

*FCC PART 15, SUBPART B and C
TEST REPORT**for***OHM ZIGBEE V.2****MODEL: 450202**

Prepared for

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	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 other agency of the U.S. Government.

Device Tested: OHM Zigbee v.2
Model: 450202
S/N: N/A

Product Description: This is an RF module used in door handles with smartode locks.

Modifications: The EUT was not modified during the testing.

Manufacturer: Spectrum Brands, Inc.
19701 Da Vinci
Lake Forest, California 92610

Test Dates: September 18, 21, 22, 23 and 24, 2015

Test Specifications: EMI requirements
CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.247

Test Procedure: ANSI C63.4, ANSI C63:10

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 C, section 15.209
3	Spurious Radiated RF Emissions, 9 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, 9 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	Peak Power Output	Complies with the relevant requirements of FCC Title 47, Part 15, Subpart C, section 15.247 (b)(3)
7	RF Conducted Antenna Test	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247 (d)
8	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 OHM Zigbee v.2, Model: 450202. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4 and ANSI C63.10. 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.

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.

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

Spectrum Brands, Inc.

Thuan Nguyen 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 Spectrum Brands, Inc. 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 emissions test report.

SPEC	TITLE
FCC Title 47, Part 15 Subpart C	FCC Rules - Radio frequency devices (including digital devices) – Intentional Radiators
ANSI C63.4 2014	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
ANSI C63.10 2013	American National Standard for Testing Unlicensed Wireless Devices

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration - Emissions

The OHM Zigbee v.2, Model: 450202(EUT) was mounted inside four different hosts:

1. Smartcode Deadolt 5
2. Smartcode Lever 5
3. Smartcode Deadbolt 10
4. Smartcode Deadbolt 10T

The EUT was continuously transmitting during the testing. A laptop was used to program the EUT so that it could transmit at the low, middle and high channels.

Operation of the EUT during the testing:

The final data for the EUT was taken for each of the hosts mentioned above. Please see Appendix E for the data sheets.

4.1.1 Cable Construction and Termination

There were no external cables connected to the EUT.



5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT**5.1 EUT and Accessory List**

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
OHM ZIGBEE V.2 (EUT)	SPECTRUM BRANDS, INC.	450202	N/A	NUL450202ZIG
SMARTCODE DEADBOLT	SPECTRUM BRANDS, INC.	SMARTCODE DEADBOLT 5	N/A	N/A
SMARTCODE DEADBOLT	SPECTRUM BRANDS, INC.	SMARTCODE LEVER 5	N/A	N/A
SMARTCODE DEADBOLT	SPECTRUM BRANDS, INC.	SMARTCODE DEADBOLT 10	N/A	N/A
SMARTCODE DEADBOLT	SPECTRUM BRANDS, INC.	SMARTCODE DEADBOLT 10T	N/A	N/A
LAPTOP*	DELL	PP18L	G0X80C1	N/A
INSIGHT DESKTOP PROGRAM*	EMBER	VERSION 3.0.131	N/A	N/A

*Used to program the EUT only prior to testing so that it could be tested at the low, middle, and high channels.

5.2 Emissions Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CAL. CYCLE
GENERAL TEST EQUIPMENT USED IN LAB D					
TDK TestLab	TDK RF Solutions, Inc.	9.22	700145	N/A	N/A
Computer	Hewlett Packard	p6716f	MXX1030PX0	N/A	N/A
LCD Monitor	Hewlett Packard	52031a	3CQ046N3MG	N/A	N/A
EMI Receiver, 20 Hz – 26.5 GHz	Agilent Technologies	N9038A	MY51100115	April 3, 2015	1 Year
RF RADIATED EMISSIONS TEST EQUIPMENT					
CombiLog Antenna	Com-Power	AC-220	61060	September 3, 2015	1 Year
Preamplifier	Com-Power	PA-118	551024	March 6, 2015	1 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
Preamplifier	Com-Power	PA-840	711013	May 13, 2014	2 Year
Horn Antenna	Com-Power	AH-826	0071957	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

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

For frequencies below 1 GHz: The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

For frequencies above 1 GHz: The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 1.5 meters above the ground plane.

The EUT was not grounded.

7. CHARACTERISTICS OF THE TRANSMITTER

7.1 Transmitter Power

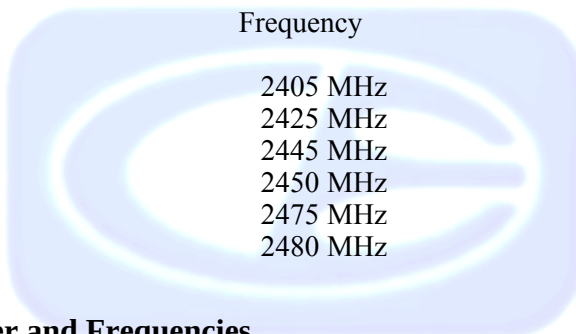
Transmit power is herein defined as the power delivered to a 50 ohm load at the RF output of the EUT.

Peak Power

20.332 dBm
20.883 dBm
21.280 dBm
21.355 dBm
21.311 dBm
14.904 dBm

Frequency

2405 MHz
2425 MHz
2445 MHz
2450 MHz
2475 MHz
2480 MHz



7.2 Channel Number and Frequencies

Channel 11: 2405 MHz
Channel 15: 2425 MHz
Channel 19: 2445 MHz
Channel 20: 2450 MHz
Channel 25: 2475 MHz
Channel 26: 2480 MHz

7.3 Antenna Gain

The antennas have a gain of 2 dBi.

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. 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 Test

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.

For frequencies above 1 GHz, the readings were averaged by a duty cycle correction factor. See section 8.7 of this test report for a detailed explanation. The duty cycle data sheets are located in Appendix E.

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
1 GHz to 25 GHz	1 MHz	Horn 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. 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 9 kHz to 25 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 C, Sections 15.209 and 15.247 (d) for radiated emissions. Please see Appendix E for the data sheets.

8.1.3 RF Emissions Test ResultsTable 1.0 RADIATED EMISSION RESULTS
OHM ZIGBEE v.2, Model: 450202

Frequency MHz	Corrected Reading* dBuV	Specification Limit dBuV	Delta (Cor. Reading – Spec. Limit) dB
7215 (Vertical) (Smartcode Lever 5)	53.57 (Avg)	54.00	-0.44
7425 (Vertical) (Smartcode Lever 5)	53.26 (Avg)	54.00	-0.74
7335 (Vertical) (Smartcode Deadbolt 10T)	53.07 (Avg)	54.00	-0.93
7245 (Vertical) (Smartcode Deadbolt 10T)	52.86 (Avg)	54.00	-1.14
7350 (Vertical) (Smartcode Deadbolt 10)	52.81 (Avg)	54.00	-1.19
7275 (Horizontal) (Smartcode Deadbolt 10)	52.70 (Avg)	54.00	-1.30

Notes:

- * The complete emissions data is given in Appendix E of this report.
- QP Quasi-Peak Reading
- AVG Average Reading

8.2 DTS Bandwidth

The DTS Bandwidth 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 DTS Bandwidth.

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 C section 15.247 (a)(2). The 6 dB bandwidth is greater than 500 kHz. Please see the data sheets located in Appendix E.

8.3 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 8 MHz and the video bandwidth was 50 MHz. The cable loss was also added back into the reading using the reference level offset. The Peak Output Power was then taken.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C, section 15.247 (b)(3). Please see the data sheets located in Appendix E.

8.4 RF Antenna Conducted Test

The emissions in the non-restricted frequency bands measurements were performed using the EMI Receiver. The emissions were measured using a direct connection from the RF output of the EUT. The reference level was established by setting the instrument center frequency to DTS channel center frequency. A peak detector was used with sweep set to auto. A max hold trace was used and allowed to fully stabilize. The peak marker function was used to determine the level and 20 dB below that was the reference level. For emission level measurement, the center frequency and span were set to encompass the frequency range to be measured. A peak detector was used with a sweep time set to auto. The number of measurement points were greater than the span/RBW. A max hold trace was used and allowed to fully stabilize. The peak marker function was used to determine the maximum amplitude level. The final qualification data sheets are located in Appendix E.

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.

8.5 RF Band Edges

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. 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 8.1.2 of this test report was used to maximize the emission.

Test Results:

EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (d). The RF power at the restricted bands closest to the band edges at 2390 MHz and 2483.5 MHz meet the limits of section 15.209. Please see the data sheets located in Appendix E.

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 analyzer center frequency to DTS channel center frequency
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to 3 kHz $\leq$ RBW $\leq$ 100 kHz
4. Set the VBW $\geq$ 3 X RBW
5. Detector = peak
6. Sweep time = auto couple
7. Trace mode = max hold
8. Allow trace to fully stabilize
9. Use the peak marker function to determine the maximum amplitude level within the RBW
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (e).

8.7 Duty Cycle

The Standard Lock / Unlock mode produced the worst case when measured and is as follows:

Note: The data taken in Appendix E was to confirm that the duty cycle will never exceed 11.58%, which is the absolute worst case duty cycle according to the firmware designer.

$$\delta(\text{dB}) = 20 \log \left[\sum (nt_1 + mt_2 + \dots + \xi t_x) / T \right]$$

Where

n is the number of pulses of duration t_1

m is the number of pulses of duration t_2

ξ is the number of pulses of duration t_x

T is the period of the pulse train or 100 ms if the pulse train length is greater than 100 ms

Pulse 1 = 692 us

Pulse 2 = 456 us

Pulse 3 = 676 us

Pulse 4 = 464 us

Pulse 5 = 1984 us

Pulse 6 = 664 us

Pulse 7 = 1728 us

Total On Time = 6664 us

Number of Pulses in worst case 100 ms was 7.

$$6.664 \text{ ms} / 100 \text{ ms} = 0.06664\%$$

Note: The absolute worst case duty cycle according to the firmware designer is 11.58% and this was used for all duty cycle calculations instead.

$$20 \log (0.1158) = -18.72 \text{ dB correction factor}$$

9. CONCLUSIONS

The OHM Zigbee v.2, Model: 450202 meets all of the specification limits defined in FCC Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.247.

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



For US, Canada, Australia/New Zealand, Japan, Taiwan, Korea, and the European Union, Compatible Electronics is currently accredited by NVLAP to ISO/IEC 17025.

For the most up-to-date version of our scopes and certificates please visit

<http://celectronics.com/quality/scope/>

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."



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.

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

OHM Zigbee v.2
Model: 450202
S/N: N/A

There were no additional models covered under this report.



APPENDIX D

DIAGRAMS, CHARTS, AND PHOTOS

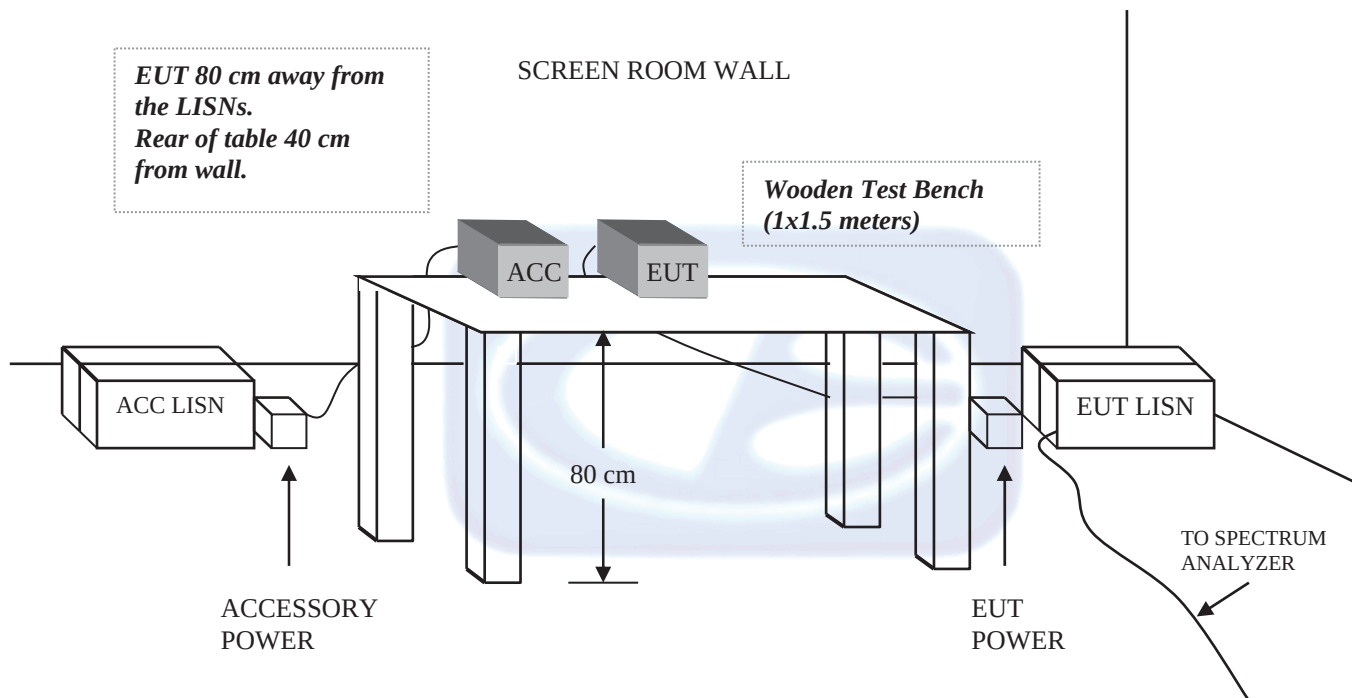
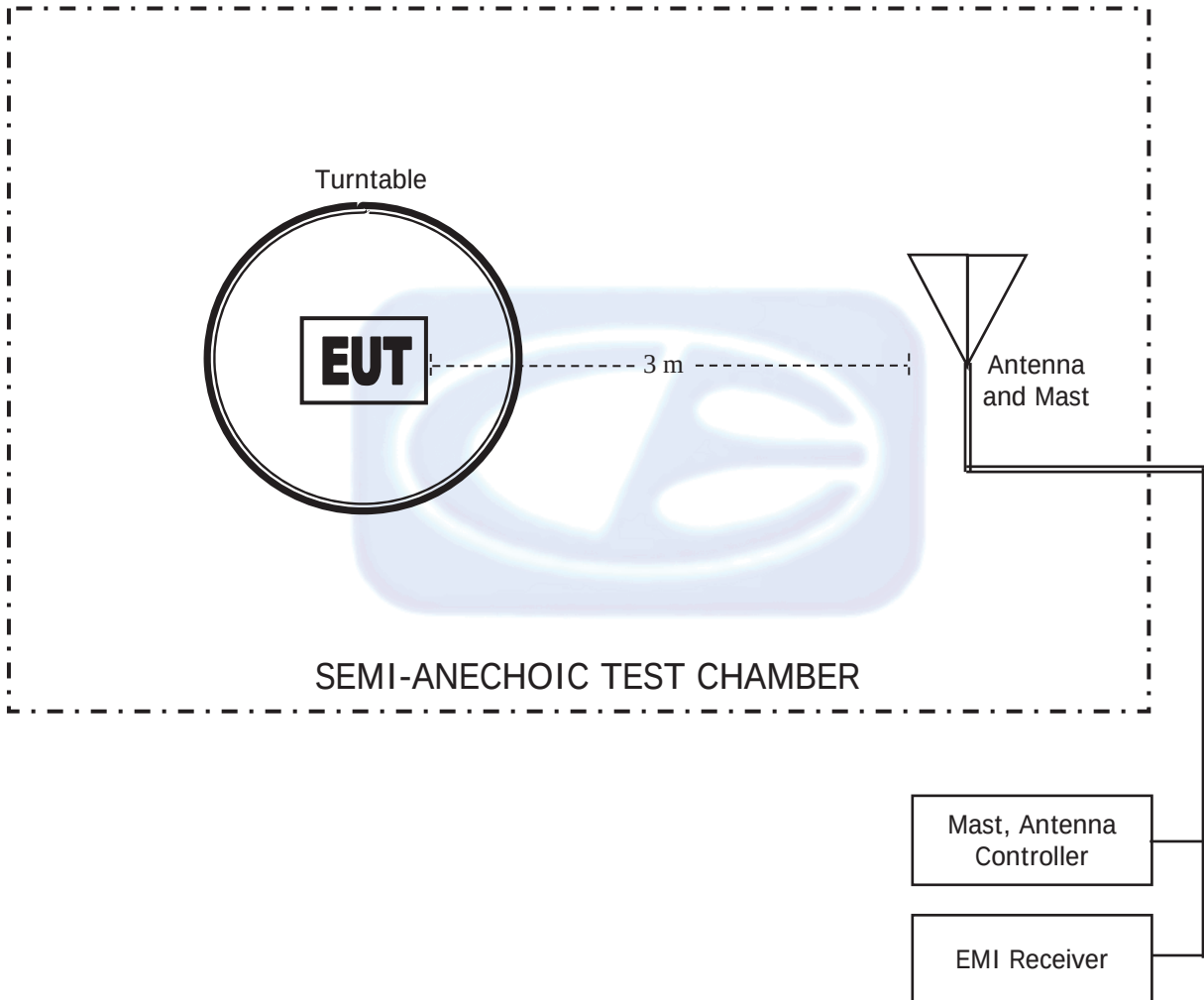
FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

FIGURE 2: 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: SEPTEMBER 3, 2015**

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	24.00	200	13.00
35	24.30	250	15.30
40	25.40	300	18.20
45	21.50	350	17.90
50	22.50	400	18.60
60	15.40	450	19.80
70	12.70	500	21.60
80	11.10	550	22.40
90	13.40	600	23.70
100	13.80	650	24.30
120	15.40	700	24.00
125	15.40	750	24.50
140	13.10	800	24.30
150	17.20	850	26.30
160	13.20	900	26.90
175	14.20	950	26.00
180	14.30	1000	25.60

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 AH-826**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

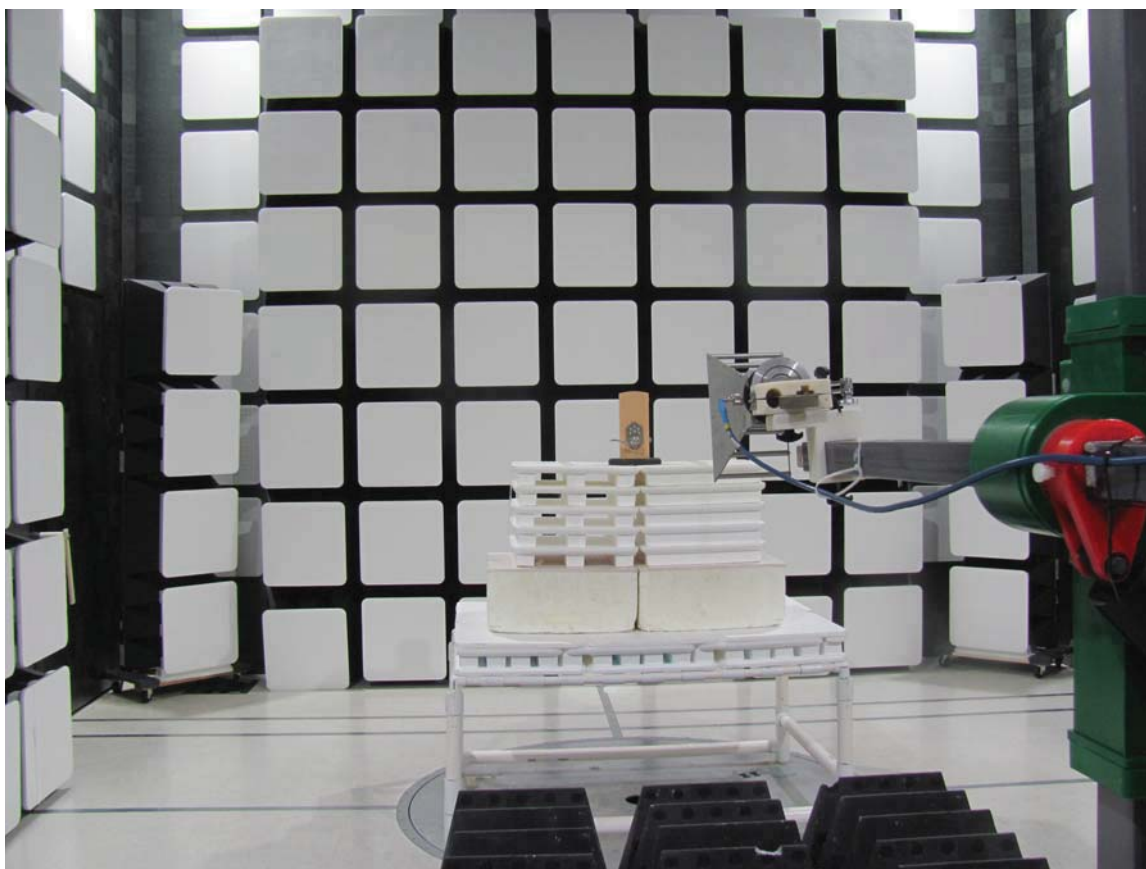


FRONT VIEW

SPECTRUM BRANDS, INC.
OHM ZIGBEE V.2
MODEL: 450202

FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 1 GHz
INSTALLED INSIDE THE SMARTCODE DEADBOLT 5

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



REAR VIEW

SPECTRUM BRANDS, INC.
OHM ZIGBEE V.2
MODEL: 450202

FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 1 GHz
INSTALLED INSIDE THE SMARTCODE DEADBOLT 5

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



FRONT VIEW

SPECTRUM BRANDS, INC.
OHM ZIGBEE V.2
MODEL: 450202

FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz
INSTALLED INSIDE THE SMARTCODE DEADBOLT 5

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

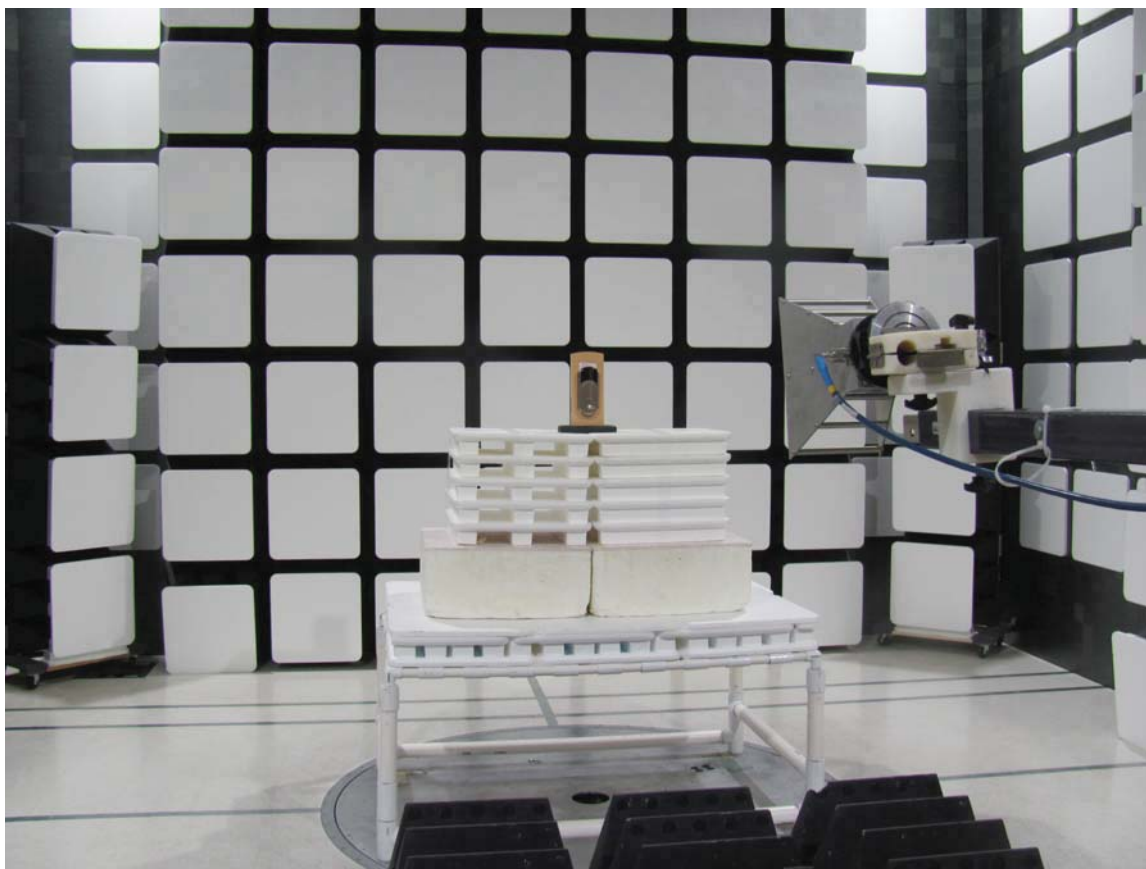


REAR VIEW

SPECTRUM BRANDS, INC.
OHM ZIGBEE V.2
MODEL: 450202

FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz
INSTALLED INSIDE THE SMARTCODE DEADBOLT 5

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

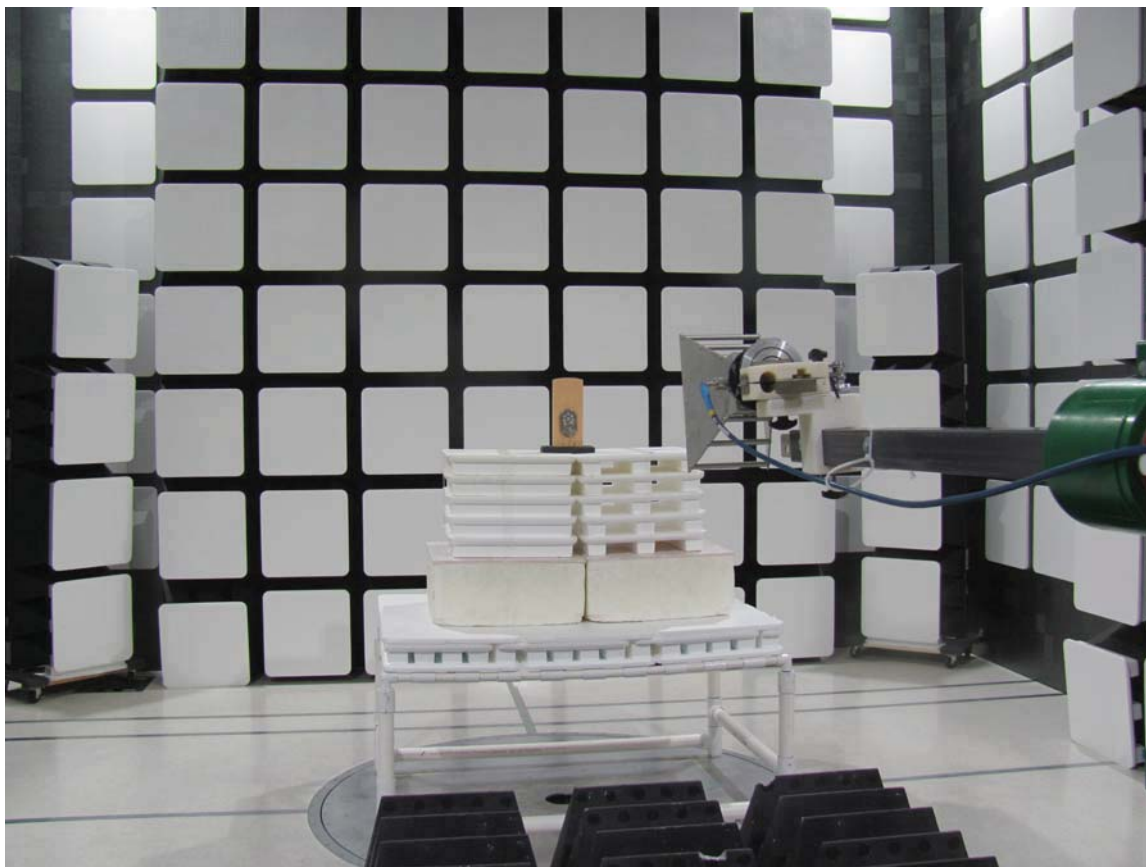


FRONT VIEW

SPECTRUM BRANDS, INC.
OHM ZIGBEE V.2
MODEL: 450202

FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 1 GHz
INSTALLED INSIDE THE SMARTCODE LEVER 5

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

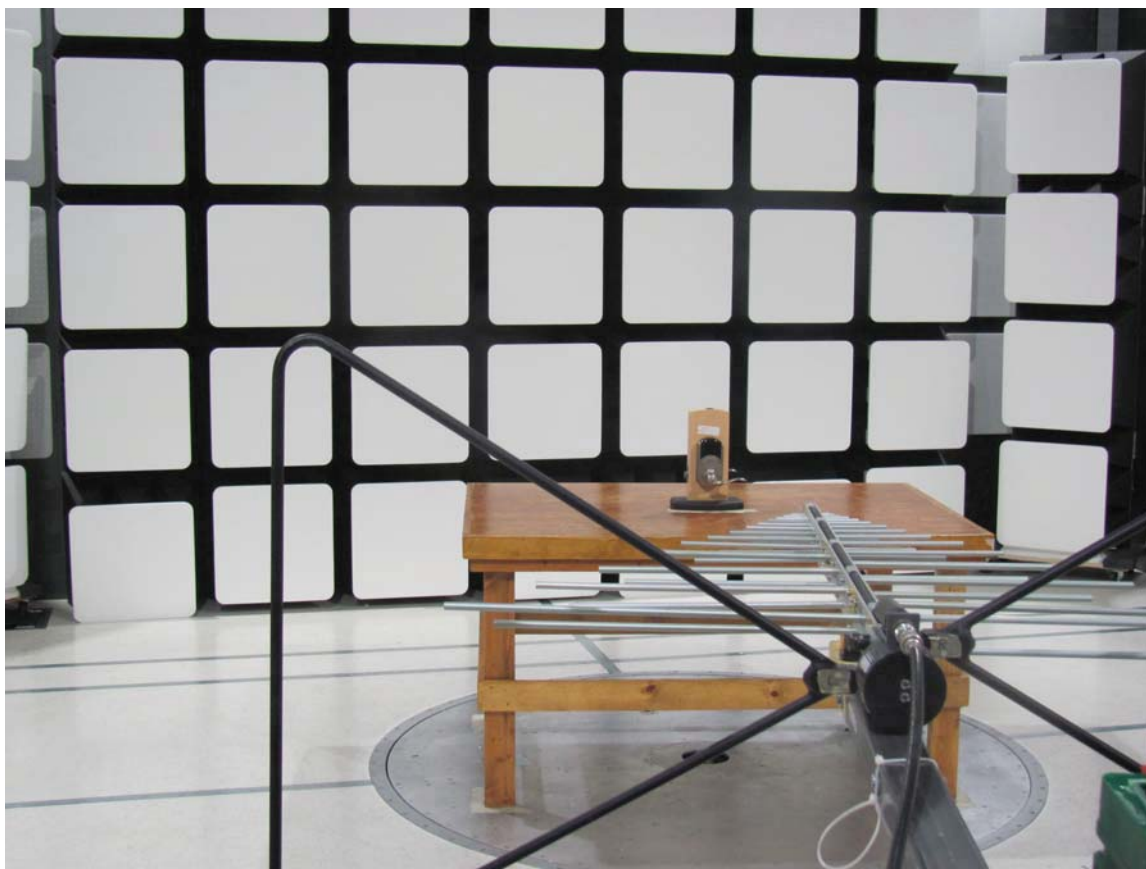


REAR VIEW

SPECTRUM BRANDS, INC.
OHM ZIGBEE V.2
MODEL: 450202

FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 1 GHz
INSTALLED INSIDE THE SMARTCODE LEVER 5

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



FRONT VIEW

SPECTRUM BRANDS, INC.
OHM ZIGBEE V.2
MODEL: 450202

FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz
INSTALLED INSIDE THE SMARTCODE LEVER 5

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



REAR VIEW

SPECTRUM BRANDS, INC.
OHM ZIGBEE V.2
MODEL: 450202

FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz
INSTALLED INSIDE THE SMARTCODE LEVER 5

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

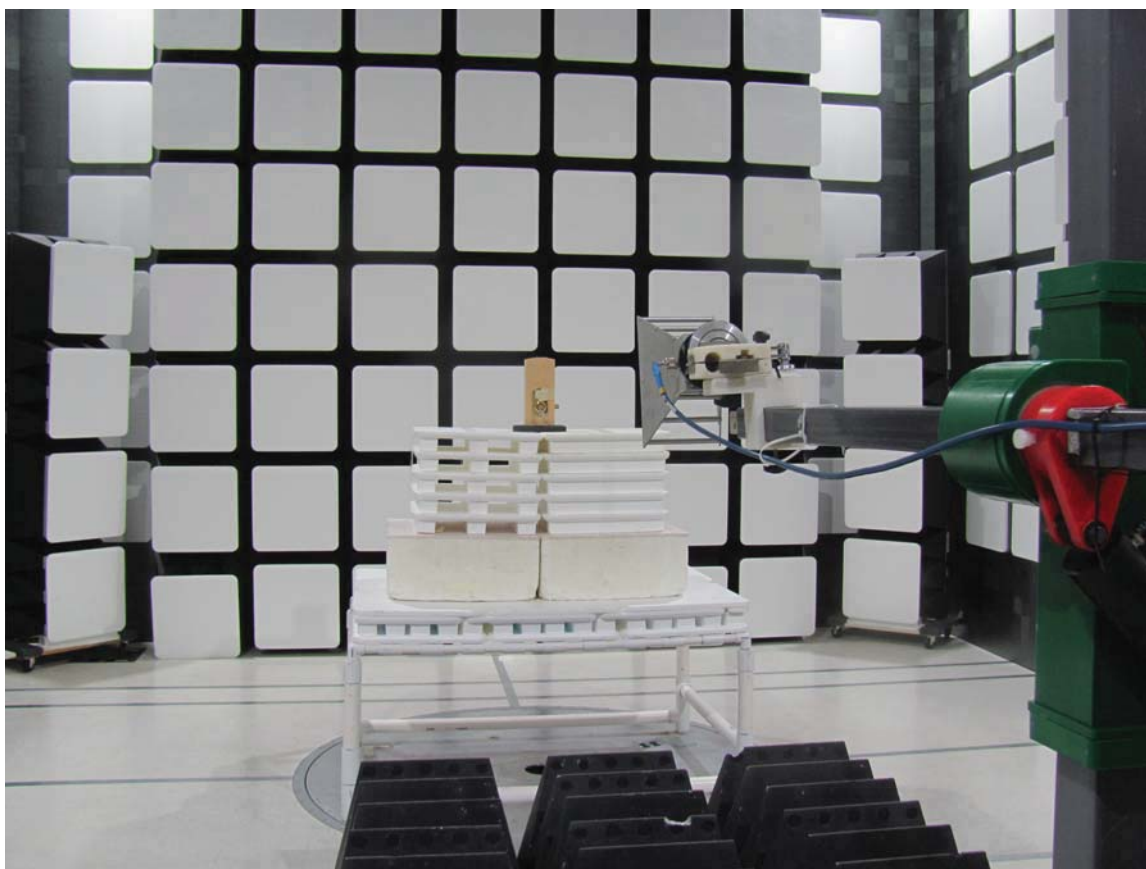


FRONT VIEW

SPECTRUM BRANDS, INC.
OHM ZIGBEE V.2
MODEL: 450202

FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 1 GHz
INSTALLED INSIDE THE SMARTCODE DEADBOLT 10

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



REAR VIEW

SPECTRUM BRANDS, INC.
OHM ZIGBEE V.2
MODEL: 450202

FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 1 GHz
INSTALLED INSIDE THE SMARTCODE DEADBOLT 10

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



FRONT VIEW

SPECTRUM BRANDS, INC.
OHM ZIGBEE V.2
MODEL: 450202

FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz
INSTALLED INSIDE THE SMARTCODE DEADBOLT 10

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



REAR VIEW

SPECTRUM BRANDS, INC.
OHM ZIGBEE V.2
MODEL: 450202

FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz
INSTALLED INSIDE THE SMARTCODE DEADBOLT 10

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

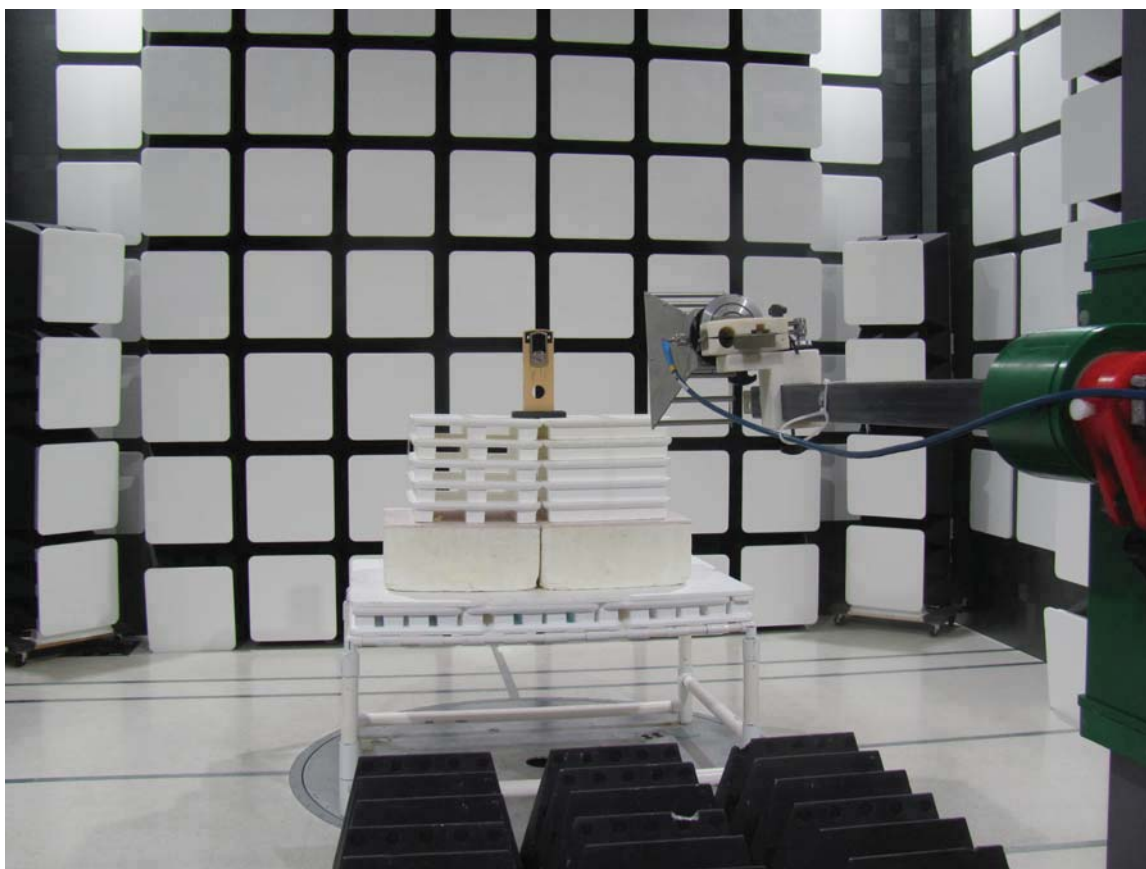


FRONT VIEW

SPECTRUM BRANDS, INC.
OHM ZIGBEE V.2
MODEL: 450202

FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 1 GHz
INSTALLED INSIDE THE SMARTCODE DEADBOLT 10T

