

**FCC PART 15, SUBPART B and C; FCC 15.231; and RSS-210 & RSS GEN
TEST REPORT***for***Z-WAVE GARAGE DOOR CONTROLLER****Model: GDZW7-ECO**

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 by the client to claim product certification, approval or endorsement by NVLAP, NIST or any agency of the United States government.

Device Tested: Z-Wave Garage Door Controller
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

Product Description: The equipment under test is a Z-Wave Garage Door Controller that uses Z-Wave technology. The transmit frequencies are 310 MHz , 315 MHz , 345 MHz and 390 MHz. The clock oscillator is 39 MHz.
Dimensions: 2.3 cm (L) x 9.2 cm (W) x 13.7 cm (H).

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

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

Test Dates: January 9, 10, 11, 12, and 17, 2023

Test Specifications covered by accreditation:

Test Specifications: Emissions requirements
CFR Title 47, Part 15, Subpart B;
CFR Title 47, Part 15, Subpart C, sections 15.205, 15.207, 15.209, and 15.231;
RSS-210 and RSS-Gen



Test Procedures: ANSI C63.4 and 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	Complies with the Class B limits of CFR Title 47, Part 15 Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, section 15.207; and the limits of RSS-210 and RSS-Gen Highest reading in relation to spec limit 40.60 dBuV/m (AVG) @ 0.310 MHz (*U = 2.72 dB)
2	Spurious Radiated RF Emissions, 9 kHz – 3.9 GHz (Transmitter and Digital portion)	Complies with the Class B limits of CFR Title 47, Part 15 Subpart B; the limits of CFR Title 47, Part 15 Subpart C, sections 15.205, 15.209, and 15.231; and the limits of RSS-210 and RSS-Gen Highest reading in relation to spec limit 76.67 dBuV/m (AVG) @ 345 MHz (*U = 3.32 dB)
3	-20 dB Bandwidth	Complies with limits of CFR Title 47, Part 15 Subpart C, section 15.231 (c); and the limits of RSS-210
4	Transmission Time	Complies with limits of CFR Title 47, Part 15 Subpart C, section 15.231 (a)(1) and (a)(2); and the limits of RSS-210

*U = Expanded Uncertainty with a coverage factor of k=2

1. PURPOSE

This document is a qualification test report based on the emissions tests performed on the Z-Wave Garage Door Controller, Model: GDZW7-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 CFR Title 47, Part 15 Subpart B section, 15.109; the specification limits defined by CFR Title 47, Part 15 Subpart C sections 15.205, 15.207, 15.209 and 15.231; and the specifications limits defined by RSS-210 and RSS-Gen.

This test report covers the FCC 15.231 portion of the EUT. The FCC 15.249 portion is covered under the Compatible Electronics, Inc. test report **B30117D1**, and the FCC 15.247 portion is covered under the Compatible Electronics, Inc. test report **B30117D2**.

1.1

Decision Rule & Risk

If a measured value exceeds a specification limit it implies non-compliance. If the value is below a specification limit it implies compliance. Measurement uncertainty of the laboratory is reported with all measurement results but generally not taken into consideration unless a standard, rule or law requires it to be considered.

Qualification test reports are only produced for products that are in compliance with the test requirements, therefore results are always in conformity. Otherwise, an engineering report or just the data is provided to the customer.

When performing a measurement and making a statement of conformity, in or out-of-specification to manufacturer's specifications or Pass/Fail against a requirement, there are two possible outcomes:

- The result is reported as conforming with the specification
- The result is reported as not conforming with the specification

The decision rule is defined below.

When the test result is found to be below the limit but within our measurement uncertainty of the limit, it is our policy that the final acceptance decision is left to the customer, after discussing the implications and potential risks of the decision.

When the test result is found to be exactly on the specification, it is our policy, in the case of unwanted emissions measurements to consider the result non-compliant, however, the final decision is left to the customer, after discussing the implications and potential risks of the decision.

When the test result is found to be over the specification limit under any condition, it is our policy to consider the result non-compliant.

In terms of uncertainty of measurement, the laboratory is a calibrated and tightly controlled environment and generally exceptionally stable, the measurement uncertainties are evaluated without the considering of the test sample. When it comes to the test sample however, as most testing is performed on a single sample rather than a sample population, and that sample is often a pre-production representation of the final product, that test sample represents a significantly higher source of measurement uncertainty. We advise our customers of this and that when in doubt (small test to limit margins), they may wish to perform statistical sampling on a population to gain a higher confidence in the results. All lab reported results are that of a single sample in any event.

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, Inc.

David Shepard	Product Compliance/QA Specialist
Jay Stone	Director of Engineering

Compatible Electronics Inc.

Kyle Fujimoto	Sr. Test Engineer
James Ross	Sr. 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, Inc. as of the date of this 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
FCC	Federal Communications Commission
DoC	Declaration of Conformity
N/A	Not Applicable
Tx	Transmit
Rx	Receive
Inc.	Incorporated
LLC	Limited Liability Company
RF	Radio Frequency
BLE	Bluetooth Low Energy
CFR	Code of Federal Regulations
Sr.	Senior
DC	Direct Current
LED	Light Emitting Diode

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 B	FCC Rules – Radio frequency devices (including digital devices) – Unintentional Radiators
FCC Title 47, Part 15 Subpart C	FCC Rules – Radio frequency devices (including digital devices) – Intentional Radiators
RSS-210 Issue 10: 2019 + Amendment (April 2020)	License-exempt Radio Apparatus: Category I Equipment
RSS-Gen Issue 5: 2018 + Amendment 1: 2019 + Amendment 2: 2021	General Requirements for Compliance of Radio Apparatus
EN 50147-2: 1997	Anechoic chambers. Alternative test site suitability with respect to site attenuation
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 Z-Wave Garage Door Controller, Model: GDZW7-ECO (EUT) was connected to unterminated cables on its J3 and J4 ports. A switching adapter was also connected to its DC IN port. The EUT was transmitting and/or receiving at 310 MHz or 315 MHz or 345 MHz or 390 MHz on a continuous basis.

The EUT was tested for emissions 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 firmware inside the EUT allowed the EUT to continuously transmit or receive at 310 MHz or 315 MHz or 345 MHz or 390 MHz.

The firmware is stored on the company's servers.

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

Cable 1 This is a 1.5-meter unshielded, unterminated cable connecting the EUT's J3 port. The cable was bundled to 40 centimeters above the ground plane.

Cable 2 This is a 1.5-meter unshielded, unterminated cable connecting the EUT's J4 port. The cable was bundled to 40 centimeters above the ground plane.

Cable 3 This is a 1.5-meter unshielded cable connecting the EUT to the switching adapter. The cable has a 1/8 inch power adapter at the EUT end and is hard wired into the switching adapter. The cable was bundled to a length of 1-meter.

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

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	IDENTIFICATIONS
Z-WAVE GARAGE DOOR CONTROLLER (EUT)	ECOLINK INTELLIGENT TECHNOLOGY, INC.	GDZW7-ECO	ELGLCR2217TW00005	FCC: XQC-GDZW7LR IC: 9863B-GDZW7LR
FIRMWARE	ECOLINK INTELLIGENT TECHNOLOGY, INC.	1.0	N/A	N/A
SWITCHING ADAPTER	AMIGO	AMS135-1201000FU	N/A	N/A

5.2 Emissions Test Equipment

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
RF RADIATED AND AC CONDUCTED EMISSIONS TEST EQUIPMENT					
TDK TestLab	TDK RF Solutions, Inc.	9.22	700145	N/A	N/A
EMI Receiver, 20 Hz – 26.5 GHz	Keysight Technologies, Inc.	N9038A	MY51210150	September 17, 2021	September 17, 2023
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
Loop Antenna	Com-Power	AL-130R	121090	February 10, 2022	February 10, 2025
CombiLog Antenna	Com-Power	AC-220	61093	December 14, 2021	December 14, 2023
Horn Antenna	Com-Power	AH-118	10050113	December 16, 2021	December 16, 2023
Preamplifier	Com-Power	PA-118	181653	March 7, 2022	March 7, 2023
Below 1 GHz Conducted Cable	N/A	N/A	Asset #: 0009	October 3, 2022	October 3, 2023
Below 1 GHz Radiated Cable	N/A	N/A	Asset #: 0006	October 3, 2022	October 3, 2023
Above 1 GHz Cable	Suhner	Sucoflex 102EA	2291	August 2, 2021	August 2, 2023
Above 1 GHz Cable	Suhner	Sucoflex 102EA	501393	August 2, 2021	August 2, 2023
Above 1 GHz Cable	Suhner	Sucoflex 102EA	501394	August 2, 2021	August 2, 2023
LISN	Com-Power	LI-215A	191951	August 16, 2022	August 16, 2023
Attenuator 10 dB	Surecall	SC-ATT-10	17100025	December 2, 2022	December 2, 2023
Multimeter	Fluke	115	36601149WS	November 21, 2021	November 21, 2023
Variable Autotransformer	Staco Energy Products	3PN2210	003	N/A	N/A
Computer	Hewlett Packard	p6716f	MXX1030PX0	N/A	N/A
LCD Monitor	Hewlett Packard	52031a	3CQ046N3MG	N/A	N/A

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 0.6 by 1.2 meter non-conductive table 0.8 meters above the ground plane.

For frequencies above 1 GHz: The EUT was mounted on a 0.6 by 1.2 meter non-conductive table 1.5 meters above the ground plane.

The EUT was not grounded.

6.3 Measurement Uncertainty

Compatible Electronics' U_{lab} value is less than U_{cisp} , thus based on this – compliance is deemed to occur if no measured disturbance exceeds the disturbance limit

$$u_c(y) = \sqrt{\sum_i c_i^2 u^2(x_i)}$$

Measurement		U_{cisp}	$U_{lab} = 2 u_c(y)$
Conducted disturbance (mains port)	(150 kHz – 30 MHz)	3.4 dB	2.72 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(30 MHz – 1 000 MHz)	6.3 dB	3.32 dB (Vertical) 3.30 dB (Horizontal)
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(1 GHz - 6 GHz)	5.2 dB	4.06 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(6 GHz – 18 GHz)	5.5 dB	4.06 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(18 GHz – 26.5 GHz)	N/A	4.43 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(26.5 GHz – 40 GHz)	N/A	4.57 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.

The six highest emissions are listed in Table 1.

Test Results:

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

7.1.2 Radiated Emissions Test

The EMI Receiver was used as the measuring meter. An internal preamplifier was used to increase the sensitivity of the instrument during emissions tests up to 1000 MHz, and an external preamplifier was used to increase the sensitivity of the instrument during emissions tests above 1 GHz. 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 considers 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, except for the fundamental frequency and the 2nd harmonic of the fundamental frequency, were quasi-peaked using the quasi-peak detector of the EMI Receiver.

