



MOBILE DEVICES BUSINESS

**PRODUCT SAFETY AND COMPLIANCE
EMC LABORATORY**

EMC TEST REPORT - Addendum

Test Report Number – 16799-1BT

Report Date – October-7-2005

Revision 2

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 cursive script that reads 'Mark Sidlow'.

Signature:

Name: Mark Sidlow

Title: Senior Electrical Engineer

Date : 2005-07-10

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Table of Contents

Test Report Details	5
Applicable Standards	6
Summary of Testing.....	7
General and Special Conditions.....	7
Equipment and Cable Configurations.....	8
Measuring Equipment and Calibration Information	8
Description of Bluetooth Transmitter	9
Measurement Procedures and Data.....	10
CARRIER FREQUENCY SEPARATION	10
Measurement Procedure.....	10
Measurement Results	10
Carrier Frequency Separation	11
NUMBER OF HOPPING FREQUENCIES.....	12
Measurement Procedure.....	12
Measurement Results	12
Number of Hopping Frequencies (Channels 0 – 39)	13
Number of Hopping Frequencies (Channels 39 – 78)	13
TIME OF OCCUPANCY (DWELL TIME).....	14
Measurement Procedure.....	14
Measurement Results	14
Dwell Time	15
20dB Bandwidth	16
Measurement Procedure.....	16
Measurement Results	16
FIELD STRENGTH OF SPURIOUS EMISSIONS.....	18
Measurement Procedure.....	18
Measurement Results	18
30-1000MHz Low Channel Dual Polarization X	19
30-1000MHz Low Channel Dual Polarization Y	20
30-1000MHz Low Channel Dual Polarization Z.....	21
30-1000MHz Mid Channel Dual Polarization X.....	22
30 -1000MHz Mid Channel Dual Polarization Y	23
30 -1000MHz Mid Channel Dual Polarization Z	24
30 -1000MHz High Channel Dual Polarization X.....	25
30 -1000MHz High Channel Dual Polarization Y.....	26
30 -1000MHz High Channel Dual Polarization Z	27
1-25 GHz Low Channel Dual Polarization X	28
1-25 GHz Low Channel Dual Polarization Y	29
1-25 GHz Low Channel Dual Polarization Z	30
1-25 GHz Mid Channel Dual Polarization X.....	31
1-25 GHz Mid Channel Dual Polarization Y.....	32
1-25 GHz Mid Channel Dual Polarization Z	33
1-25 GHz High Channel Dual Polarization X	34
1-25 GHz High Channel Dual Polarization Y	35
1-25 GHz High Channel Dual Polarization Z.....	36

Authorized Band Emissions Low Channel Dual Polarization Z	377
Authorized Band Emissions High Channel Dual Polarization Z	38
PEAK OUTPUT POWER	39
Measurement Procedure.....	39
Measurement Results	39
Peak Output Power	39
BAND-EDGE COMPLIANCE OF RF CONDUCTED EMISSIONS	400
Measurement Procedure.....	400
Measurement Results	400
Low Band Edge with Hopping Disabled	411
Low Band Edge with Hopping Enabled	411
High Band Edge with Hopping Disabled.....	412
High Band Edge with Hopping Enabled.....	422
SPURIOUS RF CONDUCTED EMISSIONS	43
Measurement Procedure.....	43
Measurement Results	43
Conducted Spurious Emissions 30-3000MHz (Low Channel Enabled).....	44
Conducted Spurious Emissions 2-10GHz (Low Channel Enabled)	44
Conducted Spurious Emissions 10-20GHz (Low Channel Enabled)	45
Conducted Spurious Emissions 20-26.5GHz (Low Channel Enabled)	45
Conducted Spurious Emissions 30-3000MHz (Mid Channel Enabled)	46
Conducted Spurious Emissions 2-10GHz (Mid Channel Enabled).....	46
Conducted Spurious Emissions 10-20GHz (Mid Channel Enabled).....	47
Conducted Spurious Emissions 20-26.5GHz (Mid Channel Enabled).....	47
Conducted Spurious Emissions 30-3000MHz (High Channel Enabled).....	48
Conducted Spurious Emissions 2-10GHz (High Channel Enabled).....	48
Conducted Spurious Emissions 10-20GHz (High Channel Enabled).....	49
Conducted Spurious Emissions 20-26.5GHz (High Chan Enabled)	49
AC LINE CONDUCTED	430
Measurement Procedure.....	430
Measurement Results	430
Bluetooth Channel 0 2402MHz TX Mode Neutral Coupling Hopping.....	51
Bluetooth Channel 0 2402MHz TX Mode Line Coupling Nonhopping	51
Bluetooth Channel 39 2441MHz TX Mode Line Coupling Nonhopping	452
Bluetooth Channel 39 2441MHz TX Mode Neutral Coupling Hopping.....	52
Bluetooth Channel 78 2480MHz TX Mode Line Coupling Hopping	53
Bluetooth Channel 78 2480MHz TX Line Neutral Coupling Hopping.....	53
Bluetooth Channel 0 2402MHz TX Mode Line Coupling Hopping	54
Bluetooth Channel 0 2402MHz TX Mode Neutral Coupling Nonhopping.....	54

Bluetooth Channel 39 2441MHz TX Mode Line Coupling Hopping	55
Bluetooth Channel 39 2441MHz TX Mode Neutral Coupling Nonhopping.....	55
Bluetooth Channel 78 2480MHz TX Mode Line Coupling Nonhopping	56
Bluetooth Channel 78 2480MHz TX Mode Neutral Coupling Nonhopping.....	56

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: 1900 GSM, Bluetooth

Model Number: E770

Serial Numbers: 004400016576355, 004400016576389
& 004400016576330

Testing Complete Date: September 21, 2005

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	Result
2	Number of Hopping Frequencies	Result
3	Time of Occupancy (Dwell Time)	Result
4	20 dB Bandwidth	Result
5	Spurious RF Conducted Emissions	Result
6	Field Strength of Spurious Emissions	Result
7	Max Power	N/A
8	Band Edges	See plots
9	Conducted Spurious Emissions	Result

Test	Test Name	Results
1	Carrier Frequency Separation	1 MHz
2	Number of Hopping	79
3	Time of Occupancy (Dwell Time)	2.92 ms
4	20 dB Bandwidth	1 MHz
5	Spurious RF Conducted Emissions	See plots
6	Field Strength of Spurious Emissions	See plots
7	Max Power	-1.31 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

Paste Equipment List Here

Manufacturer	Equipment Type	Model No.	Serial Number	Cal. Due Date
Rohde & Schwarz	Receiver	ESI26	838786/010	2/7/2006
Hewlett-Packard	EMC Analyzer	7405	US39440191	11/13/2005
ETS	DRG Horn Antenna	265	2455	5/25/2006
ETS	DRG Horn Antenna	3115	6222	2/9/2006
ETS	Log-Periodic Antenna	3148	1188	6/14/2006
ETS	Biconical Antenna	3110B	3370	2/16/2006
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	5/23/2006
Thermotron	Environmental Chamber	S-4	31580	1/18/2006
Giga-Tronics	Power Meter	8651A	8650508	12/27/2005

U.L. Equipment

Hewlett Packard	QP Adapter	85650A	2811A01069	1/6/2006
Hewlett Packard	S/A Display	8566B	2542A12974	1/6/2006
Hewlett Packard	S/A	8566B	2637A03376	1/6/2006
Hewlett Packard	RF Preselector	85685A	2810A00692	1/6/2006
Rohde & Schwarz	S/A	FSEK20	DE2525315	3/15/2006
EMCO	Horn Antenna 1-18GHz	3115	2638	7/29/2006
EMCO	Horn Antenna 18-26.5GHz	3160-09	9904-1165	N/A*
Chase	Bi-Con Antenna 30-300MHz	VBA6106A	1246	7/22/2006
Chase	Log-Periodic Antenna	UPA6108	1120	8/2/2006

All equipment is on a one-year calibration cycle.

Description of Bluetooth Transmitter

The E770 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.

The maximum Bluetooth antenna gain is -.62 dBi.

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 E770 had its hopping function enabled. The following spectrum analyzer settings were used:

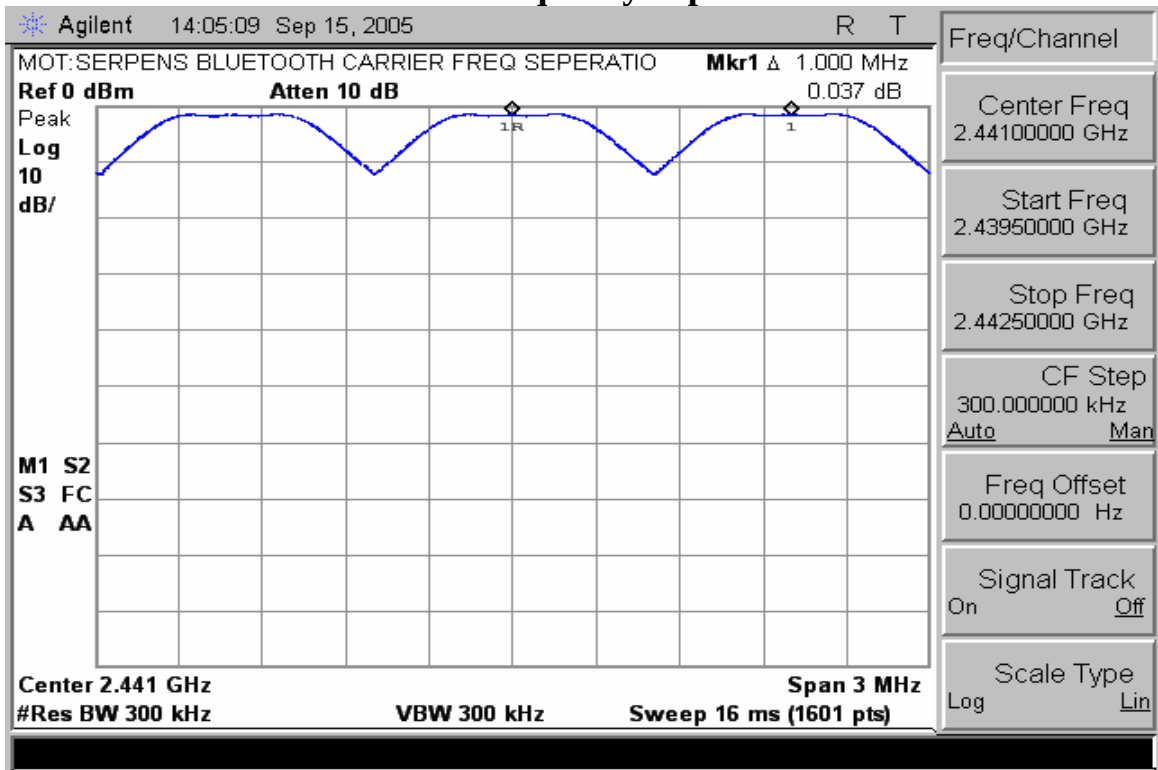
1. Span = wide enough to capture the peaks of two adjacent channels
2. Resolution (or IF) Bandwidth (RBW) $\geq$ 1% of the span
3. Video (or Average) Bandwidth (VBW) $\geq$ RBW
4. Sweep = auto
5. Detector function = peak
6. Trace = max hold

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.

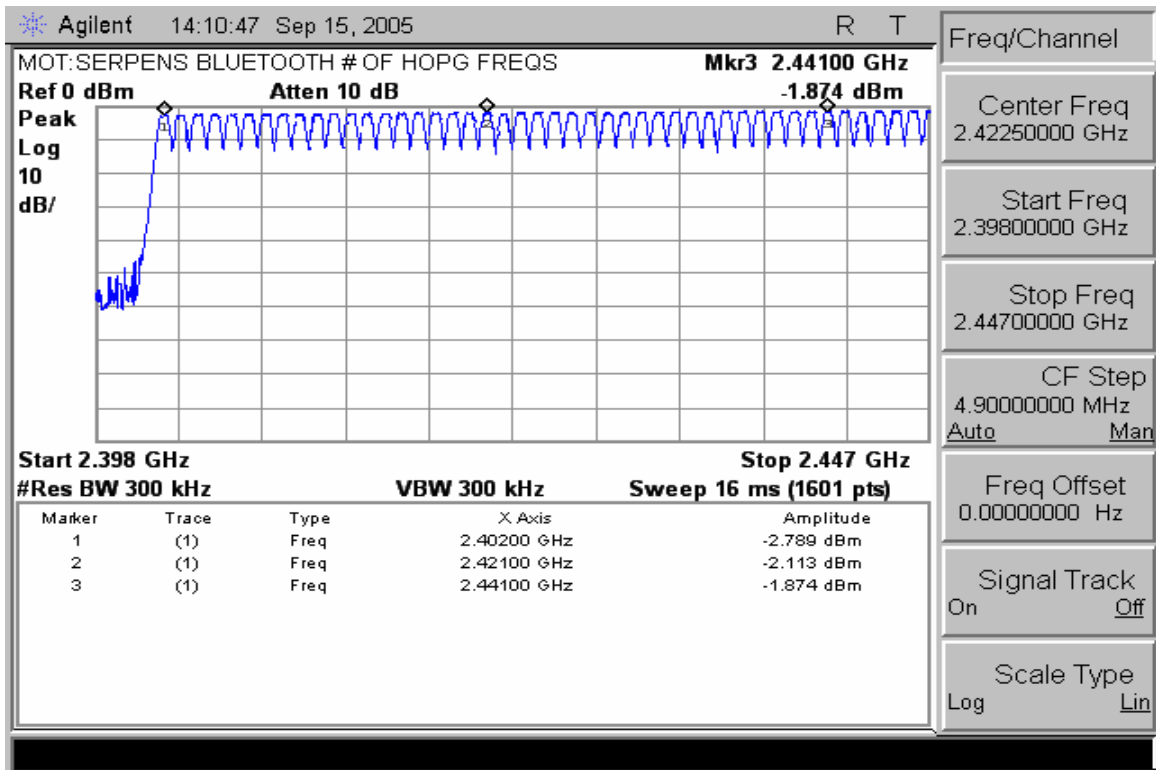
The Bluetooth frequency hopping function of the EUT was enabled. The spectrum analyzer used the following settings:

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

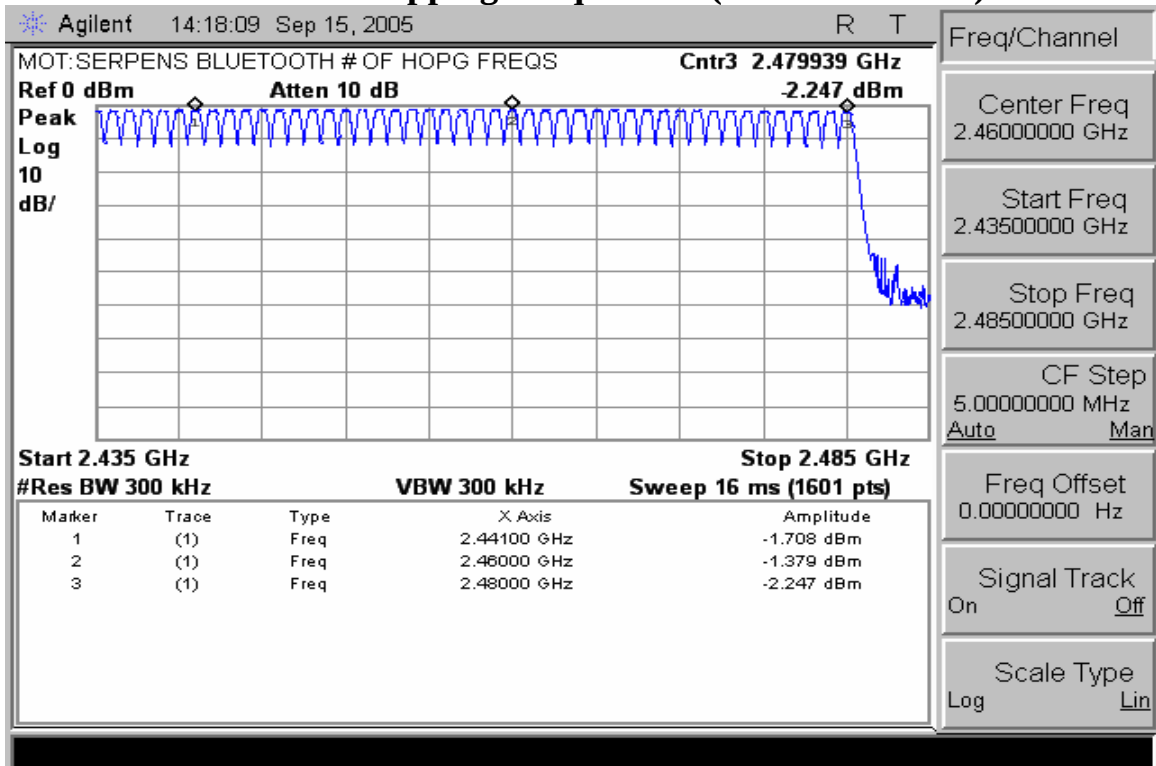
The trace was allowed to stabilize.

Measurement Results

See attached.



Number of Hopping Frequencies (Channels 0 – 39)



Number of Hopping Frequencies (Channels 39 – 78)

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.

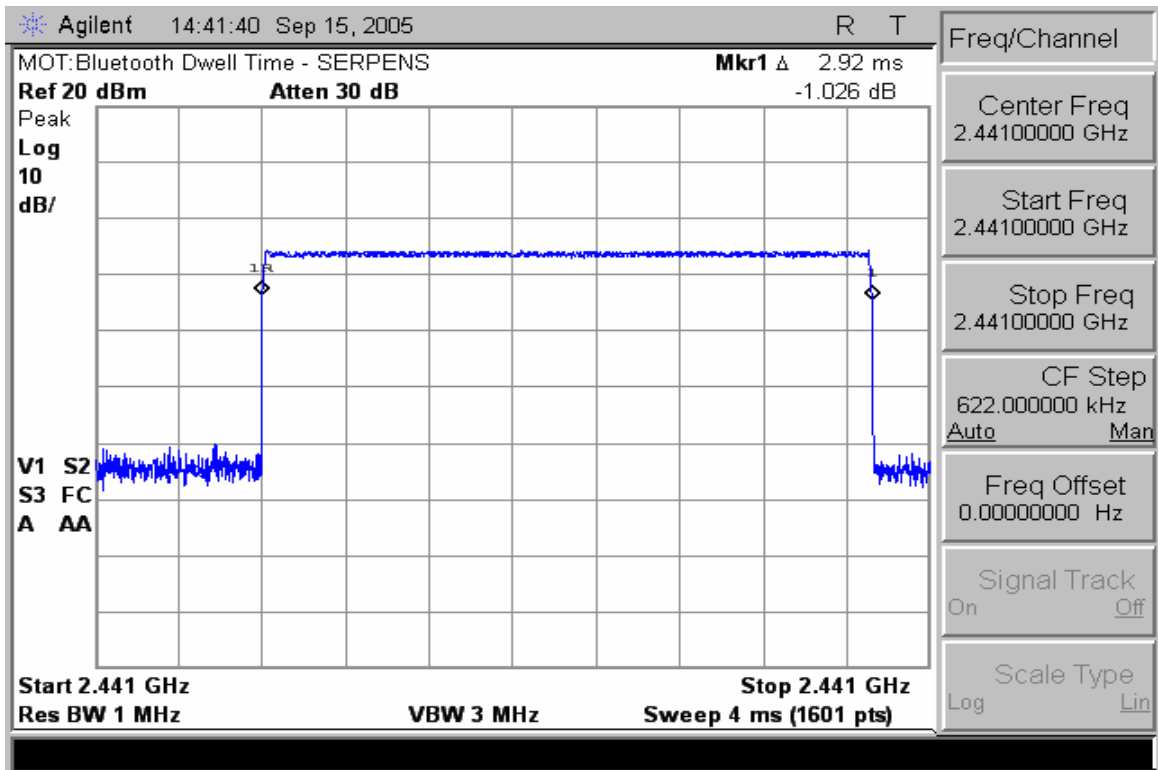
The Bluetooth hopping function of the EUT was enabled. The following spectrum analyzer settings were used:

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.

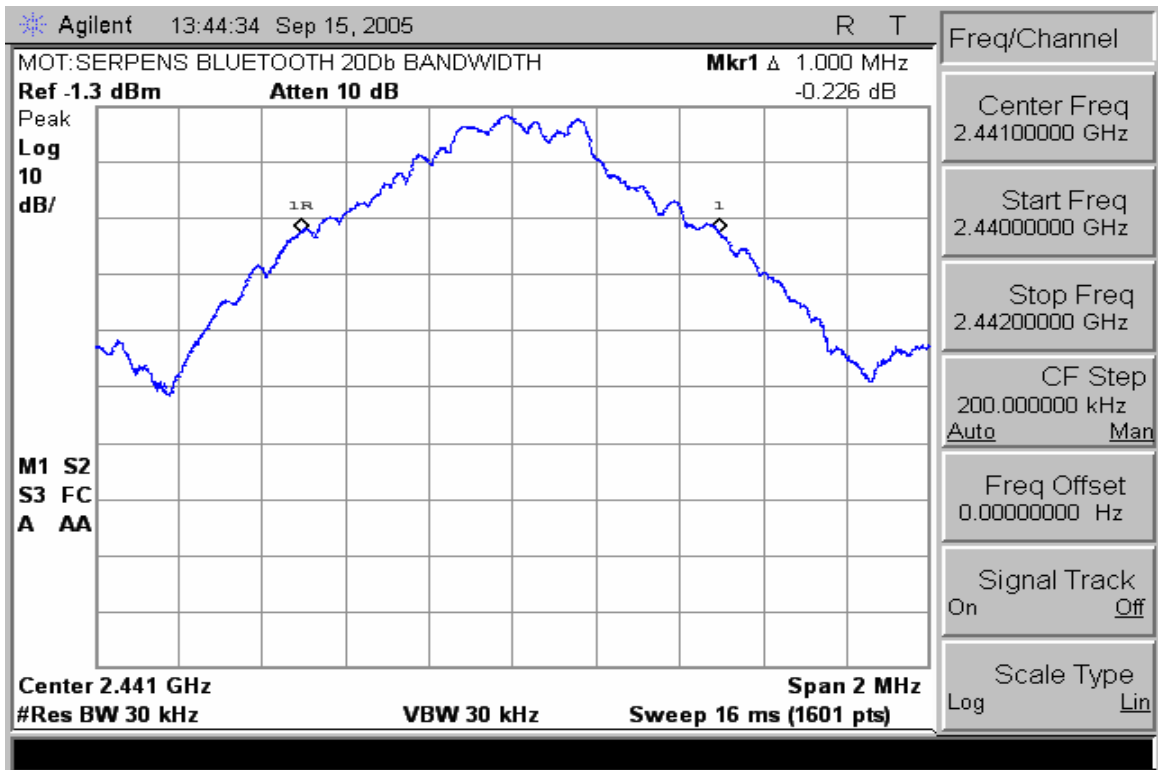
The Bluetooth frequency hopping function of the EUT was enabled. The spectrum analyzer used the following settings:

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



20dB Bandwidth

FIELD STRENGTH OF SPURIOUS EMISSIONS

CFR Part 2.1053, 15.247

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.