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



REAR VIEW

SPECTRUM BRANDS, INC.
OHM ZIGBEE V.2
MODEL: 450202

FCC SUBPART B AND C – RADIATED EMISSIONS – ABOVE 1 GHz
INSTALLED INSIDE THE SMARTCODE DEADBOLT 10T

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

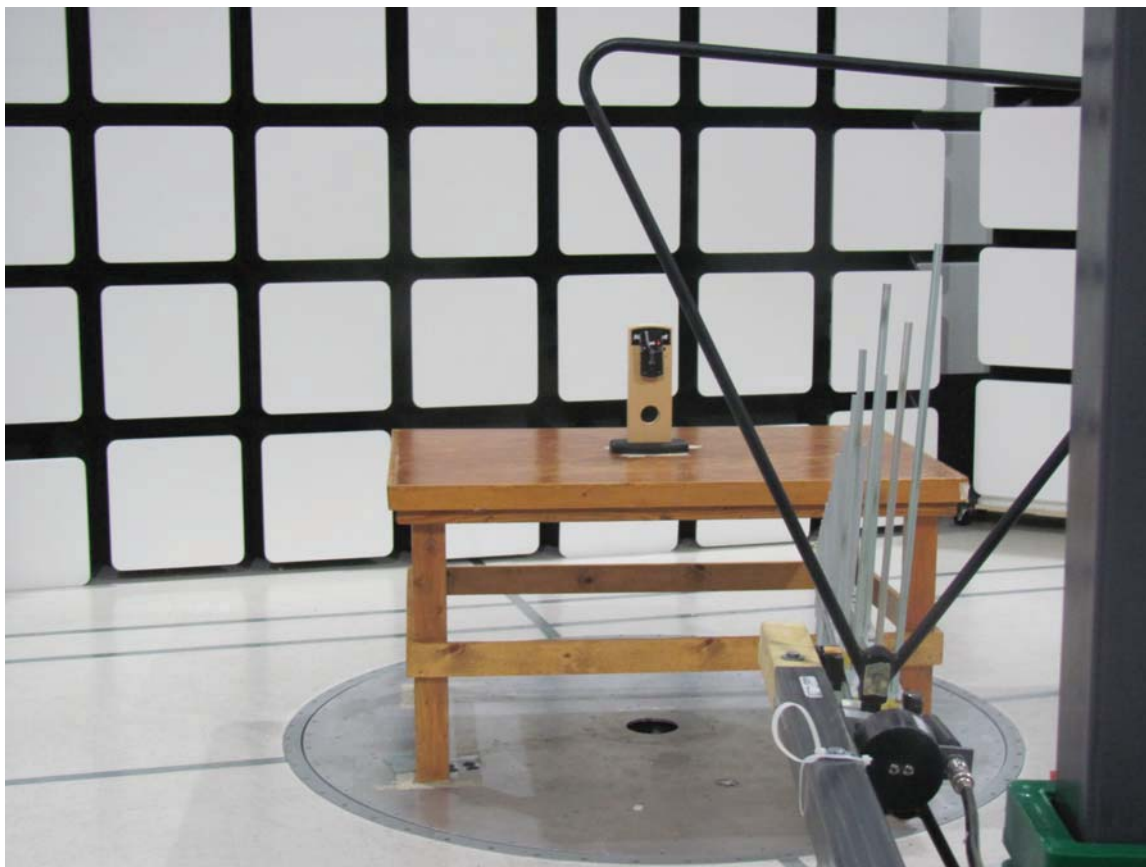


FRONT VIEW

SPECTRUM BRANDS, INC.
OHM ZIGBEE V.2
MODEL: 450202

FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz
INSTALLED INSIDE THE SMARTCODE DEADBOLT 10T

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



REAR VIEW

SPECTRUM BRANDS, INC.
OHM ZIGBEE V.2
MODEL: 450202

FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz
INSTALLED INSIDE THE SMARTCODE DEADBOLT 10T

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

APPENDIX E

DATA SHEETS

RADIATED EMISSIONS

DATA SHEETS

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2405 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4810	60.31	V	74.00	-13.69	Peak	1.59	357.00	
4810	41.59	V	54.00	-12.41	Avg	1.59	357.00	
7215	65.69	V	74.00	-8.32	Peak	1.11	13.00	
7215	46.97	V	54.00	-7.04	Avg	1.11	13.00	
9620								Done via Conducted -
9620								Not in Restricted Band
12025	62.56	V	74.00	-11.44	Peak	2.33	13.25	
12025	43.84	V	54.00	-10.16	Avg	2.33	13.25	
14430								Done via Conducted -
14430								Not in Restricted Band
16835								No Emissions
16835								Detected
19240								No Emissions
19240								Detected
21645								No Emissions
21645								Detected
24050								No Emissions
24050								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2405 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4810	52.39	H	74.00	-21.61	Peak	1.11	5.00	
4810	33.67	H	54.00	-20.33	Avg	1.11	5.00	
7215	62.67	H	74.00	-11.33	Peak	1.11	15.00	
7215	43.95	H	54.00	-10.05	Avg	1.11	15.00	
9620								Done via Conducted -
9620								Not in Restricted Band
12025	56.44	H	74.00	-17.56	Peak	1.47	302.00	
12025	37.72	H	54.00	-16.28	Avg	1.47	302.00	
14430								Done via Conducted -
14430								Not in Restricted Band
16835								No Emissions
16835								Detected
19240								No Emissions
19240								Detected
21645								No Emissions
21645								Detected
24050								No Emissions
24050								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2425 MHz Harmonics**Transmit Mode - 11.58% Duty Cycle**

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4850	58.56	V	74.00	-15.44	Peak	1.43	358.00	
4850	39.84	V	54.00	-14.16	Avg	1.43	358.00	
7275	68.51	V	74.00	-5.49	Peak	1.59	13.00	
7275	49.79	V	54.00	-4.21	Avg	1.59	13.00	
9700								Done via Conducted -
9700								Not in Restricted Band
12125	59.68	V	74.00	-14.32	Peak	1.03	302.75	
12125	40.96	V	54.00	-13.04	Avg	1.03	302.75	
14550								Done via Conducted -
14550								Not in Restricted Band
16975								No Emissions
16975								Detected
19400								No Emissions
19400								Detected
21825								No Emissions
21825								Detected
24250								No Emissions
24250								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2425 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4850	50.57	H	74.00	-23.43	Peak	1.27	50.25	
4850	31.85	H	54.00	-22.15	Avg	1.27	50.25	
7275	64.29	H	74.00	-9.71	Peak	1.11	335.00	
7275	45.57	H	54.00	-8.43	Avg	1.11	335.00	
9700								Done via Conducted -
9700								Not in Restricted Band
12125	59.24	H	74.00	-14.76	Peak	1.03	54.25	
12125	40.52	H	54.00	-13.48	Avg	1.03	54.25	
14550								Done via Conducted -
14550								Not in Restricted Band
16975								No Emissions
16975								Detected
19400								No Emissions
19400								Detected
21825								No Emissions
21825								Detected
24250								No Emissions
24250								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2445 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4890	51.63	V	74.00	-22.37	Peak	2.39	308.75	
4890	32.91	V	54.00	-21.09	Avg	2.39	308.75	
7335	68.66	V	74.00	-5.34	Peak	1.27	5.00	
7335	49.94	V	54.00	-4.06	Avg	1.27	5.00	
9780								Done via Conducted -
9780								Not in Restricted Band
12225	60.38	V	74.00	-13.62	Peak	1.63	338.50	
12225	41.66	V	54.00	-12.34	Avg	1.63	338.50	
14670								Done via Conducted -
14670								Not in Restricted Band
17115								No Emissions
17115								Detected
19560								No Emissions
19560								Detected
22005								No Emissions
22005								Detected
24450								No Emissions
24450								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2445 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4890	49.78	H	74.00	-24.22	Peak	1.43	126.75	
4890	31.06	H	54.00	-22.94	Avg	1.43	126.75	
7335	66.64	H	74.00	-7.36	Peak	1.43	339.50	
7335	47.92	H	54.00	-6.08	Avg	1.43	339.50	
9780								Done via Conducted -
9780								Not in Restricted Band
12225	60.69	H	74.00	-13.31	Peak	1.51	91.75	
12225	41.97	H	54.00	-12.03	Avg	1.51	91.75	
14670								Done via Conducted -
14670								Not in Restricted Band
17115								No Emissions
17115								Detected
19560								No Emissions
19560								Detected
22005								No Emissions
22005								Detected
24450								No Emissions
24450								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2450 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4900	51.78	V	74.00	-22.22	Peak	1.50	0.00	
4900	33.06	V	54.00	-20.94	Avg	1.58	0.00	
7350	69.71	V	74.00	-4.30	Peak	1.26	0.00	
7350	50.99	V	54.00	-3.02	Avg	1.26	0.00	
9800								Done via Conducted -
9800								Not in Restricted Band
12250	60.75	V	74.00	-13.26	Peak	1.58	165.16	
12250	42.03	V	54.00	-11.98	Avg	1.58	165.16	
14700								Done via Conducted -
14700								Not in Restricted Band
17150								No Emissions
17150								Detected
19600								No Emissions
19600								Detected
22050								No Emissions
22050								Detected
24500								No Emissions
24500								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2450 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4900	50.89	H	74.00	-23.11	Peak	1.11	324.25	
4900	32.17	H	54.00	-21.83	Avg	1.11	324.25	
7350	64.35	H	74.00	-9.66	Peak	2.07	31.75	
7350	45.63	H	54.00	-8.38	Avg	2.07	31.75	
9800								Done via Conducted -
9800								Not in Restricted Band
12250	60.04	H	74.00	-13.96	Peak	1.13	5.25	
12250	41.32	H	54.00	-12.68	Avg	1.13	5.25	
14700								Done via Conducted -
14700								Not in Restricted Band
17150								No Emissions
17150								Detected
19600								No Emissions
19600								Detected
22050								No Emissions
22050								Detected
24500								No Emissions
24500								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2475 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4950	56.49	V	74.00	-17.51	Peak	1.28	336.00	
4950	37.77	V	54.00	-16.23	Avg	1.28	336.00	
7425	69.45	V	74.00	-4.55	Peak	1.27	15.00	
7425	50.73	V	54.00	-3.27	Avg	1.27	15.00	
9900								Done via Conducted -
9900								Not in Restricted Band
12375	61.03	V	74.00	-12.97	Peak	1.64	350.75	
12375	42.31	V	54.00	-11.69	Avg	1.64	350.75	
14850								Done via Conducted -
14850								Not in Restricted Band
17325								No Emissions
17325								Detected
19800								No Emissions
19800								Detected
22275								No Emissions
22275								Detected
24750								No Emissions
24750								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2475 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4950	55.34	H	74.00	-18.67	Peak	1.75	232.00	
4950	36.62	H	54.00	-17.39	Avg	1.75	232.00	
7425	63.89	H	74.00	-10.11	Peak	2.38	293.25	
7425	45.17	H	54.00	-8.83	Avg	2.38	293.25	
9900								Done via Conducted -
9900								Not in Restricted Band
12375	61.06	H	74.00	-12.94	Peak	1.05	133.75	
12375	42.34	H	54.00	-11.66	Avg	1.05	133.75	
14850								Done via Conducted -
14850								Not in Restricted Band
17325								No Emissions
17325								Detected
19800								No Emissions
19800								Detected
22275								No Emissions
22275								Detected
24750								No Emissions
24750								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2480 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4960	55.69	V	74.00	-18.31	Peak	3.50	241.10	
4960	36.97	V	54.00	-17.03	Avg	3.50	241.10	
7440	57.45	V	74.00	-16.56	Peak	1.83	30.50	
7440	38.73	V	54.00	-15.28	Avg	1.83	30.50	
9920								Done via Conducted -
9920								Not in Restricted Band
12400	61.29	V	74.00	-12.71	Peak	1.29	0.00	
12400	42.57	V	54.00	-11.43	Avg	1.29	0.00	
14880								Done via Conducted -
14880								Not in Restricted Band
17360								No Emissions
17360								Detected
19840								No Emissions
19840								Detected
22320								No Emissions
22320								Detected
24800								No Emissions
24800								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2480 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4960	50.86	H	74.00	-23.14	Peak	1.51	0.00	
4960	32.14	H	54.00	-21.86	Avg	1.51	0.00	
7440	54.87	H	74.00	-19.13	Peak	2.39	320.25	
7440	36.15	H	54.00	-17.85	Avg	2.39	320.25	
9920								Done via Conducted -
9920								Not in Restricted Band
12400	61.02	H	74.00	-12.98	Peak	1.49	39.50	
12400	42.30	H	54.00	-11.70	Avg	1.49	39.50	
14880								Done via Conducted -
14880								Not in Restricted Band
17360								No Emissions
17360								Detected
19840								No Emissions
19840								Detected
22320								No Emissions
22320								Detected
24800								No Emissions
24800								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Lever 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2405 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4810	59.55	V	74.00	-14.45	Peak	1.84	164.25	
4810	40.83	V	54.00	-13.17	Avg	1.84	164.25	
7215	72.29	V	74.00	-1.72	Peak	1.22	202.50	
7215	53.57	V	54.00	-0.44	Avg	1.22	202.50	
9620								Done via Conducted -
9620								Not in Restricted Band
12025	64.60	V	74.00	-9.40	Peak	2.09	192.50	
12025	45.88	V	54.00	-8.12	Avg	2.09	192.50	
14430								Done via Conducted -
14430								Not in Restricted Band
16835								No Emissions
16835								Detected
19240								No Emissions
19240								Detected
21645								No Emissions
21645								Detected
24050								No Emissions
24050								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Lever 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2405 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4810	53.75	H	74.00	-20.25	Peak	2.21	217.70	
4810	35.03	H	54.00	-18.97	Avg	2.21	217.70	
7215	70.63	H	74.00	-3.37	Peak	1.76	85.00	
7215	51.91	H	54.00	-2.09	Avg	1.76	85.00	
9620								Done via Conducted -
9620								Not in Restricted Band
12025	59.61	H	74.00	-14.39	Peak	1.88	286.50	
12025	40.89	H	54.00	-13.11	Avg	1.88	286.50	
14430								Done via Conducted -
14430								Not in Restricted Band
16835								No Emissions
16835								Detected
19240								No Emissions
19240								Detected
21645								No Emissions
21645								Detected
24050								No Emissions
24050								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Lever 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2425 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4850	57.42	V	74.00	-16.58	Peak	1.85	5.00	
4850	38.70	V	54.00	-15.30	Avg	1.85	5.00	
7275	64.52	V	74.00	-9.48	Peak	1.52	311.50	
7275	45.80	V	54.00	-8.20	Avg	1.52	311.50	
9700								Done via Conducted -
9700								Not in Restricted Band
12125	61.56	V	74.00	-12.44	Peak	1.21	25.25	
12125	42.84	V	54.00	-11.16	Avg	1.21	25.25	
14550								Done via Conducted -
14550								Not in Restricted Band
16975								No Emissions
16975								Detected
19400								No Emissions
19400								Detected
21825								No Emissions
21825								Detected
24250								No Emissions
24250								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Lever 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2425 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4850	56.42	H	74.00	-17.58	Peak	2.42	5.00	
4850	37.70	H	54.00	-16.30	Avg	2.42	5.00	
7275	63.55	H	74.00	-10.45	Peak	2.71	104.50	
7275	44.83	H	54.00	-9.17	Avg	2.71	104.50	
9700								Done via Conducted -
9700								Not in Restricted Band
12125	62.01	H	74.00	-11.99	Peak	1.23	355.00	
12125	43.29	H	54.00	-10.71	Avg	1.23	355.00	
14550								Done via Conducted -
14550								Not in Restricted Band
16975								No Emissions
16975								Detected
19400								No Emissions
19400								Detected
21825								No Emissions
21825								Detected
24250								No Emissions
24250								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Lever 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2445 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4890	60.88	V	74.00	-13.12	Peak	1.25	135.00	
4890	42.16	V	54.00	-11.84	Avg	1.25	135.00	
7335	70.26	V	74.00	-3.74	Peak	1.54	19.75	
7335	51.54	V	54.00	-2.46	Avg	1.54	19.75	
9780								Done via Conducted -
9780								Not in Restricted Band
12225	69.42	V	74.00	-4.58	Peak	2.69	20.25	
12225	50.70	V	54.00	-3.30	Avg	2.69	20.25	
14670								Done via Conducted -
14670								Not in Restricted Band
17115								No Emissions
17115								Detected
19560								No Emissions
19560								Detected
22005								No Emissions
22005								Detected
24450								No Emissions
24450								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Lever 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2445 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4890	52.60	H	74.00	-21.40	Peak	1.85	268.50	
4890	33.88	H	54.00	-20.12	Avg	1.85	268.50	
7335	71.31	H	74.00	-2.69	Peak	1.32	272.75	
7335	52.59	H	54.00	-1.41	Avg	1.32	272.75	
9780								Done via Conducted -
9780								Not in Restricted Band
12225	66.60	H	74.00	-7.40	Peak	1.41	353.75	
12225	47.88	H	54.00	-6.12	Avg	1.41	353.75	
14670								Done via Conducted -
14670								Not in Restricted Band
17115								No Emissions
17115								Detected
19560								No Emissions
19560								Detected
22005								No Emissions
22005								Detected
24450								No Emissions
24450								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Lever 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2450 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4900	55.03	V	74.00	-18.98	Peak	1.87	196.50	
4900	36.31	V	54.00	-17.70	Avg	1.87	196.50	
7350	65.94	V	74.00	-8.06	Peak	1.99	269.75	
7350	47.22	V	54.00	-6.78	Avg	1.99	269.75	
9800								Done via Conducted -
9800								Not in Restricted Band
12250	59.79	V	74.00	-14.21	Peak	1.61	189.00	
12250	41.07	V	54.00	-12.93	Avg	1.61	189.00	
14700								Done via Conducted -
14700								Not in Restricted Band
17150								No Emissions
17150								Detected
19600								No Emissions
19600								Detected
22050								No Emissions
22050								Detected
24500								No Emissions
24500								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Lever 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2450 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4900	56.69	H	74.00	-17.31	Peak	2.19	5.00	
4900	37.97	H	54.00	-16.03	Avg	2.19	5.00	
7350	70.21	H	74.00	-3.79	Peak	1.96	21.75	
7350	51.49	H	54.00	-2.51	Avg	1.96	21.75	
9800								Done via Conducted -
9800								Not in Restricted Band
12250	59.51	H	74.00	-14.49	Peak	2.44	102.89	
12250	40.79	H	54.00	-13.21	Avg	2.44	102.89	
14700								Done via Conducted -
14700								Not in Restricted Band
17150								No Emissions
17150								Detected
19600								No Emissions
19600								Detected
22050								No Emissions
22050								Detected
24500								No Emissions
24500								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Lever 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2475 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4950	55.65	V	74.00	-18.35	Peak	2.39	5.00	
4950	36.93	V	54.00	-17.07	Avg	2.39	5.00	
7425	71.98	V	74.00	-2.02	Peak	2.03	13.25	
7425	53.26	V	54.00	-0.74	Avg	2.03	13.25	
9900								Done via Conducted -
9900								Not in Restricted Band
12375	58.24	V	74.00	-15.76	Peak	1.83	101.28	
12375	39.52	V	54.00	-14.48	Avg	1.83	101.28	
14850								Done via Conducted -
14850								Not in Restricted Band
17325								No Emissions
17325								Detected
19800								No Emissions
19800								Detected
22275								No Emissions
22275								Detected
24750								No Emissions
24750								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Lever 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2475 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4950	54.73	H	74.00	-19.27	Peak	1.82	297.51	
4950	36.01	H	54.00	-17.99	Avg	1.82	297.51	
7425	65.50	H	74.00	-8.50	Peak	1.29	52.25	
7425	46.78	H	54.00	-7.22	Avg	1.29	52.25	
9900								Done via Conducted -
9900								Not in Restricted Band
12375	60.96	H	74.00	-13.04	Peak	1.01	223.75	
12375	42.24	H	54.00	-11.76	Avg	1.01	223.75	
14850								Done via Conducted -
14850								Not in Restricted Band
17325								No Emissions
17325								Detected
19800								No Emissions
19800								Detected
22275								No Emissions
22275								Detected
24750								No Emissions
24750								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Lever 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2480 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4960	49.84	V	74.00	-24.16	Peak	1.51	122.50	
4960	31.12	V	54.00	-22.88	Avg	1.51	122.50	
7440	54.17	V	74.00	-19.83	Peak	1.52	123.50	
7440	35.45	V	54.00	-18.55	Avg	1.52	123.50	
9920								Done via Conducted -
9920								Not in Restricted Band
12400	57.21	V	74.00	-16.79	Peak	1.05	101.25	
12400	38.49	V	54.00	-15.51	Avg	1.05	101.25	
14880								Done via Conducted -
14880								Not in Restricted Band
17360								No Emissions
17360								Detected
19840								No Emissions
19840								Detected
22320								No Emissions
22320								Detected
24800								No Emissions
24800								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Lever 5

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2480 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4960	55.41	H	74.00	-18.59	Peak	1.64	0.00	
4960	36.69	H	54.00	-17.31	Avg	1.64	0.00	
7440	57.21	H	74.00	-16.79	Peak	2.12	31.00	
7440	38.49	H	54.00	-15.51	Avg	2.12	31.00	
9920								Done via Conducted -
9920								Not in Restricted Band
12400	60.61	H	74.00	-13.39	Peak	1.02	161.50	
12400	41.89	H	54.00	-12.11	Avg	1.02	161.50	
14880								Done via Conducted -
14880								Not in Restricted Band
17360								No Emissions
17360								Detected
19840								No Emissions
19840								Detected
22320								No Emissions
22320								Detected
24800								No Emissions
24800								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2405 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4810	60.07	V	74.00	-13.93	Peak	1.59	339.75	
4810	41.35	V	54.00	-12.65	Avg	1.59	339.75	
7215	65.84	V	74.00	-8.16	Peak	1.43	8.00	
7215	47.12	V	54.00	-6.88	Avg	1.43	8.00	
9620								Done via Conducted -
9620								Not in Restricted Band
12025	62.08	V	74.00	-11.92	Peak	2.58	275.25	
12025	43.36	V	54.00	-10.64	Avg	2.58	275.25	
14430								Done via Conducted -
14430								Not in Restricted Band
16835								No Emissions
16835								Detected
19240								No Emissions
19240								Detected
21645								No Emissions
21645								Detected
24050								No Emissions
24050								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2405 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4810	58.30	H	74.00	-15.71	Peak	2.71	340.50	
4810	39.58	H	54.00	-14.43	Avg	2.71	340.50	
7215	64.81	H	74.00	-9.19	Peak	1.27	27.75	
7215	46.09	H	54.00	-7.91	Avg	1.27	27.75	
9620								Done via Conducted -
9620								Not in Restricted Band
12025	62.13	H	74.00	-11.87	Peak	1.64	277.50	
12025	43.41	H	54.00	-10.59	Avg	1.64	277.50	
14430								Done via Conducted -
14430								Not in Restricted Band
16835								No Emissions
16835								Detected
19240								No Emissions
19240								Detected
21645								No Emissions
21645								Detected
24050								No Emissions
24050								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2425 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4850	58.78	V	74.00	-15.22	Peak	1.75	343.00	
4850	40.06	V	54.00	-13.94	Avg	1.75	343.00	
7275	70.30	V	74.00	-3.70	Peak	1.43	12.75	
7275	51.58	V	54.00	-2.42	Avg	1.43	12.75	
9700								Done via Conducted -
9700								Not in Restricted Band
12125	56.26	V	74.00	-17.74	Peak	1.00	362.50	
12125	37.54	V	54.00	-16.46	Avg	1.00	362.50	
14550								Done via Conducted -
14550								Not in Restricted Band
16975								No Emissions
16975								Detected
19400								No Emissions
19400								Detected
21825								No Emissions
21825								Detected
24250								No Emissions
24250								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2425 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4850	58.37	H	74.00	-15.63	Peak	2.40	337.25	
4850	39.65	H	54.00	-14.35	Avg	2.40	337.25	
7275	71.42	H	74.00	-2.58	Peak	1.43	27.75	
7275	52.70	H	54.00	-1.30	Avg	1.43	27.75	
9700								Done via Conducted -
9700								Not in Restricted Band
12125	60.07	H	74.00	-13.93	Peak	1.97	109.28	
12125	41.35	H	54.00	-12.65	Avg	1.97	109.28	
14550								Done via Conducted -
14550								Not in Restricted Band
16975								No Emissions
16975								Detected
19400								No Emissions
19400								Detected
21825								No Emissions
21825								Detected
24250								No Emissions
24250								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2445 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4890	56.39	V	74.00	-17.61	Peak	1.59	333.00	
4890	37.67	V	54.00	-16.33	Avg	1.59	333.00	
7335	71.36	V	74.00	-2.64	Peak	1.59	22.75	
7335	52.64	V	54.00	-1.36	Avg	1.59	22.75	
9780								Done via Conducted -
9780								Not in Restricted Band
12225	63.44	V	74.00	-10.56	Peak	1.89	286.00	
12225	44.72	V	54.00	-9.28	Avg	1.89	286.00	
14670								Done via Conducted -
14670								Not in Restricted Band
17115								No Emissions
17115								Detected
19560								No Emissions
19560								Detected
22005								No Emissions
22005								Detected
24450								No Emissions
24450								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2445 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4890	53.12	H	74.00	-20.88	Peak	1.11	50.75	
4890	34.40	H	54.00	-19.60	Avg	1.11	50.75	
7335	69.69	H	74.00	-4.31	Peak	1.11	313.00	
7335	50.97	H	54.00	-3.03	Avg	1.11	313.00	
9780								Done via Conducted -
9780								Not in Restricted Band
12225	61.09	H	74.00	-12.91	Peak	1.51	0.00	
12225	42.37	H	54.00	-11.63	Avg	1.51	0.00	
14670								Done via Conducted -
14670								Not in Restricted Band
17115								No Emissions
17115								Detected
19560								No Emissions
19560								Detected
22005								No Emissions
22005								Detected
24450								No Emissions
24450								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2450 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4900	56.88	V	74.00	-17.12	Peak	1.43	341.00	
4900	38.16	V	54.00	-15.84	Avg	1.43	341.00	
7350	71.53	V	74.00	-2.47	Peak	1.43	14.00	
7350	52.81	V	54.00	-1.19	Avg	1.43	14.00	
9800								Done via Conducted -
9800								Not in Restricted Band
12250	62.03	V	74.00	-11.97	Peak	1.81	255.50	
12250	43.31	V	54.00	-10.69	Avg	1.81	255.50	
14700								Done via Conducted -
14700								Not in Restricted Band
17150								No Emissions
17150								Detected
19600								No Emissions
19600								Detected
22050								No Emissions
22050								Detected
24500								No Emissions
24500								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2450 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4900	55.44	H	74.00	-18.56	Peak	2.94	174.77	
4900	36.72	H	54.00	-17.28	Avg	2.94	174.77	
7350	70.70	H	74.00	-3.30	Peak	1.27	17.00	
7350	51.98	H	54.00	-2.02	Avg	1.27	17.00	
9800								Done via Conducted -
9800								Not in Restricted Band
12250	63.46	H	74.00	-10.54	Peak	1.41	24.50	
12250	44.74	H	54.00	-9.26	Avg	1.41	24.50	
14700								Done via Conducted -
14700								Not in Restricted Band
17150								No Emissions
17150								Detected
19600								No Emissions
19600								Detected
22050								No Emissions
22050								Detected
24500								No Emissions
24500								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2475 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4950	58.19	V	74.00	-15.81	Peak	1.75	0.00	
4950	39.47	V	54.00	-14.53	Avg	1.75	0.00	
7425	71.32	V	74.00	-2.68	Peak	1.11	355.00	
7425	52.60	V	54.00	-1.40	Avg	1.11	355.00	
9900								Done via Conducted -
9900								Not in Restricted Band
12375	62.40	V	74.00	-11.60	Peak	1.53	30.25	
12375	43.68	V	54.00	-10.32	Avg	1.53	30.25	
14850								Done via Conducted -
14850								Not in Restricted Band
17325								No Emissions
17325								Detected
19800								No Emissions
19800								Detected
22275								No Emissions
22275								Detected
24750								No Emissions
24750								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2475 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4950	52.81	H	74.00	-21.19	Peak	1.26	52.50	
4950	34.09	H	54.00	-19.91	Avg	1.26	52.50	
7425	66.78	H	74.00	-7.22	Peak	1.11	13.00	
7425	48.06	H	54.00	-5.94	Avg	1.11	13.00	
9900								Done via Conducted -
9900								Not in Restricted Band
12375	60.83	H	74.00	-13.17	Peak	1.78	251.25	
12375	42.11	H	54.00	-11.89	Avg	1.78	251.25	
14850								Done via Conducted -
14850								Not in Restricted Band
17325								No Emissions
17325								Detected
19800								No Emissions
19800								Detected
22275								No Emissions
22275								Detected
24750								No Emissions
24750								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2480 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4960	49.96	V	74.00	-24.04	Peak	1.78	0.00	
4960	31.24	V	54.00	-22.76	Avg	1.78	0.00	
7440	57.26	V	74.00	-16.74	Peak	1.36	152.75	
7440	38.54	V	54.00	-15.46	Avg	1.36	152.75	
9920								Done via Conducted -
9920								Not in Restricted Band
12400	58.21	V	74.00	-15.79	Peak	1.31	0.00	
12400	39.49	V	54.00	-14.51	Avg	1.31	0.00	
14880								Done via Conducted -
14880								Not in Restricted Band
17360								No Emissions
17360								Detected
19840								No Emissions
19840								Detected
22320								No Emissions
22320								Detected
24800								No Emissions
24800								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2480 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4960	50.48	H	74	-23.52	Peak	1.57	0.00	
4960	31.76	H	54	-22.24	Avg	1.57	0.00	
7440	54.79	H	74	-19.21	Peak	1.57	125.00	
7440	36.07	H	54	-17.93	Avg	1.57	125.00	
9920								Done via Conducted -
9920								Not in Restricted Band
12400	61.27	H	74	-12.73	Peak	1.58	155.00	
12400	42.55	H	54	-11.45	Avg	1.58	155.00	
14880								Done via Conducted -
14880								Not in Restricted Band
17360								No Emissions
17360								Detected
19840								No Emissions
19840								Detected
22320								No Emissions
22320								Detected
24800								No Emissions
24800								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10T

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2405 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4810	61.34	V	74.00	-12.66	Peak	2.07	340.50	
4810	42.62	V	54.00	-11.38	Avg	2.07	340.50	
7215	66.23	V	74.00	-7.77	Peak	1.59	59.75	
7215	47.51	V	54.00	-6.49	Avg	1.59	59.75	
9620								Done via Conducted -
9620								Not in Restricted Band
12025	61.93	V	74.00	-12.08	Peak	2.13	5.00	
12025	43.21	V	54.00	-10.80	Avg	2.13	5.00	
14430								Done via Conducted -
14430								Not in Restricted Band
16835								No Emissions
16835								Detected
19240								No Emissions
19240								Detected
21645								No Emissions
21645								Detected
24050								No Emissions
24050								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10T

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2405 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4810	60.27	H	74.00	-13.73	Peak	2.54	299.00	
4810	41.55	H	54.00	-12.45	Avg	2.54	299.00	
7215	66.04	H	74.00	-7.96	Peak	1.27	315.25	
7215	47.32	H	54.00	-6.68	Avg	1.27	315.25	
9620								Done via Conducted -
9620								Not in Restricted Band
12025	60.26	H	74.00	-13.74	Peak	1.18	36.25	
12025	41.54	H	54.00	-12.46	Avg	1.18	36.25	
14430								Done via Conducted -
14430								Not in Restricted Band
16835								No Emissions
16835								Detected
19240								No Emissions
19240								Detected
21645								No Emissions
21645								Detected
24050								No Emissions
24050								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10T

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2425 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4850	58.15	V	74.00	-15.85	Peak	2.07	342.00	
4850	39.43	V	54.00	-14.57	Avg	2.07	342.00	
7275	70.71	V	74.00	-3.29	Peak	1.43	15.00	
7275	51.99	V	54.00	-2.01	Avg	1.43	15.00	
9700								Done via Conducted -
9700								Not in Restricted Band
12125	60.21	V	74.00	-13.79	Peak	1.41	313.50	
12125	41.49	V	54.00	-12.51	Avg	1.41	313.50	
14550								Done via Conducted -
14550								Not in Restricted Band
16975								No Emissions
16975								Detected
19400								No Emissions
19400								Detected
21825								No Emissions
21825								Detected
24250								No Emissions
24250								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10T

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2425 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4850	55.54	H	74.00	-18.46	Peak	1.91	307.75	
4850	36.82	H	54.00	-17.18	Avg	1.91	307.75	
7275	70.32	H	74.00	-3.68	Peak	1.11	309.75	
7275	51.60	H	54.00	-2.40	Avg	1.11	309.75	
9700								Done via Conducted -
9700								Not in Restricted Band
12125	59.22	H	74.00	-14.78	Peak	1.62	56.75	
12125	40.50	H	54.00	-13.50	Avg	1.62	56.75	
14550								Done via Conducted -
14550								Not in Restricted Band
16975								No Emissions
16975								Detected
19400								No Emissions
19400								Detected
21825								No Emissions
21825								Detected
24250								No Emissions
24250								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10T

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2445 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4890	57.71	V	74.00	-16.29	Peak	1.90	6.00	
4890	38.99	V	54.00	-15.01	Avg	1.90	6.00	
7335	71.79	V	74.00	-2.21	Peak	1.43	184.25	
7335	53.07	V	54.00	-0.93	Avg	1.43	184.25	
9780								Done via Conducted -
9780								Not in Restricted Band
12225	60.16	V	74.00	-13.84	Peak	2.17	130.50	
12225	41.44	V	54.00	-12.56	Avg	2.17	130.50	
14670								Done via Conducted -
14670								Not in Restricted Band
17115								No Emissions
17115								Detected
19560								No Emissions
19560								Detected
22005								No Emissions
22005								Detected
24450								No Emissions
24450								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10T

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2445 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4890	53.60	H	74.00	-20.40	Peak	2.23	111.50	
4890	34.88	H	54.00	-19.12	Avg	2.23	111.50	
7335	69.39	H	74.00	-4.61	Peak	1.37	126.83	
7335	50.67	H	54.00	-3.33	Avg	1.37	126.83	
9780								Done via Conducted -
9780								Not in Restricted Band
12225	60.99	H	74.00	-13.01	Peak	1.63	285.00	
12225	42.27	H	54.00	-11.73	Avg	1.63	285.00	
14670								Done via Conducted -
14670								Not in Restricted Band
17115								No Emissions
17115								Detected
19560								No Emissions
19560								Detected
22005								No Emissions
22005								Detected
24450								No Emissions
24450								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10T

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2450 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4900	57.79	V	74.00	-16.21	Peak	1.75	139.50	
4900	39.07	V	54.00	-14.93	Avg	1.75	139.50	
7350	70.30	V	74.00	-3.70	Peak	1.91	161.00	
7350	51.58	V	54.00	-2.42	Avg	1.91	161.00	
9800								Done via Conducted -
9800								Not in Restricted Band
12250	59.31	V	74.00	-14.69	Peak	1.25	196.00	
12250	40.59	V	54.00	-13.41	Avg	1.25	196.00	
14700								Done via Conducted -
14700								Not in Restricted Band
17150								No Emissions
17150								Detected
19600								No Emissions
19600								Detected
22050								No Emissions
22050								Detected
24500								No Emissions
24500								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10T

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2450 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4900	47.93	H	74.00	-26.07	Peak	1.25	155.00	
4900	29.21	H	54.00	-24.79	Avg	1.25	155.00	
7350	70.37	H	74.00	-3.63	Peak	1.12	129.25	
7350	51.65	H	54.00	-2.35	Avg	1.12	129.25	
9800								Done via Conducted -
9800								Not in Restricted Band
12250	62.43	H	74.00	-11.57	Peak	1.15	216.00	
12250	43.71	H	54.00	-10.29	Avg	1.15	216.00	
14700								Done via Conducted -
14700								Not in Restricted Band
17150								No Emissions
17150								Detected
19600								No Emissions
19600								Detected
22050								No Emissions
22050								Detected
24500								No Emissions
24500								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10T

