FCC PART 15, SUBPART B and C
TEST REPORT

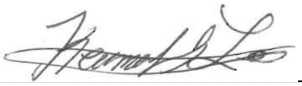
for

HIGH RANGE BLE/ANT MODULE

MODEL: SRU232

Prepared for

DELPHIAN SYSTEMS LLC
720 DARTMOUTH LANE
BUFFALO GROVE, ILLINOIS 60089

Prepared by:_  _

KENNETH LEE

Approved by: 

KYLE FUJIMOTO

COMPATIBLE ELECTRONICS INC.
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DATE: APRIL 6, 2015

	REPORT BODY	APPENDICES					TOTAL
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GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Compatible Electronics Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced without the written permission of Compatible Electronics, unless done so in full.

This report must not be used to claim product certification, approval or endorsement by NVLAP, NIST or any agency of the federal government.

Device Tested:	High Range BLE/ANT Module Model: SRU232 S/N: N/A
Product Description:	See Expository Statement.
Modifications:	The EUT was not modified during the testing.
Customer:	Delphian Systems LLC 720 Dartmouth Lane Buffalo Grove, Illinois 60089
Test Dates:	March 19, 25, 30 and 31, 2015 and April 1 and 2, 2015
Test Specifications:	Emissions requirements CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.247
Test Procedure:	ANSI C63.4
Test Deviations:	The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz – 30 MHz	The EUT complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, section 15.207.
2	Spurious Radiated RF Emissions, 30 MHz – 1000 MHz	Complies with the **Class B** limits of CFR Title 47, Part 15 Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, section 15.209
3	Spurious Radiated RF Emissions, 10 kHz – 30 MHz and 1000 MHz – 25000 MHz	Complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and CFR Title 47, Part 15, Subpart C, section 15.247(d)
4	Fundamental and Emissions produced by the intentional radiator in non-restricted bands, 10 kHz – 25 GHz	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247(d)
5	Emissions produced by the intentional radiator in restricted bands, 10 kHz – 25 GHz	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.205, 15.209, and section 15.247 (d)
6	DTS Bandwidth	Complies with the relevant requirements of FCC Title 47, Part 15, Subpart C, section 15.247 (a)(2)
7	Peak Power Output	Complies with the relevant requirements of FCC Title 47, Part 15, Subpart C, section 15.247 (b)(3)
8	RF Conducted Antenna Test	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247 (d)
9	Peak Power Spectral Density from the Intentional Radiator to the Antenna	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247 (e)

1. PURPOSE

This document is a qualification test report based on the emissions tests performed on the High Range BLE/ANT Module, Model: SRU232. The emissions measurements were performed according to the measurement procedure described in ANSI C63.4. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the **Class B** specification limits defined by CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.247.

2. ADMINISTRATIVE DATA

2.1 Location of Testing

The emissions tests described herein were performed at the test facility of Compatible Electronics, 114 Olinda Drive, Brea, California 92823.

2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

2.3 Cognizant Personnel

Delphian Systems LLC

Gary Myers	Director of Technology

Compatible Electronics Inc.

Kyle Fujimoto	Test Engineer
James Ross	Test Engineer
Kenneth Lee	Test Technician

2.4 Date Test Sample was Received

The test sample was received prior to the initial day of testing.

2.5 Disposition of the Test Sample

The test sample has not been returned to Delphian Systems LLC as of the date of this test report.

2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
HP	Hewlett Packard
ITE	Information Technology Equipment
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network
N/A	Not Applicable
BLE	Bluetooth Low Energy

3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this emissions Test Report.

SPEC	TITLE
FCC Title 47, Part 15 Subpart C	FCC Rules - Radio frequency devices (including digital devices) – Intentional Radiators
FCC Title 47, Part 15 Subpart B	FCC Rules - Radio frequency devices (including digital devices) – Unintentional Radiators
ANSI C63.4 2009	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz
KDB 558074 v03r02	Guidance for preforming compliance measurements on digital transmission systems (DTS) operating under 15.247.
EN 50147-2 1997	Anechoic chambers. Alternative test site suitability with respect to site attenuation.

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration - Emissions

The High Range BLE/ANT Module, Model: SRU232 (EUT) was directly connected to a host PCB that was connected to the AC mains via an AC adapter.

The EUT was tested with both a UFL antenna and a chip antenna.

The EUT was tested for emissions at the low, middle, and high channels while in the X, Y and Z axis. The EUT was continuously transmitting.

The final radiated data for the EUT as was taken in the mode described above. Please see Appendix E for the data sheets.

4.1.1 Cable Construction and Termination

Cable 1

This was a 2 meter unshielded cable connecting the host PCB to the power supply. The cable was hardwired to the power supply and had a single pin power connector on the host PCB end.

Cable 2

This was a 20 cm shielded cable connecting the EUT to the UFL antenna. The cable had an RSMA connector on the antenna end and a UFL connector on the EUT end.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
HIGH RANGE BLE/ANT MODULE	DELPHIAN SYSTEMS LLC	SRU232	N/A	2AEHJSRU232
AC ADAPTOR	ALFA	FOR SONY	N/A	N/A

5.2 Emissions Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CAL. CYCLE
GENERAL TEST EQUIPMENT USED IN LAB B					
Computer	Compaq	CQ5210F	CNX9360CF9	N/A	N/A
Monitor	Hewlett Packard	HPs2031a	3CQ046N3MD	N/A	N/A
EMI Receiver	Rohde & Schwarz	ESIB40	100194	December 4, 2014	1 Year
GENERAL TEST EQUIPMENT USED IN LAB D					
Computer	Hewlett Packard	p6716f	MXX1030PX0	N/A	N/A
LCD Monitor	Hewlett Packard	52031a	3CQ046N3MG	N/A	N/A
EMI Receiver	Rohde & Schwarz	ESIB40	100194	December 4, 2014	1 Year
RF RADIATED EMISSIONS TEST EQUIPMENT					
CombiLog Antenna	Com-Power	AC-220	61060	May 20, 2014	1 Year
Preamplifier	Com-Power	PA-118	551024	March 6, 2015	1 Year
Preamplifier	Com-Power	PA-840	711013	May 13, 2014	2 Year
Loop Antenna	Com-Power	AL-130	17089	February 6, 2015	2 Year
Horn Antenna	Com-Power	AH-118	071175	February 26, 2014	2 Year
Horn Antenna	Com-Power	AH-826	0071957	N/A	N/A
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A
System Controller	Sunol Sciences Corporation	SC110V	112213-1	N/A	N/A
Turntable	Sunol Sciences Corporation	2011VS	N/A	N/A	N/A
Antenna-Mast	Sunol Sciences Corporation	TWR95-4	112213-3	N/A	N/A

Emissions test equipment continued

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CAL. CYCLE
RF CONDUCTED EMISSIONS TEST EQUIPMENT					
Shield Room Test	Compatible Electronics	11CD	N/A	N/A	N/A
LISN	Com-Power	LI-215	12082	June 12, 2014	1 Year
LISN	Com-Power	LI-215	12090	June 12, 2014	1 Year
Transient Limiter	Com-Power	252A910	1	October 10, 2014	1 Year
Monitor	Hewlett Packard	D5258A	TW74500641	N/A	N/A
Computer	Hewlett Packard	4530	US91912319	N/A	N/A
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	3638A08784	May 20, 2014	1 Year
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	2648A14530	May 20, 2014	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650A	2811A01363	May 20, 2014	1 Year

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 and 7.1 of this report for emissions test location.

6.2 EUT Mounting, Bonding and Grounding

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

The EUT was not grounded during testing.

7. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

7.1 RF Emissions

7.1.1 Radiated Emissions (Spurious and Harmonics) Test – Lab B

The EMI Receiver was used as a measuring meter. A preamplifier was used to increase the sensitivity of the instrument. The Com Power Microwave Preamplifiers Models: PA-118 and PA-840 was used for frequencies above 1 GHz. The EMI Receiver was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the EMI Receiver records the highest measured reading over all the sweeps.

For frequencies above 1 GHz, the readings were averaged using an average detector.

The measurement bandwidth and transducer used for the radiated emissions test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
1 GHz to 18 GHz	1 MHz	Horn Antenna
18 GHz to 25GHz	1 MHz	Horn Antenna

The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4: 2009. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT by the Radiated Emission Manual Test software. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna in order to ensure accurate results.

Radiated Emissions (Spurious and Harmonics) Test -- Lab B (con't)

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT. The EUT was tested at a 3 meter test distance from 1 GHz to 25 GHz to obtain the final test data.

Test Results:

The EUT complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, Sections 15.209 and 15.247 (d) for radiated emissions. Please see Appendix E for the data sheets.

7.1.2 Radiated Emissions (Spurious and Harmonics) Test – Lab D

The EMI Receiver was used as the measuring meter. A built-in, internal preamplifier was used to increase the sensitivity of the instrument. The EMI Receiver was initially used in the Analyzer mode feature activated. In this mode, the EMI receiver can then record the actual frequency to be measured. This final reading is then taken accurately in the EMI Receiver mode, which takes into account the cable loss, amplifier gain and antenna factors, so that a true reading is compared to the true limit. A quasi-peak reading was taken only for those readings, which are marked accordingly on the data sheets.

The EMI test chamber of Compatible Electronics, Inc. was used for radiated emissions testing. This test site is in full compliance with ANSI C63.4, EN 50147-2 and CISPR 22. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT.

The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength).

The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
10 kHz to 150 kHz	200 Hz	Active Loop Antenna
150 kHz to 30 MHz	9 kHz	Active Loop Antenna
30 MHz to 1 GHz	120 kHz	CombiLog Antenna

The EUT was tested at a 3 meter test distance.

Test Results:

The EUT complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, Sections 15.209 and 15.247 (d) for radiated emissions. Please see Appendix E for the data sheets.

7.1.3 Conducted Emissions Test

The spectrum analyzer was used as a measuring meter. The data was collected with the spectrum analyzer in the peak detect mode with the "Max Hold" feature activated. The quasi-peak was used only where indicated in the data sheets. A transient limiter was used for the protection of the spectrum analyzer input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the spectrum analyzer. The output of the second LISN was terminated by a 50-ohm termination. The effective measurement bandwidth used for this test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding, and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI C63.4. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The conducted emissions from the EUT were maximized for operating mode as well as cable placement. The final data was collected under program control by the Compatible Electronics software in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave. The six highest emissions are listed in Table 2.0. The final qualification data is located in Appendix E.

Test Results:

The EUT complies with the **Class** B limits of CFR Title 47, Part 15, Subpart B and the limits of CFR Title 47, part 15, subpart C, section 15.207 for conducted emissions.

7.1.4 RF Emissions Test Results

Table 1.0 RADIATED EMISSION RESULTS
High Range BLE/ANT Module, Model: SRU232

Frequency MHz	Average Corrected Reading* dBuV	Specification Limit dBuV	Delta (Cor. Reading – Spec. Limit) dB
7206 (V) (X-Axis) (Low Channel) (UFL)	52.81 (A)	54.00	-1.19
7206 (H) (Z-Axis) (Low Channel) (CH)	52.68 (A)	54.00	-1.32
7206 (H) (Z-Axis) (Low Channel) (UFL)	52.29 (A)	54.00	-1.71
7320 (V) (X-Axis) (High Channel) (CH)	52.08 (A)	54.00	-1.92
4804 (H) (Y-Axis) (Low Channel) (UFL)	51.64 (A)	54.00	-2.36
4804 (H) (Z-Axis) (Low Channel) (UFL)	51.47 (A)	54.00	-2.53

Table 2.0 CONDUCTED EMISSION RESULTS
High Range BLE/ANT Module, Model: SRU232

Frequency MHz	Corrected Reading* dBuV	Average Specification Limit dBuV	Delta (Emission – Spec. Limit) dB
0.641 (WL) (UFL)	37.24	46.00	-8.76
1.434 (WL) (UFL)	36.58	46.00	-9.42
4.480 (BL) (UFL)	36.55	46.00	-9.45
0.953 (WL) (CH)	36.54	46.00	-9.46
3.383 (WL) (UFL)	36.44	46.00	-9.56
2.238 (WL) (UFL)	36.44	46.00	-9.56
0.641 (BL) (CH)	36.44	46.00	-9.56

Notes:

* The complete emissions data is given in Appendix E of this report.
(BL) Black Lead
(WL) White Lead
(H) Horizontal
(V) Vertical
(QP) Average Reading
(CH) Chip Antenna
(UFL) UFL Antenna

7.2 Peak Output Power

The Peak Output Power was measured using the EMI Receiver. The peak output power was measured using a direct connection from the RF output of the EUT. The resolution bandwidth was 3 MHz and the video bandwidth was 10 MHz. The cable loss was also added back into the reading using the reference level offset.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (b)(2). The maximum peak output power is less than 1 W. Please see the data sheets located in Appendix E.

Since direct measurements tests could not be performed on the chip antenna the peak output power was calculated by the following equation:

P = [(E*D)^2] / (30 * G)

Where:
P = Power in Watts for which you are solving
E = The measured maximum field strength in V/m utilizing the widest available RBW.
G = The numeric gain of the transmitting antenna over an isotropic radiator.

Test Results:

This test complies with the relevant requirements of CFR Title 47, Part 15, Subpart C section 15.247 (b)(3).

7.3 RF Antenna Conducted Test

The RF antenna conducted test was performed using the EMI Receiver. The RF antenna conducted test measured using a direct connection from the RF out on the EUT into the input of the EMI Receiver. The resolution bandwidth was 100 kHz, and the video bandwidth was 300 kHz. The spans were wide enough to include all the harmonics and emissions that were produced by the intentional radiator.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (d). The RF power that is produced by the intentional radiator is at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of desired power. Please see the radiated emission data sheets located in Appendix E.

Since antenna conducted tests could not be performed on the chip antenna all harmonics were tested using the radiated emissions test procedure located in section 7.1.2 of this test report.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (d). The RF power that is produced by the intentional radiator is at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of desired power. Please see the radiated emission data sheets located in Appendix E.

7.4 RF Band Edges

The RF band edges were taken at the edges of the ISM spectrum (2400 MHz when the EUT was on the low channel and 2483.5 MHz when the EUT was on the high channel) using the EMI Receiver. The RBW was set to 1 MHz and the VBW was set to 3 MHz. Plots of the fundamental were taken to ensure the amplitude at the band edges were at least 20 dB down from the peak of the fundamental emission. A preamplifier was used to boost the signal level, with the plots being taken at a 3 meter test distance. The radiated emissions test procedure as describe in section 7.1.2 of this test report was used to maximize the emission.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (d). The RF power at the band edges at 2400 MHz and 2483.5 MHz meet the requirements of FCC Title 47, Part 15, Subpart C section 15.247 (d). Please see the data sheets located in Appendix E.

7.5 DTS Bandwidth

The DTS Bandwidth was measured using the EMI Receiver. The resolution bandwidth was 100 kHz and the video bandwidth was 300 kHz.

Test Results:
The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (a)(2). The 6 dB bandwidth is greater than 500 kHz. Please see the data sheets located in Appendix E.

7.6 Spectral Density Test

The spectrum density output was measured using the EMI Receiver. The spectral density output was measured using a direct connection from the RF out on the EUT into the input of the EMI Receiver. The resolution bandwidth 3 kHz, and the video bandwidth was 10 kHz. The highest 1.5 MHz of the signal was used as the frequency span with the sweep rate being 1 second for every 3 kHz of span.

Test Results:

This test complies with the relevant requirements of CFR Title 47, Part 15, Subpart C section 15.247 (e).

Since antenna conducted tests could not be performed on the chip antenna, the spectral density was measured as follows:

1. The spectrum analyzer was tuned to the highest point of the maximized fundamental emission based on the procedure used in section 7.1.1. The spectrum analyzer was then set to an RBW of 3 kHz, VBW of 10 kHz, frequency span of 300 kHz, and a sweep time of 100 seconds. Using these settings, the peak level was obtained.

2. Using the peak level obtained in step 1, the field strength, E, was derived by applying the appropriate antenna factor, cable loss, and pre-amp gain for that frequency.

3. The following equation was then used to calculate the power level for comparison to the +8 dBm limit:

P = [(E*D)^2] / (30 * G)

Where:
P = Power in Watts for which you are solving
E = the field strength in V/m obtained in step B
G = the numeric gain of the transmitting antenna over an isotropic radiator

Test Results:

This test complies with the relevant requirements of CFR Title 47, Part 15, Subpart C section 15.247 (e).

8. CONCLUSIONS

The High Range BLE/ANT Module, Model: SRU232, as tested, meets all of the specification limits defined in FCC Title 47, Part 15, Subpart B, and Subpart C, sections 15.205, 15.209, and 15.247.

APPENDIX A

LABORATORY ACCREDITATIONS AND RECOGNITIONS

LABORATORY ACCREDITATIONS AND RECOGNITIONS

NVLAP LAB CODES 200063-0, 200528-0, 200527-0

For US, Canada, Australia/New Zealand, Japan, Taiwan, Korea, and the European Union, Compatible Electronics is currently accredited by NVLAP to ISO/IEC 17025. Please follow the link to the NIST/NVLAP site for each of our facilities' NVLAP certificate and scope of accreditation

NVLAP listing links

Agoura Division / **Brea Division** / **Silverado/Lake Forest Division**

.Quote from ISO-ILAC-IAF Communiqué on 17025:

"A laboratory's fulfilment of the requirements of ISO/IEC 17025:2005 means the laboratory meets both the technical competence requirements and management system requirements that are necessary for it to consistently deliver technically valid test results and calibrations. The management system requirements in ISO/IEC 17025:2005 (Section 4) are written in language relevant to laboratory operations and meet the principles of ISO 9001:2008 Quality Management Systems — Requirements."

ANSI listing CETCB

Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for EMC under the US/EU Mutual Recognition Agreement (MRA).
US/EU MRA list NIST MRA site

Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for Taiwan/BSMI under the US/APEC (Asia-Pacific Economic Cooperation) Mutual Recognition Agreement (MRA).
APEC MRA list NIST MRA site

We are also listed for IT products by the following country/agency:

VCCI Support member: Please visit http://www.vcci.jp/vcci_e/

FCC Listing, from FCC OET site
FCC test lab search https://fjallfoss.fcc.gov/oetcf/eas/reports/TestFirmSearch.cfm

Compatible Electronics IC listing can be found at:
http://www.ic.gc.ca/eic/site/ic1.nsf/eng/home

APPENDIX B

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC Subpart B and FCC 15.247 specifications.

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

The EUT was not modified during the testing.

APPENDIX C

ADDITIONAL MODELS COVERED UNDER THIS REPORT

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

High Range BLE/ANT Module
Model: SRU232
S/N: N/A

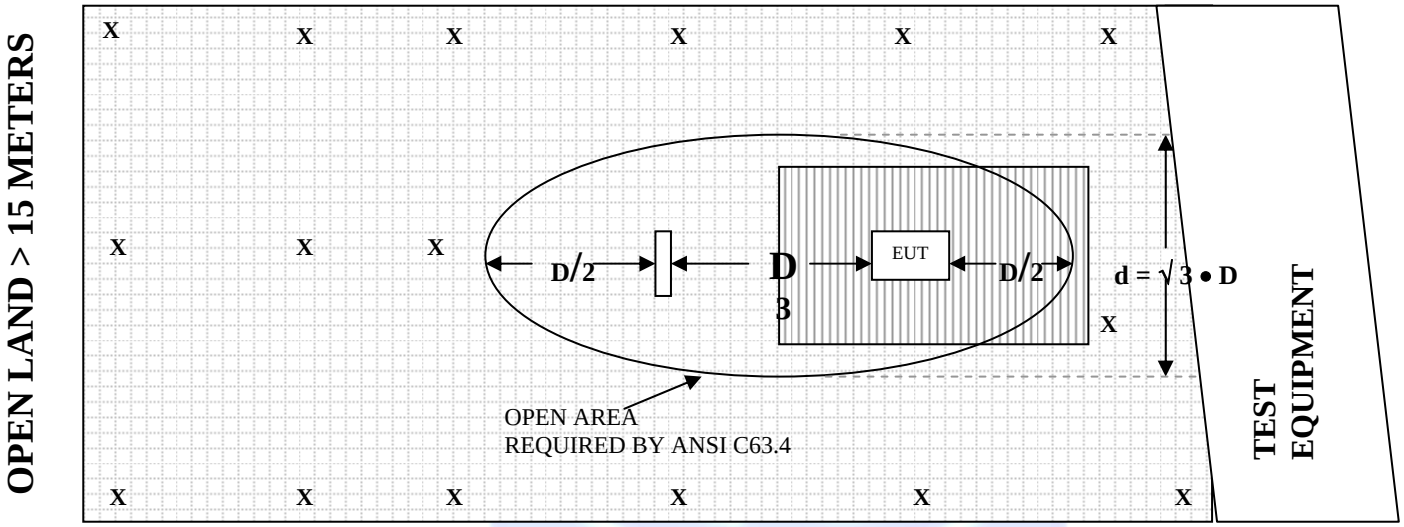
There were no additional models covered under this report.

APPENDIX D

DIAGRAMS AND CHARTS

FIGURE 1: PLOT MAP AND LAYOUT OF RADIATED SITE

OPEN LAND > 15 METERS



OPEN LAND > 15 METERS

X = GROUND RODS	= GROUND SCREEN
D = TEST DISTANCE (meters)	= WOOD COVER

FIGURE 2: LAYOUT OF THE SEMI-ANECHOIC TEST CHAMBER

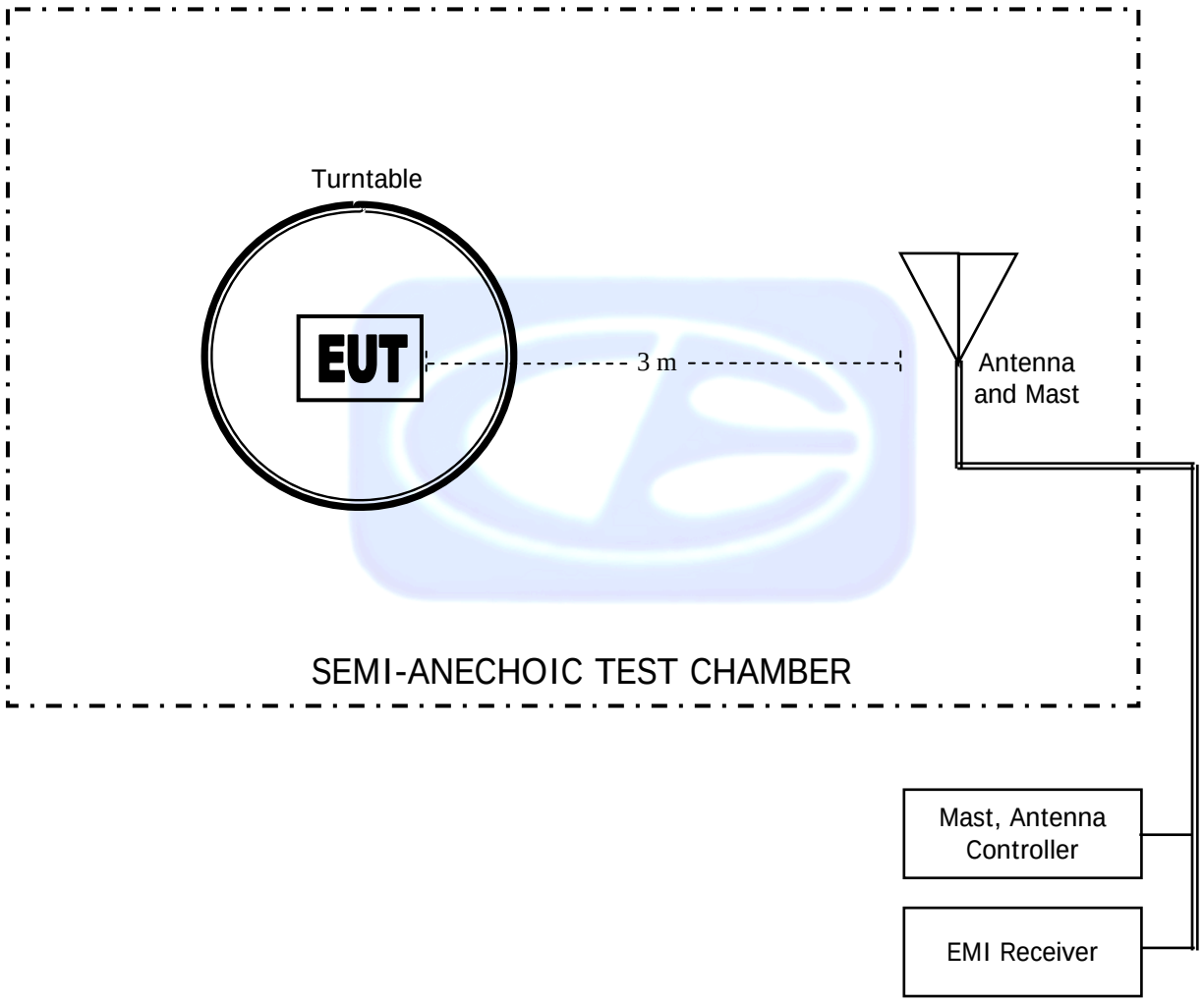
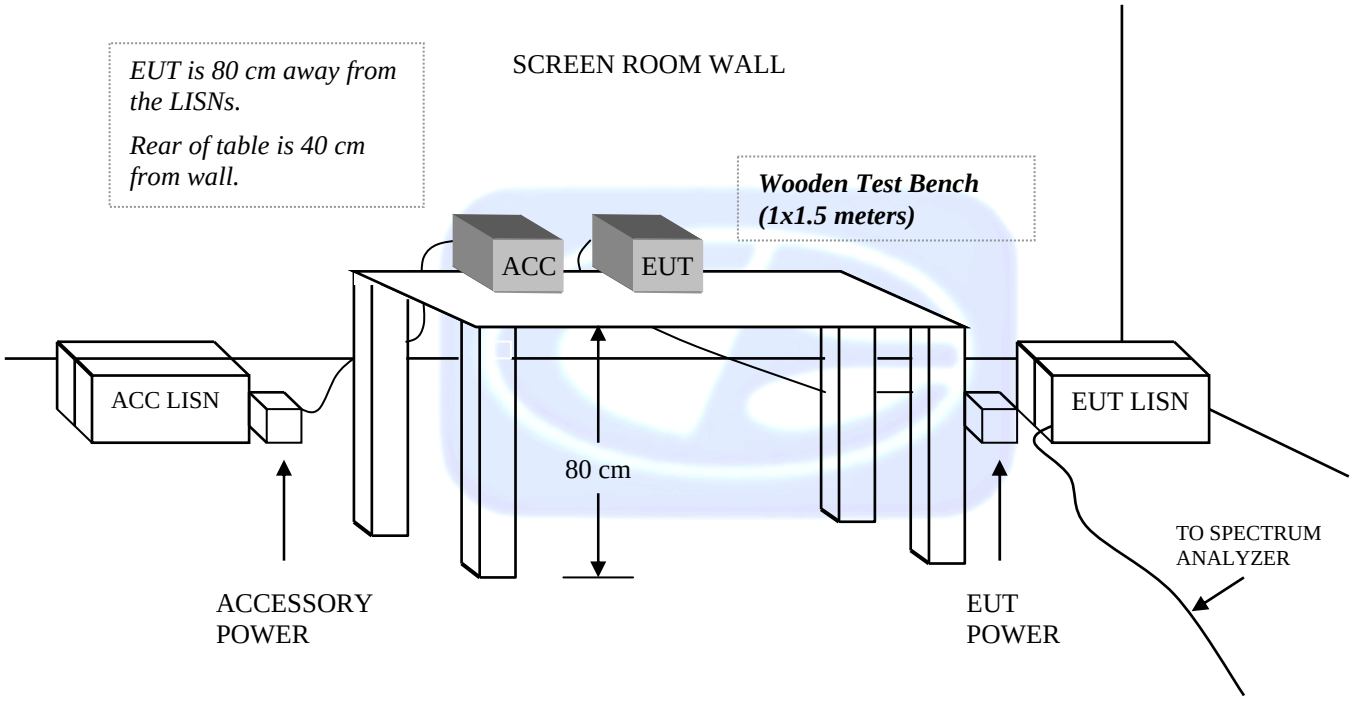


FIGURE 3: CONDUCTED EMISSIONS TEST SETUP



COM-POWER AL-130

LOOP ANTENNA

S/N: 17089

CALIBRATION DATE: FEBRUARY 6, 2015

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-33.18	18.32
0.01	-34.10	17.40
0.02	-38.65	12.85
0.03	-39.28	12.22
0.04	-40.09	11.41
0.05	-40.85	10.65
0.06	-40.88	10.62
0.07	-41.07	10.43
0.08	-41.04	10.46
0.09	-41.19	10.31
0.1	-41.20	10.30
0.2	-41.52	9.98
0.3	-41.53	9.97
0.4	-41.42	10.08
0.5	-41.53	9.97
0.6	-41.53	9.97
0.7	-41.43	10.07
0.8	-41.23	10.27
0.9	-41.13	10.37
1	-41.14	10.36
2	-40.80	10.70
3	-40.66	10.84
4	-40.61	10.89
5	-40.33	11.17
6	-40.53	10.97
7	-40.47	11.03
8	-40.48	11.02
9	-39.93	11.57
10	-39.81	11.69
15	-43.35	8.15
20	-39.16	12.34
25	-40.24	11.26
30	-43.18	8.32

COM-POWER AC-220

COMBILOG ANTENNA

S/N: 61060

CALIBRATION DATE: MAY 20, 2014

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	23.40	200	14.40
35	23.70	250	16.40
40	24.20	300	17.90
45	22.60	350	15.60
50	22.10	400	19.90
60	17.90	450	20.40
70	12.70	500	21.60
80	11.60	550	21.50
90	12.20	600	22.30
100	13.20	650	23.50
120	15.70	700	23.70
125	15.80	750	25.90
140	13.60	800	25.90
150	16.90	850	26.40
160	14.20	900	27.00
175	14.90	950	27.70
180	15.00	1000	27.50

COM POWER AH-118

HORN ANTENNA

S/N: 071175

CALIBRATION DATE: FEBRUARY 26, 2014

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	24.23	10.0	38.43
1.5	25.84	10.5	40.19
2.0	28.14	11.0	40.49
2.5	29.51	11.5	41.39
3.0	31.20	12.0	42.02
3.5	32.17	12.5	43.30
4.0	31.40	13.0	42.77
4.5	31.86	13.5	40.18
5.0	34.82	14.0	42.59
5.5	34.38	14.5	41.74
6.0	36.31	15.0	41.84
6.5	34.81	15.5	38.48
7.0	37.48	16.0	39.52
7.5	36.98	16.5	37.85
8.0	36.66	17.0	41.33
8.5	38.47	17.5	44.96
9.0	37.22	18.0	48.50
9.5	37.86		

