TIMCO ENGINEERING, Inc.

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COMPLIANCE TEST REPORT
PER FCC PART 15.247
AND IC RSS-210

Applicant	MOTOROLA, INC.
Address	600 NORTH U.S. HWY 45
	LIBERTYVILLE ILLINOIS 60048-5343 USA
FCC ID	IHDP56KY1
Model Number	H88XAH6JR2AN
Product Description	iDEN i296 MONOLITH PHONE
Date Sample Received	11/24/2009
Date Tested	12/09/2009
Tested By	Richard Block
Approved By	Mario de Aranzeta
Report Number	2866DUT9TestReport.doc
Test Results	☒ PASS ☐ FAIL

ACCREDITED

Testing Certificate # 0955-01

TABLE OF CONTENT

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 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: 12/9/2009

GENERAL INFORMATION

DUT Specification

Applicable Standard	Part 15.247		
DUT Description	iDEN i296 MONOLITH PHONE		
FCC ID	IHDP56KY1		
MODEL NUMBER	H88XAH6JR2AN		
Serial Number	364VKUTF6Y		
Software	IC8.00.03		
Hardware	P2A-5		
Operating Frequency	TX: 2.402 – 2.480 GHz	RX: Same	
DUT Power Source	☒ 110–120Vac/50– 60Hz		
	☐ DC Power		
	☐ Battery Operated Exclusively		
Test Item	☐ Prototype	☒ Pre-Production	☐ Production
Type of Equipment	☐ Fixed	☐ Mobile	☒ 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			

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 2/5/09	2/5/12
3-Meter Semi-Anechoic Chamber	Panashield	N/A	N/A	Listed 5/11/07	5/10/10
Analyzer Open-Frame Tower Preamplifier	HP	8449B	3008A01075	CAL 7/22/09	7/22/11
Analyzer Open-Frame Tower Quasi-Peak Adapter	HP	85650A	2043A00305	CAL 10/26/09	10/26/11
Analyzer Open-Frame Tower RF Preselector	HP	85685A	3107A01282	CAL 7/22/09	7/22/11
Analyzer Open-Frame Tower Spectrum Analyzer	HP	8566B/85662A	2627A03154/ 2648A14276	CAL 7/22/09	7/22/11
Antenna: BiconiLog	EMCO	3143	9409-1043		No Cal Required
Antenna: Biconnical	Eaton	94455-1	1057	CAL 1/15/08	1/15/10
Antenna: Log-Periodic	Electro-Metrics	LPA-25	1122	CAL 12/15/08	12/15/11
LISN	Electro-Metrics	ANS-25/2	2604	CAL 10/16/09	10/16/11
Signal Generator	HP	8640B	2308A21464	CAL 8/4/09	8/4/11

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 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.

RADIATION INTERFERENCE

Rules Part No.: 15.247, 15.209

Requirements:

Frequency	Limits
Part 15.209	
9 to 490 kHz	2400/F (kHz) µV/m @ 300 meters
490 to 1705 kHz	24000/F (kHz) µV/m @ 30 meters
1705 kHz to 30 MHz	29.54 dBµV/m @ 30 meters
30 – 88	40.0 dBµV/m @ 3 meters
80 – 216	43.5 dBµV/m @ 3 meters
216 – 960	46.0 dBµV/m @ 3 meters
Above 960	54.0 dBµV/m @ 3 meters
Part 15.247	
Fundamental 902 – 928 MHz	127.37 dBµV/m @ 3 meters
Fundamental 2.4 – 2.4835 MHz	127.37 dBµV/m @ 3 meters
Harmonics	54.0 dBµV/m @ 3 meters

Any emissions that fall in the restricted bands (15.205) must be less than or equal to 54 dBuV/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 dBµV	Ant. Polarity	Coax Loss dB	Correction Factor dB/m	Field Strength dBµV/m	Margin dB
2,402.0	**2,402.00**	**63.1**	**H**	**3.18**	**32.25**	**98.53**	**28.85**
2,402.0	**2,402.00**	**64.6**	**V**	**3.18**	**32.25**	**100.03**	**27.35**
2,402.0	**4,804.00**	**3.7**	**H**	**4.90**	**34.10**	**42.70**	**11.30**
2,402.0	**4,804.00**	**4.0**	**V**	**4.90**	**34.10**	**43.00**	**11.00**
2,402.0	**7,206.00**	**11.2**	**H**	**5.72**	**36.04**	**52.96**	**1.04**
2,402.0	**7,206.00**	**12.1**	**V**	**5.72**	**36.04**	**53.86**	**0.14**
2,402.0	**9,608.00**	**8.9**	**V**	**6.78**	**36.71**	**52.39**	**1.61**
2,402.0	**9,608.00**	**9.7**	**H**	**6.78**	**36.71**	**53.19**	**0.81**
2,402.0	**12,010.00**	**4.8**	**V**	**7.81**	**38.71**	**51.32**	**2.68**
2,402.0	**12,010.00**	**5.6**	**H**	**7.81**	**38.71**	**52.12**	**1.88**
2,441.0	**2,441.00**	**57.8**	**H**	**3.21**	**32.35**	**93.36**	**34.02**
2,441.0	**2,441.00**	**62.4**	**V**	**3.21**	**32.35**	**97.96**	**29.42**
2,441.0	**4,882.00**	**4.1**	**V**	**4.94**	**34.10**	**43.14**	**10.86**
2,441.0	**4,882.00**	**5.6**	**H**	**4.94**	**34.10**	**44.64**	**9.36**
2,441.0	**7,323.00**	**10.4**	**H**	**5.79**	**36.06**	**52.25**	**1.75**
2,441.0	**7,323.00**	**11.3**	**V**	**5.79**	**36.06**	**53.15**	**0.85**
2,441.0	**9,764.00**	**7.2**	**V**	**6.83**	**36.86**	**50.89**	**3.11**