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2475 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4950	57.33	V	74.00	-16.67	Peak	1.59	328.00	
4950	38.61	V	54.00	-15.39	Avg	1.59	328.00	
7425	71.58	V	74.00	-2.42	Peak	1.43	16.00	
7425	52.86	V	54.00	-1.14	Avg	1.43	16.00	
9900								Done via Conducted -
9900								Not in Restricted Band
12375	62.62	V	74.00	-11.38	Peak	1.43	235.00	
12375	43.90	V	54.00	-10.10	Avg	1.43	235.00	
14850								Done via Conducted -
14850								Not in Restricted Band
17325								No Emissions
17325								Detected
19800								No Emissions
19800								Detected
22275								No Emissions
22275								Detected
24750								No Emissions
24750								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10T

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2475 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4950	52.04	H	74.00	-21.96	Peak	1.26	35.00	
4950	33.32	H	54.00	-20.68	Avg	1.26	35.00	
7425	65.21	H	74.00	-8.79	Peak	1.27	312.25	
7425	46.49	H	54.00	-7.51	Avg	1.27	312.25	
9900								Done via Conducted -
9900								Not in Restricted Band
12375	61.64	H	74.00	-12.36	Peak	1.51	34.25	
12375	42.92	H	54.00	-11.08	Avg	1.51	34.25	
14850								Done via Conducted -
14850								Not in Restricted Band
17325								No Emissions
17325								Detected
19800								No Emissions
19800								Detected
22275								No Emissions
22275								Detected
24750								No Emissions
24750								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10T

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

2480 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4960	49.60	V	74.00	-24.40	Peak	1.56	5.00	
4960	30.88	V	54.00	-23.12	Avg	1.56	5.00	
7440	54.73	V	74.00	-19.27	Peak	2.12	48.50	
7440	36.01	V	54.00	-17.99	Avg	2.12	48.50	
9920								Done via Conducted -
9920								Not in Restricted Band
12400	61.62	V	74.00	-12.38	Peak	1.51	148.00	
12400	42.90	V	54.00	-11.10	Avg	1.51	148.00	
14880								Done via Conducted -
14880								Not in Restricted Band
17360								No Emissions
17360								Detected
19840								No Emissions
19840								Detected
22320								No Emissions
22320								Detected
24800								No Emissions
24800								Detected

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10T

Date: 09/23/2015

Lab: D

Tested By: Kyle Fujimoto

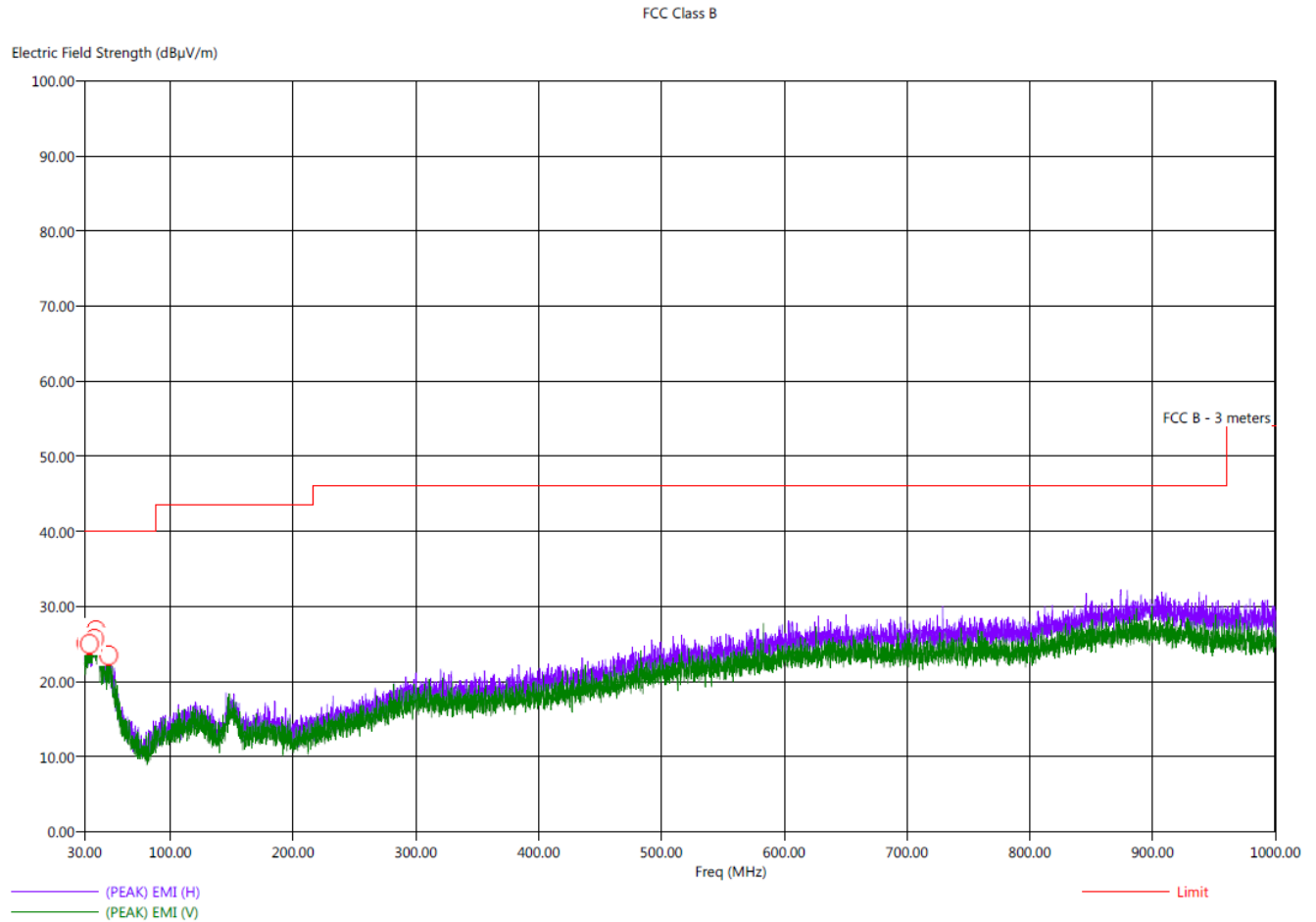
2480 MHz Harmonics

Transmit Mode - 11.58% Duty Cycle

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
4960	49.75	H	74.00	-24.25	Peak	1.29	76.50	
4960	31.03	H	54.00	-22.97	Avg	1.29	76.50	
7440	53.90	H	74.00	-20.11	Peak	1.54	242.50	
7440	35.18	H	54.00	-18.83	Avg	1.54	242.50	
9920								Done via Conducted -
9920								Not in Restricted Band
12400	58.46	H	74.00	-15.54	Peak	1.02	97.00	
12400	39.74	H	54.00	-14.26	Avg	1.02	97.00	
14880								Done via Conducted -
14880								Not in Restricted Band
17360								No Emissions
17360								Detected
19840								No Emissions
19840								Detected
22320								No Emissions
22320								Detected
24800								No Emissions
24800								Detected

Title: Pre-Scan - 30-1000 MHz - FCC Class B
File: Agilent - Pre-Scan - Below 1 GHz - MN 910 - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: OHM Zigbee v.2
EUT Condition: The EUT is continuously transmitting
Customer: Spectrum Brands, Inc.
Model: 450202
Installed Inside the Smartcode Deadbolt 5

9/24/2015 3:46:41 PM
Sequence: Preliminary Scan



Note #1: The EUT was continuously transmitting at the low channel

Note #2: The EUT had no emissions detected from 9 kHz to 30 MHz

Note #3: The EUT had no non harmonic emissions nor emissions from the digital portion detected above 1 GHz

-

Title: Radiated Final - 30-1000 MHz - FCC Class B
File: Agilent - Final Scan - Below 1 GHz - MN 910 - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: OHM Zigbee v.2
EUT Condition: The EUT is continuously transmitting
Customer: Spectrum Brands, Inc.
Model: 450202
Installed Inside the Smartcode Deadbolt 5

9/24/2015 3:55:48 PM
Sequence: Final Measurements

FCC Class B - 30 MHz - 1 GHz

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 Aql (deg)	Twr Ht (cm)
31.40	H	26.38	21.95	-13.62	-18.05	40.00	24.10	0.36	57.50	287.25
34.20	V	27.35	21.97	-12.65	-18.03	40.00	24.25	0.39	24.00	158.35
38.20	V	26.75	22.88	-13.25	-17.12	40.00	25.04	0.42	229.00	271.19
39.40	H	27.01	23.17	-12.99	-16.83	40.00	25.32	0.43	124.50	252.32
39.90	H	27.01	23.15	-12.99	-16.85	40.00	25.35	0.43	203.50	222.83
49.80	V	24.89	20.19	-15.11	-19.81	40.00	22.43	0.50	56.75	270.77

Note #1: The EUT was continuously transmitting at the low channel

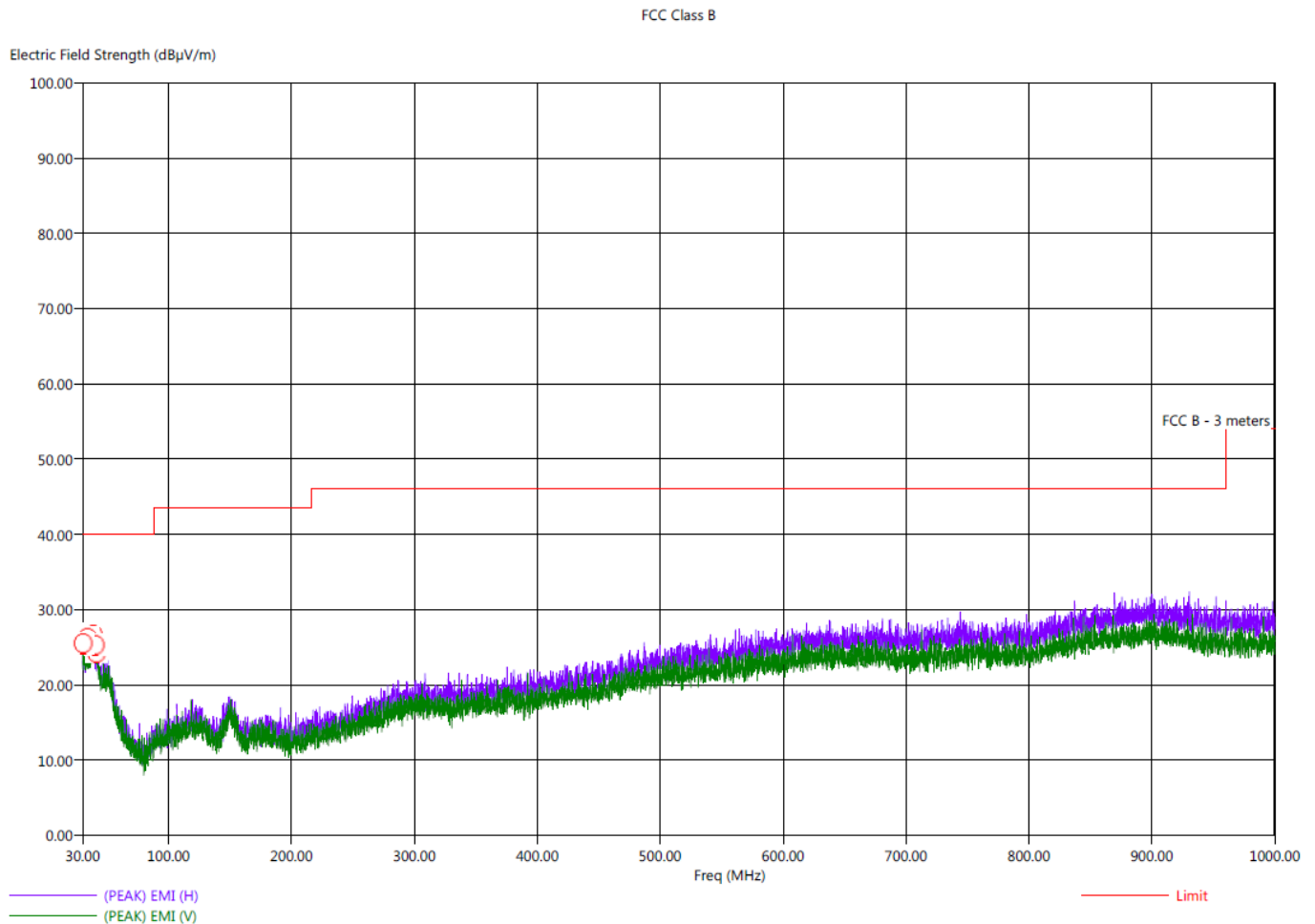
Note #2: The EUT had no emissions detected from 9 kHz to 30 MHz

Note #3: The EUT had no non harmonic emissions nor emissions from the digital portion detected above 1 GHz



Title: Pre-Scan - 30-1000 MHz - FCC Class B
File: Agilent - Pre-Scan - Below 1 GHz - MN 912 - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: OHM Zigbee v.2
EUT Condition: The EUT is continuously transmitting
Customer: Spectrum Brands, Inc.
Model: 450202
Installed Inside the Smartcode Lever 5

9/24/2015 4:20:55 PM
Sequence: Preliminary Scan



Note #1: The EUT was continuously transmitting at the low channel

Note #2: The EUT had no emissions detected from 9 kHz to 30 MHz

Note #3: The EUT had no non harmonic emissions nor emissions from the digital portion detected above 1 GHz

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

Title: Radiated Final - 30-1000 MHz - FCC Class B
File: Agilent - Final Scan - Below 1 GHz - MN 912 - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: OHM Zigbee v.2
EUT Condition: The EUT is continuously transmitting
Customer: Spectrum Brands, Inc.
Model: 450202
Installed Inside the Smartcode Lever 5

9/24/2015 4:31:26 PM
Sequence: Final Measurements

FCC Class B - 30 MHz - 1 GHz

Freq (MHz)	Pol	(PEAK) EMI (dBμV/m)	(OP) EMI (dBμV/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dBμV/m)	Transducer (dB)	Cable (dB)	Ttbt Aql (deg)	Twr Ht (cm)
30.60	V	26.51	21.83	-13.49	-18.17	40.00	24.04	0.36	228.75	191.01
34.10	H	26.41	22.06	-13.59	-17.94	40.00	24.26	0.39	68.75	142.35
38.70	H	26.96	22.93	-13.04	-17.07	40.00	25.10	0.42	180.50	378.89
39.90	H	27.41	23.05	-12.59	-16.95	40.00	25.29	0.43	176.25	173.64
40.30	V	27.34	23.14	-12.66	-16.86	40.00	25.33	0.43	293.50	126.35
41.40	V	27.42	22.11	-12.58	-17.89	40.00	24.40	0.44	164.00	351.13

Note #1: The EUT was continuously transmitting at the low channel

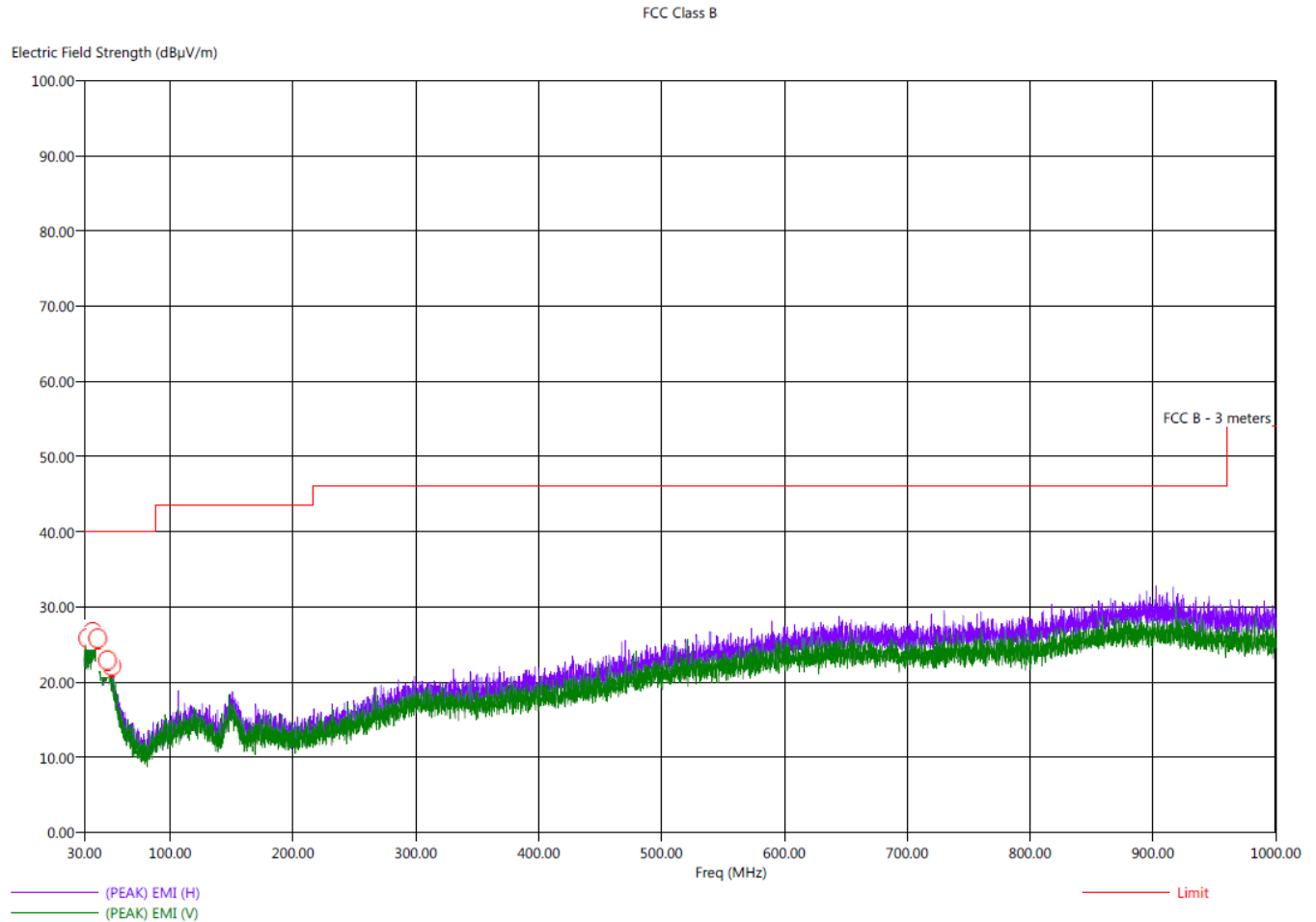
Note #2: The EUT had no emissions detected from 9 kHz to 30 MHz

Note #3: The EUT had no non harmonic emissions nor emissions from the digital portion detected above 1 GHz



Title: Pre-Scan - 30-1000 MHz - FCC Class B
File: Agilent - Pre-Scan - Below 1 GHz - MN 914 - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: OHM Zigbee v.2
EUT Condition: The EUT is continuously transmitting
Customer: Spectrum Brands, Inc.
Model: 450202
Installed Inside the Smartcode Deadbolt 10

9/24/2015 3:11:49 PM
Sequence: Preliminary Scan



Note #1: The EUT was continuously transmitting at the low channel

Note #2: The EUT had no emissions detected from 9 kHz to 30 MHz

Note #3: The EUT had no non harmonic emissions nor emissions from the digital portion detected above 1 GHz

Title: Radiated Final - 30-1000 MHz - FCC Class B
File: Agilent - Final Scan - Below 1 GHz - MN 914 - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: OHM Zigbee v.2
EUT Condition: The EUT is continuously transmitting
Customer: Spectrum Brands, Inc.
Model: 450202
Installed Inside the Smartcode Deadbolt 10

9/24/2015 3:20:26 PM
Sequence: Final Measurements

FCC Class B - 30 MHz - 1 GHz

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 Aql (dca)	Twr Ht (cm)
33.00	H	26.47	21.89	-13.53	-18.11	40.00	24.19	0.38	109.00	142.83
36.80	H	26.60	22.52	-13.40	-17.48	40.00	24.75	0.41	197.75	399.73
39.10	H	27.68	22.99	-12.32	-17.01	40.00	25.19	0.42	148.25	284.08
41.00	V	26.85	22.32	-13.15	-17.68	40.00	24.53	0.44	273.00	400.02
49.00	V	24.19	20.11	-15.81	-19.89	40.00	22.35	0.49	292.50	400.02
52.40	V	23.28	18.61	-16.72	-21.39	40.00	20.62	0.51	247.25	394.47

Note #1: The EUT was continuously transmitting at the low channel

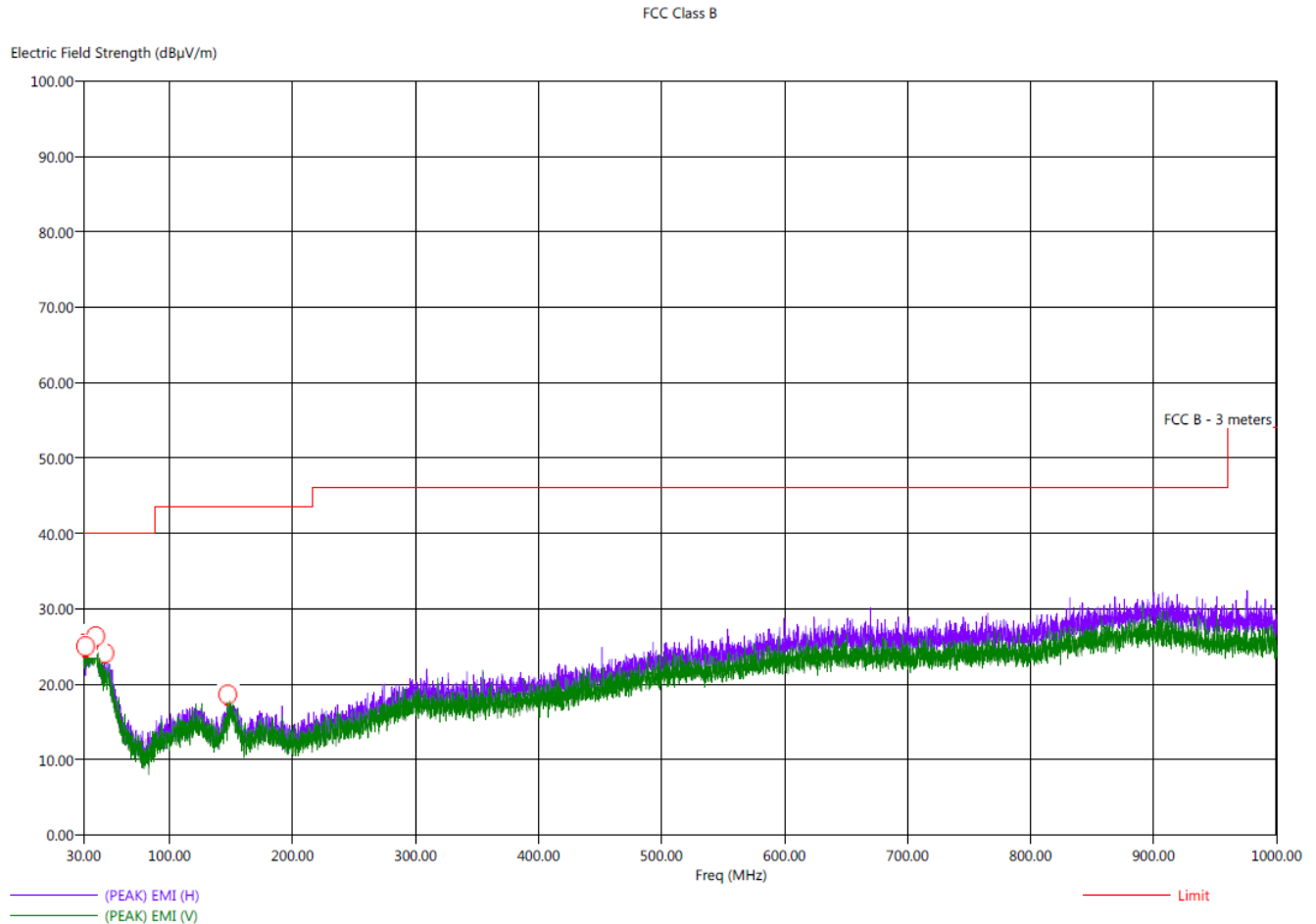
Note #2: The EUT had no emissions detected from 9 kHz to 30 MHz

Note #3: The EUT had no non harmonic emissions nor emissions from the digital portion detected above 1 GHz



Title: Pre-Scan - 30-1000 MHz - FCC Class B
File: Agilent - Pre-Scan - Below 1 GHz - MN 916 - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: OHM Zigbee v.2
EUT Condition: The EUT is continuously transmitting
Customer: Spectrum Brands, Inc.
Model: 450202
Installed Inside the Smartcode Deadbolt 10T

9/24/2015 1:54:55 PM
Sequence: Preliminary Scan



Note #1: The EUT was continuously transmitting at the low channel

Note #2: The EUT had no emissions detected from 9 kHz to 30 MHz

Note #3: The EUT had no non harmonic emissions nor emissions from the digital portion detected above 1 GHz

Title: Radiated Final - 30-1000 MHz - FCC Class B
File: Agilent - Final Scan - Below 1 GHz - MN 916 - FCC Class B.set
Operator: Kyle Fujimoto
EUT Type: OHM Zigbee v.2
EUT Condition: The EUT is continuously transmitting
Customer: Spectrum Brands, Inc.
Model: 450202
Installed Inside the Smartcode Deadbolt 10T

9/24/2015 2:05:32 PM
Sequence: Final Measurements

FCC Class B - 30 MHz - 1 GHz

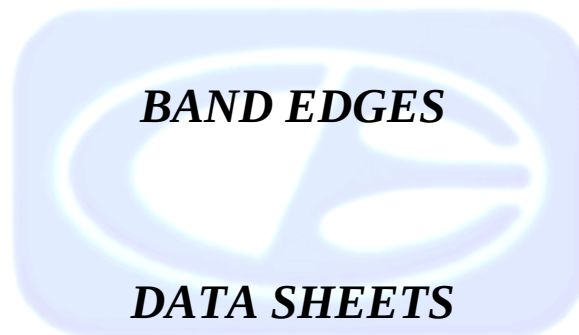
Freq (MHz)	Pol	(PEAK) EMI (dBμV/m)	(QP) EMI (dBμV/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dBμV/m)	Transducer (dB)	Cable (dB)	Ttbl Aql (deq)	Twr Ht (cm)
30.60	H	25.62	21.96	-14.38	-18.04	40.00	24.05	0.36	272.50	191.55
31.80	V	26.49	21.94	-13.51	-18.06	40.00	24.10	0.36	157.50	347.61
39.10	H	27.16	23.14	-12.84	-16.86	40.00	25.24	0.42	280.50	271.43
40.00	V	27.33	23.24	-12.67	-16.76	40.00	25.36	0.43	337.25	400.08
47.40	H	24.25	19.80	-15.75	-20.20	40.00	22.03	0.48	70.00	331.91
147.40	H	19.49	14.67	-24.01	-28.83	43.50	16.24	0.89	140.00	173.70

Note #1: The EUT was continuously transmitting at the low channel

Note #2: The EUT had no emissions detected from 9 kHz to 30 MHz

Note #3: The EUT had no non harmonic emissions nor emissions from the digital portion detected above 1 GHz





FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed inside the Smartcode Deadbolt 5

Date: 09/18/2015

Lab: D

Tested By: Kyle Fujimoto

Band Edges - 2405 MHz

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2405	109.77	H	--	--	Peak	2.24	0.00	Fundamental at
2405	91.05	H	--	--	Avg	2.24	0.00	2405 MHz
2390	52.01	H	74.00	-21.99	Peak	2.24	0.00	Lower
2390	33.29	H	54.00	-20.71	Avg	2.24	0.00	Band Edge
2405	111.29	V	--	--	Peak	1.28	123.25	Fundamental at
2405	92.57	V	--	--	Avg	1.28	123.25	2405 MHz
2390	51.39	V	74.00	-22.61	Peak	1.28	123.25	Lower
2390	32.67	V	54.00	-21.33	Avg	1.28	123.25	Band Edge

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed inside the Smartcode Deadbolt 5

Date: 09/21/2015

Lab: D

Tested By: Kyle Fujimoto

Band Edges - 2475 MHz

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2475	107.68	H	--	--	Peak	1.70	154.50	Fundamental at
2475	88.96	H	--	--	Avg	1.70	154.50	2475 MHz
2483.5	58.08	H	74.00	-15.92	Peak	1.70	154.50	Upper
2483.5	39.36	H	54.00	-14.64	Avg	1.70	154.50	Band Edge
2475	108.14	V	--	--	Peak	1.91	299.50	Fundamental at
2475	89.42	V	--	--	Avg	1.91	299.50	2475 MHz
2483.5	59.78	V	74.00	-14.22	Peak	1.91	299.50	Upper
2483.5	41.06	V	54.00	-12.94	Avg	1.91	299.50	Band Edge

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed inside the Smartcode Deadbolt 5

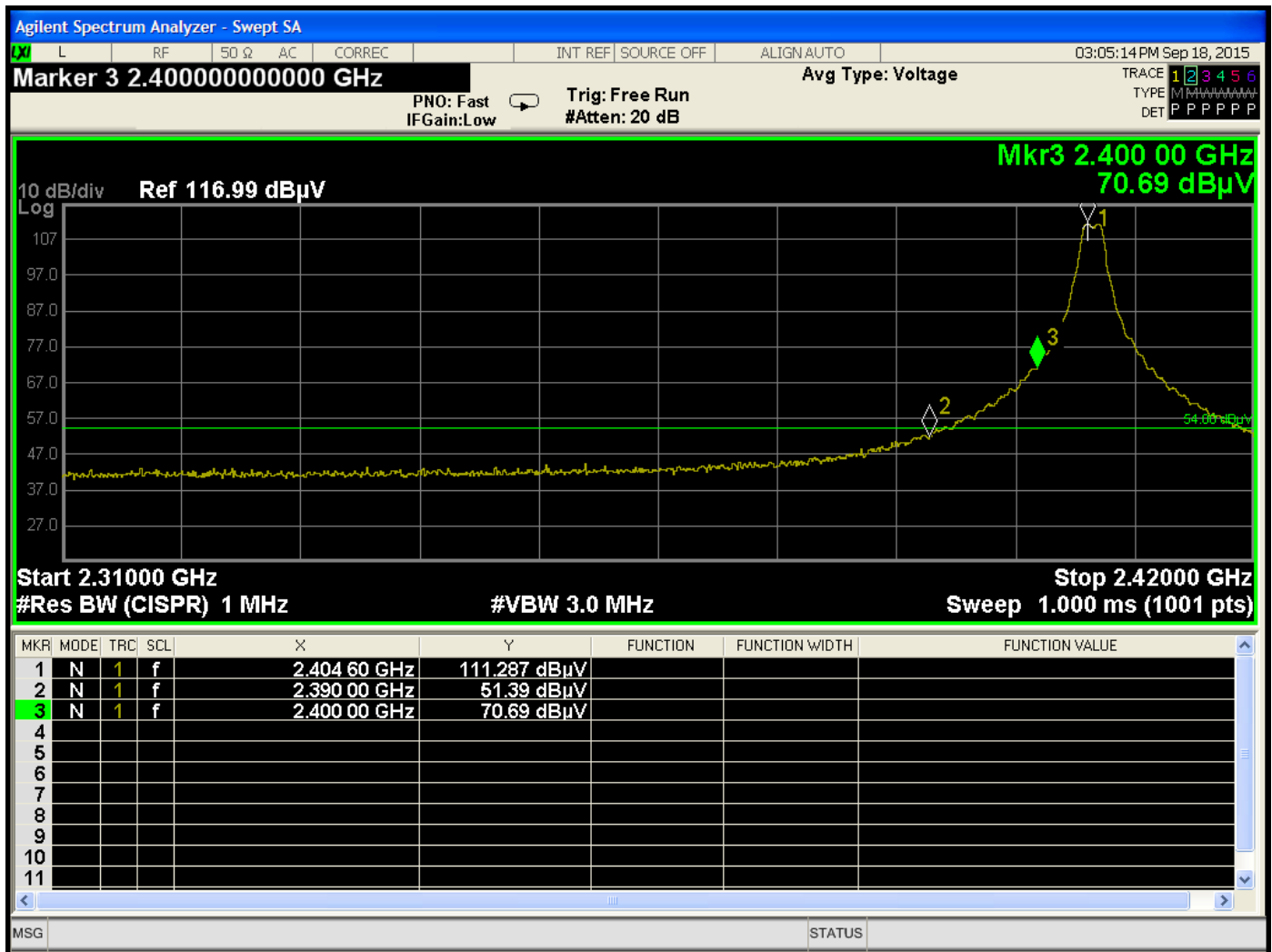
Date: 09/21/2015

Lab: D

Tested By: Kyle Fujimoto

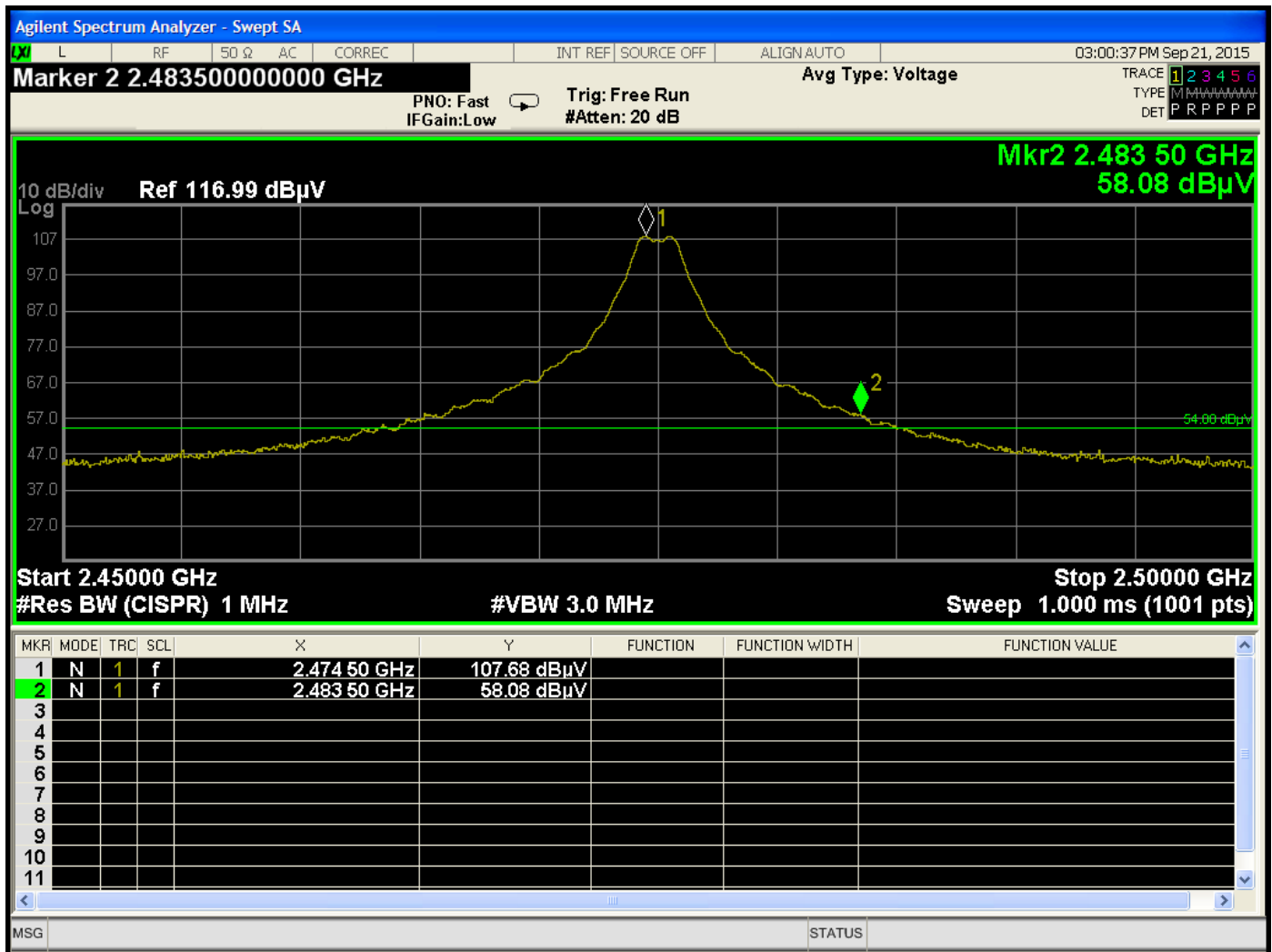
Band Edges - 2480 MHz

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	101.85	H	--	--	Peak	1.59	163.00	Fundamental at
2480	83.13	H	--	--	Avg	1.59	163.00	2480 MHz
2483.5	70.08	H	74.00	-3.92	Peak	1.59	163.00	Upper
2483.5	51.36	H	54.00	-2.64	Avg	1.59	163.00	Band Edge
2480	103.67	V	--	--	Peak	2.23	301.00	Fundamental at
2480	84.95	V	--	--	Avg	2.23	301.00	2480 MHz
2483.5	71.57	V	74.00	-2.43	Peak	2.23	301.00	Upper
2483.5	52.85	V	54.00	-1.15	Avg	2.23	301.00	Band Edge

