

**FCC PART 15, SUBPART B and C; RSS-210, RSS GEN
TEST REPORT***for***ZIGBEE 3.0 DOOR/WINDOW CONTACT SENSOR****Part Number: DWZB1-ECO**

Prepared for

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DATE: DECEMBER 12, 2019

	REPORT BODY	APPENDICES					TOTAL
		A	B	C	D	E	
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GENERAL REPORT SUMMARY

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

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

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

Device Tested: Zigbee 3.0 Door/Window Contact Sensor
Part Number: DWZB1-ECO
S/N: N/A

Product Description: The equipment under test is a door contact sensor

Modifications: The EUT was not modified to meet the specifications.

Customer: Ecolink Intelligent Technology, Inc.
2055 Corte Del Nogal
Carlsbad, California 92011

Test Dates: December 11-12 and December 18, 2019

Test Specifications covered by accreditation:

Test Specifications: Emissions requirements
CFR Title 47, Part 15, Subpart B; and Subpart C, Sections 15.205, 15.209, and 15.249;
RSS-210 Issue 9 (2017), and RSS-Gen Issue 5 (2018)



Test Procedures: ANSI C63.4: 2014 and ANSI C63.10: 2013

Test Deviations: The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Spurious Radiated RF Emissions, 9 kHz – 25000 MHz (Transmitter, Receiver, and Digital portion)	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 15.205, 15.209 and 15.249; RSS-210 and RSS-Gen Highest reading in relation to spec limit 89.22 dBuV/m (AVG) @ 2405 MHz (*U = 3.63 dB)

1. PURPOSE

This document is a qualification test report based on the emissions tests performed on the Zigbee 3.0 Door/Window Contact Sensor, Part Number: DWZB1-ECO. The emissions measurements were performed according to the measurement procedure described in ANSI C63.4 and ANSI C63.10. The tests were performed 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 Code of Federal Regulations Title 47, Part 15 Subpart B sections 15.107, 15.109; and Part 15 Subpart C sections 15.205, 15.209 and 15.249; RSS-210 and RSS-Gen.

2. ADMINISTRATIVE DATA

2.1 Location of Testing

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

2.2 Traceability Statement

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

2.3 Cognizant Personnel

Ecolink Intelligent Technology

Shing Chen	Project Manager
David Shepard	Compliance Engineer

Compatible Electronics Inc.

Harvey Samaco	Test Technician
Kyle Fujimoto	Test Engineer

2.4 Date Test Sample was Received

The test sample was received prior to the date of this report.

2.5 Disposition of the Test Sample

The test sample has not been returned to Ecolink Intelligent Technology as of the date of this test report.

2.6 Abbreviations and Acronyms

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

EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
ITE	Information Technology Equipment
DoC	Declaration of Conformity
N/A	Not Applicable
Tx	Transmit
Rx	Receive
Inc.	Incorporated
RF	Radio Frequency
BLE	Bluetooth Low Energy
N/A	Not Applicable

3. APPLICABLE DOCUMENTS

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

SPEC	TITLE
FCC Title 47, Part 15 Subpart C	FCC Rules – Radio frequency devices (including digital devices) – Intentional Radiators
FCC Title 47, Part 15 Subpart B	FCC Rules – Radio frequency devices (including digital devices) – Unintentional Radiators
RSS-210 Issue 9: 2017	License-exempt Radio Apparatus: Category I Equipment
RSS Gen Issue 5: 2018	General Requirements for Compliance of Radio Apparatus
ANSI C63.4: 2014	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
ANSI C63.10: 2013	American National Standard of procedure for compliance testing of unlicensed wireless devices

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration – Emissions

The Zigbee 3.0 Door/Window Contact Sensor, Part Number: DWZB1-ECO (EUT) was a standalone unit that is powered by a AA battery.

The EUT was tested for emissions at the low, middle, and high channels while in the X, Y and Z axis. The X orientation is when the EUT is parallel to the ground. The Y orientation is when the EUT is perpendicular to the ground mounted vertically. The Z orientation is when the EUT is perpendicular to the ground mounted horizontally.

The EUT was tested with a new battery.

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

4.1.1 Cable Construction and Termination

The EUT had no external cables.



5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	PART NUMBER	FCC ID
ZIGBEE 3.0 DOOR/WINDOW CONTACT SENSOR (EUT)	ECOLINK INTELLIGENT TECHNOLOGY	DWZB1-ECO	XQC-DWZB1ECO IC:9863B-DWZB1ECO

5.2 Emissions Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CAL. CYCLE
RADIATED AND CONDUCTED EMISSIONS TEST EQUIPMENT					
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	Keysight Technologies	N9038A	MY5120150	August 23, 2019	1 Year
CombiLog Antenna	Com-Power	AC-220	061093	June 5, 2019	2 Year
System Controller	Sunol Sciences Corporation	SC110V	112213-1	N/A	N/A
Turntable	Sunol Sciences Corporation	2011VS	N/A	N/A	N/A
Antenna-Mast	Sunol Sciences Corporation	TWR95-4	112213-3	N/A	N/A
Turntable	Com-Power	TT-100	N/A	N/A	N/A
Antenna-Mast	Com-Power	AM-100	N/A	N/A	N/A
Horn Antenna	Com-Power	AH-118	071175	February 22, 2018	2 Year
Preamplifier	Com-Power	PA-118	181653	January 25, 2019	1 Year
Preamplifier	Com-Power	PA-840	711013	May 10, 2018	2 Year
Horn Antenna	Com-Power	AH-826	71957	N/A	N/A
Loop Antenna	Com-Power	AL-130R	121090	February 5, 2019	2 Year

6. TEST SITE DESCRIPTION**6.1 Test Facility Description**

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

6.2 EUT Mounting, Bonding and Grounding

For frequencies 1 GHz and below: 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.

6.3 Measurement Uncertainty

The uncertainty values are in the table below.

The uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level, using a coverage factor of $k=2$

MEASUREMENT TYPE	PARTICULAR CONFIGURATION	UNCERTAINTY VALUES
RADIATED EMISSIONS	3-METER CHAMBER, COMBILOG ANTENNA	3.27 dB (Vertical) 3.19 dB (Horizontal)
RADIATED EMISSIONS	3-METER CHAMBER, HORN ANTENNA	3.63 dB (Both Vertical and Horizontal)
AC LINE CONDUCTED EMISSIONS	3-METER CHAMBER, COM-POWER LISN	2.72 dB



7. TEST PROCEDURES

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

7.1 RF Emissions

7.1.1 Conducted Emissions Test

The EMI Receiver was used as a measuring meter. A quasi-peak and/or average reading was taken only where indicated in the data sheets. A 10 dB attenuator was used for the protection of the EMI Receiver input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the EMI Receiver. 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 63:4. 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 computer software. The final qualification data is located in Appendix E.

Test Results:

This test was not performed because the EUT operates on battery power only and cannot be connected to the AC public mains.

7.1.2 Radiated Emissions Test

The EMI Receiver was used as the measuring meter. Preamplifiers were 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. The effective measurement bandwidth used for the radiated emissions test was according to the frequency measured.

The frequencies below 1 GHz were quasi-peaked using the quasi-peak detector of the EMI Receiver.

The harmonic frequencies above 1 GHz were averaged using the duty cycle correction calculation.

All other frequencies above 1 GHz were averaged using the average detector of the EMI Receiver.

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 EUT was tested at a 3-meter test distance. The six highest emissions are listed in Table 1.

Radiated Emissions Test (Continued)

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

Test Results:

The EUT complies with the **Class B** limits of RSS-210, RSS-Gen, CFR Title 47, Part 15, Subpart B; and Subpart C sections 15.205, 15.209 and 15.249 for radiated emissions.

7.1.3 RF Emissions Test Results

Table 1 RADIATED EMISSION RESULTS
 Zigbee 3.0 Door/Window Contact Sensor
 Part Number: DWZB1-ECO

Frequency (MHz)	EMI Reading (dBuV/m)	Specification Limit (dBuV/m)	Delta (Cor. Reading – Spec. Limit) (dB)
2405.00 (V) (Y-Axis) (Low Channel)	89.22 (Avg)	93.97	-4.75
2440.00 (V) (Y-Axis) (Mid Channel)	88.96 (Avg)	93.97	-5.01
2405.00 (H) (X-Axis) (Low Channel)	88.78 (Avg)	93.97	-5.19
2440.00 (H) (Y-Axis) (Mid Channel)	88.66 (Avg)	93.97	-5.31
2405.00 (H) (Y-Axis) (Low Channel)	88.62 (Avg)	93.97	-5.35
2440.00 (H) (X-Axis) (Mid Channel)	88.54 (Avg)	93.97	-5.43

Notes:

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

7.1.4 Sample Calculations

A correction factor for the antenna, cable and a distance factor (if any) must be applied to the meter reading before a true field strength reading can be obtained. This Corrected Meter Reading is then compared to the specification limit in order to determine compliance with the limits.

The equation can be derived in the following manner:

Specification limit ($\mu\text{V}/\text{m}$) $\log \times 20 =$ Specification Limit in $\text{dB}\mu\text{V}$

(Specification distance / test distance) $\log \times 40 =$ distance factor

Note: When using an Active Antenna, the Antenna factor shall be subtracted due to the combination of the internal amplification and antenna loss. At lower frequencies the cable loss is negligible.

OR

Corrected Meter Reading = meter reading + F - A + C

where: F = antenna factor
A = amplifier gain
C = cable loss

The correction factors for the antenna and the amplifier gain are attached in Appendix D of this report. The data sheets are attached in Appendix E.

The distance factor D is 0 when the test is performed at the required specification distance.

7.1.5 Duty Cycle Calculation

The fundamental and harmonics were measured at a 3-meter test distance. The EMI Receiver was used to obtain the final test data. The final qualification data sheets are located in Appendix E.

Where

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

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

Duty Cycle Correction Factor = -19.21 dB

Total On Time = 10.95 ms

The time between pulses is greater than 100 ms

Duty Cycle = 10.95 ms / 100 ms = 0.1095 = 10.95%

7.1.6 99% Bandwidth

The 99% Bandwidth was measured using an EMI Receiver and was taken after maximizing the worst case fundamental emission for both channels per section 7.1.

The following steps were performed for measuring the 99% bandwidth per RSS-GEN, Issue 5, clause 6.7.

1. Set RBW to 1% to 5% of the actual occupied bandwidth.
2. Set VBW to greater than 3 times the RBW.
3. Set the EMI Receiver to the Occupied Bandwidth Function set at 99%
4. Set the peak detector to max hold.
5. Set the sweep time to auto
6. Allow the trace to stabilize.

Please note that this was only used to determine the emission bandwidth and that there are no limits or pass/fail criteria for this test. Please see the data sheets located in Appendix E.



8. CONCLUSIONS

The Zigbee 3.0 Door/Window Contact Sensor, Part Number: DWZB1-ECO (EUT), as tested, meets all of the specification limits defined in the RSS-210, RSS-Gen, **Class B** specification limits defined in FCC Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209 and 15.249.




APPENDIX A***LABORATORY ACCREDITATIONS AND RECOGNITIONS***

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

Newbury Park Division
1050 Lawrence Drive
Newbury Park, CA 91320
(805) 480-4044

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

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."

**Innovation, Science and Economic Development Canada
Lab Code 2154A**





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 15.249 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 MODEL COVERED
UNDER THIS REPORT***

ADDITIONAL MODEL COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

Zigbee 3.0 Door/Window Contact Sensor
Part Number: DWZB1-ECO
S/N: N/A

There are no additional models covered under this report.