The harmonic frequencies above 1 GHz, the fundamental frequency, and the 2nd harmonic 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 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 to ensure accurate results.

The EUT was tested at a 3-meter test distance. The six highest emissions are listed in Table 2.

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 3.9 GHz	1 MHz	Horn Antenna

Test Results:

The EUT complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; the limits of CFR Title 47, Part 15, Subpart C sections 15.205, 15.209 and 15.231; and the limits of RSS-210 and RSS-Gen for radiated emissions.

7.1.3 RF Emissions Test Results

Table 1 CONDUCTED EMISSION RESULTS
Z-Wave Garage Door Controller, Model: GDZW7-ECO

Frequency MHz	Average Corrected Reading* dBμV/m	Average Specification Limit dBμV/m	Delta (Cor. Reading – Spec. Limit) dB
0.310 (BL) (Tx) ³	40.60	49.77	-9.17
0.310 (BL) (Tx) ⁴	40.38	49.80	-9.42
0.314 (WL) (Rx) ¹	39.92	49.70	-9.78
0.310 (BL) (Rx) ³	39.71	49.68	-9.97
0.310 (BL) (Tx) ¹	39.66	49.78	-10.12
0.310 (BL) (Rx) ²	39.35	49.67	-10.32

¹ 310.00 MHz Tx/Rx Frequency

² 315.00 MHz Tx/Rx Frequency

³ 345.00 MHz Tx/Rx Frequency

⁴ 390.00 MHz Tx/Rx Frequency

Table 2 RADIATED EMISSION RESULTS
Z-Wave Garage Door Controller, Model: GDZW7-ECO

Frequency MHz	Average Corrected Reading* dBμV/m	Specification Limit dBμV/m	Delta (Cor. Reading – Spec. Limit) dB
345.00 (V) (Y-Axis)	76.67	77.26	-0.59
345.00 (H) (X-Axis)	75.58	77.26	-1.68
345.00 (V) (Z-Axis)	75.04	77.26	-2.22
345.00 (H) (Y-Axis)	74.76	77.26	-2.50
345.00 (H) (Z-Axis)	74.06	77.26	-3.20
345.00 (H) (Z-Axis)	71.68	77.26	-5.58

Notes:

- * The complete emissions data is given in Appendix E of this report.
- (V) Vertical
- (H) Horizontal
- (BL) Black Lead
- (WL) White Lead
- (Rx) Receiving
- (Tx) Transmitting

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.

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

To correct for distance when measuring at a distance other than the specification

For measurements below 30 MHz: (Specification distance / test distance) $\log \times 40$ = distance factor

For measurements above 30 MHz: (Specification distance / test distance) $\log \times 20$ = 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.

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.

When the limit is in terms of magnetic field, the following equation applies:

$$H[\text{dB}(\mu\text{A}/\text{m})] = V[\text{dB}(\mu\text{V})] + L_C [\text{dB}] - G_{PA} [\text{dB}] + AF^H [\text{dB}(\text{S}/\text{m})]$$

where: H is the magnetic field strength (to be compared with the limit),
 V is the voltage level measured by the receiver or spectrum analyzer,
 L_C is the cable loss,
 G_{PA} is the gain of the preamplifier (if used), and
 AF^H is the magnetic antenna factor.

The G_{PA} term is only included in the equation when an external preamplifier is used in the measurement chain, in front of the receiver or spectrum analyzer. An external preamplifier is not usually necessary (or even advisable, due to risk of saturating the input mixer of the receiver) when an active loop antenna is used. In that case, the antenna factor of the loop already includes the gain of its built-in preamplifier.

If the “electrical” antenna factor is used instead, the above equation becomes:

$$H[\text{dB}(\mu\text{A}/\text{m})] = V[\text{dB}(\mu\text{V})] + L_C [\text{dB}] - G_{PA} [\text{dB}] + AF^E [\text{dB}(\text{m}^{-1})] - 51.5 [\text{dB}\Omega]$$

where: AF^E is the “electric” antenna factor, as provided by the antenna calibration laboratory.

When the limit is in terms of electric field, the following equation applies:

$$E[\text{dB}(\mu\text{V}/\text{m})] = V[\text{dB}(\mu\text{V})] + L_C [\text{dB}] - G_{PA} [\text{dB}] + AF^E [\text{dB}(\text{m}^{-1})]$$

or, if the magnetic antenna factor is used:

$$E[\text{dB}(\mu\text{V}/\text{m})] = V[\text{dB}(\mu\text{V})] + L_C [\text{dB}] - G_{PA} [\text{dB}] + AF^H [\text{dB}(\text{S}/\text{m})] + 51.5 [\text{dB}\Omega]$$

The display of the receiver (or spectrum analyzer) **shall not** be configured in units of current, e.g. μA or $\text{dB}(\mu\text{A})$. That conversion is calculated inside the receiver (or spectrum analyzer) using its input impedance, which is 50Ω , while the magnetic field calculation is based on the free-space impedance of 377Ω .

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 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

Version I (315 MHz and 390 MHz):

Duty Cycle Correction Factor = -13.18 dB

Time of One Small Pulse = 540 μs

Time of One Medium Pulse = 1040 μs

Time of One Large Pulse = 1550 μs

Number of Small Pulses = 7

Number of Medium Pulses = 7

Number of Large Pulses = 7

Total On Time = 21910 μs = 21.910 ms

The time between pulses is greater than 100 ms

Duty Cycle = 21.91 ms / 100 ms = 21.91 %

Version II (310 MHz):

Duty Cycle Correction Factor = -14.83 dB

Time of One Small Pulse = 290 μs

Time of One Large Pulse = 540 μs

Number of Small Pulses = 42

Number of Large Pulses = 11

Total On Time = 18120 μs = 18.120 ms

The time between pulses is greater than 100 ms

Duty Cycle = 18.12 ms / 100 ms = 18.12 %

Duty Cycle Calculation (Continued)**Honeywell (345 MHz):**

Duty Cycle Correction Factor = -17.82 dB

Time of One Small Pulse = 170 μ s

Time of One Large Pulse = 300 μ s

Number of Small Pulses = 42

Number of Large Pulses = 19

Total On Time = 12840 μ s = 12.840 ms

The time between pulses is greater than 100 ms

Duty Cycle = 12.840 ms / 100 ms = 12.840 %

7.1.6 99 % Bandwidth

The 99 % bandwidth was measured using an EMI Receiver.

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.

7.1.7 -20 dB Bandwidth

The -20 dB bandwidth was measured using an EMI Receiver.

The following steps were performed for measuring the -20 dB bandwidth:

1. Set RBW to at least 1% of the Occupied Bandwidth.
2. Set the span between two times and five times the Occupied Bandwidth
2. Set VBW to greater than 3 times the RBW.
3. Set the peak detector to max hold.
4. Set the sweep time to auto
5. Allow the trace to stabilize.
6. Set the markers to -20 dB of the peak fundamental emission

Test Results:

The EUT complies with limits of CFR Title 47, Part 15, Subpart C section 15.231 (c); and the limits of RSS-210.

7.1.8 Transmission Time

The transmission time was measured using an EMI Receiver.

The following steps were performed for measuring transmission time:

1. Set RBW = 120 kHz.
2. Set VBW = 510 kHz
3. Span = 0 Hz
4. Set the sweep time to 10 seconds
5. Push a button on the EUT, which automatically activated the transmitter.
6. Allow the trace to stabilize.
7. Set the 1st marker to start of the transmission
8. Set the 2nd marker for 5 seconds after the start of the transmission
9. Verify the transmission does not go beyond the 2nd marker.

Test Results:

The EUT complies with limits of CFR Title 47, Part 15, Subpart C section 15.231 (a)(1) and (a)(2); and the limits of RSS-210.

7.1.9 Variation of the Input Power

The variation of the input power test was performed using the EMI Receiver. The EUT input power was varied between 85% and 115% of the nominal rated supply voltage. The carrier frequency was monitored for any change in amplitude.

Test Results:

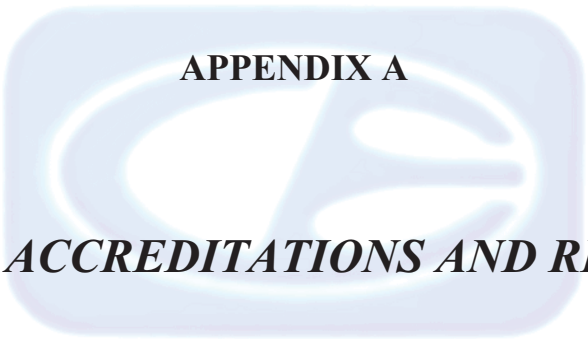
The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.31 (e); and RSS-247.



8. CONCLUSIONS

The Z-Wave Garage Door Controller, Model: GDZW7-ECO (EUT), as tested, meets all the specification limits defined in RSS-210, RSS-Gen, the **Class B** specification limits defined in CFR Title 47, Part 15, Subpart B; and the specification limits defined in CFR Title 47, Part, 15, Subpart C, sections 15.205, 15.207, 15.209 and 15.231.





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



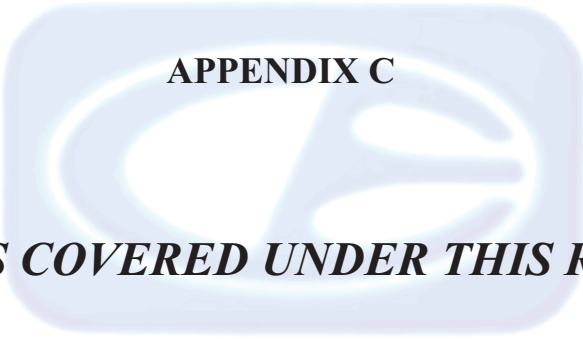
MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC Subpart B, FCC 15.231, RSS-210, and RSS-Gen 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

MODELS COVERED UNDER THIS REPORT

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



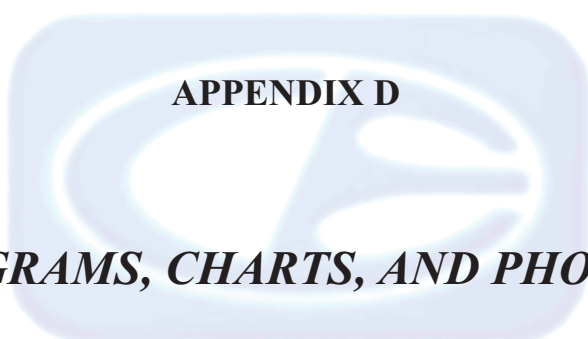
MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

Z-Wave Garage Door Controller
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

There are no additional models or part numbers covered under this report.