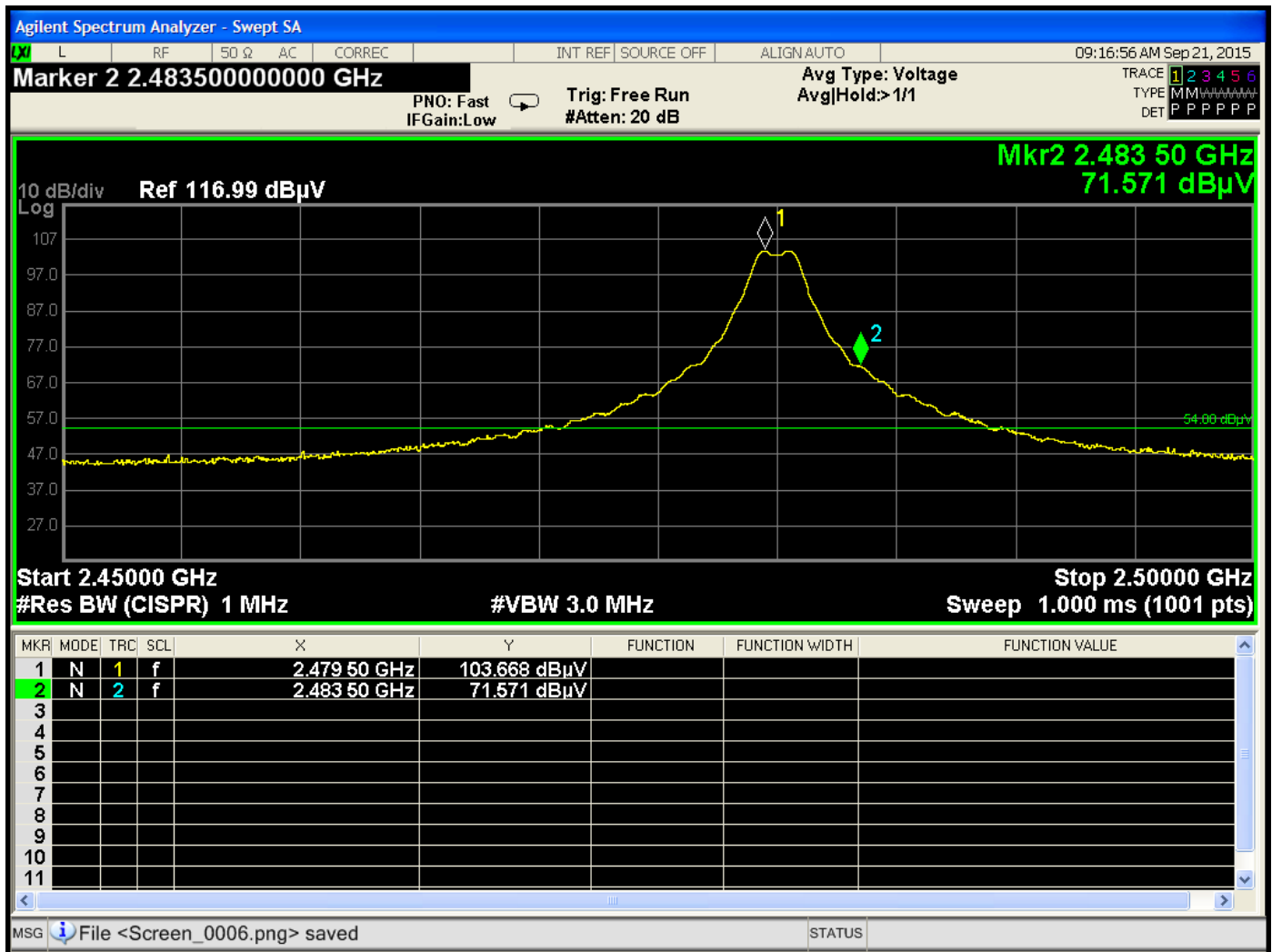


Band Edge for 2405 MHz Fundamental – Vertical Polarization – Installed Inside the Smartcode Deadbolt 5

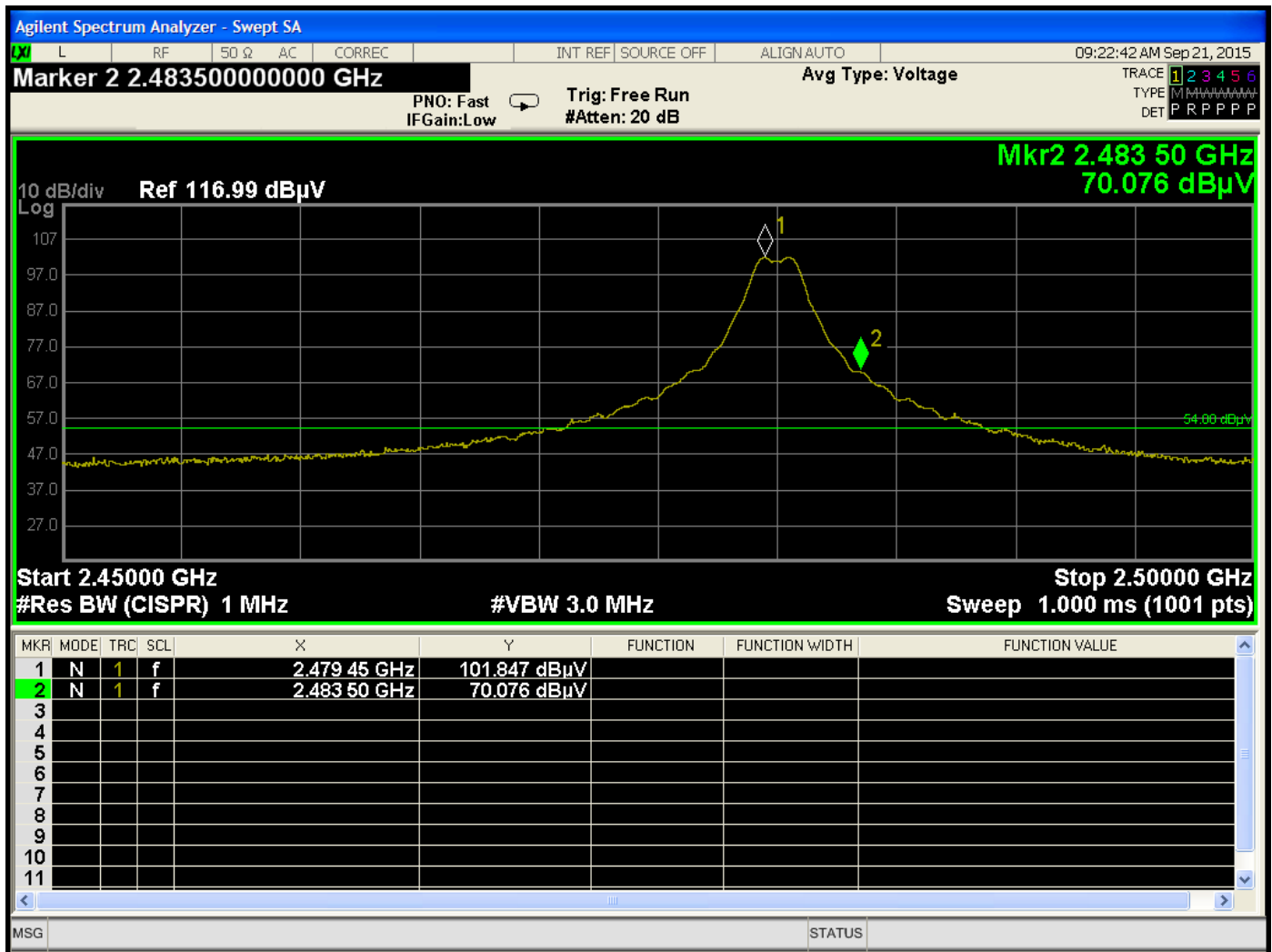




Band Edge for 2475 MHz Fundamental – Horizontal Polarization – Installed Inside the Smartcode Deadbolt 5



Band Edge for 2480 MHz Fundamental – Vertical Polarization – Installed Inside the Smartcode Deadbolt 5



Band Edge for 2480 MHz Fundamental – Horizontal Polarization – Installed Inside the Smartcode Deadbolt 5

FCC 15.247

Spectrum Brands, Inc.

OHM ZIGBEE v.2

Model: 450202

Installed in the Smartcode Lever 5

Date: 09/18/2015

Lab: D

Tested By: Kyle Fujimoto

Band Edges - 2405 MHz

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2405	104.89	H	--	--	Peak	1.91	57.75	Fundamental at
2405	86.17	H	--	--	Avg	1.91	57.75	2405 MHz
2390	49.01	H	74.00	-24.99	Peak	1.91	57.75	Lower
2390	30.29	H	54.00	-23.71	Avg	1.91	57.75	Band Edge
2405	108.07	V	--	--	Peak	2.07	306.50	Fundamental at
2405	89.35	V	--	--	Avg	2.07	306.50	2405 MHz
2390	50.72	V	74.00	-23.28	Peak	2.07	306.50	Lower
2390	32.00	V	54.00	-22.00	Avg	2.07	306.50	Band Edge

FCC 15.247

Spectrum Brands, Inc.

OHM ZIGBEE v.2

Model: 450202

Installed in the Smartcode Lever 5

Date: 09/18/2015

Lab: D

Tested By: Kyle Fujimoto

Band Edges - 2475 MHz

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2475	103.83	H	--	--	Peak	1.11	162.25	Fundamental at
2475	85.11	H	--	--	Avg	1.11	162.25	2475 MHz
2483.5	56.26	H	74.00	-17.74	Peak	1.11	162.25	Upper
2483.5	37.54	H	54.00	-16.46	Avg	1.11	162.25	Band Edge
2475	107.64	V	--	--	Peak	1.11	153.25	Fundamental at
2475	88.92	V	--	--	Avg	1.11	153.25	2475 MHz
2483.5	59.76	V	74.00	-14.24	Peak	1.11	153.25	Upper
2483.5	41.04	V	54.00	-12.96	Avg	1.11	153.25	Band Edge

FCC 15.247

Spectrum Brands, Inc.

OHM ZIGBEE v.2

Model: 450202

Installed in the Smartcode Lever 5

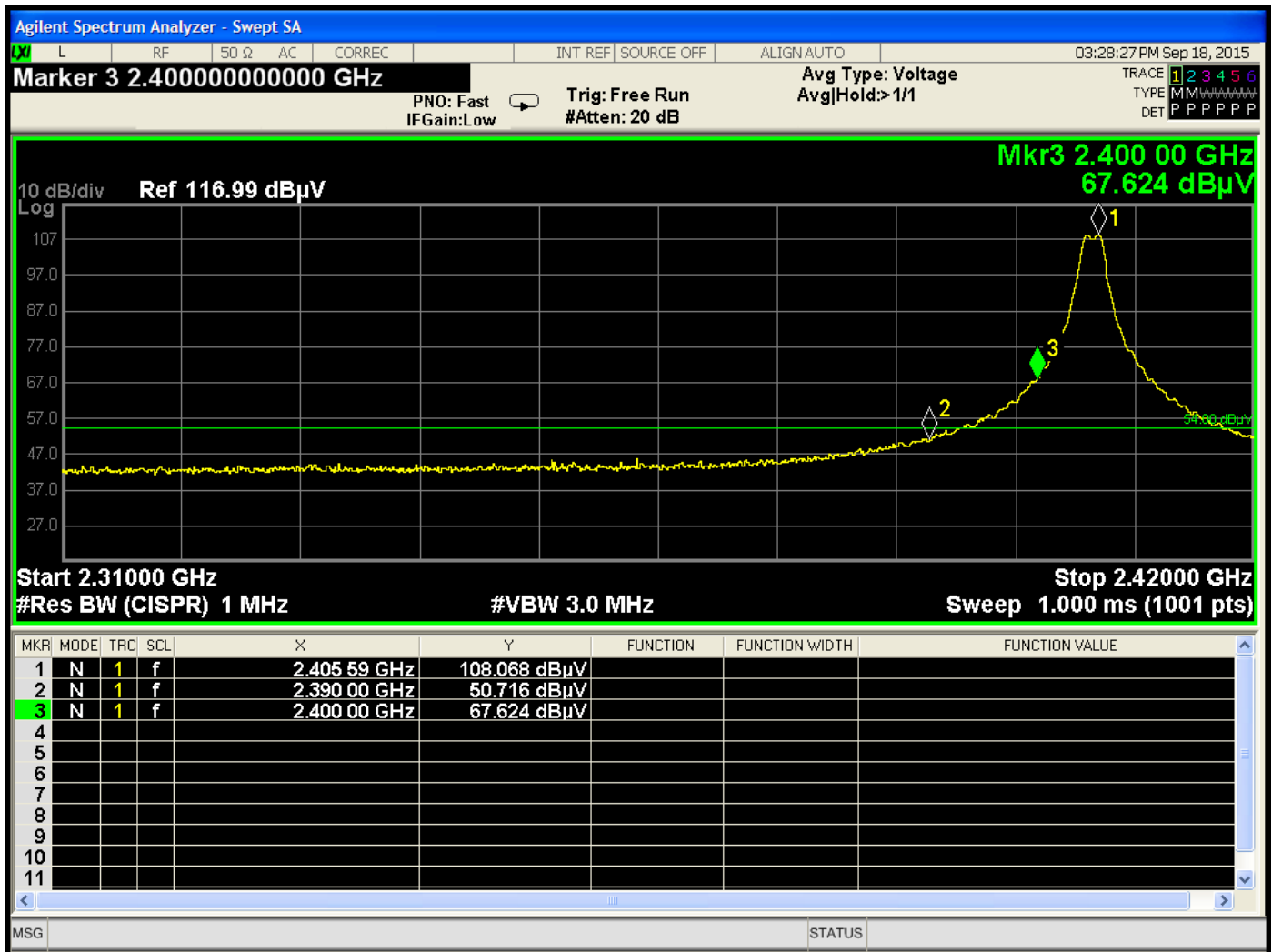
Date: 09/18/2015

Lab: D

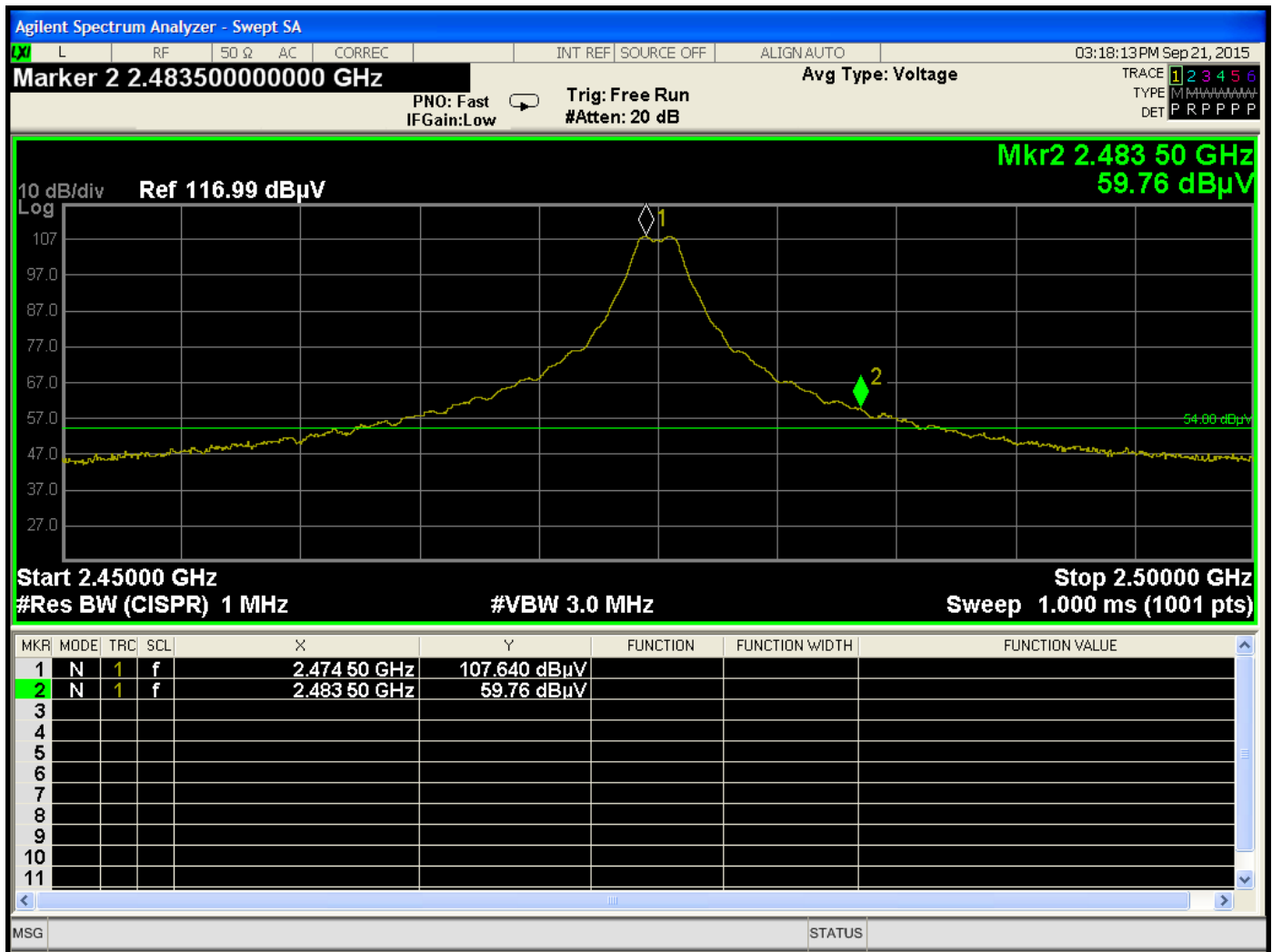
Tested By: Kyle Fujimoto

Band Edges - 2480 MHz

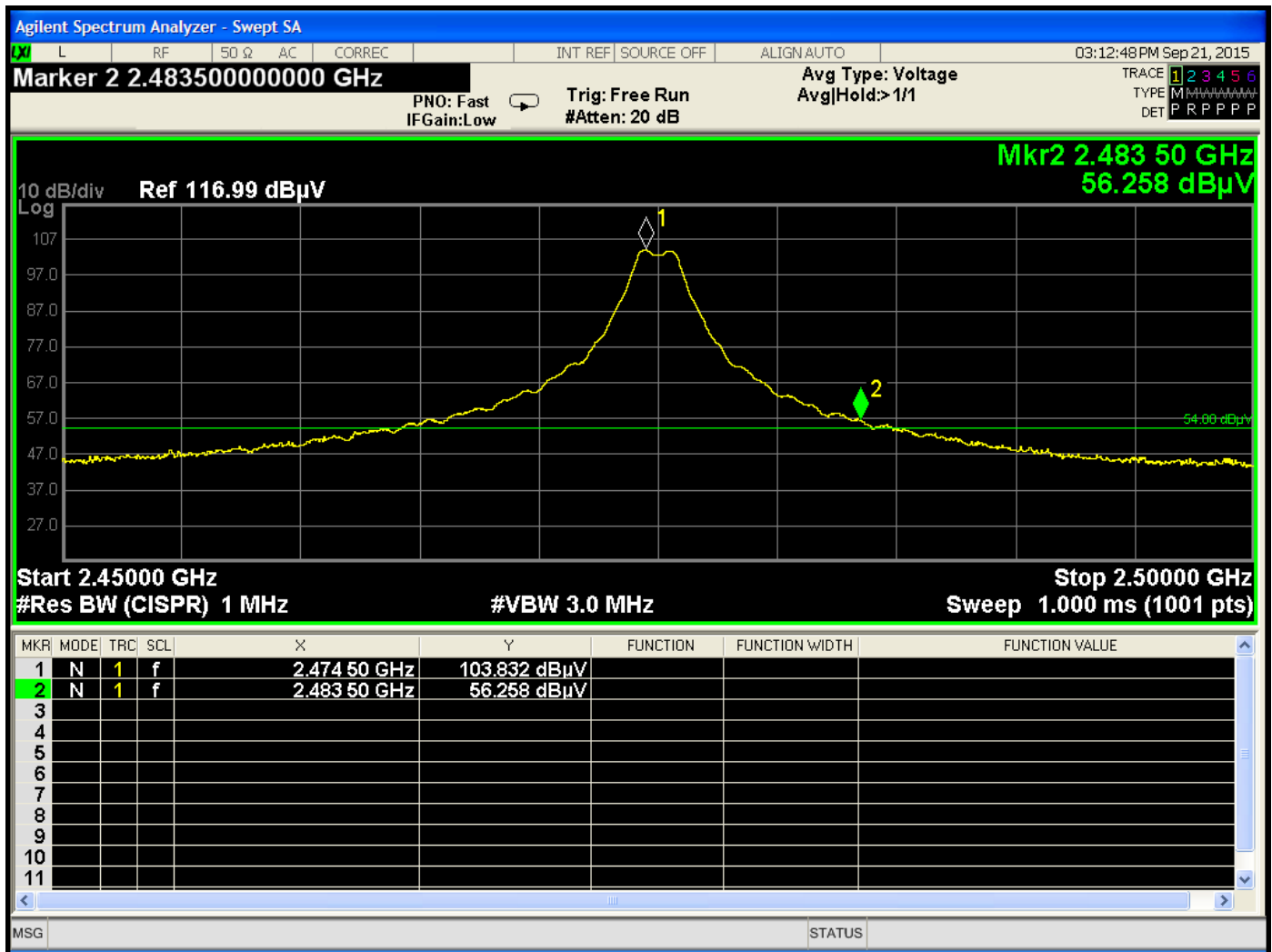
Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	104.37	H	--	--	Peak	1.91	140.50	Fundamental at
2480	85.65	H	--	--	Avg	1.91	140.50	2480 MHz
2483.5	72.17	H	74.00	-1.83	Peak	1.91	140.50	Upper
2483.5	53.45	H	54.00	-0.55	Avg	1.91	140.50	Band Edge
2480	101.69	V	--	--	Peak	2.39	111.50	Fundamental at
2480	82.97	V	--	--	Avg	2.39	111.50	2480 MHz
2483.5	69.05	V	74.00	-4.95	Peak	2.39	111.50	Upper
2483.5	50.33	V	54.00	-3.67	Avg	2.39	111.50	Band Edge



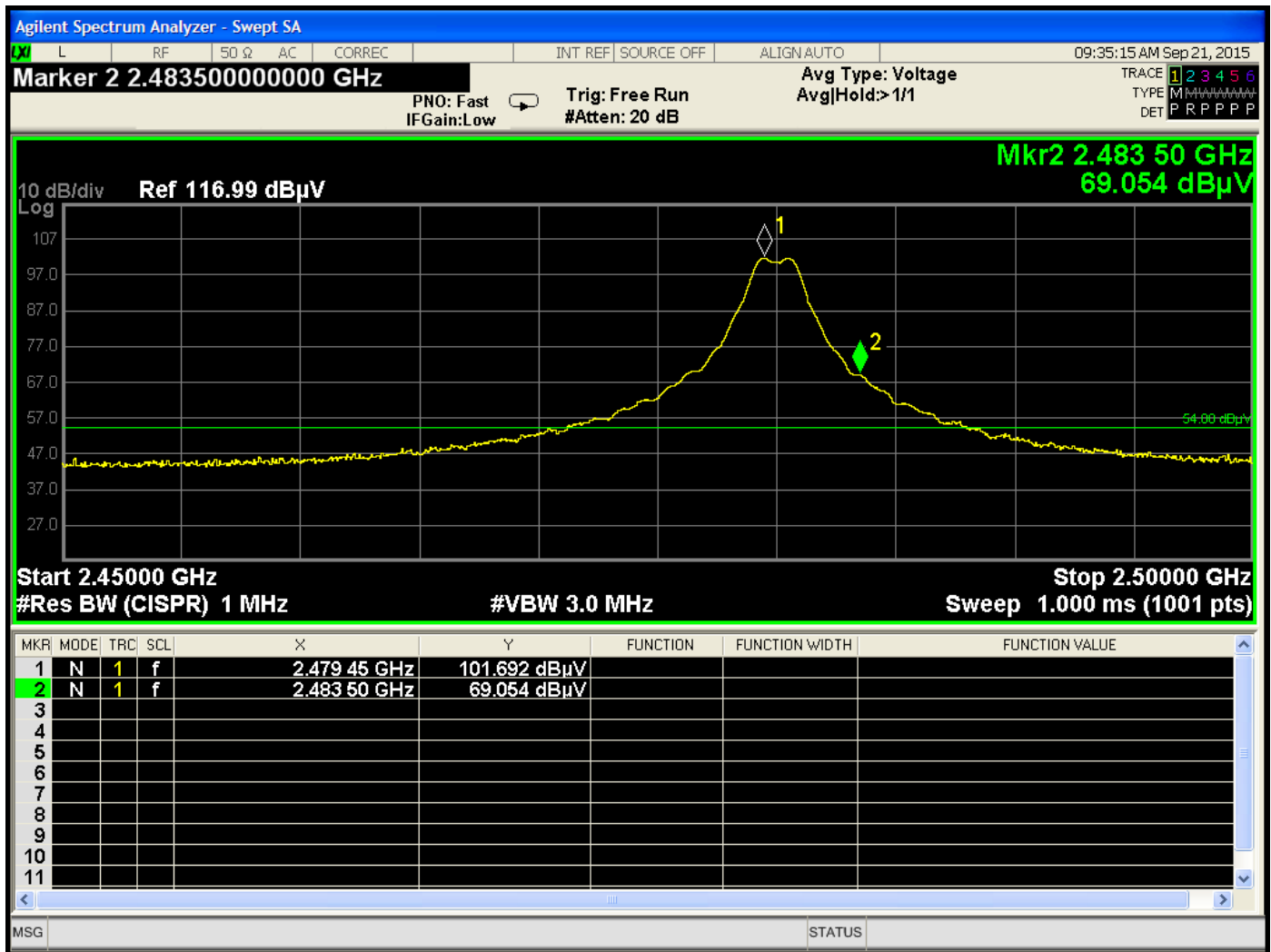
Band Edge for 2405 MHz Fundamental – Vertical Polarization – Installed Inside the Smartcode Lever 5



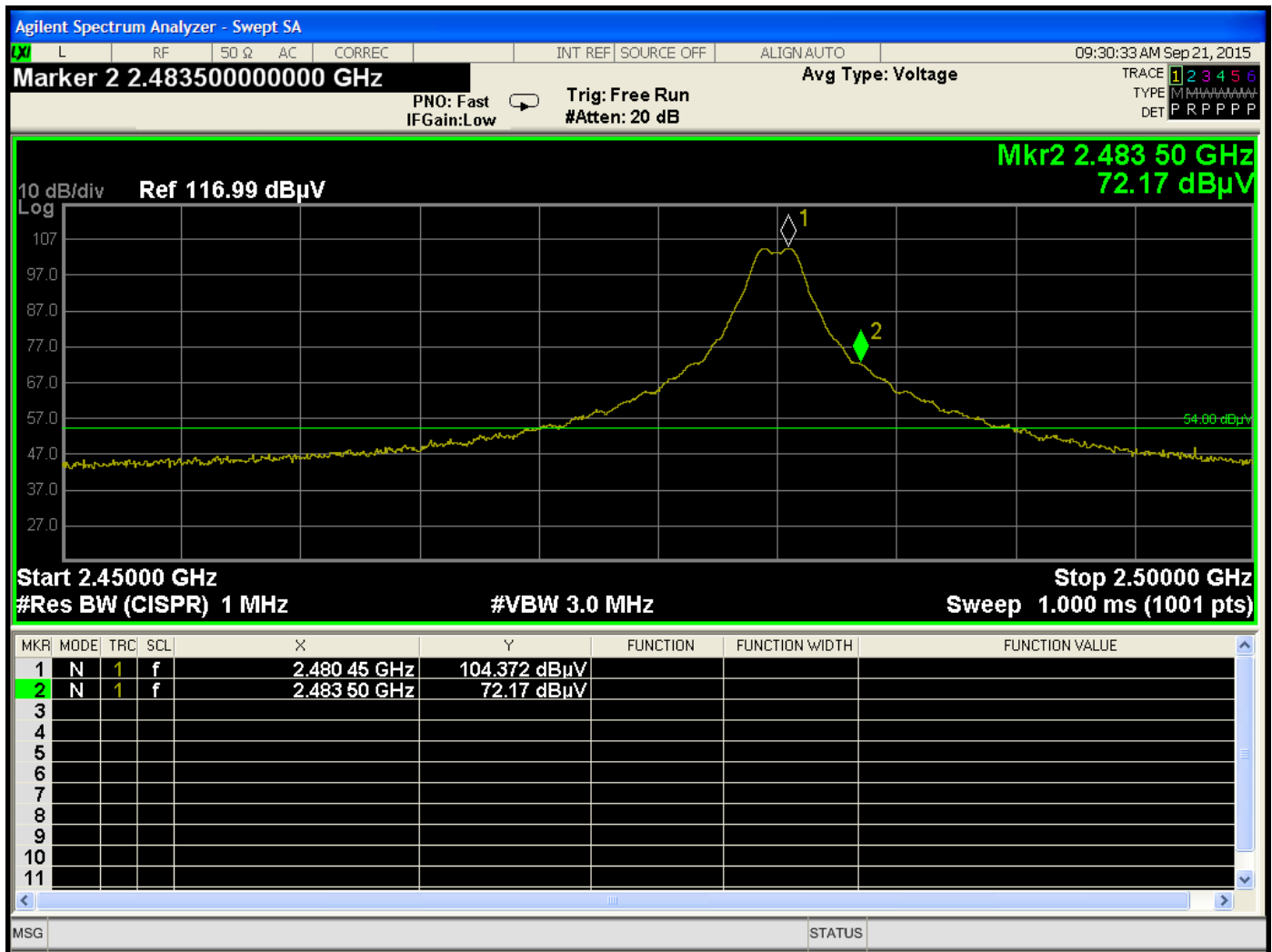
Band Edge for 2475 MHz Fundamental – Vertical Polarization – Installed Inside the Smartcode Lever 5



Band Edge for 2475 MHz Fundamental – Horizontal Polarization – Installed Inside the Smartcode Lever 5



Band Edge for 2480 MHz Fundamental – Vertical Polarization – Installed Inside the Smartcode Lever 5



Band Edge for 2480 MHz Fundamental – Horizontal Polarization – Installed Inside the Smartcode Lever 5

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10

Date: 09/21/2015

Lab: D

Tested By: Kyle Fujimoto

Band Edges - 2405 MHz

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2405	112.95	H	--	--	Peak	1.75	193.00	Fundamental at
2405	94.23	H	--	--	Avg	1.75	193.00	2405 MHz
2390	61.54	H	74.00	-12.46	Peak	1.75	193.00	Lower
2390	42.82	H	54.00	-11.18	Avg	1.75	193.00	Band Edge
2405	111.82	V	--	--	Peak	1.43	161.00	Fundamental at
2405	93.10	V	--	--	Avg	1.43	161.00	2405 MHz
2390	53.23	V	74.00	-20.77	Peak	1.43	161.00	Lower
2390	34.51	V	54.00	-19.49	Avg	1.43	161.00	Band Edge

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10

Date: 09/17/2015

Lab: D

Tested By: Kyle Fujimoto

Band Edges - 2475 MHz

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2475	111.21	H	--	--	Peak	1.27	183.25	Fundamental at
2475	92.49	H	--	--	Avg	1.27	183.25	2475 MHz
2483.5	61.71	H	74.00	-12.29	Peak	1.27	183.25	Upper
2483.5	42.99	H	54.00	-11.01	Avg	1.27	183.25	Band Edge
2475	110.10	V	--	--	Peak	1.43	156.25	Fundamental at
2475	91.38	V	--	--	Avg	1.43	156.25	2475 MHz
2483.5	61.56	V	74.00	-12.44	Peak	1.43	156.25	Upper
2483.5	42.84	V	54.00	-11.16	Avg	1.43	156.25	Band Edge

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10

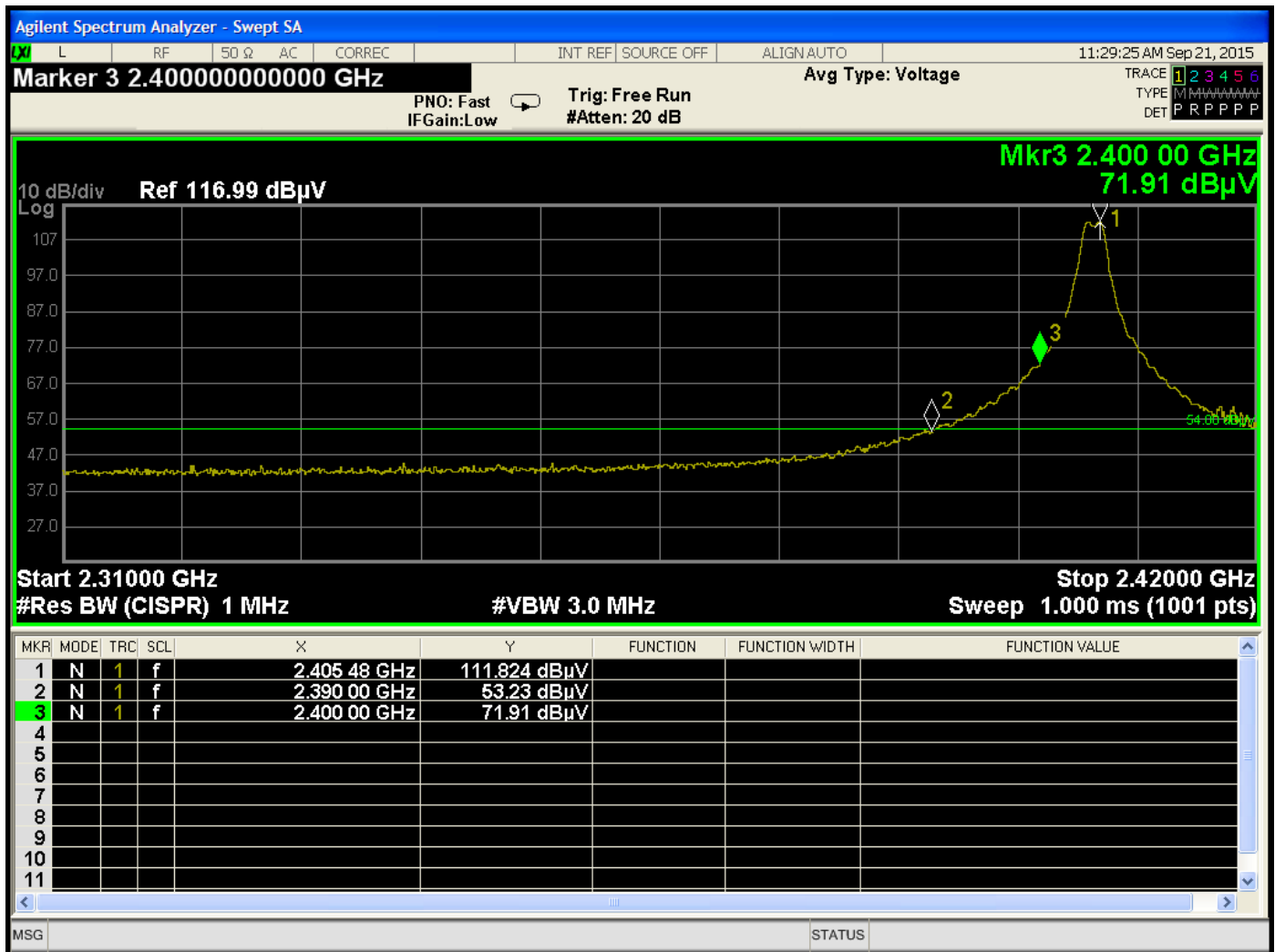
Date: 09/21/2015

Lab: D

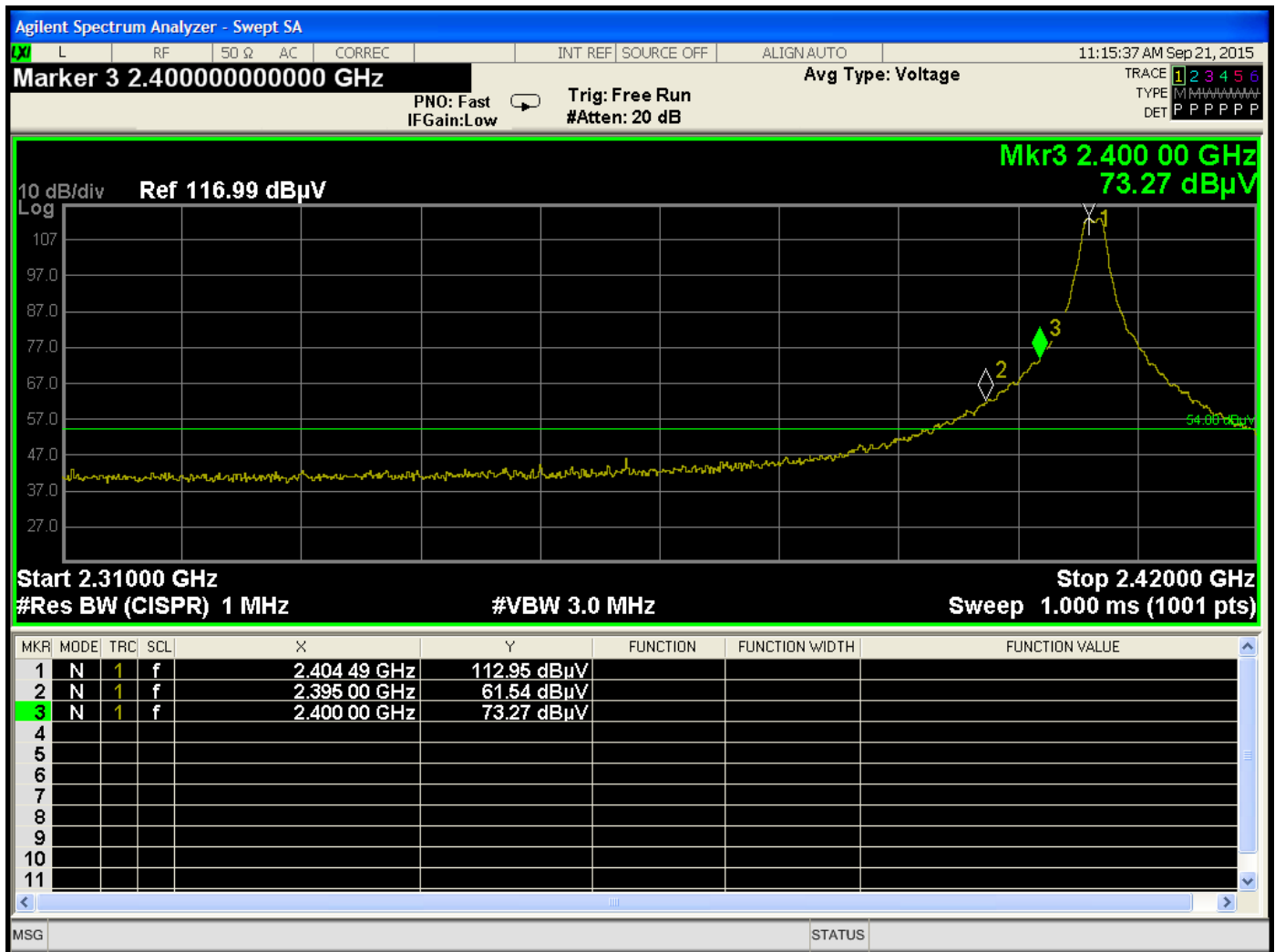
Tested By: Kyle Fujimoto

Band Edges - 2480 MHz

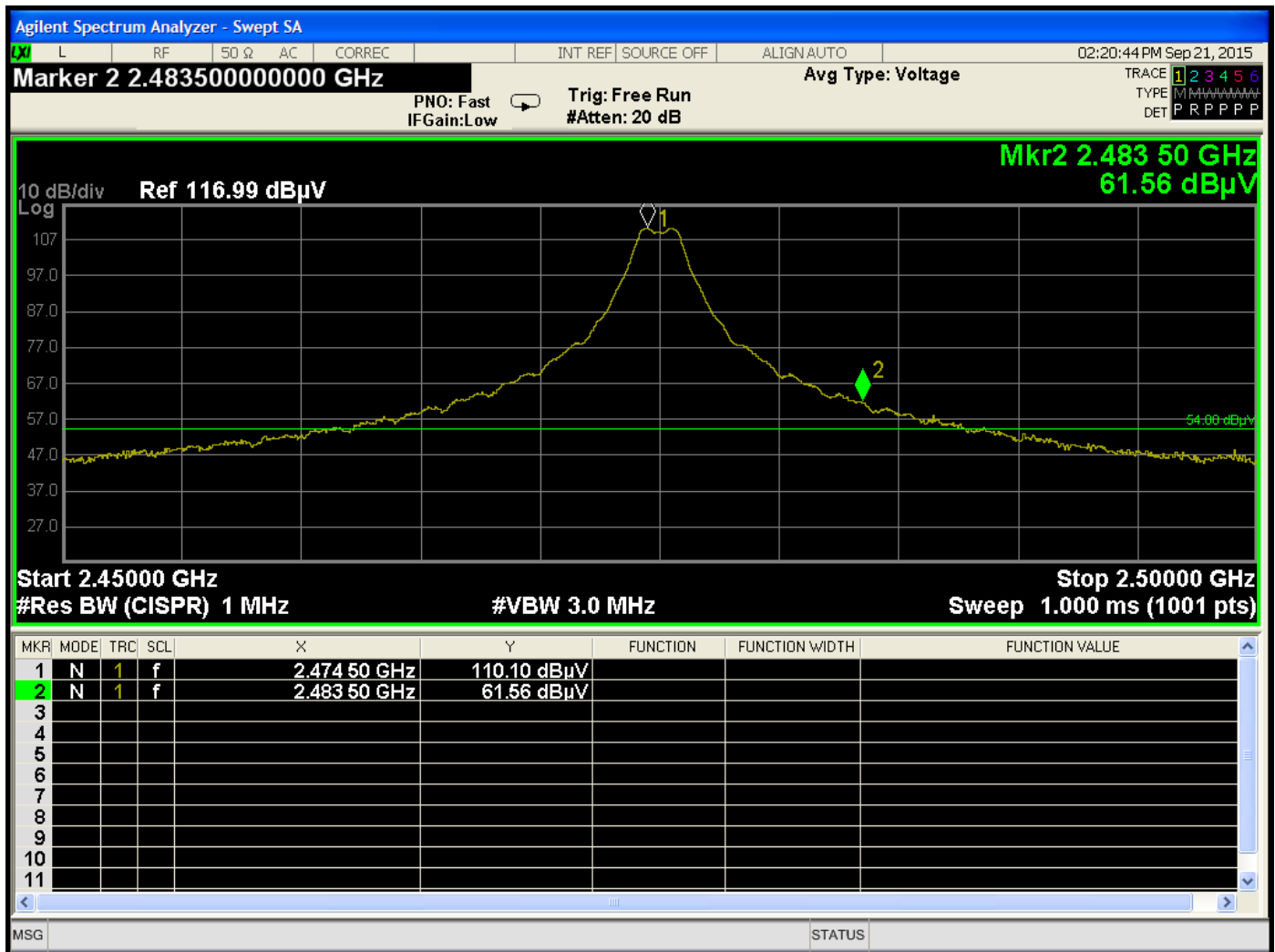
Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	104.92	H	--	--	Peak	1.11	175.75	Fundamental at
2480	86.20	H	--	--	Avg	1.11	175.75	2480 MHz
2483.5	72.59	H	74.00	-1.41	Peak	1.11	175.75	Upper
2483.5	53.87	H	54.00	-0.13	Avg	1.11	175.75	Band Edge
2480	105.14	V	--	--	Peak	1.91	156.25	Fundamental at
2480	86.42	V	--	--	Avg	1.91	156.25	2480 MHz
2483.5	72.40	V	74.00	-1.60	Peak	1.91	156.25	Upper
2483.5	53.68	V	54.00	-0.32	Avg	1.91	156.25	Band Edge



