FCC PART 15, SUBPART B and E
TEST REPORT

for

MIMO OFDM RADIO

MODEL: SC3822

Prepared for

SILVUS TECHNOLOGIES
10990 WILSHIRE BLVD., SUITE #1500
LOS ANGELES, CALIFORNIA 90024

Prepared by:_____

KYLE FUJIMOTO

Approved by:_____

JAMES ROSS

COMPATIBLE ELECTRONICS INC.
114 OLINDA DRIVE
BREA, CALIFORNIA 92823
(714) 579-0500

DATE: AUGUST 11, 2015

	REPORT BODY	APPENDICES					TOTAL
		A	***B***	***C***	***D***	***E***	
PAGES	24	2	2	2	15	64	**109**

TABLE OF CONTENTS

LIST OF APPENDICES

APPENDIX	TITLE
A	Laboratory Accreditations and Recognitions
B	Modifications to the EUT
C	Additional Models Covered Under This Report
D	Diagrams, Charts, and Photos • Test Setup Diagrams • Radiated and Conducted Emissions Photos • Antenna and Effective Gain Factors
E	Data Sheets

LIST OF FIGURES

FIGURE	TITLE
1	Conducted Emissions Test Setup
2	Plot Map And Layout of Test Site
3	Layout of the Semi-Anechoic Test Chamber

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 endorsement by NVLAP or any other agency of the U.S. Government.

Device Tested:	MIMO OFDM Radio Model: SC3822 S/N: N/A
Product Description:	See Expository Statement.
Modifications:	The EUT was not modified during the testing.
Manufacturer:	Silvus Technologies 10990 Wilshire Blvd., Suite #1500 Los Angeles, California 90024
Test Dates:	March 4 and 24, 2015
Test Specifications:	EMI requirements CFR Title 47, Part 15, Subpart B; and Subpart E, section 15.407.
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	This test was not performed because the EUT will operate on DC power only and cannot be plugged into the AC public mains.
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 E, section 15.407 (b)(6)
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 E, section 15.407 (b)(4), (b)(6), and (b)(7)
4	Fundamental and Emissions produced by the intentional radiator in non-restricted bands, 10 kHz – 40 GHz	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart E, section 15.407 (b)(4) and (b)(6)
5	Emissions produced by the intentional radiator in restricted bands, 10 kHz – 40 GHz	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart E, section 15.407 (b)(6) and (b)(7)
6	Peak Power Output	Complies with the relevant requirements of FCC Title 47, Part 15, Subpart E, section 15.407 (a)(3)
7	Peak Power Spectral Density from the Intentional Radiator to the Antenna	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart E, section 15.407 (a)(3)

1. PURPOSE

This document is a qualification test report based on the emissions tests performed on the MIMO OFDM Radio, Model: SC3822. The EMI 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 E, section 15.2407.

Note #1: For the unintentional radiator portion of the test, the EUT was within the **Class B** specification limits defined by CFR Title 47, Part 15, Subpart B.

Note #2: The frequencies in the 2.4 GHz range are covered under Subpart C and will be covered under the test report **B50324D2**.

2. ADMINISTRATIVE DATA

2.1 Location of Testing

The EMI 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

Silvus Technologies

Grant Denoon	Senior RF Engineer

Compatible Electronics Inc.

James Ross	Test Engineer
Kyle Fujimoto	Test Engineer
Michael Christensen	Lab Manager, Brea Division

2.4 Date Test Sample was Received

The test sample was received prior to the date of testing.

2.5 Disposition of the Test Sample

The test sample was returned to Silvus Technologies on April 2, 2015.

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

3. APPLICABLE DOCUMENTS

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

SPEC	TITLE
FCC Title 47, Part 15 Subpart C	FCC Rules - Radio frequency devices (including digital devices) – Intentional 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
FCC Title 47, Part 15 Subpart B	FCC Rules - Radio frequency devices (including digital devices) – Unintentional Radiators
KDB 789033 D02v01	Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices Part 15, Subpart E
ANSI C63.10 2009	American National Standard for Testing Unlicensed Wireless Devices

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration - Emissions

The MIMO OFDM Radio, Model: SC3822(EUT) was connected to a battery (through a junction box) via its PWR/COMM port. The EUT was also connected to the laptop's USB port via its USB/GPIO port and also connected to the laptop's serial and ethernet ports through a junction box. The laptop was also connected to an AC power supply.

During the testing, the EUT was communicating with the laptop utilizing the UNIX client software. All commands and data were sent over the ethernet port.

Operation of the EUT during the testing:

For the intentional radiator portion of the test: The laptop had a program that locked one channel at a time so that the low, middle, and high channels could be tested. The EUT was tested in two orthogonal axis. The carrier was modulated so that the duty cycle was greater than 98 percent. The laptop was pinging the EUT on a continuous basis via its Ethernet port.

For the unintentional radiator and conducted emission portion of the test: The laptop used a program that allowed the EUT to function as normal. The laptop was also pinging the EUT on a continuous basis via its Ethernet port.

The final radiated data for the EUT as well as the conducted data was taken in modes above. Please see Appendix E for the data sheets.

4.1.1 Cable Construction and Termination

Cable 1 This is a 2-meter unshielded cable connecting the AC Adapter to the laptop. The cable has a 1-pin power connector at the laptop end and is hard wired into the AC Adapter. The cable was bundled to a length of 1-meter.

Cable 2 This is a 30-centimeter braid shielded cable connecting the EUT to the laptop. The cable has a 12-pin male connector at the EUT end and a USB type 'A' connector at the laptop end. The shield of the cable was grounded to the chassis via the connectors.

Cable 3 This a 10-centimeter cable connecting the EUT to the junction box. The cable has a 12-pin female connector at the EUT end and is hard wired into the junction box. The shield of the cable was grounded to the chassis via the connectors.

Cable 4 This is a 30-centimeter braid and foil shielded cable connecting the junction box to the battery. The cable has a 6-pin DIN connector at the battery end and is hard wired into the junction box. The shield of the cable was grounded to the chassis via the connector. The cable has a molded ferrite at the junction box end.

Cable 5 This is a 20-centimeter braid and foil shielded cable connecting the junction box to the laptop. The cable has a D-9 pin metallic connector at the laptop end and is hard wired into the junction box. The shield of the cable was grounded to the chassis via the connector. The cable has a molded ferrite at the junction box end.

Cable 6 This is a 10-centimeter braid and foil shielded cable connecting the junction box to the laptop. The cable has an RJ-45 connector at the laptop end and is hard wired into the junction box.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
MIMO OFDM RADIO (EUT)	SILVUS TECHNOLOGIES	SC3822	N/A	N2S-SC3822
AC ADAPTER	DELL	LA90P50-00	CN-ODF266-71615-02C-2346	N/A
LAPTOP	DELL	PP04X	CN-OHN341-48643-87H-2372	QD5-BRCM1028
BATTERY	BREN-TRONICS	BB-25901U	B062114	N/A
JUNCTION BOX	N/A	N/A	N/A	N/A

5.2 EMI Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CALIBRATION CYCLE
RF RADIATED EMISSIONS TEST EQUIPMENT – LAB D					
TDK TestLab	TDK RF Solutions, Inc.	9.22	700145	N/A	N/A
CombiLog Antenna	Com-Power	AC-220	61060	May 20, 2014	1 Year
Loop Antenna	Com-Power	AL-130	17089	February 6, 2015	2 Year
EMI Receiver, 20 Hz – 26.5 GHz	Agilent Technologies	N9038A	MY51100115	March 6, 2014	2 Year
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
Computer	Hewlett Packard	p6716f	MXX1030PX0	N/A	N/A
LCD Monitor	Hewlett Packard	52031a	3CQ046N3MG	N/A	N/A
RF RADIATED EMISSIONS TEST EQUIPMENT – LAB B					
Horn Antenna	Com-Power	AH-118	071175	February 26, 2014	2 Year
Horn Antenna	Com-Power	AH-826	0071957	N/A	N/A
Horn Antenna	Com-Power	AH840	91003	N/A	N/A
Preamplifier	Com-Power	PA-118	551024	March 6, 2015	1 Year
Preamplifier	Com-Power	PA-840	711013	May 13, 2014	2 Year
EMI Receiver	Rohde & Schwarz	ESIB40	100194	December 4, 2014	1 Year
Computer	Compaq	CQ5210F	CNX9360CF9	N/A	N/A
Monitor	Hewlett Packard	HPs2031a	3CQ046N3MD	N/A	N/A
Turntable	Com-Power	TT-100	N/A	N/A	N/A
Antenna Mast	Com-Power	AM-100	N/A	N/A	N/A

5.3 Emissions Test Equipment (Continued)

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CALIBRATION CYCLE
PEAK POWER OUTPUT TEST EQUIPMENT					
Power Measuring Analyzer	Boonton Electronics	4500A-01	1282	December 2, 2014	1 Year
Peak Power Sensor	Boonton Electronics	57318	3723	December 2, 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 grounded to the chassis of the laptop via the shield of the cables.

7. CHARACTERISTICS OF THE TRANSMITTER

7.1 Transmitter Power

Transmit power is herein defined as the power delivered to a 50 ohm load at the RF output of the EUT.

Average Power	Frequency
24.47 dBm	5760 MHz
25.03 dBm	5785 MHz
25.17 dBm	5810 MHz

7.2 Channel Number and Frequencies

There are a total of 3 channels.

5760 MHz
5785 MHz
5810 MHz

7.3 Antenna Gain

The antennas have a gain of 3 dBi each.

8. TEST PROCEDURES

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

8.1 RF Emissions

8.1.1 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: 2009. 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 conducted emissions software in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave. The final qualification data is located in Appendix E.

Test Results:

This test was not performed because the EUT will operate on DC power only and cannot be plugged in the AC public mains.

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

The EMI Receiver was used as a measuring meter. Amplifiers were used to increase the sensitivity of the instrument. The Com Power Microwave Preamplifier Model: PA-118 was used for frequencies above from1 GHz to 18 GHz, and the Com Power Microwave Preamplifier Model: PA-840 was used for frequencies above 18 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.

The frequencies above 1 GHz were averaged by using the RMS average detector function on the EMI Receiver.

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

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
1 GHz to 40 GHz	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.

For the non-harmonic emissions from 4 GHz to 6 GHz, antenna-port conducted measurements in conjunction with cabinet emissions tests were performed per section (G)(3)(b) of KDB 789033 and performing the steps described in section (G)(3)(b)(i), (G)(3)(b)(ii), (G)(3)(b)(iii), and (G)(3)(b)(iv) of KDB 789033.

Radiated Emissions (Spurious and Harmonics) Test (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 40 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 E sections 15.407 (b)(4), (b)(6), and (b)(7) for radiated emissions. Please see Appendix E for the data sheets.

8.1.3 Radiated Emissions 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 with 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 measurement bandwidths and transducers used for the radiated emissions test were:

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

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 gunsight method was used when measuring with the horn antenna in order to ensure accurate results.

The EUT was tested at a 3-meter test distance from 10 kHz to 1 GHz.

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 E sections 15407 (b)(4), (b)(6), and (b)(7) for radiated emissions. Please see Appendix E for the data sheets.

8.1.3 RF Emissions Test Results

Table 1.0 RADIATED EMISSION RESULTS
MIMO OFDM Radio, Model: SC3822

Frequency MHz	Corrected Reading* dBuV	Specification Limit dBuV	Delta (Cor. Reading – Spec. Limit) dB
11520 (V) (X-Axis)	51.79 (Avg)	54.00	-2.21
11520 (H) (Y-Axis)	51.21 (Avg)	54.00	-2.79
720.00 (H)	42.62 (QP)	46.00	-3.38
375.00 (H)	42.42 (QP)	46.00	-3.58
11520 (V) (Y-Axis)	50.25 (Avg)	54.00	-3.75
11520 (H)(X-Axis)	49.69 (Avg)	54.00	-4.31

Notes:

*	The complete emissions data is given in Appendix E of this report.
QP	Quasi-Peak Reading
Avg	Average Reading
V	Vertical Polarization
H	Horizontal Polarization

8.2 Minimum Emission Bandwidth for the band 5.725-5.85 GHz

The Minimum Emission Bandwidth for the band 5.725-5.85 GHz was measured using the EMI Receiver. The bandwidth was measured using a direct connection from the RF output of the EUT. The following steps were performed for measuring the Minimum Emission Bandwidth for the band 5.725-5.85 GHz.

1. Set RBW = 100 kHz
2. Set the video bandwidth (VBW) to equal or greater than 3 times the RBW
3. Detector = Peak
4. Trace Mode = Max Hold
5. Sweep = Auto Couple
6. Allow the trace to stabilize
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart E section 15.407 (e). The 6 dB bandwidth is greater than 500 kHz. Please see the data sheets located in Appendix E.

8.3 Emission Bandwidth (EBW)

The Emission Bandwidth (EBW) for the band 5.725-5.85 GHz was measured using the EMI Receiver. The bandwidth was measured using a direct connection from the RF output of the EUT. The following steps were performed for measuring the Emission Bandwidth (EBW).

1. Set RBW = approximately 1% of the emission bandwidth
2. Set the VBW > RBW
3. Detector = Peak
4. Trace Mode = Max Hold
5. Sweep = Auto Couple
6. Allow the trace to stabilize
7. Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

8.3 Average Output Power

The Average Output Power was taken using the power meter and power sensor. The EUT was directly connected to the power sensor, which was directly connected to the power meter. The Average Output Power was then taken.

The peak output power was taken for all two antenna ports. The total power was then summed among the two antenna ports (in mW) and then converted to dBm.

The antenna gain in dBi was derived by using the gain of each antenna + 10 log (number of antennas). This gain in dBi was then used to determine the reduction necessary from the 1 watt limit per Subpart E, section 15.407 (a)(3).

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart E, section 15.407 (a)(3). Please see the data sheets located in Appendix E.

8.4 RF Band Edges

The RF band edges were taken at the edges of the ISM spectrum (5725 MHz when the EUT was on the low channel and 5850 MHz when the EUT was on the high channel) using the EMI Receiver. The RBW was set to 1 MHz. Plots of the fundamental were taken to ensure the amplitude at the band edges were below the limits of FCC 15.407 (b)(4).

Note: any emissions that was above the limits of FCC 15.407 (b)(4) were then tested with an RBW of 1 MHz and VBW of 10 Hz to show demonstration to FCC 15.209, which is permitted per section (G)(2)(c) of KDB 789033 D02v01.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart E section 15.407 (b)(4), (b)(6), and (b)(7).

8.6 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 following steps were performed for measuring the spectral density.

1. Set span to encompass the entire emission bandwidth (EBW) of the signal
2. Set RBW = 500 kHz.
3. Set VBW >= 3 MHz
4. Number of points in sweep >= 2 Span / RBW.
5. Sweep time = auto
6. Detector = RMS
7. Trace average at least 100 traces in power averaging mode
8. Use the peak search function on the instrument to find the peak of the spectrum and record its value
9. The gain of each antenna + 10 log (number of antennas) was added the result obtained in step #8.
10. The result is the Maximum PSD over 500 kHz reference bandwidth

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart E, section 15.407 (a)(3).

9. CONCLUSIONS

The MIMO OFDM Radio, Model: SC3822 meets all of the specification limits defined in FCC Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.407.

Note: For the unintentional radiator portion of the test, the EUT was within the **Class B** specification limits defined by CFR Title 47, Part 15, Subpart B.

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 Subpart E 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.

No modifications were made to the EUT during the testing.

APPENDIX C

ADDITIONAL MODELS COVERED UNDER THIS REPORT

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

MIMO OFDM Radio
Model: SC3822
S/N: N/A

There were no additional models covered under this report.

APPENDIX D

DIAGRAMS, CHARTS, AND PHOTOS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

