datedUL International EMC Services
333 Pfingsten Road
Northbrook, Illinois 60062-2096
(800) 873-8536
Fax No. (847) 272-8864
http://www.ul.com/hitech/emc/

October 31, 2006

Motorola Inc.
Attn: Mr. Doug Hammers
600 N. US HWY 45
Libertyville, IL 60048
US

UL Reference: File MC15003, Project 06CA54650

Subject: EMC Test and Measurement Report for
Cell Phone FCC ID - IHDT56FP2, 19265-1

Dear Mr. Hammers:

We have provided with this letter your EMC Test Report for the above referenced model. The product was determined to comply with the requirements noted in the report.

Please review the attached report and direct any questions or comments to me.

We appreciate your interest in UL's EMC Services, and encourage you to contact us in the future should you need EMC test services. This closes Project 06CA54650.

Best regards,

Lou Madjarov (Ext 43957)
EMC Sr. Project Engineer
International EMC Services

Reviewed by:

Jack Steiner
Section Manager
International EMC Services

EMC – TEST REPORT

Issue Date: October 30, 2006

Ö **EMISSIONS**

IMMUNITY

Test Report File No.	:	MC15003
Project No.	:	06CA54650
		19265-1
Kind of Product	:	NFC Cell Phone
Applicant	:	Motorola Inc.
License Holder	:	Motorola Inc.
Address	:	600 N. US HWY 45
	:	Libertyville, IL 60048
	:	US
Manufacturer	:	Same as Applicant
	:	
	:	
	:	
Test Result	:	**COMPLIANT**

This report without appendices consists of 10 pages. Appendix A contains test photos, Appendix B contains original test data and Appendix C contains operating instructions provided by the manufacturer. The data contained in this report reflects only the items tested in the configurations and mode of operations described. An attempt has been made to arrange the EUT, with the equipment provided, into a test configuration which maximizes the observed emissions of the EUT while simulating, as close as practical, a typical end-use installation.

Underwriters Laboratories Inc. 333 Pfingsten Rd. Northbrook, IL 60062
Fax: (847) 272-8864

REPORT DIRECTORY

SECTION TITLE

1.0 GENERAL PRODUCT DESCRIPTION

The equipment under test (EUT) is a NFC cell phone FCC ID - IHDT56FP2, 19265-1.

1.0.1 Equipment Mobility:

Hand-held

1.0.2 Test Voltage and Frequency:

Voltage (V)	Frequency (Hz)
Cell phone battery	DC

1.1 MODEL DIFFERENCES

Any other model(s) represented by the models tested in this investigation will be documented by the manufacturer.

1.2 ENVIRONMENTAL CONDITIONS IN TEST LAB

Temperature:	**20-25 °C**
Relative Humidity:	**30-60% RH**
Atmospheric Pressure:	**860-1060 mbar**

1.3 CALIBRATION OF EQUIPMENT USED FOR MEASUREMENT

All test equipment and test accessories are calibrated on a regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less.

All test equipment calibrations are traceable to the National Institute of Standards and Technology (NIST), therefore, all test data recorded in this report is traceable to NIST.

Equipment Calibration Data

Manufacturer Name	Item Name Description	Model #	Serial Number	Calibration Date	Calibration Due Date
Hewlett Packard	QP Adapter	85650A	2811A01069	1/06/06	1/06/07
Hewlett Packard	S/A Display	8566B	2542A12974	1/06/06	1/06/07
Hewlett Packard	S/A	8566B	2637A03376	1/06/06	1/06/07
Chase	Bi-Con Antenna 30-300MHz	VBA6106A	1246	08/15/06	08/15/07
Chase	Log-Periodic Antenna	UPA6109	1060	3/17/06	3/17/07
EMCO	Horn Antenna 1-18GHz	3115	2638	8/09/06	8/09/07
EMCO	Loop Antenna Model	6502/1	1089	1/09/06	1/09/07

1.4 EUT CONFIGURATION(s)

See Appendix A for individual set-up configuration(s). In addition to the EUT, the following peripheral devices and/or cables were connected during the measurement:

Phone was tested in battery mode only. No external cables (USB, Headphone or Charger) were attached per manufacturer's request.

Device	Manufacturer	Submission #	Serial #	FCC ID
EUT	Motorola Corp	19265-1	-	IHDT56FP2

1.5 EUT OPERATING MODE(s)

The equipment under test was operated during the measurements under the following conditions:

- Per manufacturer's request tests were performed in NFC mode only. See Appendix C for manufacturer's provided instructions for configuring the phone to operate in this mode.
- Tests were performed with EUT orientated along X, Y and Z orthogonal axis.

1.6 DEVICE MODIFICATIONS

The following modifications were necessary for compliance:

None

2.0 EMISSIONS TEST REGULATIONS

The following test were performed according to the following regulations:

- The **radiated emission** requirements of paragraph **15.225a), b), c) and d) and 15.209 of CFR47 Part 15 2006.** Under this project only 9kHz-30MHz, 30MHz to 1000MHz, 1GHz to 10GHz and band-edge measurements were performed.

RADIATED ELECTRIC FIELD EMISSIONS
9kHz to 30MHz and 30 to 1000MHz

Test Location

10 Meter Semi-Anechoic Chamber

UL Procedure
Northbrook Work Instruction for Measurement of Radiated Emissions (EMC)
08-CA-W0030

Test Instruments

Spectrum Analyzer / Quasi-peak Adapter / Preamplifier

Hewlett Packard Model 8566B Spectrum Analyzer	EMC4085
Model 85650A Quasi-peak Adapter	EMC4016
Miteq AM-3A-000110-N Preamp	EMC4151

Antennas

Chase EMC Ltd., Biconical Antenna Model VBA6106A	S/N 1246	EMC4078
Chase EMC Ltd., Log Periodic Antenna Model UPA6109	S/N 1060	EMC4258
EMCO Loop Antenna Model 6502/1	S/N 1089	EMC4026

Frequency Range of Measurement

9kHz – 30MHz
30MHz-1000MHz

Measurement Distance

3 meters – 9kHz – 30MHz,
10 meters - 30MHz -1000MHz

Test Results

The requirements are:
MET

Remarks

See App. B for complete test results.
Preliminary peak scans were performed with the EUT configured along X, Y and Z orthogonal axis. Final maximized (azimuth and height) measurements were then performed under worst-case configuration as determined during preliminary measurement.

RADIATED ELECTRIC FIELD EMISSIONS, 1 TO 10 GHz
BAND-EDGE MEASUREMENTS

Test Location

10 Meter Semi-Anechoic Chamber

UL Procedure

Northbrook Work Instruction for Measurement of Radiated Emissions (EMC)
08-CA-W0030

Test Instruments

Spectrum Analyzer

Hewlett Packard Model 8566B Spectrum Analyzer EMC4085

Antennas

Emco	Double-Ridge Guide Horn	3115	2638

Frequency Range of Measurement
1 to 10 GHz

Measurement Distance
3 meters

Test Results

The requirements are:
MET

Remarks
See App. B for complete test results.

Preliminary peak scans were performed with the EUT configured along X, Y and Z orthogonal axis. Final maximized (azimuth and height) measurements were then performed under worst-case configuration as determined during preliminary measurement.

3.0 IMMUNITY TEST REGULATIONS

Immunity testing was not performed per the request of the manufacturer nor required by CFR 47, Part 15.