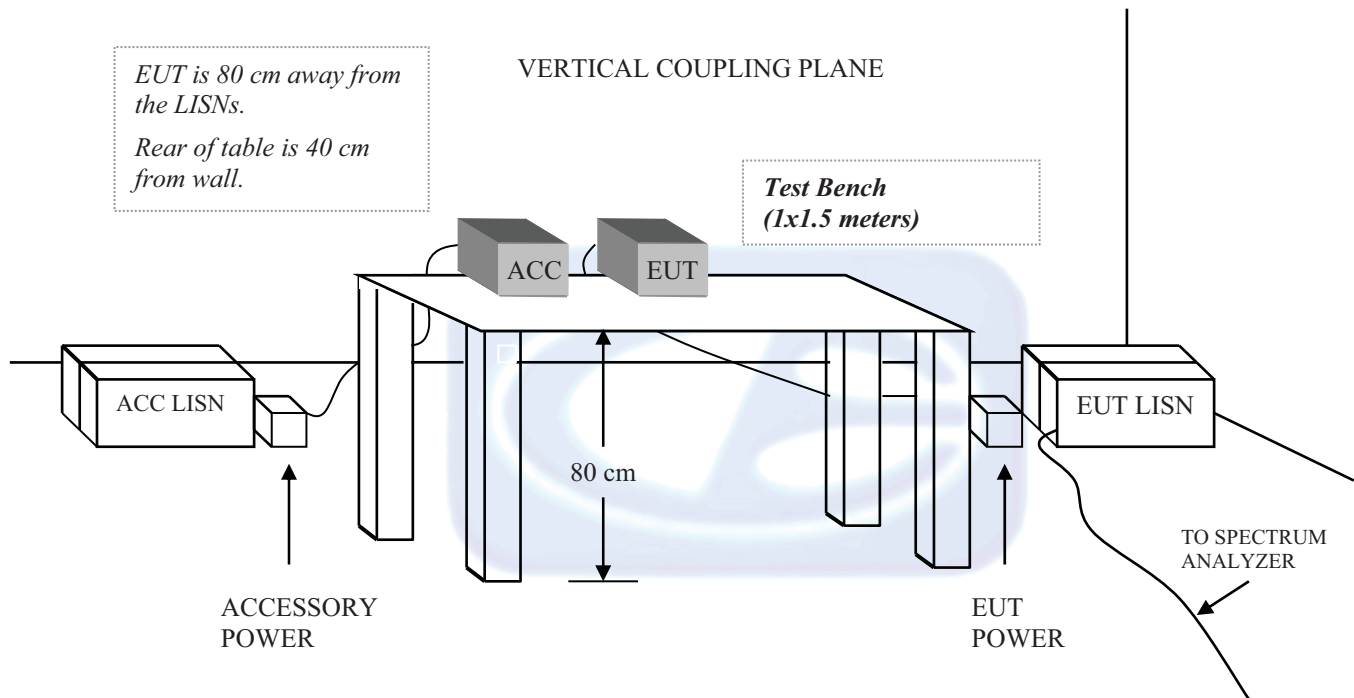


APPENDIX D

DIAGRAMS, CHARTS, AND PHOTOS

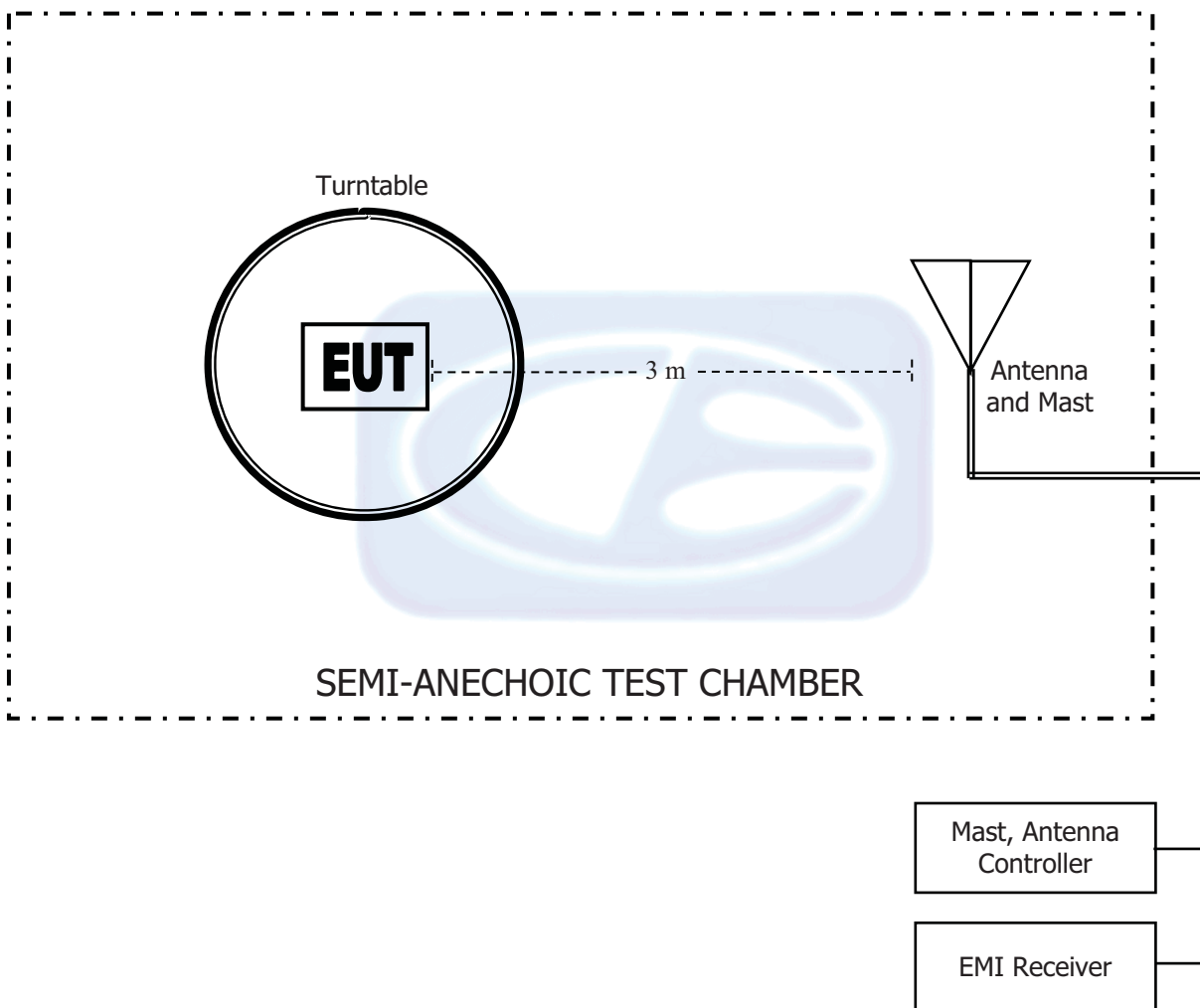


FIGURE 1: CONDUCTED EMISSIONS TEST SETUP





***FIGURE 2: LAYOUT OF THE SEMI-ANECHOIC
TEST CHAMBER***





COM-POWER AL-130R

LOOP ANTENNA

S/N: 121090

CALIBRATION DATE: FEBRUARY 10, 2022

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	15.6	-35.8
0.01	15.8	-35.6
0.02	14.8	-36.6
0.03	15.6	-35.9
0.04	15.0	-36.5
0.05	14.4	-37.1
0.06	14.6	-36.9
0.07	14.3	-37.2
0.08	14.3	-37.2
0.09	14.4	-37.0
0.10	14.1	-37.4
0.20	14.1	-37.4
0.30	14.0	-37.5
0.40	13.9	-37.6
0.50	14.1	-37.3
0.60	14.1	-37.3
0.70	14.2	-37.3
0.80	14.2	-37.3
0.90	14.2	-37.2
1.00	14.4	-37.0
2.00	14.6	-36.9
3.00	14.6	-36.8
4.00	14.9	-36.6
5.00	14.9	-36.7
6.00	14.8	-36.7
7.00	14.6	-36.8
8.00	14.5	-37.0
9.00	14.3	-37.2
10.00	14.5	-37.0
11.00	14.6	-36.9
12.00	14.7	-36.7
13.00	14.9	-36.6
14.00	15.0	-36.5
15.00	14.9	-36.6
16.00	14.9	-36.6
17.00	14.6	-36.8
18.00	14.4	-37.1
19.00	14.5	-37.0
20.00	14.5	-37.0
21.00	14.2	-37.3
22.00	13.9	-37.5
23.00	13.9	-37.5
24.00	13.8	-37.7
25.00	13.4	-38.0
26.00	13.2	-38.2
27.00	13.2	-38.3
28.00	12.7	-38.7
29.00	12.7	-38.8
30.00	12.4	-39.0

COM-POWER AC-220**COMBILOG ANTENNA****S/N: 61093****CALIBRATION DATE: DECEMBER 14, 2021**

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	22.50	200	16.00
35	21.40	250	17.40
40	21.00	300	19.70
45	20.60	350	20.00
50	19.70	400	22.20
60	16.10	450	22.40
70	12.80	500	23.10
80	12.50	550	23.40
90	14.20	600	24.90
100	15.40	650	25.30
120	16.50	700	25.40
125	16.80	750	26.40
140	15.90	800	26.70
150	16.60	850	27.10
160	18.50	900	27.90
175	15.90	950	28.00
180	15.50	1000	28.00

COM POWER AH-118**HORN ANTENNA****S/N: 10050113****CALIBRATION DATE: DECEMBER 16, 2021**

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	23.86	10.0	38.91
1.5	25.67	10.5	39.94
2.0	28.25	11.0	39.10
2.5	29.17	11.5	39.70
3.0	29.78	12.0	40.29
3.5	30.88	12.5	41.93
4.0	31.21	13.0	41.34
4.5	32.96	13.5	40.57
5.0	33.30	14.0	40.23
5.5	34.24	14.5	42.25
6.0	34.57	15.0	43.63
6.5	35.61	15.5	39.96
7.0	36.60	16.0	40.38
7.5	37.49	16.5	40.56
8.0	37.44	17.0	40.93
8.5	37.98	17.5	42.27
9.0	38.01	18.0	43.77
9.5	38.53		