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

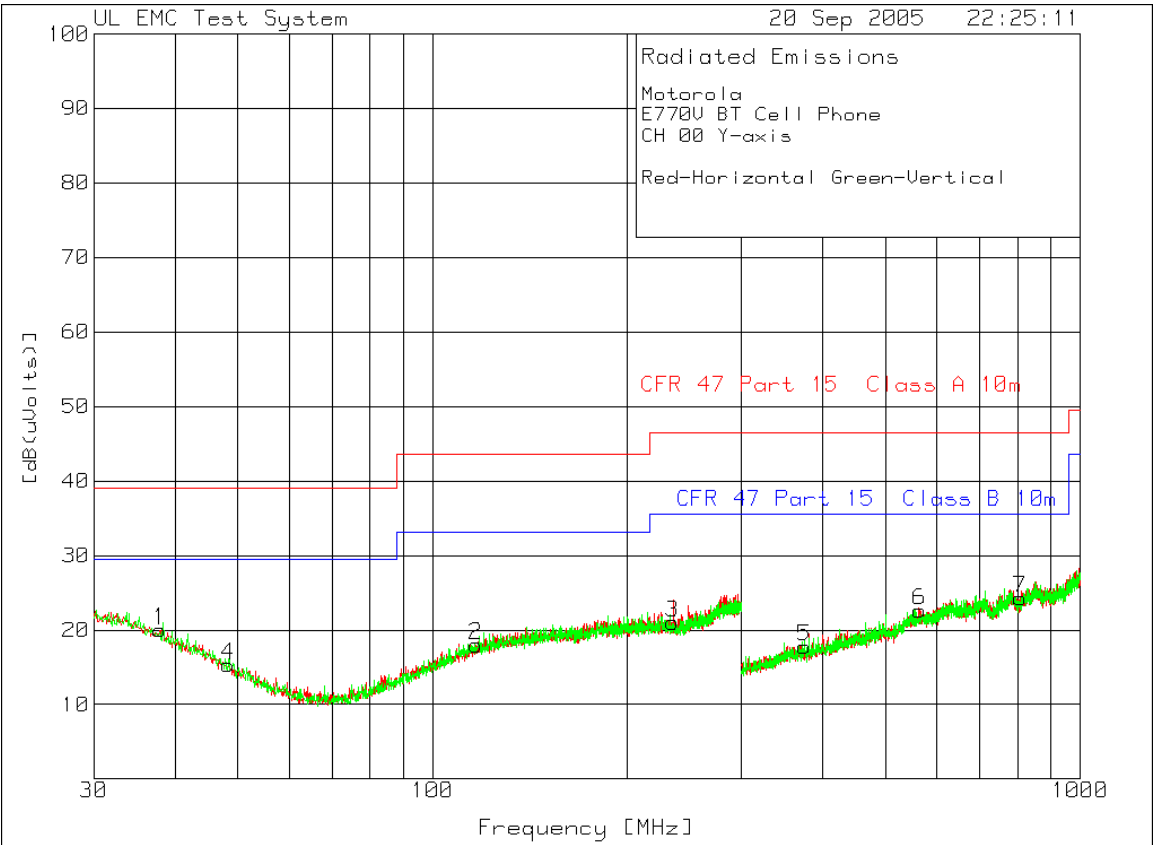
A fully charged battery was used for the supply voltage.

Measurement Results

Attached

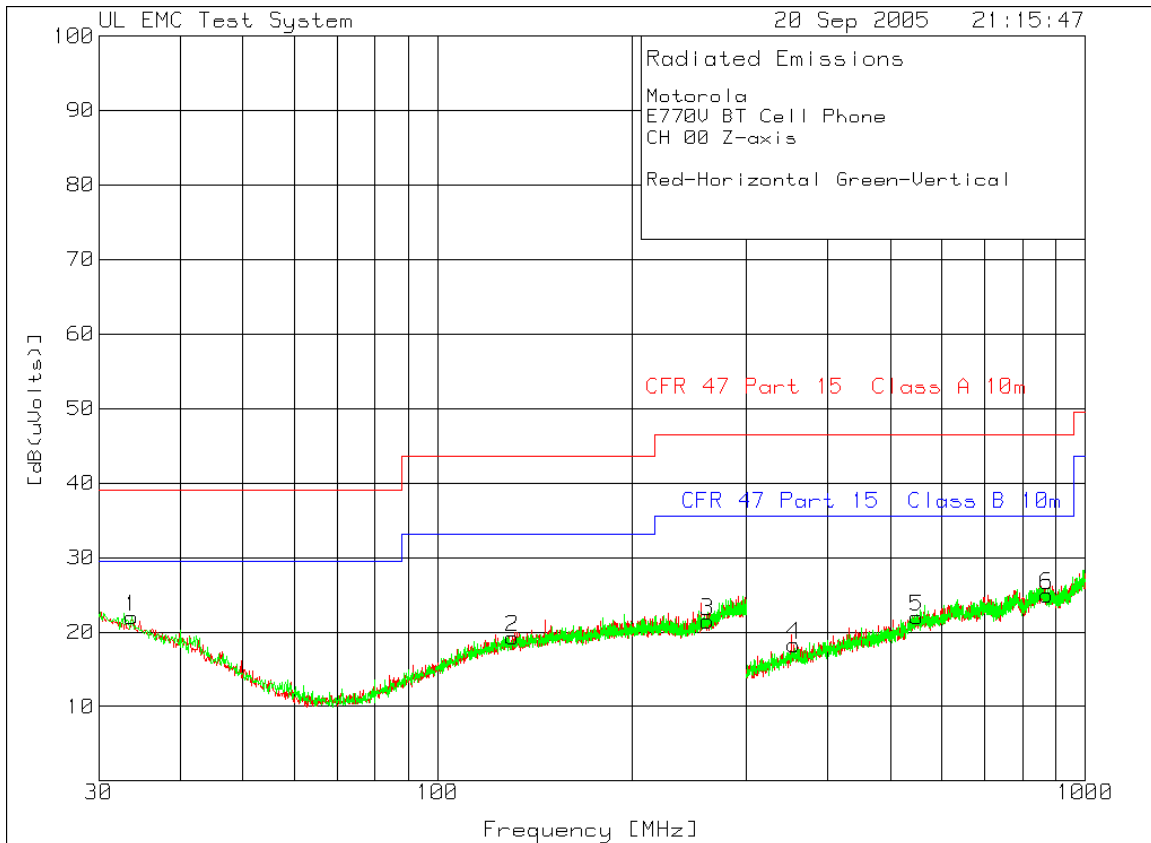


Motorola E770V BT Cell Phone CH 00 X-axis Red-Horizontal Green-Vertical													
Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level [dB(uVolts)]	Limit 1	Margin 1[dB]	Limit 2	Margin 2[dB]	Azimuth [deg]	Height [cm]	Polarity
Range 2 30 - 300MHz													
1 (From Test equipment)	54.2879	38.4	pk	-30.3	8.4	16.5	39.1	-22.6	29.6	-13.1	252	101	Vert
2 (From Test Equipment)	78.9805	39.6	pk	-30.2	7.1	16.5	39.1	-22.6	29.6	-13.1	271	101	Vert
3	190.7046	35.3	pk	-29.9	15.8	21.2	43.5	-22.3	33.1	-11.9	100	101	Vert
Range 3 300 - 1000MHz													
4	356.3218	35	pk	-32.5	15	17.5	46.4	-28.9	35.6	-18.1	18	100	Horz
5	553.973	34.9	pk	-31.6	19.1	22.4	46.4	-24	35.6	-13.2	18	100	Horz
6	868.4658	33.9	pk	-31.6	22.4	24.7	46.4	-21.7	35.6	-10.9	306	100	Horz
LIMIT 1: CFR 47 Part 15 Class A 10m													
LIMIT 2: CFR 47 Part 15 Class B 10m													

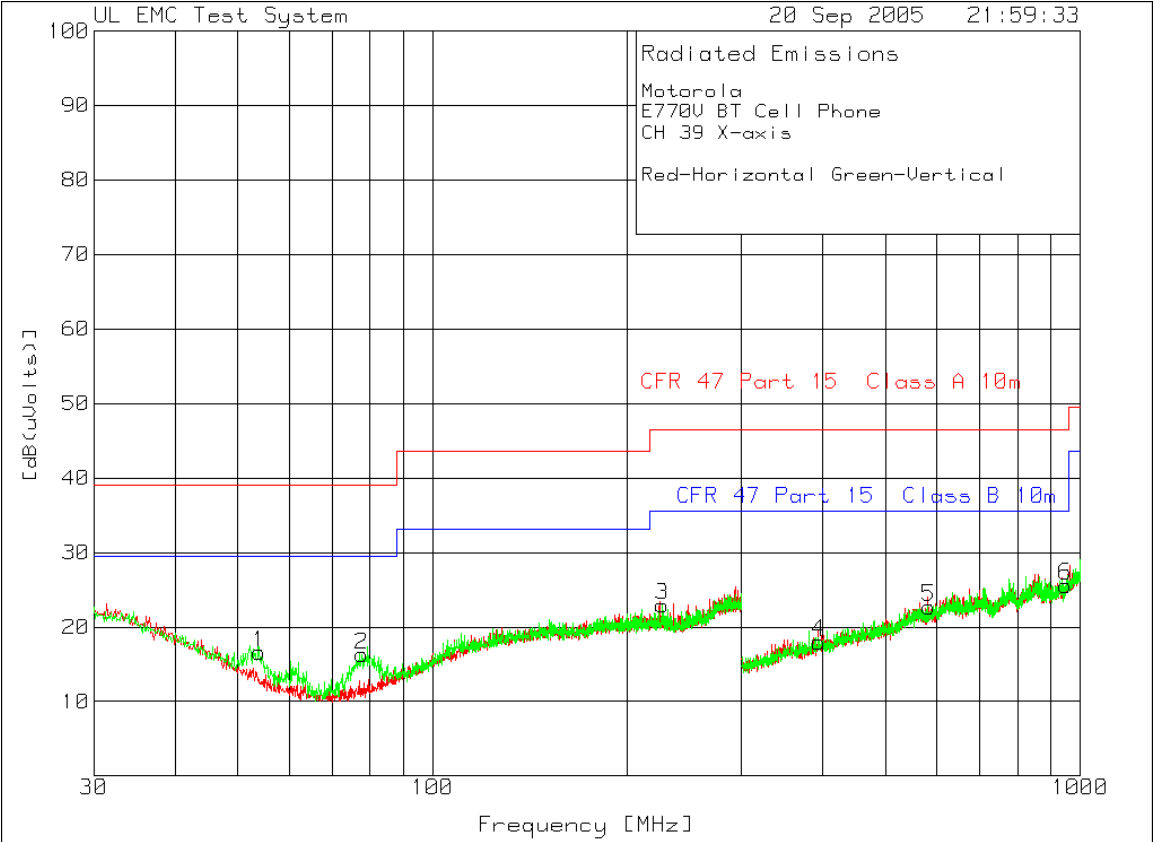


30-1000MHz Low Channel Dual Polarization Y

Motorola E770V BT Cell Phone CH 00 Y-axis Red-Horizontal Green-Vertical													
Marker Number	Test Frequency [MHz]	Meter Reading [dB(μV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level [dB(μVolts)]	Limit 1	Margin 1[dB]	Limit 2	Margin 2[dB]	Azimuth [deg]	Height [cm]	Polarity
Range 1 30 - 300MHz													
1	37.8936	35.2	pk	-30.4	15.2	20	39.1	-19.1	29.6	-9.6	152	101	Horz
2	116.6267	35.1	pk	-30.1	13	18	43.5	-25.5	33.1	-15.1	95	101	Horz
3	234.5577	35.1	pk	-29.7	15.6	21	46.4	-25.4	35.6	-14.6	356	101	Horz
4	48.3508	34.8	pk	-30.3	10.8	15.3	39.1	-23.8	29.6	-14.3	284	101	Horz
Range 3 300 - 1000MHz													
5	374.8626	35.1	pk	-32.3	15	17.8	46.4	-28.6	35.6	-17.8	257	100	Horz
6	564.4678	34.7	pk	-31.5	19.4	22.6	46.4	-23.8	35.6	-13	146	100	Horz
7	807.946	34.6	pk	-31.5	21.2	24.3	46.4	-22.1	35.6	-11.3	82	100	Horz
LIMIT 1: CFR 47 Part 15 Class A 10m LIMIT 2: CFR 47 Part 15 Class B 10m													

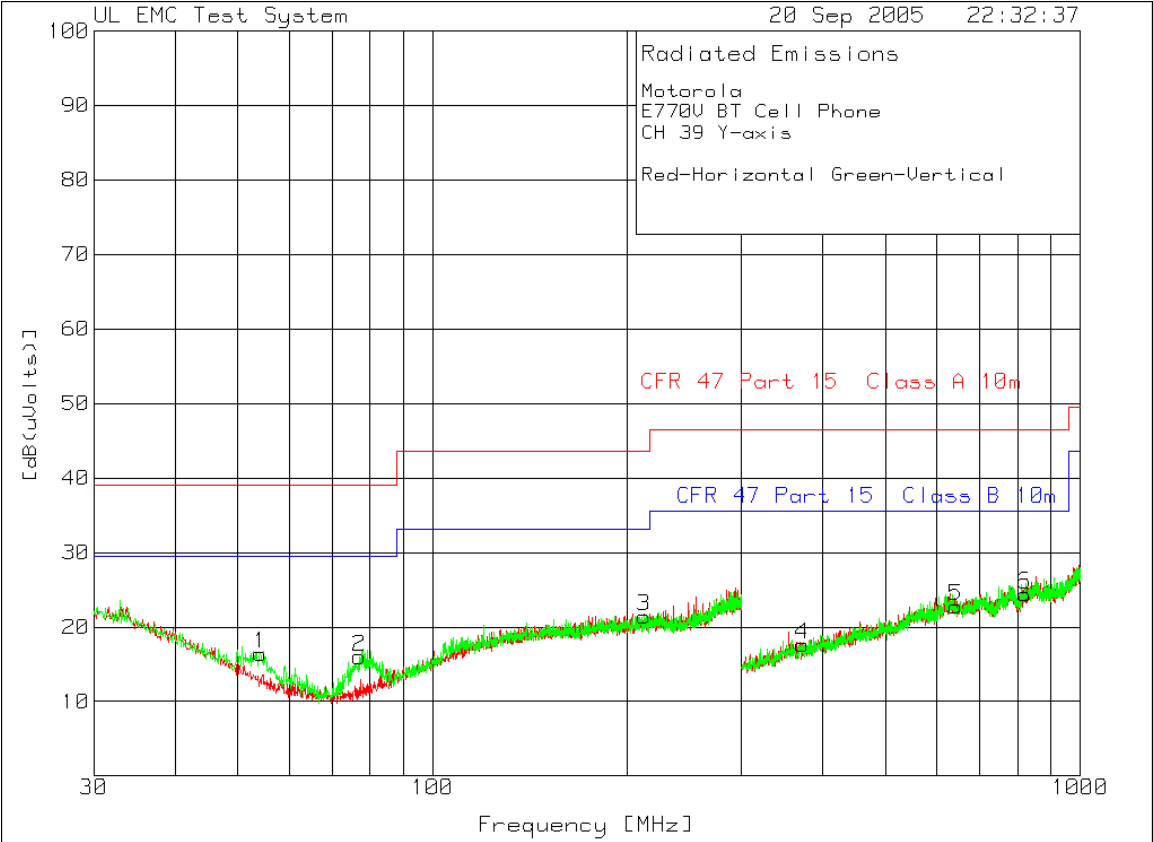


Motorola E770V BT Cell Phone CH 00 Z-axis Red-Horizontal Green-Vertical													
Marker Number	Test Frequency [MHz]	Meter Reading [dB(μV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level [dB(μVolts)]	Limit 1	Margin 1[dB]	Limit 2	Margin 2[dB]	Azimuth [deg]	Height [cm]	Polarity
Range 1 30 - 300MHz													
1	33.6432	35.8	pk	-30.4	16.6	22	39.1	-17.1	29.6	-7.6	247	173	Horz
2	130.6596	35.4	pk	-30.1	14	19.3	43.5	-24.2	33.1	-13.8	96	173	Horz
3	261.2743	34.6	pk	-29.5	16.4	21.5	46.4	-24.9	35.6	-14.1	39	173	Horz
Range 3 300 - 1000MHz													
4	355.2724	35.7	pk	-32.4	15	18.3	46.4	-28.1	35.6	-17.3	178	100	Horz
5	549.7751	34.4	pk	-31.5	19.1	22	46.4	-24.4	35.6	-13.6	193	100	Horz
6	872.3139	34.4	pk	-31.6	22.2	25	46.4	-21.4	35.6	-10.6	98	100	Horz
LIMIT 1: CFR 47 Part 15 Class A 10m													
LIMIT 2: CFR 47 Part 15 Class B 10m													



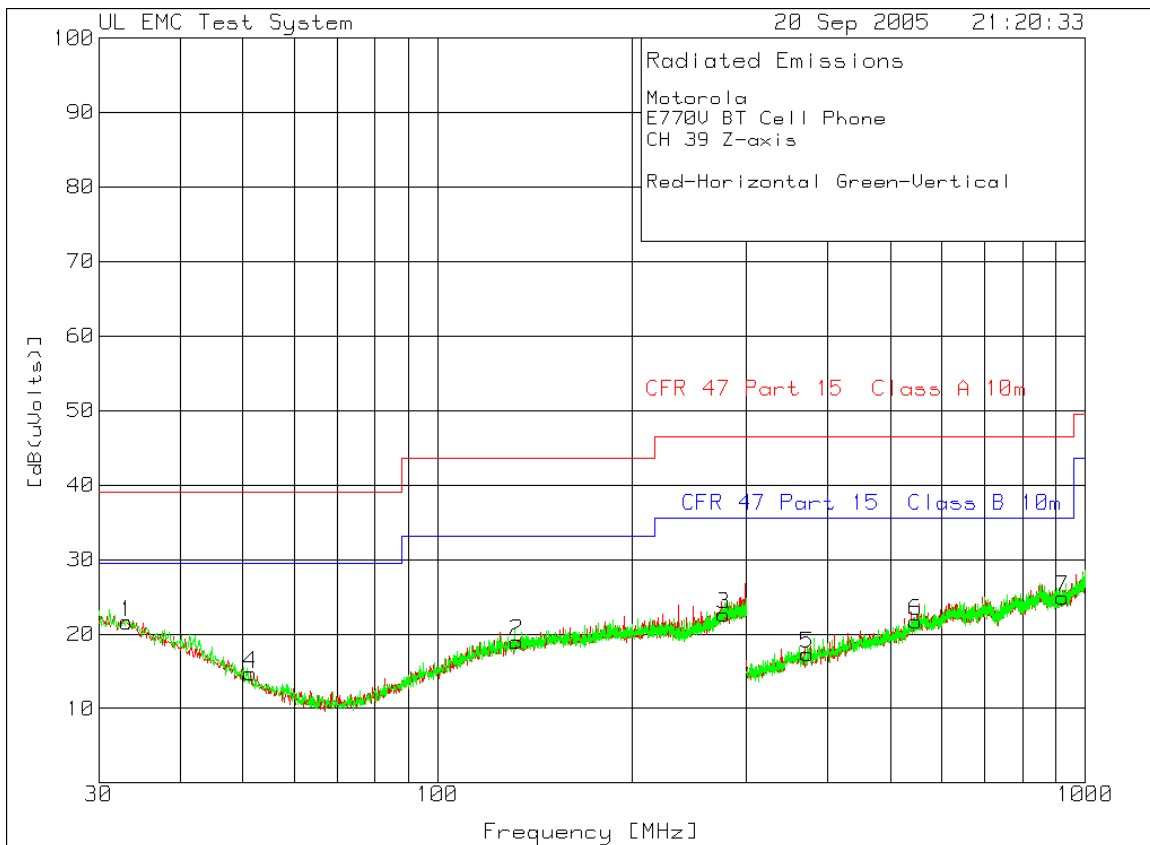
30-1000MHz Mid Channel Dual Polarization X

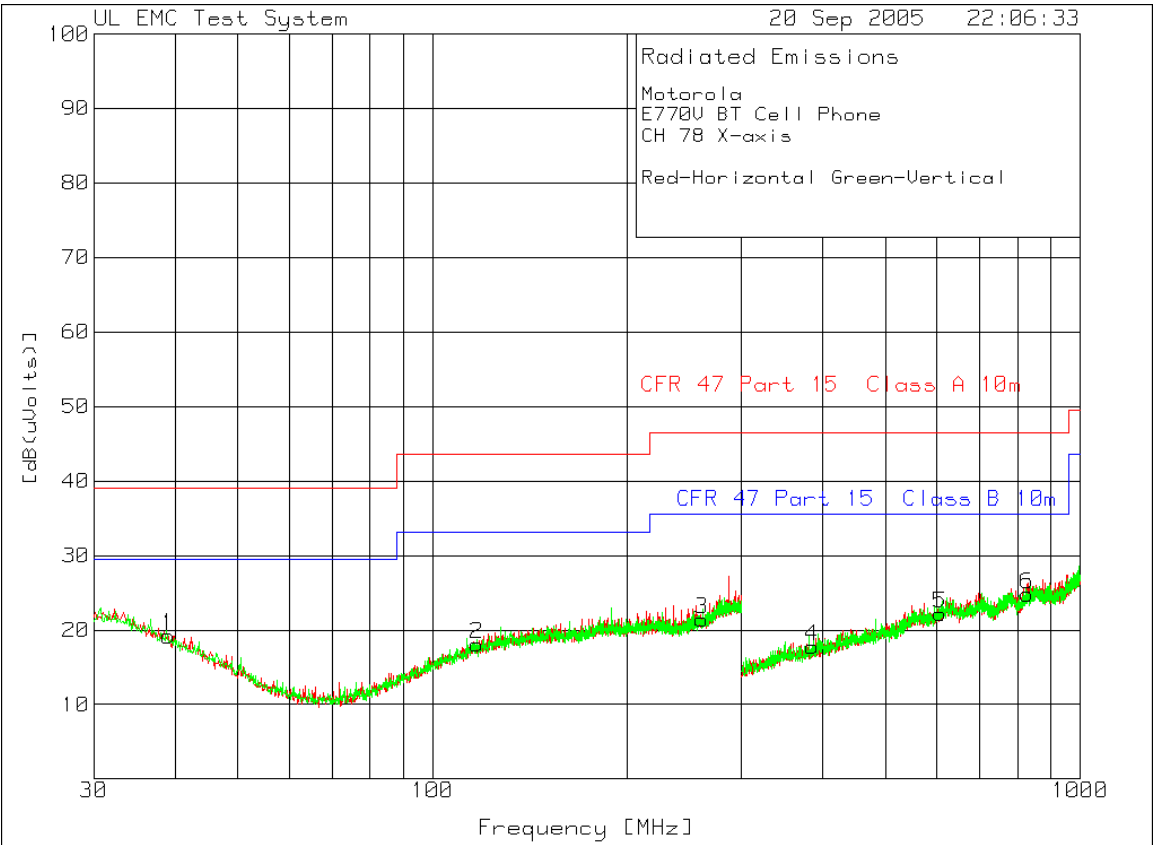
Motorola													
E770V BT Cell Phone													
CH 39 X-axis													
Red-Horizontal Green-Vertical													
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1[dB]	Limit 2	Margin 2[dB]	Azimuth [deg]	Height [cm]	Polarity
Number	Frequency	Reading	Type	Factor	Factor	[dB(uVolts)]							
	[MHz]	[dB(uV)]		[dB]	[dB]								
Range 2 30 - 300MHz													
1	54.018	38.3	pk	-30.3	8.6	16.6	39.1	-22.5	29.6	-13	1	101	Vert
2	77.7661	39.6	pk	-30.2	6.9	16.3	39.1	-22.8	29.6	-13.3	115	101	Vert
3	226.4617	36.6	pk	-29.6	15.9	22.9	46.4	-23.5	35.6	-12.7	342	101	Vert
Range 3 300 - 1000MHz													
4	395.1524	34.6	pk	-32.1	15.5	18	46.4	-28.4	35.6	-17.6	2	100	Horz
5	583.7082	35	pk	-31.4	19.1	22.7	46.4	-23.7	35.6	-12.9	193	100	Horz
6	948.9256	34.1	pk	-31.4	22.9	25.6	46.4	-20.8	35.6	-10	289	100	Horz
LIMIT 1: CFR 47 Part 15 Class A 10m													
LIMIT 2: CFR 47 Part 15 Class B 10m													