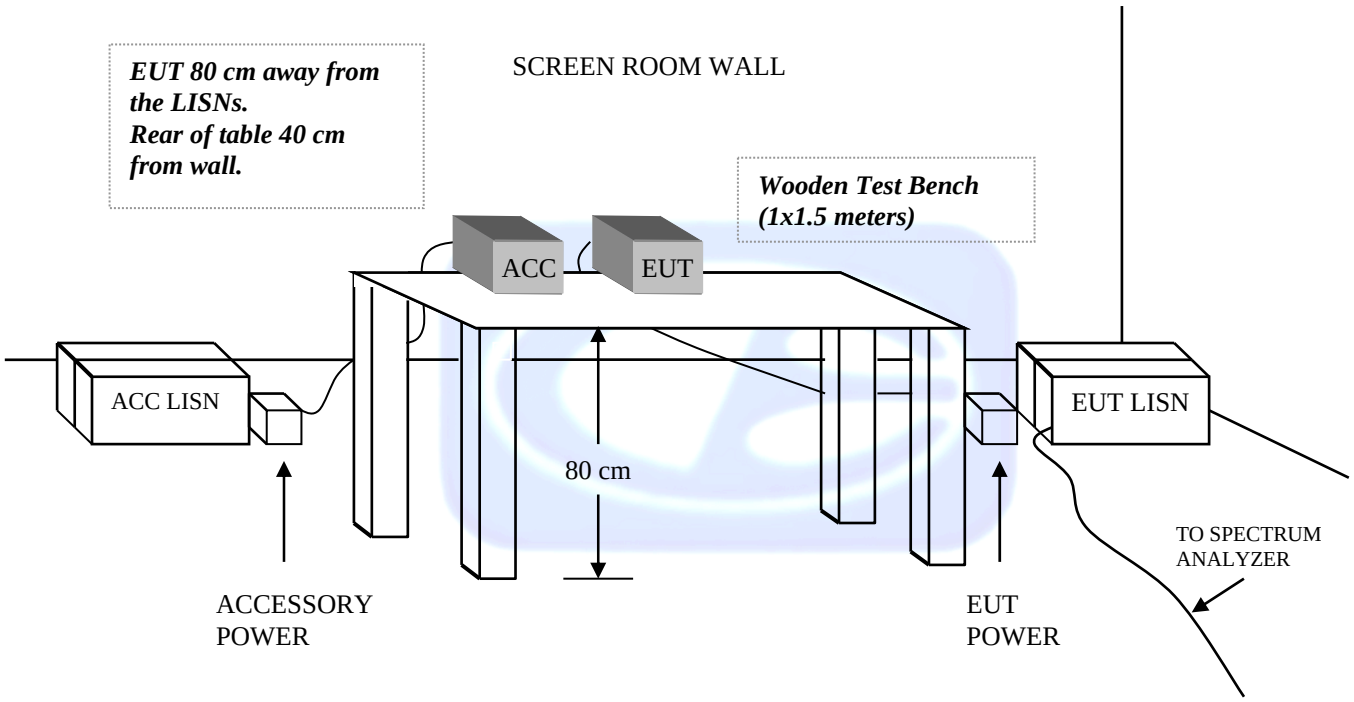


FIGURE 2: PLOT MAP AND LAYOUT OF RADIATED SITE

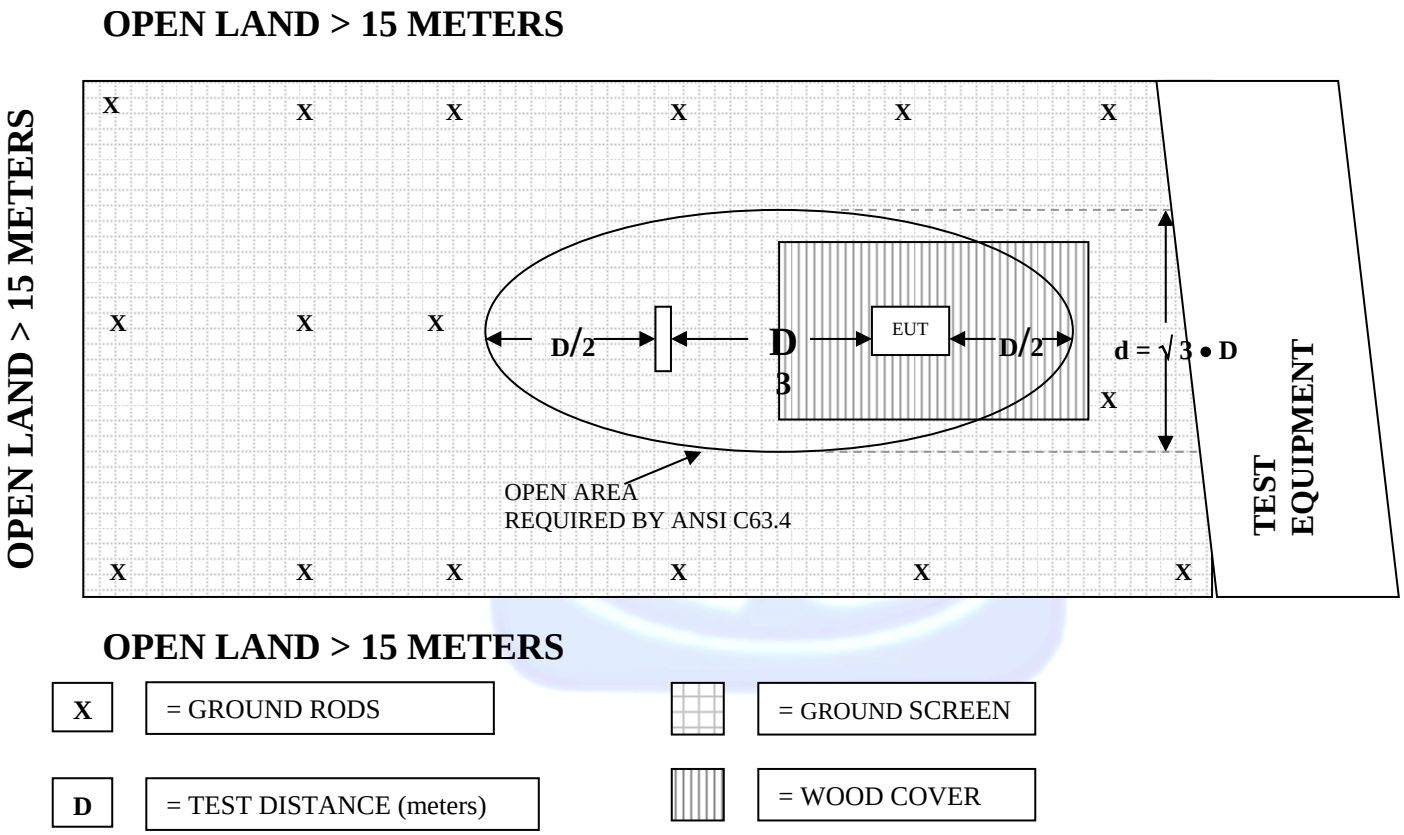
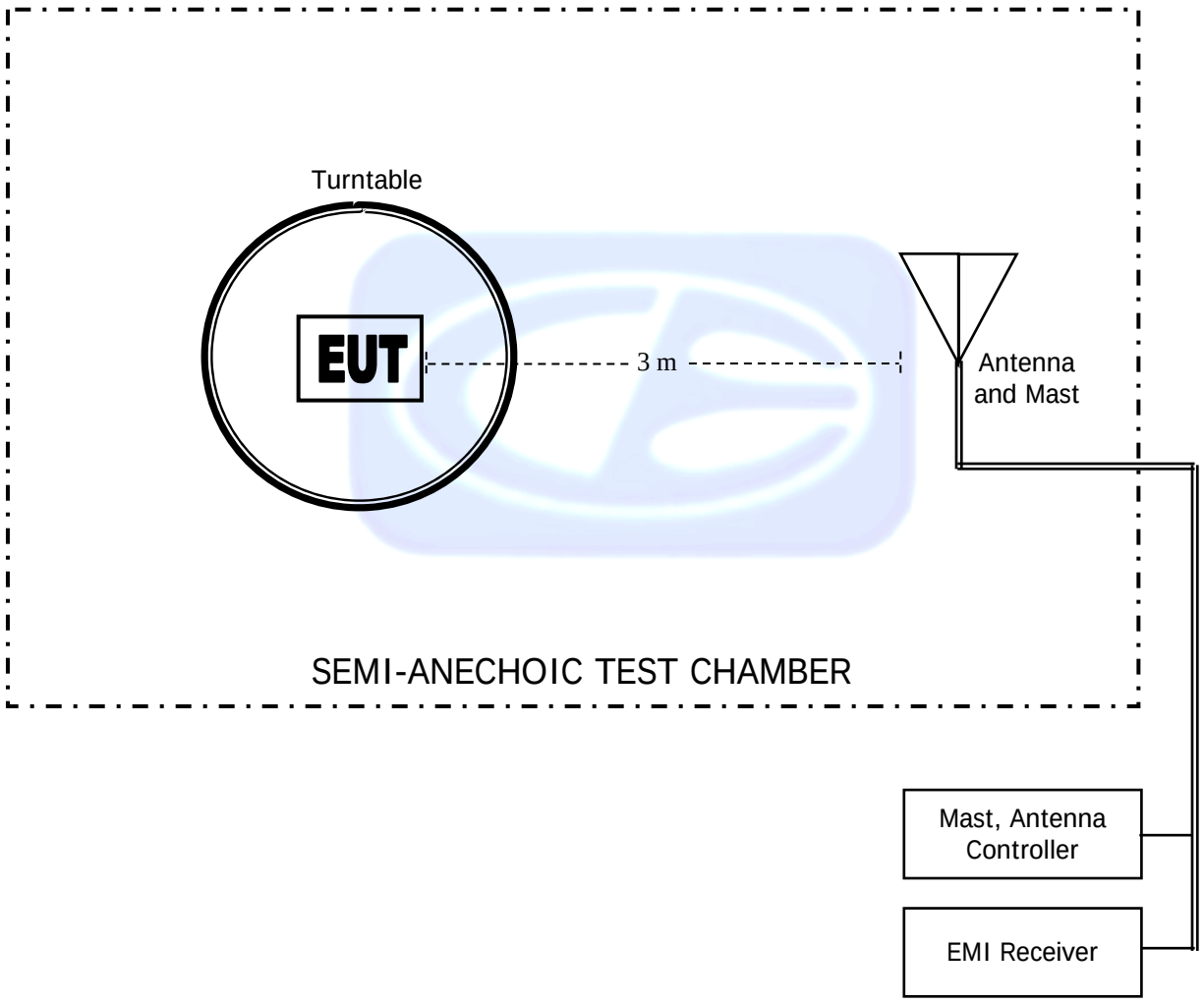


FIGURE 3: LAYOUT OF THE SEMI-ANECHOIC TEST CHAMBER



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		

COM-POWER AH826

HORN ANTENNA

S/N: 71957

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	33.5	22.5	35.5
18.5	33.5	23.0	35.9
19.0	34.0	23.5	35.7
19.5	34.0	24.0	35.6
20.0	34.3	24.5	36.0
20.5	34.9	25.0	36.2
21.0	34.7	25.5	36.1
21.5	35.0	26.0	36.2
22.0	35.0	26.5	35.7

COM-POWER PA-840

MICROWAVE PREAMPLIFIER

S/N: 711013

CALIBRATION DATE: MAY 13, 2014

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	25.19	31.0	25.69
19.0	24.48	31.5	25.74
20.0	24.39	32.0	26.35
21.0	24.73	32.5	26.64
22.0	23.49	33.0	25.98
23.0	24.23	33.5	24.68
24.0	24.59	34.0	24.61
25.0	25.32	34.5	23.78
26.0	25.66	35.0	24.74
26.5	25.99	35.5	24.39
27.0	26.26	36.0	23.46
27.5	25.33	36.5	23.71
28.0	24.49	37.0	26.35
28.5	24.74	37.5	23.49
29.0	25.93	38.0	25.42
29.5	26.28	38.5	24.87
30.0	26.17	39.0	22.60
30.5	26.11	39.5	20.57
		40.0	19.15

COM-POWER AH840

HORN ANTENNA

S/N: 91003

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
26.5	41.0	31.0	40.9
27.0	40.3	31.5	41.8
27.5	41.6	32.0	40.0
28.0	41.9	32.5	40.8
28.5	41.8	33.0	40.6
29.0	41.2	33.5	40.6
29.5	40.8	34.0	40.6
30.0	41.0	34.5	40.8
30.5	41.5	40.0	41.0

FRONT VIEW

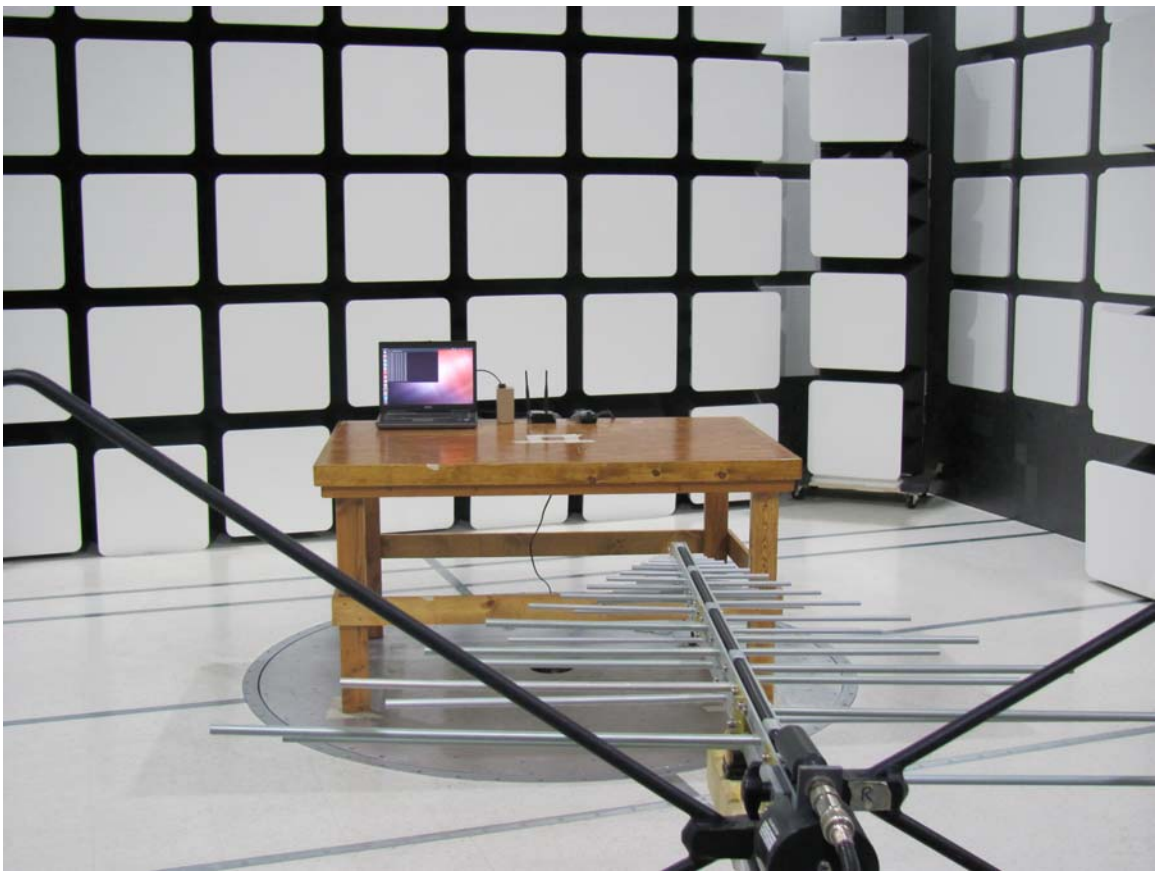
SILVUS TECHNOLOGIES
MIMO OFDM RADIO
MODEL: SC3822
FCC SUBPART B AND E – RADIATED EMISSIONS – ABOVE 1 GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

SILVUS TECHNOLOGIES
MIMO OFDM RADIO
MODEL: SC3822
FCC SUBPART B AND E – RADIATED EMISSIONS – ABOVE 1 GHz

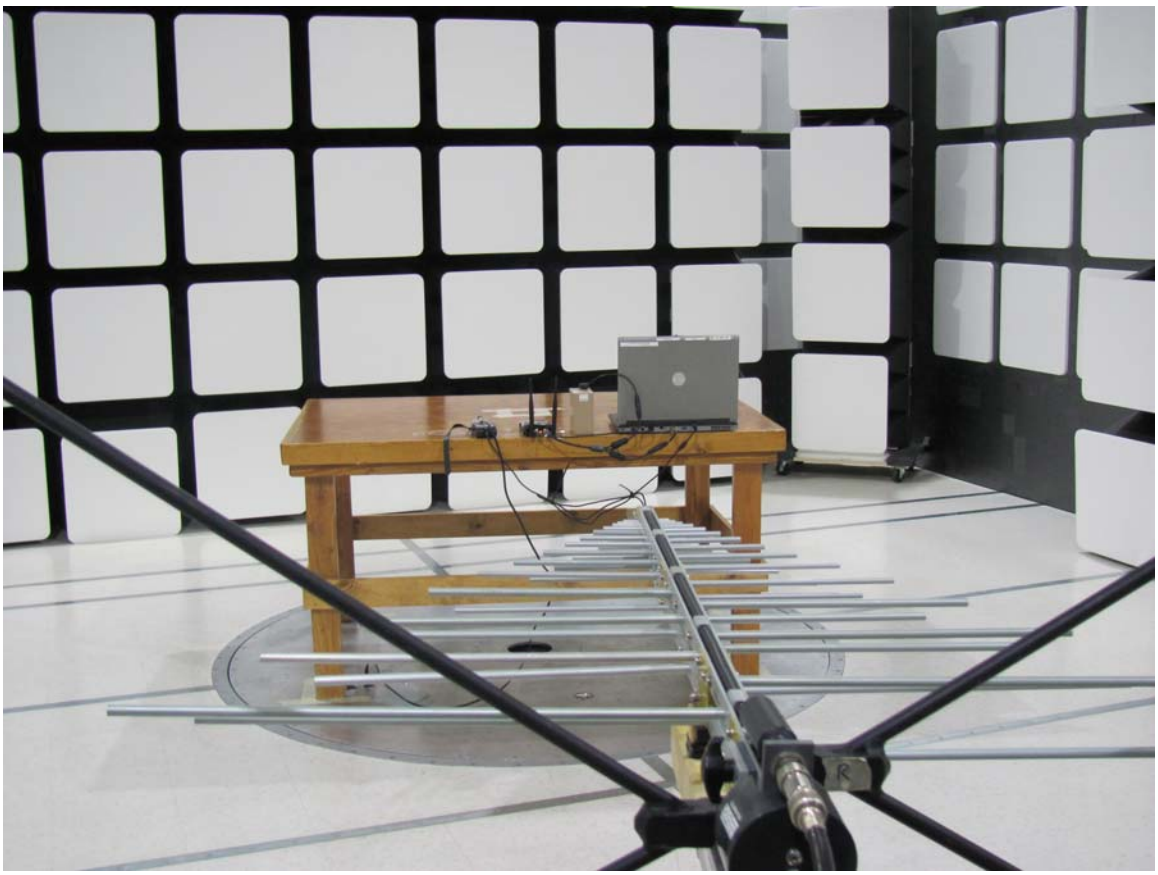
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



FRONT VIEW

SILVUS TECHNOLOGIES
MIMO OFDM RADIO
MODEL: SC3822
FCC SUBPART B AND E – RADIATED EMISSIONS – BELOW 1 GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

SILVUS TECHNOLOGIES
MIMO OFDM RADIO
MODEL: SC3822
FCC SUBPART B AND E – RADIATED EMISSIONS – BELOW 1 GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

APPENDIX E

DATA SHEETS

RADIATED EMISSIONS

DATA SHEETS

FCC 15.407

Silvus Technologies
MIMO OFDM Radio
Model: SC 3822

Date: 03/24/2015
Lab: B
Tested By: Kyle Fujimoto

5760 MHz Fundamental at Gain 59
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
5760		V	--	--	Peak			**N/A**
5760		V	--	--	Avg			**Done via Conducted**
11520	60.11	V	74	-13.89	Peak	1.05	135	
11520	51.79	V	54	-2.21	Avg	1.05	135	
17280								**No Emission**
17280								**Detected**
23040								**No Emission**
23040								**Detected**
28800								**No Emission**
28800								**Detected**
34560								**No Emission**
34560								**Detected**

FCC 15.407

Silvus Technologies
MIMO OFDM Radio
Model: SC 3822

Date: 03/24/2015
Lab: B
Tested By: Kyle Fujimoto

5760 MHz Fundamental at Gain 59
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
5760		V	--	--	Peak			**N/A**
5760		V	--	--	Avg			**Done via Conducted**
11520	54.93	V	74	-19.07	Peak	1.25	135	
11520	50.25	V	54	-3.75	Avg	1.25	135	
17280								**No Emission**
17280								**Detected**
23040								**No Emission**
23040								**Detected**
28800								**No Emission**
28800								**Detected**
34560								**No Emission**
34560								**Detected**

FCC 15.407
Silvus Technologies
MIMO OFDM Radio
Model: SC 3822

Date: 03/24/2015
Lab: B
Tested By: Kyle Fujimoto

5760 MHz Fundamental at Gain 59
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
5760		H	--	--	Peak			**N/A**
5760		H	--	--	Avg			**Done via Conducted**
11520	54.38	H	74	-19.62	Peak	1.25	155	
11520	49.69	H	54	-4.31	Avg	1.25	155	
17280								**No Emission**
17280								**Detected**
23040								**No Emission**
23040								**Detected**
28800								**No Emission**
28800								**Detected**
34560								**No Emission**
34560								**Detected**

FCC 15.407

Silvus Technologies
MIMO OFDM Radio
Model: SC 3822

Date: 03/24/2015
Lab: B
Tested By: Kyle Fujimoto

5760 MHz Fundamental at Gain 59
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
5760		H	--	--	Peak			**N/A**
5760		H	--	--	Avg			**Done via Conducted**
11520	58.33	H	74	-15.67	Peak	1.25	155	
11520	51.21	H	54	-2.79	Avg	1.25	155	
17280								**No Emission**
17280								**Detected**
23040								**No Emission**
23040								**Detected**
28800								**No Emission**
28800								**Detected**
34560								**No Emission**
34560								**Detected**

FCC 15.407

Silvus Technologies
MIMO OFDM Radio
Model: SC 3822

Date: 03/24/2015
Lab: B
Tested By: Kyle Fujimoto

5785 MHz Fundamental at Gain 59
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
5785		V	--	--	Peak			**N/A**
5785		V	--	--	Avg			**Done via Conducted**
11570	56.74	V	74	-17.26	Peak	1.25	155	
11570	48.11	V	54	-5.89	Avg	1.25	155	
17355								**No Emission**
17355								**Detected**
23140								**No Emission**
23140								**Detected**
28925								**No Emission**
28925								**Detected**
34710								**No Emission**
34710								**Detected**

FCC 15.407

Silvus Technologies
MIMO OFDM Radio
Model: SC 3822

Date: 03/24/2015
Lab: B
Tested By: Kyle Fujimoto

5785 MHz Fundamental at Gain 59
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
5785		V	--	--	Peak			**N/A**
5785		V	--	--	Avg			**Done via Conducted**
11570	54.61	V	74	-19.39	Peak	1.25	135	
11570	48.79	V	54	-5.21	Avg	1.25	135	
17355								**No Emission**
17355								**Detected**
23140								**No Emission**
23140								**Detected**
28925								**No Emission**
28925								**Detected**
34710								**No Emission**
34710								**Detected**

FCC 15.407

Silvus Technologies
MIMO OFDM Radio
Model: SC 3822

Date: 03/24/2015
Lab: B
Tested By: Kyle Fujimoto

5785 MHz Fundamental at Gain 59
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
5785		H	--	--	Peak			**N/A**
5785		H	--	--	Avg			**Done via Conducted**
11570	55.16	H	74	-18.84	Peak	1.25	135	
11570	48.71	H	54	-5.29	Avg	1.25	135	
17355								**No Emission**
17355								**Detected**
23140								**No Emission**
23140								**Detected**
28925								**No Emission**
28925								**Detected**
34710								**No Emission**
34710								**Detected**

FCC 15.407

Silvus Technologies
MIMO OFDM Radio
Model: SC 3822

Date: 03/24/2015
Lab: B
Tested By: Kyle Fujimoto

5785 MHz Fundamental at Gain 59
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
5785		H	--	--	Peak			**N/A**
5785		H	--	--	Avg			**Done via Conducted**
11570	54.14	H	74	-19.86	Peak	1.35	125	
11570	48.03	H	54	-5.97	Avg	1.35	125	
17355								**No Emission**
17355								**Detected**
23140								**No Emission**
23140								**Detected**
28925								**No Emission**
28925								**Detected**
34710								**No Emission**
34710								**Detected**

FCC 15.407

Silvus Technologies
MIMO OFDM Radio
Model: SC 3822

Date: 03/24/2015
Lab: B
Tested By: Kyle Fujimoto

5810 MHz Fundamental at Gain 59
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
5810		V	--	--	Peak			**N/A**
5810		V	--	--	Avg			**Done Via Conducted**
11620	57.63	V	74	-16.37	Peak	1.25	155	
11620	48.76	V	54	-5.24	Avg	1.25	155	
17430								**No Emission**
17430								**Detected**
23240								**No Emission**
23240								**Detected**
29050								**No Emission**
29050								**Detected**
34860								**No Emission**
34860								**Detected**

FCC 15.407

Silvus Technologies
MIMO OFDM Radio
Model: SC 3822

Date: 03/24/2015
Lab: B
Tested By: Kyle Fujimoto

5810 MHz Fundamental at Gain 59
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
5810		V	--	--	Peak			**N/A**
5810		V	--	--	Avg			**Done Via Conducted**
11620	55.32	V	74	-18.68	Peak	1.25	155	
11620	43.55	V	54	-10.45	Avg	1.25	155	
17430								**No Emission**
17430								**Detected**
23240								**No Emission**
23240								**Detected**
29050								**No Emission**
29050								**Detected**
34860								**No Emission**
34860								**Detected**

FCC 15.407
Silvus Technologies
MIMO OFDM Radio
Model: SC 3822

Date: 03/24/2015
Lab: B
Tested By: Kyle Fujimoto

5810 MHz Fundamental at Gain 59
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
5810		H	--	--	Peak			**N/A**
5810		H	--	--	Avg			**Done Via Conducted**
11620	53.81	H	74	-20.19	Peak	1.25	155	
11620	41.96	H	54	-12.04	Avg	1.25	155	
17430								**No Emission**
17430								**Detected**
23240								**No Emission**
23240								**Detected**
29050								**No Emission**
29050								**Detected**
34860								**No Emission**
34860								**Detected**

