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FCC PART 15.247 TEST REPORT

DIGITAL SPREAD SPECTRUM

Applicant	MOTOROLA MOBILITY, INC.
Address	600 NORTH U.S. HWY 45 LIBERTYVILLE ILLINOIS 60048-5343 USA
FCC ID	IHDT56NT1
Model Number	H3051B41033A
Serial Number	364BNN0B1G
Product Description	ATLAS PEAK ROAD iDEN
Date Sample Received	8/14/2012
Date Tested	8/16/2012
Tested By	John A. Day
Approved By	Mario R. de Aranzeta
Report Number	2048CUT12TestReport.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.

The test results relate only to the items tested.

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: 2005 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: August 28, 2012

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GENERAL INFORMATION

DUT Specification

Applicable Standard	Part 15.247		
DUT Description	ATLAS PEAK ROAD iDEN		
FCC ID	IHDT56NT1		
Serial #	364BNN0B1G		
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.		

Test Supporting Equipment

Supporting Device	Manufacturer	Model / FCC ID	Serial Number
N/A			

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 dB μ V) 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 dB μ V	+ 10.36 dB	+ 0.5 = 30.86 dB μ V/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 10 kHz 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 MHz and the video bandwidth (VBW) =3 MHz 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=100 kHz, VBW=300 kHz and the span set to 10 MHz and the spectrum was scanned from 30 MHz to the 10th Harmonic of the fundamental. Above 1 GHz the resolution bandwidth was 1 MHz and the VBW = 3 MHz and the span to 50 MHz.

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. Emissions attenuated more than 20 dB below the permissible value are not reported.

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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) $\mu\text{V}/\text{m}$ @ 300 meters
490 to 1705 kHz	24000/F (kHz) $\mu\text{V}/\text{m}$ @ 30 meters
1705 kHz to 30 MHz	29.54 dB $\mu\text{V}/\text{m}$ @ 30 meters
30 – 88	40.0 dB $\mu\text{V}/\text{m}$ @ 3 meters
80 – 216	43.5 dB $\mu\text{V}/\text{m}$ @ 3 meters
216 – 960	46.0 dB $\mu\text{V}/\text{m}$ @ 3 meters
Above 960	54.0 dB $\mu\text{V}/\text{m}$ @ 3 meters
Part 15.247	
Fundamental 902 – 928 MHz	127.37 dB $\mu\text{V}/\text{m}$ @ 3 meters
Fundamental 2.4 – 2.4835 MHz	127.37 dB $\mu\text{V}/\text{m}$ @ 3 meters
Harmonics	54.0 dB $\mu\text{V}/\text{m}$ @ 3 meters

Any emissions that fall in the restricted bands (15.205) must be less than or equal to 54 dB $\mu\text{V}/\text{m}$. Spurious emissions not in a restricted band must be 20 dBc. Harmonics were checked through the 10th harmonic.

Test Data: All values are peak unless noted.
Items mark with an * designate a frequency in a restricted band.

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity	Coax Loss dB	Correction Factor dB/m	Field Strength dBuV/m	Margin dB
2,402.0	2,402.00	71.6	H	3.18	32.40	107.18	20.20
2,402.0	2,402.00	72.1	V	3.18	32.40	107.68	19.70
2,402.0	4,804.00	7.0	H	4.90	34.38	46.28	7.72
2,402.0	4,804.00	10.4	V	4.90	34.38	49.68	4.32
2,402.0	7,206.00	7.8	H	5.72	36.16	49.68	4.32
2,402.0	7,206.00	9.6	V	5.72	36.16	51.48	2.52
2,402.0	9,608.00	8.8	H	6.78	36.73	52.31	1.69
2,402.0	9,608.00	10.0	V	6.78	36.73	53.51	0.49
2,441.0	2,441.00	68.8	H	3.21	32.48	104.49	22.89
2,441.0	2,441.00	70.8	V	3.21	32.48	106.49	20.89
2,441.0	4,882.00	8.3	V	4.94	34.43	47.67	6.33
2,441.0	4,882.00	9.9	H	4.94	34.43	49.27	4.73
2,441.0	7,323.00	8.0	V	5.79	36.14	49.93	4.07
2,441.0	7,323.00	8.9	H	5.79	36.14	50.83	3.17
2,441.0	9,764.00	8.7	V	6.83	36.92	52.45	1.55
2,441.0	9,764.00	8.9	H	6.83	36.92	52.65	1.35
2,480.0	2,480.00	68.0	V	3.24	32.56	103.80	23.58
2,480.0	2,480.00	69.1	H	3.24	32.56	104.90	22.48
2,480.0	4,960.00	8.7	V	4.98	34.48	48.16	5.84
2,480.0	4,960.00	10.9	H	4.98	34.48	50.36	3.64

