6.8 BLUETOOTH MEASURED DATA – Pursuant 47 CFR 2.1041

Bluetooth conducted measurement setup and procedure was provided in Exhibit 7.

6.8.1 Bluetooth Carrier Frequency Separation – Pursuant 47 CFR 15.247(a)(1)

The measurement shows a carrier frequency separation of 1.012 MHz, which is greater than the measured 20 dB bandwidth of 829.7 kHz.

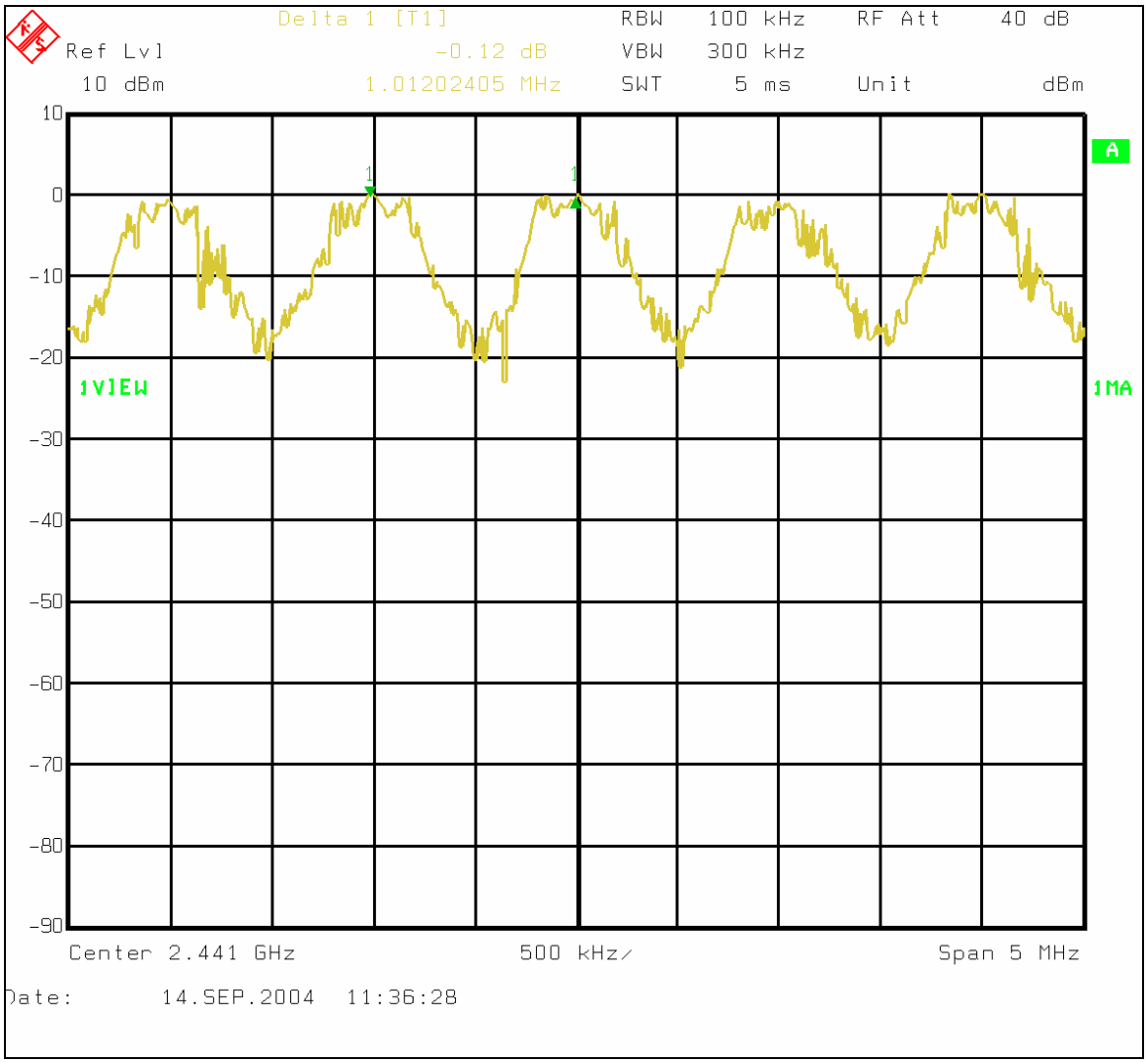


Figure 6-38: Plot of Bluetooth carrier frequency separation

6.8.2 Bluetooth number of hopping frequencies – Pursuant 47 CFR 15.247(a)(1)(iii)

The measurement shows 79 non-overlapping channels over a span of 79 MHz.

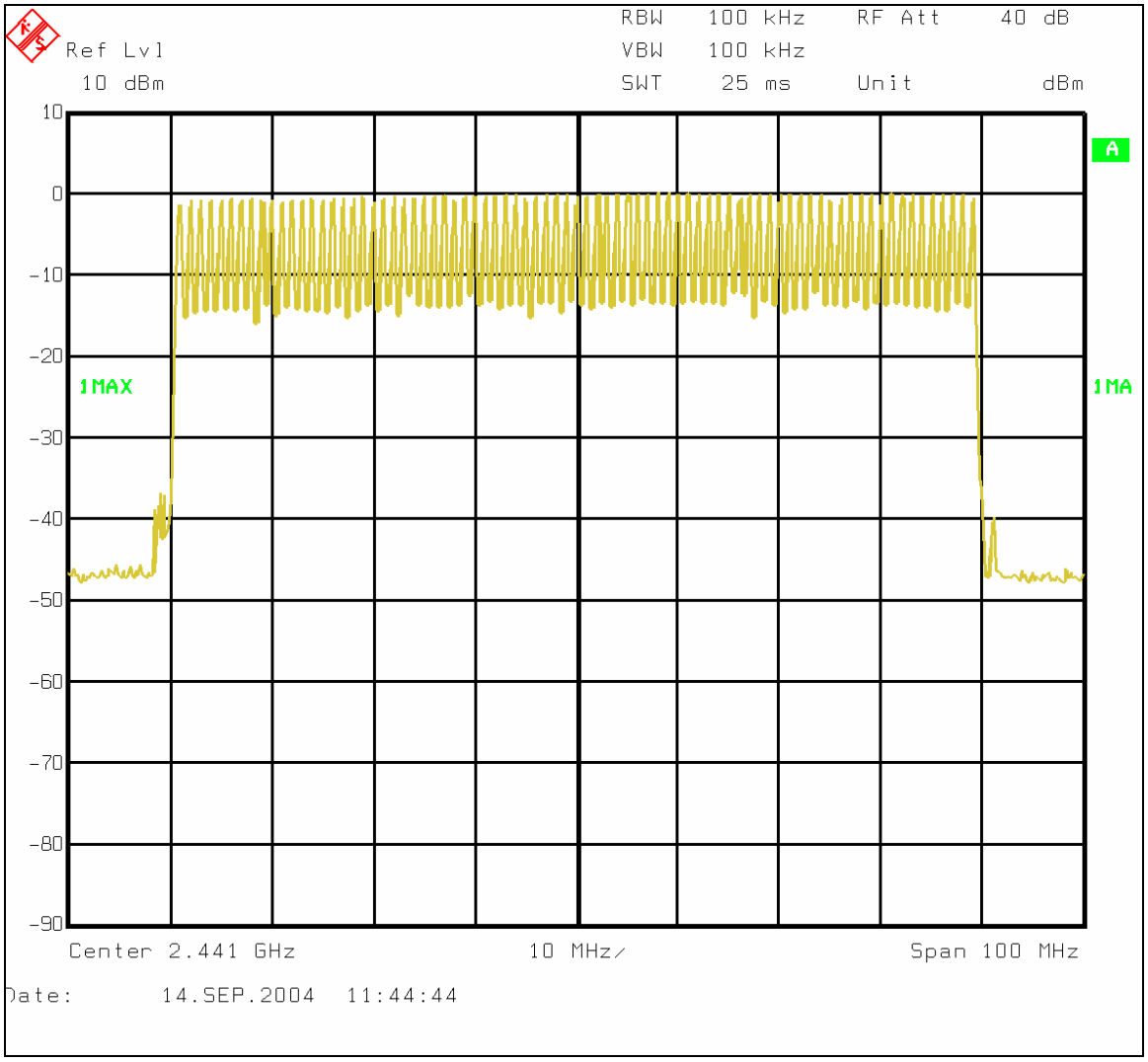


Figure 6-39: Plot of number of Bluetooth hopping frequencies

6.8.3 Time of Occupancy (Dwell Time) – Pursuant 47 CFR 15.247(a)(1)(iii)

The measurement shows the total dwell time in a 31.6 second period to be 135.691 ms.