COM-POWER PAM-118**PREAMPLIFIER****S/N: 181653****CALIBRATION DATE: MARCH 7, 2022**

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	40.02	6.0	38.84
1.1	39.72	6.5	39.20
1.2	39.93	7.0	39.46
1.3	39.98	7.5	39.67
1.4	39.99	8.0	39.28
1.5	40.20	8.5	38.63
1.6	40.05	9.0	38.96
1.7	40.15	9.5	39.33
1.8	40.20	10.0	39.58
1.9	40.33	11.0	38.25
2.0	40.33	12.0	40.03
2.5	40.60	13.0	40.55
3.0	40.76	14.0	40.36
3.5	40.87	15.0	39.34
4.0	40.39	16.0	37.34
4.5	39.55	17.0	42.14
5.0	40.34	18.0	42.54
5.5	39.45		



FRONT VIEW

ECOLINK INTELLIGENT TECHNOLOGY, INC.
Z-WAVE GARAGE DOOR CONTROLLER
MODEL: GDZW7-ECO

FCC SUBPART B AND C; RSS-210 AND RSS-GEN – RADIATED EMISSIONS – BELOW 1 GHz

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



REAR VIEW

ECOLINK INTELLIGENT TECHNOLOGY, INC.
Z-WAVE GARAGE DOOR CONTROLLER
MODEL: GDZW7-ECO

FCC SUBPART B AND C; RSS-210 AND RSS-GEN – RADIATED EMISSIONS – BELOW 1 GHz

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



FRONT VIEW

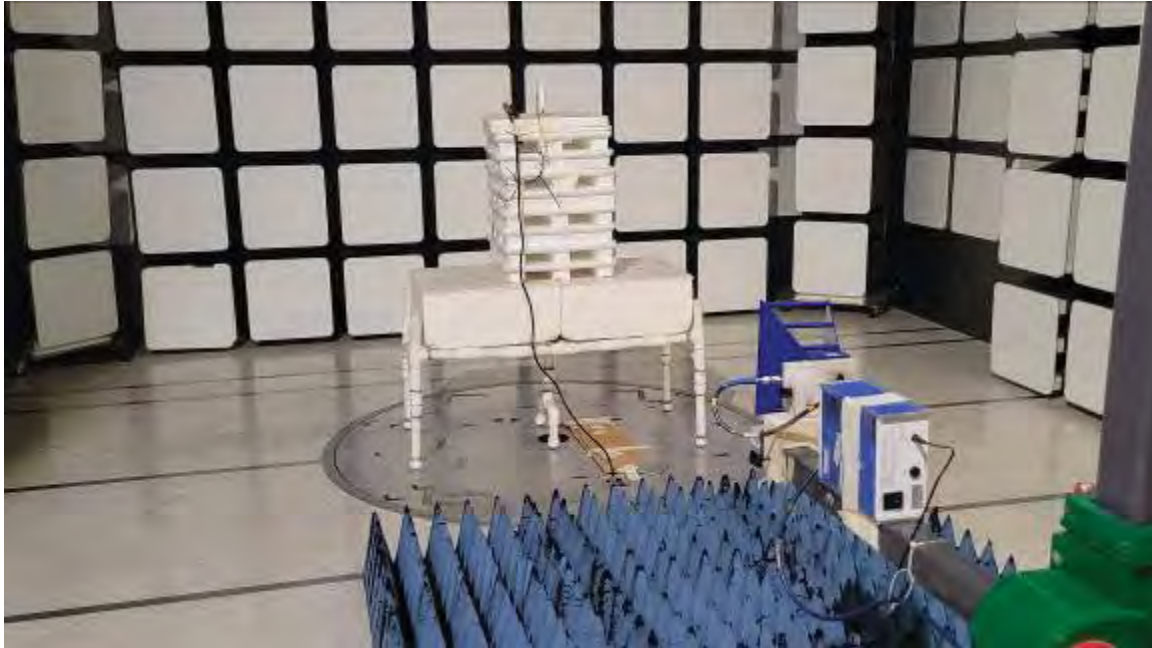
ECOLINK INTELLIGENT TECHNOLOGY, INC.

Z-WAVE GARAGE DOOR CONTROLLER

MODEL: GDZW7-ECO

FCC SUBPART B AND C; RSS-210 AND RSS-GEN – RADIATED EMISSIONS – ABOVE 1 GHz
TRANSMIT MODE

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



REAR VIEW

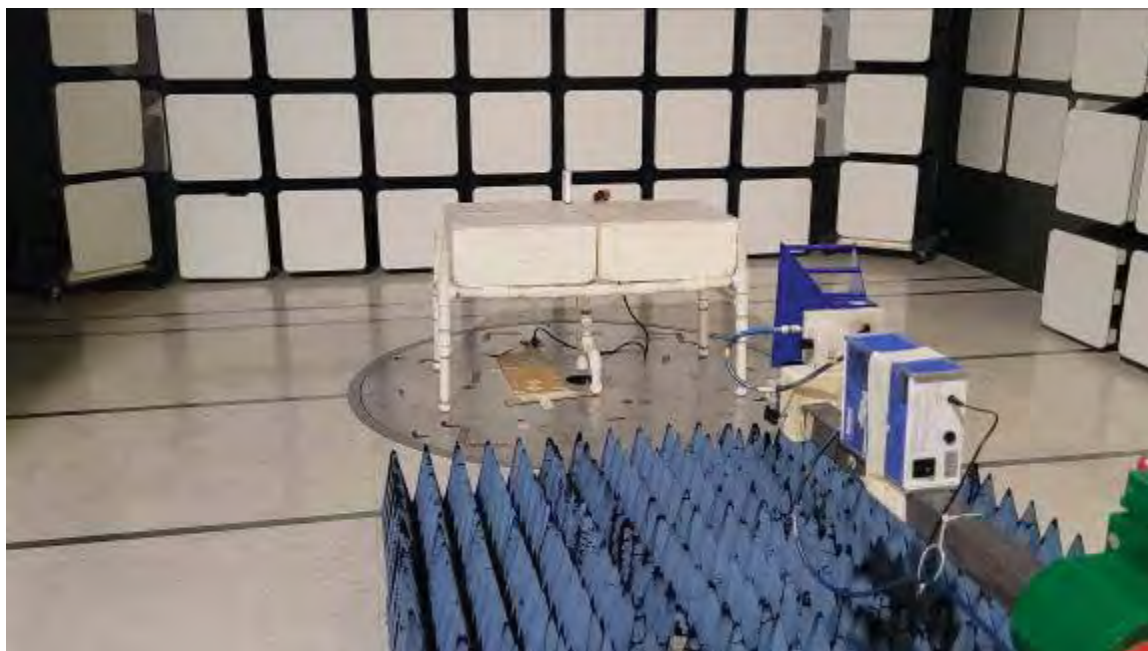
ECOLINK INTELLIGENT TECHNOLOGY, INC.

Z-WAVE GARAGE DOOR CONTROLLER

MODEL: GDZW7-ECO

FCC SUBPART B AND C; RSS-210 AND RSS-GEN – RADIATED EMISSIONS – ABOVE 1 GHz
TRANSMIT MODE

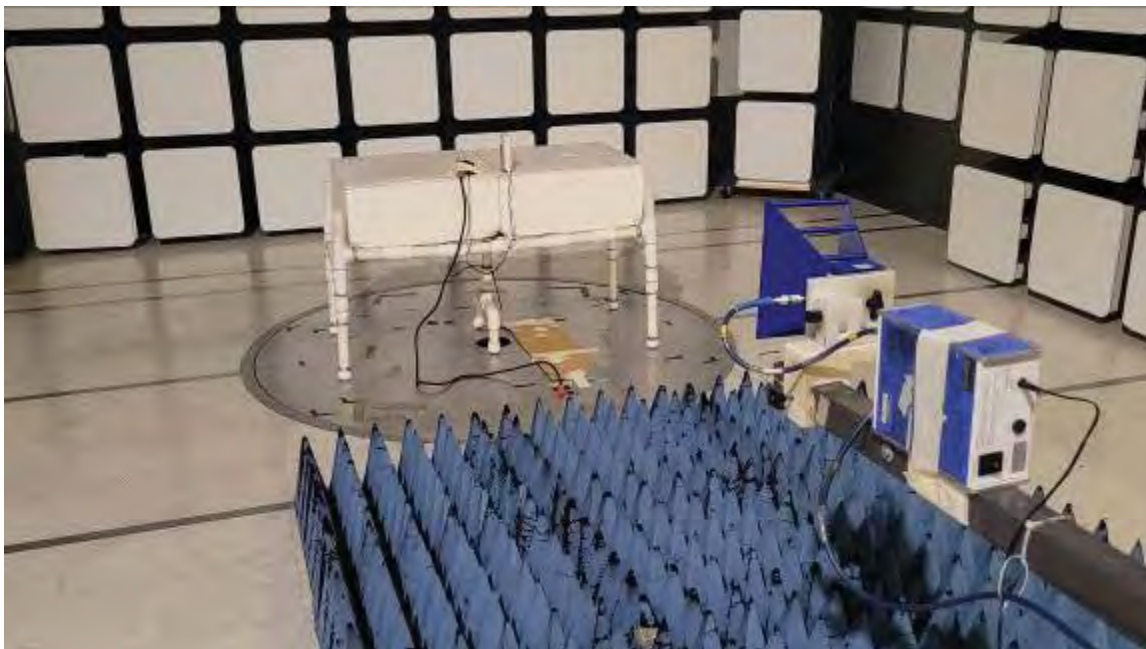
**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



FRONT VIEW

ECOLINK INTELLIGENT TECHNOLOGY, INC.
Z-WAVE GARAGE DOOR CONTROLLER
MODEL: GDZW7-ECO
FCC SUBPART B AND C; RSS-210 AND RSS-GEN – RADIATED EMISSIONS – ABOVE 1 GHz
RECEIVE MODE