Measurements were made from the lowest frequency generated or 9 kHz to the tenth harmonic.

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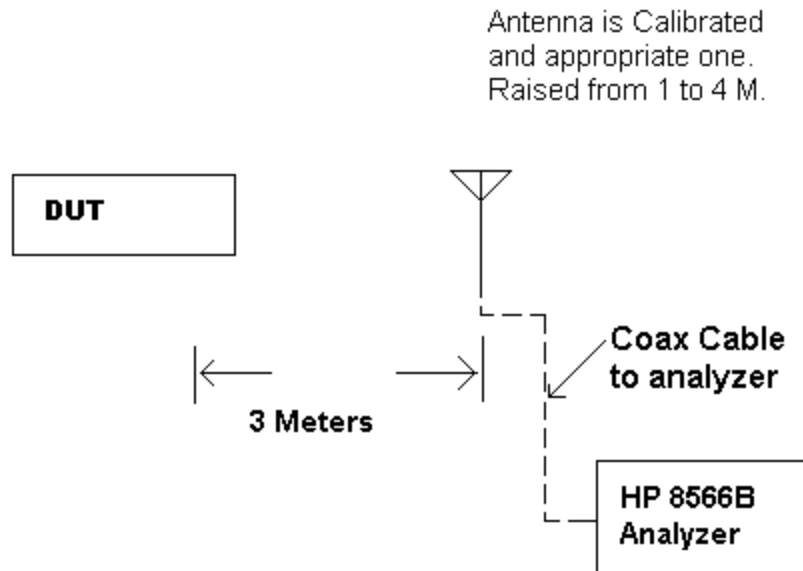
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continued

Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBμV	Ant. Polarity	Coax Loss dB	Correction Factor dB/m	Field Strength dBμV/m	Margin dB
2,480.0	7,440.00	8.8	V	5.86	36.11	50.77	3.23
2,480.0	7,440.00	9.1	H	5.86	36.11	51.07	2.93
2,480.0	9,920.00	8.0	V	6.88	37.10	51.98	2.02
2,480.0	9,920.00	8.6	H	6.88	37.10	52.58	1.42

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 Spread Spectrum Systems – KDB 558074 dated March 23, 2005.

