



849 NW State Road 45
Newberry, FL 32669 USA
Ph: 888.472.2424 or 352.472.5500
Fax: 352.472.2030
Email: info@timcoengr.com
Website: www.timcoengr.com

FCC PART 15.247 TEST REPORT

Applicant	MOTOROLA, INC.
Address	600 NORTH US HWY 45 LIBERTYVILLE IL 60048 USA
FCC ID	IHD56HJ1
Product Description	BLUEFIN
Date Sample Received	1/15/2008
Date Tested	2/6/08
Tested By	Richard Block
Approved By	Mario de Aranzeta
Report Number	121UT8TestReport.doc
Test Results	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

**THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL
WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.**



Testing Certificate # 0955-01

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GENERAL REMARKS

The attached report shall not be reproduced except in full without the written permission of Timco Engineering Inc.

Summary

The device under test does:

- fulfill the general approval requirements as identified in this test report
 not fulfill the general approval requirements as identified in this test report

Attestations

This equipment has been tested in accordance with the standards identified in this test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.



Testing Certificate # 0955-01

I attest that the necessary measurements were made, under my supervision, at:

Timco Engineering Inc.
849 NW State Road 45
Newberry, Fl 32669



Authorized Signatory Name:

Mario de Aranzeta C.E.T.
Compliance Engineer/ Lab. Supervisor

Date: 2/14/2008

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GENERAL INFORMATION

DUT Specification

Applicable Standard	Part 15.247		
DUT Description	BLUEFIN		
FCC ID	IHD56HJ1		
Operating Frequency	TX: 2402 – 2480 MHz	RX: Same	
DUT Power Source	<input type="checkbox"/> 110–120Vac/50– 60Hz		
	<input type="checkbox"/> DC Power		
	<input checked="" type="checkbox"/> Battery Operated Exclusively		
Test Item	<input type="checkbox"/> Prototype	<input checked="" type="checkbox"/> Pre-Production	<input type="checkbox"/> Production
Type of Equipment	<input type="checkbox"/> Fixed	<input type="checkbox"/> Mobile	<input checked="" type="checkbox"/> Portable
Test Facility	Timco Engineering Inc. located at 849 NW State Road 45 Newberry, FL 32669 USA.		
Test Conditions	Temperature: 26°C Relative humidity: 50%		
Test Exercise	The DUT was placed in continuous transmit mode of operation.		

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EMC EQUIPMENT LIST

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
3/10-Meter OATS	TEI	N/A	N/A	Listed 3/20/07	3/19/10
3-Meter OATS	TEI	N/A	N/A	Listed 1/11/06	1/10/09
3-Meter Semi-Anechoic Chamber	Panashield	N/A	N/A	Listed 5/11/07	5/11/10
Antenna: Biconnical	Eaton	94455-1	1096	CAL 10/11/06	10/11/08
Antenna: Biconnical	Electro-Metrics	BIA-25	1171	CAL 7/18/07	7/18/09
Analyzer Blue Tower Quasi-Peak Adapter	HP	85650A	2811A01279	CAL 5/17/07	5/17/09
Analyzer Blue Tower RF Preselector	HP	85685A	2926A00983	CAL 5/17/07	5/17/09
Analyzer Blue Tower Spectrum Analyzer	HP	8568B	2928A04729 2848A18049	CAL 5/17/07	5/17/09
LISN	Electro-Metrics	ANS-25/2	2604	CAL 10/5/06	10/5/08
LISN	Electro-Metrics	EM-7820	2682	CAL 7/23/07	7/23/09
Antenna: Log-Periodic	Eaton	96005	1243	CAL 12/13/07	12/13/09

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TEST PROCEDURES

Radiation Interference: ANSI C63.4-2003 using a spectrum analyzer, a preselector, a quasi-peak adapter, and an appropriate antenna. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The resolution bandwidth was 100 kHz with an appropriate sweep speed and the video bandwidth was 300 kHz up to 1 GHz and 1 MHz with a video BW of 3 MHz above 1 GHz. When an emission was found, the table was rotated to produce the maximum signal strength. The antenna was placed in both the horizontal and vertical planes and the worse case emissions were reported. The spectrum was searched to at least the tenth (10) harmonic of the fundamental.