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

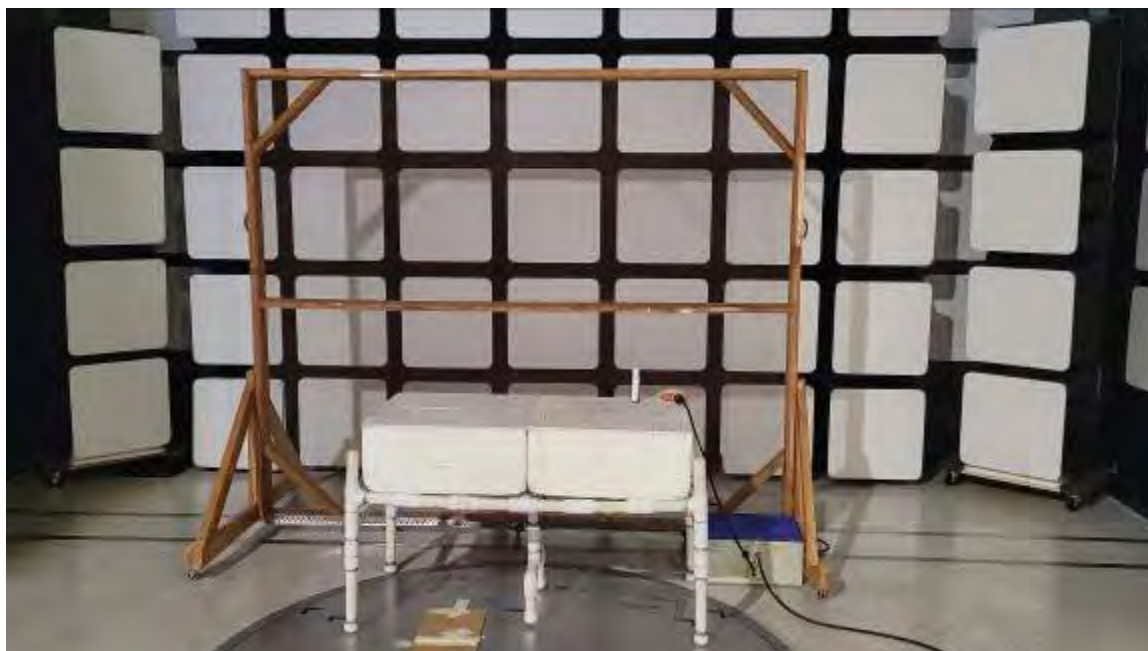


REAR VIEW

ECOLINK INTELLIGENT TECHNOLOGY, INC.
Z-WAVE GARAGE DOOR CONTROLLER
MODEL: GDZW7-ECO

FCC SUBPART B AND C; RSS-210 AND RSS-GEN – RADIATED EMISSIONS – ABOVE 1 GHz
RECEIVE MODE

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



FRONT VIEW

ECOLINK INTELLIGENT TECHNOLOGY, INC.

Z-WAVE GARAGE DOOR CONTROLLER

MODEL: GDZW7-ECO

FCC SUBPART B AND C; AND RSS-GEN – CONDUCTED EMISSIONS

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



REAR VIEW

ECOLINK INTELLIGENT TECHNOLOGY, INC.

Z-WAVE GARAGE DOOR CONTROLLER

MODEL: GDZW7-ECO

FCC SUBPART B AND C; AND RSS-GEN – CONDUCTED EMISSIONS

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



APPENDIX E

DATA SHEETS



RADIATED EMISSIONS

DATA SHEETS

Title: Pre-Scan - FCC Class B

File: 6 - Keysight - Pre-Scan - Y-Axis - 310 MHz - RX MODE - FCC Class B - 01-11-2023.set

Operator: Kyle Fujimoto

EUT Type: Z-Wave Garage Door Controller

EUT Condition: The EUT is continuously receiving at 310 MHz

Company: Ecolink Intelligent Technology, Inc.

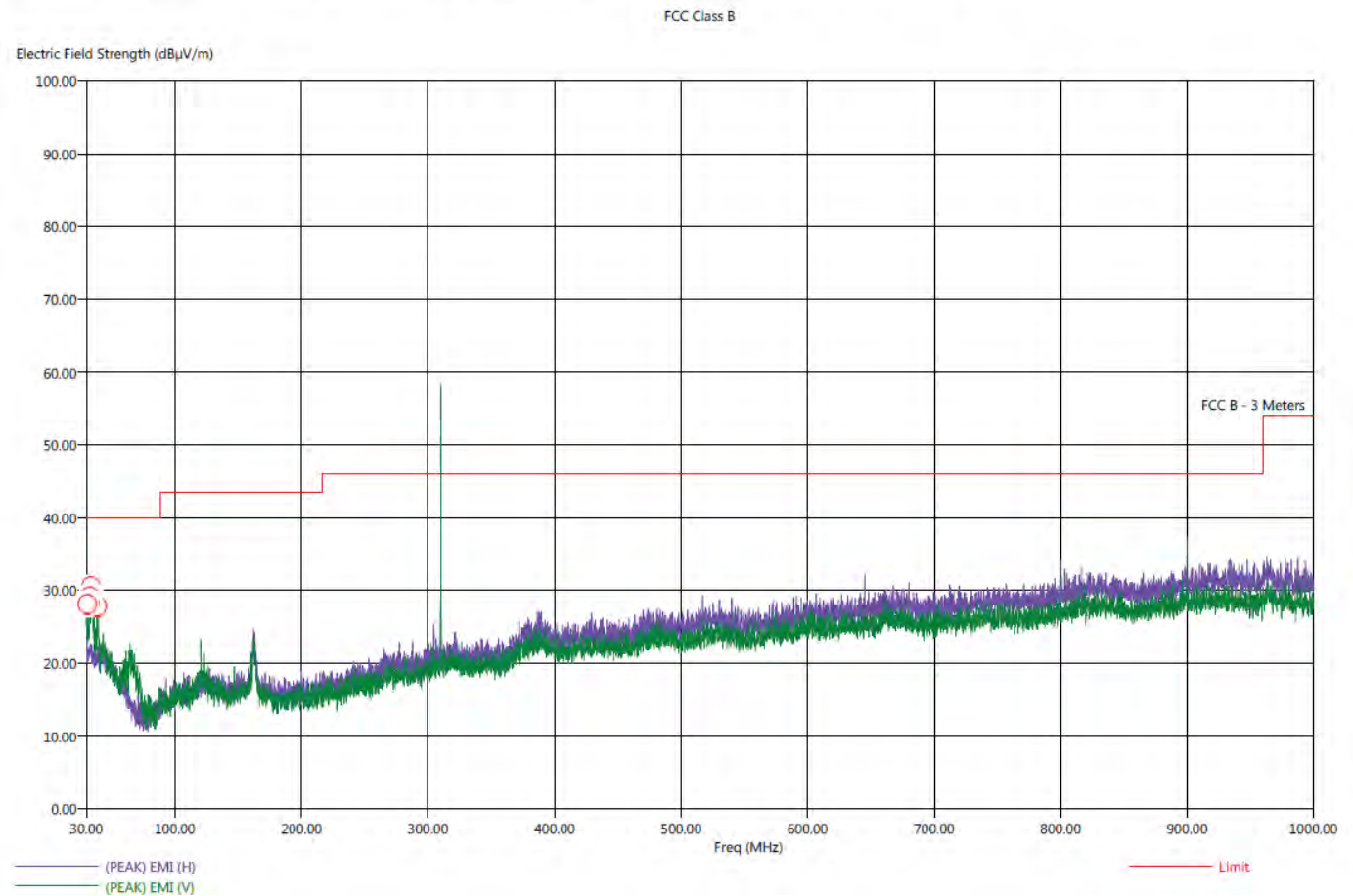
Model: GDZW7-ECO

S/N: ELGLCR2217TW00005

Y-Axis (Worst Case)

Note: The Frequency at 310 MHz is from the accessory unit transmitting 310 MHz to the receiving unit. The accessory unit is placed in the corner of the test chamber.

1/11/2023 1:58:19 PM
Sequence: Preliminary Scan





Title: Radiated Final - FCC Class B
File: 6 - Keysight - Final Scan - Y-Axis - 310 MHz - RX MODE - FCC Class B - 01-11-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously receiving at 310 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005
Y-Axis (Worst Case)

1/11/2023 2:33:01 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)	Ttl Aql (deg)	Twr Ht. (cm)
30.70	V	24.20	19.50	-15.80	-20.50	40.00	22.26	0.36	307.50	127.14
32.40	V	24.61	19.13	-15.39	-20.87	40.00	21.88	0.38	306.50	143.44
32.80	V	24.62	19.06	-15.38	-20.94	40.00	21.84	0.38	104.75	382.49
33.40	V	23.62	18.78	-16.38	-21.22	40.00	21.62	0.38	71.25	111.32
34.40	V	24.02	18.54	-15.98	-21.46	40.00	21.48	0.39	330.00	223.08
38.60	V	23.29	18.22	-16.71	-21.78	40.00	21.05	0.41	100.75	143.26



Title: Pre-Scan - FCC Class B
File: 2 - Keysight - Pre-Scan - Y-Axis - 310 MHz - FCC Class B - 01-11-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously transmitting at 310 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005
Y-Axis (Worst Case)
Note: The Frequencies at 310 MHz, 620 MHz, and 930 MHz are subject to the limits of FCC 15.231 instead

1/11/2023 8:13:03 AM
Sequence: Preliminary Scan





Title: Radiated Final - FCC Class B
File: 2 - Keysight - Final Scan - Y-Axis - 310 MHz - FCC Class B - 01-11-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously transmitting at 310 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: N/AELGLCR2217TW00005
Y-Axis (Worst Case)

1/11/2023 8:44:49 AM
Sequence: Final Measurements

FCC Class B

Freq (MHz)	Pol	(PEAK) EMI (dB μ V/m)	(QP) EMI (dB μ V/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dB μ V/m)	Transducer (dB)	Cable (dB)	Ttl Aql (deg)	Twr Ht (cm)
32.70	H	24.61	19.13	-15.39	-20.87	40.00	21.90	0.38	297.50	159.14
34.20	H	24.48	18.86	-15.52	-21.14	40.00	21.48	0.39	49.75	270.97
34.80	V	31.30	26.73	-8.70	-13.27	40.00	21.42	0.39	245.00	111.26
37.80	V	27.24	21.82	-12.76	-18.18	40.00	21.13	0.41	267.00	111.26
38.90	V	24.10	19.00	-15.90	-21.00	40.00	21.00	0.41	109.50	318.43
65.70	V	23.97	18.75	-16.03	-21.25	40.00	13.95	0.56	330.25	111.20





Title: Pre-Scan - FCC Class B

File: 5 - Keysight - Pre-Scan - X-Axis - 315 MHz - RX MODE - FCC Class B - 01-11-2023.set

Operator: Kyle Fujimoto

EUT Type: Z-Wave Garage Door Controller

EUT Condition: The EUT is continuously receiving at 315 MHz

Company: Ecolink Intelligent Technology, Inc.