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	9,764.00	9.0	H	6.83	36.86	52.69	1.31
2,441.0	12,205.00	3.3	V	7.94	38.86	50.10	3.90
2,441.0	12,205.00	5.0	H	7.94	38.86	51.80	2.20
2,480.0	2,480.00	57.3	H	3.24	32.45	92.99	34.39
2,480.0	2,480.00	63.5	V	3.24	32.45	99.19	28.19
2,480.0	4,960.00	4.0	H	4.98	34.10	43.08	10.92
2,480.0	4,960.00	4.6	V	4.98	34.10	43.68	10.32
2,480.0	7,440.00	8.2	H	5.87	36.09	50.16	3.84
2,480.0	7,440.00	8.4	V	5.87	36.09	50.36	3.64
2,480.0	9,920.00	3.6	V	6.88	37.02	47.50	6.50
2,480.0	9,920.00	5.2	H	6.88	37.02	49.10	4.90
2,480.0	12,400.00	2.9	V	8.08	39.02	50.00	4.00
2,480.0	12,400.00	4.1	H	8.08	39.02	51.20	2.80

iDEN + BT Co-location

For TX iDEN 800 MHz band

Bluetooth Signal set to hopping, Tx discrete frequency

	Frequency		Code	Peak	Horizontal		Peak	Vertical			
	Bluetooth	TX		Freq	Reading	E-Field	Freq	Reading	E-Field	Limit	Margin
	MHz	MHz		MHz	dBuV	dBuV/m	MHz	dBuV	dBuV/m	dBuV/m	dB
fbt-ftx	hopping	806.0625	A	1666	16.1	**47.8**	1661	15.7	**47.4**	54	**6.2**
		813.5625	B	1654	15.7	**47.3**	1635	15.6	**47.1**	54	**6.7**
		824.9875	C	1611	16.4	**47.7**	1629	14.7	**46.1**	54	**6.3**
fbt+ftx	hopping	806.0625	D	3212	9.3	**45.8**	3245	10.3	**46.8**	54	**7.2**
		813.5625	E	3243	9.5	**46.0**	3274	11.2	**47.8**	54	**6.3**
		824.9875	F	3276	7.9	**44.5**	3272	11.5	**48.1**	54	**6.0**