Formula Of Conversion Factors: The field strength at 3m was established by adding the meter reading of the spectrum analyzer (which is set to read in units of dBuV) to the antenna correction factor supplied by the antenna manufacturer plus the coax loss. The antenna correction factors are stated in terms of dB. The gain of the preselector was accounted for in the spectrum analyzer meter reading.

Example:

Freq (MHz)	Meter Reading	+ ACF	+ CL = FS
33	20 dBuV	+ 10.36 dB	+ 0.5 = 30.86 dBuV/m @ 3m

Power Line Conducted Interference: The procedure used was ANSI C63.4-2003 using a 50uH LISN. Both lines were observed. The bandwidth of the spectrum analyzer was 10kHz with an appropriate sweep speed. The spectrum was scanned from 0.15 to 30 MHz.

Occupied Bandwidth: A small sample of the transmitter output was fed into the spectrum analyzer and the attached plot was printed. The vertical scale is set to -10 dBm per division.

Bandwidth 6.0dB: The measurements were made with the spectrum analyzer's resolution bandwidth (RBW)=1.0MHz and the video bandwidth (VBW) =3.0MHz and the span set as shown on plot.

Power Output: The RF power output was measured at the antenna feed point using a peak power meter.

Antenna Conducted Emissions: The RBW=100kHz, VBW=300kHz and the span set to 10.0MHz and the spectrum was scanned from 30MHz to the 10th Harmonic of the fundamental. Above 1.0GHz the resolution bandwidth was 1.0MHz and the VBW = 3.0MHz and the span to 50MHz.

ANSI C63.4-2003 10.1 Measurement Procedures: The DUT was placed on a table 80 cm high and with dimensions of 1m by 1.5m. The DUT was placed in the center of the table (1.5m side). The table used for radiated measurements is capable of continuous rotation.

When an emission was found, the table was rotated to produce the maximum signal strength. At this point, the antenna was raised and lowered from 1m to 4m. The antenna was placed in both the horizontal and vertical planes.

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RADIATION INTERFERENCE

Rules Part No.: 15.247, 15.209

Requirements:

Frequency	Limits
Part 15.209	
9 to 490 kHz	2400/F (kHz) μ V/m @ 300 meters
490 to 1705 kHz	24000/F (kHz) μ V/m @ 30 meters
1705 kHz to 30 MHz	29.54 dB μ V/m @ 30 meters
30 – 88	40.0 dB μ V/m @ 3 meters
80 – 216	43.5 dB μ V/m @ 3 meters
216 – 960	46.0 dB μ V/m @ 3 meters
Above 960	54.0 dB μ V/m @ 3 meters
Part 15.249	
Fundamental 902 – 928 MHz	127.37 dB μ V/m @ 3 meters
Fundamental 2.4 – 2.4835 MHz	127.37 dB μ V/m @ 3 meters
Harmonics	54.0 dB μ V/m @ 3 meters

Any emissions that fall in the restricted bands (15.205) must be less than or equal to 54 dB μ V/m. Spurious emissions not in a restricted band must be 20 dBc.

Test Data:

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity	Coax Loss dB	Correction Factor dB	Field Strength dBuV/m	Margin dB
2,402.0	2,402.00	61.0	V	3.18	32.25	96.43	30.95
2,402.0	2,402.00	61.7	H	3.18	32.25	97.13	30.25
2,402.0	4,804.00*	4.4	H	4.90	34.10	43.40	10.60
2,402.0	4,804.00*	4.9	V	4.90	34.10	43.90	10.10
2,402.0	7,206.00	5.2	V	5.72	36.04	46.96	30.17
2,402.0	7,206.00	5.8	H	5.72	36.04	47.56	29.57
2,402.0	9,608.00	5.3	H	6.78	36.71	48.79	28.34
2,402.0	9,608.00	5.4	V	6.78	36.71	48.89	28.24
2,402.0	12,010.00*	4.5	V	7.81	38.71	51.02	2.98
2,402.0	12,010.00*	5.3	H	7.81	38.71	51.82	2.18
2,441.0	2,441.00	59.9	V	3.21	32.35	95.46	31.92
2,441.0	2,441.00	61.9	H	3.21	32.35	97.46	29.92
2,441.0	4,882.00*	5.4	H	4.94	34.10	44.44	9.56
2,441.0	4,882.00*	6.3	V	4.94	34.10	45.34	8.66
2,441.0	7,323.00*	5.7	H	5.79	36.06	47.55	6.45
2,441.0	7,323.00*	6.0	V	5.79	36.06	47.85	6.15
2,441.0	9,764.00	5.2	H	6.83	36.86	48.89	28.57
2,441.0	9,764.00	5.7	V	6.83	36.86	49.39	28.07

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TEST DATA CONTD.