Model: GDZW7-ECO

S/N: ELGLCR2217TW00005

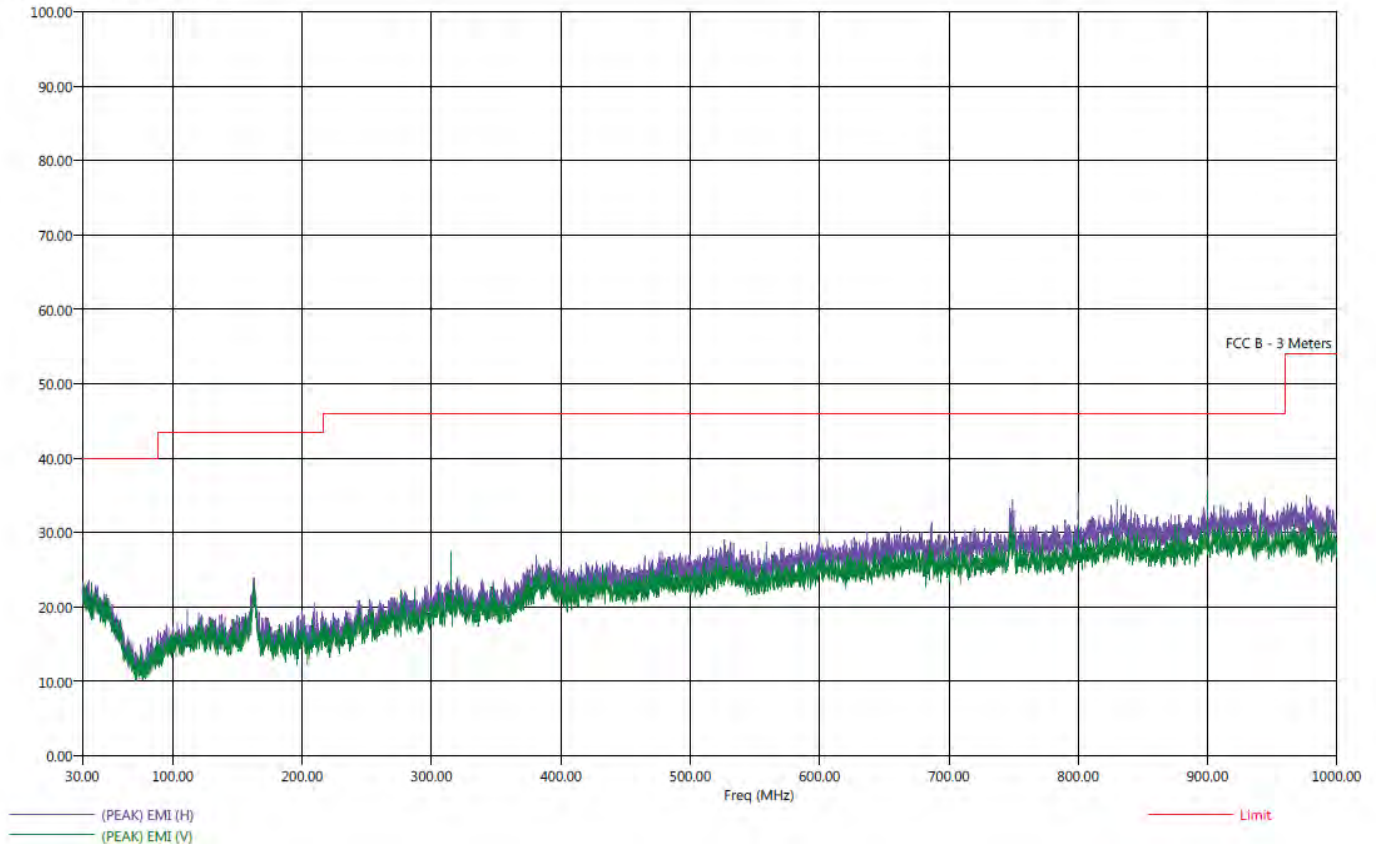
X-Axis (Worst Case)

Note: The Frequency at 315 MHz is from the accessory unit transmitting 315 MHz to the receiving unit. The accessory unit is placed in the corner of the test chamber.

1/11/2023 2:58:41 PM
Sequence: Preliminary Scan

FCC Class B

Electric Field Strength (dB μ V/m)





Title: Radiated Final - FCC Class B
File: 5 - Keysight - Final Scan - X-Axis - 315 MHz - RX MODE - FCC Class B - 01-11-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously receiving at 315 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005
X-Axis (Worst Case)

1/11/2023 3:18:00 PM
Sequence: Final Measurements

FCC Class B

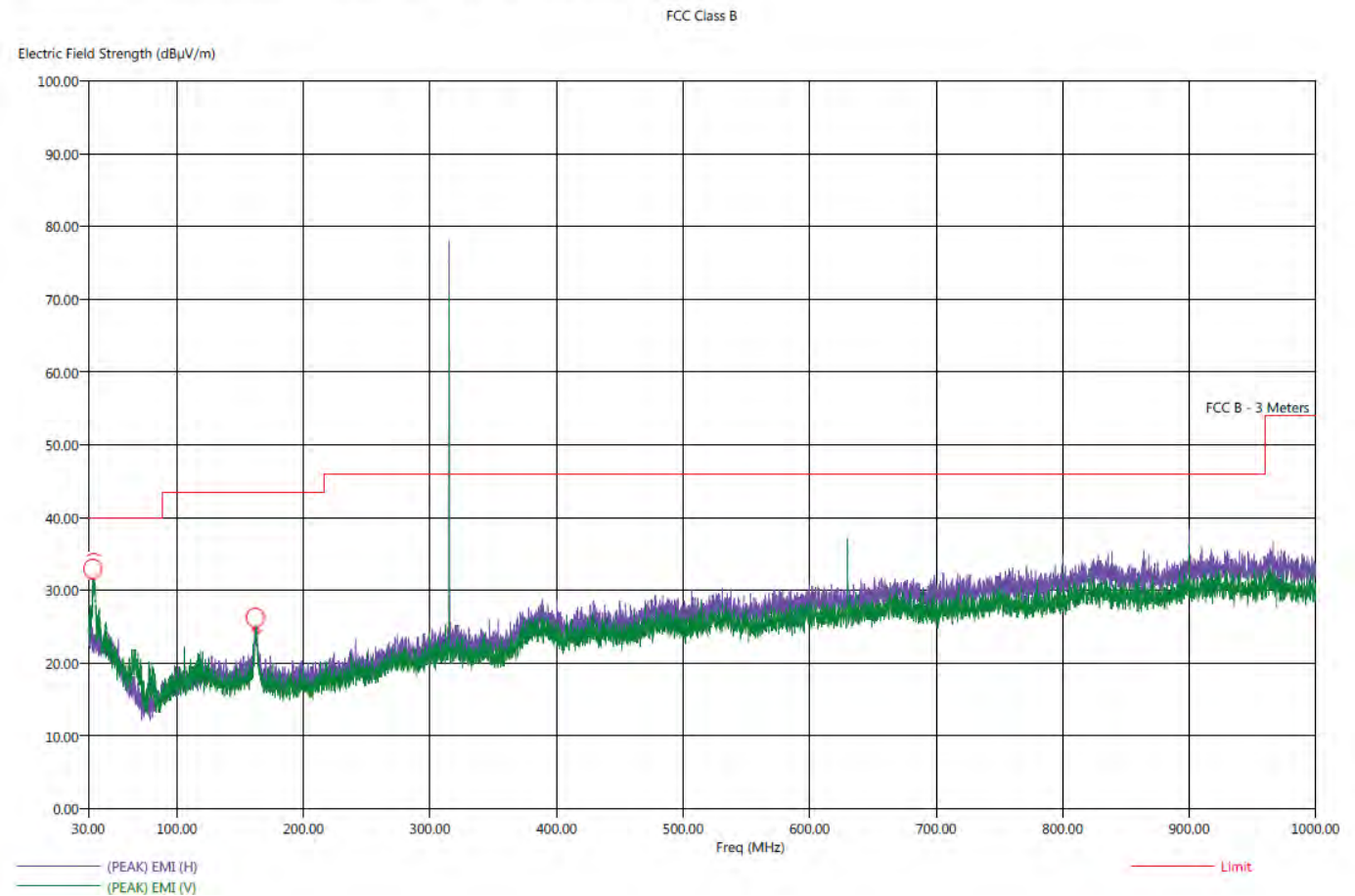
Freq (MHz)	Pol	(PEAK) EMI (dBμV/m)	(OP) EMI (dBμV/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dBμV/m)	Transducer (dB)	Cable (dB)	Ttbl Aql (deg)	Twr Ht (cm)
31.70	H	24.19	19.33	-15.81	-20.67	40.00	22.00	0.37	188.25	334.31
33.30	H	24.20	18.88	-15.80	-21.12	40.00	21.68	0.38	251.00	206.55
36.20	H	23.92	18.14	-16.08	-21.86	40.00	21.20	0.40	345.00	350.67
41.30	H	23.91	18.34	-16.09	-21.66	40.00	20.90	0.43	315.50	270.79
42.40	H	23.71	18.20	-16.29	-21.80	40.00	20.87	0.43	164.75	158.79
49.20	H	21.92	17.34	-18.08	-22.66	40.00	19.83	0.46	67.50	143.14





Title: Pre-Scan - FCC Class B
File: 1 - Keysight - Pre-Scan - Y-Axis - 315 MHz - FCC Class B - 01-10-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously transmitting at 315 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005
Y-Axis (Worst Case)
Note: The Frequencies at 315 MHz, 630 MHz, and 945 MHz are subject to the limits of FCC 15.231 instead

1/10/2023 3:24:55 PM
Sequence: Preliminary Scan





Title: Radiated Final - FCC Class B
File: 1 - Keysight - Final Scan - Y-Axis - 315 MHz - FCC Class B - 01-10-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously transmitting at 315 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005
Y-Axis (Worst Case)

1/10/2023 3:52:19 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)
33.40	V	34.54	27.79	-5.46	-12.21	40.00	21.63	0.38	299.25	127.08
34.20	V	35.54	29.50	-4.46	-10.50	40.00	21.46	0.39	313.00	111.44
34.80	V	34.38	28.57	-5.62	-11.43	40.00	21.45	0.39	319.50	143.38
161.90	H	28.58	22.48	-14.92	-21.02	43.50	22.92	0.94	308.25	318.55
162.20	H	27.63	22.36	-15.87	-21.14	43.50	22.80	0.94	180.75	254.79
163.30	H	27.35	21.30	-16.15	-22.20	43.50	21.79	0.94	235.00	302.61





Title: Pre-Scan - FCC Class B

File: 7 - Keysight - Pre-Scan - Y-Axis - 345 MHz - RX MODE - FCC Class B - 01-12-2023.set

Operator: Kyle Fujimoto

EUT Type: Z-Wave Garage Door Controller

EUT Condition: The EUT is continuously receiving at 345 MHz

Company: Ecolink Intelligent Technology, Inc.

