



MOTOROLA

PERSONAL COMMUNICATIONS SECTOR

**PRODUCT SAFETY AND COMPLIANCE
EMC LABORATORY**

EMC TEST REPORT - Addendum

Test Report Number –15351-1BT

Report Date – December 13, 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.

Signature: *Mark Sidlow*

Name: Mark Sidlow

Title: Senior Electrical Engineer

Date: December 13, 2004

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A2LA Certificate Number: 1846-01



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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: CDMA 800, CDMA 1900, Bluetooth

Model Number: E815

Version: SJUG0462AA

Serial Numbers: 68586569, 6858652F,
6858652F, 6858652F,
68586565

Testing Complete Date: December 13, 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	999KHz
2	Number of Hopping	79
3	Time of Occupancy (Dwell Time)	2.888ms
4	20 dB Bandwidth	1.000MHz
5	Spurious RF Conducted Emissions	See plots
6	Field Strength of Spurious Emissions	See plots
7	Max Power	0.79 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	10/2/2005
Hewlett-Packard	EMC Analyzer	7405	US39440191	11/13/2005
Miteq	Preamplifier 0.1-26.5GHz	NSP2650-NF-S	966350	1/8/2005
ETS	DRG Horn Antenna	3115	6222	10/4/2005
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	11/14/2005
Attenuator	Weinschel	AS-6	6675	10/14/2005
Attenuator	Weinschel	AS-6	6677	11/4/2005
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
Giga-Tronics	Power Meter	8651A	8650561	4/8/2005
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*
	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 MPX 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.

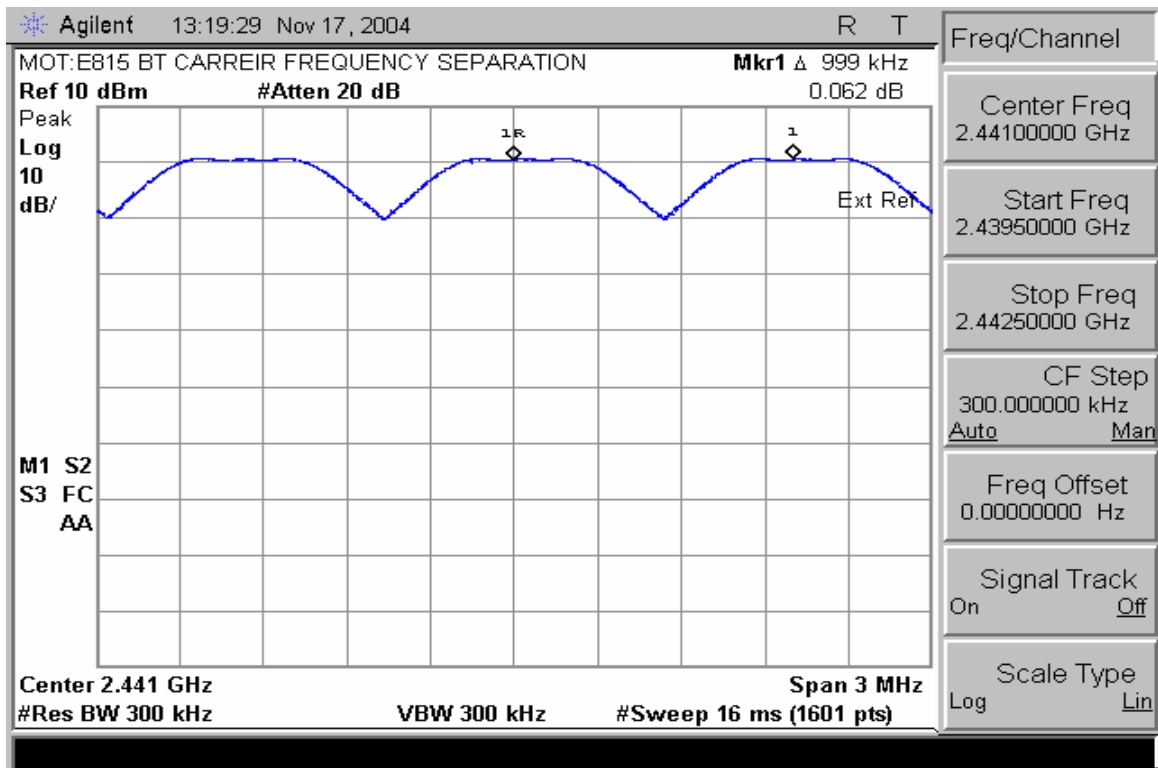
The Bluetooth transmitter of the MPX had its hopping function enabled. The following spectrum analyzer settings were used:

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.

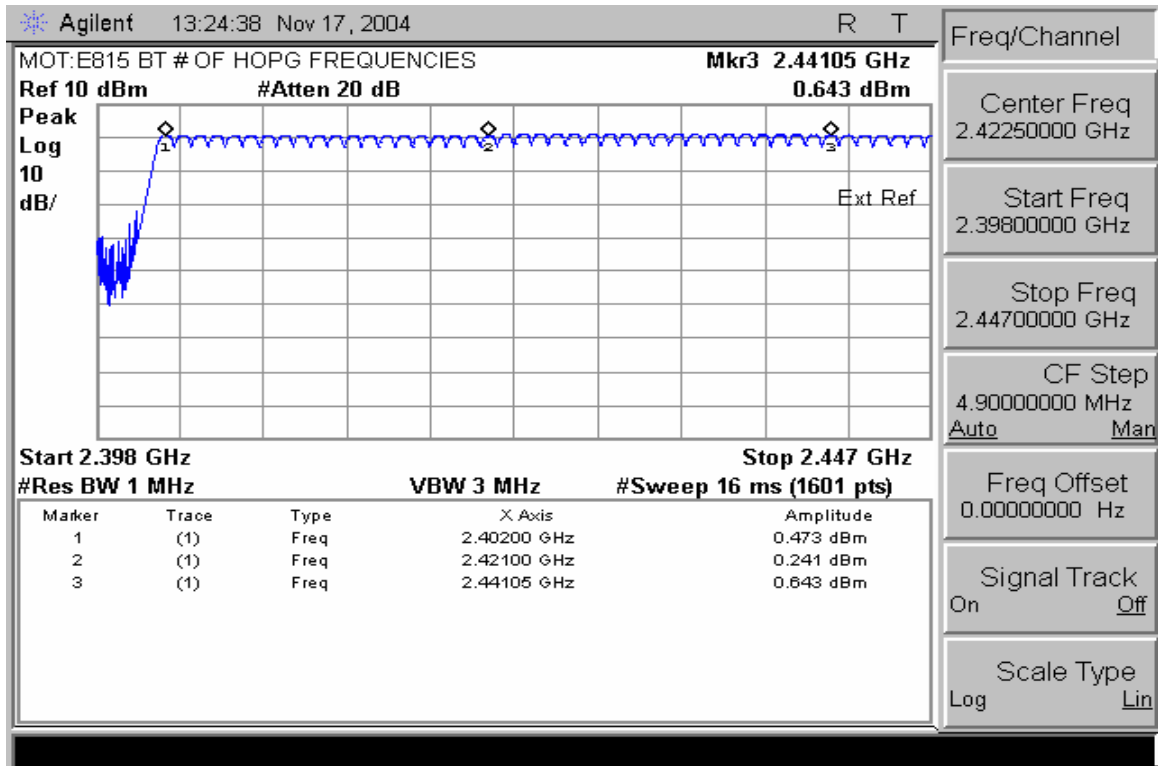
The Bluetooth frequency hopping function of the EUT was enabled. The spectrum analyzer used the following settings:

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

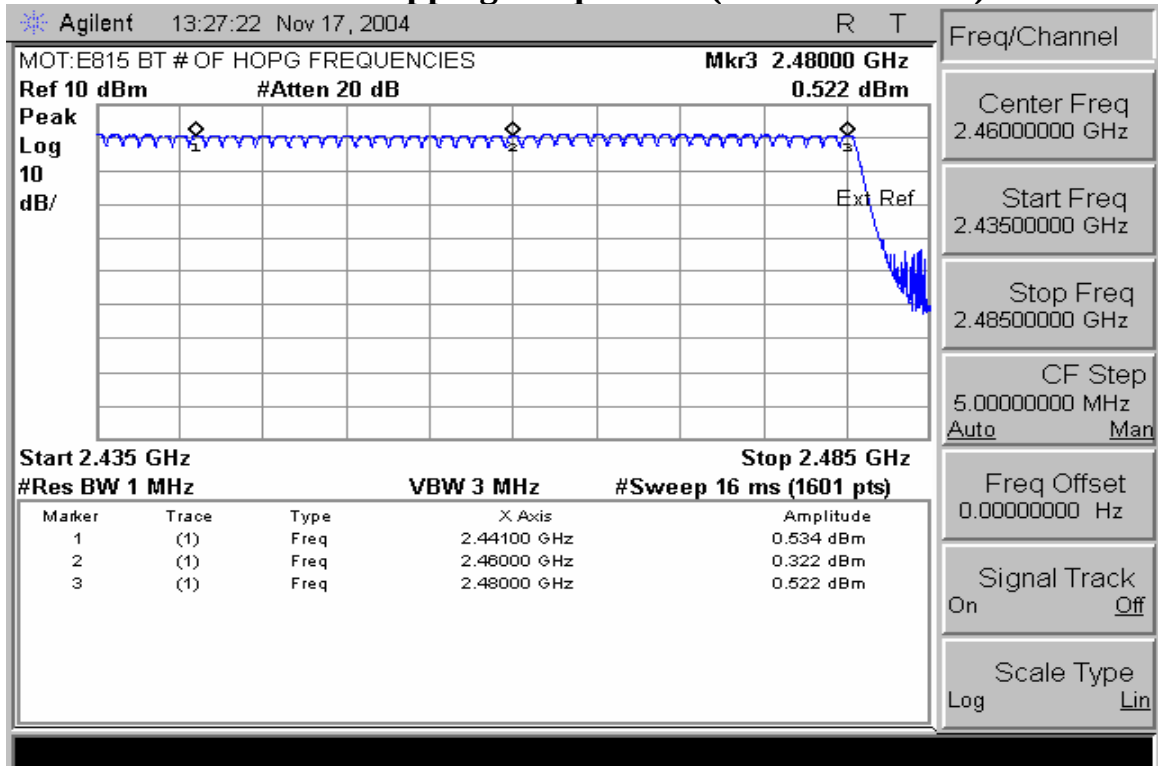
The trace was allowed to stabilize.

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.

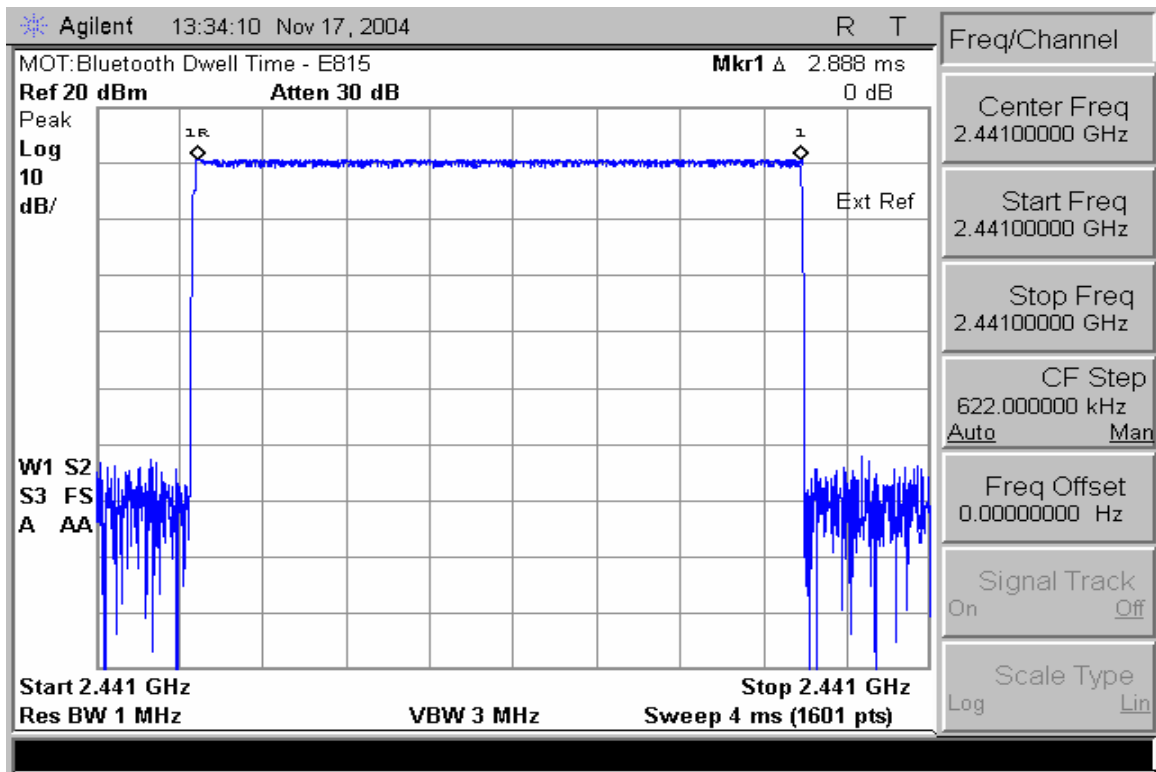
The Bluetooth hopping function of the EUT was enabled. The following spectrum analyzer settings were used:

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.

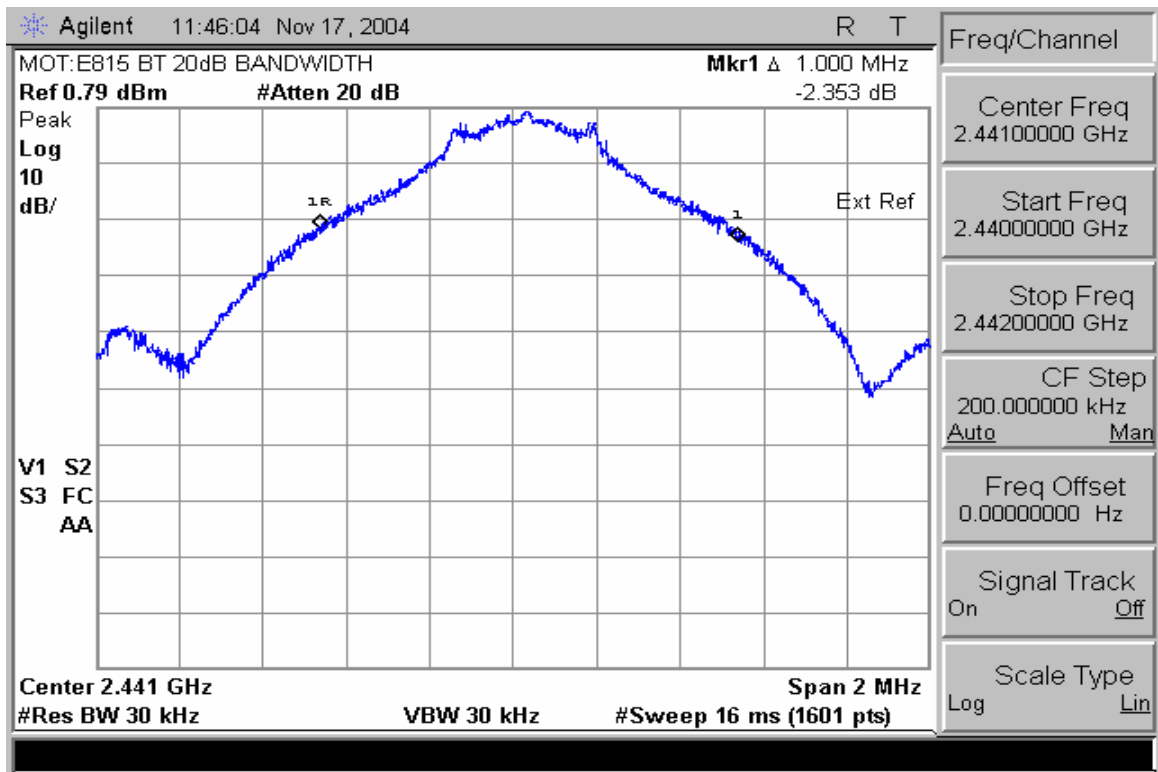
The Bluetooth frequency hopping function of the EUT was enabled. The spectrum analyzer used the following settings:

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.