4.0 GENERAL REMARKS

Sample Receipt Date : October 25, 2006

Test Dates

Start : October 25, 2006
End : October 25, 2006

4.1 SUMMARY

The requirements according to the technical regulations are:

MET

Underwriters Laboratories Inc.
333 Pfingsten Road
Northbrook, IL 60062 USA

Test Engineer:

Lou Madjarov (Ext 43957)
EMC Sr. Project Engineer
International EMC Services

Reviewed by:

Jack Steiner
Section Manager
International EMC Services

APPENDIX A

PHOTOS

Radiated Emissions
X-Axis

Radiated Emissions
Y-Axis

Radiated Emissions
Z-Axis

APPENDIX B

TEST DATA

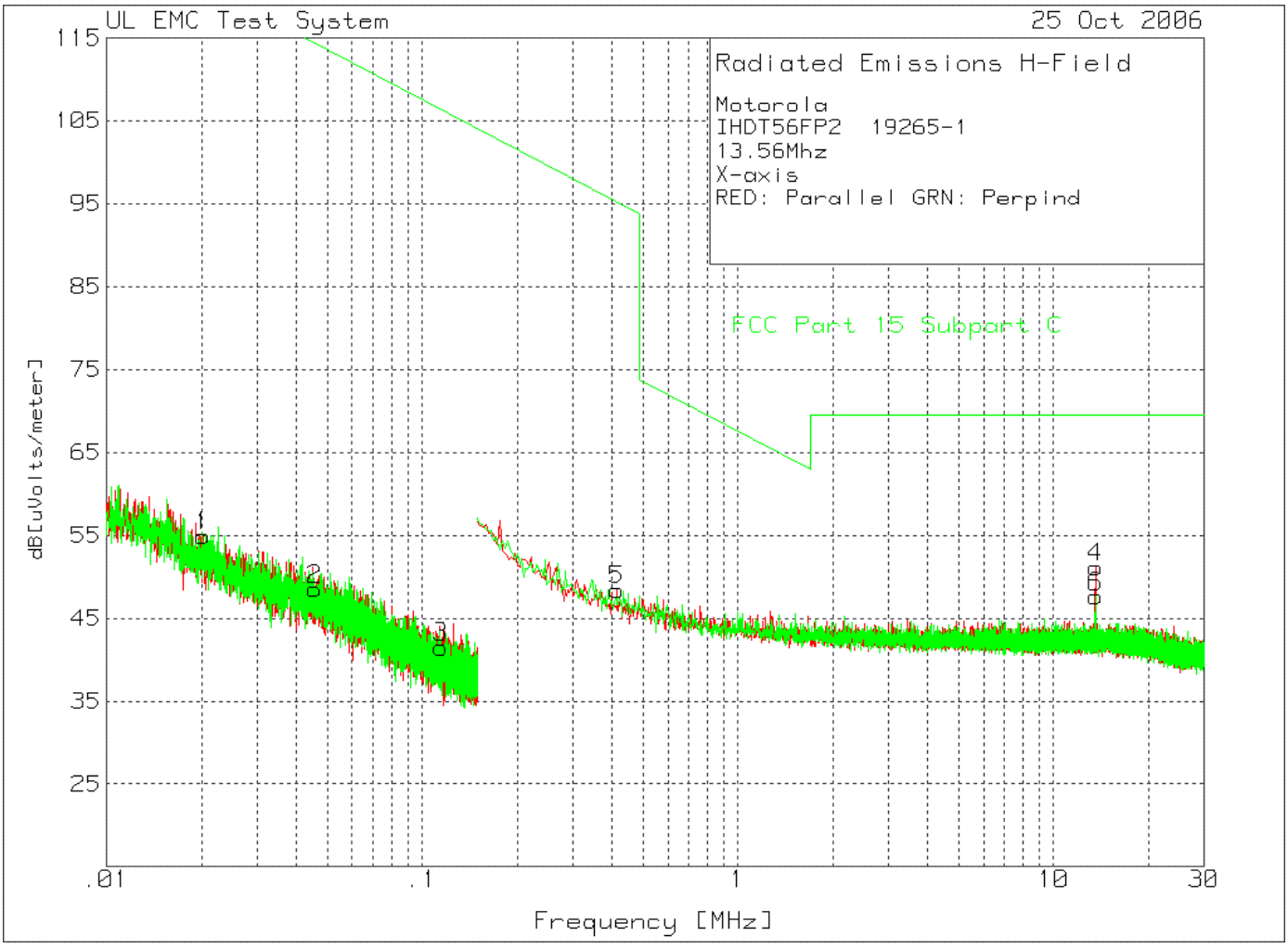
EMISSIONS

Radiated Electric Field Emissions

UNDERWRITERS LABORATORIES INC.
Radiated Emissions

Date Tested:10-25-2006

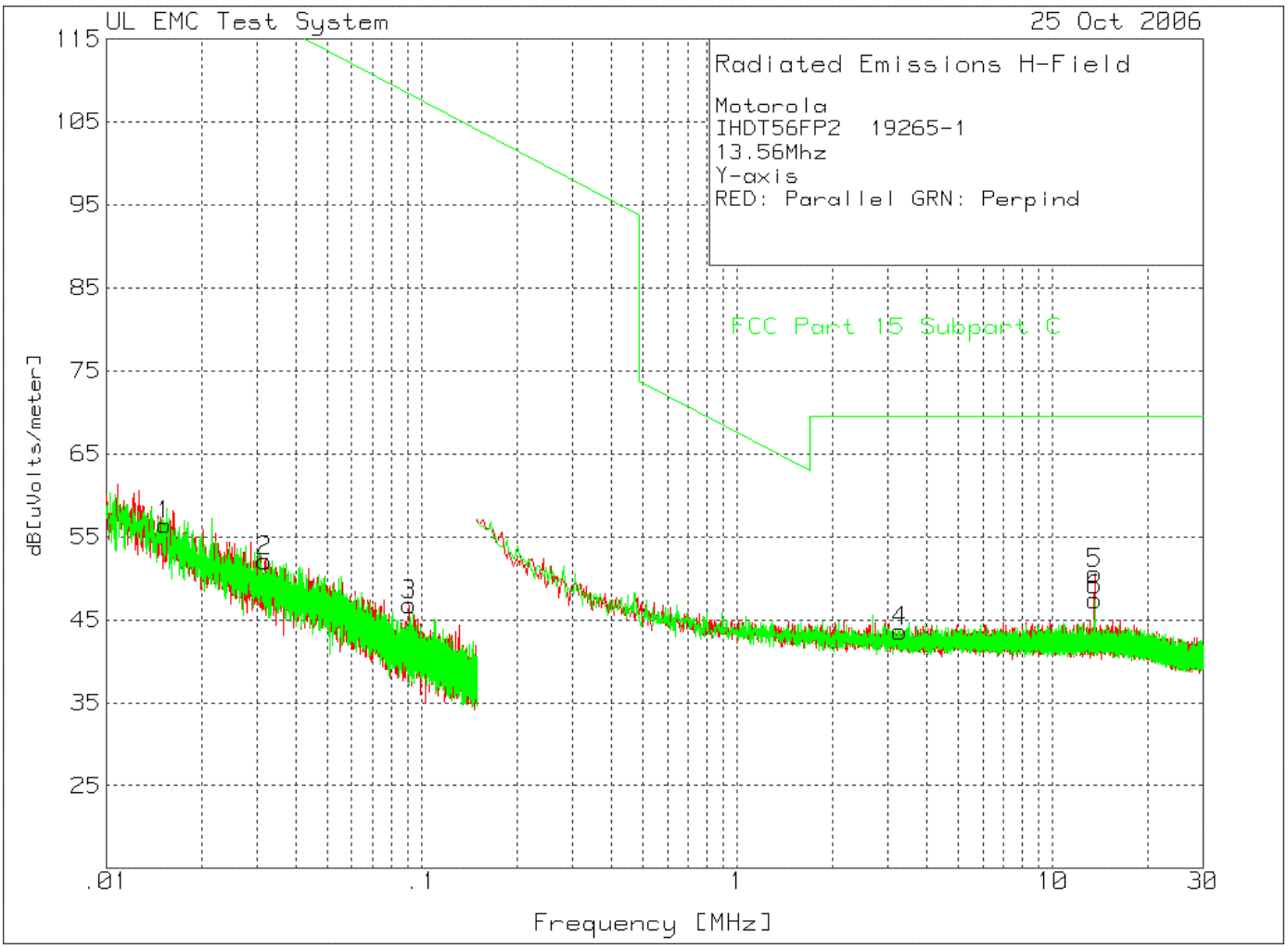
Manufacturer	**:**	**Motorola Inc.**
Equipment Under Test	**:**	**FCC ID - IHDT56FP2, 19265-1 Cell Phone**
Requirement	**:**	**CFR 47 Part 15 Subpart C**
Detection Mode	**:**	Peak (pk)
Bandwidth 9kHz-150kHz	**:**	200Hz
Bandwidth 150kHz-30MHz	**:**	9kHz
Measurement Distance	**:**	3 meter
Antenna Type	**:**	**9kHz – 30MHz Loop**