30 -1000MHz Mid Channel Dual Polarization Y

Motorola	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1[dB]	Limit 2	Margin 2[dB]	Azimuth [deg]	Height [cm]	Polarity
E770V BT Cell Phone	Frequency	Reading	Type	Factor	Factor	[dB(uVolts)]							
CH 39 Y-axis	[MHz]	[dB(uV)]		[dB]	[dB]								
Red-Horizontal Green-Vertical													
Marker													
Number													
Range 2 30 - 300MHz													
1	54.1529	38.2	pk	-30.3	8.5	16.4	39.1	-22.7	29.6	-13.2	267	101	Vert
2	76.9565	39.4	pk	-30.2	6.8	16	39.1	-23.1	29.6	-13.6	59	101	Vert
3	212.0239	35.3	pk	-29.8	15.9	21.4	43.5	-22.1	33.1	-11.7	59	101	Vert
Range 3 300 - 1000MHz													
4	372.7636	35	pk	-32.3	14.9	17.6	46.4	-28.8	35.6	-18	2	100	Horz
5	642.1289	33.7	pk	-30.9	20	22.8	46.4	-23.6	35.6	-12.8	257	100	Horz
6	820.8896	34.1	pk	-31.6	21.9	24.4	46.4	-22	35.6	-11.2	350	100	Horz
LIMIT 1: CFR 47 Part 15 Class A 10m													
LIMIT 2: CFR 47 Part 15 Class B 10m													





Motorola
 E770V BT Cell Phone
 CH 78 X-axis
 Red-Horizontal Green-Vertical
 Marker
 Number

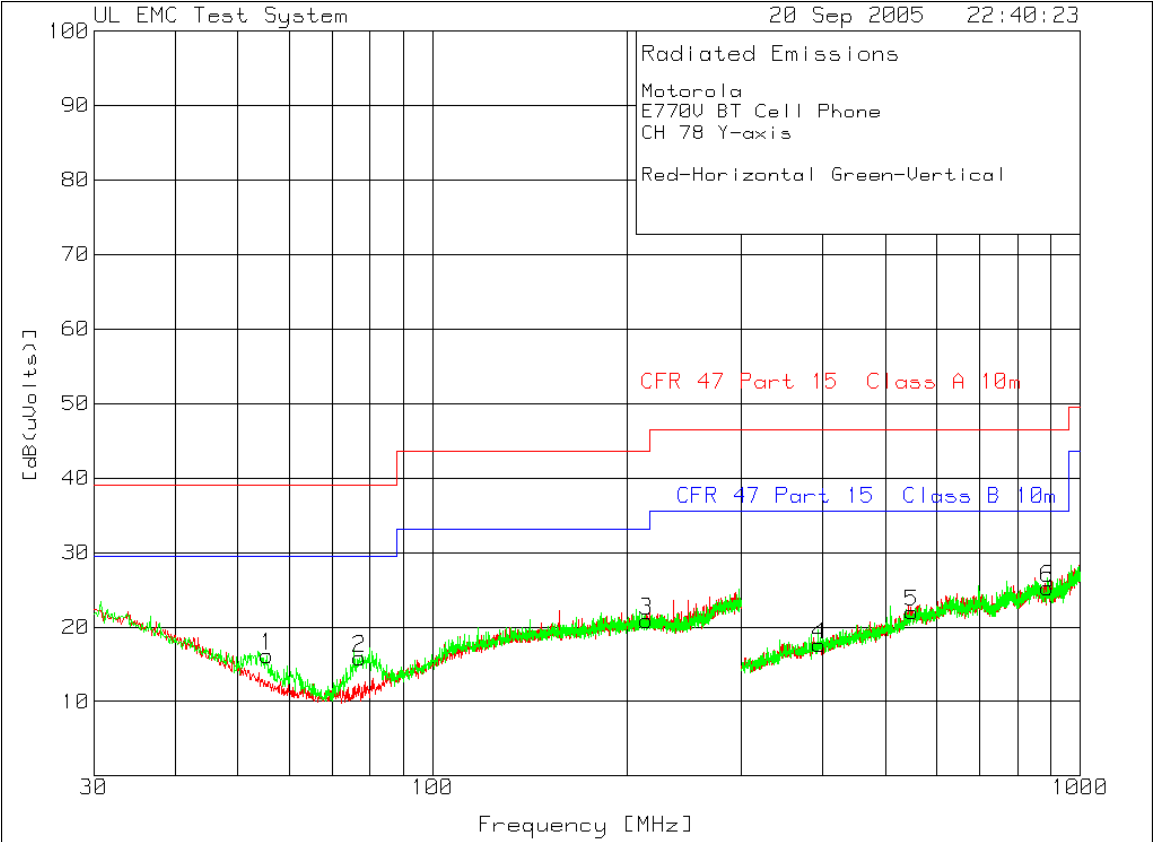
Range 1 30 - 300MHz

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]	Limit 2	Margin 2[dB]	Azimuth [deg]	Height [cm]	Polarity
1	39.0405	34.9	pk	-30.4	14.7	19.2	39.1	-19.9	29.6	-10.4	20	101	Horz
2	117.0315	35.2	pk	-30.1	13	18.1	43.5	-25.4	33.1	-15	152	101	Horz
3	260.7346	34.5	pk	-29.5	16.4	21.4	46.4	-25	35.6	-14.2	20	101	Horz

Range 3 300 - 1000MHz

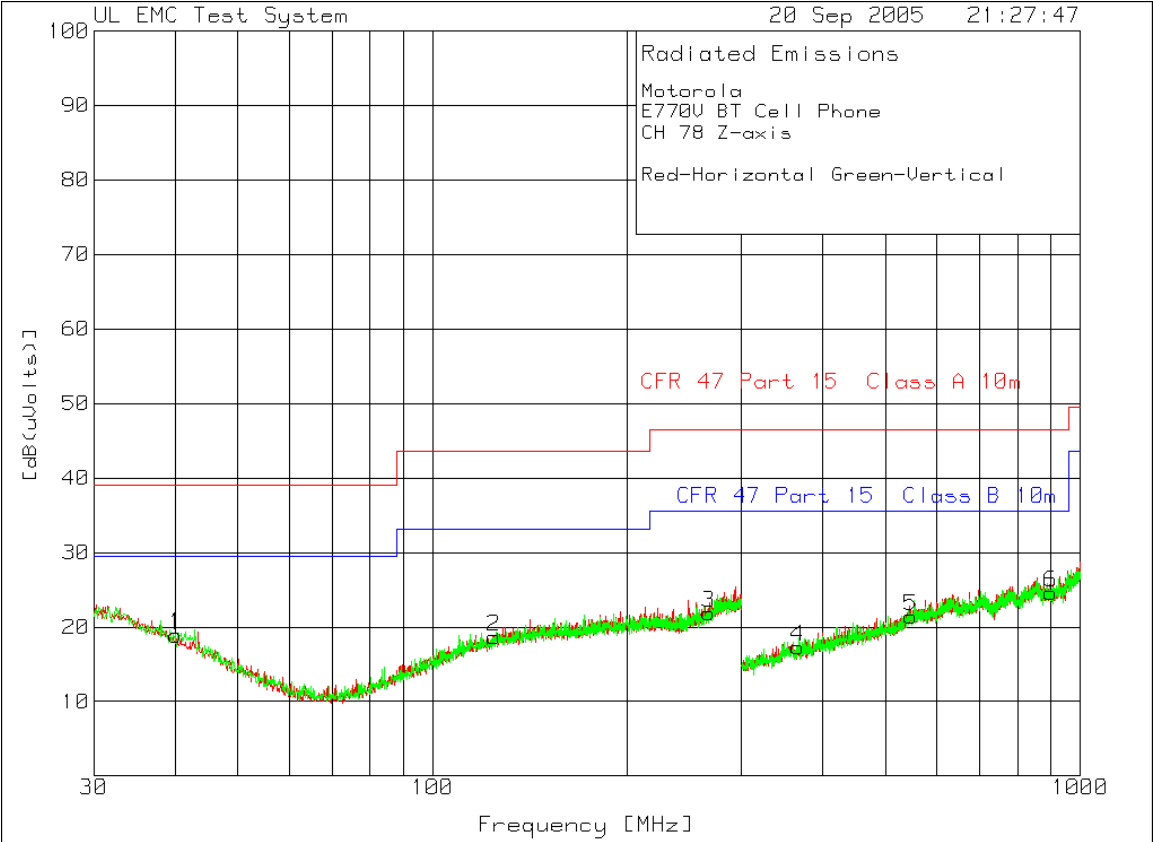
4	385.3573	35	pk	-32.3	15.1	17.8	46.4	-28.6	35.6	-17.8	242	100	Horz
5	608.1959	33.9	pk	-31.3	19.6	22.2	46.4	-24.2	35.6	-13.4	274	100	Horz
6	827.5363	34.2	pk	-31.5	22.1	24.8	46.4	-21.6	35.6	-10.8	274	100	Horz

LIMIT 1: CFR 47 Part 15 Class A 10m
 LIMIT 2: CFR 47 Part 15 Class B 10m

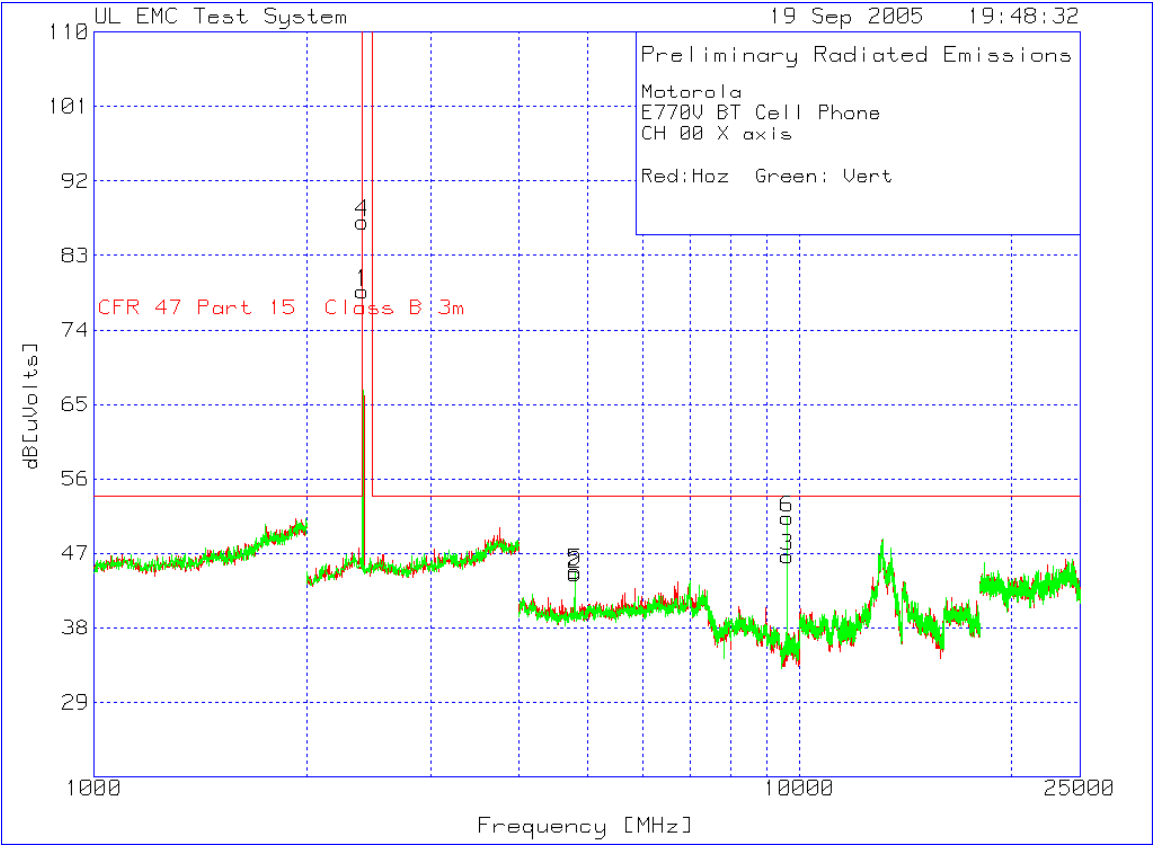


30 -1000MHz High Channel Dual Polarization Y

Motorola E770V BT Cell Phone CH 78 Y-axis Red-Horizontal Green-Vertical													
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1[dB]	Limit 2	Margin 2[dB]	Azimuth [deg]	Height [cm]	Polarity
Number	Frequency	Reading	Type	Factor	Factor	[dB(μVolts)]							
	[MHz]	[dB(μV)]		[dB]	[dB]								
Range 2 30 - 300MHz													
1	55.5022	38.5	pk	-30.3	8	16.2	39.1	-22.9	29.6	-13.4	286	101	Vert
2	77.1589	39.3	pk	-30.2	6.8	15.9	39.1	-23.2	29.6	-13.7	21	101	Vert
3	214.1829	34.8	pk	-29.8	15.9	20.9	43.5	-22.6	33.1	-12.2	229	101	Vert
Range 3 300 - 1000MHz													
4	395.5023	34.2	pk	-32.1	15.5	17.6	46.4	-28.8	35.6	-18	194	100	Horz
5	549.4253	34.4	pk	-31.5	19.1	22	46.4	-24.4	35.6	-13.6	2	100	Horz
6	890.5048	34.4	pk	-31.6	22.5	25.3	46.4	-21.1	35.6	-10.3	114	100	Horz
LIMIT 1: CFR 47 Part 15 Class A 10m													
LIMIT 2: CFR 47 Part 15 Class B 10m													

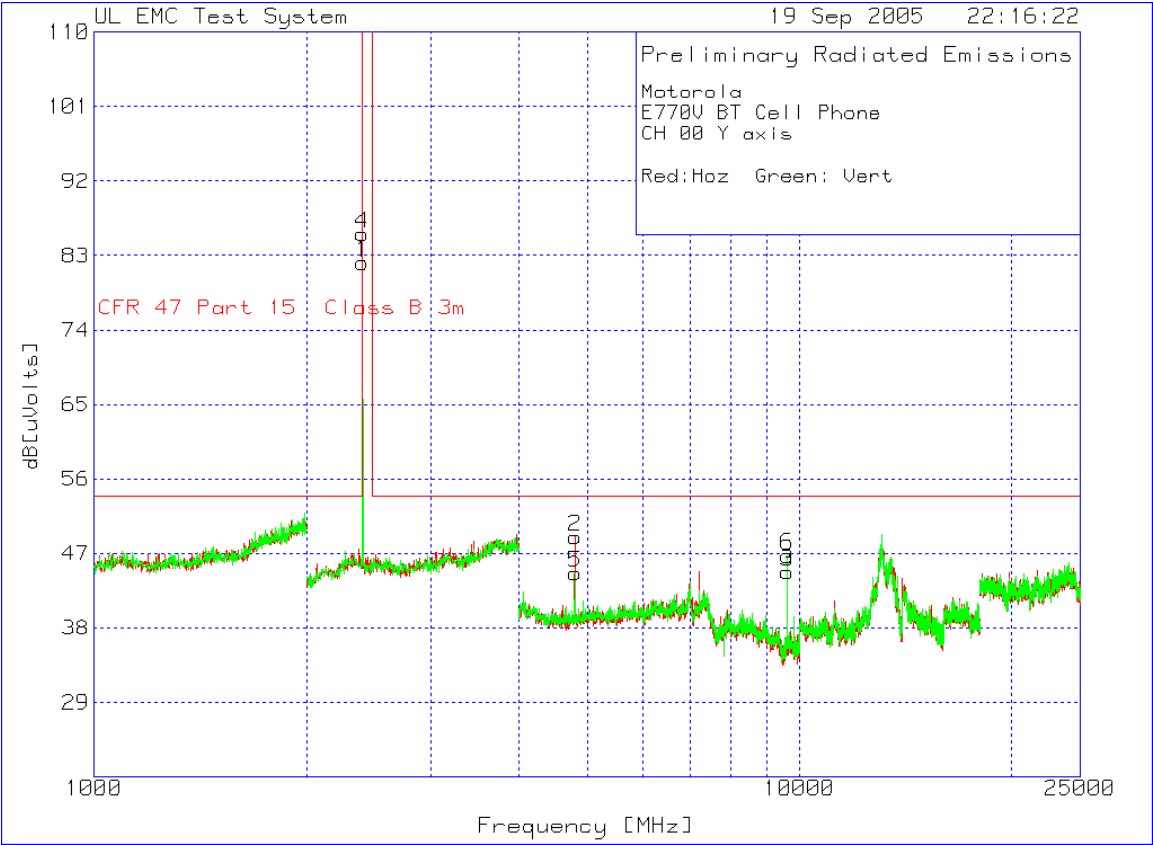


Motorola E770V BT Cell Phone CH 78 Z-axis Red-Horizontal Green-Vertical													
Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level [dB(uVolts)]	Limit 1	Margin 1[dB]	Limit 2	Margin 2[dB]	Azimuth [degs]	Height [cm]	Polarity
Range 1 30 - 300MHz													
1	40.1199	34.9	pk	-30.3	14.3	18.9	39.1	-20.2	29.6	-10.7	354	101	Horz
2	124.4528	35.1	pk	-30	13.6	18.7	43.5	-24.8	33.1	-14.4	0	101	Horz
3	267.0764	34.5	pk	-29.4	16.8	21.9	46.4	-24.5	35.6	-13.7	266	101	Horz
Range 3 300 - 1000MHz													
4	366.4668	34.8	pk	-32.3	14.8	17.3	46.4	-29.1	35.6	-18.3	130	100	Horz
5	548.026	33.9	pk	-31.5	19	21.4	46.4	-25	35.6	-14.2	2	100	Horz
6	900.4748	34.1	pk	-31.7	22.2	24.6	46.4	-21.8	35.6	-11	350	100	Horz
LIMIT 1: CFR 47 Part 15 Class A 10m LIMIT 2: CFR 47 Part 15 Class B 10m													



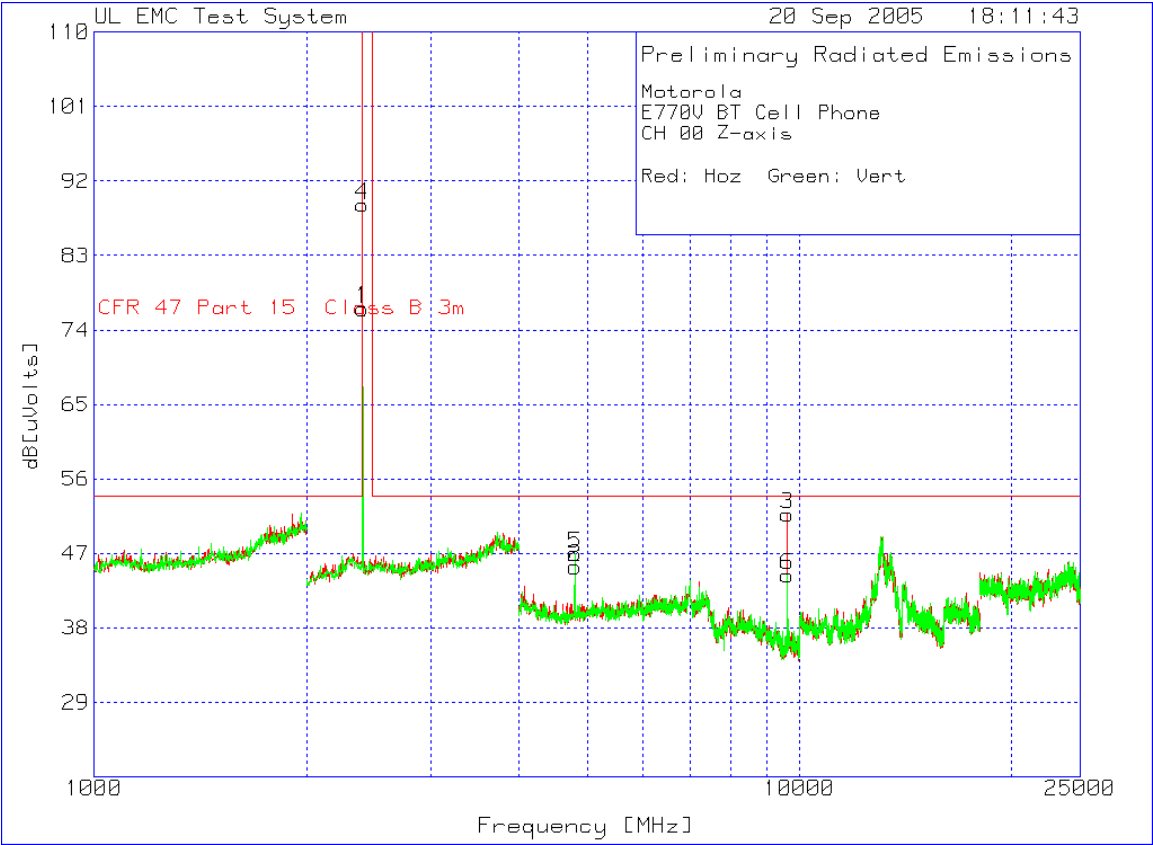
1-25 GHz Low Channel Dual Polarization X

Motorola E770V BT Cell Phone CH 00 X axis Red:Hoz Green: Vert										
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	52.44	pk	4.4	21.8	78.64	999	-920.36	149	Horz
4 - 8GHz 4000 - 8000MHz 2	4804.805	67.47	pk	-50.6	27.7	44.57	54	-9.43	100	Horz
8 - 12GHz 8000 - 12000MHz 3	9609.61	59.26	pk	-49	36.4	46.66	54	-7.34	149	Horz
2 - 4GHz 2000 - 4000MHz 4	2400.802	60.85	pk	4.4	21.8	87.05	999	-911.95	100	Vert
4 - 8GHz 4000 - 8000MHz 5	4804.805	67.74	pk	-50.6	27.7	44.84	54	-9.16	100	Vert
8 - 12GHz 8000 - 12000MHz 6	9605.606	64	pk	-49.1	36.4	51.3	54	-2.7	150	Vert
LIMIT 1: CFR 47 Part 15 Class B 3m										