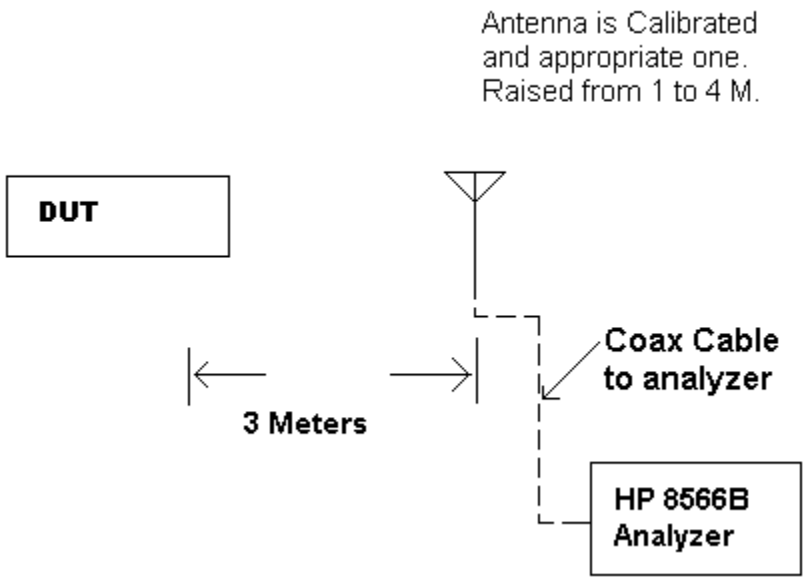
hopping = 2402 to 2480 MHz

For TX iDEN 800 MHz band

Bluetooth and TX signals set to discrete values

	Frequency		Code	Peak	Horizontal		Peak	Vertical			
	Bluetooth	TX		Freq	Reading	E-Field	Freq	Reading	E-Field	Limit	Margin
	MHz	MHz		MHz	dBuV	dBuV/m	MHz	dBuV	dBuV/m	dBuV/m	dB
fbt-ftx	2441	824.9875	G	1616	14.0	**45.3**	1616	14.3	**45.6**	54	**8.4**
	2402	824.9875	H	1577	13.7	**44.8**	1577	13.4	**44.5**	54	**9.3**
	2480	824.9875	I	1655	13.7	**45.3**	1655	14.1	**45.7**	54	**8.3**
fbt+ftx	2441	824.9875	G	3266	7.8	**44.3**	3266	12.0	**48.5**	54	**5.5**
	2402	824.9875	H	3277	6.0	**42.6**	3277	5.6	**42.2**	54	**11.5**
	2480	824.9875	I	3305	5.1	**42.0**	3305	9.4	**46.0**	54	**8.0**

Method of Measuring Radiated Spurious Emissions



METHOD OF MEASUREMENT: The procedure used was ANSI C63.4-2003 & the FCC/OET Guidance on Measurements for Spread Spectrum Systems – Public Notice DA 00-705 dated March 30th, 2000.

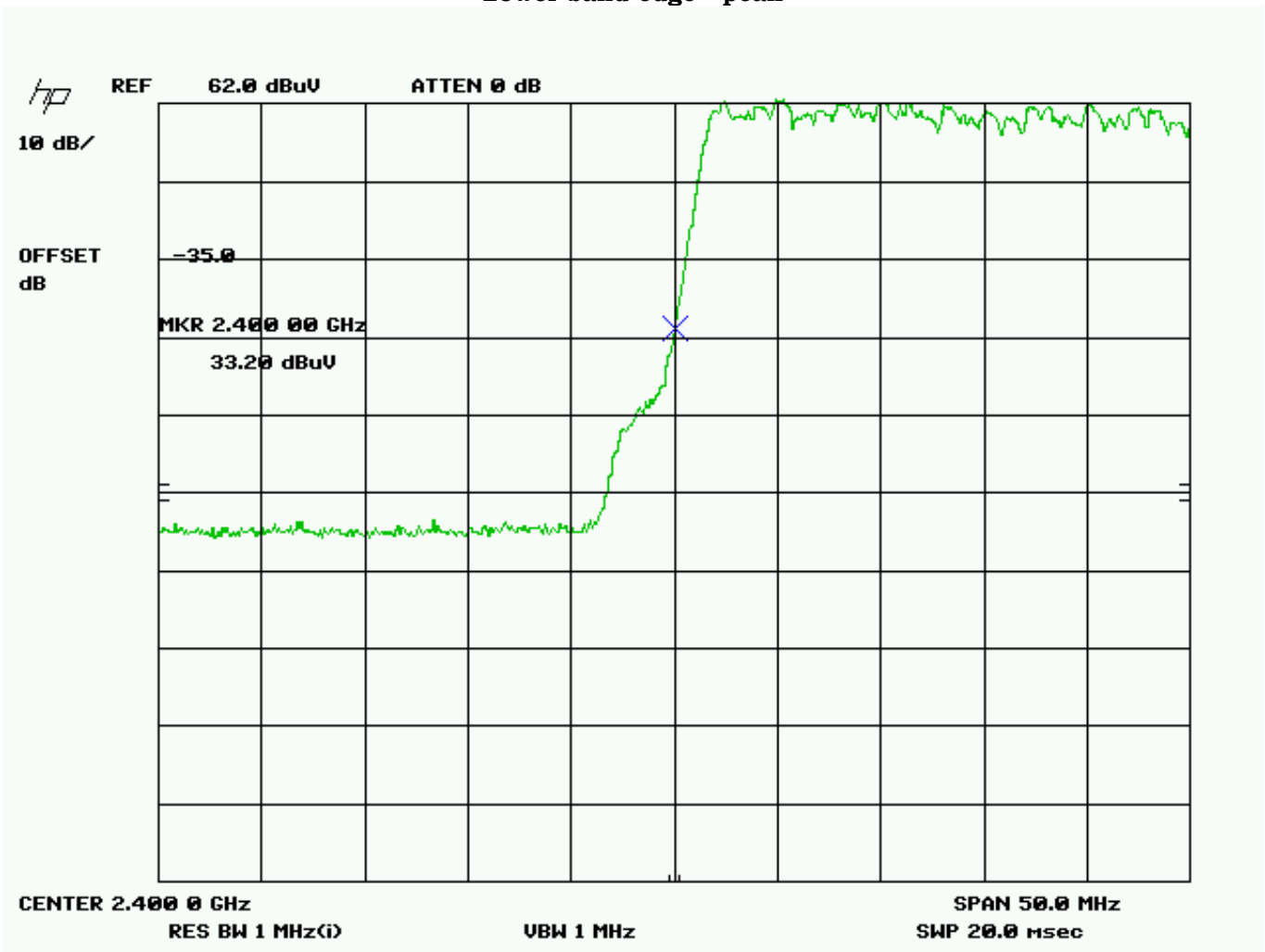
BAND EDGE COMPLIANCE

Rules Part No.: FCC Pt 15.247 (d), RSS-210

Requirements: Restricted bands 54 dBµV/m.