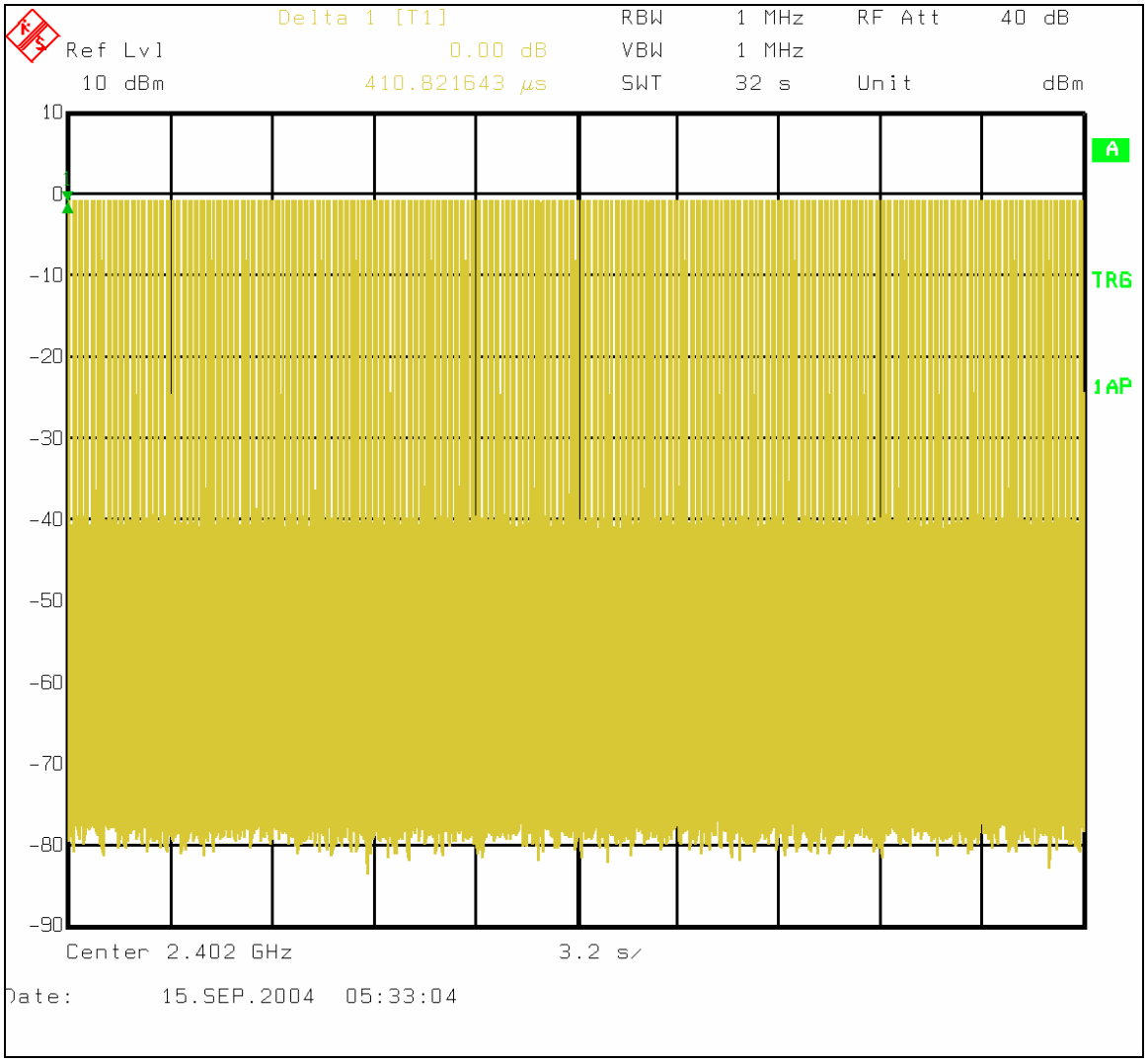


Figure 6-40: Plot of dwell time over 32 second period

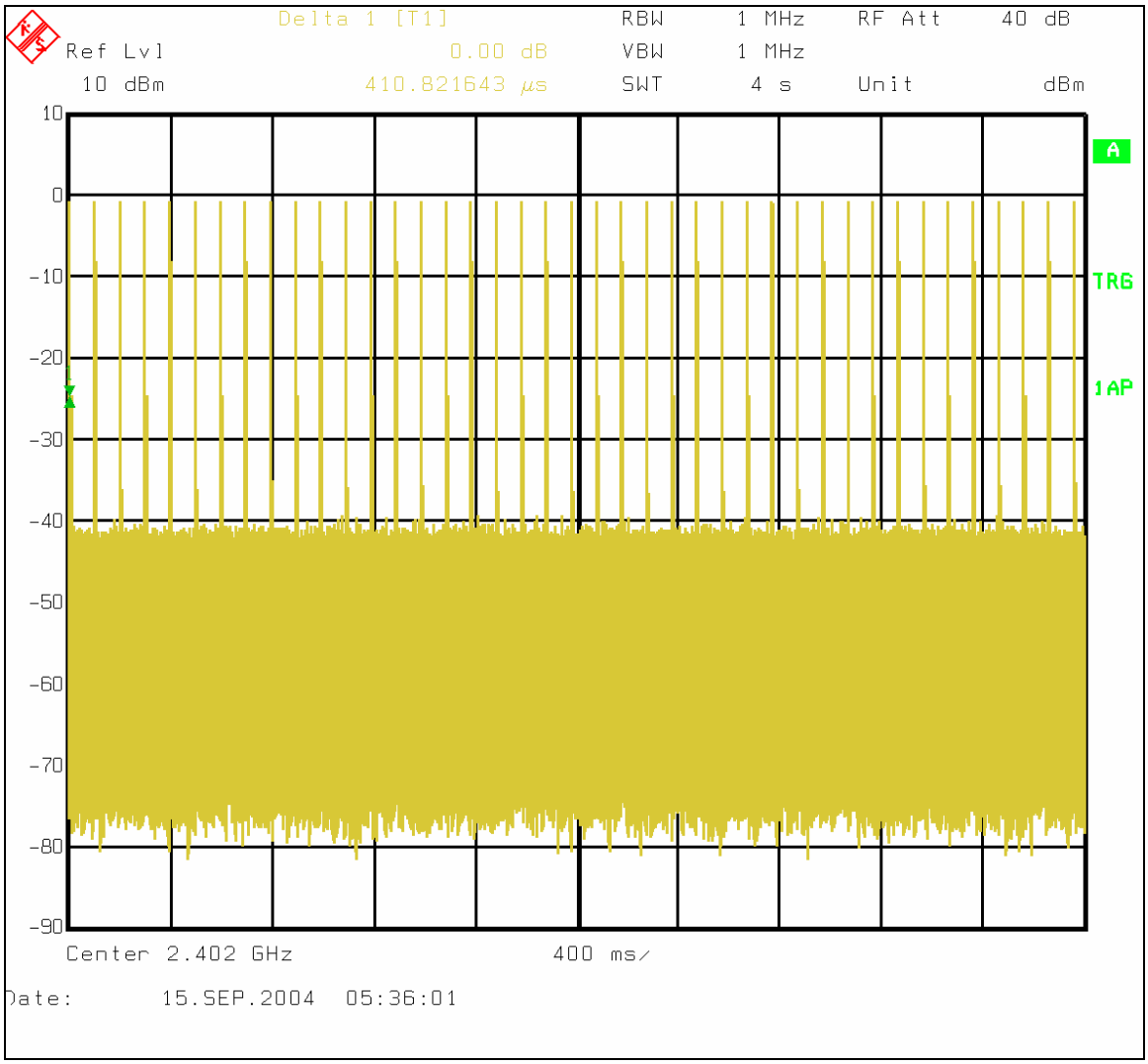


Figure 6-41: Plot of dwell time over 4 second period

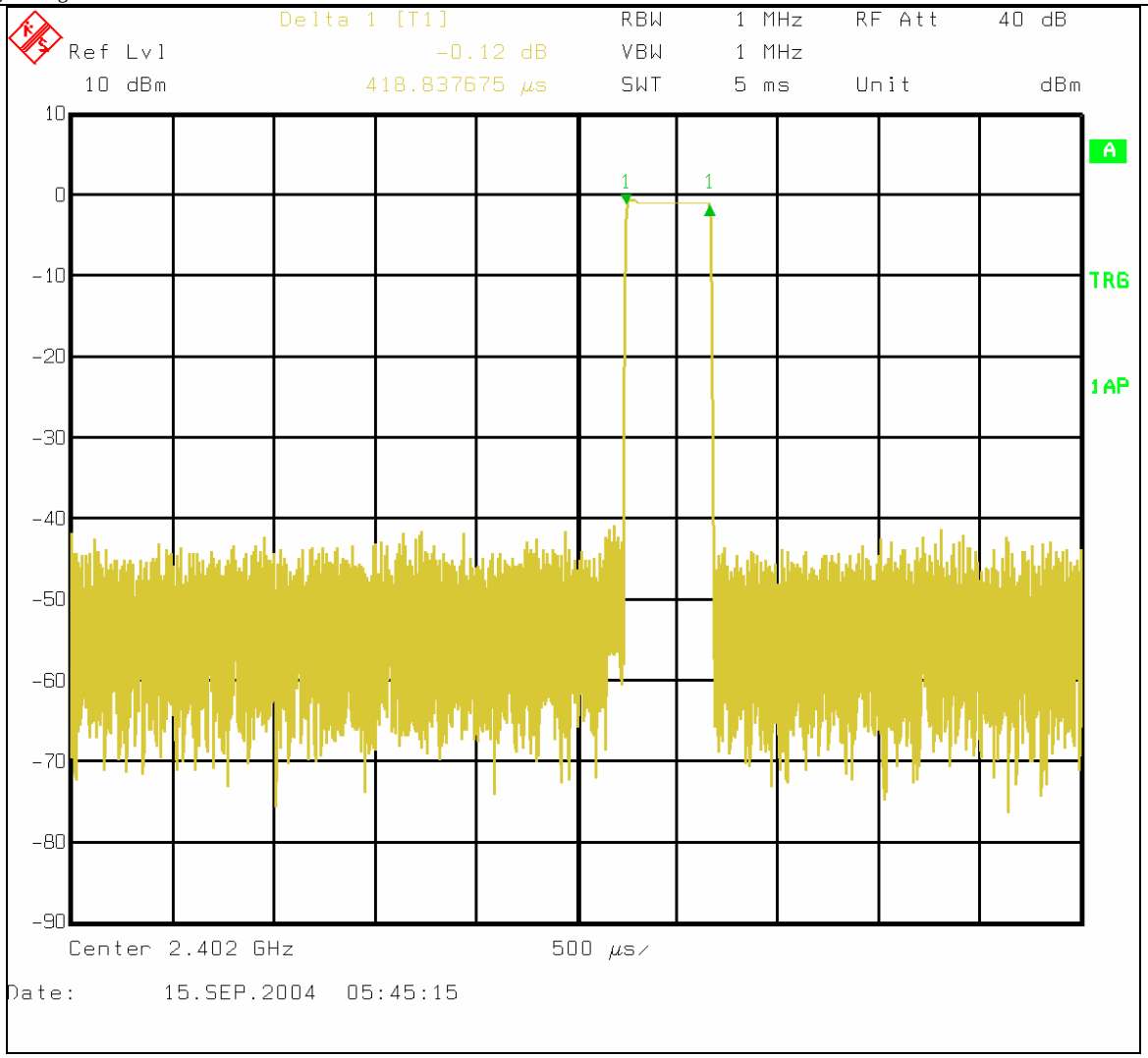


Figure 6-42: Plot of dwell time over 5 mili-second period