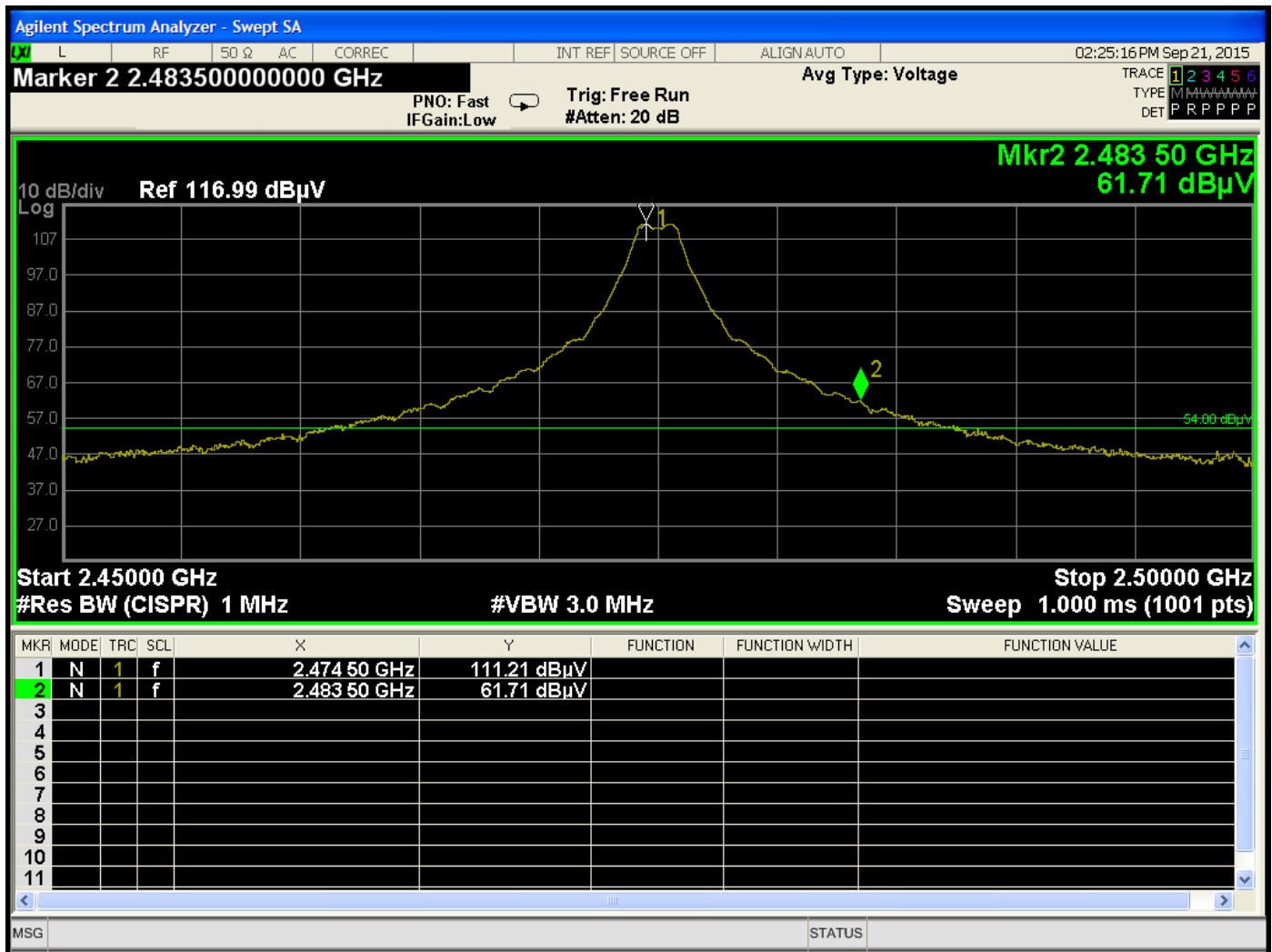
Band Edge for 2405 MHz Fundamental – Vertical Polarization – Installed Inside the Smartcode Deadbolt 10



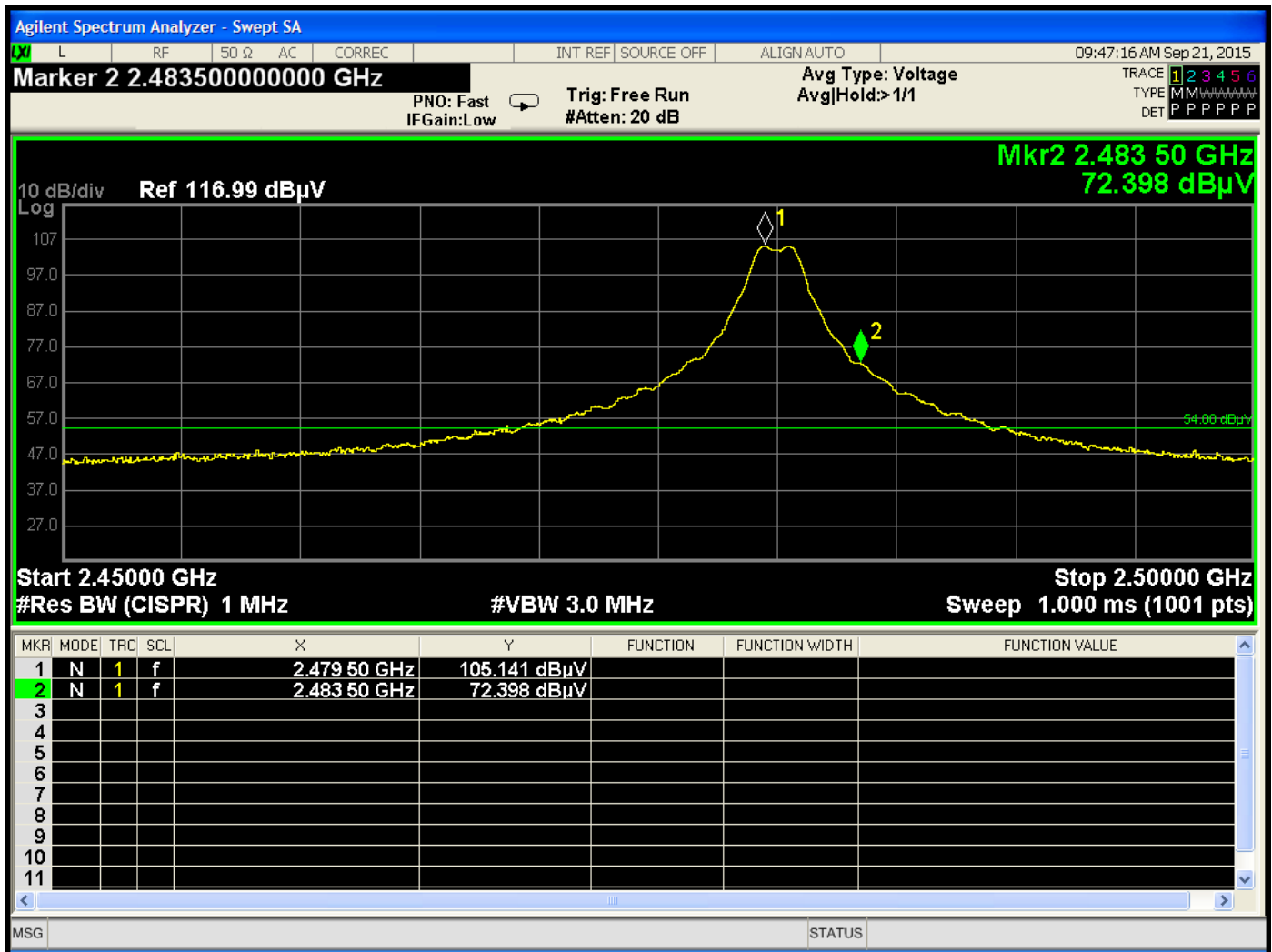
Band Edge for 2405 MHz Fundamental – Horizontal Polarization – Installed Inside the Smartcode Deadbolt 10



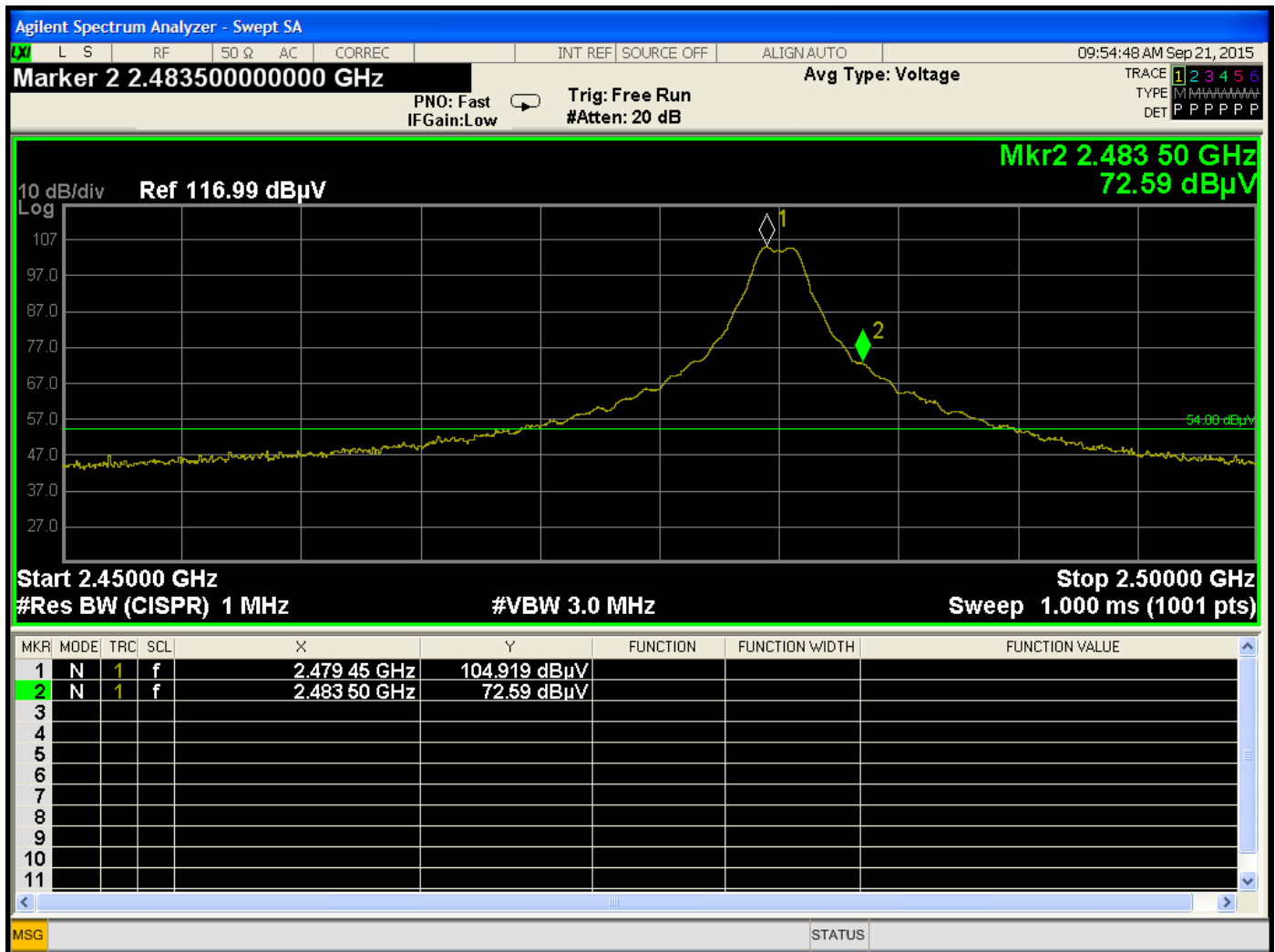
Band Edge for 2475 MHz Fundamental – Vertical Polarization – Installed Inside the Smartcode Deadbolt 10



Band Edge for 2475 MHz Fundamental – Horizontal Polarization – Installed Inside the Smartcode Deadbolt 10



Band Edge for 2480 MHz Fundamental – Vertical Polarization – Installed Inside the Smartcode Deadbolt 10



Band Edge for 2480 MHz Fundamental – Horizontal Polarization – Installed Inside the Smartcode Deadbolt 10

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10T

Date: 09/21/2015

Lab: D

Tested By: Kyle Fujimoto

Band Edges - 2405 MHz

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2405	112.14	H	--	--	Peak	1.59	196.25	Fundamental at
2405	93.42	H	--	--	Avg	1.59	196.25	2405 MHz
2390	53.27	H	74.00	-20.73	Peak	1.59	196.25	Lower
2390	34.55	H	54.00	-19.45	Avg	1.59	196.25	Band Edge
2405	109.81	V	--	--	Peak	1.75	140.50	Fundamental at
2405	91.09	V	--	--	Avg	1.75	140.50	2405 MHz
2390	51.23	V	74.00	-22.77	Peak	1.75	140.50	Lower
2390	32.51	V	54.00	-21.49	Avg	1.75	140.50	Band Edge

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10T

Date: 09/21/2015

Lab: D

Tested By: Kyle Fujimoto

Band Edges - 2475 MHz

Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2475	109.80	H	--	--	Peak	1.43	207.00	Fundamental at
2475	91.08	H	--	--	Avg	1.43	207.00	2475 MHz
2483.5	61.40	H	74.00	-12.60	Peak	1.43	207.00	Upper
2483.5	42.68	H	54.00	-11.32	Avg	1.43	207.00	Band Edge
2475	107.66	V	--	--	Peak	2.07	137.25	Fundamental at
2475	88.94	V	--	--	Avg	2.07	137.25	2475 MHz
2483.5	58.49	V	74.00	-15.51	Peak	2.07	137.25	Upper
2483.5	39.77	V	54.00	-14.23	Avg	2.07	137.25	Band Edge

FCC 15.247

Spectrum Brands, Inc.

OHM Zigbee v.2

Model: 450202

Installed Inside the Smartcode Deadbolt 10T

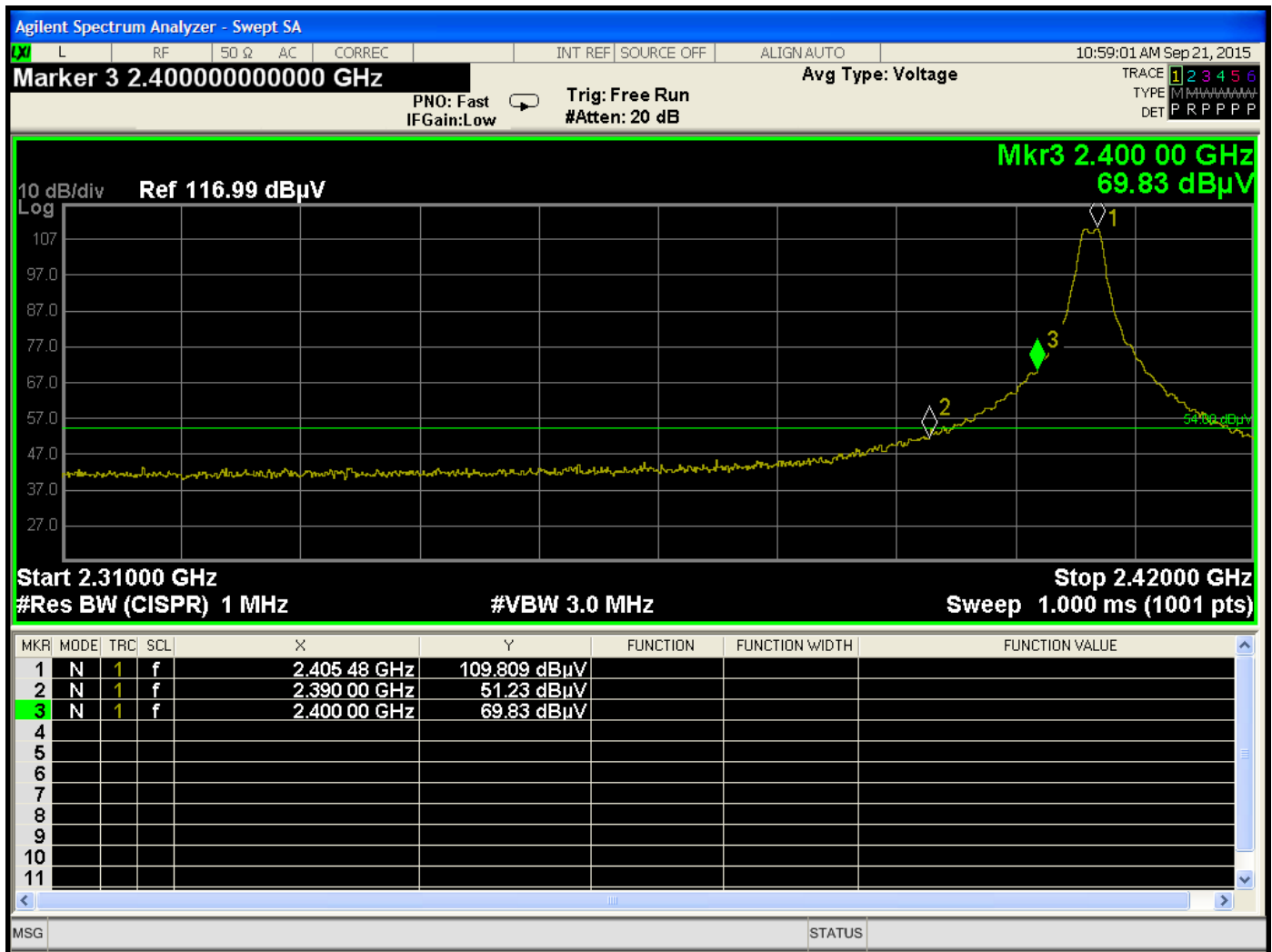
Date: 09/21/2015

Lab: D

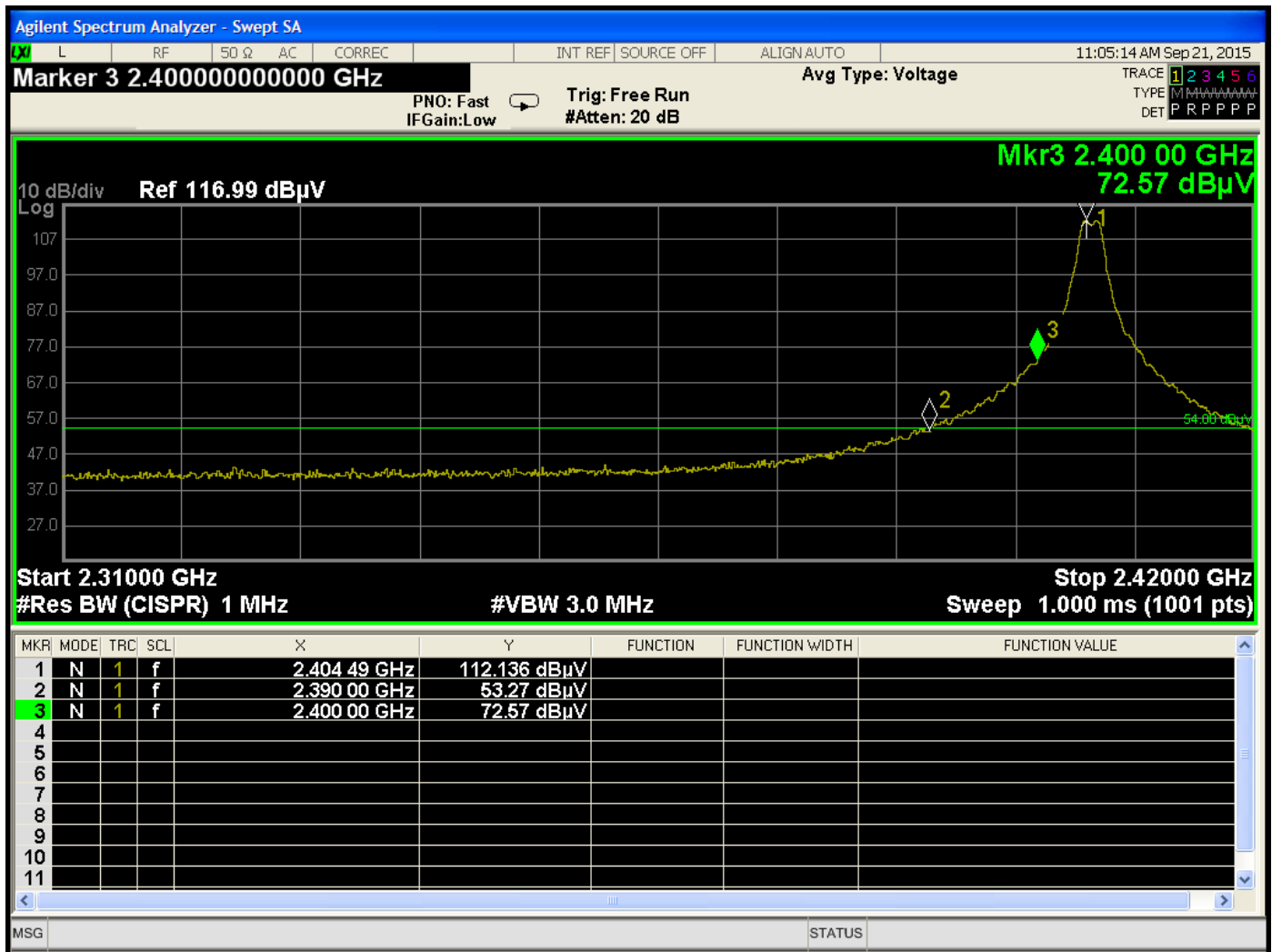
Tested By: Kyle Fujimoto

Band Edges - 2480 MHz

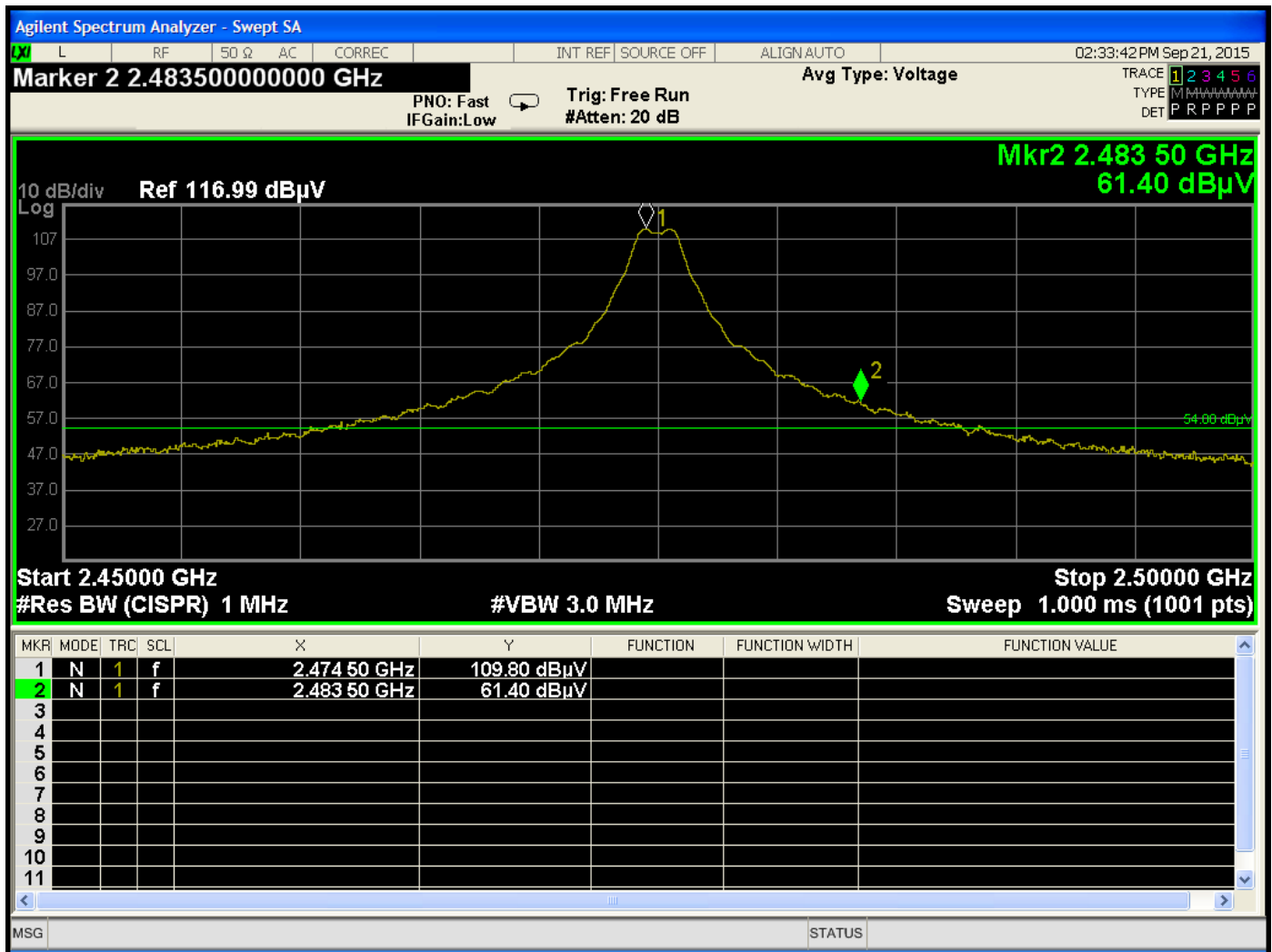
Freq. (MHz)	Level (dBuV)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Ant. Height (m)	Table Angle (deg)	Comments
2480	104.05	H	--	--	Peak	1.11	211.50	Fundamental at
2480	85.33	H	--	--	Avg	1.11	211.50	2480 MHz
2483.5	71.63	H	74.00	-2.38	Peak	1.11	211.50	Upper
2483.5	52.91	H	54.00	-1.10	Avg	1.11	211.50	Band Edge
2480	103.70	V	--	--	Peak	2.07	152.75	Fundamental at
2480	84.98	V	--	--	Avg	2.07	152.75	2480 MHz
2483.5	70.51	V	74.00	-3.49	Peak	2.07	152.75	Upper
2483.5	51.79	V	54.00	-2.21	Avg	2.07	152.75	Band Edge



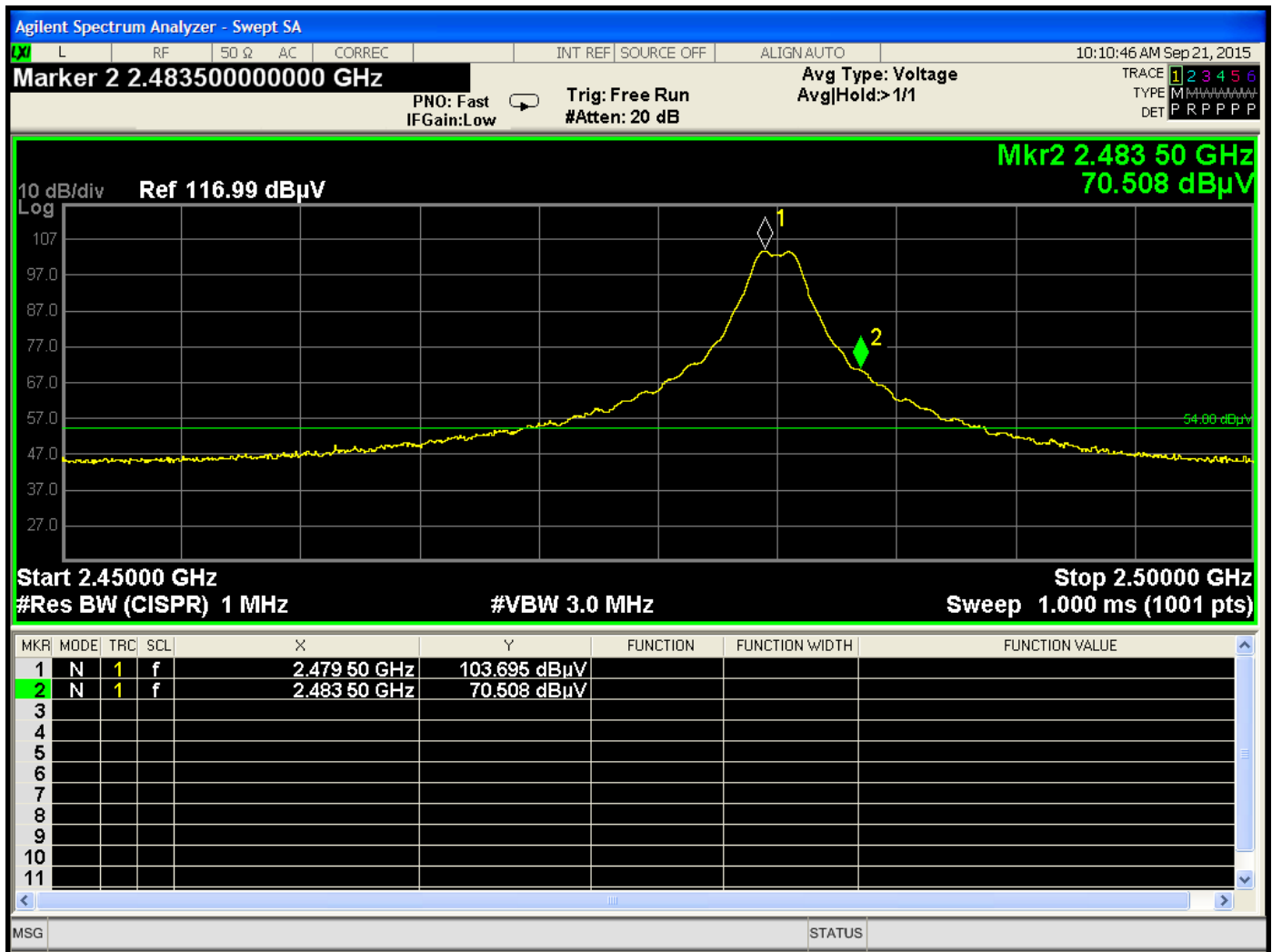
Band Edge for 2405 MHz Fundamental – Vertical Polarization – Installed Inside the Smartcode Deadbolt 10T



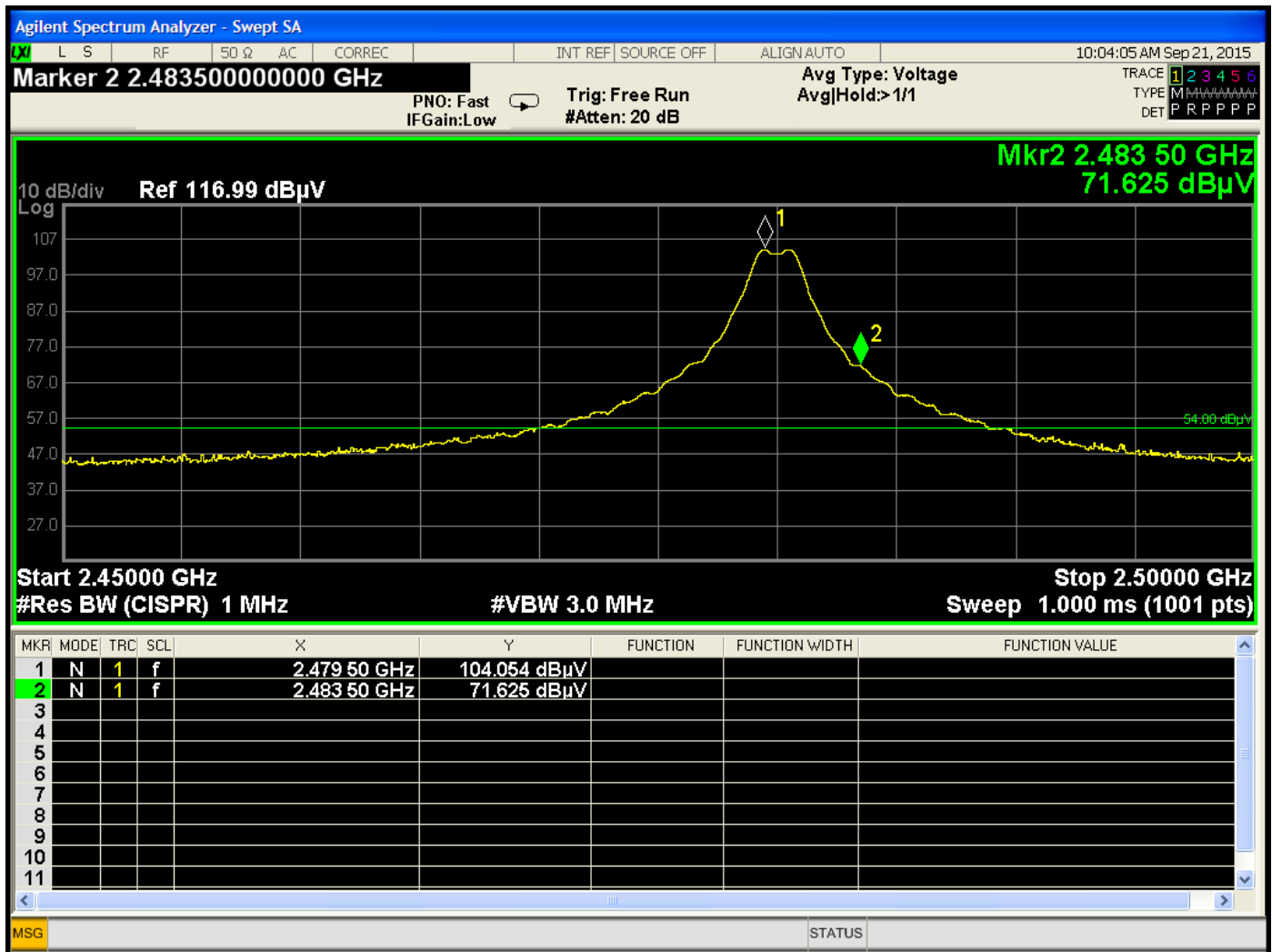
Band Edge for 2405 MHz Fundamental – Horizontal Polarization – Installed Inside the Smartcode Deadbolt 10T



