

PERSONAL COMMUNICATIONS SECTOR

**PRODUCT SAFETY AND COMPLIANCE
EMC LABORATORY**

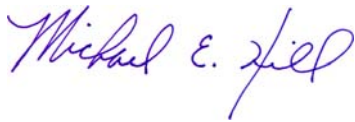
EMC TEST REPORT - Addendum

Test Report Number – 13913-2BT

Report Date – May 28, 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: 

Name: Michael E. Hill

Title: Senior Electrical Engineer

Date : 2004-05-28

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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: GSM 1900, GSM 850, Bluetooth (Class II)

Model Number: V3

Serial Numbers: LRZ04B007, LRZ04B0093

Testing Complete Date: May 28, 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)	2.922 ms
4	20 dB Bandwidth	1.016 MHz
5	Spurious RF Conducted Emissions	See plots
6	Field Strength of Spurious Emissions	See plots
7	Max Power	-0.47 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 Name	Item Name Description	Model #	Serial Number	Calibration Due Date
Hewlett Packard	Spectrum Analyzer, EMC	E7405	US40240219	12-Apr-05
UL Test Equipment				
Hewlett Packard	QP Adapter	85650A	2811A01069	1/08/2005
Hewlett Packard	S/A Display	8566B	2542A12974	1/08/2005
Hewlett Packard	S/A	8566B	2637A03376	1/08/2005
Hewlett Packard	RF Preselector	85685A	2810A00692	1/08/2005
Rohde & Schwarz	S/A	FSEK20	DE2525315	1/09/2005
EMCO	Horn Antenna 1-18GHz	3115	2638	7/10/2004
EMCO	Horn Antenna 18-26.5GHz	3160-09	9904-1165	N/A*
Chase	Bi-Con Antenna 30-300MHz	VBA6106A	1246	6/23/2004
Chase	Log-Periodic Antenna	UPA6108	1120	6/23/2004

* Per ANSI C63.5-1998 (Revision of ANSI C63.5-1988) pg. 6, under 5.1 General "It is unnecessary to calibrate standard gain horn antennas for use above 1GHz; rather, they are used as gain standards to calibrate other antennas (see 12.3.1 of IEEE Std 149-1979)."

All equipment is on a one-year calibration cycle.

Description of Bluetooth Transmitter

The V3 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.

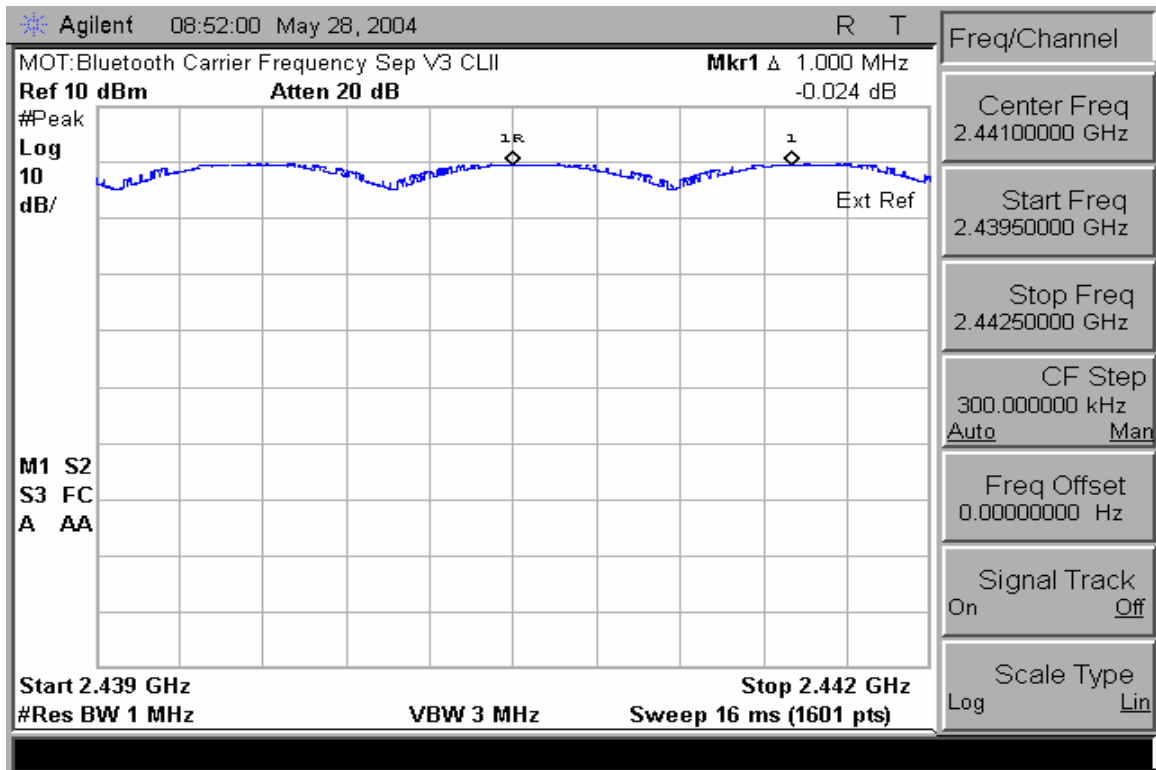
The Bluetooth transmitter of the V3 had its hopping function enabled. The following spectrum analyzer settings were used:

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.

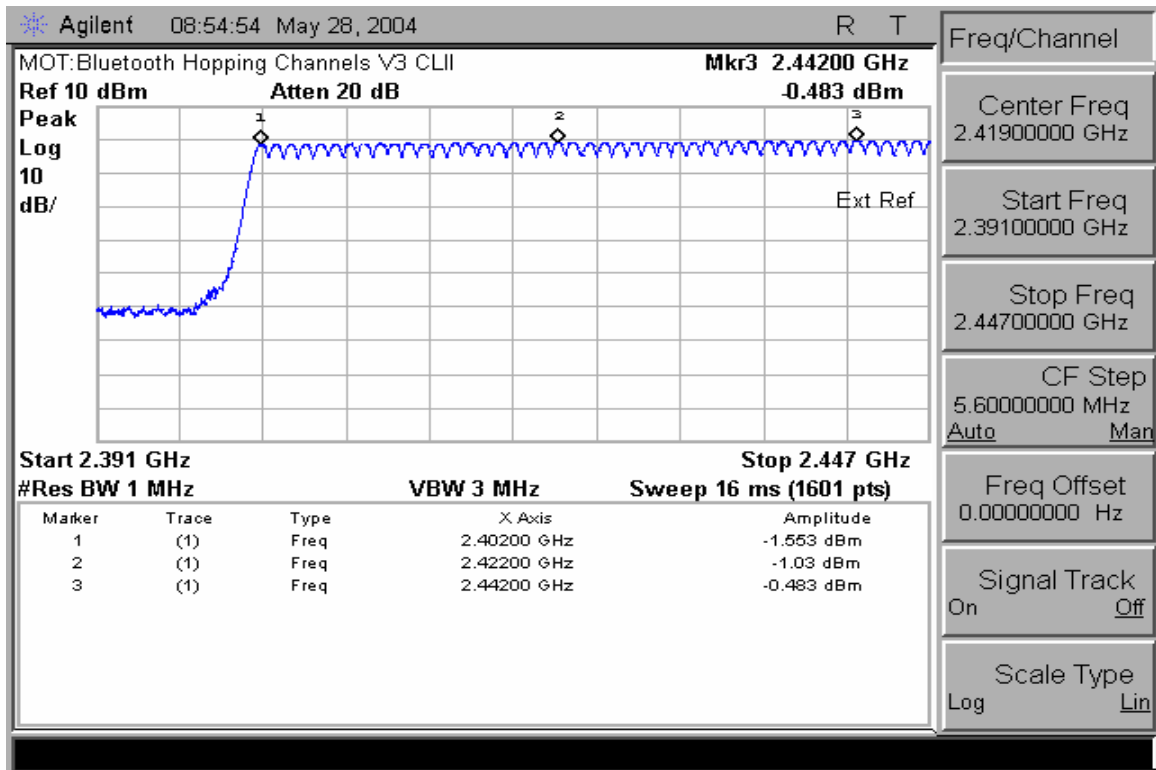
The Bluetooth frequency hopping function of the EUT was enabled. The spectrum analyzer used the following settings:

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

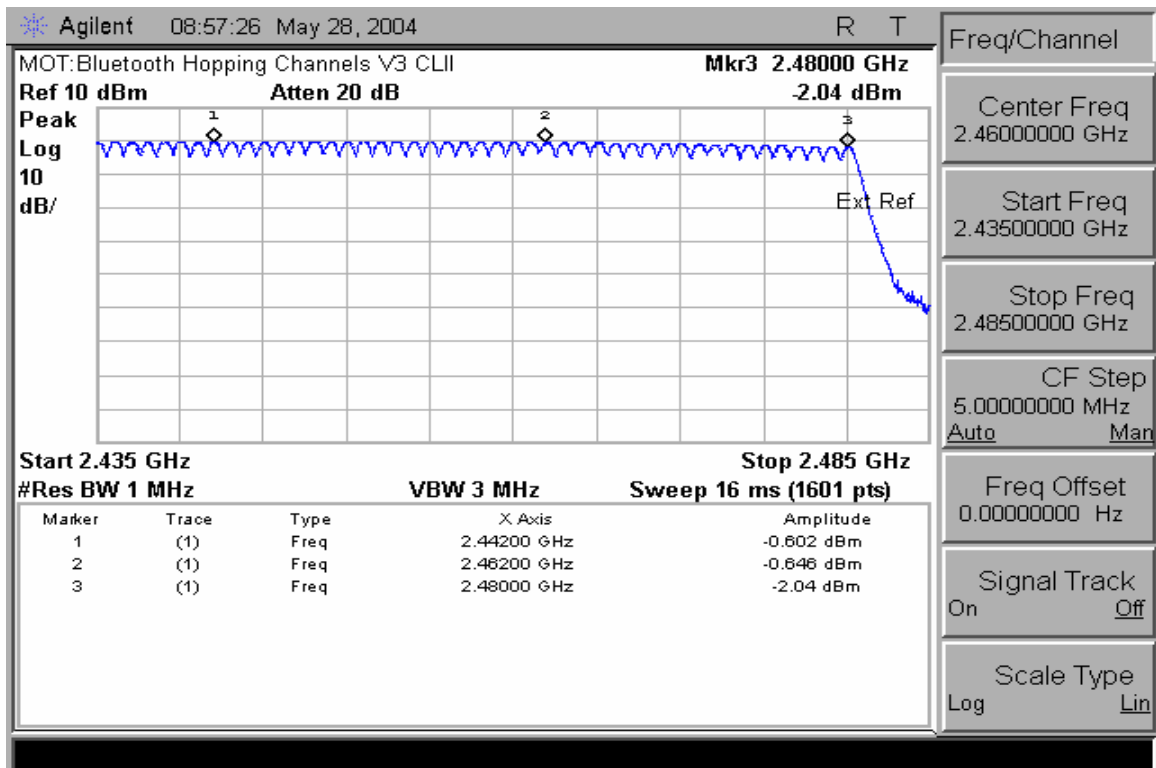
The trace was allowed to stabilize.

Measurement Results

See attached.



Number of Hopping Frequencies (Channels 0 – 40)



Number of Hopping Frequencies (Channels 40 – 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.

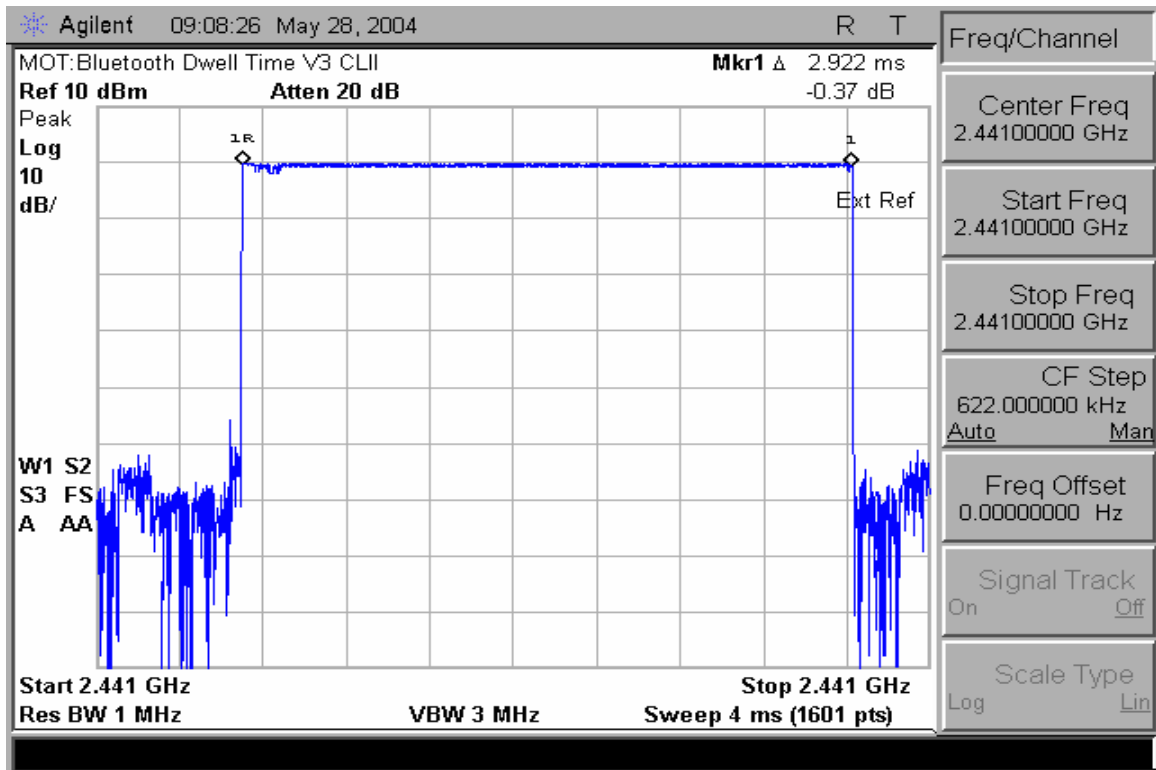
The Bluetooth hopping function of the EUT was enabled. The following spectrum analyzer settings were used:

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

As defined in DA 0075, dwell time is used to calculate a Duty Cycle Correction Factor for radiated emissions:

$$DCCF = 20 \log [(dwell\ time)/100ms] = 20 \log [2.922ms/100ms] = -30.7$$

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.

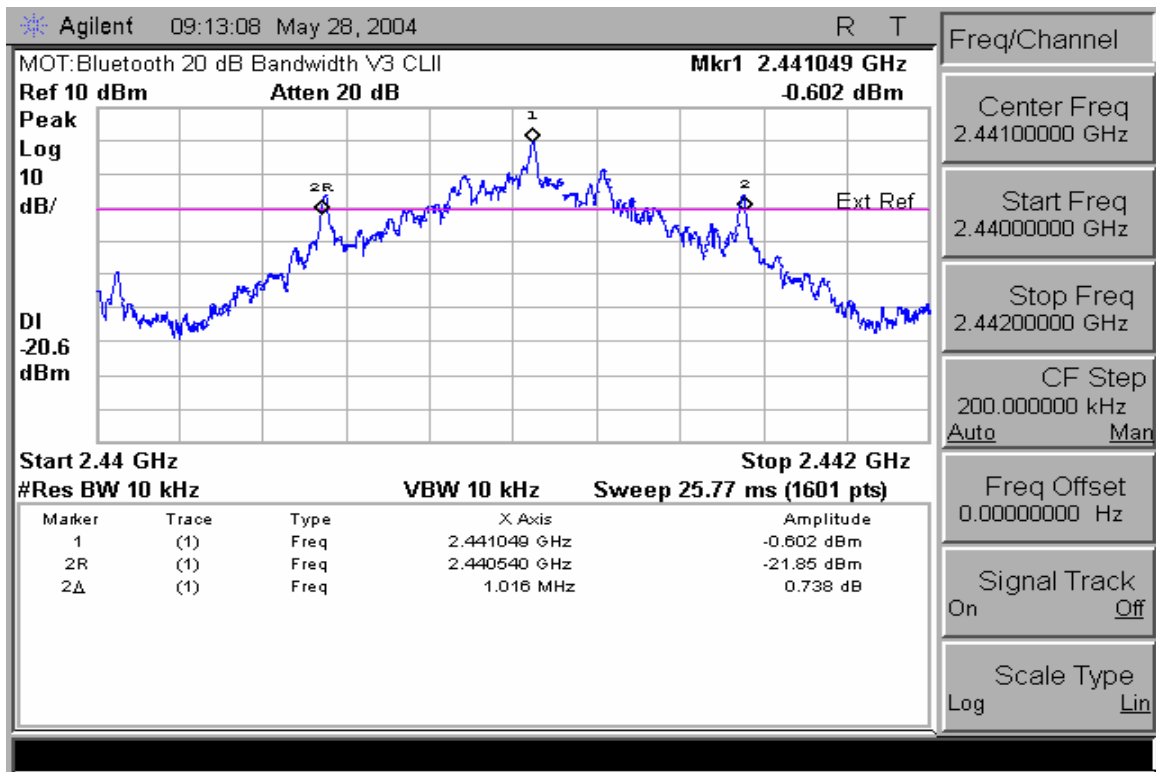
The Bluetooth frequency hopping function of the EUT was enabled. The spectrum analyzer used the following settings:

1. Span = approx. 2 to 3 times the 20dB bandwidth, centered on a hopping frequency
2. RBW $\geq$ 1% of the 20dB bandwidth
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

CFR47 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.

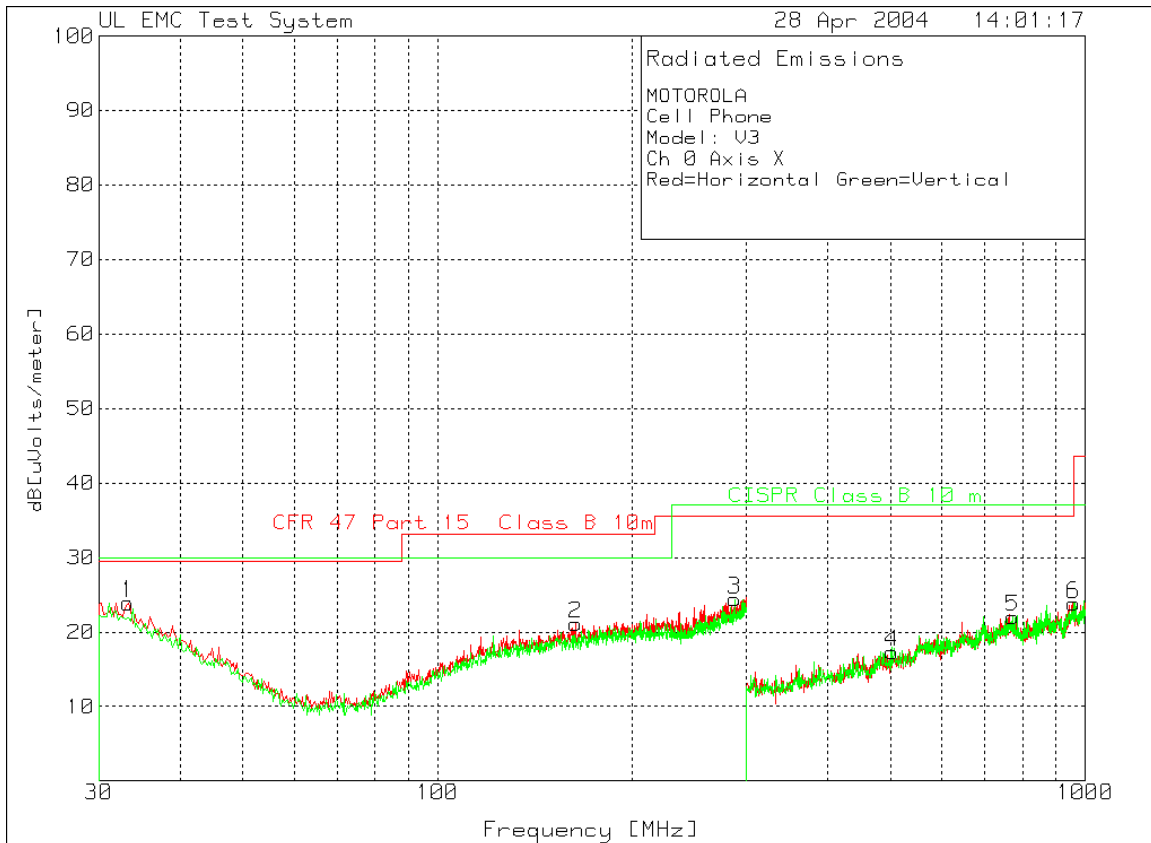
Field Strength (dBuV/m) = EMI Receiver Level (dBuV) + Cable Loss (dB) -
Amplifier Gain (dB) + Antenna Correction Factor (1/m)

A fully charged battery was used for the supply voltage.

This data was taken at Underwriter's Laboratories.

Measurement Results

Attached



30 -1000MHz Low Channel Dual Polarization X-Orientation

MOTOROLA

Cell Phone

Model: V3

Ch 0 Axis X

Red=Horizontal Green=Vertical

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1	2
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Range: 1 30 - 300MHz

1	33.24	32.3 pk	-26.9	18.5	23.9	29.6	30
Azimuth:1		Height:101	Horz	Margin [dB]	-5.7	-6.1	
2	163.11	32.6 pk	-26.5	15	21.1	33.1	30
Azimuth:357		Height:101	Horz	Margin [dB]	-12	-8.9	

Range: 2 30 - 300MHz

3	287.31	32.1 pk	-25.7	18	24.4	35.6	37
Azimuth:324		Height:101	Vert	Margin [dB]	-11.2	-12.6	

Range: 3 300 - 1000MHz

4	503	31.3 pk	-31.9	17.9	17.3	35.6	37
Azimuth:280		Height:101	Horz	Margin [dB]	-18.3	-19.7	

Range: 4 300 - 1000MHz

5	771.8	31.3 pk	-31.4	22.1	22	35.6	37
Azimuth:9		Height:101	Vert	Margin [dB]	-13.6	-15	
6	958.7	30.8 pk	-31.4	24.4	23.8	35.6	37
Azimuth:148		Height:101	Vert	Margin [dB]	-11.8	-13.2	

LIMIT 1: CFR 47 Part 15 Class B 10m

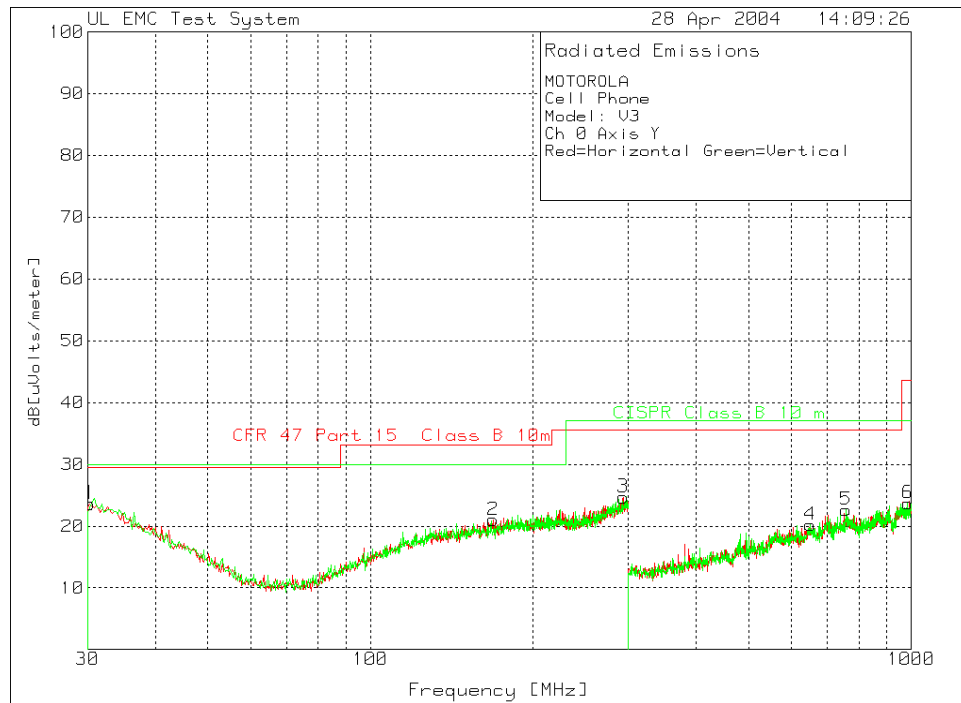
LIMIT 2: CISPR Class B 10 m

LIMIT 3: NONE

LIMIT 4: NONE

LIMIT 5: NONE

LIMIT 6: NONE



30 -1000MHz Low Channel Dual Polarization Y-Orientation

MOTOROLA

Cell Phone

Model: V3

Ch 0 Axis Y

Red=Horizontal Green=Vertical

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1	2
Range: 1 30 - 300MHz							
1	30.27	31.3 pk	-26.9	19.2	23.6	29.6	30
	Azimuth:269	Height:101 Horz			Margin [dB]	-6	-6.4
2	168.51	32.2 pk	-26.5	15.3	21	33.1	30
	Azimuth:67	Height:101 Horz			Margin [dB]	-12.1	-9
3	293.25	32.2 pk	-25.6	18.1	24.7	35.6	37
	Azimuth:235	Height:101 Horz			Margin [dB]	-10.9	-12.3
Range: 4 300 - 1000MHz							
4	650.7	31 pk	-31.3	20.5	20.2	35.6	37
	Azimuth:195	Height:101 Vert			Margin [dB]	-15.4	-16.8
5	756.4	32.2 pk	-31.2	21.6	22.6	35.6	37
	Azimuth:33	Height:101 Vert			Margin [dB]	-13	-14.4
6	985.3	30.7 pk	-31	24	23.7	43.5	37
	Azimuth:195	Height:101 Vert			Margin [dB]	-19.8	-13.3