6.8.4 20 dB Bandwidth – Pursuant 47 CFR 15.247(a)(1)(ii)

The 20 dB bandwidth of the emission is 829.7 kHz.

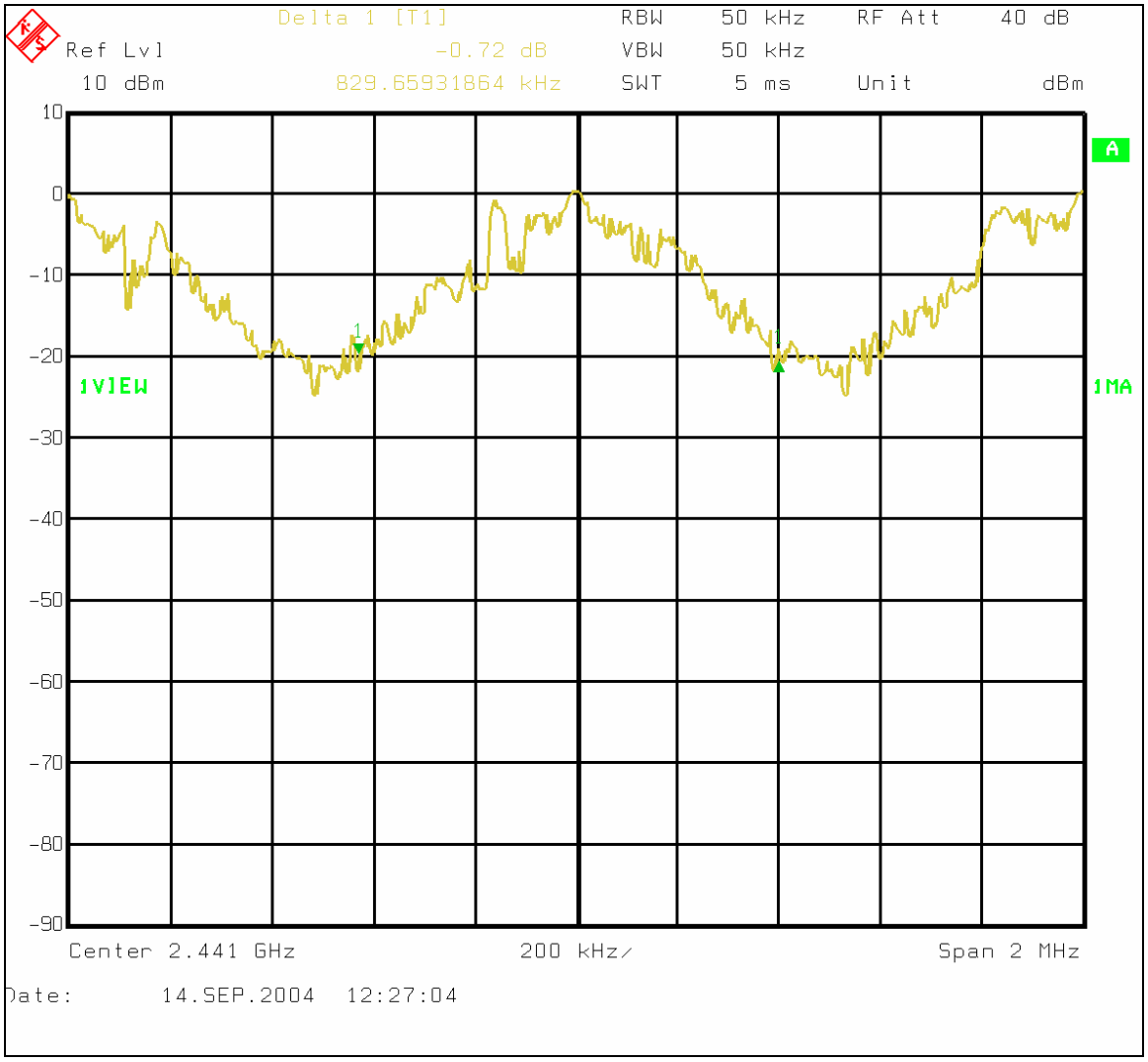


Figure 6-43: Plot of 20 – dB bandwidth

6.8.5 Peak Bluetooth Output Power – Pursuant 47 CFR 15.247(b)(1)

The peak output power is -0.16 dBm, which is equivalent to 0.964 mW.