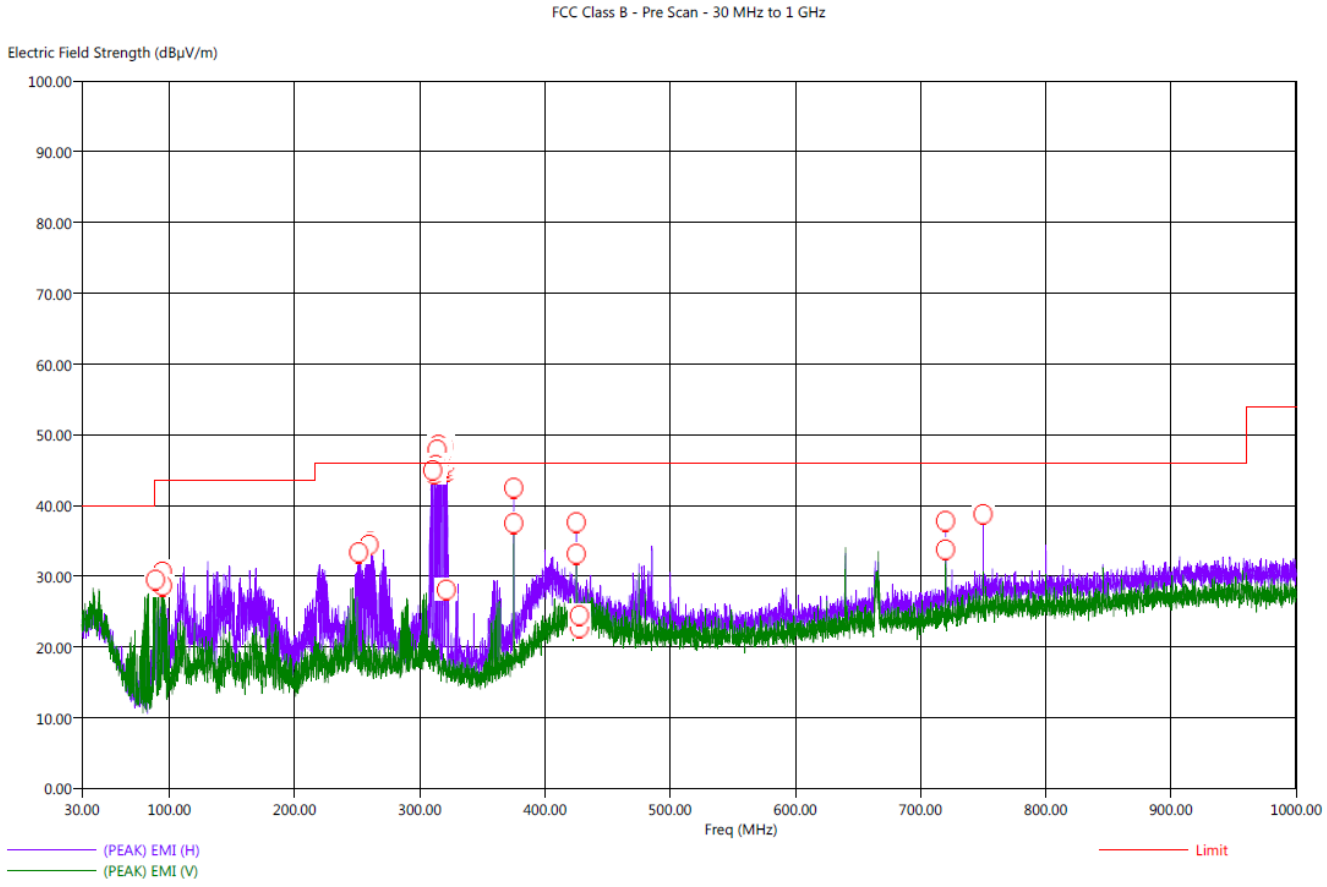
FCC 15.407
Silvus Technologies
MIMO OFDM Radio
Model: SC 3822

Date: 03/24/2015
Lab: B
Tested By: Kyle Fujimoto

5810 MHz Fundamental at Gain 59
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
5810		H	--	--	Peak			**N/A**
5810		H	--	--	Avg			**Done Via Conducted**
11620	55.35	H	74	-18.65	Peak	1.25	135	
11620	48.89	H	54	-5.11	Avg	1.25	135	
17430								**No Emission**
17430								**Detected**
23240								**No Emission**
23240								**Detected**
29050								**No Emission**
29050								**Detected**
34860								**No Emission**
34860								**Detected**

Title: Pre-Scan - FCC Class B
File: Pre-Scan - OFFICIAL - 5760 MHz - Total of 2 Ferrites - Remove Ethernet and PWR COMM Cable Ferrite - With Serial Connection - Connect USB Cable - 03-04-2015.set
3/4/2015 2:32:37 PM
Sequence: Preliminary Scan
Operator: Kyle Fujimoto
EUT Type: MIMO OFDM Radio
EUT Condition: EUT is powered on and transmitting at 5760 MHz - Worst Case Channel
Comments: Customer: Silvus Technologies, Inc.
Model: SC3822
Configuration: Transmitting at 5760 MHz
Ferrite on Power Cable and Serial Debug Cable
Powered by an Exernal Battery



Title: Radiated Final - 30-1000 MHz - FCC Class B 3/4/2015 3:05:59 PM
File: Final Scan - OFFICIAL - 5760 MHz - Total of 2 Ferrites - Remove Ethernet and PWR COMM Cable Ferrite - with Serial Connection - Connect USB Cable - 03-04-20 Sequence: Final Measurements
Operator: Kyle Fujimoto
EUT Type: MIMO OFDM Radio
EUT Condition: EUT is powered on and transmitting at 5760 MHz
Comments: Customer: Silvus Technologies, Inc.
Model: SC3822
Configuration: Transmitting at 5760 MHz
Ferrite on Power Cable and Serial Debug Cable
Powered by an External Battery

FCC Class B

Freq (MHz)	Pol	(PEAK) EMI (dBµV/m)	(QP) EMI (dBµV/m)	Limit (dBµV/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Transducer (dB)	Cable (dB)	Ttbl Aql (deg)	Twr Ht (cm)
89.00	V	21.65	18.12	43.50	-21.85	-25.38	12.13	0.66	66.50	111.25
94.40	H	27.53	21.13	43.50	-15.97	-22.37	12.65	0.69	156.50	205.70
94.50	V	34.64	24.53	43.50	-8.86	-18.97	12.65	0.69	282.50	159.37
251.30	H	23.18	19.51	46.00	-22.82	-26.49	16.44	1.22	327.75	127.85
259.50	H	24.61	21.45	46.00	-21.39	-24.55	16.72	1.24	31.00	110.53
260.50	H	40.31	31.43	46.00	-5.69	-14.57	16.72	1.24	295.75	127.31
310.40	H	22.56	17.24	46.00	-23.44	-28.76	17.42	1.35	15.50	175.55
311.60	H	24.82	20.60	46.00	-21.18	-25.40	17.31	1.36	313.25	127.43
312.80	H	42.69	32.84	46.00	-3.31	-13.16	17.29	1.36	0.25	223.37
313.90	H	46.60	35.09	46.00	0.60	-10.91	17.24	1.36	323.50	127.37
314.90	H	44.39	29.37	46.00	-1.61	-16.63	17.19	1.37	4.75	175.49
315.10	H	45.41	29.19	46.00	-0.59	-16.81	17.18	1.37	338.75	127.19
316.20	H	43.82	32.64	46.00	-2.18	-13.36	17.13	1.37	-0.25	175.61
317.20	H	48.31	37.23	46.00	2.31	-8.77	17.08	1.37	355.75	127.25
317.40	H	43.79	32.42	46.00	-2.21	-13.58	17.06	1.37	145.50	204.80
318.80	H	43.99	34.01	46.00	-2.01	-11.99	17.03	1.38	357.50	142.53
319.30	H	46.32	33.39	46.00	0.32	-12.61	16.96	1.38	0.00	111.37
319.80	H	42.10	28.58	46.00	-3.90	-17.42	16.94	1.38	359.75	159.37
320.20	H	41.58	24.51	46.00	-4.42	-21.49	16.92	1.38	0.00	223.55
320.50	H	42.85	32.51	46.00	-3.15	-13.49	16.91	1.38	357.25	143.37
320.70	H	43.35	31.36	46.00	-2.65	-14.64	16.92	1.38	8.50	223.61
321.00	H	21.57	27.09	46.00	-24.43	-18.91	16.91	1.38	338.50	127.31
321.20	H	21.60	17.49	46.00	-24.40	-28.51	16.86	1.39	122.25	127.55
321.30	H	37.81	27.93	46.00	-8.19	-18.07	16.88	1.39	285.00	351.79
321.50	H	21.51	16.63	46.00	-24.49	-29.37	16.88	1.39	0.00	111.31
375.00	H	43.39	42.42	46.00	-2.61	-3.58	17.82	1.53	186.00	111.13
375.00	V	39.17	37.50	46.00	-6.83	-8.50	17.82	1.53	115.00	159.25
425.00	H	41.62	36.11	46.00	-4.38	-9.89	20.16	1.66	288.25	221.64
425.00	V	37.40	35.83	46.00	-8.60	-10.17	20.16	1.66	340.75	127.19
427.50	V	31.51	28.32	46.00	-14.49	-17.68	20.18	1.67	305.75	127.31
427.60	V	31.06	27.95	46.00	-14.94	-18.05	20.18	1.67	308.50	111.19
720.00	H	43.58	42.62	46.00	-2.42	-3.38	24.60	2.30	303.25	110.83
720.00	V	41.20	40.11	46.00	-4.80	-5.89	24.60	2.30	220.25	111.19
750.00	H	38.89	36.30	46.00	-7.11	-9.70	25.90	2.36	2.75	207.37

FCC 15.407 and FCC Class B

Silvus Technologies
MIMO OFDM Radio
Model: SC 3822

Date: 03/24/2015
Labs: B and D
Tested By: Kyle Fujimoto

Fundamental at 5760, 5785, and 5810 MHz
Non Harmonic Emissions from the Tx and Digital Portion - 10 kHz to 30 MHz

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
								No Emissions Found for the
								Non-Harmonic Emissions from the Tx
								from 10 kHz to 30 MHz
								for both Vertical and Horizontal
								Polarizations
								No Emissions Found for the
								Digital Portion
								from 10 kHz to 30 MHz
								for both Vertical and Horizontal
								Polarizations

FCC 15.407

Silvus Technologies
MIMO OFDM Radio
Model: SC 3822

Date: 03/24/2015
Lab: B
Tested By: Kyle Fujimoto

Non Harmonic Emissions from the Tx and Digital Portion -- 1000 MHz to 40000 MHz
Cabinet Radiated Emissions Test per section (G)(3)(b)(i) of KDB 789033
Both antennas are terminated with 50 ohm terminators.

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4839.97	43.98	V	74	-30.02	Peak	2.5	180	Low Channel
4839.97	30.79	V	54	-23.21	Avg	2.5	180	Vertical X-Axis
4839.97	45.85	V	74	-28.15	Peak	1.25	135	Low Channel
4839.97	32.77	V	54	-21.23	Avg	1.25	135	Vertical Y-Axis
4839.97	43.38	H	74	-30.62	Peak	1.5	135	Low Channel
4839.97	30.69	H	54	-23.31	Avg	1.5	135	Horizontal X-Axis
4839.97	43.25	H	74	-30.75	Peak	1.65	145	Low Channel
4839.97	30.51	H	54	-23.49	Avg	1.65	145	Horizontal Y-Axis
4849.95	44.67	V	74	-29.33	Peak	1.25	155	Middle Channel
4849.95	30.62	V	54	-23.38	Avg	1.25	155	Vertical X-Axis
4849.95	42.62	V	74	-31.38	Peak	1.25	315	Middle Channel
4849.95	30.56	V	54	-23.44	Avg	1.25	315	Vertical Y-Axis
4849.95	43.53	H	74	-30.47	Peak	1.5	225	Middle Channel
4849.95	30.55	H	54	-23.45	Avg	1.5	225	Horizontal X-Axis
4849.95	44.06	H	74	-29.94	Peak	1.35	45	Middle Channel
4849.95	30.44	H	54	-23.56	Avg	1.35	45	Horizontal Y-Axis

FCC 15.407

Silvus Technologies
MIMO OFDM Radio
Model: SC 3822

Date: 03/24/4015
Lab: B
Tested By: Kyle Fujimoto

Non Harmonic Emissions from the Tx and Digital Portion -- 1000 MHz to 40000 MHz
Cabinet Radiated Emissions Test (G)(3)(b)(i) of KDB 789033
Both antennas are terminated with 50 ohm terminators.

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4860	42.75	V	74	-31.25	Peak	1.25	225	High Channel
4860	30.54	V	54	-23.46	Avg	1.25	225	Vertical X-Axis
4860	43.66	V	74	-30.34	Peak	1.35	180	High Channel
4860	30.48	V	54	-23.52	Avg	1.35	180	Vertical Y-Axis
4860	43.65	H	74	-30.35	Peak	1.35	235	High Channel
4860	30.77	H	54	-23.23	Avg	1.35	235	Horizontal X-Axis
4860	43.82	H	74	-30.18	Peak	1.25	245	High Channel
4860	30.78	H	54	-23.22	Avg	1.25	245	Horizontal Y-Axis

FCC 15.407

Silvus Technologies
MIMO OFDM Radio
Model: SC 3822

Date: 03/24/2015
Lab: B
Tested By: Kyle Fujimoto

Non Harmonic Emissions from the Tx and Digital Portion -- 1000 MHz to 40000 MHz
Cabinet Radiated Emissions Test (G)(3)(b)(i) of KDB 789033
Both antennas are terminated with 50 ohm terminators.

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
6340.18	48.76	V	68.2	-19.44	Peak	1.25	155	Low Channel
								Vertical X-Axis
6340.18	51.05	V	68.2	-17.15	Peak	1.25	315	Low Channel
								Vertical Y-Axis
6340.18	50.45	H	68.2	-17.75	Peak	1.35	135	Low Channel
								Horizontal X-Axis
6340.18	51.71	H	68.2	-16.49	Peak	1.35	125	Low Channel
								Horizontal Y-Axis
6340.18	49.18	V	68.2	-19.02	Peak	1.25	145	Middle Channel
								Vertical X-Axis
6340.18	51.82	V	68.2	-16.38	Peak	1.25	225	Middle Channel
								Vertical Y-Axis
6340.18	50.28	H	68.2	-17.92	Peak	1.35	235	Middle Channel
								Horizontal X-Axis
6340.18	50.94	H	68.2	-17.26	Peak	1.25	135	Middle Channel
								Horizontal Y-Axis

FCC 15.407

Silvus Technologies
MIMO OFDM Radio
Model: SC 3822

Date: 03/24/2015
Lab: B
Tested By: Kyle Fujimoto

Non Harmonic Emissions from the Tx and Digital Portion -- 1000 MHz to 40000 MHz
Cabinet Radiated Emissions Test (G)(3)(b)(i) of KDB 789033
Both antennas are terminated with 50 ohm terminators.

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
6340.18	49.92	V	68.2	-18.28	Peak	1.35	145	High Channel
								Vertical X-Axis
6340.18	51.72	V	68.2	-16.42	Peak	1.25	155	High Channel
								Vertical Y-Axis
6340.18	50.38	H	68.2	-17.82	Peak	1.35	145	High Channel
								Horizontal X-Axis
6340.18	52.31	H	68.2	-15.89	Peak	1.25	155	High Channel
								Horizontal Y-Axis

CONDUCTED SPURIOUS EMISSIONS

MIMO OFDM Radio
Model: SC 3822

Set at Low Channel (5760 MHz)

4839.97 MHz
Gain Setting = 59

ANTENNA PORT	Peak EIRP at 1 MHz RBW (dBm)	PEAK EIRP (mW) at 1 MHz RBW
1	-51.65	0.00000683912
2	-58.25	0.00000149624
Total Power:	-50.79	0.00000833535
With 3 + 10 Log (2) dB for Antenna Gain	-44.78	0.0000332660
Effective dBuV/m	50.42	

Note: The effective dBuV/m is derived from section (G)(1)(d)(ii) of KDB 789033.

E[dBuV/m] = EIRP[dBm] + 95.2, for d = 3 meters.

CONDUCTED SPURIOUS EMISSIONS

MIMO OFDM Radio
Model: SC 3822

Set at Middle Channel (5785 MHz)

4849.95 MHz
Gain Setting = 59

ANTENNA PORT	Peak EIRP at 1 MHz RBW (dBm)	PEAK EIRP (mW) at 1 MHz RBW
1	-52.12	0.00000613762
2	-57.44	0.00000180302
Total Power:	-51.00	0.0000794064
With 3 + 10 Log (2) dB for Antenna Gain	-44.99	0.000031696
Effective dBuV/m	50.21	

Note: The effective dBuV/m is derived from section (G)(1)(d)(ii) of KDB 789033.

E[dBuV/m] = EIRP[dBm] + 95.2, for d = 3 meters.

CONDUCTED SPURIOUS EMISSIONS

MIMO OFDM Radio
Model: SC 3822

Set at High Channel (5810 MHz)

4860.00 MHz
Gain Setting = 59

ANTENNA PORT	Peak EIRP at 1 MHz RBW	PEAK EIRP (mW) at 1 MHz RBW
1	-52.28	0.00000591562
2	-57.81	0.00000165577
Total Power:	-51.21	0.00000757139
With 3 + 10 Log (2) dB for Antenna Gain	-45.20	0.00003019
Effective dBuV/m	50.00	

Note: The effective dBuV/m is derived from section (G)(1)(d)(ii) of KDB 789033.

E[dBuV/m] = EIRP[dBm] + 95.2, for d = 3 meters.

CONDUCTED SPURIOUS EMISSIONS

MIMO OFDM Radio
Model: SC 3822

Set at Low Channel (5760 MHz)

6340.18 MHz
Gain Setting = 59

ANTENNA PORT	Peak EIRP at 1 MHz RBW (dBm)	PEAK EIRP (mW) at 1 MHz RBW
1	-45.44	0.0000285759
2	-43.65	0.0000431519
Total Power:	-41.44	0.0000717278
With 3 + 10 Log (2) dB for Antenna Gain	-35.43	0.000286212

Note: The limit is -27 dBm per section CFR Title 47, Part 15, Subpart E, Section 15.407 (b)(4).

CONDUCTED SPURIOUS EMISSIONS

MIMO OFDM Radio
Model: SC 3822

Set at Middle Channel (5785 MHz)

6340.18 MHz
Gain Setting = 59

ANTENNA PORT	Peak EIRP at 1 MHz RBW (dBm)	PEAK EIRP (mW) at 1 MHz RBW
1	-45.64	0.0000272898
2	-43.93	0.0000404576
Total Power:	-41.69	0.0000677642
With 3 + 10 Log (2) dB for Antenna Gain	-35.68	0.000270329

Note: The limit is -27 dBm per section CFR Title 47, Part 15, Subpart E, Section 15.407 (b)(4).