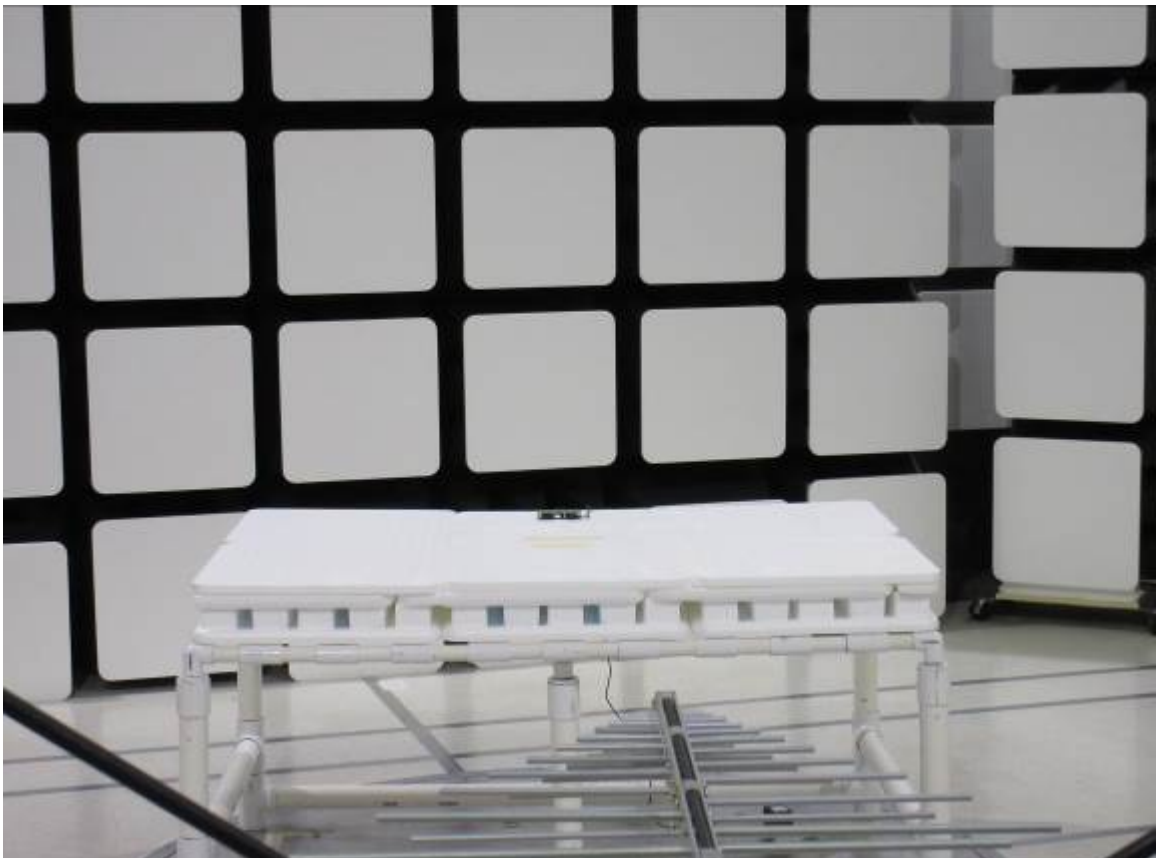
COM-POWER PA-118

PREAMPLIFIER

S/N: 551024

CALIBRATION DATE: MARCH 6, 2015

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	39.76	6.0	38.77
1.1	40.46	6.5	38.46
1.2	40.05	7.0	38.27
1.3	40.58	7.5	38.77
1.4	39.50	8.0	39.25
1.5	39.92	8.5	38.63
1.6	40.40	9.0	39.58
1.7	40.10	9.5	42.12
1.8	40.49	10.0	38.53
1.9	38.86	11.0	40.21
2.0	41.53	12.0	41.15
2.5	41.05	13.0	40.51
3.0	40.29	14.0	40.32
3.5	40.82	15.0	39.47
4.0	40.88	16.0	39.88
4.5	41.37	17.0	39.79
5.0	40.73	18.0	40.61
5.5	39.05		

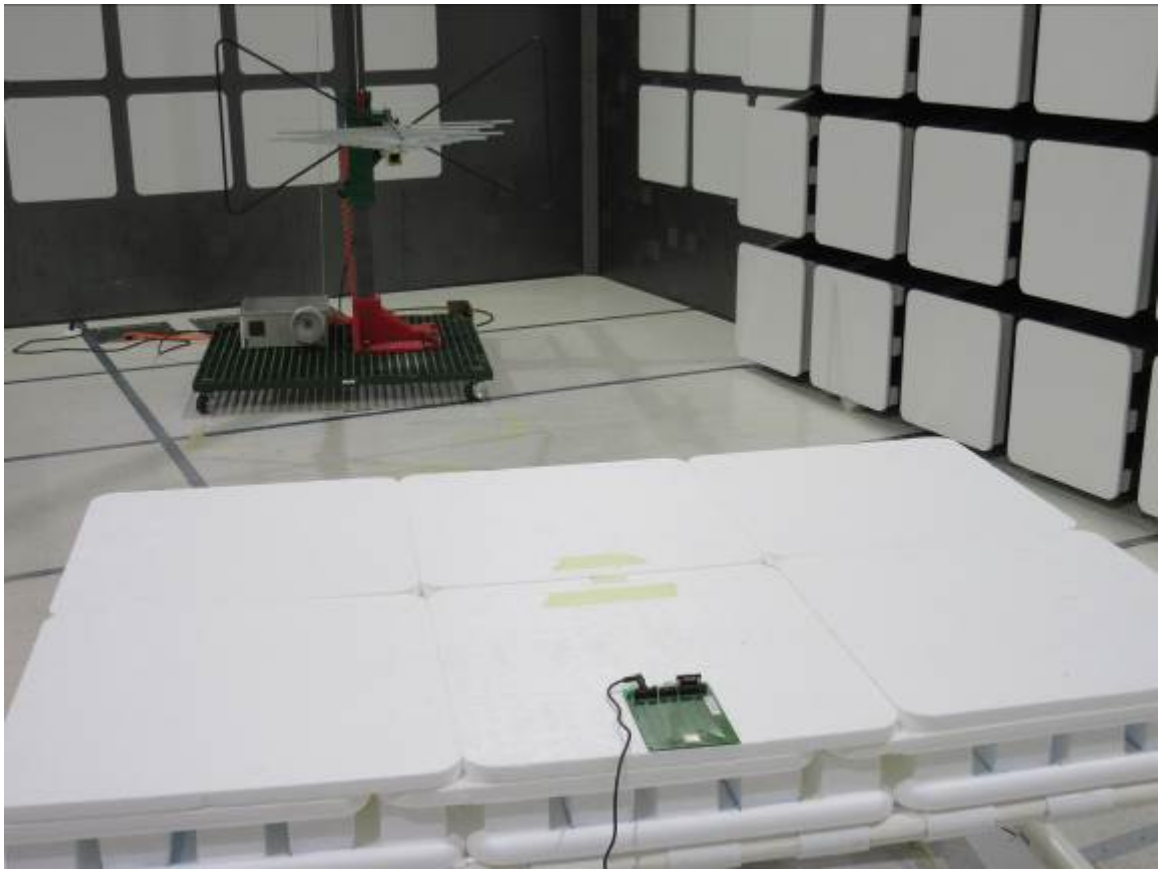


FRONT VIEW

CHIP ANTENNA

DELPHIAN SYSTEMS LLC
HIGH RANGE BLE/ANT MODULE
MODEL: SRU232
FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

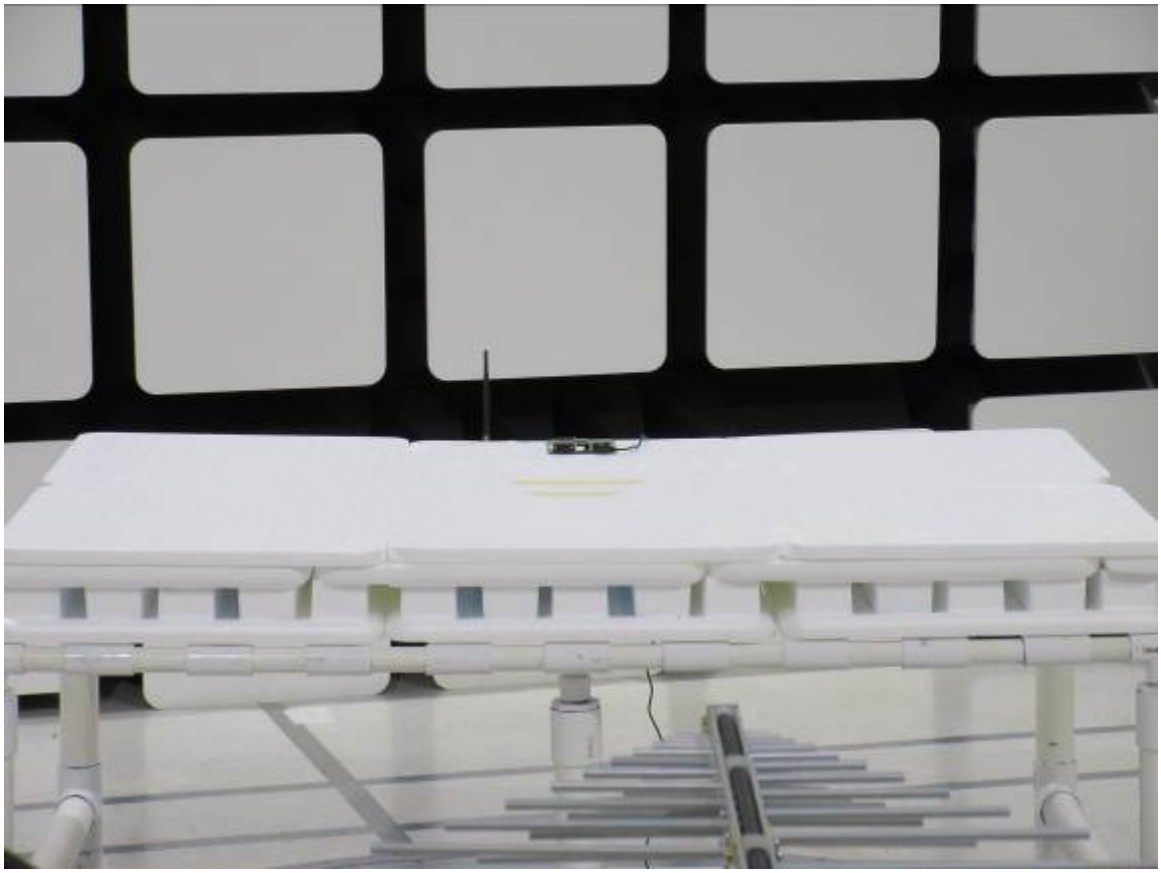


REAR VIEW

CHIP ANTENNA

DELPHIAN SYSTEMS LLC
HIGH RANGE BLE/ANT MODULE
MODEL: SRU232
FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

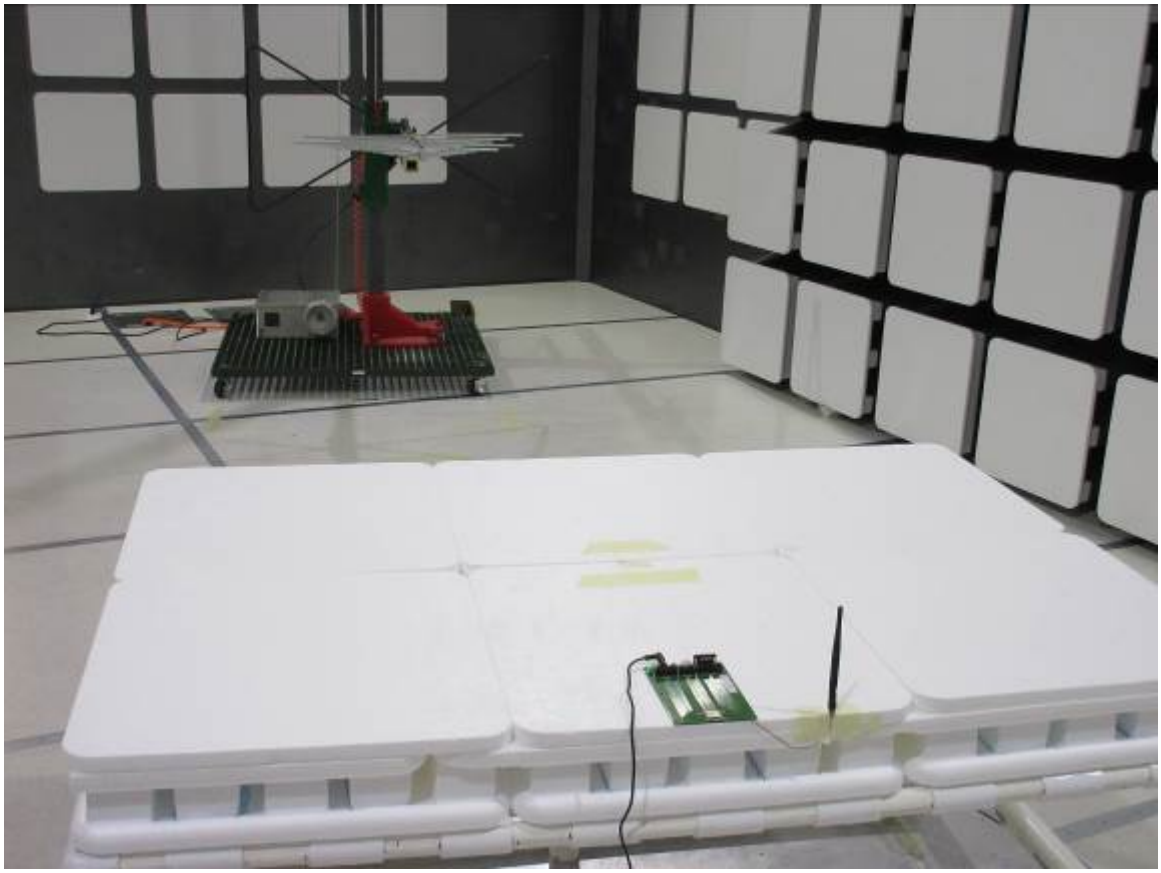


FRONT VIEW

UFL ANTENNA

DELPHIAN SYSTEMS LLC
HIGH RANGE BLE/ANT MODULE
MODEL: SRU232
FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

UFL ANTENNA

DELPHIAN SYSTEMS LLC
HIGH RANGE BLE/ANT MODULE
MODEL: SRU232
FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

FRONT VIEW

CHIP ANTENNA

DELPHIAN SYSTEMS LLC
HIGH RANGE BLE/ANT MODULE
MODEL: SRU232
FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 1 GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

CHIP ANTENNA

DELPHIAN SYSTEMS LLC
HIGH RANGE BLE/ANT MODULE
MODEL: SRU232
FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 1 GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

FRONT VIEW

UFL ANTENNA

DELPHIAN SYSTEMS LLC
HIGH RANGE BLE/ANT MODULE
MODEL: SRU232
FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 1 GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

UFL ANTENNA

DELPHIAN SYSTEMS LLC
HIGH RANGE BLE/ANT MODULE
MODEL: SRU232
FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 1 GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

FRONT VIEW

CHIP ANTENNA

DELPHIAN SYSTEMS LLC
HIGH RANGE BLE/ANT MODULE
MODEL: SRU232
FCC SUBPART B AND C – CONDUCTED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

CHIP ANTENNA

DELPHIAN SYSTEMS LLC
HIGH RANGE BLE/ANT MODULE
MODEL: SRU232
FCC SUBPART B AND C – CONDUCTED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

FRONT VIEW

UFL ANTENNA

DELPHIAN SYSTEMS LLC
HIGH RANGE BLE/ANT MODULE
MODEL: SRU232
FCC SUBPART B AND C – CONDUCTED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

UFL ANTENNA

DELPHIAN SYSTEMS LLC
HIGH RANGE BLE/ANT MODULE
MODEL: SRU232
FCC SUBPART B AND C – CONDUCTED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

APPENDIX E

DATA SHEETS

RADIATED EMISSIONS

DATA SHEETS

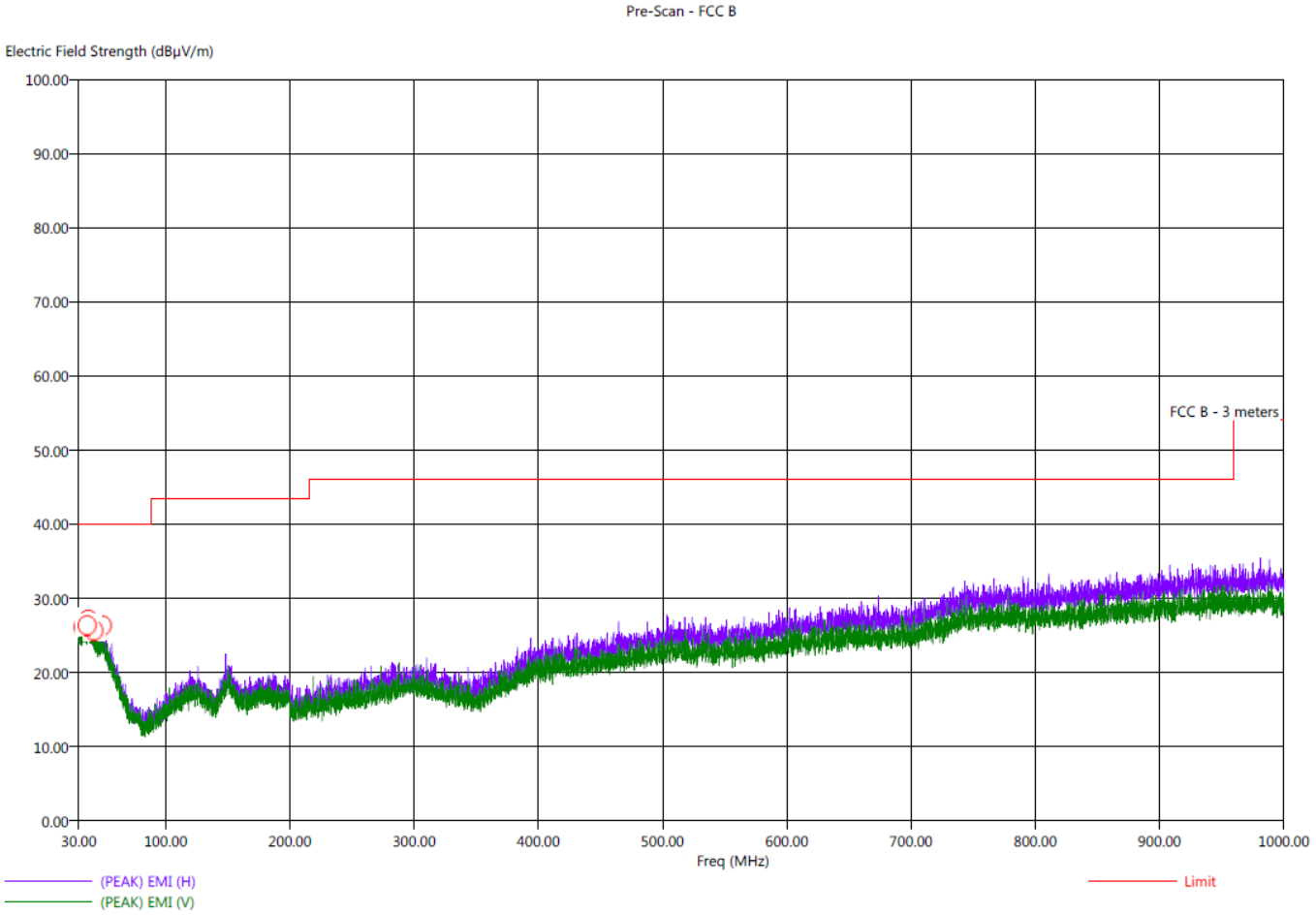
RADIATED EMISSIONS

DATA SHEETS

CHIP ANTENNA

Title: Radiated Pre-Scan 30 - 1000 MHz - FCC Class B
File: Radiated Pre-Scan 30-1000Mhz - FCC Class B - X-Axis.set
Operator: Kenneth Lee
EUT Type: High Range BLE/ANT Module
EUT Condition: Continuously Transmitting - X-Axis - Worst Case
Comments: Customer: Delphian Systems LLC
Model: SRU232
Note: Chip Antenna

4/1/2015 12:26:12 PM
Sequence: Preliminary Scan



Title: Final Scan - FCC Class B
File: Radiated Final 30-1000Mhz -FCC Class B.set
Operator: Kenneth Lee
EUT Type: High Range BLE/ANT Module
EUT Condition: Continuously Transmitting - X-Axis - Worst Case
Comments: Customer: Delphian Systems LLC
Model: SRU232
Note: Chip Antenna

4/1/2015 2:16:25 PM
Sequence: Final Measurements

Final Scan - FCC Class B

Freq (MHz)	Pol	(PEAK) EMI (dBµV/m)	(QP) EMI (dBµV/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dBµV/m)	Transducer (dB)	Cable (dB)	Ttbl Agl (deg)	Twr Ht (cm)
33.50	H	25.89	20.09	-14.11	-19.91	40.00	23.62	0.38	68.00	341.82
36.80	V	25.95	20.53	-14.05	-19.47	40.00	23.89	0.41	117.50	161.04
37.70	H	25.78	20.63	-14.22	-19.37	40.00	23.98	0.41	311.75	160.98
39.90	H	26.24	20.92	-13.76	-19.08	40.00	24.19	0.43	311.25	144.50
42.20	V	26.12	20.19	-13.88	-19.81	40.00	23.44	0.45	75.00	210.47
49.20	H	24.61	19.18	-15.39	-20.82	40.00	22.18	0.49	296.25	161.04

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FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Chip Antenna

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2402	92.11	V	--	--	Peak	1.15	225	X-Axis
2402	90.6	V	--	--	Avg	1.15	225	Vertical Polarization
2402	104.29	H	--	--	Peak	1.15	180	X-Axis
2402	103.56	H	--	--	Avg	1.15	180	Horizontal Polarization
2402	101.91	V	--	--	Peak	1.15	270	Y-Axis
2402	101.46	V	--	--	Avg	1.15	270	Vertical Polarization
2402	104.46	H	--	--	Peak	1.5	0	Y-Axis
2402	103.91	H	--	--	Avg	1.5	0	Horizontal Polarization
2402	105.69	V	--	--	Peak	1.5	135	Z-Axis
2402	105.06	V	--	--	Avg	1.5	135	Vertical Polarization
2402	101.91	H	--	--	Peak	1.5	45	Z-Axis
2402	101.56	H	--	--	Avg	1.5	45	Horizontal Polarization

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Chip Antenna

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2440	100.35	V	--	--	Peak	1.5	315	X-Axis
2440	100.09	V	--	--	Avg	1.5	315	Vertical Polarization
2440	108.28	H	--	--	Peak	1.5	45	X-Axis
2440	107.26	H	--	--	Avg	1.5	45	Horizontal Polarization
2440	102.93	V	--	--	Peak	1.25	45	Y-Axis
2440	102.37	V	--	--	Avg	1.25	45	Vertical Polarization
2440	107.34	H	--	--	Peak	1.5	180	Y-Axis
2440	106.83	H	--	--	Avg	1.5	180	Horizontal Polarization
2440	108.37	V	--	--	Peak	1.5	315	Z-Axis
2440	108.09	V	--	--	Avg	1.5	315	Vertical Polarization
2440	101.69	H	--	--	Peak	1.5	45	Z-Axis
2440	101.22	H	--	--	Avg	1.5	45	Horizontal Polarization

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

High Channel - Chip Antenna

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	98.01	V	--	--	Peak	1.75	225	X-Axis
2480	97.28	V	--	--	Avg	1.75	225	Vertical Polarization
2480	103.59	H	--	--	Peak	1.25	0	X-Axis
2480	103.13	H	--	--	Avg	1.25	0	Horizontal Polarization
2480	99.34	V	--	--	Peak	1.25	135	Y-Axis
2480	99.11	V	--	--	Avg	1.25	135	Vertical Polarization
2480	102.11	H	--	--	Peak	1.35	180	Y-Axis
2480	100.52	H	--	--	Avg	1.35	180	Horizontal Polarization
2480	105.92	V	--	--	Peak	1.15	315	Z-Axis
2480	105.48	V	--	--	Avg	1.15	315	Vertical Polarization
2480	99.71	H	--	--	Peak	1.25	135	Z-Axis
2480	98.94	H	--	--	Avg	1.25	135	Horizontal Polarization

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Chip Antenna
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	53.55	V	74	-20.45	Peak	1.25	165	
4804	44.11	V	54	-9.89	Avg	1.25	165	
7206	55.08	V	74	-18.92	Peak	1.35	175	
7206	50.01	V	54	-3.99	Avg	1.35	175	
9608								No Emissions
9608								Detected
12010								No Emissions
12010								Detected
14412								No Emissions
14412								Detected
16814								No Emissions
16814								Detected
19216								No Emissions
19216								Detected
21618								No Emissions
21618								Detected
24020								No Emissions
24020								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Chip Antenna
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	48.42	V	74	-25.58	Peak	1.25	0	
4804	40.98	V	54	-13.02	Avg	1.25	0	
7206	54.11	V	74	-19.89	Peak	1.35	0	
7206	46.27	V	54	-7.73	Avg	1.35	0	
9608								No Emissions
9608								Detected
12010								No Emissions
12010								Detected
14412								No Emissions
14412								Detected
16814								No Emissions
16814								Detected
19216								No Emissions
19216								Detected
21618								No Emissions
21618								Detected
24020								No Emissions
24020								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Chip Antenna
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	48.25	V	74	-25.75	Peak	1.25	225	
4804	41.78	V	54	-12.22	Avg	1.25	225	
7206	52.13	V	74	-21.87	Peak	1.25	135	
7206	44.04	V	54	-9.96	Avg	1.25	135	
9608								No Emissions
9608								Detected
12010								No Emissions
12010								Detected
14412								No Emissions
14412								Detected
16814								No Emissions
16814								Detected
19216								No Emissions
19216								Detected
21618								No Emissions
21618								Detected
24020								No Emissions
24020								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Chip Antenna
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	47.52	H	74	-26.48	Peak	1.25	155	
4804	38.72	H	54	-15.28	Avg	1.25	155	
7206	49.09	H	74	-24.91	Peak	1.35	165	
7206	42.75	H	54	-11.25	Avg	1.35	165	
9608								No Emissions
9608								Detected
12010								No Emissions
12010								Detected
14412								No Emissions
14412								Detected
16814								No Emissions
16814								Detected
19216								No Emissions
19216								Detected
21618								No Emissions
21618								Detected
24020								No Emissions
24020								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Chip Antenna
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	51.97	H	74	-22.03	Peak	1.25	155	
4804	42.44	H	54	-11.56	Avg	1.25	155	
7206	50.54	H	74	-23.46	Peak	1.35	165	
7206	43.37	H	54	-10.63	Avg	1.35	165	
9608								No Emissions
9608								Detected
12010								No Emissions
12010								Detected
14412								No Emissions
14412								Detected
16814								No Emissions
16814								Detected
19216								No Emissions
19216								Detected
21618								No Emissions
21618								Detected
24020								No Emissions
24020								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Low Channel - Chip Antenna
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	54.06	H	74	-19.94	Peak	1.25	225	
4804	50.73	H	54	-3.27	Avg	1.25	225	
7206	56.72	H	74	-17.28	Peak	1.35	225	
7206	52.68	H	54	-1.32	Avg	1.35	225	
9608								No Emissions
9608								Detected
12010								No Emissions
12010								Detected
14412								No Emissions
14412								Detected
16814								No Emissions
16814								Detected
19216								No Emissions
19216								Detected
21618								No Emissions
21618								Detected
24020								No Emissions
24020								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Chip Antenna
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	49.57	V	74	-24.43	Peak	1.25	155	
4880	41.78	V	54	-12.22	Avg	1.25	155	
7320	57.24	V	74	-16.76	Peak	1.25	175	
7320	52.08	V	54	-1.92	Avg	1.25	175	
9760								No Emissions
9760								Detected
12200								No Emissions
12200								Detected
14640								No Emissions
14640								Detected
17080								No Emissions
17080								Detected
19520								No Emissions
19520								Detected
21960								No Emissions
21960								Detected
24400								No Emissions
24400								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Chip Antenna
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	51.07	V	74	-22.93	Peak	1.25	180	
4880	45.11	V	54	-8.89	Avg	1.25	180	
7320	55.08	V	74	-18.92	Peak	1.25	165	
7320	50.91	V	54	-3.09	Avg	1.25	165	
9760								No Emissions
9760								Detected
12200								No Emissions
12200								Detected
14640								No Emissions
14640								Detected
17080								No Emissions
17080								Detected
19520								No Emissions
19520								Detected
21960								No Emissions
21960								Detected
24400								No Emissions
24400								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Chip Antenna
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	50.56	V	74	-23.44	Peak	1.25	135	
4880	43.21	V	54	-10.79	Avg	1.25	135	
7320	51.56	V	74	-22.44	Peak	1.35	165	
7320	43.19	V	54	-10.81	Avg	1.35	165	
9760								No Emissions
9760								Detected
12200								No Emissions
12200								Detected
14640								No Emissions
14640								Detected
17080								No Emissions
17080								Detected
19520								No Emissions
19520								Detected
21960								No Emissions
21960								Detected
24400								No Emissions
24400								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Chip Antenna
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	52.19	H	74	-21.81	Peak	1.25	155	
4880	46.55	H	54	-7.45	Avg	1.25	155	
7320	53.48	H	74	-20.52	Peak	1.35	165	
7320	43.71	H	54	-10.29	Avg	1.35	165	
9760								No Emissions
9760								Detected
12200								No Emissions
12200								Detected
14640								No Emissions
14640								Detected
17080								No Emissions
17080								Detected
19520								No Emissions
19520								Detected
21960								No Emissions
21960								Detected
24400								No Emissions
24400								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Chip Antenna
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	50.34	H	74	-23.66	Peak	1.25	135	
4880	43.81	H	54	-10.19	Avg	1.25	135	
7320	53.08	H	74	-20.92	Peak	1.35	225	
7320	47.41	H	54	-6.59	Avg	1.35	225	
9760								No Emissions
9760								Detected
12200								No Emissions
12200								Detected
14640								No Emissions
14640								Detected
17080								No Emissions
17080								Detected
19520								No Emissions
19520								Detected
21960								No Emissions
21960								Detected
24400								No Emissions
24400								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - Chip Antenna
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	53.11	H	74	-20.89	Peak	1.25	155	
4880	46.33	H	54	-7.67	Avg	1.25	155	
7320	56.12	H	74	-17.88	Peak	1.25	155	
7320	50.93	H	54	-3.07	Avg	1.25	155	
9760								No Emissions
9760								Detected
12200								No Emissions
12200								Detected
14640								No Emissions
14640								Detected
17080								No Emissions
17080								Detected
19520								No Emissions
19520								Detected
21960								No Emissions
21960								Detected
24400								No Emissions
24400								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