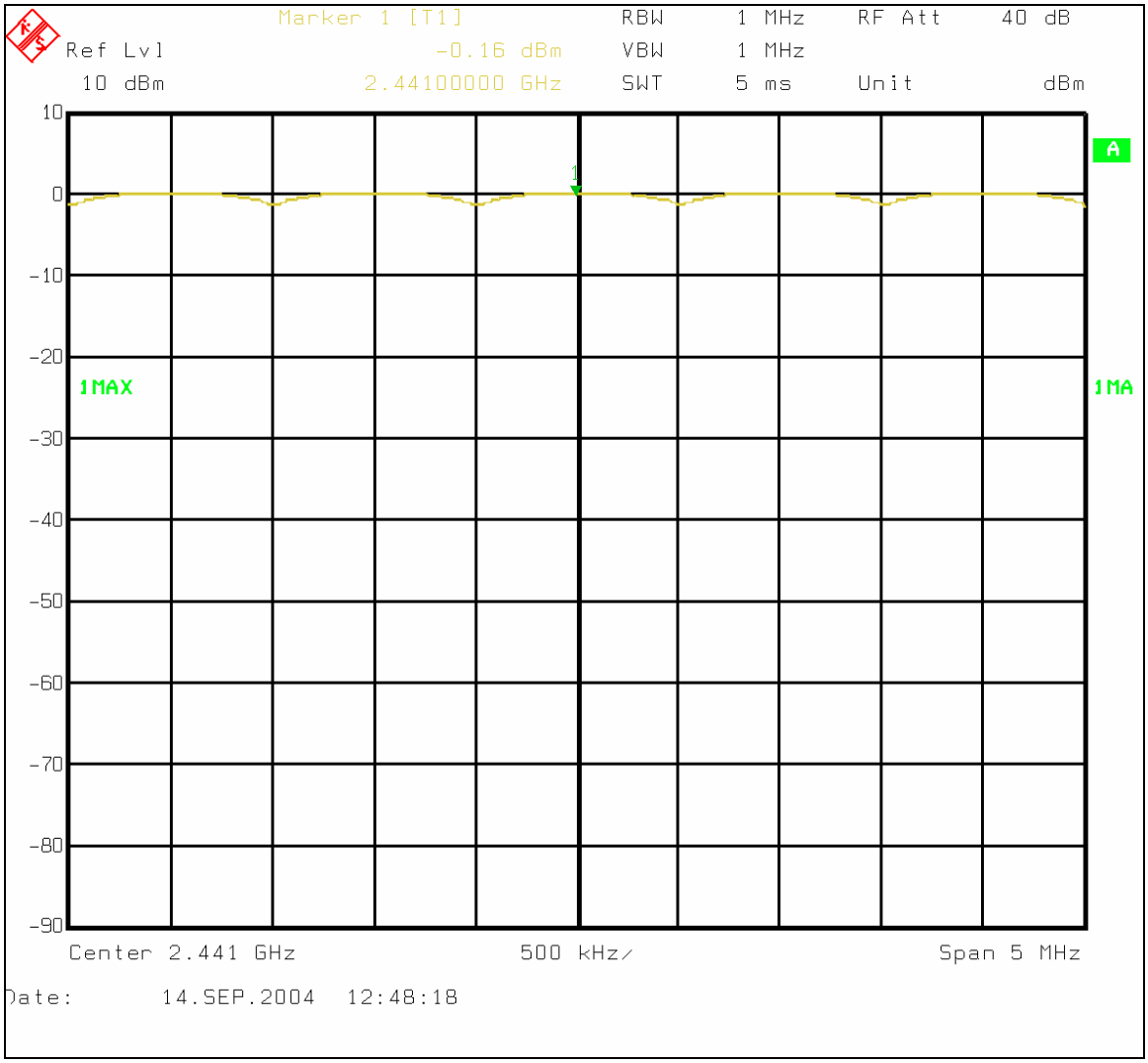


Figure 6-44: Plot of peak output power

6.8.6 Band-Edge Compliance of RF Conducted Emissions – Pursuant 47 CFR 15.247(c)

The measurement shows 34.34 dB at the lower band edge and 45.98 dB at the upper band edge with the hopping function disabled. The measurement shows 36.16 dB at the lower band edge and 45.30 dB at the upper band edge with the hopping function enabled.