Band Edge for 2475 MHz Fundamental – Horizontal Polarization – Installed Inside the Smartcode Deadbolt 10T



Band Edge for 2480 MHz Fundamental – Vertical Polarization – Installed Inside the Smartcode Deadbolt 10T



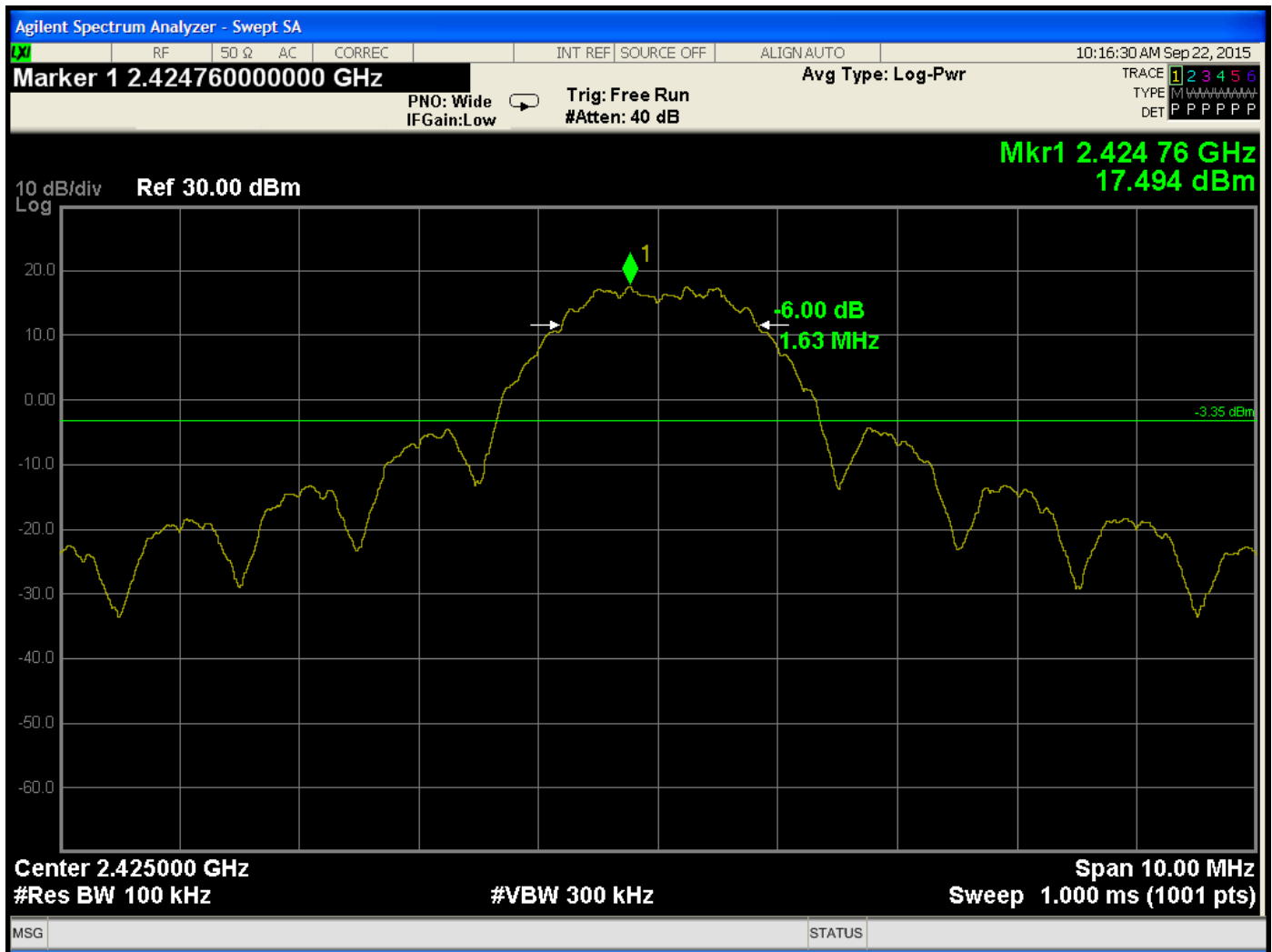
Band Edge for 2480 MHz Fundamental – Horizontal Polarization – Installed Inside the Smartcode Deadbolt 10T