LIMIT 1: CFR 47 Part 15 Class B 10m

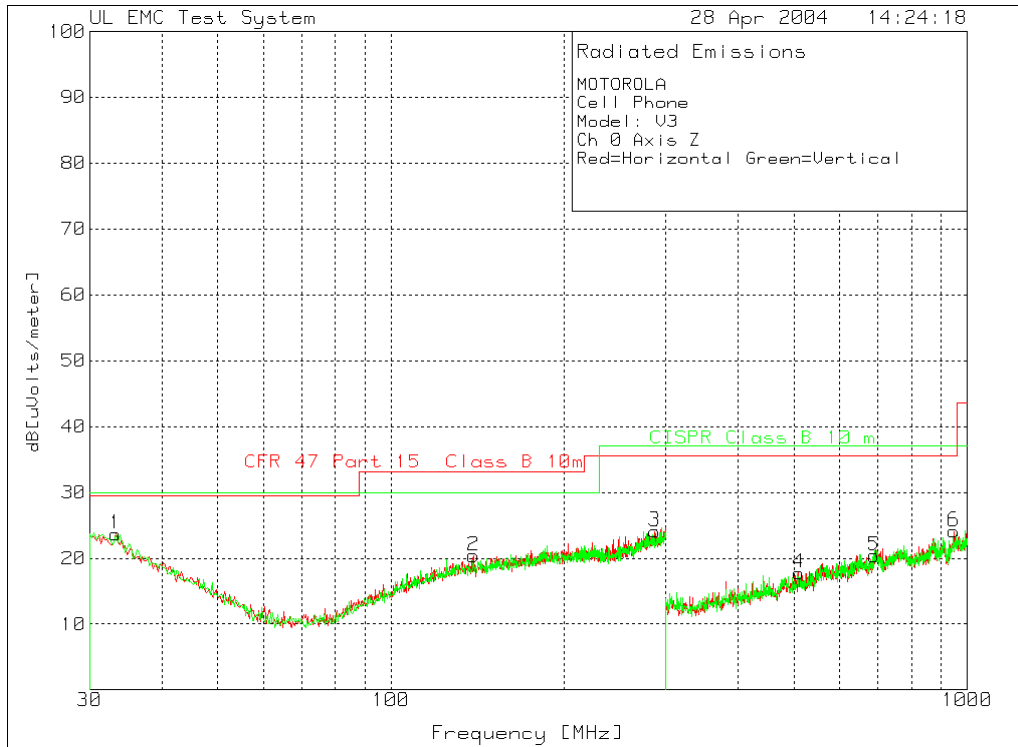
LIMIT 2: CISPR Class B 10 m

LIMIT 3: NONE

LIMIT 4: NONE

LIMIT 5: NONE

LIMIT 6: NONE



30 -1000MHz Low Channel Dual Polarization Z-Orientation

MOTOROLA

Cell Phone

Model: V3

Ch 0 Axis Z

Red=Horizontal Green=Vertical

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1	2
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Range: 1 30 - 300MHz

1	33.24	32.1 pk	-26.9	18.5	23.7	29.6	30
		Azimuth:357 Height:101 Horz			Margin [dB]	-5.9	-6.3
2	139.08	32.6 pk	-26.6	14.4	20.4	33.1	30
		Azimuth:357 Height:101 Horz			Margin [dB]	-12.7	-9.6
3	286.77	31.8 pk	-25.7	18	24.1	35.6	37
		Azimuth:337 Height:101 Horz			Margin [dB]	-11.5	-12.9

Range: 3 300 - 1000MHz

4	510	31.8 pk	-31.9	17.9	17.8	35.6	37
		Azimuth:95 Height:101 Horz			Margin [dB]	-17.8	-19.2
5	689.2	30.5 pk	-31.2	21.1	20.4	35.6	37
		Azimuth:350 Height:101 Horz			Margin [dB]	-15.2	-16.6
6	946.8	31.4 pk	-31.7	24.4	24.1	35.6	37
		Azimuth:211 Height:101 Horz			Margin [dB]	-11.5	-12.9

LIMIT 1: CFR 47 Part 15 Class B 10m

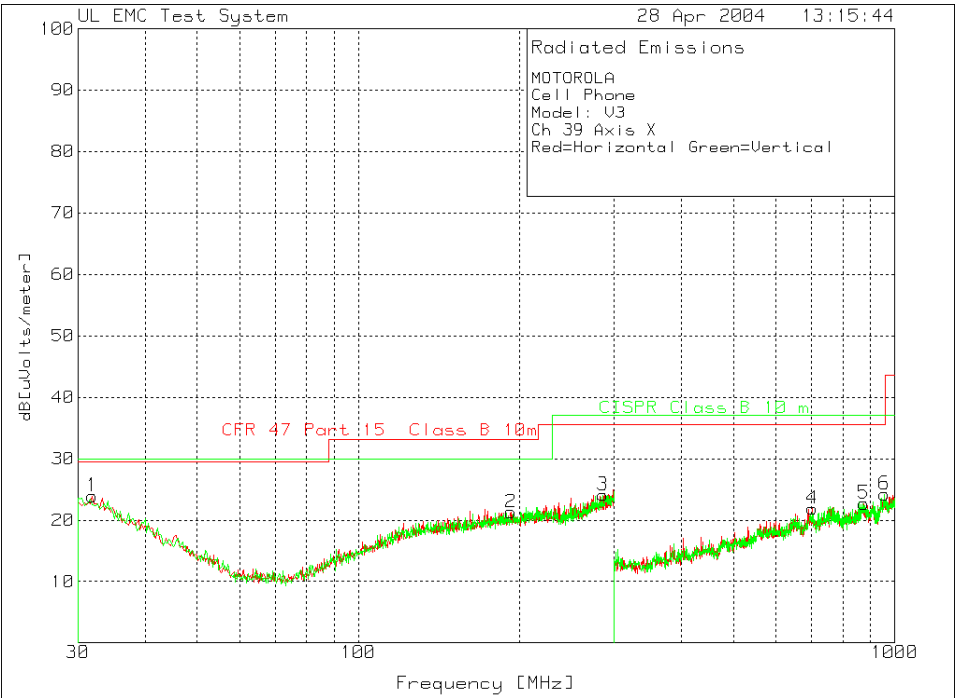
LIMIT 2: CISPR Class B 10 m

LIMIT 3: NONE

LIMIT 4: NONE

LIMIT 5: NONE

LIMIT 6: NONE



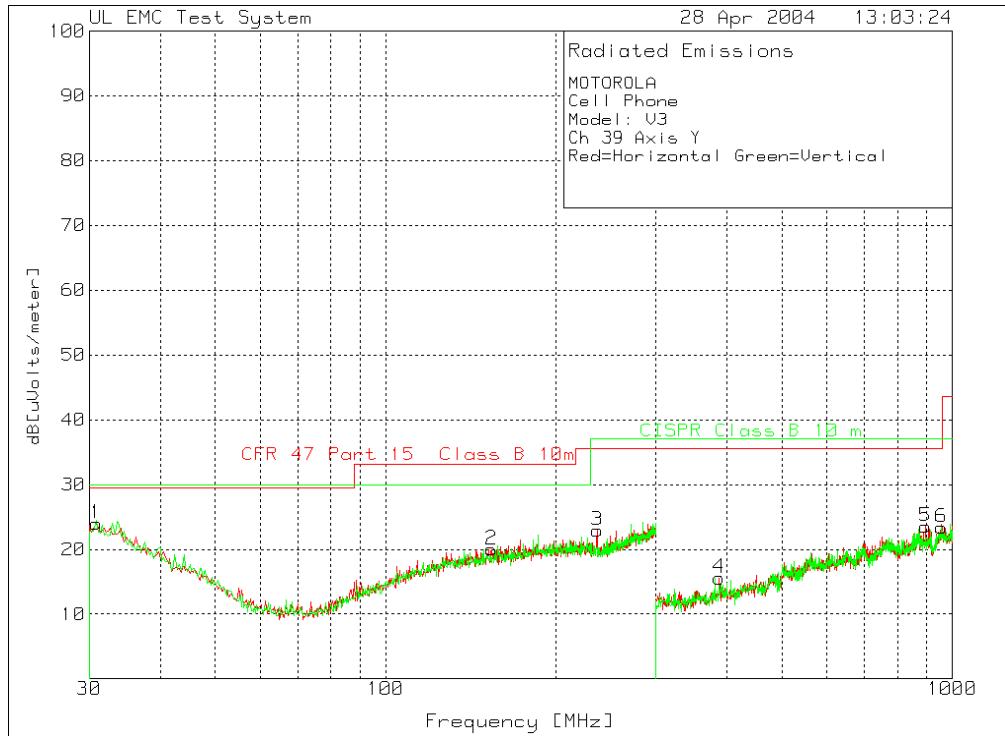
30 -1000MHz Mid Channel Dual Polarization X-Orientation

MOTOROLA
 Cell Phone
 Model: V3
 Ch 39 Axis X

Red=Horizontal Green=Vertical

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1 dB[uV/m]	Limit:2 dB[uV/m]
Range: 1 30 - 300MHz							
1	31.89	31.9 pk	-26.9	18.9	23.9	29.6	30
		Azimuth:324 Height:101 Horz			Margin [dB]	-5.7	-6.1
2	192.27	31.7 pk	-26.3	15.9	21.3	33.1	30
		Azimuth:324 Height:101 Horz			Margin [dB]	-11.8	-8.7
Range: 2 30 - 300MHz							
3	285.69	31.9 pk	-25.7	17.9	24.1	35.6	37
		Azimuth:204 Height:101 Vert			Margin [dB]	-11.5	-12.9
Range: 3 300 - 1000MHz							
4	702.5	31.7 pk	-31.1	21.3	21.9	35.6	37
		Azimuth:172 Height:101 Horz			Margin [dB]	-13.7	-15.1
5	875.4	30.9 pk	-31.9	23.7	22.7	35.6	37
		Azimuth:195 Height:101 Horz			Margin [dB]	-12.9	-14.3
Range: 4 300 - 1000MHz							
6	956.6	31.2 pk	-31.5	24.5	24.2	35.6	37
		Azimuth:116 Height:101 Vert			Margin [dB]	-11.4	-12.8

LIMIT 1: CFR 47 Part 15 Class B 10m
 LIMIT 2: CISPR Class B 10 m
 LIMIT 3: NONE
 LIMIT 4: NONE
 LIMIT 5: NONE
 LIMIT 6: NONE



30 -1000MHz Mid-Channel Dual Polarization Y-Orientation

MOTOROLA

Cell Phone

Model: V3

Ch 39 Axis Y

Red=Horizontal Green=Vertical

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1	2
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Range: 1 30 - 300MHz

1	30.81	31.8 pk	-26.9	19.1	24	29.6	30
					Azimuth:9	Height:101 Horz	
					Margin [dB]	-5.6	-6
2	153.66	31.6 pk	-26.6	15	20	33.1	30
					Azimuth:137	Height:101 Horz	
					Margin [dB]	-13.1	-10
3	236.01	33.3 pk	-26	15.6	22.9	35.6	37
					Azimuth:306	Height:101 Horz	
					Margin [dB]	-12.7	-14.1

Range: 3 300 - 1000MHz

4	387.5	32.2 pk	-32.3	15.7	15.6	35.6	37
					Azimuth:165	Height:101 Horz	
					Margin [dB]	-20	-21.4
5	896.4	32.1 pk	-31.8	23.2	23.5	35.6	37
					Azimuth:118	Height:101 Horz	
					Margin [dB]	-12.1	-13.5

Range: 4 300 - 1000MHz

6	956.6	30.4 pk	-31.5	24.5	23.4	35.6	37
					Azimuth:148	Height:101 Vert	
					Margin [dB]	-12.2	-13.6

LIMIT 1: CFR 47 Part 15 Class B 10m

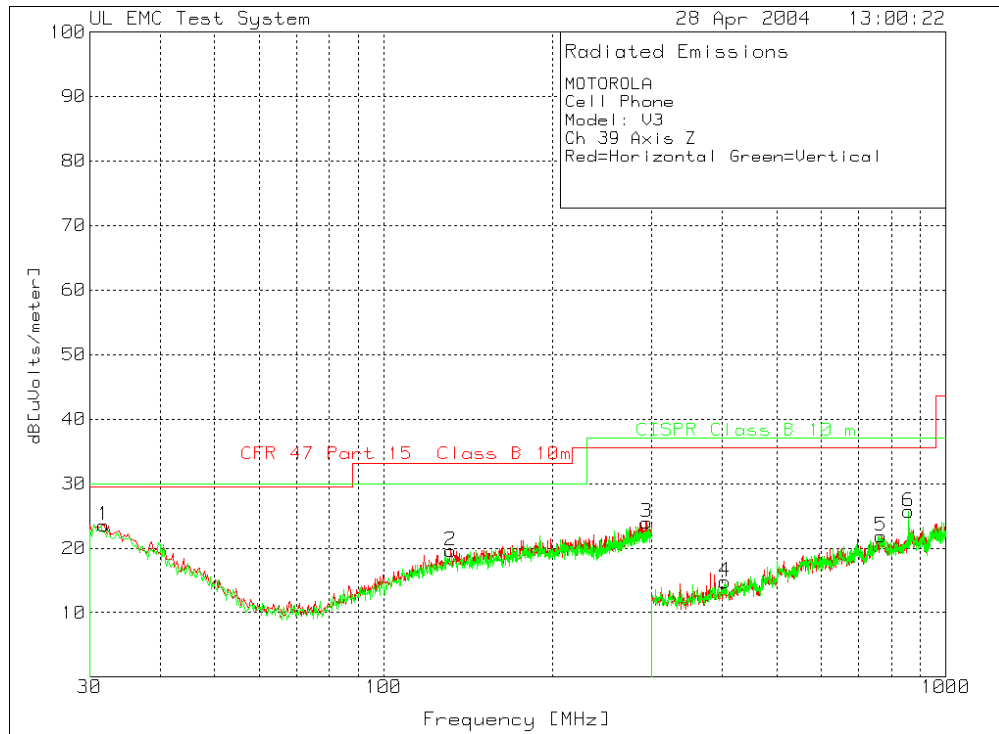
LIMIT 2: CISPR Class B 10 m

LIMIT 3: NONE

LIMIT 4: NONE

LIMIT 5: NONE

LIMIT 6: NONE



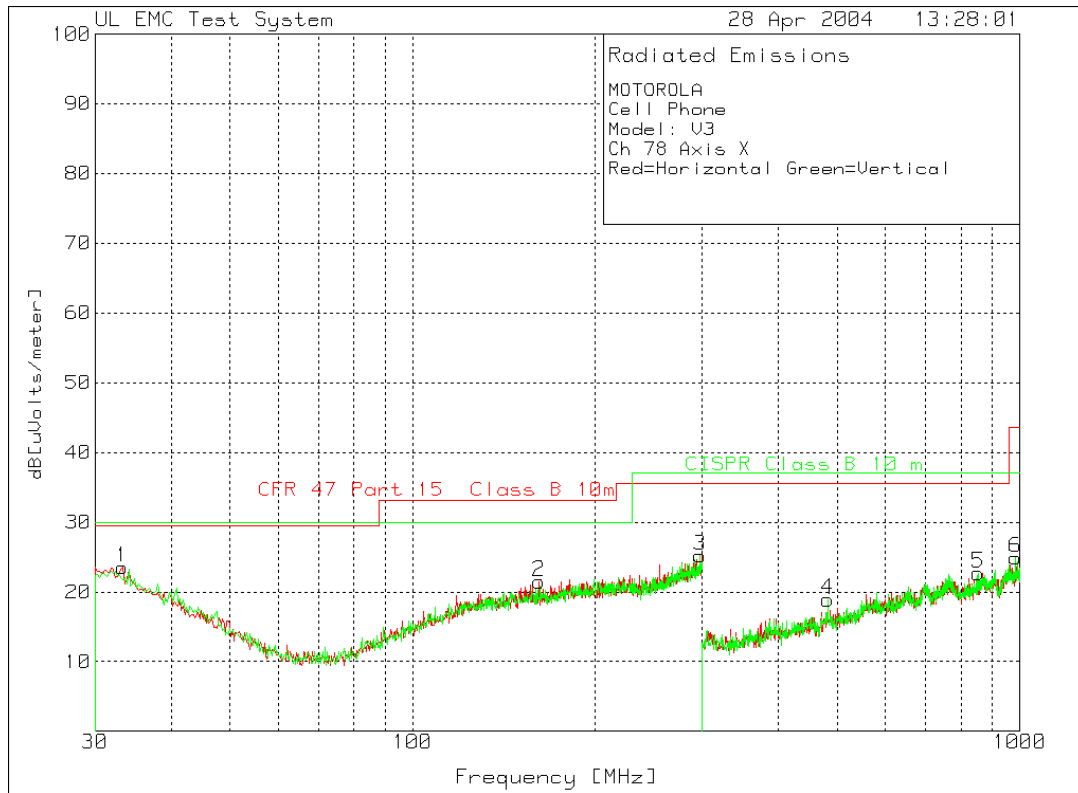
30 -1000MHz Mid Channel Dual Polarization Z-Orientation

MOTOROLA
Cell Phone
Model: V3
Ch 39 Axis Z

Red=Horizontal Green=Vertical

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1	2
Range: 1 30 - 300MHz							
1	31.755	31.6 pk	-26.9	18.8	23.5	29.6	30
		Azimuth:291	Height:101		Margin [dB]	-6.1	-6.5
2	131.52	32 pk	-26.6	14.2	19.6	33.1	30
		Azimuth:10	Height:101		Margin [dB]	-13.5	-10.4
3	293.25	31.5 pk	-25.6	18.1	24	35.6	37
		Azimuth:324	Height:101		Margin [dB]	-11.6	-13
Range: 4 300 - 1000MHz							
4	404.3	31.3 pk	-32.5	16	14.8	35.6	37
		Azimuth:58	Height:101		Margin [dB]	-20.8	-22.2
5	766.2	31.4 pk	-31.5	22	21.9	35.6	37
		Azimuth:287	Height:101		Margin [dB]	-13.7	-15.1
6	859.3	34.6 pk	-31.9	23	25.7	35.6	37
		Azimuth:35	Height:101		Margin [dB]	-9.9	-11.3

LIMIT 1: CFR 47 Part 15 Class B 10m
LIMIT 2: CISPR Class B 10 m
LIMIT 3: NONE
LIMIT 4: NONE
LIMIT 5: NONE
LIMIT 6: NONE



30 -1000MHz High Channel Dual Polarization X-Orientation

MOTOROLA**Cell Phone****Model: V3****Ch 78 Axis X****Red=Horizontal Green=Vertical**

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1	2
Range: 1 30 - 300MHz							
1	33.24	31.9 pk	-26.9	18.5	23.5	29.6	30
	Azimuth:271	Height:101	Horz		Margin [dB]	-6.1	-6.5
2	161.49	33 pk	-26.5	15	21.5	33.1	30
	Azimuth:103	Height:101	Horz		Margin [dB]	-11.6	-8.5
Range: 2 30 - 300MHz							
3	297.57	32.4 pk	-25.7	18.5	25.2	35.6	37
	Azimuth:88	Height:101	Vert		Margin [dB]	-10.4	-11.8
Range: 4 300 - 1000MHz							
4	482.7	32.8 pk	-32	18.1	18.9	5.6	37
	Azimuth:10	Height:101	Vert		Margin [dB]	-16.7	-18.1
5	853.7	31.8 pk	-31.9	22.8	22.7	35.6	37
	Azimuth:287	Height:101	Vert		Margin [dB]	-12.9	-14.3
6	983.9	31.9 pk	-30.9	23.9	24.9	43.5	37
	Azimuth:310	Height:101	Vert		Margin [dB]	-18.6	-12.1

LIMIT 1: CFR 47 Part 15 Class B 10m

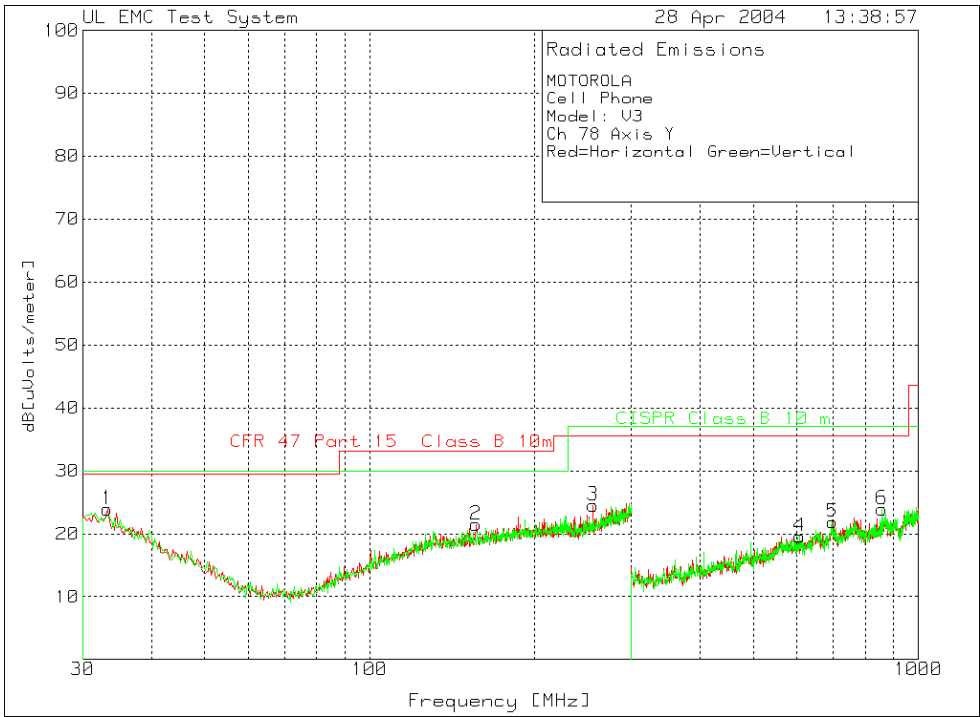
LIMIT 2: CISPR Class B 10 m

LIMIT 3: NONE

LIMIT 4: NONE

LIMIT 5: NONE

LIMIT 6: NONE

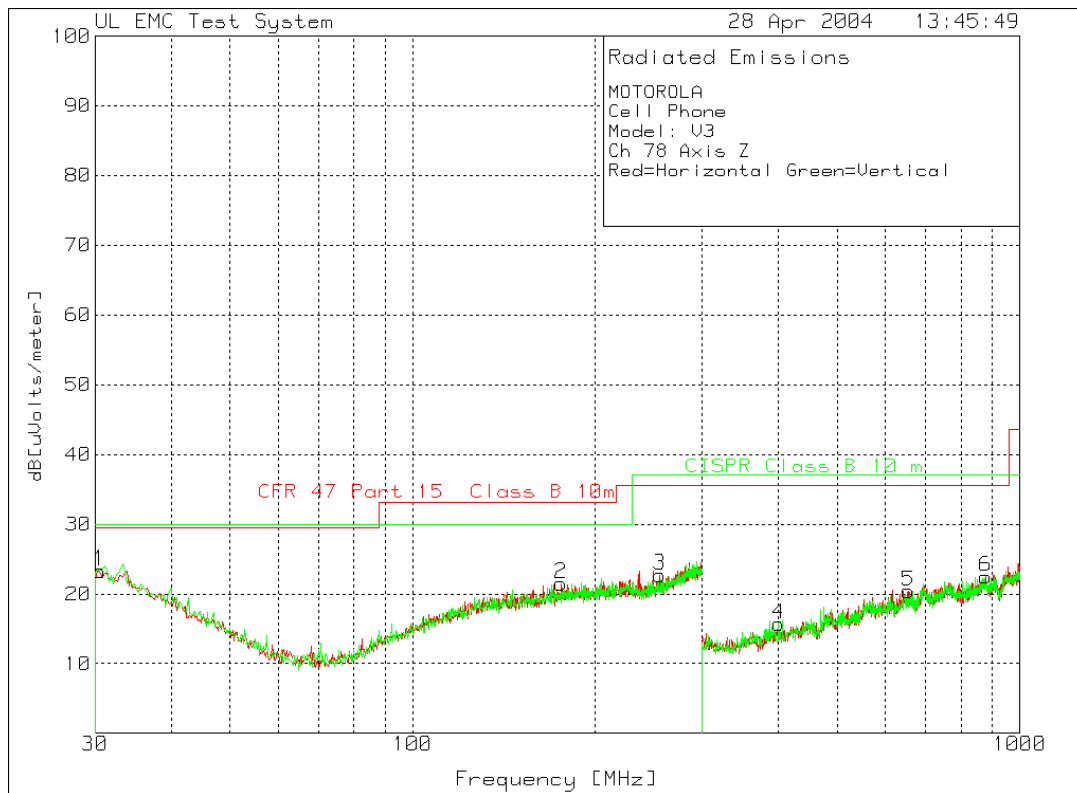


30 -1000MHz High Channel Dual Polarization Y-Orientation

MOTOROLA
 Cell Phone
 Model: V3
 Ch 78 Axis Y
 Red=Horizontal Green=Vertical

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1	2
Range: 1 30 - 300MHz							
1	33.24	32.3 pk	-26.9	18.5	23.9	29.6	30
	Azimuth:168	Height:101	Horz	Margin [dB]	-5.7	-6.1	
2	156.09	32.9 pk	-26.5	15.1	21.5	33.1	30
	Azimuth:100	Height:101	Horz	Margin [dB]	-11.6	-8.5	
3	255.18	33.9 pk	-25.9	16.5	24.5	35.6	37
	Azimuth:100	Height:101	Horz	Margin [dB]	-11.1	-12.5	
Range: 4 300 - 1000MHz							
4	608	31.5 pk	-31.4	19.5	19.6	35.6	37
	Azimuth:264	Height:101	Vert	Margin [dB]	-16	-17.4	
5	697.6	31.3 pk	-31.2	21.8	21.9	35.6	37
	Azimuth:287	Height:101	Vert	Margin [dB]	-13.7	-15.1	
6	859.3	32.8 pk	-31.9	23	23.9	35.6	37
	Azimuth:33	Height:101	Vert	Margin [dB]	-11.7	-13.1	

LIMIT 1: CFR 47 Part 15 Class B 10m
 LIMIT 2: CISPR Class B 10 m
 LIMIT 3: NONE
 LIMIT 4: NONE
 LIMIT 5: NONE
 LIMIT 6: NONE