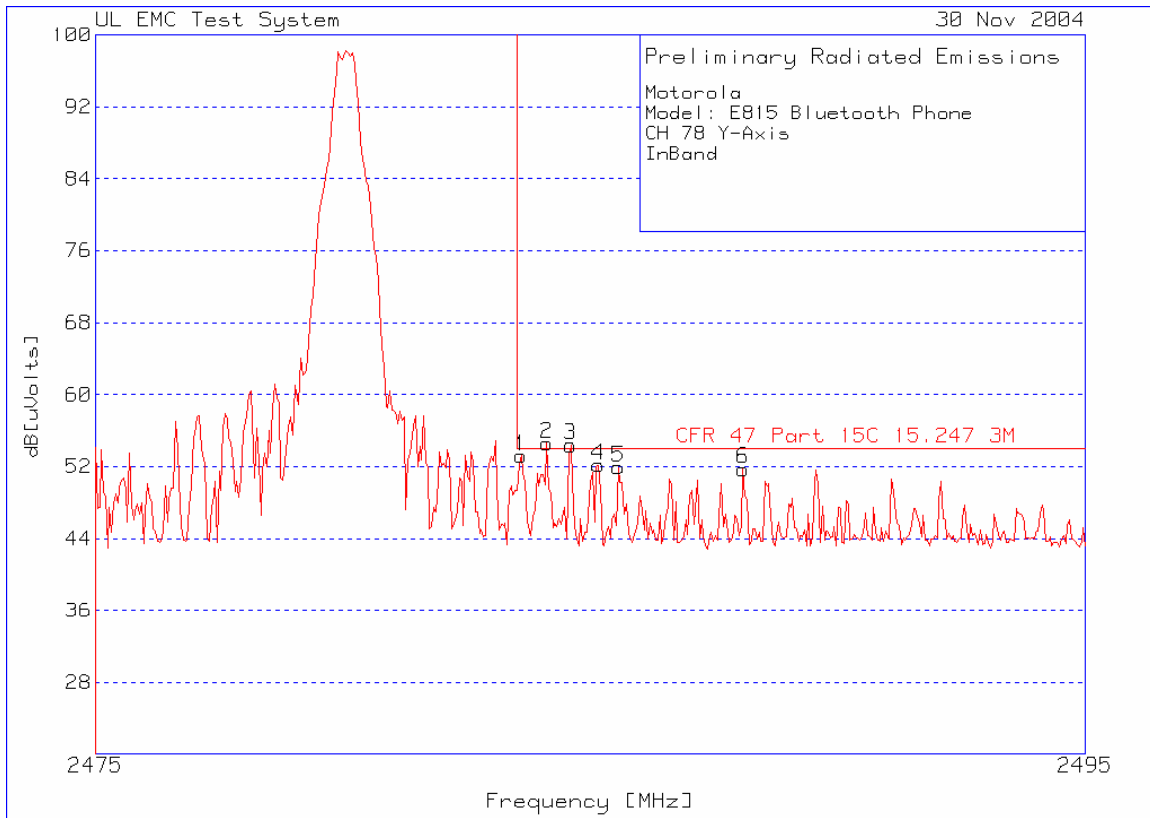
Field Strength (dBuV/m) = EMI Receiver Level (dBuV) + Cable Loss (dB) -
Amplifier Gain (dB) + Antenna Correction Factor (1/m)

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: E815 Bluetooth Phone
CH 78 Y-Axis
InBand
Marker
Number

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 2475 - 2495MHz										
1	2483.577	27.8	pk	3.3	22.1	53.2	54	-0.8	149	Horz
2	2484.098	29.18	pk	3.3	22.1	54.58	54	0.58	149	Horz
3	2484.579	29	pk	3.3	22.1	54.4	54	0.4	149	Horz
4	2485.14	26.76	pk	3.3	22.1	52.16	54	-1.84	149	Horz
5	2485.541	26.52	pk	3.3	22.1	51.92	54	-2.08	149	Horz
6	2488.066	26.34	pk	3.3	22.1	51.74	54	-2.26	149	Horz

LIMIT 1: CFR 47 Part 15C 15.247 3M

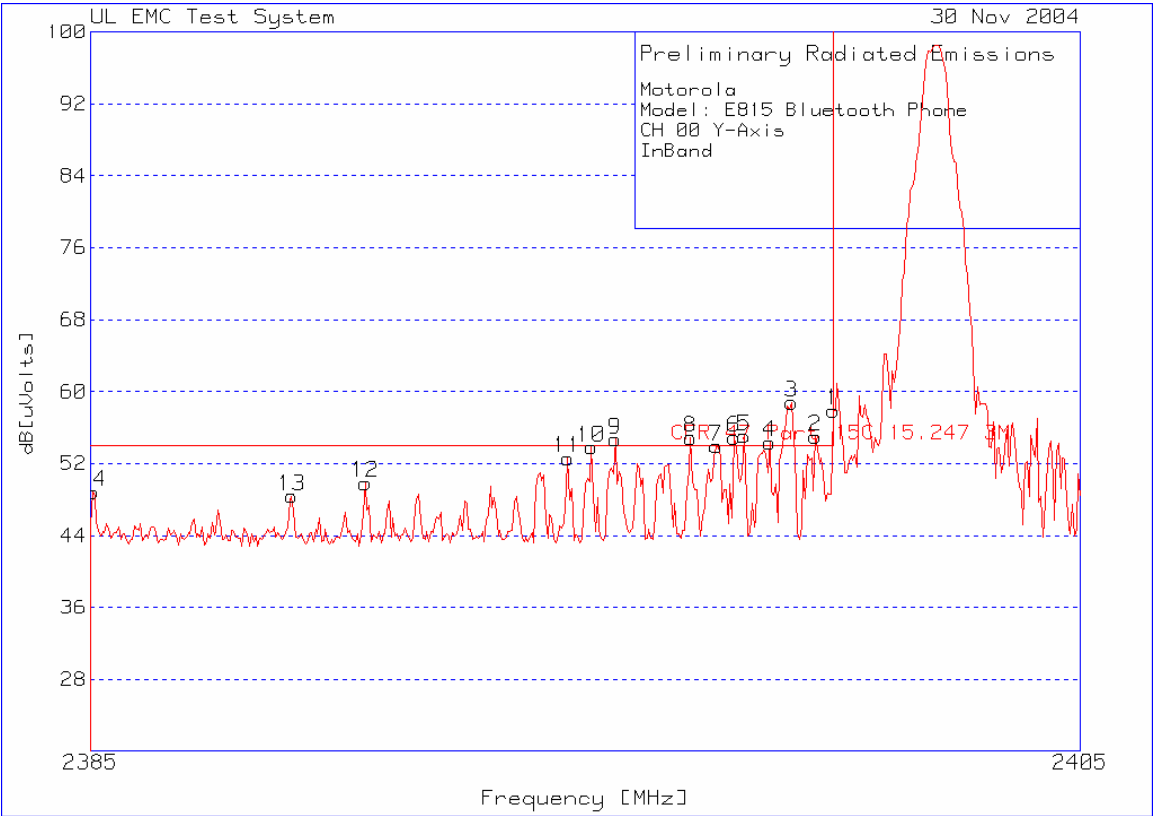
LIMIT 2: NONE
LIMIT 3: NONE
LIMIT 4: NONE
LIMIT 5: NONE
LIMIT 6: NONE

Motorola
Model: E815 Bluetooth Phone
CH 78 Y-Axis
InBand
Test
Frequency [MHz]

Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts]	Limit 1	Margin 1[dB]	Azimuth [deg]	Height [cm]	Polarity
2 - 4GHz 2475 - 2495MHz										
2484.098	18.72	av	3.3	22.1	44.12	54	-9.88	99	142	Horz
2484.579	15.88	av	3.3	22.1	41.28	54	-12.72	75	150	Horz