POWER LINE CONDUCTED INTERFERENCE

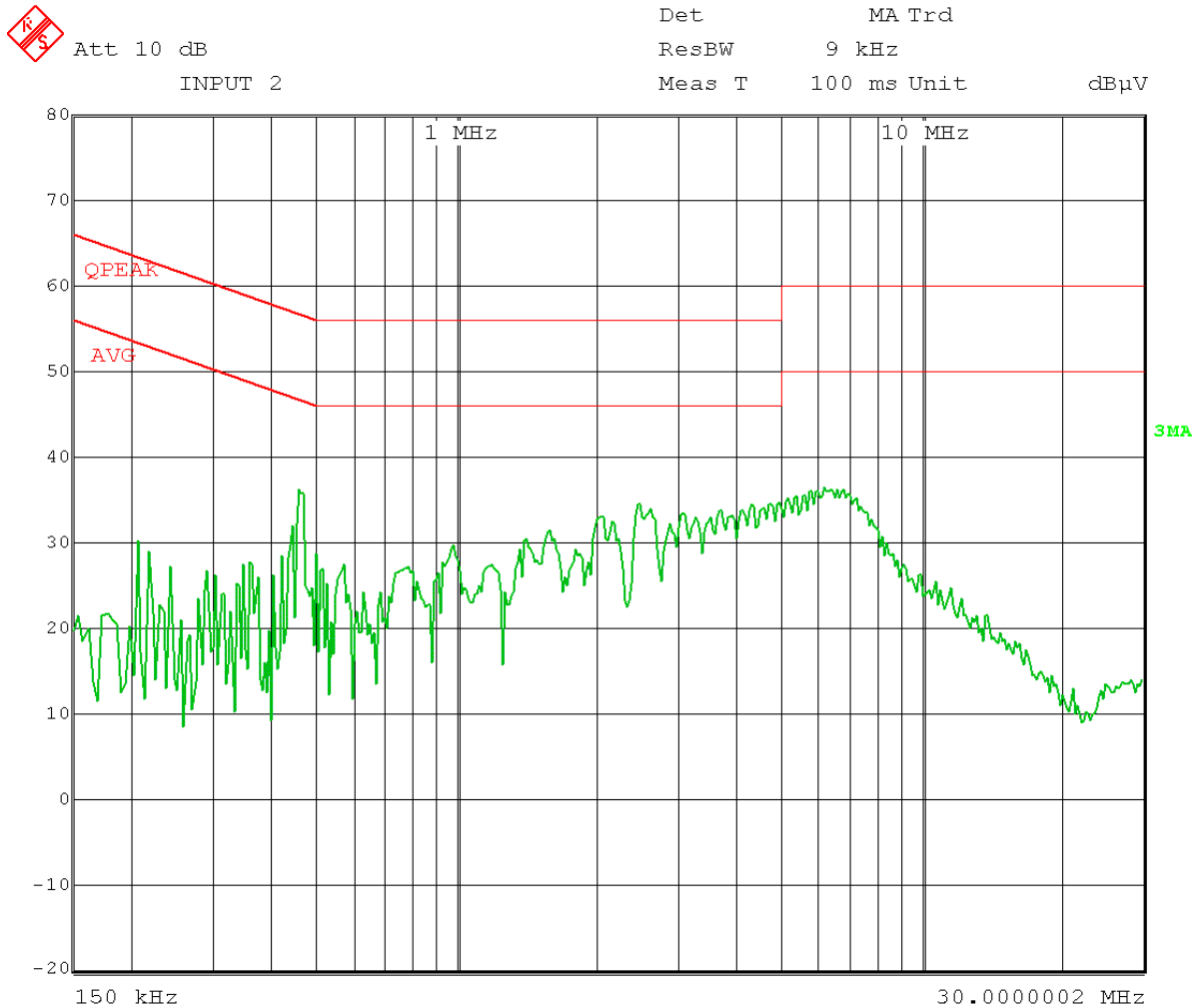
Rules Part No.: Part 15.207

Requirements:

Frequency (MHz)	Quasi Peak Limits (dBμV)	Average Limits (dBμV)
0.15 – 0.5	66 – 56 *	56 – 46 *
0.5 – 5.0	56	46
5.0 – 30	60	50
* Decrease with logarithm of frequency		

Test Data: The following plots represent the emissions read for power line conducted. Both lines were observed.