30 -1000MHz High Channel Dual Polarization Z-Orientation

MOTOROLA

Cell Phone

Model: V3

Ch 78 Axis Z

Red=Horizontal Green=Vertical

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1	2
Range: 1 30 - 300MHz							
1	30.54	31 pk	-26.9	19.2	23.3	29.6	30
	Azimuth:168	Height:101	Horz	Margin [dB]	-6.3	-6.7	
2	175.53	32.4 pk	-26.4	15.5	21.5	33.1	30
	Azimuth:357	Height:101	Horz	Margin [dB]	-11.6	-8.5	
3	255.18	32.1 pk	-25.9	16.5	22.7	35.6	37
	Azimuth:134	Height:101	Horz	Margin [dB]	-12.9	-14.3	
Range: 3 300 - 1000MHz							
4	400.8	32 pk	-32.3	16	15.7	35.6	37
	Azimuth:328	Height:101	Horz	Margin [dB]	-19.9	-21.3	
5	654.9	31.1 pk	-31.2	20.5	20.4	35.6	37
	Azimuth:3	Height:101	Horz	Margin [dB]	-15.2	-16.6	
6	878.2	31 pk	-32	23.5	22.5	35.6	37
	Azimuth:9	Height:101	Horz	Margin [dB]	-13.1	-14.5	

LIMIT 1: CFR 47 Part 15 Class B 10m

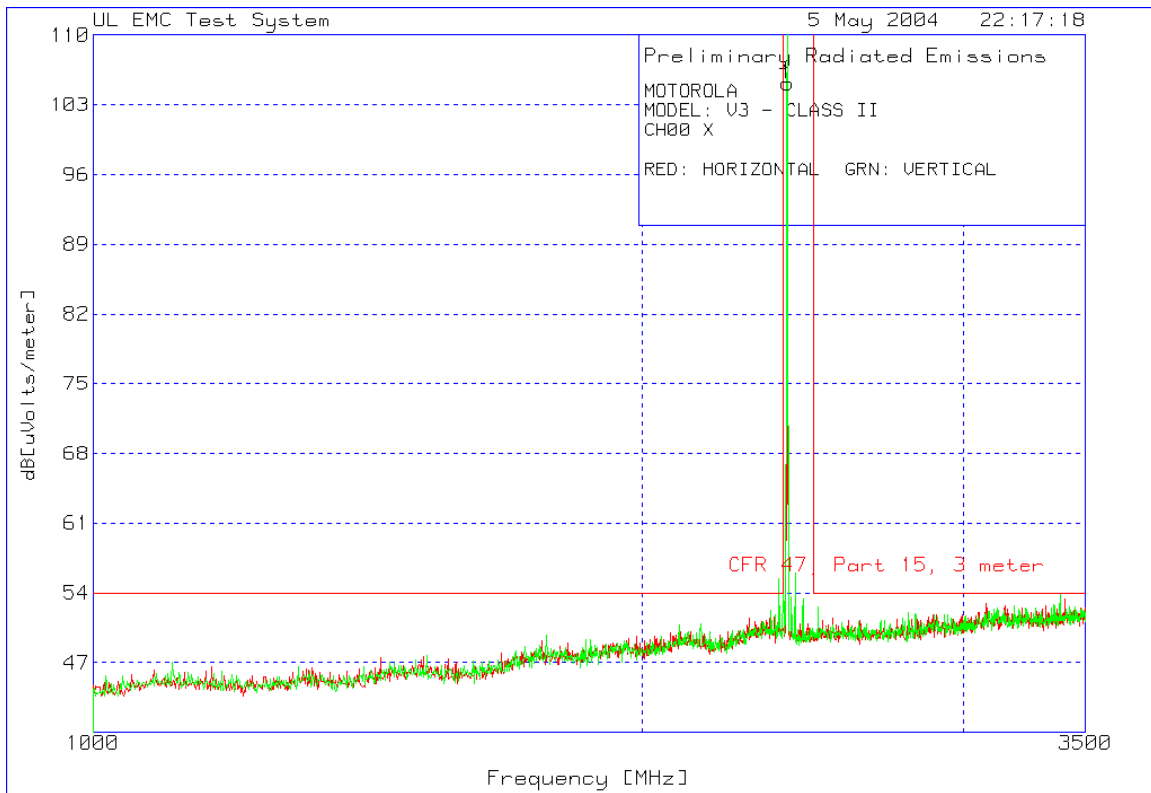
LIMIT 2: CISPR Class B 10 m

LIMIT 3: NONE

LIMIT 4: NONE

LIMIT 5: NONE

LIMIT 6: NONE



1-3GHz Low Channel X-Orientation

MODEL: V3 - CLASS II

CH00 X

RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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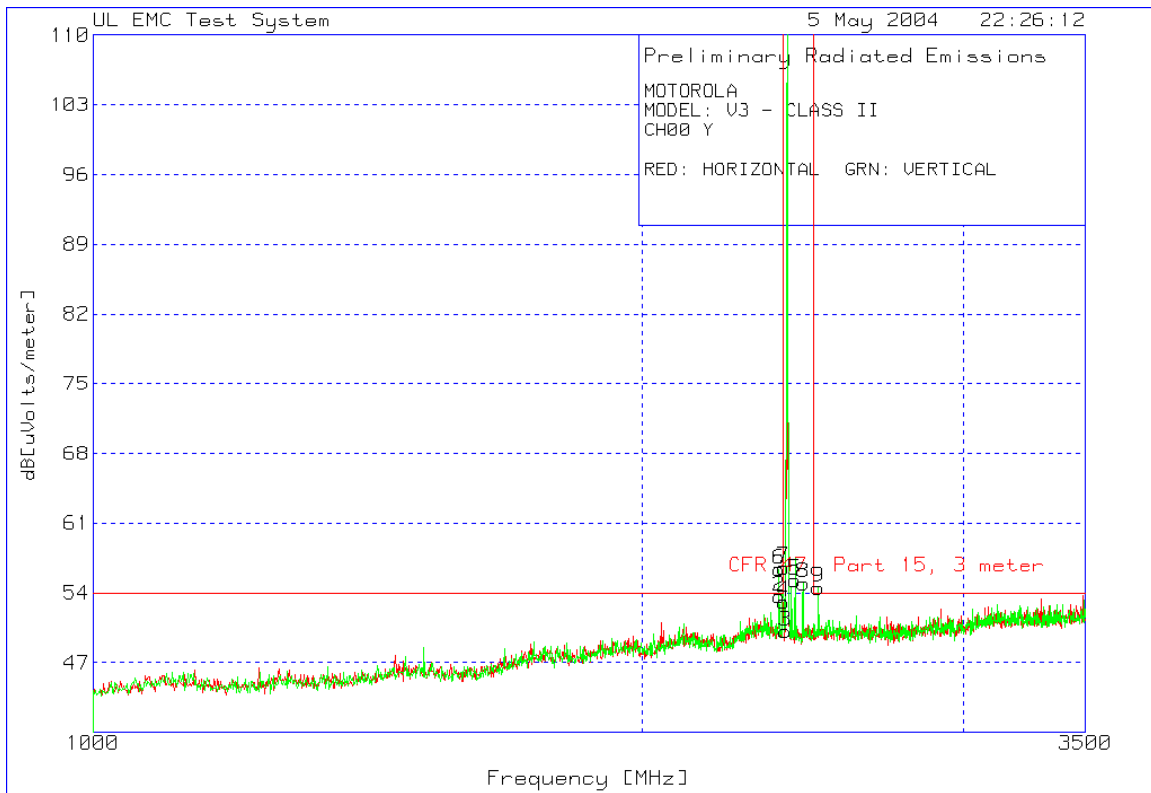
Horizontal 1000 - 3500MHz

1	2402.602	74.35 pk	2	28.8	105.15	999
Height:101 Horz Margin [dB]					-893.85	

Vertical 1000 - 3500MHz

2	2402.602	82.91 pk	2	28.8	113.71	999
Height:101 Vert Margin [dB]					-885.29	

LIMIT 1: CFR 47, Part 15, 3 meter



1-3GHz Low Channel Y-Orientation

MOTOROLA**MODEL: V3 - CLASS II****CH00 Y****RED: HORIZONTAL GRN: VERTICAL**

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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Horizontal 1000 - 3500MHz

1	2402.602	80.1 pk	2	28.8	110.9	999
		Height:101 Horz		Margin [dB]	-888.1	
2	2377.585	23.05 pk	1.9	28.7	53.65	54
		Height:101 Horz		Margin [dB]	-.35	
3	2395.931	19.32 pk	2	28.8	50.12	999
		Height:101 Horz		Margin [dB]	-948.88	
4	2390.928	22.4 pk	2	28.7	53.1	999
		Height:101 Horz		Margin [dB]	-945.9	
5	2425.951	24.46 pk	2	28.8	55.26	999
		Height:101 Horz		Margin [dB]	-943.74	

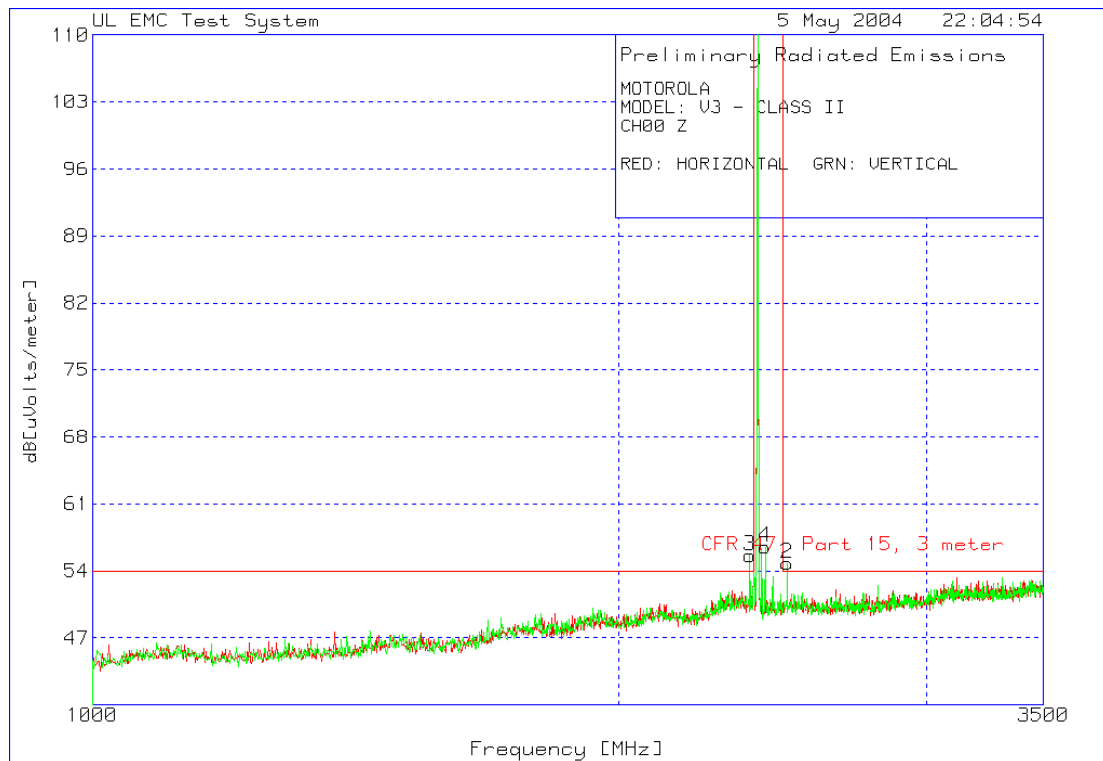
Vertical 1000 - 3500MHz

6	2377.585	25.77 pk	1.9	28.7	56.37	54
		Height:101 Vert		Margin [dB]	2.37	
7	2390.928	25.84 pk	2	28.7	56.54	999
		Height:101 Vert		Margin [dB]	-942.46	
8	2450.968	24.17 pk	2	28.8	54.97	999
		Height:101 Vert		Margin [dB]	-944.03	
9	2497.666	23.73 pk	1.9	28.9	54.53	54
		Height:101 Vert		Margin [dB]	.53	

LIMIT 1: CFR 47, Part 15, 3 meter

The duty cycle correction factor was applied to over limit signals:

Frequency (MHz)	Level (dBuV)	Duty Cycle Correction Factor	Corrected Level	Limit	Corrected Margin
2377.585	56.37	-30.66	25.71	54	-28.29
2497.666	54.53	-30.66	23.87	54	-30.13



1-3GHz Low Channel Z-Orientation

MOTOROLA

MODEL: V3 - CLASS II

CH00 Z

RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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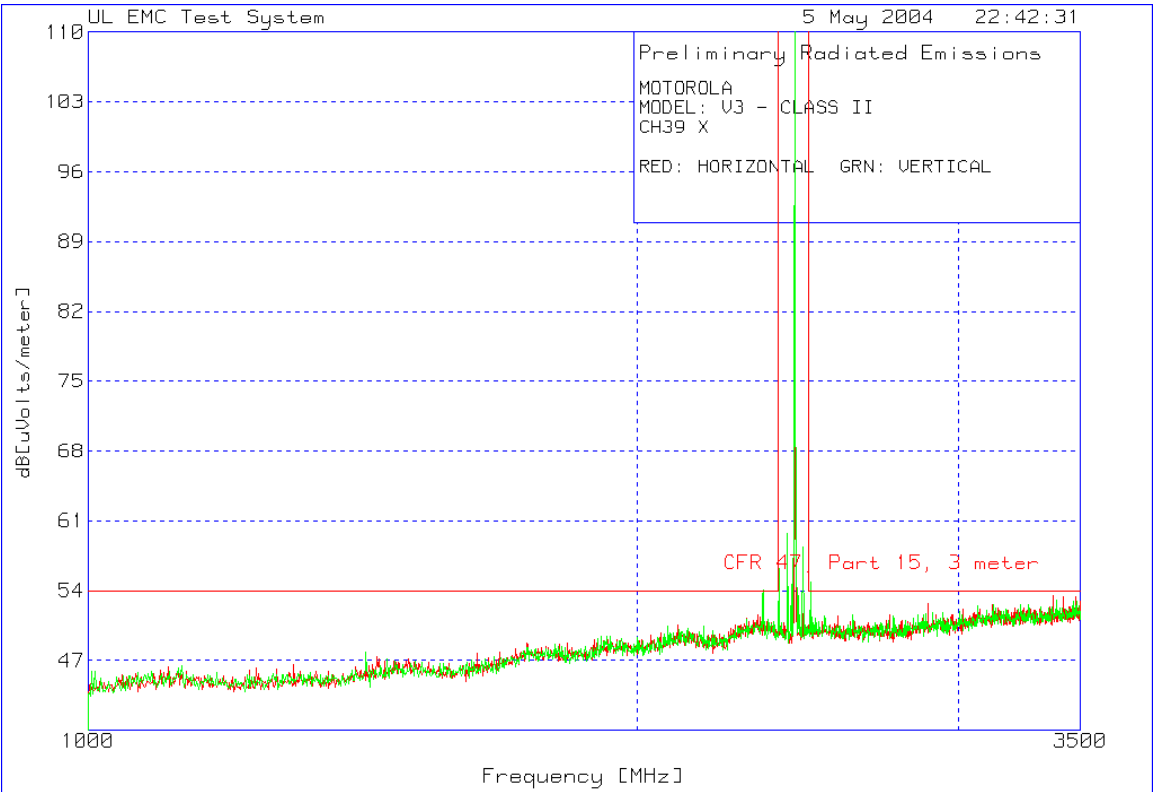
Vertical 1000 - 3500MHz

1	2402.602	83.64 pk	2	28.8	114.44	999
		Height:101 Vert		Margin[dB]	-884.56	
2	2497.666	23.99 pk	1.9	28.9	54.79	54
		Height:101 Vert		Margin[dB]	0.79	
3	2377.585	25.03 pk	1.9	28.7	55.63	54
		Height:101 Vert		Margin[dB]	1.63	
4	2425.951	25.69 pk	2	28.8	56.49	999
		Height:101 Vert		Margin[dB]	-942.51	

LIMIT 1: CFR 47, Part 15, 3 meter

The duty cycle correction factor was applied to over limit signals:

Frequency (MHz)	Level (dBUV)	Duty Cycle Correction Factor	Corrected Level	Limit	Corrected Margin
2497.666	54.79	-30.66	24.13	54	-29.87
2377.585	55.63	-30.66	24.97	54	-29.03

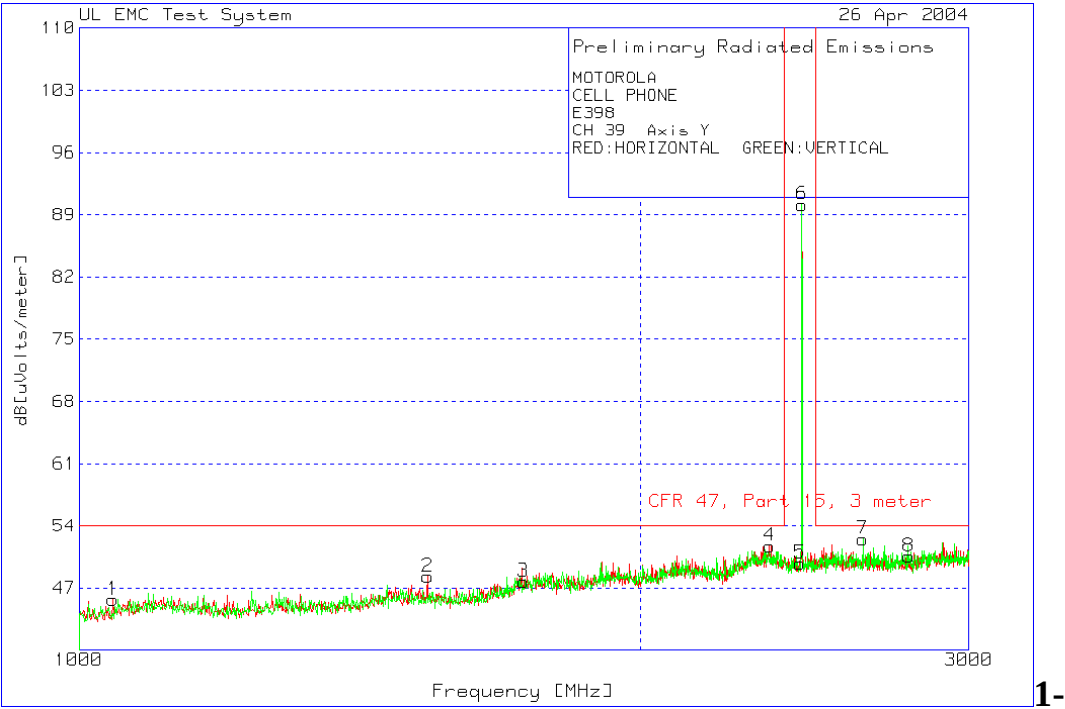


1-3GHz Mid-Channel X-Orientation

MOTOROLA
 MODEL: V3 - CLASS II
 CH39 X
 RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
1	2440.961	79.87 pk	2	28.8	110.67	999
		Height:100 Vert		Margin[dB]	-888.33	

LIMIT 1: CFR 47, Part 15, 3 meter

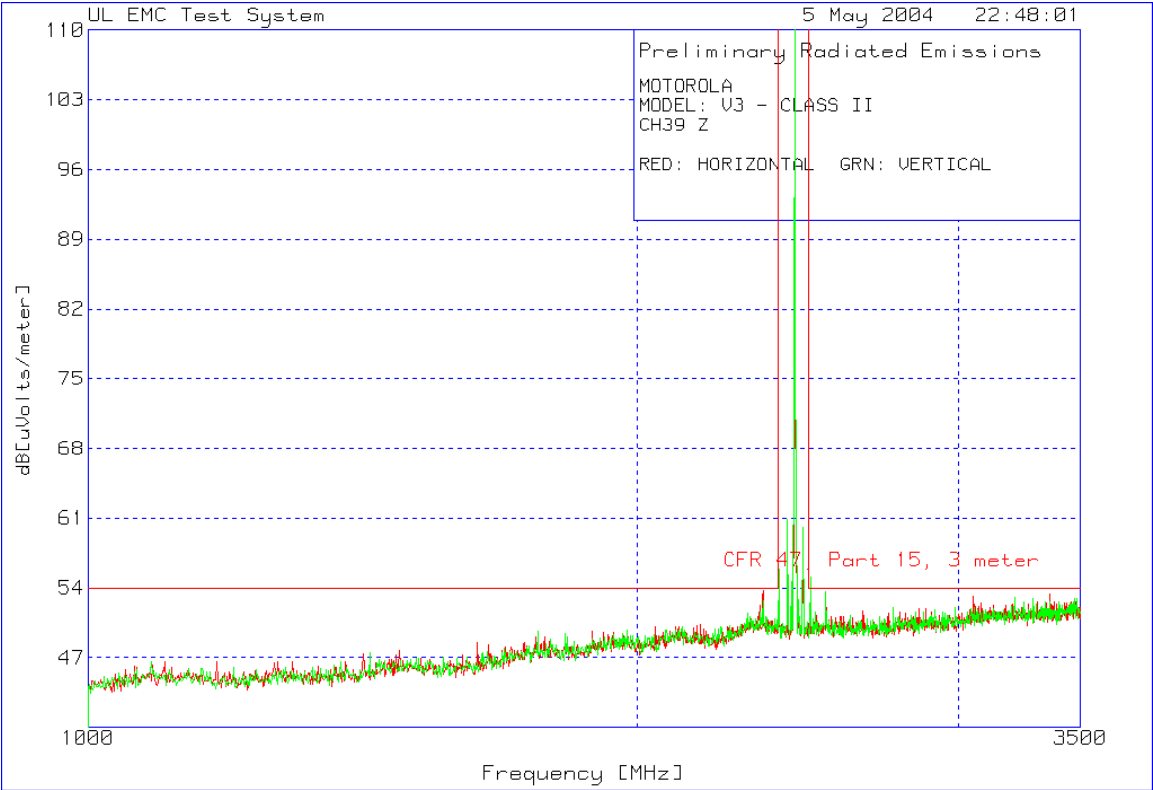


3GHz Mid-Channel Y-Orientation

MOTOROLA
 MODEL: V3 - CLASS II
 CH39 Y
 RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
1	2440.961	83.18 pk	2	28.8	113.98	999
Vertical 1000 - 3500MHz				Margin[dB]	[-885.02	

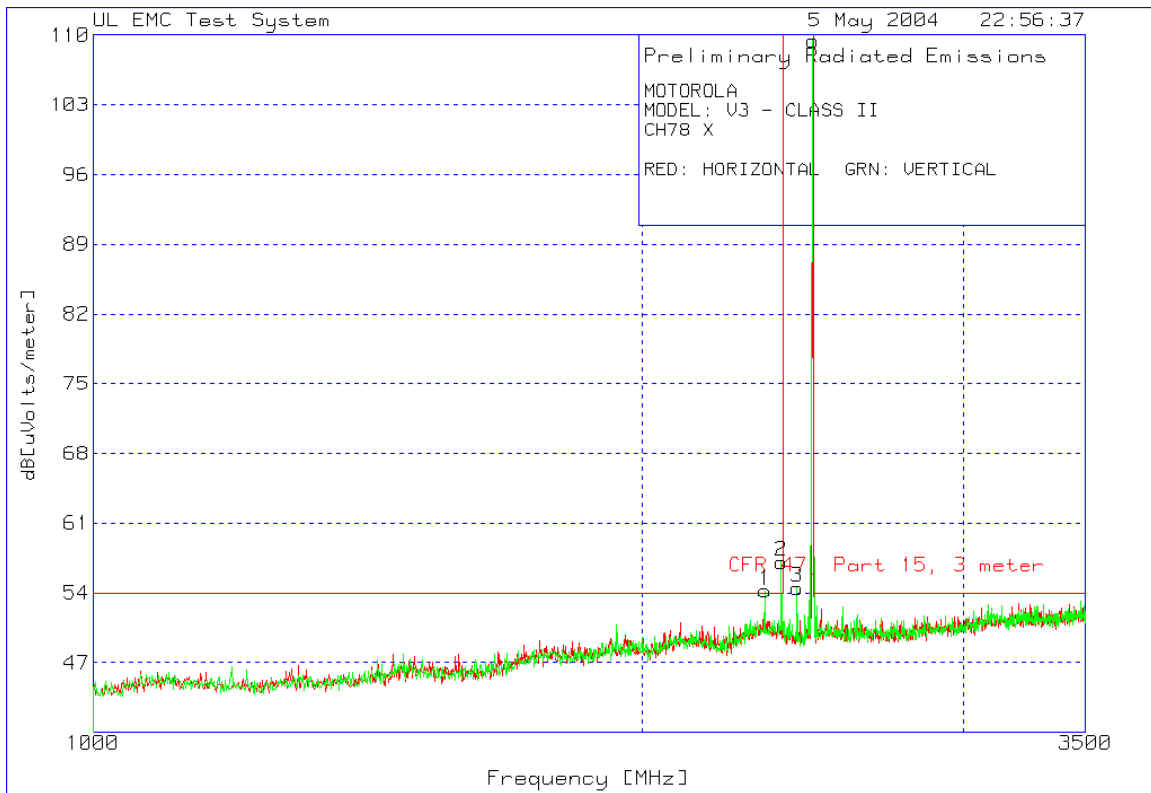
LIMIT 1: CFR 47, Part 15, 3 meter



1-3GHz Mid-Channel Z-Orientation

MOTOROLA					
MODEL: V3 - CLASS II					
CH39 Z					
RED: HORIZONTAL GRN: VERTICAL					
Test	Meter	Ga	Transducer	Level	Limit:1
No. Frequency	Reading	Fa	Factor	dB[uV/m]	
[MHz]	[dB(uV)]	[d	[dB]		
Vertical 1000 - 3500MHz					
1	2440.961	81.26	pk	28.8	112.06 999
Height:100 Vert		Margin		-886.94	