APPENDIX D

DIAGRAMS AND CHARTS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

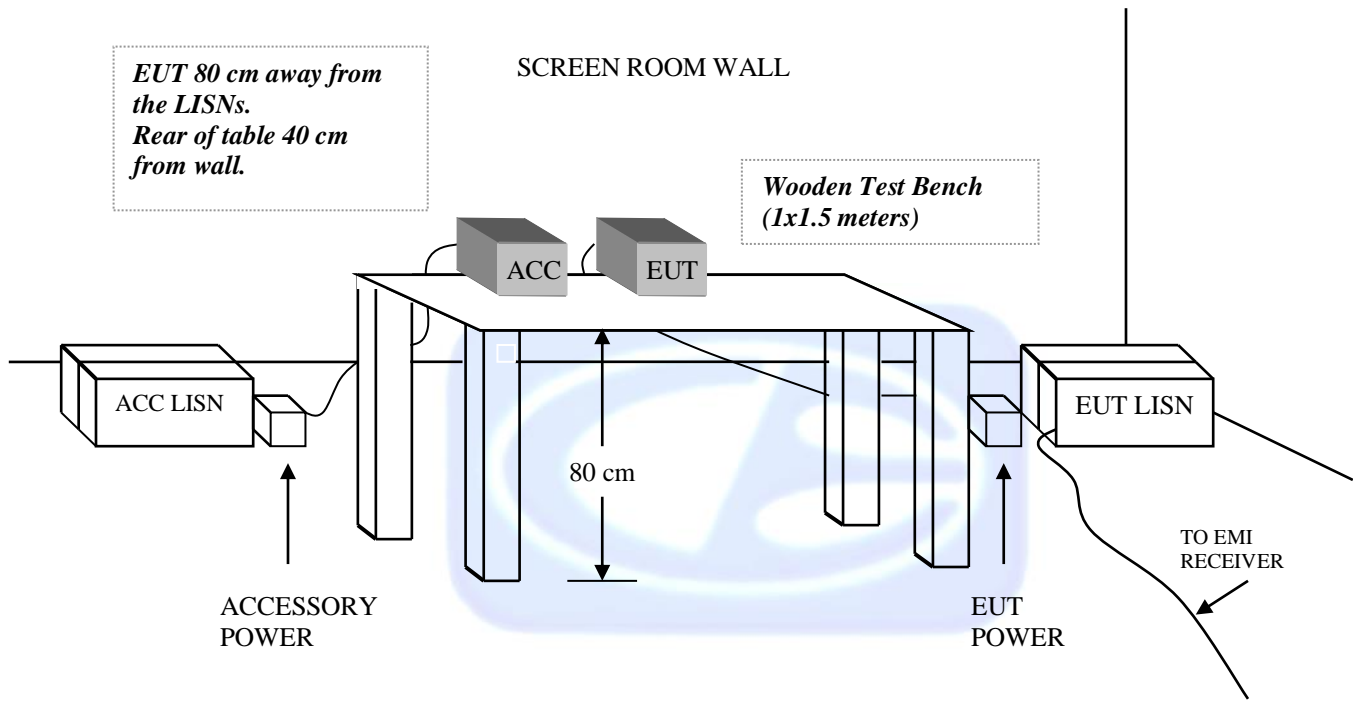
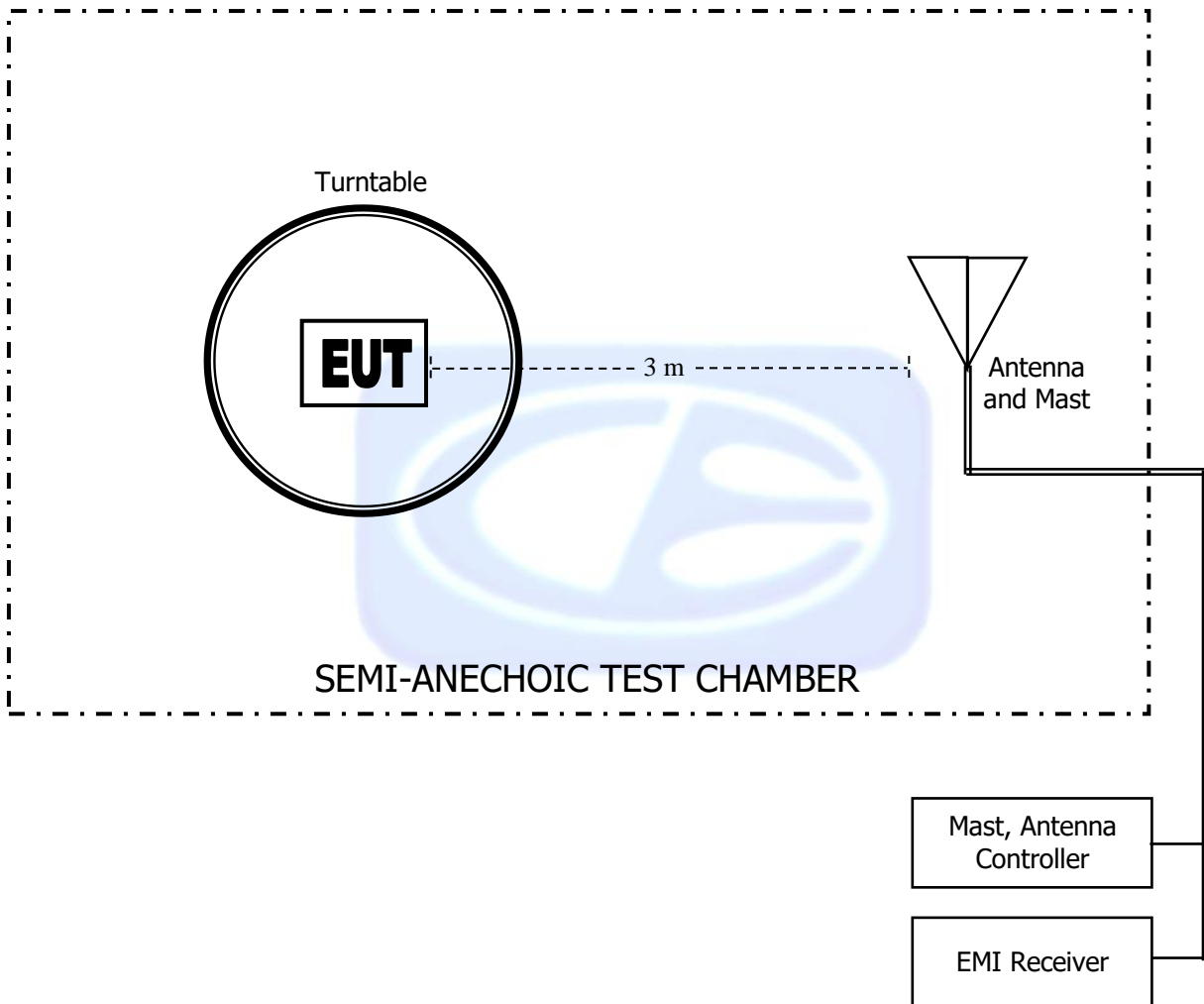


FIGURE 2: LAYOUT OF THE SEMI -ANECHOIC TEST CHAMBER



COM-POWER AL-130R**LOOP ANTENNA**

S/N: 121090

CALIBRATION DATE: FEBRUARY 5, 2019

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.01	15.6	-35.9
0.02	14.8	-36.7
0.03	15.6	-35.9
0.04	15.1	-36.4
0.05	14.4	-37.0
0.06	14.6	-36.9
0.07	14.4	-37.1
0.08	14.3	-37.1
0.09	14.5	-36.9
0.10	14.1	-37.3
0.20	14.1	-37.3
0.30	14.0	-37.4
0.40	14.0	-37.4
0.50	14.2	-37.2
0.60	14.2	-37.2
0.70	14.2	-37.2
0.80	14.2	-37.3
0.90	14.3	-37.2
1.00	14.5	-37.0
2.00	14.5	-36.9
3.00	14.5	-36.9
4.00	14.7	-36.8
5.00	14.6	-36.9
6.00	14.6	-36.9
7.00	14.6	-36.9
8.00	14.6	-36.9
9.00	14.6	-36.9
10.00	14.8	-36.6
11.00	14.9	-36.6
12.00	14.8	-36.6
13.00	14.8	-36.7
14.00	14.6	-36.8
15.00	14.5	-36.9
16.00	14.5	-37.0
17.00	14.6	-36.9
18.00	14.7	-36.7
19.00	14.8	-36.6
20.00	14.9	-36.6
21.00	14.6	-36.8
22.00	14.2	-37.2
23.00	13.7	-37.7
24.00	13.3	-38.2
25.00	13.0	-38.5
26.00	12.9	-38.6
27.00	13.0	-38.5
28.00	13.1	-38.4
29.00	13.1	-38.4
30.00	12.9	-38.5

COM-POWER AC-220**COMBILOG ANTENNA**

S/N: 61093

CALIBRATION DATE: JUNE 5, 2019

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	22.10	200	15.30
35	20.90	250	16.80
40	20.10	300	19.00
45	19.40	350	19.60
50	18.40	400	21.70
60	15.10	450	21.60
70	12.00	500	22.20
80	11.60	550	22.70
90	13.50	600	24.20
100	14.70	650	24.40
120	15.90	700	24.50
125	15.90	750	25.40
140	14.80	800	26.30
150	15.50	850	26.70
160	19.80	900	27.50
175	15.20	950	27.80
180	14.90	1000	27.90

COM POWER AH-118**HORN ANTENNA**

S/N: 071175

CALIBRATION DATE: FEBRUARY 22, 2018

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	23.71	10.0	40.08
1.5	25.46	10.5	40.75
2.0	29.26	11.0	41.78
2.5	27.95	11.5	41.02
3.0	29.03	12.0	40.32
3.5	29.70	12.5	40.96
4.0	30.71	13.0	40.29
4.5	31.62	13.5	39.48
5.0	33.23	14.0	39.89
5.5	35.07	14.5	42.75
6.0	34.43	15.0	40.98
6.5	34.98	15.5	38.54
7.0	36.75	16.0	39.40
7.5	37.10	16.5	39.40
8.0	37.66	17.0	41.74
8.5	39.29	17.5	42.58
9.0	37.75	18.0	44.68
9.5	38.23		

COM-POWER PA-840**MICROWAVE PREAMPLIFIER**

S/N: 711013

CALIBRATION DATE: MAY 10, 2018

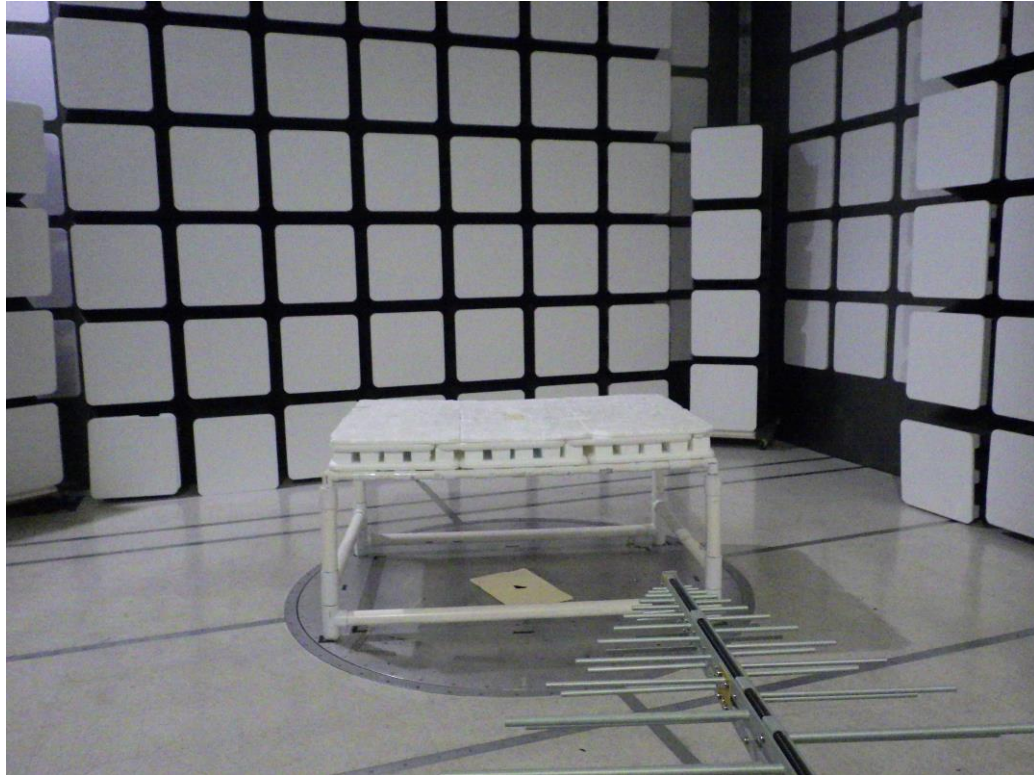
FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	26.90	31.0	24.56
19.0	24.65	31.5	25.84
20.0	25.74	32.0	26.93
21.0	24.78	32.5	27.76
22.0	24.83	33.0	25.76
23.0	24.81	33.5	26.76
24.0	25.52	34.0	26.51
25.0	24.90	34.5	27.49
26.0	25.92	35.0	27.64
26.5	26.53	35.5	27.45
27.0	26.41	36.0	25.08
27.5	24.78	36.5	25.61
28.0	25.13	37.0	24.69
28.5	29.29	37.5	24.10
29.0	28.44	38.0	24.83
29.5	27.51	38.5	24.41
30.0	27.12	39.0	24.44
30.5	26.42	39.5	22.96
		40.0	22.29

COM-POWER PA-118**PREAMPLIFIER**

S/N: 181653

CALIBRATION DATE: JANUARY 25, 2019

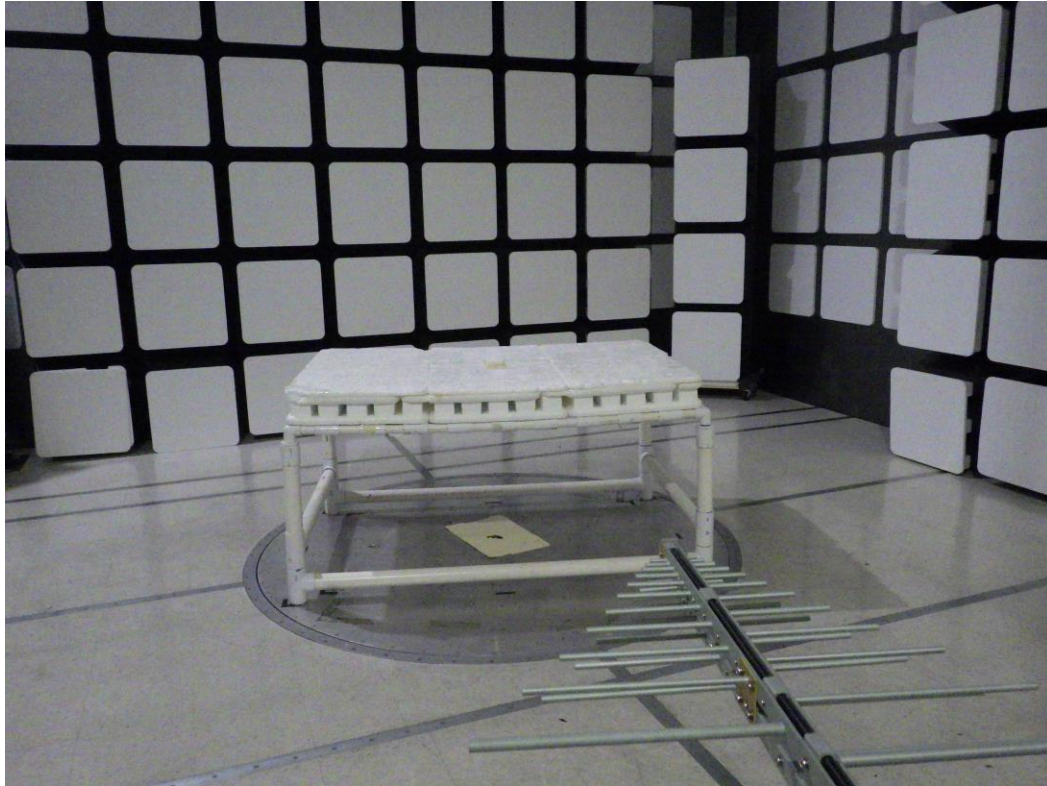
FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	40.10	6.0	40.60
1.1	40.10	6.5	39.50
1.2	40.00	7.0	39.40
1.3	39.70	7.5	39.30
1.4	39.60	8.0	39.20
1.5	39.90	8.5	40.50
1.6	40.00	9.0	39.60
1.7	39.70	9.5	39.50
1.8	39.50	10.0	38.80
1.9	39.60	11.0	38.70
2.0	39.90	12.0	42.20
2.5	40.10	13.0	40.00
3.0	40.80	14.0	40.30
3.5	40.60	15.0	40.20
4.0	40.50	16.0	41.00
4.5	41.60	17.0	39.70
5.0	39.20	18.0	40.90
5.5	40.00		