Model: GDZW7-ECO

S/N: ELGLCR2217TW00005

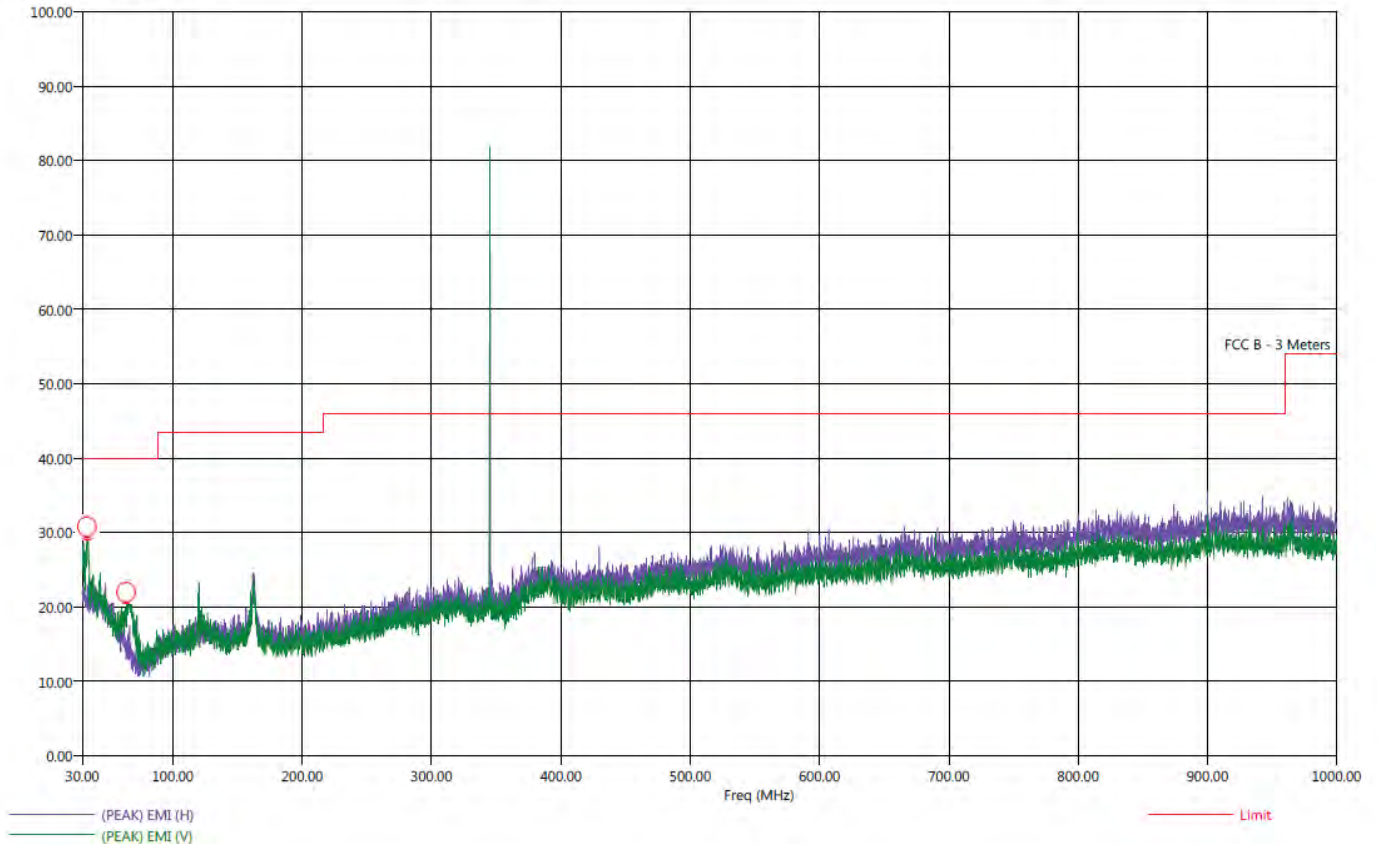
Y-Axis (Worst Case)

Note: The Frequency at 345 MHz is from the accessory unit transmitting 345 MHz to the receiving unit. The accessory unit is placed in the corner of the test chamber.

1/12/2023 8:02:07 AM
Sequence: Preliminary Scan

FCC Class B

Electric Field Strength (dB μ V/m)





Title: Radiated Final - FCC Class B
File: 7 - Keysight - Final Scan - Y-Axis - 345 MHz - RX MODE - FCC Class B - 01-12-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously receiving at 345 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005
Y-Axis (Worst Case)

1/12/2023 8:21:11 AM
Sequence: Final Measurements

FCC Class B

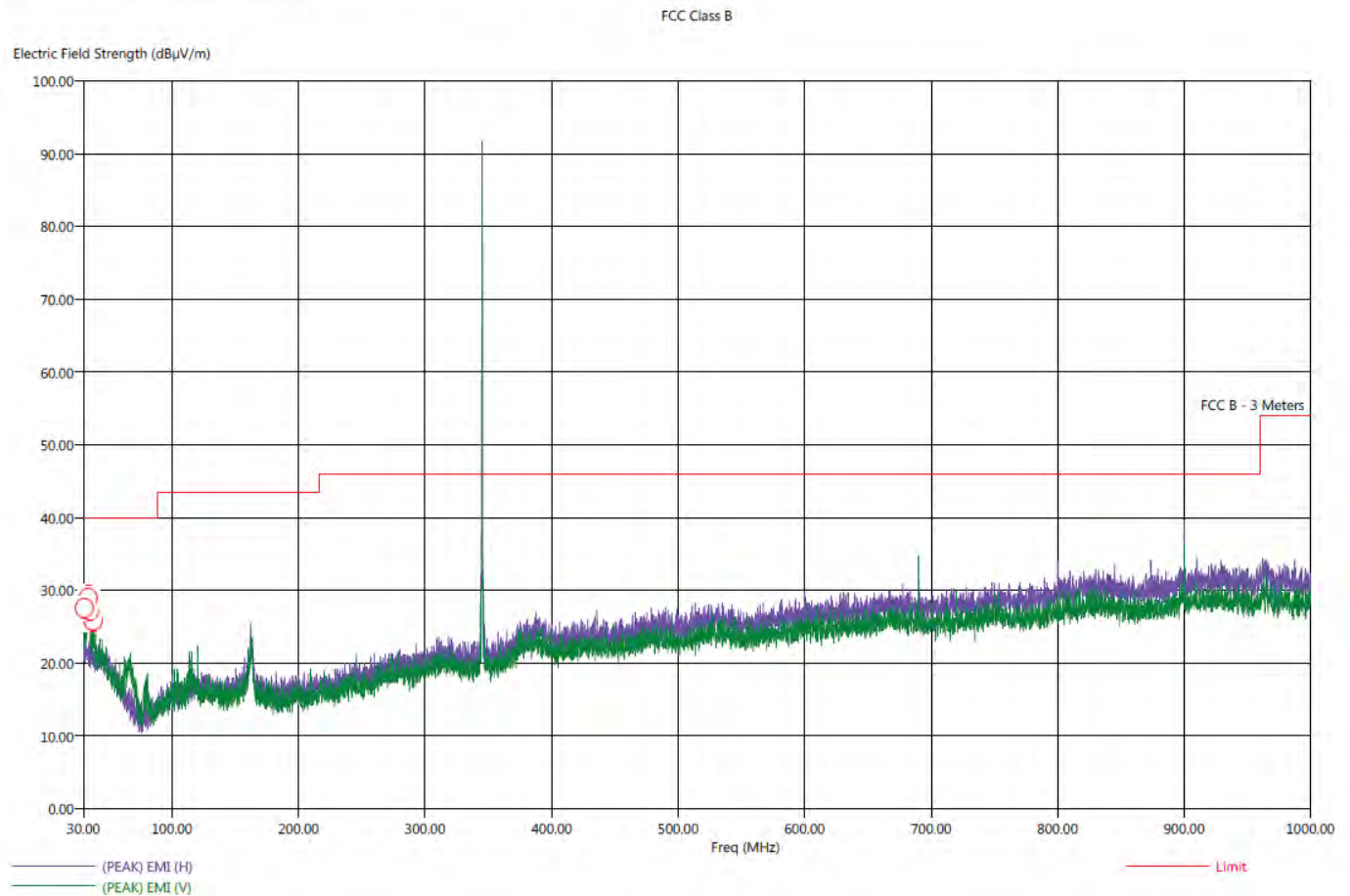
Freq (MHz)	Pol	(PEAK) EMI (dB μ V/m)	(QP) EMI (dB μ V/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dB μ V/m)	Transducer (dB)	Cable (dB)	Ttbl Aql (deg)	Twr Ht (cm)
33.40	V	30.93	25.76	-9.07	-14.24	40.00	21.61	0.38	333.00	143.20
34.00	V	24.13	18.62	-15.87	-21.38	40.00	21.56	0.38	304.75	302.73
63.90	V	27.11	22.21	-12.89	-17.79	40.00	14.56	0.55	310.00	127.08
64.80	V	27.01	22.41	-12.99	-17.59	40.00	14.24	0.56	311.75	143.02
65.60	V	27.67	22.89	-12.33	-17.11	40.00	13.90	0.57	321.25	127.20
66.40	V	26.53	21.77	-13.47	-18.23	40.00	13.62	0.57	3.25	159.02





Title: Pre-Scan - FCC Class B
File: 3 - Keysight - Pre-Scan - Y-Axis - 345 MHz - FCC Class B - 01-11-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously transmitting at 345 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005
Y-Axis (Worst Case)
Note: The Frequencies at 345 MHz and 690 MHz are subject to the limits of FCC 15.231 instead

1/11/2023 9:03:24 AM
Sequence: Preliminary Scan





Title: Radiated Final - FCC Class B
File: 3 - Keysight - Final Scan - Y-Axis - 345 MHz - FCC Class B - 01-11-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously transmitting at 345 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005
Y-Axis (Worst Case)

1/11/2023 9:43:29 AM
Sequence: Final Measurements

FCC Class B

Freq (MHz)	Pol	(PEAK) EMI (dB μ V/m)	(QP) EMI (dB μ V/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dB μ V/m)	Transducer (dB)	Cable (dB)	Ttbl Aql (deg)	Twr Ht (cm)
30.70	V	29.48	23.79	-10.52	-16.21	40.00	22.19	0.36	332.25	111.02
33.90	V	33.67	26.95	-6.33	-13.05	40.00	21.55	0.39	265.50	111.26
34.20	V	31.68	25.56	-8.32	-14.44	40.00	21.48	0.39	251.25	174.97
34.60	V	32.27	26.87	-7.73	-13.13	40.00	21.42	0.39	305.50	111.26
35.00	V	31.78	26.30	-8.22	-13.70	40.00	21.40	0.39	319.25	127.26
37.70	V	27.09	20.94	-12.91	-19.06	40.00	21.13	0.41	284.75	158.85





Title: Pre-Scan - FCC Class B

File: 8 - Keysight - Pre-Scan - Y-Axis - 390 MHz - RX MODE - FCC Class B - 01-12-2023.set

Operator: Kyle Fujimoto

EUT Type: Z-Wave Garage Door Controller

EUT Condition: The EUT is continuously receiving at 390 MHz

Company: Ecolink Intelligent Technology, Inc.