LIMIT 1: CFR 47, Part 15, 3 meter



1-3GHz High-Channel X-Orientation

MOTOROLA

MODEL: V3 - CLASS II

CH78 X

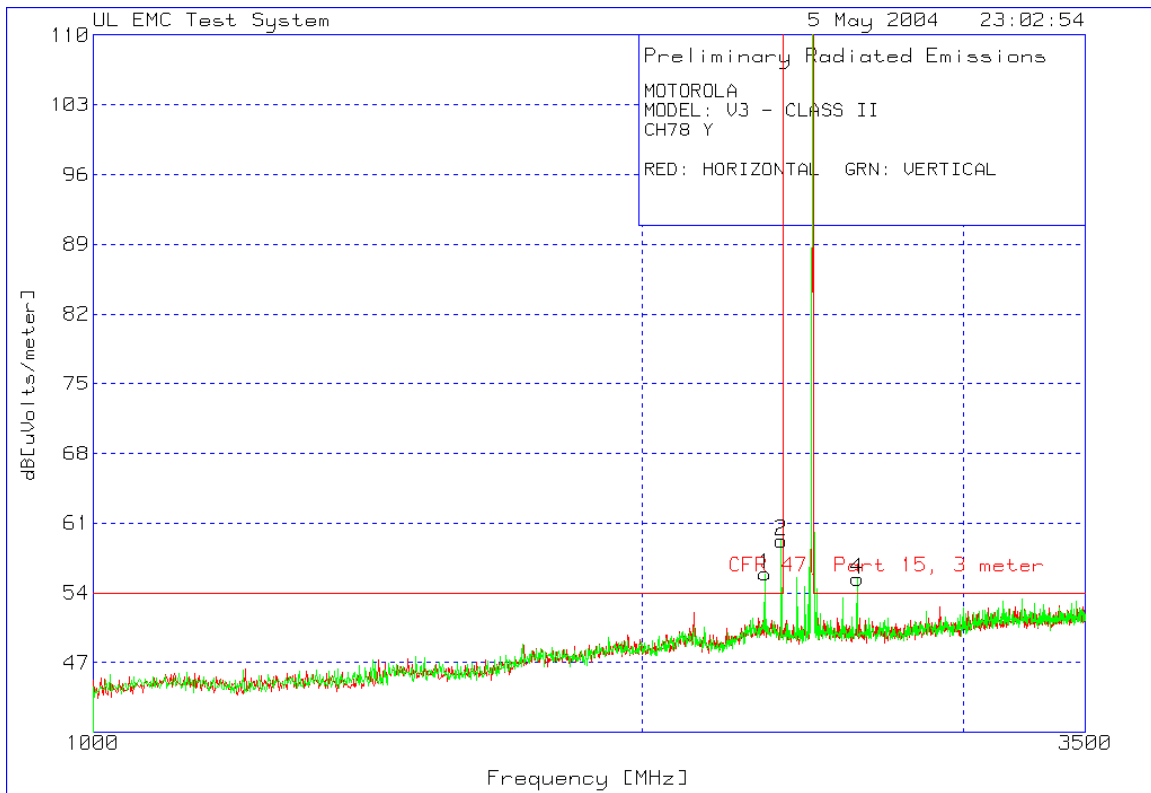
RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
Vertical 1000 - 3500MHz						
1	2335.891	23.6 pk	1.9	28.7	54.2	54
		Height:100 Vert		Margin[dB]	0.2	
2	2384.257	26.53 pk	1.9	28.7	57.13	54
		Height:100 Vert		Margin[dB]	3.13	
3	2432.622	23.72 pk	2	28.8	54.52	999
		Height:100 Vert		Margin[dB]	-944.48	
4	2480.988	78.69 pk	1.9	28.9	109.49	999
		Height:100 Vert		Margin[dB]	-889.51	

LIMIT 1: CFR 47, Part 15, 3 meter

The duty cycle correction factor was applied to over limit signals:

Frequency (MHz)	Level (dBuV)	Duty Cycle Correction Factor	Corrected Level	Limit	Corrected Margin
2335.891	54.2	-30.66	23.54	54	-30.46
2384.257	57.13	-30.66	26.47	54	-27.53



1-3GHz High-Channel Y-Orientation

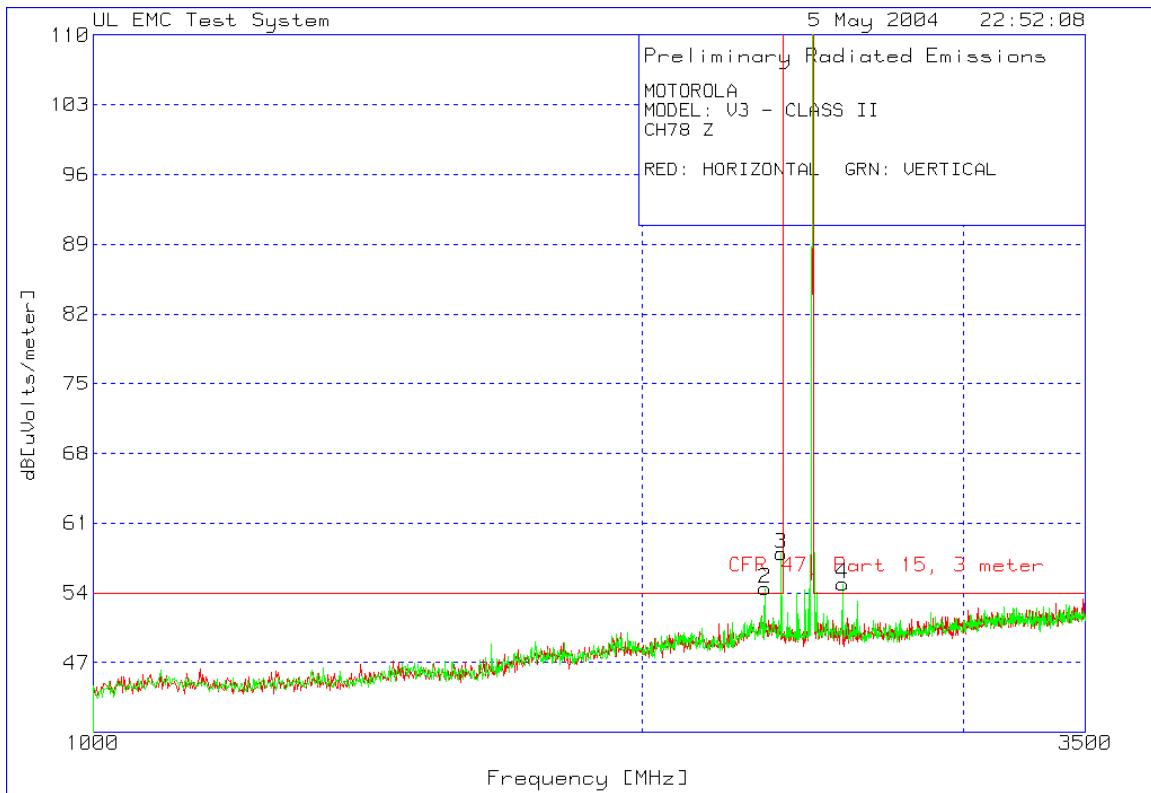
MOTOROLA
MODEL: V3 - CLASS II
CH78 Y

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
Vertical 1000 - 3500MHz						
1	2335.891	25.3 pk	1.9		28.7 55.9	54
	Height:100 Vert			Margin[dB]		1.9
2	2384.257	28.67 pk	1.9		28.7 59.27	54
	Height:100 Vert			Margin[dB]		5.27
3	2480.988	82.34 pk	1.9		28.9 113.14	999
	Height:100 Vert			Margin[dB]		-885.86
4	2624.417	24.2 pk	2		29.2 55.4	54
	Height:100 Vert			Margin[dB]		1.4

LIMIT 1: CFR 47, Part 15, 3 meter

The duty cycle correction factor was applied to over limit signals:

Frequency (MHz)	Level (dBuV)	Duty Cycle Correction Factor	Corrected Level	Limit	Corrected Margin
2335.891	55.9	-30.66	25.24	54	-28.76
2384.257	59.27	-30.66	28.61	54	-25.39
2624.417	55.4	-30.66	24.74	54	-29.26



1-3GHz High-Channel Z-Orientation

MOTOROLA**MODEL: V3 - CLASS II****CH78 Z****RED: HORIZONTAL GRN: VERTICAL**

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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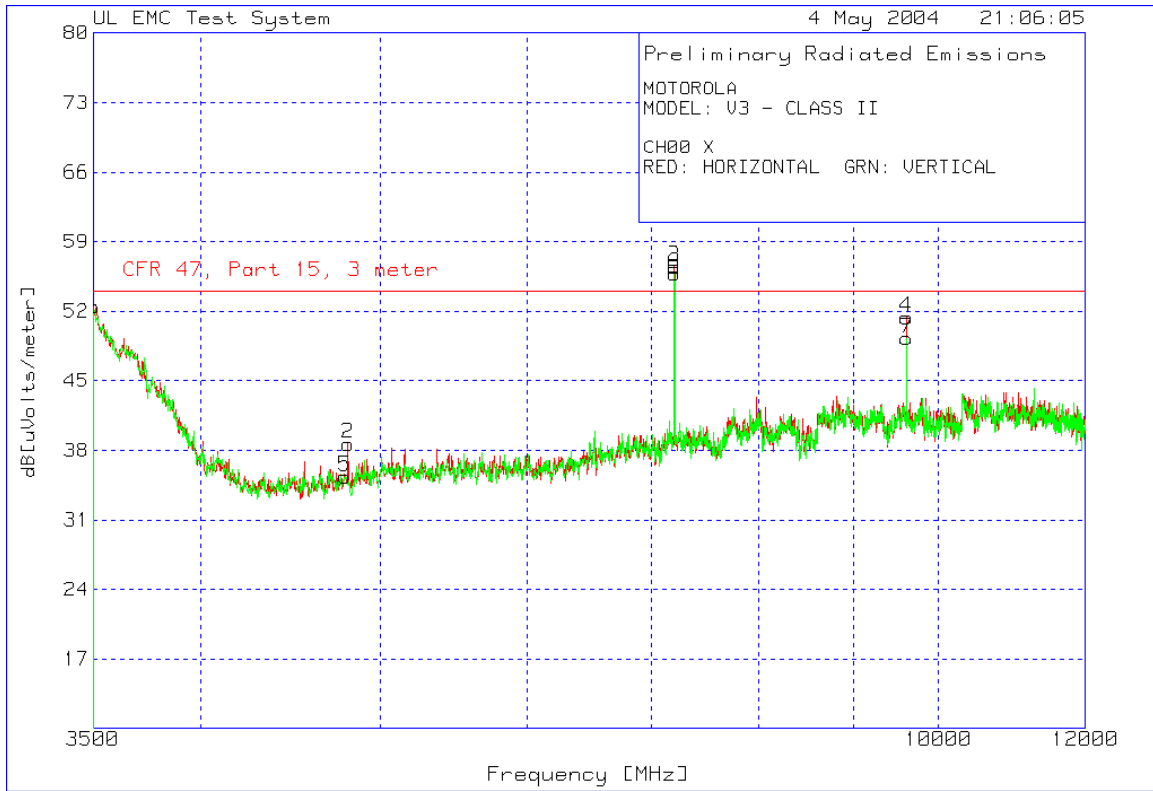
Vertical 1000 - 3500MHz

1	2480.988	81.2 pk	1.9	28.9	112	999
			Height:100 Vert	Margin[dB]	-887	
2	2335.891	23.84 pk	1.9	28.7	54.44	54
			Height:100 Vert	Margin[dB]	0.44	
3	2384.257	27.35 pk	1.9	28.7	57.95	54
			Height:100 Vert	Margin[dB]	3.95	
4	2576.051	23.81 pk	2	29.1	54.91	54
			Height:100 Vert	Margin[dB]	0.91	

LIMIT 1: CFR 47, Part 15, 3 meter

The duty cycle correction factor was applied to over limit signals:

Frequency (MHz)	Level (dBuV)	Duty Cycle Correction Factor	Corrected Level	Limit	Corrected Margin
2335.891	54.44	-30.66	23.78	54	-30.22
2384.257	57.95	-30.66	27.29	54	-26.71



3-12GHz Low-Channel X-Orientation

MOTOROLA**MODEL: V3 - CLASS II****CH00 X****RED: HORIZONTAL GRN: VERTICAL**

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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Horizontal 3500 - 12000MHz

1	3503.401	51.38 pk	-30.2	31.3	52.48	54
		Height:101 Horz			Margin [dB]	-1.52
2	4802.721	53.87 pk	-48.9	33.7	38.67	54
		Height:150 Horz			Margin [dB]	-15.33
3	7204.082	65.38 pk	-45.4	36.5	56.48	54
		Height:150 Horz			Margin [dB]	2.48
4	9608.844	60.75 pk	-47.7	38.3	51.35	54
		Height:150 Horz			Margin [dB]	-2.65

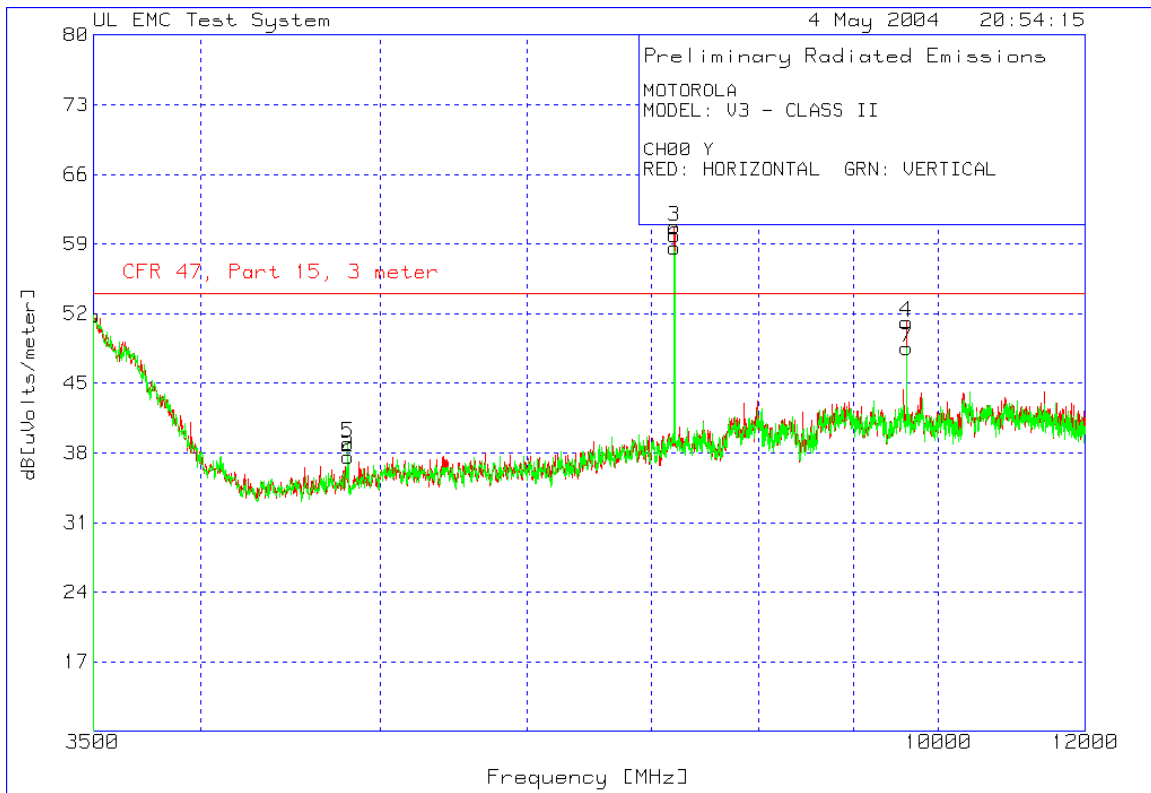
Vertical 3500 - 12000MHz

5	4785.714	50.86 pk	-49.2	33.7	35.36	54
		Height:101 Vert			Margin [dB]	-18.64
6	7204.082	64.7 pk	-45.4	36.5	55.8	54
		Height:150 Vert			Margin [dB]	1.8
7	9608.844	58.68 pk	-47.7	38.3	49.28	54
		Height:150 Vert			Margin [dB]	-4.72

LIMIT 1: CFR 47, Part 15, 3 meter

The duty cycle correction factor was applied to over limit signals:

Frequency (MHz)	Level (dBuV)	Duty Cycle Correction Factor	Corrected Level	Limit	Corrected Margin
7204.082	56.48	-30.66	25.82	54	-28.18
7204.082	55.8	-30.66	25.14	54	-28.86



3-12GHz Low-Channel Y-Orientation

MOTOROLA

MODEL: V3 - CLASS II

CH00 Y

RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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Horizontal 3500 - 12000MHz

1	3503.401	50.76 pk	-30.2	31.3	51.86	54
		Height:101 Horz	Margin [dB]		-2.14	
2	4802.721	52.84 pk	-48.9	33.7	37.64	54
		Height:101 Horz	Margin [dB]		-16.36	
3	7204.082	69.66 pk	-45.4	36.5	60.76	54
		Height:150 Horz	Margin [dB]		6.76	
4	9608.844	60.55 pk	-47.7	38.3	51.15	54
		Height:150 Horz	Margin [dB]		-2.85	

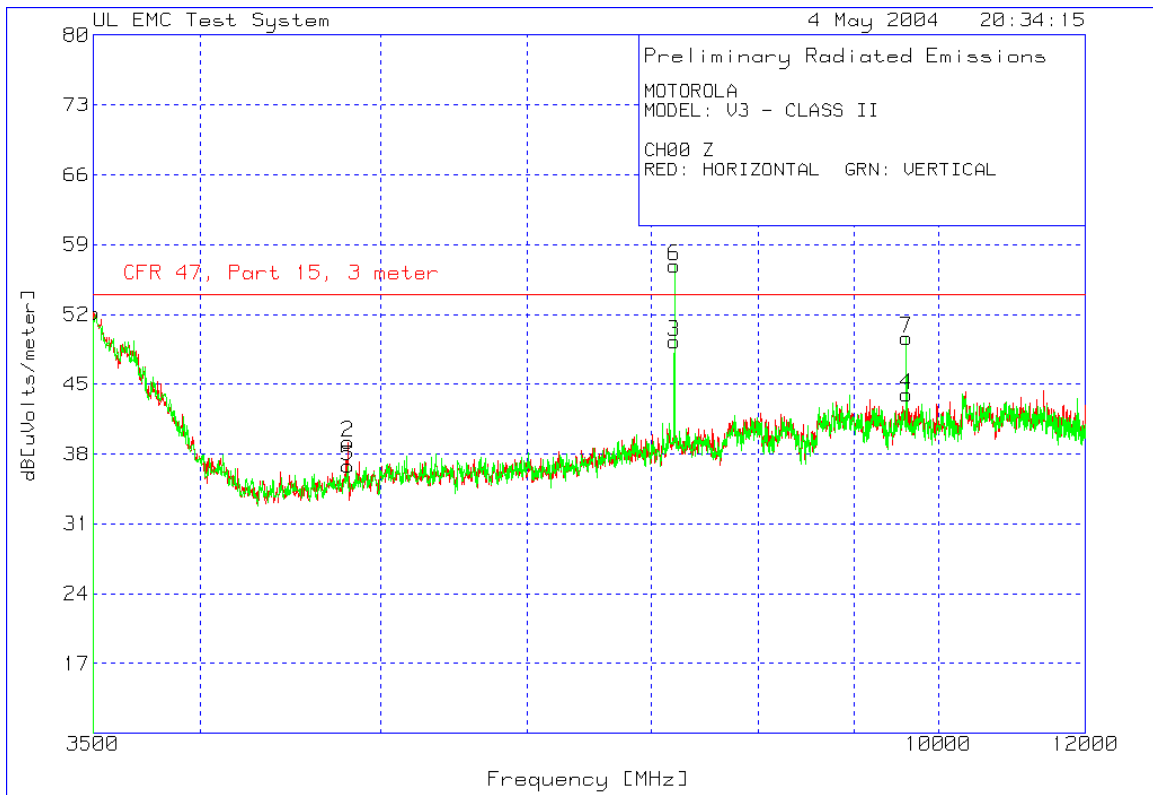
Vertical 3500 - 12000MHz

5	4802.721	54.19 pk	-48.9	33.7	38.99	54
		Height:101 Vert	Margin [dB]		-15.01	
6	7204.082	67.54 pk	-45.4	36.5	58.64	54
		Height:101 Vert	Margin [dB]		4.64	
7	9608.844	57.96 pk	-47.7	38.3	48.56	54
		Height:101 Vert	Margin [dB]		-5.44	

LIMIT 1: CFR 47, Part 15, 3 meter

The duty cycle correction factor was applied to over limit signals:

Frequency (MHz)	Level (dBuV)	Duty Cycle Correction Factor	Corrected Level	Limit	Corrected Margin
7204.082	60.76	-30.66	30.1	54	-23.9
7204.082	58.64	-30.66	27.98	54	-26.02



3-12GHz Low-Channel Z-Orientation

MOTOROLA**MODEL: V3 - CLASS II****CH00 Z****RED: HORIZONTAL GRN: VERTICAL**

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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Horizontal 3500 - 12000MHz

1	3500	50.77 pk	-29.9	31.3	52.17	54
		Height:150 Horz	Margin [dB]		-1.83	
2	4802.721	54.39 pk	-48.9	33.7	39.19	54
		Height:101 Horz	Margin [dB]		-14.81	
3	7204.082	58.21 pk	-45.4	36.5	49.31	54
		Height:150 Horz	Margin [dB]		-4.69	
4	9608.844	53.39 pk	-47.7	38.3	43.99	54
		Height:101 Horz	Margin [dB]		-10.01	

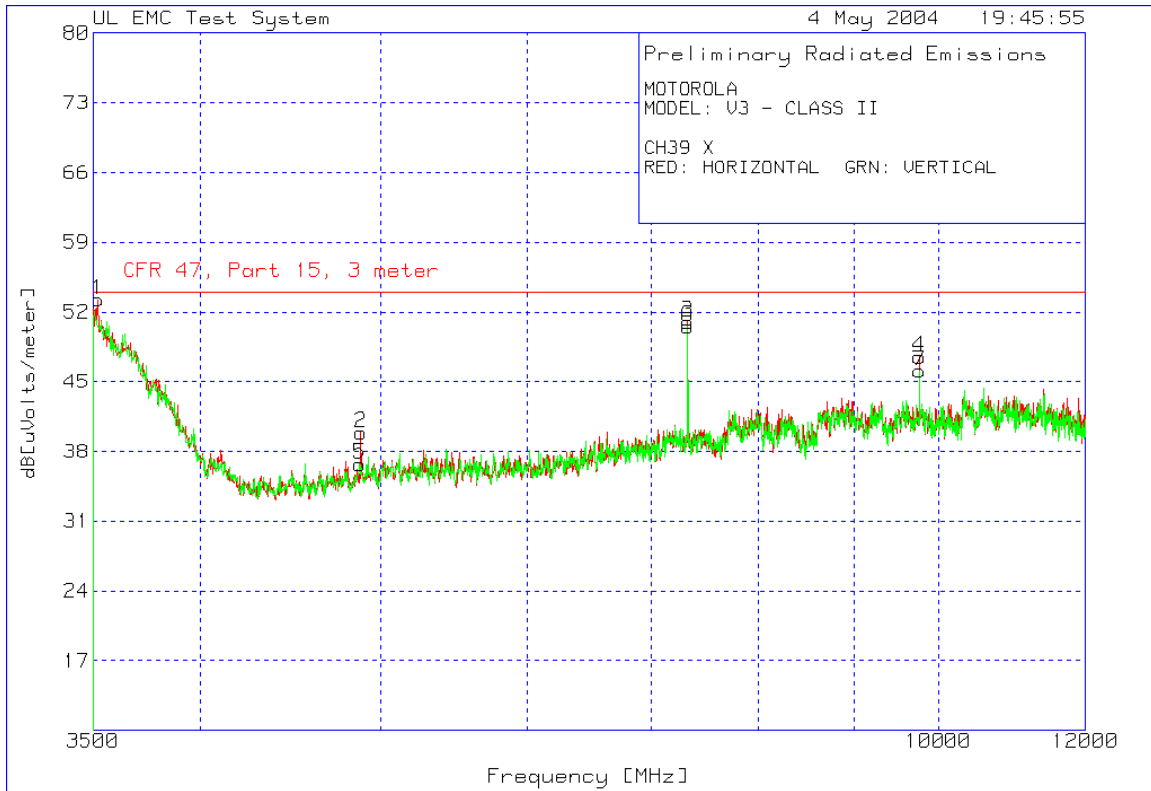
Vertical 3500 - 12000MHz

5	4802.721	52 pk	-48.9	33.7	36.8	54
		Height:101 Vert	Margin [dB]		-17.2	
6	7204.082	65.78 pk	-45.4	36.5	56.88	54
		Height:150 Vert	Margin [dB]		2.88	
7	9608.844	59.04 pk	-47.7	38.3	49.64	54
		Height:150 Vert	Margin [dB]		-4.36	

LIMIT 1: CFR 47, Part 15, 3 meter

The margins for the signals measured above are positive. The duty cycle correction factor was applied:

Frequency (MHz)	Level (dBuV)	Duty Cycle Correction Factor	Corrected Level	Limit	Corrected Margin
7204.082	56.88	-30.66	26.22	54	-27.78