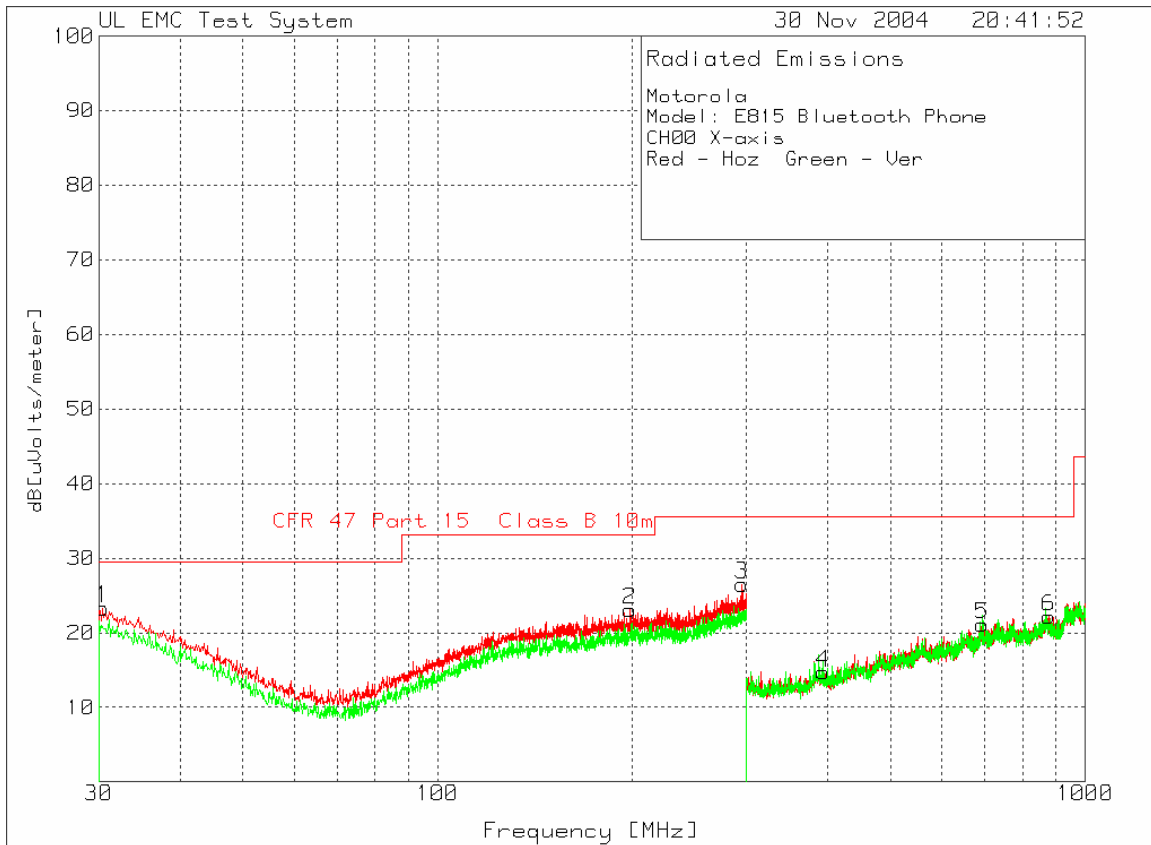
IT 1: CFR 47 Part 15C 15.247 3M

LIMIT 2: NONE
LIMIT 3: NONE
LIMIT 4: NONE
LIMIT 5: NONE
LIMIT 6: NONE

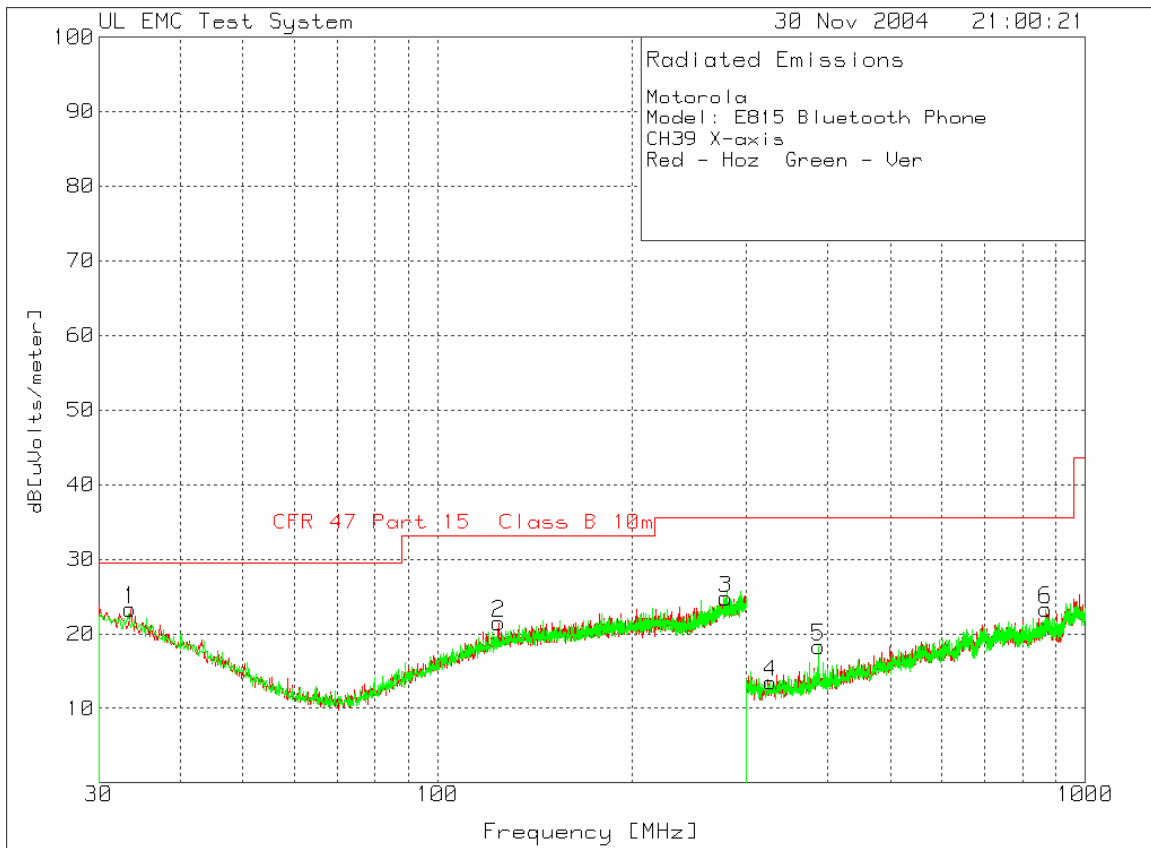


Inband Low Channel

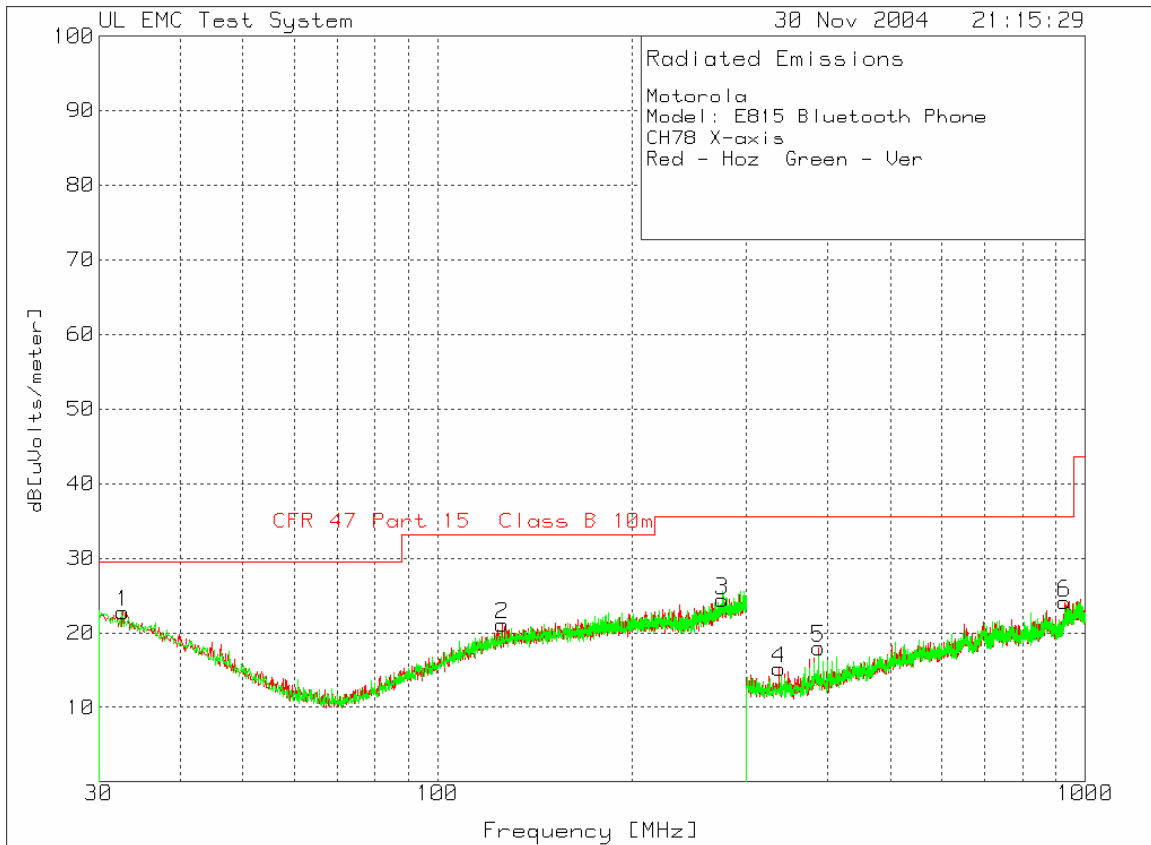
Motorola											
Model: E815 Bluetooth Phone											
CH 00 Y-Axis											
InBand											
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1[dB]	Height [cm]	Polarity	
Number	Frequency	Reading	Type	Factor	Factor	dB[uVolts]					
	[MHz]	[dB(uV)]		[dB]	[dB]						
2 - 4GHz 2385 - 2405MHz											
1	2399.99	32.79	pk	3.3	21.8	57.89	54	3.89	150	Horz	
2	2399.629	29.91	pk	3.3	21.8	55.01	54	1.01	150	Horz	
3	2399.148	33.7	pk	3.3	21.8	58.8	54	4.8	150	Horz	
4	2398.707	29.29	pk	3.3	21.8	54.39	54	0.39	150	Horz	
5	2398.186	29.95	pk	3.3	21.8	55.05	54	1.05	150	Horz	
6	2397.986	29.81	pk	3.3	21.8	54.91	54	0.91	150	Horz	
7	2397.625	28.84	pk	3.3	21.8	53.94	54	-0.06	100	Horz	
8	2397.104	29.81	pk	3.3	21.8	54.91	54	0.91	150	Horz	
9	2395.581	29.61	pk	3.3	21.8	54.71	54	0.71	150	Horz	
10	2395.1	28.72	pk	3.3	21.8	53.82	54	-0.18	150	Horz	
11	2394.619	27.52	pk	3.3	21.8	52.62	54	-1.38	150	Horz	
12	2390.531	24.74	pk	3.3	21.8	49.84	54	-4.16	150	Horz	
13	2389.048	23.28	pk	3.3	21.8	48.38	54	-5.62	150	Horz	
14	2385.04	23.73	pk	3.3	21.8	48.83	54	-5.17	150	Horz	
LIMIT 1: CFR 47 Part 15C 15.247 3M											
LIMIT 2: NONE											
LIMIT 3: NONE											
LIMIT 4: NONE											
LIMIT 5: NONE											
LIMIT 6: NONE											



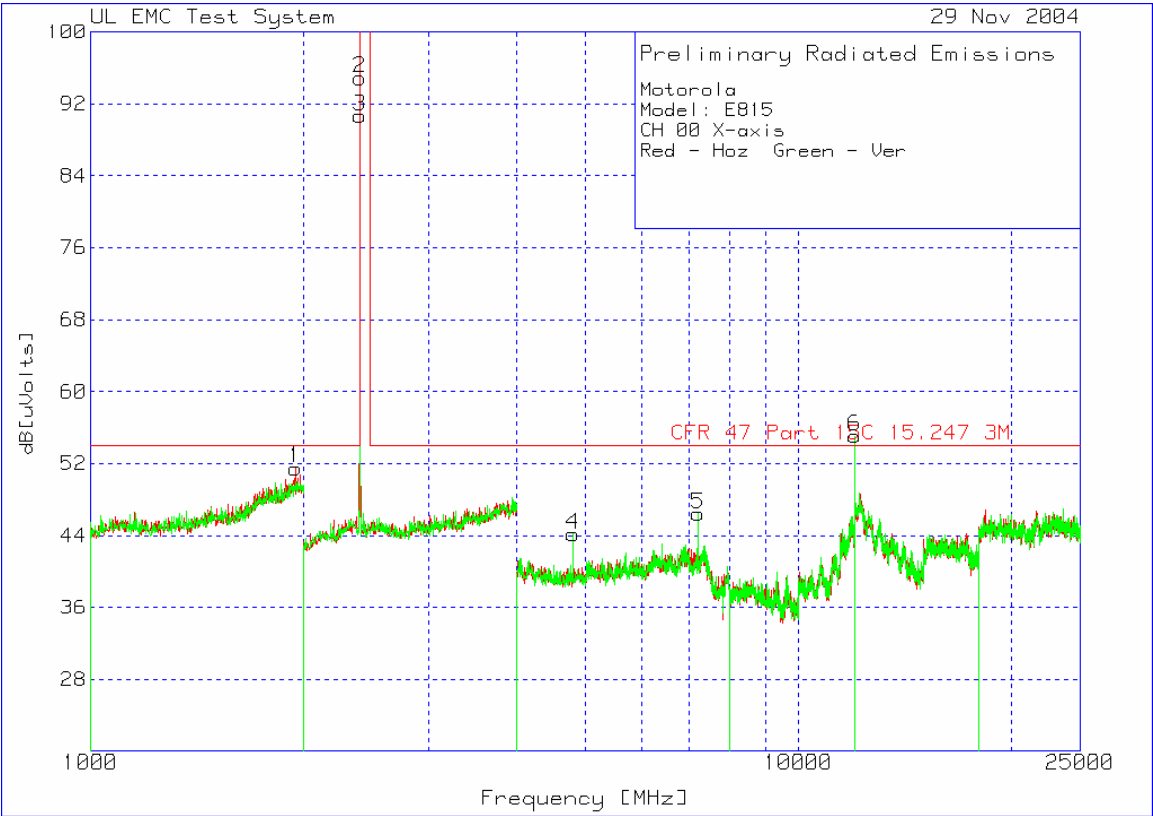
30 -1000MHz Low Channel Dual Polarization X-Axis



30-1000MHz Mid Channel Dual Polarization X-Axis

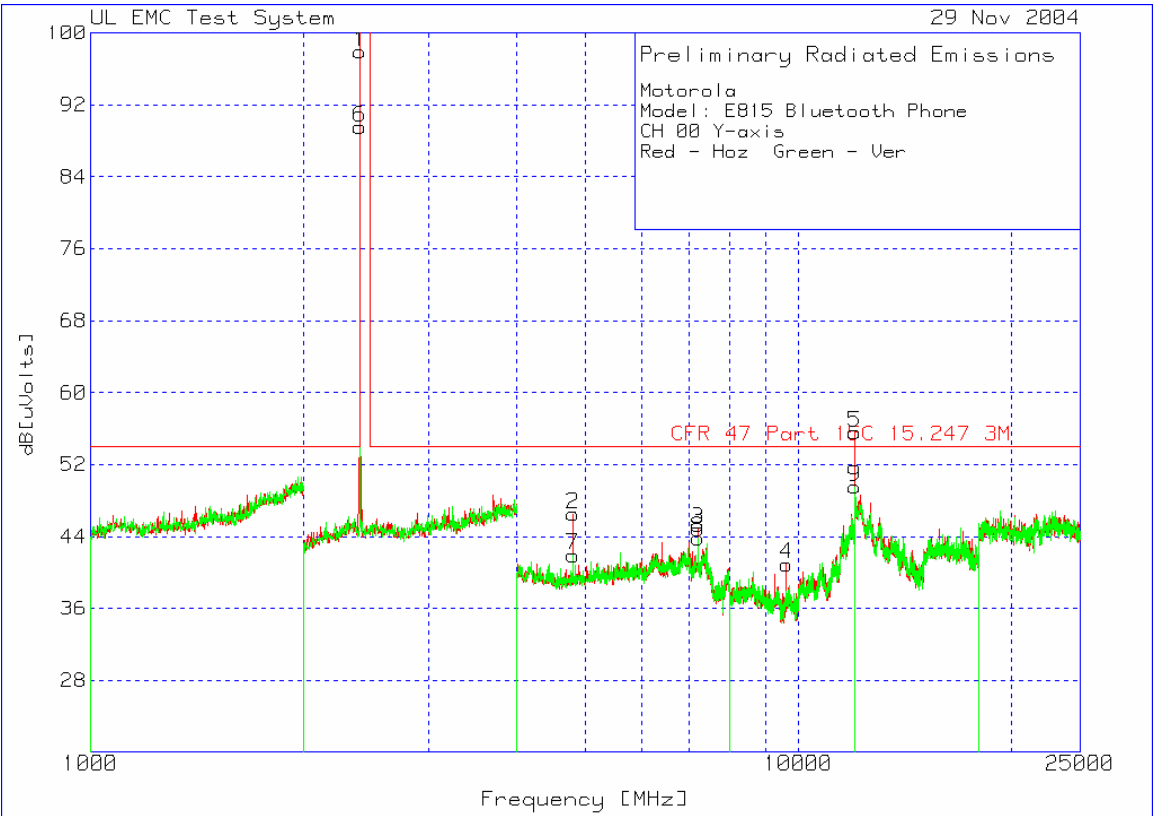


30-1000MHz High Channel Dual Polarization X-Axis



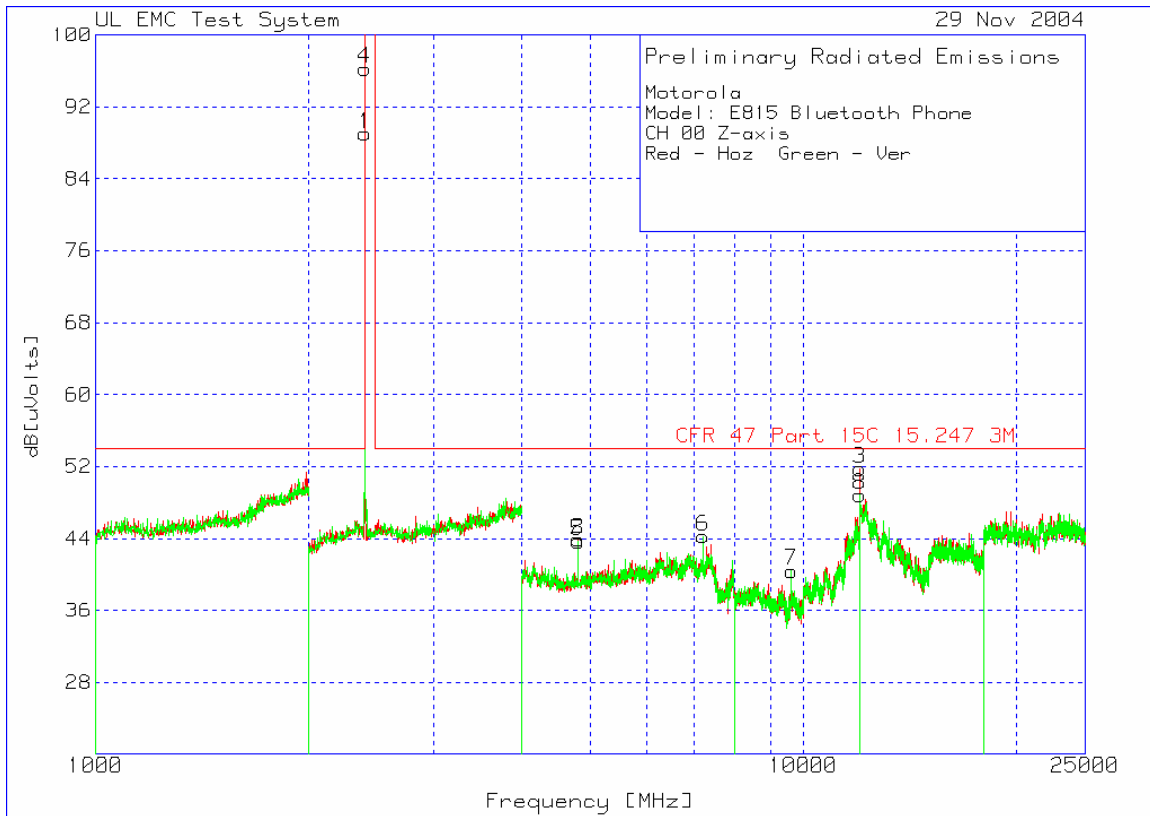
1-25GHz Low Channel X-Orientation

Motorola Model: E815 CH 00 X-axis Red - Hoz Green - Ver											
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	
1 - 2GHz 1000 - 2000MHz 1	1945.892	21.17	pk	3.1	27.2	51.47	54	-2.53	100	Horz	
2 - 4GHz 2000 - 4000MHz 2	2400.802	69.79	pk	3.3	21.8	94.89	999	-904.11	149	Horz	
2 - 4GHz 2000 - 4000MHz 3	2400.802	65.56	pk	3.3	21.8	90.66	999	-908.34	149	Vert	
4 - 8GHz 4000 - 8000MHz 4	4804.805	67.85	pk	-51.4	27.7	44.15	54	-9.85	100	Vert	
5	7207.207	63.93	pk	-47.3	29.8	46.43	54	-7.57	100	Vert	
12 - 18GHz 12000 - 18000MHz 6	12006.01	56.96	pk	-41.3	39.4	55.06	54	1.06	149	Vert	
LIMIT 1: CFR 47 Part 15C 15.247 3M LIMIT 2: NONE LIMIT 3: NONE LIMIT 4: NONE LIMIT 5: NONE LIMIT 6: NONE											