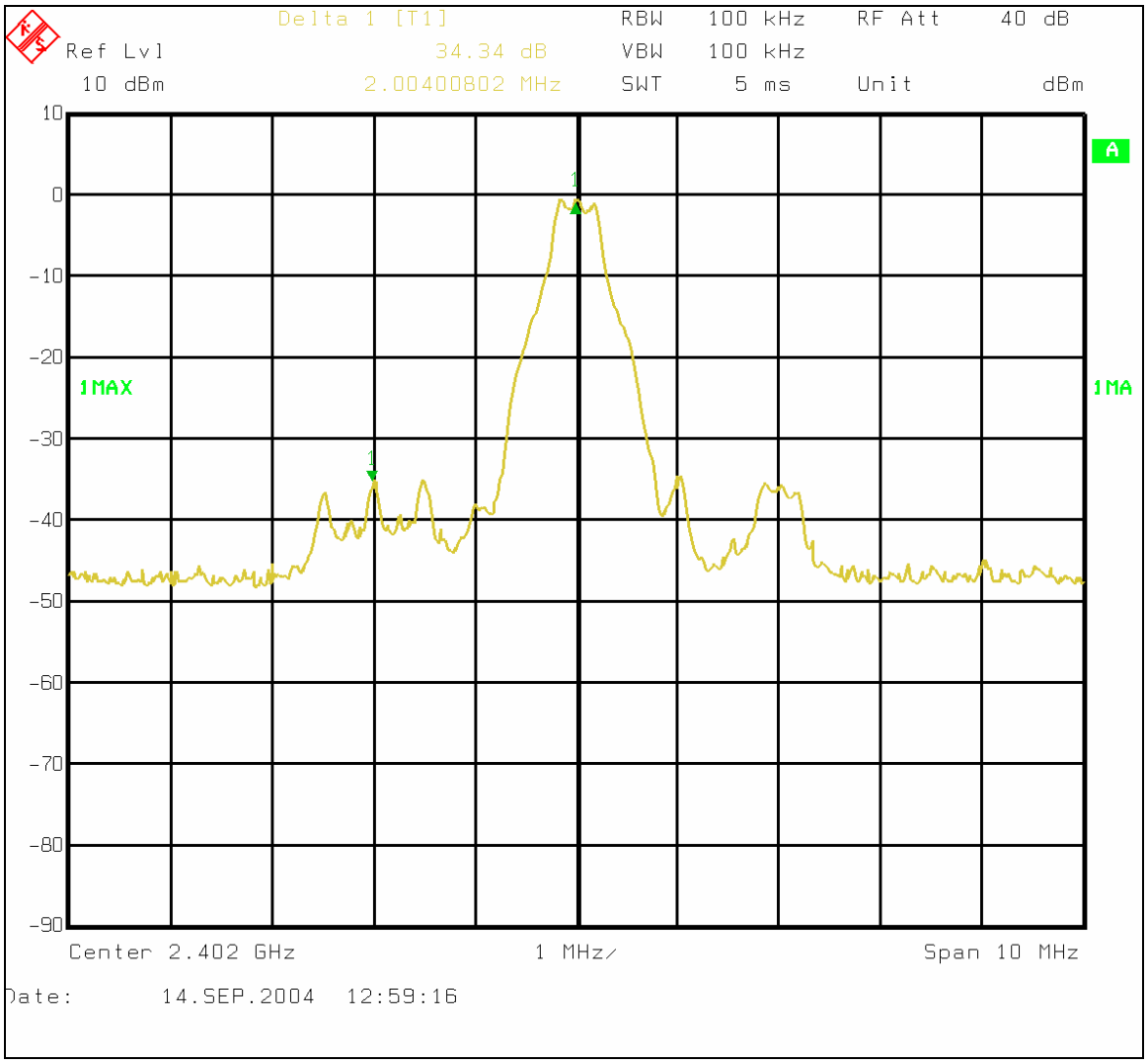


Figure 6-45: Plot of lower band-edge conducted emissions with hopping disabled

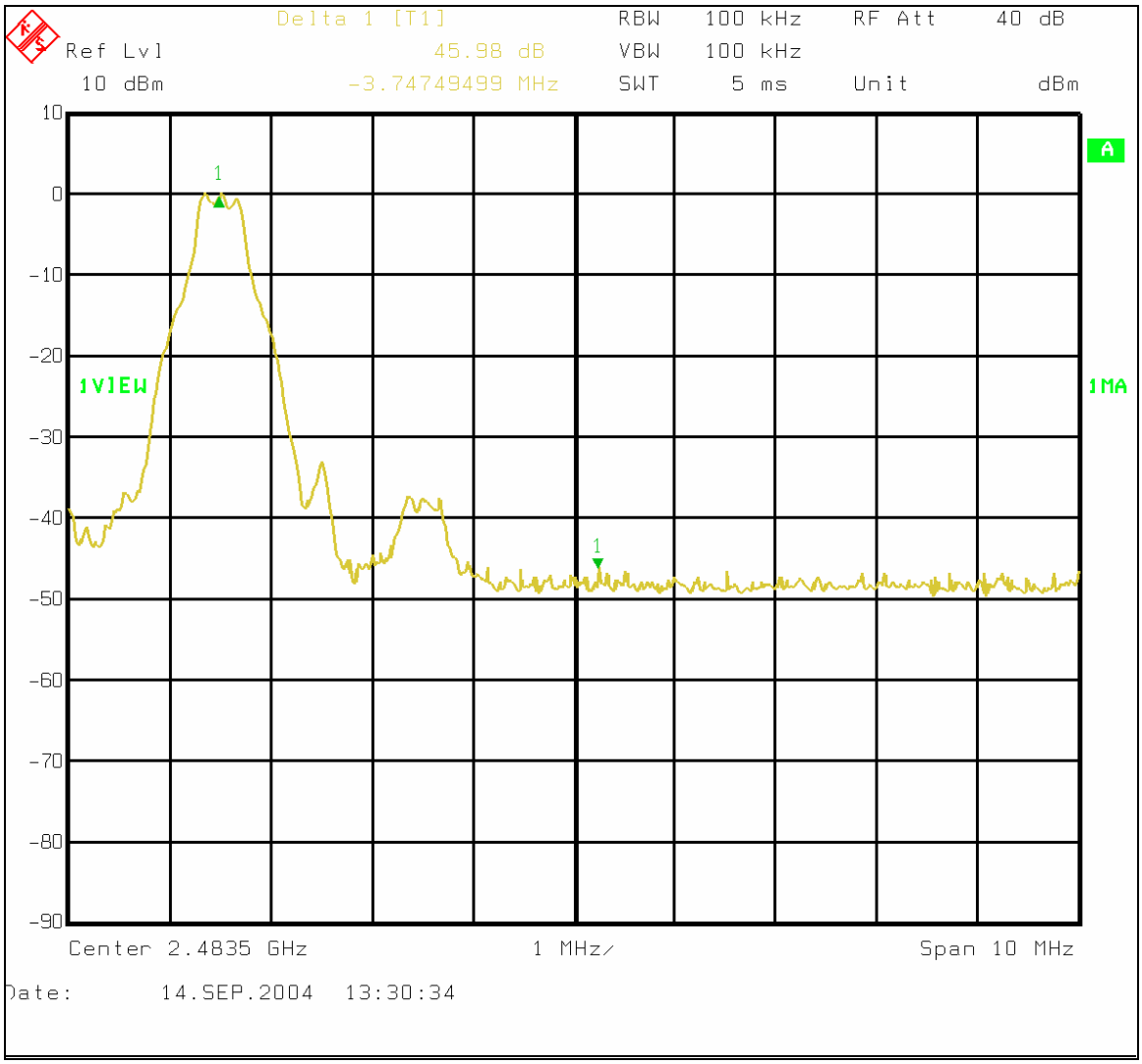


Figure 6-46: Plot of upper band-edge conducted emissions with hopping disabled

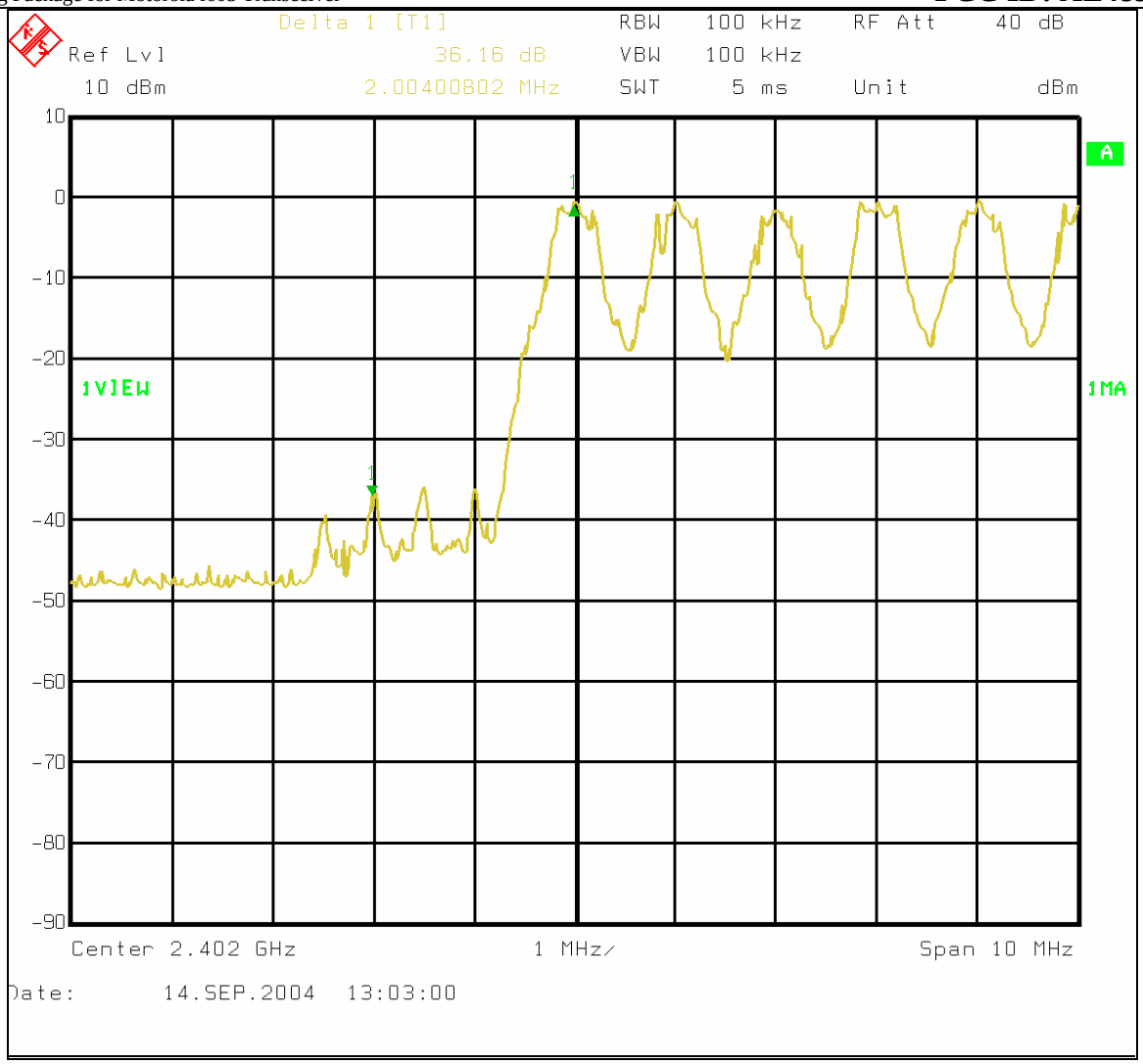


Figure 6-47: Plot of lower band-edge conducted emissions with hopping enabled

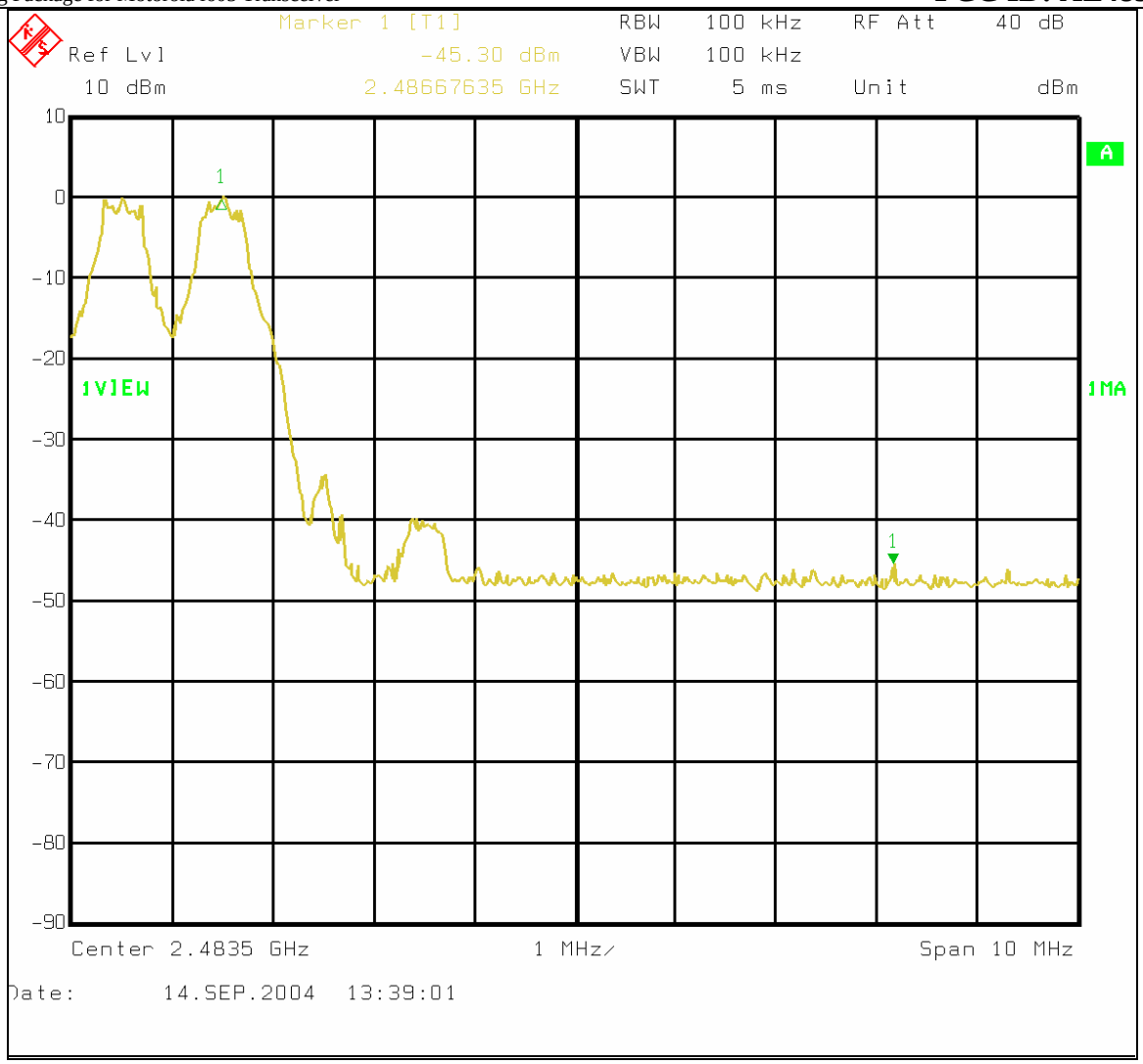


Figure 6-48: Plot of upper band-edge conducted emissions with hopping enabled

6.8.7 Spurious RF Conducted Emissions – Pursuant 47 CFR 15.247(c)

The emissions are below 30 dBc at the second harmonic of the transmit frequency and far lower at all other frequencies.