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity	Coax Loss dB	Correction Factor dB	Field Strength dBuV/m	Margin dB
2,441.0	12,205.00*	3.0	V	7.94	38.86	49.80	4.20
2,441.0	12,205.00*	3.9	H	7.94	38.86	50.70	3.30
2,480.0	2,480.00	60.4	V	3.24	32.45	96.09	31.29
2,480.0	2,480.00	60.7	H	3.24	32.45	96.39	30.99
2,480.0	4,960.00*	3.8	H	4.98	34.10	42.88	11.12
2,480.0	4,960.00*	4.4	V	4.98	34.10	43.48	10.52
2,480.0	7,440.00*	6.0	H	5.86	36.09	47.95	6.05
2,480.0	7,440.00*	6.2	V	5.86	36.09	48.15	5.85
2,480.0	9,920.00	4.5	V	6.88	37.02	48.40	27.99
2,480.0	9,920.00	5.6	H	6.88	37.02	49.50	26.89
2,480.0	12,400.00*	3.7	V	8.08	39.02	50.80	3.20
2,480.0	12,400.00*	4.5	H	8.08	39.02	51.60	2.40
2,483.5	2,483.50*	14.5	H	3.24	32.46	50.20	3.80

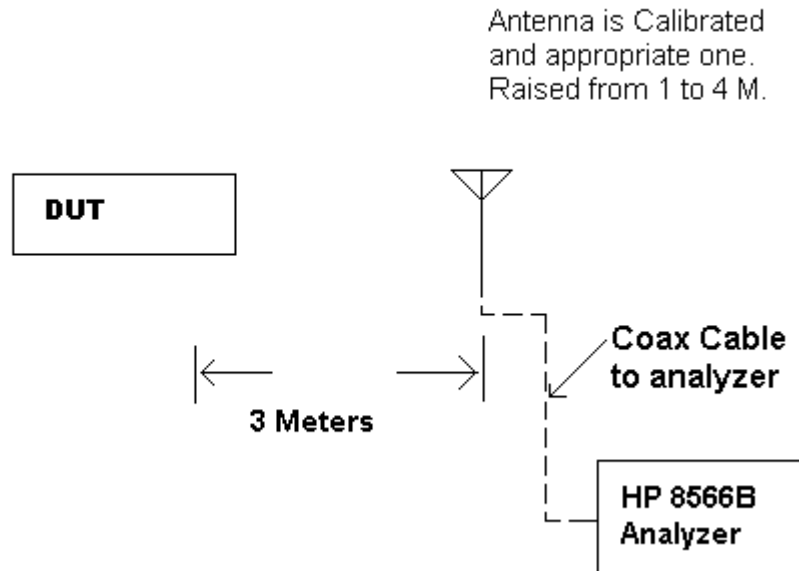
Harmonics were checked through the 10th harmonic

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Method of Measuring Radiated Spurious Emissions



METHOD OF MEASUREMENT: The procedure used was ANSI STANDARD C63.4-2003 & the FCC/OET Guidance on Measurements for Direct Sequence Spread Spectrum Systems – Public Notice 54797 Dated July 12, 1995. Measurements were made at the open field test site of TIMCO ENGINEERING INC. located at 849 N.W. State Road 45, Newberry, FL 32669.

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POWER LINE CONDUCTED INTERFERENCE

Rules Part No.: 15.207

Requirements:

Frequency (MHz)	Quasi Peak Limits (dBuV)	Average Limits (dBuV)
0.15 – 0.5	66 – 56	56 – 46
0.5 – 5.0	56	46
5.0 – 30	60	50