3-12GHz Mid-Channel X-Orientation

MOTOROLA**MODEL: V3 - CLASS II****CH39 X****RED: HORIZONTAL GRN: VERTICAL**

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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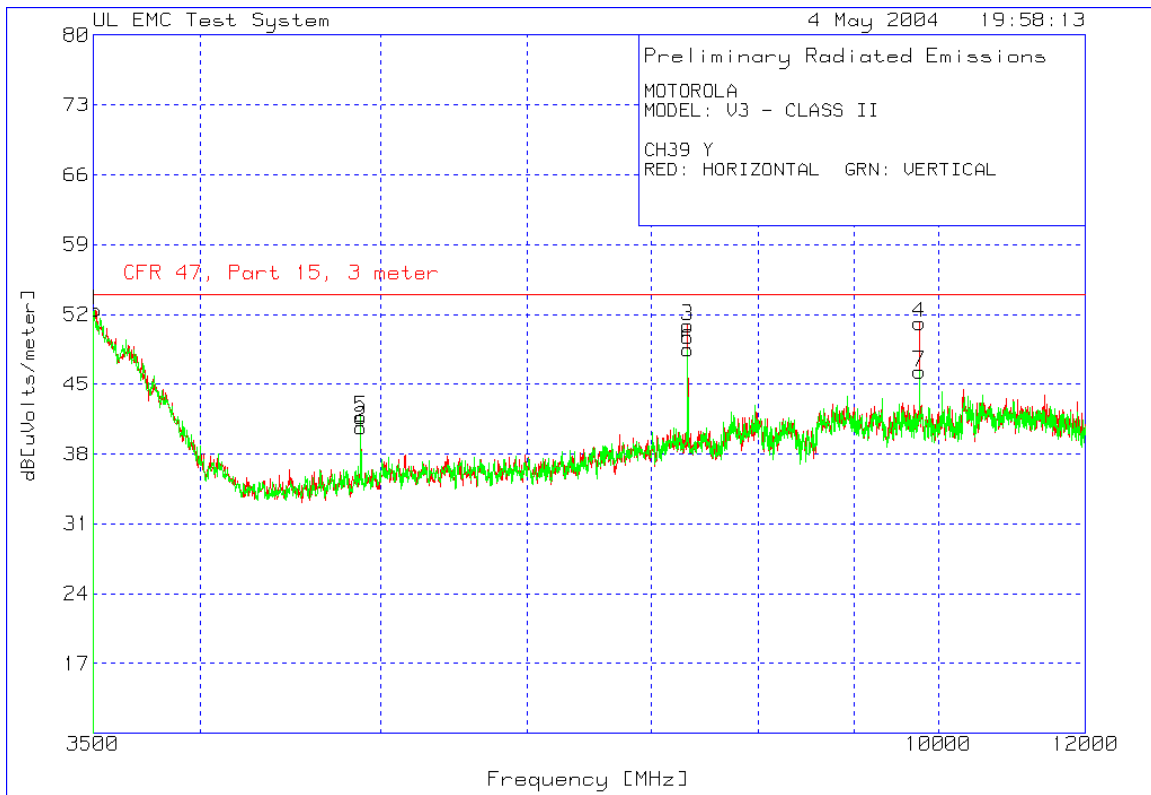
Horizontal 3500 - 12000MHz

1	3520.408	53.41 pk	-31.6	31.4	53.21	54
		Height:149 Horz	Margin [dB]		-.79	
2	4880.953	55.4 pk	-49.4	33.9	39.9	54
		Height:149 Horz	Margin [dB]		-14.1	
3	7323.13	59.4 pk	-44.9	36.5	51	54
		Height:149 Horz	Margin [dB]		-3	
4	9765.307	56.39 pk	-47.4	38.5	47.49	54
		Height:149 Horz	Margin [dB]		-6.51	

Vertical 3500 - 12000MHz

5	4874.15	52.23 pk	-49.4	33.9	36.73	54
		Height:101 Vert	Margin [dB]		-17.27	
6	7323.13	58.94 pk	-44.9	36.5	50.54	54
		Height:149 Vert	Margin [dB]		-3.46	
7	9765.307	54.98 pk	-47.4	38.5	46.08	54
		Height:101 Vert	Margin [dB]		-7.92	

LIMIT 1: CFR 47, Part 15, 3 meter



3-12GHz Mid-Channel Y-Orientation

MOTOROLA

MODEL: V3 - CLASS II

CH39 Y

RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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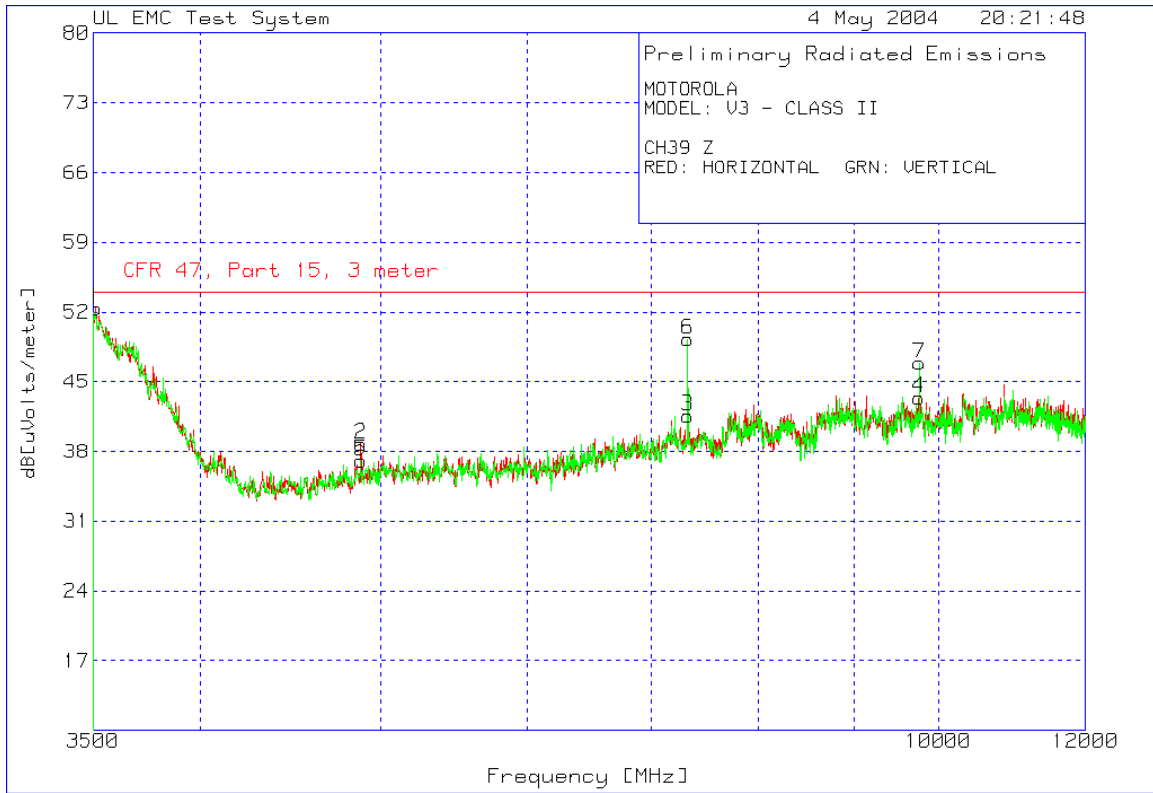
Horizontal 3500 - 12000MHz

1	3510.204	51.82 pk	-30.7	31.3	52.42	54
		Height:101 Horz	Margin [dB]		-1.58	
2	4880.953	56.17 pk	-49.4	33.9	40.67	54
		Height:150 Horz	Margin [dB]		-13.33	
3	7323.13	59.28 pk	-44.9	36.5	50.88	54
		Height:150 Horz	Margin [dB]		-3.12	
4	9765.307	60.05 pk	-47.4	38.5	51.15	54
		Height:150 Horz	Margin [dB]		-2.85	

Vertical 3500 - 12000MHz

5	4880.953	57.2 pk	-49.4	33.9	41.7	54
		Height:150 Vert	Margin [dB]		-12.3	
6	7323.13	56.87 pk	-44.9	36.5	48.47	54
		Height:150 Vert	Margin [dB]		-5.53	
7	9765.307	55.15 pk	-47.4	38.5	46.25	54
		Height:101 Vert	Margin [dB]		-7.75	

LIMIT 1: CFR 47, Part 15, 3 meter



3-12GHz Mid-Channel Z-Orientation

MOTOROLA**MODEL: V3 - CLASS II****CH39 Z****RED: HORIZONTAL GRN: VERTICAL**

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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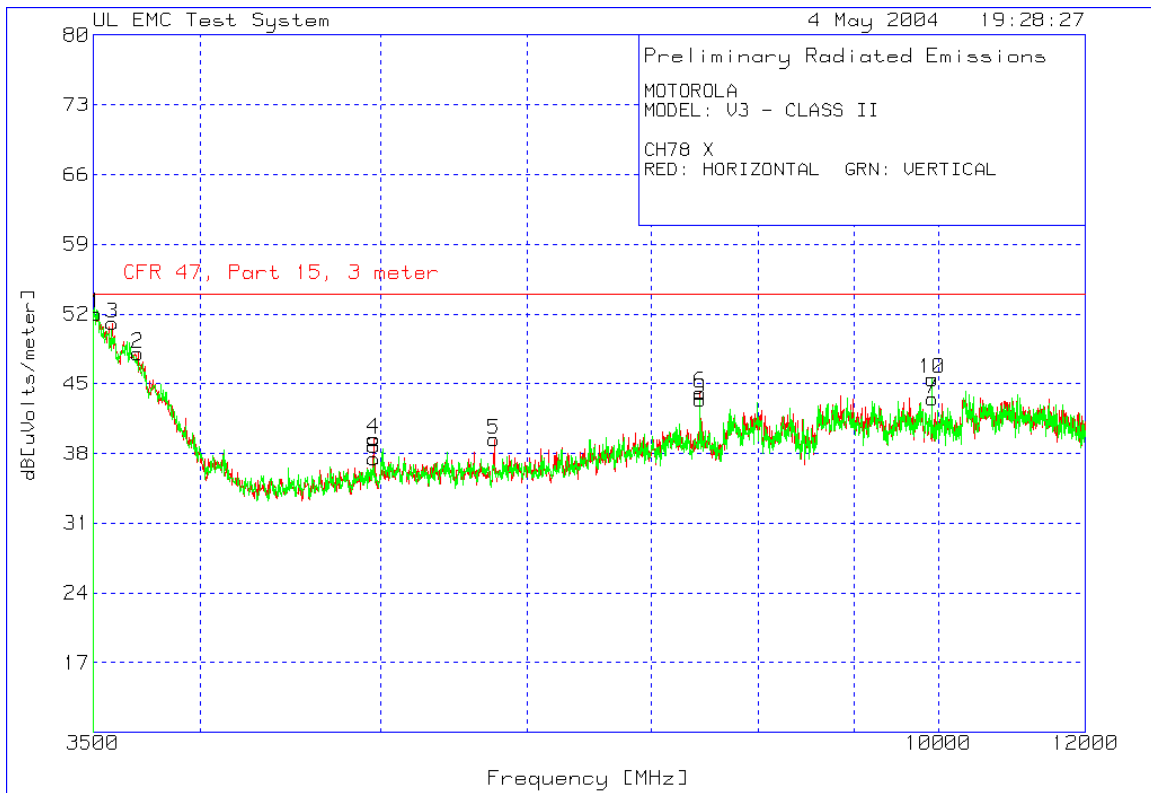
Horizontal 3500 - 12000MHz

1	3510.204	51.75 pk	-30.7	31.3	52.35	54
		Height:101 Horz	Margin [dB]		-1.65	
2	4880.953	54.26 pk	-49.4	33.9	38.76	54
		Height:101 Horz	Margin [dB]		-15.24	
3	7323.13	49.97 pk	-44.9	36.5	41.57	54
		Height:150 Horz	Margin [dB]		-12.43	
4	9758.504	52.29 pk	-47.4	38.5	43.39	54
		Height:150 Horz	Margin [dB]		-10.61	

Vertical 3500 - 12000MHz

5	4880.953	52.59 pk	-49.4	33.9	37.09	54
		Height:101 Vert	Margin [dB]		-16.91	
6	7323.13	57.66 pk	-44.9	36.5	49.26	54
		Height:150 Vert	Margin [dB]		-4.74	
7	9765.307	55.77 pk	-47.4	38.5	46.87	54
		Height:150 Vert	Margin [dB]		-7.13	

LIMIT 1: CFR 47, Part 15, 3 meter



3-12GHz High-Channel X-Orientation

MOTOROLA**MODEL: V3 - CLASS II****CH78 X****RED: HORIZONTAL GRN: VERTICAL**

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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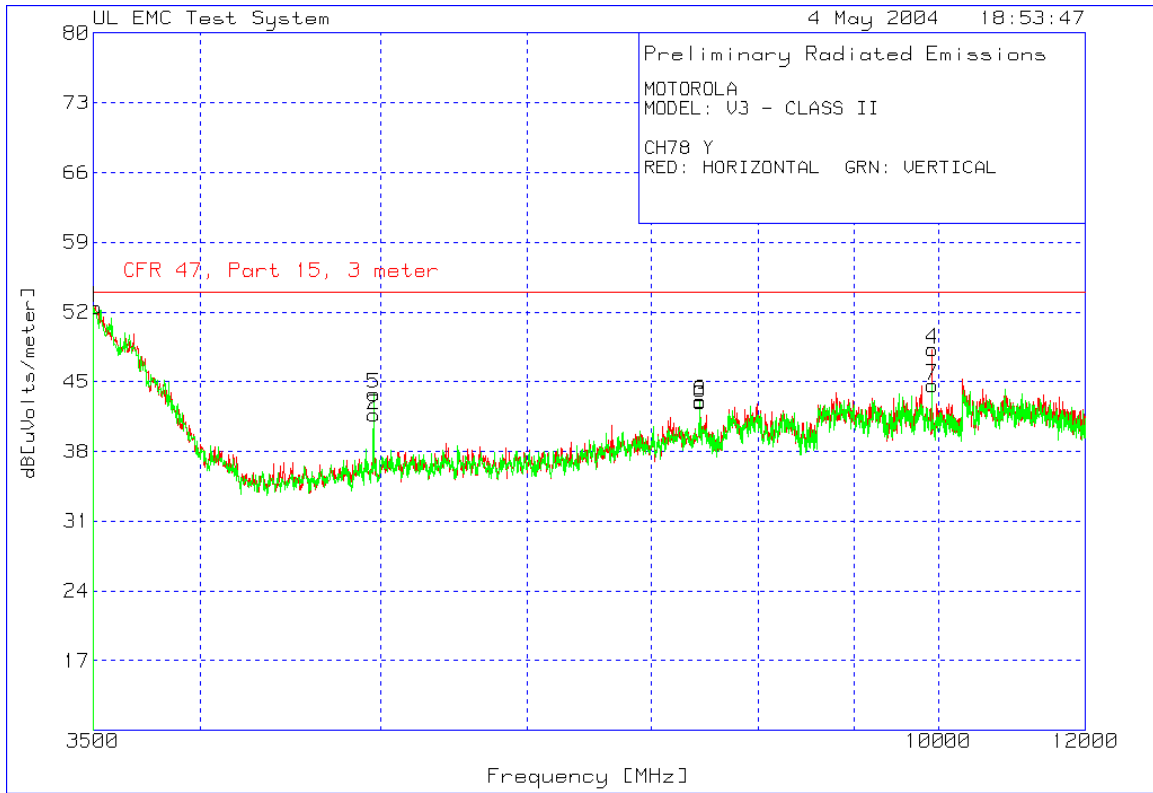
Horizontal 3500 - 12000MHz

1	3513.605	51.75 pk	-31	31.3	52.05	54
		Height:150 Horz	Margin [dB]		-1.95	
2	3700.68	50.24 pk	-34.1	31.9	48.04	54
		Height:150 Horz	Margin [dB]		-5.96	
3	3585.034	53.96 pk	-34.4	31.5	51.06	54
		Height:150 Horz	Margin [dB]		-2.94	
4	4959.184	54.47 pk	-49.2	34.2	39.47	54
		Height:150 Horz	Margin [dB]		-14.53	
5	5758.504	52.5 pk	-47.6	34.5	39.4	54
		Height:150 Horz	Margin [dB]		-14.6	
6	7438.776	52.59 pk	-44.9	36.4	44.09	54
		Height:150 Horz	Margin [dB]		-9.91	
7	9921.77	52.19 pk	-47.4	38.7	43.49	54
		Height:150 Horz	Margin [dB]		-10.51	

Vertical 3500 - 12000MHz

8	4959.184	52.49 pk	-49.2	34.2	37.49	54
		Height:101 Vert	Margin [dB]		-16.51	
9	7438.776	51.9 pk	-44.9	36.4	43.4	54
		Height:150 Vert	Margin [dB]		-10.6	
10	9921.77	54.18 pk	-47.4	38.7	45.48	54
		Height:101 Vert	Margin [dB]		-8.52	

LIMIT 1: CFR 47, Part 15, 3 meter



3-12GHz High-Channel Y-Orientation

MOTOROLA**MODEL: V3 - CLASS II****CH78 Y****RED: HORIZONTAL GRN: VERTICAL**

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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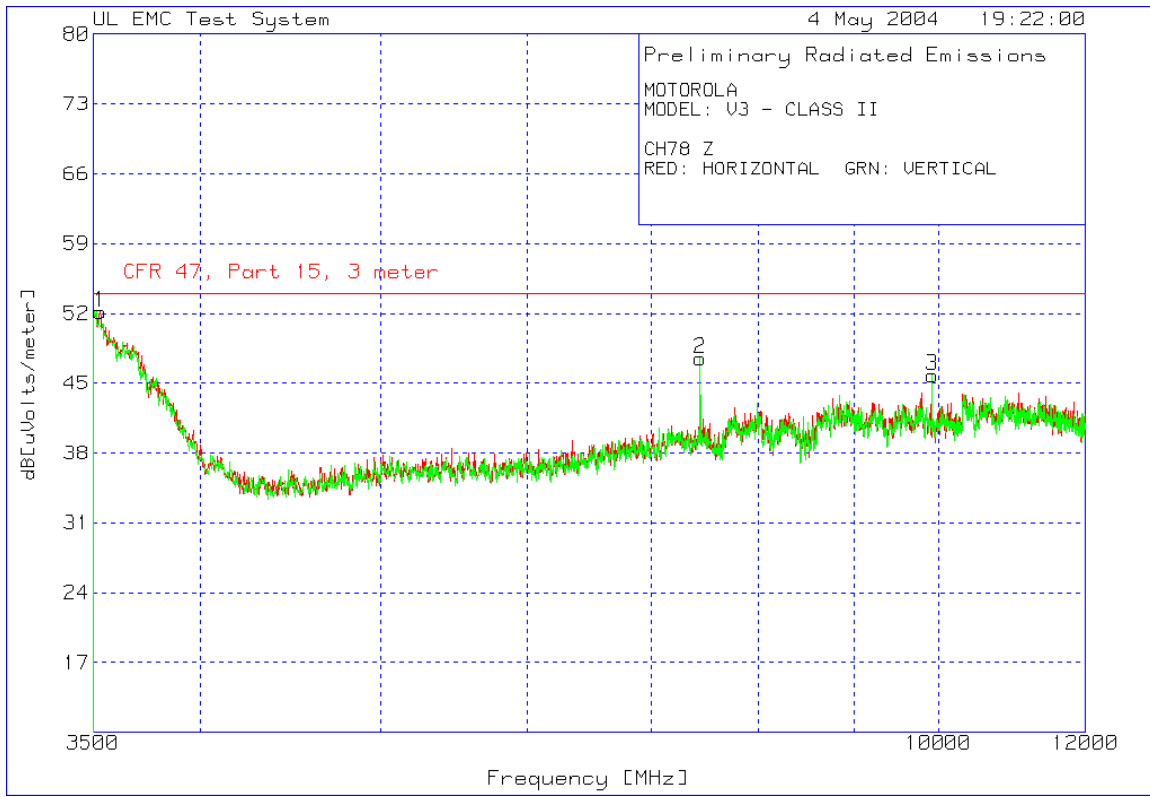
Horizontal 3500 - 12000MHz

1	3510.204	51.87 pk	-30.7	31.3	52.47	54
		Height:101 Horz	Margin [dB]		-1.53	
2	4959.184	56.67 pk	-49.2	34.2	41.67	54
		Height:150 Horz	Margin [dB]		-12.33	
3	7438.776	51.47 pk	-44.9	36.4	42.97	54
		Height:150 Horz	Margin [dB]		-11.03	
4	9921.77	56.96 pk	-47.4	38.7	48.26	54
		Height:150 Horz	Margin [dB]		-5.74	

Vertical 3500 - 12000MHz

5	4959.184	58.79 pk	-49.2	34.2	43.79	54
		Height:101 Vert	Margin [dB]		-10.21	
6	7438.776	51.61 pk	-44.9	36.4	43.11	54
		Height:149 Vert	Margin [dB]		-10.89	
7	9921.77	53.37 pk	-47.4	38.7	44.67	54
		Height:101 Vert	Margin [dB]		-9.33	

LIMIT 1: CFR 47, Part 15, 3 meter



3-12GHz High-Channel Z-Orientation

MOTOROLA

MODEL: V3 - CLASS II

CH78 Z

RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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Horizontal 3500 - 12000MHz

1	3530.612	53.23 pk	-32.5	31.4	52.13	54
					Height:101 Horz	Margin [dB]
					-1.87	

Vertical 3500 - 12000MHz

2	7438.776	55.98 pk	-44.9	36.4	47.48	54
					Height:101 Vert	Margin [dB]
					-6.52	
3	9921.77	54.5 pk	-47.4	38.7	45.8	54
					Height:150 Vert	Margin [dB]
					-8.2	

LIMIT 1: CFR 47, Part 15, 3 meter



12-18GHz Low-Channel X-Orientation

MOTOROLA
MODEL: V3 - CLASS II
CH00 X
RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
1	19214.143	73.62 pk	-60.8	40.3	53.12	54
Height:101 Vert				Margin[dB]	-0.88	
2	19503.669	71.97 pk	-60.9	40.3	51.37	54
Height:150 Vert				Margin[dB]	-2.63	
3	24780.521	68.82 pk	-58.8	40.3	50.32	54
Height:101 Vert				Margin[dB]	-3.68	

LIMIT 1: CFR 47 Part 15 Class B 3m



12-18GHz Low-Channel Y-Orientation

MOTOROLA

MODEL: V3 - CLASS II

CH00 Y

RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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Horizontal 18000 - 25000MHz

1	18763.764	72.05 pk	-60.5	40.1	51.65	54
		Height:101 Horz	Margin [dB]		-2.35	
2	19212.212	73.12 pk	-60.8	40.3	52.62	54
		Height:101 Horz	Margin [dB]		-1.38	
3	19891.892	72.15 pk	-60.8	40.2	51.55	54
		Height:101 Horz	Margin [dB]		-2.45	

Vertical 18000 - 25000MHz

4	24782.783	68.44 pk	-58.8	40.3	49.94	54
		Height:150 Vert	Margin [dB]		-4.06	

LIMIT 1: CFR 47 Part 15 Class B 3m



12-18GHz Low-Channel Z-Orientation

MOTOROLA
MODEL: V3 - CLASS II
CH00 Z
RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
1	18336.336	71.13 pk	-60.7	40	50.43	54
Height:149 Vert				Margin[dB]	-3.57	
2	19261.261	71.7 pk	-60.7	40.3	51.3	54
Height:101 Vert				Margin[dB]	-2.7	
3	24775.776	68.46 pk	-58.8	40.3	49.96	54
Height:149 Vert				Margin[dB]	-4.04	

LIMIT 1: CFR 47 Part 15 Class B 3m



12-18GHz Mid-Channel X-Orientation

MOTOROLA

MODEL: V3 - CLASS II

CH39 X

RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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Horizontal 18000 - 25000MHz

1	19022.682	72.56 pk	-60.7	40.2	52.06	54
		Height:150 Horz	Margin [dB]		-1.94	
2	19891.261	71.11 pk	-60.8	40.2	50.51	54
		Height:101 Horz	Margin [dB]		-3.49	

Vertical 18000 - 25000MHz

3	24785.19	68.6 pk	-58.8	40.3	50.1	54
		Height:101 Vert	Margin [dB]		-3.9	

LIMIT 1: CFR 47 Part 15 Class B 3m



12-18GHz Mid-Channel Y-Orientation

MOTOROLA

MODEL: V3 - CLASS II

CH39 Y

RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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Horizontal 18000 - 25000MHz

1	18798.532	72.2 pk	-60.5	40.1	51.8	54
		Height:101 Horz	Margin [dB]		-2.2	
2	19097.398	71.41 pk	-60.7	40.2	50.91	54
		Height:150 Horz	Margin [dB]		-3.09	

Vertical 18000 - 25000MHz

3	19527.018	72.14 pk	-61	40.3	51.44	54
		Height:149 Vert	Margin [dB]		-2.56	
4	24715.144	69.17 pk	-58.6	40.3	50.87	54
		Height:101 Vert	Margin [dB]		-3.13	

LIMIT 1: CFR 47 Part 15 Class B 3m



12-18GHz Mid-Channel Z-Orientation

MOTOROLA

MODEL: V3 - CLASS II

CH39 Z

RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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Horizontal 18000 - 25000MHz

3	19905.27	71.26 pk	-60.8	40.2	50.66	54
Height:150 Horz Margin [dB]					-3.34	

Vertical 18000 - 25000MHz

1	18396.931	70.68 pk	-60.5	40.1	50.28	54
Height:150 Vert Margin [dB]					-3.72	
2	19204.803	71.28 pk	-60.8	40.3	50.78	54
Height:150 Vert Margin [dB]					-3.22	
4	24789.86	69.66 pk	-58.9	40.3	51.06	54
Height:150 Vert Margin [dB]					-2.94	

LIMIT 1: CFR 47 Part 15 Class B 3m



12-18GHz High-Channel X-Orientation

MOTOROLA

MODEL: V3 - CLASS II

CH78 X

RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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Horizontal 18000 - 25000MHz

1	18551.034	71.56 pk	-60.6	40.1	51.06	54
		Height:100 Horz	Margin [dB]		-2.94	
2	19260.841	72.42 pk	-60.7	40.3	52.02	54
		Height:100 Horz	Margin [dB]		-1.98	
3	19821.214	71.59 pk	-60.8	40.3	51.09	54
		Height:100 Horz	Margin [dB]		-2.91	

Vertical 18000 - 25000MHz

4	24775.851	69.41 pk	-58.8	40.3	50.91	54
		Height:150 Vert	Margin [dB]		-3.09	

LIMIT 1: CFR 47 Part 15 Class B 3m



12-18GHz High-Channel Y-Orientation

MOTOROLA

MODEL: V3 - CLASS II

CH78 Y

RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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Horizontal 18000 - 25000MHz