High Channel - Chip Antenna
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4960	52.77	V	74	-21.23	Peak	1.25	165	
4960	46.67	V	54	-7.33	Avg	1.25	165	
7440	52.25	V	74	-21.75	Peak	1.25	180	
7440	44.58	V	54	-9.42	Avg	1.25	180	
9920								No Emissions
9920								Detected
12400								No Emissions
12400								Detected
14880								No Emissions
14880								Detected
17360								No Emissions
17360								Detected
19840								No Emissions
19840								Detected
22320								No Emissions
22320								Detected
24800								No Emissions
24800								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

High Channel - Chip Antenna
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4960	52.62	V	74	-21.38	Peak	1.35	225	
4960	44.24	V	54	-9.76	Avg	1.35	225	
7440	52.25	V	74	-21.75	Peak	1.25	225	
7440	45.76	V	54	-8.24	Avg	1.25	225	
9920								No Emissions
9920								Detected
12400								No Emissions
12400								Detected
14880								No Emissions
14880								Detected
17360								No Emissions
17360								Detected
19840								No Emissions
19840								Detected
22320								No Emissions
22320								Detected
24800								No Emissions
24800								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

High Channel - Chip Antenna
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4960	49.35	V	74	-24.65	Peak	1.25	135	
4960	43.24	V	54	-10.76	Avg	1.25	135	
7440	49.69	V	74	-24.31	Peak	1.25	45	
7440	42.83	V	54	-11.17	Avg	1.25	45	
9920								No Emissions
9920								Detected
12400								No Emissions
12400								Detected
14880								No Emissions
14880								Detected
17360								No Emissions
17360								Detected
19840								No Emissions
19840								Detected
22320								No Emissions
22320								Detected
24800								No Emissions
24800								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

High Channel - Chip Antenna
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4960	50.88	H	74	-23.12	Peak	1.25	155	
4960	42.66	H	54	-11.34	Avg	1.25	155	
7440	50.41	H	74	-23.59	Peak	1.35	135	
7440	44.24	H	54	-9.76	Avg	1.35	135	
9920								No Emissions
9920								Detected
12400								No Emissions
12400								Detected
14880								No Emissions
14880								Detected
17360								No Emissions
17360								Detected
19840								No Emissions
19840								Detected
22320								No Emissions
22320								Detected
24800								No Emissions
24800								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

High Channel - Chip Antenna
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4960	49.03	H	74	-24.97	Peak	1.25	155	
4960	42.05	H	54	-11.95	Avg	1.25	155	
7440	50.41	H	74	-23.59	Peak	1.25	180	
7440	41.58	H	54	-12.42	Avg	1.25	180	
9920								No Emissions
9920								Detected
12400								No Emissions
12400								Detected
14880								No Emissions
14880								Detected
17360								No Emissions
17360								Detected
19840								No Emissions
19840								Detected
22320								No Emissions
22320								Detected
24800								No Emissions
24800								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

High Channel - Chip Antenna
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4960	54.43	H	74	-19.57	Peak	1.25	135	
4960	50.79	H	54	-3.21	Avg	1.25	135	
7440	53.54	H	74	-20.46	Peak	1.35	225	
7440	47.26	H	54	-6.74	Avg	1.35	225	
9920								No Emissions
9920								Detected
12400								No Emissions
12400								Detected
14880								No Emissions
14880								Detected
17360								No Emissions
17360								Detected
19840								No Emissions
19840								Detected
22320								No Emissions
22320								Detected
24800								No Emissions
24800								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Labs: B and D
Tested By: Kyle Fujimoto

Non Harmonic Emissions from the Tx and Digital Portion -- 10 kHz to 25000 MHz
Vertical and Horizontal Polarizations - Chip Antenna

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Found for the
								Digital Portion
								from 10 kHz to 25000 MHz
								for both Vertical and Horizontal
								Polarizations
								No Non Harmonic Emissions Found
								for the Tx Mode
								from 10 kHz to 25000 MHz
								for both Vertical and Horizontal
								Polarizations
								Investigated in the X-Axis,
								Y-Axis, and Z-Axis

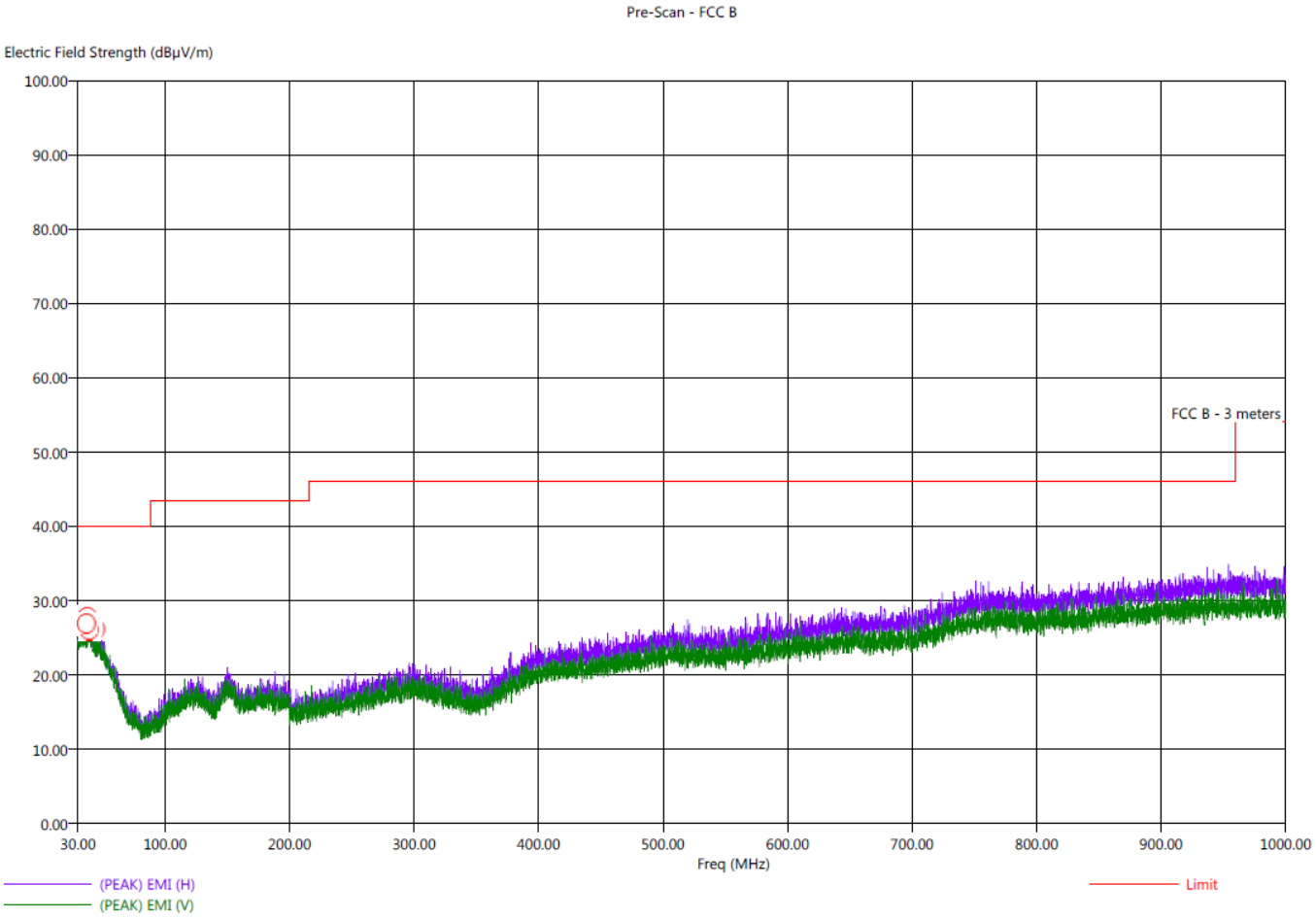
RADIATED EMISSIONS

DATA SHEETS

UFL ANTENNA

Title: Radiated Pre-Scan 30 - 1000 MHz - FCC Class B
File: Radiated Pre-Scan 30-1000Mhz - FCC Class B - X-Axis.set
Operator: Kenneth Lee
EUT Type: High Range BLE/ANT Module
EUT Condition: Continuously Transmitting - X-Axis - Worst Case
Comments: Customer: Delphian Systems LLC
Model: SRU232
Note: UFL Antenna

4/1/2015 2:51:08 PM
Sequence: Preliminary Scan



Title: Final Scan - FCC Class B
File: Radiated Final 30-1000Mhz -FCC Class B.set
Operator: Kenneth Lee
EUT Type: High Range BLE/ANT Module
EUT Condition: Continuously Transmitting - X-Axis - Worst Case
Comments: Customer: Delphian Systems LLC
Model: SRU232
Note: UFL Antenna

4/1/2015 4:03:27 PM
Sequence: Final Measurements

Final Scan - FCC Class B

Freq (MHz)	Pol	(PEAK) EMI (dBµV/m)	(QP) EMI (dBµV/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dBµV/m)	Transducer (dB)	Cable (dB)	Ttbl Agl (deg)	Twr Ht (cm)
36.50	H	25.18	20.37	-14.82	-19.63	40.00	23.87	0.41	291.00	391.85
36.90	V	25.35	20.41	-14.65	-19.59	40.00	23.92	0.41	294.75	111.55
37.60	H	25.20	20.54	-14.80	-19.46	40.00	23.96	0.41	50.75	376.26
39.10	V	26.35	20.70	-13.65	-19.30	40.00	24.11	0.42	258.75	359.49
40.50	H	25.80	20.65	-14.20	-19.35	40.00	24.06	0.43	146.25	343.31
44.20	H	24.52	19.48	-15.48	-20.52	40.00	22.79	0.46	48.50	400.08

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FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Low Channel - UFL Antenna
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	53.32	V	74	-20.68	Peak	1.25	155	
4804	47.74	V	54	-6.26	Avg	1.25	155	
7206	55.67	V	74	-18.33	Peak	1.25	155	
7206	52.81	V	54	-1.19	Avg	1.25	155	
9608								Done via Conducted -
9608								Not in Restricted Band
12010								No Emissions
12010								Detected
14412								No Emissions
14412								Detected
16814								No Emissions
16814								Detected
19216								No Emissions
19216								Detected
21618								No Emissions
21618								Detected
24020								No Emissions
24020								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Low Channel - UFL Antenna
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	53.81	V	74	-20.19	Peak	1.25	225	
4804	49.89	V	54	-4.11	Avg	1.25	225	
7206	55.53	V	74	-18.47	Peak	1.35	235	
7206	49.73	V	54	-4.27	Avg	1.35	235	
9608								Done via Conducted -
9608								Not in Restricted Band
12010								No Emissions
12010								Detected
14412								No Emissions
14412								Detected
16814								No Emissions
16814								Detected
19216								No Emissions
19216								Detected
21618								No Emissions
21618								Detected
24020								No Emissions
24020								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Low Channel - UFL Antenna
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	48.18	V	74	-25.82	Peak	1.25	135	
4804	41.48	V	54	-12.52	Avg	1.25	135	
7206	51.37	V	74	-22.63	Peak	1.35	145	
7206	43.37	V	54	-10.63	Avg	1.35	145	
9608								No Emissions
9608								Detected
12010								No Emissions
12010								Detected
14412								No Emissions
14412								Detected
16814								No Emissions
16814								Detected
19216								No Emissions
19216								Detected
21618								No Emissions
21618								Detected
24020								No Emissions
24020								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Low Channel - UFL Antenna
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	49.97	H	74	-24.03	Peak	1.25	155	
4804	45.64	H	54	-8.36	Avg	1.25	155	
7206	49.82	H	74	-24.18	Peak	1.35	165	
7206	42.47	H	54	-11.53	Avg	1.35	165	
9608								No Emissions
9608								Detected
12010								No Emissions
12010								Detected
14412								No Emissions
14412								Detected
16814								No Emissions
16814								Detected
19216								No Emissions
19216								Detected
21618								No Emissions
21618								Detected
24020								No Emissions
24020								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Low Channel - UFL Antenna
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	56.36	H	74	-17.64	Peak	1.25	135	
4804	51.64	H	54	-2.36	Avg	1.25	135	
7206	54.65	H	74	-19.35	Peak	1.35	165	
7206	50.25	H	54	-3.75	Avg	1.35	165	
9608								No Emissions
9608								Detected
12010								No Emissions
12010								Detected
14412								No Emissions
14412								Detected
16814								No Emissions
16814								Detected
19216								No Emissions
19216								Detected
21618								No Emissions
21618								Detected
24020								No Emissions
24020								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Low Channel - UFL Antenna
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4804	53.79	H	74	-20.21	Peak	1.25	0	
4804	51.47	H	54	-2.53	Avg	1.25	0	
7206	55.66	H	74	-18.34	Peak	1.25	135	
7206	52.29	H	54	-1.71	Avg	1.25	135	
9608								No Emissions
9608								Detected
12010								No Emissions
12010								Detected
14412								No Emissions
14412								Detected
16814								No Emissions
16814								Detected
19216								No Emissions
19216								Detected
21618								No Emissions
21618								Detected
24020								No Emissions
24020								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/31/2015
Lab: B
Tested By: Kenneth Lee

Middle Channel - UFL Antenna
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	56.54	V	74	-17.46	Peak	1.1	135	
4880	49.74	V	54	-4.26	Avg	1.1	135	
7320	57.08	V	74	-16.92	Peak	1.5	35	
7320	46.98	V	54	-7.02	Avg	1.5	35	
9760								Done via Conducted -
9760								Not in Restricted Band
12200								No Emissions
12200								Detected
14640								Done via Conducted -
14640								Not in Restricted Band
17080								No Emissions
17080								Detected
19520								No Emissions
19520								Detected
21960								No Emissions
21960								Detected
24400								No Emissions
24400								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/31/2015
Lab: B
Tested By: Kenneth Lee

Middle Channel - UFL Antenna
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	50.91	V	74	-23.09	Peak	1	135	
4880	41.98	V	54	-12.02	Avg	1	135	
7320	55.23	V	74	-18.77	Peak	1.1	180	
7320	44.36	V	54	-9.64	Avg	1.1	180	
9760								Done via Conducted -
9760								Not in Restricted Band
12200								No Emissions
12200								Detected
14640								Done via Conducted -
14640								Not in Restricted Band
17080								No Emissions
17080								Detected
19520								No Emissions
19520								Detected
21960								No Emissions
21960								Detected
24400								No Emissions
24400								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/31/2015
Lab: B
Tested By: Kenneth Lee

Middle Channel - UFL Antenna
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	50.55	V	74	-23.45	Peak	1	270	
4880	41.72	V	54	-12.28	Avg	1	270	
7320	53.26	V	74	-20.74	Peak	1.75	250	
7320	42.74	V	54	-11.26	Avg	1.75	250	
9760								Done via Conducted -
9760								Not in Restricted Band
12200								No Emissions
12200								Detected
14640								Done via Conducted -
14640								Not in Restricted Band
17080								No Emissions
17080								Detected
19520								No Emissions
19520								Detected
21960								No Emissions
21960								Detected
24400								No Emissions
24400								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Middle Channel - UFL Antenna
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	54.21	H	74	-19.79	Peak	1.25	225	
4880	49.37	H	54	-4.63	Avg	1.25	225	
7320	55.11	H	74	-18.89	Peak	1.35	135	
7320	51.11	H	54	-2.89	Avg	1.35	135	
9760								Done via Conducted -
9760								Not in Restricted Band
12200								No Emissions
12200								Detected
14640								Done via Conducted -
14640								Not in Restricted Band
17080								No Emissions
17080								Detected
19520								No Emissions
19520								Detected
21960								No Emissions
21960								Detected
24400								No Emissions
24400								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/31/2015
Lab: B
Tested By: Kenneth Lee

Middle Channel - UFL Antenna
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	54.78	H	74	-19.22	Peak	1	135	
4880	47.49	H	54	-6.51	Avg	1	135	
7320	53.08	H	74	-20.92	Peak	1	235	
7320	41.8	H	54	-12.2	Avg	1	235	
9760								Done via Conducted -
9760								Not in Restricted Band
12200								No Emissions
12200								Detected
14640								Done via Conducted -
14640								Not in Restricted Band
17080								No Emissions
17080								Detected
19520								No Emissions
19520								Detected
21960								No Emissions
21960								Detected
24400								No Emissions
24400								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/31/2015
Lab: B
Tested By: Kenneth Lee

Middle Channel - UFL Antenna
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4880	54.61	H	74	-19.39	Peak	1.15	235	
4880	47.34	H	54	-6.66	Avg	1.15	235	
7320	56.65	H	74	-17.35	Peak	1	235	
7320	46.22	H	54	-7.78	Avg	1	235	
9760								Done via Conducted -
9760								Not in Restricted Band
12200								No Emissions
12200								Detected
14640								Done via Conducted -
14640								Not in Restricted Band
17080								No Emissions
17080								Detected
19520								No Emissions
19520								Detected
21960								No Emissions
21960								Detected
24400								No Emissions
24400								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

High Channel - UFL Antenna
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4960	52.77	V	74	-21.23	Peak	1.25	165	
4960	46.67	V	54	-7.33	Avg	1.25	165	
7440	52.25	V	74	-21.75	Peak	1.25	180	
7440	44.58	V	54	-9.42	Avg	1.25	180	
9920								No Emissions
9920								Detected
12400								No Emissions
12400								Detected
14880								No Emissions
14880								Detected
17360								No Emissions
17360								Detected
19840								No Emissions
19840								Detected
22320								No Emissions
22320								Detected
24800								No Emissions
24800								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

High Channel - UFL Antenna
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4960	52.62	V	74	-21.38	Peak	1.35	225	
4960	44.24	V	54	-9.76	Avg	1.35	225	
7440	52.25	V	74	-21.75	Peak	1.25	225	
7440	45.76	V	54	-8.24	Avg	1.25	225	
9920								No Emissions
9920								Detected
12400								No Emissions
12400								Detected
14880								No Emissions
14880								Detected
17360								No Emissions
17360								Detected
19840								No Emissions
19840								Detected
22320								No Emissions
22320								Detected
24800								No Emissions
24800								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

High Channel - UFL Antenna
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4960	49.35	V	74	-24.65	Peak	1.25	135	
4960	43.24	V	54	-10.76	Avg	1.25	135	
7440	49.69	V	74	-24.31	Peak	1.25	45	
7440	42.83	V	54	-11.17	Avg	1.25	45	
9920								No Emissions
9920								Detected
12400								No Emissions
12400								Detected
14880								No Emissions
14880								Detected
17360								No Emissions
17360								Detected
19840								No Emissions
19840								Detected
22320								No Emissions
22320								Detected
24800								No Emissions
24800								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

High Channel - UFL Antenna
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4960	50.88	H	74	-23.12	Peak	1.25	155	
4960	42.66	H	54	-11.34	Avg	1.25	155	
7440	50.41	H	74	-23.59	Peak	1.35	135	
7440	44.24	H	54	-9.76	Avg	1.35	135	
9920								No Emissions
9920								Detected
12400								No Emissions
12400								Detected
14880								No Emissions
14880								Detected
17360								No Emissions
17360								Detected
19840								No Emissions
19840								Detected
22320								No Emissions
22320								Detected
24800								No Emissions
24800								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

High Channel - UFL Antenna
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4960	49.03	H	74	-24.97	Peak	1.25	155	
4960	42.05	H	54	-11.95	Avg	1.25	155	
7440	50.41	H	74	-23.59	Peak	1.25	180	
7440	41.58	H	54	-12.42	Avg	1.25	180	
9920								No Emissions
9920								Detected
12400								No Emissions
12400								Detected
14880								No Emissions
14880								Detected
17360								No Emissions
17360								Detected
19840								No Emissions
19840								Detected
22320								No Emissions
22320								Detected
24800								No Emissions
24800								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

High Channel - UFL Antenna
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4960	54.43	H	74	-19.57	Peak	1.25	135	
4960	50.79	H	54	-3.21	Avg	1.25	135	
7440	53.54	H	74	-20.46	Peak	1.35	225	
7440	47.26	H	54	-6.74	Avg	1.35	225	
9920								No Emissions
9920								Detected
12400								No Emissions
12400								Detected
14880								No Emissions
14880								Detected
17360								No Emissions
17360								Detected
19840								No Emissions
19840								Detected
22320								No Emissions
22320								Detected
24800								No Emissions
24800								Detected

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

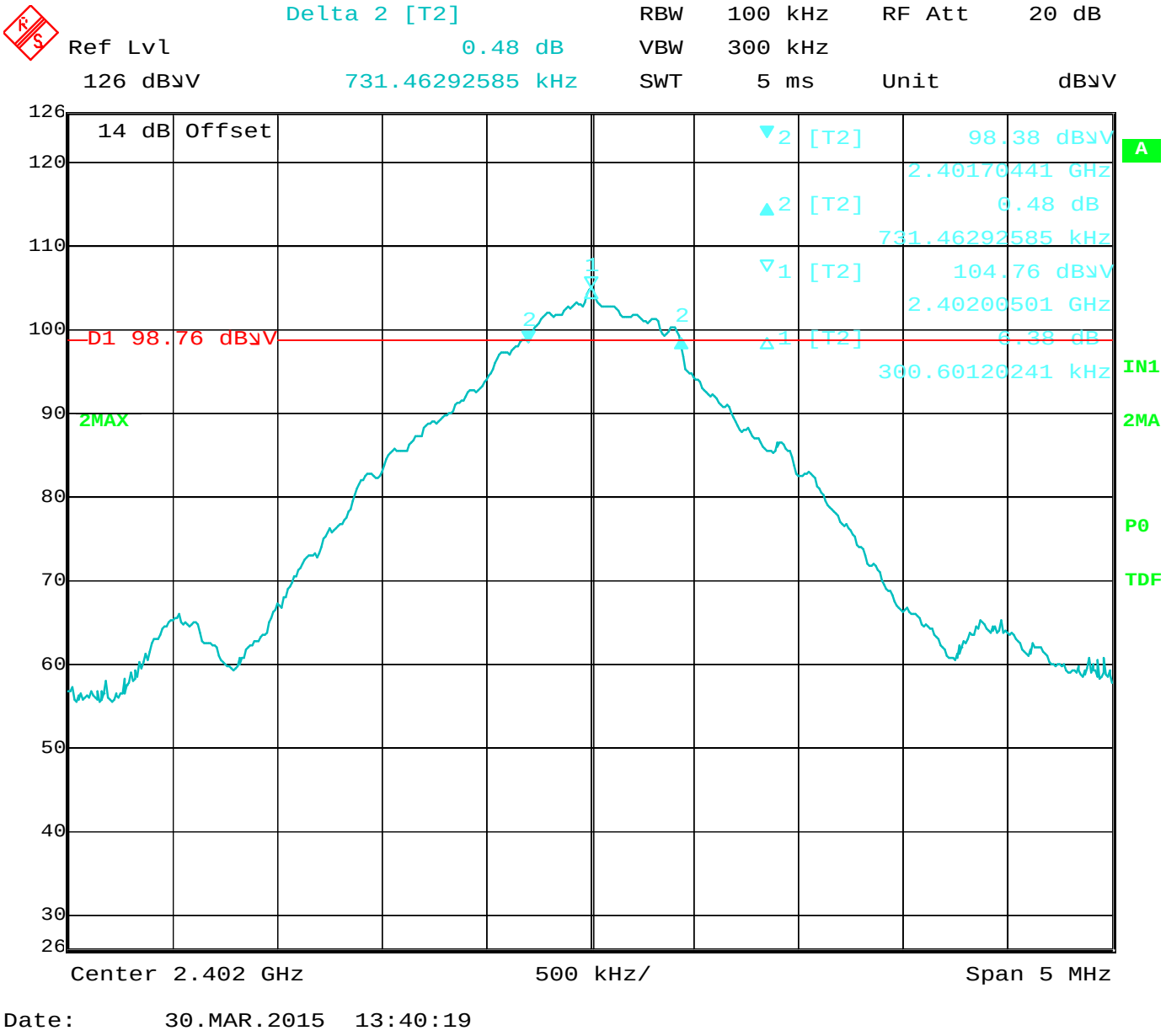
Date: 03/31/2015
Labs: B and D
Tested By: Kenneth Lee

Non Harmonic Emissions from the Tx and Digital Portion -- 10 kHz to 25000 MHz
Vertical and Horizontal Polarizations - UFL Antenna

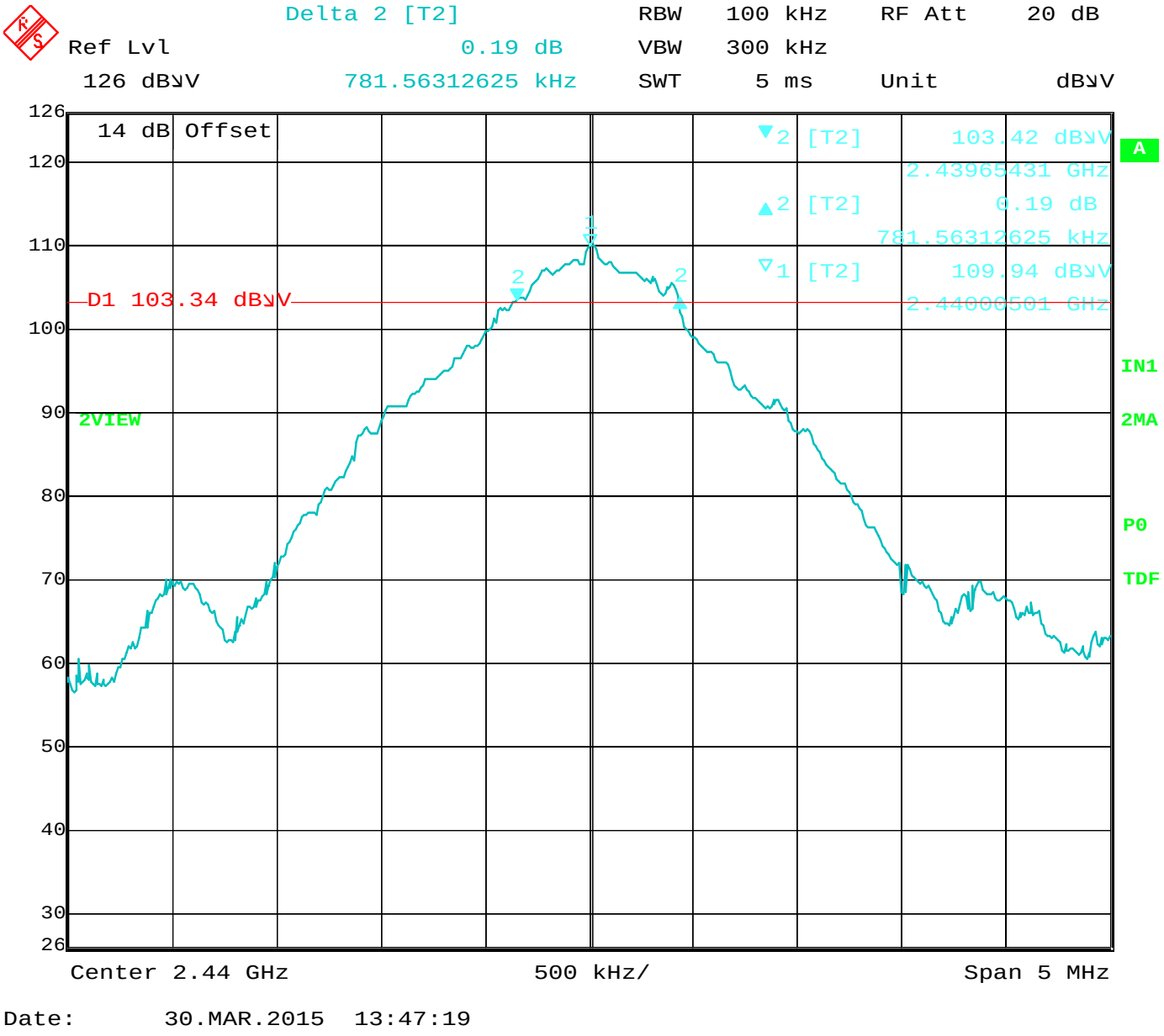
Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Found for the
								Digital Portion
								from 10 kHz to 25000 MHz
								for both Vertical and Horizontal
								Polarizations
								No Non Harmonic Emissions Found
								for the Tx Mode
								from 10 kHz to 25000 MHz
								for both Vertical and Horizontal
								Polarizations
								Investigated in the X-Axis,
								Y-Axis, and Z-Axis