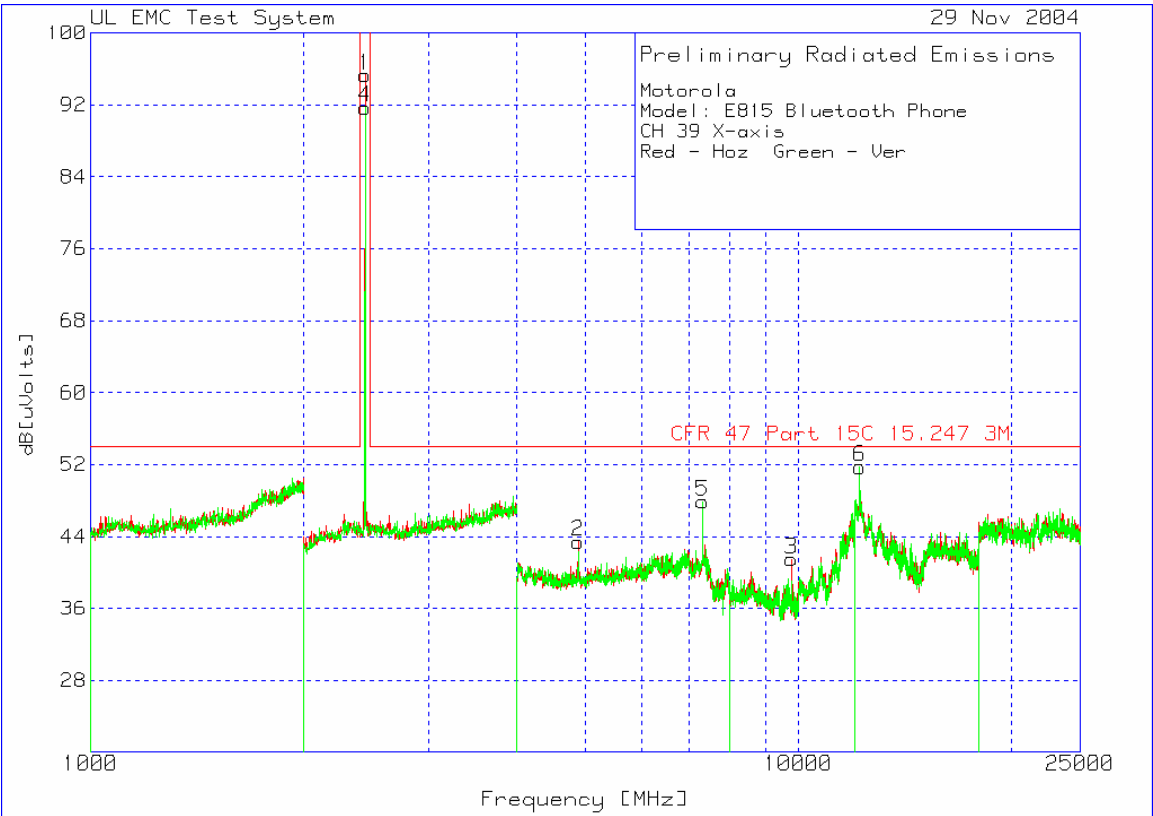
1-25GHz Low Channel Y-Orientation

Motorola Model: E815 Bluetooth Phone CH 00 Y-axis Red - Hoz Green - Ver Marker Number										
2 - 4GHz 2000 - 4000MHz	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
1	2440.802	74.84	pk	3.3	21.9	97.94	999	-901.06	150	Horz
4 - 8GHz 4000 - 8000MHz										
2	4804.805	70.21	pk	-51.4	27.7	46.51	54	-7.49	99	Horz
3	7207.207	62.33	pk	-47.3	29.8	44.83	54	-9.17	99	Horz
8 - 12GHz 8000 - 12000MHz										
4	9609.61	53.92	pk	-49.4	36.4	40.92	54	-13.08	100	Horz
12 - 18GHz 12000 - 18000MHz										
5	12006.01	57.5	pk	-41.3	39.4	55.6	54	1.6	150	Horz
2 - 4GHz 2000 - 4000MHz										
6	2440.802	64.44	pk	3.3	21.8	89.54	999	-909.46	149	Vert
4 - 8GHz 4000 - 8000MHz										
7	4804.805	65.63	pk	-51.4	27.7	41.93	54	-12.07	149	Vert
8	7207.208	61.35	pk	-47.3	29.8	43.85	54	-10.15	100	Vert
12 - 18GHz 12000 - 18000MHz										
9	12006.01	51.44	pk	-41.3	39.4	49.54	54	-4.46	149	Vert
LIMIT 1: CFR 47 Part 15C 15.247 3M LIMIT 2: NONE LIMIT 3: NONE LIMIT 4: NONE LIMIT 5: NONE LIMIT 6: NONE										



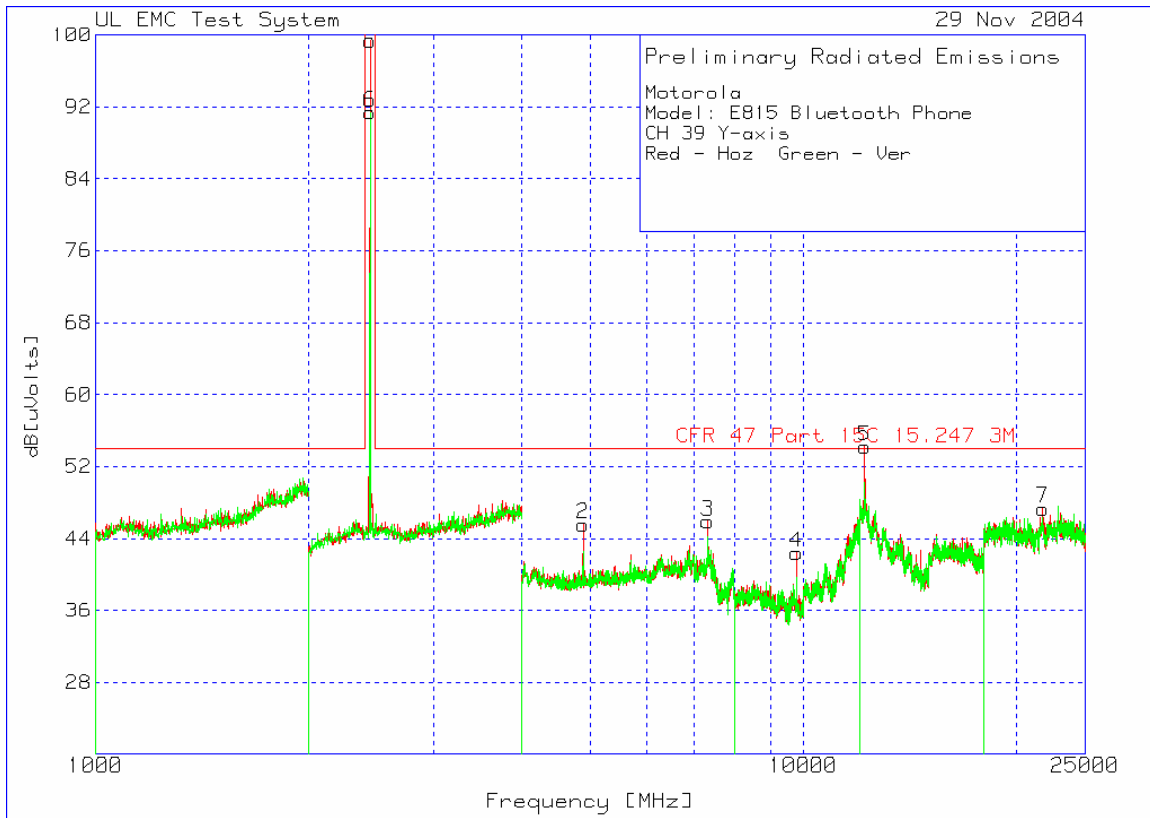
1-25GHz Low Channel Z-Orientation

Motorola										
Model: E815 Bluetooth Phone										
CH 00 Z-axis										
Red - Hoz Green - Ver										
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	2440.802	63.92	pk	3.3	21.8	89.02	999	-909.92	150	Horz
4 - 8GHz 4000 - 8000MHz 2	4804.805	67.62	pk	-51.4	27.7	43.92	54	-10.08	99	Horz
12 - 18GHz 12000 - 18000MHz 3	12006.01	53.66	pk	-41.3	39.4	51.76	54	-2.24	100	Horz
2 - 4GHz 2000 - 4000MHz 4	2400.802	71.15	pk	3.3	21.8	96.25	999	-902.75	149	Vert
4 - 8GHz 4000 - 8000MHz 5	4804.805	67.41	pk	-51.4	27.7	43.71	54	-10.29	149	Vert
6	7207.207	61.75	pk	-47.3	29.8	44.25	54	-9.75	100	Vert
8 - 12GHz 8000 - 12000MHz 7	9609.61	53.41	pk	-49.4	36.4	40.41	54	-13.59	150	Vert
12 - 18GHz 12000 - 18000MHz 8	12006.01	50.73	pk	-41.3	39.4	48.83	54	-5.17	150	Vert
LIMIT 1: CFR 47 Part 15C 15.247 3M										
LIMIT 2: NONE										
LIMIT 3: NONE										
LIMIT 4: NONE										
LIMIT 5: NONE										
LIMIT 6: NONE										



1-25 GHz Mid-Channel X-Orientation

Motorola Model: E815 Bluetooth Phone CH 39 X-axis Red - Hoz Green - Ver 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	70.13	pk	3.3	21.9	95.33	999	-903.67	150	Horz
4 - 8GHz 4000 - 8000MHz 2	4880.881	67.13	pk	-51.4	27.7	43.43	54	-10.57	100	Horz
8 - 12GHz 8000 - 12000MHz 3	9765.766	55.37	pk	-50.3	36.4	41.47	54	-12.53	100	Horz
2 - 4GHz 2000 - 4000MHz 4	2440.882	66.51	pk	3.3	21.9	91.71	999	-907.29	150	Vert
4 - 8GHz 4000 - 8000MHz 5	7323.323	64.39	pk	-47.1	30.6	47.89	54	-6.11	100	Vert
12 - 18GHz 12000 - 18000MHz 6	12204.2	53.56	pk	-41.2	39.4	51.76	54	-2.24	150	Vert
LIMIT 1: CFR 47 Part 15C 15.247 3M LIMIT 2: NONE LIMIT 3: NONE LIMIT 4: NONE LIMIT 5: NONE LIMIT 6: NONE										

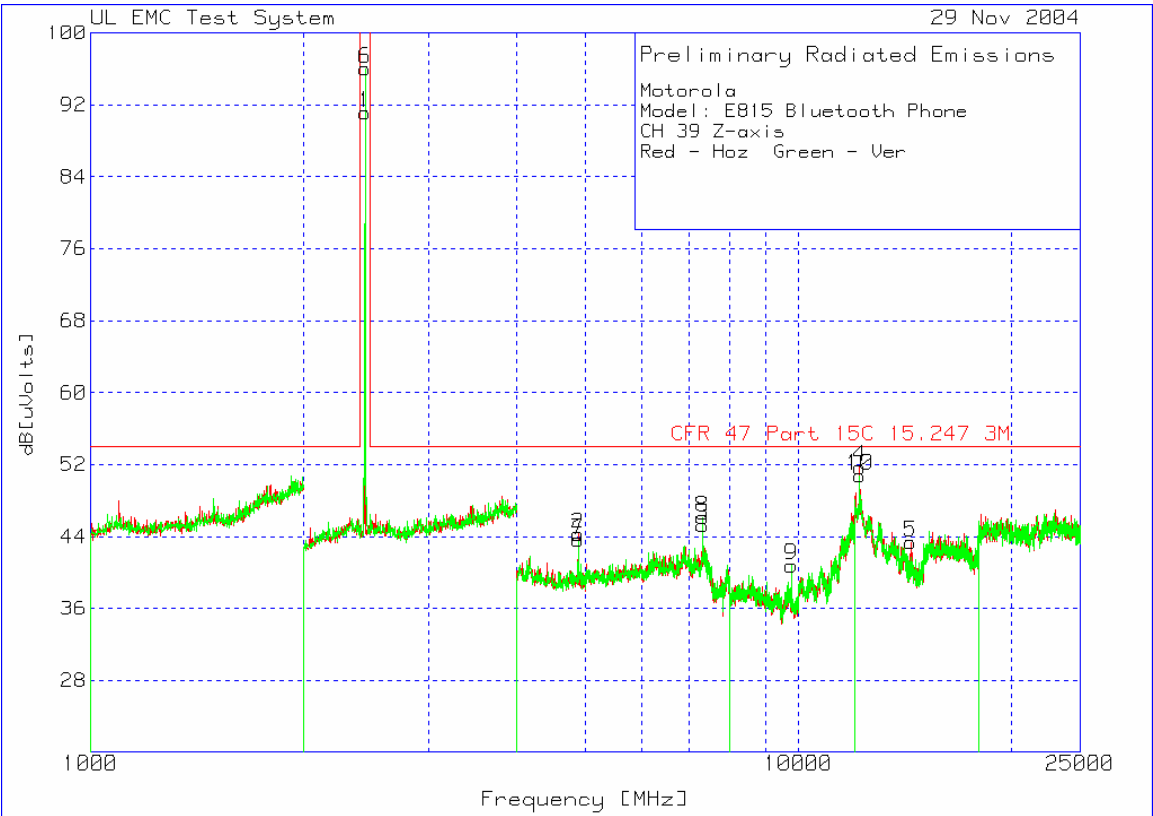


1-25GHz Mid-Channel Y-Orientation

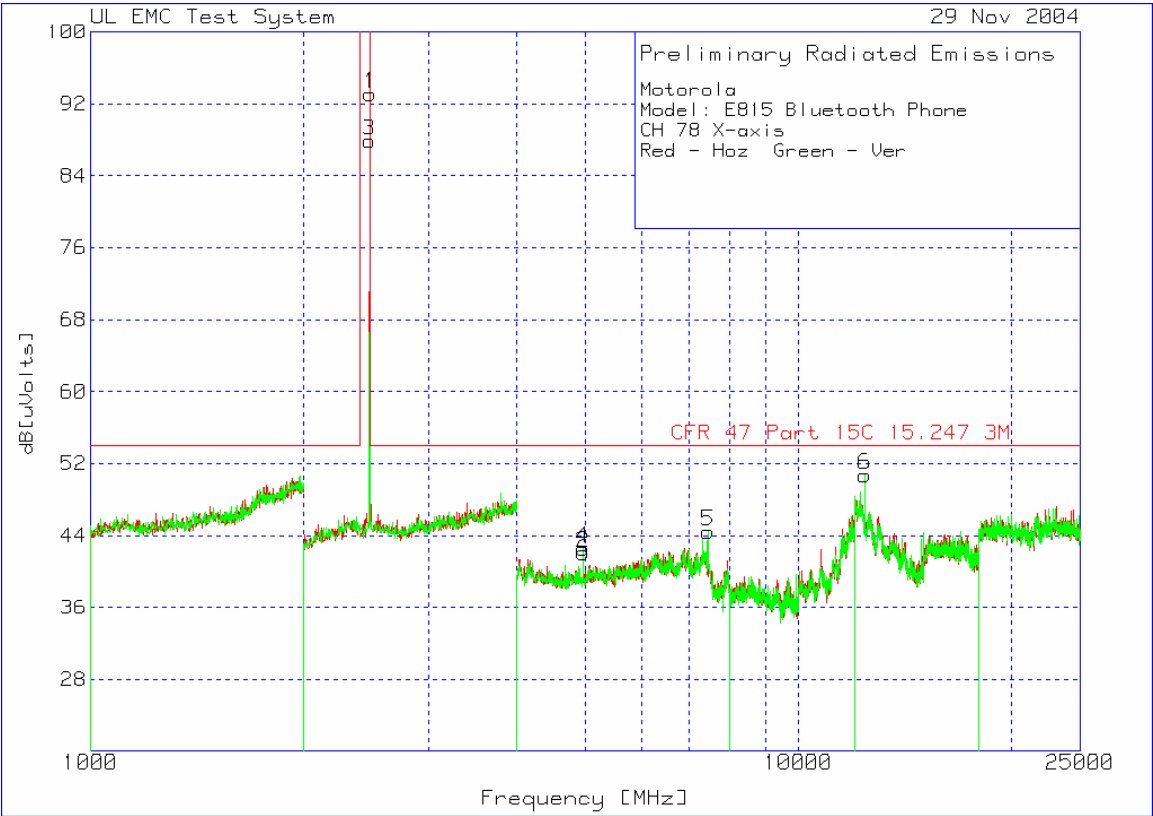
Motorola
Model: E815 Bluetooth Phone
CH 39 Y-axis
Red - Hoz Green - Ver