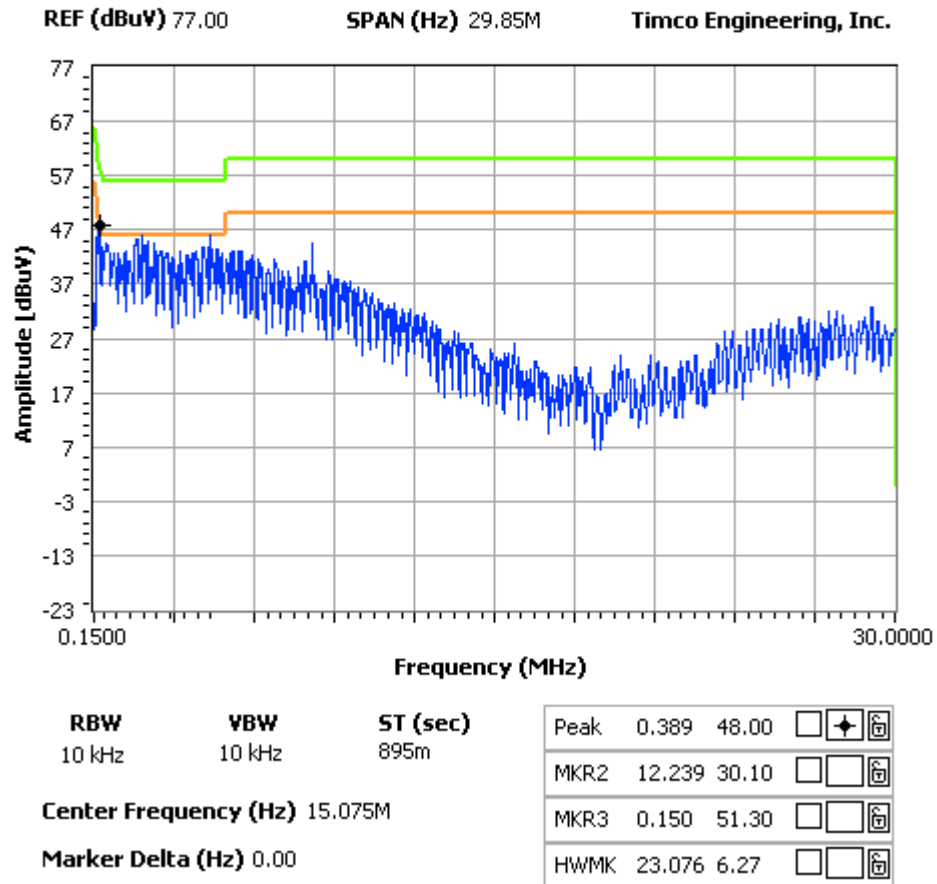
Test Data: The attached graphs represent the emissions read for power line conducted for this device. Both lines were observed.

POWERLINE CONDUCTED EMISSIONS – LINE 1

NOTES:

POWERLINE CONDUCTED -- LINE 1
 MOTOROLA -- FCC ID: IHD 56HJ1

FCC 15.107 Mask Class B



APPLICANT: MOTOROLA INC.

FCC ID: IHD56HJ1

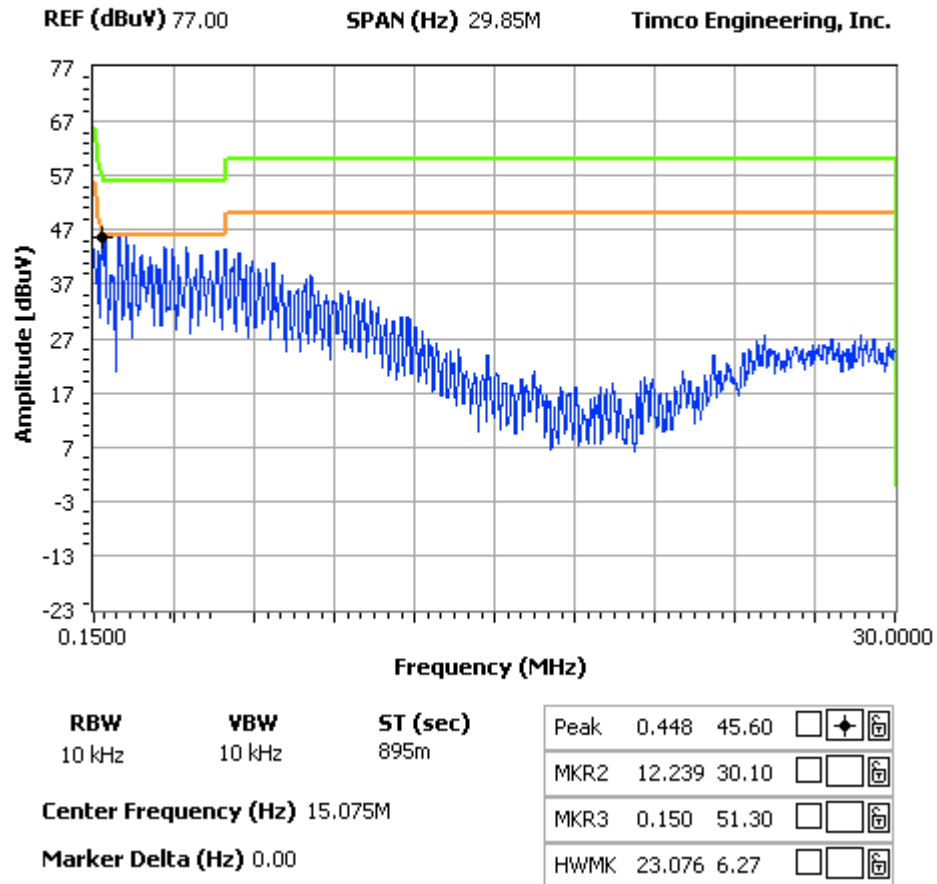
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POWERLINE CONDUCTED EMISSIONS – LINE 2