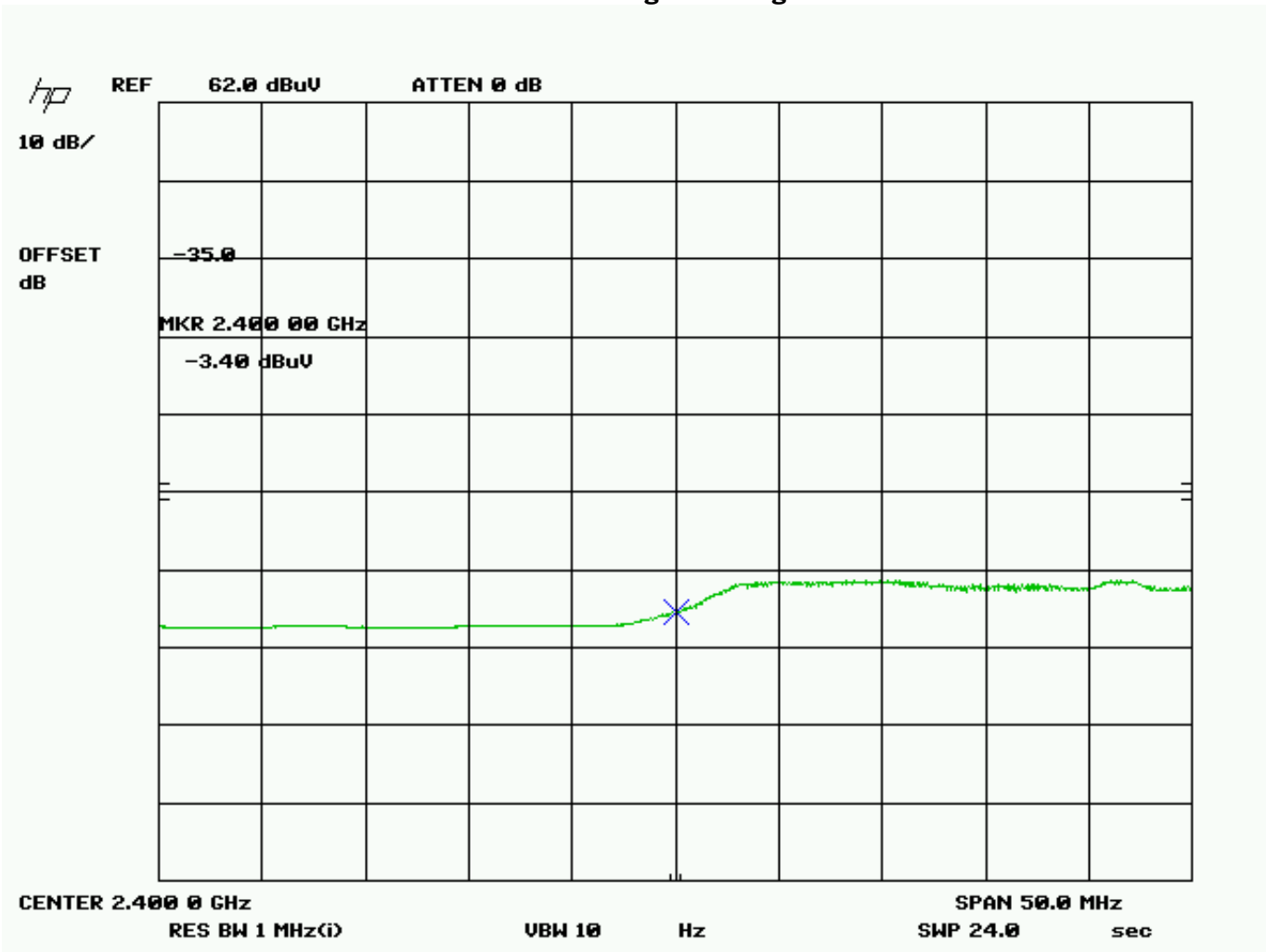
Test Data:

Lower band edge - peak



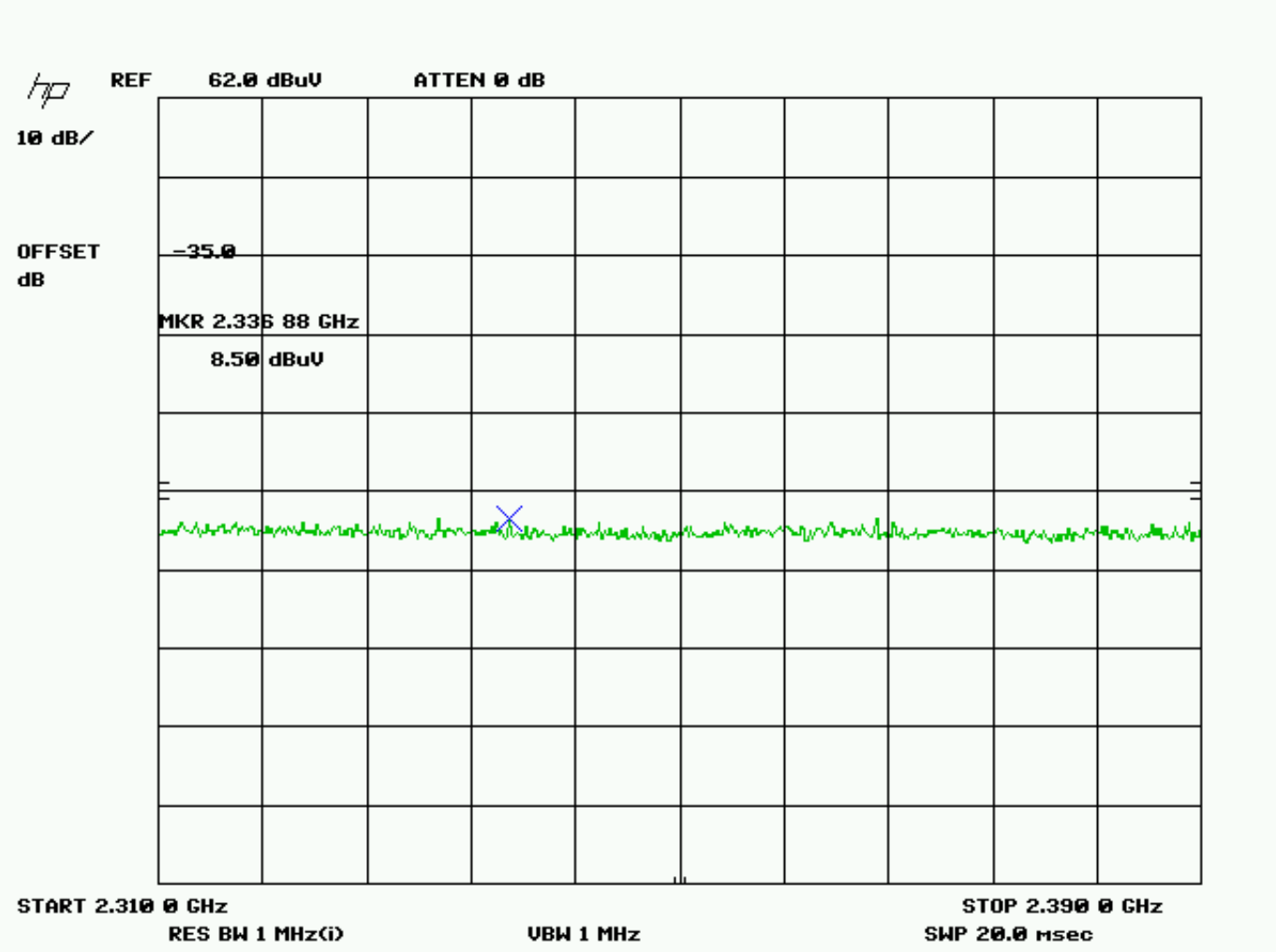
Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBµV	Ant. Polarity V/H	Coax Loss dB	Correction Factor dB/m	Field Strength dBµV/m	Margin dB
2,400.0	2,400.00	33.2	V	3.18	32.24	68.62	5.38