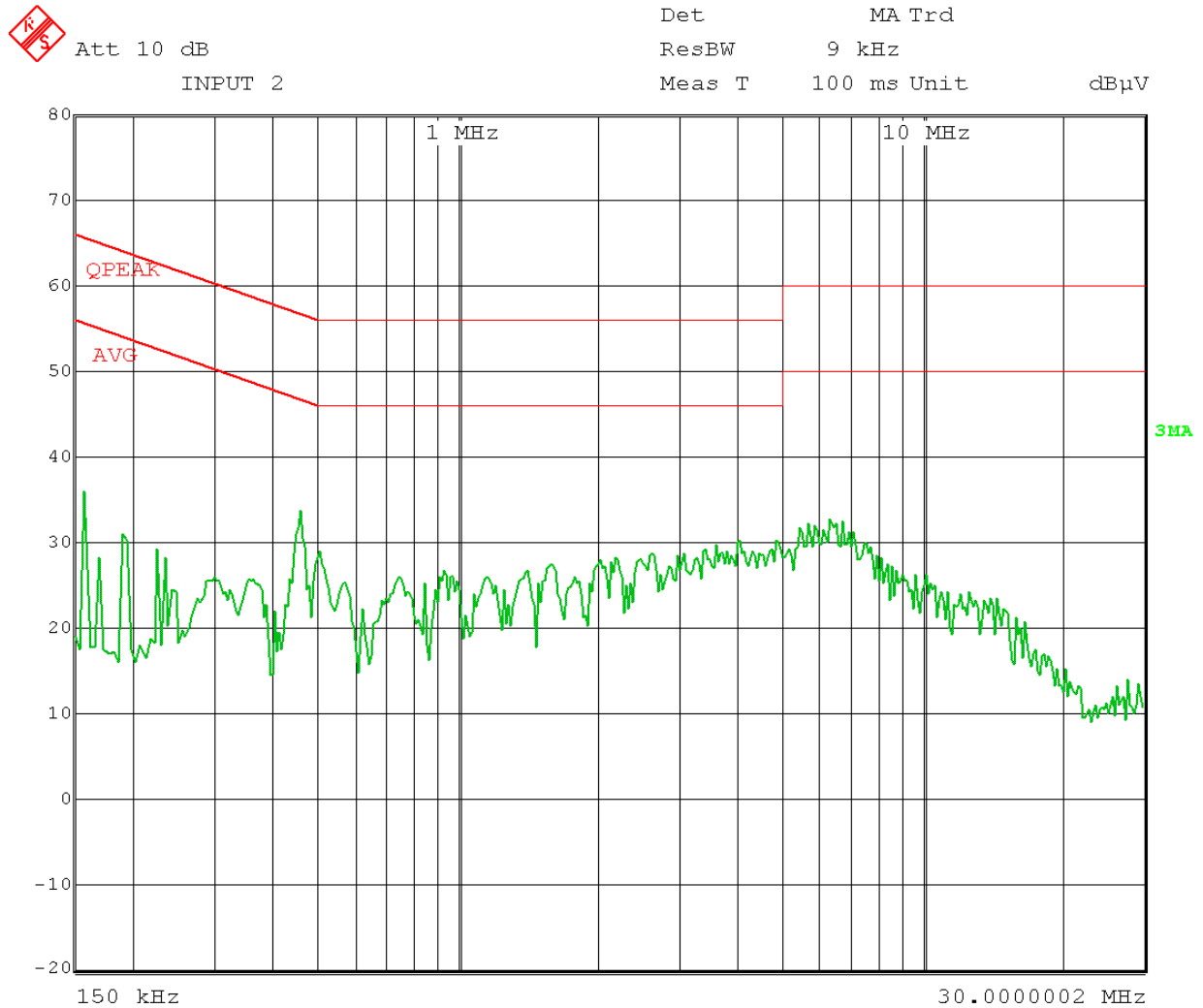
POWERLINE CONDUCTED PLOT – LINE 1
Bluetooth Hopping



Date: 15.AUG.2012 14:33:09

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POWERLINE CONDUCTED PLOT – LINE 2
Bluetooth Hopping