-6 dB BANDWIDTH

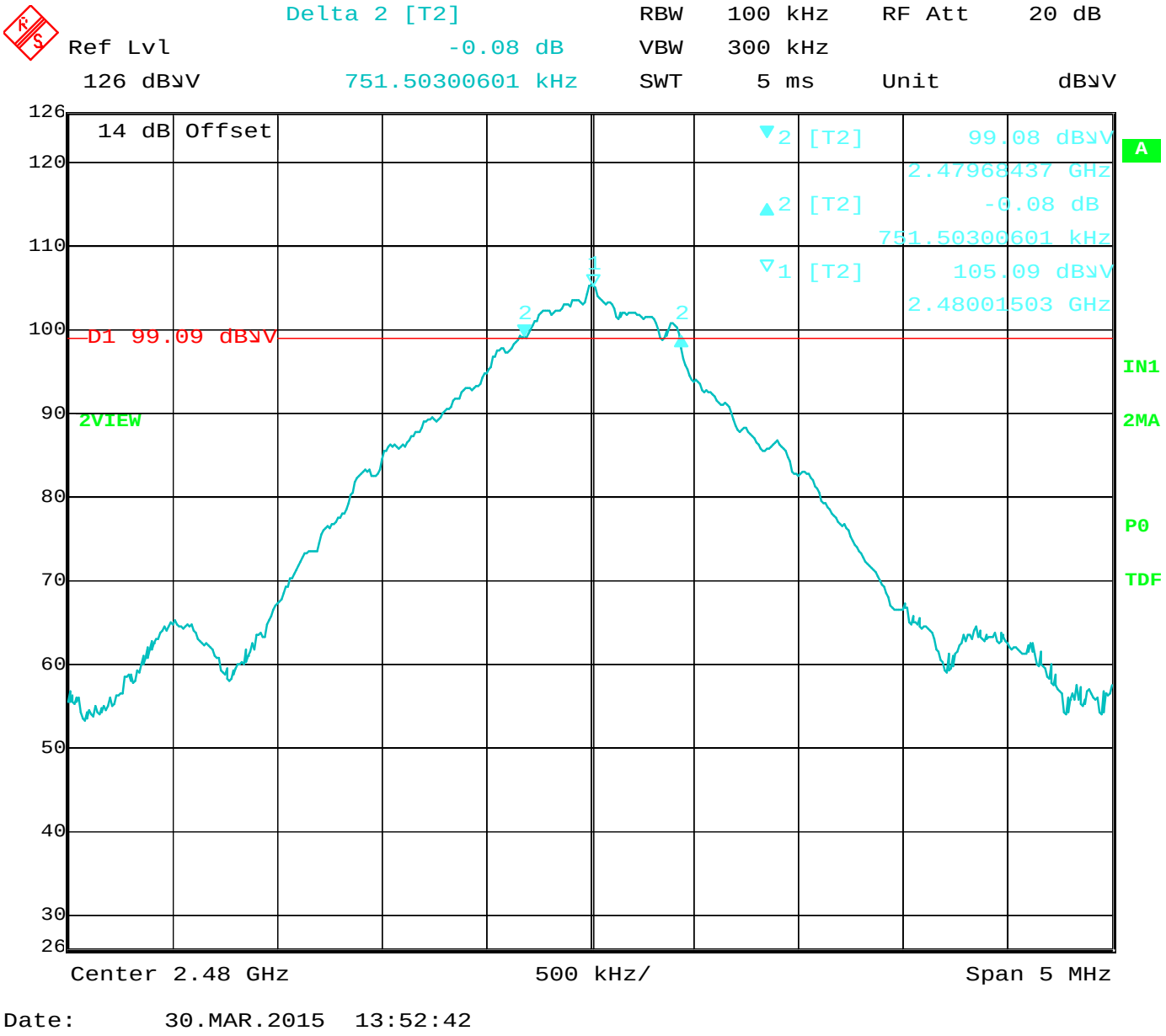
DATA SHEETS



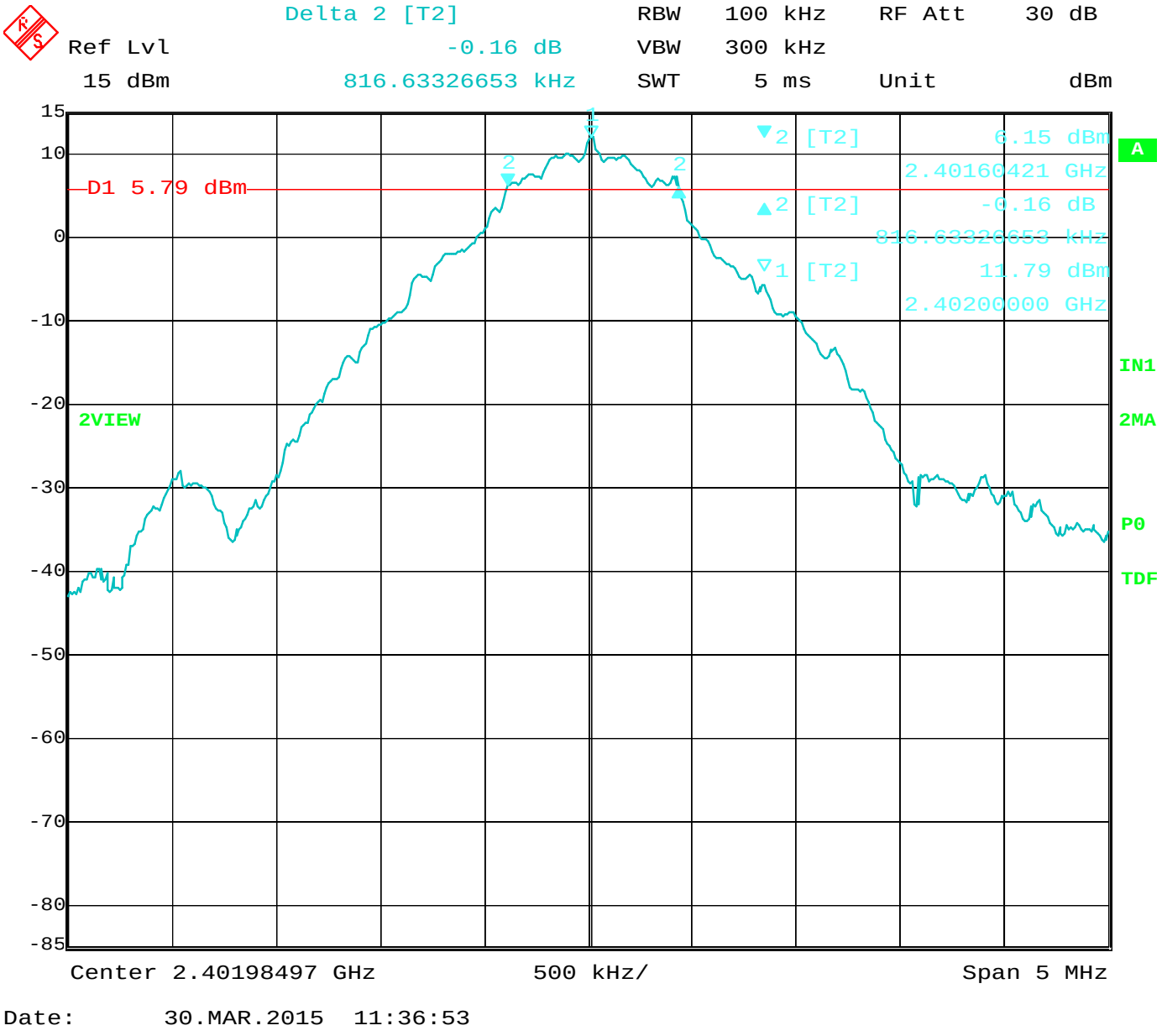
-6 dB Bandwidth – Low Channel – Chip Antenna



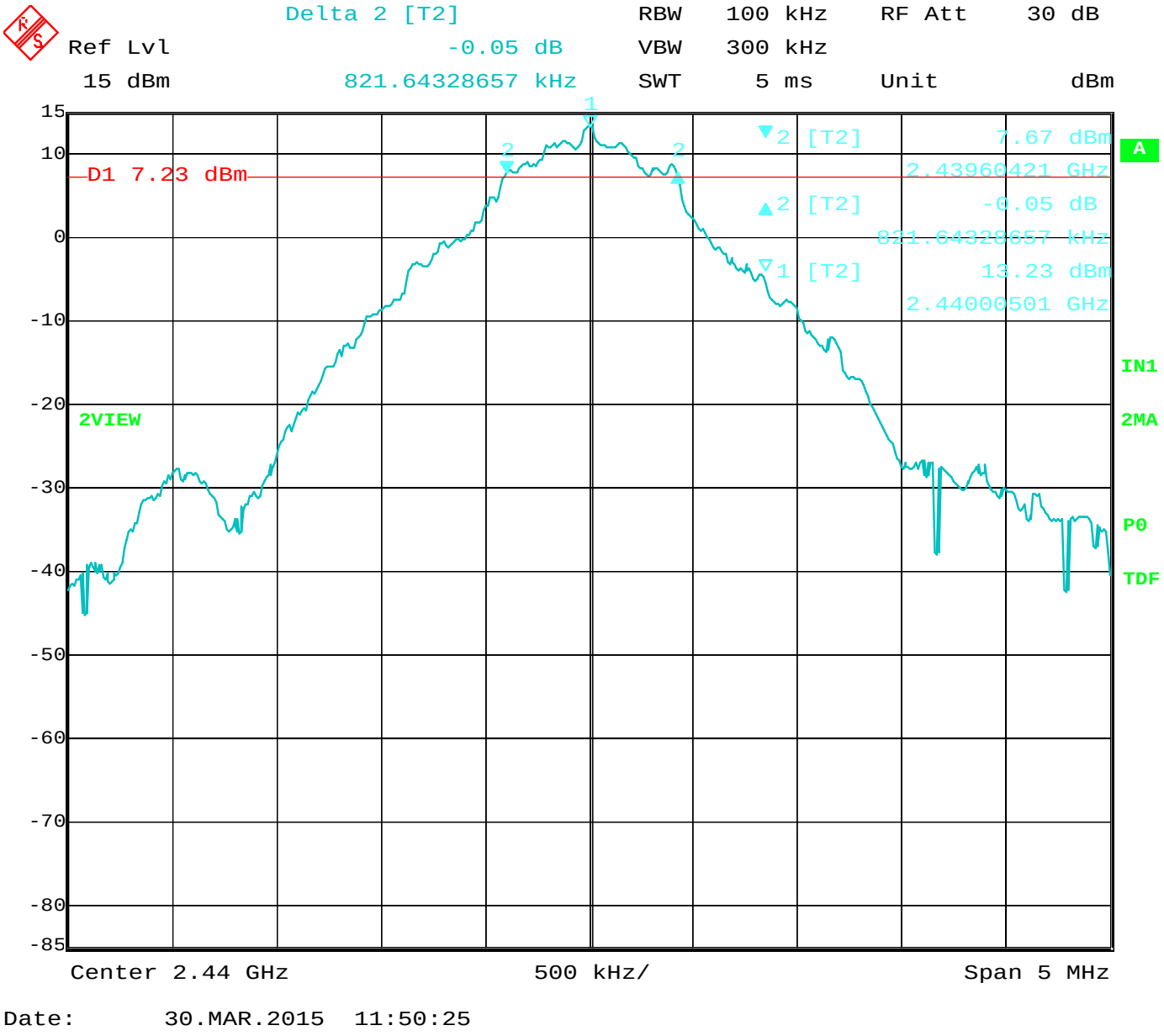
-6 dB Bandwidth – Middle Channel – Chip Antenna



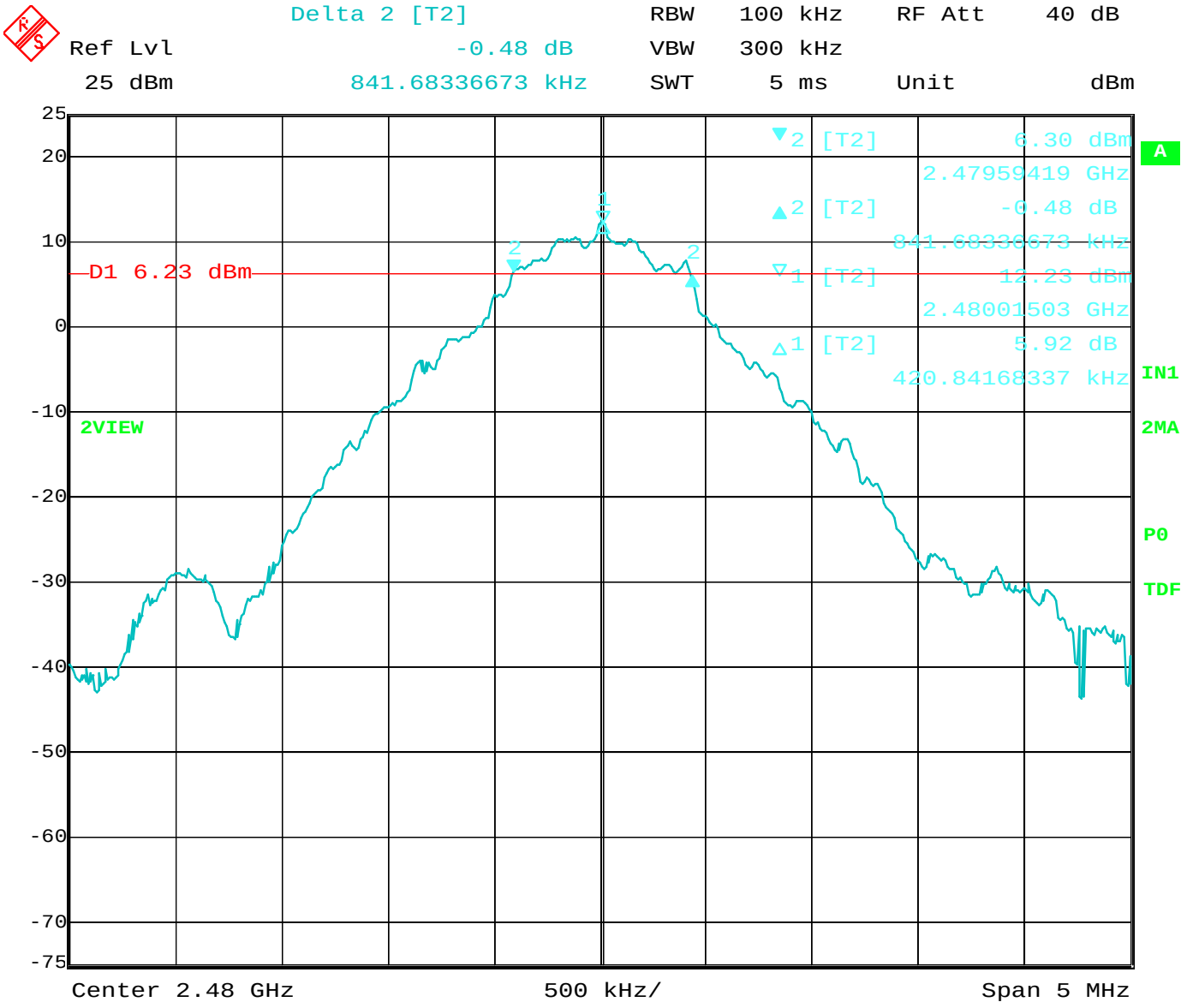
-6 dB Bandwidth – High Channel – Chip Antenna



-6 dB Bandwidth – Low Channel – UFL Antenna



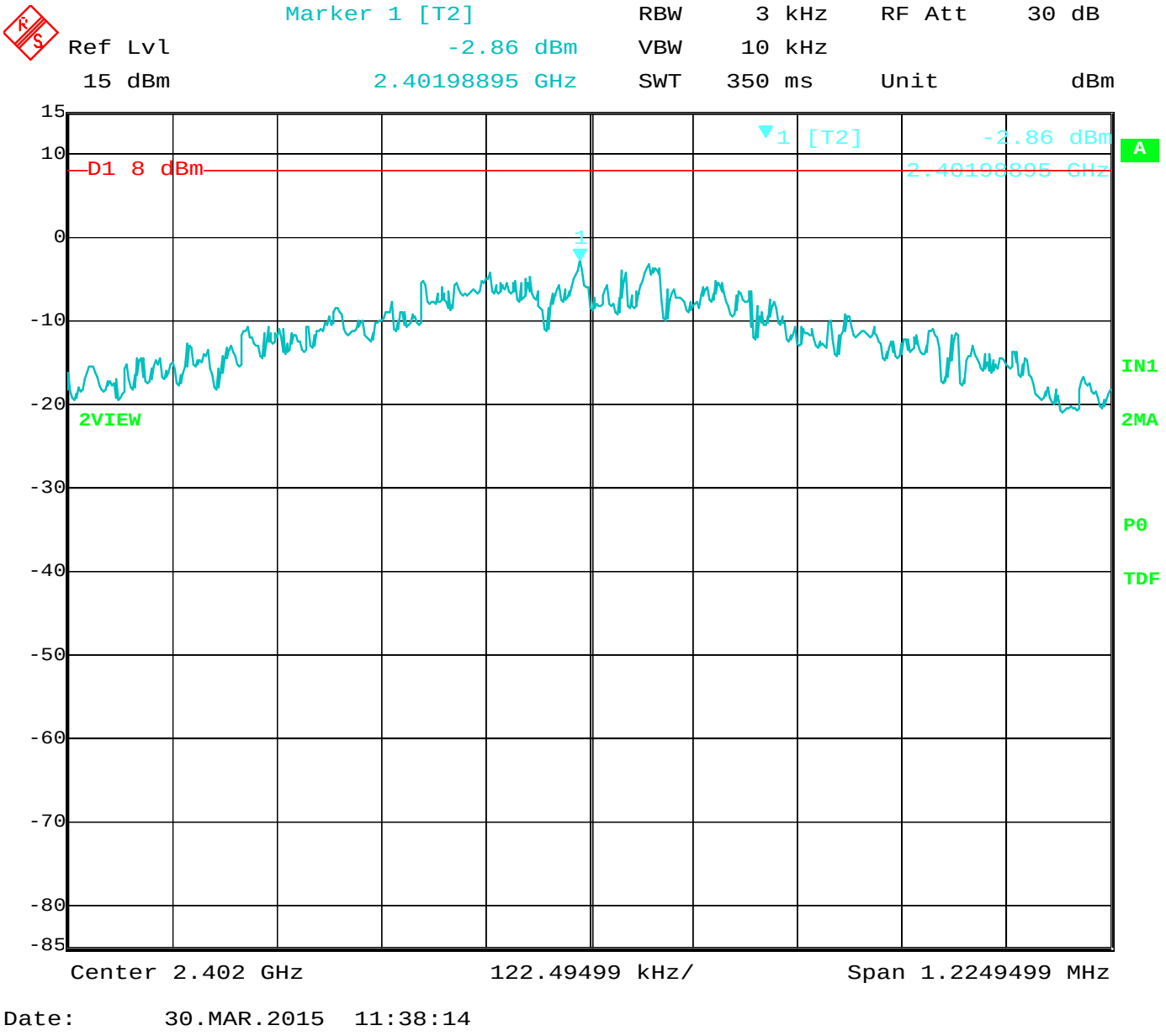
-6 dB Bandwidth – Middle Channel – UFL Antenna



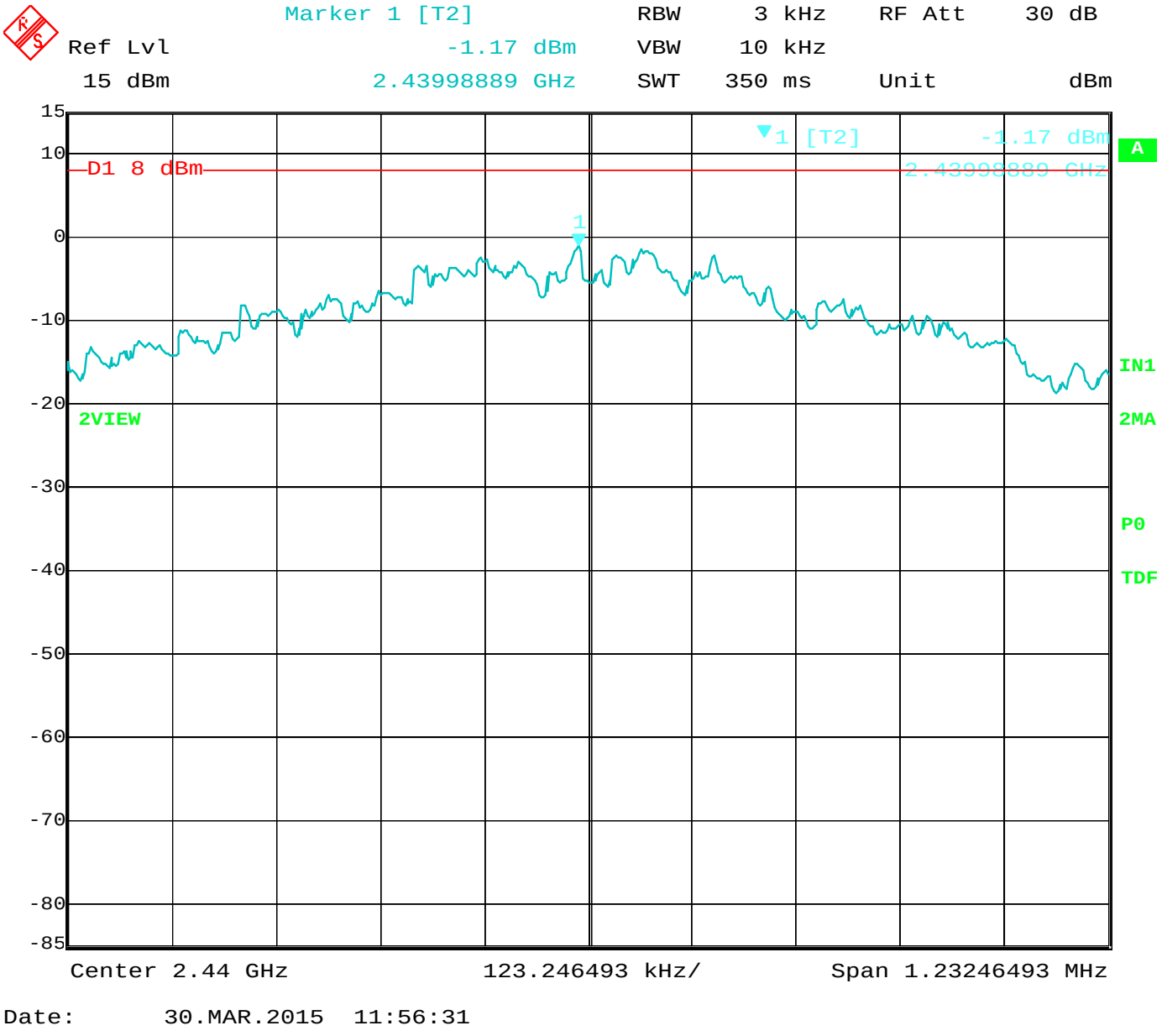
-6 dB Bandwidth – High Channel – UFL Antenna

SPECTRAL DENSITY OUTPUT

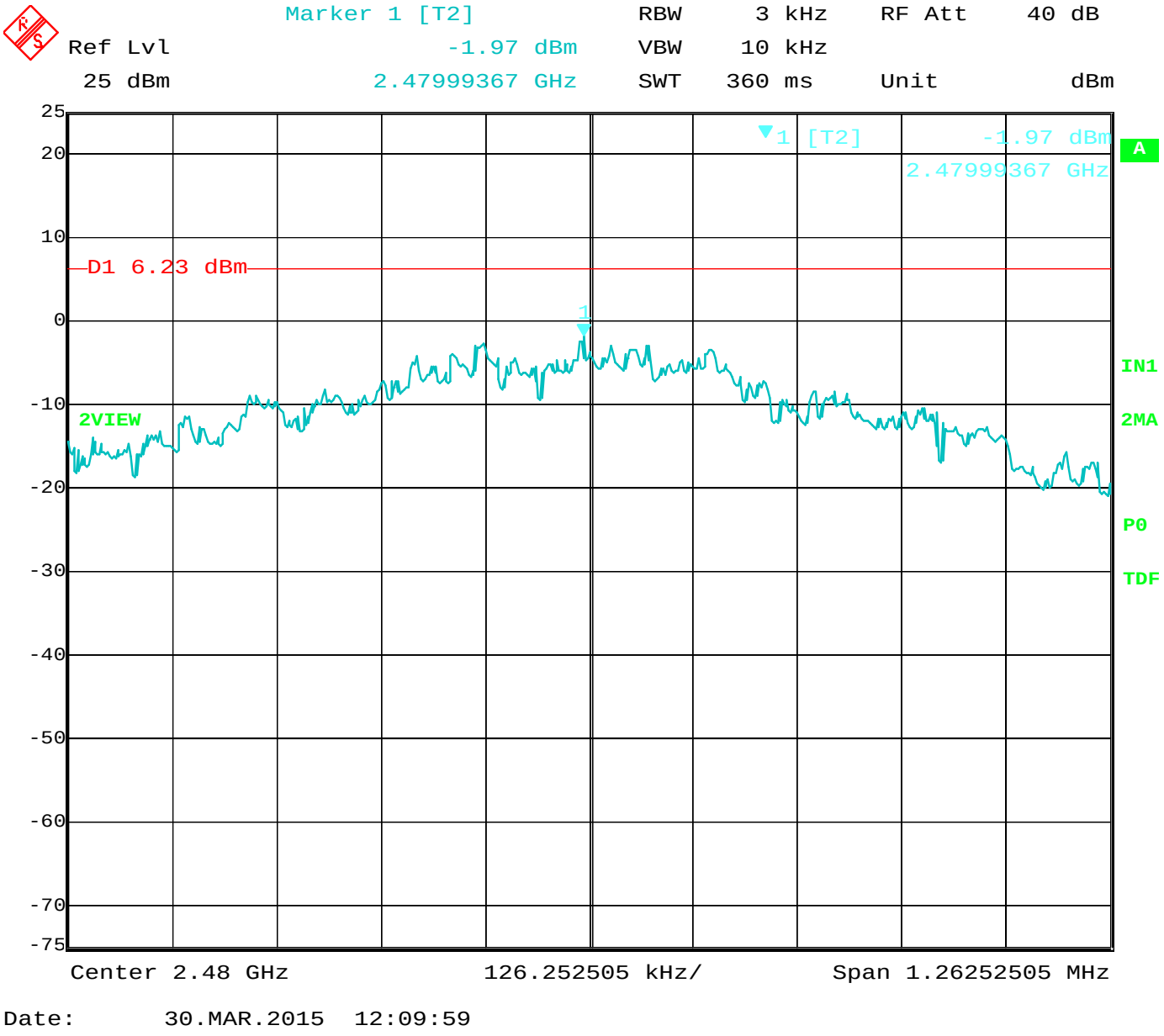
DATA SHEETS



Spectral Density Output – Low Channel – UFL Antenna



Spectral Density Output – Middle Channel – UFL Antenna



Spectral Density Output – High Channel – UFL Antenna

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232
Configuration: Chip Antenna

Date: 03/25/2015
Lab: B
Tested By: Kyle Fujimoto

Spectral Density Test
Limit = +8 dBm

Freq. (MHz)	Level (dBuV)	Level (V/m)	Antenna Gain (dBi)	Numeric Gain	Power Output (Watts)	Power Output (mW)	Power Output (dBm)	Comments
2402	77.85	0.00781	0.6	1.148154	1.5927E-05	0.01593	-17.979	Vert. X-Axis
2440	86.19	0.02039	0.6	1.148154	0.00010867	0.10867	-9.6388	Vert. X-Axis
2480	82.64	0.01355	0.6	1.148154	4.7987E-05	0.04799	-13.189	Vert. X-Axis
2402	87.56	0.02388	0.6	1.148154	0.00014898	0.14898	-8.2688	Vert. Y-Axis
2440	88.89	0.02783	0.6	1.148154	0.00020236	0.20236	-6.9388	Vert. Y-Axis
2480	84.33	0.01646	0.6	1.148154	7.0814E-05	0.07081	-11.499	Vert. Y-Axis
2402	91.23	0.03643	0.6	1.148154	0.00034683	0.34683	-4.5988	Vert. Z-Axis
2440	94.41	0.05254	0.6	1.148154	0.00072131	0.72131	-1.4188	Vert. Z-Axis
2480	97.24	0.07278	0.6	1.148154	0.00138395	1.38395	1.41121	Vert. Z-Axis
2402	89.25	0.02901	0.6	1.148154	0.00021985	0.21985	-6.5788	Horiz. X-Axis
2440	91.48	0.0375	0.6	1.148154	0.00036738	0.36738	-4.3488	Horiz. X-Axis
2480	85.64	0.01914	0.6	1.148154	9.5746E-05	0.09575	-10.189	Horiz. X-Axis
2402	89.97	0.03151	0.6	1.148154	0.00025949	0.25949	-5.8588	Horiz. Y-Axis
2440	91.06	0.03573	0.6	1.148154	0.00033352	0.33352	-4.7688	Horiz. Y-Axis
2480	88.14	0.02553	0.6	1.148154	0.00017026	0.17026	-7.6888	Horiz. Y-Axis
2402	86.61	0.0214	0.6	1.148154	0.00011971	0.11971	-9.2188	Horiz. Z-Axis
2440	86.02	0.02	0.6	1.148154	0.0001045	0.1045	-9.8088	Horiz. Z-Axis
2480	86.36	0.0208	0.6	1.148154	0.00011301	0.11301	-9.4688	Horiz. Z-Axis

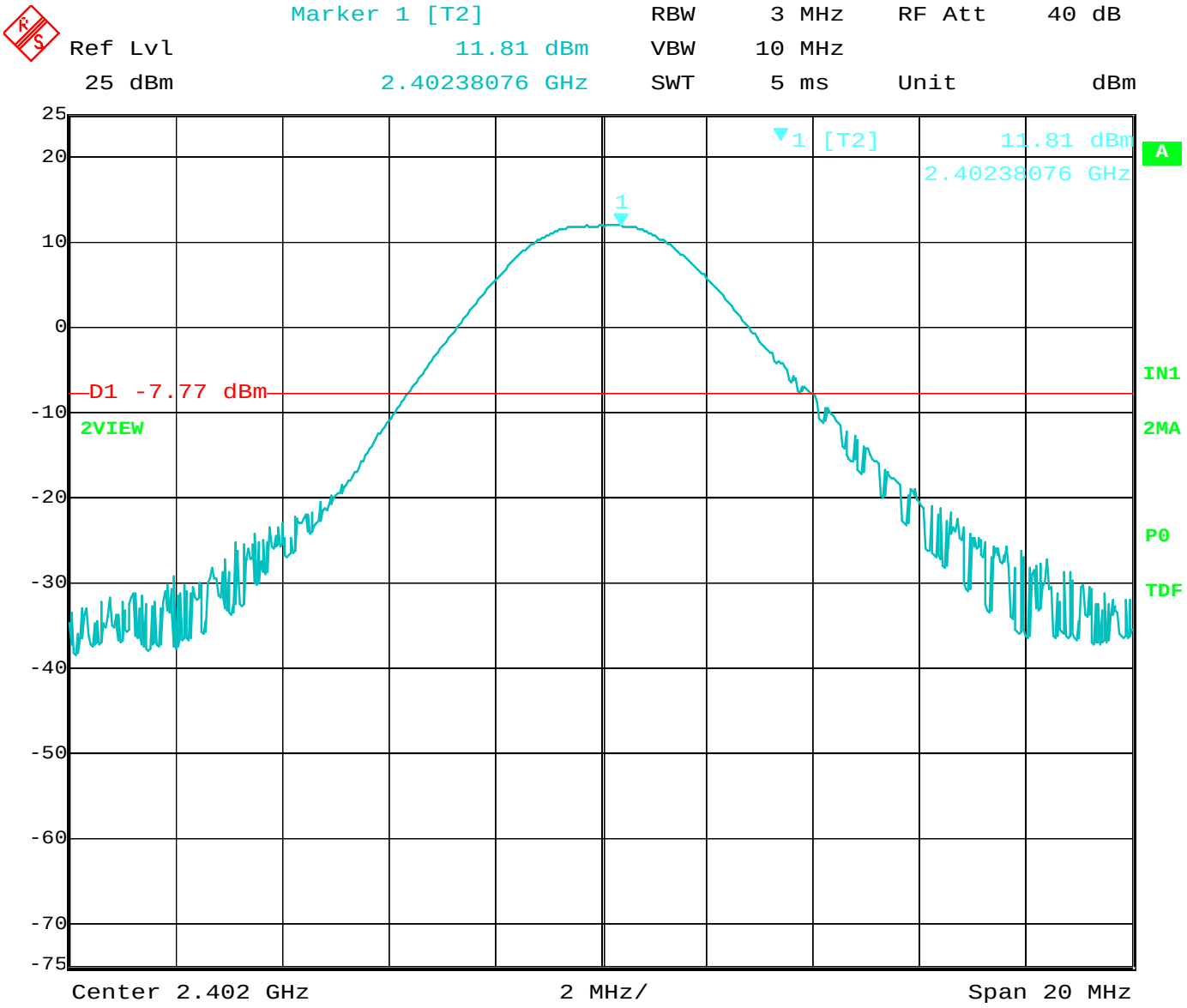
Level in dBuV obtained by maximizing fundamental emission then setting the EMI Receiver to RBW = 3 kHz, VBW = 10 kHz, Span = 300 kHz, Sweep Time = 100 Seconds