FRONT VIEW

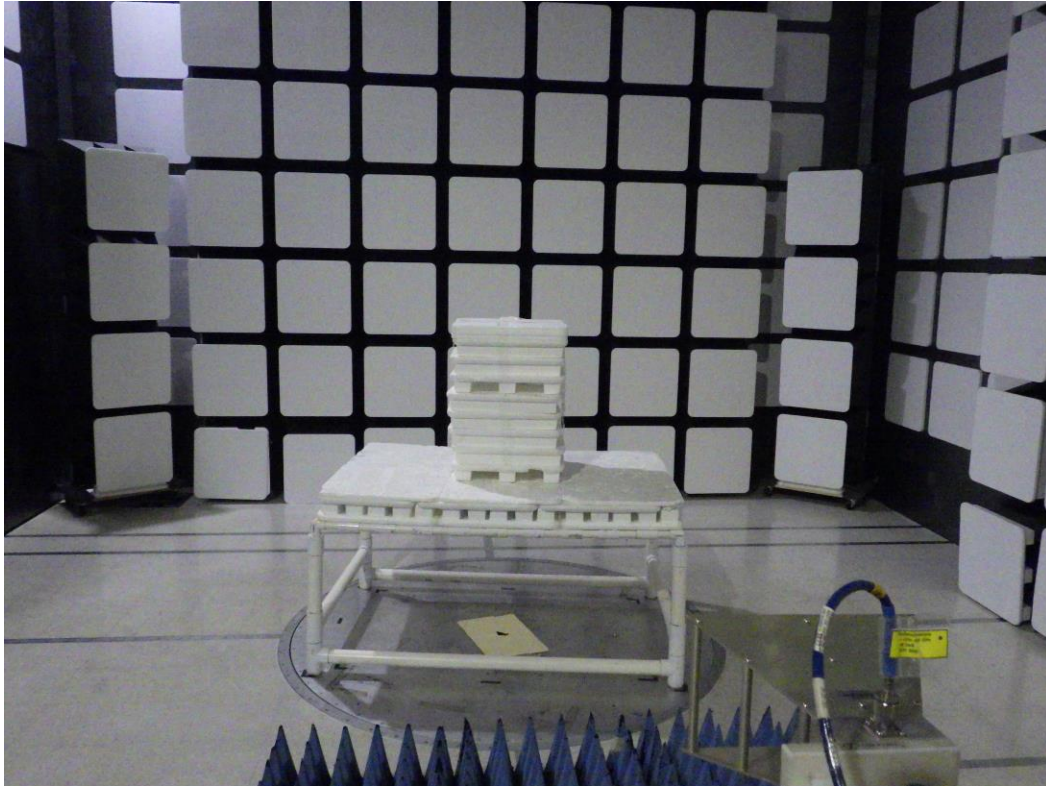
ECOLINK INTELLIGENT TECHNOLOGY
ZIGBEE 3.0 DOOR/WINDOW CONTACT SENSOR
PART NUMBER: DWZB1-ECO
FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz

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

**REAR VIEW**

ECOLINK INTELLIGENT TECHNOLOGY
ZIGBEE 3.0 DOOR/WINDOW CONTACT SENSOR
PART NUMBER: DWZB1-ECO
FCC SUBPART B AND C – RADIATED EMISSIONS – BELOW 1 GHz

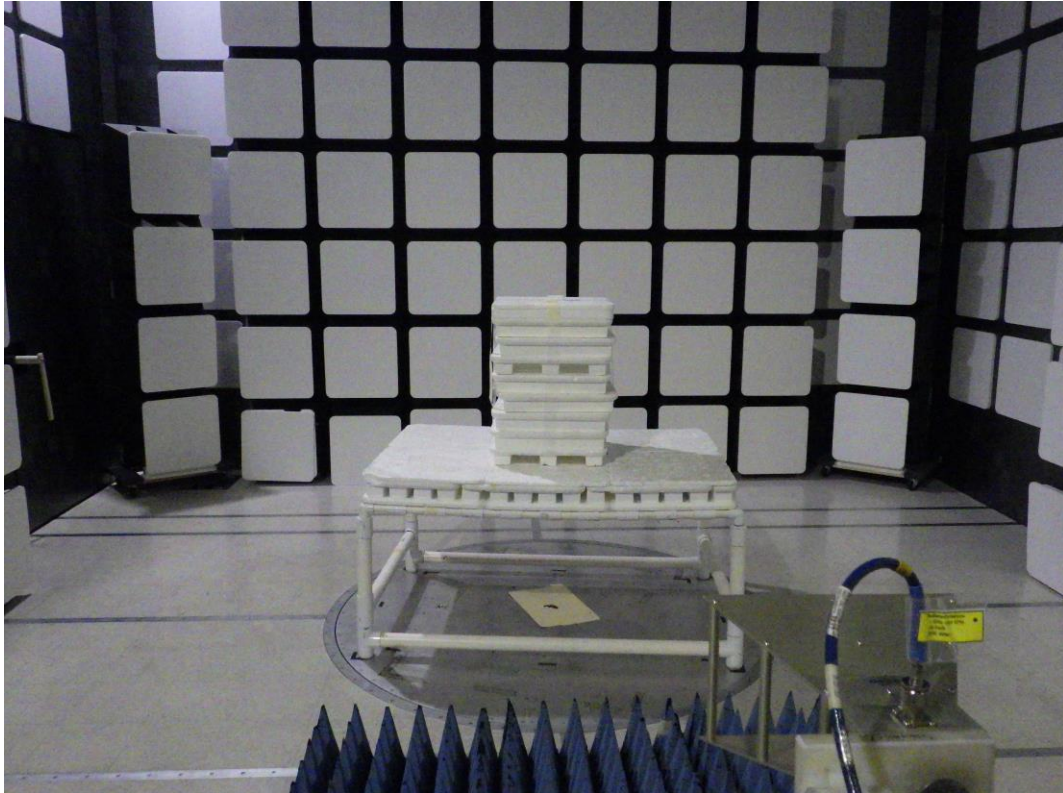
**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

**FRONT VIEW**

ECOLINK INTELLIGENT TECHNOLOGY
ZIGBEE 3.0 DOOR/WINDOW CONTACT SENSOR
PART NUMBER: DWZB1-ECO

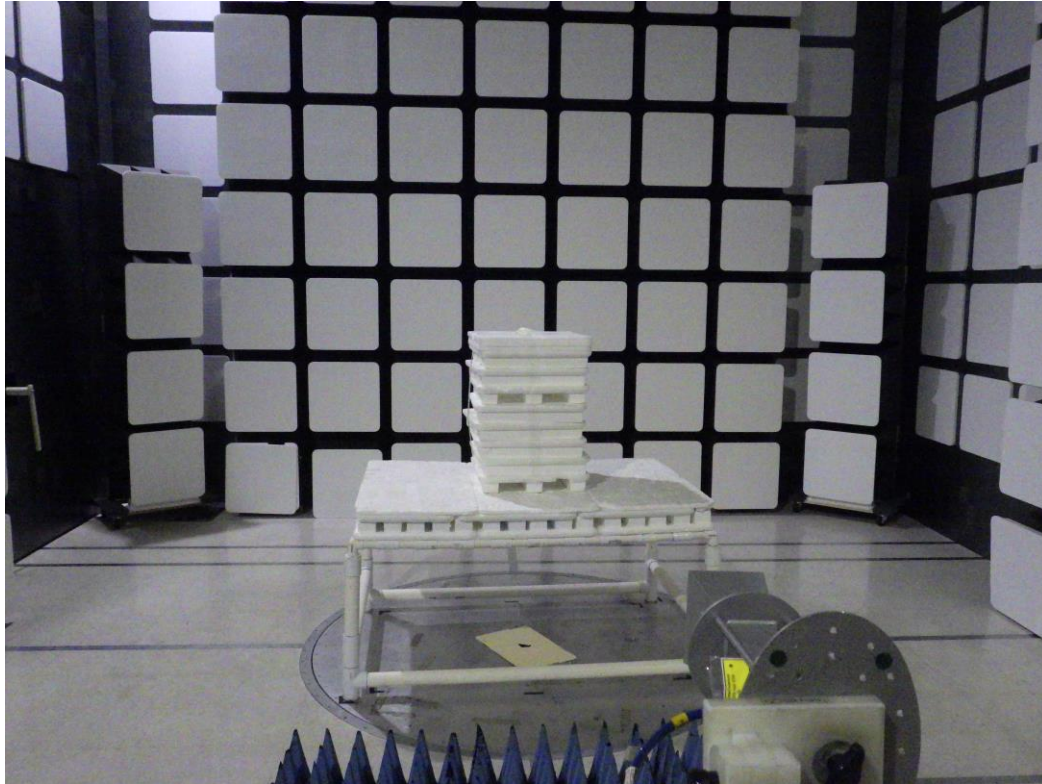
FCC SUBPART B AND C – RADIATED EMISSIONS – 1 GHz – 18 GHz

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

**REAR VIEW**

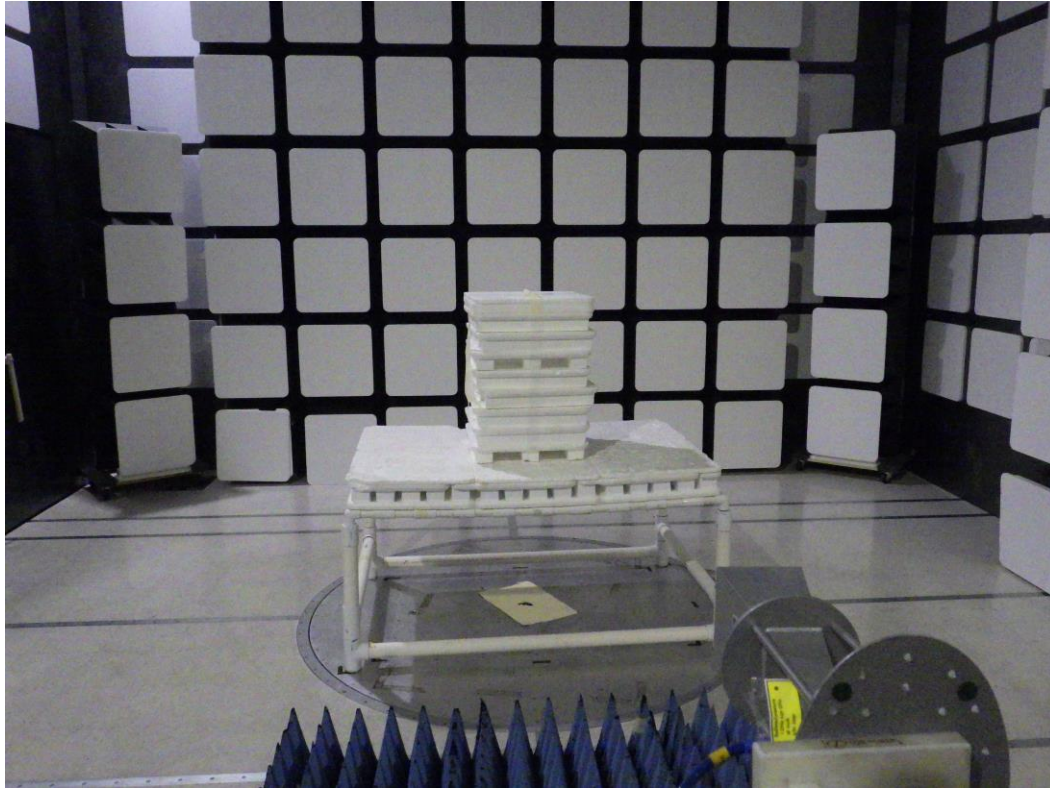
ECOLINK INTELLIGENT TECHNOLOGY
ZIGBEE 3.0 DOOR/WINDOW CONTACT SENSOR
PART NUMBER: DWZB1-ECO
FCC SUBPART B AND C – RADIATED EMISSIONS –1 GHz – 18 GHz

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

**FRONT VIEW**

ECOLINK INTELLIGENT TECHNOLOGY
ZIGBEE 3.0 DOOR/WINDOW CONTACT SENSOR
PART NUMBER: DWZB1-ECO
FCC SUBPART B AND C – RADIATED EMISSIONS – 18 GHz – 25 GHz

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

**REAR VIEW**

ECOLINK INTELLIGENT TECHNOLOGY
ZIGBEE 3.0 DOOR/WINDOW CONTACT SENSOR
PART NUMBER: DWZB1-ECO
FCC SUBPART B AND C – RADIATED EMISSIONS – 18 GHz – 25 GHz