NOTES:

POWERLINE CONDUCTED -- LINE 2
 MOTOROLA -- FCC ID: IHD 56HJ1

FCC 15.107 Mask Class B



APPLICANT: MOTOROLA INC.

FCC ID: IHD56HJ1

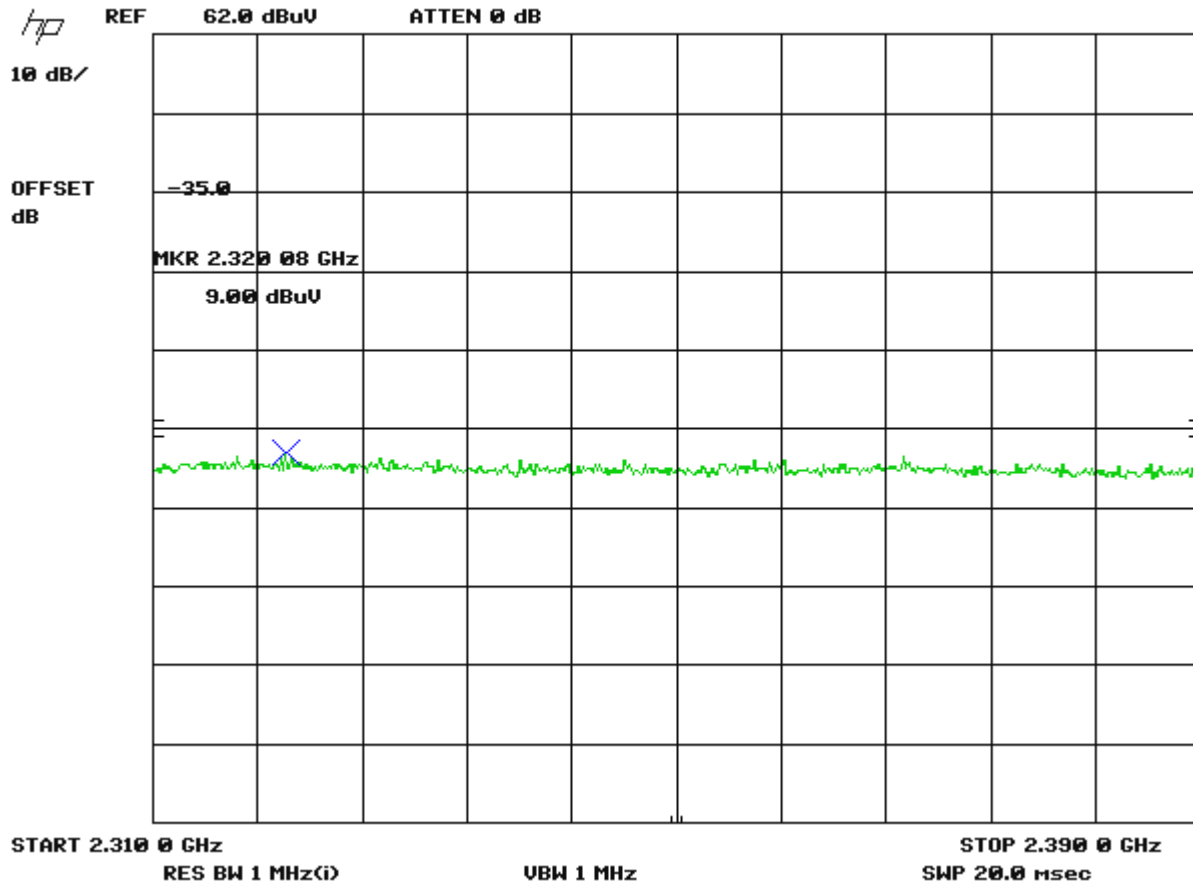
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RADIATED SPURIOUS EMISSIONS INTO ADJACENT RESTRICTED BAND