1	18569.713	71.64 pk	-60.6	40.1	51.14	54
		Height:101 Horz	Margin [dB]		-2.86	
2	18835.891	71.74 pk	-60.4	40.1	51.44	54
		Height:150 Horz	Margin [dB]		-2.56	
3	19209.473	71.98 pk	-60.8	40.3	51.48	54
		Height:101 Horz	Margin [dB]		-2.52	

Vertical 18000 - 25000MHz

4	24808.539	68.86 pk	-59	40.3	50.16	54
		Height:150 Vert	Margin [dB]		-3.84	

LIMIT 1: CFR 47 Part 15 Class B 3m



12-18GHz High-Channel Z-Orientation

MOTOROLA

MODEL: V3 - CLASS II

CH78 Z

RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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Horizontal 18000 - 25000MHz

1	18270.847	70.97 pk	-60.8	40	50.17	54
		Height:101 Horz	Margin [dB]		-3.83	
2	18583.723	71.26 pk	-60.6	40.1	50.76	54
		Height:101 Horz	Margin [dB]		-3.24	

Vertical 18000 - 25000MHz

3	18831.221	71.79 pk	-60.4	40.1	51.49	54
		Height:149 Vert	Margin [dB]		-2.51	
4	19288.859	72.22 pk	-60.7	40.3	51.82	54
		Height:149 Vert	Margin [dB]		-2.18	
5	24808.539	69.91 pk	-59	40.3	51.21	54
		Height:149 Vert	Margin [dB]		-2.79	

LIMIT 1: CFR 47 Part 15 Class B 3m

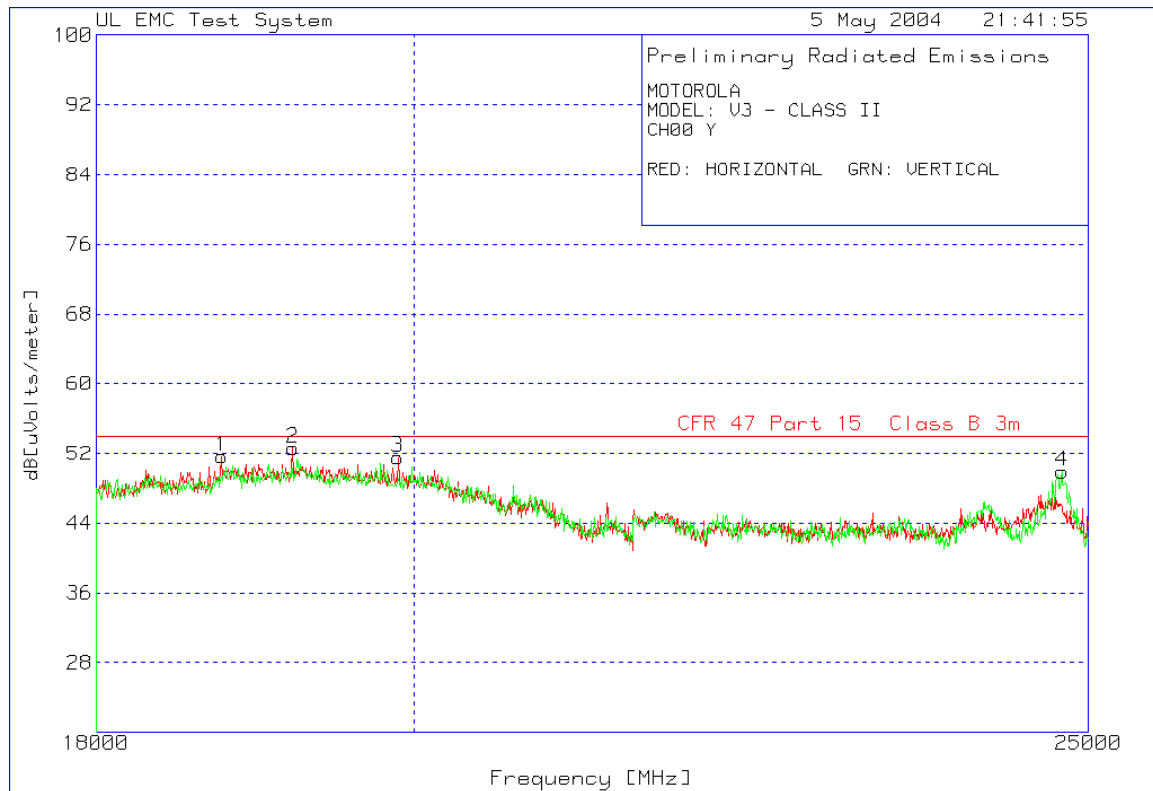


18-25GHz Low-Channel X-Orientation

MOTOROLA
MODEL: V3 - CLASS II
CH00 X
RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
1	19214.143	73.62 pk	-60.8	40.3	53.12	54
Height:101 Vert				Margin[dB]	-0.88	
2	19503.669	71.97 pk	-60.9	40.3	51.37	54
Height:150 Vert				Margin[dB]	-2.63	
3	24780.521	68.82 pk	-58.8	40.3	50.32	54
Height:101 Vert				Margin[dB]	-3.68	

LIMIT 1: CFR 47 Part 15 Class B 3m



18-25GHz Low-Channel Y-Orientation

MOTOROLA

MODEL: V3 - CLASS II

CH00 Y

RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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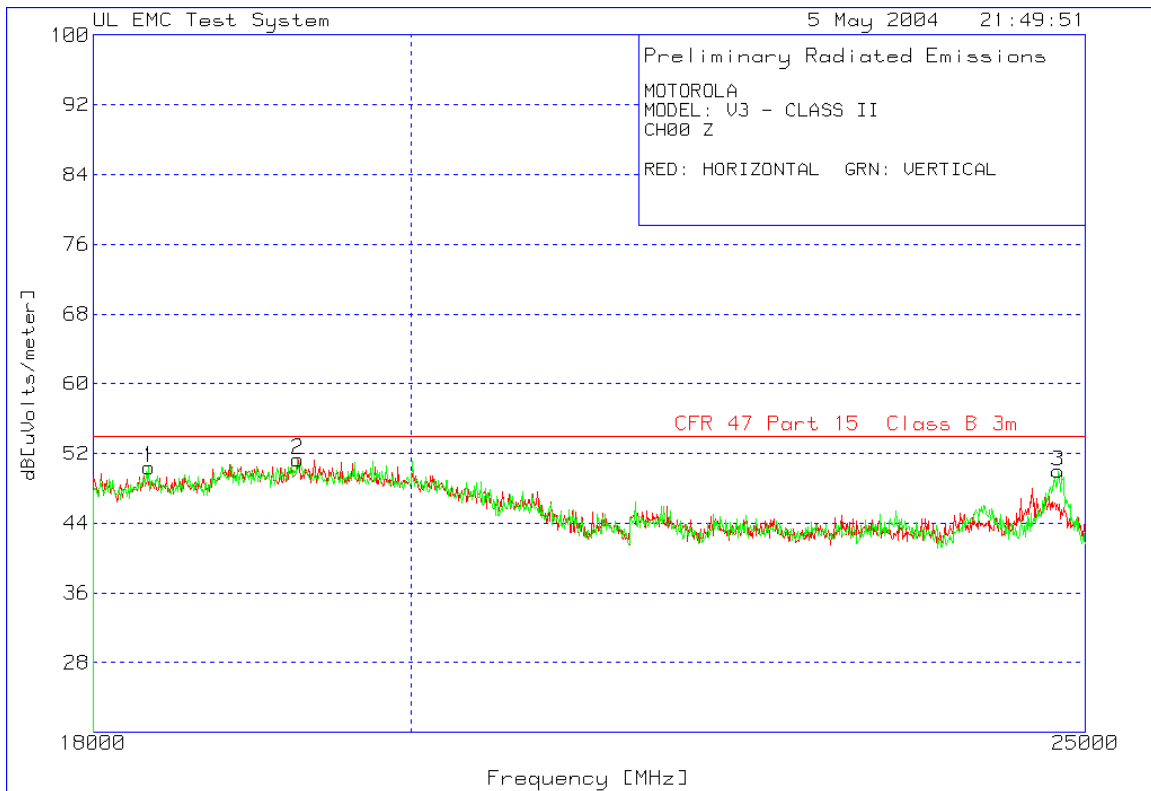
Horizontal 18000 - 25000MHz

1	18763.764	72.05 pk	-60.5	40.1	51.65	54
					Height:101 Horz Margin [dB]	-2.35
2	19212.212	73.12 pk	-60.8	40.3	52.62	54
					Height:101 Horz Margin [dB]	-1.38
3	19891.892	72.15 pk	-60.8	40.2	51.55	54
					Height:101 Horz Margin [dB]	-2.45

Vertical 18000 - 25000MHz

4	24782.783	68.44 pk	-58.8	40.3	49.94	54
					Height:150 Vert Margin [dB]	-4.06

LIMIT 1: CFR 47 Part 15 Class B 3m



18-25GHz Low-Channel Z-Orientation

MOTOROLA

MODEL: V3 - CLASS II

CH00 Z

RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
Vertical 18000 - 25000MHz						
1	18336.336	71.13 pk	-60.7	40	50.43	54
Height:149 Vert				Margin[dB]	-3.57	
2	19261.261	71.7 pk	-60.7	40.3	51.3	54
Height:101 Vert				Margin[dB]	-2.7	
3	24775.776	68.46 pk	-58.8	40.3	49.96	54
Height:149 Vert				Margin[dB]	-4.04	

LIMIT 1: CFR 47 Part 15 Class B 3m



18-25GHz Mid-Channel X-Orientation

MOTOROLA

MODEL: V3 - CLASS II

CH39 X

RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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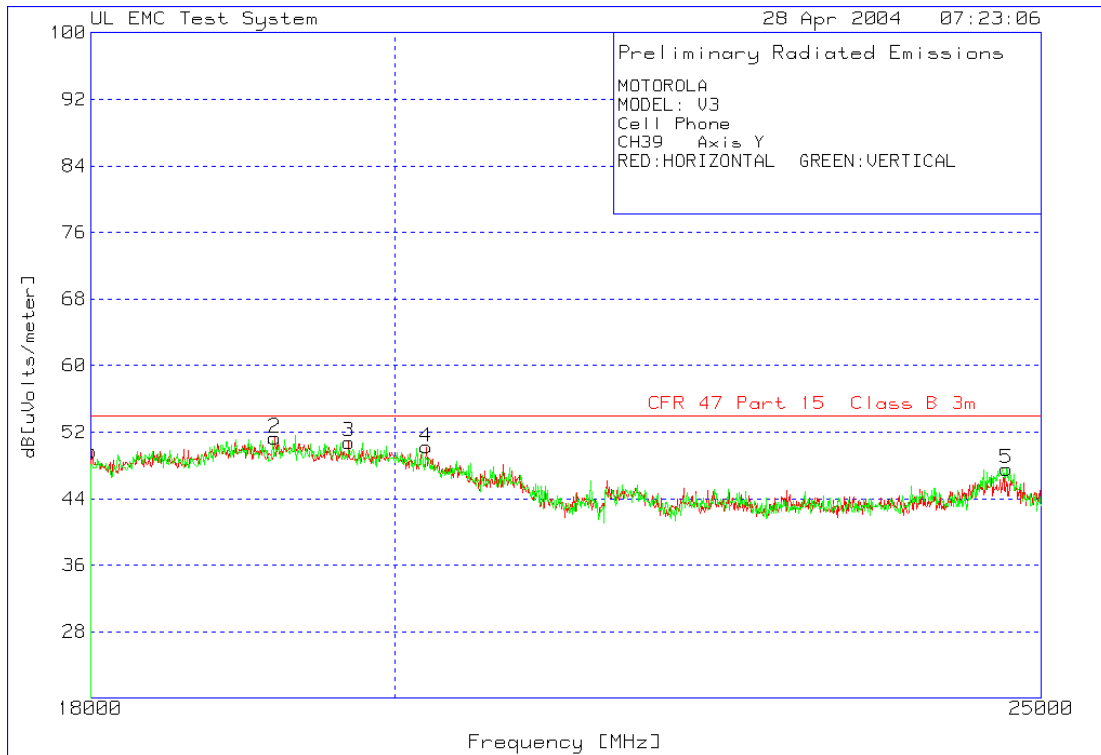
Horizontal 18000 - 25000MHz

1	19022.682	72.56 pk	-60.7	40.2	52.06	54
					Height:150 Horz Margin [dB]	-1.94
2	19891.261	71.11 pk	-60.8	40.2	50.51	54
					Height:101 Horz Margin [dB]	-3.49

Vertical 18000 - 25000MHz

3	24785.19	68.6 pk	-58.8	40.3	50.1	54
					Height:101 Vert Margin [dB]	-3.9

LIMIT 1: CFR 47 Part 15 Class B 3m



18-25GHz Mid-Channel Y-Orientation

MOTOROLA

MODEL: V3 - CLASS II

CH39 Y

RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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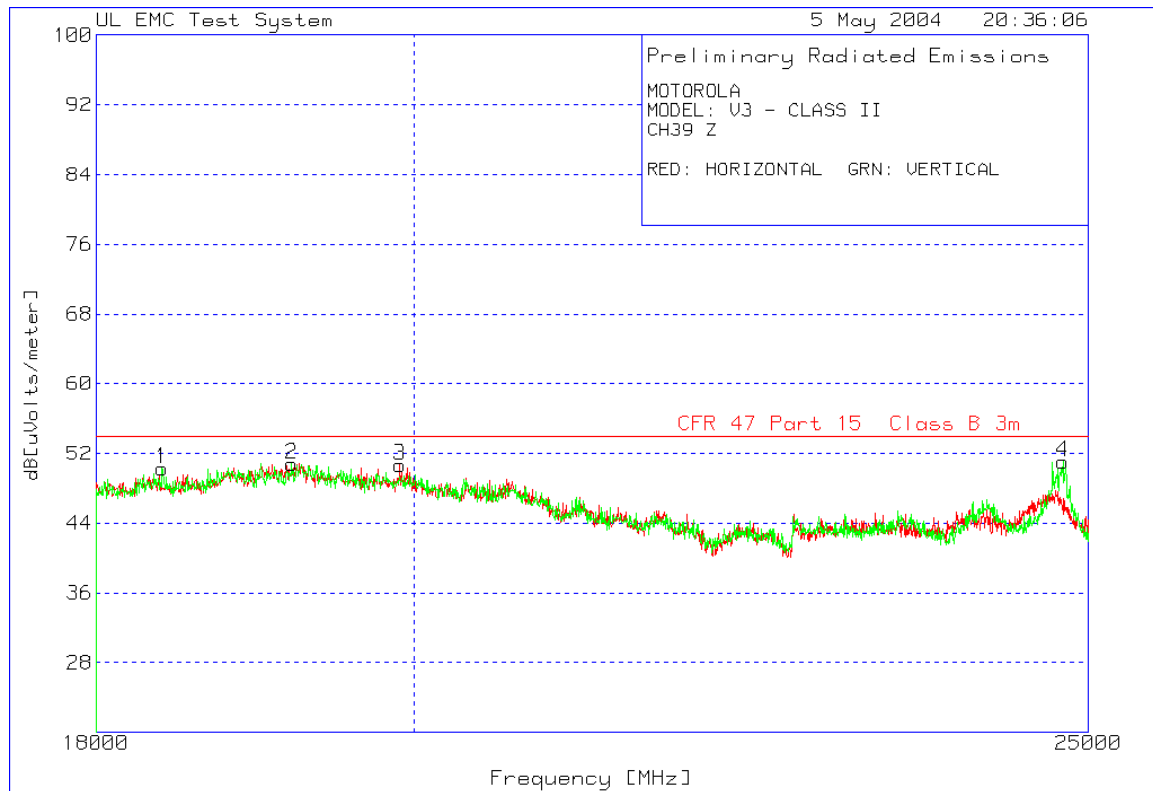
Horizontal 18000 - 25000MHz

1	18798.532	72.2 pk	-60.5	40.1	51.8	54
		Height:101 Horz	Margin [dB]		-2.2	
2	19097.398	71.41 pk	-60.7	40.2	50.91	54
		Height:150 Horz	Margin [dB]		-3.09	

Vertical 18000 - 25000MHz

3	19527.018	72.14 pk	-61	40.3	51.44	54
		Height:149 Vert	Margin [dB]		-2.56	
4	24715.144	69.17 pk	-58.6	40.3	50.87	54
		Height:101 Vert	Margin [dB]		-3.13	

LIMIT 1: CFR 47 Part 15 Class B 3m



18-25GHz Mid-Channel Z-Orientation

MOTOROLA

MODEL: V3 - CLASS II

CH39 Z

RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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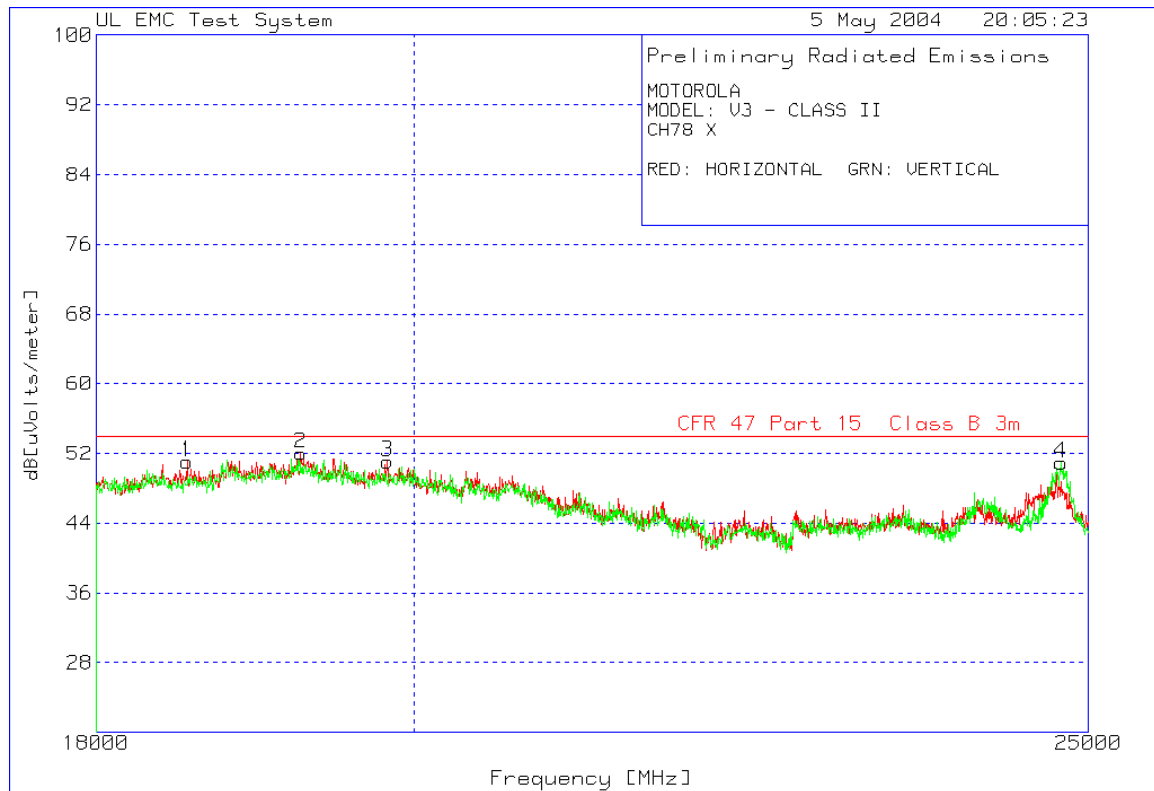
Horizontal 18000 - 25000MHz

3	19905.27	71.26 pk	-60.8	40.2	50.66	54
Height:150 Horz Margin [dB]					-3.34	

Vertical 18000 - 25000MHz

1	18396.931	70.68 pk	-60.5	40.1	50.28	54
Height:150 Vert Margin [dB]					-3.72	
2	19204.803	71.28 pk	-60.8	40.3	50.78	54
Height:150 Vert Margin [dB]					-3.22	
4	24789.86	69.66 pk	-58.9	40.3	51.06	54
Height:150 Vert Margin [dB]					-2.94	

LIMIT 1: CFR 47 Part 15 Class B 3m



18-25GHz High-Channel X-Orientation

MOTOROLA

MODEL: V3 - CLASS II

CH78 X

RED: HORIZONTAL GRN: VERTICAL

Test No.	Meter Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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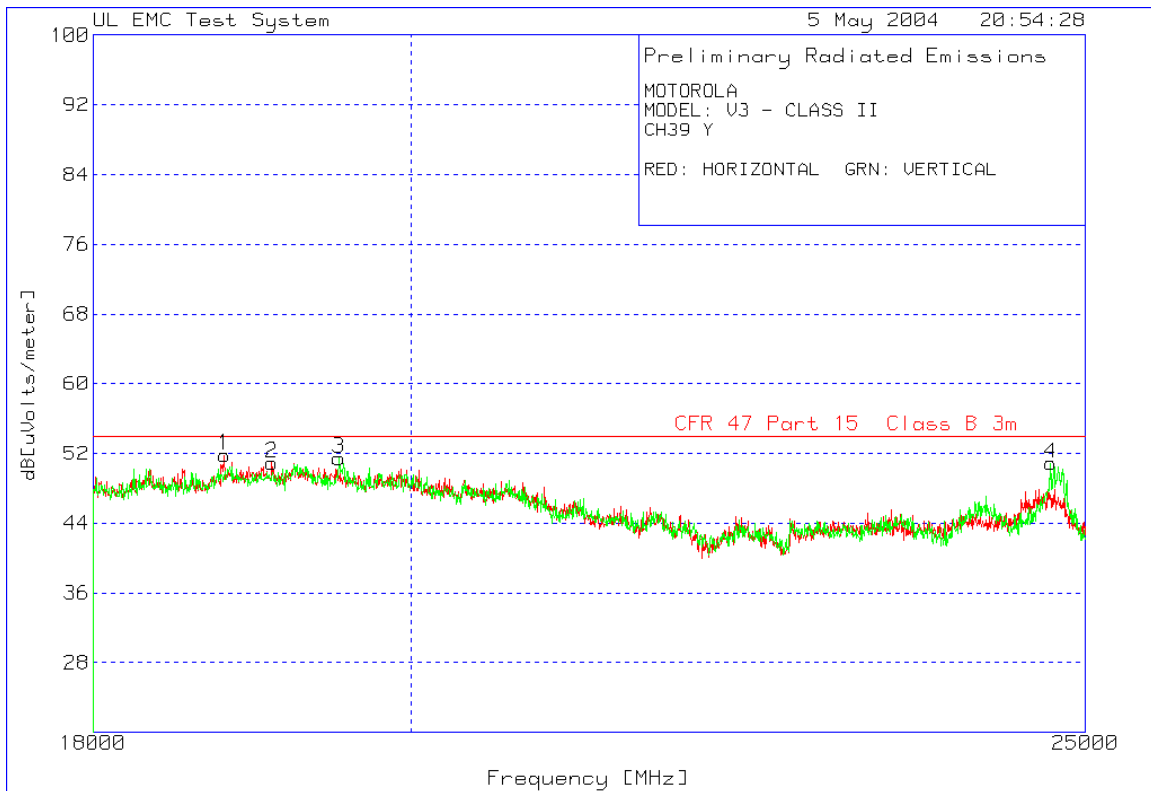
Horizontal 18000 - 25000MHz

1	18551.034	71.56 pk	-60.6	40.1	51.06	54
		Height:100 Horz			Margin [dB]	-2.94
2	19260.841	72.42 pk	-60.7	40.3	52.02	54
		Height:100 Horz			Margin [dB]	-1.98
3	19821.214	71.59 pk	-60.8	40.3	51.09	54
		Height:100 Horz			Margin [dB]	-2.91

Vertical 18000 - 25000MHz

4	24775.851	69.41 pk	-58.8	40.3	50.91	54
		Height:150 Vert			Margin [dB]	-3.09

LIMIT 1: CFR 47 Part 15 Class B 3m



18-25GHz High-Channel Y-Orientation

MOTOROLA

MODEL: V3 - CLASS II

CH78 Y

RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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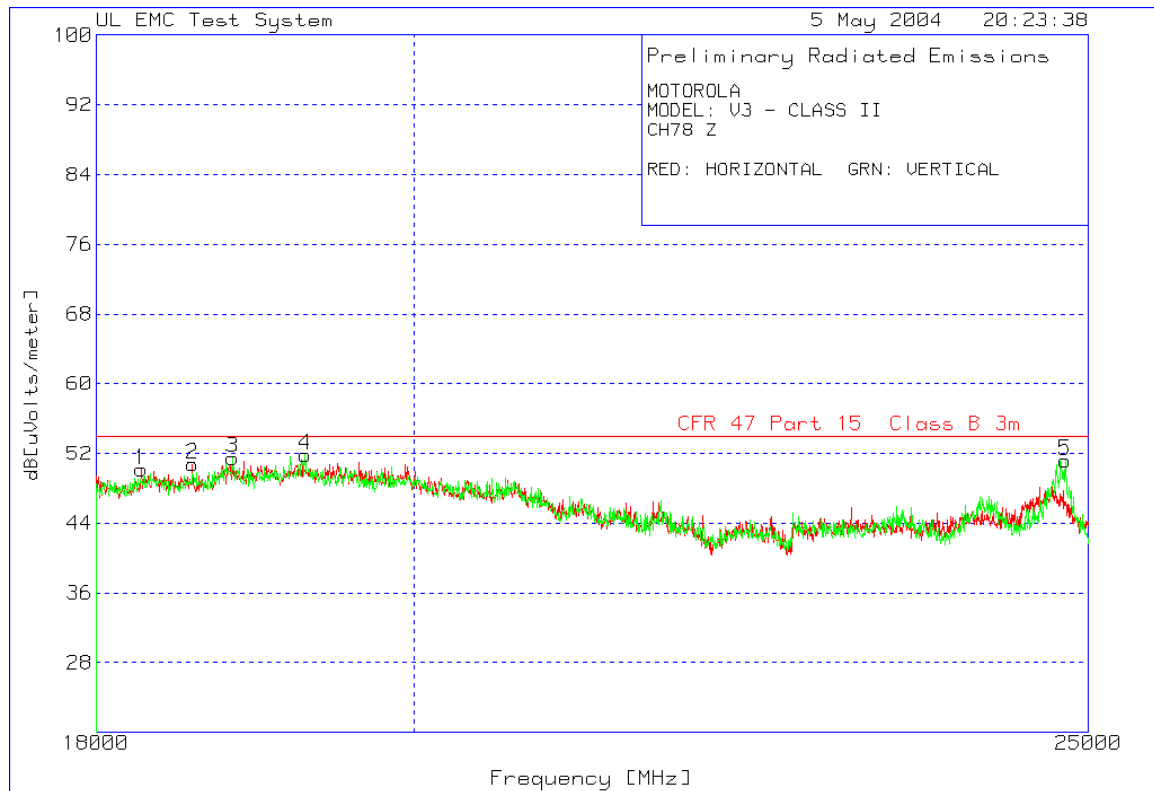
Horizontal 18000 - 25000MHz