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



APPENDIX E

DATA SHEETS

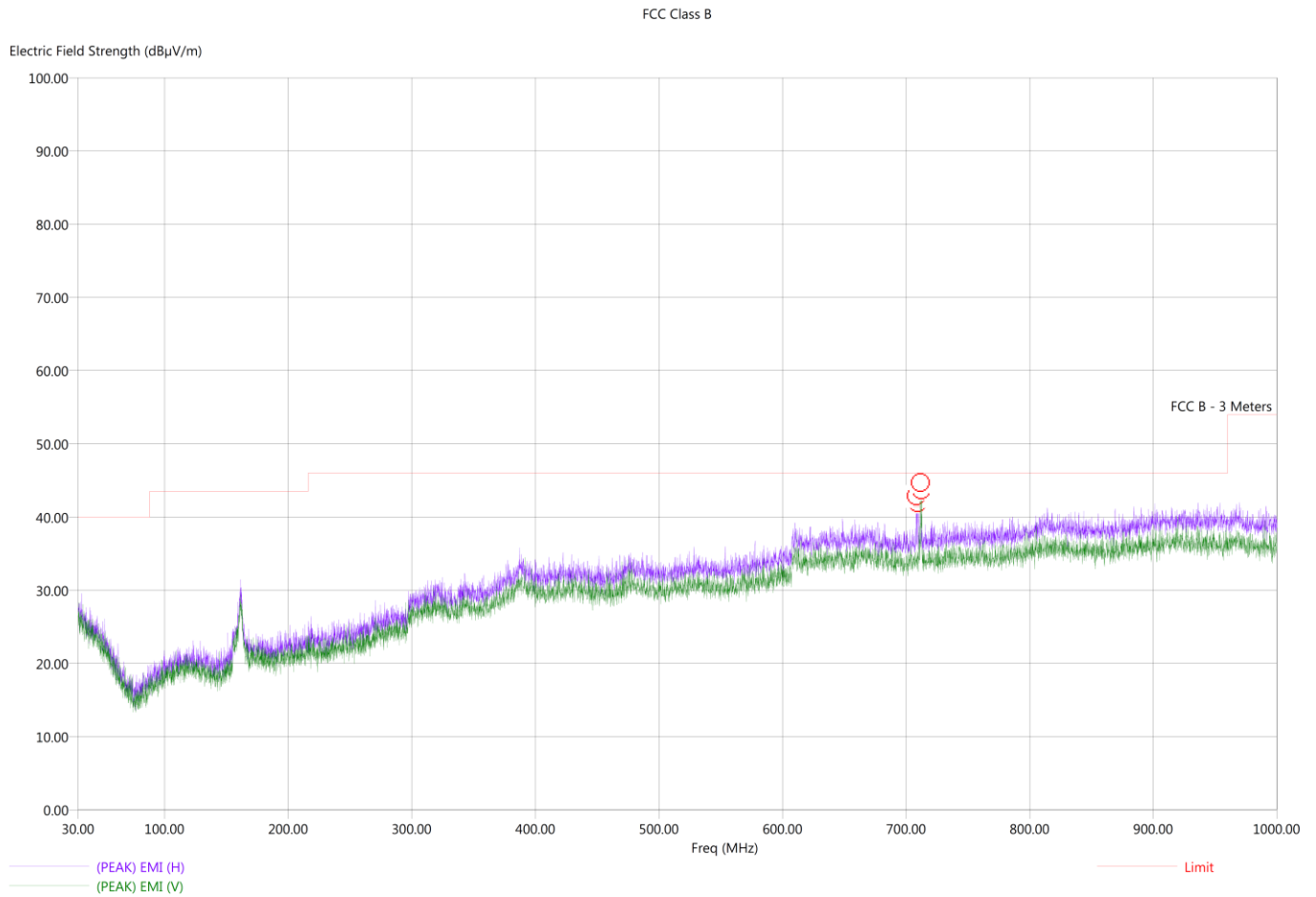


RADIATED EMISSIONS

DATA SHEETS

Title: Pre-Scan - FCC Class B
 File: 1 - Agilent - Pre-Scan - Low Ch - Z-axis - FCC Class B - 30 MHz to 1000 MHz.set
 Operator: Harvey Samaco
 EUT Type: Zigbee 3.0 Door/Window Contact Sensor
 EUT Condition: The EUT is continuously transmitting at 2405 MHz in the low channel
 Ecolink Intelligent Technology
 Model: DWZB1-ECO
 S/N: N/A
 Z-axis

12/12/2019 1:35:56 PM
 Sequence: Preliminary Scan



Title: Radiated Final - FCC Class B
 File: 1 - Agilent - Final-Scan - Low Ch - FCC Class B - 30 MHz to 1000 MHz.set
 Operator: Harvey Samaco
 EUT Type: Zigbee 3.0 Door/Window Contact Sensor
 EUT Condition: The EUT is continuously transmitting at 2405 MHz in the low channel
 Ecolink Intelligent Technology
 Model: DWZB1-ECO
 S/N: N/A
 Z-axis

12/12/2019 1:55:31 PM
 Sequence: Final Measurements

FCC Class B

Freq (MHz)	Pol	(PEAK) EMI (dBμV/m)	(QP) EMI (dBμV/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dBμV/m)	Transducer (dB)	Cable (dB)	Ttbl Aql (deg)	Twr Ht (cm)
708.20	H	39.13	34.06	-6.87	-11.94	46.00	24.70	2.53	276.75	206.74
708.80	H	39.70	34.18	-6.30	-11.82	46.00	24.70	2.54	27.50	174.86
708.90	H	46.06	37.31	0.06	-8.69	46.00	24.70	2.54	316.75	382.26
709.30	H	43.03	35.05	-2.97	-10.95	46.00	24.70	2.54	190.00	238.44
710.50	H	38.98	34.09	-7.02	-11.91	46.00	24.70	2.54	236.75	350.14
711.50	V	39.08	34.07	-6.92	-11.93	46.00	24.74	2.55	282.25	222.86
712.20	V	40.05	34.18	-5.95	-11.82	46.00	24.80	2.55	48.75	285.91
712.30	V	45.61	35.84	-0.39	-10.16	46.00	24.80	2.55	359.50	269.91





FCC 15.249

Ecolink Intelligent Technology, Inc.
 Zigbee 3.0 Door/Window Contact Sensor
 Model: DWZB1-ECO

Date: 12/11/2019
 Lab: D
 Tested By: Harvey Samaco

**Fundamental of the EUT
 2440 MHz**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2440	107.75	H	113.97	-6.22	Peak	109.75	147.22	X-Axis
2440	88.54	H	93.97	-5.43	Avg	109.75	147.22	X-Axis
2440	107.29	V	113.97	-6.68	Peak	133.00	145.19	X-Axis
2440	88.08	V	93.97	-5.89	Avg	133.00	145.19	X-Axis
2440	107.87	H	113.97	-6.10	Peak	109.25	147.58	Y-Axis
2440	88.66	H	93.97	-5.31	Avg	109.25	147.58	Y-Axis
2440	108.17	V	113.97	-5.80	Peak	209.00	119.94	Y-Axis
2440	88.96	V	93.97	-5.01	Avg	209.00	119.94	Y-Axis
2440	107.49	H	113.97	-6.48	Peak	6.75	148.89	Z-Axis
2440	88.28	H	93.97	-5.69	Avg	6.75	148.89	Z-Axis
2440	107.01	V	113.97	-6.96	Peak	224.50	116.11	Z-Axis
2440	87.80	V	93.97	-6.17	Avg	224.50	116.11	Z-Axis



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Ecolink Intelligent Technology, Inc.
 Zigbee 3.0 Door/Window Contact Sensor
 Model: DWZB1-ECO

Date: 12/11/2019
 Lab: D
 Tested By: Harvey Samaco

**Fundamental of the EUT
 2475 MHz**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2475	105.99	V	113.97	-7.98	Peak	14.75	100.00	X-Axis
2475	86.78	V	93.97	-7.19	Avg	14.75	100.00	X-Axis
2475	107.75	H	113.97	-6.22	Peak	274.75	192.41	X-Axis
2475	88.54	H	93.97	-5.43	Avg	274.75	192.41	X-Axis
2475	107.74	V	113.97	-6.23	Peak	192.00	136.71	Y-Axis
2475	88.53	V	93.97	-5.44	Avg	192.00	136.71	Y-Axis
2475	107.31	H	113.97	-6.66	Peak	276.25	192.95	Y-Axis
2475	88.10	H	93.97	-5.87	Avg	276.25	192.95	Y-Axis
2475	107.37	V	113.97	-6.60	Peak	29.50	149.73	Z-Axis
2475	88.16	V	93.97	-5.81	Avg	29.50	149.73	Z-Axis
2475	106.37	H	113.97	-7.60	Peak	59.75	137.55	Z-Axis
2475	87.16	H	93.97	-6.81	Avg	59.75	137.55	Z-Axis

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Ecolink Intelligent Technology, Inc.
 Zigbee 3.0 Door/Window Contact Sensor
 Model: DWZB1-ECO

Date: 12/11/2019
 Lab: D
 Tested By: Harvey Samaco

**Harmonics - Low Channel
 X-Axis**

Freq. (MHz)	Level (dBUV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4810	51.71	V	73.97	-22.26	Peak	93.25	100.00	
4810	32.50	V	53.97	-21.47	Avg	93.25	100.00	
7215	57.78	V	73.97	-16.19	Peak	182.25	127.76	
7215	38.57	V	53.97	-15.40	Avg	182.25	127.76	
9620								No emissions detected
9620								
12025								No emissions detected
12025								
14430								No emissions detected
14430								
16835								No emissions detected
16835								
19240								No emissions detected
19240								
21645								No emissions detected
21645								
24050								No emissions detected
24050								

FCC 15.249

Ecolink Intelligent Technology, Inc.
 Zigbee 3.0 Door/Window Contact Sensor
 Model: DWZB1-ECO

Date: 12/11/2019
 Lab: D
 Tested By: Harvey Samaco

**Harmonics - Low Channel
 Y-Axis**

Freq. (MHz)	Level (dBUV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4810	54.04	V	73.97	-19.93	Peak	323.00	145.73	
4810	34.83	V	53.97	-19.14	Avg	323.00	145.73	
7215	58.92	V	73.97	-15.05	Peak	85.50	100.00	
7215	39.71	V	53.97	-14.26	Avg	85.50	100.00	
9620								No emissions detected
9620								
12025								No emissions detected
12025								
14430								No emissions detected
14430								
16835								No emissions detected
16835								
19240								No emissions detected
19240								
21645								No emissions detected
21645								
24050								No emissions detected
24050								



FCC 15.249

Ecolink Intelligent Technology, Inc.
Zigbee 3.0 Door/Window Contact Sensor
Model: DWZB1-ECO

Date: 12/11/2019
Lab: D
Tested By: Harvey Samaco

Harmonics - Low Channel
Z-Axis

Freq. (MHz)	Level (dBUV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4810	52.90	V	73.97	-21.07	Peak	289.00	250.00	
4810	33.69	V	53.97	-20.28	Avg	289.00	250.00	
7215	58.30	V	73.97	-15.67	Peak	334.75	100.00	
7215	39.09	V	53.97	-14.88	Avg	334.75	100.00	
9620								No emissions detected
9620								
12025								No emissions detected
12025								
14430								No emissions detected
14430								
16835								No emissions detected
16835								
19240								No emissions detected
19240								
21645								No emissions detected
21645								
24050								No emissions detected
24050								



FCC 15.249

Ecolink Intelligent Technology, Inc.
 Zigbee 3.0 Door/Window Contact Sensor
 Model: DWZB1-ECO

Date: 12/11/2019
 Lab: D
 Tested By: Harvey Samaco

**Harmonics - Low Channel
 X-Axis**

Freq. (MHz)	Level (dBUV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4810	54.04	H	73.97	-19.94	Peak	212.25	156.77	
4810	34.83	H	53.97	-19.15	Avg	212.25	156.77	
7215	58.96	H	73.97	-15.01	Peak	139.75	114.32	
7215	39.75	H	53.97	-14.22	Avg	139.75	114.32	
9620								No emissions detected
9620								
12025								No emissions detected
12025								
14430								No emissions detected
14430								
16835								No emissions detected
16835								
19240								No emissions detected
19240								
21645								No emissions detected
21645								
24050								No emissions detected
24050								



FCC 15.249

Ecolink Intelligent Technology, Inc.
 Zigbee 3.0 Door/Window Contact Sensor
 Model: DWZB1-ECO

Date: 12/11/2019
 Lab: D
 Tested By: Harvey Samaco

**Harmonics - Low Channel
 Y-Axis**

Freq. (MHz)	Level (dBUV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4810	51.41	H	73.97	-22.56	Peak	0.00	197.07	
4810	32.20	H	53.97	-21.77	Avg	0.00	197.07	
7215	57.96	H	73.97	-16.01	Peak	135.75	100.00	
7215	38.75	H	53.97	-15.22	Avg	135.75	100.00	
9620								No emissions detected
9620								
12025								No emissions detected
12025								
14430								No emissions detected
14430								
16835								No emissions detected
16835								
19240								No emissions detected
19240								
21645								No emissions detected
21645								
24050								No emissions detected
24050								



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Ecolink Intelligent Technology, Inc.
 Zigbee 3.0 Door/Window Contact Sensor
 Model: DWZB1-ECO

Date: 12/11/2019
 Lab: D
 Tested By: Harvey Samaco

**Harmonics - Low Channel
 Z-Axis**

Freq. (MHz)	Level (dBUV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4810	53.43	H	73.97	-20.54	Peak	297.50	179.22	
4810	34.22	H	53.97	-19.75	Avg	297.50	179.22	
7215	57.61	H	73.97	-16.36	Peak	301.50	100.00	
7215	38.40	H	53.97	-15.57	Avg	301.50	100.00	
9620								No emissions detected
9620								
12025								No emissions detected
12025								
14430								No emissions detected
14430								
16835								No emissions detected
16835								
19240								No emissions detected
19240								
21645								No emissions detected
21645								
24050								No emissions detected
24050								



FCC 15.249

Ecolink Intelligent Technology, Inc.
 Zigbee 3.0 Door/Window Contact Sensor
 Model: DWZB1-ECO

Date: 12/11/2019
 Lab: D
 Tested By: Harvey Samaco

**Harmonics - Middle Channel
 X-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4880	55.85	V	73.97	-18.12	Peak	177.00	181.49	
4880	36.64	V	53.97	-17.33	Avg	177.00	181.49	
7320	57.86	V	73.97	-16.11	Peak	182.25	163.34	
7320	38.65	V	53.97	-15.32	Avg	182.25	163.34	
9760	54.25	V	73.97	-19.72	Peak	136.00	100.00	
9760	35.04	V	53.97	-18.93	Avg	136.00	100.00	
12200								No emissions detected
12200								
14640								No emissions detected
14640								
17080								No emissions detected
17080								
19520								No emissions detected
19520								
21960								No emissions detected
21960								
24400								No emissions detected
24400								



FCC 15.249

Ecolink Intelligent Technology, Inc.
 Zigbee 3.0 Door/Window Contact Sensor
 Model: DWZB1-ECO

Date: 12/11/2019
 Lab: D
 Tested By: Harvey Samaco

**Harmonics - Middle Channel
 Y-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4880	54.08	V	73.97	-19.90	Peak	347.25	100.00	
4880	34.87	V	53.97	-19.11	Avg	347.25	100.00	
7320	47.91	V	73.97	-26.06	Peak	123.75	100.00	
7320	28.70	V	53.97	-25.27	Avg	123.75	100.00	
9760	52.75	V	73.97	-21.22	Peak	180.75	100.00	
9760	33.54	V	53.97	-20.43	Avg	180.75	100.00	
12200								No emissions detected
12200								detected
14640								No emissions detected
14640								detected
17080								No emissions detected
17080								detected
19520								No emissions detected
19520								detected
21960								No emissions detected
21960								detected
24400								No emissions detected
24400								detected



FCC 15.249

Ecolink Intelligent Technology, Inc.
Zigbee 3.0 Door/Window Contact Sensor
Model: DWZB1-ECO