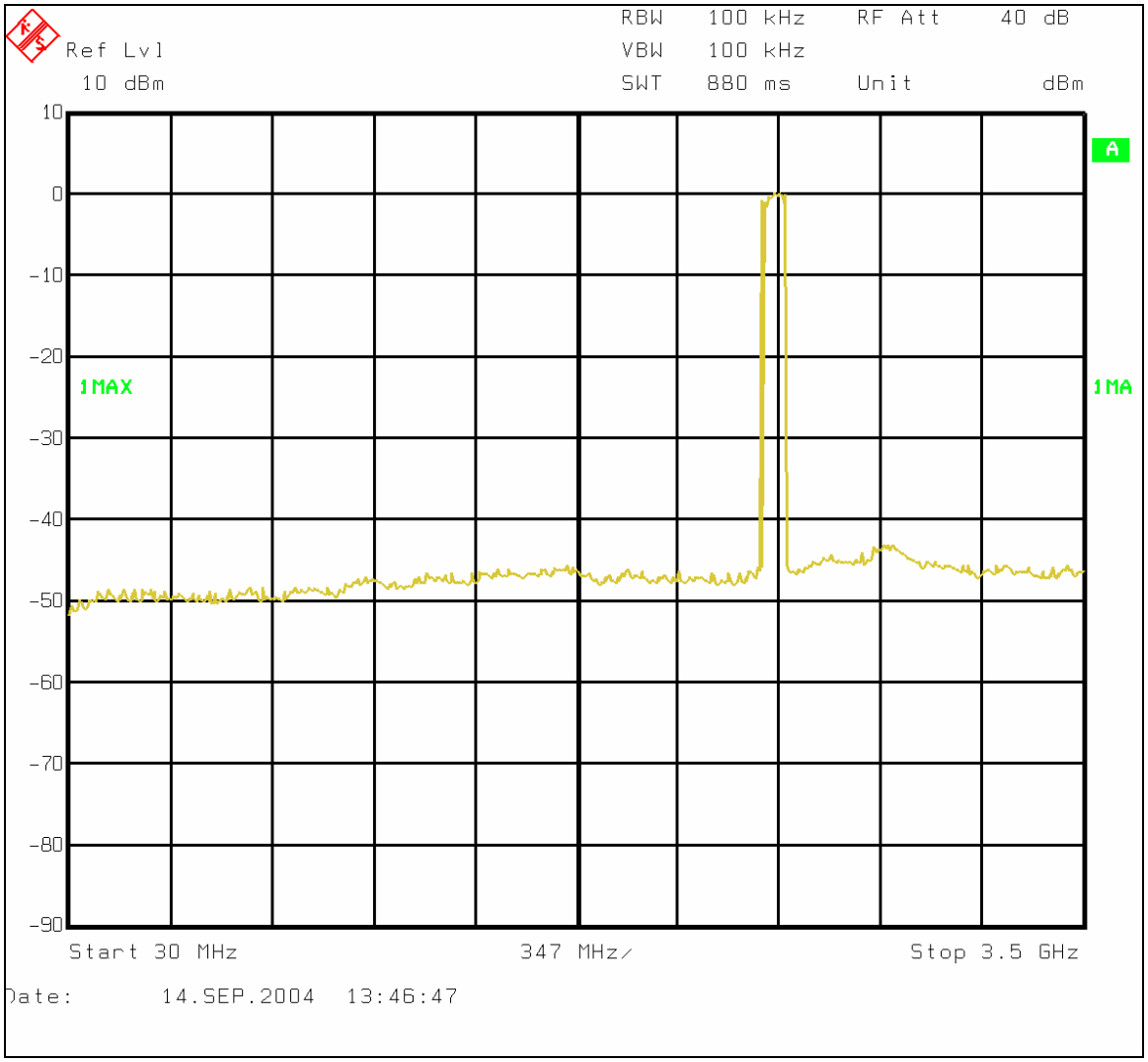


Figure 6-49: Plot of spurious conducted emissions 30 MHz – 3.5 GHz

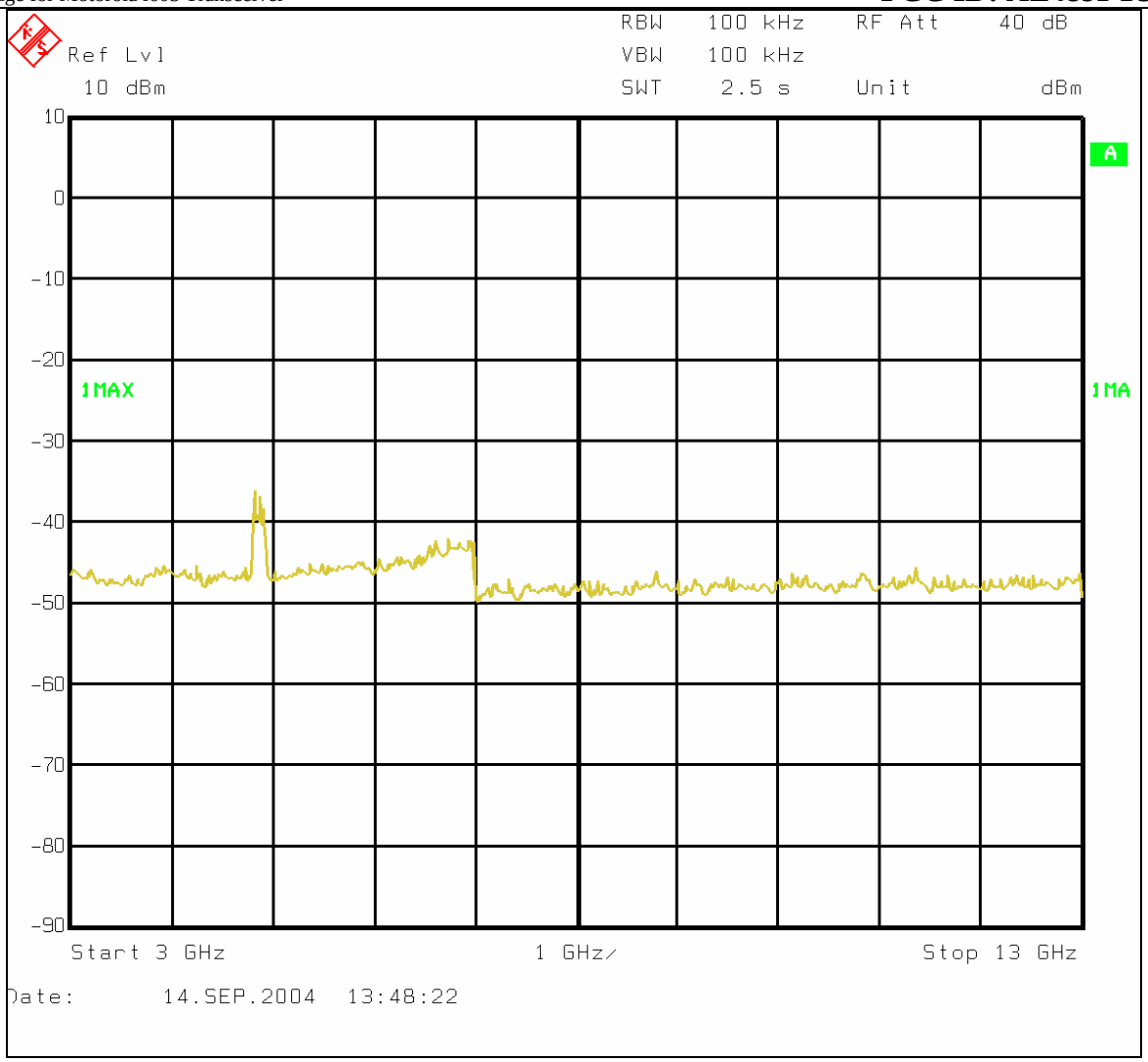


Figure 6-50: Plot of spurious conducted emissions 3 GHz – 13 GHz

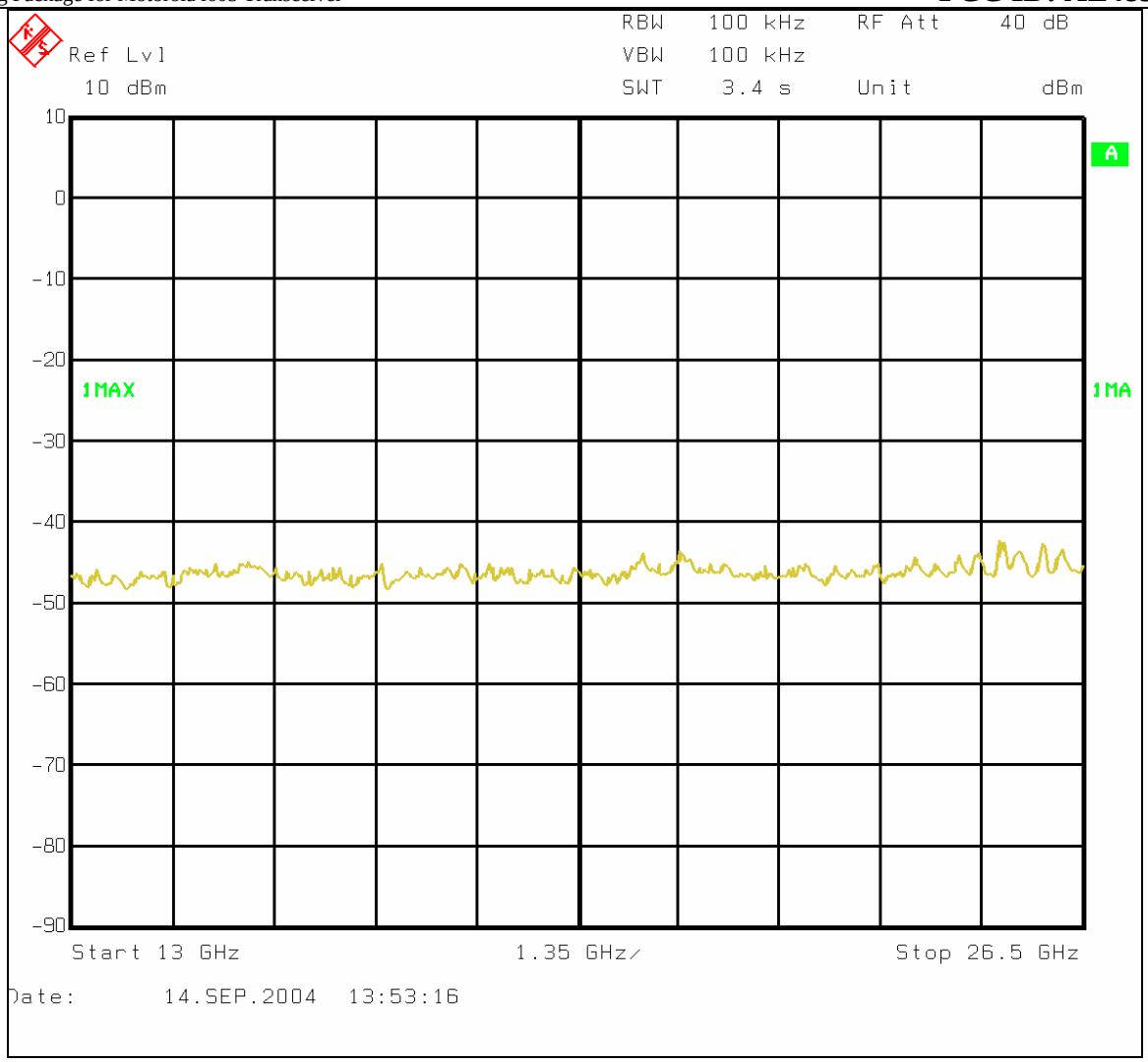


Figure 6-51: Plot of spurious conducted emissions 13 GHz – 26.5 GHz

6.8.8 Spurious RF Radiated Emissions – Pursuant 47 CFR 15.247(c)

TIMCO ENGINEERING INC.
849 NW State Road 45
Newberry, Florida 32669
http://www.timcoengr.com
888.472.2424 F 352.472.2030 email: tei@timcoengr.com

Test Report

Product Name: i605

FCC ID: AZ489FT5838
MODEL #: H58XAN6RR4AN

Applicant:

MOTOROLA, INC.
8000 WEST SUNRISE BLVD, MD: 1309
FT. LAUDERDALE FL 33322-9947

Date Receipt: SEPTEMBER 15, 2004

Date Tested: SEPTEMBER 28, 2004

APPLICANT: MOTOROLA, INC.
FCC ID: AZ489FT5838
MODEL #: H58XAN6RR4AN
REPORT #: M\MOTOROLA_TESTING\2004_TESTING\1521CUT4\1521CUT4TestReport.doc

TIMCO ENGINEERING INC.
849 NW State Road 45
Newberry, Florida 32669
http://www.timcoengr.com
888.472.2424 F 352.472.2030 email: tei@timcoengr.com

TABLE OF CONTENTS

TEST REPORT CONTAINING:

PAGE 1.....LIST OF TEST EQUIPMENT
PAGE 2.....COMPLIANCE STATMENT
PAGE 3.....TEST PROCEDURES
PAGE 4-5.....RADIATION INTERFERENCE TEST DATA
PAGE 6.....METHOD OF MEASURING RADIATED SPURIOUS EMISSIONS
PAGE 7-8.....RADIATED SPURIOUS EMISSIONS INTO ADJACENT RESTRICTED BANDS

EXHIBITS INCLUDED:

REQUEST FOR CONFIDENTIALITY LETTER
BLOCK DIAGRAM
SCHEMATICS
USERS MANUAL
LABEL SAMPLE
LABEL LOCATION
EXTERNAL PHOTOGRAPHS
INTERNAL PHOTOGRAPHS
OPERATIONAL DESCRIPTION
TEST SET UP PHOTOGRAPHS

APPLICANT: MOTOROLA, INC.
FCC ID: AZ489FT5838
MODEL #: H58XAN6RR4AN
REPORT #: M\MOTOROLA_TESTING\2004_TESTING\1521CUT4\1521CUT4TestReport.doc

TIMCO ENGINEERING INC.
849 NW State Road 45
Newberry, Florida 32669
http://www.timcoengr.com
888.472.2424 F 352.472.2030 email: tei@timcoengr.com

EMC Equipment List

Device	Manufacturer	Model	Serial Number	Cal/Char Date	Due Date
3/10-Meter OATS	TEI	N/A	N/A	Listed 3/27/04	3/26/07
3-Meter OATS	TEI	N/A	N/A	Listed 1/13/03	1/12/06
Biconnical Antenna	Eaton	94455-1	1057	CAL 3/18/03	3/18/05
Double-Ridged Horn Antenna	Electro-Metrics	RGA-180	2319	CAL 2/17/03	2/17/05