The Power in Watts is obtained by the following Formula Below:

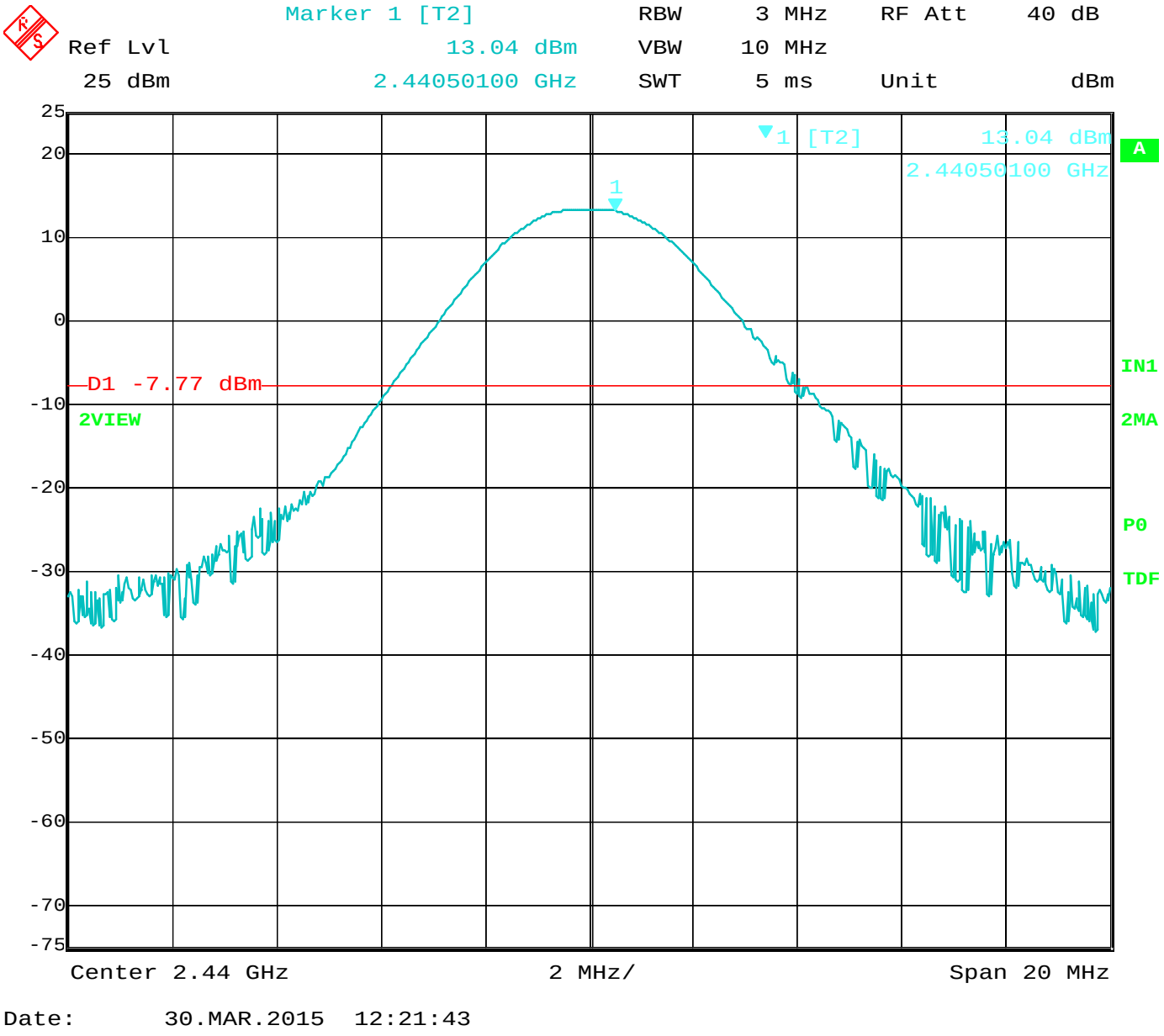
P=[(E*D)^2]/(30*G)
P = Power in Watts
E = The Measured Maximum Field Strength in V/m
G = The Numberic Gain of the Transmitting Antenna over an Isotropic Radiator

PEAK POWER

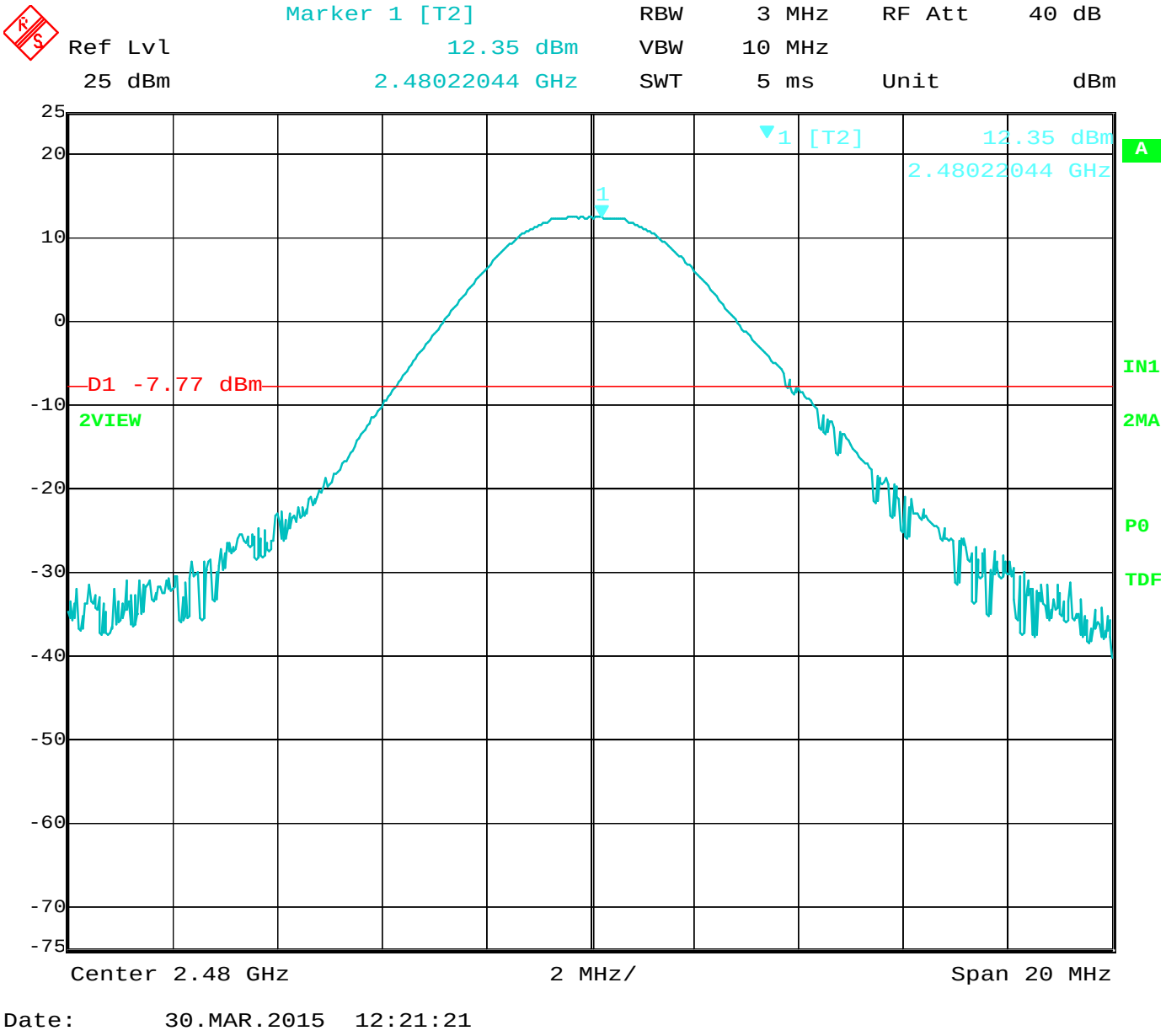
DATA SHEETS



Peak Power Output – Low Channel – UFL Antenna



Peak Power Output – Middle Channel – UFL Antenna



Peak Power Output – High Channel – UFL Antenna

FCC 15.247
Delphin Products LLC
High Range BLE/ANT Module
Model: SRU232
Configuration: Chip Antenna

Date: 03/25/2015
Lab: B
Tested By: Kyle Fujimoto

Peak Output Power

Freq. (MHz)	Level (dBuV)	Level (V/m)	Antenna Gain (dBi)	Numeric Gain	Power Output (Watts)	Power Output (mW)	Power Output (dBm)	Comments
2402	92.11	0.0403181	0.6	1.14815	0.0004247	0.42474	-3.72	Vert. X-Axis
2440	100.35	0.1041118	0.6	1.14815	0.0028322	2.83218	4.52	Vert. X-Axis
2480	98.01	0.0795243	0.6	1.14815	0.0016524	1.65242	2.18	Vert. X-Axis
2402	101.91	0.1245948	0.6	1.14815	0.0040562	4.05622	6.08	Vert. Y-Axis
2440	102.93	0.14012	0.6	1.14815	0.00513	5.13005	7.10	Vert. Y-Axis
2480	99.34	0.092683	0.6	1.14815	0.0022445	2.24451	3.51	Vert. Y-Axis
2402	105.69	0.1925307	0.6	1.14815	0.0096855	9.68548	9.86	Vert. Z-Axis
2440	108.37	0.2621199	0.6	1.14815	0.0179523	17.9523	12.54	Vert. Z-Axis
2480	105.92	0.197697	0.6	1.14815	0.0102122	10.2122	10.09	Vert. Z-Axis
2402	104.29	0.1638702	0.6	1.14815	0.0070165	7.01651	8.46	Horiz. X-Axis
2440	108.28	0.2594179	0.6	1.14815	0.0175841	17.5841	12.45	Horiz. X-Axis
2480	103.59	0.151182	0.6	1.14815	0.005972	5.97202	7.76	Horiz. X-Axis
2402	104.46	0.1671091	0.6	1.14815	0.0072966	7.29661	8.63	Horiz. Y-Axis
2440	107.34	0.2328091	0.6	1.14815	0.0141619	14.1619	11.51	Horiz. Y-Axis
2480	102.11	0.127497	0.6	1.14815	0.0042474	4.24738	6.28	Horiz. Y-Axis
2402	101.91	0.1245948	0.6	1.14815	0.0040562	4.05622	6.08	Horiz. Z-Axis
2440	101.69	0.1214787	0.6	1.14815	0.0038559	3.85586	5.86	Horiz. Z-Axis
2480	99.71	0.0967164	0.6	1.14815	0.0024441	2.44411	3.88	Horiz. Z-Axis

The Power in Watts is obtained by the following Formula Below:

P=[(E*D)^2]/(30*G)
P = Power in Watts
E = The Measured Maximum Field Strength in V/m
G = The Numberic Gain of the Transmitting Antenna over an Isotropic Radiator

BAND EDGES

DATA SHEETS

BAND EDGES

DATA SHEETS

CHIP ANTENNA

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 12/29/2014
Lab: B
Tested By: Kyle Fujimoto

Band Edges - Chip Antenna - Power Level 4 - 2 Mbit/s Worst Case
Low Channel - See Comments for Worst Case Axis

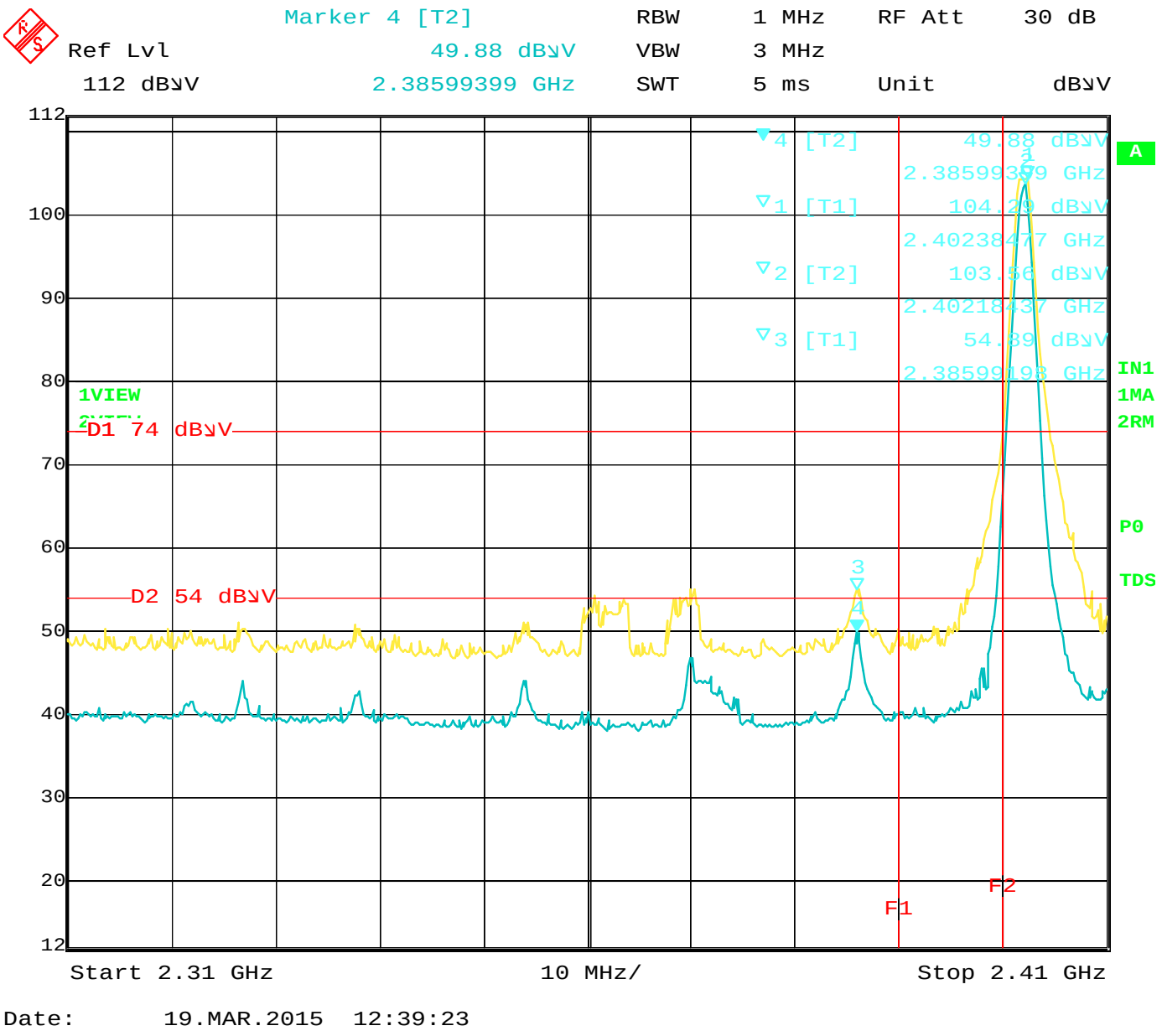
Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2402	104.29	H	--	--	Peak	1.15	180	X-Axis Horizontal Polarization
2402	103.56	H	--	--	Avg	1.15	180	@ 3 Meters - Power Setting 4
2385.992	54.89	H	74	-19.11	Peak	1.15	180	**X-Axis - Horizontal Polarization**
2385.994	49.88	H	54	-4.12	Avg	1.15	180	**@ 3 Meters - Power Setting 4**
2402	105.69	V	--	--	Peak	1.5	135	Z-Axis - Vertical Polarization
2402	105.06	V	--	--	Avg	1.5	135	@ 3 Meters - Power Setting 4
2385.952	55.33	V	74	-18.67	Peak	1.5	135	**Z-Axis - Vertical Polarization**
2385.952	50.19	V	54	-3.81	Avg	1.5	135	**@ 3 Meters - Power Setting 4**

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

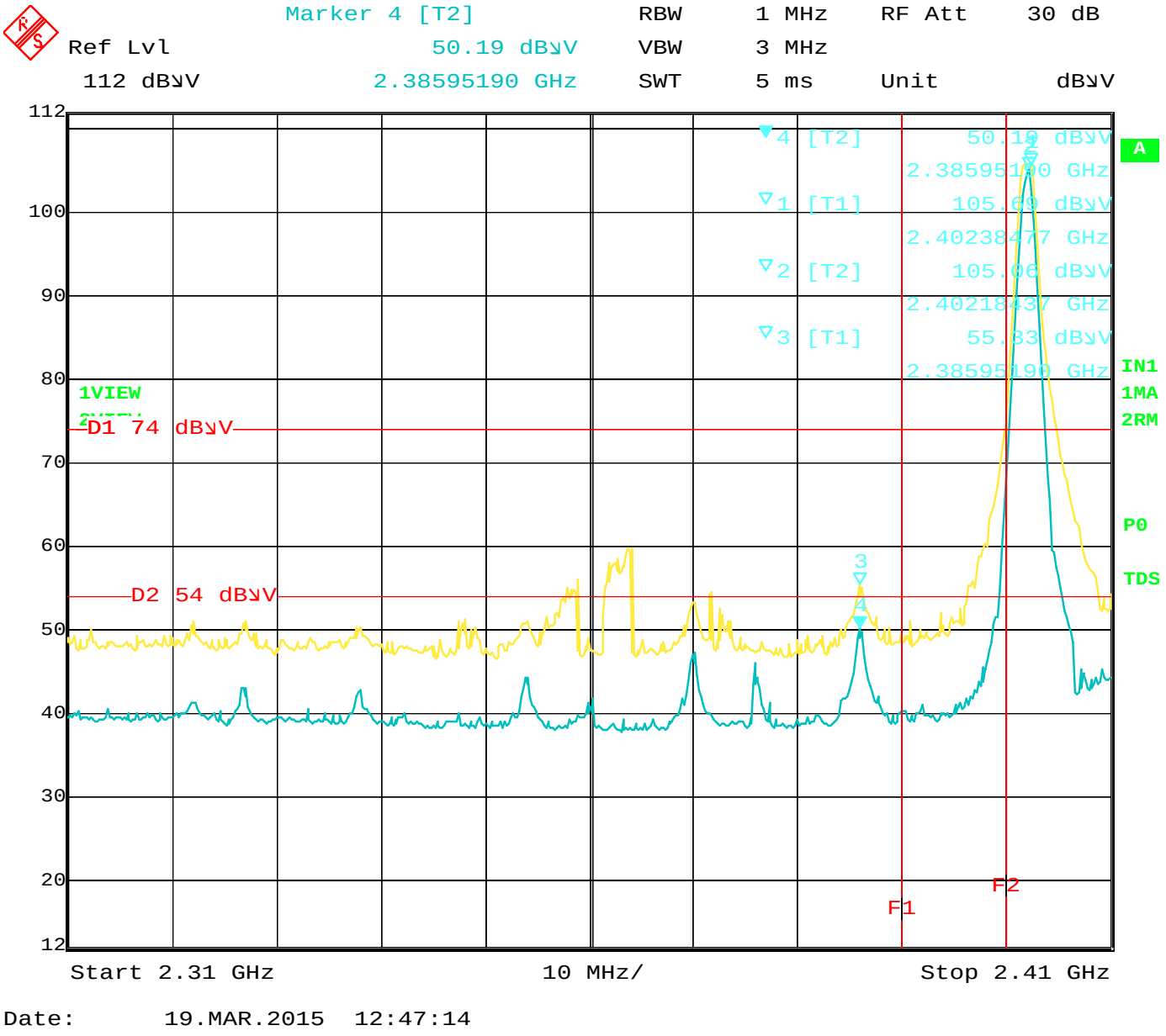
Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Band Edges - Chip Antenna - Power Level 4 - 2 Mbit/s Worst Case
High Channel - See Comments for Worst Case Axis

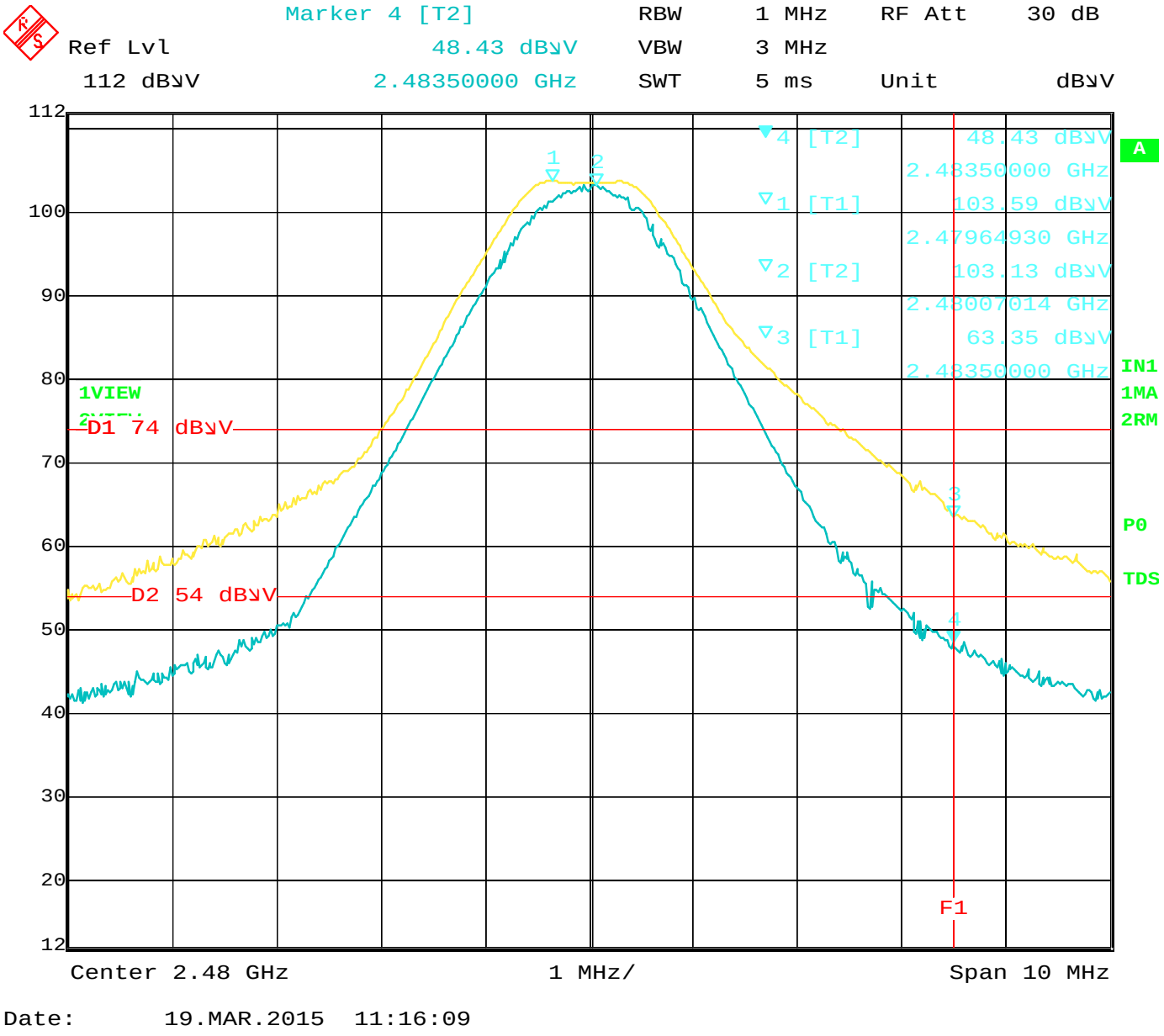
Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	103.59	H	--	--	Peak	1.25	0	X-Axis Horizontal Polarization
2480	103.13	H	--	--	Avg	1.25	0	@ 3 Meters - Power Setting 4
2483.5	63.35	H	74	-10.65	Peak	1.25	0	**X-Axis - Horizontal Polarization**
2483.5	48.43	H	54	-5.57	Avg	1.25	0	**@ 3 Meters - Power Setting 4**
2480	105.92	V	--	--	Peak	1.15	315	Z-Axis - Vertical Polarization
2480	105.48	V	--	--	Avg	1.15	315	@ 3 Meters - Power Setting 4
2483.5	67.1	V	74	-6.9	Peak	1.15	315	**Z-Axis - Vertical Polarization**
2483.5	51.07	V	54	-2.93	Avg	1.15	315	**@ 3 Meters - Power Setting 4**



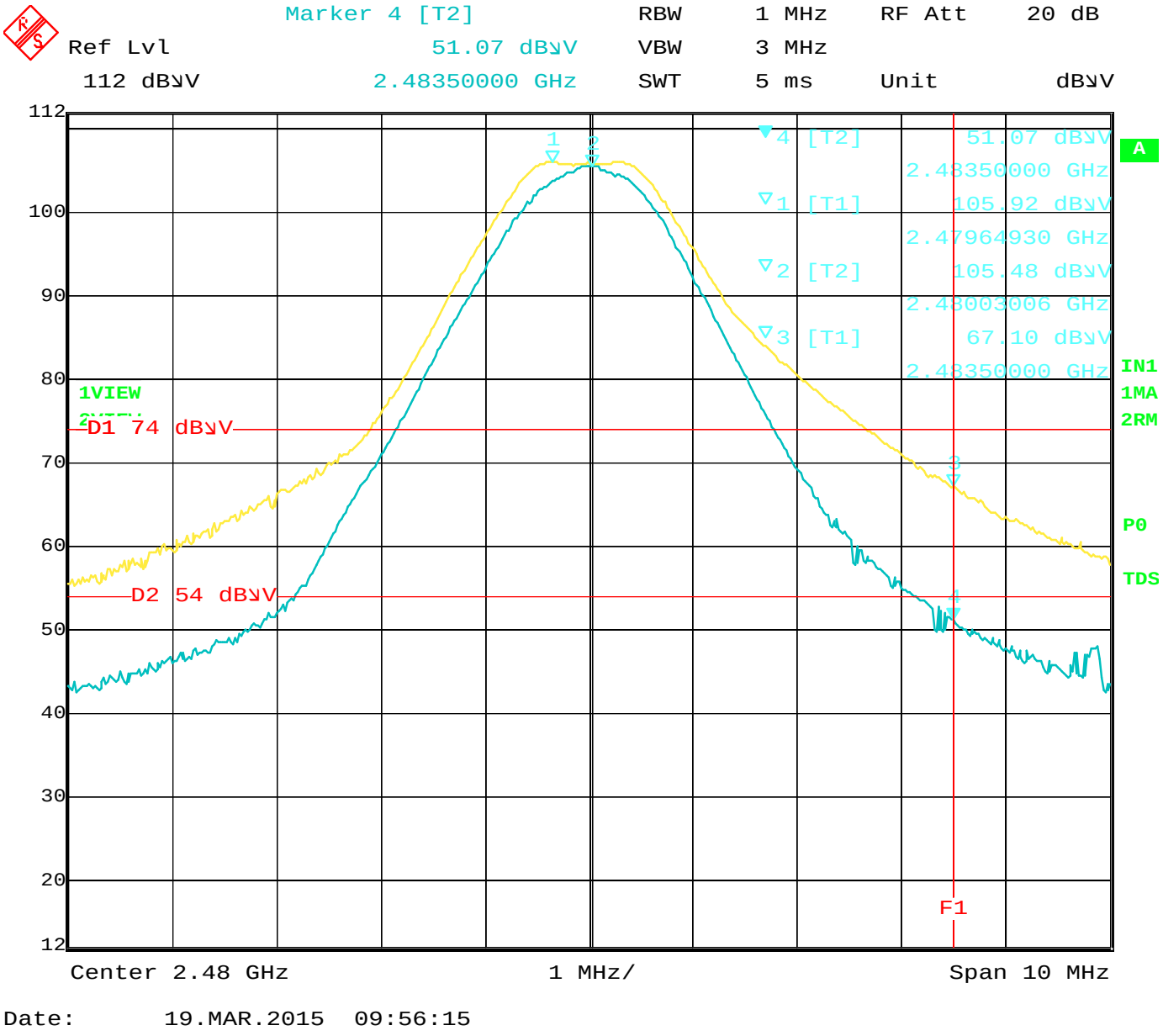
Band Edge – Low Channel – Horizontal – X-Axis – Worst Case – Chip Antenna



Band Edge – Low Channel – Vertical – Z-Axis – Worst Case – Chip Antenna



Band Edge – High Channel – Horizontal – X-Axis – Worst Case – Chip Antenna



Band Edge – High Channel – Vertical – Z-Axis – Worst Case – Chip Antenna

BAND EDGES

DATA SHEETS

UFL ANTENNA

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Band Edges - UFL Antenna - Power Level 4 - 2 Mbit/s Worst Case
Low Channel - See Comments for Worst Case Axis