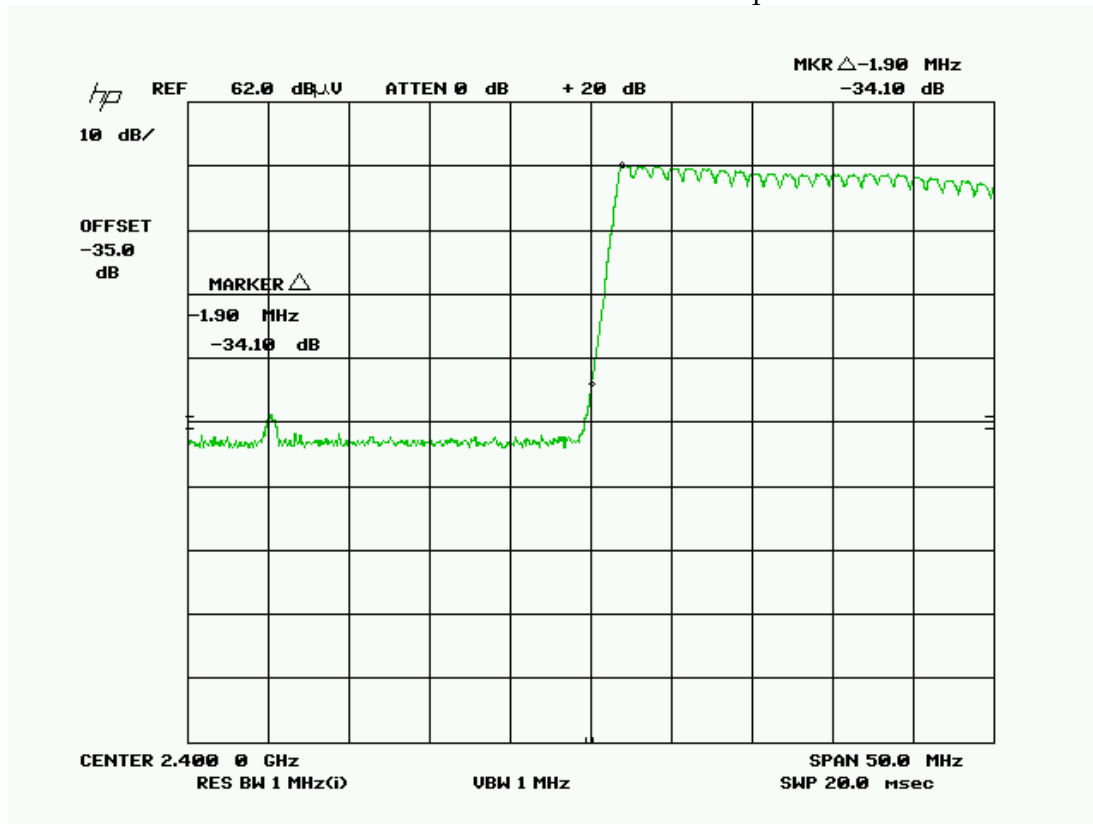
Date: 15.AUG.2012 14:36:34

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 $\mu\text{V}/\text{m}$ (54 $\text{dB}\mu\text{V}/\text{m}$).

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.