UNDERWRITERS LABORATORIES INC.
Radiated Emissions

Date Tested:10-25-2006

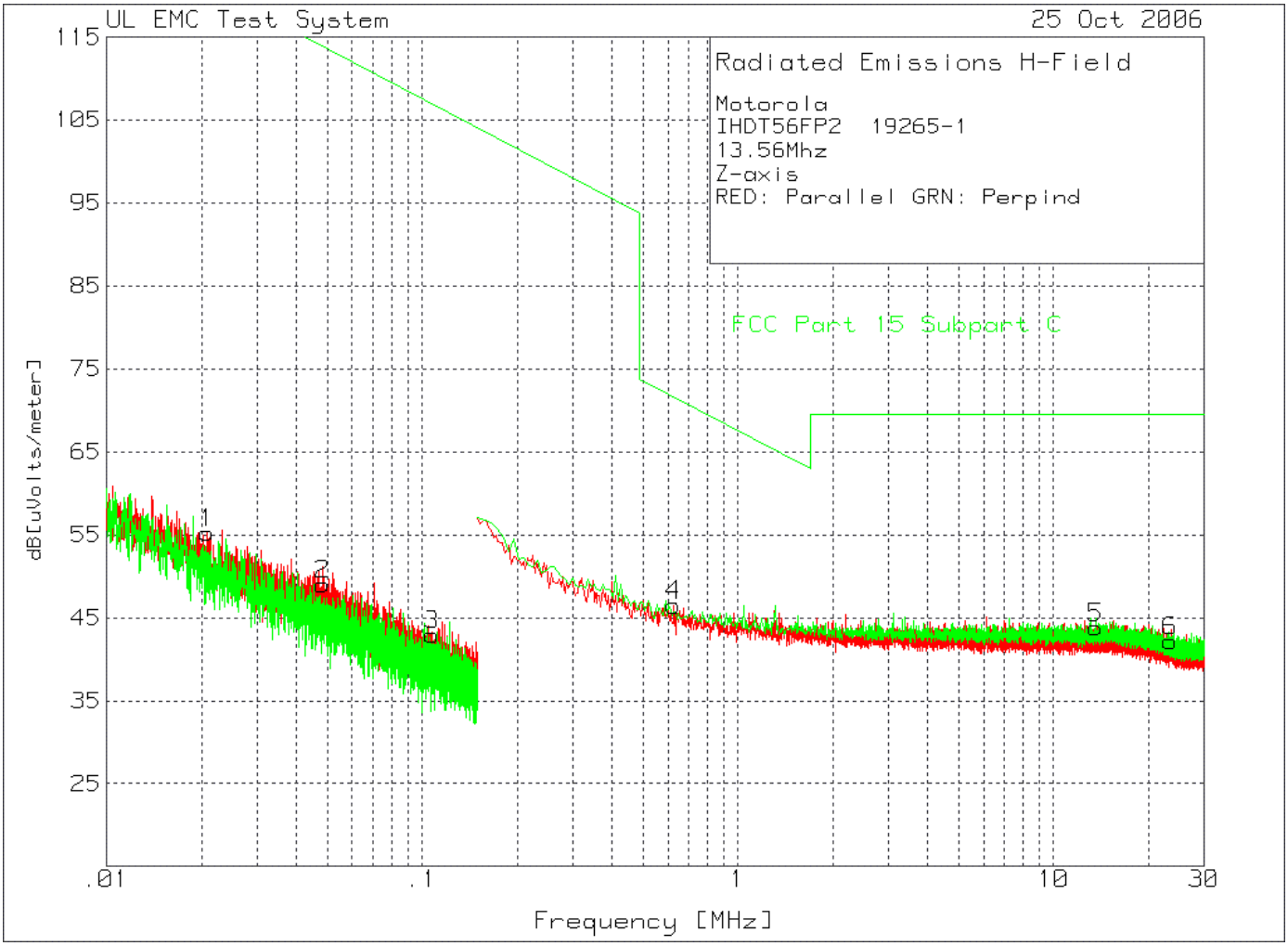
Manufacturer	**:**	**Motorola Inc.**
Equipment Under Test	**:**	**FCC ID - IHDT56FP2, 19265-1 Cell Phone**
Requirement	**:**	**CFR 47 Part 15 Subpart C**
Detection Mode	**:**	Peak (pk)
Bandwidth 9kHz-150kHz	**:**	200Hz
Bandwidth 150kHz-30MHz	**:**	9kHz
Measurement Distance	**:**	3 meter
Antenna Type	**:**	**9kHz – 30MHz Loop**



UNDERWRITERS LABORATORIES INC.
Radiated Emissions

Date Tested:10-25-2006

Manufacturer	:	**Motorola Inc.**
Equipment Under Test	:	**FCC ID - IHDT56FP2, 19265-1 Cell Phone**
Requirement	:	**CFR 47 Part 15 Subpart C**
Detection Mode	:	Peak (pk)
Bandwidth 9kHz-150kHz	:	200Hz
Bandwidth 150kHz-30MHz	:	9kHz
Measurement Distance	:	3 meter
Antenna Type	:	**9kHz – 30MHz Loop**



UNDERWRITERS LABORATORIES INC.
Radiated Emissions

Date Tested:10-25-2006

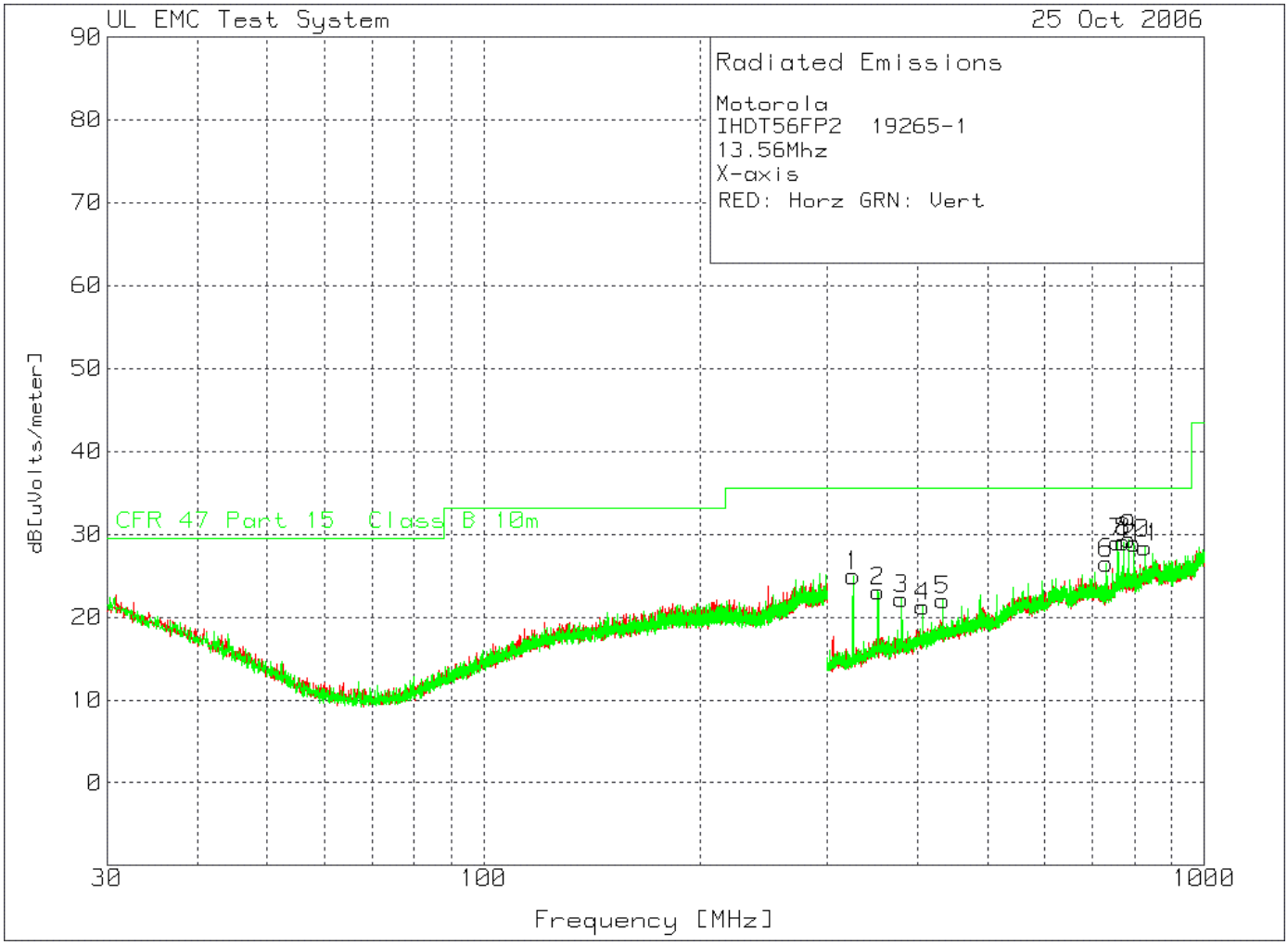
Manufacturer	**:**	**Motorola Inc.**
Equipment Under Test	**:**	**FCC ID - IHDT56FP2, 19265-1 Cell Phone**
Requirement	**:**	**CFR 47 Part 15 Subpart C**
Detection Mode	**:**	Peak (pk)
Bandwidth 9kHz-150kHz	**:**	200Hz
Bandwidth 150kHz-30MHz	**:**	9kHz
Measurement Distance	**:**	3 meter
Antenna Type	**:**	**9kHz – 30MHz Loop**

Preliminary peak scans were performed with EUT configured along X, Y and Z orthogonal axis. Final maximized (azimuth and height) qp or average measurements were not considered necessary as preliminary peak measurements were greater than 6dB under the FCC limit.