1	18569.713	71.64 pk	-60.6	40.1	51.14	54
Height:101 Horz Margin [dB]						-2.86
2	18835.891	71.74 pk	-60.4	40.1	51.44	54
Height:150 Horz Margin [dB]						-2.56
3	19209.473	71.98 pk	-60.8	40.3	51.48	54
Height:101 Horz Margin [dB]						-2.52

Vertical 18000 - 25000MHz

4	24808.539	68.86 pk	-59	40.3	50.16	54
Height:150 Vert Margin [dB]						-3.84

LIMIT 1: CFR 47 Part 15 Class B 3m



18-25GHz High-Channel Z-Orientation

MOTOROLA

MODEL: V3 - CLASS II

CH78 Z

RED: HORIZONTAL GRN: VERTICAL

Test No.	Frequency [MHz]	Meter Reading [dB(uV)]	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uV/m]	Limit:1
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Horizontal 18000 - 25000MHz

1	18270.847	70.97 pk	-60.8	40	50.17	54
		Height:101 Horz	Margin [dB]		-3.83	
2	18583.723	71.26 pk	-60.6	40.1	50.76	54
		Height:101 Horz	Margin [dB]		-3.24	

Vertical 18000 - 25000MHz

3	18831.221	71.79 pk	-60.4	40.1	51.49	54
		Height:149 Vert	Margin [dB]		-2.51	
4	19288.859	72.22 pk	-60.7	40.3	51.82	54
		Height:149 Vert	Margin [dB]		-2.18	
5	24808.539	69.91 pk	-59	40.3	51.21	54
		Height:149 Vert	Margin [dB]		-2.79	

LIMIT 1: CFR 47 Part 15 Class B 3m

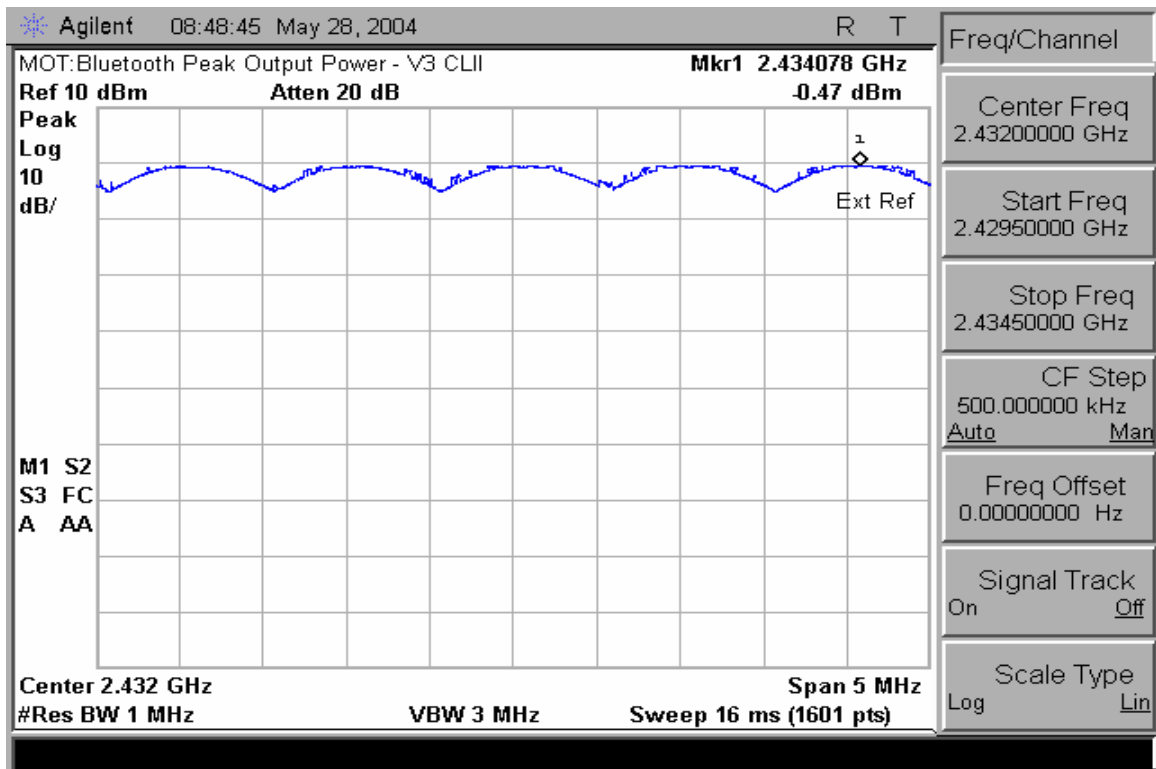
PEAK OUTPUT POWER

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

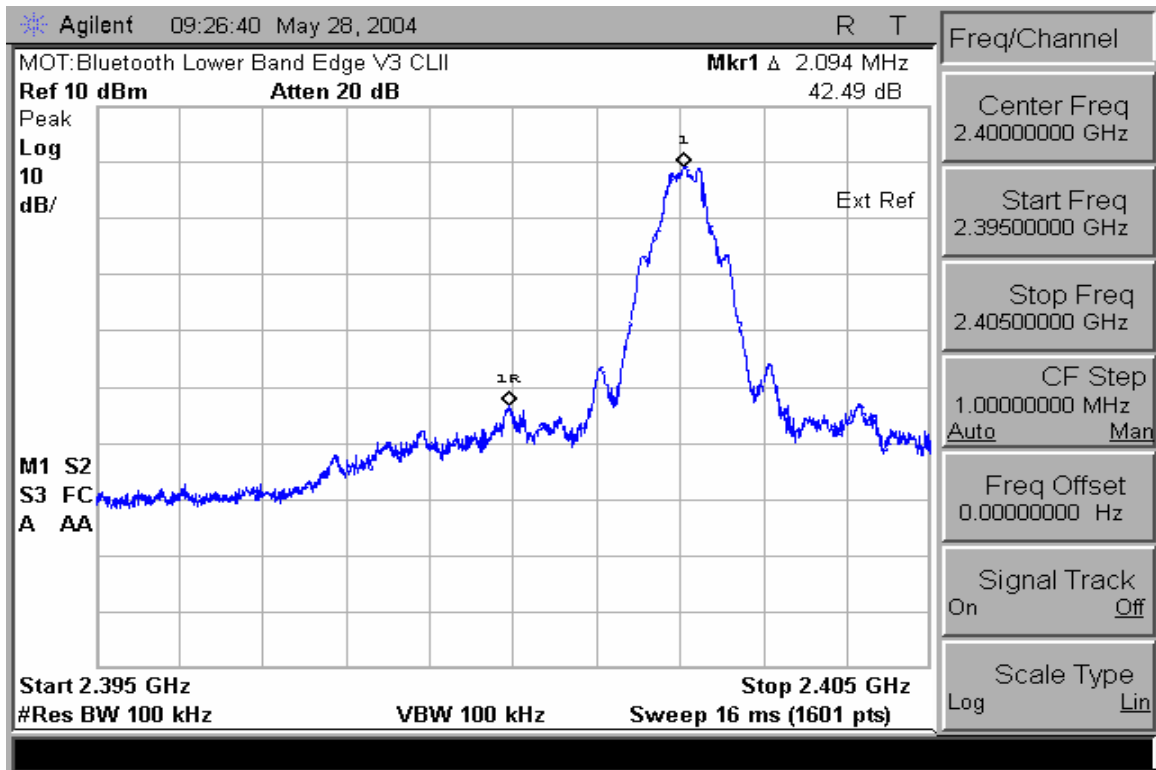
CFR 47 Part 15.247

Measurement Procedure

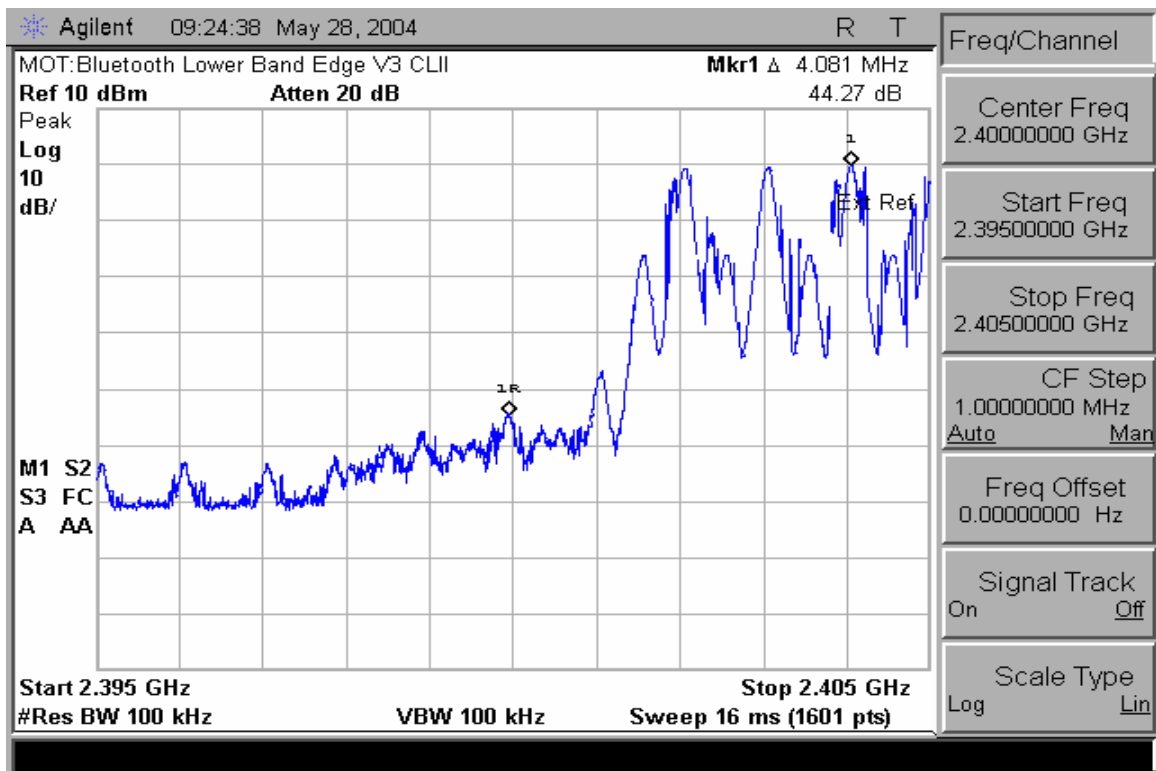
The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage.

Measurement Results

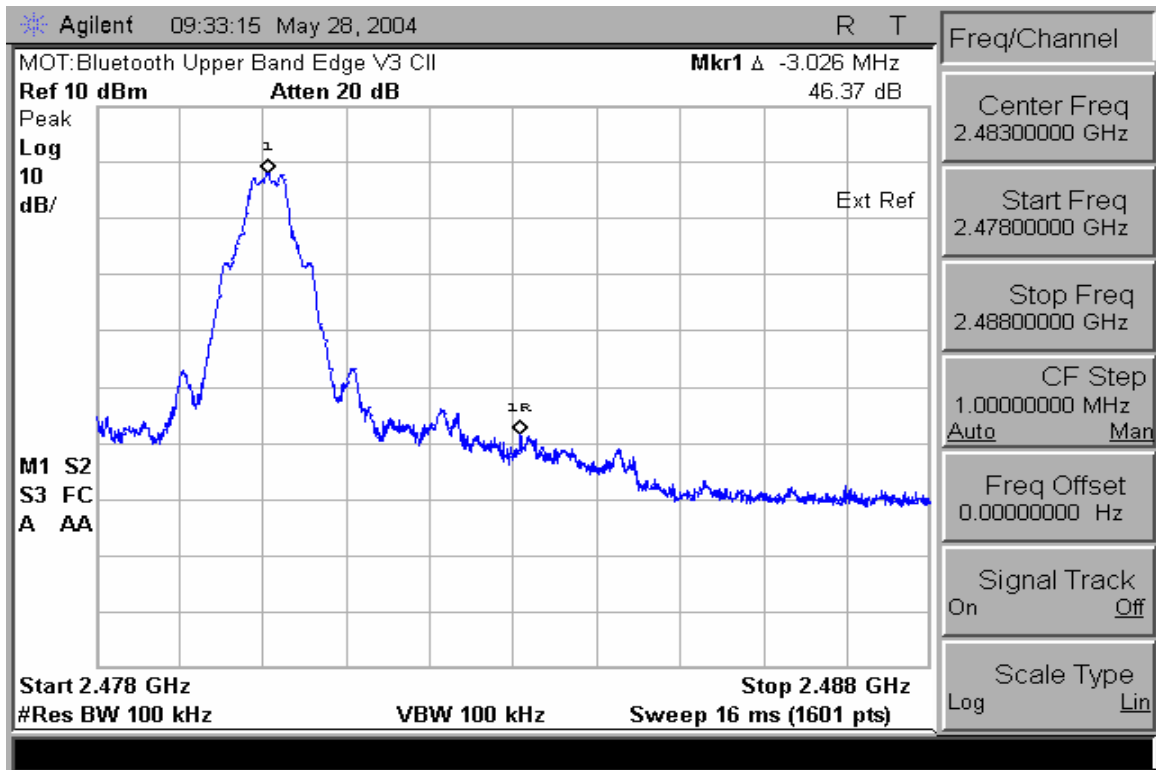
See Attached:



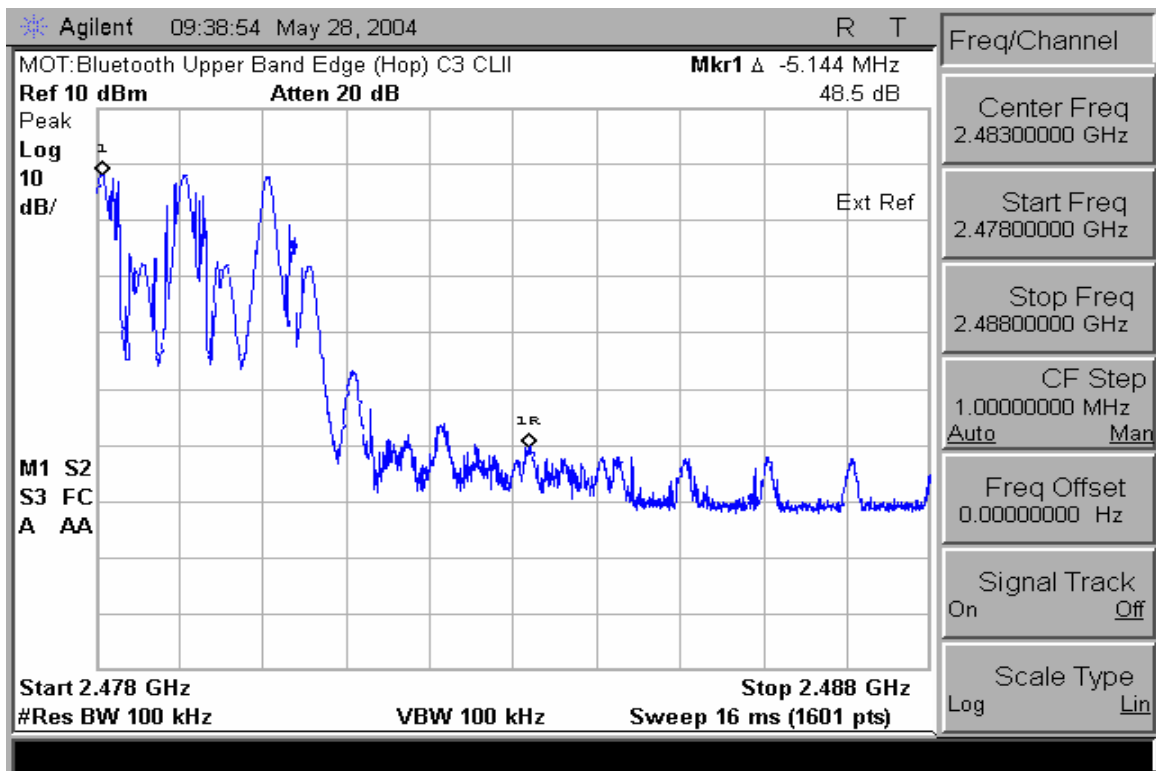
Low Band Edge with Hopping Disabled



Low Band Edge with Hopping Enabled



High Band Edge with Hopping Disabled



High Band Edge with Hopping Enabled

SPURIOUS RF CONDUCTED EMISSIONS

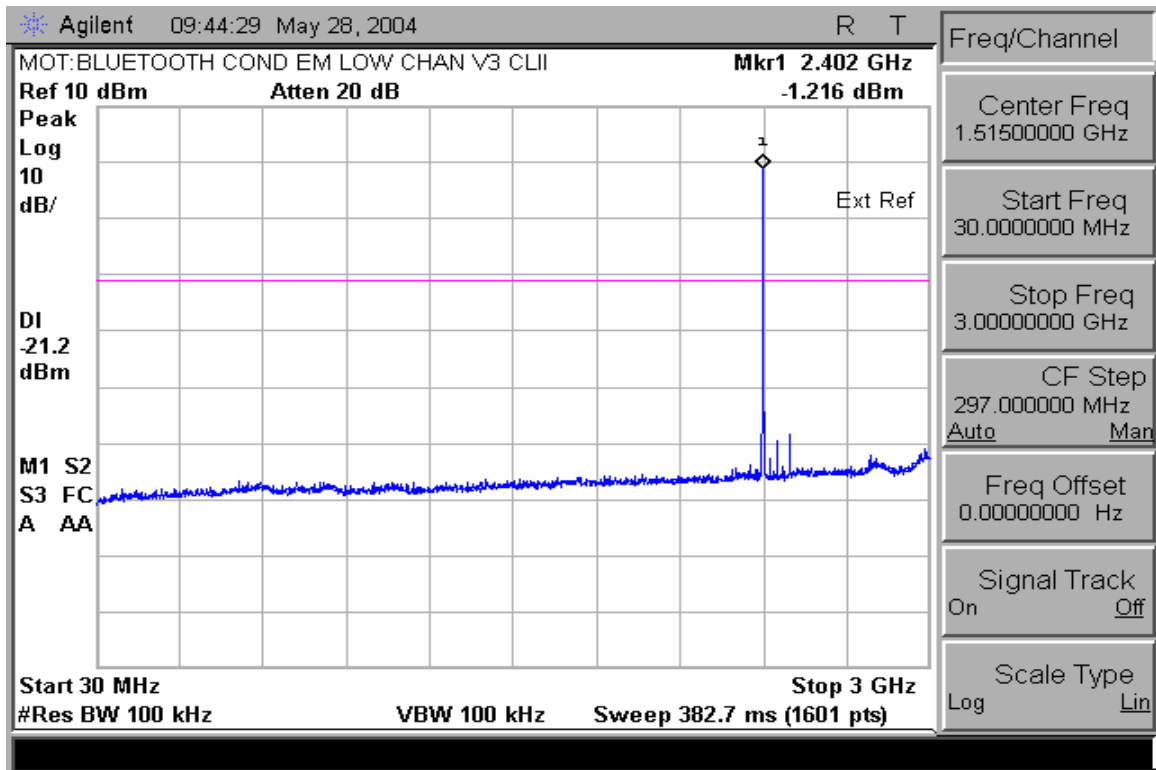
CFR 47 Part 15.247

Measurement Procedure

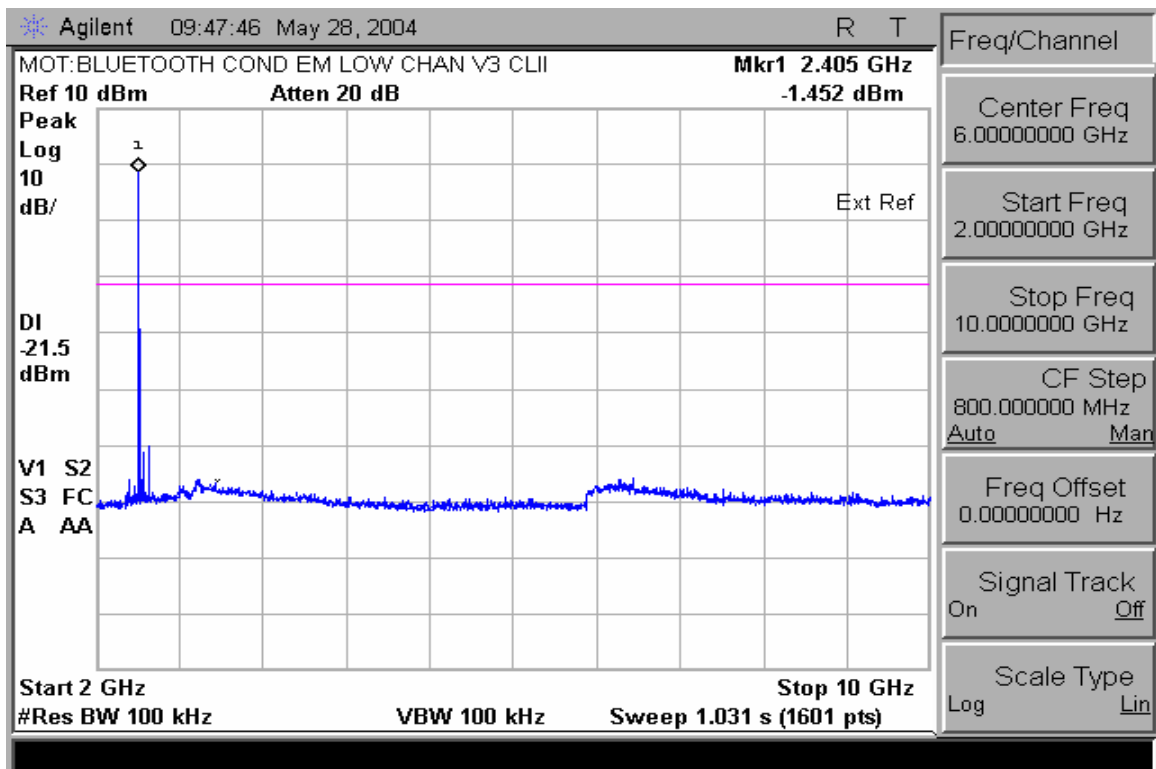
The RF output port of the Equipment-Under-Test is directly coupled to the input of the EMC analyzer through a specialized RF connector and a 10dB passive attenuator. A fully charged battery was used for the supply voltage.