Requirements: Emissions that fall in the restricted bands (15.205). These emissions must be less than or equal to 500 uV/m (54 dBuV/m).

Test Procedure: An in band field strength measurement of the fundamental Emission using the RBW and detector function required by C63.4-2000 and FCC Rules. The procedure was repeated with an average detector and a plot made. The calculated field strength in the adjacent restricted band is presented below.

The frequency hopping function was enabled during testing.

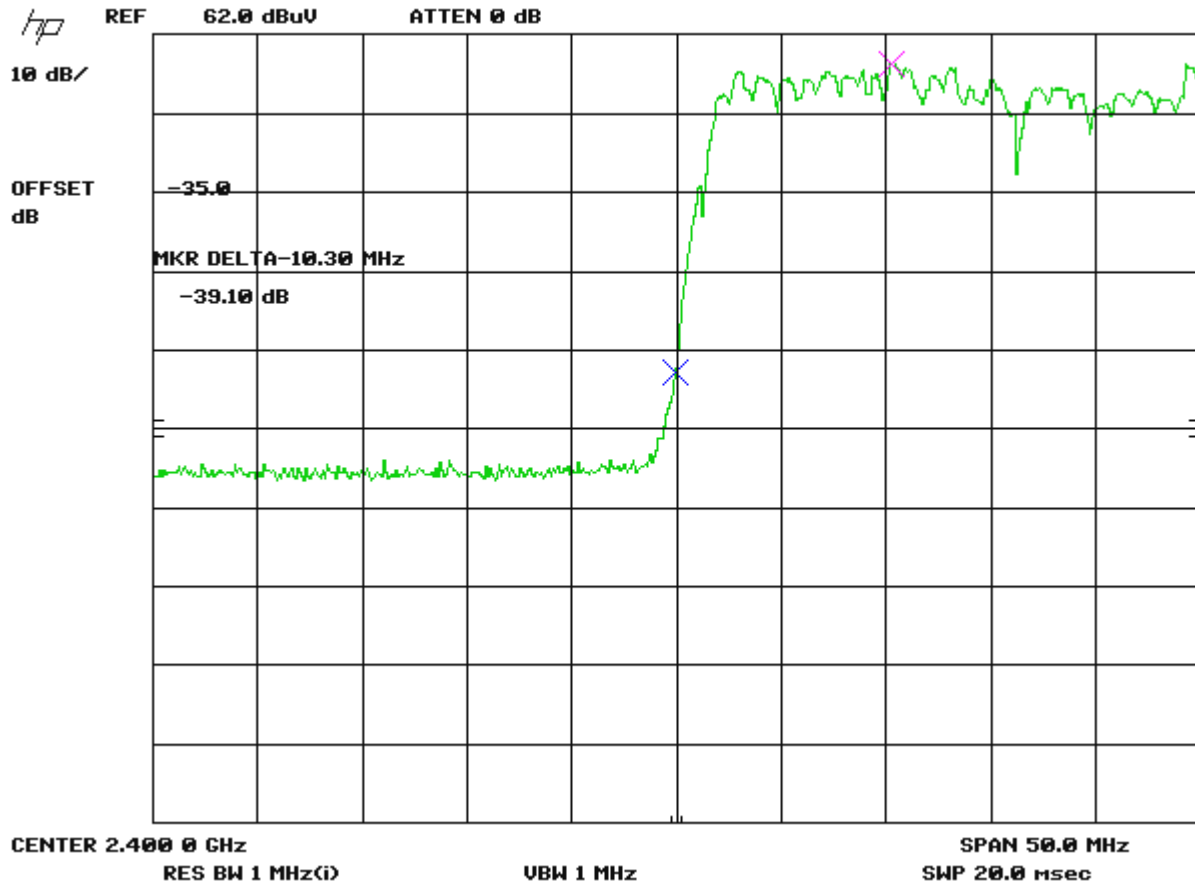


Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity	Coax Loss dB	Correction Factor dB	Field Strength dBuV/m	Margin dB
2,320.1	2,320.08	9.0	H	3.12	32.03	44.15	9.85