CONDUCTED SPURIOUS EMISSIONS

MIMO OFDM Radio
Model: SC 3822

Set at High Channel (5810 MHz)

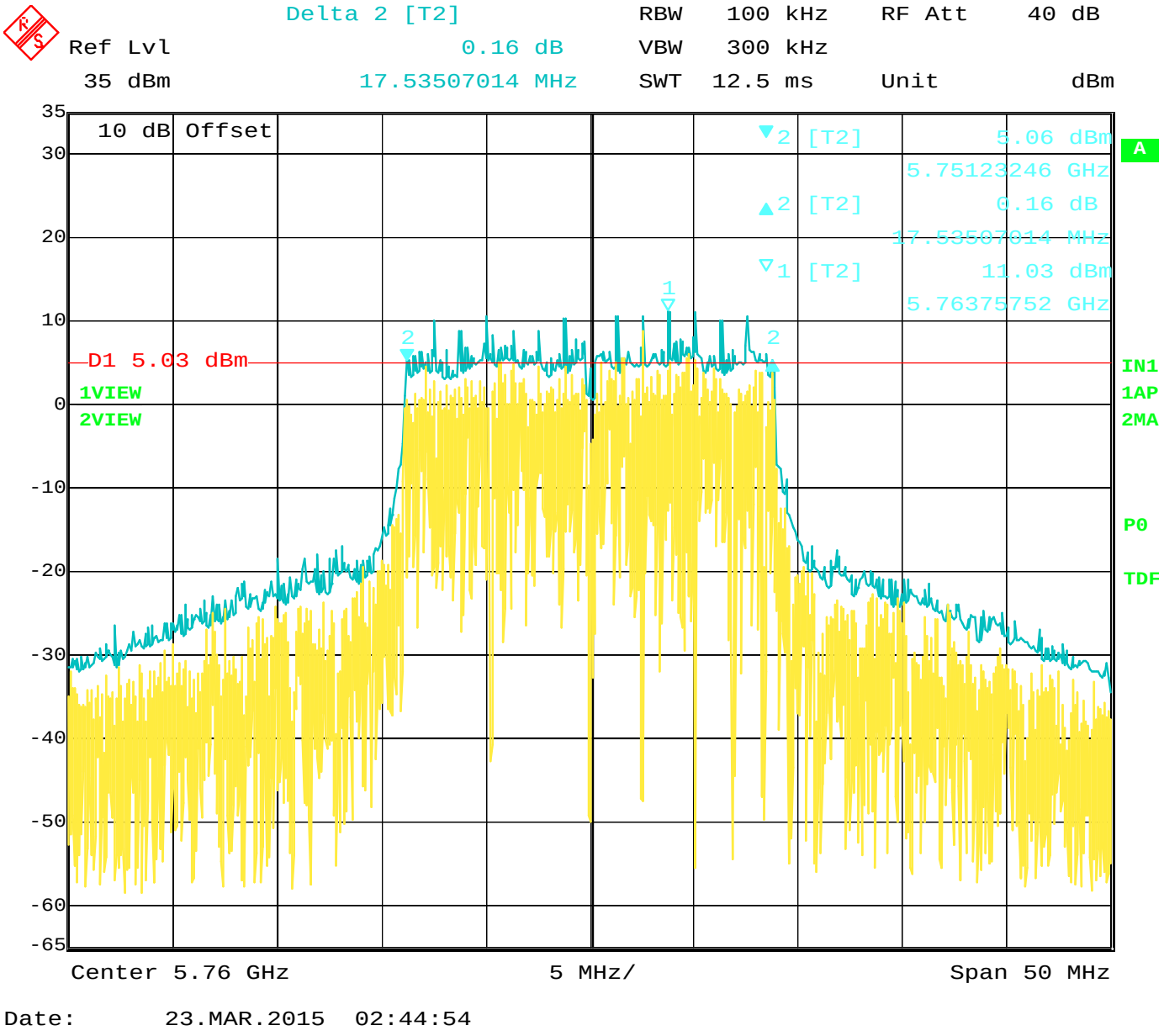
6340.18 MHz
Gain Setting = 59

ANTENNA PORT	Peak EIRP at 1 MHz RBW (dBm)	PEAK EIRP (mW) at 1 MHz RBW
1	-47.46	0.0000179473
2	-43.49	0.0000447713
Total Power:	-42.02	0.0000627187
With 3 + 10 Log (2) dB for Antenna Gain	-36.01	0.000250263

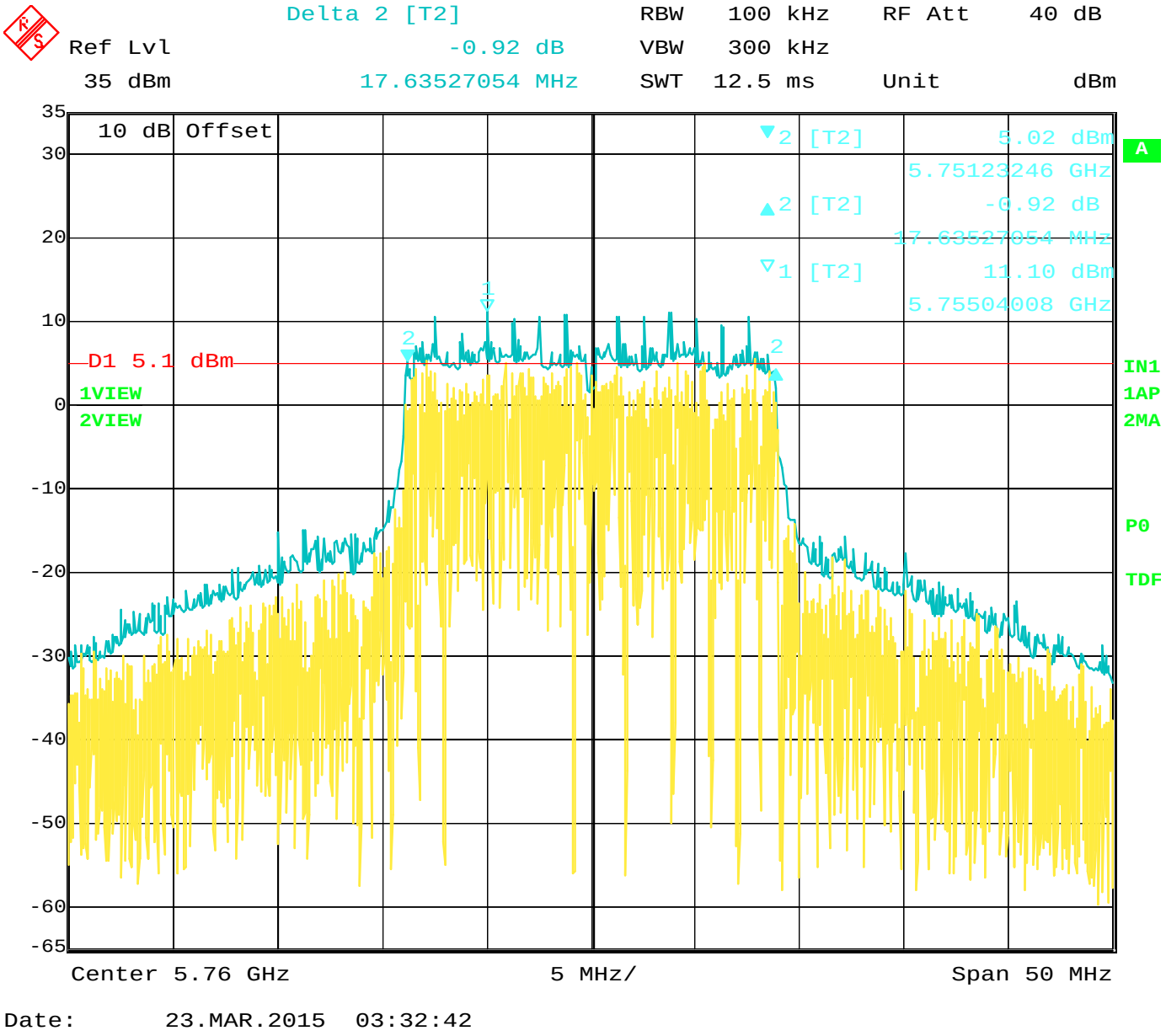
Note: The limit is -27 dBm per section CFR Title 47, Part 15, Subpart E, Section 15.407 (b)(4).

-6 dB BANDWIDTH

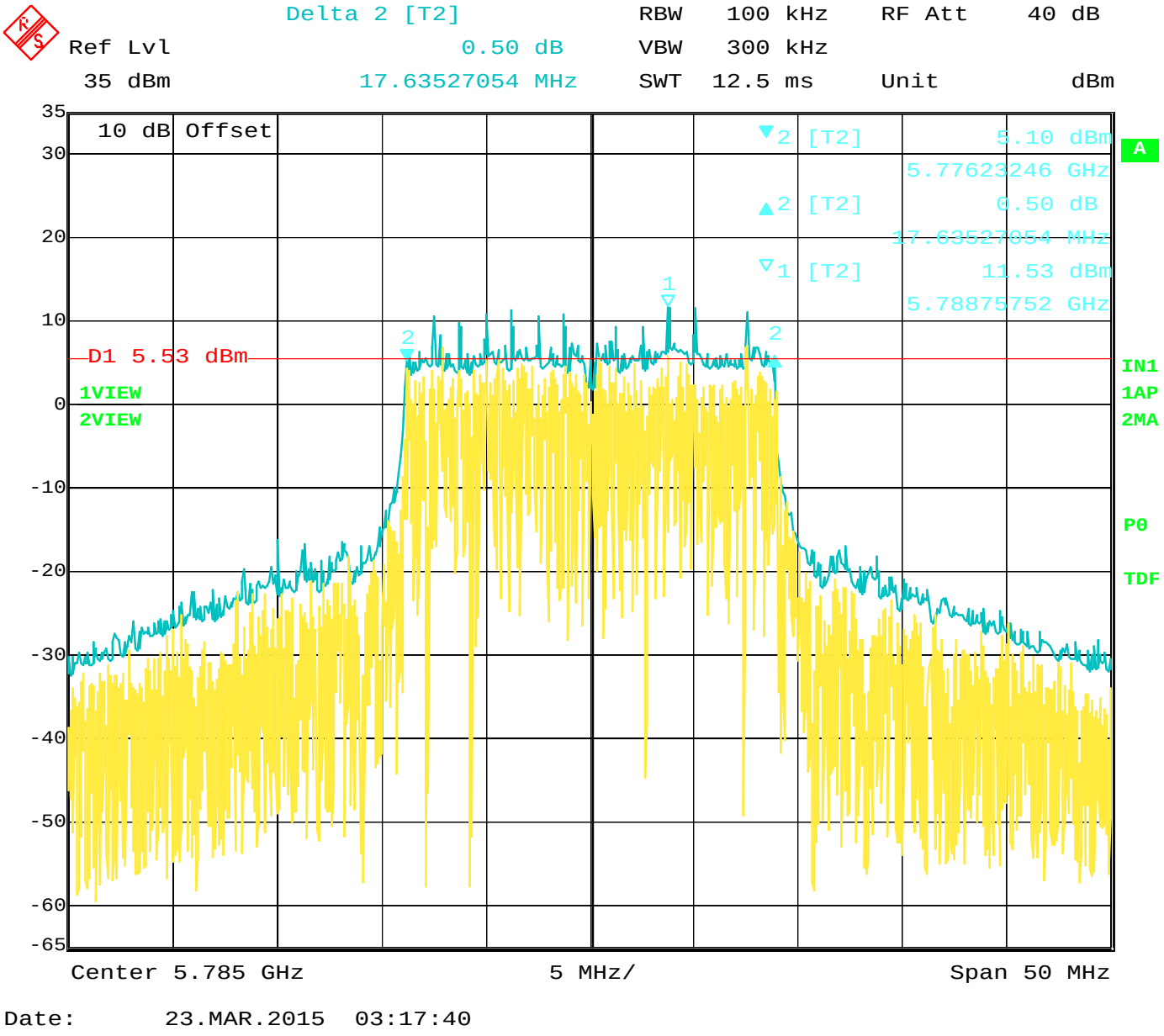
DATA SHEETS



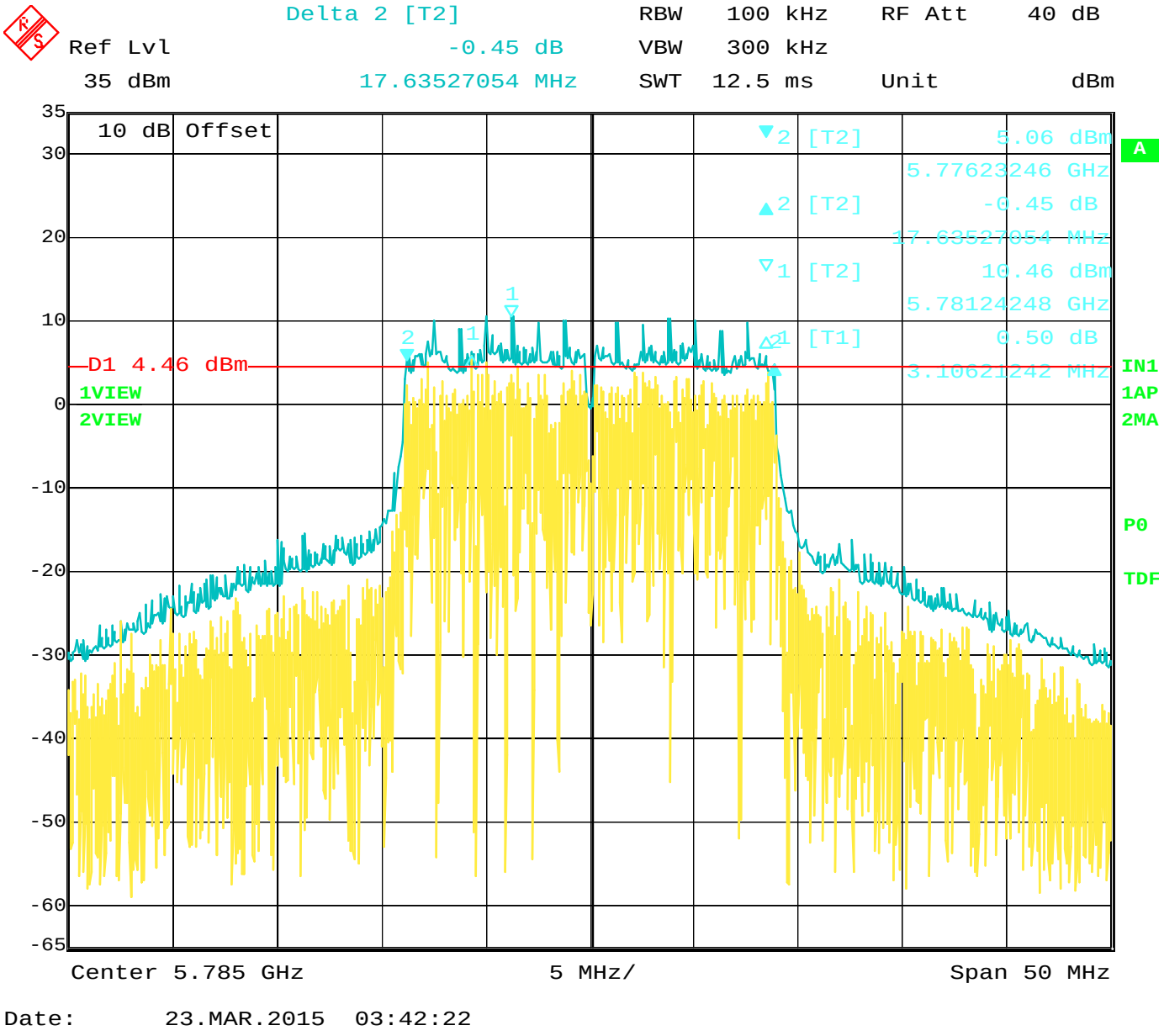
-6 dB Bandwidth for 5760 MHz Fundamental – Antenna Port 1



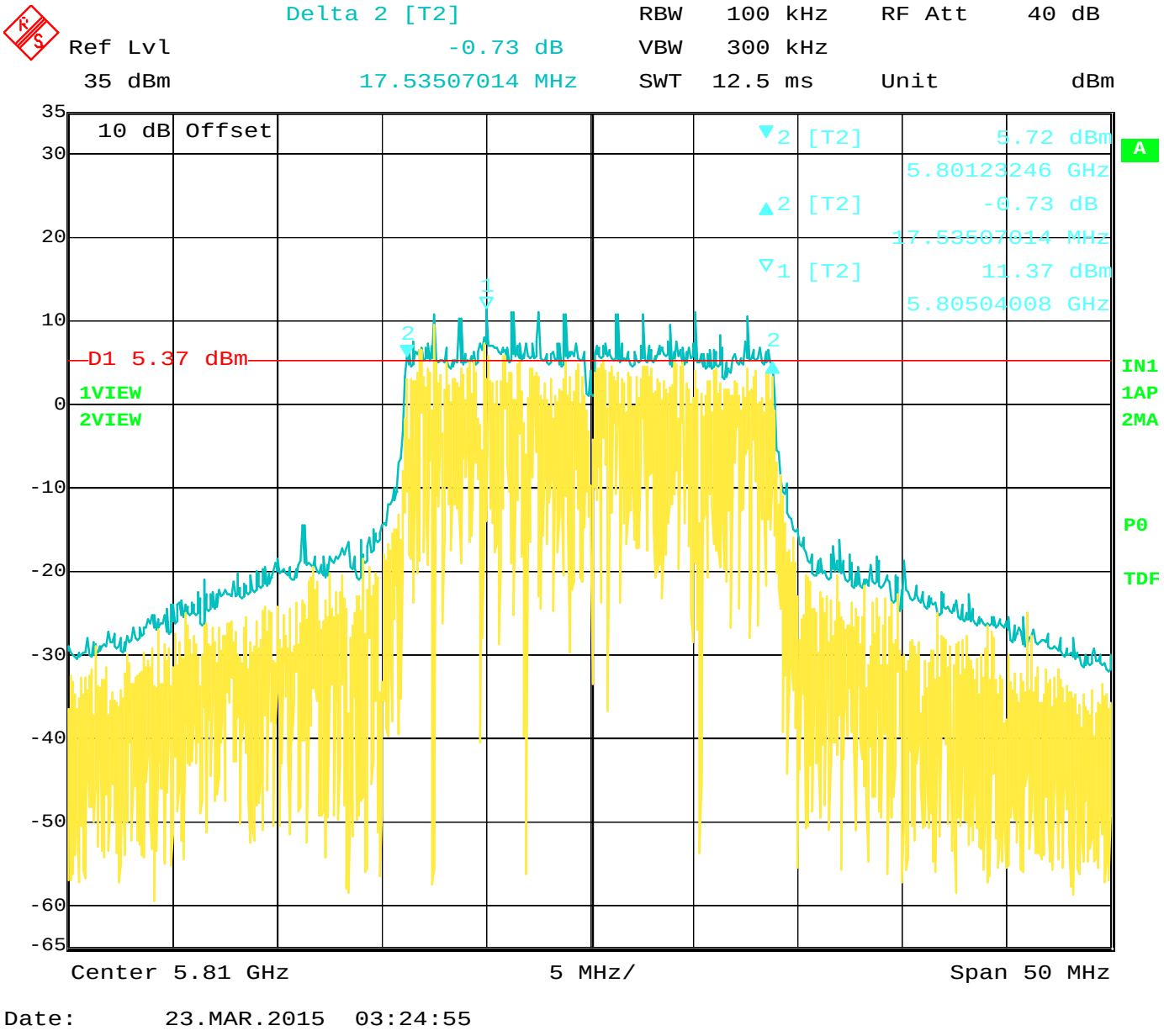
-6 dB Bandwidth for 5760 MHz Fundamental – Antenna Port 2



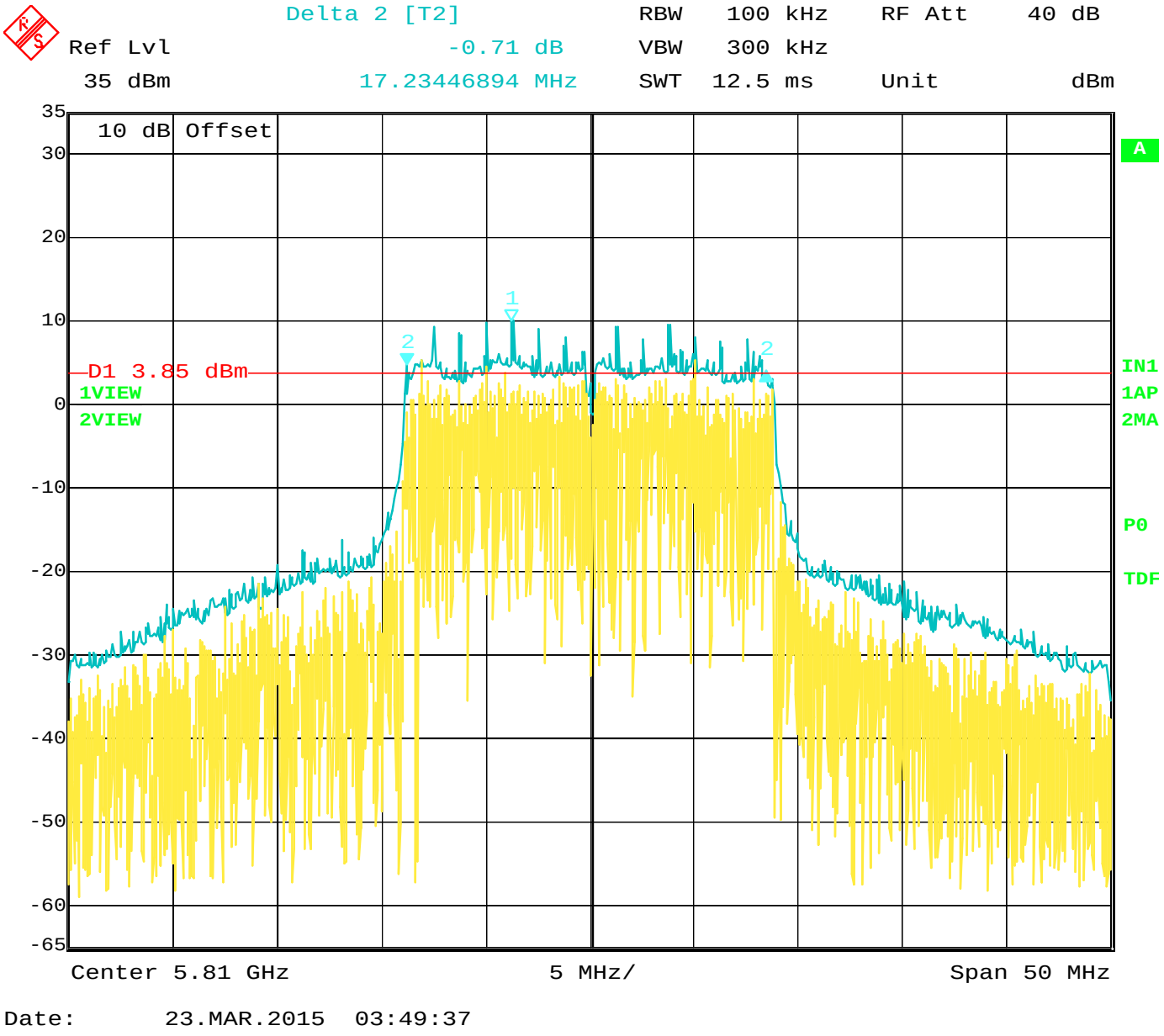
-6 dB Bandwidth for 5785 MHz Fundamental – Antenna Port 1