ch 2412-Lower restricted band peak



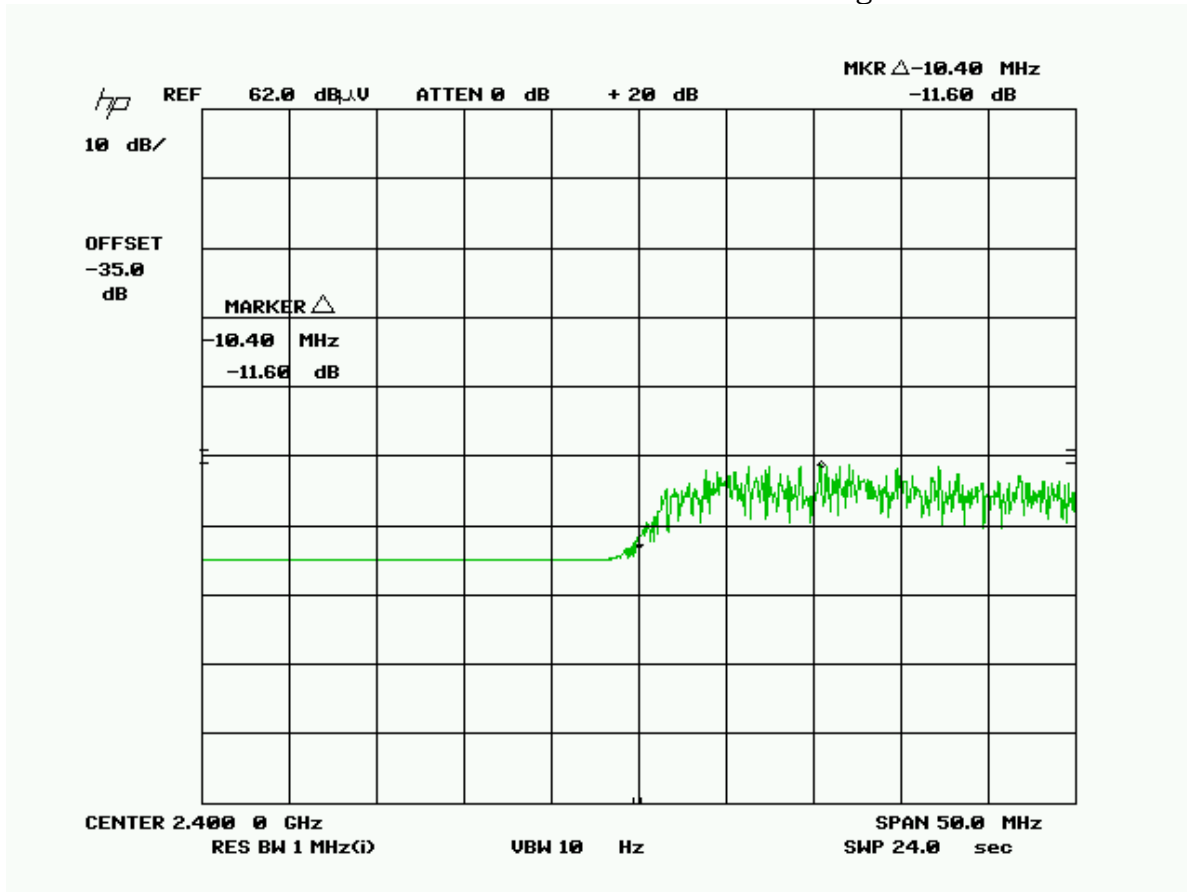
Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dB μV	Ant. Pol	Coax Loss dB	Correction Factor dB/m	Field Strength dB $\mu\text{V}/\text{m}$	Margin dB
2,400.0	2,400.00	18.1	V	3.18	32.40	53.68	0.32

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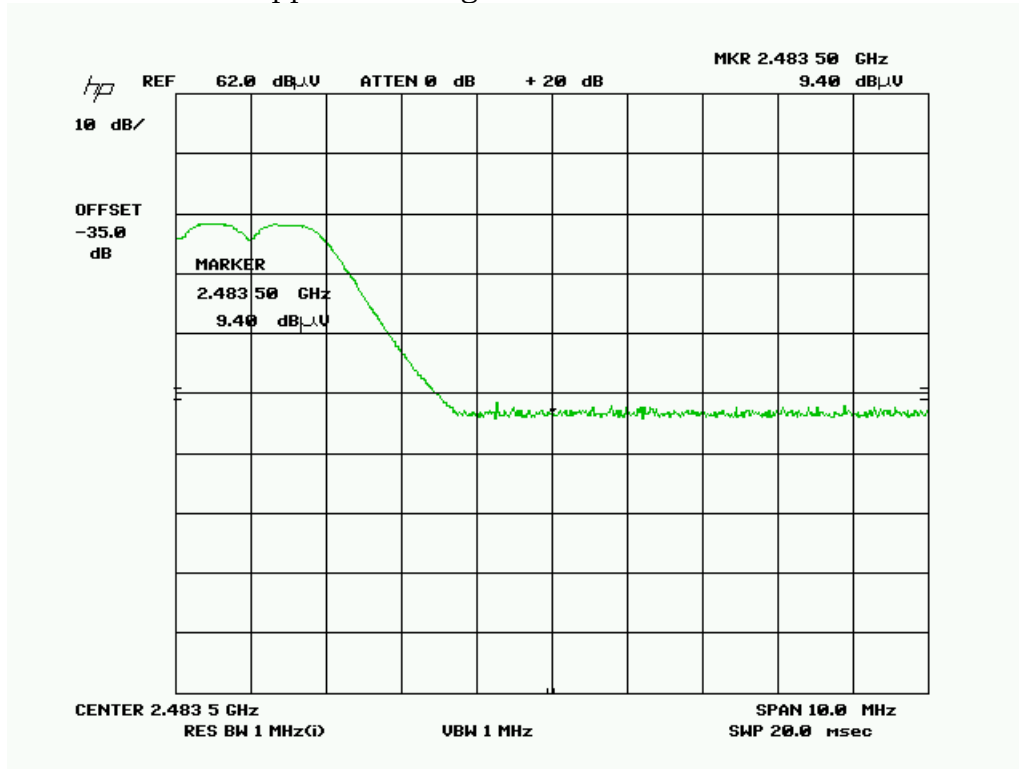
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ch 2412-Lower restricted band Average