Date: 12/11/2019
Lab: D
Tested By: Harvey Samaco

**Harmonics - Middle Channel
Z-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4880	53.87	V	73.97	-20.10	Peak	302.50	174.08	
4880	34.66	V	53.97	-19.31	Avg	302.50	174.08	
7320	49.06	V	73.97	-24.91	Peak	265.00	100.00	
7320	29.85	V	53.97	-24.12	Avg	265.00	100.00	
9760	54.44	V	73.97	-19.53	Peak	240.25	100.00	
9760	35.23	V	53.97	-18.74	Avg	240.25	100.00	
12200								No emissions detected
12200								detected
14640								No emissions detected
14640								detected
17080								No emissions detected
17080								detected
19520								No emissions detected
19520								detected
21960								No emissions detected
21960								detected
24400								No emissions detected
24400								detected



FCC 15.249

Ecolink Intelligent Technology, Inc.
 Zigbee 3.0 Door/Window Contact Sensor
 Model: DWZB1-ECO

Date: 12/11/2019
 Lab: D
 Tested By: Harvey Samaco

**Harmonics - Middle Channel
 X-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4880	55.44	H	73.97	-18.53	Peak	135.50	132.35	
4880	36.23	H	53.97	-17.74	Avg	135.50	132.35	
7320	57.04	H	73.97	-16.93	Peak	149.50	100.00	
7320	37.83	H	53.97	-16.14	Avg	149.50	100.00	
9760	54.94	H	73.97	-19.03	Peak	202.75	100.00	
9760	35.73	H	53.97	-18.24	Avg	202.75	100.00	
12200								No emissions detected
12200								
14640								No emissions detected
14640								
17080								No emissions detected
17080								
19520								No emissions detected
19520								
21960								No emissions detected
21960								
24400								No emissions detected
24400								



FCC 15.249

Ecolink Intelligent Technology, Inc.
 Zigbee 3.0 Door/Window Contact Sensor
 Model: DWZB1-ECO

Date: 12/11/2019
 Lab: D
 Tested By: Harvey Samaco

**Harmonics - Middle Channel
 Y-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4880	55.23	H	73.97	-18.74	Peak	172.00	100.00	
4880	36.02	H	53.97	-17.95	Avg	172.00	100.00	
7320	47.15	H	73.97	-26.82	Peak	12.50	100.00	
7320	27.94	H	53.97	-26.03	Avg	12.50	100.00	
9760	54.22	H	73.97	-19.75	Peak	154.50	100.00	
9760	35.01	H	53.97	-18.96	Avg	154.50	100.00	
12200								No emissions detected
12200								detected
14640								No emissions detected
14640								detected
17080								No emissions detected
17080								detected
19520								No emissions detected
19520								detected
21960								No emissions detected
21960								detected
24400								No emissions detected
24400								detected



FCC 15.249

Ecolink Intelligent Technology, Inc.
 Zigbee 3.0 Door/Window Contact Sensor
 Model: DWZB1-ECO

Date: 12/11/2019
 Lab: D
 Tested By: Harvey Samaco

**Harmonics - Middle Channel
 Z-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4880	55.52	H	73.97	-18.45	Peak	217.25	163.16	
4880	36.31	H	53.97	-17.66	Avg	217.25	163.16	
7320	49.73	H	73.97	-24.24	Peak	232.75	100.00	
7320	30.52	H	53.97	-23.45	Avg	232.75	100.00	
9760	49.92	H	73.97	-24.05	Peak	233.00	100.00	
9760	30.71	H	53.97	-23.26	Avg	233.00	100.00	
12200								No emissions detected
12200								
14640								No emissions detected
14640								
17080								No emissions detected
17080								
19520								No emissions detected
19520								
21960								No emissions detected
21960								
24400								No emissions detected
24400								



FCC 15.249

Ecolink Intelligent Technology, Inc.
Zigbee 3.0 Door/Window Contact Sensor
Model: DWZB1-ECO

Date: 12/11/2019
Lab: D
Tested By: Harvey Samaco

**Harmonics - High Channel
X-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4950	55.28	V	73.97	-18.69	Peak	184.75	155.28	
4950	36.07	V	53.97	-17.90	Avg	184.75	155.28	
7425	49.74	V	73.97	-24.23	Peak	168.00	100.00	
7425	30.53	V	53.97	-23.44	Avg	168.00	100.00	
9900	52.45	V	73.97	-21.52	Peak	155.25	100.00	
9900	33.24	V	53.97	-20.73	Avg	155.25	100.00	
12375								No emissions detected
12375								
14850								No emissions detected
14850								
17325								No emissions detected
17325								
19800								No emissions detected
19800								
22275								No emissions detected
22275								
24750								No emissions detected
24750								



FCC 15.249

Ecolink Intelligent Technology, Inc.
 Zigbee 3.0 Door/Window Contact Sensor
 Model: DWZB1-ECO

Date: 12/11/2019
 Lab: D
 Tested By: Harvey Samaco

**Harmonics - High Channel
 Y-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4950	53.61	V	73.97	-20.36	Peak	28.25	100.00	
4950	34.40	V	53.97	-19.57	Avg	28.25	100.00	
7425	48.50	V	73.97	-25.47	Peak	17.25	100.00	
7425	29.29	V	53.97	-24.68	Avg	17.25	100.00	
9900	50.54	V	73.97	-23.43	Peak	210.50	100.00	
9900	31.33	V	53.97	-22.64	Avg	210.50	100.00	
12375								No emissions detected
12375								
14850								No emissions detected
14850								
17325								No emissions detected
17325								
19800								No emissions detected
19800								
22275								No emissions detected
22275								
24750								No emissions detected
24750								



FCC 15.249

Ecolink Intelligent Technology, Inc.
 Zigbee 3.0 Door/Window Contact Sensor
 Model: DWZB1-ECO

Date: 12/11/2019
 Lab: D
 Tested By: Harvey Samaco

**Harmonics - High Channel
 Z-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4950	52.76	V	73.97	-21.21	Peak	271.25	188.11	
4950	33.55	V	53.97	-20.42	Avg	271.25	188.11	
7425	49.76	V	73.97	-24.21	Peak	259.25	202.20	
7425	30.55	V	53.97	-23.42	Avg	259.25	202.20	
9900	52.91	V	73.97	-21.06	Peak	268.75	100.00	
9900	33.70	V	53.97	-20.27	Avg	268.75	100.00	
12375								No emissions detected
12375								
14850								No emissions detected
14850								
17325								No emissions detected
17325								
19800								No emissions detected
19800								
22275								No emissions detected
22275								
24750								No emissions detected
24750								



FCC 15.249

Ecolink Intelligent Technology, Inc.
Zigbee 3.0 Door/Window Contact Sensor
Model: DWZB1-ECO

Date: 12/11/2019
Lab: D
Tested By: Harvey Samaco

**Harmonics - High Channel
X-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4950	57.04	H	73.97	-16.93	Peak	119.25	148.77	
4950	37.83	H	53.97	-16.14	Avg	119.25	148.77	
7425	48.96	H	73.97	-25.01	Peak	153.75	100.00	
7425	29.75	H	53.97	-24.22	Avg	153.75	100.00	
9900	53.25	H	73.97	-20.72	Peak	0.00	116.11	
9900	34.04	H	53.97	-19.93	Avg	0.00	116.11	
12375								No emissions detected
12375								
14850								No emissions detected
14850								
17325								No emissions detected
17325								
19800								No emissions detected
19800								
22275								No emissions detected
22275								
24750								No emissions detected
24750								



FCC 15.249

Ecolink Intelligent Technology, Inc.
 Zigbee 3.0 Door/Window Contact Sensor
 Model: DWZB1-ECO

Date: 12/11/2019
 Lab: D
 Tested By: Harvey Samaco

**Harmonics - High Channel
 Y-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4950	54.40	H	73.97	-19.57	Peak	155.00	100.00	
4950	35.19	H	53.97	-18.78	Avg	155.00	100.00	
7425	47.01	H	73.97	-26.96	Peak	0.00	100.00	
7425	27.80	H	53.97	-26.17	Avg	0.00	100.00	
9900	52.46	H	73.97	-21.51	Peak	159.25	100.00	
9900	33.25	H	53.97	-20.72	Avg	159.25	100.00	
12375								No emissions detected
12375								
14850								No emissions detected
14850								
17325								No emissions detected
17325								
19800								No emissions detected
19800								
22275								No emissions detected
22275								
24750								No emissions detected
24750								



FCC 15.249

Ecolink Intelligent Technology, Inc.
 Zigbee 3.0 Door/Window Contact Sensor
 Model: DWZB1-ECO

Date: 12/11/2019
 Lab: D
 Tested By: Harvey Samaco

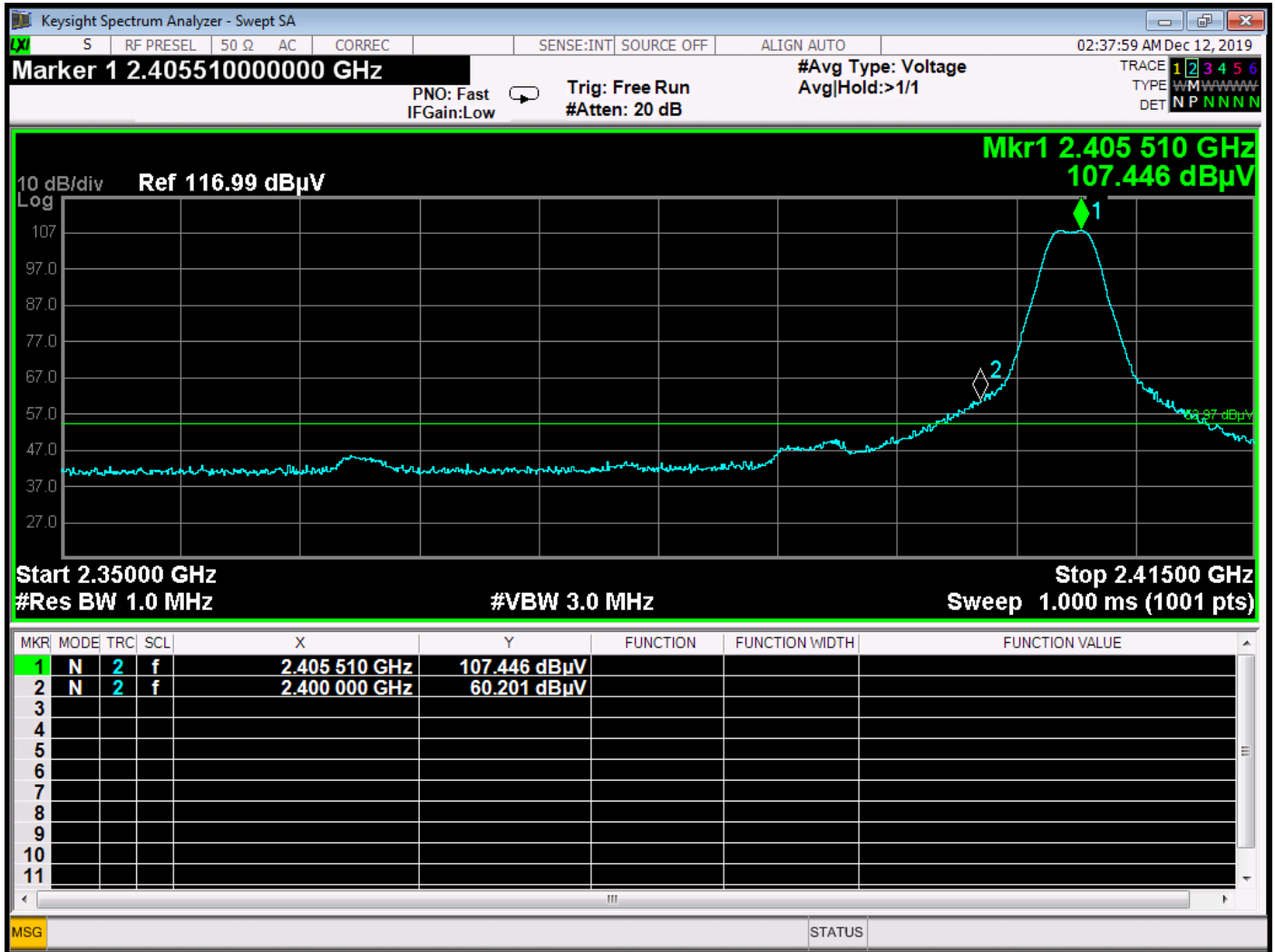
**Harmonics - High Channel
 Z-Axis**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4950	55.04	H	73.97	-18.93	Peak	208.00	156.47	
4950	35.83	H	53.97	-18.14	Avg	208.00	156.47	
7425	49.66	H	73.97	-24.31	Peak	244.00	100.00	
7425	30.45	H	53.97	-23.52	Avg	244.00	100.00	
9900	53.32	H	73.97	-20.65	Peak	295.25	100.00	
9900	34.11	H	53.97	-19.86	Avg	295.25	100.00	
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12375								
14850								No emissions detected
14850								
17325								No emissions detected
17325								
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24750								