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	74.2	pk	3.3	21.9	99.4	999	-899.6	150	Horz
4 - 8GHz 4000 - 8000MHz 2	4880.881	69.26	pk	-51.4	27.7	45.56	54	-8.44	100	Horz
3	7323.323	62.42	pk	-47.1	30.6	45.92	54	-8.08	100	Horz
8 - 12GHz 8000 - 12000MHz 4	9765.766	56.31	pk	-50.3	36.4	42.41	54	-11.59	100	Horz
12 - 18GHz 12000 - 18000MHz 5	12204.2	56.03	pk	-41.2	39.4	54.23	54	0.23	99	Horz
18-26.5GHz 18000 - 25000MHz 7	21776.78	67.62	pk	-60.7	40.4	47.32	54	-6.68	100	Horz
2 - 4GHz 2000 - 4000MHz 6	2440.882	66.19	pk	3.3	21.9	91.39	999	-907.61	150	Vert

LIMIT 1: CFR 47 Part 15C 15.247 3M
LIMIT 2: NONE
LIMIT 3: NONE
LIMIT 4: NONE
LIMIT 5: NONE
LIMIT 6: NONE

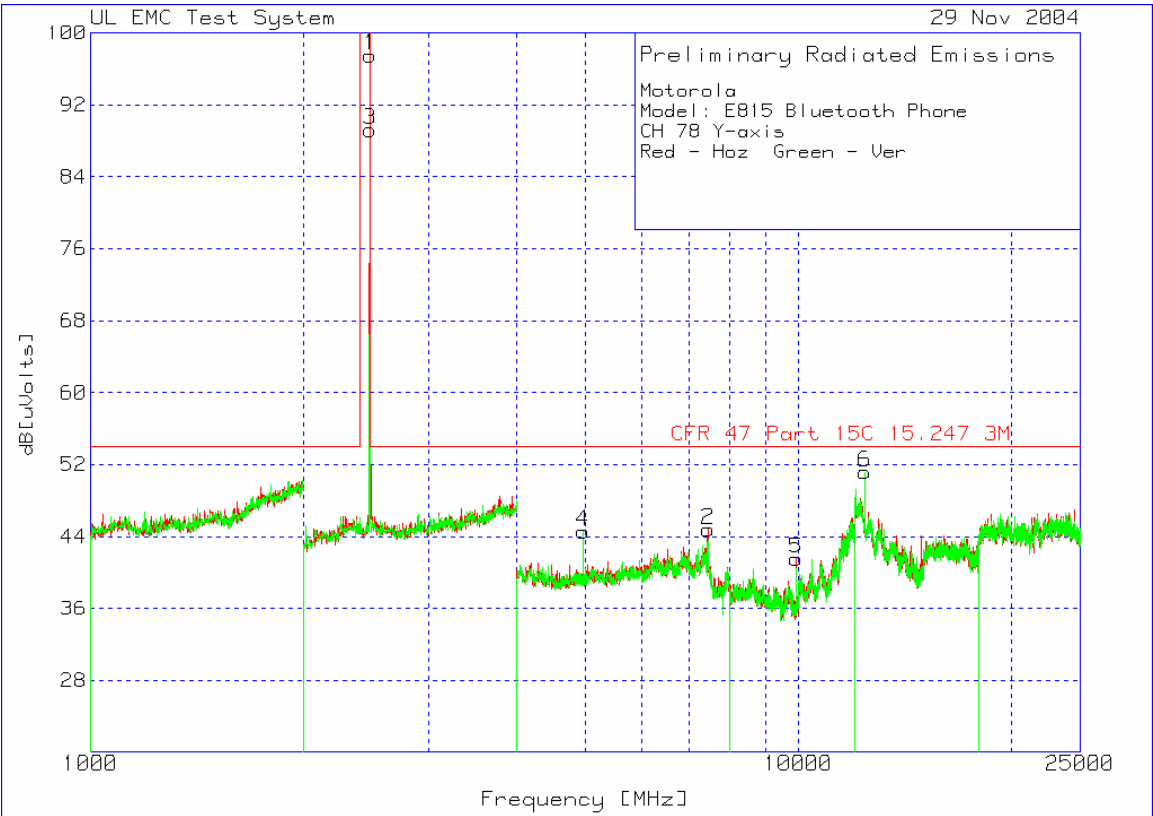


Motorola Model: E815 Bluetooth Phone CH 39 Z-axis Red - Hoz Green - Ver Marker Number										
Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts]	Limit 1	Margin 1[dB]	Height [cm]	Polarity	
2 - 4GHz 2000 - 4000MHz										
1	2440.882	65.95	pk	3.3	21.9	91.15	999	-907.85	149	Horz
4 - 8GHz 4000 - 8000MHz										
2	4880.881	68	pk	-51.4	27.7	44.3	54	-9.7	100	Horz
3	7323.323	61.75	pk	-47.1	30.6	45.25	54	-8.75	100	Horz
12 - 18GHz 12000 - 18000MHz										
4	12204.2	53.55	pk	-41.2	39.4	51.75	54	-2.25	99	Horz
5	14396.4	46.27	pk	-42.7	39.8	43.37	54	-10.63	99	Horz
2 - 4GHz 2000 - 4000MHz										
6	2440.882	70.86	pk	3.3	21.9	96.06	999	-902.94	100	Vert
4 - 8GHz 4000 - 8000MHz										
7	4880.881	67.33	pk	-51.4	27.7	43.63	54	-10.37	150	Vert
8	7323.323	62.63	pk	-47.1	30.6	46.13	54	-7.87	100	Vert
8 - 12GHz 8000 - 12000MHz										
9	9765.766	54.69	pk	-50.3	36.4	40.79	54	-13.21	150	Vert
12 - 18GHz 12000 - 18000MHz										
10	12204.2	52.58	pk	-41.2	39.4	50.78	54	-3.22	99	Vert
LIMIT 1: CFR 47 Part 15C 15.247 3M LIMIT 2: NONE LIMIT 3: NONE LIMIT 4: NONE LIMIT 5: NONE LIMIT 6: NONE										



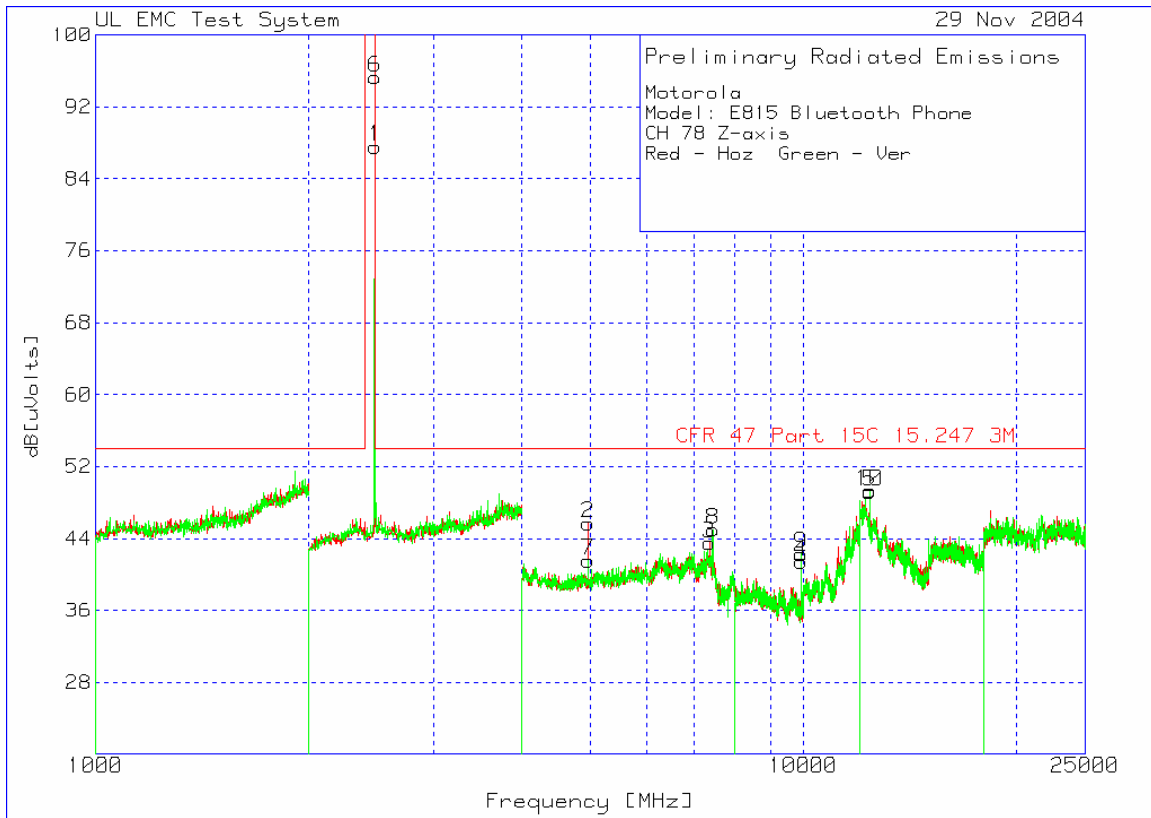
1-25 GHz High-Channel X-Orientation

Motorola											
Model: E815 Bluetooth Phone											
CH 78 X-axis											
Red - Hoz Green - Ver											
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1[dB]	Height [cm]	Polarity	
Number	Frequency [MHz]	Reading [dB(uV)]	Type	Factor [dB]	Factor [dB]	dB[uVolts]					
2 - 4GHz 2000 - 4000MHz											
1	2480.962	67.81	pk	3.3	22	93.11	999	-905.89	149	Horz	
4 - 8GHz 4000 - 8000MHz											
2	4960.961	65.87	pk	-51.6	27.8	42.07	54	-11.93	100	Horz	
2 - 4GHz 2000 - 4000MHz											
3	2476.954	62.62	pk	3.3	22	87.92	999	-911.08	150	Vert	
4 - 8GHz 4000 - 8000MHz											
4	4960.961	66.36	pk	-51.6	27.8	42.56	54	-11.44	100	Vert	
5	7443.443	60.84	pk	-46.9	30.5	44.44	54	-9.56	100	Vert	
12 - 18GHz 12000 - 18000MHz											
6	12396.4	55.04	pk	-43.7	39.4	50.74	54	-3.26	100	Vert	
LIMIT 1: CFR 47 Part 15C 15.247 3M											
LIMIT 2: NONE											
LIMIT 3: NONE											
LIMIT 4: NONE											
LIMIT 5: NONE											
LIMIT 6: NONE											



1-25 GHz High-Channel Y-Orientation

Motorola Model: E815 Bluetooth Phone CH 78 Y-axis Red - Hoz Green - Ver											
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	72.21	pk	3.3	22	97.51	999	-901.49	99	Horz	
4 - 8GHz 4000 - 8000MHz 2	7443.443	61.18	pk	-46.9	30.5	44.78	54	-9.22	99	Horz	
8 - 12GHz 8000 - 12000MHz 5	9921.922	55.43	pk	-50.3	36.4	41.53	54	-12.47	100	Horz	
2 - 4GHz 2000 - 4000MHz 3	2480.962	63.92	pk	3.3	22	89.22	999	-909.78	100	Vert	
4 - 8GHz 4000 - 8000MHz 4	4960.961	68.36	pk	-51.6	27.8	44.56	54	-9.44	99	Vert	
12 - 18GHz 12000 - 18000MHz 6	12396.4	55.45	pk	-43.7	39.4	51.15	54	-2.85	150	Vert	
LIMIT 1: CFR 47 Part 15C 15.247 3M LIMIT 2: NONE LIMIT 3: NONE LIMIT 4: NONE LIMIT 5: NONE LIMIT 6: NONE											



1-25 GHz High-Channel Z-Orientation

Motorola
Model: E815 Bluetooth Phone
CH 78 Z-axis
Red - Hoz Green - Ver
Marker Number

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	62.27	pk	3.3	22	87.57	999	-911.43	150	Horz
4 - 8GHz 4000 - 8000MHz 2	4960.961	69.49	pk	-51.6	27.8	45.69	54	-8.31	100	Horz
3	7359.359	59.91	pk	-47.3	30.9	43.51	54	-10.49	100	Horz
8 - 12GHz 8000 - 12000MHz 4	9921.922	55.35	pk	-50.3	36.4	41.45	54	-12.55	150	Horz
12 - 18GHz 12000 - 18000MHz 5	12396.4	53.52	pk	-43.7	39.4	49.22	54	-4.78	100	Horz
2 - 4GHz 2000 - 4000MHz 6	2480.962	69.99	pk	3.3	22	95.29	999	-903.71	149	Vert
4 - 8GHz 4000 - 8000MHz 7	4960.961	65.34	pk	-51.6	27.8	41.54	54	-12.46	150	Vert
8	7443.443	61.41	pk	-46.9	30.5	45.01	54	-8.99	100	Vert
8 - 12GHz 8000 - 12000MHz 9	9917.918	56.29	pk	-50.4	36.4	42.29	54	-11.71	150	Vert
12 - 18GHz 12000 - 18000MHz 10	12396.4	53.62	pk	-43.7	39.4	49.32	54	-4.68	150	Vert