LISN	Electro-Metrics	EM-7820	2682	CAL 3/12/03	3/12/05
Log-Periodic Antenna	Eaton	96005	1243	CAL 5/8/03	5/8/05

TIMCO ENGINEERING INC.
849 NW State Road 45
Newberry, Florida 32669
http://www.timcoengr.com
888.472.2424 F 352.472.2030 email: tei@timcoengr.com

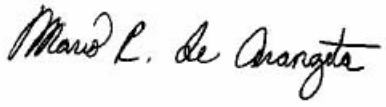
Compliance Statement:

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 and demonstrate that the equipment complies with the appropriate standards. No modifications were made to the equipment during testing in order to demonstrate compliance with these standards.

I attest that the necessary measurements were made, under my supervision, at TIMCO ENGINEERING, INC. located at 849 N.W. State Road 45, Newberry, Florida 32669.

Authorized Signatory Name: Mario R de Aranzeta

Signature:



Function: ENGINEER

Date: SEPTEMBER 30, 2004

Test engineer name: Nam Nguyen

Signature:

Date: SEPTEMBER 30, 2004

APPLICANT: MOTOROLA, INC.
FCC ID: AZ489FT5838
MODEL #: H58XAN6RR4AN
REPORT #: M\MOTOROLA_TESTING\2004_TESTING\1521CUT4\1521CUT4TestReport.doc
Page 2 of 8

TIMCO ENGINEERING INC.
849 NW State Road 45
Newberry, Florida 32669
http://www.timcoengr.com
888.472.2424 F 352.472.2030 email: tei@timcoengr.com

TEST PROCEDURE

GENERAL: This report shall NOT be reproduced except in full without the written approval of TIMCO ENGINEERING, INC.

POWER LINE CONDUCTED INTERFERENCE: The procedure used was ANSI STANDARD C63.4-1992 using a 50uH LISN. Both lines were observed with the UUT transmitting. The bandwidth of the spectrum analyzer was 10kHz with an appropriate sweep speed. The ambient temperature of the UUT was 76°F with a humidity of 55%.

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=100 kHz, VBW=300 kHz 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.

RADIATION INTERFERENCE: The test procedure used was ANSI STANDARD C63.4-1992 using a HEWLETT PACKARD spectrum analyzer with a pre-selector. The bandwidth (RBW) of the spectrum analyzer was 100kHz up to 1GHz and 1.0MHz above 1GHz with an appropriate sweep speed. The VBW above 1.0GHz was = 3.0MHz. The analyzer was calibrated in dB above a microvolt at the output of the antenna. The ambient temperature of the UUT was 76°F with a humidity of 55%.