-6 dB Bandwidth for 5785 MHz Fundamental – Antenna Port 2



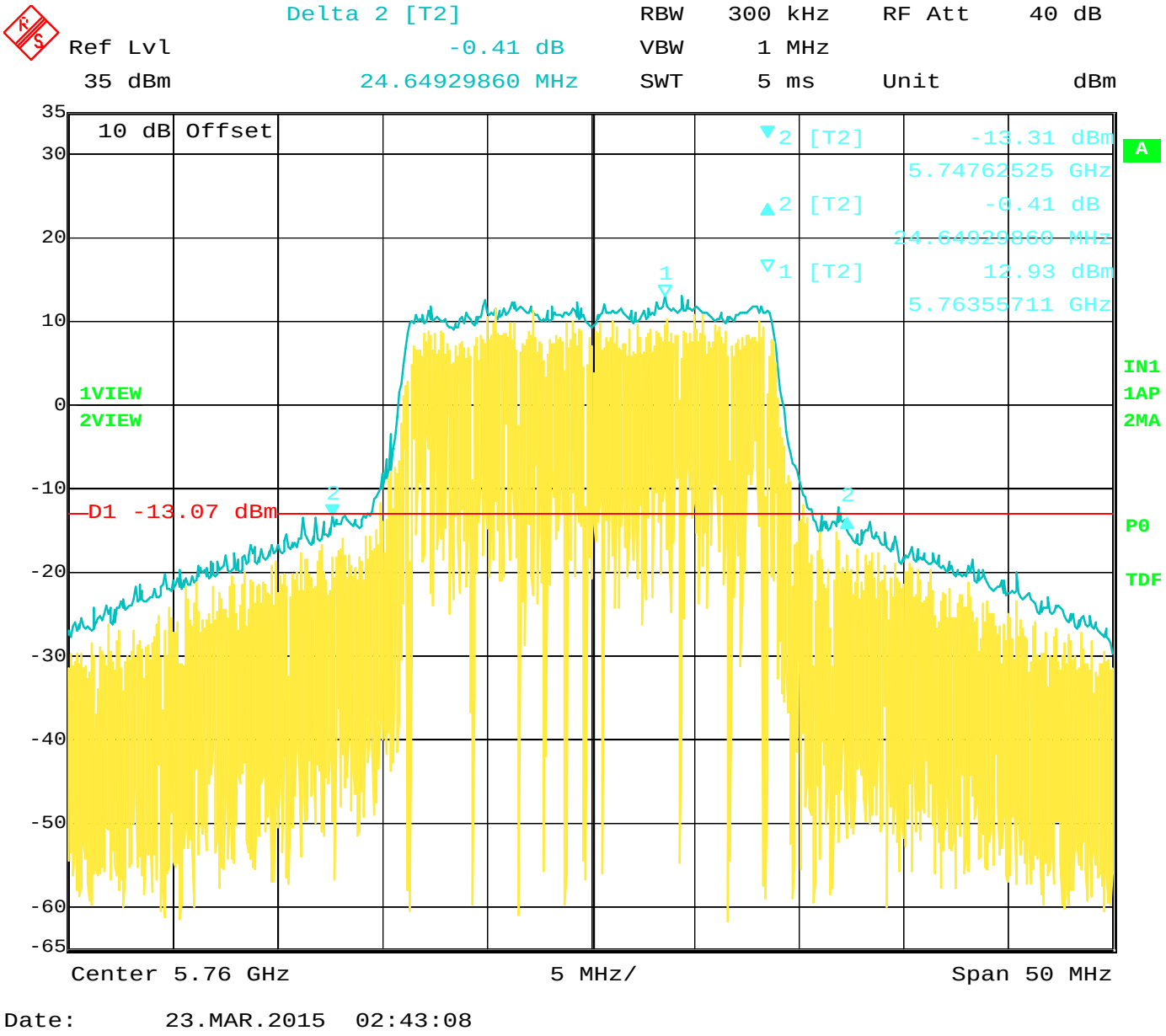
-6 dB Bandwidth for 5810 MHz Fundamental – Antenna Port 1



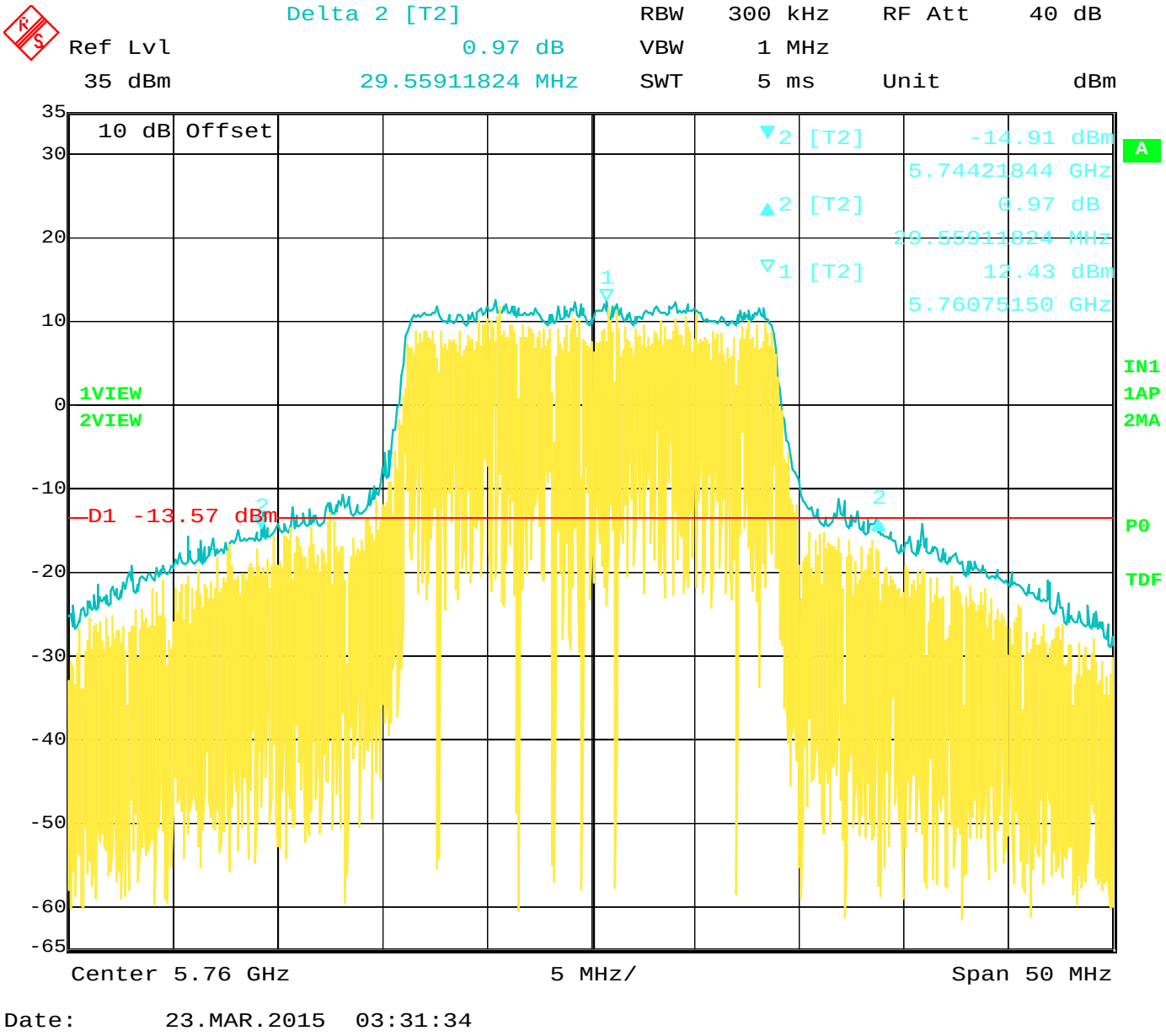
-6 dB Bandwidth for 5810 MHz Fundamental – Antenna Port 2

-26 dB BANDWIDTH

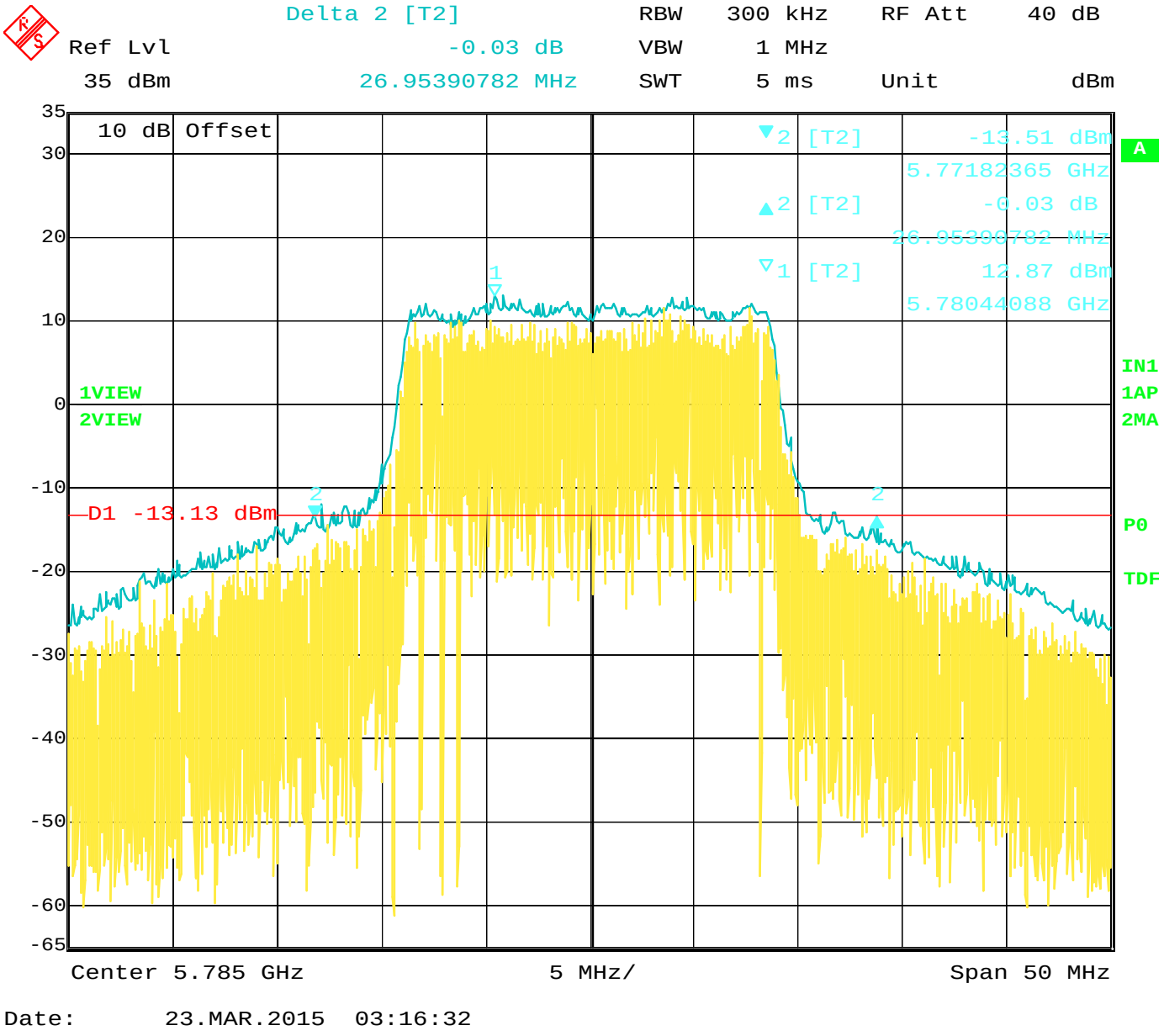
DATA SHEETS



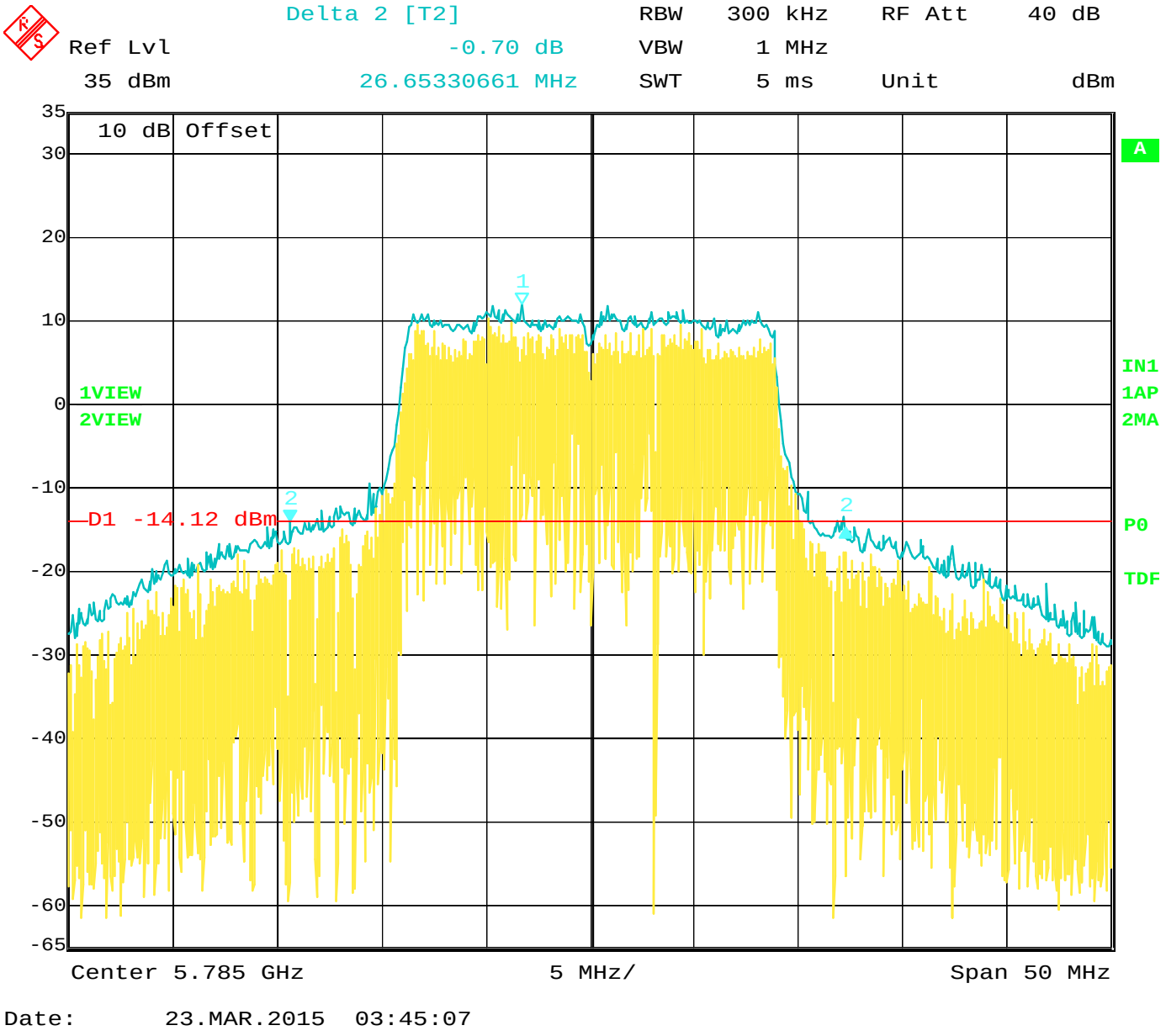
-26 dB Bandwidth for 5760 MHz Fundamental – Antenna Port 1



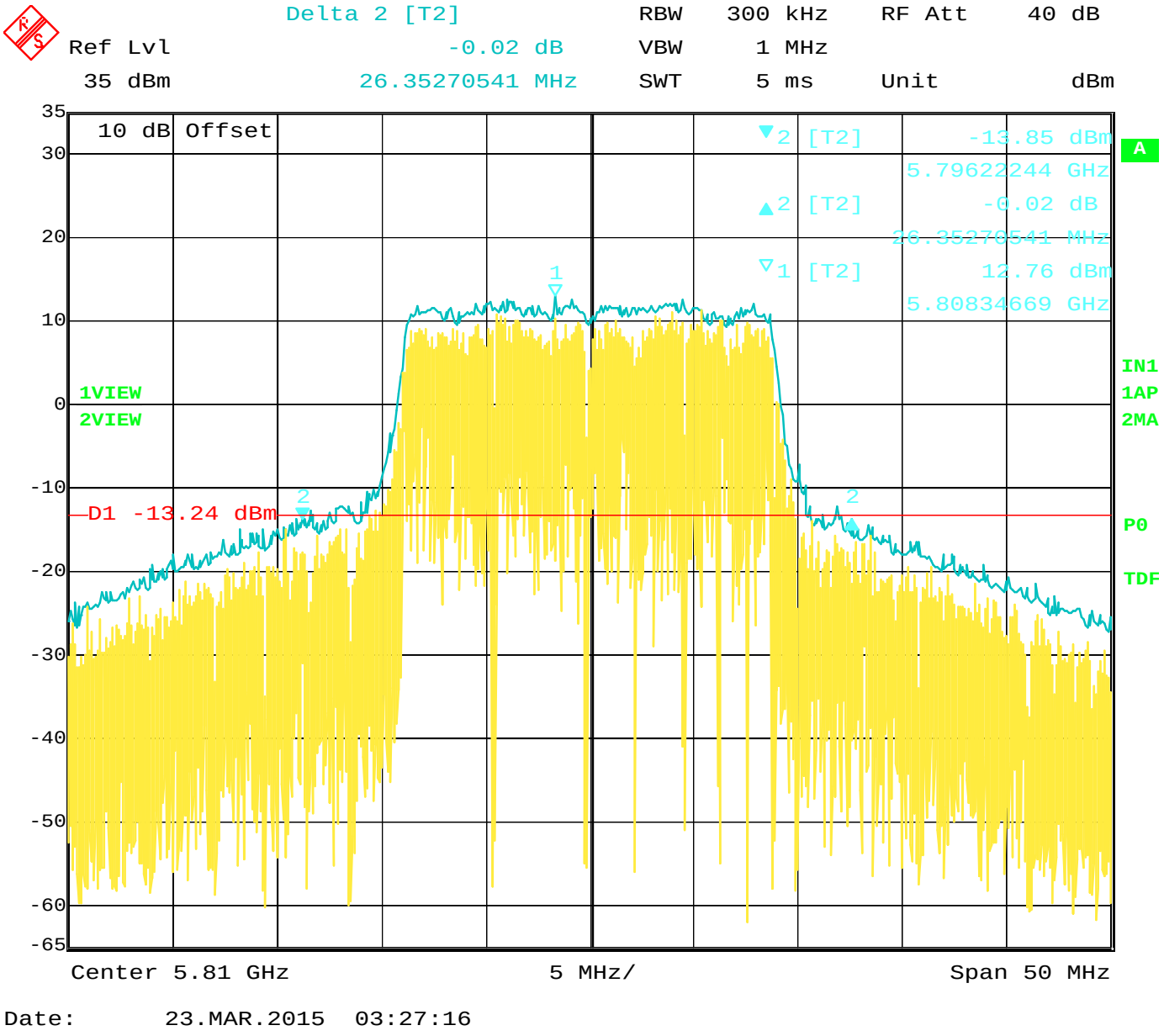
-26 dB Bandwidth for 5760 MHz Fundamental – Antenna Port 2



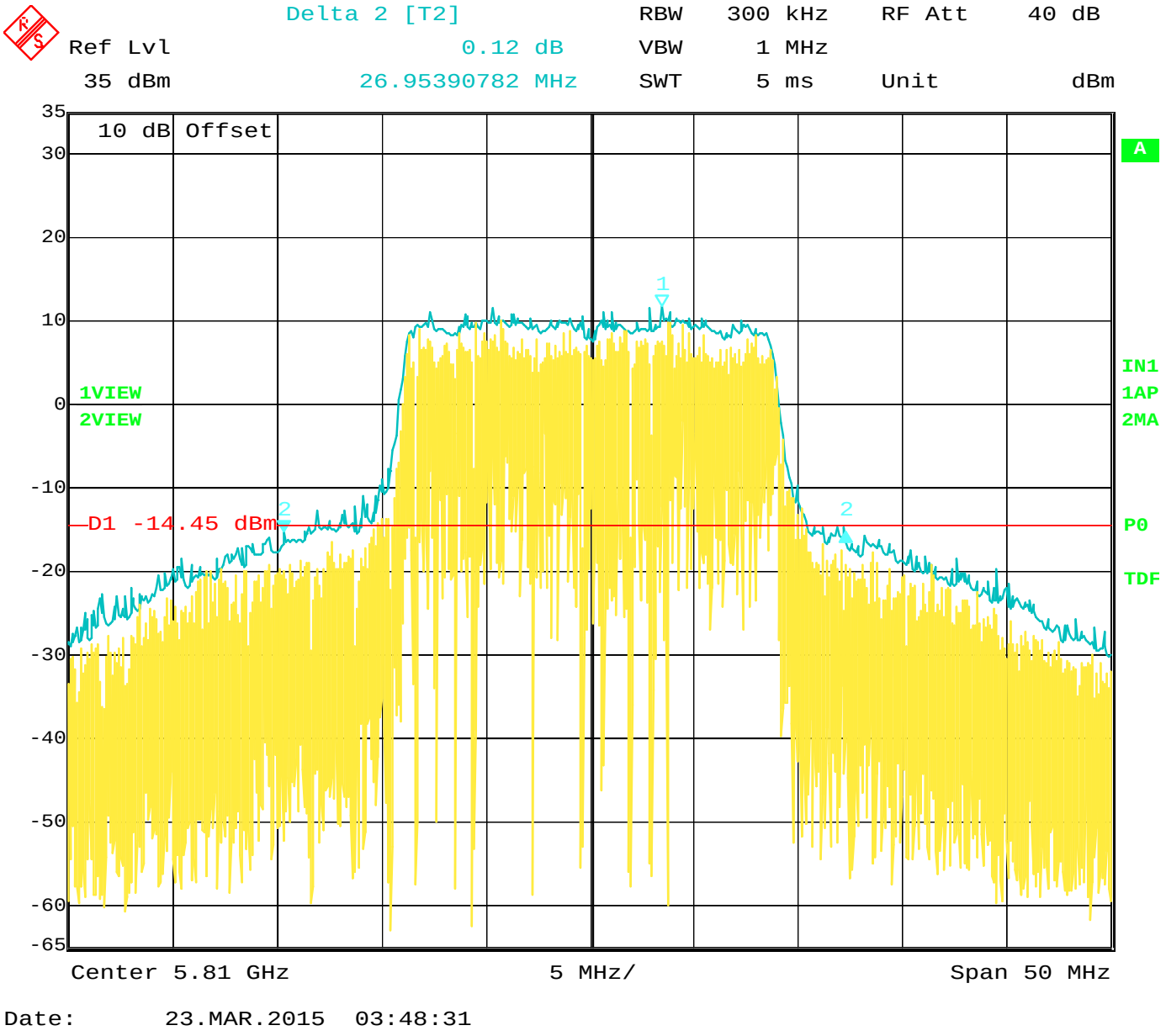
-26 dB Bandwidth for 5785 MHz Fundamental – Antenna Port 1