BAND EDGES

DATA SHEETS

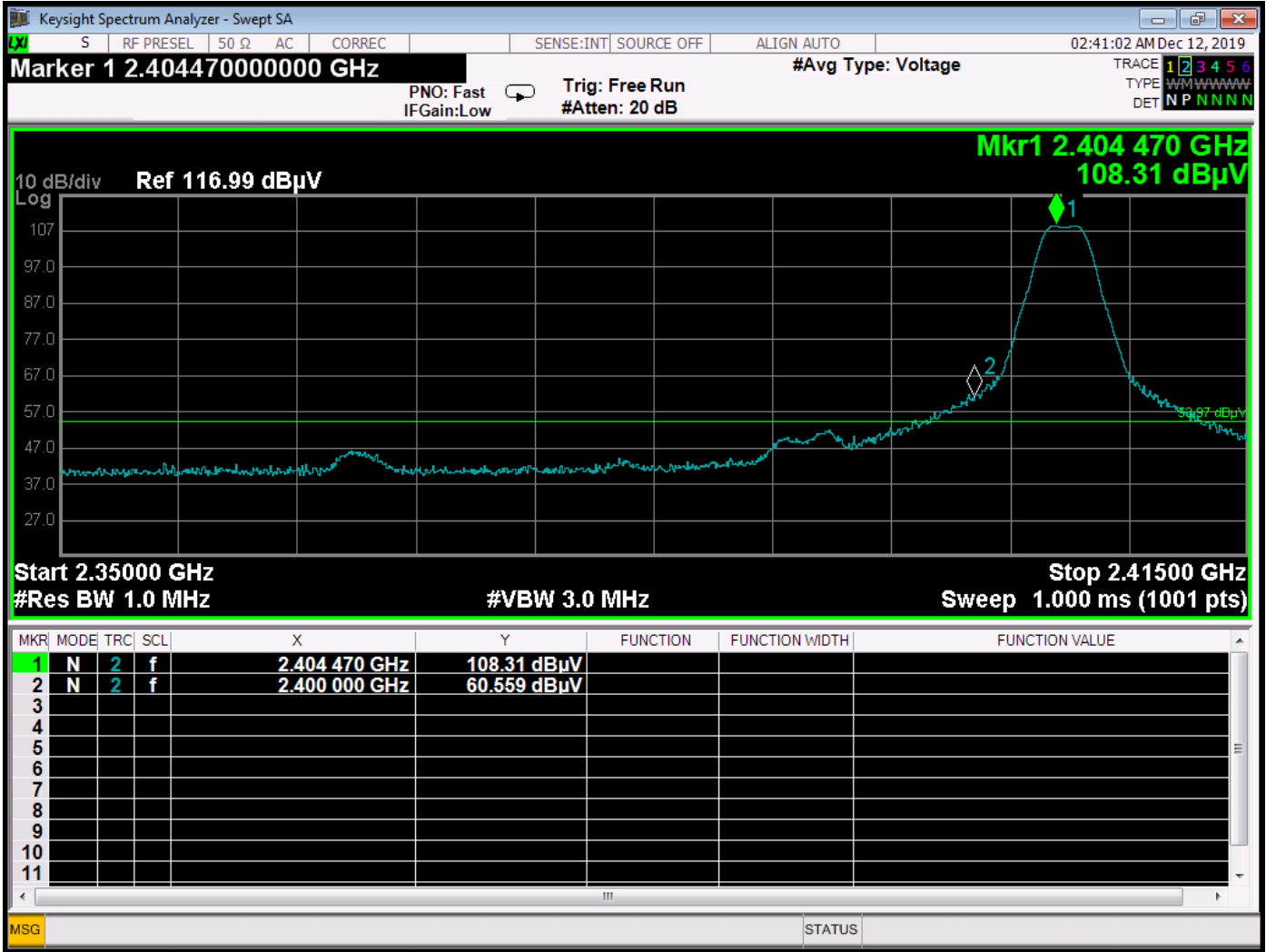


Low Band Edge – Horizontal – X-Axis

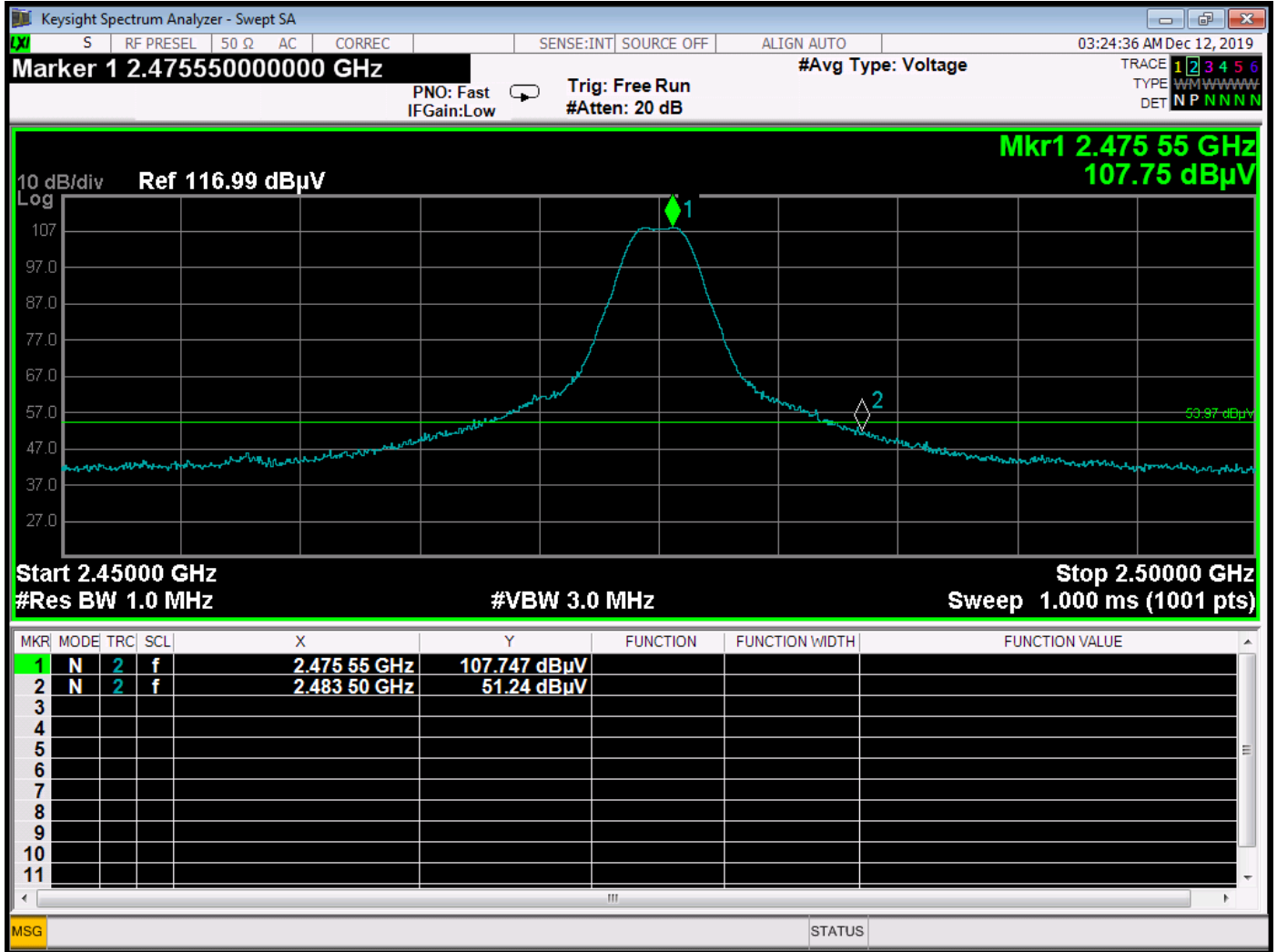
Brea Division
 114 Olinda Drive
 Brea, CA 92823
 (714) 579-0500

Newbury Park Division
 1050 Lawrence Drive
 Newbury Park, CA 91320
 (805) 480-4044

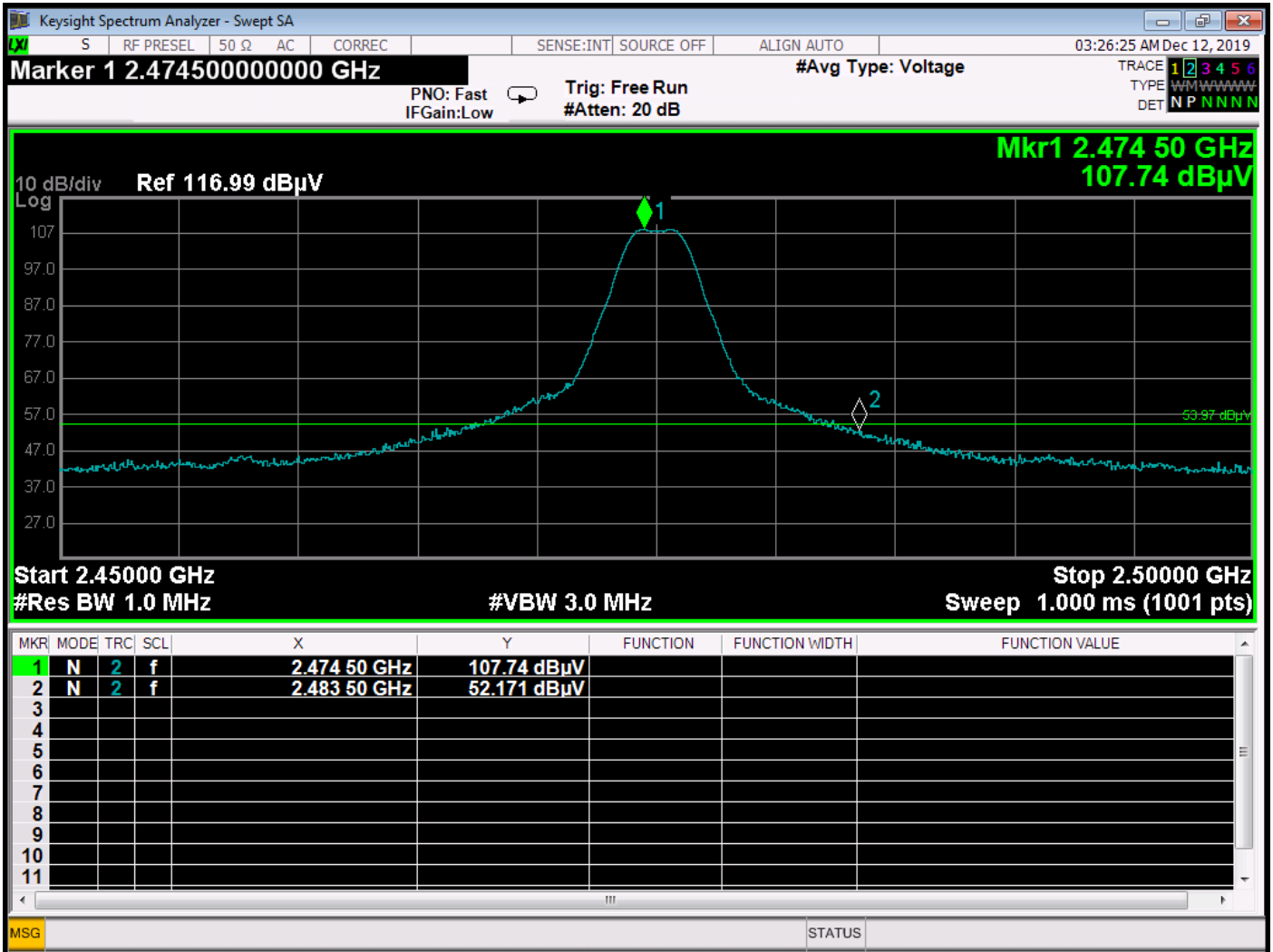
Lake Forest Division
 20621 Pascal Way
 Lake Forest, CA 92630
 (949) 587-0400



Low Band Edge – Vertical – Y-Axis



High Band Edge – Horizontal – X-Axis



High Band Edge – Vertical – Y-Axis

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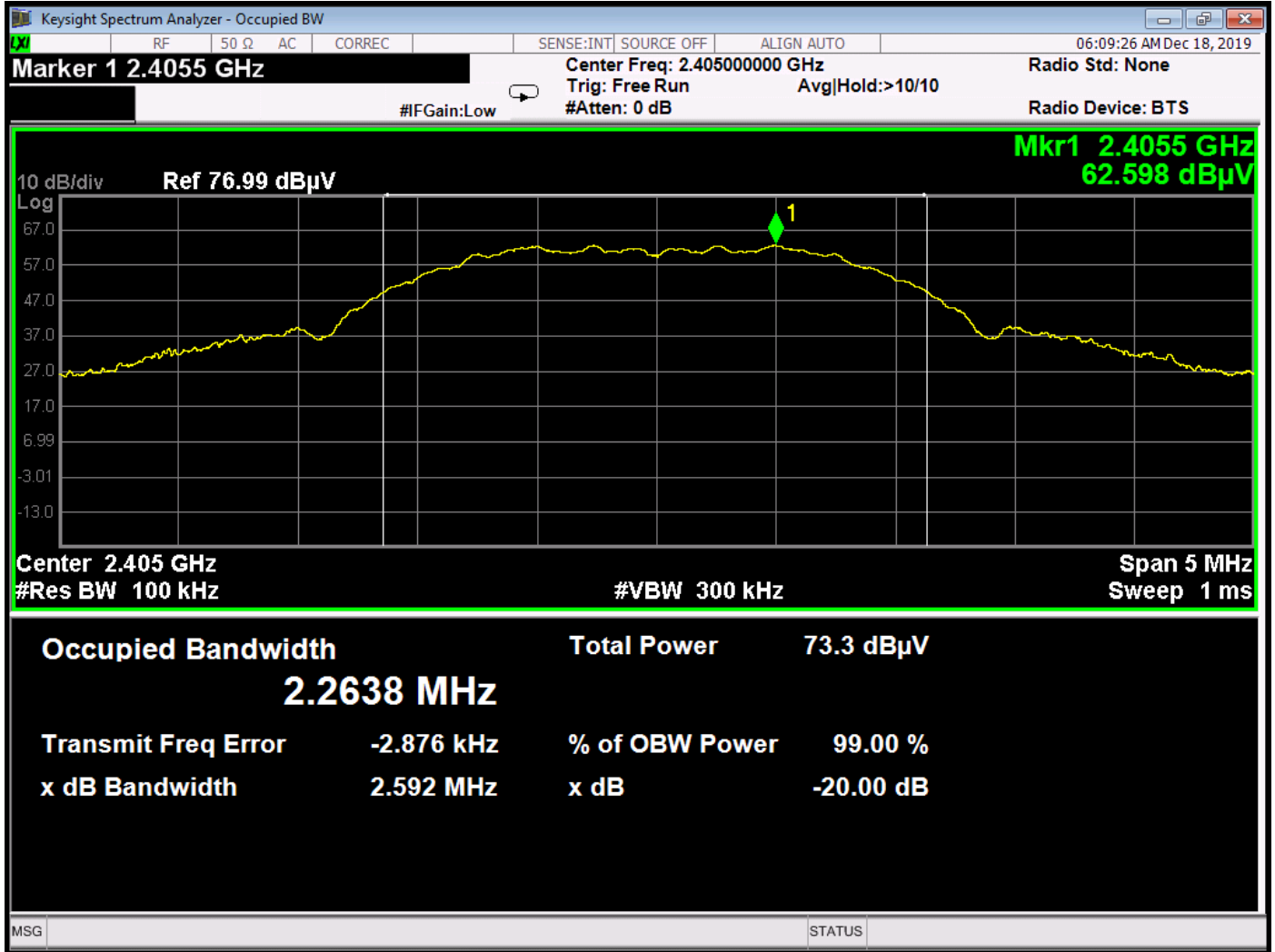