UNDERWRITERS LABORATORIES INC.
Radiated Emissions

Date Tested:10-25-2006

Manufacturer	:	**Motorola Inc.**
Equipment Under Test	:	**FCC ID - IHDT56FP2, 19265-1 Cell Phone**
Requirement	:	**CFR 47 Part 15 Class B**
Detection Mode	:	Peak (pk)
Bandwidth	:	120 kHz
Measurement Distance	:	10 meter
Antenna Type	:	**30 - 300 MHz, Biconical**
		300 - 1000 MHz, Log-Periodic



UNDERWRITERS LABORATORIES INC.
Radiated Emissions

Date Tested:10-25-2006

Manufacturer : **Motorola Inc.**
Equipment Under Test : **FCC ID - IHDT56FP2, 19265-1 Cell Phone**
Requirement : **CFR 47 Part 15 Class B**
Detection Mode : Peak (pk)
Bandwidth : 120 kHz
Measurement Distance : 10 meter
Antenna Type : **30 - 300 MHz, Biconical**
300 - 1000 MHz, Log-Periodic

Motorola
IHDT56FP2 19265-1
13.56Mhz
X-axis
RED: Parallel GRN: Perpind

Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/ meter]	Limit 1	Margin 1[dB]	Azimuth [degs]	Height [cm]	Polarity
786.4139	34.13	qp	-31.7	22	24.43	35.6	-11.17	258	201	Vert
799.9726	35.89	qp	-31.6	21.8	26.09	35.6	-9.51	149	203	Vert

LIMIT 1: CFR 47 Part 15 Class B 10m

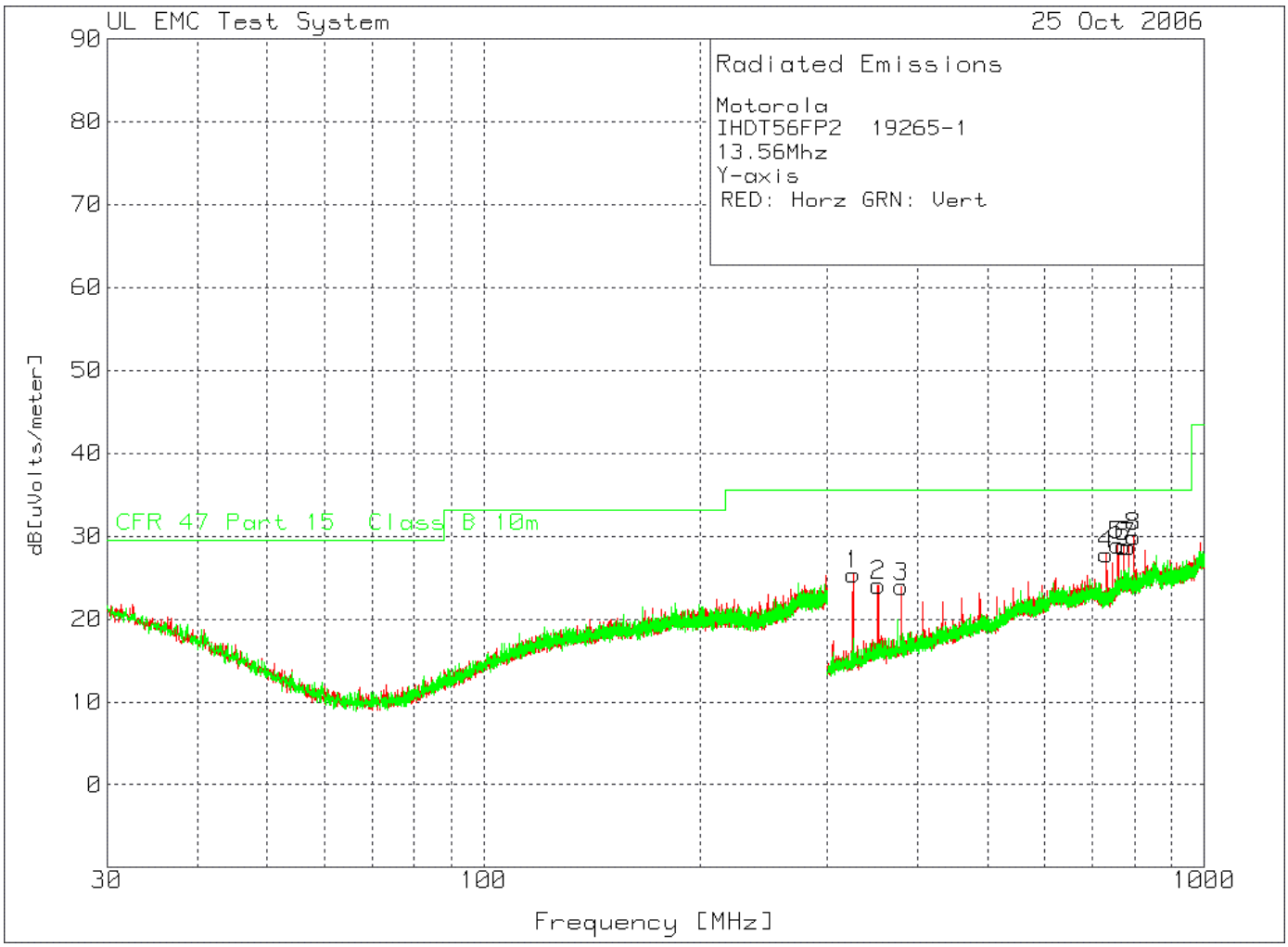
pk - Peak detector
qp - Quasi-Peak detector
av - Average detector
avlg - Average log detector
ave - Average detector

File: 30-1000MHz X-axis.TXT

UNDERWRITERS LABORATORIES INC.
Radiated Emissions

Date Tested: 10-25-2006

Manufacturer	:	**Motorola Inc.**
Equipment Under Test	:	**FCC ID - IHDT56FP2, 19265-1 Cell Phone**
Requirement	:	**CFR 47 Part 15 Class B**
Detection Mode	:	Peak (pk)
Bandwidth	:	120 kHz
Measurement Distance	:	10 meter
Antenna Type	:	**30 - 300 MHz, Biconical** **300 - 1000 MHz, Log-Periodic**



UNDERWRITERS LABORATORIES INC.
Radiated Emissions

Date Tested: 10-25-2006

Manufacturer : **Motorola Inc.**
Equipment Under Test : **FCC ID - IHDT56FP2, 19265-1 Cell Phone**
Requirement : **CFR 47 Part 15 Class B**
Detection Mode : Peak (pk)
Bandwidth : 120 kHz
Measurement Distance : 10 meter
Antenna Type : **30 - 300 MHz, Biconical**
300 - 1000 MHz, Log-Periodic

Motorola
IHDT56FP2 19265-1
13.56Mhz
Y-axis
RED: Parallel GRN: Perpind

Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/ meter]	Limit 1	Margin 1[dB]	Azimuth [degs]	Height [cm]	Polarity
799.9706	39.76	qp	-31.6	21.8	29.96	35.6	-5.64	179	114	Horz