Lower bandedge – average



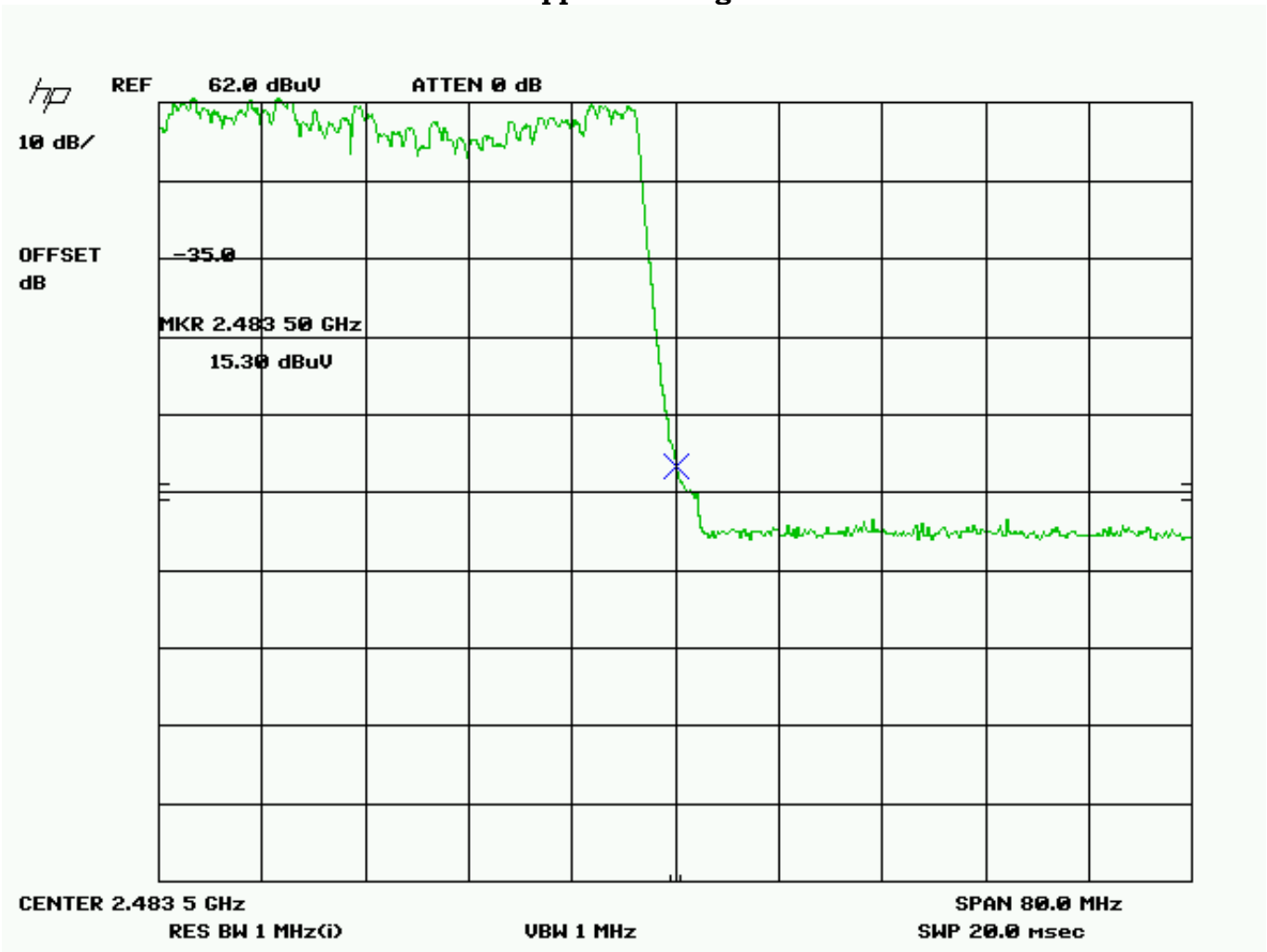
Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBµV	Ant. Polarity V/H	Coax Loss dB	Correction Factor dB/m	Field Strength dBµV/m	Margin dB
2,400.0	2,400.00	-3.4	V	3.18	32.24	32.02	21.98

Lower non-adjacent restricted band



Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBµV	Ant. Polarity V/H	Coax Loss dB	Correction Factor dB/m	Field Strength dBµV/m	Margin dB
2,366.9	2,366.88	8.5	V	3.16	32.15	43.81	10.19

Upper bandedge



Tuned Frequency MHz	Emission Frequency MHz	Meter Reading dBµV	Ant. Polarity V/H	Coax Loss dB	Correction Factor dB/m	Field Strength dBµV/m	Margin dB
2,483.5	2,483.50	15.3	V	3.24	32.46	51.00	3.00

POWER LINE CONDUCTED INTERFERENCE

Rules Part No.: Part 15.207

Requirements:

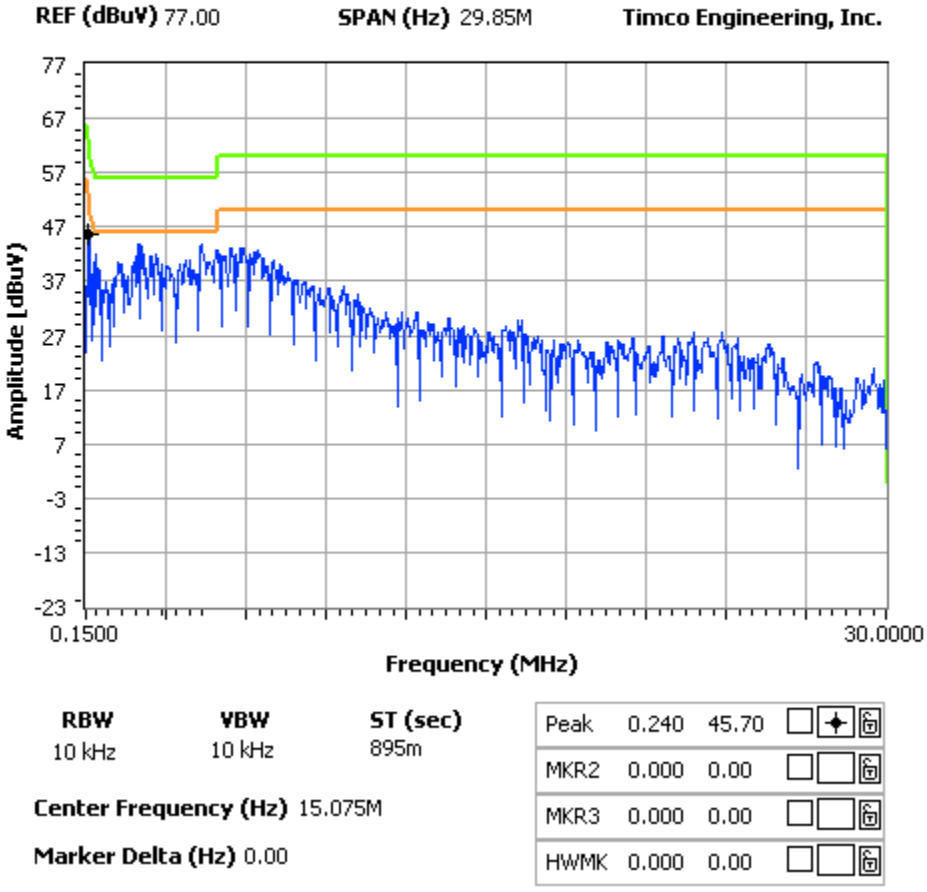
Frequency (MHz)	Quasi Peak Limits (dBµV)	Average Limits (dBuV)
0.15 – 0.5	66 – 56 *	56 – 46 *
0.5 – 5.0	56	46
5.0 – 30	60	50
* Decrease with logarithm of frequency		