-6 dB BANDWIDTH

DATA SHEETS



-20 dB Bandwidth – 2405 MHz



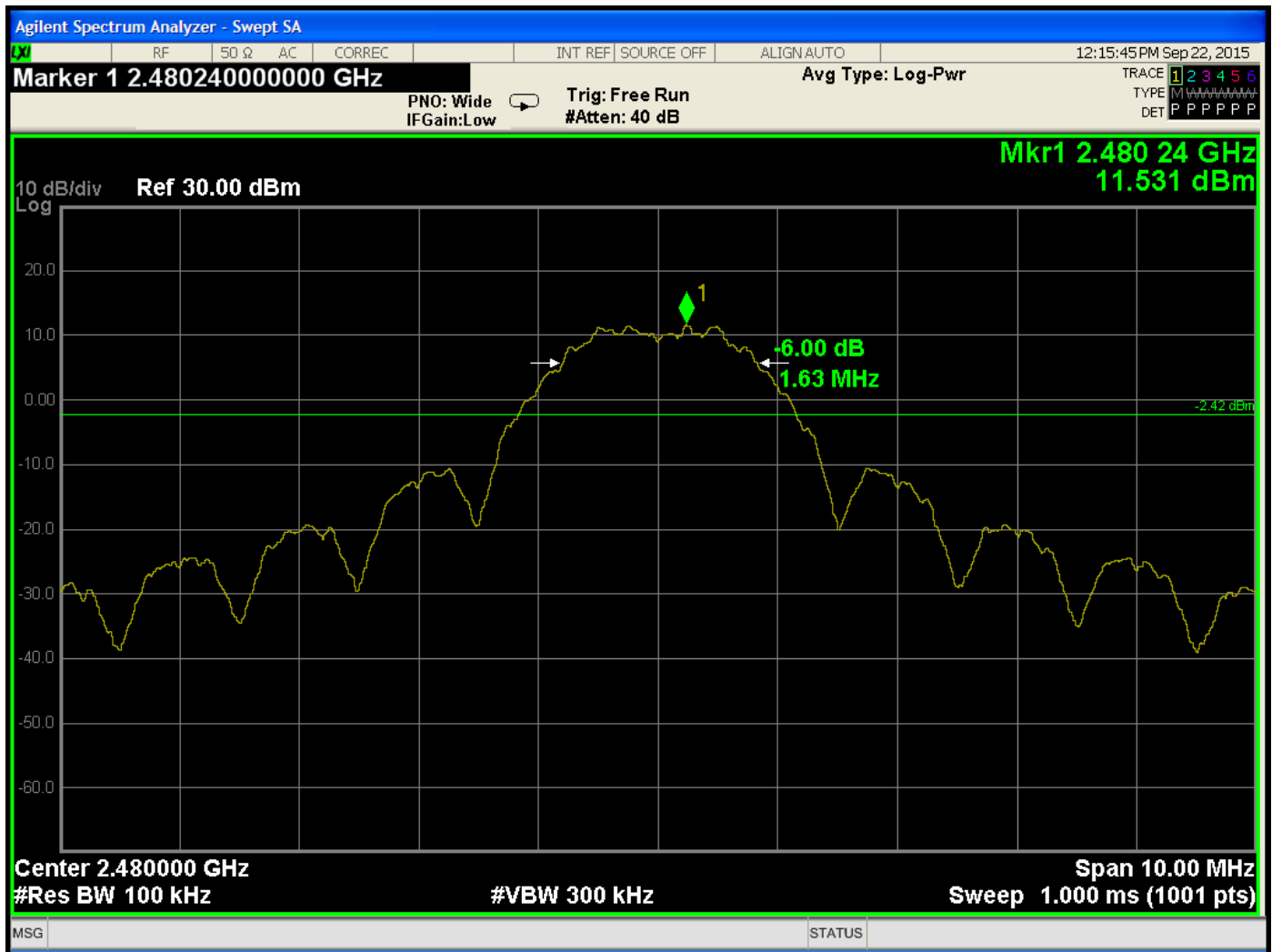
-20 dB Bandwidth – 2425 MHz



-20 dB Bandwidth – 2450 MHz



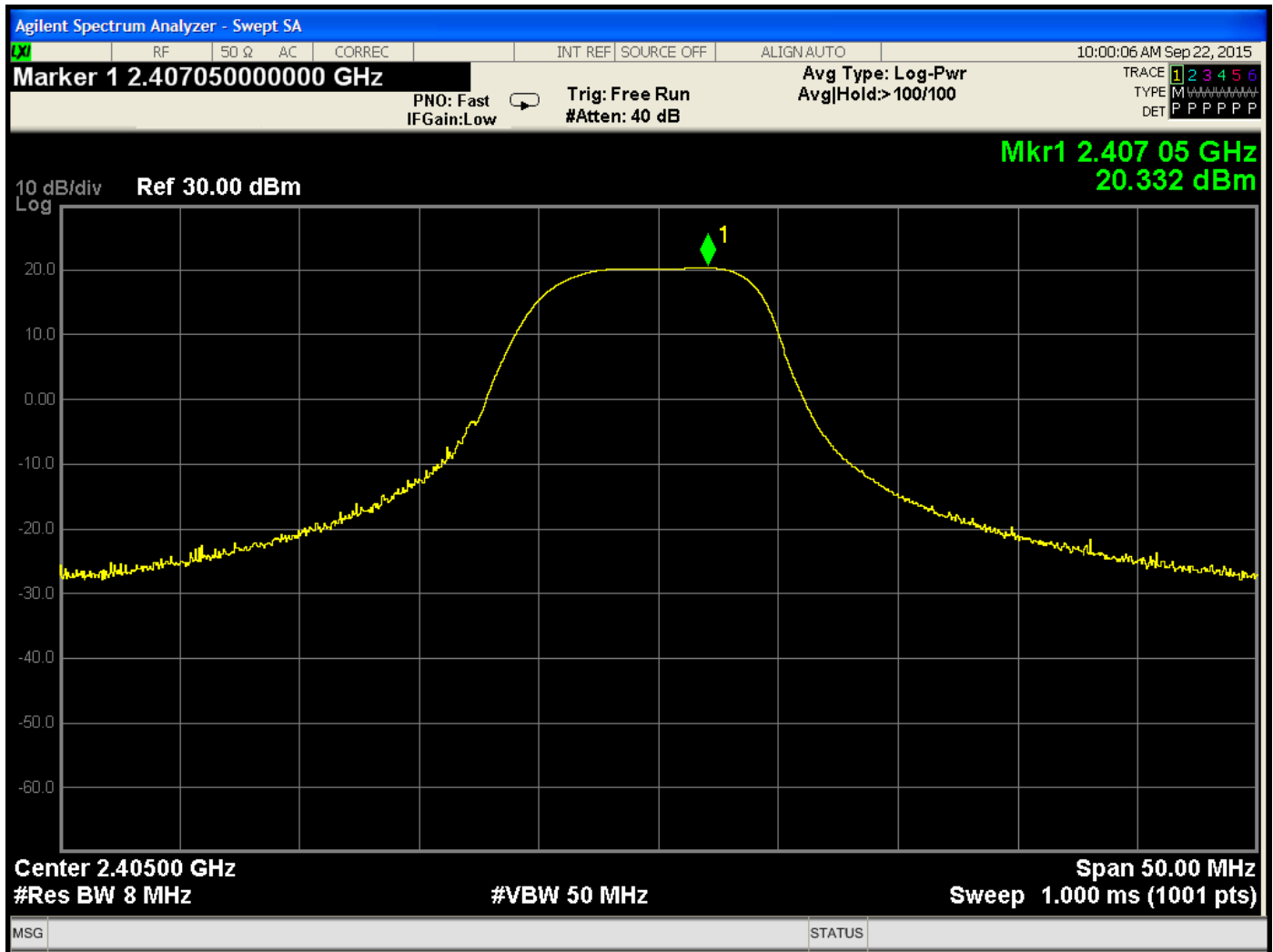
-20 dB Bandwidth – 2475 MHz



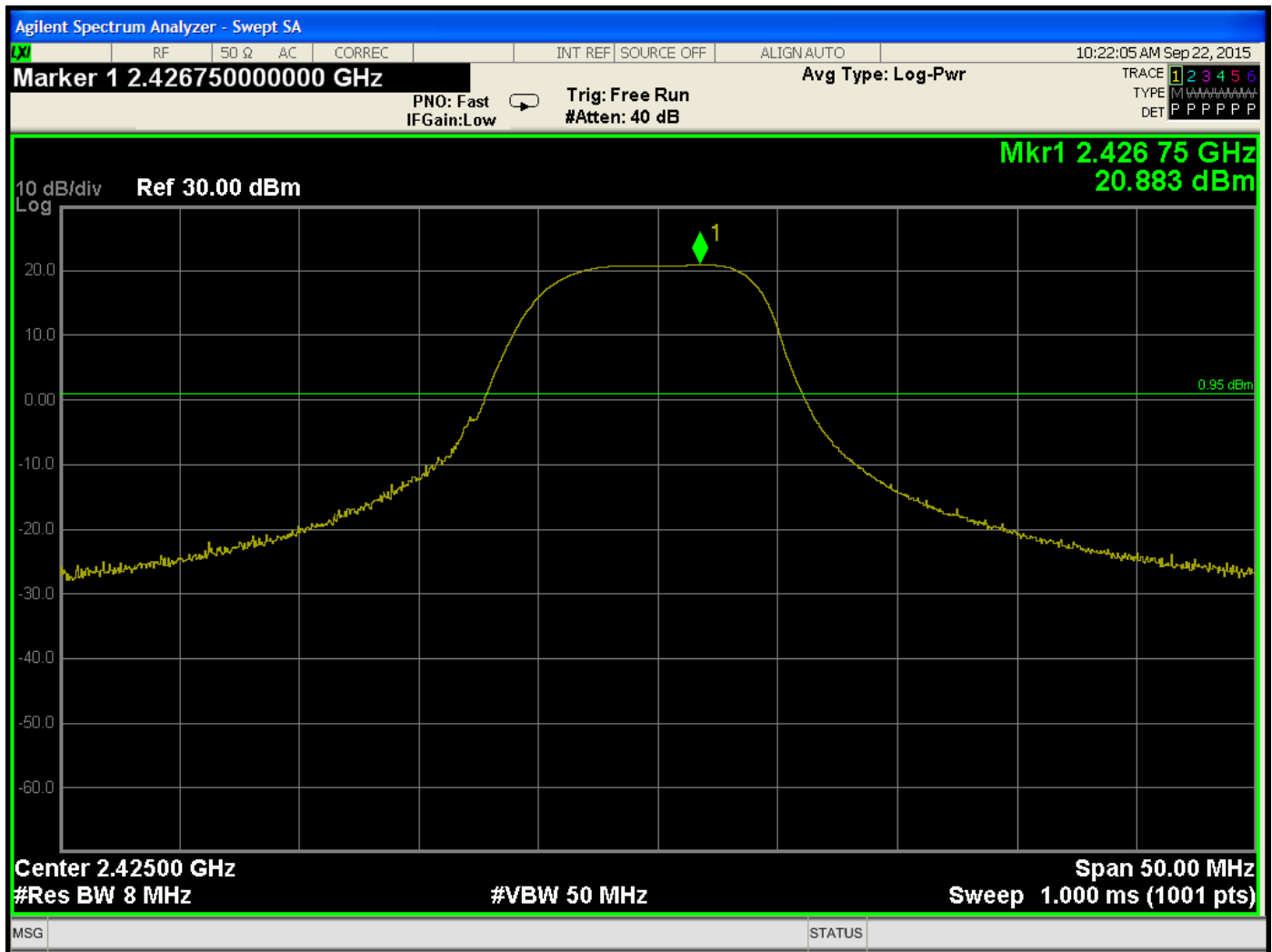
-20 dB Bandwidth – 2480 MHz

PEAK POWER

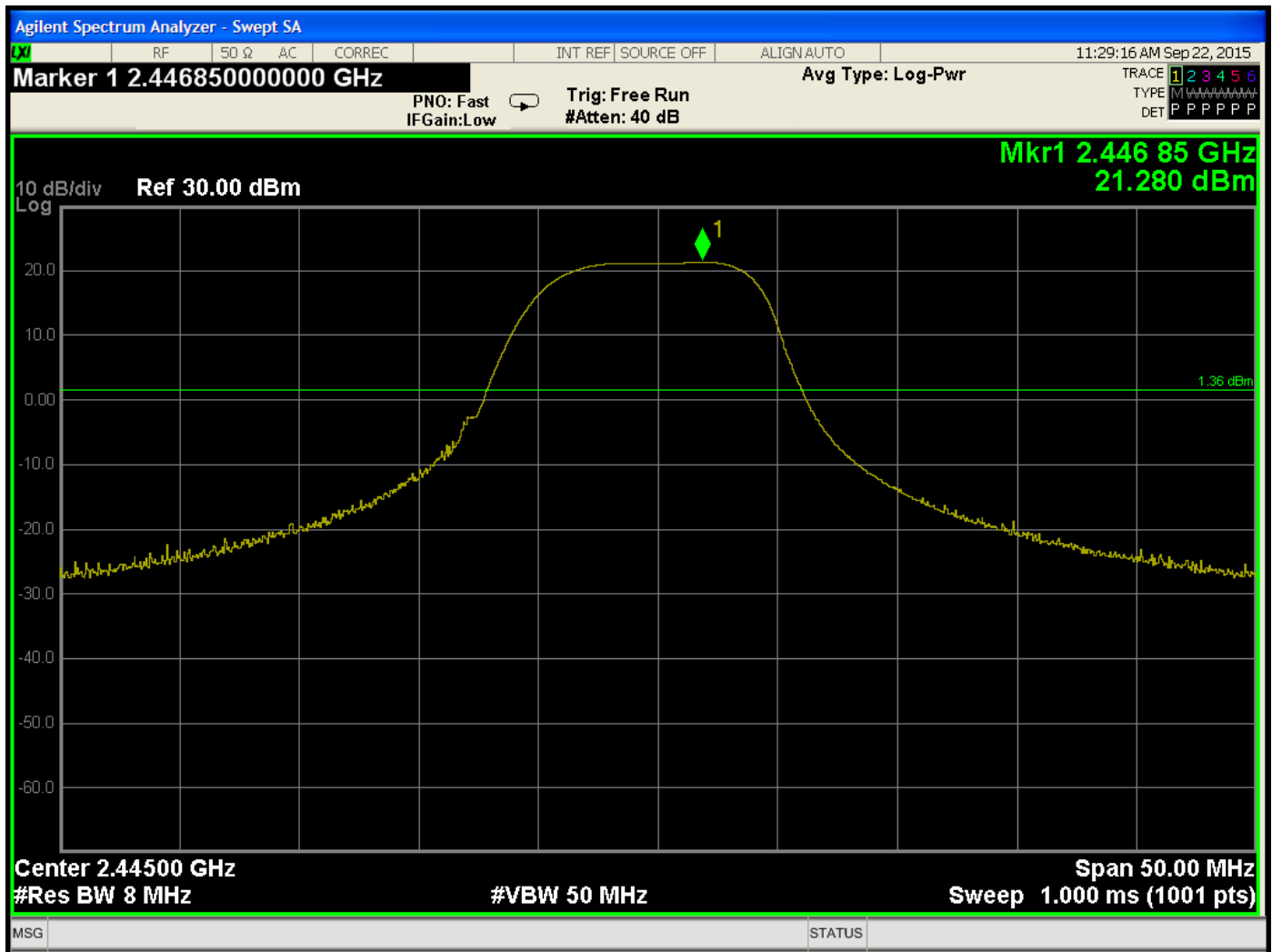
DATA SHEETS



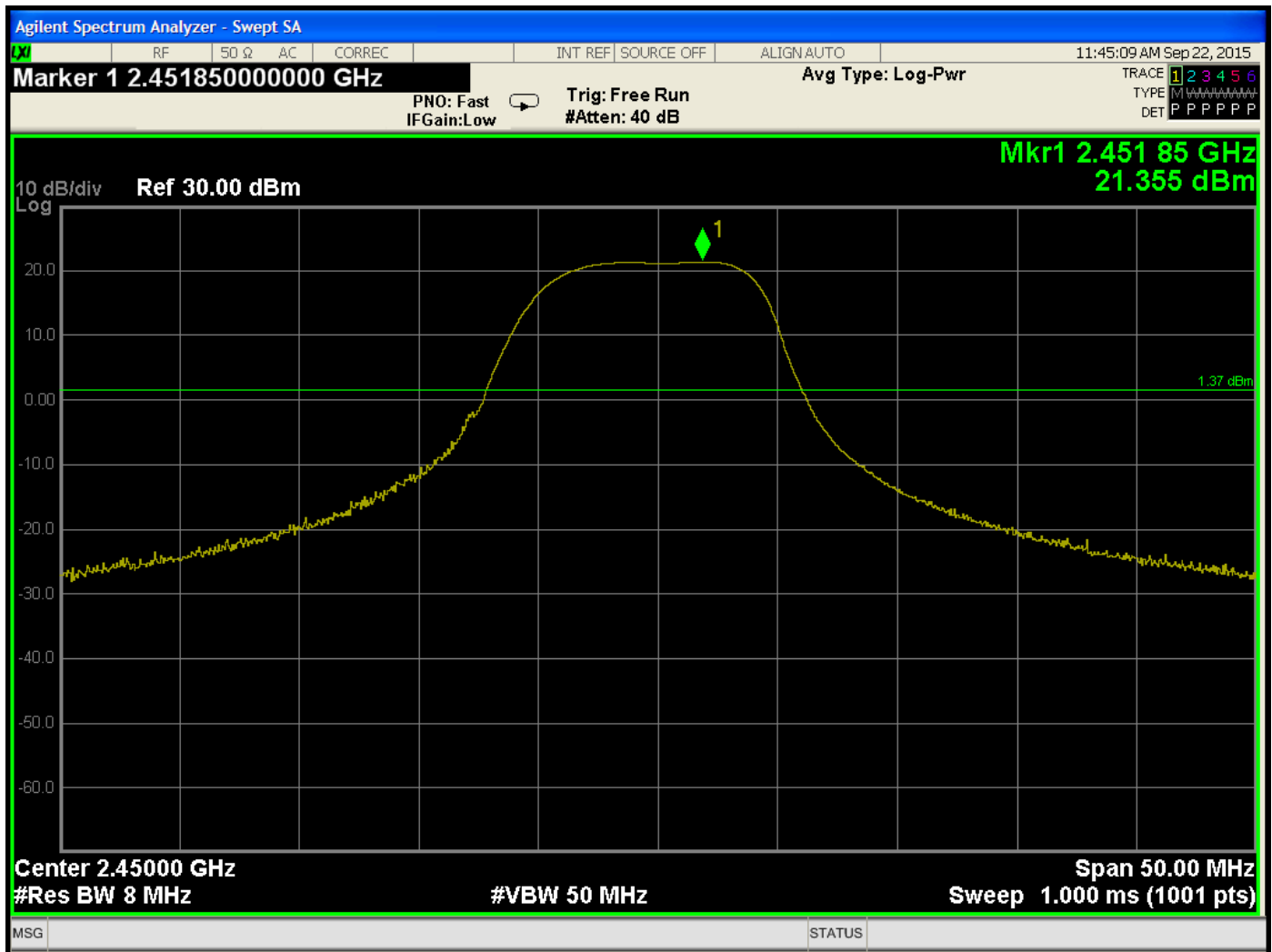
Peak Power Output – 2405 MHz



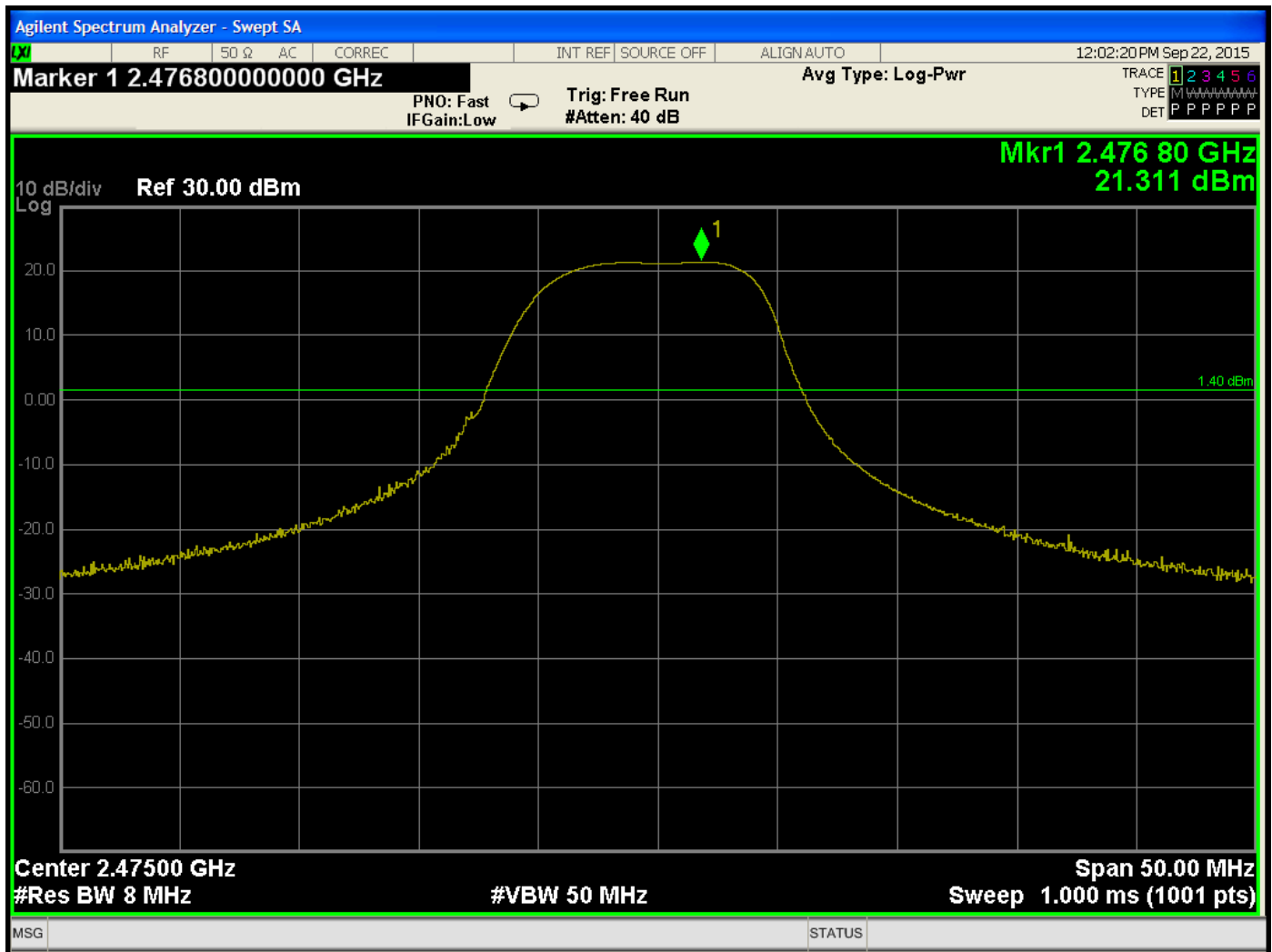
Peak Power Output – 2425 MHz



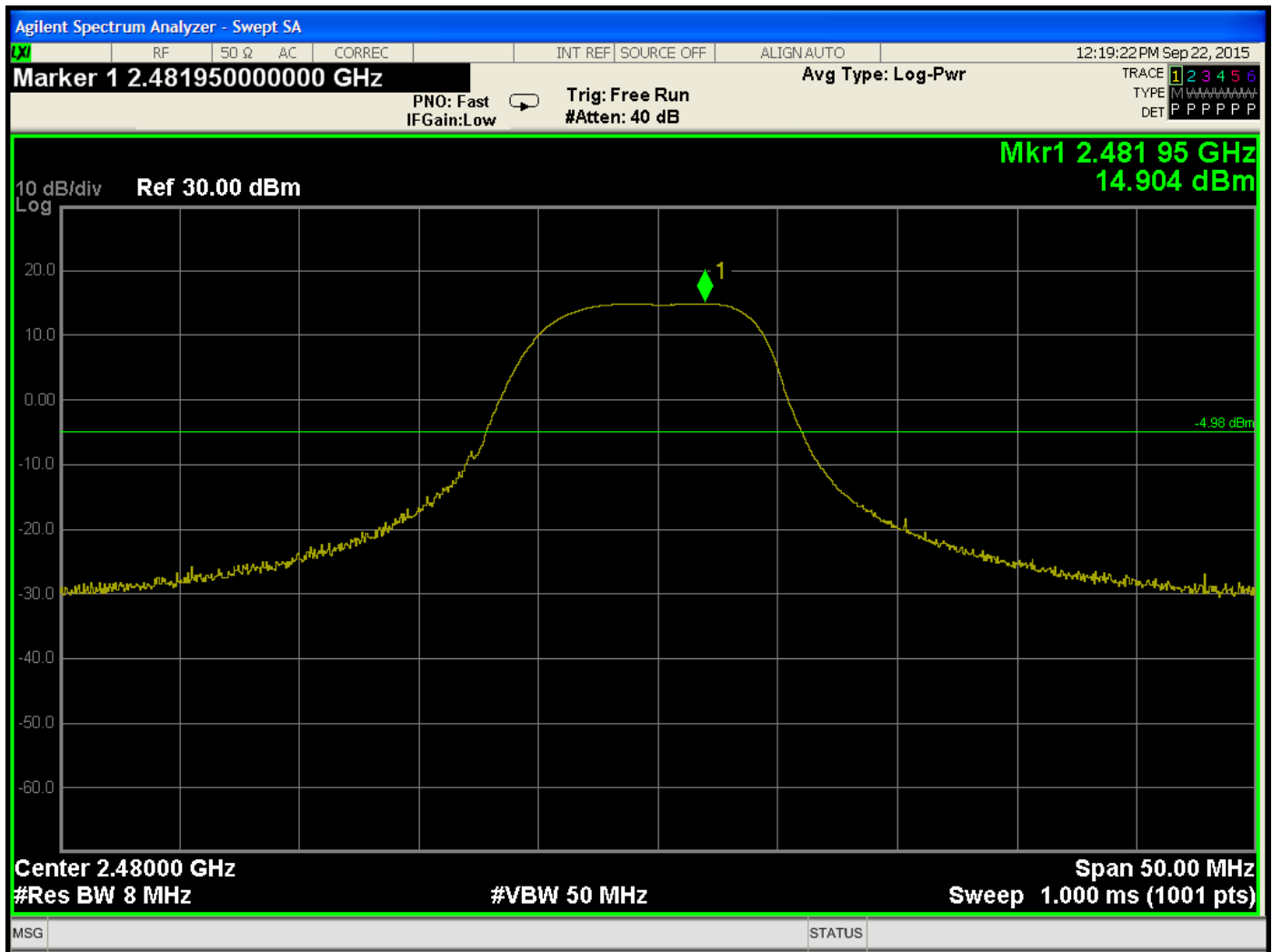
Peak Power Output – 2445 MHz



Peak Power Output – 2450 MHz



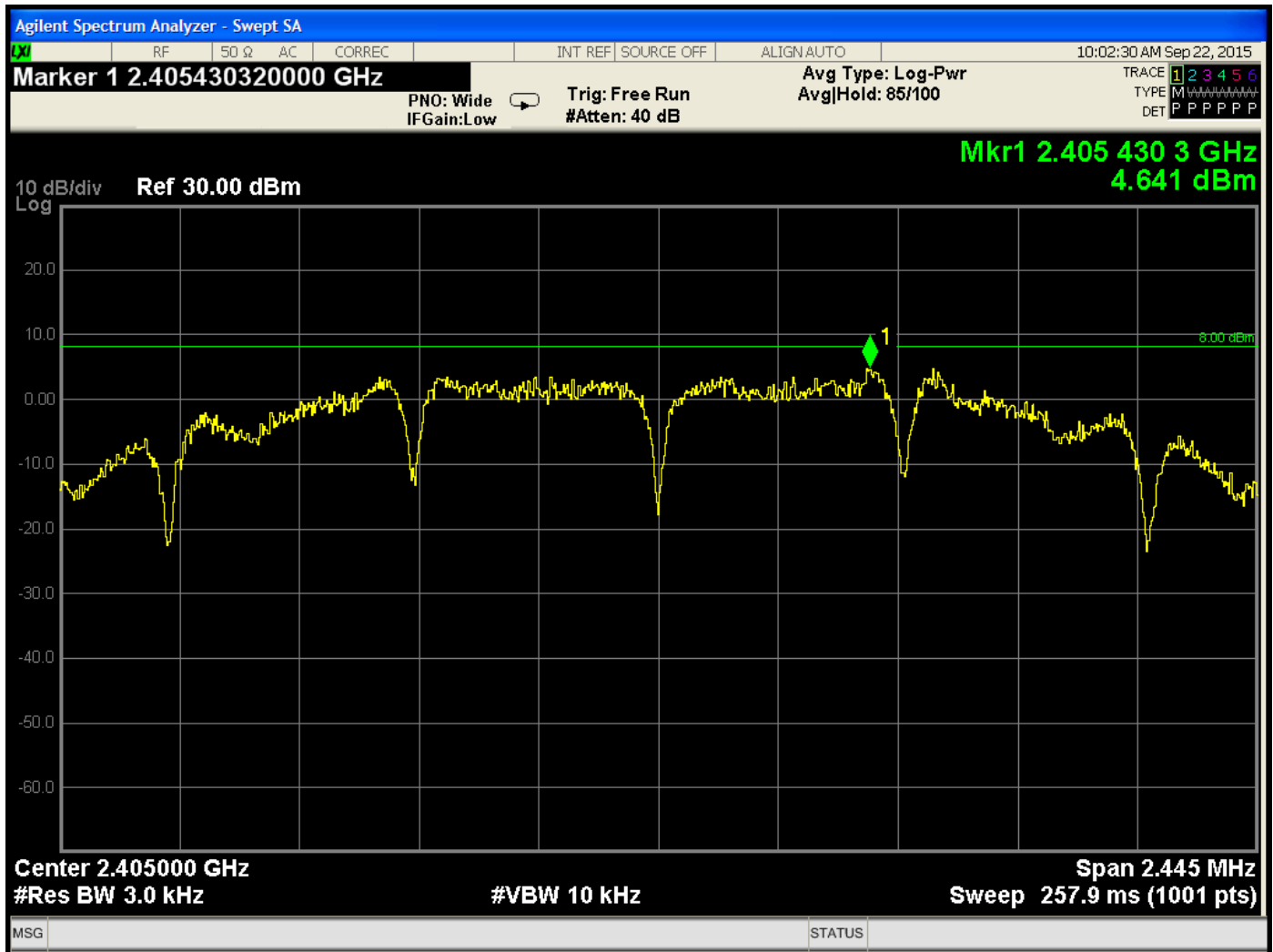
Peak Power Output – 2475 MHz



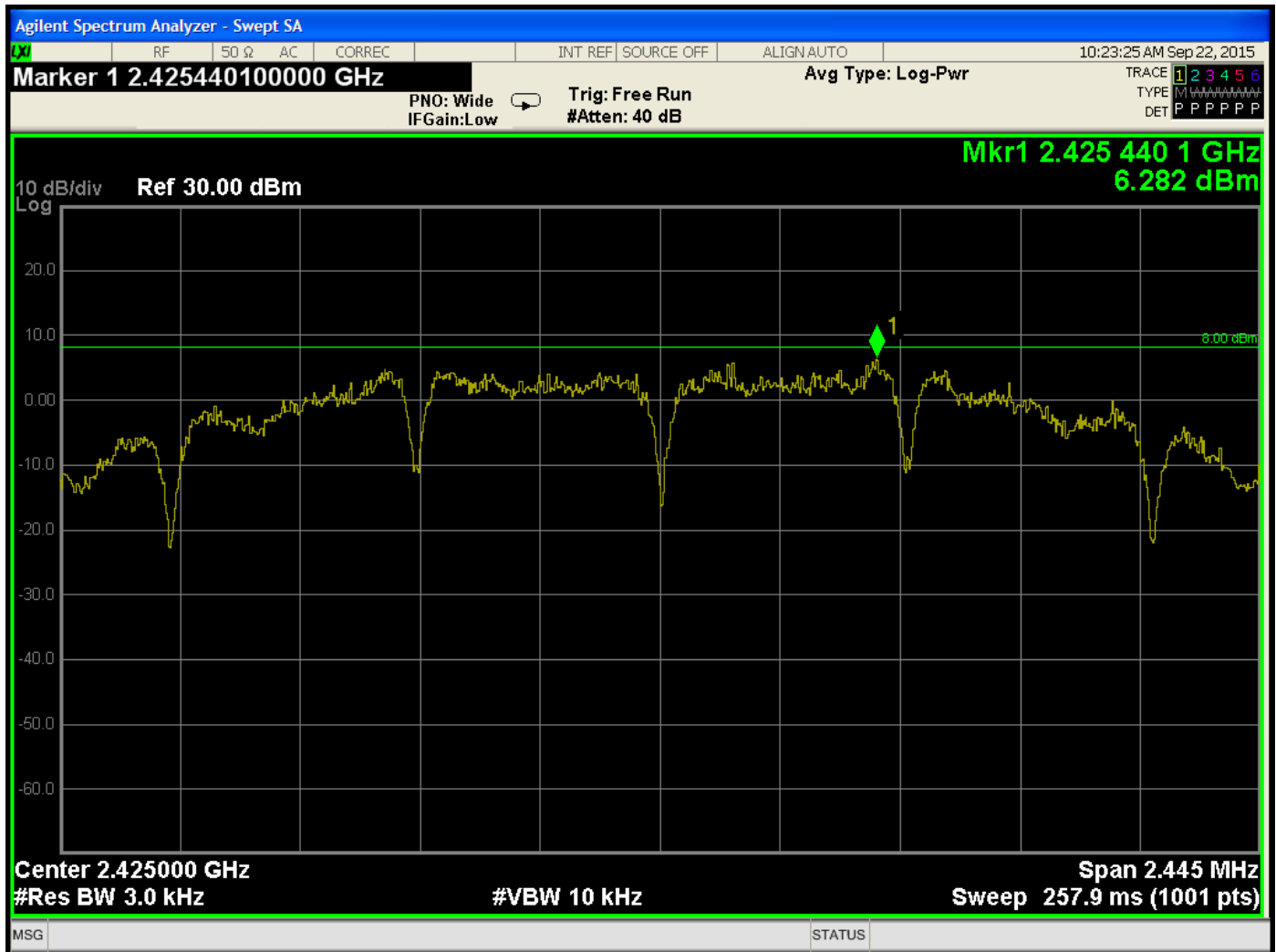
Peak Power Output – 2480 MHz

SPECTRAL DENSITY OUTPUT

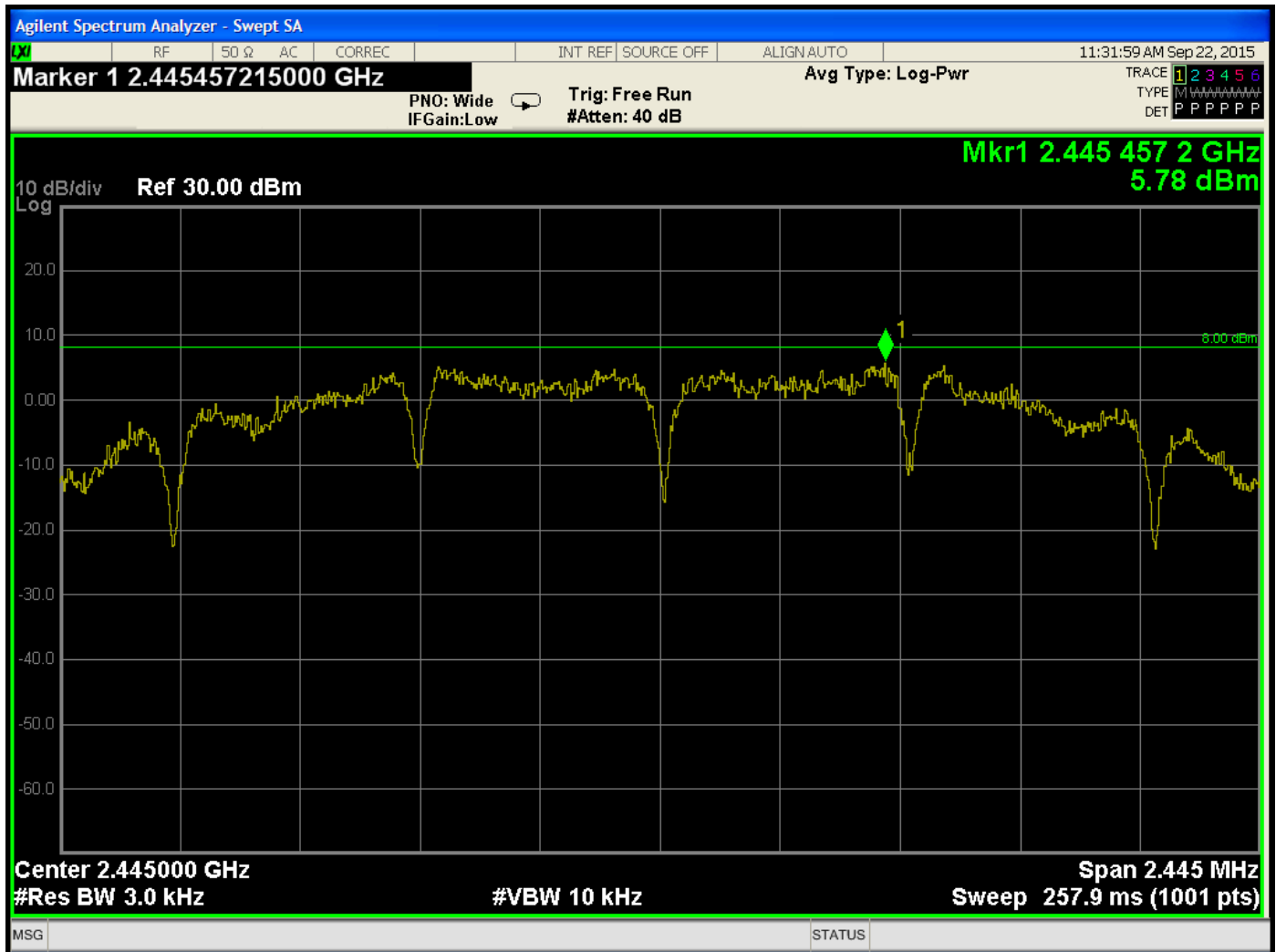
DATA SHEETS



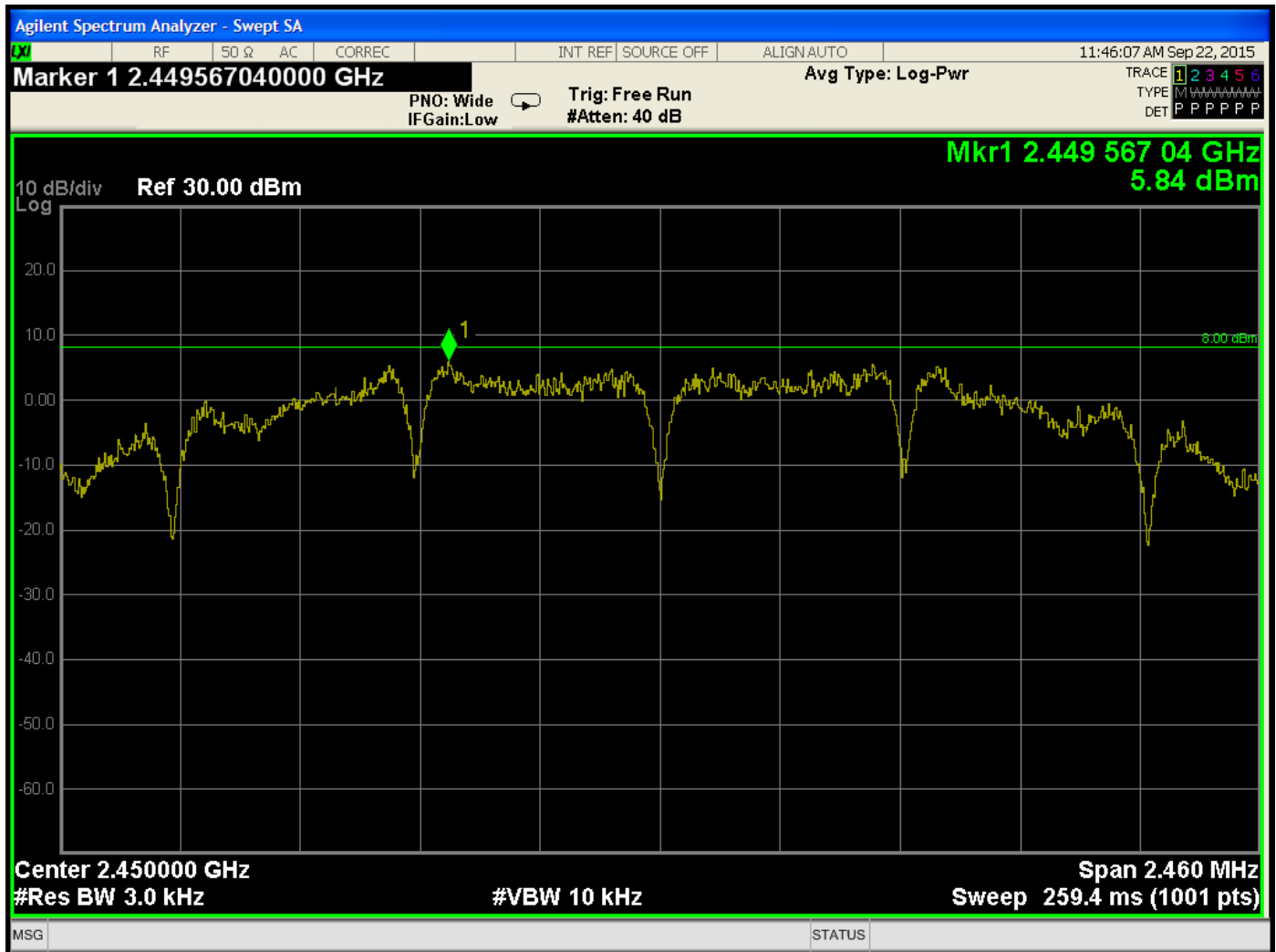
Peak Power Spectral Density – 2405 MHz



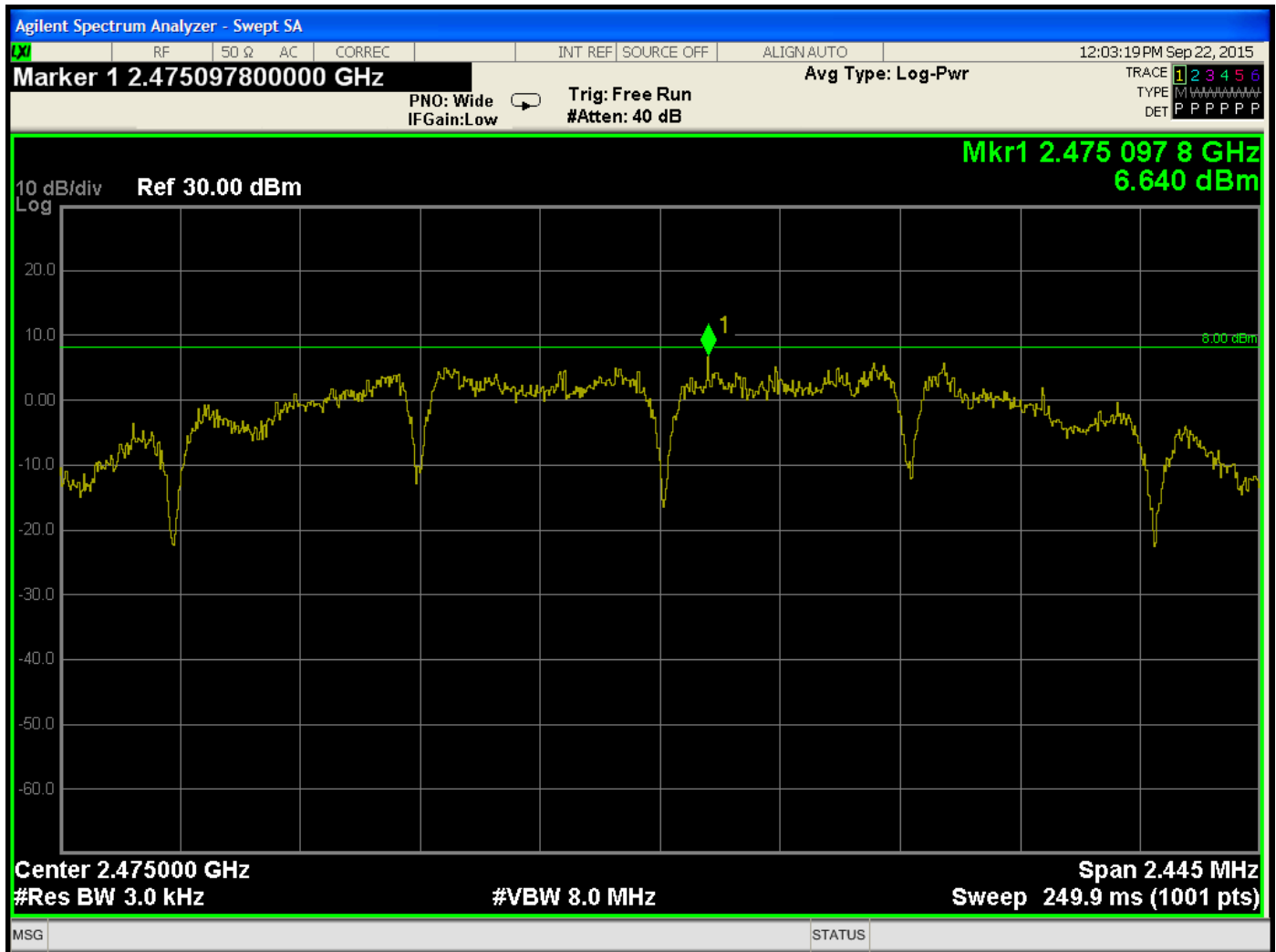
Peak Power Spectral Density – 2425 MHz



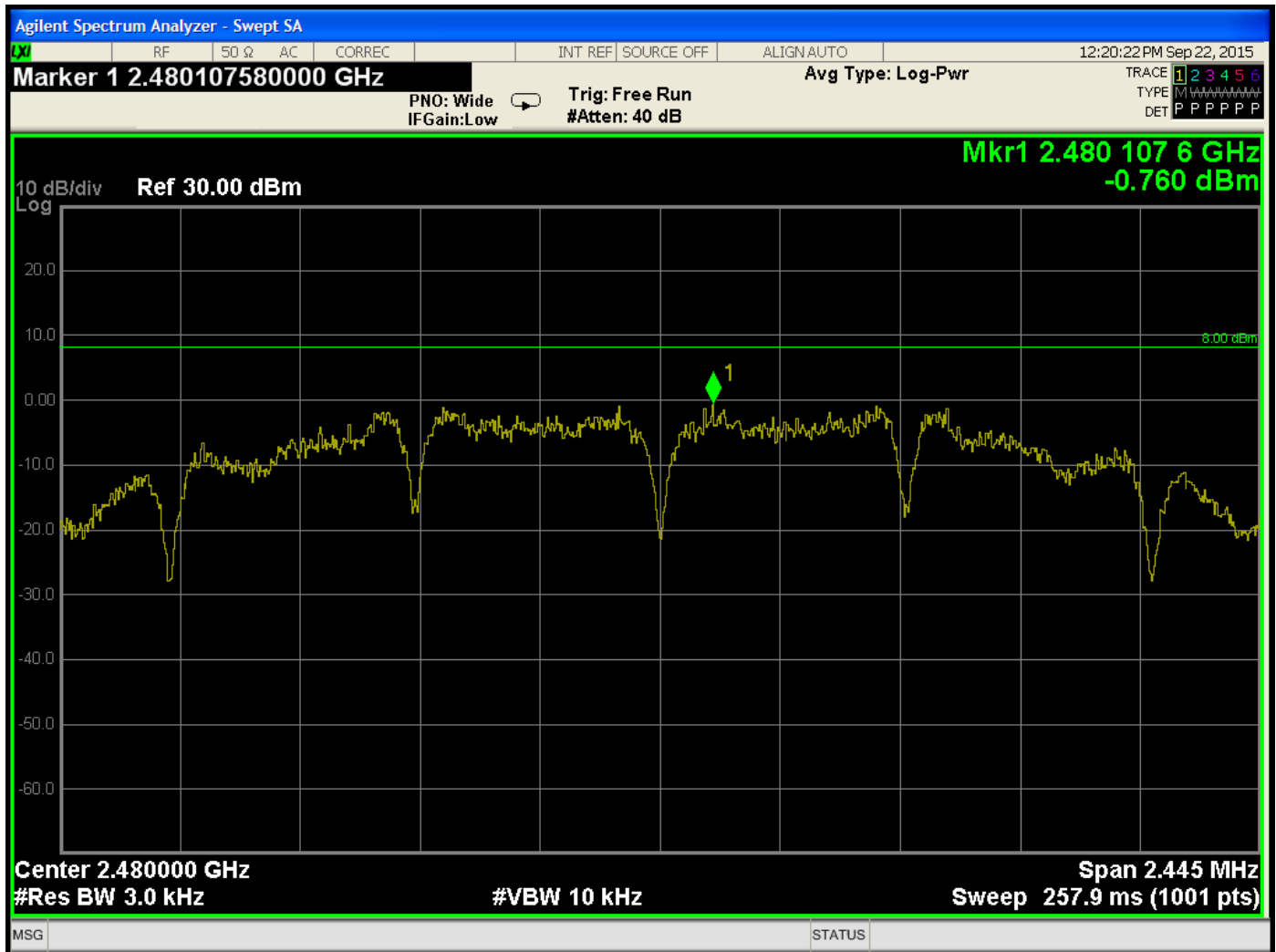
Peak Power Spectral Density – 2445 MHz



Peak Power Spectral Density – 2450 MHz

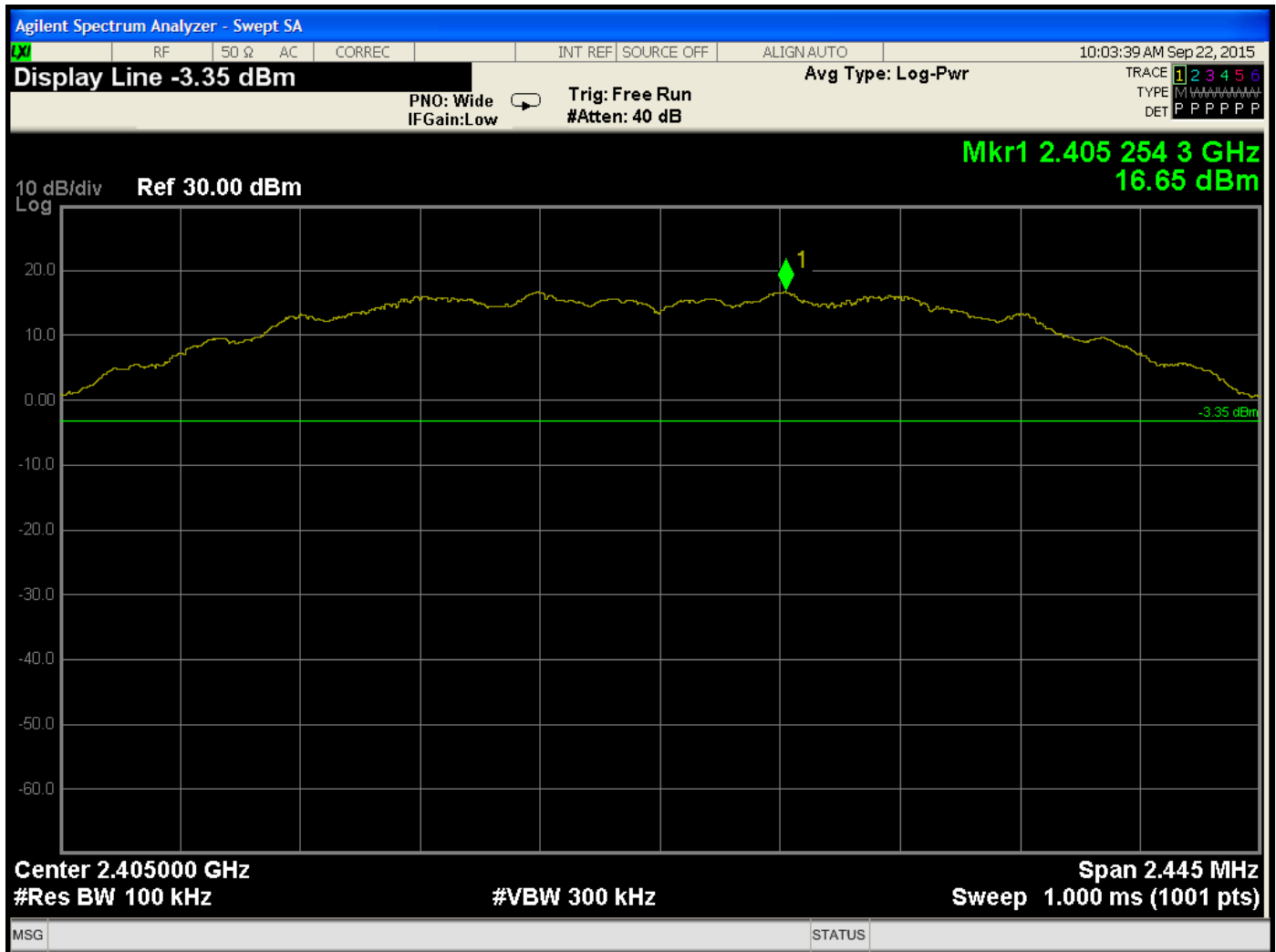


Peak Power Spectral Density – 2475 MHz

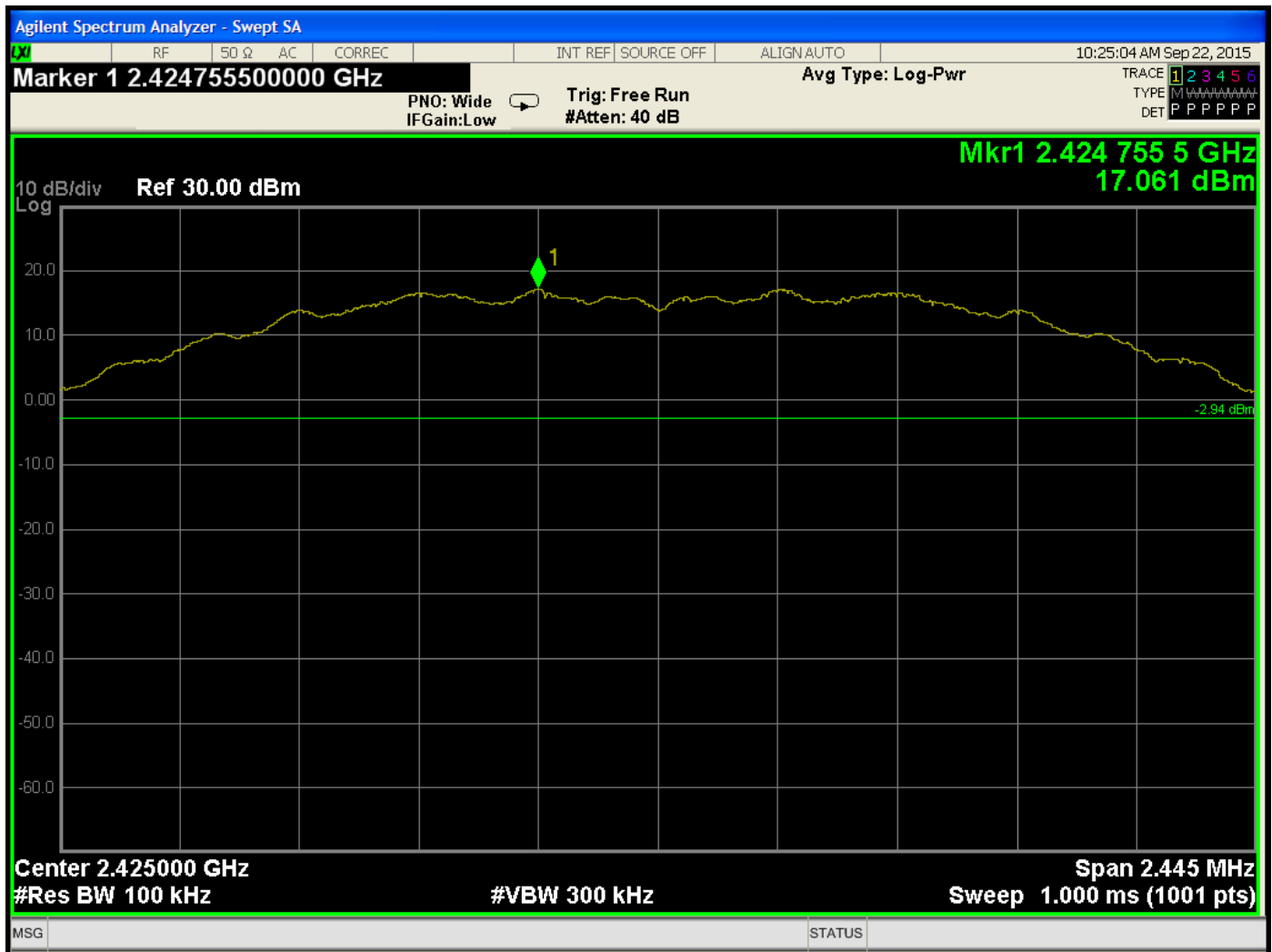


Peak Power Spectral Density – 2480 MHz

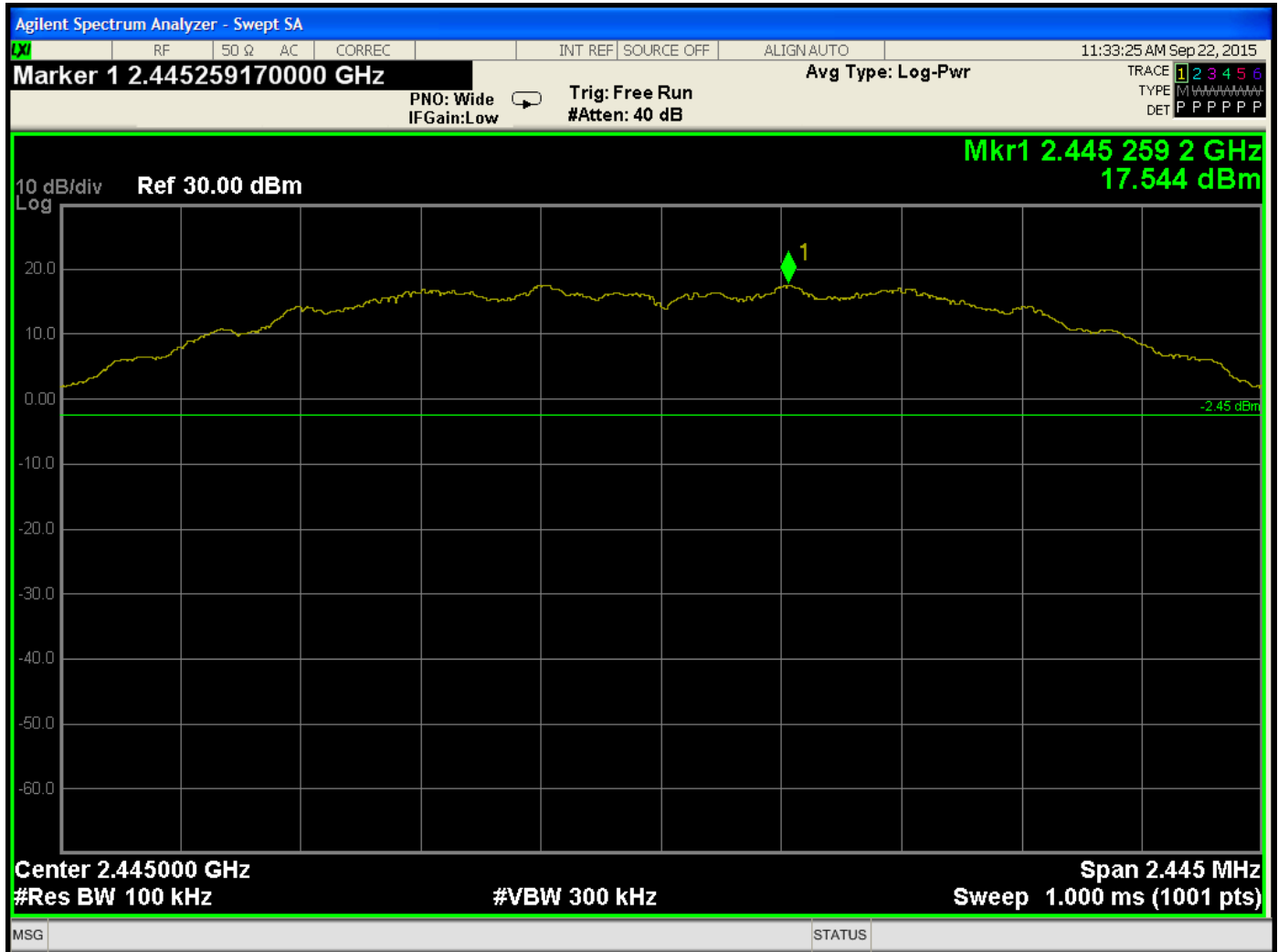
RF ANTENNA CONDUCTED
DATA SHEETS



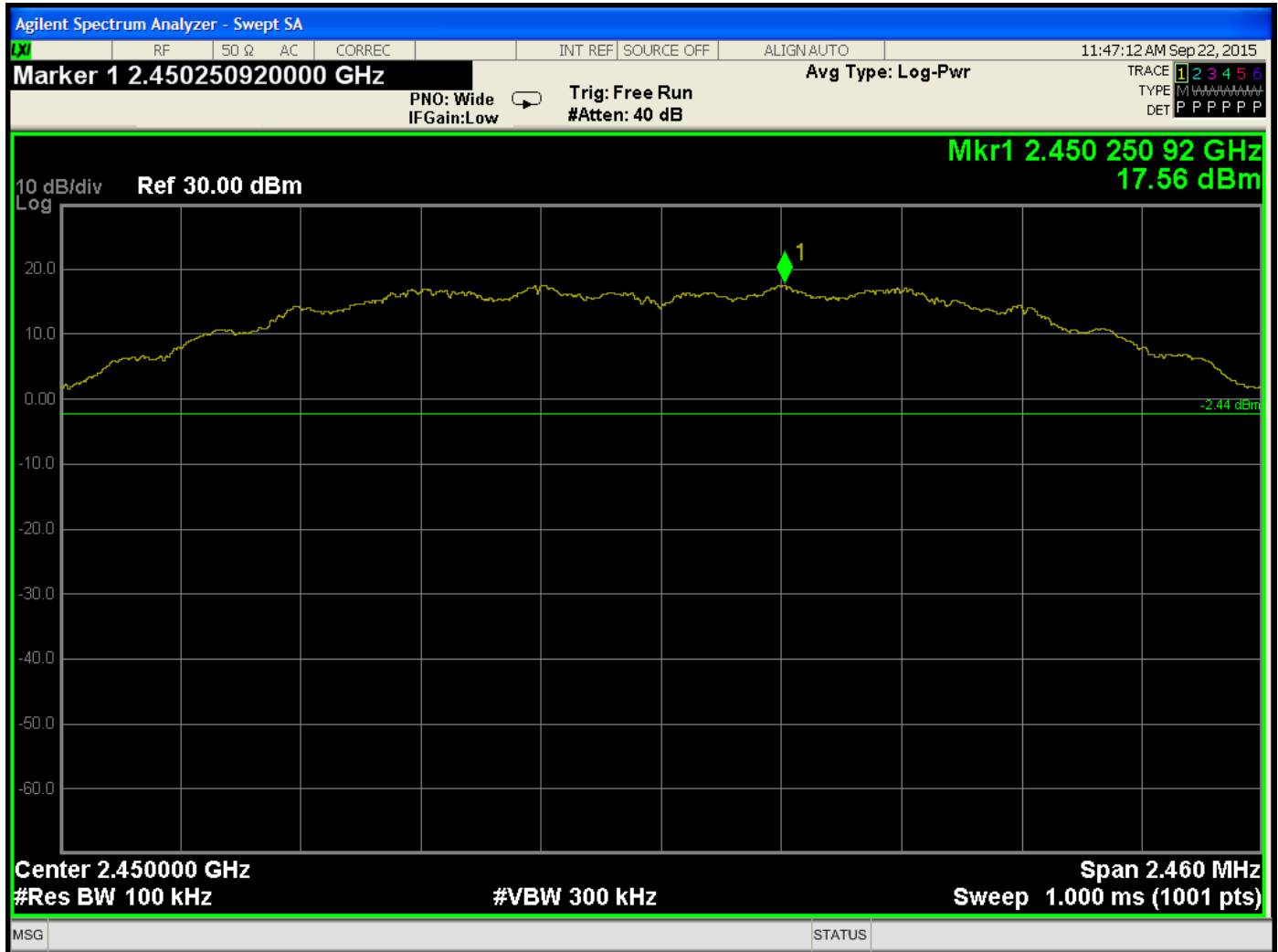
RF Antenna Conducted – Reference Level – 2405 MHz Fundamental



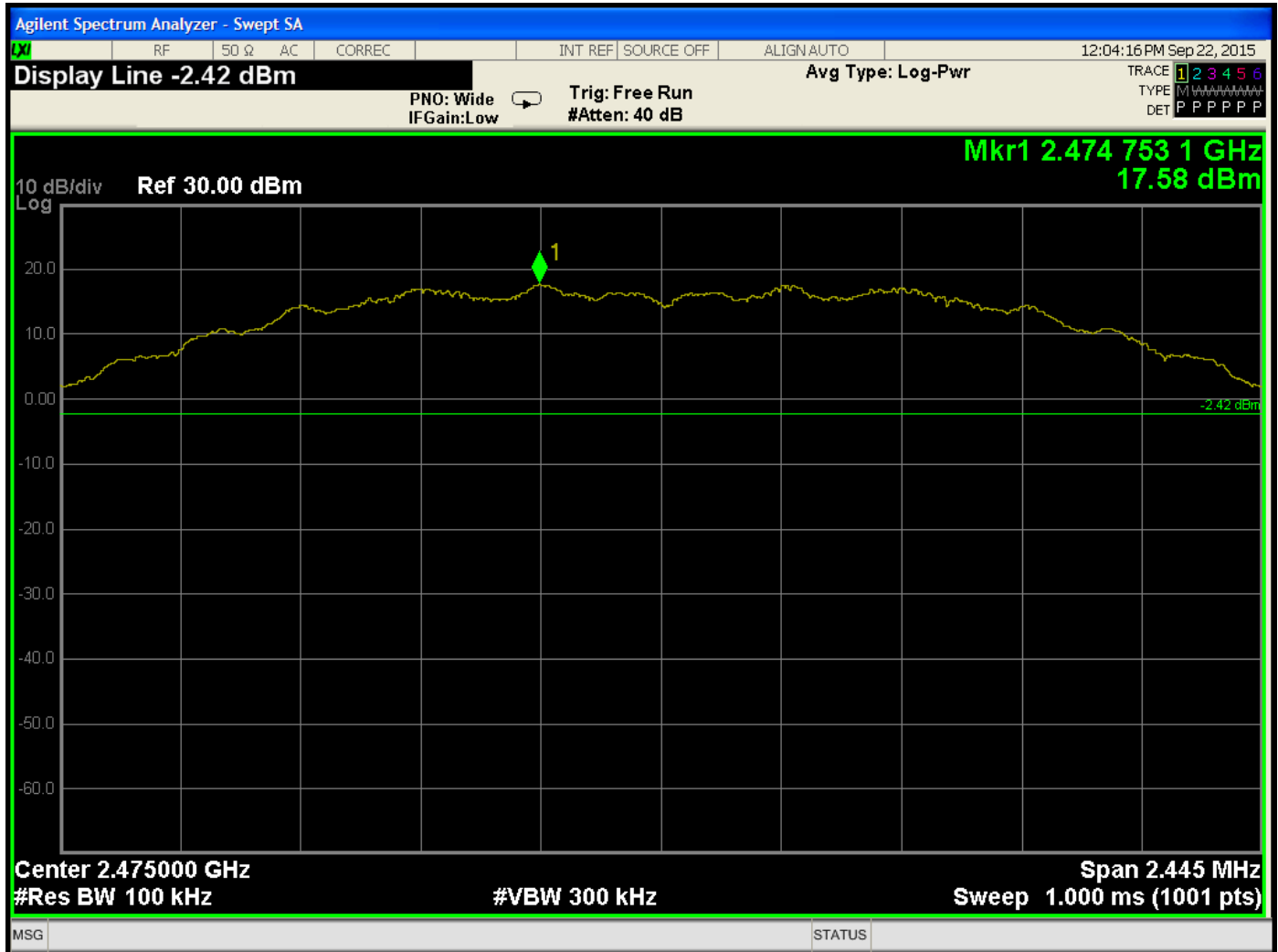
RF Antenna Conducted – Reference Level – 2425 MHz Fundamental