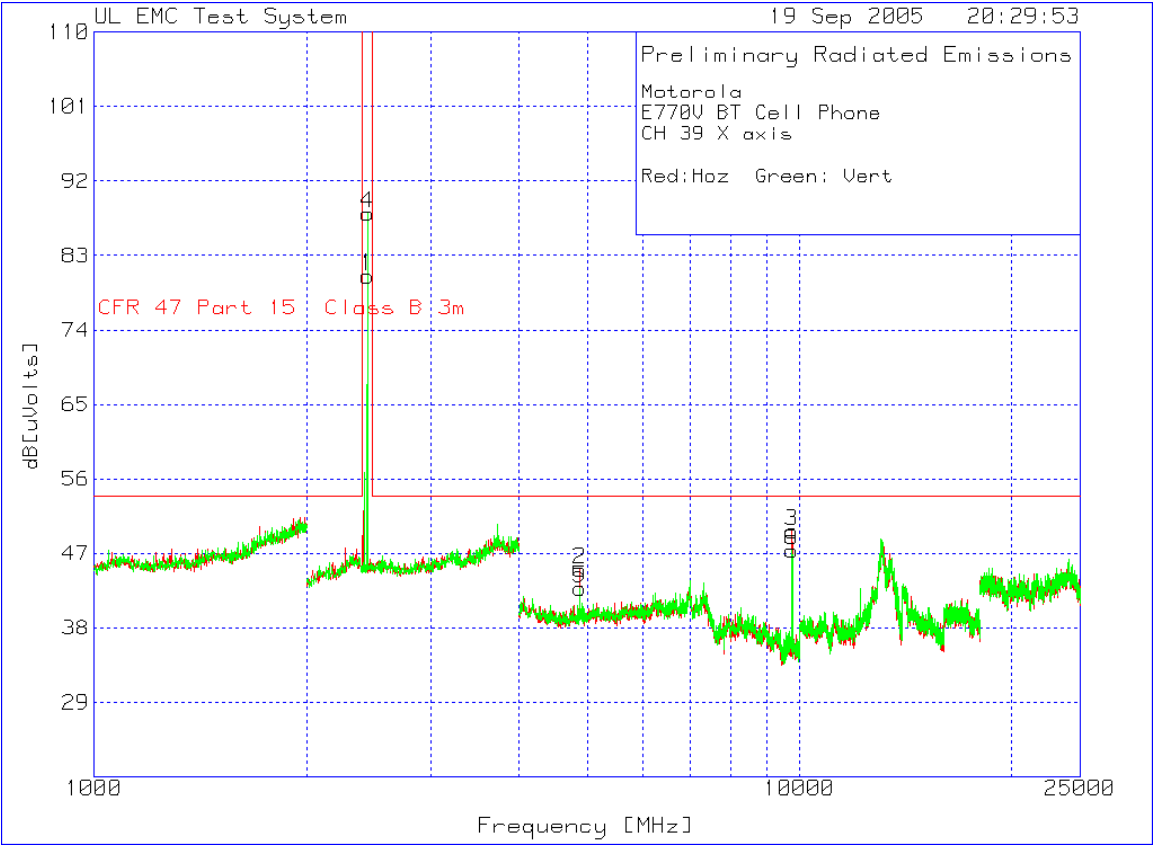
1-25 GHz Low Channel Dual Polarization Y

Motorola E770V BT Cell Phone CH 00 Y axis Red: Hoz Green: Vert										
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	55.95	pk	4.4	21.8	82.15	999	-916.85	100	Horz
4 - 8GHz 4000 - 8000MHz										
2	4800.801	72.02	pk	-50.7	27.7	49.02	54	-4.98	100	Horz
8 - 12GHz 8000 - 12000MHz										
3	9605.606	57.48	pk	-49.1	36.4	44.78	54	-9.22	150	Horz
2 - 4GHz 2000 - 4000MHz										
4	2400.802	59.39	pk	4.4	21.8	85.59	999	-913.41	149	Vert
4 - 8GHz 4000 - 8000MHz										
5	4804.805	67.53	pk	-50.6	27.7	44.63	54	-9.37	150	Vert
8 - 12GHz 8000 - 12000MHz										
6	9605.606	59.47	pk	-49.1	36.4	46.77	54	-7.23	100	Vert
LIMIT 1: CFR 47 Part 15 Class B 3m										



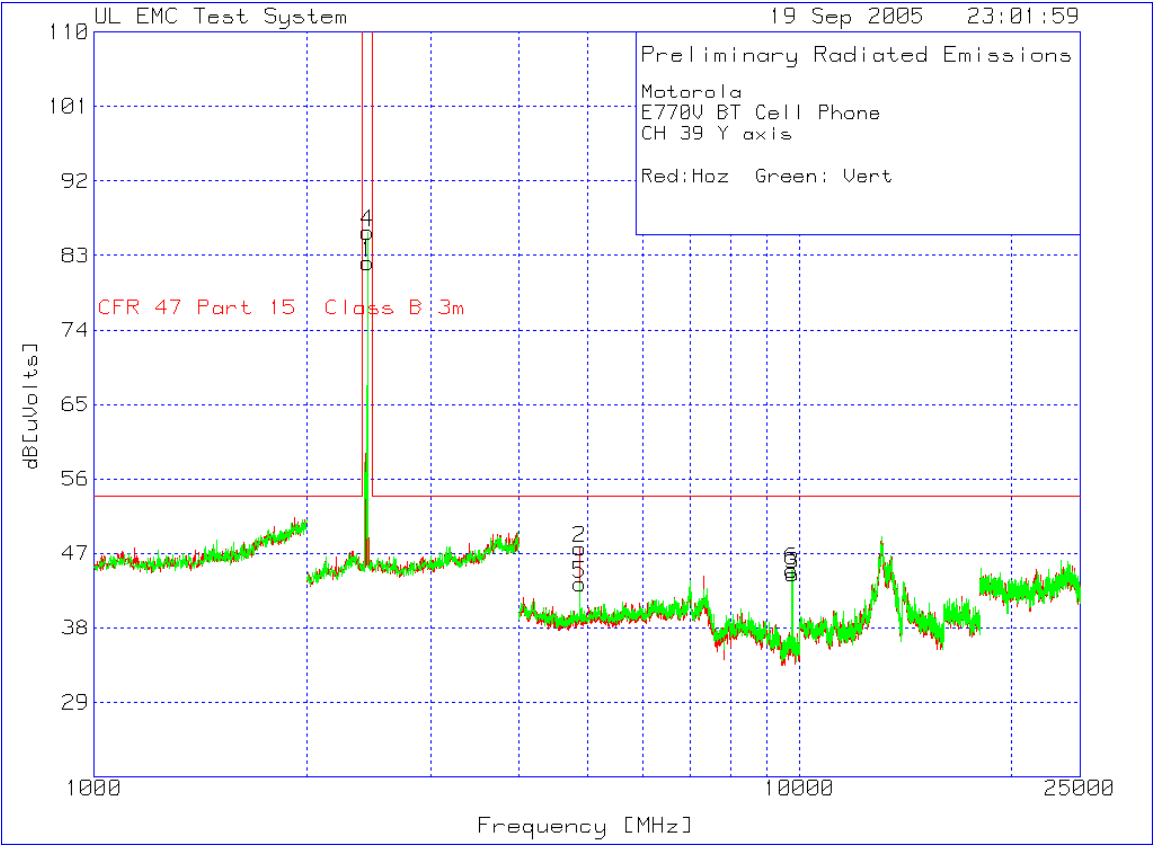
1-25 GHz Low Channel Dual Polarization Z

Motorola E770V BT Cell Phone CH 00 Z-axis Red: Hoz Green: Vert										
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	50.35	pk	4.4	21.8	76.55	999	-922.45	100	Horz
4 - 8GHz 4000 - 8000MHz 2	4800.801	68.38	pk	-50.7	27.7	45.38	54	-8.62	149	Horz
8 - 12GHz 8000 - 12000MHz 3	9609.61	64.34	pk	-49	36.4	51.74	54	-2.26	149	Horz
2 - 4GHz 2000 - 4000MHz 4	2400.802	62.92	pk	4.4	21.8	89.12	999	-909.88	100	Vert
4 - 8GHz 4000 - 8000MHz 5	4804.805	69.89	pk	-50.6	27.7	46.99	54	-7.01	100	Vert
8 - 12GHz 8000 - 12000MHz 6	9605.606	57.06	pk	-49.1	36.4	44.36	54	-9.64	149	Vert
LIMIT 1: CFR 47 Part 15 Class B 3m										



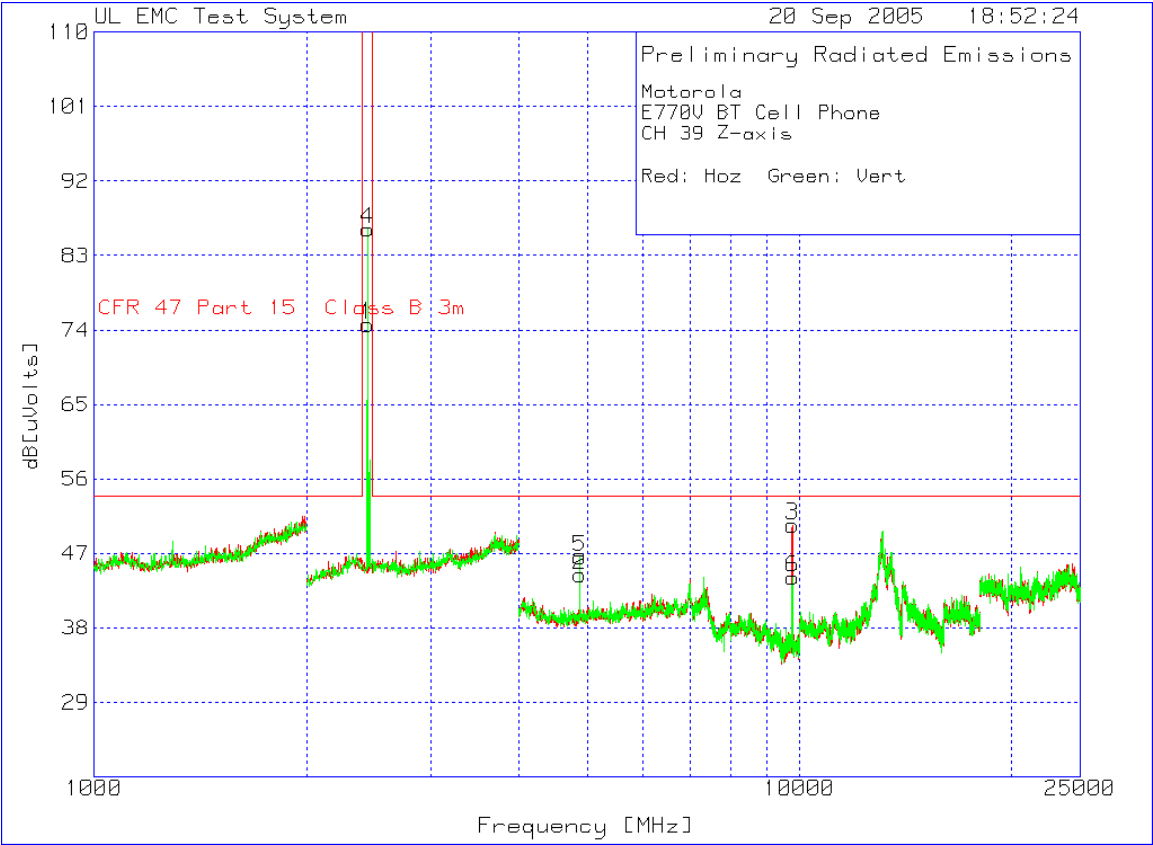
1-25 GHz Mid Channel Dual Polarization X

Motorola E770V BT Cell Phone CH 39 X axis Red: Hoz Green: Vert										
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	54.4	pk	4.2	21.9	80.5	999	-918.5	100	Horz
4 - 8GHz 4000 - 8000MHz 2	4880.881	67.83	pk	-50.5	27.7	45.03	54	-8.97	100	Horz
8 - 12GHz 8000 - 12000MHz 3	9761.762	62.69	pk	-49.4	36.4	49.69	54	-4.31	149	Horz
2 - 4GHz 2000 - 4000MHz 4	2440.882	61.99	pk	4.2	21.9	88.09	999	-910.91	100	Vert
4 - 8GHz 4000 - 8000MHz 5	4880.881	65.61	pk	-50.5	27.7	42.81	54	-11.19	100	Vert
8 - 12GHz 8000 - 12000MHz 6	9761.762	60.37	pk	-49.4	36.4	47.37	54	-6.63	100	Vert
LIMIT 1: CFR 47 Part 15 Class B 3m										



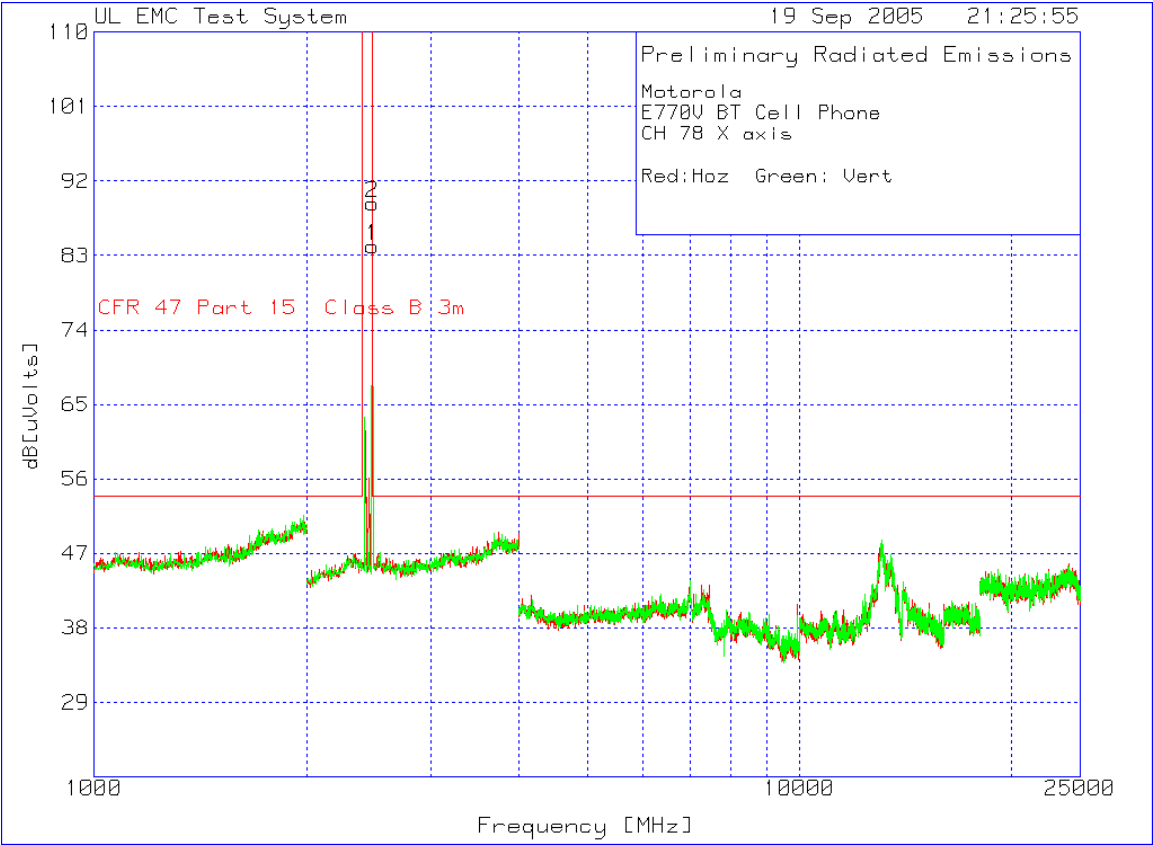
1-25 GHz Mid Channel Dual Polarization Y

Motorola E770V BT Cell Phone CH 39 Y axis Red: Hoz Green: Vert										
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	56.06	pk	4.2	21.9	82.16	999	-916.84	100	Horz
4 - 8GHz 4000 - 8000MHz 2	4880.881	70.45	pk	-50.5	27.7	47.65	54	-6.35	100	Horz
8 - 12GHz 8000 - 12000MHz 3	9765.766	57.62	pk	-49.5	36.4	44.52	54	-9.48	149	Horz
2 - 4GHz 2000 - 4000MHz 4	2440.882	59.74	pk	4.2	21.9	85.84	999	-913.16	149	Vert
4 - 8GHz 4000 - 8000MHz 5	4880.881	66.17	pk	-50.5	27.7	43.37	54	-10.63	149	Vert
8 - 12GHz 8000 - 12000MHz 6	9761.762	58.01	pk	-49.4	36.4	45.01	54	-8.99	149	Vert
LIMIT 1: CFR 47 Part 15 Class B 3m										



1-25 GHz Mid Channel Dual Polarization Z

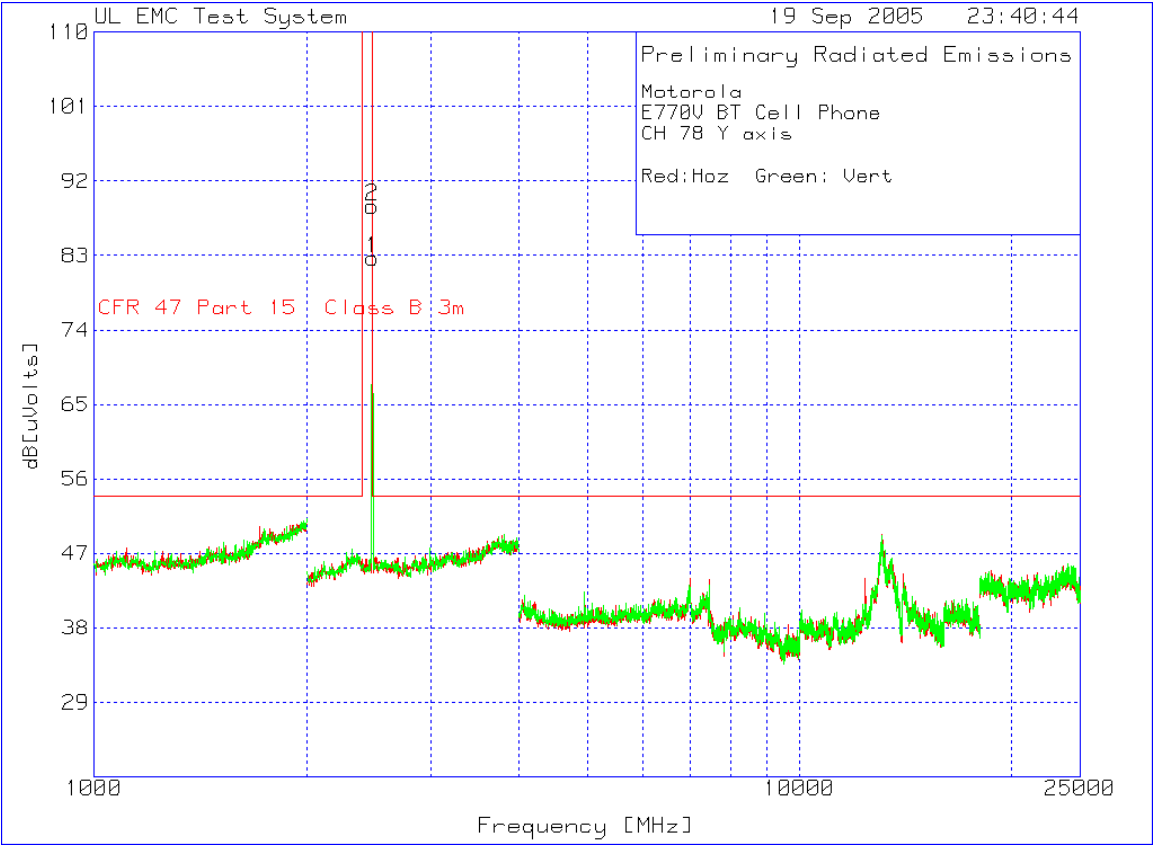
Motorola E770V BT Cell Phone CH 39 Z-axis Red: Hoz Green: Vert										
Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts]	Limit 1	Margin 1[dB]	Height [cm]	Polarity
2 - 4GHz 2000 - 4000MHz 1	2440.882	48.57	pk	4.2	21.9	74.67	999	-924.33	100	Horz
4 - 8GHz 4000 - 8000MHz 2	4880.881	67.21	pk	-50.5	27.7	44.41	54	-9.59	149	Horz
8 - 12GHz 8000 - 12000MHz 3	9765.766	63.54	pk	-49.5	36.4	50.44	54	-3.56	149	Horz
2 - 4GHz 2000 - 4000MHz 4	2440.882	60.05	pk	4.2	21.9	86.15	999	-912.85	150	Vert
4 - 8GHz 4000 - 8000MHz 5	4880.881	69.36	pk	-50.5	27.7	46.56	54	-7.44	100	Vert
8 - 12GHz 8000 - 12000MHz 6	9765.766	57.19	pk	-49.5	36.4	44.09	54	-9.91	150	Vert
LIMIT 1: CFR 47 Part 15 Class B 3m										



1-25 GHz High Channel Dual Polarization X

Motorola E770V BT Cell Phone CH 78 X axis Red:Hoz Green: Vert 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	58.04	pk	4.1	22	84.14	999	-914.86	100	Horz
2 - 4GHz 2000 - 4000MHz 2	2480.962	63.17	pk	4.1	22	89.27	999	-909.73	100	Vert

