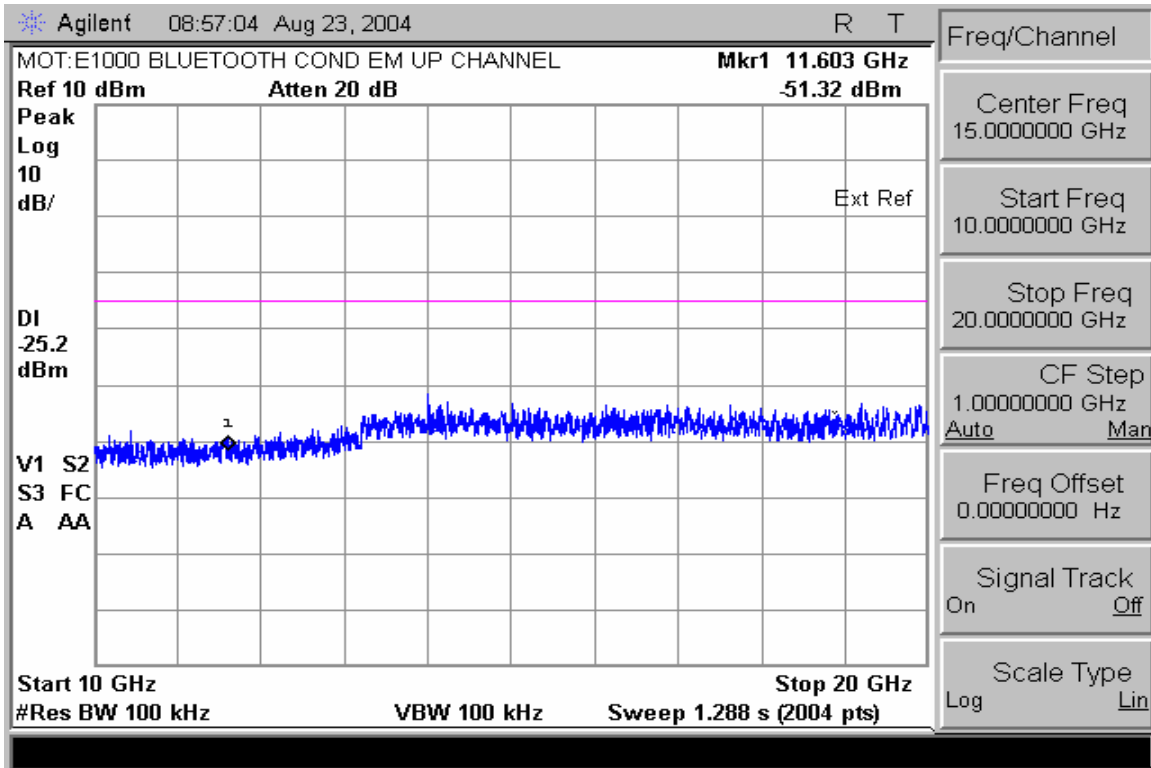
Conducted Spurious Emissions 20-26.5GHz (Mid Chan Enabled)



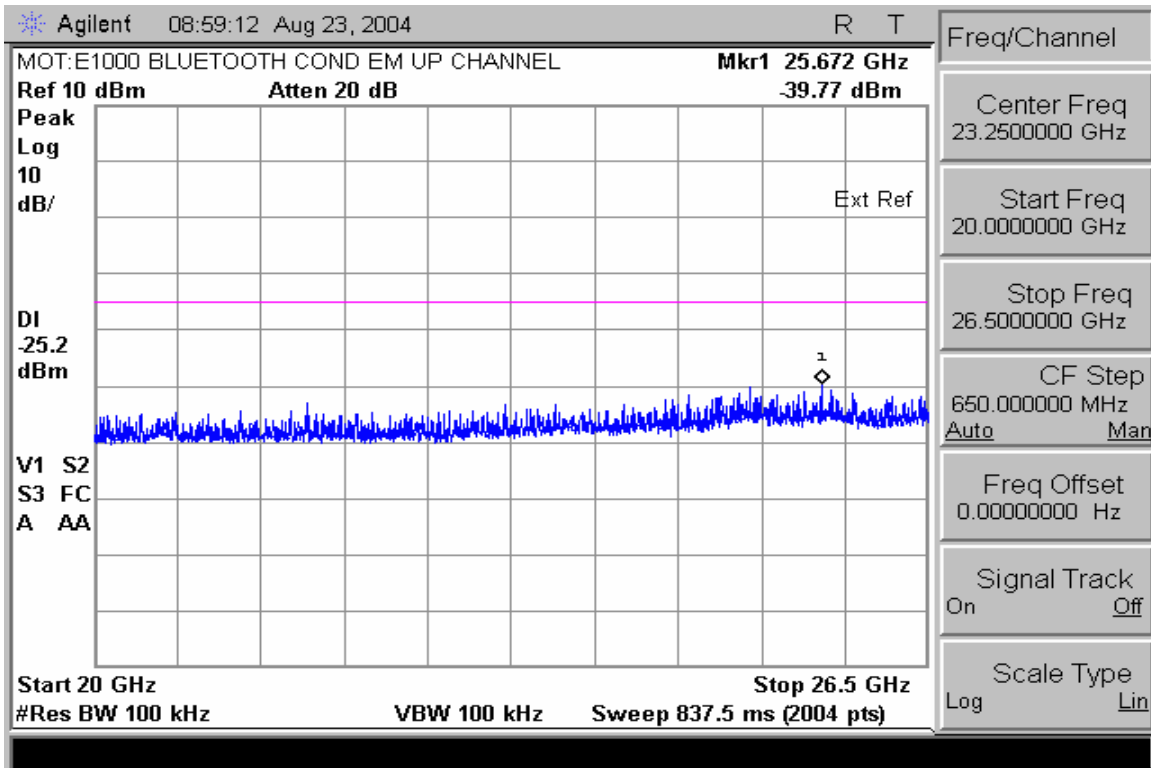
Conducted Spurious Emissions 30-3000MHz (High Channel Enabled)



Conducted Spurious Emissions 2-10GHz (High Channel Enabled)



Conducted Spurious Emissions 10-20GHz (High Channel Enabled)



Conducted Spurious Emissions 20-26.5GHz (High Chan Enabled)

End of Test Report