Measurement Results

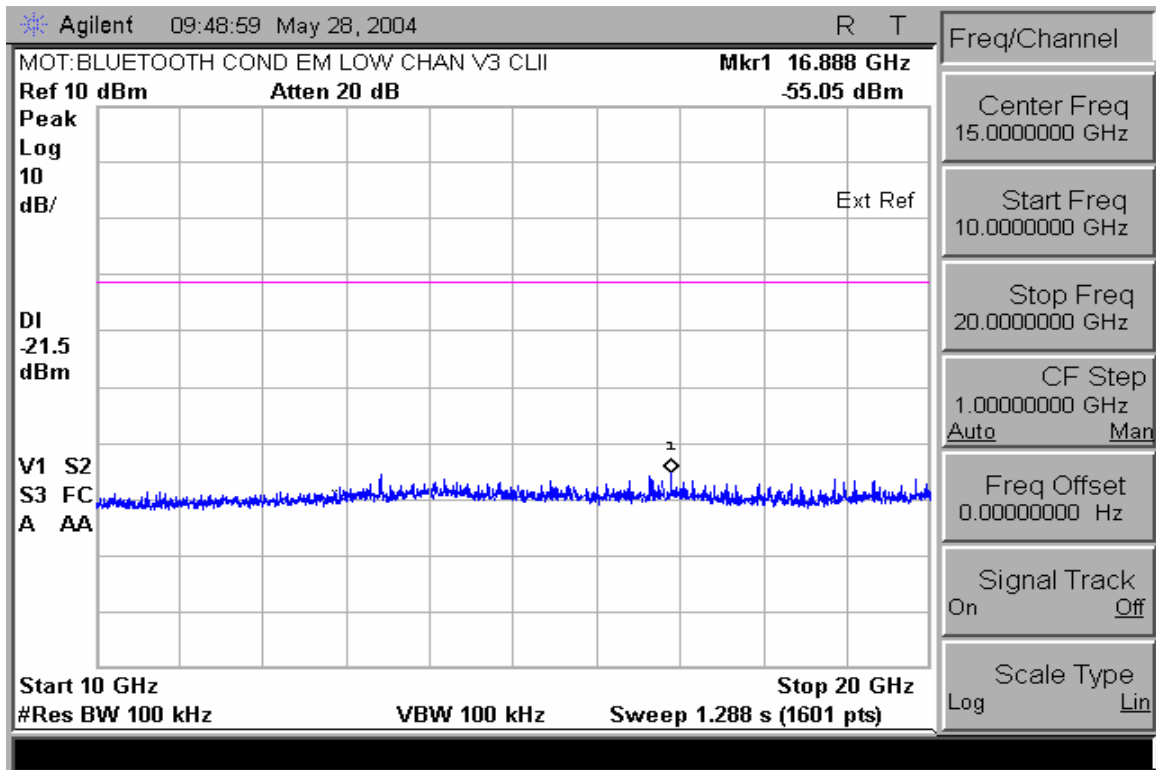
See attached:



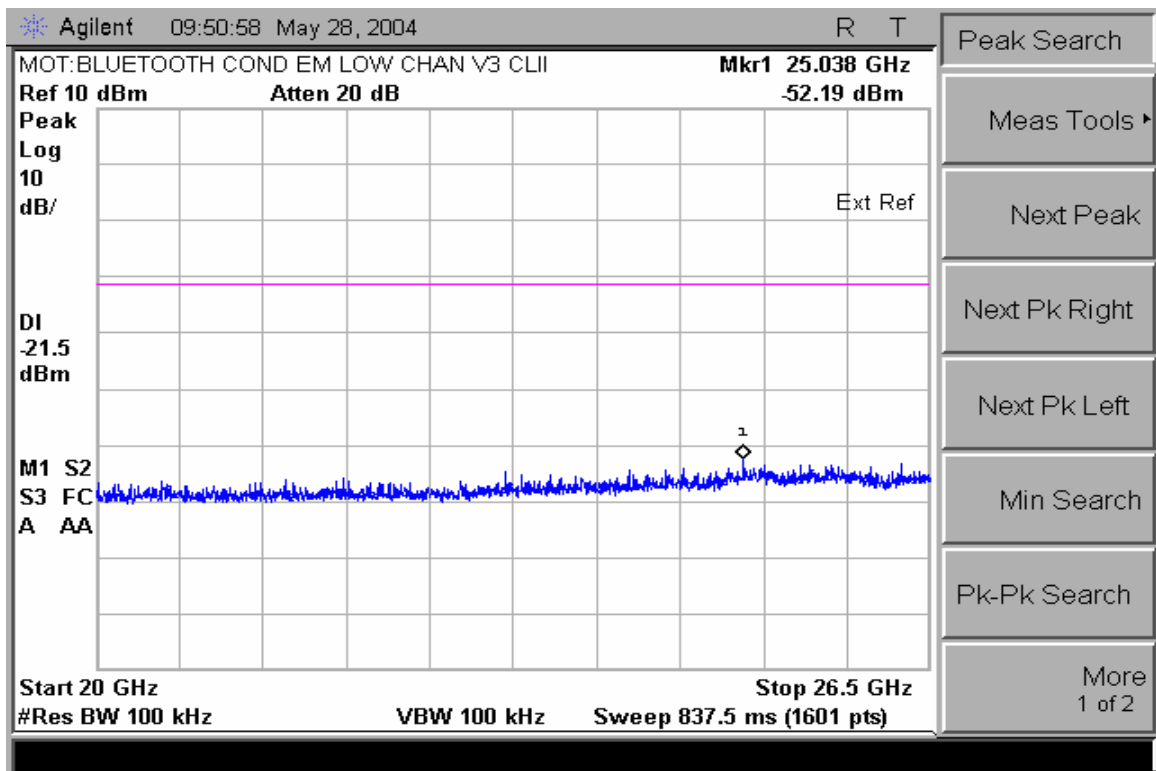
Conducted Spurious Emissions 30-3000MHz (Low Channel Enabled)



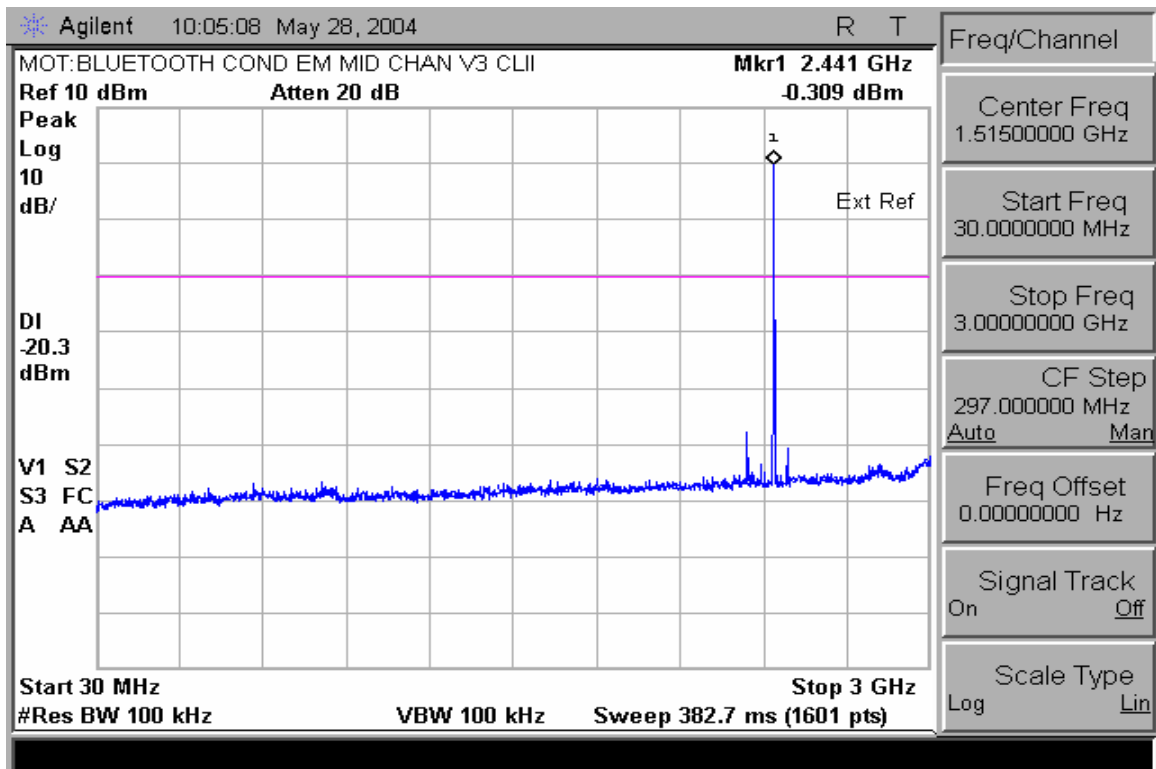
Conducted Spurious Emissions 2-10GHz (Low Channel Enabled)



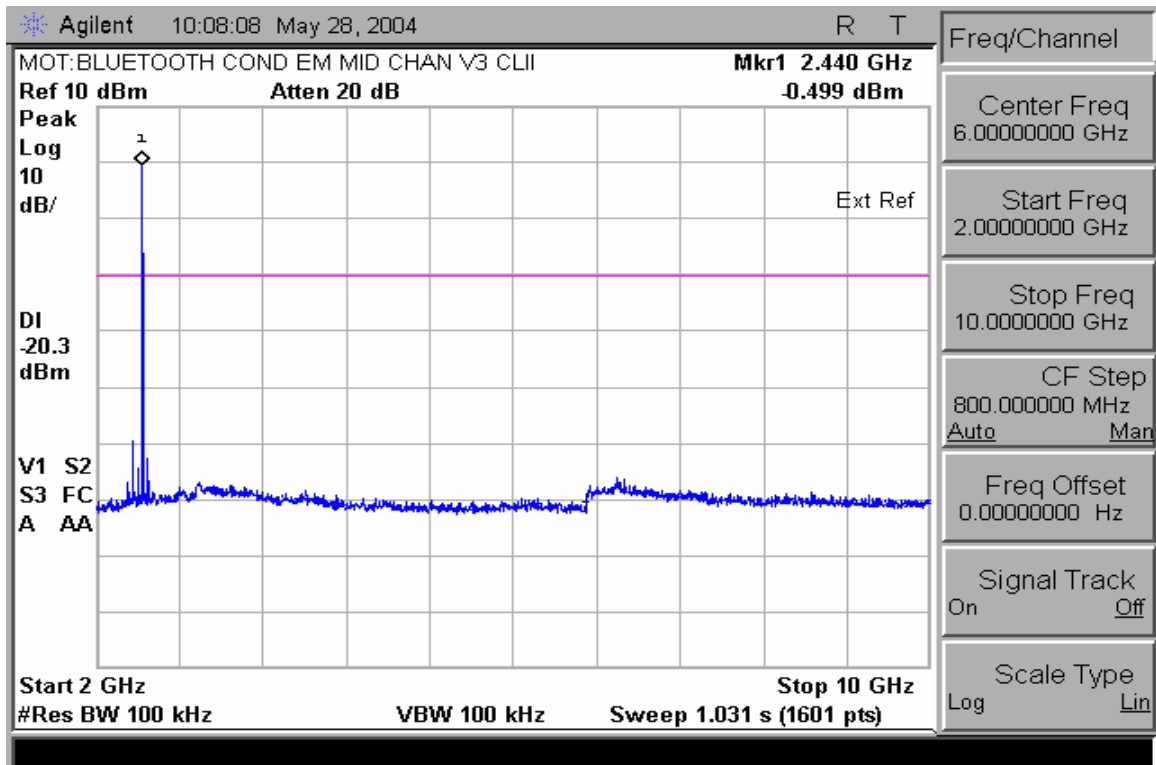
Conducted Spurious Emissions 10-20GHz (Low Channel Enabled)



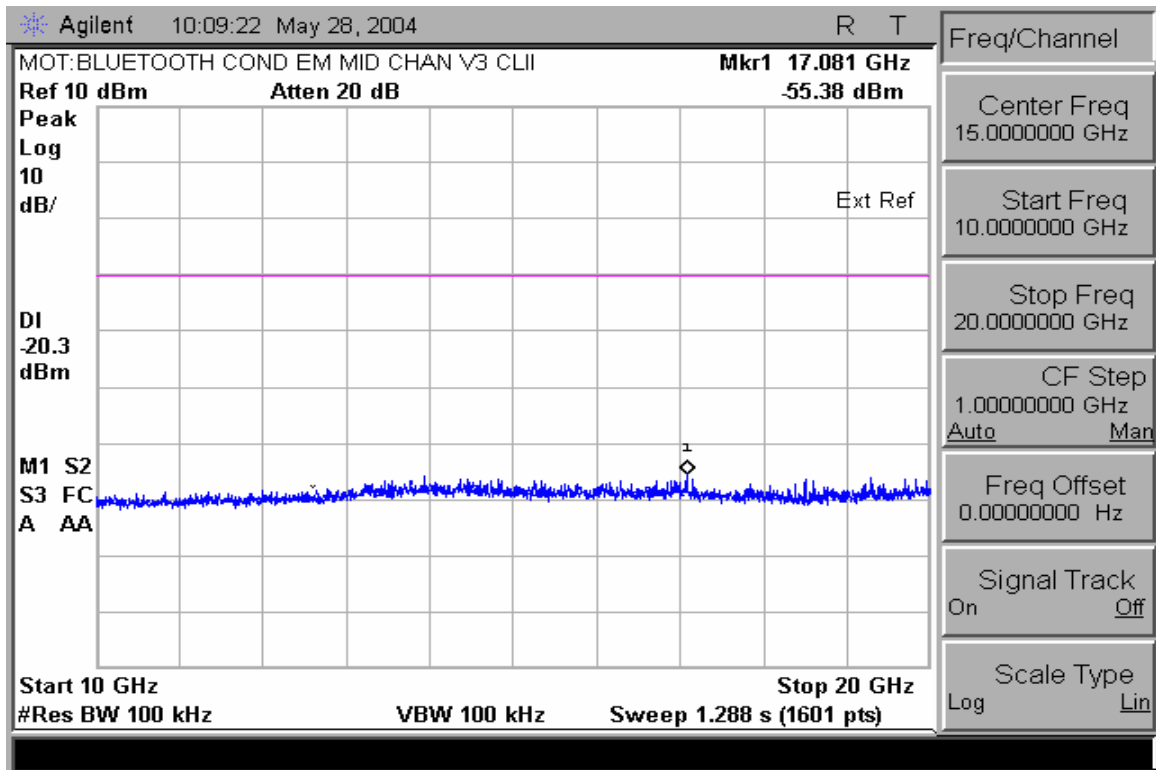
Conducted Spurious Emissions 20-26.5GHz (Low Channel Enabled)



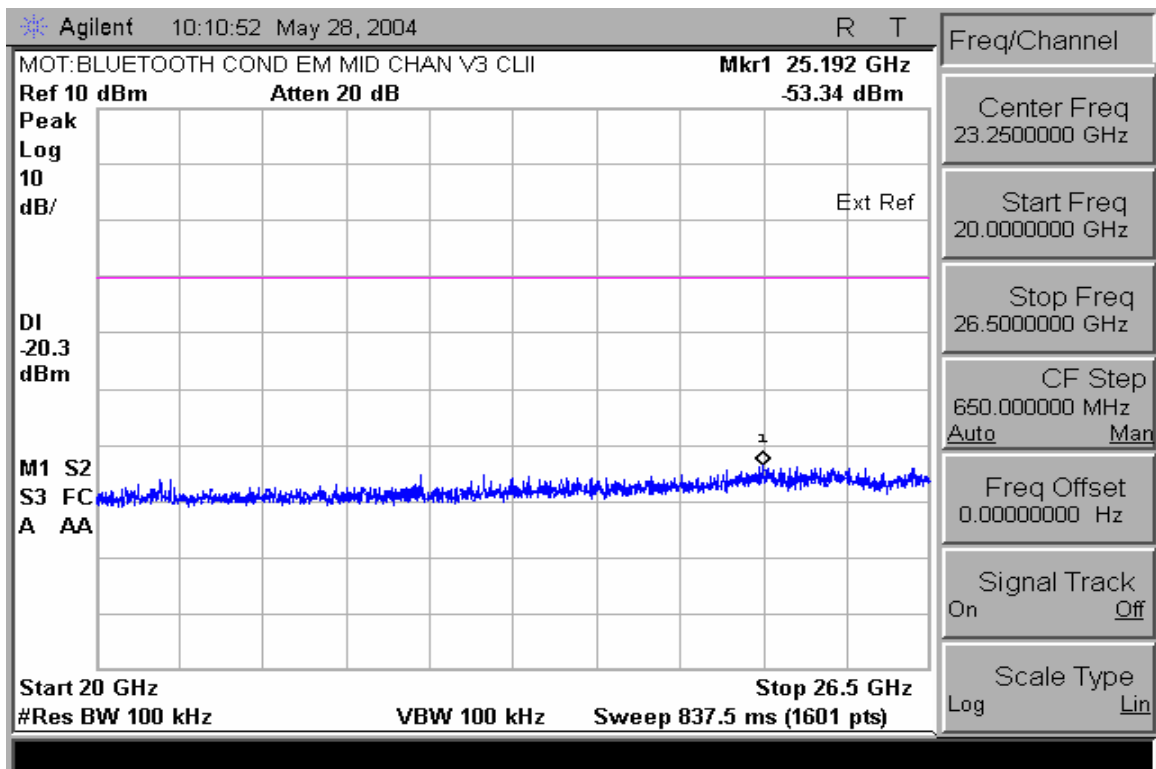
Conducted Spurious Emissions 30-3000MHz (Mid Channel Enabled)



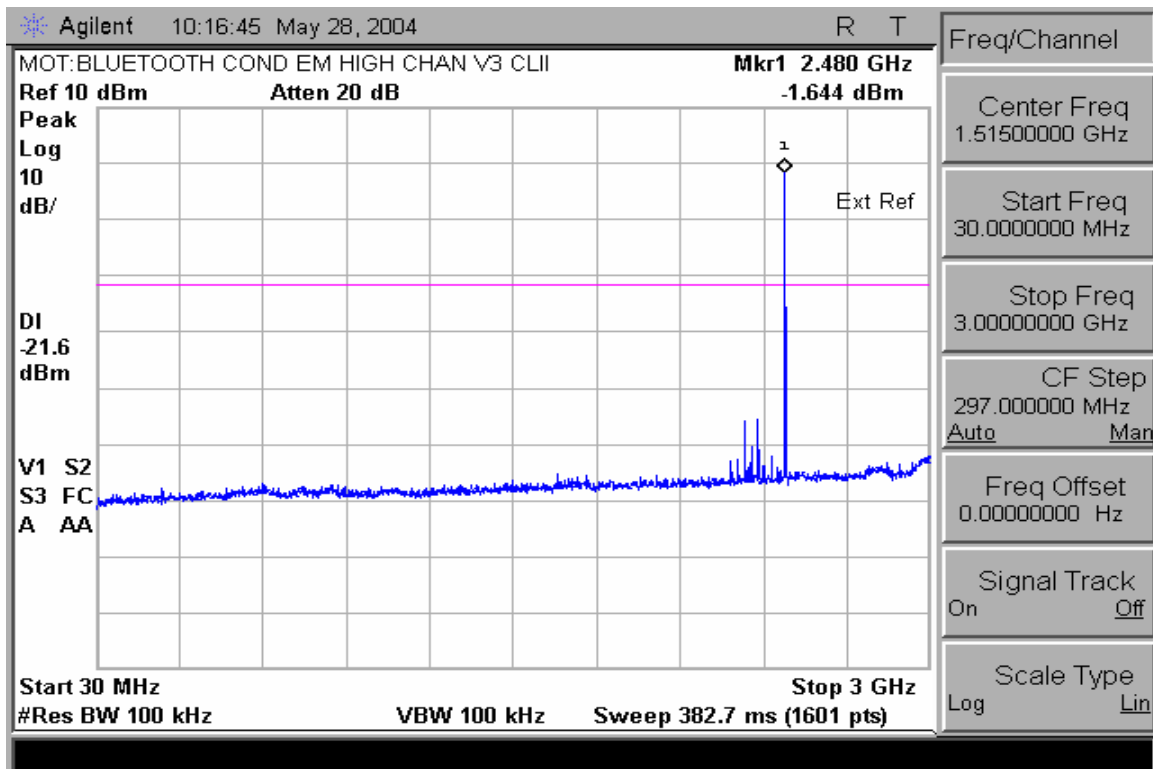
Conducted Spurious Emissions 2-10GHz (Mid Channel Enabled)



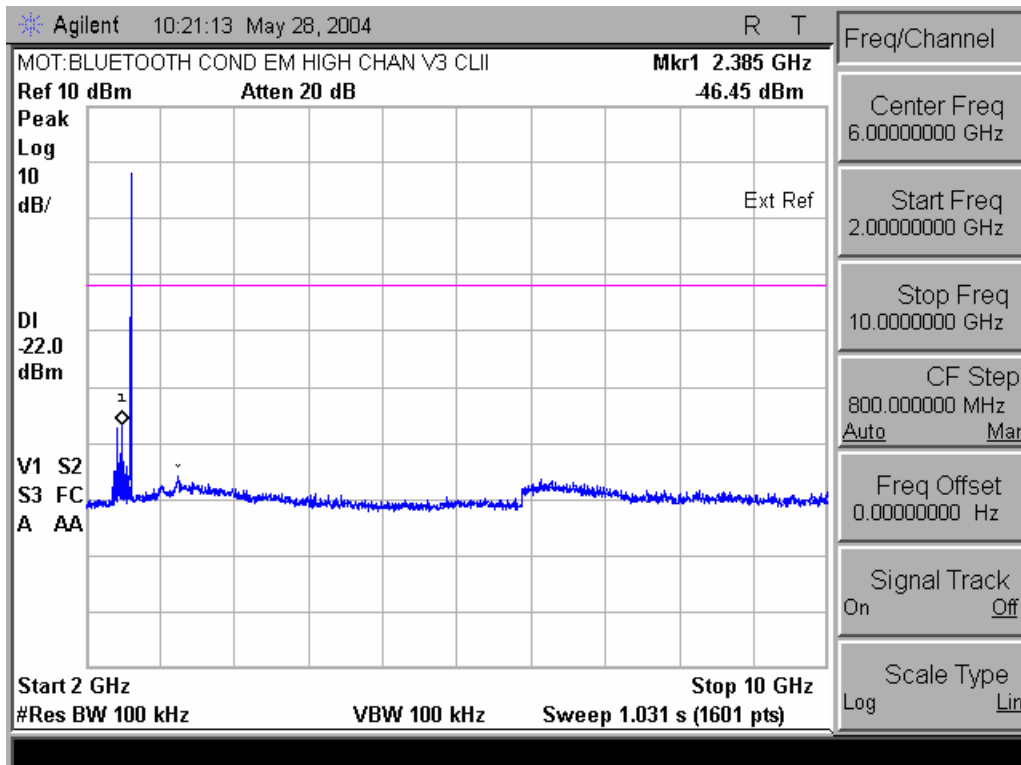
Conducted Spurious Emissions 10-20GHz (Mid Channel Enabled)



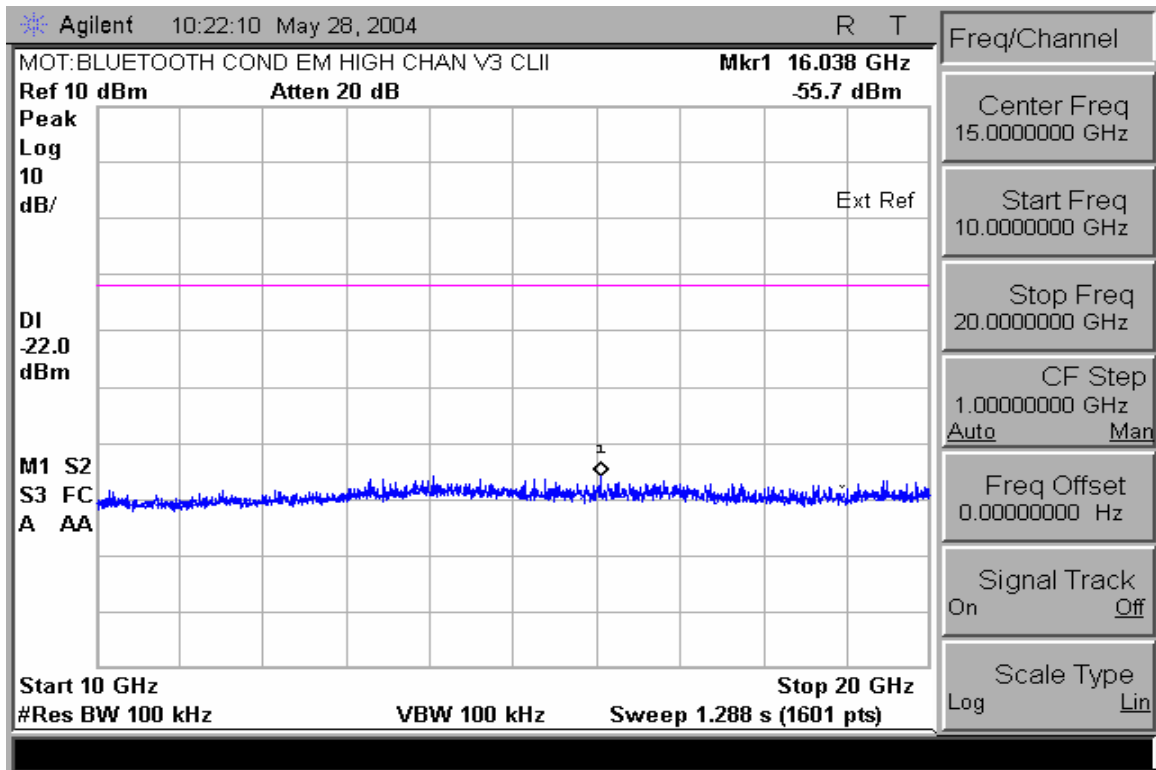
Conducted Spurious Emissions 20-26.5GHz (Mid Chan Enabled)



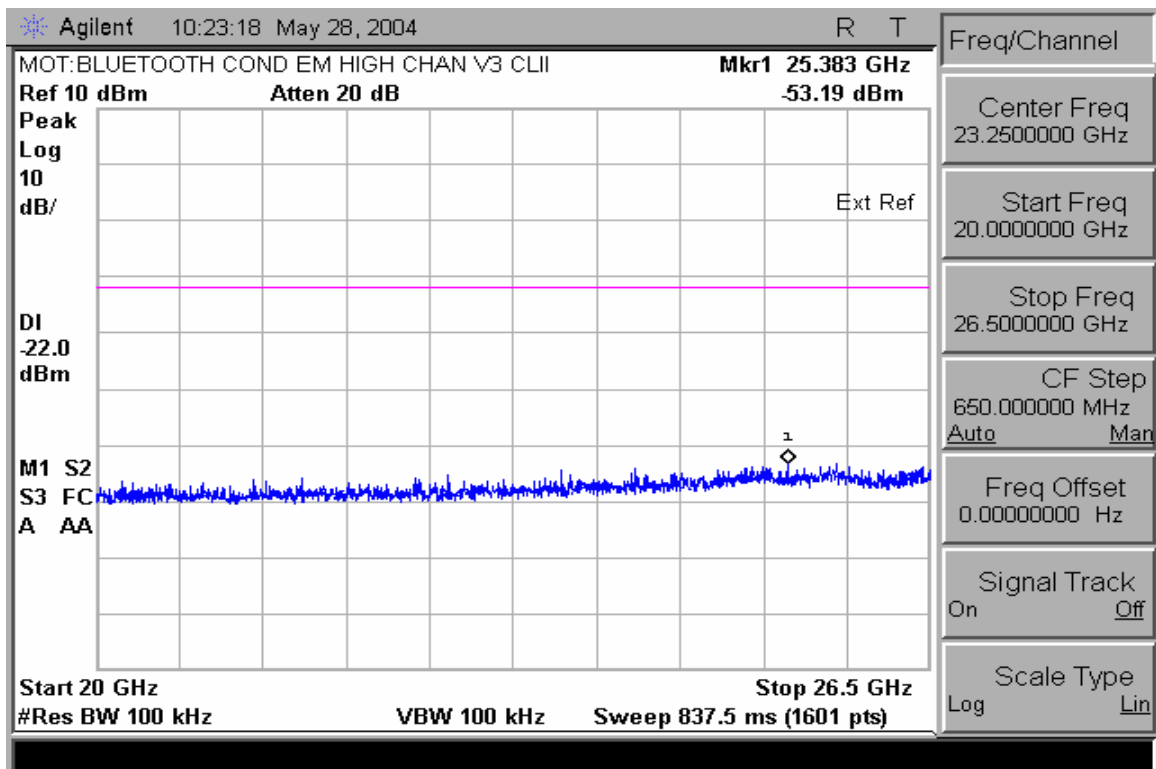
Conducted Spurious Emissions 30-3000MHz (High Channel Enabled)



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