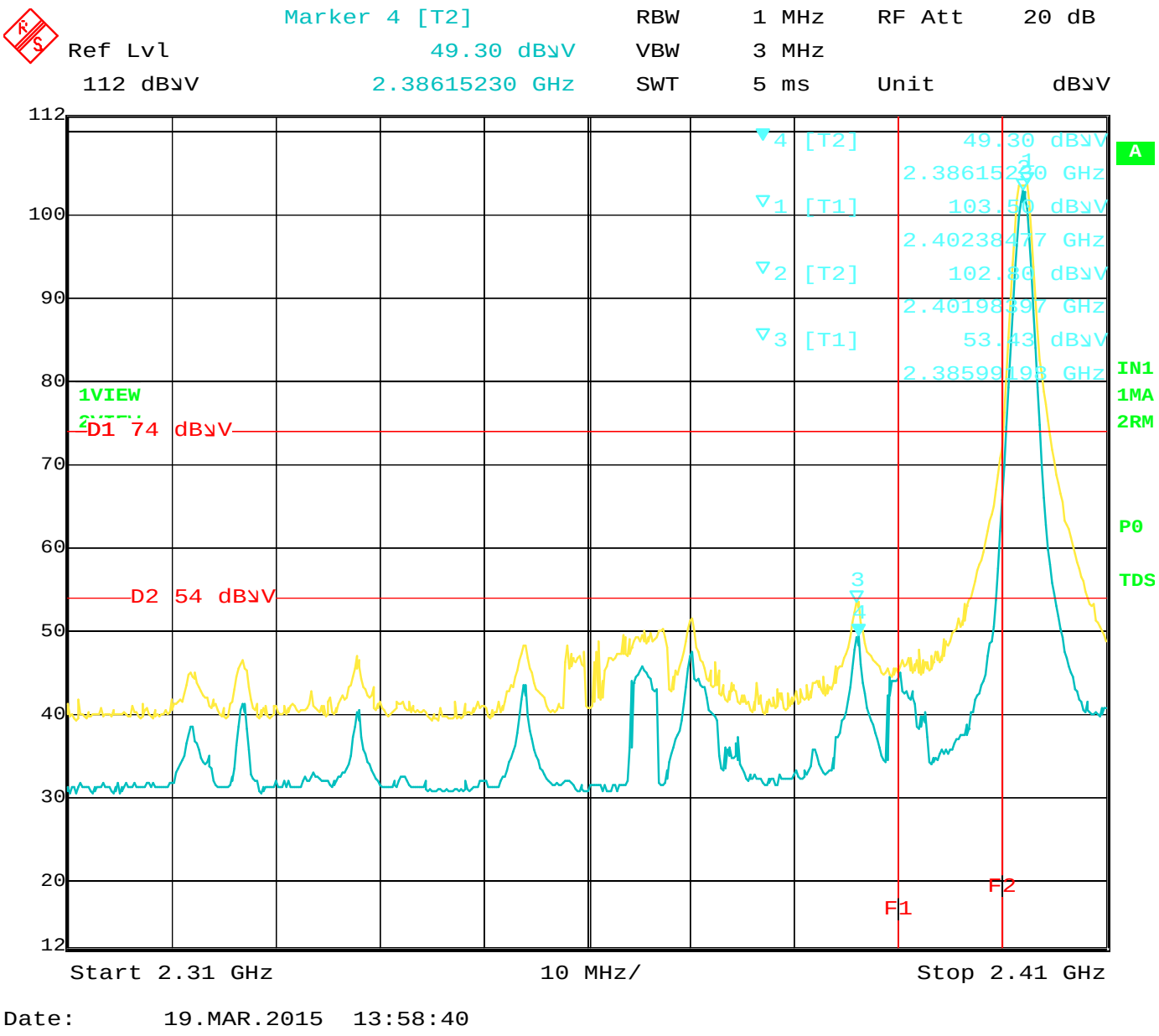
Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2402	103.50	H	--	--	Peak	1.5	135	X-Axis Horizontal Polarization
2402	102.80	H	--	--	Avg	1.5	135	@ 3 Meters - Power Setting 4
2385.992	53.43	H	74	-20.57	Peak	1.5	135	**X-Axis - Horizontal Polarization**
2386.152	49.30	H	54	-4.7	Avg	1.5	135	**@ 3 Meters - Power Setting 4**
2402	106.34	V	--	--	Peak	1.5	270	Z-Axis - Vertical Polarization
2402	105.31	V	--	--	Avg	1.5	270	@ 3 Meters - Power Setting 4
2386.192	55.81	V	74	-18.19	Peak	1.5	270	**Z-Axis - Vertical Polarization**
2386.152	50.64	V	54	-3.36	Avg	1.5	270	**@ 3 Meters - Power Setting 4**

FCC 15.247
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232

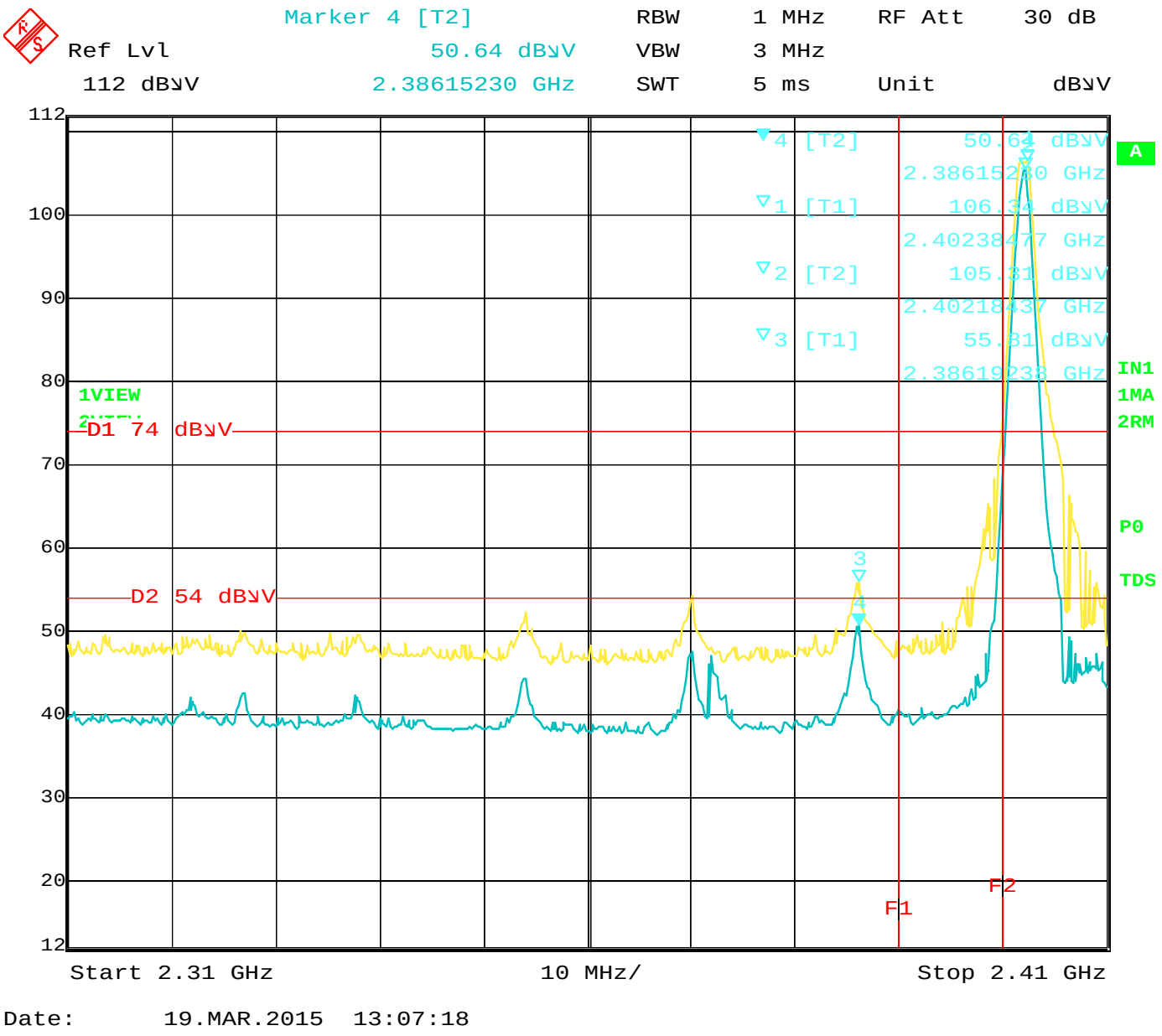
Date: 03/19/2015
Lab: B
Tested By: Kyle Fujimoto

Band Edges - UFL Antenna - Power Level 4 - 2 Mbit/s Worst Case
High Channel - See Comments for Worst Case Axis

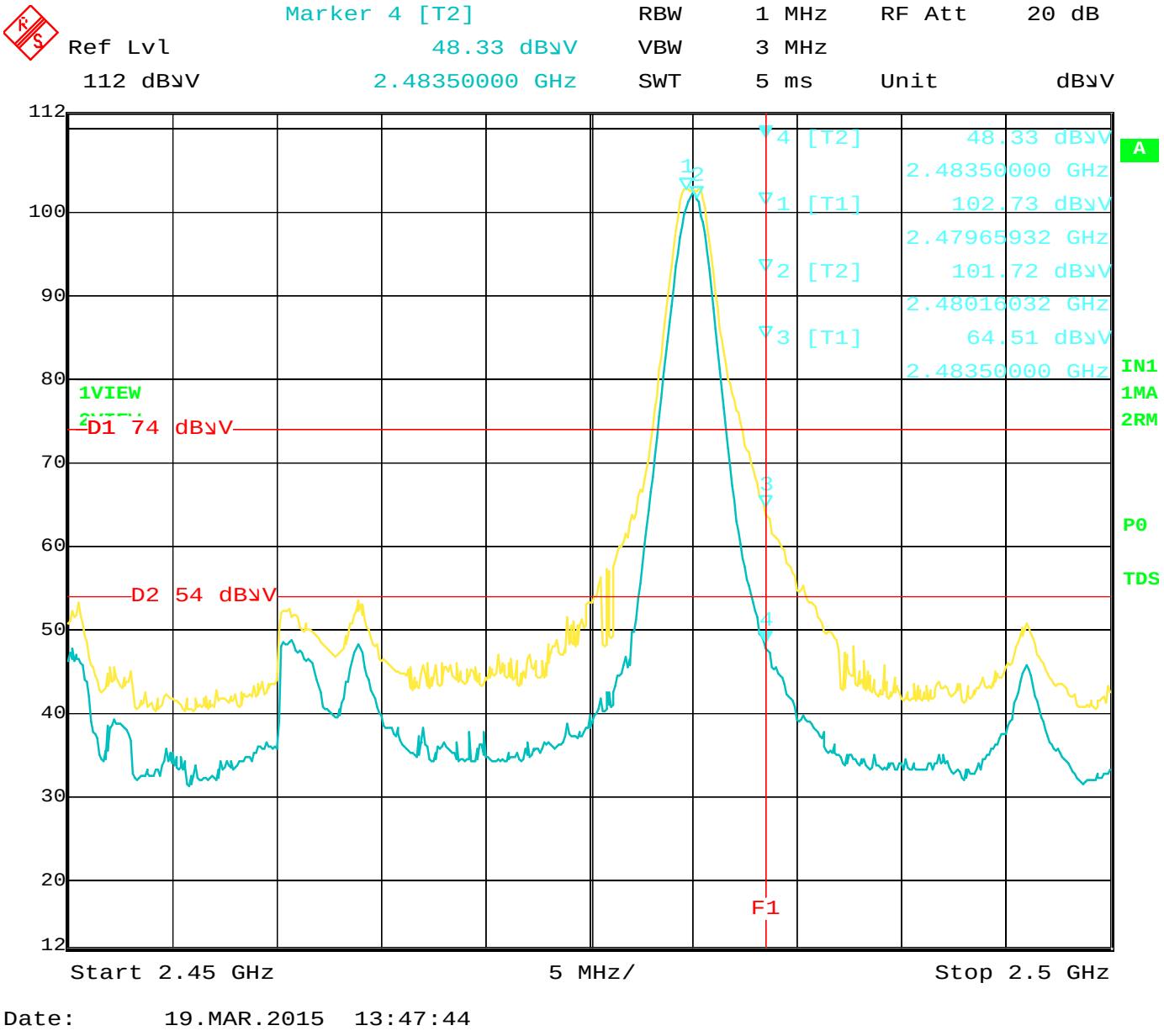
Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	102.73	H	--	--	Peak	1.25	225	X-Axis Horizontal Polarization
2480	101.72	H	--	--	Avg	1.25	225	@ 3 Meters - Power Setting 4
2483.5	64.51	H	74	-9.49	Peak	1.25	225	**X-Axis - Horizontal Polarization**
2483.5	48.33	H	54	-5.67	Avg	1.25	225	**@ 3 Meters - Power Setting 4**
2480	107.68	V	--	--	Peak	1.5	225	Z-Axis - Vertical Polarization
2480	105.95	V	--	--	Avg	1.5	225	@ 3 Meters - Power Setting 4
2483.5	69.27	V	74	-4.73	Peak	1.15	225	**Z-Axis - Vertical Polarization**
2483.5	53.61	V	54	-0.39	Avg	1.15	225	**@ 3 Meters - Power Setting 4**



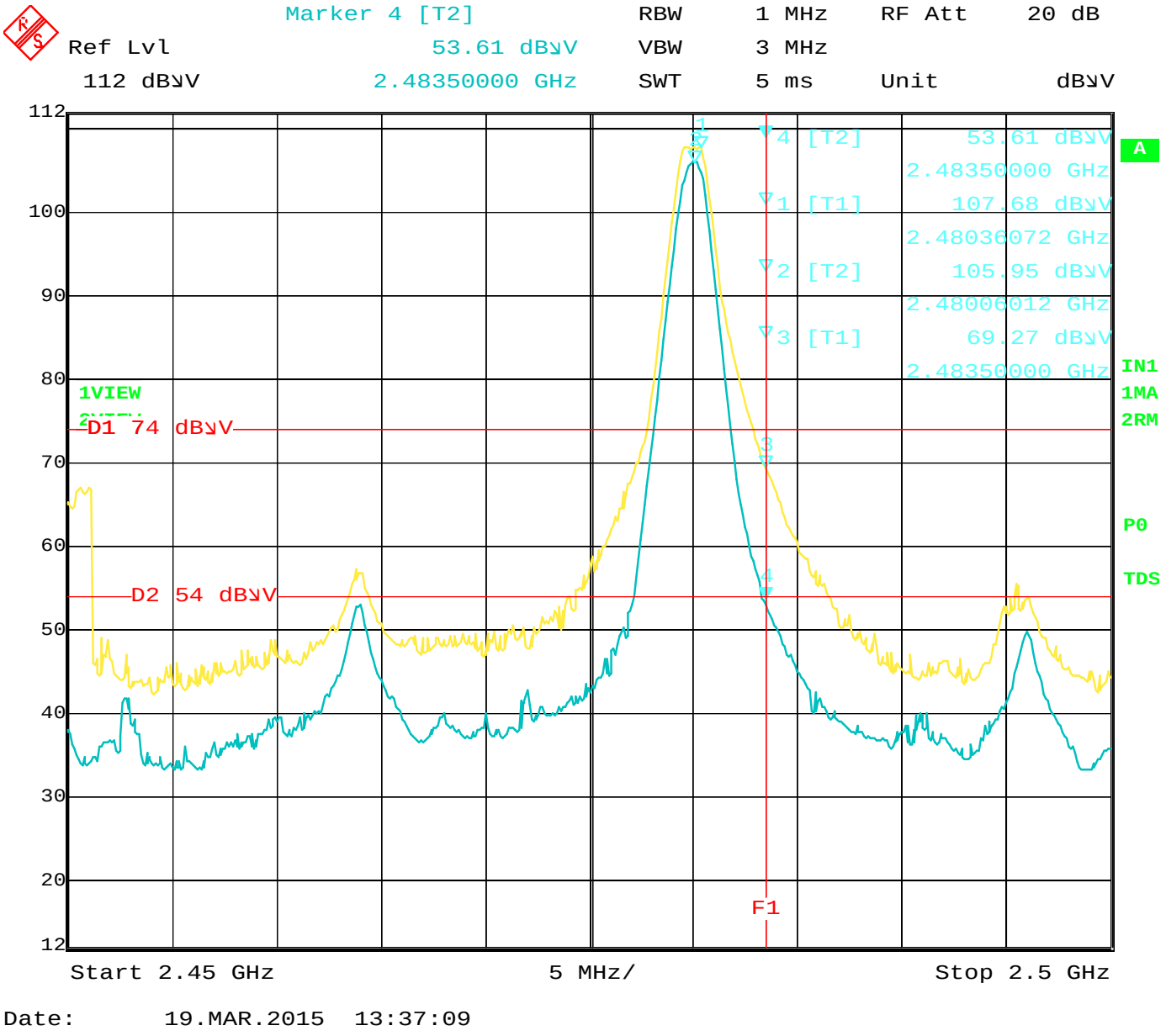
Band Edge – Low Channel – Horizontal – X-Axis – Worst Case – UFL Antenna



Band Edge – Low Channel – Vertical – Z-Axis – Worst Case – UFL Antenna



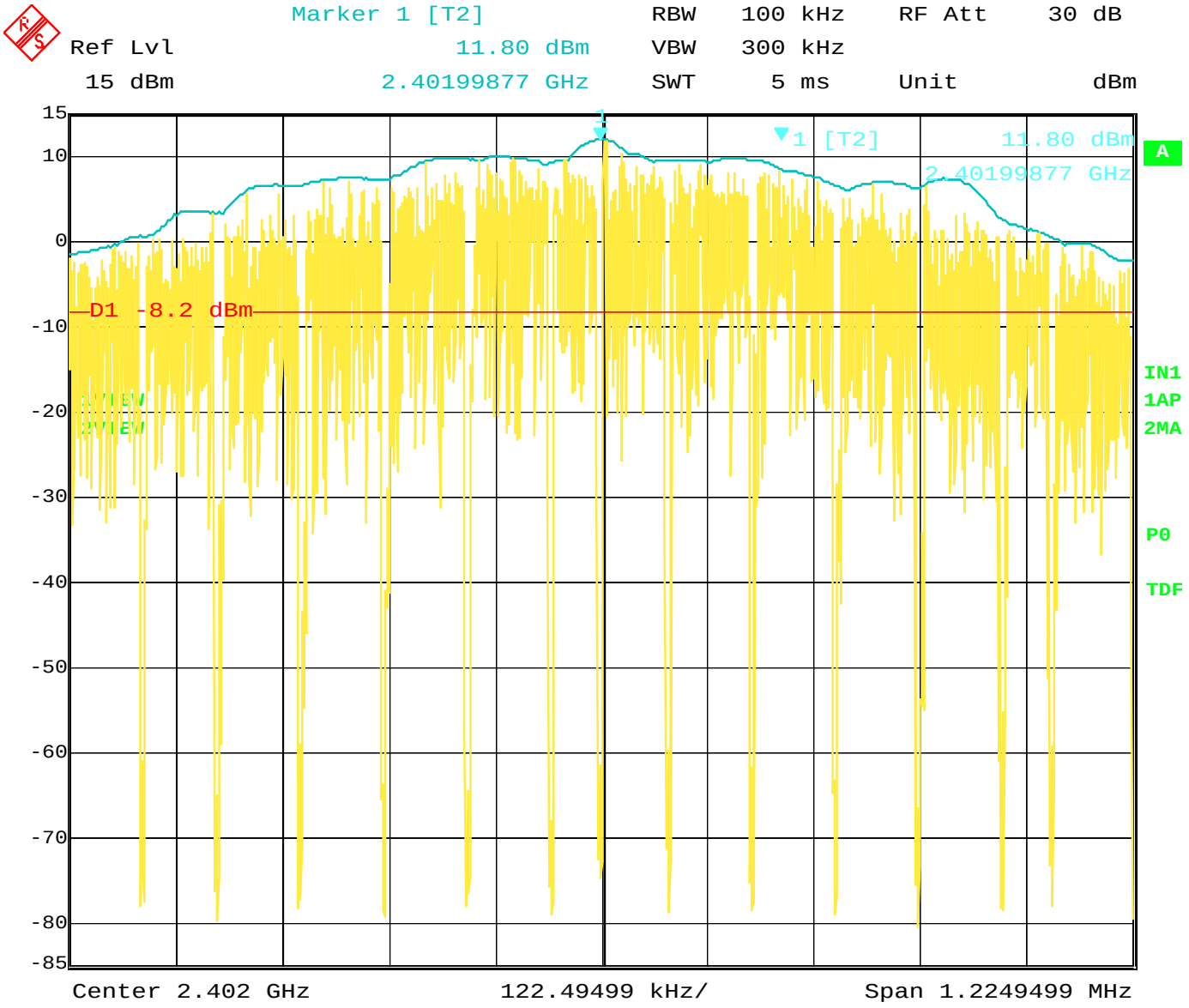
Band Edge – High Channel – Horizontal – X-Axis – Worst Case – UFL Antenna



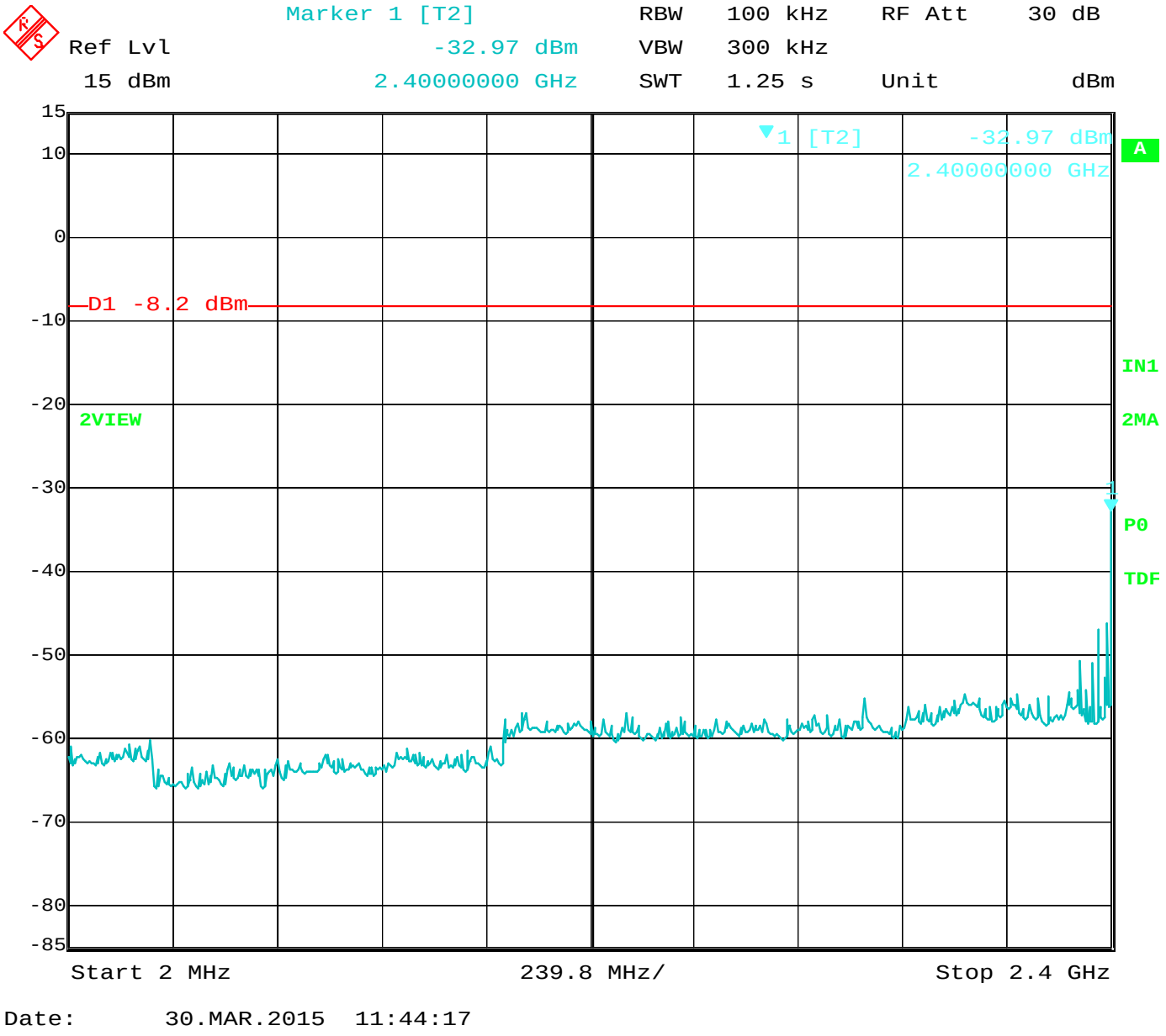
Band Edge – High Channel – Vertical – Z-Axis – Worst Case – UFL Antenna

RF ANTENNA CONDUCTED

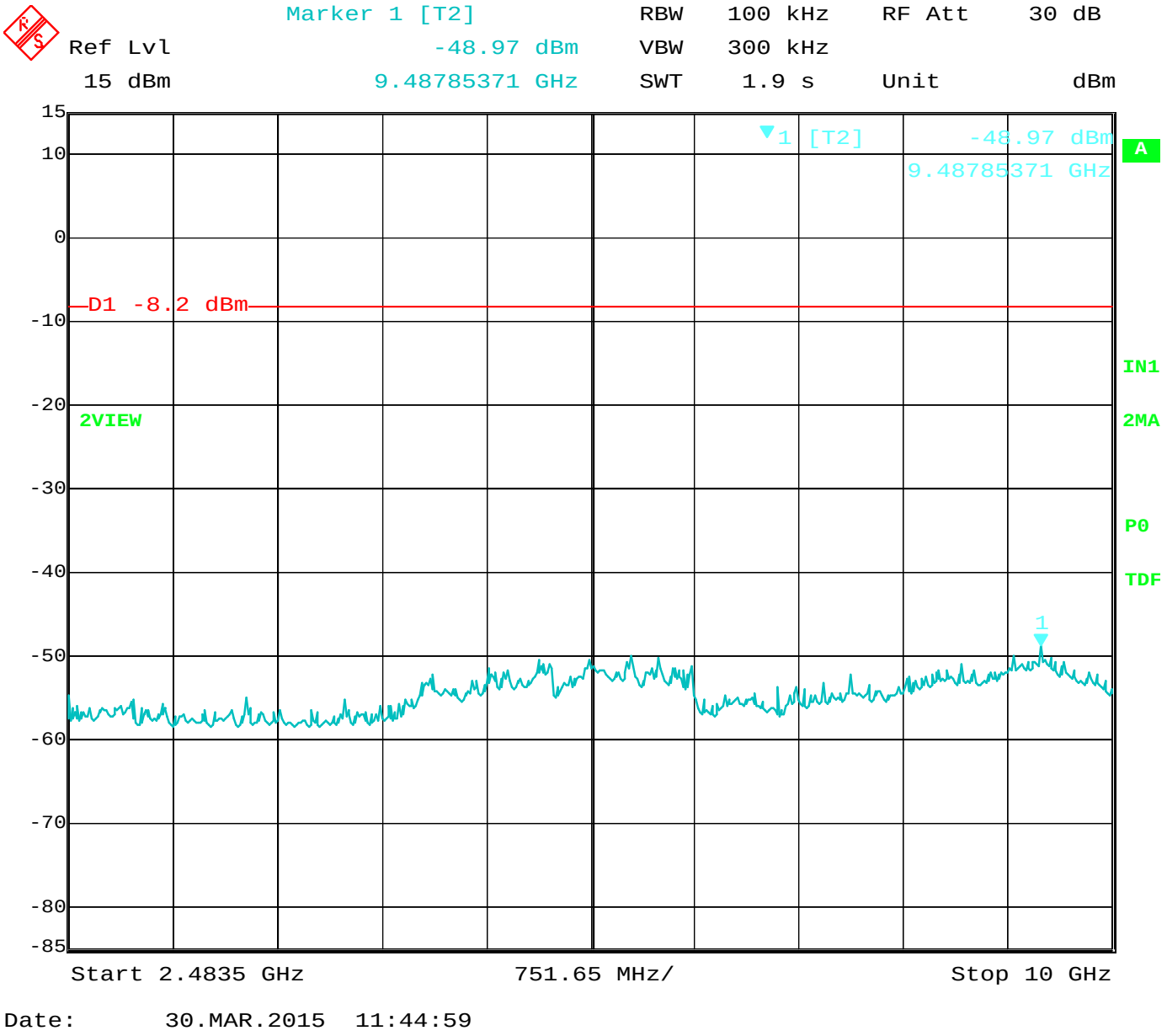
DATA SHEETS



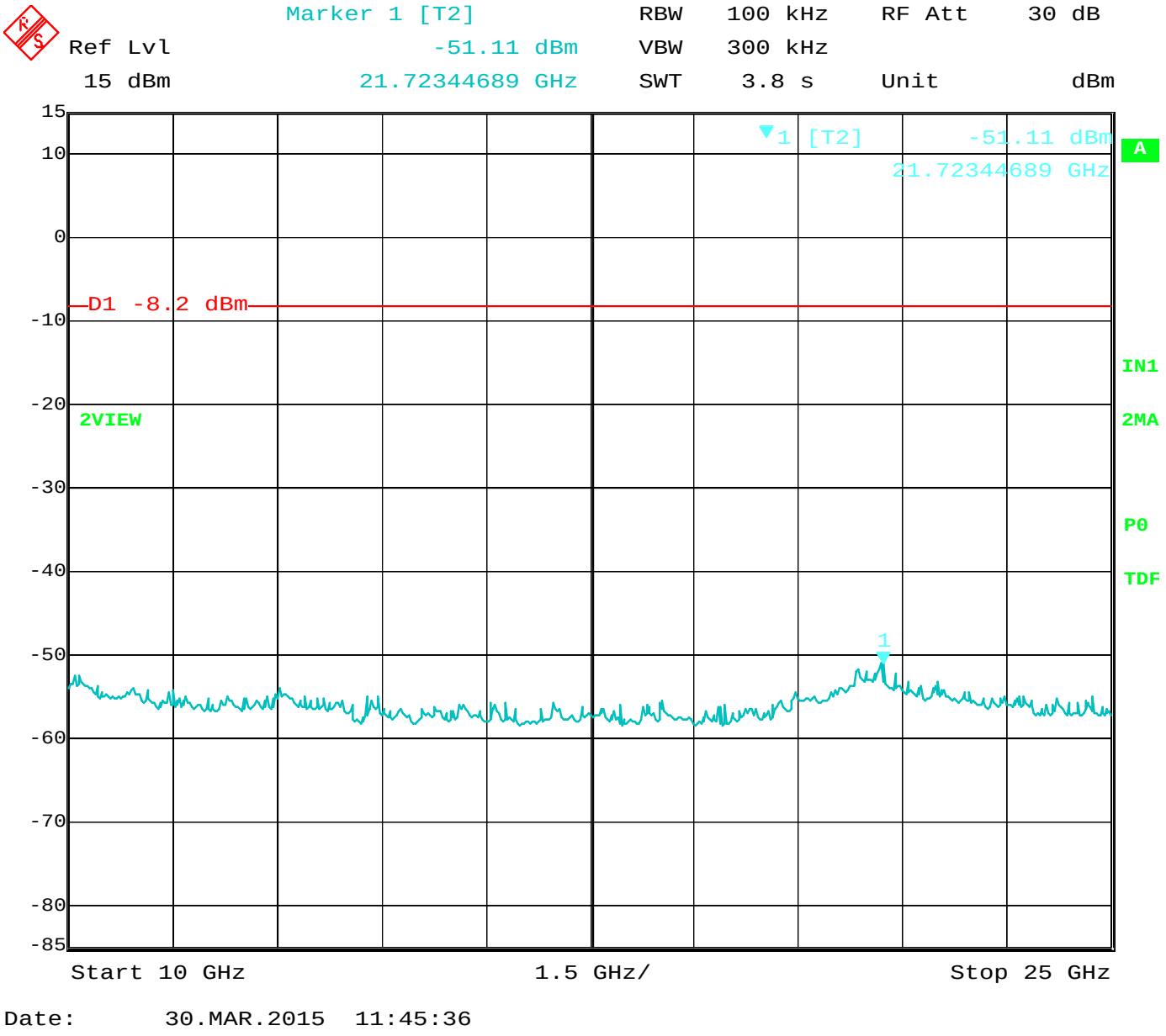
RF Antenna Conducted – Low Channel – Reference Level – UFL Antenna