LIMIT 1: CFR 47 Part 15 Class B 3m

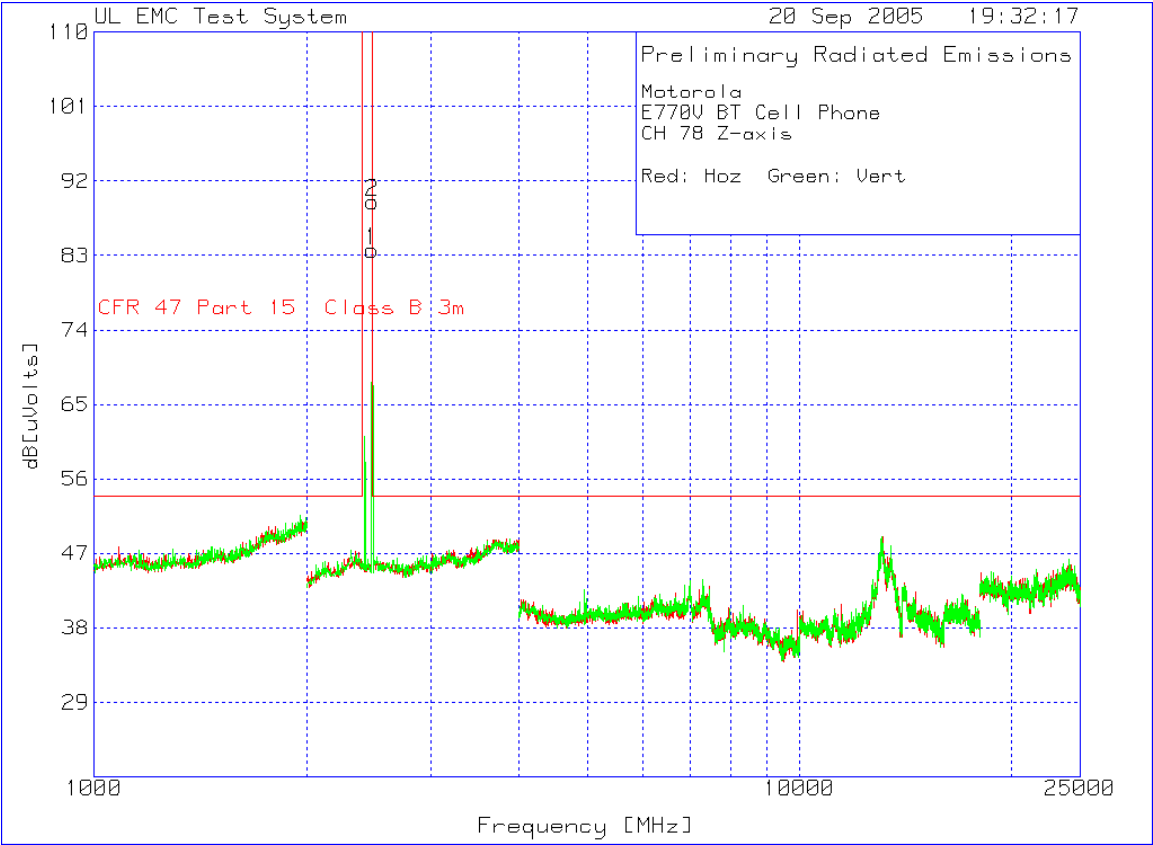


1-25 GHz High Channel Dual Polarization Y

Motorola
 E770V BT Cell Phone
 CH 78 Y axis
 Red: Hoz Green: Vert
 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	56.56	pk	4.1	22	82.66	999	-916.34	100	Horz
2 - 4GHz 2000 - 4000MHz 2	2476.954	62.88	pk	4.1	22	88.98	999	-910.02	150	Vert

LIMIT 1: CFR 47 Part 15 Class B 3m

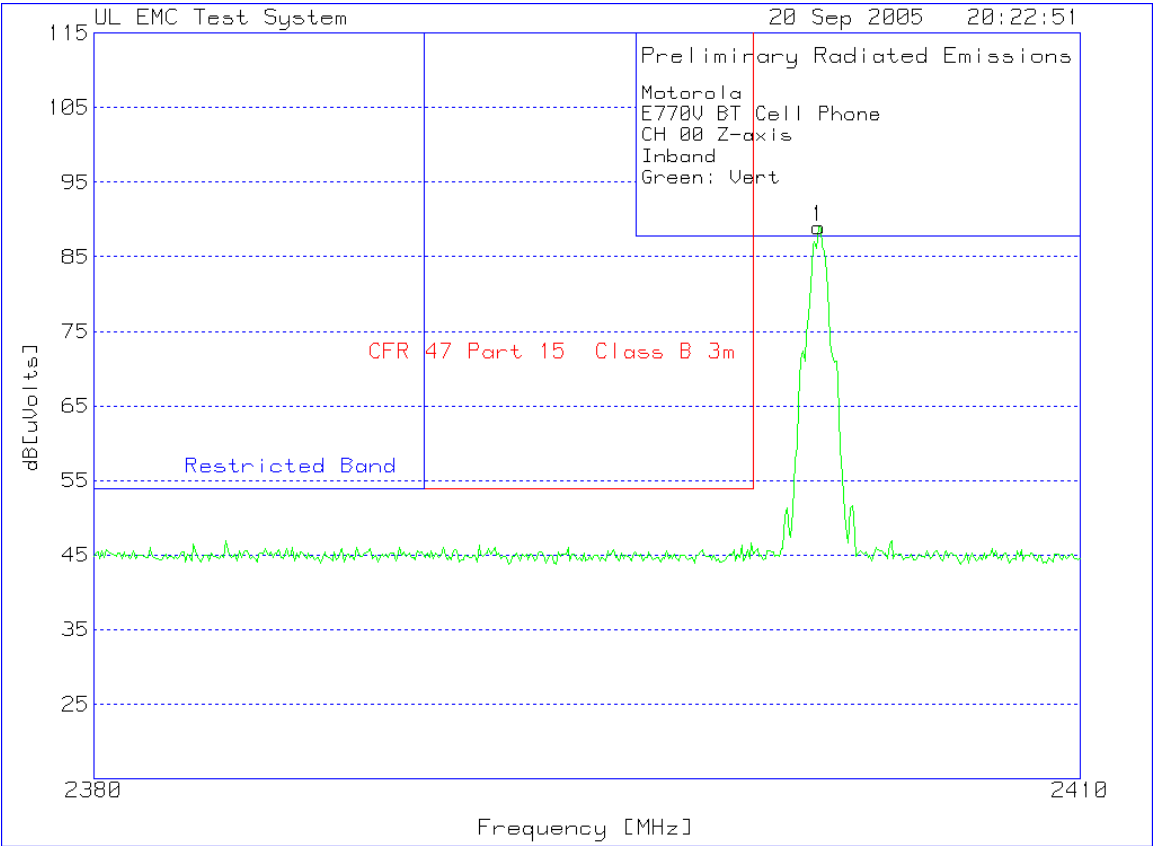


1-25 GHz High Channel Dual Polarization Z

Motorola
 E770V BT Cell Phone
 CH 78 Z-axis
 Red: Hoz Green: Vert
 Marker
 Number

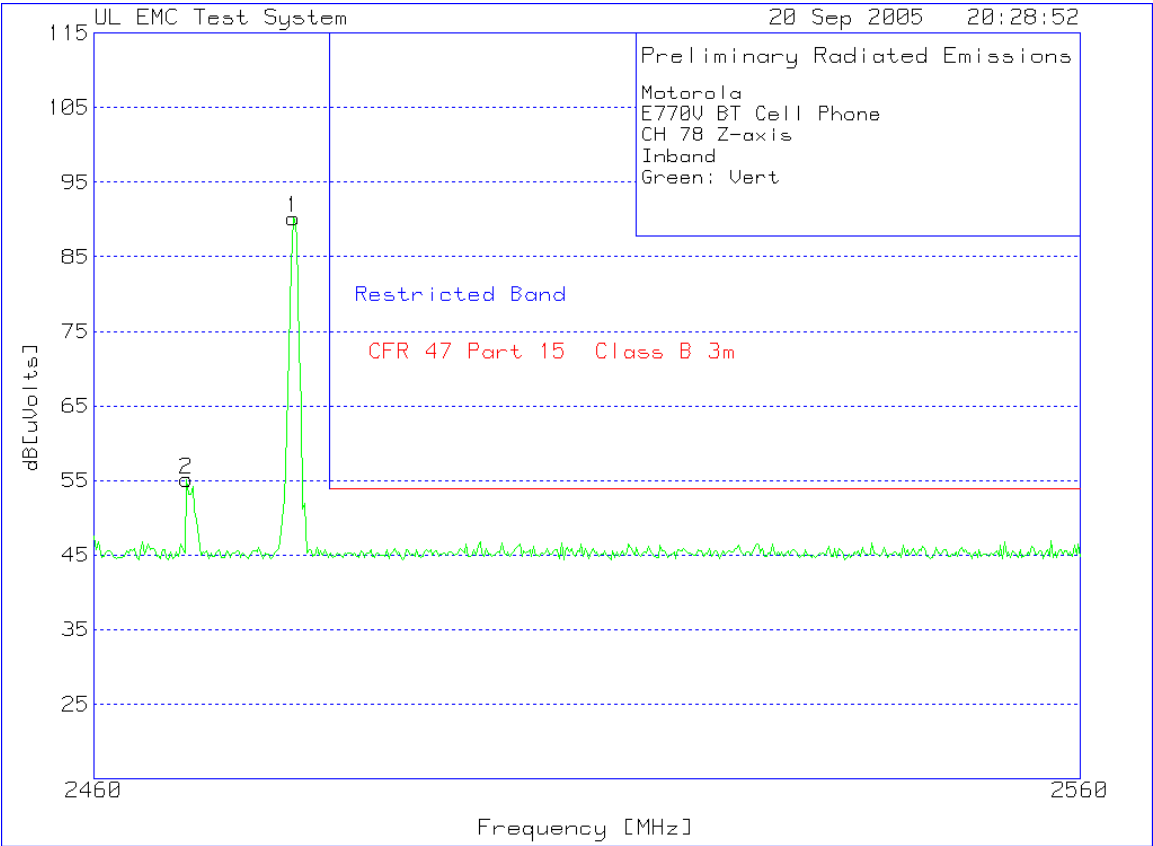
Marker Number	Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts]	Limit 1	Margin 1[dB]	Height [cm]	Polarity
2 - 4GHz 2000 - 4000MHz 1	2476.954	57.53	pk	4.1	22	83.63	999	-915.37	100	Horz
2 - 4GHz 2000 - 4000MHz 2	2480.962	63.38	pk	4.1	22	89.48	999	-909.52	100	Vert

LIMIT 1: CFR 47 Part 15 Class B 3m



Authorized Band Emissions Low Channel Dual Polarization Z

Motorola													
E770V BT Cell Phone													
CH 00 Z-axis													
Inband													
Green: Vert													
Marker													
Number													
2 - 4GHz 2380 - 2410MHz													
1	2402.004	62.79	pk	4.4	21.8	88.99	999	-910.01	999	-910.01	100	Vert	
LIMIT 1: CFR 47 Part 15 Class B 3m													
LIMIT 2: Restricted Band													



Authorized Band Emissions High Channel Dual Polarization Z

Motorola												
E770V BT Cell Phone												
CH 78 Z-axis												
Inband												
Green: Vert												
Marker	Test	Meter	Detector	Gain/Loss	Transducer	Level	Limit 1	Margin 1[dB]	Limit 2	Margin 2[dB]	Height [cm]	Polarity
Number	Frequency	Reading	Type	Factor	Factor	dB[uVolts]						
	[MHz]	[dB(uV)]		[dB]	[dB]							
2 - 4GHz 2460 - 2560MHz												
1	2479.84	64.05	pk	4.1	22	90.15	999	-908.85	999	-908.85	100	Vert
2	2469.218	28.93	pk	4.2	22	55.13	999	-943.87	999	-943.87	149	Vert
LIMIT 1: CFR 47 Part 15 Class B 3m												
LIMIT 2: Restricted Band												

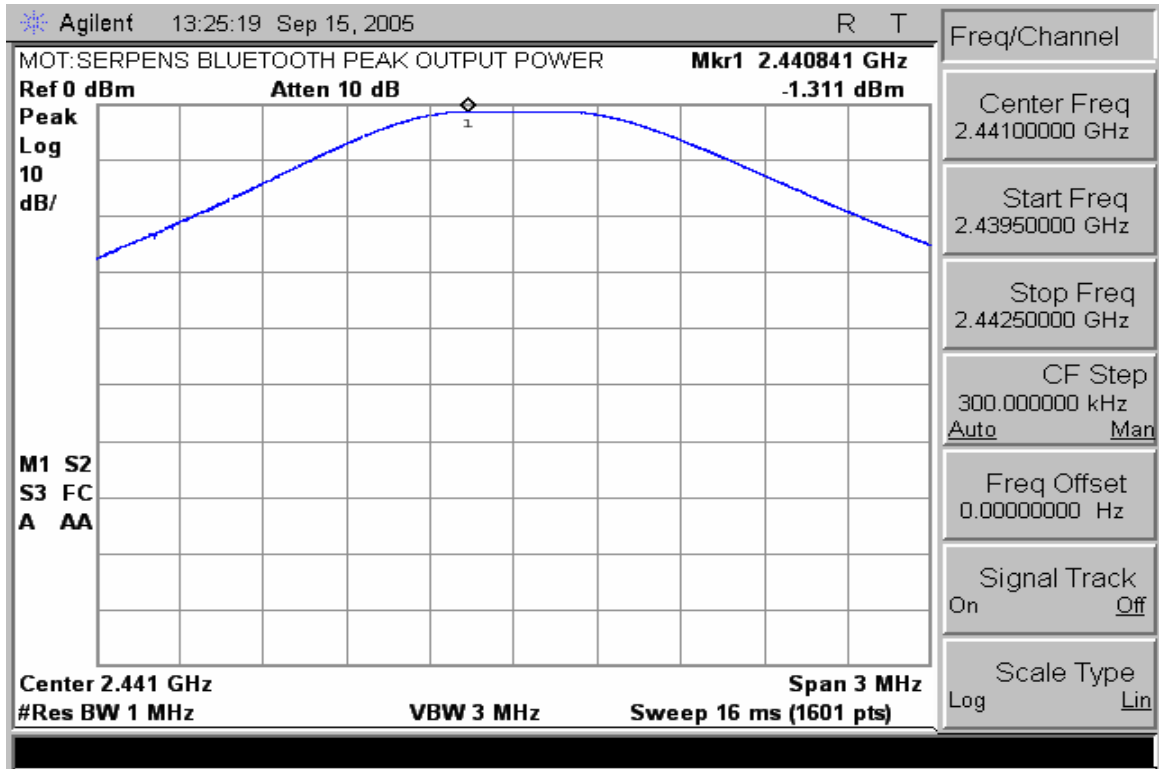
PEAK OUTPUT POWER

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

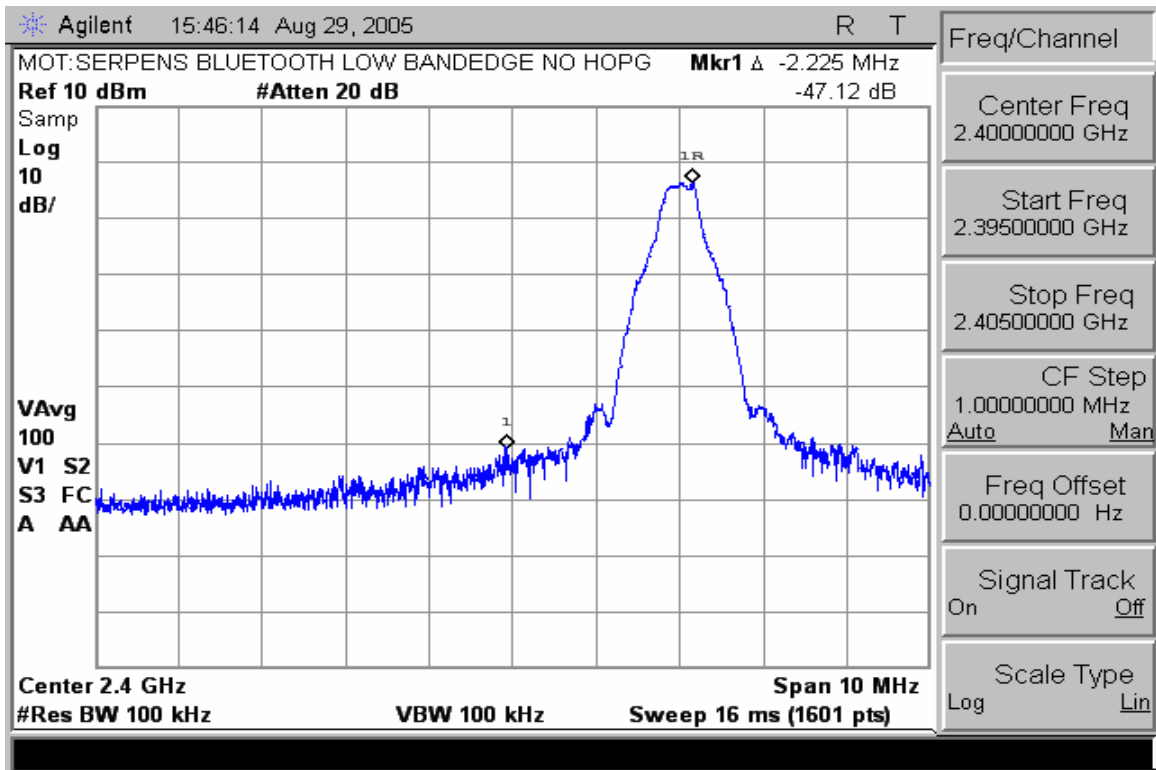
CFR 47 Part 15.247

Measurement Procedure

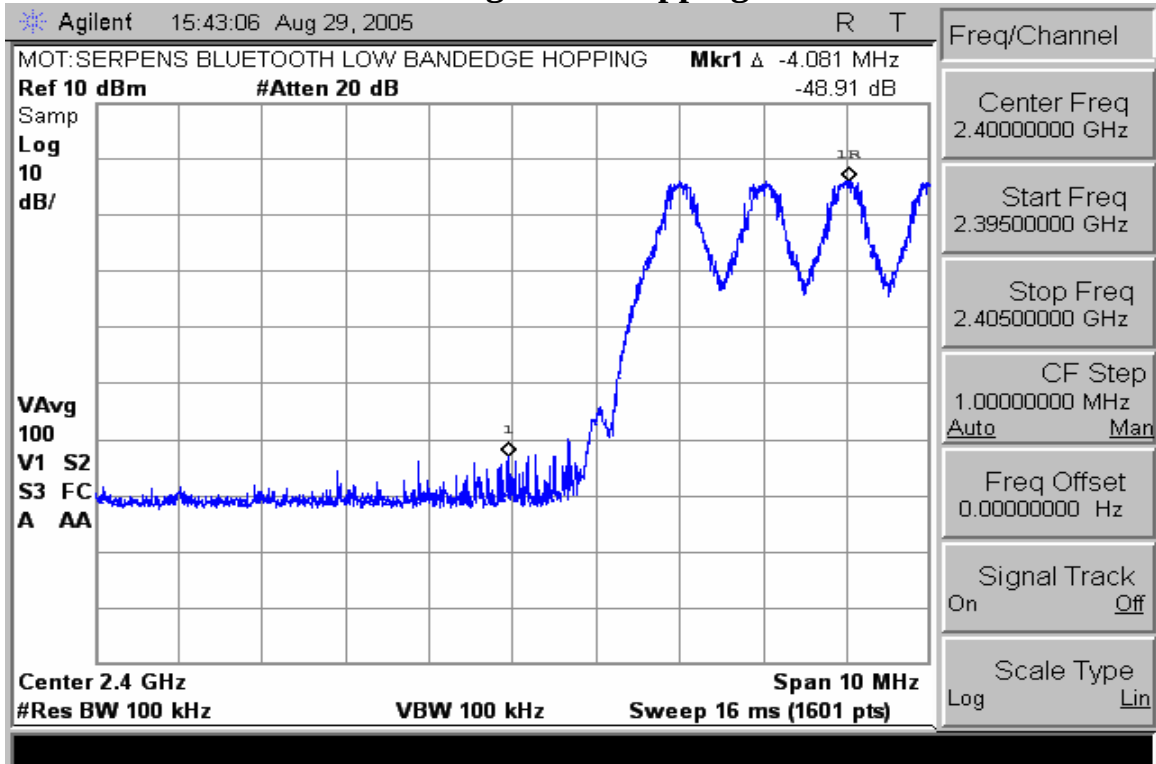
The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage.

Measurement Results

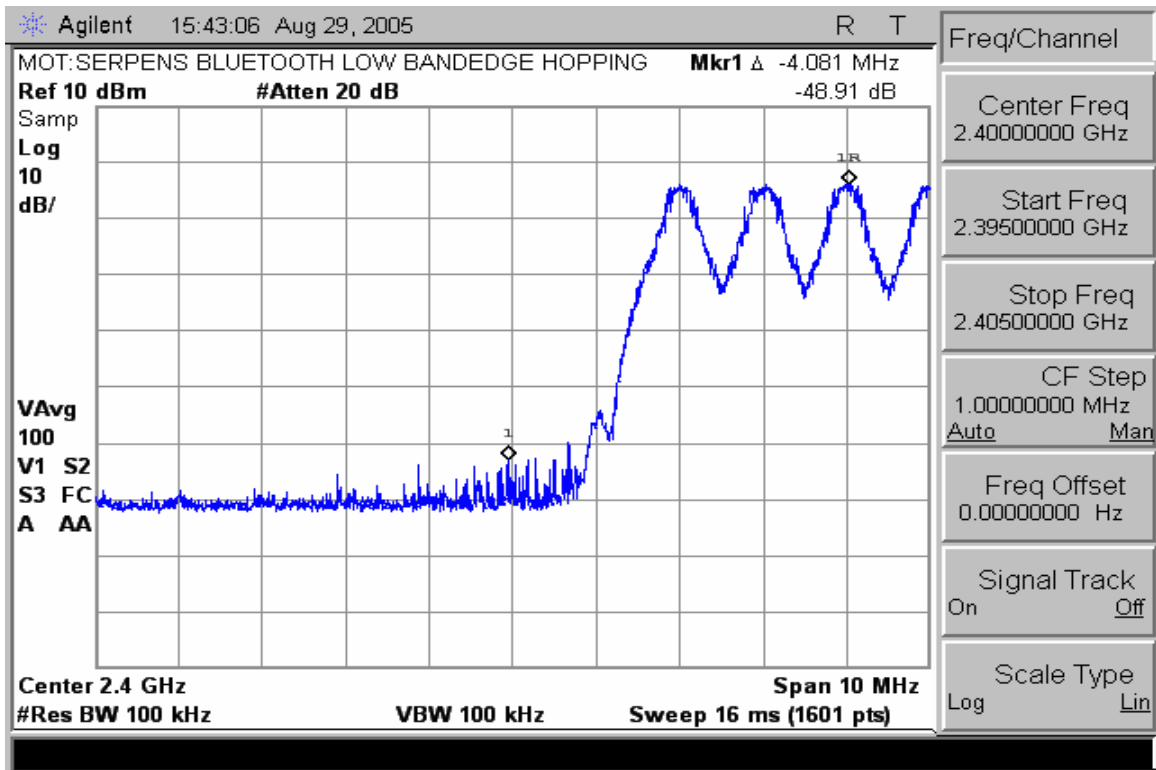
See Attached:



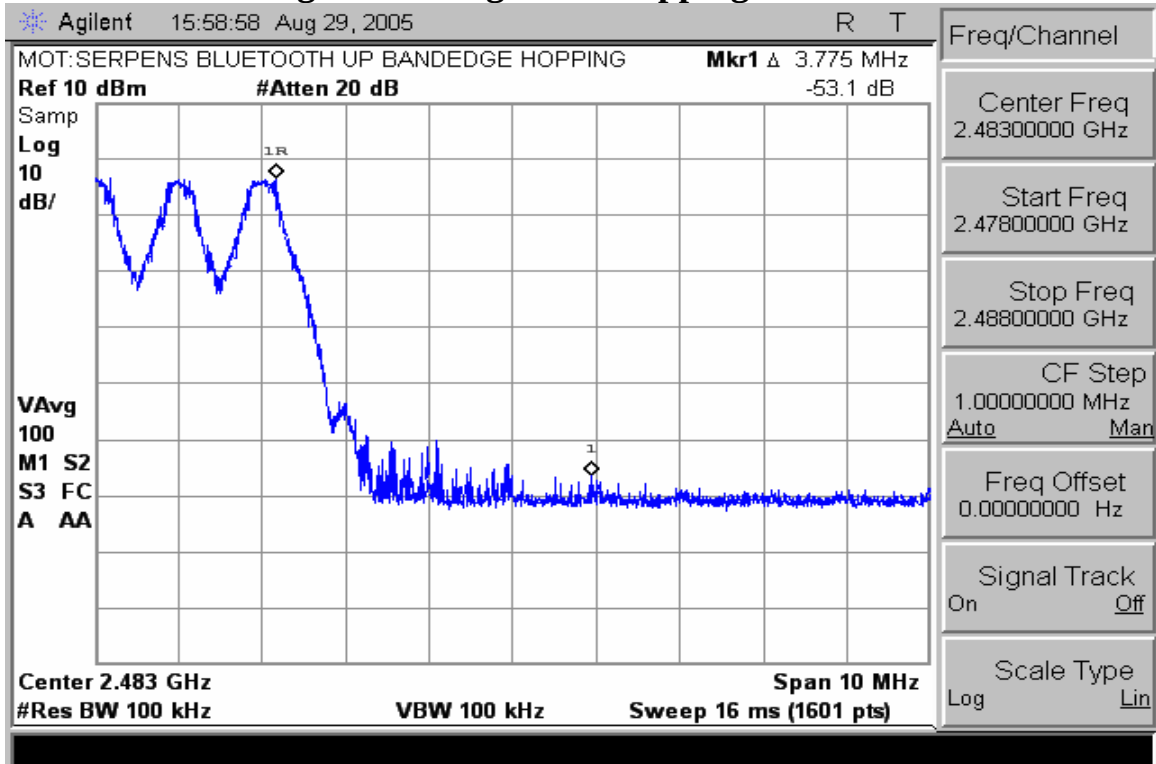
Low Band Edge with Hopping Disabled



Low Band Edge with Hopping Enabled



High Band Edge with Hopping Disabled



High Band Edge with Hopping Enabled

SPURIOUS RF CONDUCTED EMISSIONS

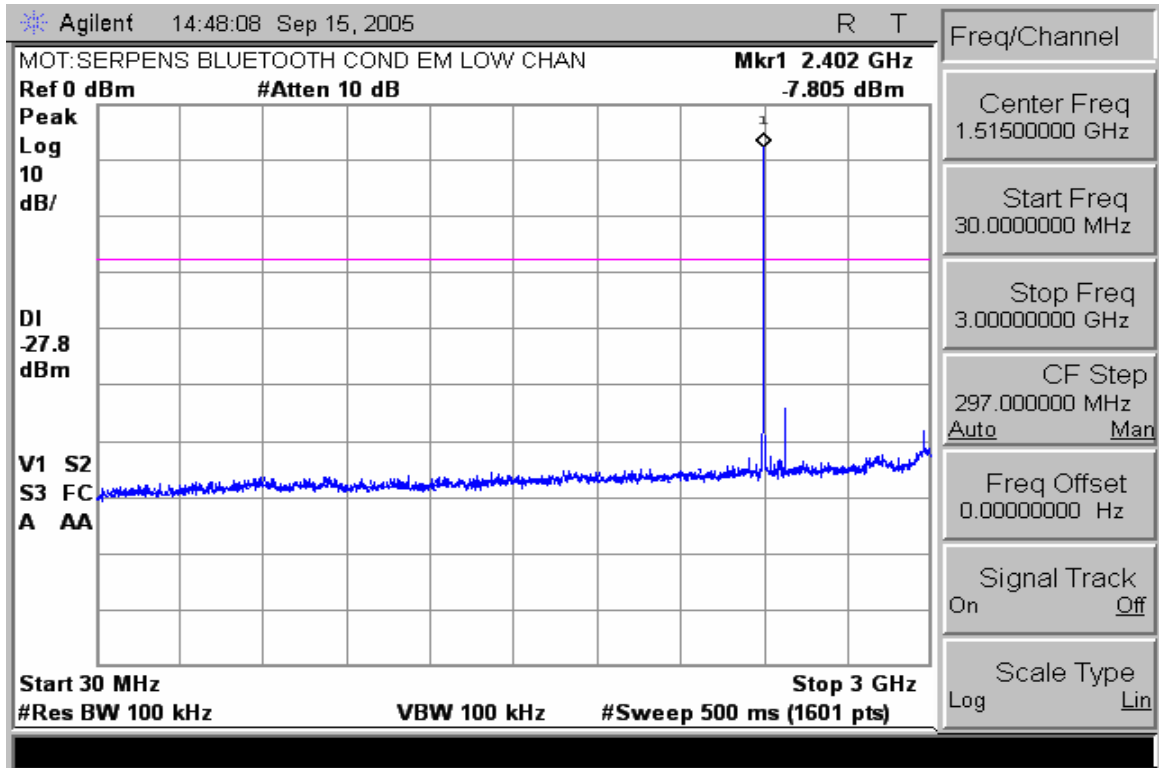
CFR 47 Part 15.247

Measurement Procedure

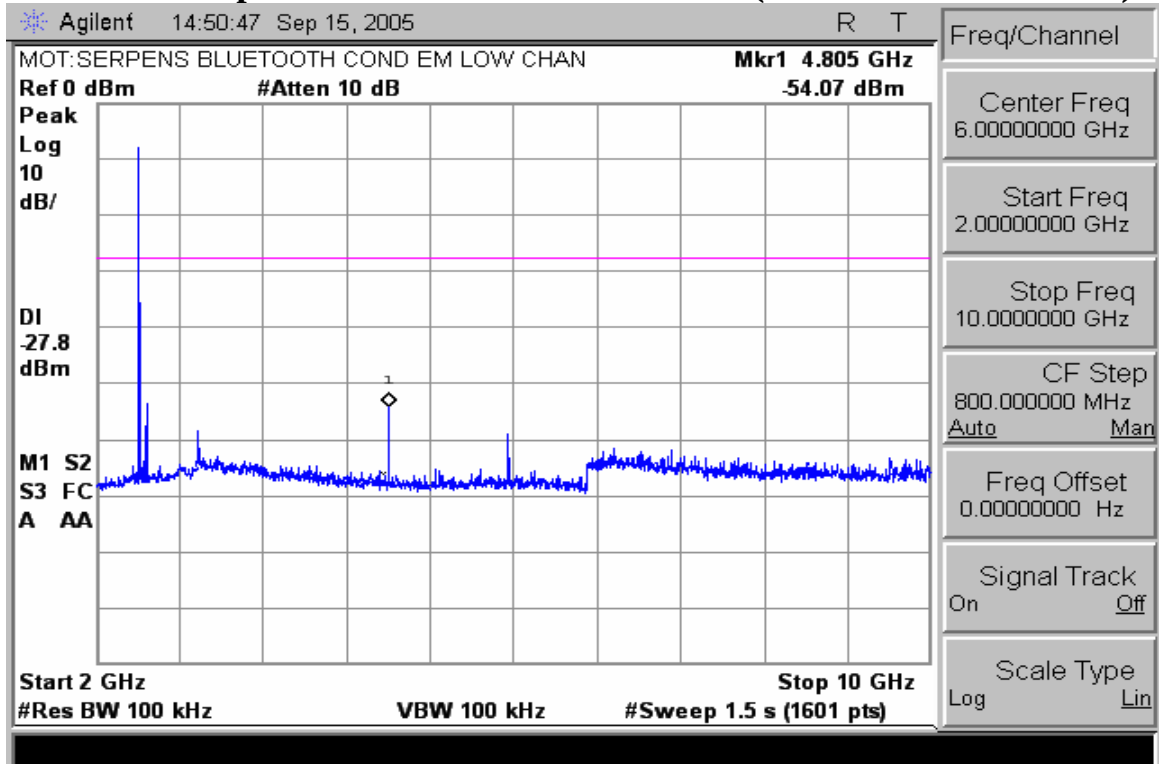
The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage.

Measurement Results

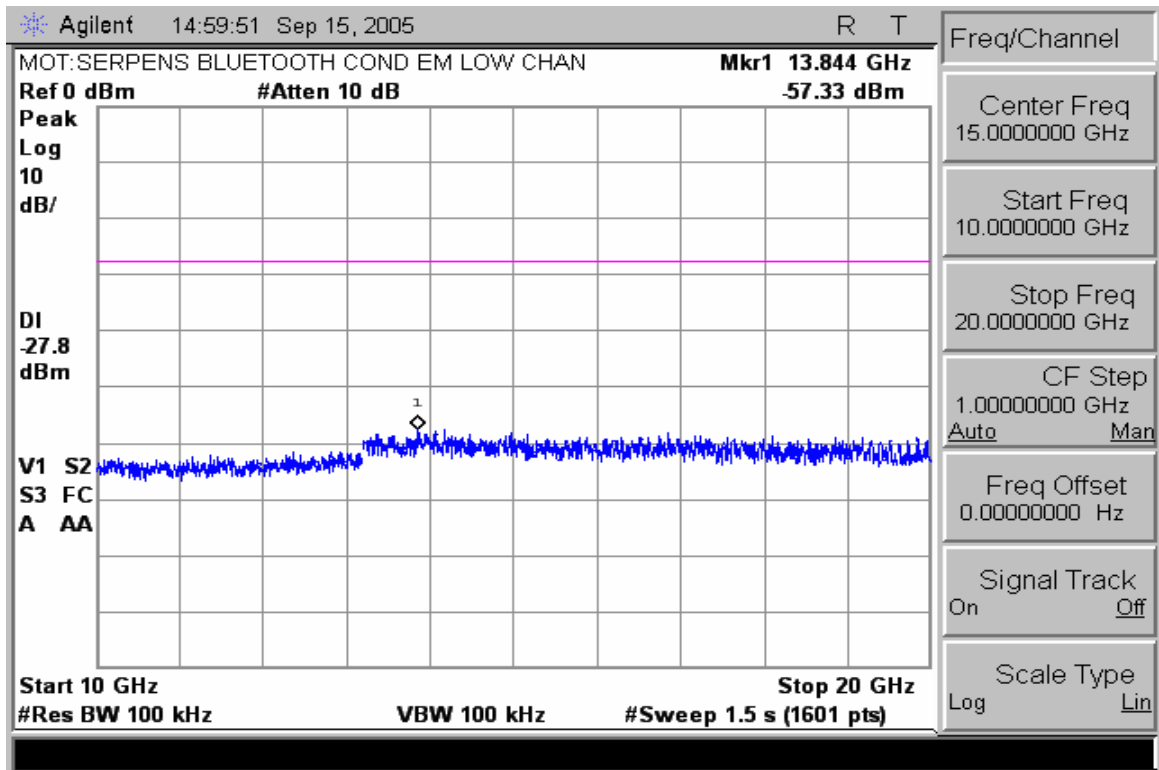
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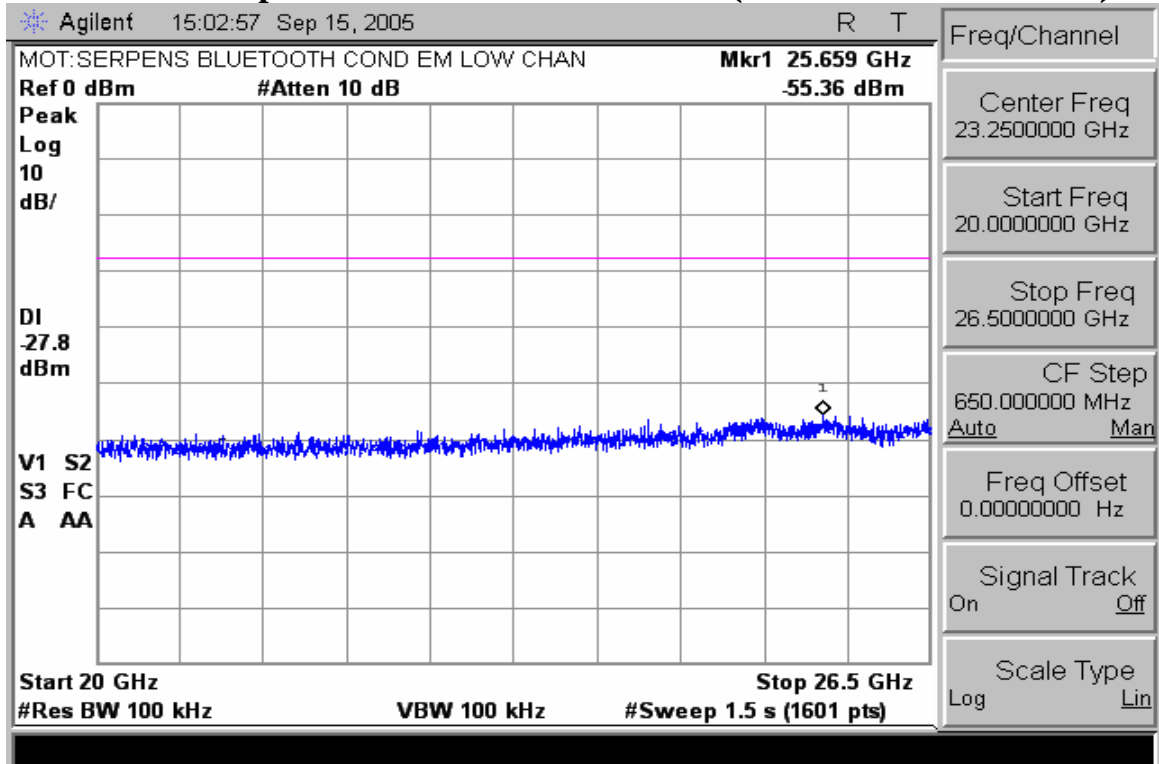
Conducted Spurious Emissions 30-3000MHz (Low Channel Enabled)



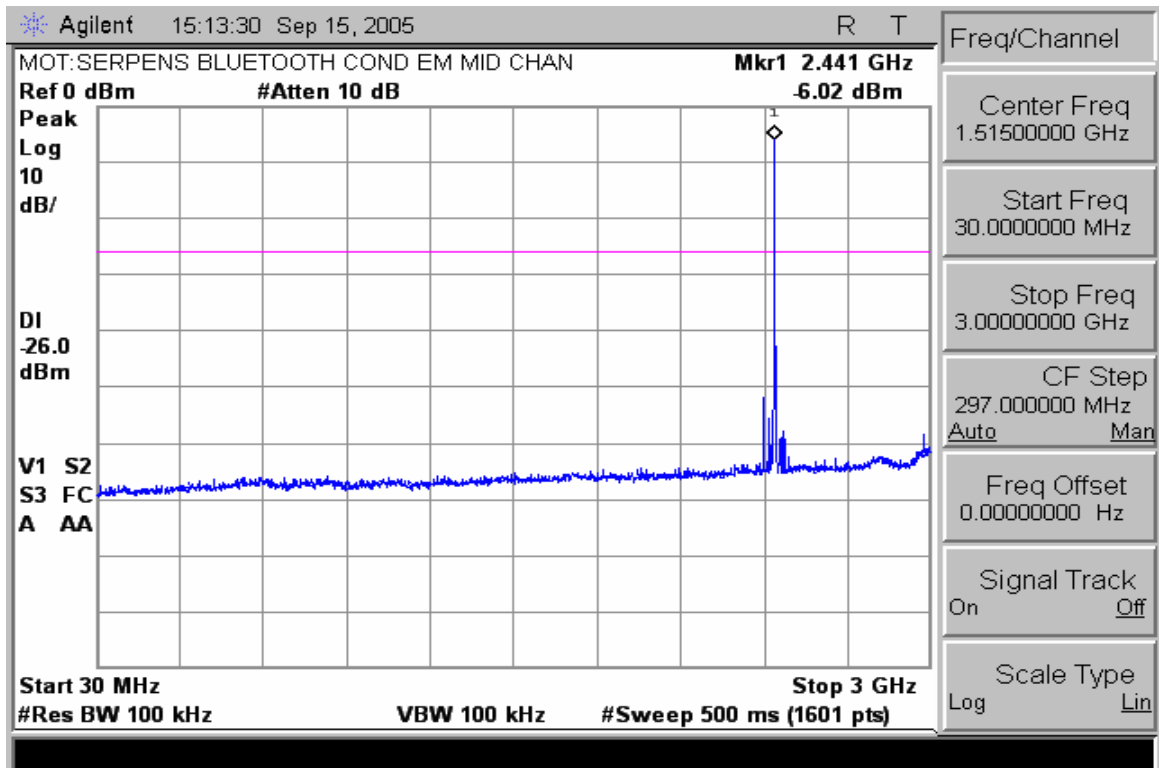
Conducted Spurious Emissions 2-10GHz (Low Channel Enabled)



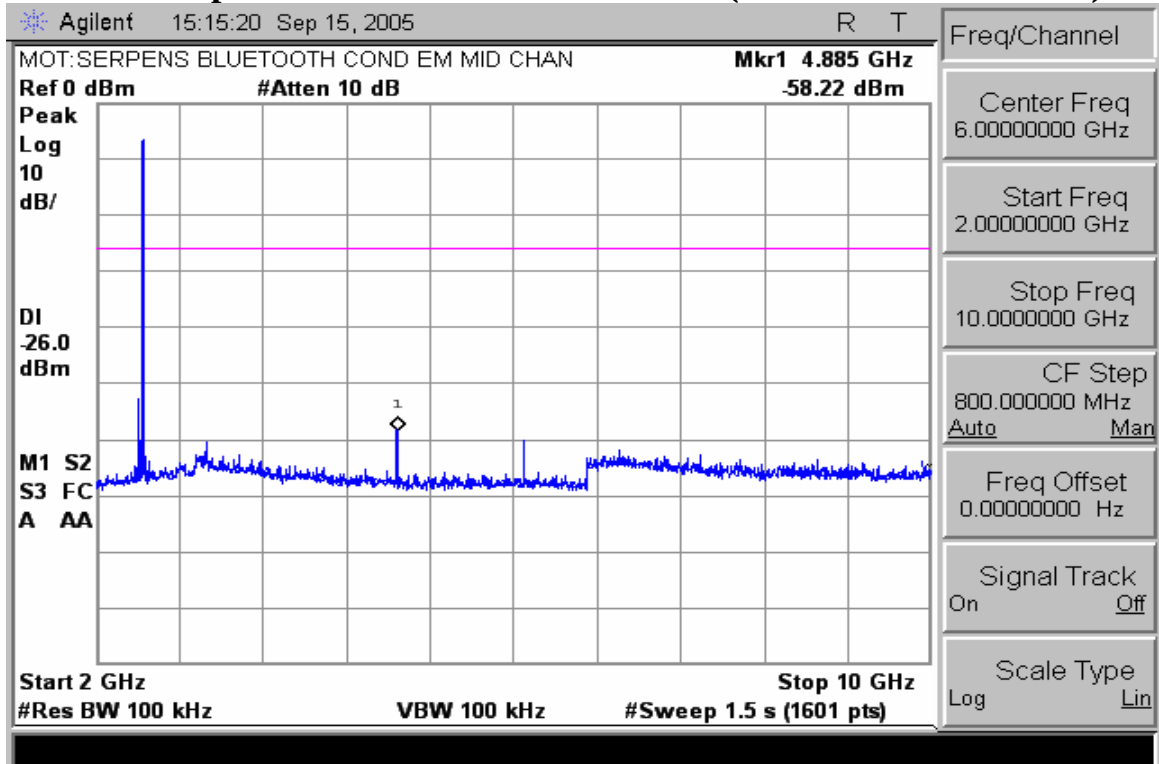
Conducted Spurious Emissions 10-20GHz (Low Channel Enabled)



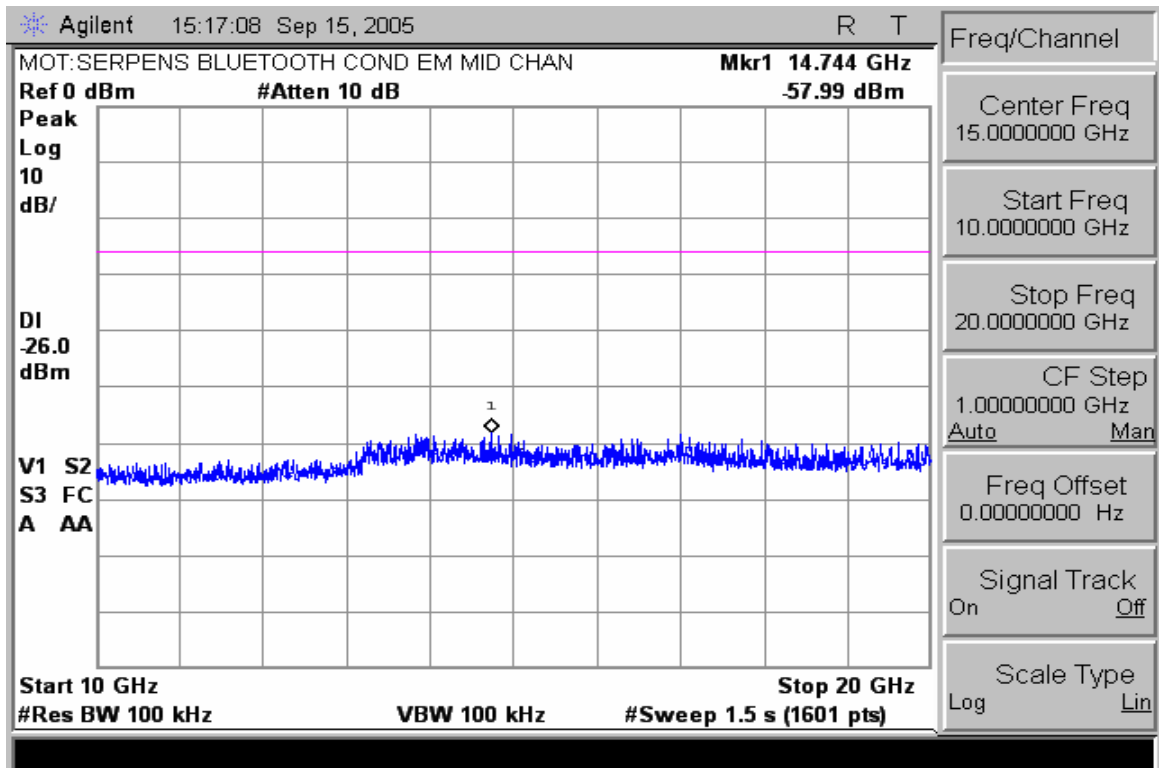
Conducted Spurious Emissions 20-26.5GHz (Low Channel Enabled)