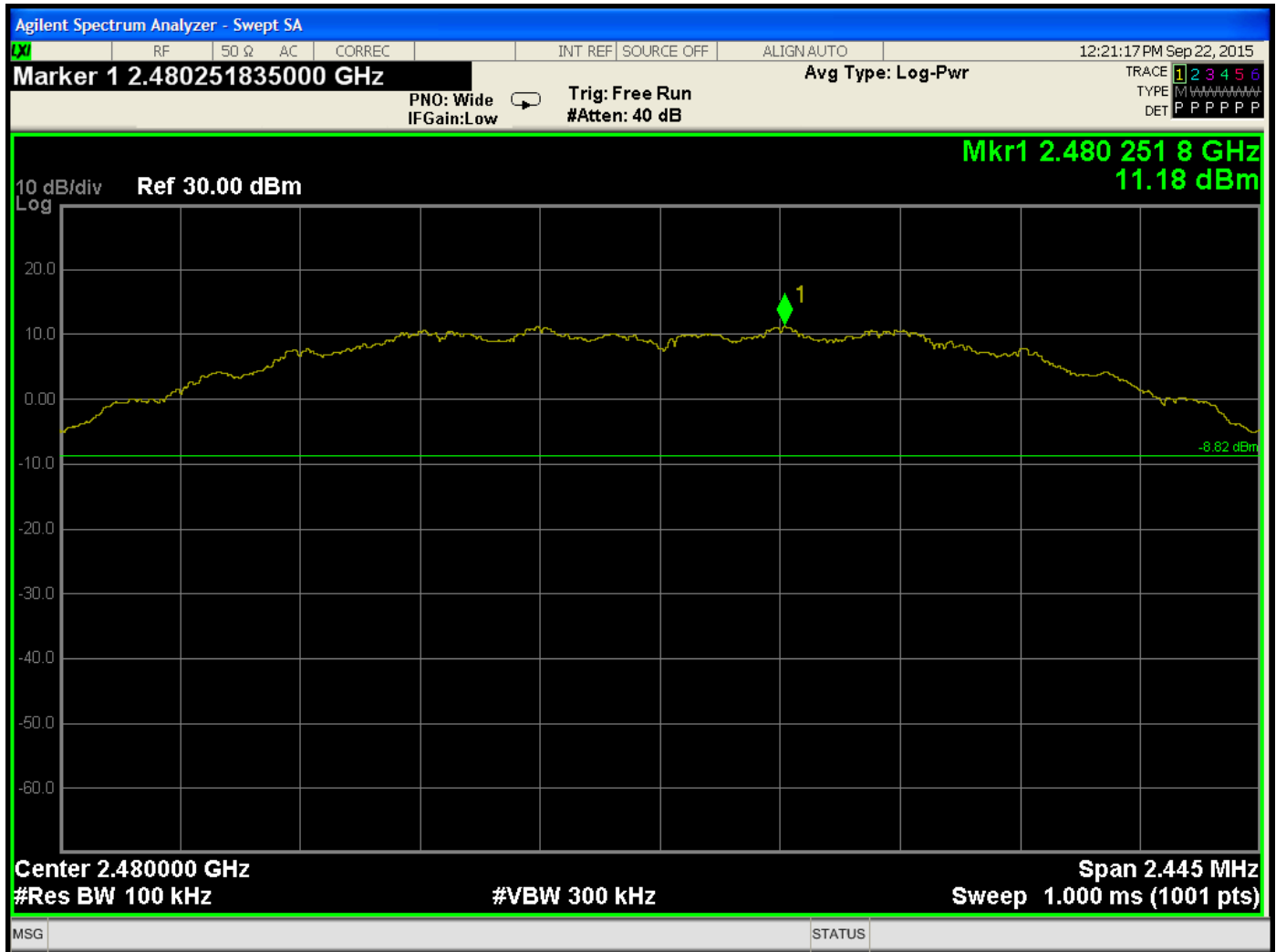
RF Antenna Conducted – Reference Level – 2445 MHz Fundamental



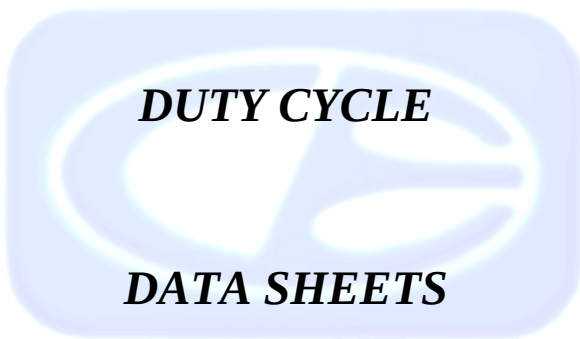
RF Antenna Conducted – Reference Level – 2450 MHz Fundamental



RF Antenna Conducted – Reference Level – 2475 MHz Fundamental

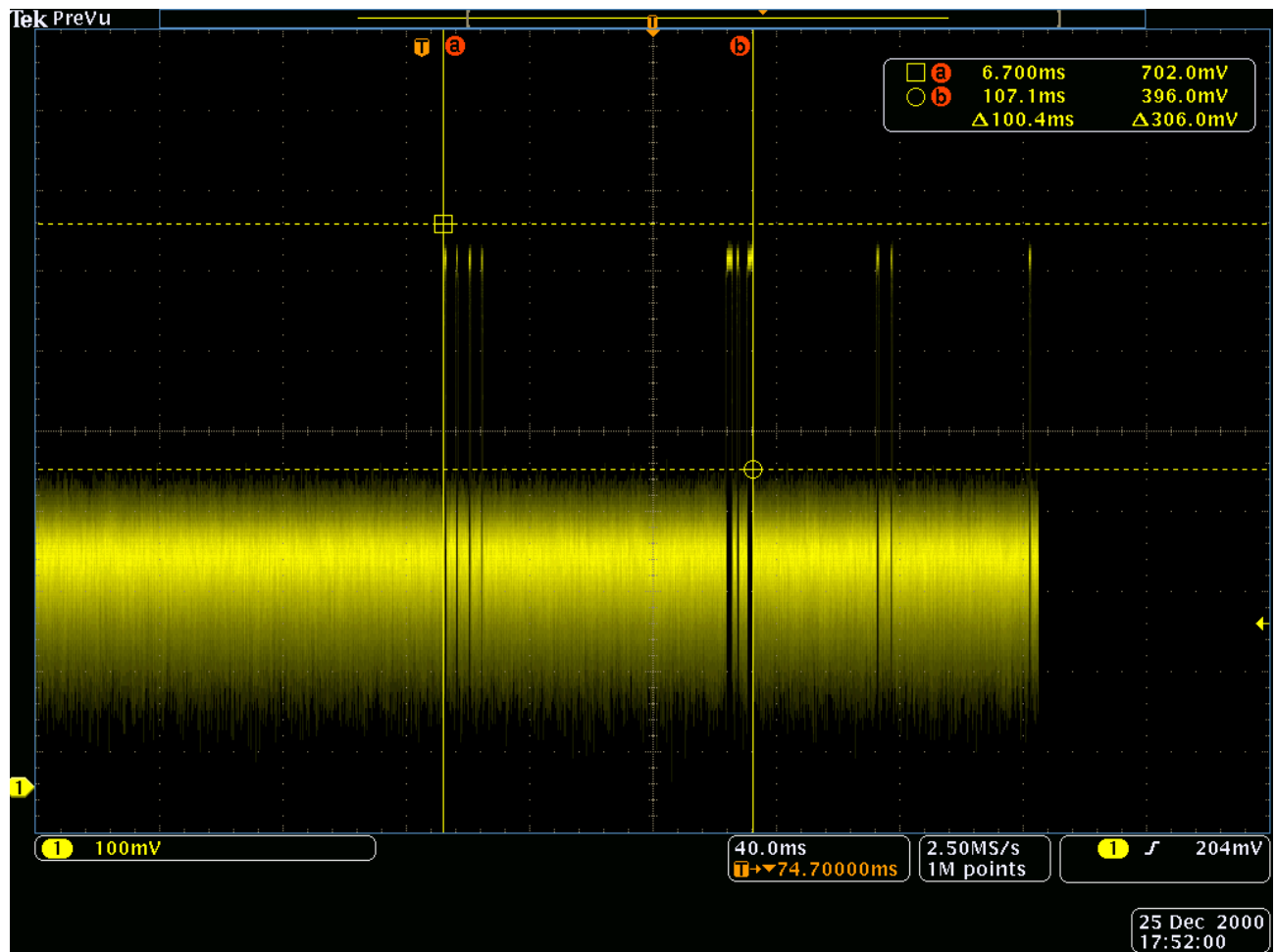


RF Antenna Conducted – Reference Level – 2480 MHz Fundamental

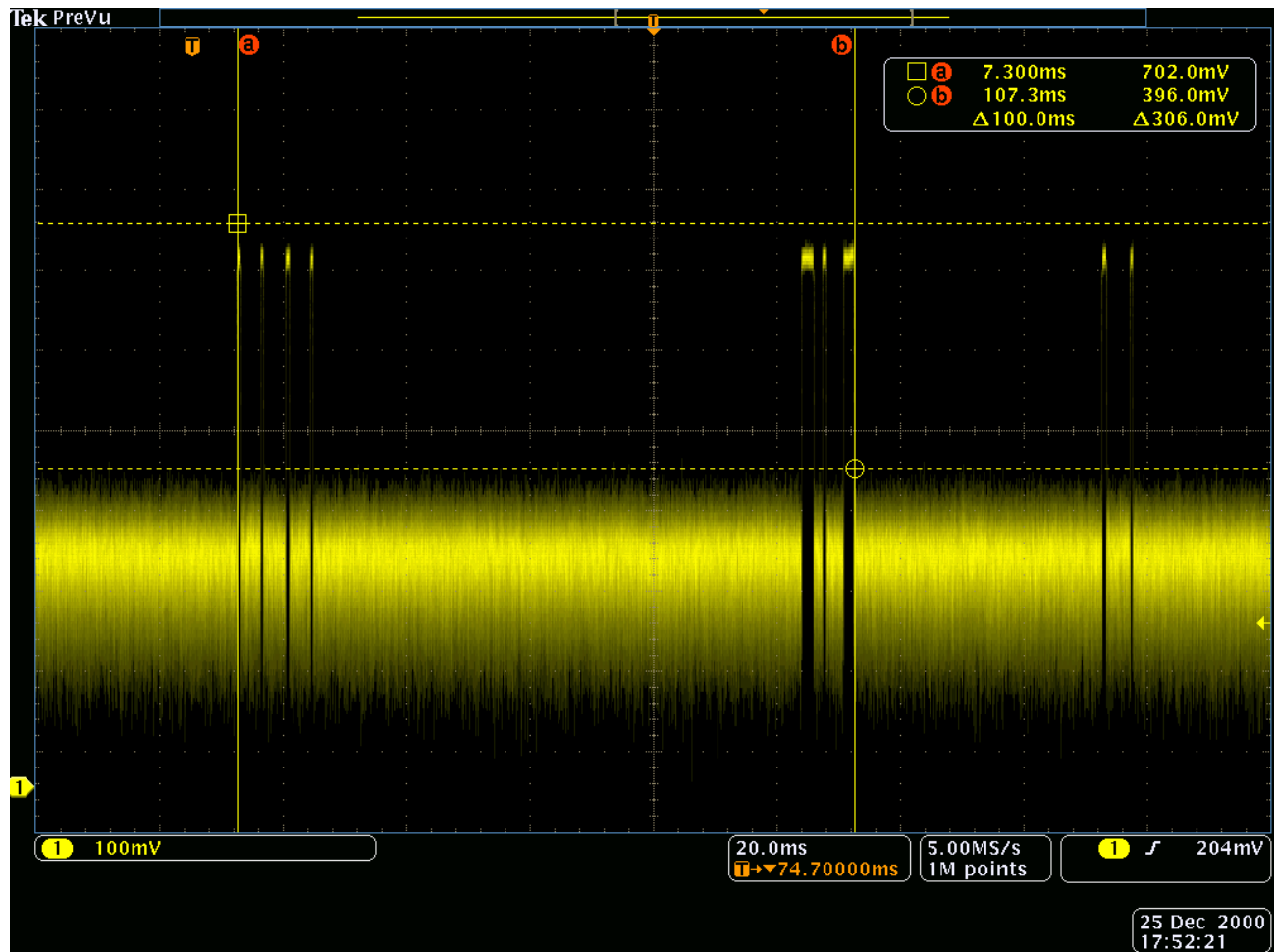


DUTY CYCLE

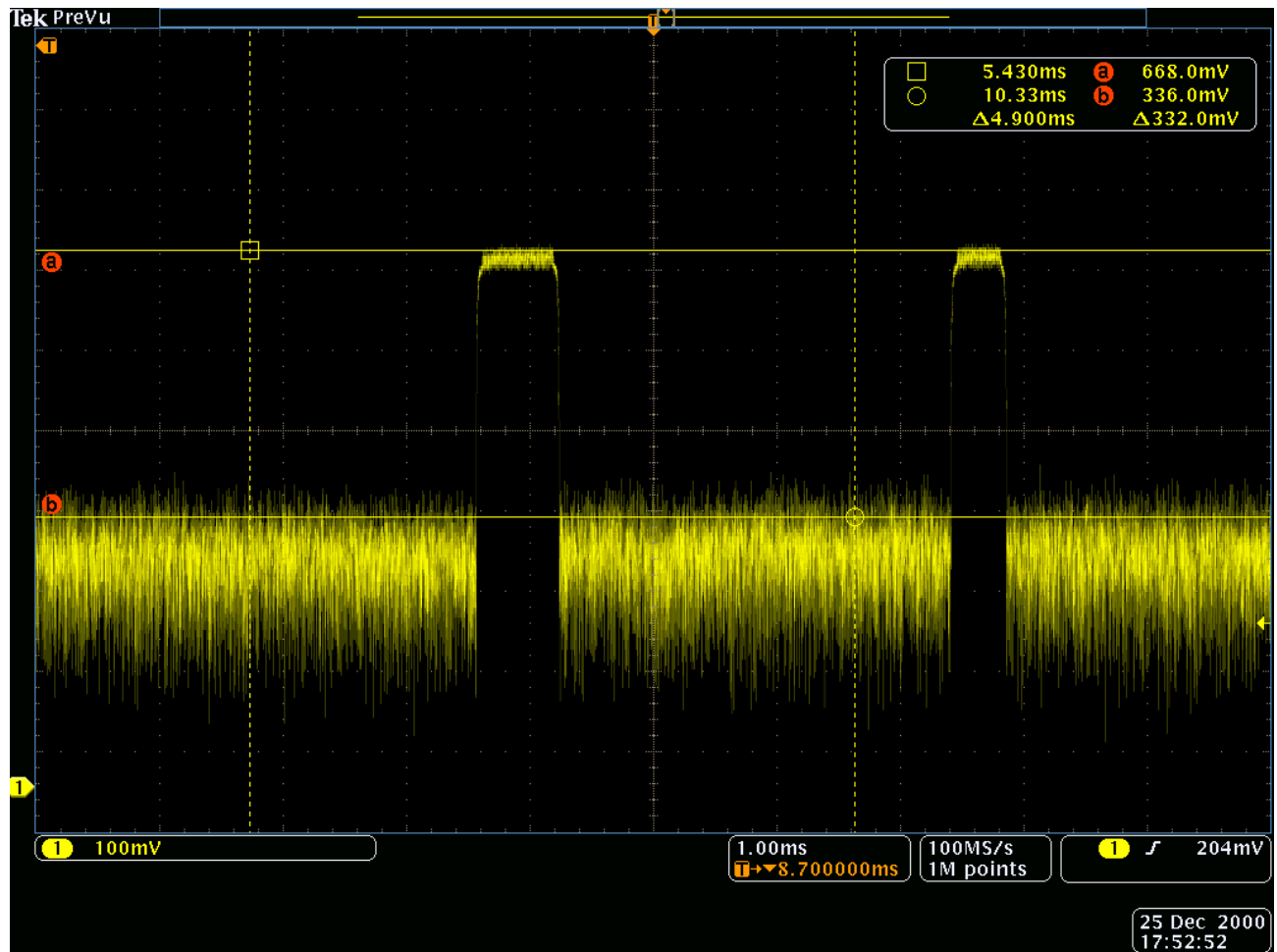
DATA SHEETS



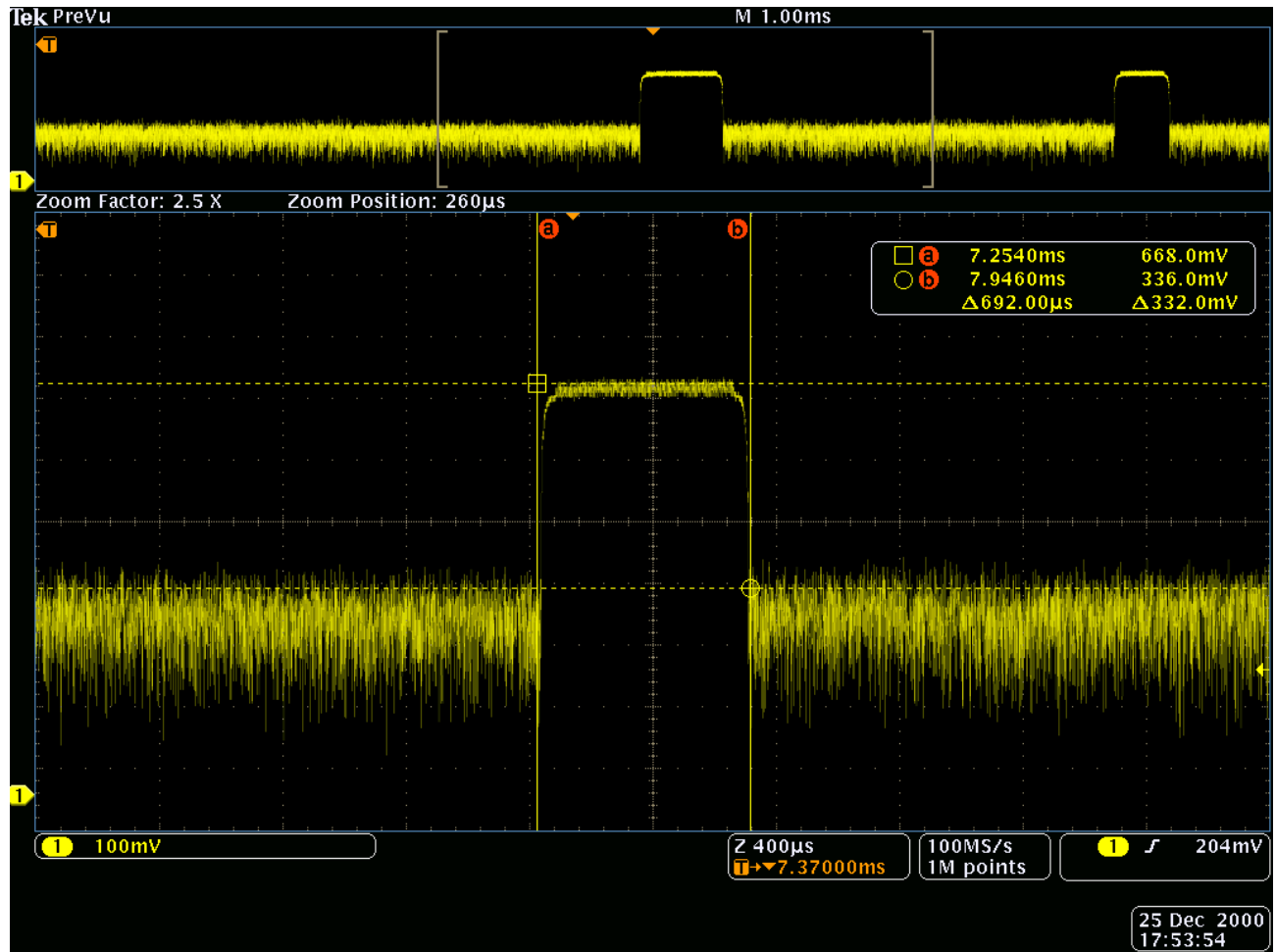
Number of Pulses in worst case 100 ms = 7



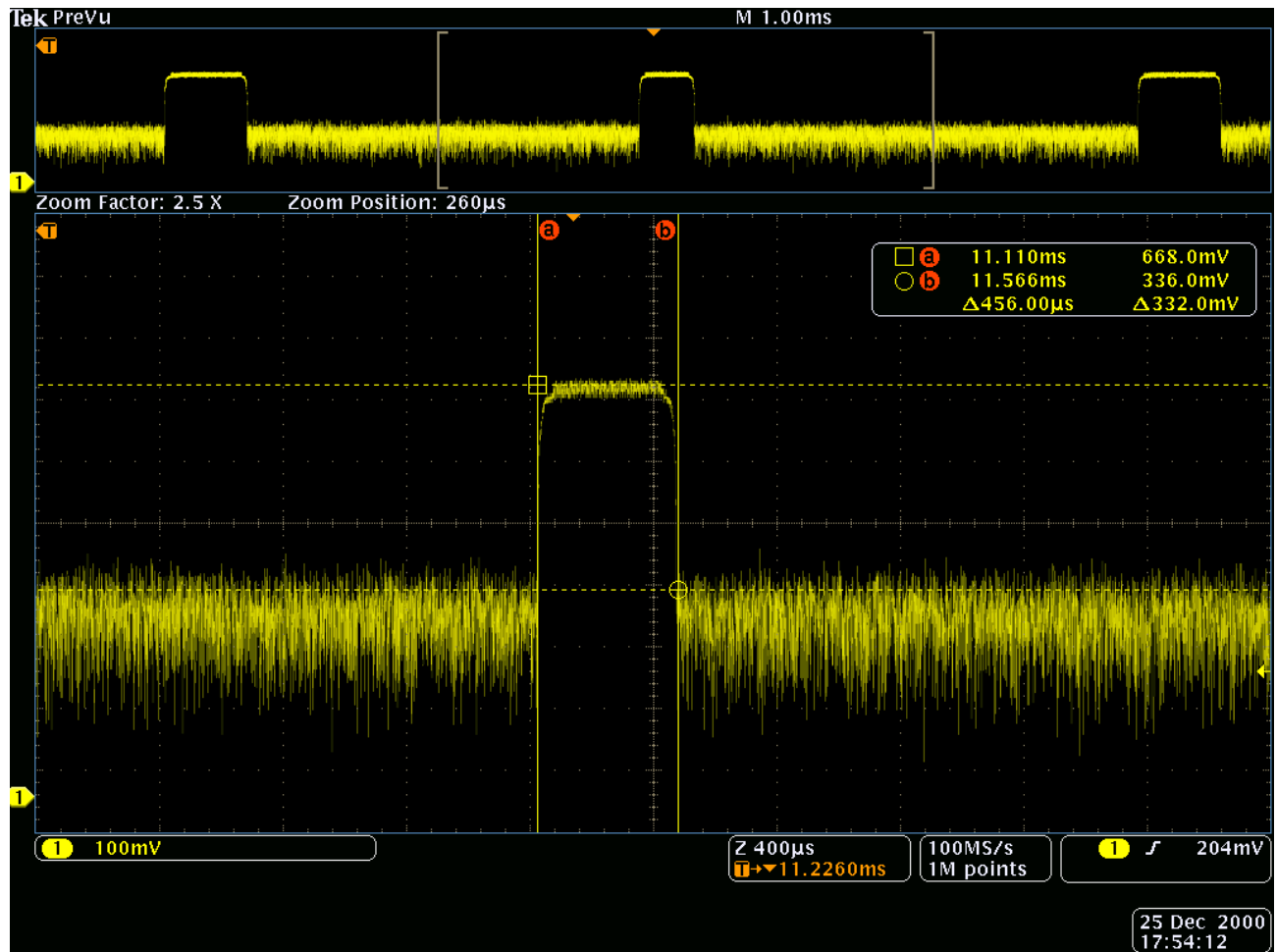
Number of Pulses in worst case 100 ms = 7 (Closeup up View)



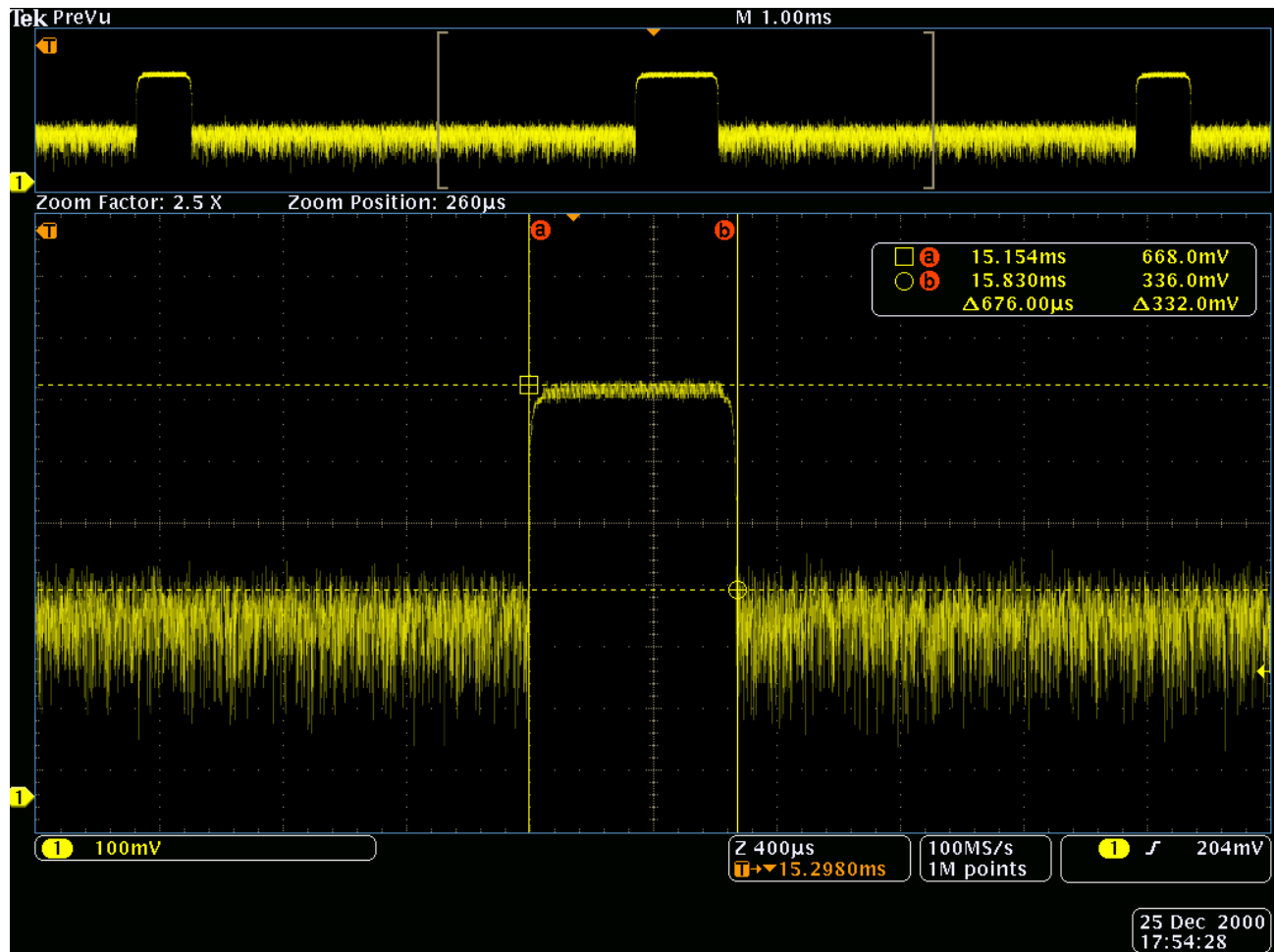
Plot showing Highest Voltage Level to determine 50% levels.



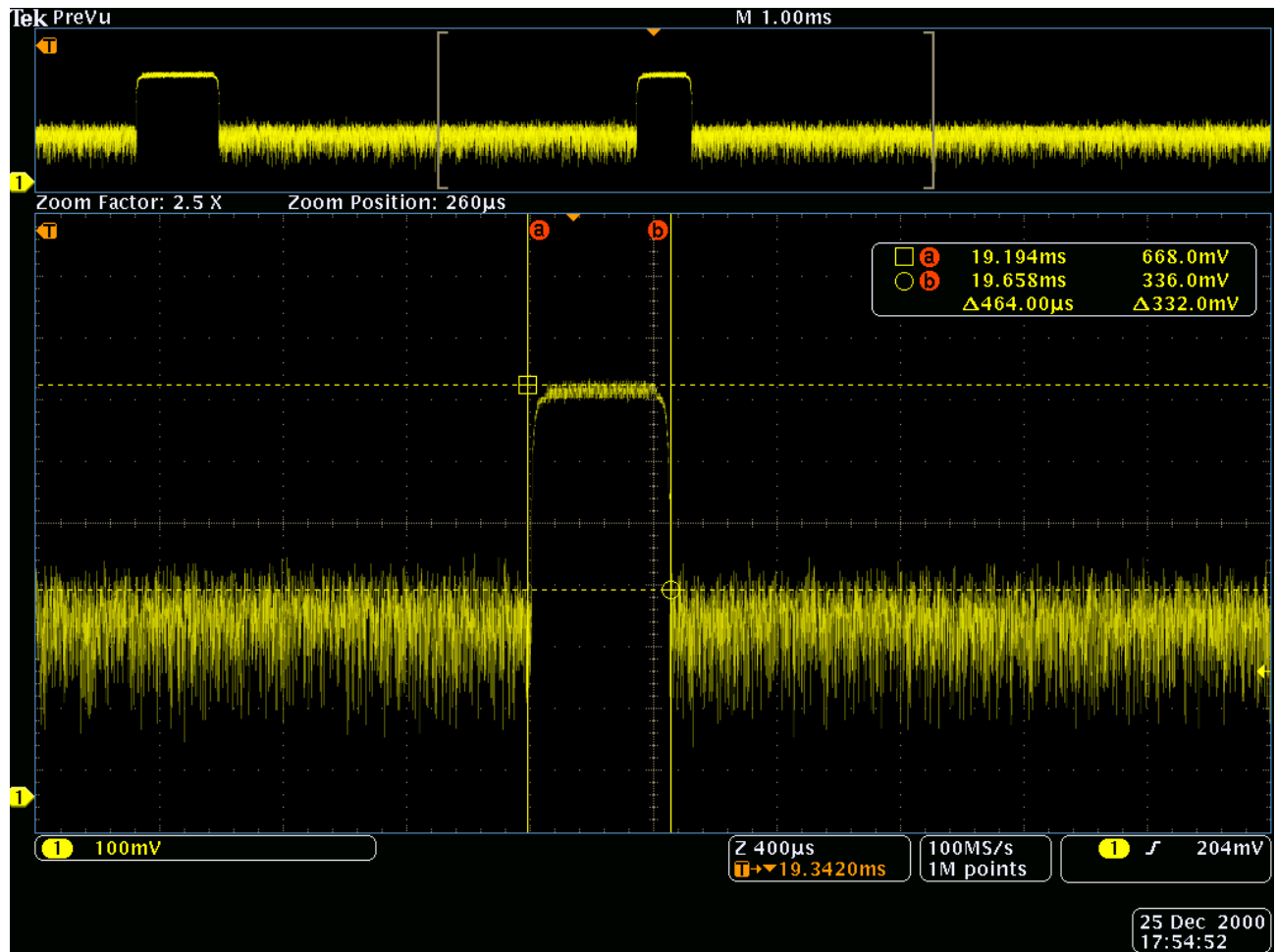
Time of Pulse #1 = 692 us



Time of Pulse #2 = 456 us

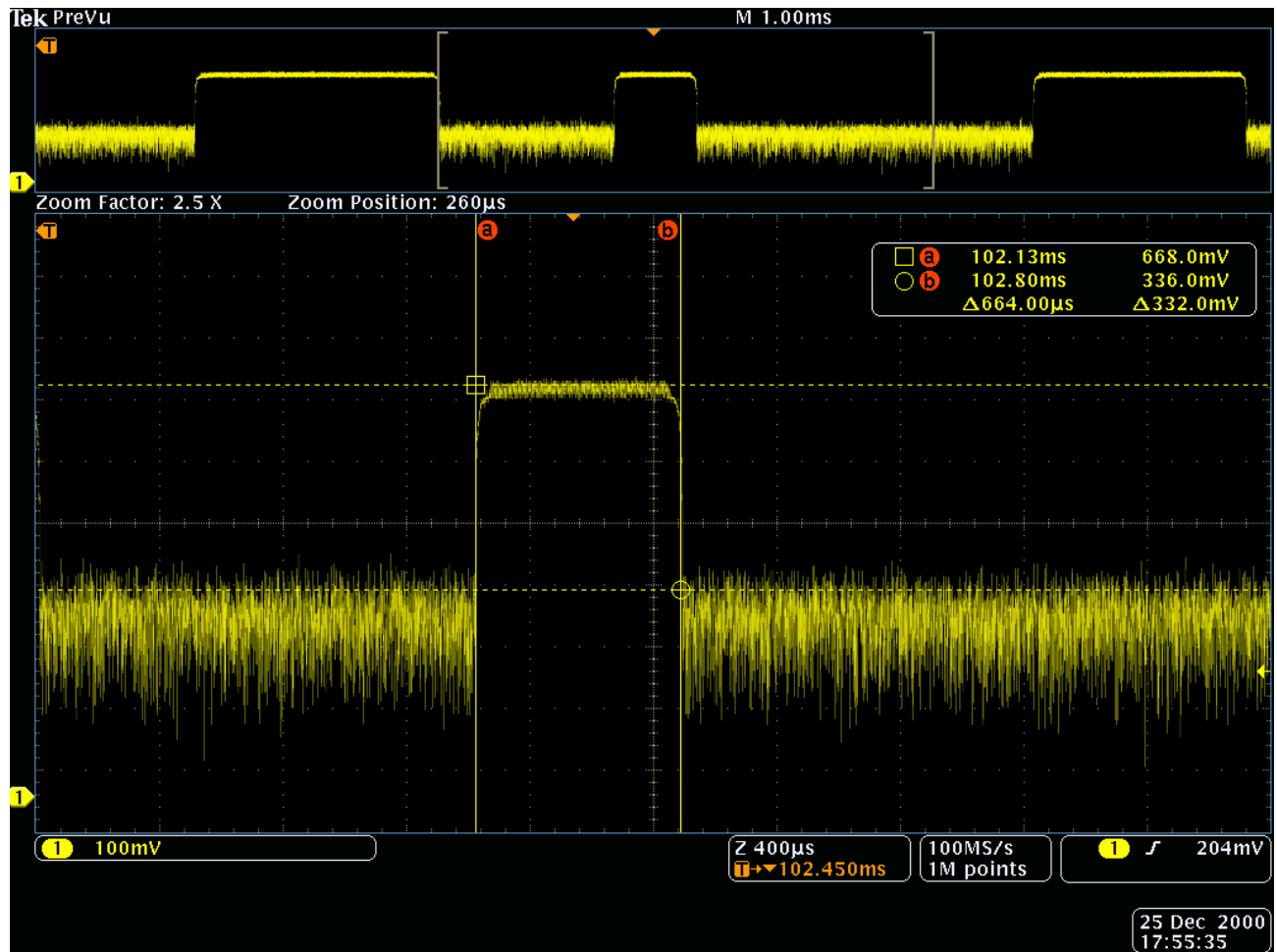


Time of Pulse #3 = 676 us

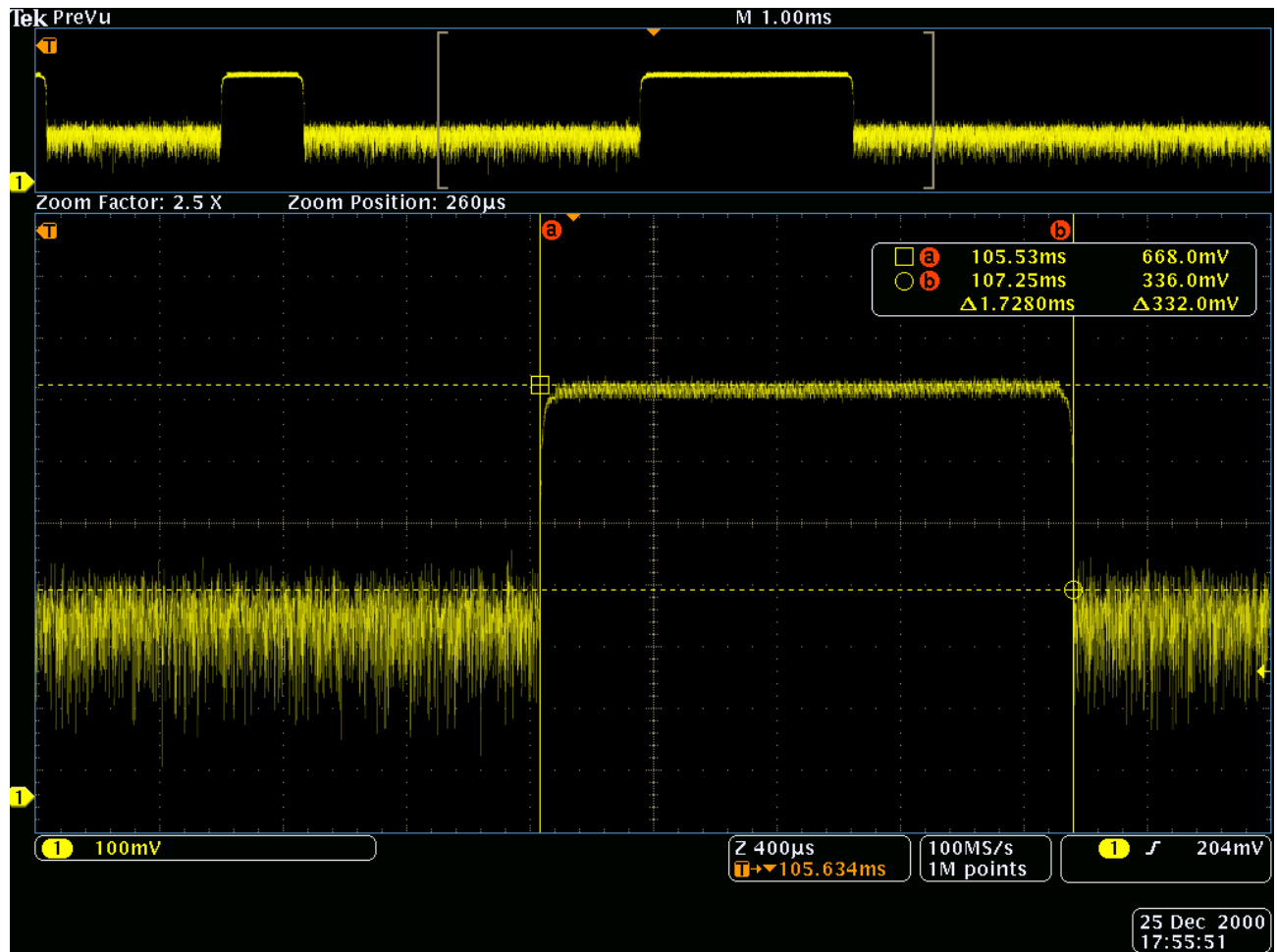


Time of Pulse #4 = 464 us

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OHM Zigbee v.2
Model: 450202



Time of Pulse #6 = 664 us



Time of Pulse #7 = 1.7280 ms

Total on Time = 6664 us (6.664 ms)

The duty cycle is less than the manufacturer's stated worst case duty cycle of 11.58%