***99 % BANDWIDTH
DATA SHEETS***

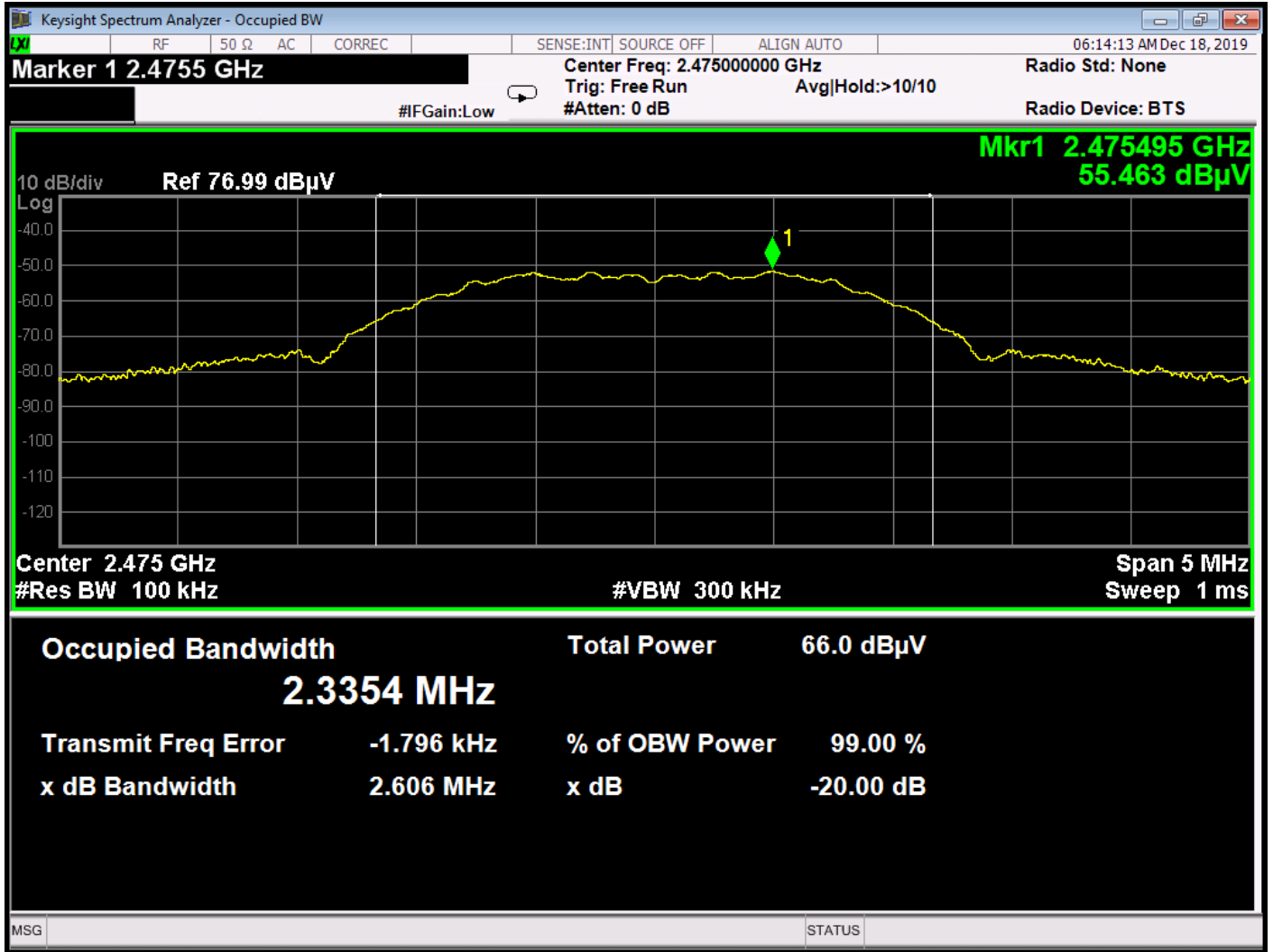
**Brea Division
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Brea, CA 92823
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99 Percent BW – 2405.00 MHz – Low channel – Total Power

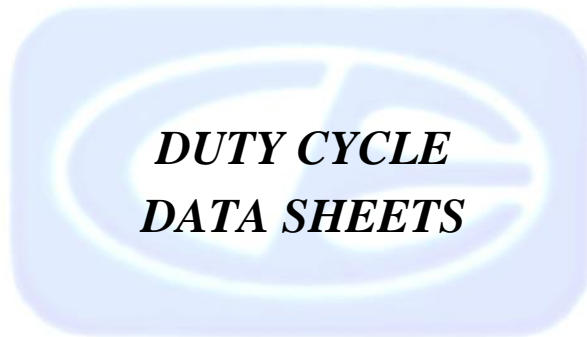


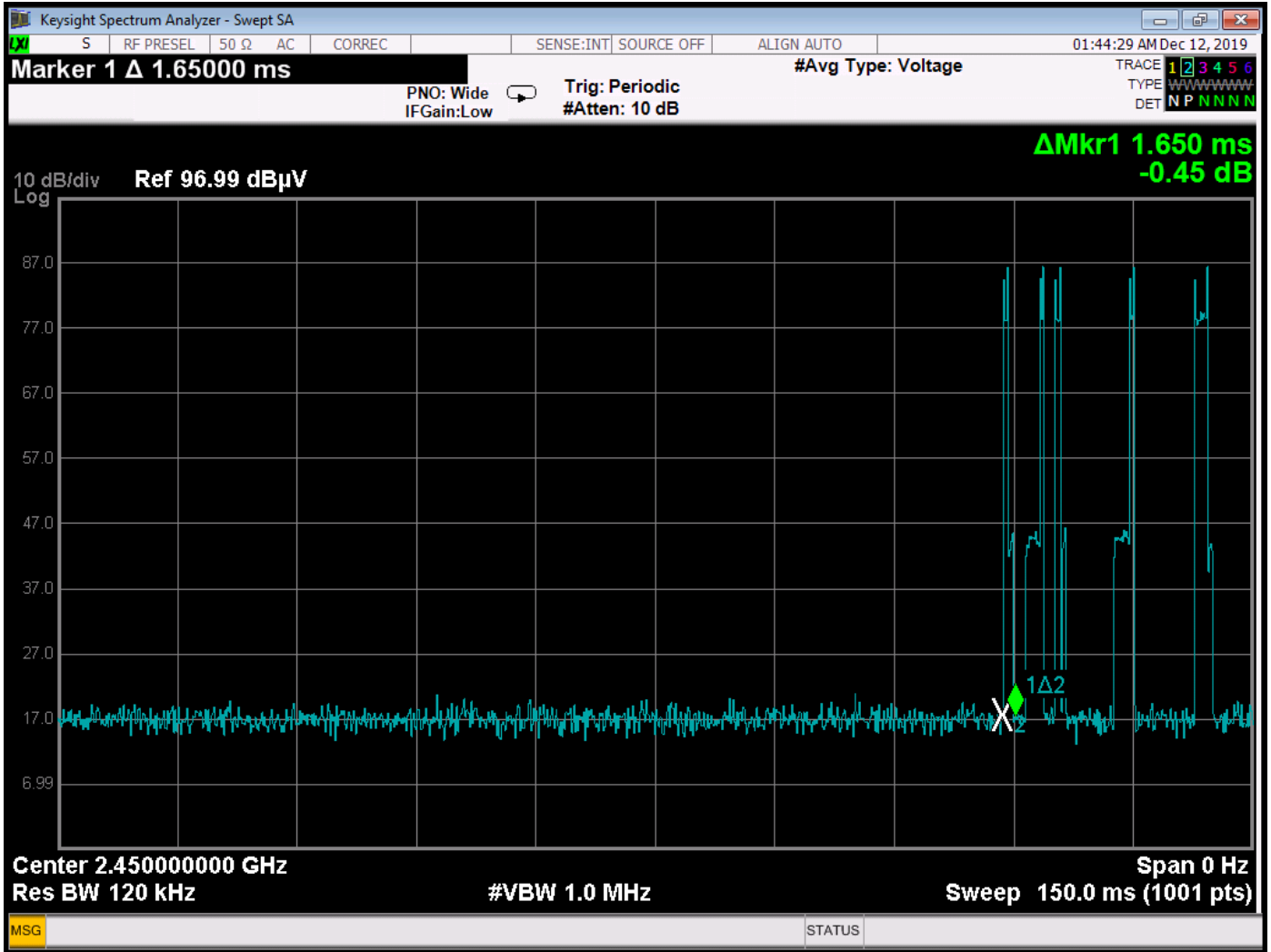
99 Percent BW – 2475.00 MHz – High channel – Total Power

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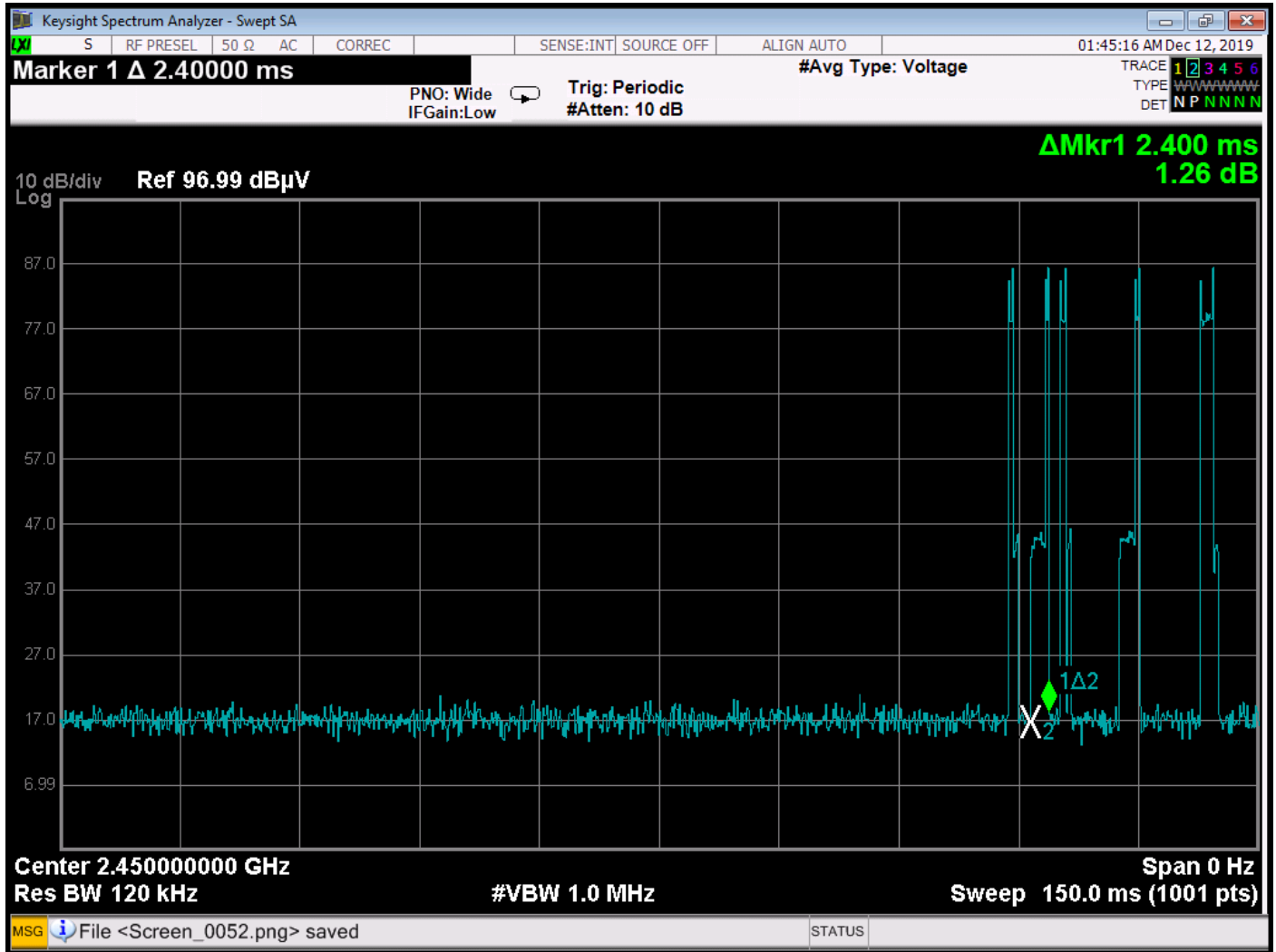