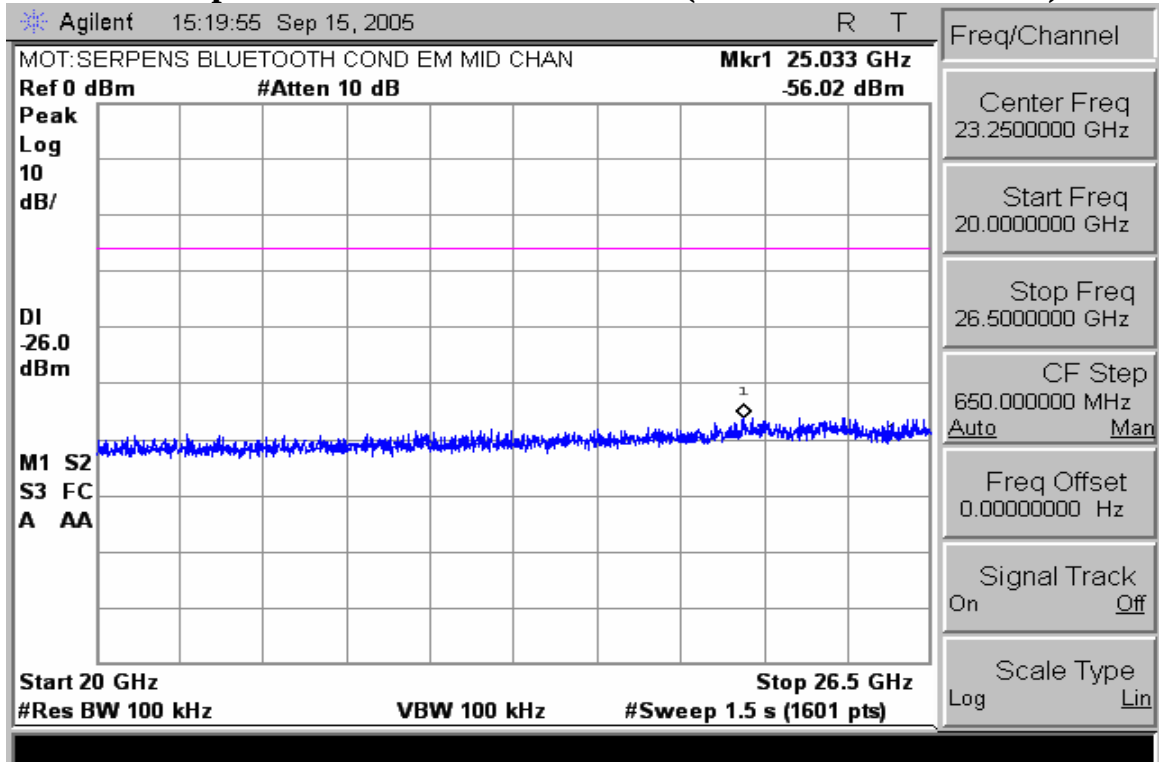
Conducted Spurious Emissions 30-3000MHz (Mid Channel Enabled)



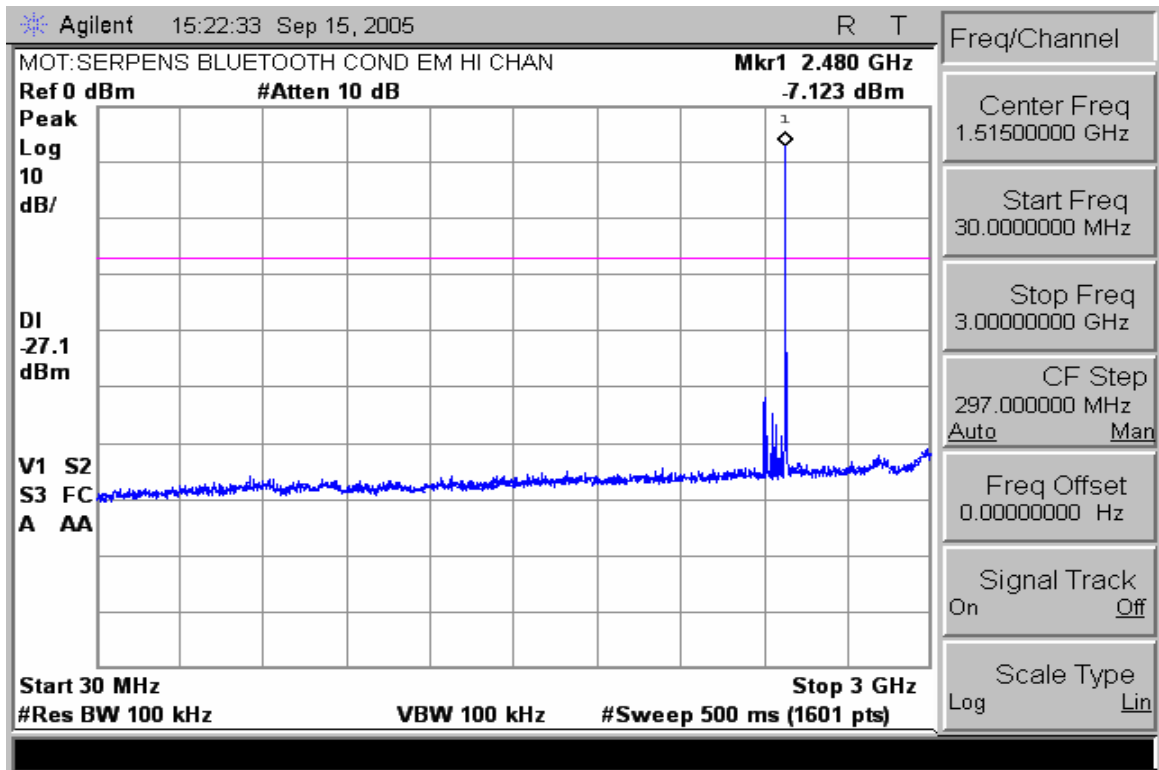
Conducted Spurious Emissions 2-10GHz (Mid Channel Enabled)



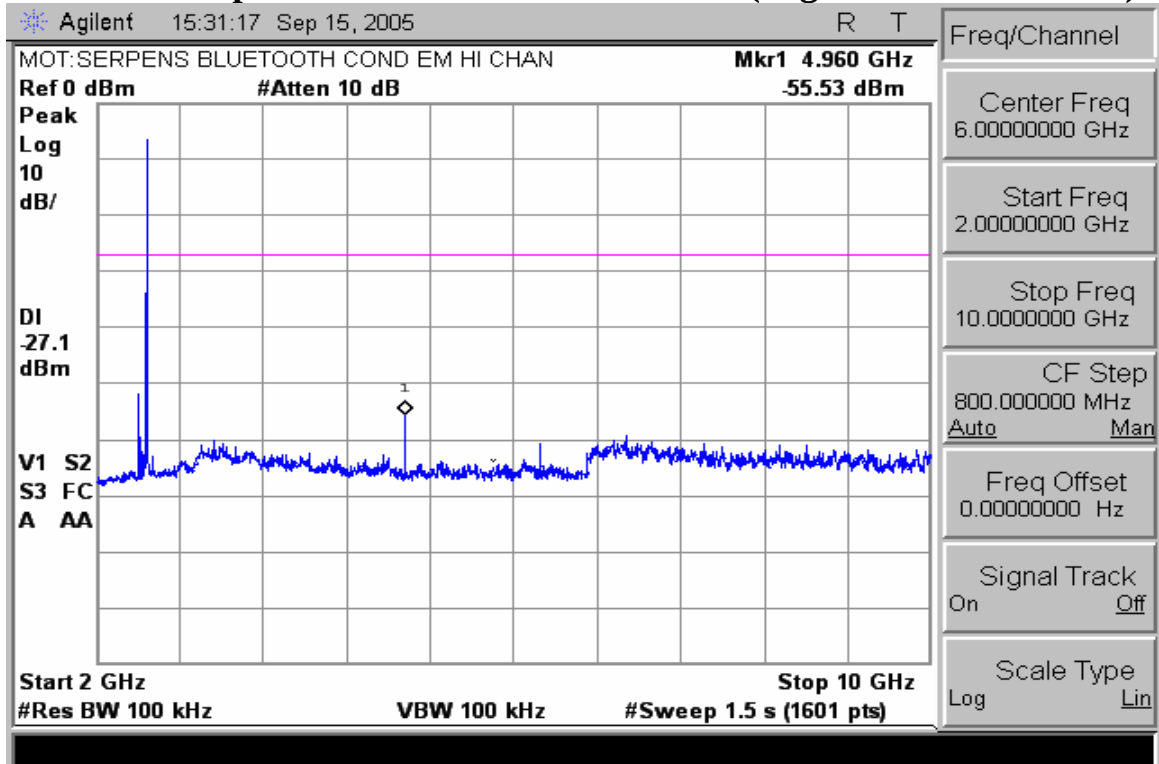
Conducted Spurious Emissions 10-20GHz (Mid Channel Enabled)



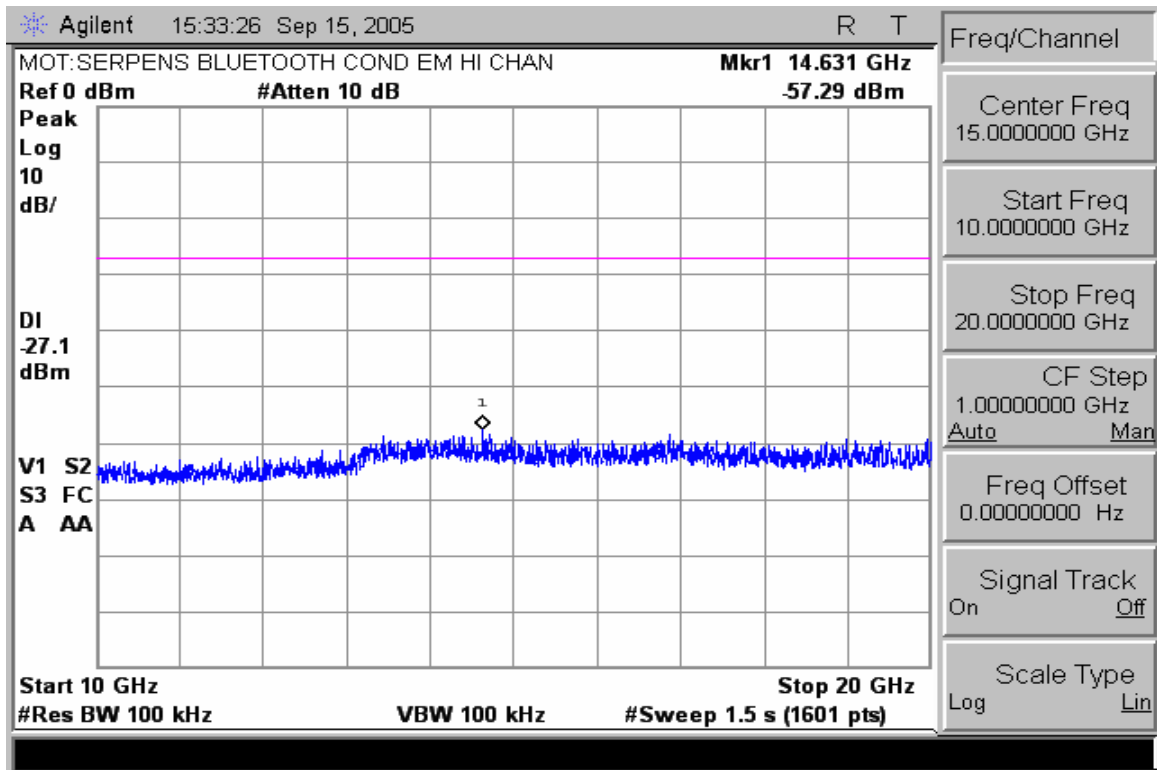
Conducted Spurious Emissions 20-26.5GHz (Mid Chan Enabled)



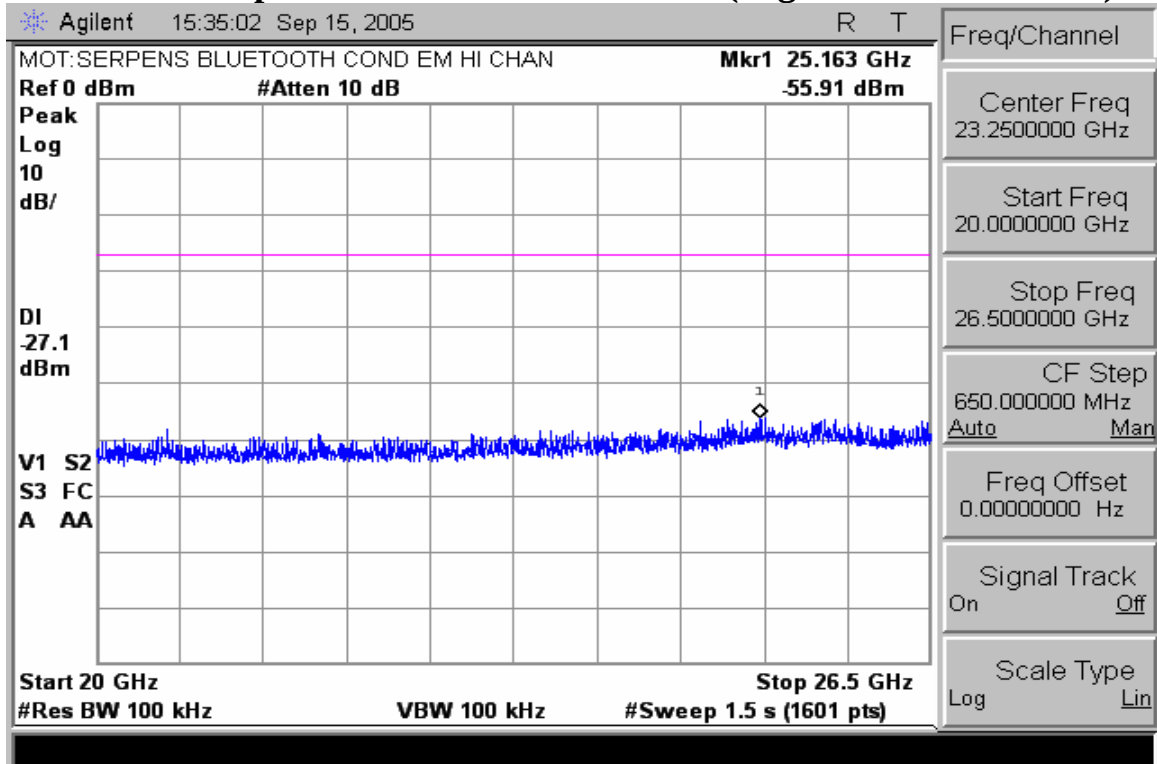
Conducted Spurious Emissions 30-3000MHz (High Channel Enabled)



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)

AC LINE CONDUCTED

CFR 47 Part 15.207

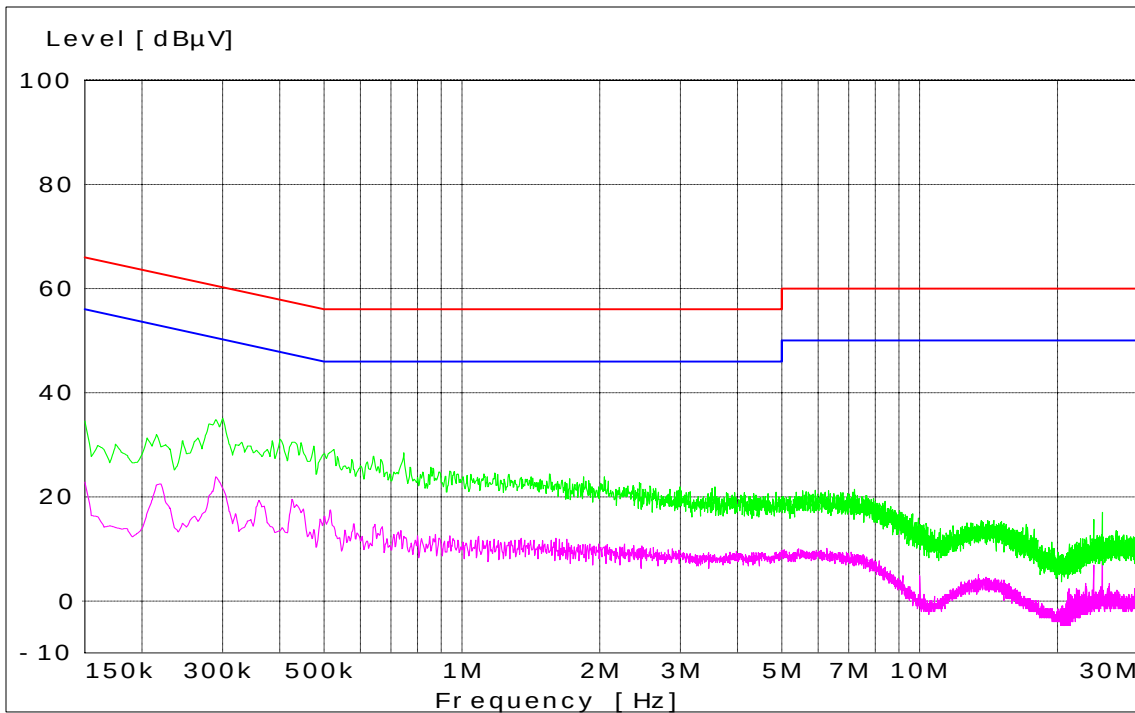
Measurement Procedure

Measured levels of ac powerline conducted emission shall be the radio-noise voltage from the line probe or across the 50 Ω LISN port, where permitted, terminated into a 50 Ω noise meter, or where permitted or required, the radio-noise current on the powerline sensed by a current probe.

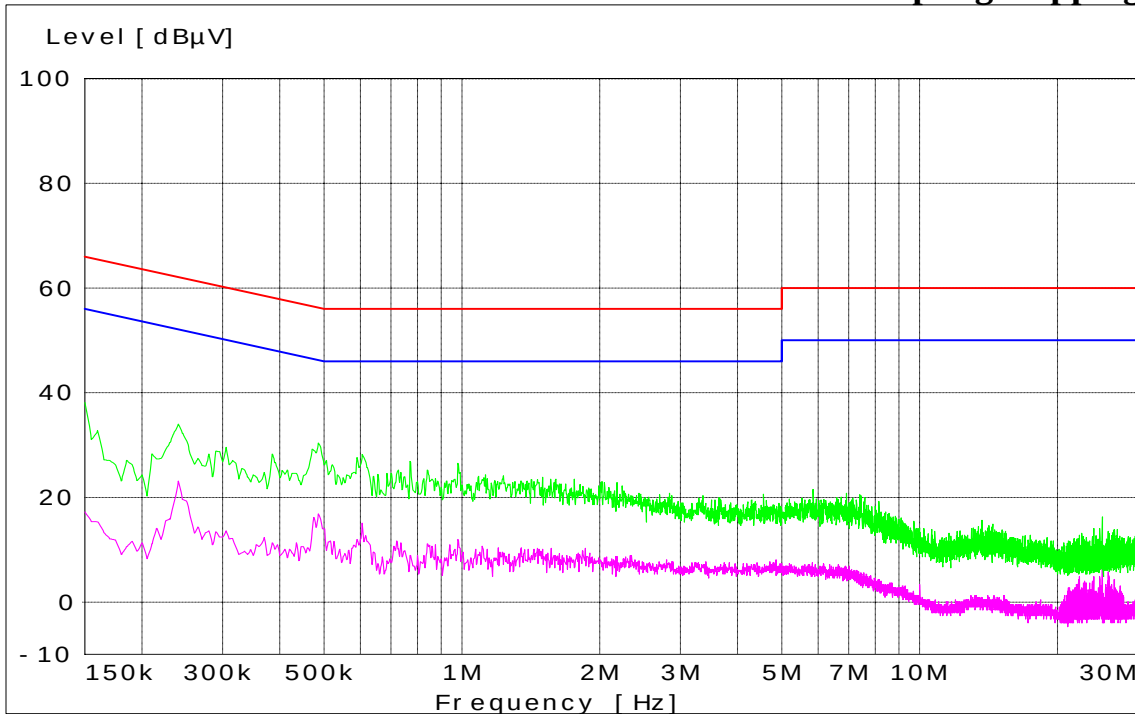
All radio-noise voltage and current measurements shall be made on each current-carrying conductor at the plug end of the EUT power cord or calibrated extension cord by the use of mating plugs and receptacles on the EUT and LISN. Equipment shall be tested with power cords that are normally supplied using an LISN, the 50 Ω measuring port is terminated by a 50 Ω radio-noise meter or a 50 Ω resistive load. All other ports are terminated in 50 Ω .

Measurement Results

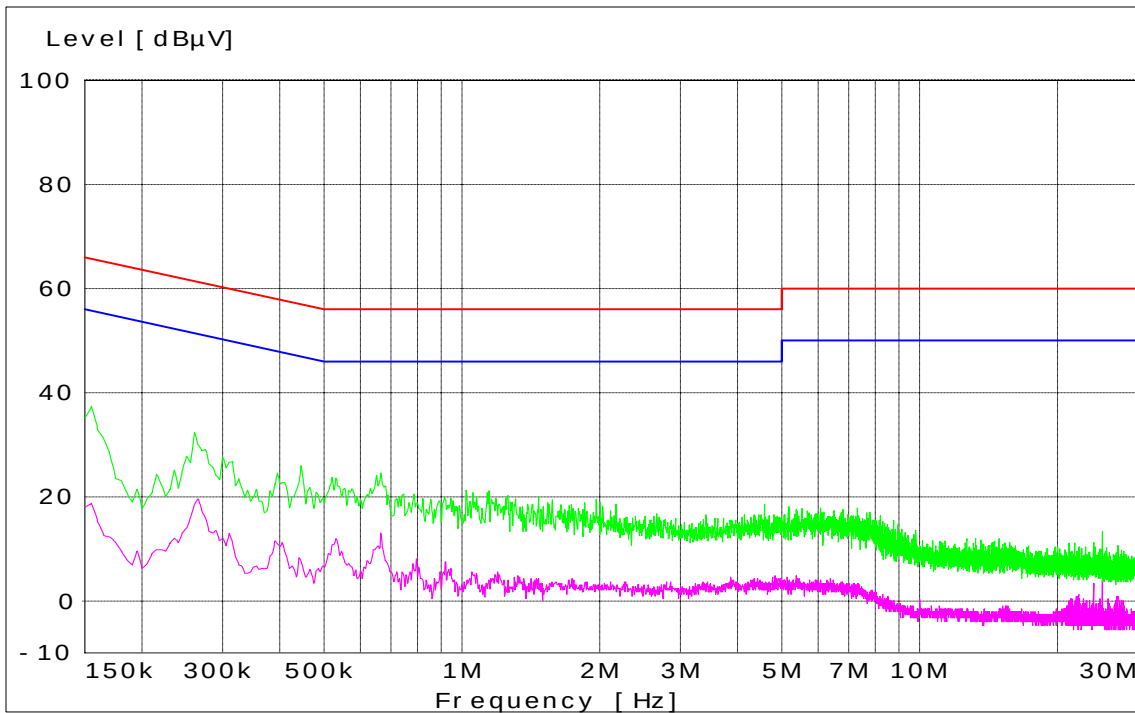
See attached:



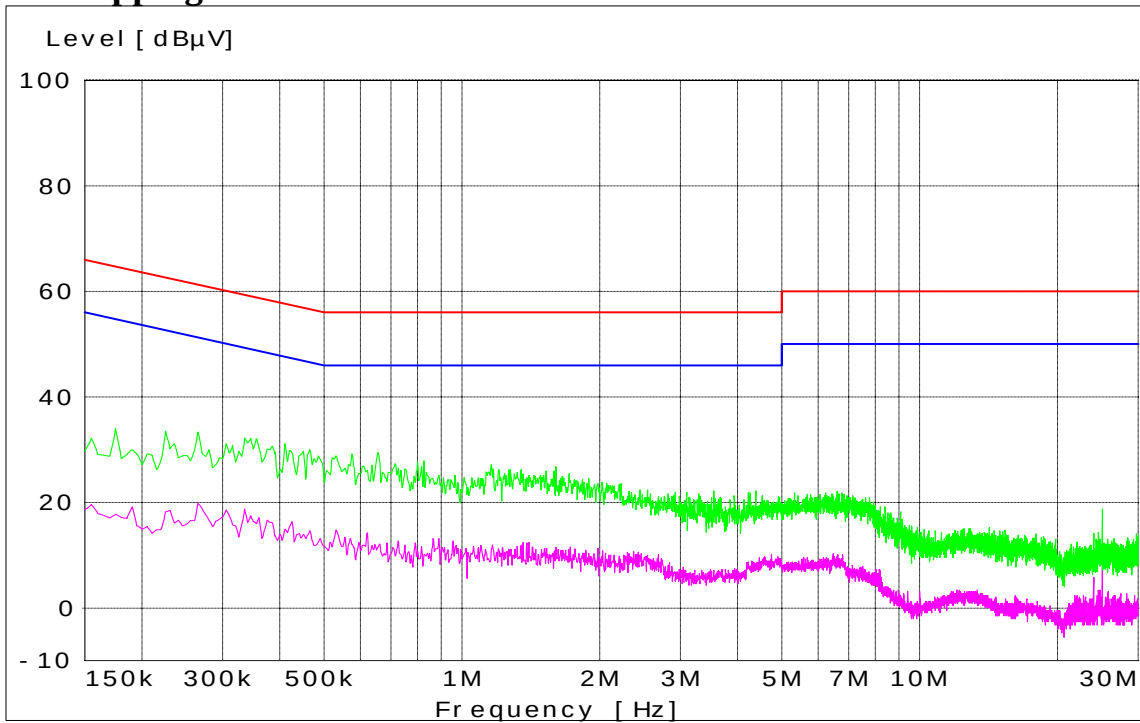
Bluetooth Channel 0 2402MHz - Tx Mode - Neutral Coupling Hopping



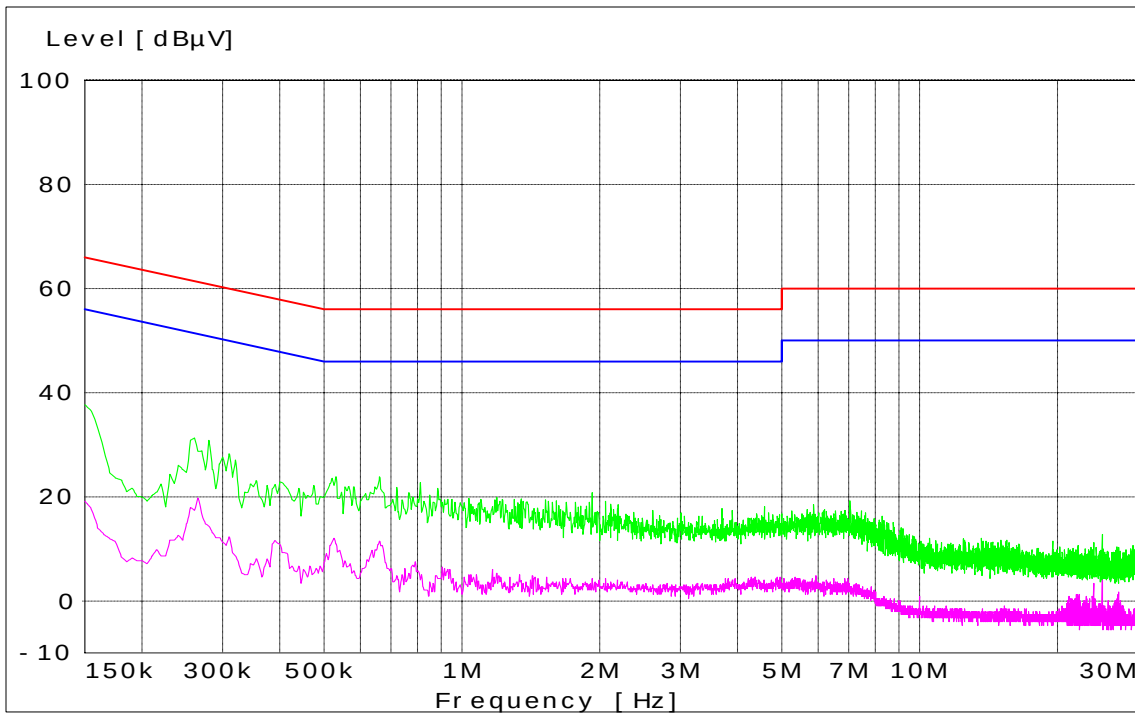
Bluetooth Channel 0 2402MHz - Tx Mode – Line Coupling Nonhopping



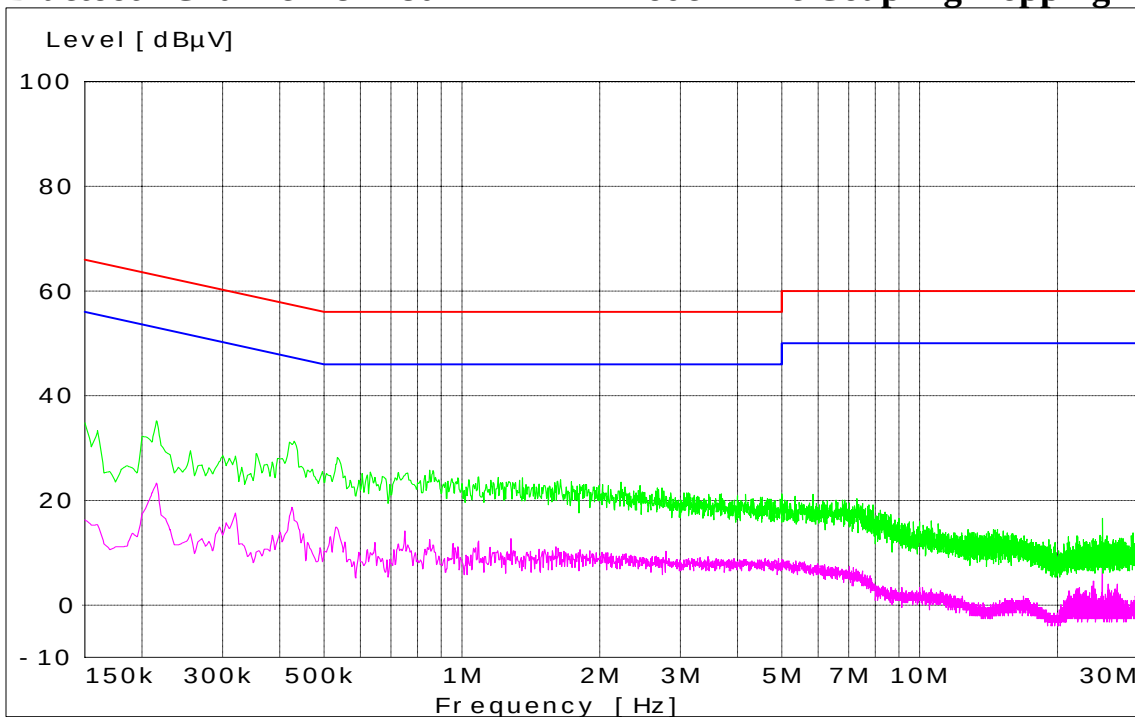
**Bluetooth Channel 39 2441MHz - Tx Mode - Line Coupling
Nonhopping**



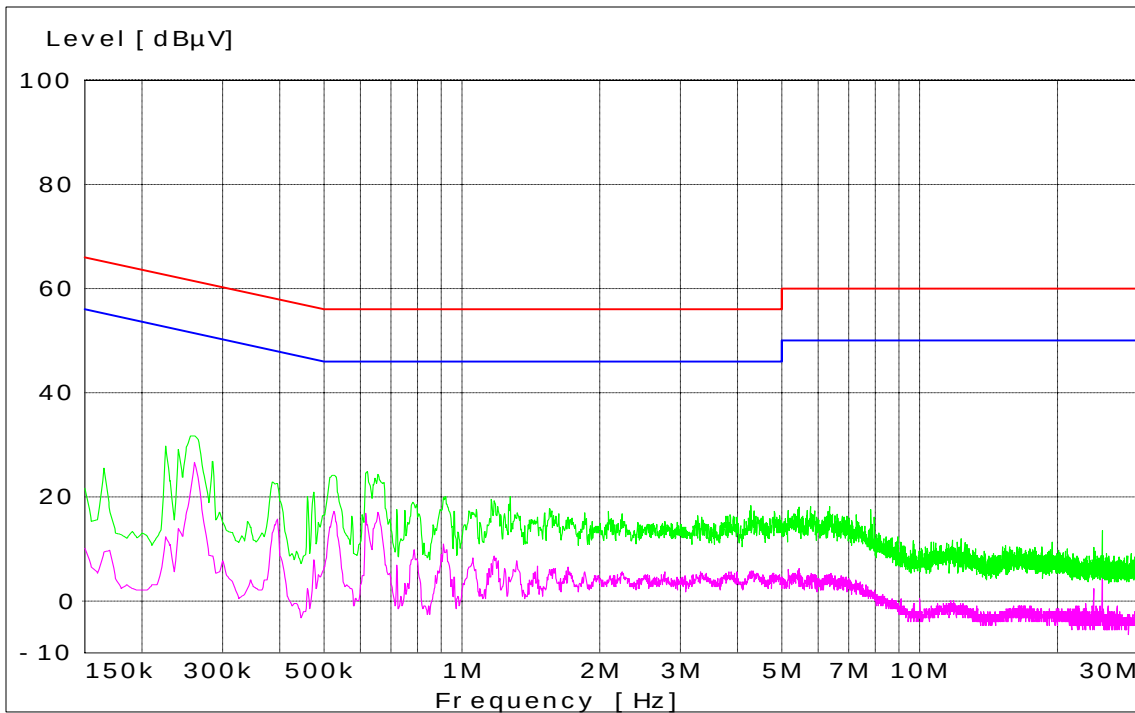
**Bluetooth Channel 39 2441MHz - Tx Mode - Neutral Coupling
Hopping**



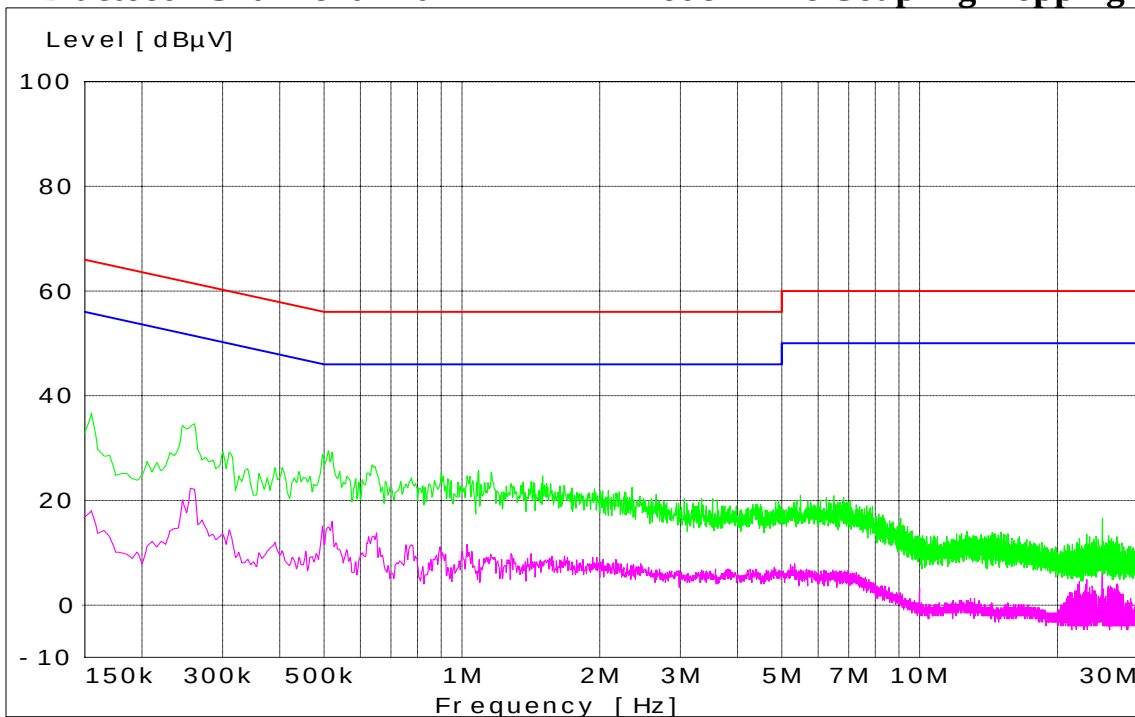
Bluetooth Channel 78 2480MHz - Tx Mode - Line Coupling Hopping



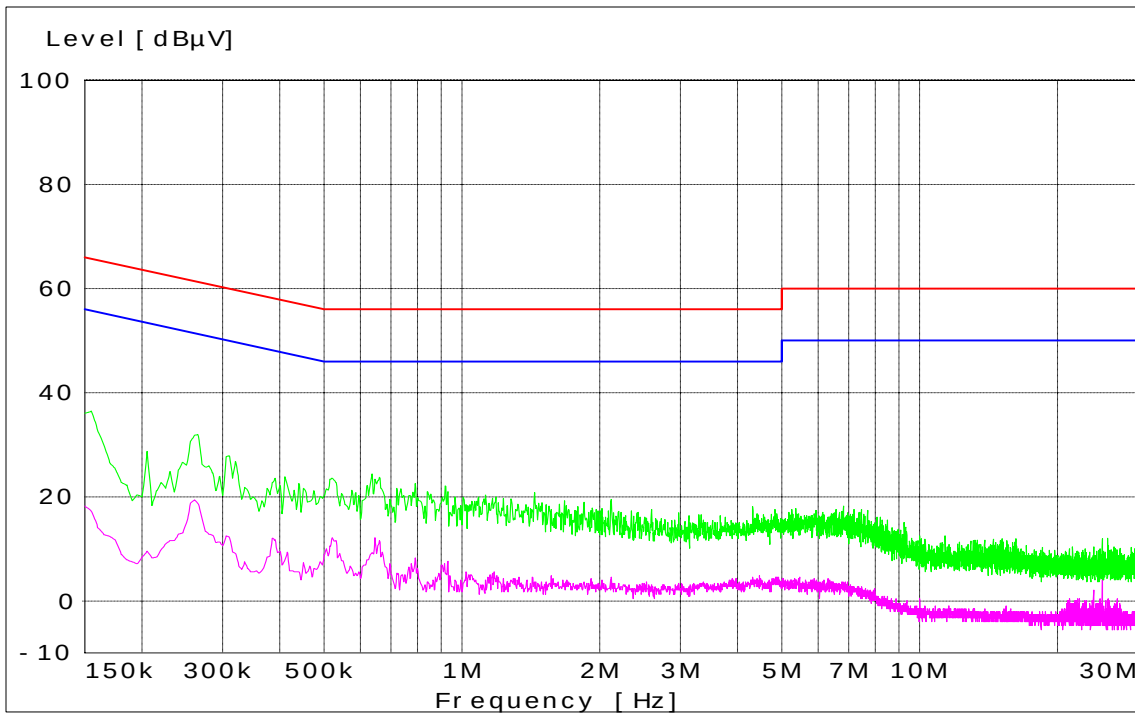
Bluetooth Channel 78 2480MHz - Tx Mode - Neutral Coupling Hopping



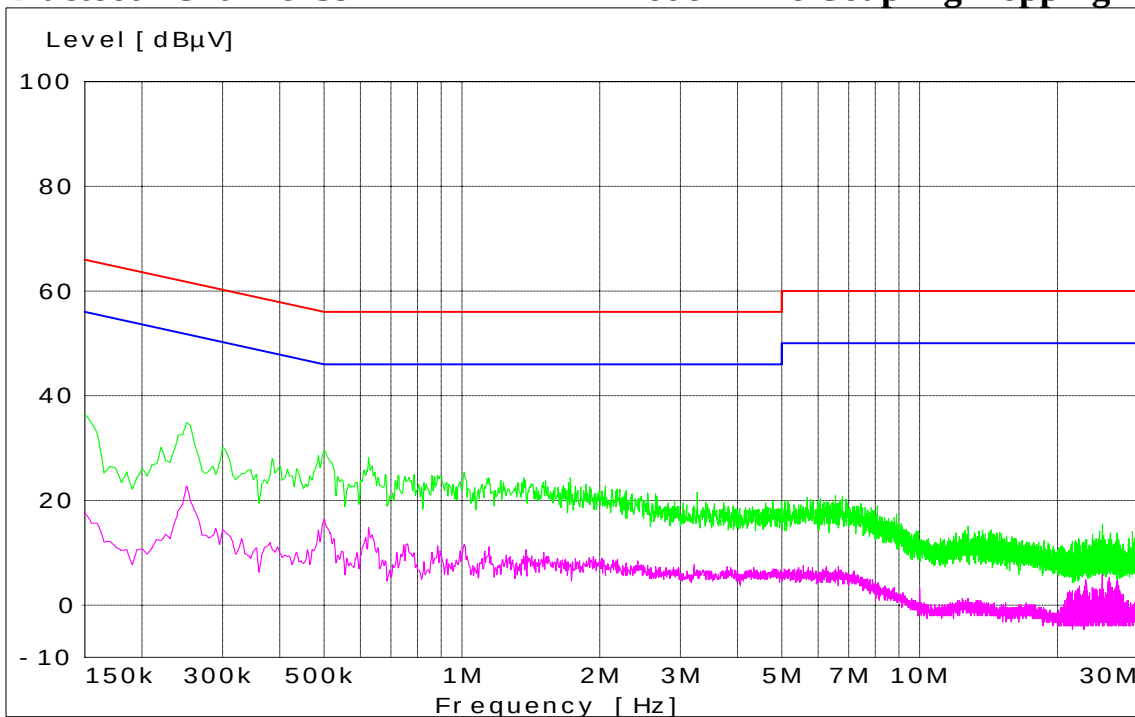
Bluetooth Channel 0 2402MHz - Tx Mode - Line Coupling Hopping



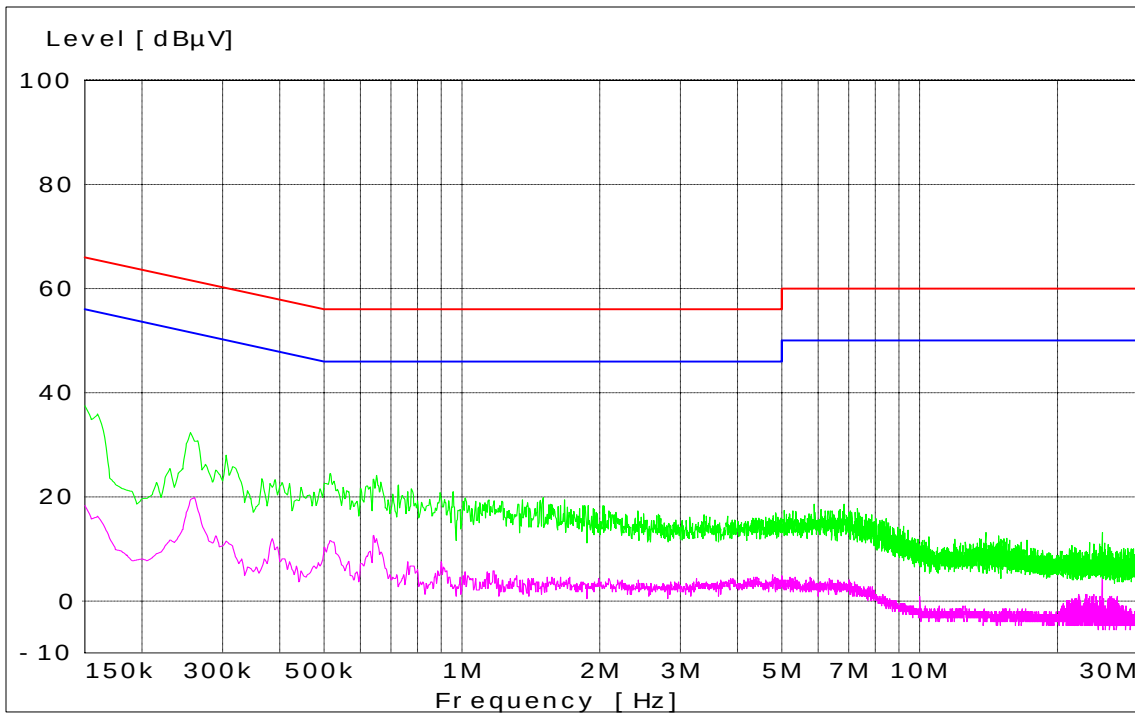
Bluetooth Channel 0 2402MHz - Tx Mode - Neutral Coupling Nonhopping



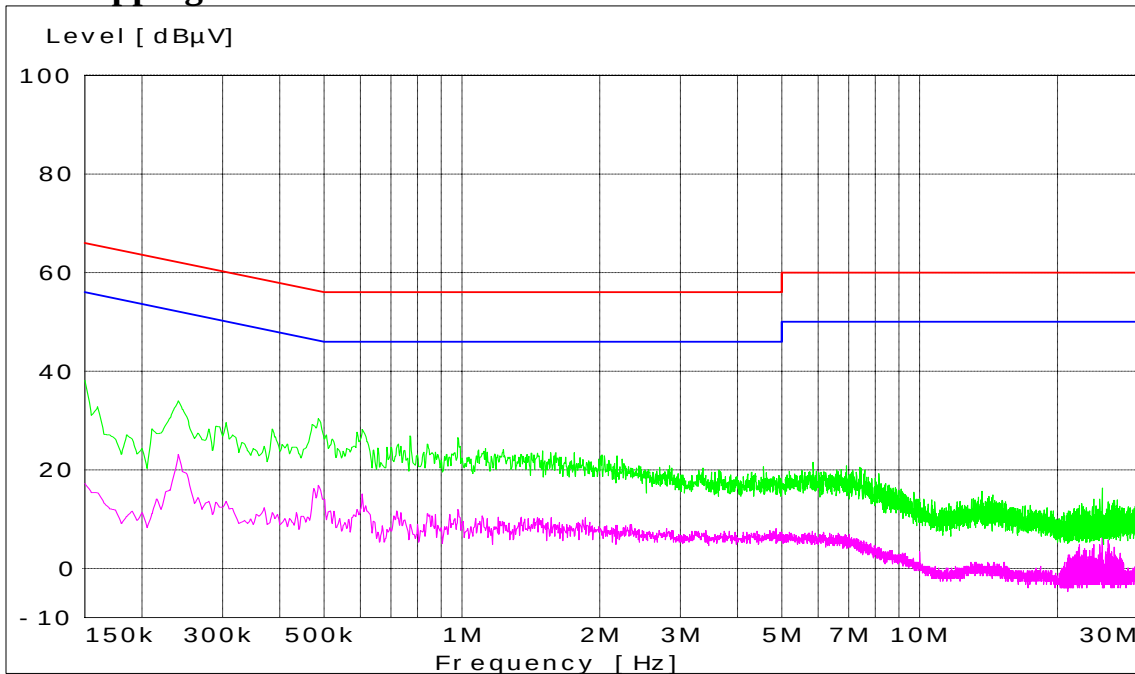
Bluetooth Channel 39 2441MHz - Tx Mode - Line Coupling Hopping



Bluetooth Channel 39 2441MHz - Tx Mode - Neutral Coupling Nonhopping



**Bluetooth Channel 78 2480MHz - Tx Mode - Line Coupling
Nonhopping**



**Bluetooth Channel 78 2480MHz - Tx Mode - Neutral Coupling
Nonhopping**

End of Test Report