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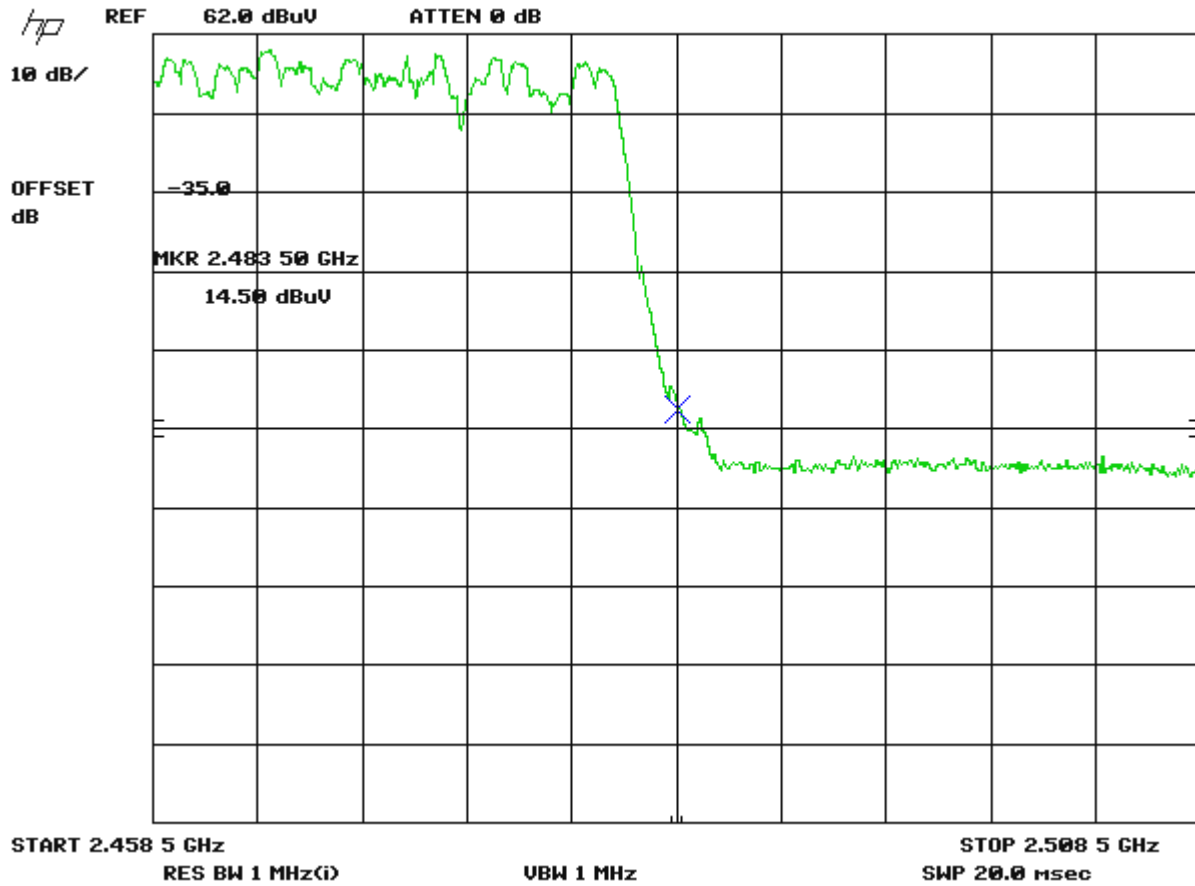
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Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity	Coax Loss dB	Correction Factor dB	Field Strength dBuV/m	Margin dB
2,483.5	2,483.50	14.5	H	3.24	32.46	50.20	3.80

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