LIMIT 1: CFR 47 Part 15 Class B 10m

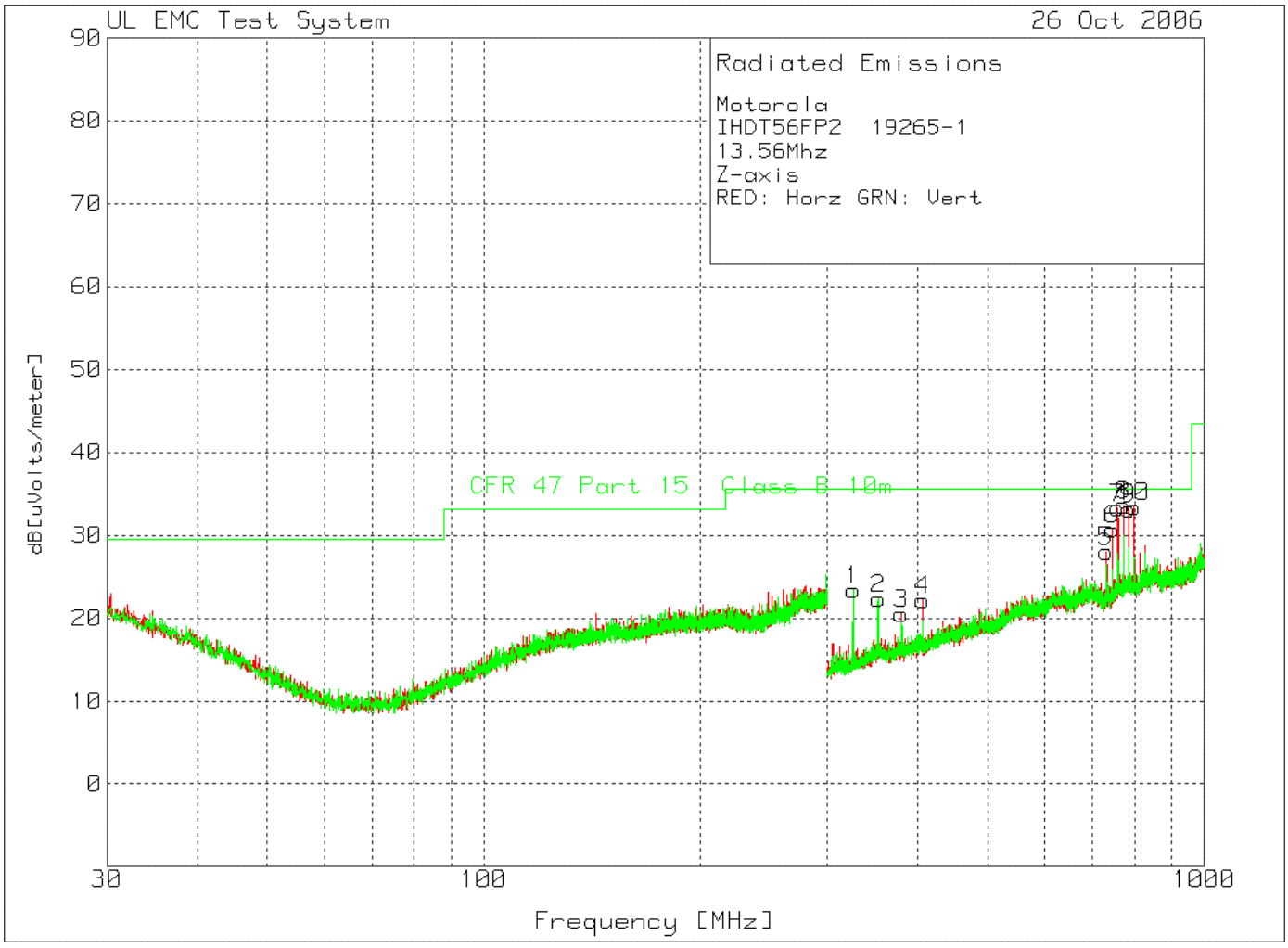
pk - Peak detector
qp - Quasi-Peak detector
av - Average detector
avlg - Average log detector
ave - Average detector

File: 30-1000MHz Y-axis.TXT

UNDERWRITERS LABORATORIES INC.
Radiated Emissions

Date Tested: 10-26-2006

Manufacturer	:	**Motorola Inc.**
Equipment Under Test	:	**FCC ID - IHDT56FP2, 19265-1 Cell Phone**
Requirement	:	**CFR 47 Part 15 Class B**
Detection Mode	:	Peak (pk)
Bandwidth	:	120 kHz
Measurement Distance	:	10 meter
Antenna Type	:	**30 - 300 MHz, Biconical**
		300 - 1000 MHz, Log-Periodic



UNDERWRITERS LABORATORIES INC.
Radiated Emissions

Date Tested:10-25-2006

Manufacturer : **Motorola Inc.**
Equipment Under Test : **FCC ID - IHDT56FP2, 19265-1 Cell Phone**
Requirement : **CFR 47 Part 15 Class B**
Detection Mode : Peak (pk)
Bandwidth : 120 kHz
Measurement Distance : 10 meter
Antenna Type : **30 - 300 MHz, Biconical**
300 - 1000 MHz, Log-Periodic

Motorola
IHDT56FP2 19265-1
13.56Mhz
Z-axis
RED: Parallel GRN: Perpind

Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/ meter]	Limit 1	Margin 1[dB]	Azimuth [degs]	Height [cm]	Polarity
745.7326	39.8	qp	-31.6	20.7	28.9	35.6	-6.7	1	104	Horz
759.2914	42.52	qp	-31.4	21.5	32.62	35.6	-2.98	19	112	Horz
772.8518	43.19	qp	-31.7	21.8	33.29	35.6	-2.31	198	104	Horz
786.4117	42.68	qp	-31.7	22	32.98	35.6	-2.62	184	113	Horz
799.9719	42.26	qp	-31.6	21.8	32.46	35.6	-3.14	182	111	Horz

LIMIT 1: CFR 47 Part 15 Class B 10m

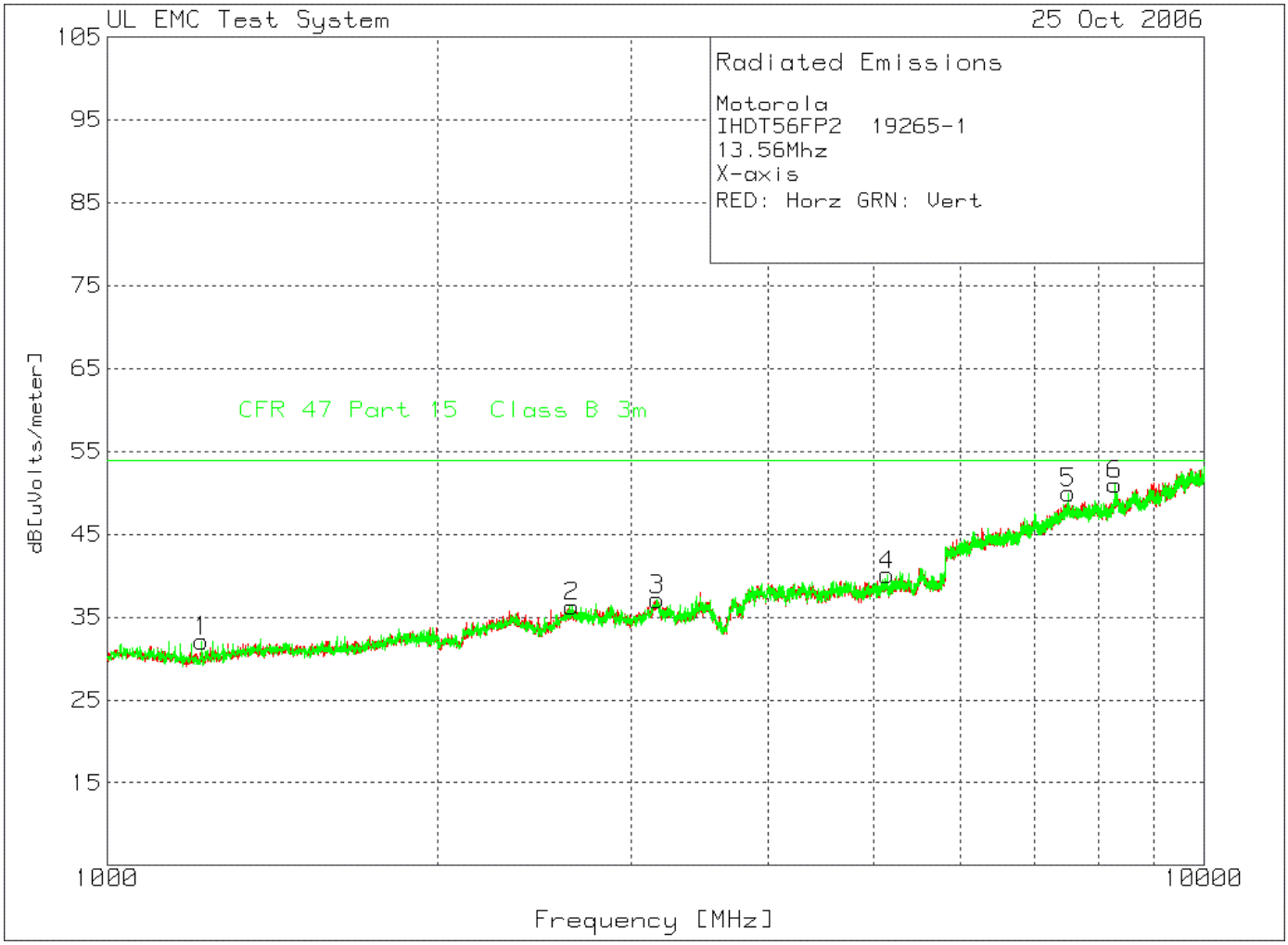
pk - Peak detector
qp - Quasi-Peak detector
av - Average detector
avlg - Average log detector
ave - Average detector