LIMIT 1: CFR 47 Part 15C 15.247 3M
LIMIT 2: NONE
LIMIT 3: NONE
LIMIT 4: NONE
LIMIT 5: NONE
LIMIT 6: NONE

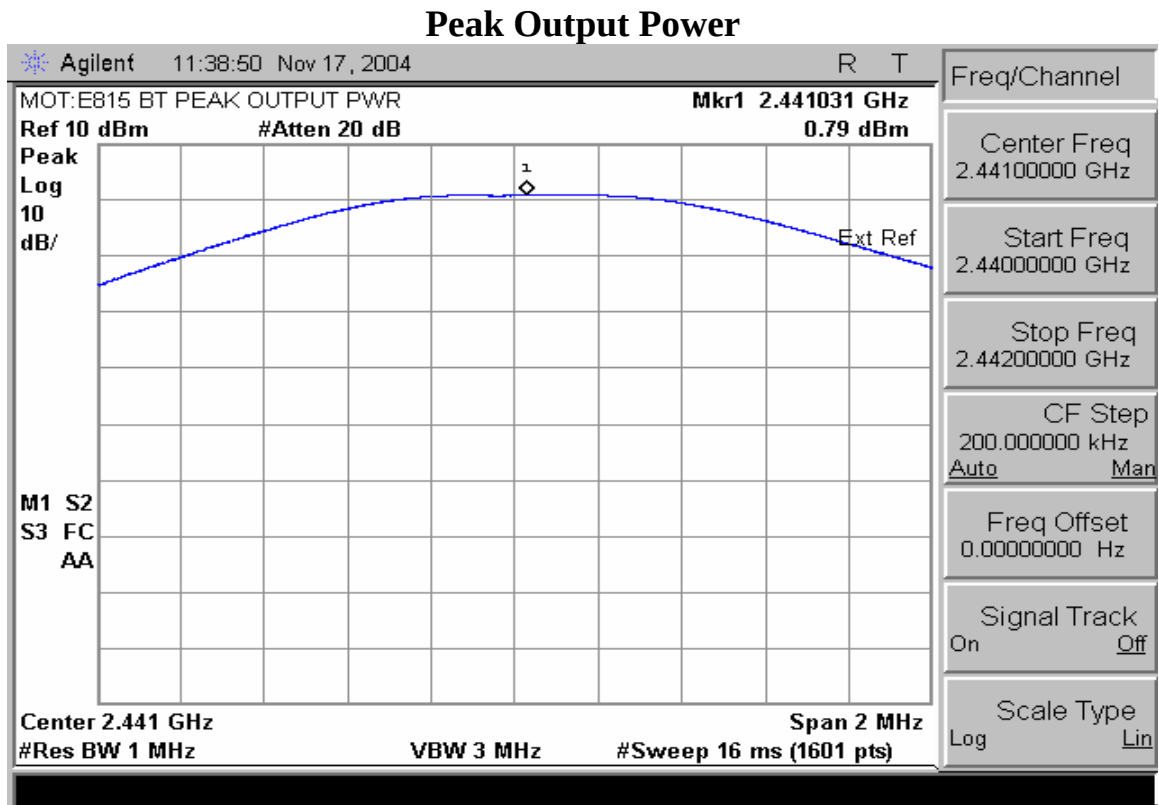
PEAK OUTPUT POWER

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



BAND-EDGE COMPLIANCE OF RF CONDUCTED EMISSIONS

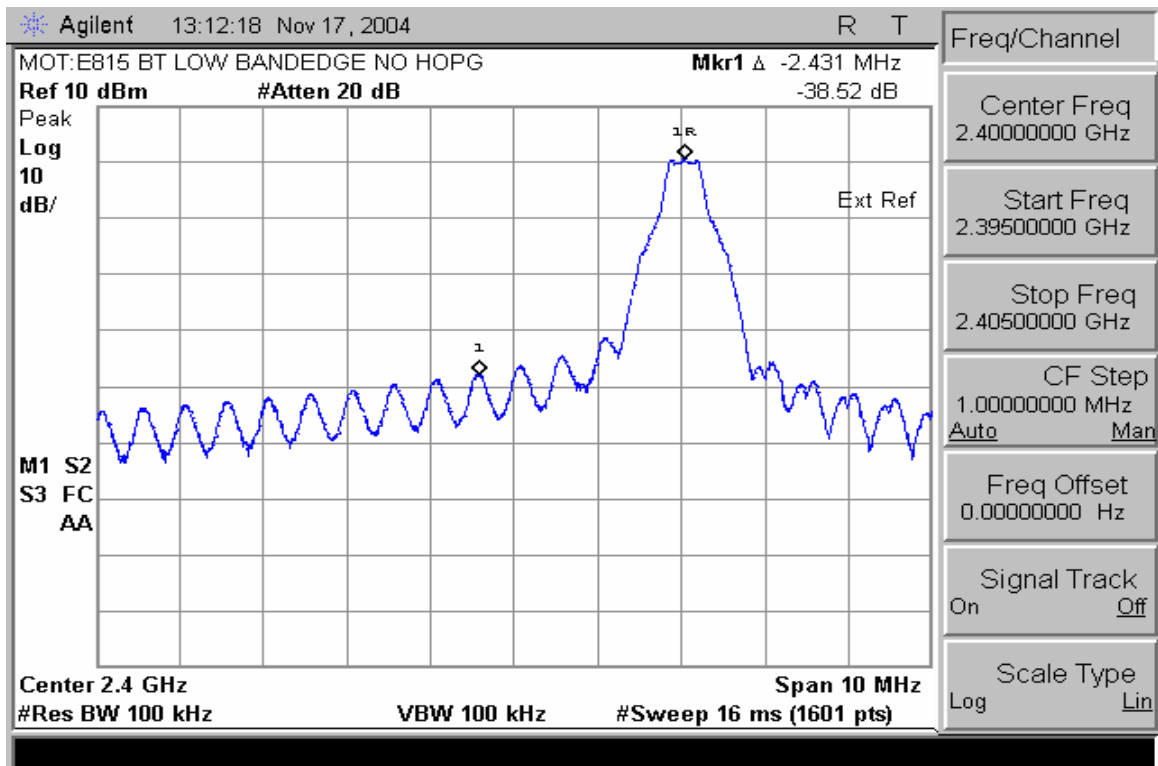
CFR 47 Part 15.247

Measurement Procedure

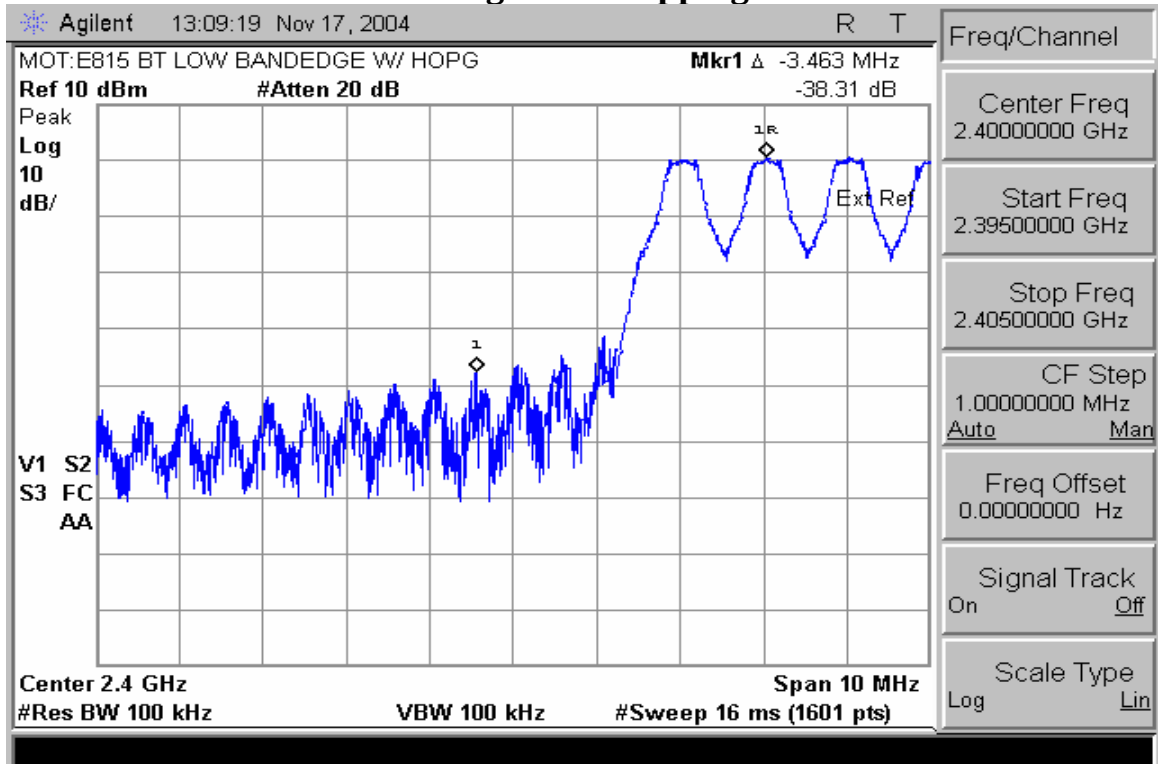
The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage.

Measurement Results

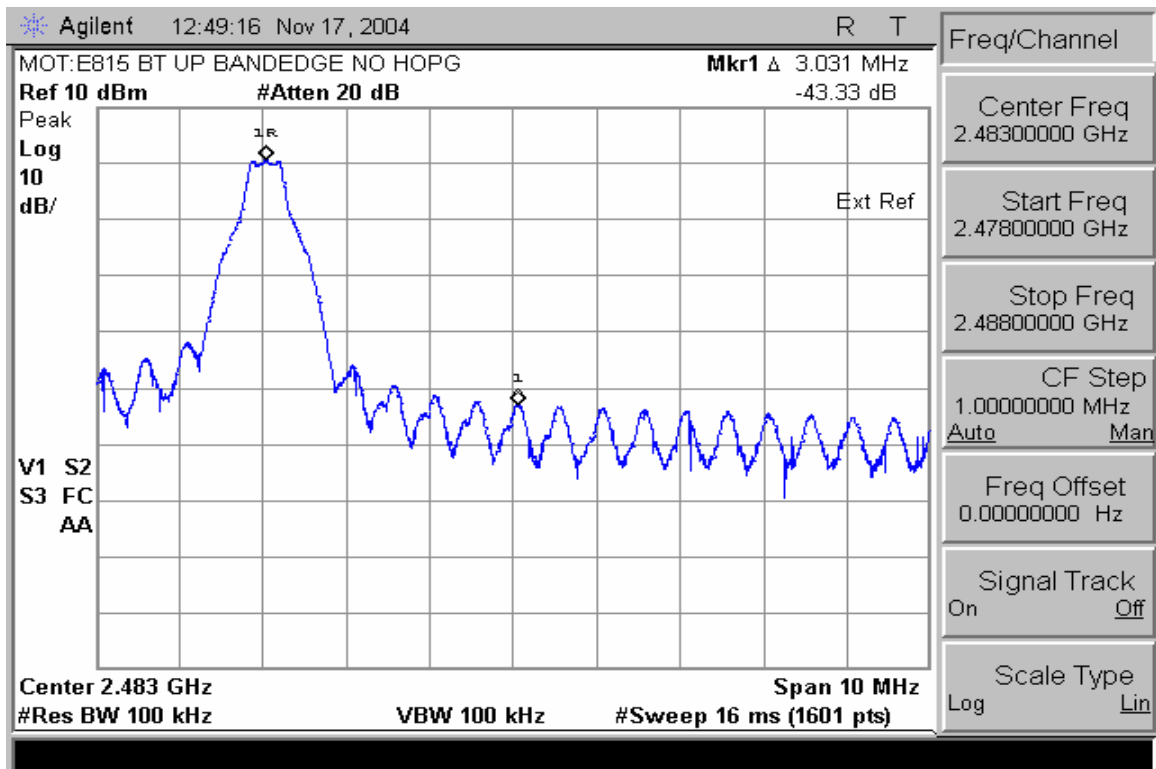
See Attached:



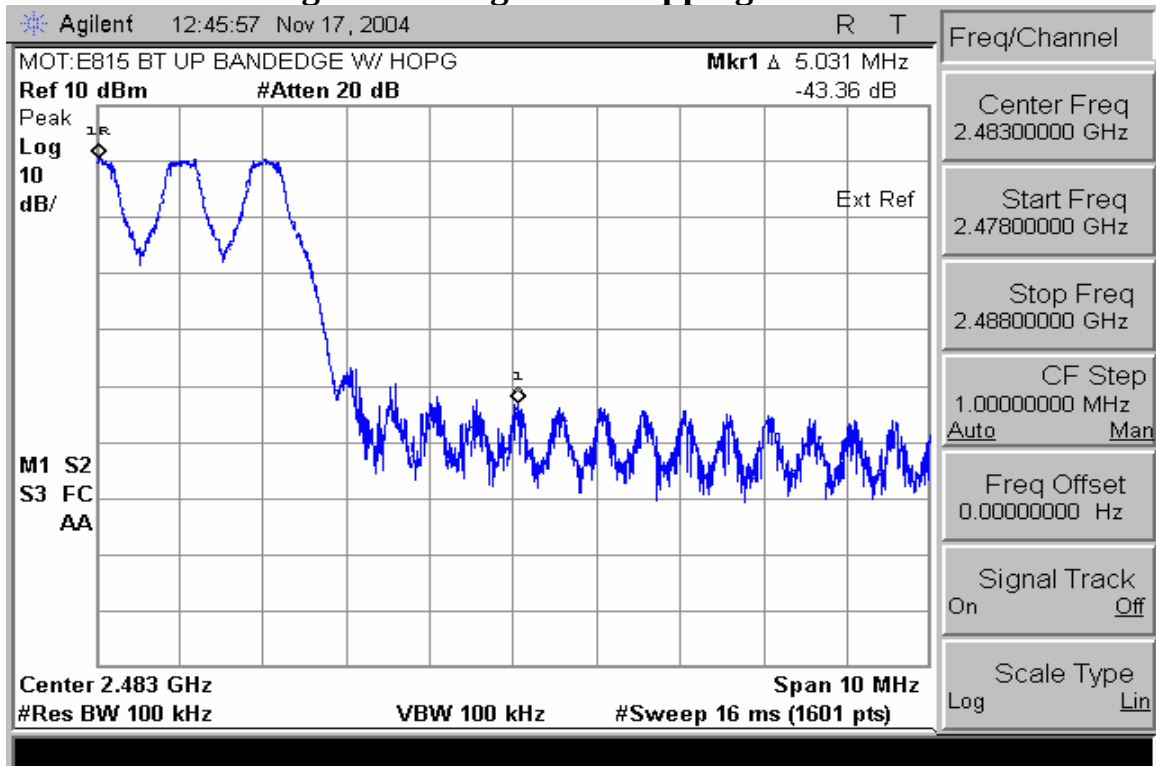
Low Band Edge with Hopping Disabled



Low Band Edge with Hopping Enabled



High Band Edge with Hopping Disabled



High Band Edge with Hopping Enabled

SPURIOUS RF CONDUCTED EMISSIONS

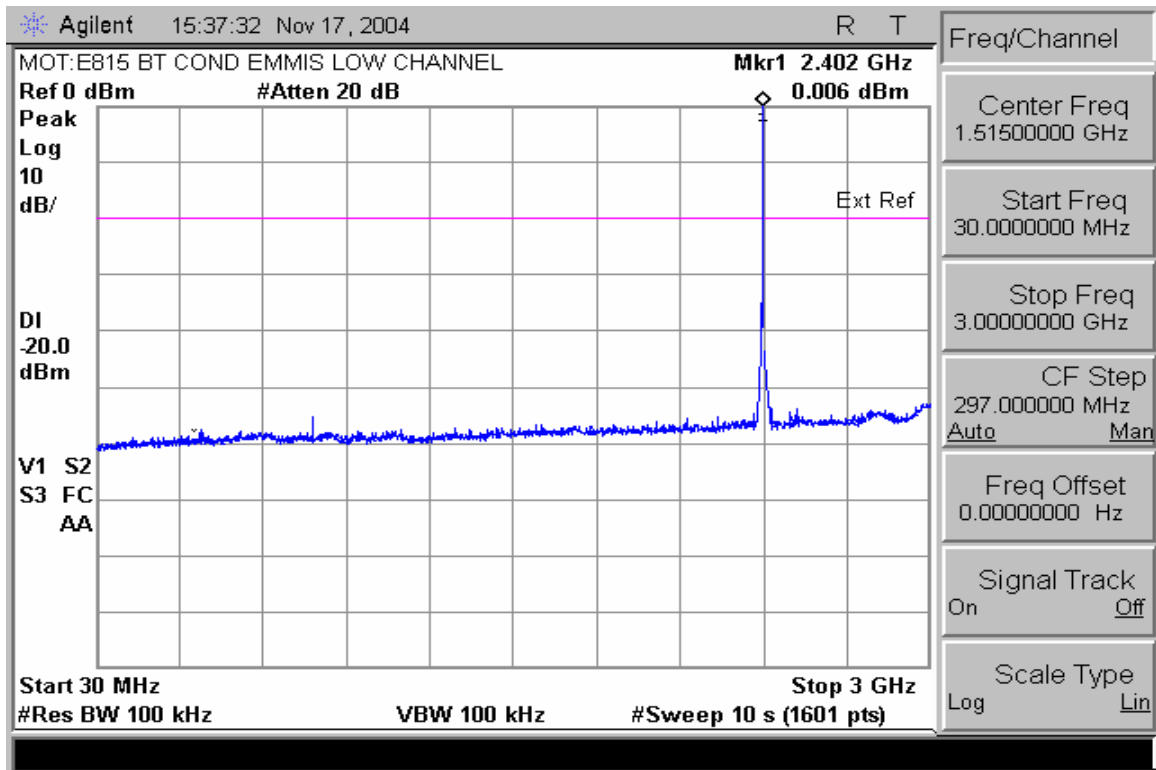
CFR 47 Part 15.247

Measurement Procedure

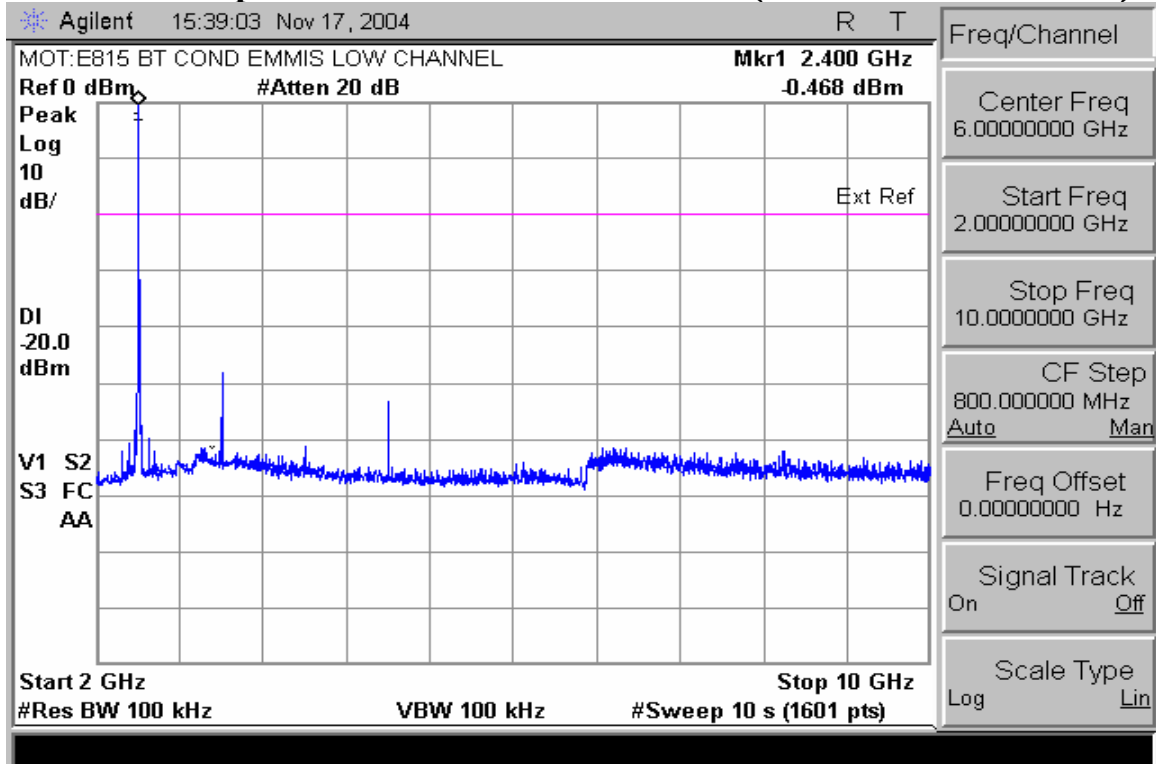
The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage.