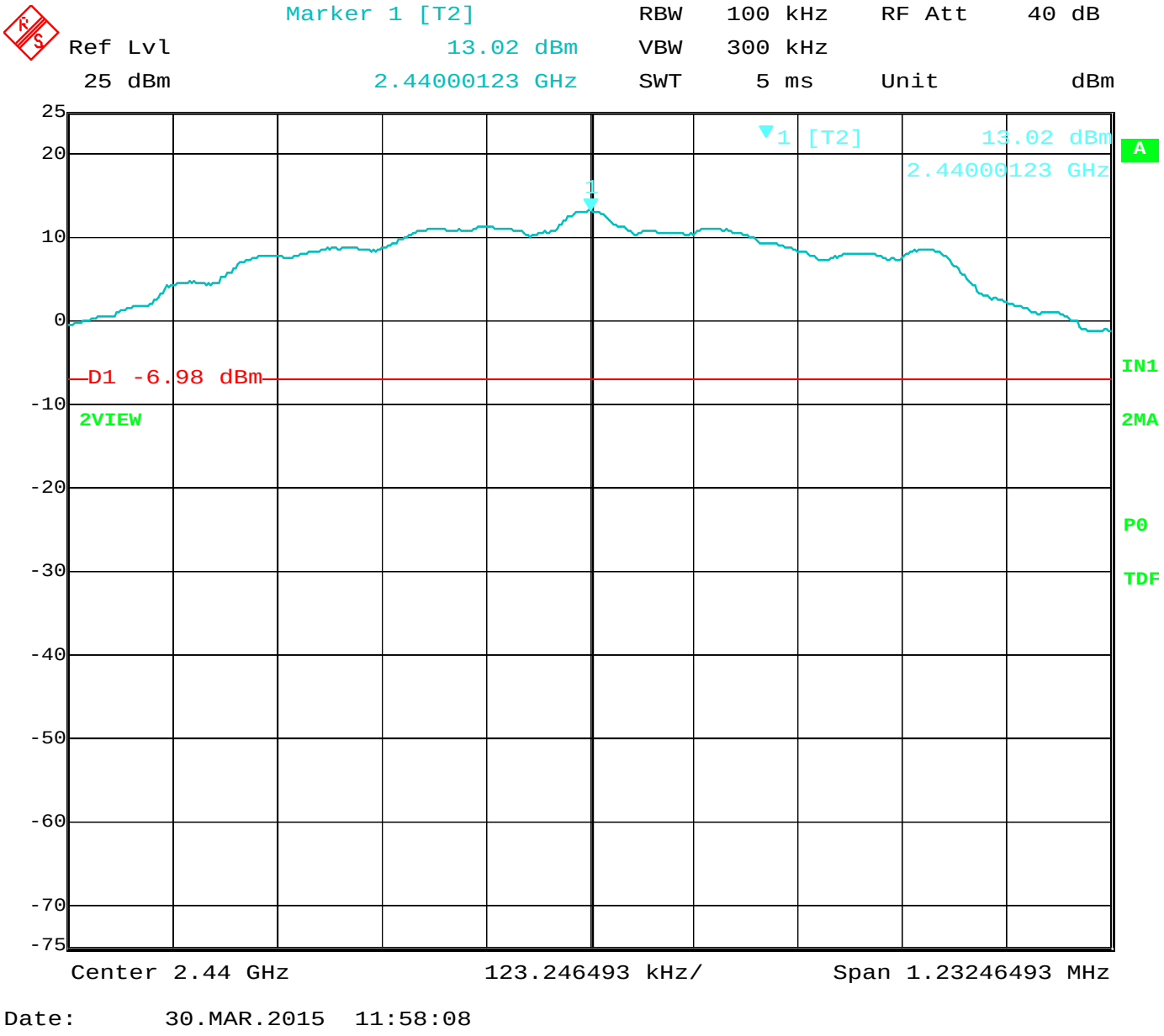
RF Antenna Conducted – Low Channel – 2 MHz to 2.4 GHz – UFL Antenna



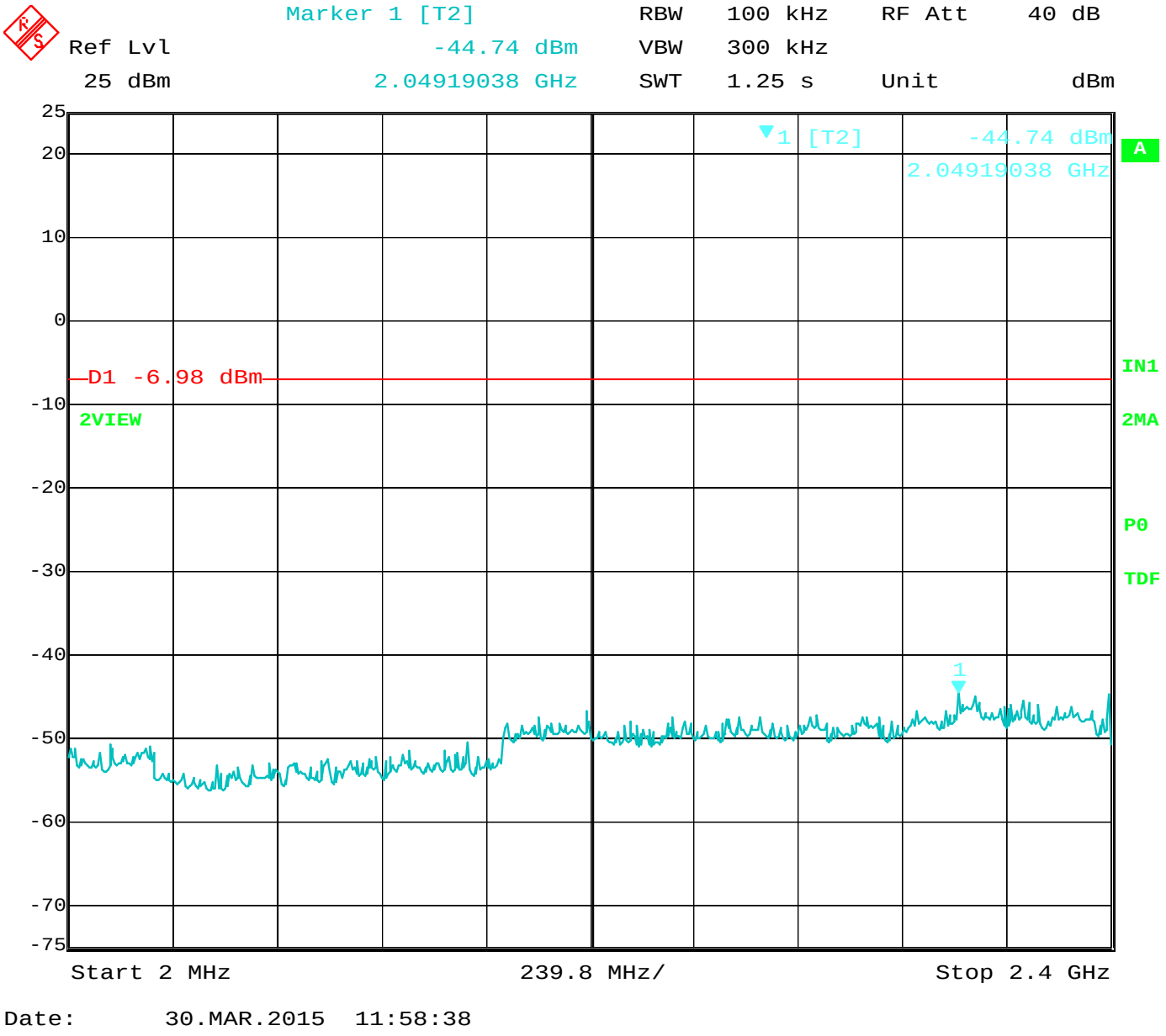
RF Antenna Conducted – Low Channel – 2.4835 GHz to 10 GHz – UFL Antenna



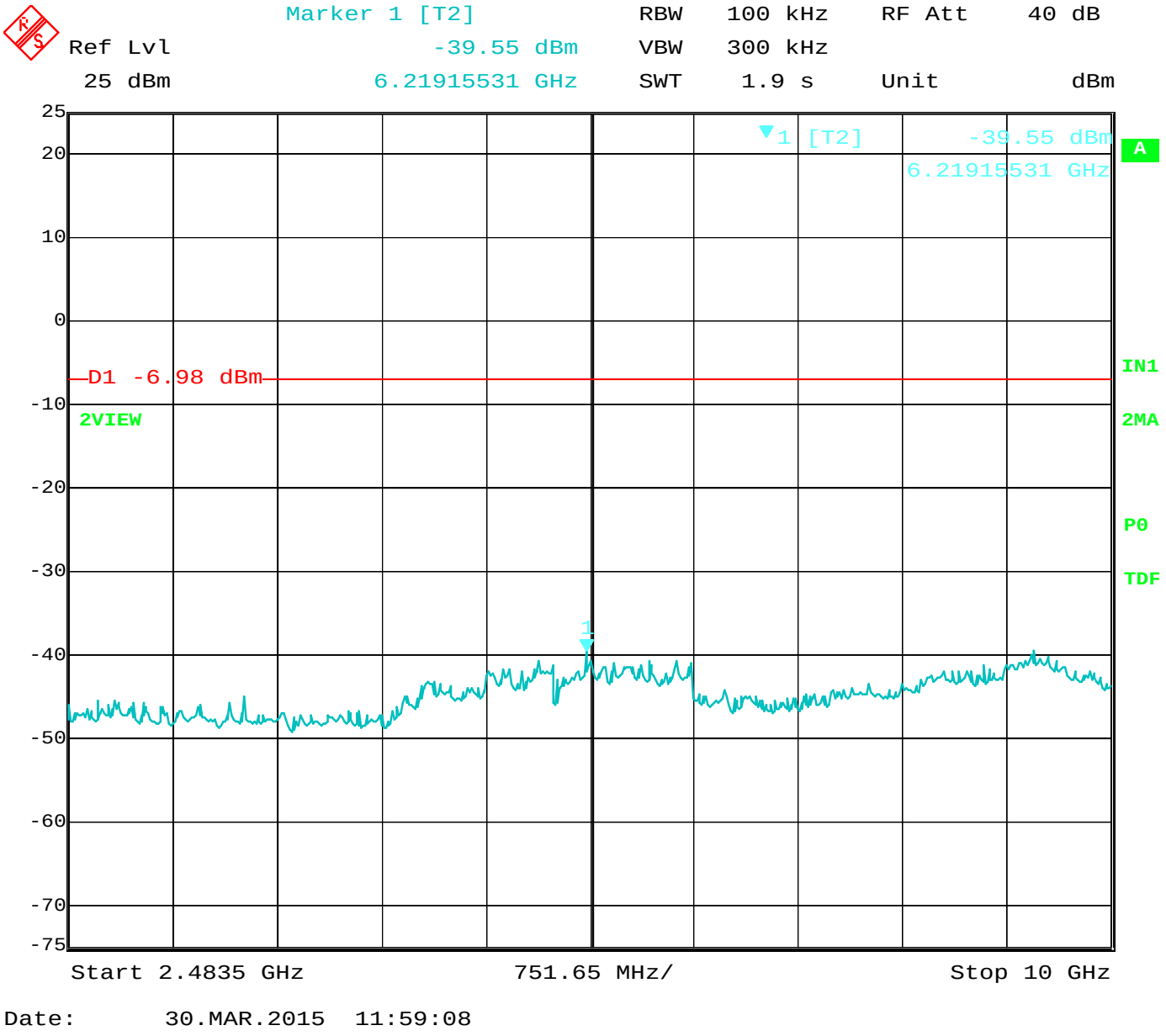
RF Antenna Conducted – Low Channel – 10 GHz to 25 GHz – UFL Antenna



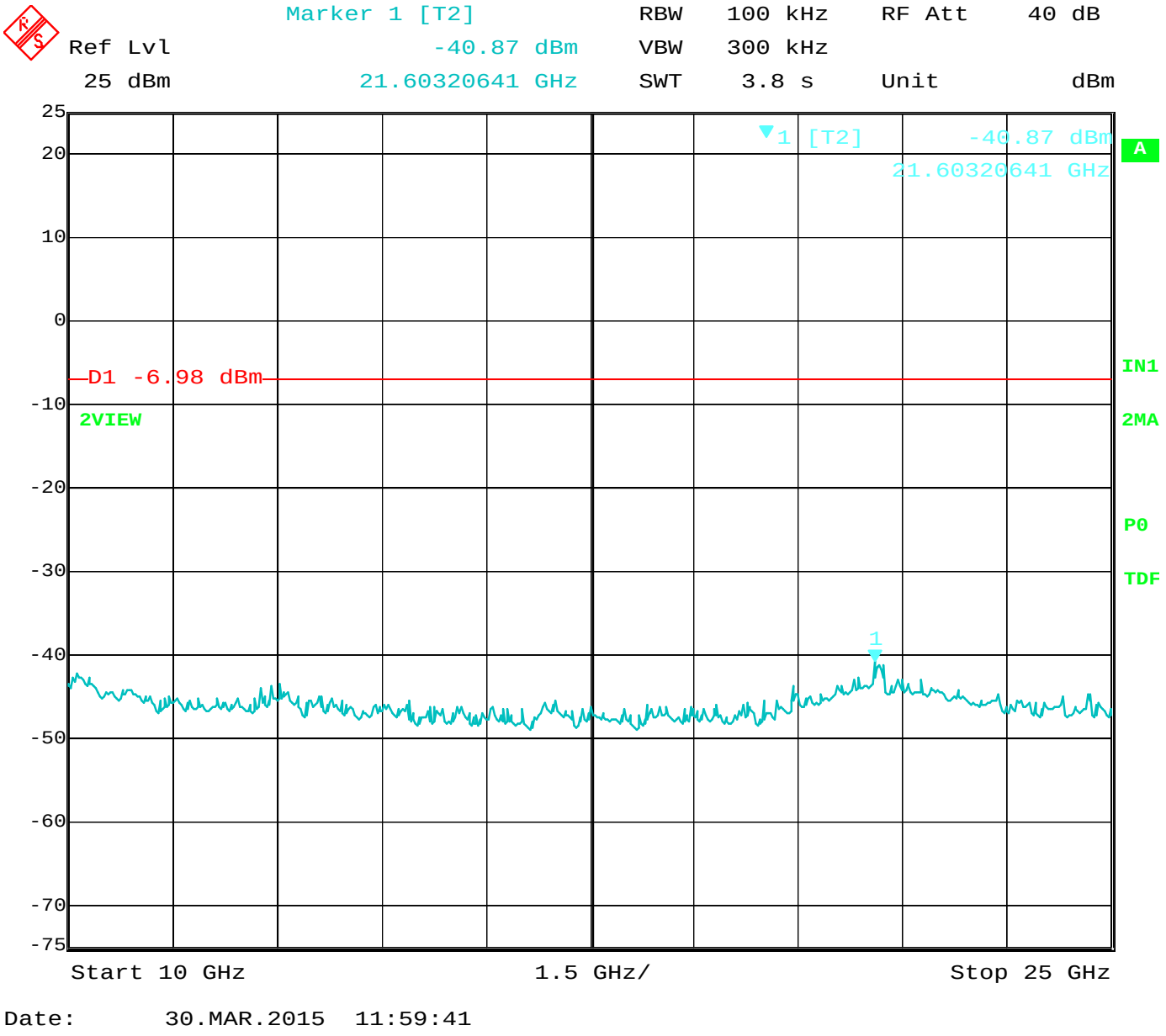
RF Antenna Conducted – Middle Channel – Reference Level – UFL Antenna



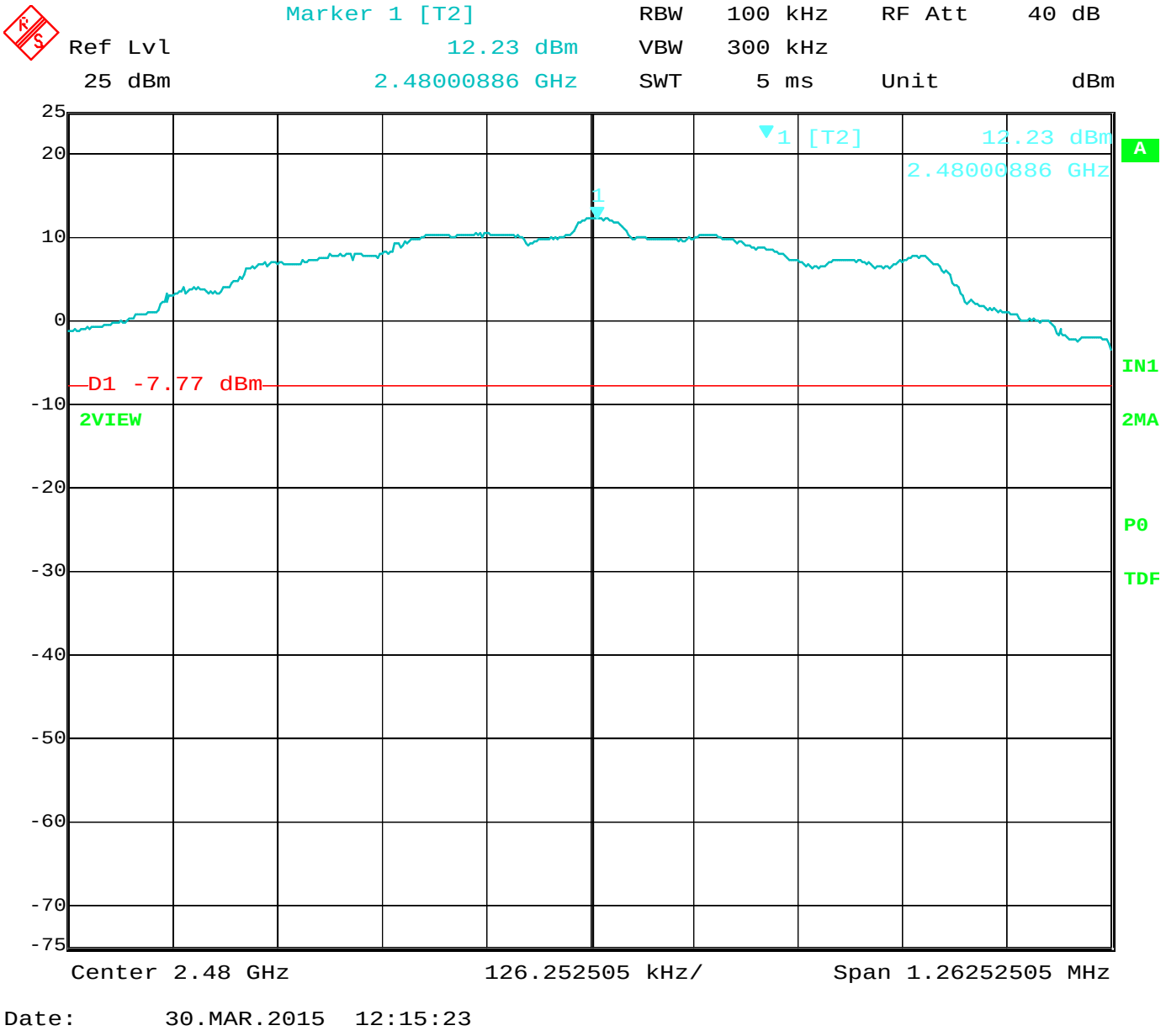
RF Antenna Conducted – Middle Channel – 2 MHz to 2.4 GHz – UFL Antenna



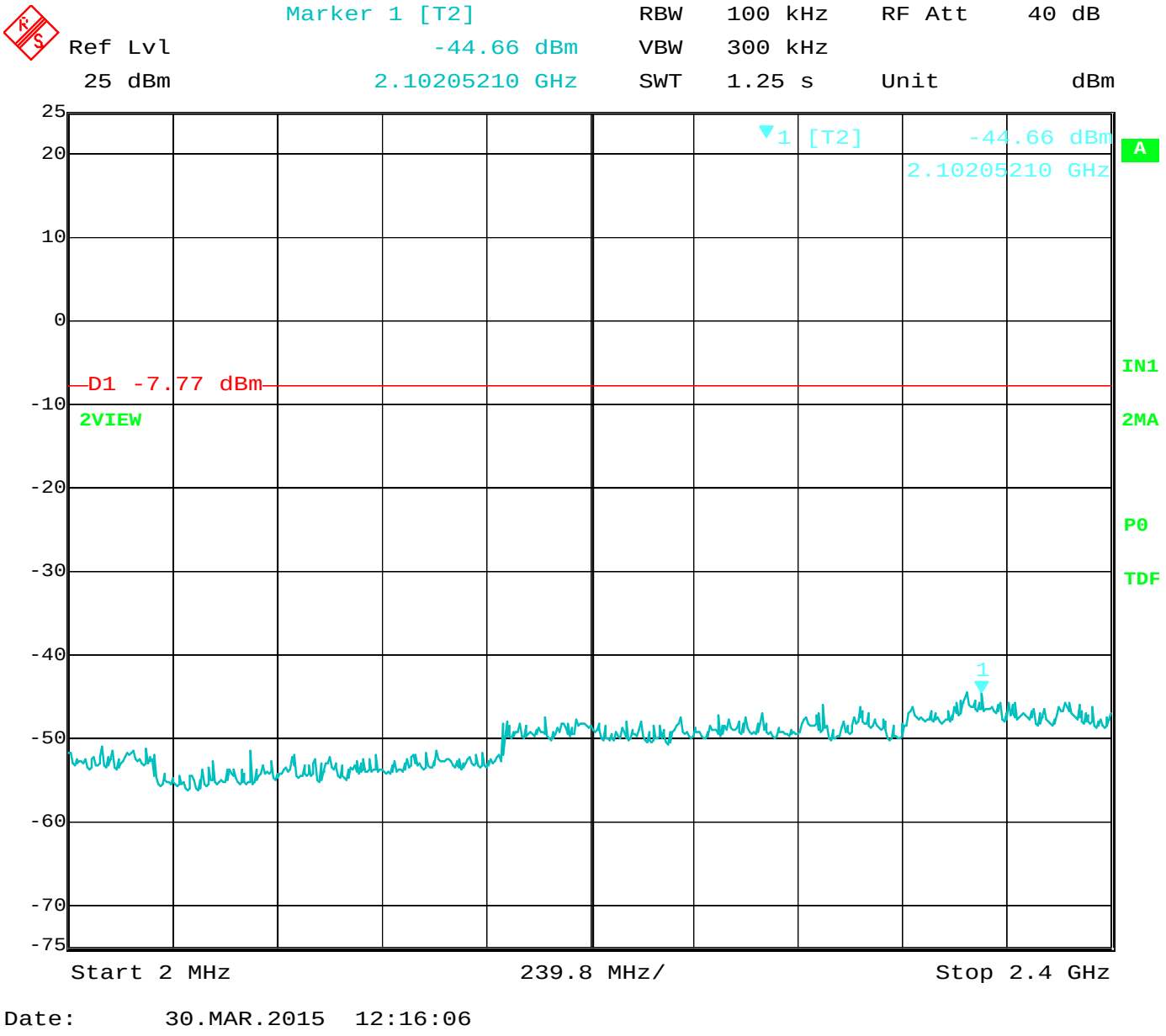
RF Antenna Conducted – Middle Channel – 2.4385 GHz to 10 GHz – UFL Antenna



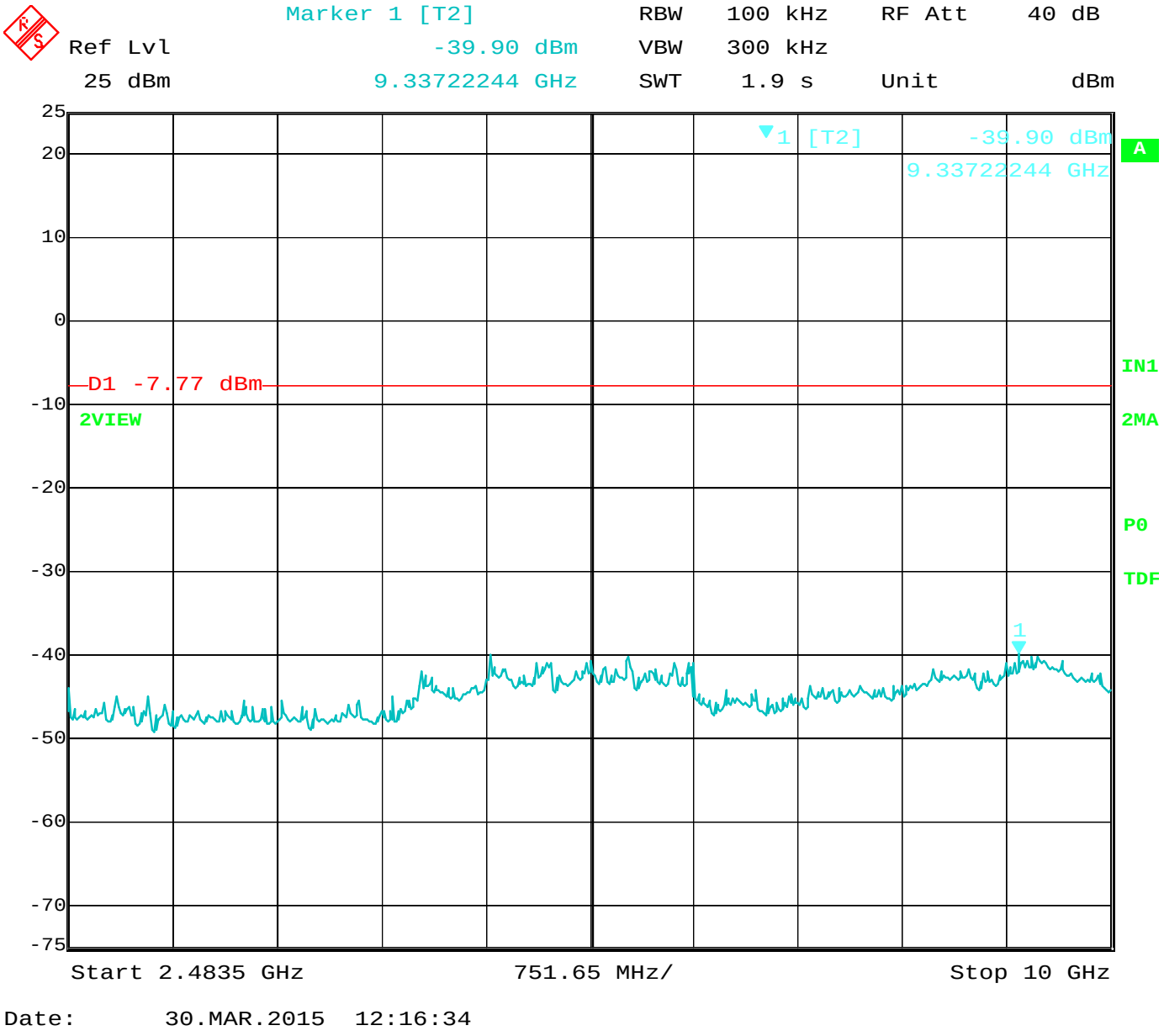
RF Antenna Conducted – Middle Channel – 10 GHz to 25 GHz – UFL Antenna