File: 30-1000MHz Z-axis.TXT

UNDERWRITERS LABORATORIES INC.
Radiated Emissions

Date Tested: 10-25-2006

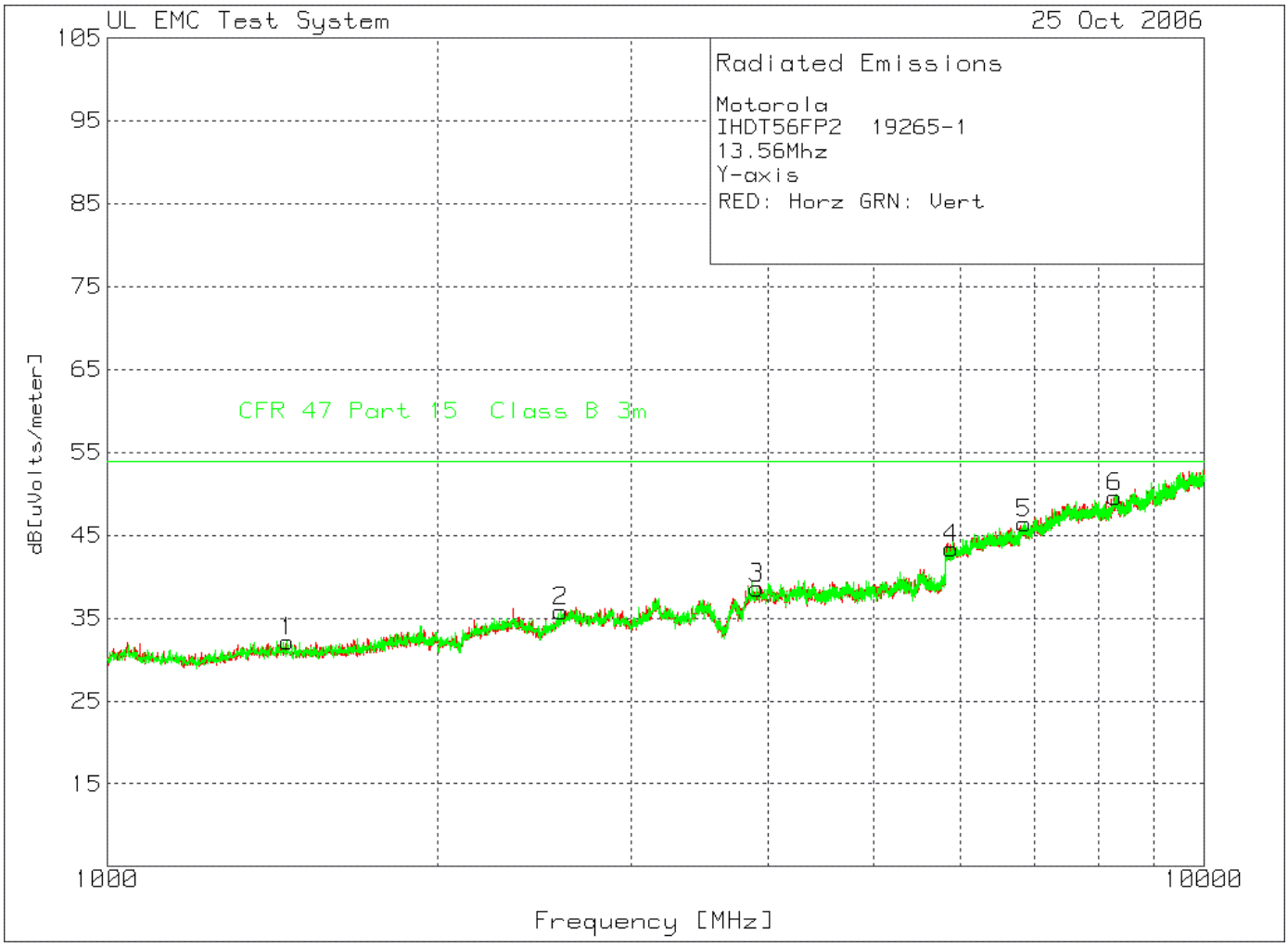
Manufacturer	**:**	**Motorola Inc.**
Equipment Under Test	**:**	**FCC ID - IHDT56FP2, 19265-1 Cell Phone**
Requirement	**:**	**CFR 47 Part 15 Subpart C**
Detection Mode	**:**	Peak (pk)
Bandwidth	**:**	1 MHz
Measurement Distance	**:**	3 meter
Antenna Type	**:**	1-10GHz Horn



UNDERWRITERS LABORATORIES INC.
Radiated Emissions

Date Tested: 10-25-2006

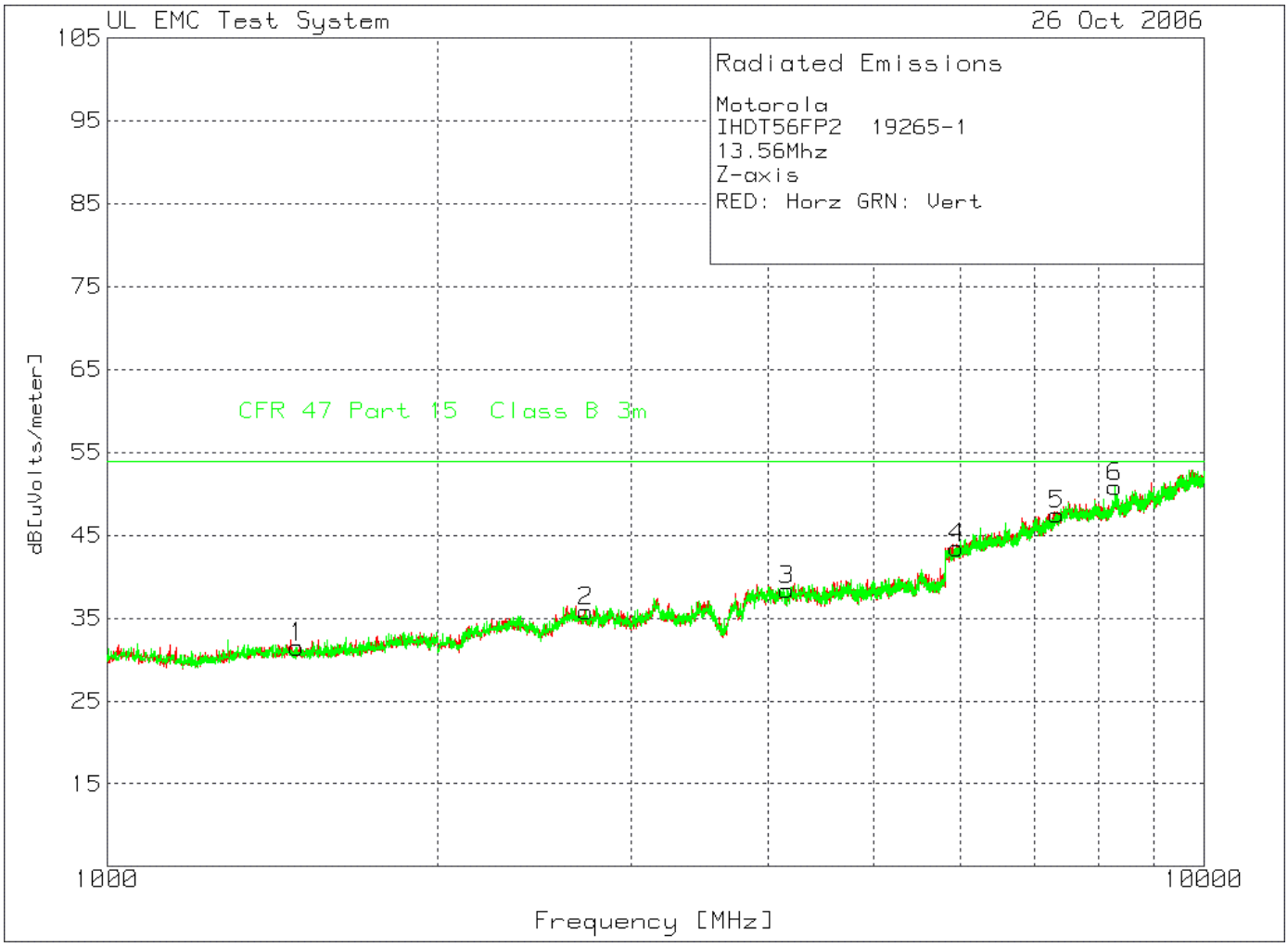
Manufacturer	:	**Motorola Inc.**
Equipment Under Test	:	**FCC ID - IHDT56FP2, 19265-1 Cell Phone**
Requirement	:	**CFR 47 Part 15 Subpart C**
Detection Mode	:	Peak (pk)
Bandwidth	:	1 MHz
Measurement Distance	:	3 meter
Antenna Type	:	1-10GHz Horn