Duty cycle – Pulse 1 per 150 ms is 1.65 ms

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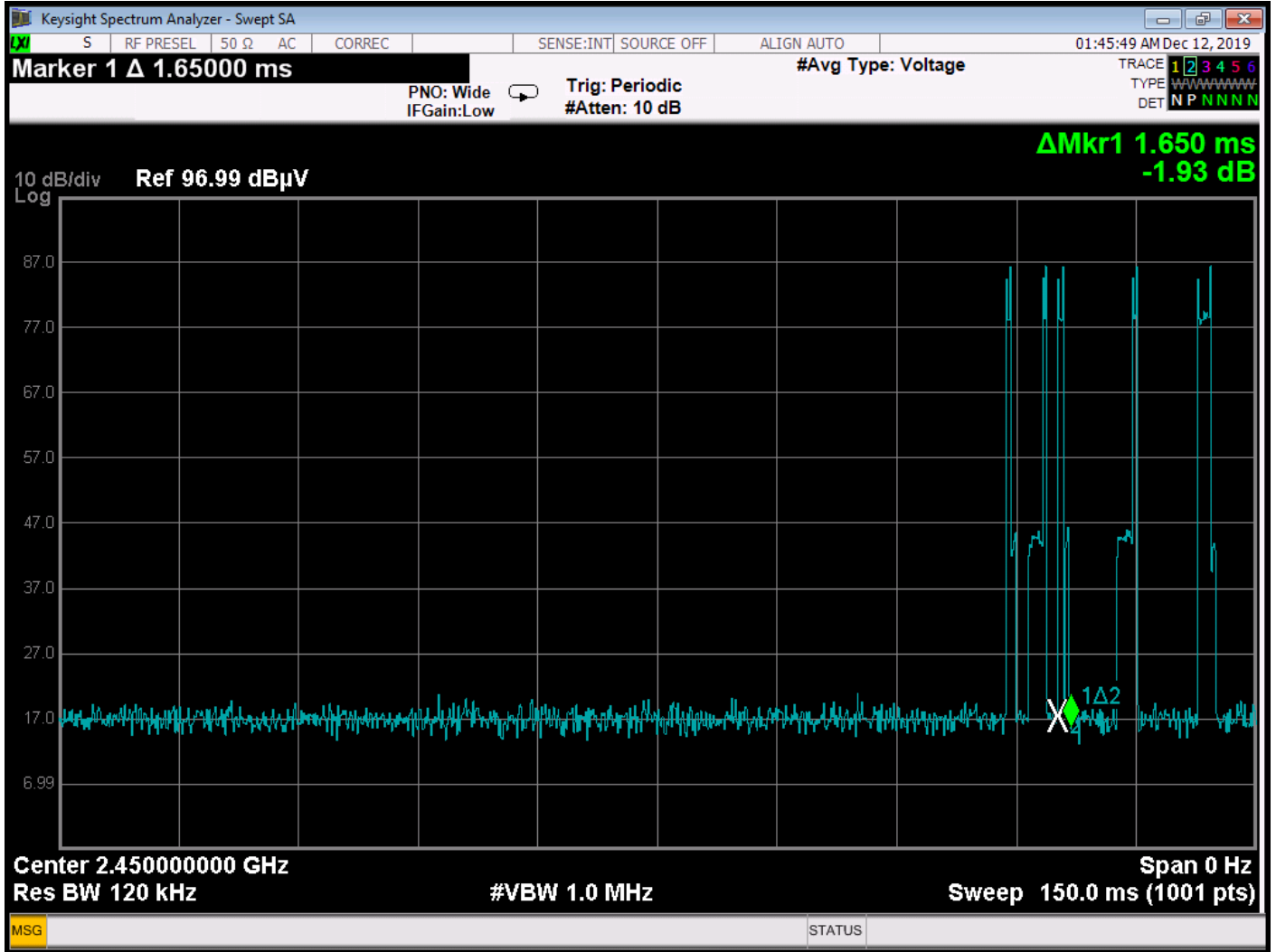


Duty cycle – Pulse 2 per 150 ms is 2.40 ms

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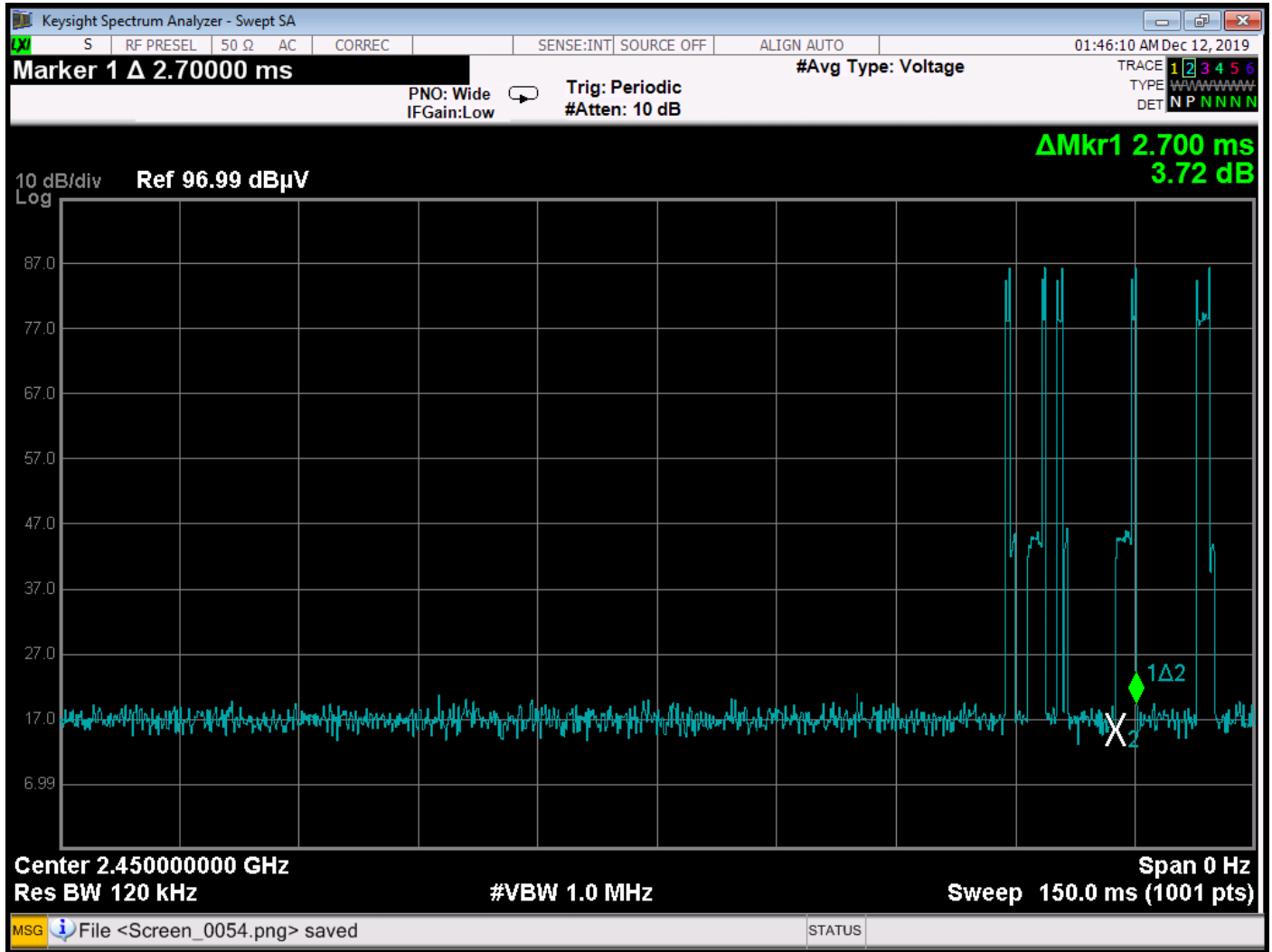


Duty cycle – Pulse 3 per 150 ms is 1.65 ms

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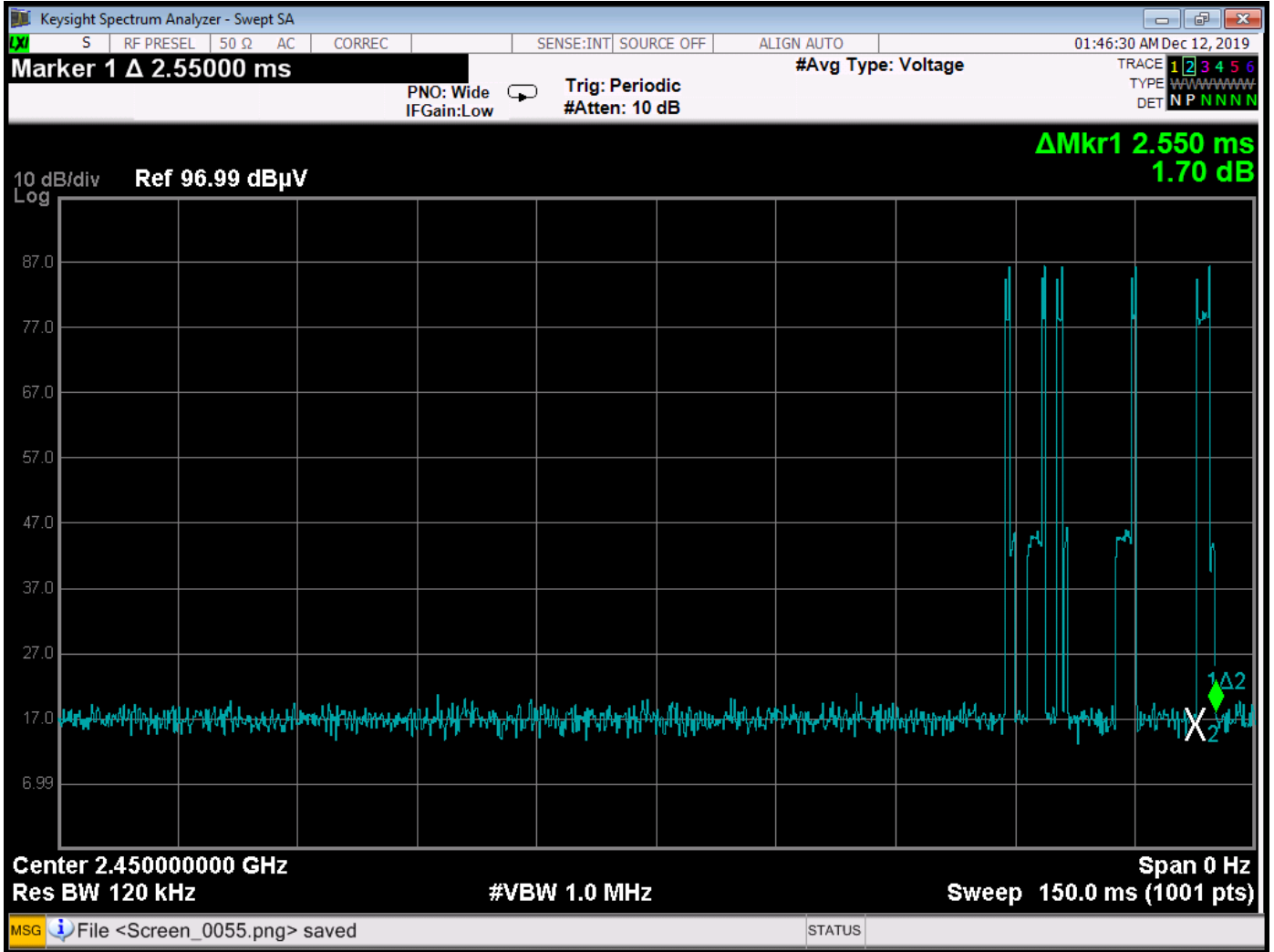


Duty cycle – Pulse 4 per 150 ms is 2.70 ms

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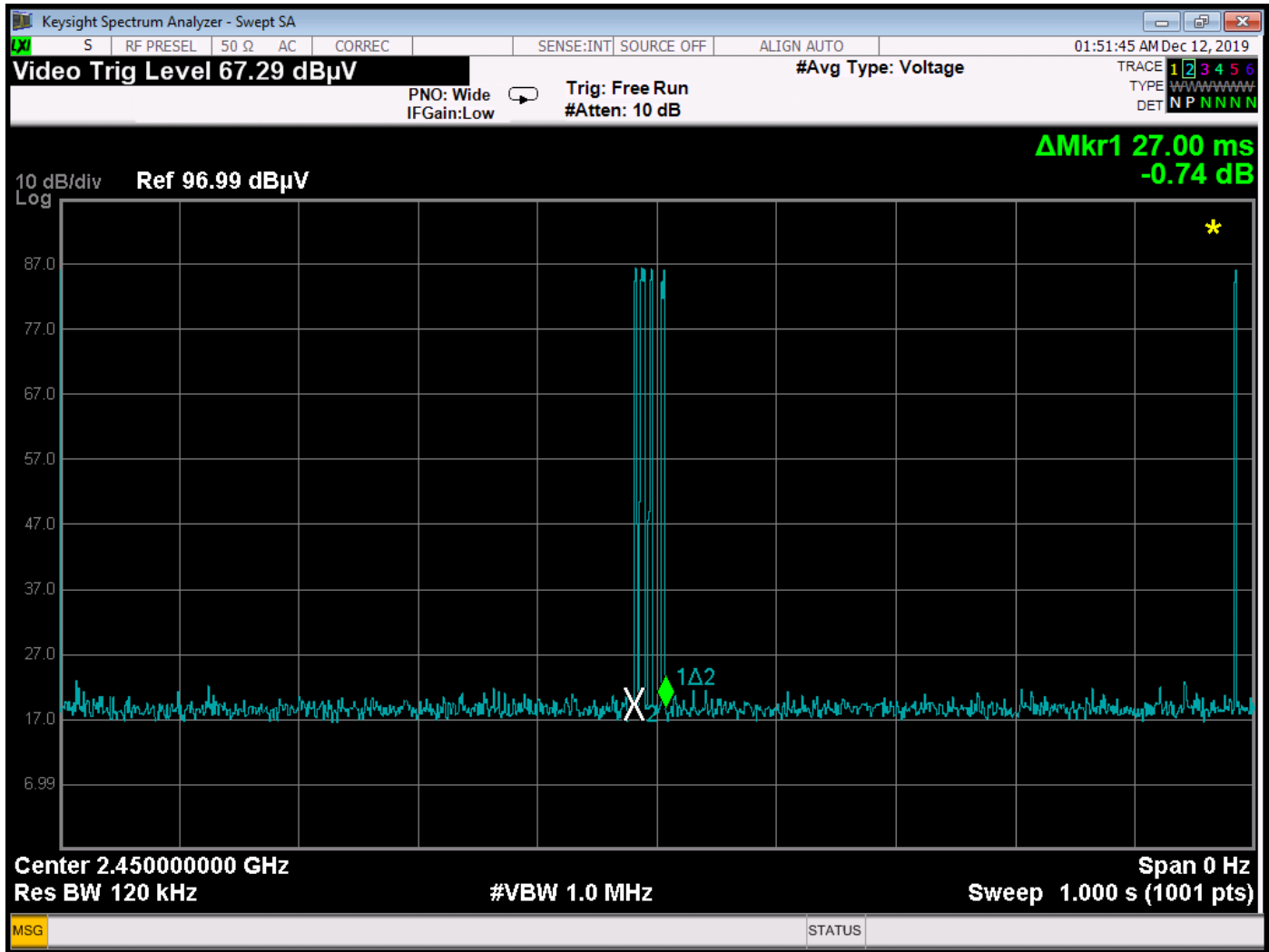


Duty cycle – Pulse 5 per 150 ms is 2.55 ms

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Cumulation of pulses is 10.95 ms

Duty Cycle = 10.95 ms / (100 ms x 100) = 10.95%

Duty cycle correction = 20 log (0.1095) = -19.21 dB correction factor

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