-26 dB Bandwidth for 5785 MHz Fundamental – Antenna Port 2



-26 dB Bandwidth for 5810 MHz Fundamental – Antenna Port 1



-26 dB Bandwidth for 5810 MHz Fundamental – Antenna Port 2

AVERAGE POWER OUTPUT

DATA SHEETS

AVERAGE OUTPUT POWER

MIMO OFDM Radio
Model: SC3822

Limit = 29.99 dBm

5760 MHz
Gain Setting = 59

ANTENNA PORT	AVERAGE POWER (dBm)	AVERAGE POWER (mW)
1	21.76	149.97
2	21.13	129.72
Total Power:	24.47	279.69

AVERAGE OUTPUT POWER

MIMO OFDM Radio
Model: SC3822

Limit = 29.99 dBm

5785 MHz
Gain Setting = 59

ANTENNA PORT	AVERAGE POWER (dBm)	AVERAGE POWER (mW)
1	21.71	148.25
2	22.29	169.82
Total Power:	25.03	318.07

AVERAGE OUTPUT POWER

MIMO OFDM Radio
Model: SC3822

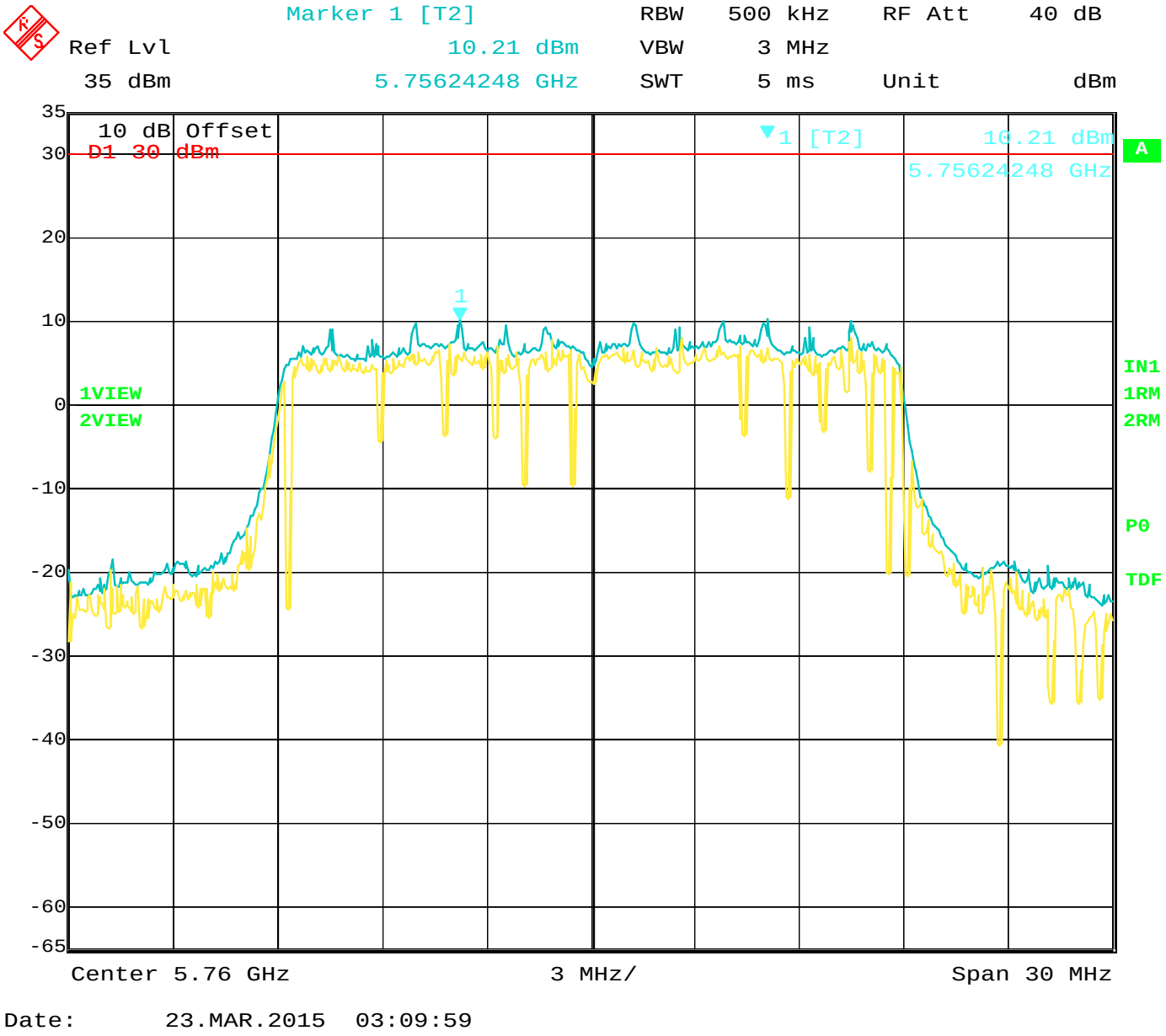
Limit = 29.99 dBm

5810 MHz
Gain Setting = 59

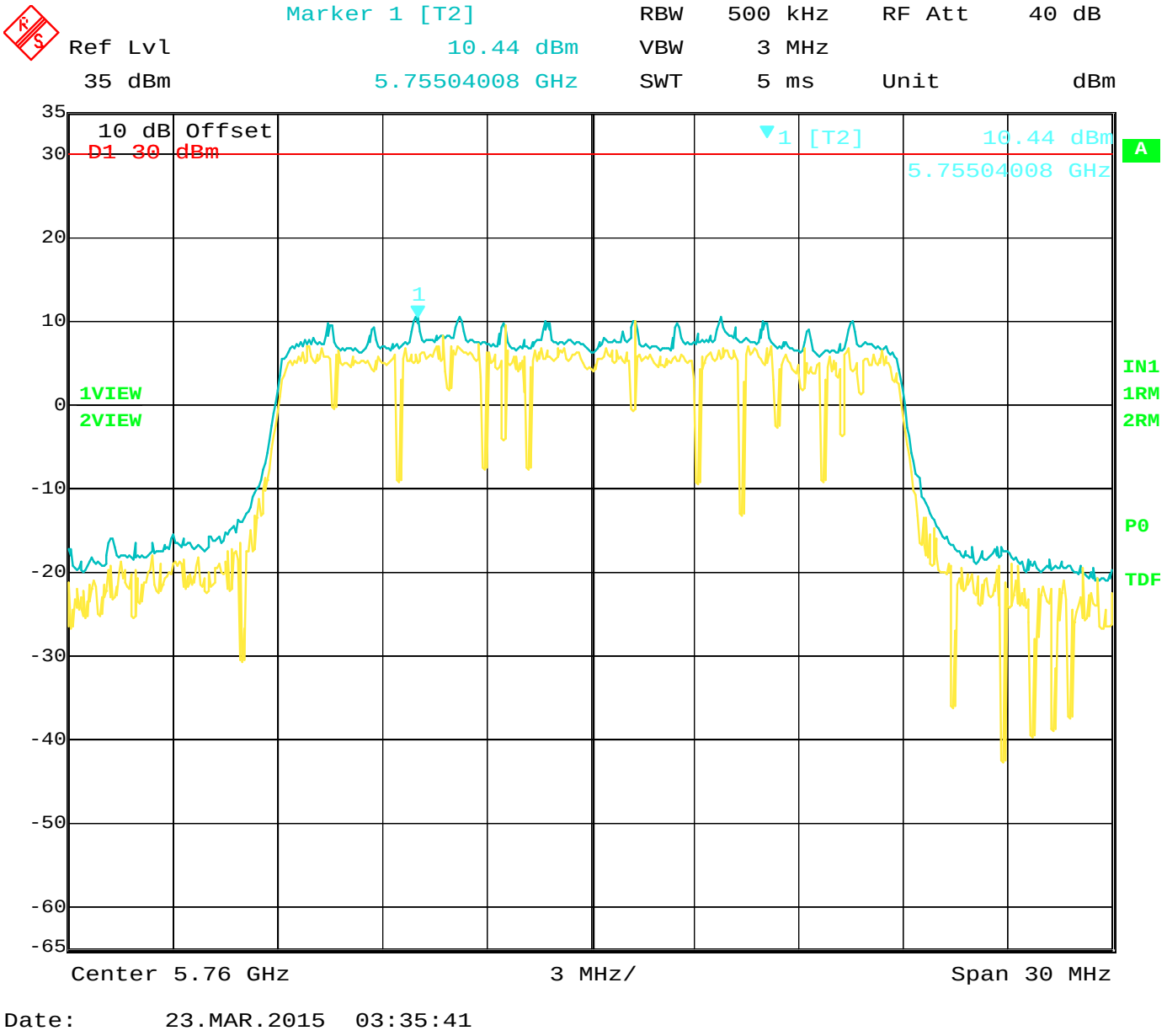
ANTENNA PORT	AVERAGE POWER (dBm)	AVERAGE POWER (mW)
1	21.91	155.24
2	22.40	173.78
Total Power:	25.17	329.02

SPECTRAL DENSITY OUTPUT

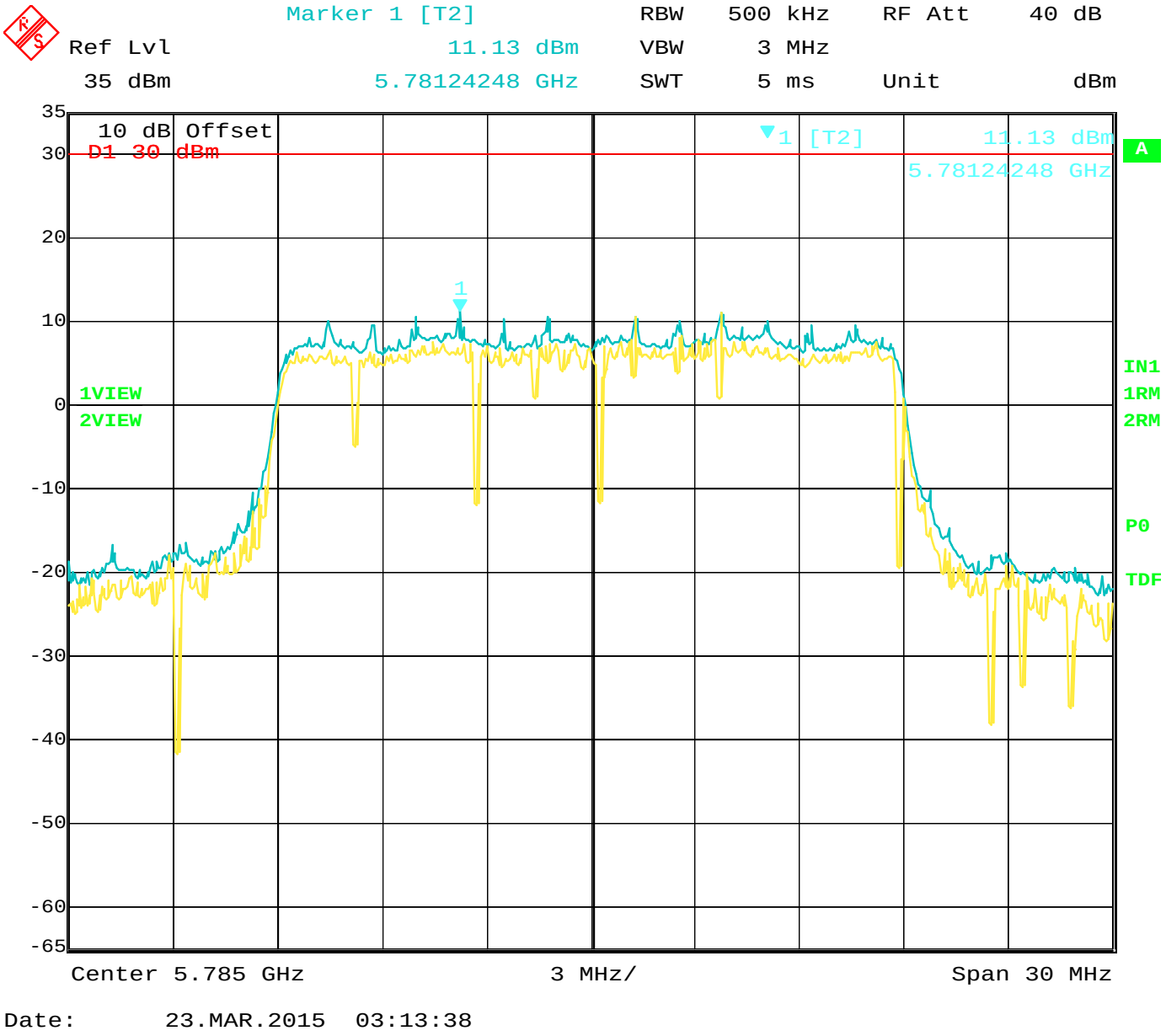
DATA SHEETS



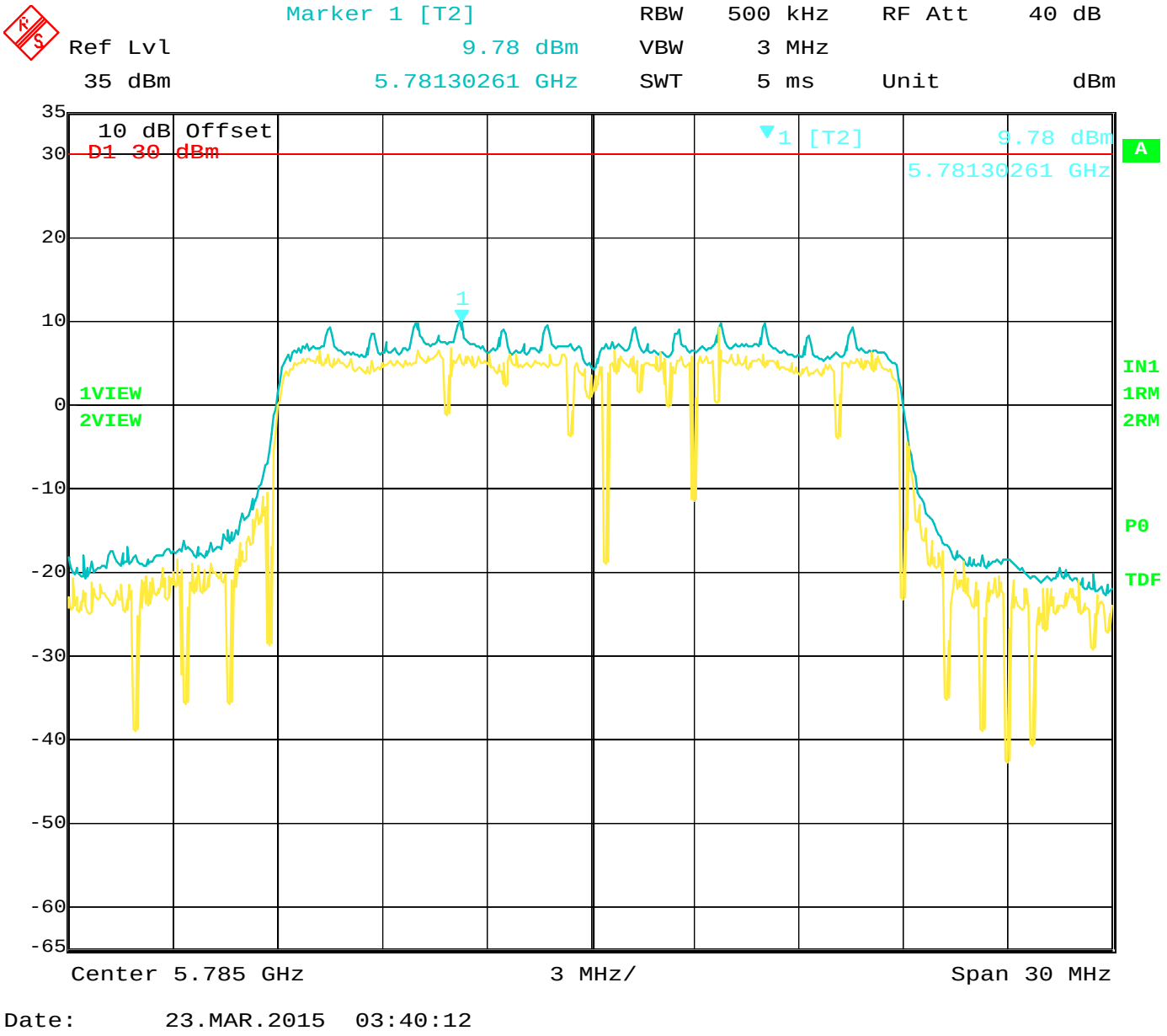
Power Spectral Density Output – 5760 MHz – Antenna Port 1
Number of Outputs Correction Factor = 3+10 log (2) = 6.01 dB
Actual Power Spectral Output = +16.22 dBm



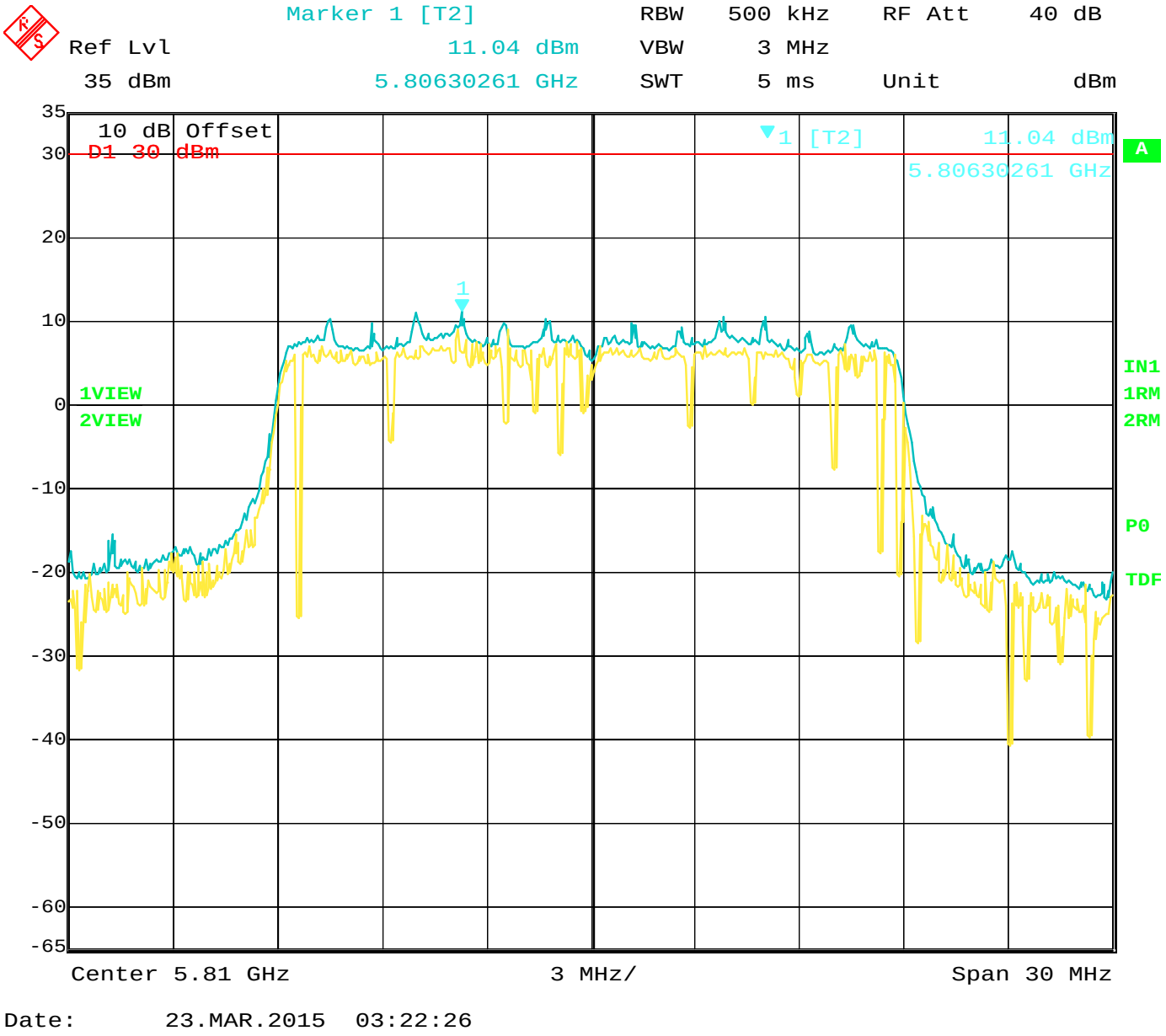
Power Spectral Density Output – 5760 MHz – Antenna Port 2
Number of Outputs Correction Factor = 3+10 log (2) = 6.01 dB
Actual Power Spectral Output = +16.45 dBm