UNDERWRITERS LABORATORIES INC.
Radiated Emissions

Date Tested: 10-26-2006

Manufacturer	:	**Motorola Inc.**
Equipment Under Test	:	**FCC ID - IHDT56FP2, 19265-1 Cell Phone**
Requirement	:	**CFR 47 Part 15 Subpart C**
Detection Mode	:	Peak (pk)
Bandwidth	:	1 MHz
Measurement Distance	:	3 meter
Antenna Type	:	1-10GHz Horn



UNDERWRITERS LABORATORIES INC.
Radiated Emissions

Date Tested: 10-25-2006

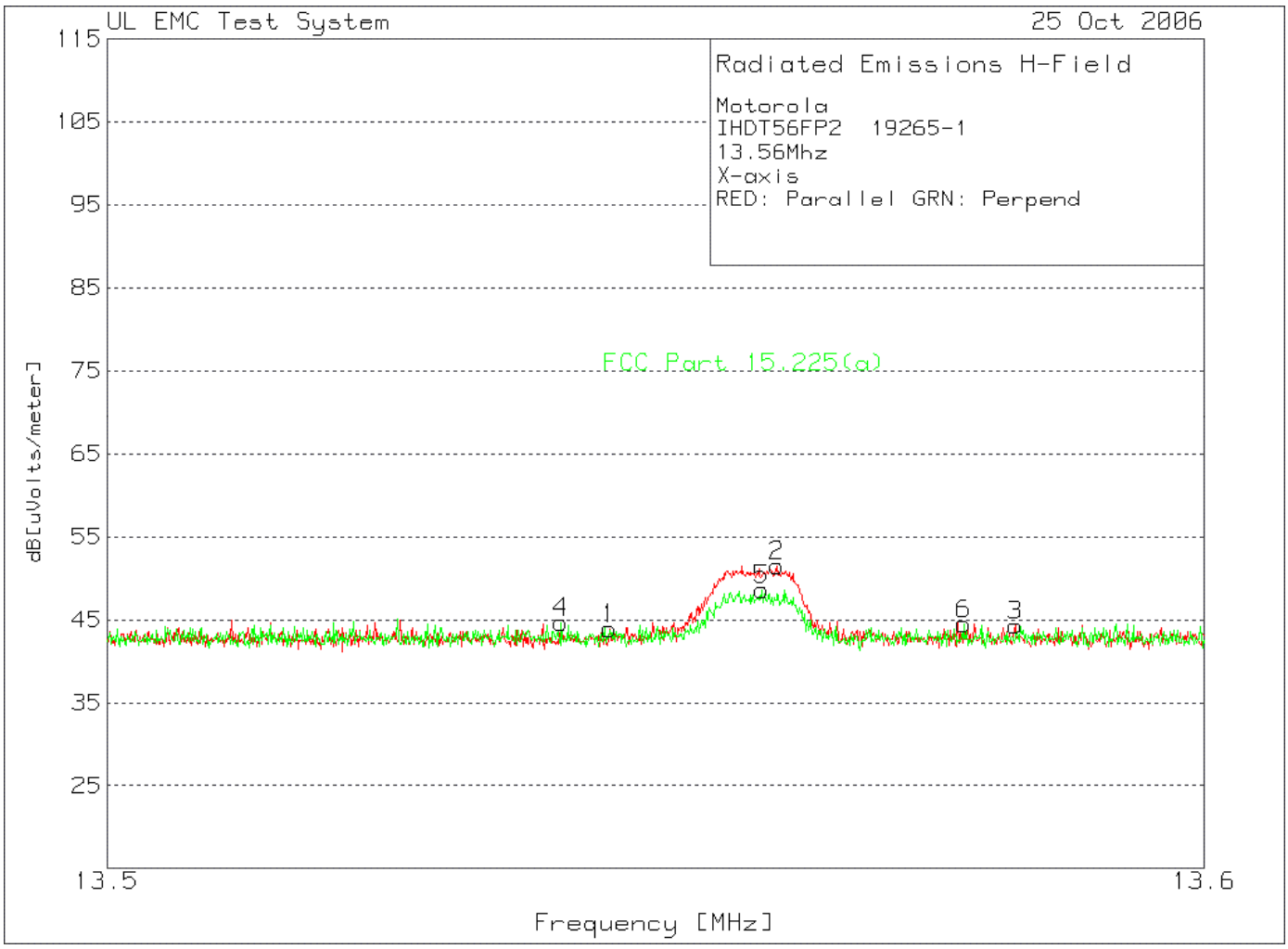
Manufacturer	**:**	**Motorola Inc.**
Equipment Under Test	**:**	**FCC ID - IHDT56FP2, 19265-1 Cell Phone**
Requirement	**:**	**CFR 47 Part 15 Subpart C**
Detection Mode	**:**	Average (VBW=10Hz)
Bandwidth	**:**	1 MHz
Measurement Distance	**:**	3 meter
Antenna Type	**:**	1-10GHz Horn

Preliminary peak scans were performed with EUT configured along X, Y and Z orthogonal axis. Final maximized (azimuth and height) average measurements were not considered necessary as preliminary peak measurements were greater than 6dB under the FCC limit.

UNDERWRITERS LABORATORIES INC.
Radiated Emissions

Date Tested: 10-25-2006

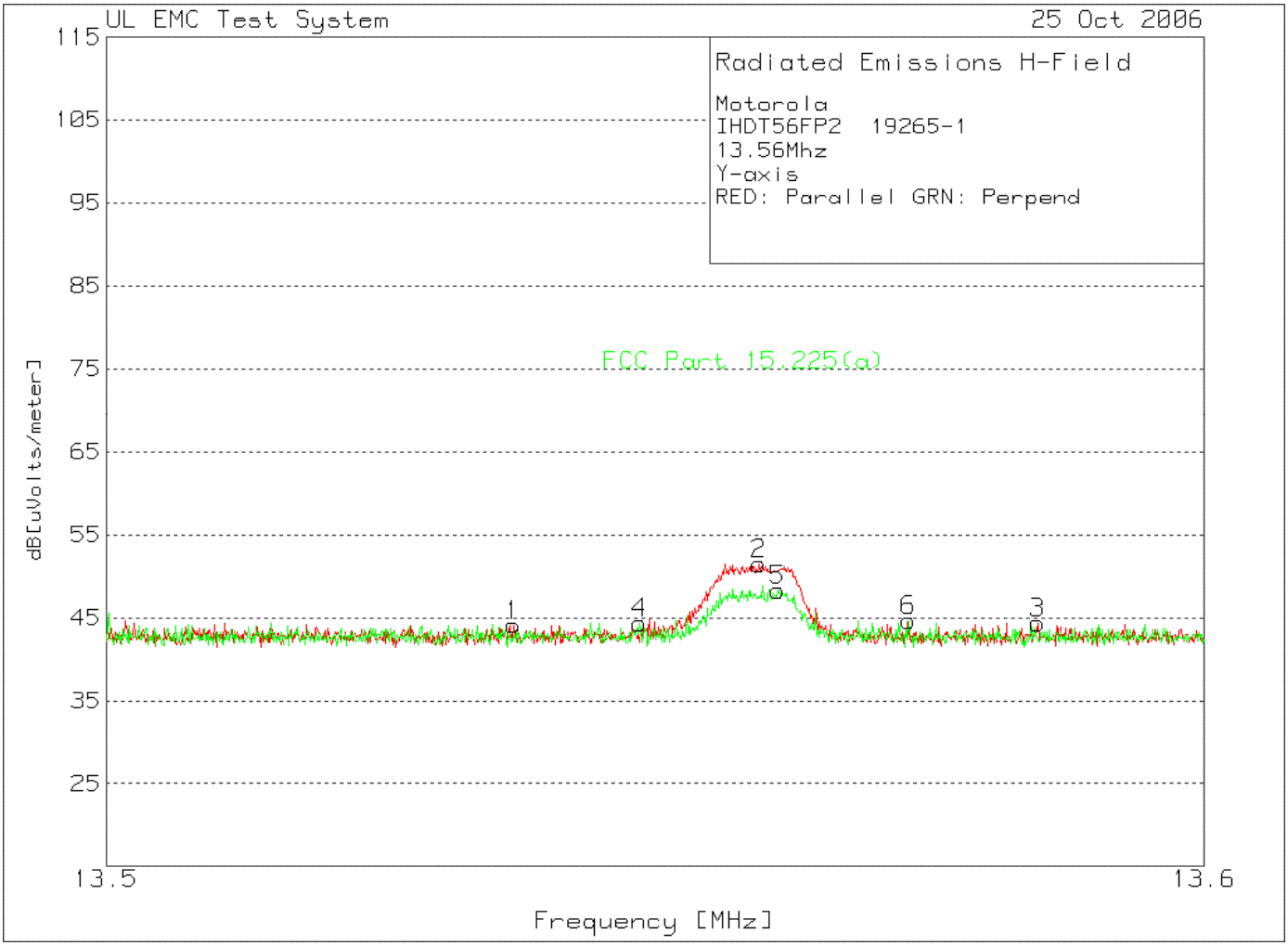
Manufacturer	:	**Motorola Inc.**
Equipment Under Test	:	**FCC ID - IHDT56FP2, 19265-1 Cell Phone (Inband)**
Requirement	:	**CFR 47 Part 15 Subpart C**
Detection Mode	:	Peak (pk)
Bandwidth	:	9 kHz
Measurement Distance	:	3-meter
Antenna Type	:	Loop