Measurement Results

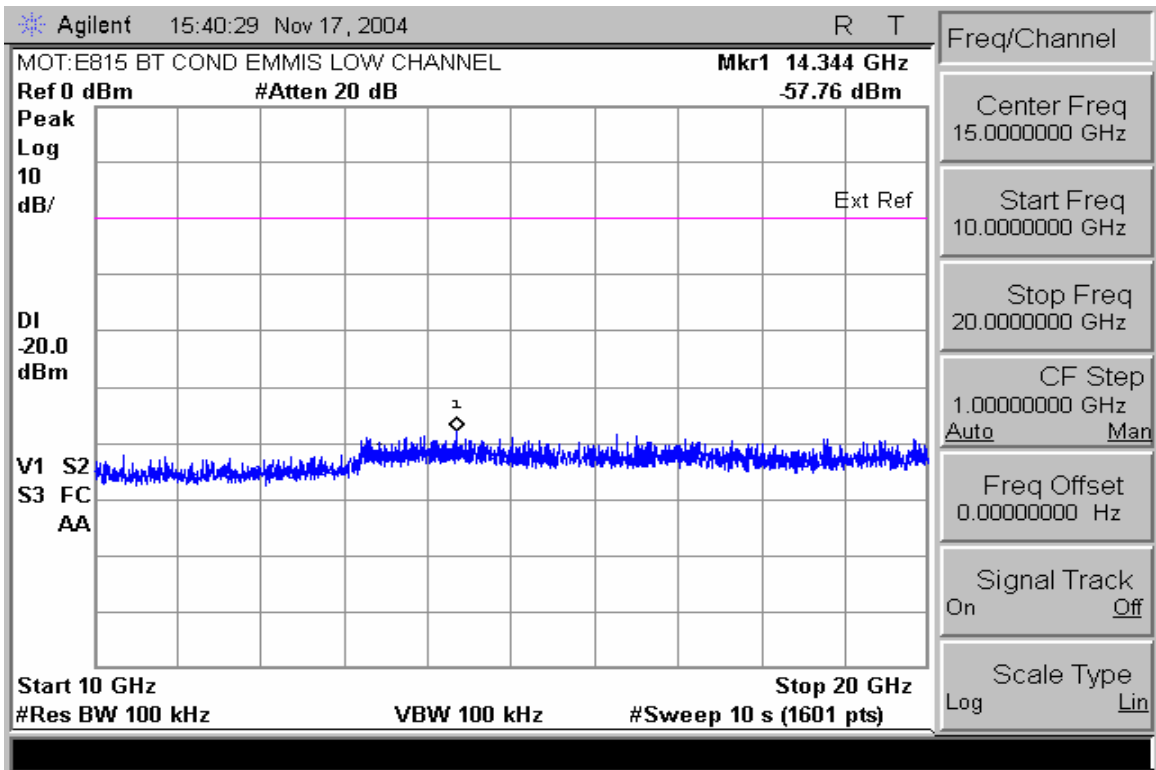
See attached:



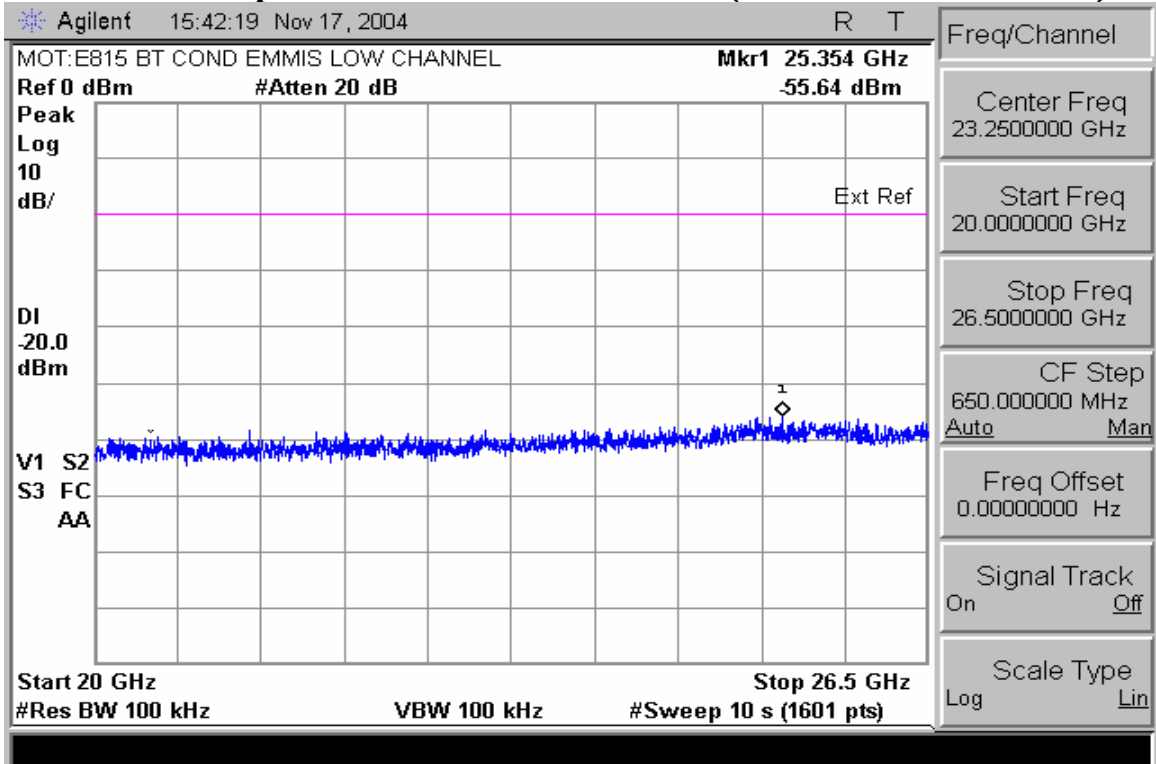
Conducted Spurious Emissions 30-3000MHz (Low Channel Enabled)



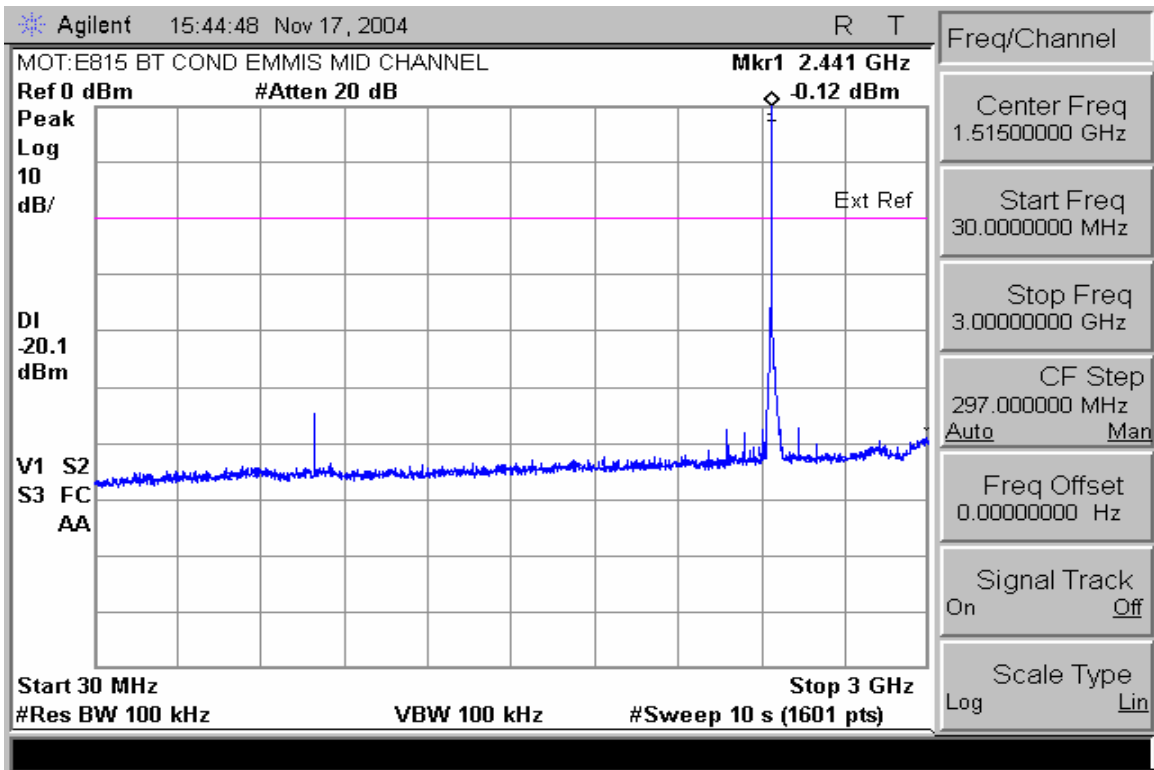
Conducted Spurious Emissions 2-10GHz (Low Channel Enabled)



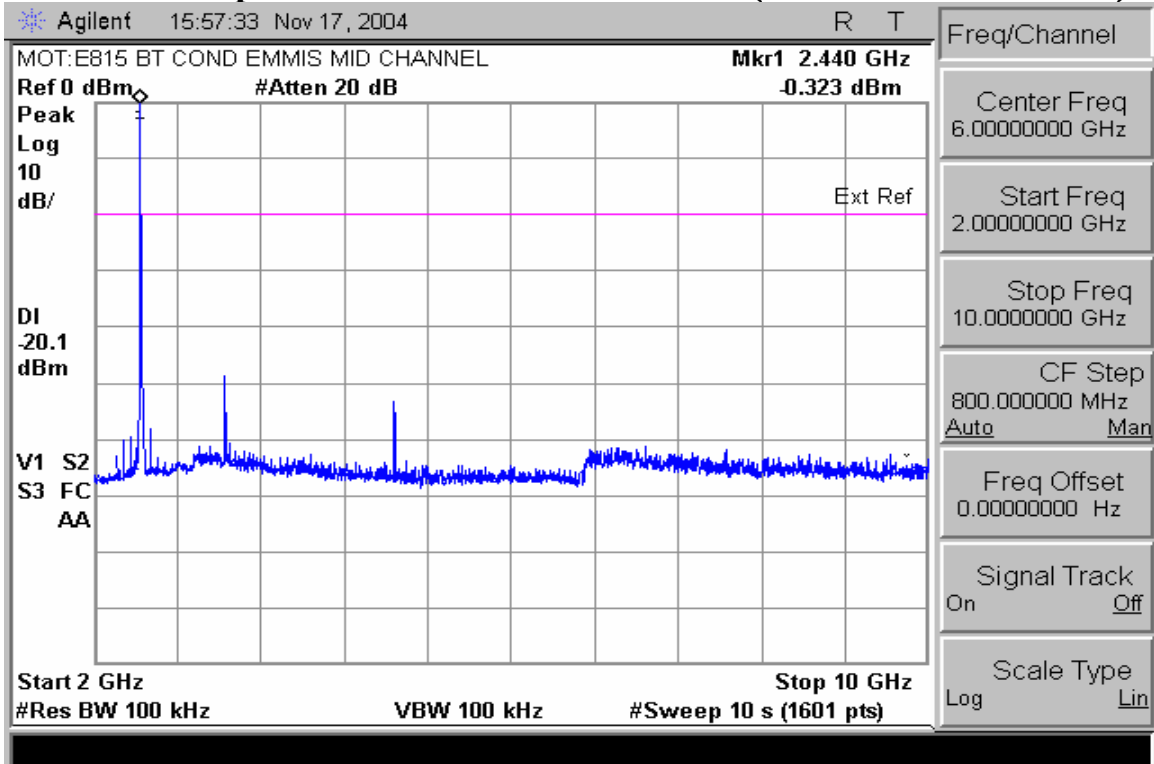
Conducted Spurious Emissions 10-20GHz (Low Channel Enabled)



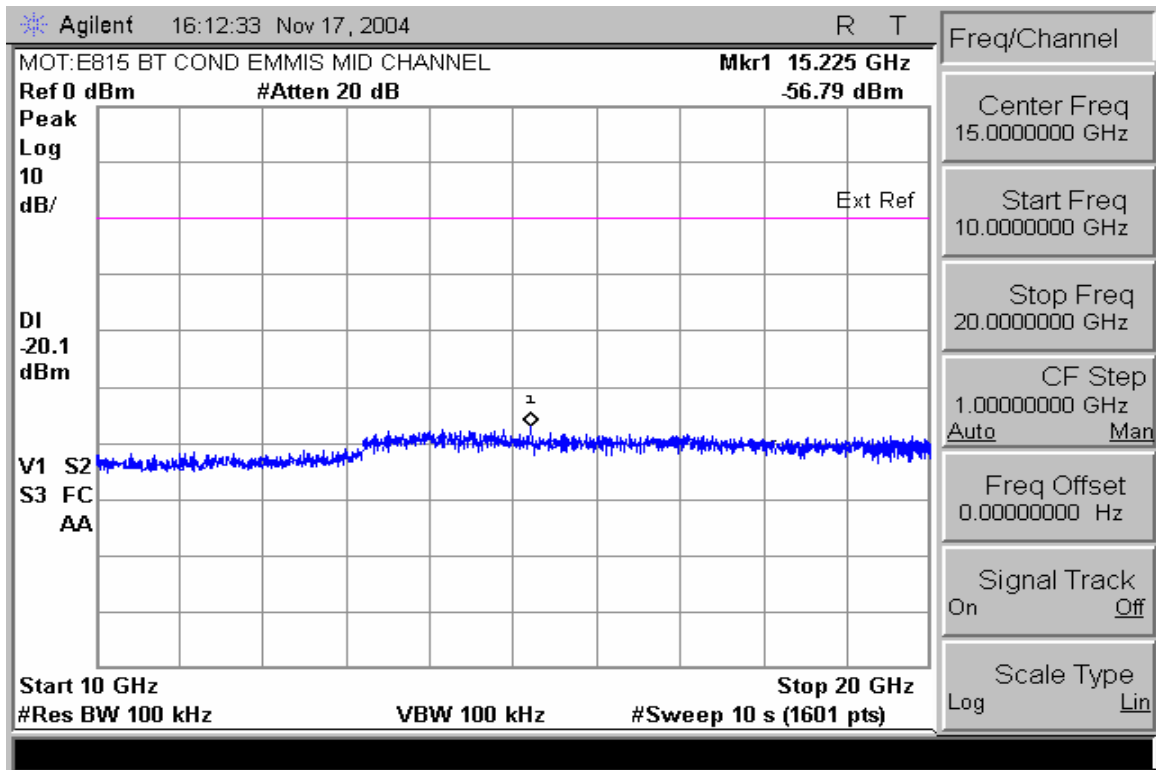
Conducted Spurious Emissions 20-26.5GHz (Low Channel Enabled)