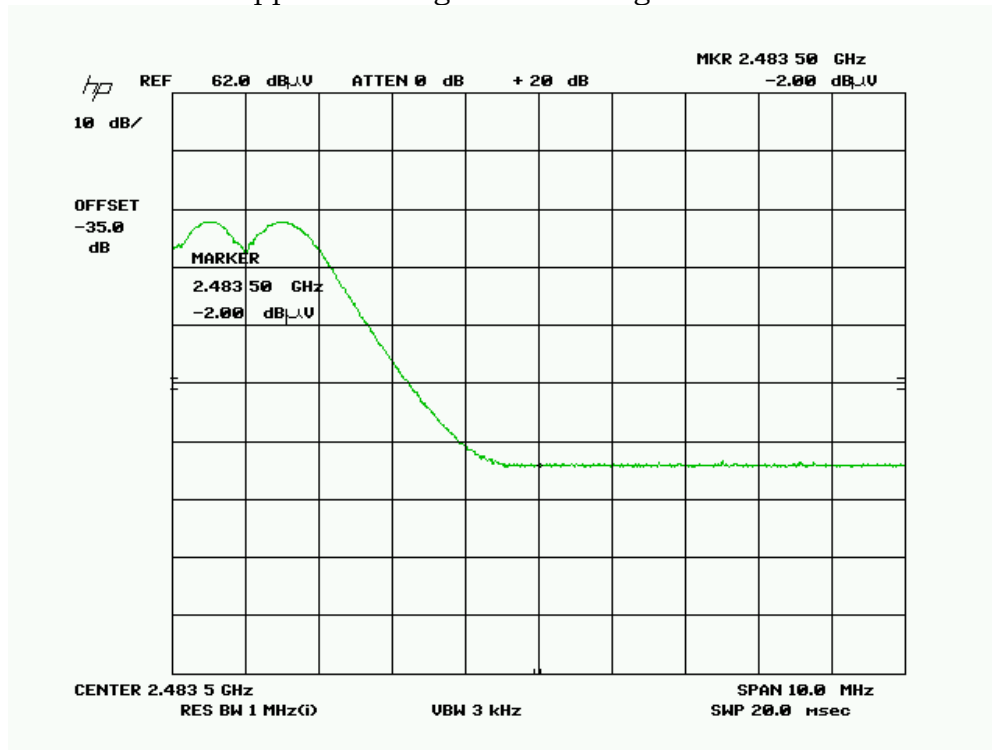
Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Ant. Pol	Coax Loss dB	Correction Factor dB/m	Field Strength dBuV/m	Margin dB
2,400.0	2,400.00	0.0	V	3.18	32.40	35.58	18.42

Upper bandedge ch 2464 Peak Horiz.



Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBuV	Ant. Pol	Coax Loss dB	Correction Factor dB/m	Field Strength dBuV/m	Margin dB
2,483.5	2,483.50	9.4	V	3.24	32.57	45.21	8.79

Upper bandedge 2464 average – Horiz.



Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBμV	Ant. Pol	Coax Loss dB	Correction Factor dB/m	Field Strength dBμV/m	Margin dB
2,483.5	2,483.50	-2.0	V	3.24	32.57	33.81	20.19