TIMCO ENGINEERING INC.
849 NW State Road 45
Newberry, Florida 32669
http://www.timcoengr.com
888.472.2424 F 352.472.2030 email: tei@timcoengr.com

15.247(c), 15.205 & 15.209(b) **Field strength of spurious emissions:**

REQUIREMENTS FOR EMISSIONS THAT FALL IN A RESTRICTED BAND:

FIELD STRENGTH LIMITS FOR PEAK READINGS: 74 dBuV/m
FIELD STRENGTH LIMITS FOR AVERAGE READINGS: 54 dBuV/m

REQUIREMENTS FOR EMISSION THAT FALL OUTSIDE OF THE RESTRICTED BAND:

HARMONIC IS 20 dB BELOW FUNDAMENTAL FIELD STRENGTH NUMBER

TEST CONFIGURATION:	DELL LAPTOP	MODEL #: PP01L
	i605	MODEL #: 364AEQ16LD
	RS-232 CABLE	MODEL #: NNTN5406A
	BATTERY	MODEL #: NNTN4655A

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		61.2	H	3.18	29.24	93.62	33.75
2,402.0	4,804.00	R	9.6	H	4.90	34.07	48.57	5.43
2,402.0	4,804.00	R	10.5	V	4.90	33.97	49.37	4.63
2,441.0	2,441.00		62.7	H	3.21	29.31	95.22	32.15
2,441.0	4,882.00	R	11.0	H	4.94	34.32	50.26	3.74
2,441.0	4,882.00	R	11.3	V	4.94	34.22	50.46	3.54
2,478.0	2,478.00		61.2	H	3.23	29.36	93.79	33.58
2,478.0	4,956.00	R	11.1	H	4.98	34.56	50.64	3.36
2,478.0	4,956.00	R	12.5	V	4.98	34.46	51.94	2.06

All emissions noted are Peak emissions

Harmonics were checked through the 10th harmonic

TIMCO ENGINEERING INC.
849 NW State Road 45
Newberry, Florida 32669
http://www.timcoengr.com
888.472.2424 F 352.472.2030 email: tei@timcoengr.com

15.247(c), 15.205 &15.209(b) **Field strength of spurious emissions:**

REQUIREMENTS FOR EMISSIONS THAT FALL IN A RESTRICTED BAND:

FIELD STRENGTH LIMITS FOR PEAK READINGS: 74 dBuV/m
FIELD STRENGTH LIMITS FOR AVERAGE READINGS: 54 dBuV/m

REQUIREMENTS FOR EMISSION THAT FALL OUTSIDE OF THE RESTRICTED BAND:

HARMONIC IS 20 dB BELOW FUNDAMENTAL FIELD STRENGTH NUMBER

TEST CONFIGURATION:	DELL LAPTOP	MODEL #: PP01L
	i605	MODEL #: 364AEQ16LD
	RS-232 CABLE	MODEL #: NNTN5406A
	BATTERY	MODEL #: NNTN4655A

TEST DATA (In Hopping Mode):

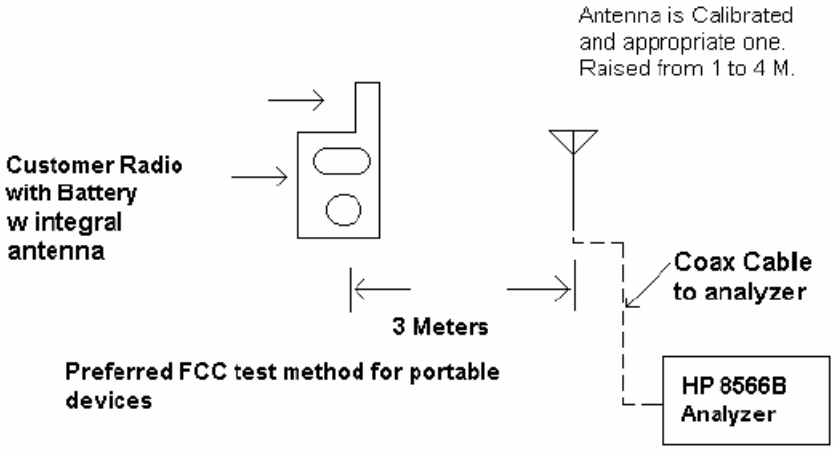
Emission Frequency MHz	Meter Reading dBuV	Ant. Polarity	Coax Loss dB	Correction Factor dB	Field Strength dBuV/m	Margin dB
2,134.40	10.6	H	2.99	28.82	42.41	11.59
2,134.40	11.7	V	2.99	28.89	43.58	10.42

All emissions noted are Peak emissions

Harmonics were checked through the 10th harmonic

TIMCO ENGINEERING INC.
849 NW State Road 45
Newberry, Florida 32669
http://www.timcoengr.com
888.472.2424 F 352.472.2030 email: tei@timcoengr.com

Method of Measuring Radiated Spurious Emissions



Equipment placed 80cm above ground on a rotatable platform.

METHOD OF MEASUREMENT: The procedure used was ANSI STANDARD C63.4-1992 & 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.

TIMCO ENGINEERING INC.
849 NW State Road 45
Newberry, Florida 32669
http://www.timcoengr.com
888.472.2424 F 352.472.2030 email: tei@timcoengr.com

APPLICANT: MOTOROLA, INC.

FCC ID: AZ489FT5838

MODEL #: H58XAN6RR4AN

NAME OF TEST: 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.

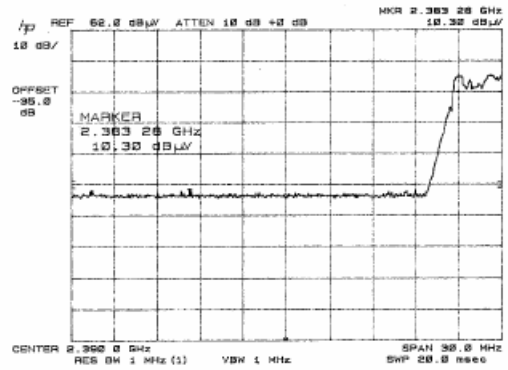
FREQUENCY: 2383.28 MHz
+10.30 dBuV from plot
+10.00 dB Attn
+29.25 dB/m ACF
+ 3.17 dB Coax Loss
+52.72 dBuV/m

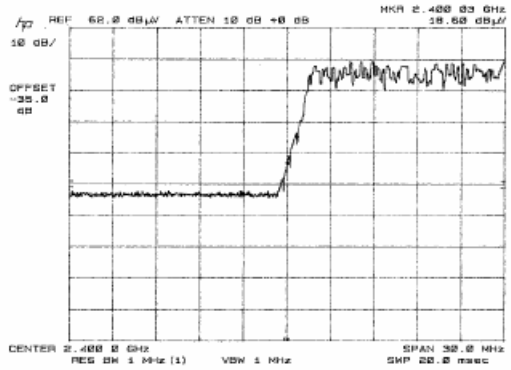
FREQUENCY: 2400.03 MHz (Bandedge not in restricted band)
+18.60 dBuV from plot
+10.00 dB Attn
+29.24 dB/m ACF
+ 3.18 dB Coax Loss
+61.02 dBuV/m

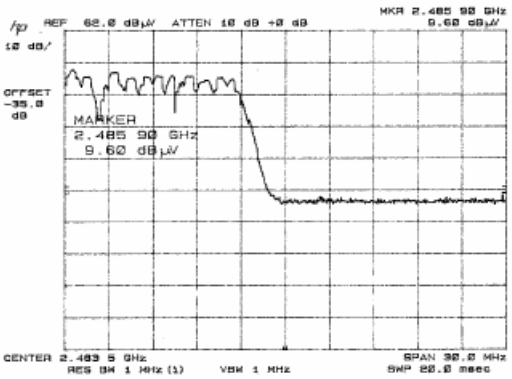
FREQUENCY: 2485.90 MHz
+ 9.60 dBuV from plot
+10.00 dB Attn
+29.36 dB/m ACF
+ 3.23 dB Coax Loss
+52.19 dBuV/m

Both hopping and non-hopping modes were tested and the worst case data is reported above and in the plots on the following page

TIMCO ENGINEERING INC.
849 NW State Road 45
Newberry, Florida 32669
http://www.timcoengr.com
888.472.2424 F 352.472.2030 email: tei@timcoengr.com







APPLICANT: MOTOROLA, INC.
FCC ID: AZ489FT5838
MODEL #: H58XAN6RR4AN
REPORT #: M\MOTOROLA_TESTING\2004_TESTING\1521CUT4\1521CUT4TestReport.doc
Page 8 of 8

6.8.9 Bluetooth Radiated Spurious Emissions test set up

BT Radiated Spurious Emissions test was done at TIMCO ENGINEERING LAB at 849 NW State Road 45, Newberry, FL 32669 and follow the FCC Measurement Guidelines (FCC Public Notice# DA 00-705 released on March 30, 2000).