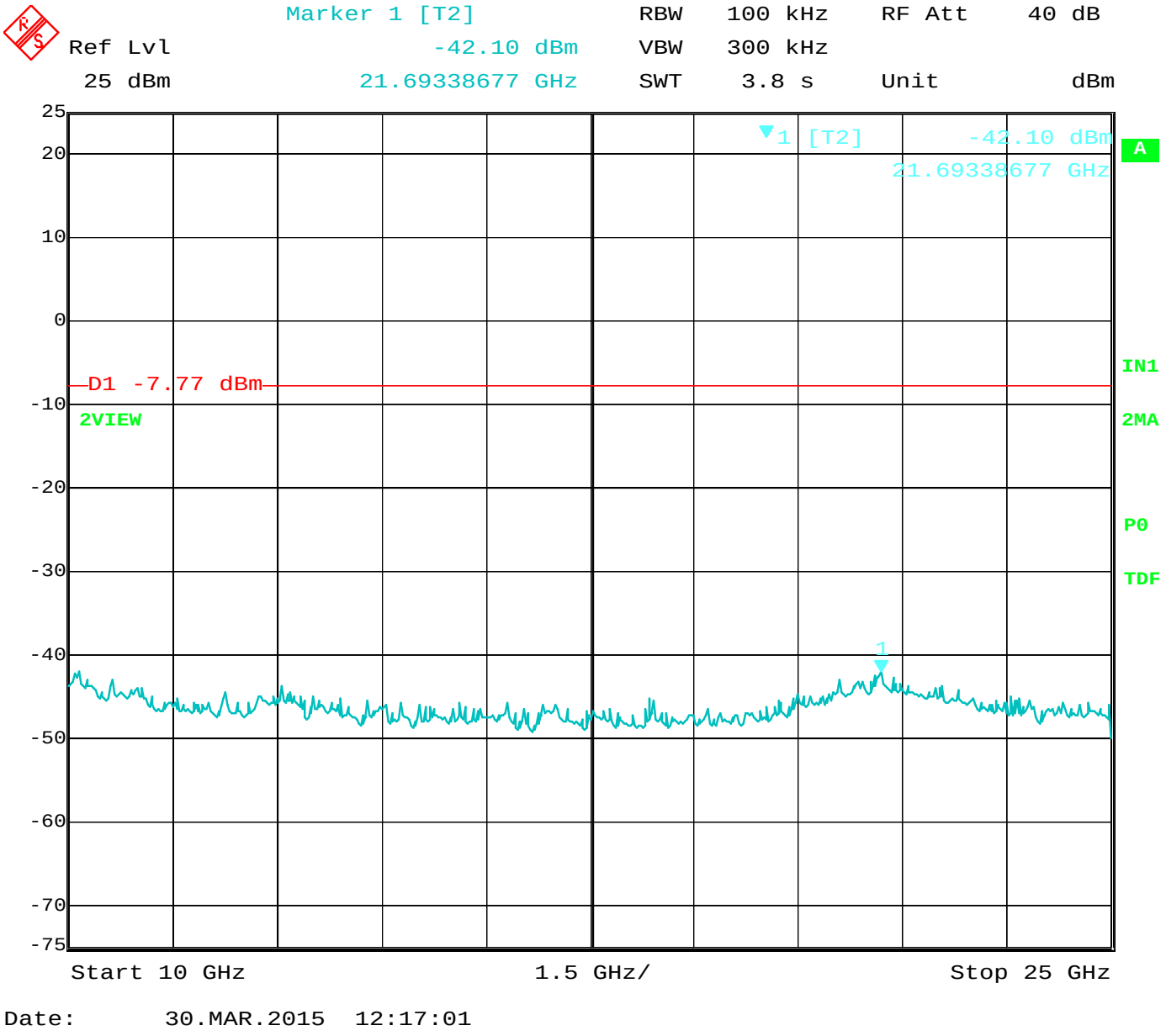
RF Antenna Conducted – High Channel – Reference Level – UFL Antenna



RF Antenna Conducted – High Channel – 2 MHz to 2.4 GHz – UFL Antenna



RF Antenna Conducted – High Channel – 2.4835 GHz to 10 GHz – UFL Antenna



RF Antenna Conducted – High Channel – 10 GHz to 25 GHz – UFL Antenna

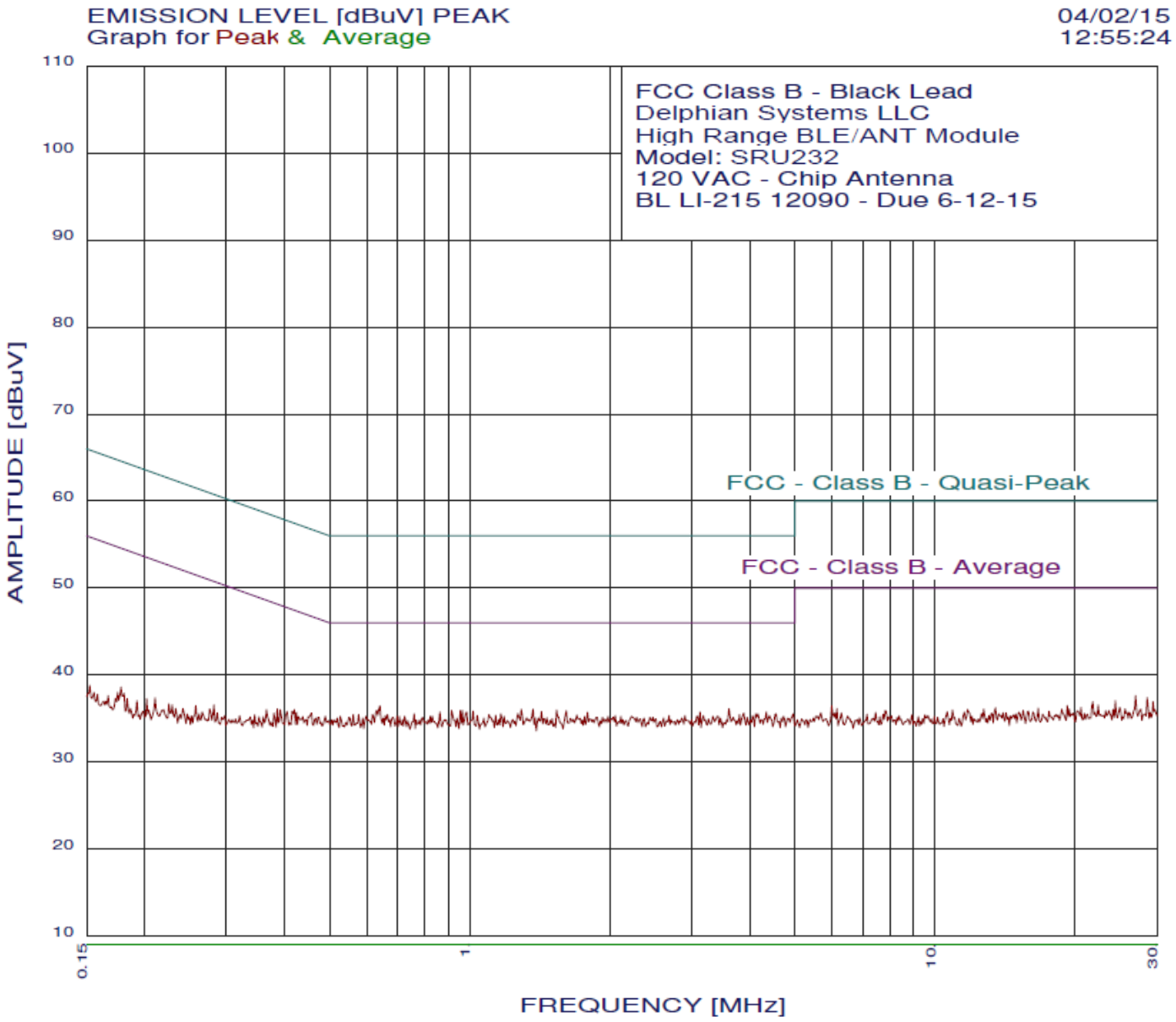
CONDUCTED EMISSIONS

DATA SHEETS

CONDUCTED EMISSIONS

DATA SHEETS

CHIP ANTENNA


EMISSION LEVEL [dBuV] PEAK
Graph for Peak & Average
04/02/15
12:55:24
FCC Class B - Black Lead
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232
120 VAC - Chip Antenna
BL LI-215 12090 - Due 6-12-15
FCC - Class B - Quasi-Peak
FCC - Class B - Average
AMPLITUDE [dBuV]
110
100
90
80
70
60
50
40
30
20
10
0.15
1
10
30
FREQUENCY [MHz]

page 1/1

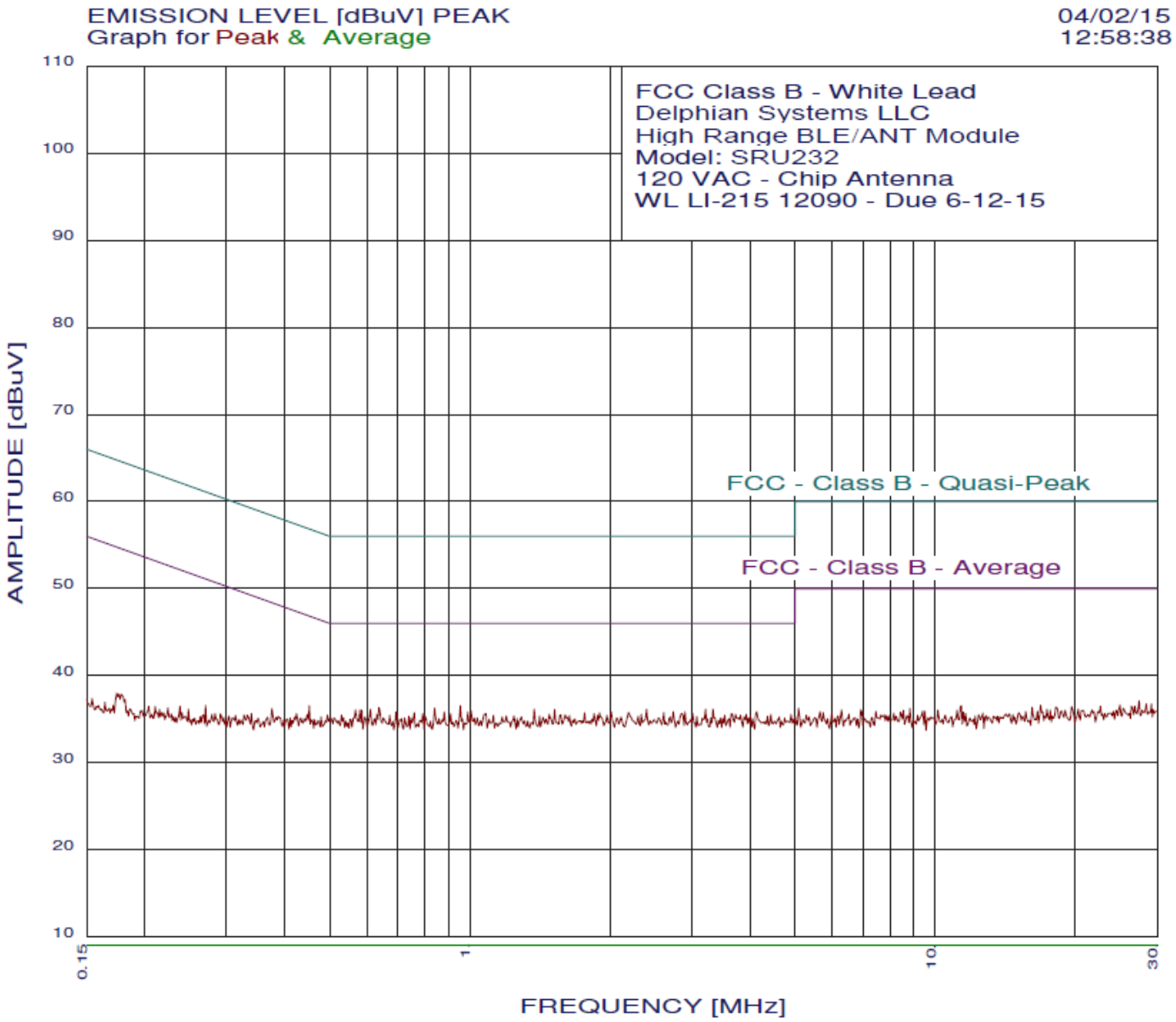
04/02/15 12:55:24

FCC Class B - Black Lead
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232
120 VAC - Chip Antenna
BL LI-215 12090 - Due 6-12-15
Test Engineer : Kenneth Lee

---

50 highest peaks above -50.00 dB of FCC - Class B - Average limit line
Peak criteria : 0.01 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.641	36.44	46.00	-9.56
2	3.605	36.14	46.00	-9.86
3	1.367	36.08	46.00	-9.92
4	1.290	36.07	46.00	-9.93
5	1.536	35.99	46.00	-10.01
6	0.631	35.94	46.00	-10.06
7	0.914	35.94	46.00	-10.06
8	0.953	35.94	46.00	-10.06
9	0.963	35.94	46.00	-10.06
10	1.611	35.90	46.00	-10.10
11	1.016	35.84	46.00	-10.16
12	1.426	35.78	46.00	-10.22
13	4.339	35.75	46.00	-10.25
14	3.124	35.74	46.00	-10.26
15	0.862	35.74	46.00	-10.26
16	0.984	35.74	46.00	-10.26
17	1.790	35.72	46.00	-10.28
18	3.882	35.65	46.00	-10.35
19	1.269	35.57	46.00	-10.43
20	1.166	35.56	46.00	-10.44
21	4.954	35.55	46.00	-10.45
22	4.552	35.55	46.00	-10.45
23	4.159	35.55	46.00	-10.45
24	4.114	35.55	46.00	-10.45
25	0.759	35.54	46.00	-10.46
26	1.100	35.45	46.00	-10.55
27	3.800	35.44	46.00	-10.56
28	0.561	35.44	46.00	-10.56
29	0.577	35.44	46.00	-10.56
30	0.618	35.44	46.00	-10.56
31	0.665	35.44	46.00	-10.56
32	1.699	35.41	46.00	-10.59
33	1.136	35.35	46.00	-10.65
34	4.408	35.35	46.00	-10.65
35	4.050	35.35	46.00	-10.65
36	3.175	35.34	46.00	-10.66
37	2.900	35.34	46.00	-10.66
38	1.038	35.34	46.00	-10.66
39	2.679	35.34	46.00	-10.66
40	0.658	35.34	46.00	-10.66
41	2.055	35.34	46.00	-10.66
42	1.184	35.26	46.00	-10.74
43	4.722	35.25	46.00	-10.75
44	0.527	35.24	46.00	-10.76
45	3.419	35.24	46.00	-10.76
46	3.328	35.24	46.00	-10.76
47	3.091	35.24	46.00	-10.76
48	0.598	35.24	46.00	-10.76
49	0.698	35.24	46.00	-10.76
50	0.705	35.24	46.00	-10.76


EMISSION LEVEL [dBuV] PEAK
Graph for Peak & Average
04/02/15
12:58:38
FCC Class B - White Lead
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232
120 VAC - Chip Antenna
WL LI-215 12090 - Due 6-12-15
FCC - Class B - Quasi-Peak
FCC - Class B - Average
AMPLITUDE [dBuV]
110
100
90
80
70
60
50
40
30
20
10
0.15
1
10
30
FREQUENCY [MHz]

page 1/1

04/02/15 12:58:38

FCC Class B - White Lead
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232
120 VAC - Chip Antenna
WL LI-215 12090 - Due 6-12-15
Test Engineer : Kenneth Lee

---

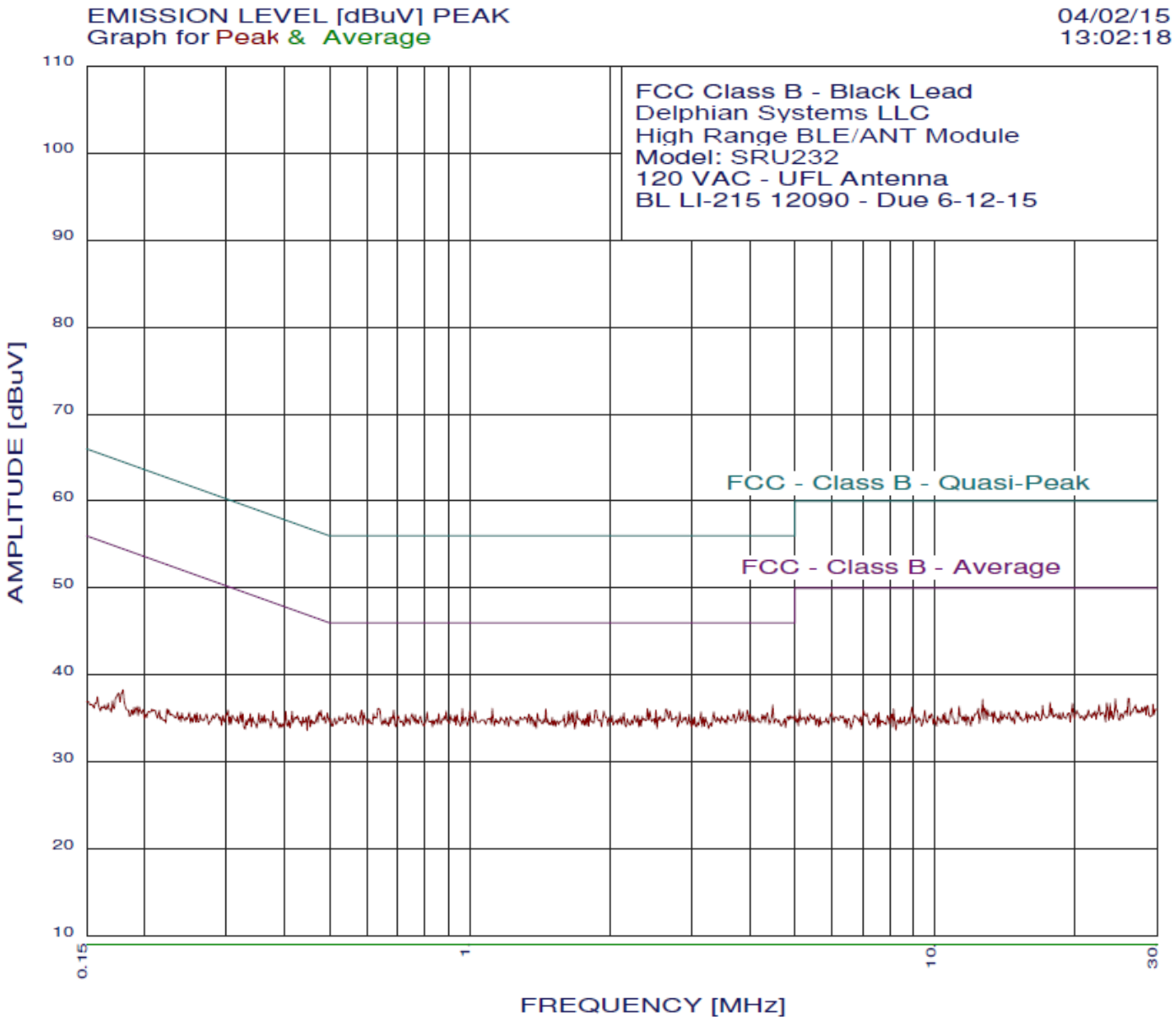
50 highest peaks above -50.00 dB of FCC - Class B - Average limit line
Peak criteria : 0.01 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.953	36.54	46.00	-9.46
2	0.637	36.34	46.00	-9.66
3	0.839	36.24	46.00	-9.76
4	1.374	36.18	46.00	-9.82
5	0.611	36.14	46.00	-9.86
6	3.328	36.14	46.00	-9.86
7	3.209	36.14	46.00	-9.86
8	2.397	36.14	46.00	-9.86
9	1.520	36.09	46.00	-9.91
10	0.567	36.04	46.00	-9.96
11	0.580	36.04	46.00	-9.96
12	0.586	36.04	46.00	-9.96
13	1.006	35.94	46.00	-10.06
14	4.137	35.84	46.00	-10.16
15	2.900	35.84	46.00	-10.16
16	2.736	35.84	46.00	-10.16
17	0.694	35.84	46.00	-10.16
18	2.013	35.84	46.00	-10.16
19	0.990	35.84	46.00	-10.16
20	0.881	35.84	46.00	-10.16
21	2.610	35.74	46.00	-10.26
22	2.190	35.74	46.00	-10.26
23	0.759	35.74	46.00	-10.26
24	1.899	35.73	46.00	-10.27
25	1.763	35.72	46.00	-10.28
26	0.452	36.54	46.85	-10.31
27	1.083	35.65	46.00	-10.35
28	3.663	35.64	46.00	-10.36
29	3.011	35.64	46.00	-10.36
30	2.855	35.64	46.00	-10.36
31	0.909	35.64	46.00	-10.36
32	0.792	35.64	46.00	-10.36
33	1.849	35.62	46.00	-10.38
34	1.480	35.59	46.00	-10.41
35	3.924	35.54	46.00	-10.46
36	4.432	35.54	46.00	-10.46
37	0.631	35.54	46.00	-10.46
38	3.722	35.54	46.00	-10.46
39	4.902	35.54	46.00	-10.46
40	2.334	35.54	46.00	-10.46
41	1.603	35.50	46.00	-10.50
42	1.569	35.50	46.00	-10.50
43	1.124	35.45	46.00	-10.55
44	0.530	35.45	46.00	-10.55
45	3.820	35.44	46.00	-10.56
46	3.529	35.44	46.00	-10.56
47	0.672	35.44	46.00	-10.56
48	1.971	35.44	46.00	-10.56
49	1.879	35.43	46.00	-10.57
50	1.637	35.40	46.00	-10.60

CONDUCTED EMISSIONS

DATA SHEETS

UFL ANTENNA


EMISSION LEVEL [dBuV] PEAK
Graph for Peak & Average
04/02/15
13:02:18
FCC Class B - Black Lead
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232
120 VAC - UFL Antenna
BL LI-215 12090 - Due 6-12-15
FCC - Class B - Quasi-Peak
FCC - Class B - Average
AMPLITUDE [dBuV]
110
100
90
80
70
60
50
40
30
20
10
0.15
1
10
30
FREQUENCY [MHz]

page 1/1

04/02/15 13:02:18

FCC Class B - Black Lead
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232
120 VAC - UFL Antenna
BL LI-215 12090 - Due 6-12-15
Test Engineer : Kenneth Lee

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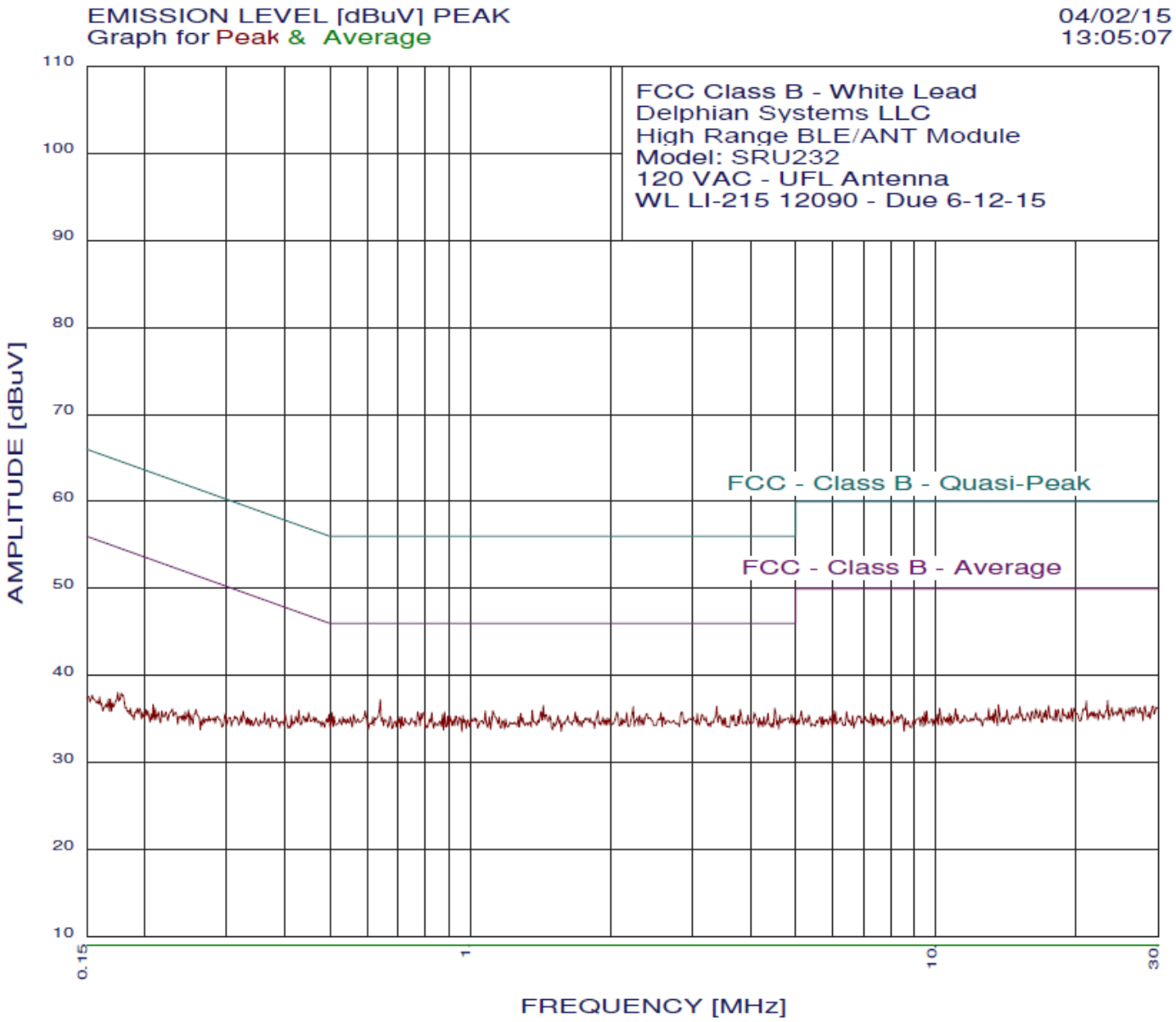
50 highest peaks above -50.00 dB of FCC - Class B - Average limit line
Peak criteria : 0.01 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	4.480	36.55	46.00	-9.45
2	1.118	36.15	46.00	-9.85
3	0.634	36.14	46.00	-9.86
4	2.410	36.14	46.00	-9.86
5	0.963	36.14	46.00	-9.86
6	1.456	36.09	46.00	-9.91
7	3.800	36.04	46.00	-9.96
8	2.651	36.04	46.00	-9.96
9	3.945	35.95	46.00	-10.05
10	0.586	35.94	46.00	-10.06
11	2.514	35.94	46.00	-10.06
12	0.686	35.94	46.00	-10.06
13	1.869	35.93	46.00	-10.07
14	1.699	35.91	46.00	-10.09
15	2.693	35.84	46.00	-10.16
16	2.436	35.84	46.00	-10.16
17	1.027	35.84	46.00	-10.16
18	0.890	35.84	46.00	-10.16
19	1.000	35.84	46.00	-10.16
20	1.939	35.83	46.00	-10.17
21	1.629	35.80	46.00	-10.20
22	3.862	35.75	46.00	-10.25
23	3.346	35.74	46.00	-10.26
24	3.141	35.74	46.00	-10.26
25	2.826	35.74	46.00	-10.26
26	0.809	35.74	46.00	-10.26
27	1.810	35.72	46.00	-10.28
28	1.671	35.71	46.00	-10.29
29	4.361	35.65	46.00	-10.35
30	0.544	35.64	46.00	-10.36
31	0.592	35.64	46.00	-10.36
32	2.145	35.64	46.00	-10.36
33	1.654	35.61	46.00	-10.39
34	1.397	35.58	46.00	-10.42
35	0.479	35.94	46.36	-10.42
36	0.494	35.64	46.09	-10.45
37	0.621	35.54	46.00	-10.46
38	0.751	35.54	46.00	-10.46
39	0.858	35.54	46.00	-10.46
40	1.790	35.52	46.00	-10.48
41	1.338	35.47	46.00	-10.53
42	4.249	35.45	46.00	-10.55
43	4.008	35.45	46.00	-10.55
44	3.702	35.44	46.00	-10.56
45	0.555	35.44	46.00	-10.56
46	2.963	35.44	46.00	-10.56
47	0.728	35.44	46.00	-10.56
48	0.763	35.44	46.00	-10.56
49	0.909	35.44	46.00	-10.56
50	0.939	35.44	46.00	-10.56


EMISSION LEVEL [dBuV] PEAK
Graph for Peak & Average
04/02/15
13:05:07
FCC Class B - White Lead
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232
120 VAC - UFL Antenna
WL LI-215 12090 - Due 6-12-15
FCC - Class B - Quasi-Peak
FCC - Class B - Average
AMPLITUDE [dBuV]
110
100
90
80
70
60
50
40
30
20
10
0.15
1
10
30
FREQUENCY [MHz]

page 1/1

04/02/15 13:05:07

FCC Class B - White Lead
Delphian Systems LLC
High Range BLE/ANT Module
Model: SRU232
120 VAC - UFL Antenna
WL LI-215 12090 - Due 6-12-15
Test Engineer : Kenneth Lee

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50 highest peaks above -50.00 dB of FCC - Class B - Average limit line
Peak criteria : 0.01 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.641	37.24	46.00	-8.76
2	1.434	36.58	46.00	-9.42
3	3.383	36.44	46.00	-9.56
4	2.238	36.44	46.00	-9.56
5	4.504	36.24	46.00	-9.76
6	3.800	36.14	46.00	-9.86
7	1.359	35.97	46.00	-10.03
8	1.118	35.95	46.00	-10.05
9	1.077	35.95	46.00	-10.05
10	0.595	35.94	46.00	-10.06
11	1.879	35.93	46.00	-10.07
12	1.419	35.88	46.00	-10.12
13	2.840	35.84	46.00	-10.16
14	2.066	35.84	46.00	-10.16
15	0.881	35.84	46.00	-10.16
16	0.771	35.84	46.00	-10.16
17	1.680	35.81	46.00	-10.19
18	0.505	35.75	46.00	-10.25
19	4.071	35.74	46.00	-10.26
20	2.568	35.74	46.00	-10.26
21	2.168	35.74	46.00	-10.26
22	0.826	35.74	46.00	-10.26
23	0.792	35.74	46.00	-10.26
24	1.283	35.67	46.00	-10.33
25	4.361	35.64	46.00	-10.36
26	3.075	35.64	46.00	-10.36
27	2.397	35.64	46.00	-10.36
28	0.783	35.64	46.00	-10.36
29	0.561	35.54	46.00	-10.46
30	4.902	35.54	46.00	-10.46
31	3.141	35.54	46.00	-10.46
32	0.872	35.54	46.00	-10.46
33	0.497	35.55	46.05	-10.50
34	1.456	35.48	46.00	-10.52
35	3.945	35.44	46.00	-10.56
36	4.624	35.44	46.00	-10.56
37	3.683	35.44	46.00	-10.56
38	3.644	35.44	46.00	-10.56
39	3.438	35.44	46.00	-10.56
40	2.310	35.44	46.00	-10.56
41	0.963	35.44	46.00	-10.56
42	1.620	35.40	46.00	-10.60
43	1.544	35.39	46.00	-10.61
44	1.480	35.39	46.00	-10.61
45	0.510	35.35	46.00	-10.65
46	3.761	35.34	46.00	-10.66
47	0.672	35.34	46.00	-10.66
48	0.934	35.34	46.00	-10.66
49	0.904	35.34	46.00	-10.66
50	0.895	35.34	46.00	-10.66