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

BLUETOOTH – HOPPING
BK10 BATTERY
POWERLINE CONDUCTED PLOT – LINE 1

NOTES:
POWERLINE CONDUCTED -- LINE 1
MOTOROLA, INC. -- FCC ID: IHDP56KY1
BATTERY: BK10

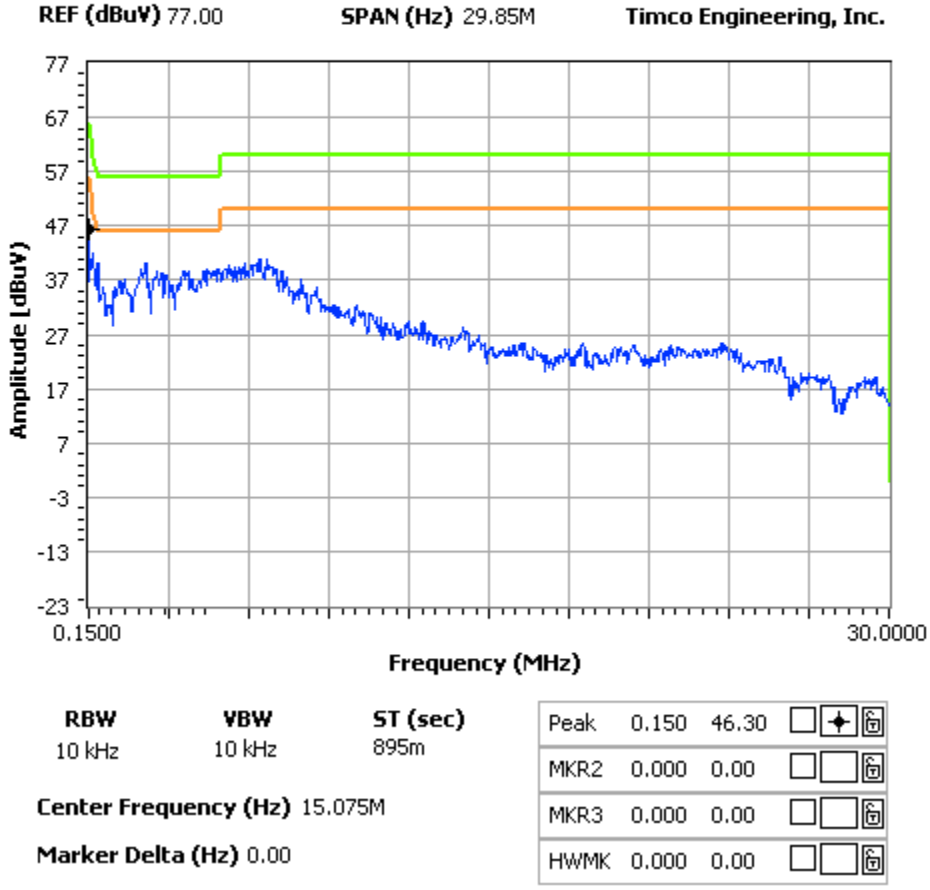
FCC 15.107 Mask Class B



POWERLINE CONDUCTED PLOT – LINE 2

NOTES:
POWERLINE CONDUCTED -- LINE 2
MOTOROLA, INC. -- FCC ID: IHDP56KY1
BATTERY: BK10

FCC 15.107 Mask Class B



RBW	VBW	ST (sec)
10 kHz	10 kHz	895m

Center Frequency (Hz) 15.075M

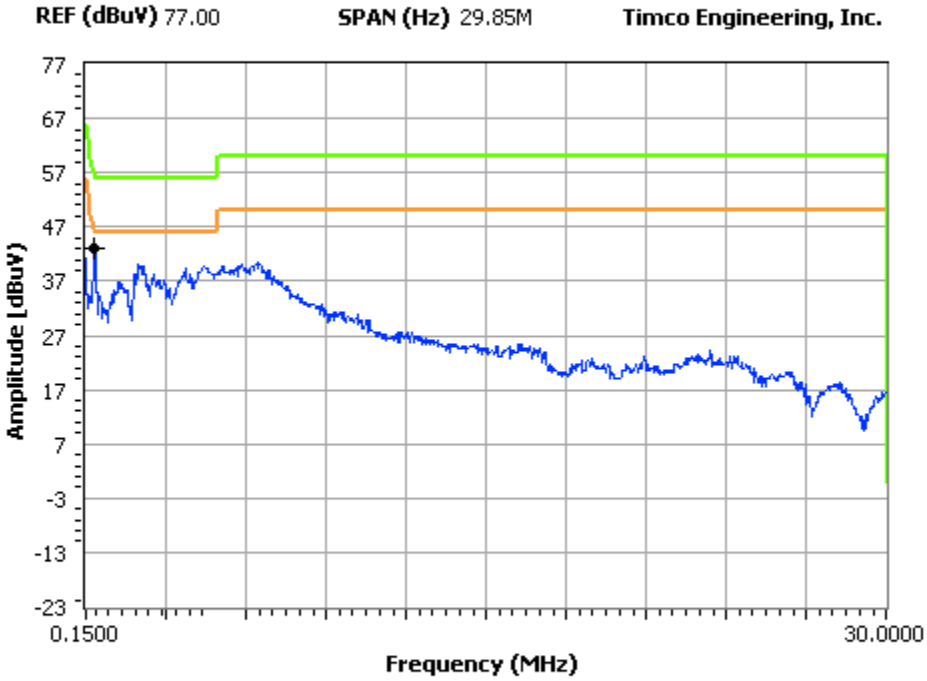
Marker Delta (Hz) 0.00

Peak	0.150	46.30