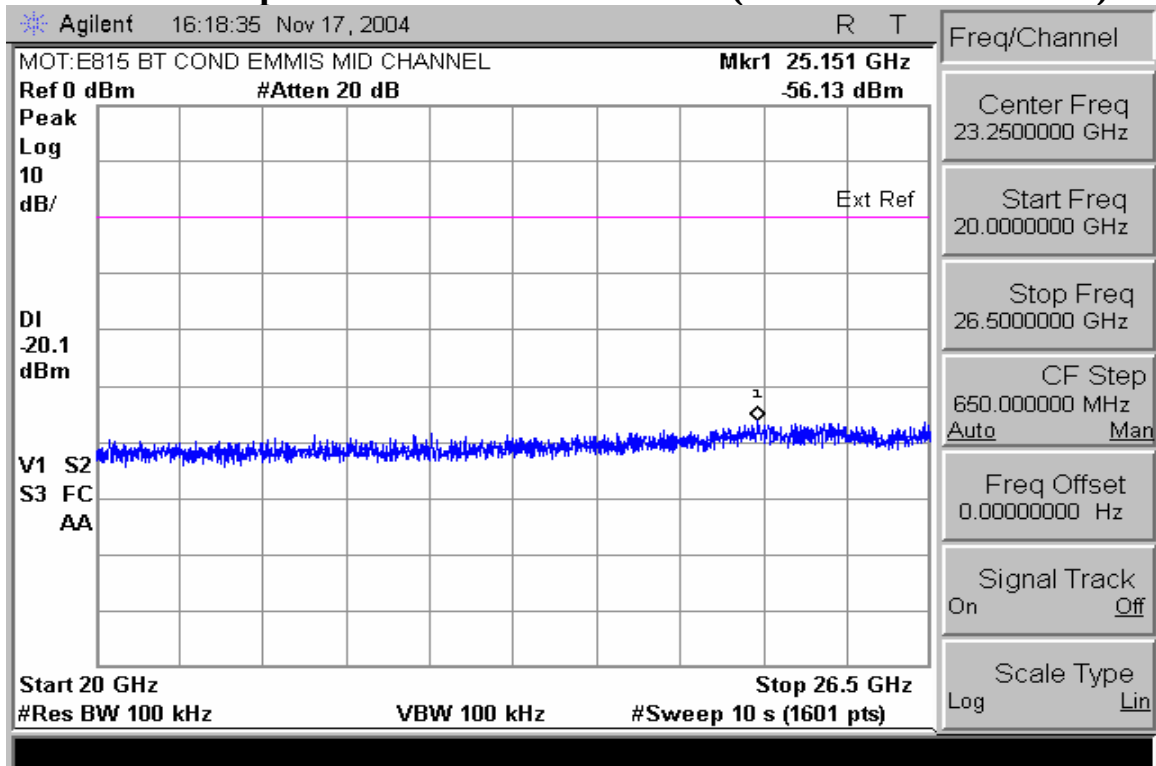
Conducted Spurious Emissions 30-3000MHz (Mid Channel Enabled)



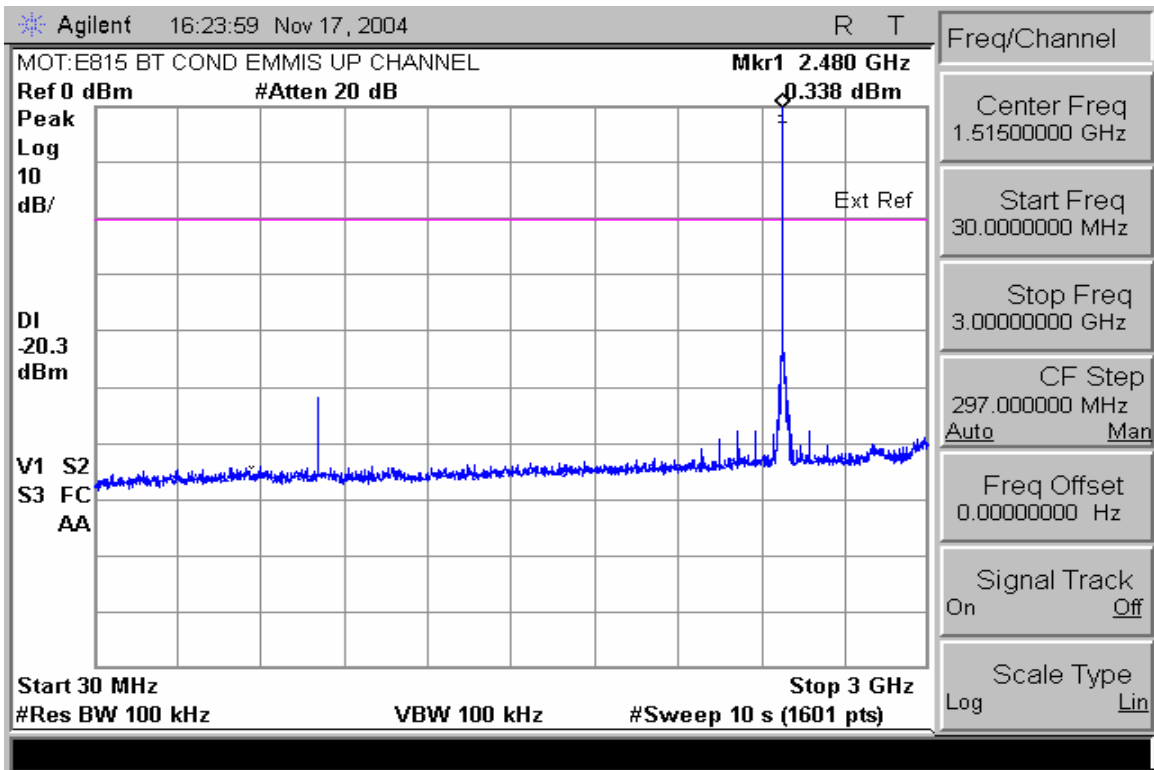
Conducted Spurious Emissions 2-10GHz (Mid Channel Enabled)



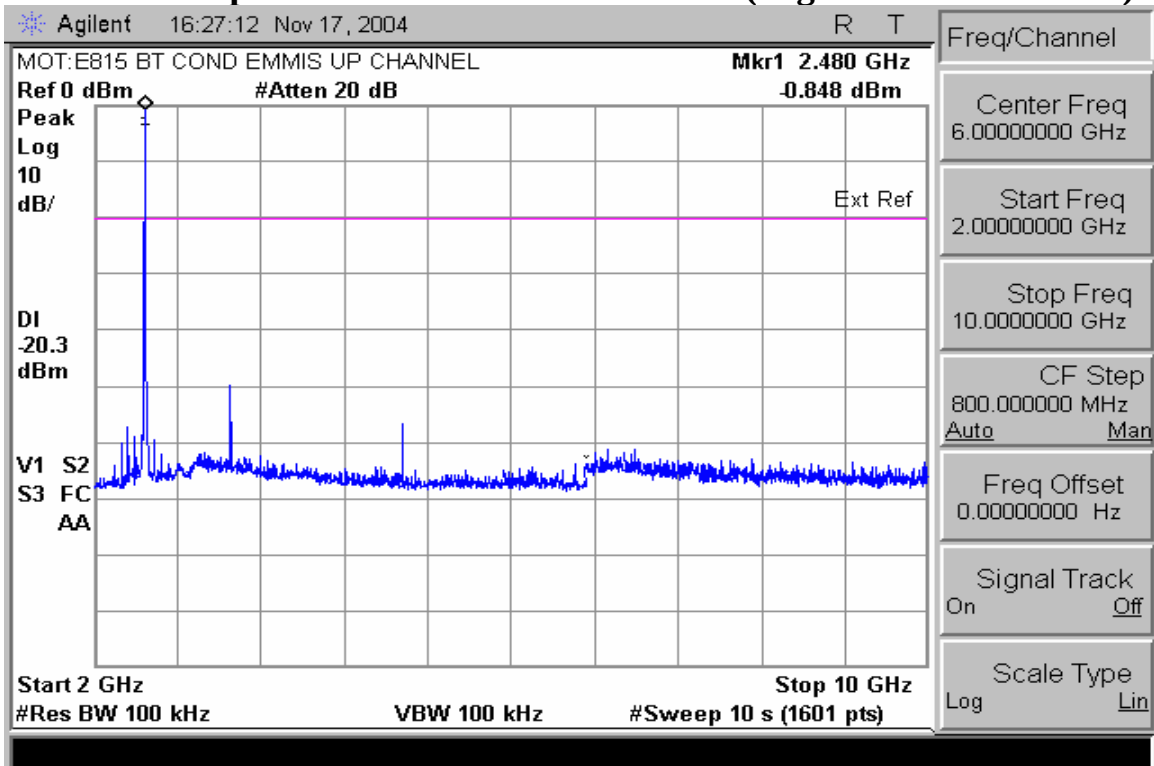
Conducted Spurious Emissions 10-20GHz (Mid Channel Enabled)



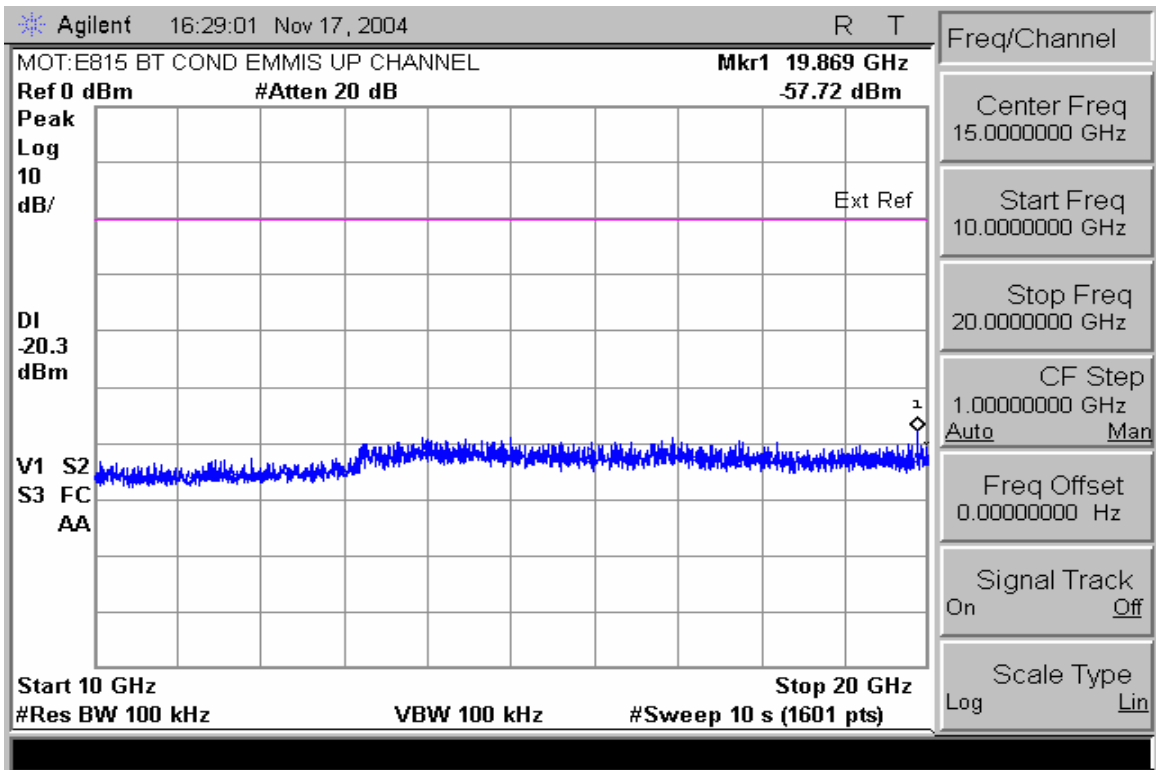
Conducted Spurious Emissions 20-26.5GHz (Mid Chan Enabled)



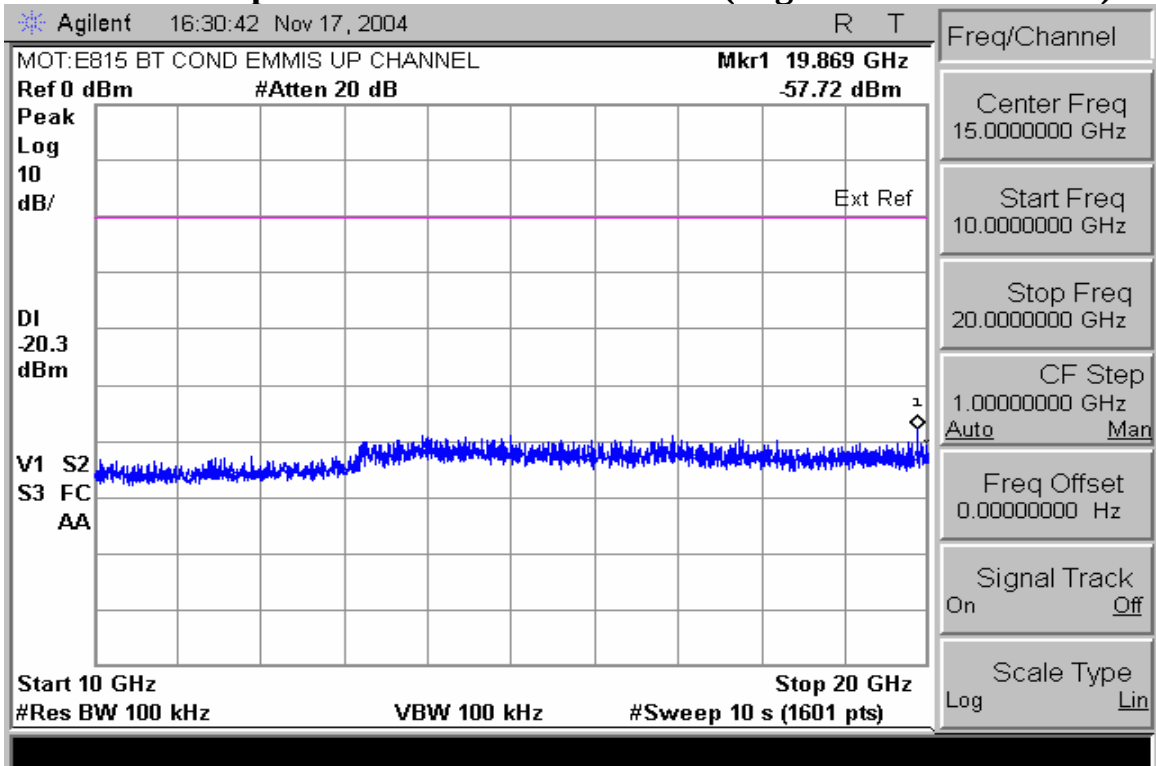
Conducted Spurious Emissions 30-3000MHz (High Channel Enabled)



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