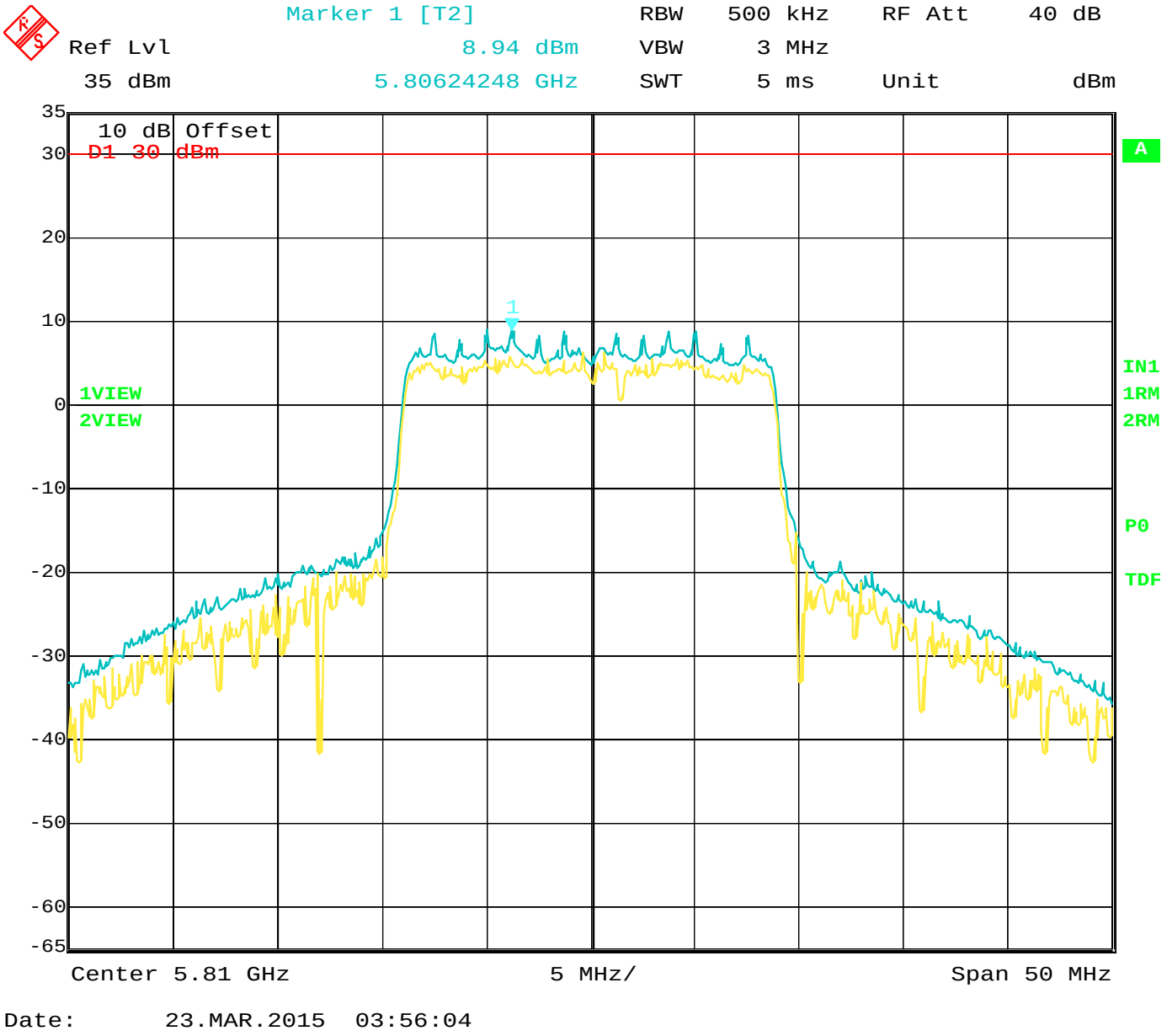
Power Spectral Density Output – 5785 MHz – Antenna Port 1
Number of Outputs Correction Factor = 3+10 log (2) = 6.01 dB
Actual Power Spectral Output = +17.14 dBm



Power Spectral Density Output – 5785 MHz – Antenna Port 2
Number of Outputs Correction Factor = 3+10 log (2) = 6.01 dB
Actual Power Spectral Output = +15.79 dBm



Power Spectral Density Output – 5810 MHz – Antenna Port 1
Number of Outputs Correction Factor = 3+10 log (2) = 6.01 dB
Actual Power Spectral Output = +17.05 dBm



Power Spectral Density Output – 5810 MHz – Antenna Port 2
Number of Outputs Correction Factor = 3+10 log (2) = 6.01 dB
Actual Power Spectral Output = +14.95 dBm

BAND EDGES

DATA SHEETS

FCC 15.407

Silvus Technologies
MIMO OFDM Radio
Model: SC 3822

Date: 03/23/2015
Lab: B
Tested By: Kyle Fujimoto

Band Edges - Vertical Polarization
Low Channel Gain Setting = 59, High Channel Gain Setting = 59
Worst Case - X-Axis

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
5760	123.46	V	--	--	Peak	1.5	225	**Fundamental**
								of Low Channel
5724.51	76.46	V	78.2	-1.74	Peak	1.5	225	**Band Edge of**
5725	75.45	V	78.2	-2.75	Peak	1.5	225	**Low Channel**
5714.16	72.04	V	74	-1.96	Peak	1.5	225	**Band Edge of**
5714.16	53.70	V	54	-0.3	Avg	1.5	225	**Low Channel - 15.209***
5715	70.04	V	74	-3.96	Peak	1.5	225	**Band Edge of**
5715	53.86	V	54	-0.14	Avg	1.5	225	**Low Channel - 15.209***
5810	122.70	V	--	--	Peak	1.5	225	**Fundamental**
								of High Channel
5850	72.15	V	78.2	-6.05	Peak	1.5	225	**Band Edge of**
								High Channel
5860	66.88	V	68.2	-1.32	Peak	1.5	225	**Band Edge of**
								High Channel

See section (G)(2)(c) of KDB 789033 D02v01, which allows compliance to FCC 15.209 for all emissions.

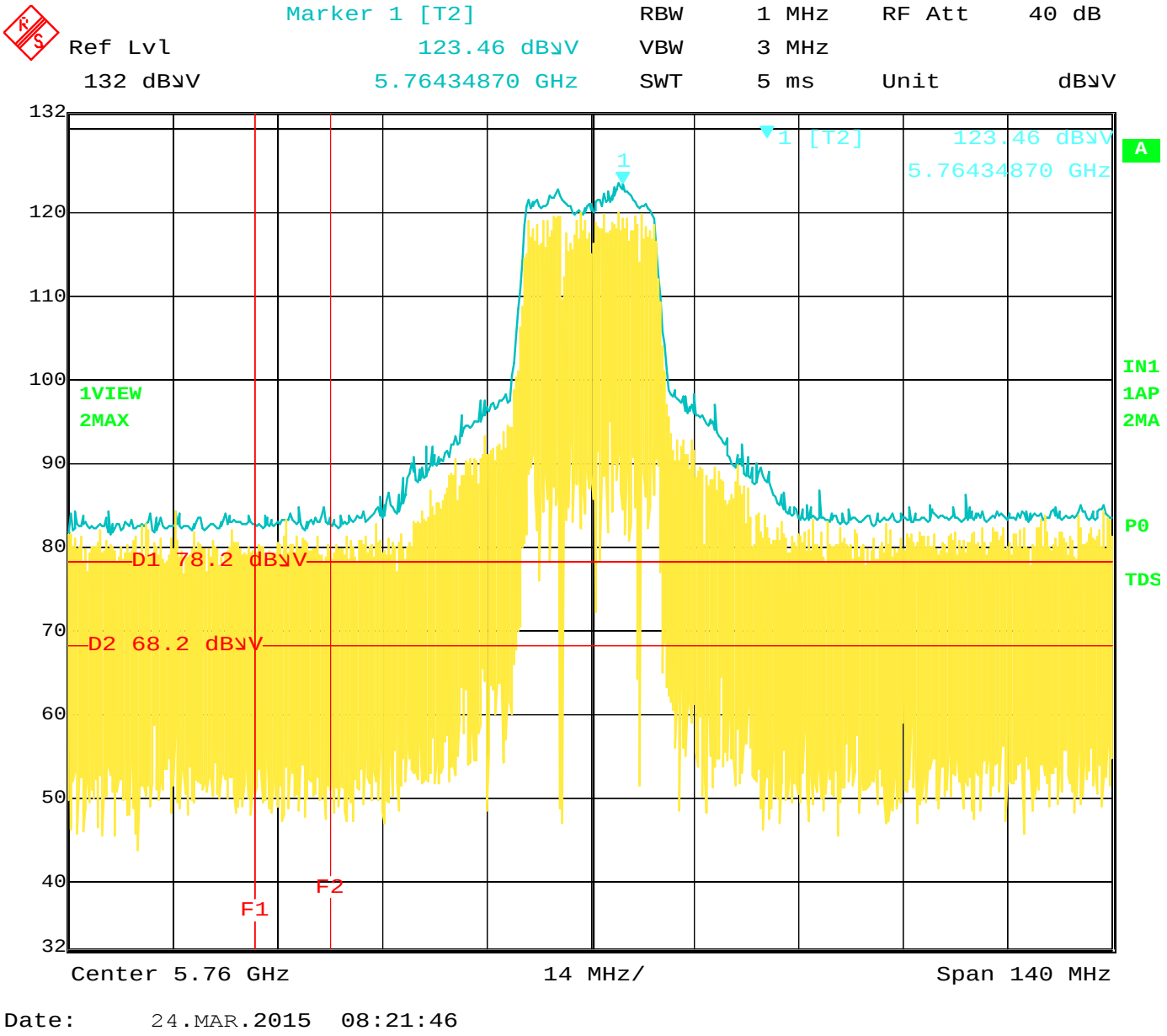
FCC 15.407

Silvus Technologies
MIMO OFDM Radio
Model: SC 3822

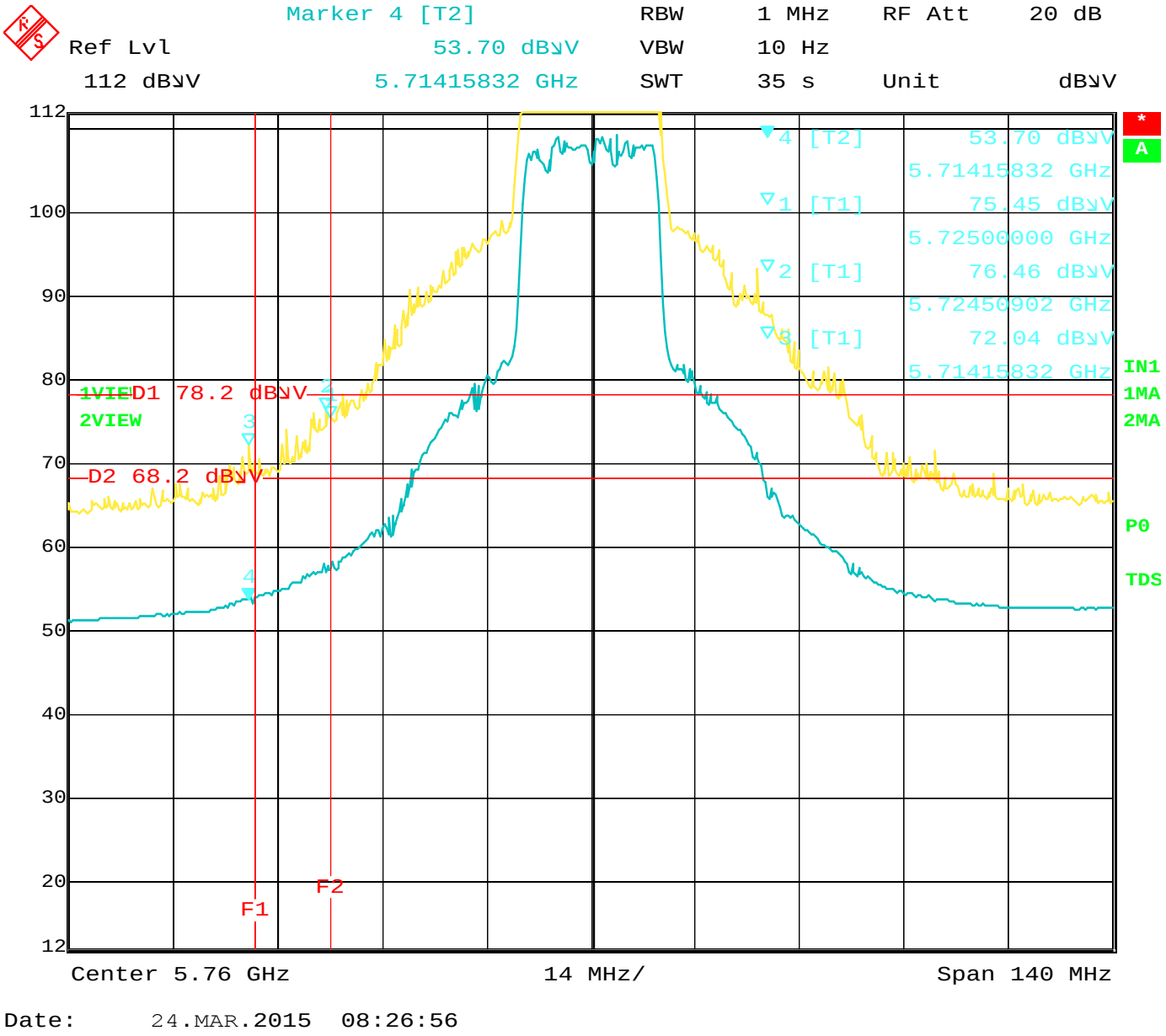
Date: 03/23/2015
Lab: B
Tested By: Kyle Fujimoto

Band Edges - Horizontal Polarization
Low Channel Gain Setting = 59, High Channel Gain Setting = 59
Worst Case - X-Axis

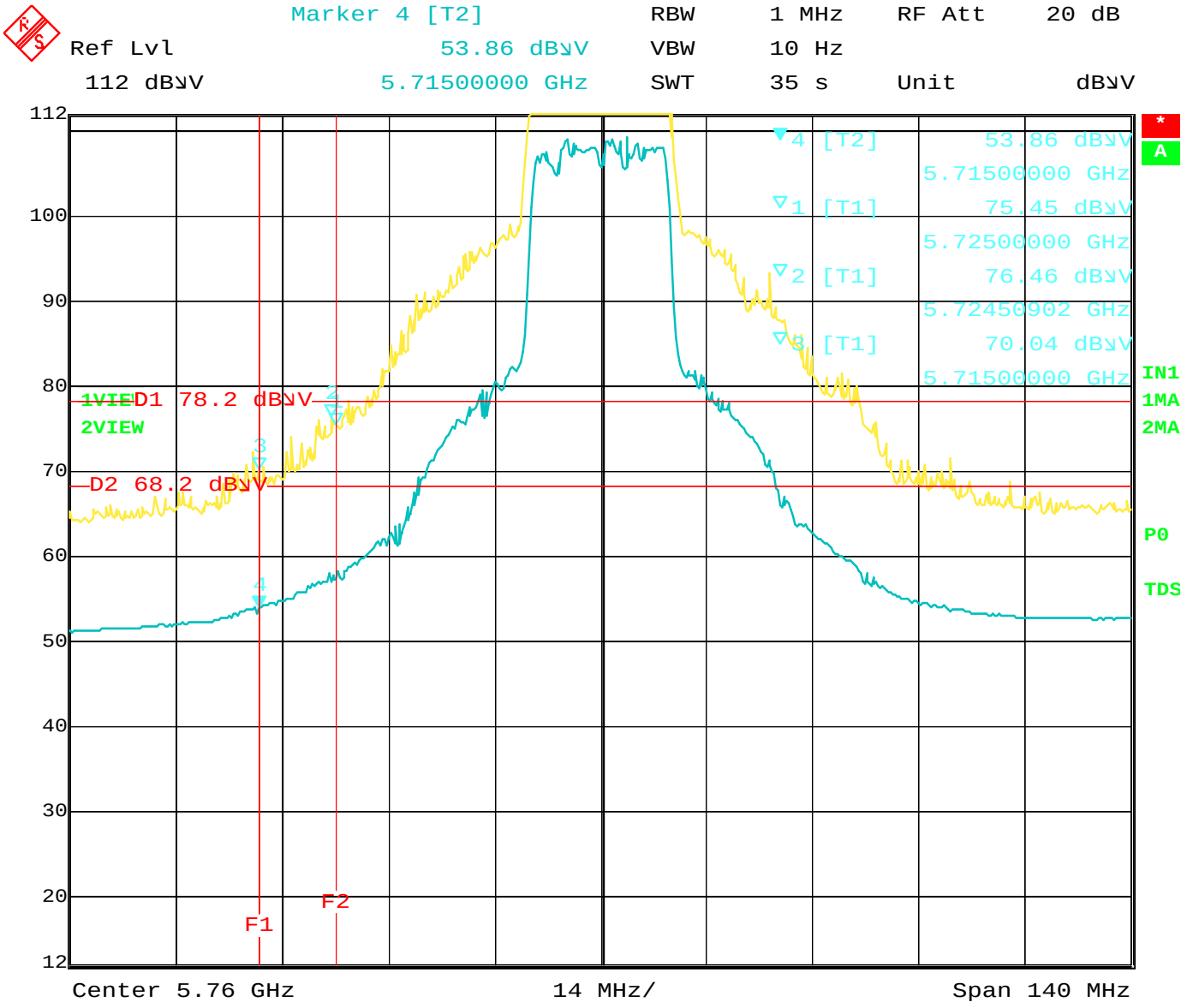
Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
5760	114.15	H	--	--	Peak	1.5	135	**Fundamental of Low Channel**
5725	66.70	H	78.2	-11.5	Peak	1.5	135	**Band Edge of Low Channel**
5715	63.45	H	68.2	-4.75	Peak	1.5	135	**Band Edge of Low Channel**
5810	113.68	H	--	--	Peak	1.5	135	**Fundamental of High Channel**
5850	66.24	H	78.2	-11.96	Peak	1.5	135	**Band Edge of High Channel**
5860	65.54	H	68.2	-2.66	Peak	1.5	135	**Band Edge of High Channel**



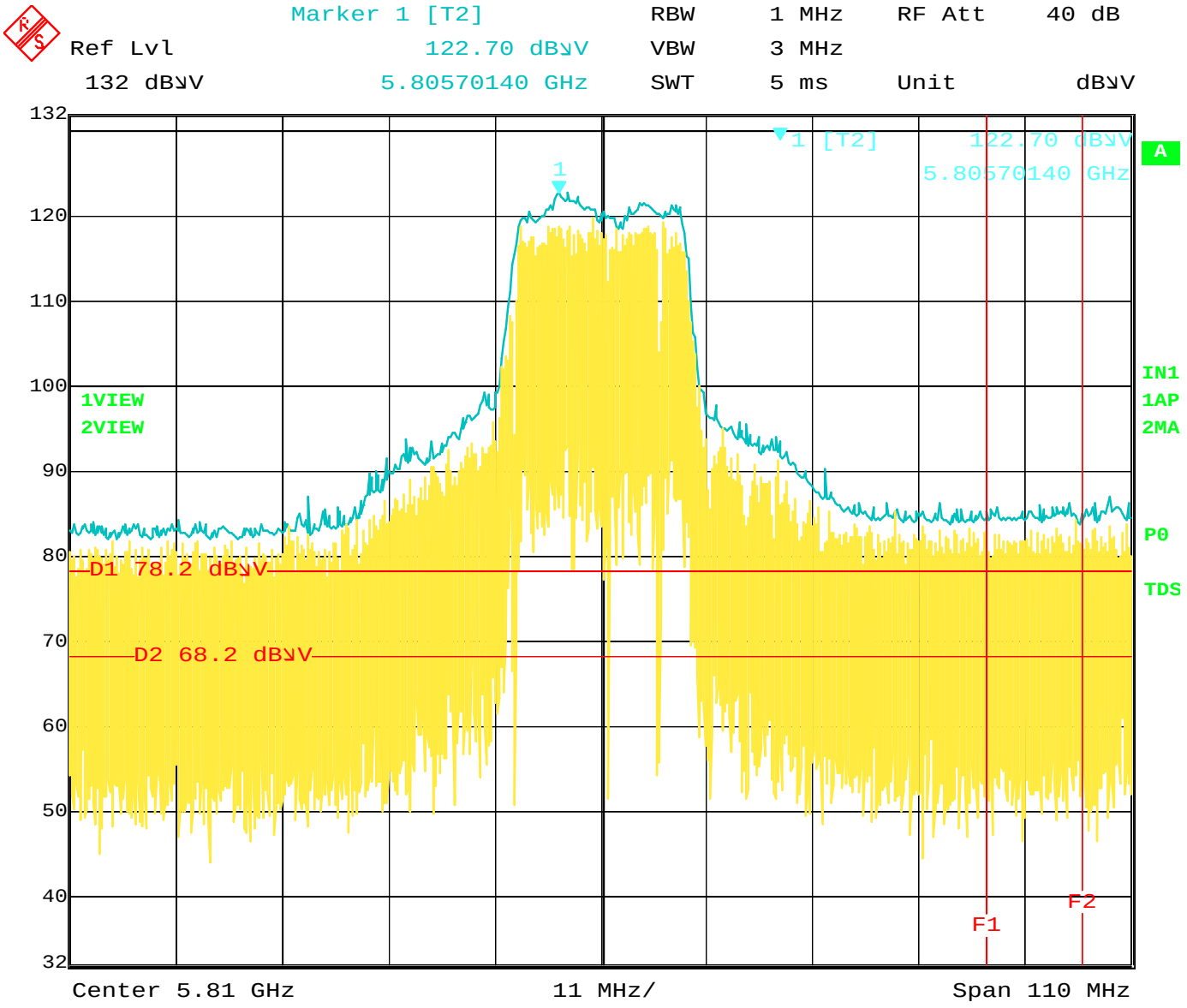
Band Edge for 5760 MHz Fundamental –Vertical Polarization – X-Axis (Worst Case)
Gain Setting 59 – Peak Fundamental Emission