MKR2	0.000	0.00
MKR3	0.000	0.00
HWMK	0.000	0.00

BLUETOOTH – HOPPING
BK60 BATTERY
POWERLINE CONDUCTED PLOT – LINE 1

NOTES:
POWERLINE CONDUCTED -- LINE 1
MOTOROLA, INC. -- FCC ID: IHDP56KY1
BATTERY: BK60

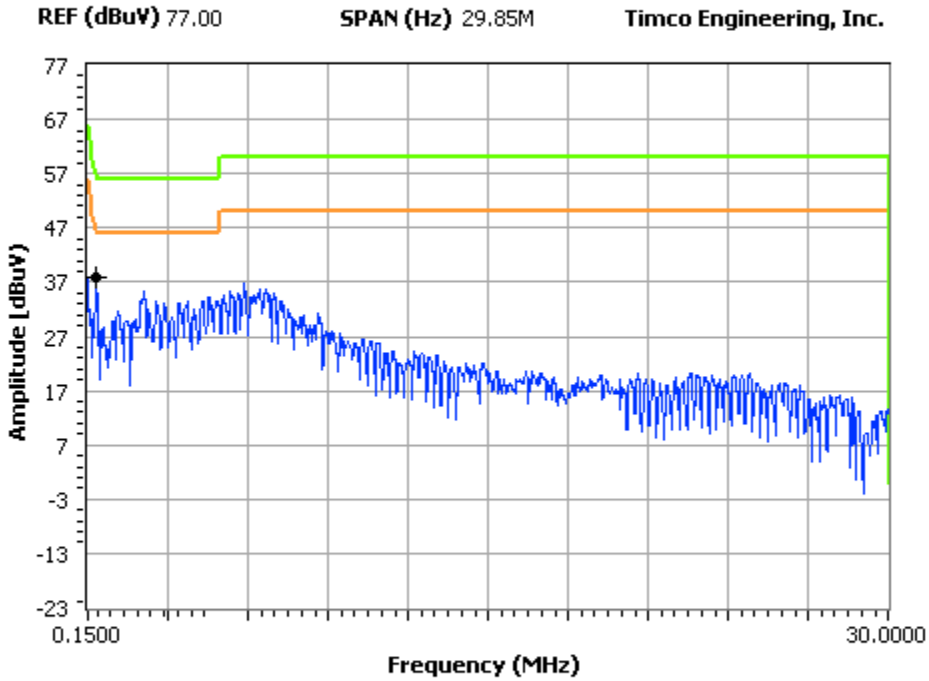
FCC 15.107 Mask Class B



POWERLINE CONDUCTED PLOT – LINE 2

NOTES:
POWERLINE CONDUCTED -- LINE 2
MOTOROLA, INC. -- FCC ID: IHDP56KY1
BATTERY: BK60

FCC 15.107 Mask Class B



RBW	VBW	ST (sec)
10 kHz	10 kHz	895m

Center Frequency (Hz) 15.075M

Marker Delta (Hz) 0.00

Peak	0.448	37.80
MKR2	0.000	0.00
MKR3	0.000	0.00
HWMK	0.000	0.00