UNDERWRITERS LABORATORIES INC.
Radiated Emissions

Date Tested: 10-25-2006

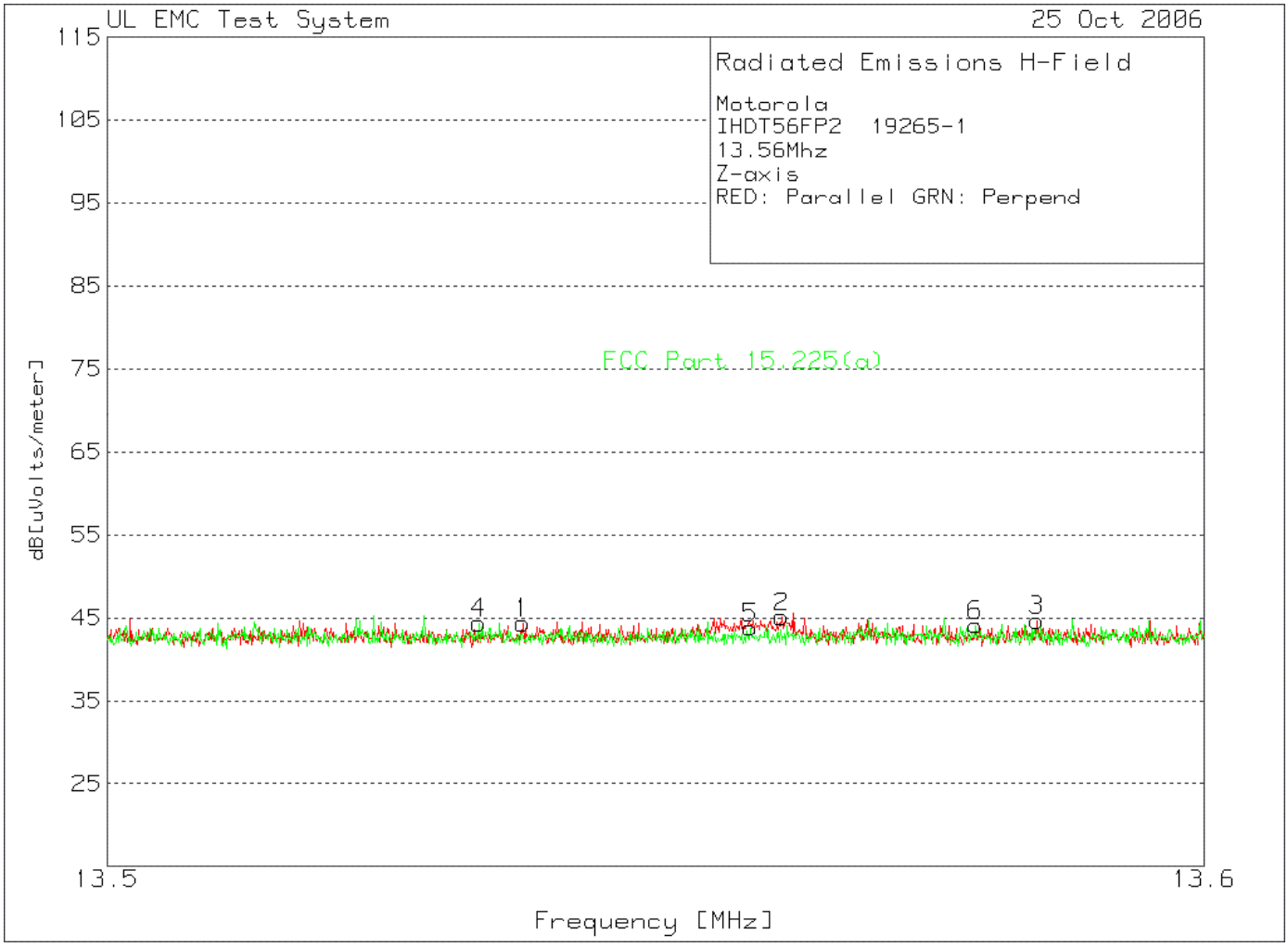
Manufacturer	:	**Motorola Inc.**
Equipment Under Test	:	**FCC ID - IHDT56FP2, 19265-1 Cell Phone (Inband)**
Requirement	:	**CFR 47 Part 15 Subpart C**
Detection Mode	:	Peak (pk)
Bandwidth	:	9 kHz
Measurement Distance	:	3-meter
Antenna Type	:	Loop



UNDERWRITERS LABORATORIES INC.
Radiated Emissions

Date Tested: 10-25-2006

Manufacturer	**:**	**Motorola Inc.**
Equipment Under Test	**:**	**FCC ID - IHDT56FP2, 19265-1 Cell Phone (Inband)**
Requirement	**:**	**CFR 47 Part 15 Subpart C**
Detection Mode	**:**	Peak (pk)
Bandwidth	**:**	9 kHz
Measurement Distance	**:**	3-meter
Antenna Type	**:**	Loop



UNDERWRITERS LABORATORIES INC.
Radiated Emissions

Date Tested: 10-25-2006

Manufacturer : **Motorola Inc.**
Equipment Under Test : **FCC ID - IHDT56FP2, 19265-1 Cell Phone (Inband)**
Requirement : **CFR 47 Part 15 Subpart C**
Detection Mode : Peak (pk)
Bandwidth : 9 kHz
Measurement Distance : 3-meter
Antenna Type : Loop

Motorola
IHDT56FP2 19265-1
13.56Mhz
X Y Z-axis
RED: Parallel GRN: Perpend

Test Frequency [MHz]	Meter Reading [dB(uV)]	Detector Type	Gain/Loss Factor [dB]	Transducer Factor [dB]	Level dB[uVolts/meter]	Limit 1	Margin 1[dB]	EUT Axis	Polarity
13.561	39.9	pk	.4	11.2	51.5	124	-72.5	X	Parallel
13.5596	37	pk	.4	11.2	48.6	124	-75.4	X	Perpend
13.5594	39.9	pk	.4	11.2	51.5	124	-72.5	Y	Parallel
13.5611	36.7	pk	.4	11.2	48.3	124	-75.7	Y	Perpend
13.5614	33.5	pk	.4	11.2	45.1	124	-78.9	Z	Parallel
13.5585	32.2	pk	.4	11.2	43.8	124	-80.2	Z	Perpend

LIMIT 1: FCC Part 15.225(a)

pk - Peak detector
qp - Quasi-Peak detector
av - Average detector
avlg - Average log detector
ave - Average detector

File: Inband X Y Z-axis limit 124dBmicroV_m.TXT

APPENDIX C

NFC Operating Instructions provided by Motorola in an e-mail communication dated October 25, 2006. For confidentiality reasons the information is not provided and it is available upon authorized request.