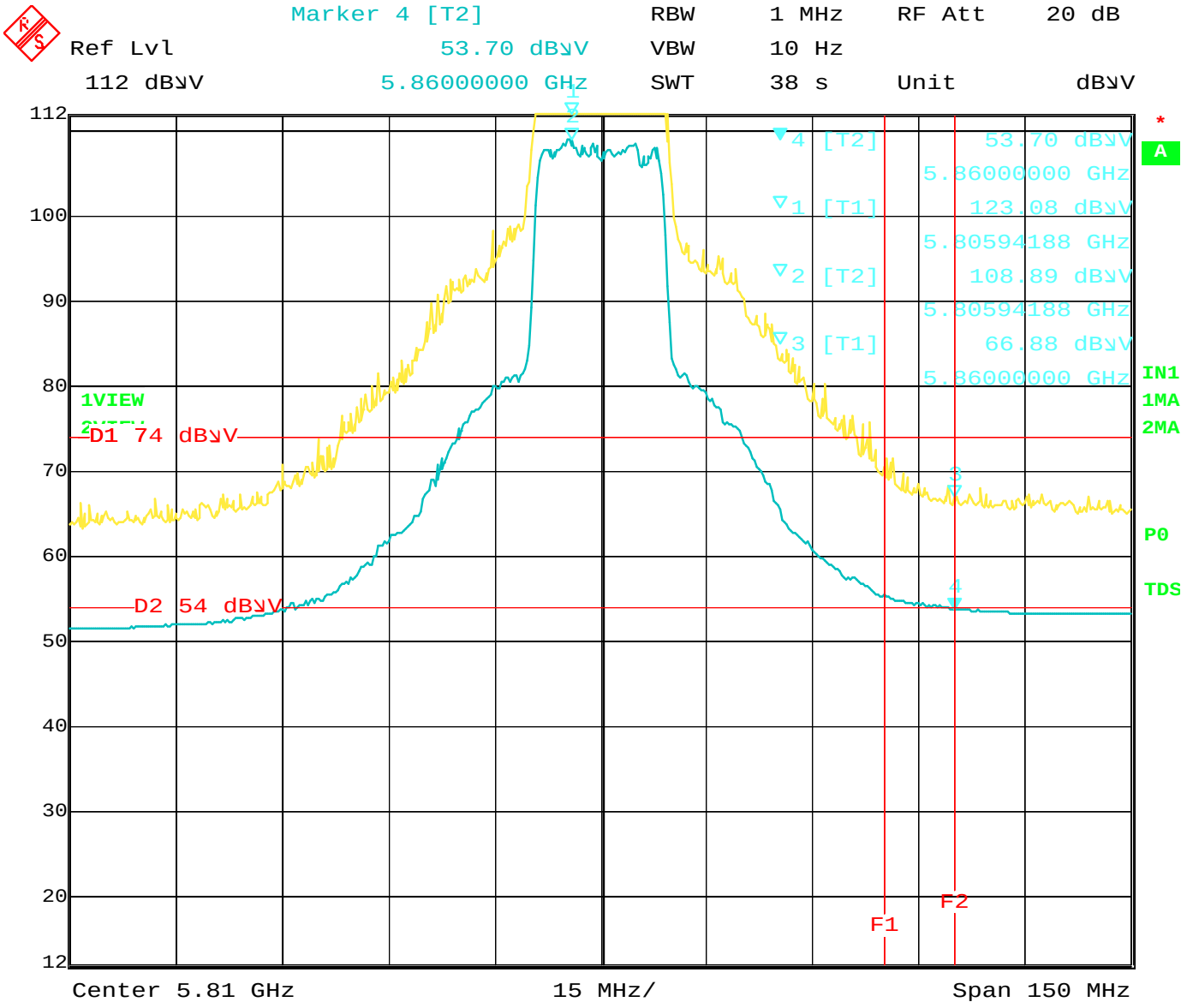
Band Edge for 5760 MHz Fundamental –Vertical Polarization – X-Axis (Worst Case)
Gain Setting 59 – Emission of the Band Edge with Averaging per section (6)(d) of KDB 789033 at 5714.16 MHz



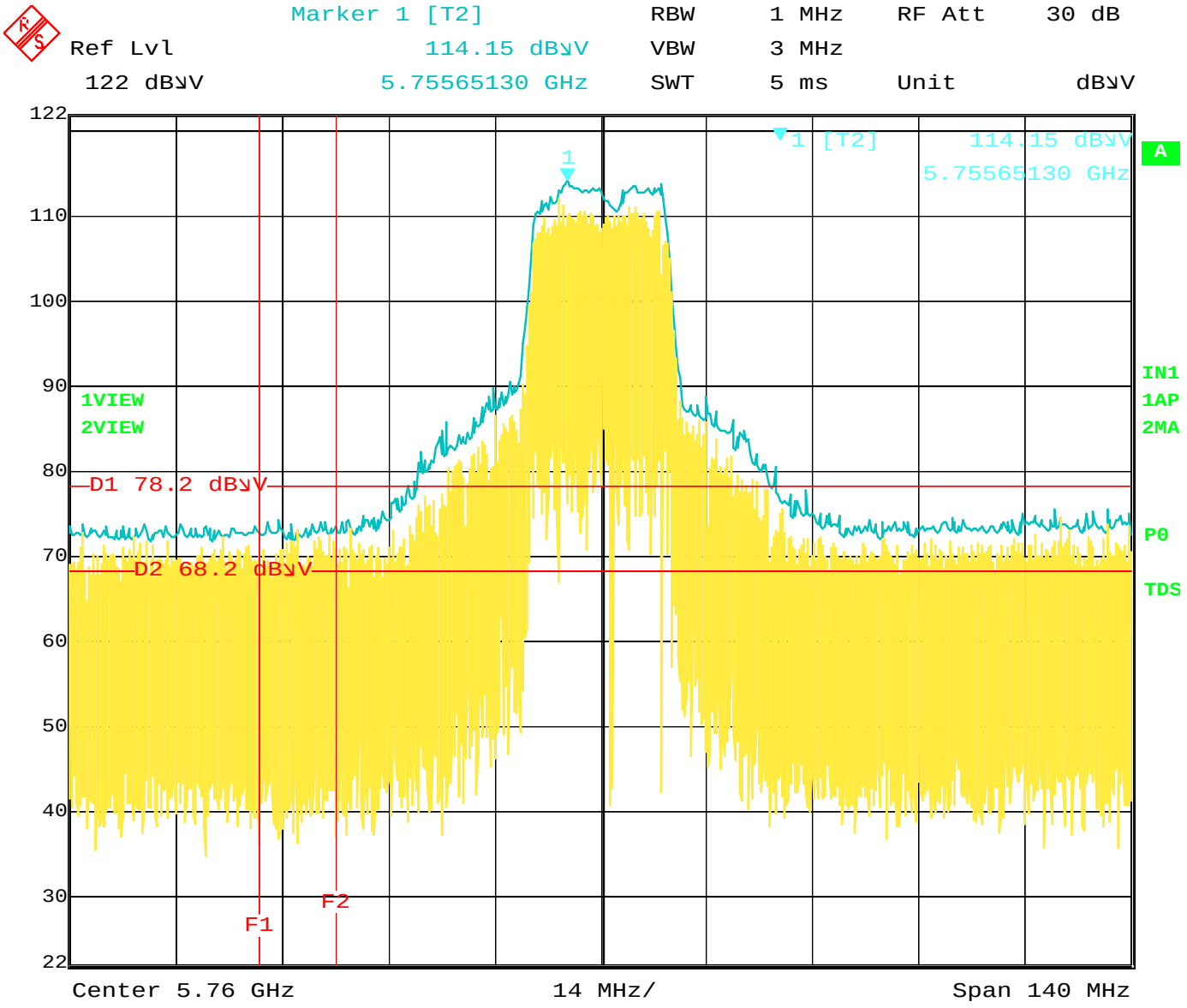
Band Edge for 5760 MHz Fundamental –Vertical Polarization – X-Axis (Worst Case)
Gain Setting 59 – Emission of the Band Edge with Averaging per section (6)(d) of KDB 789033 at 5715 MHz



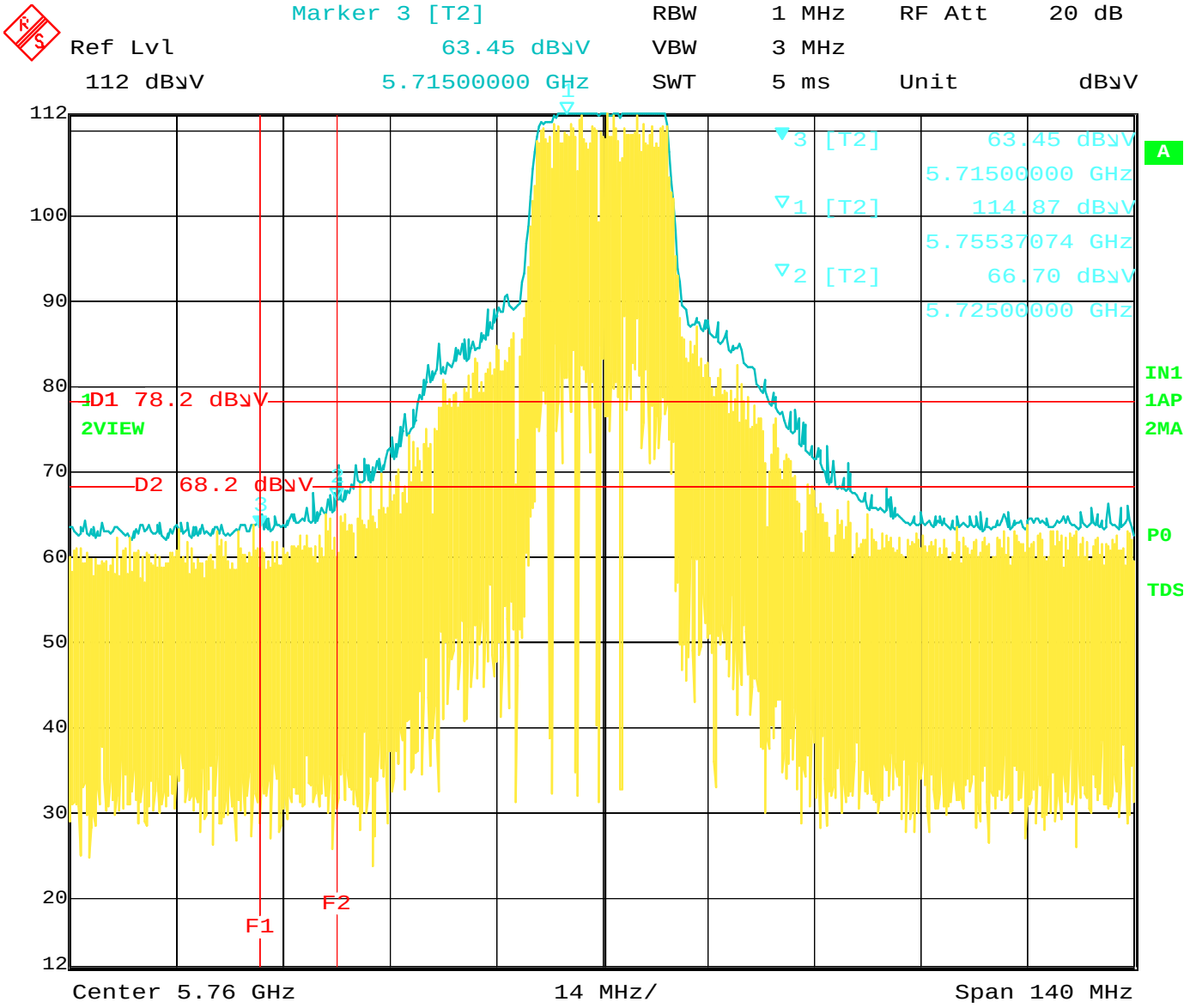
Band Edge for 5810 MHz Fundamental –Vertical Polarization – X-Axis (Worst Case)
Gain Setting 59 – Peak Fundamental Emission



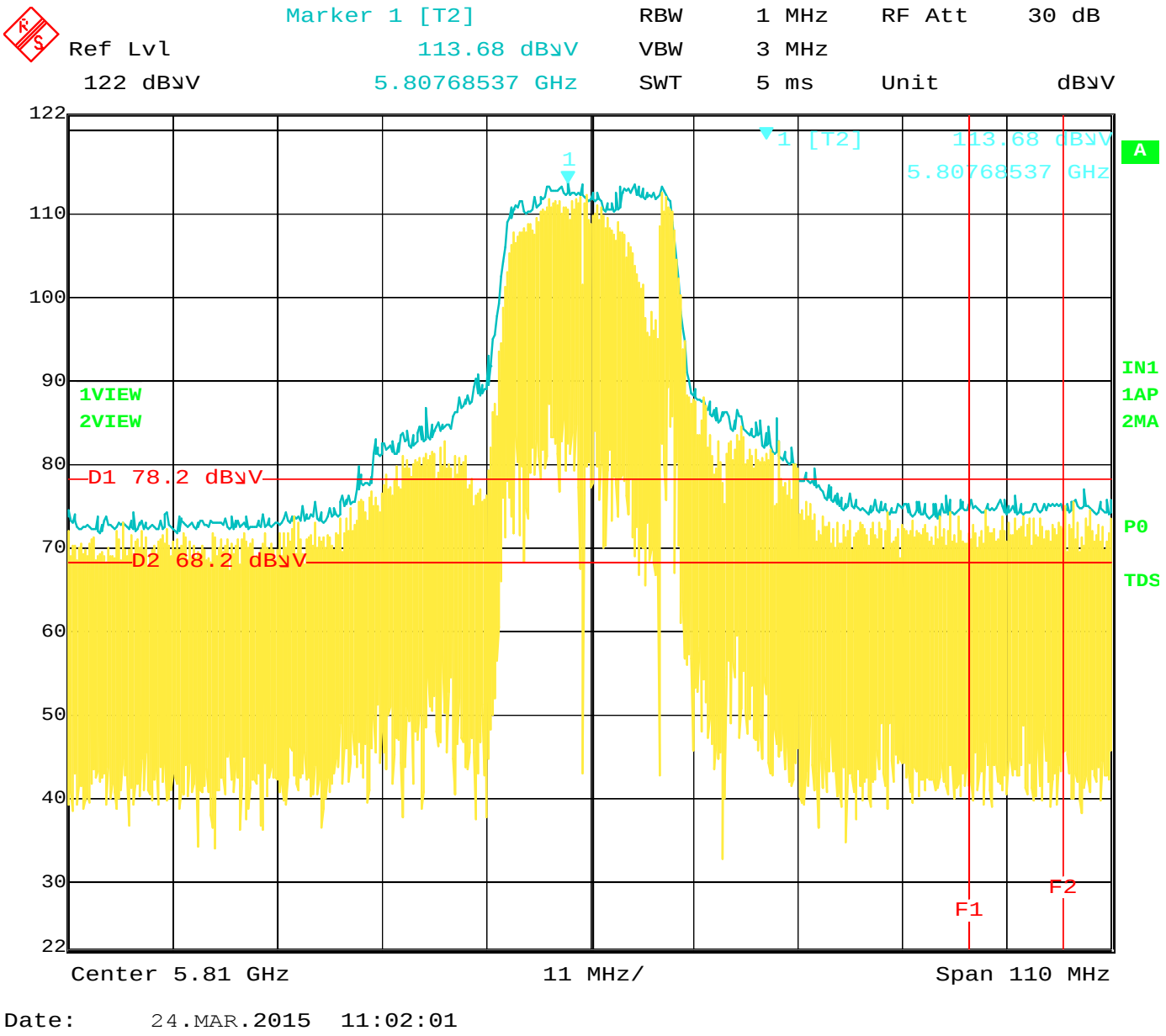
Band Edge for 5810 MHz Fundamental –Vertical Polarization – X-Axis (Worst Case)
Gain Setting 59 – Band Edge at 5850 MHz and 5860 MHz



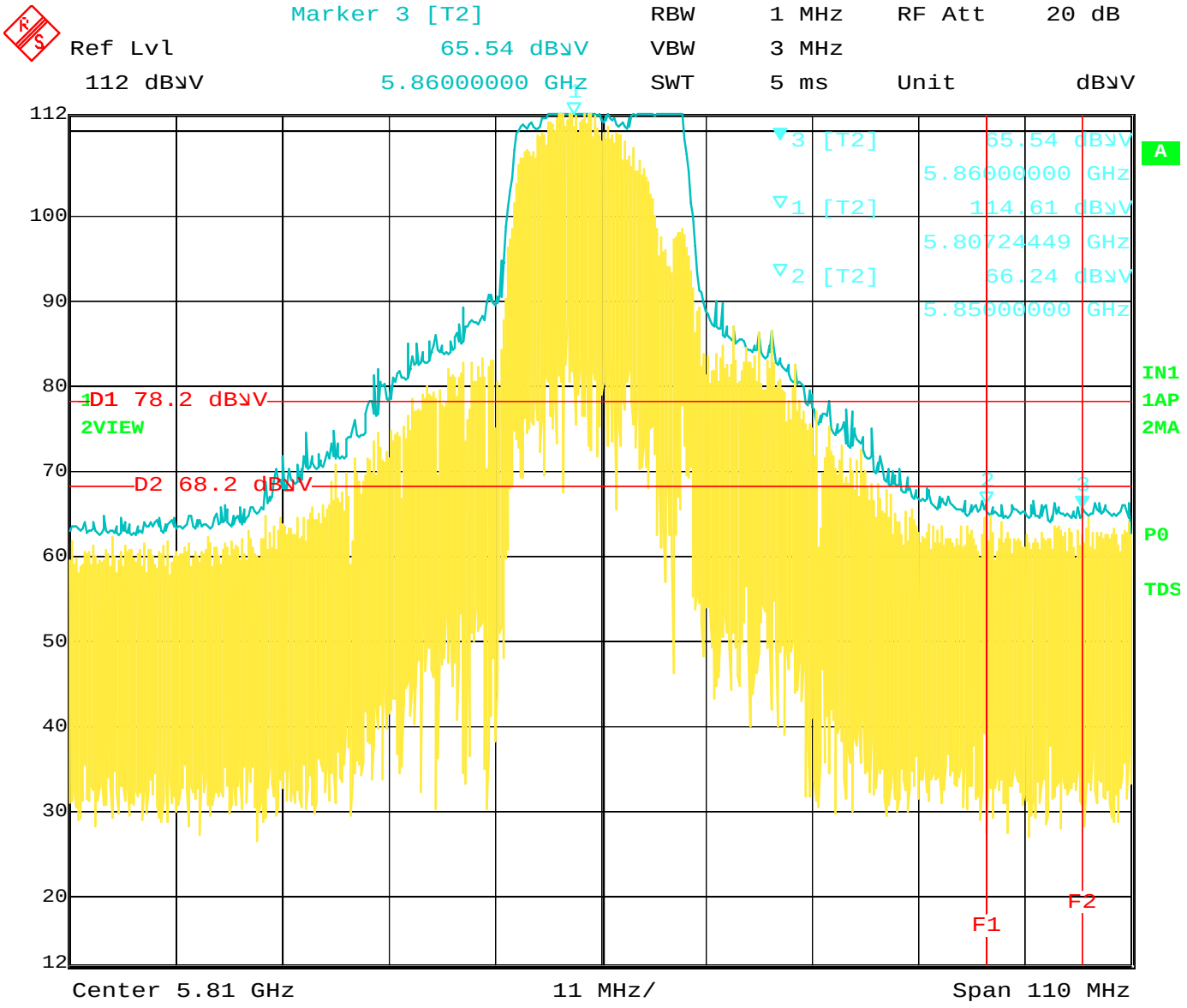
Band Edge for 5760 MHz Fundamental –Horizontal Polarization – X-Axis (Worst Case)
Gain Setting 59 – Peak Fundamental Emission



Band Edge for 5760 MHz Fundamental –Horizontal Polarization – X-Axis (Worst Case)
Gain Setting 59 – Band Edge at 5815 MHz and 5725 MHz



Band Edge for 5810 MHz Fundamental –Horizontal Polarization – X-Axis (Worst Case)
Gain Setting 59 – Peak Fundamental Emission



Band Edge for 5810 MHz Fundamental –Horizontal Polarization – X-Axis (Worst Case)
Gain Setting 59 – Band Edge at 5850 MHz and 5860 MHz