Model: GDZW7-ECO

S/N: ELGLCR2217TW00005

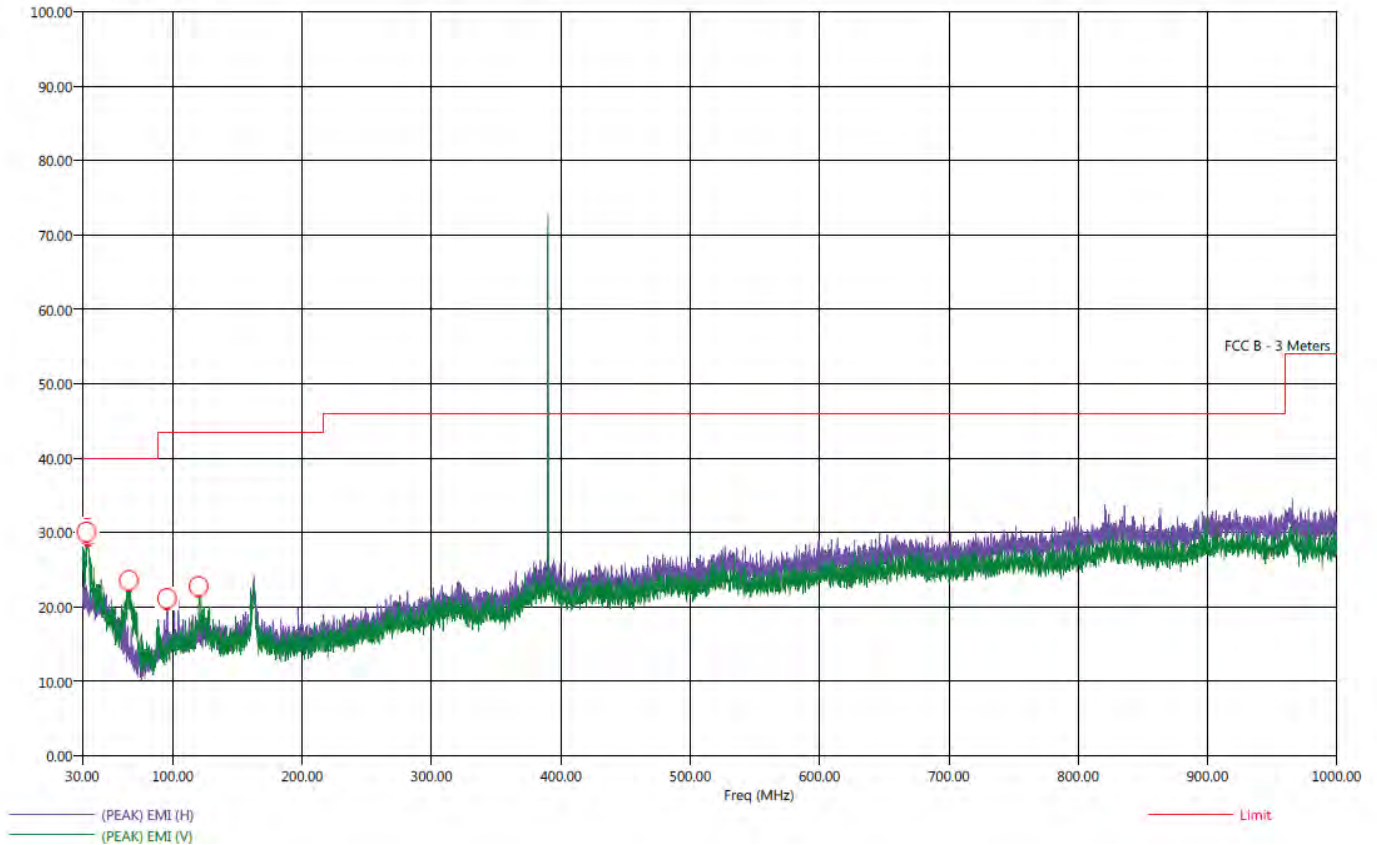
Y-Axis (Worst Case)

Note: The Frequency at 390 MHz is from the accessory unit transmitting 390 MHz to the receiving unit. The accessory unit is placed in the corner of the test chamber.

1/12/2023 7:05:48 AM
Sequence: Preliminary Scan

FCC Class B

Electric Field Strength (dB μ V/m)





Title: Radiated Final - FCC Class B

File: 8 - Keysight - Final Scan - Y-Axis - 390 MHz - RX MODE - FCC Class B - 01-12-2023.set

Operator: Kyle Fujimoto

EUT Type: Z-Wave Garage Door Controller

EUT Condition: The EUT is continuously receiving at 390 MHz

Company: Ecolink Intelligent Technology, Inc.

Model: GDZW7-ECO

S/N: ELGLCR2217TW00005

Y-Axis (Worst Case)

1/12/2023 7:37:39 AM

Sequence: Final Measurements

FCC Class B

Freq (MHz)	Pol	(PEAK) EMI (dB μ V/m)	(QP) EMI (dB μ V/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dB μ V/m)	Transducer (dB)	Cable (dB)	Ttbl Aql (deg)	Twr Ht (cm)
33.20	V	31.02	25.02	-8.98	-14.98	40.00	21.68	0.38	248.50	143.26
33.60	V	32.07	26.47	-7.93	-13.53	40.00	21.66	0.38	275.50	111.02
34.10	V	31.36	26.26	-8.64	-13.74	40.00	21.52	0.39	4.75	126.61
66.00	V	24.77	19.89	-15.23	-20.11	40.00	13.79	0.57	359.75	111.20
95.50	H	17.57	12.36	-25.93	-31.14	43.50	14.94	0.68	38.00	126.97
120.00	V	26.07	20.30	-17.43	-23.20	43.50	16.50	0.79	0.00	111.26





Title: Pre-Scan - FCC Class B

File: 4 - Keysight - Pre-Scan - Y-Axis - 390 MHz - FCC Class B - 01-11-2023.set

Operator: Kyle Fujimoto

EUT Type: Z-Wave Garage Door Controller

EUT Condition: The EUT is continuously transmitting at 390 MHz

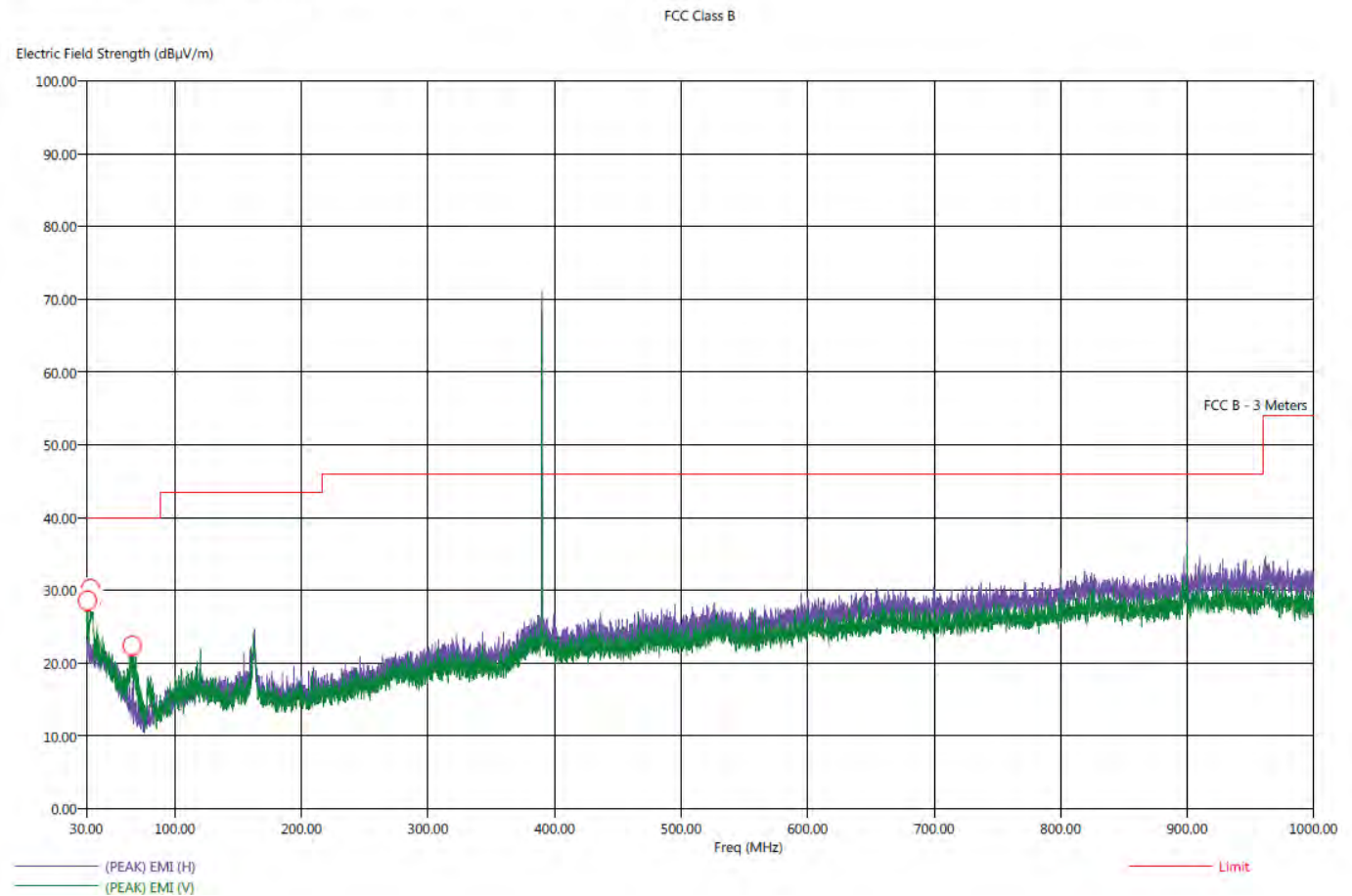
Company: Ecolink Intelligent Technology, Inc.

Model: GDZW7-ECO

S/N: ELGLCR2217TW00005

Y-Axis (Worst Case)

Note: The Frequencies at 390 MHz and 780 MHz are subject to the limits of FCC 15.231 instead

1/11/2023 10:20:36 AM
Sequence: Preliminary Scan

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



Title: Radiated Final - FCC Class B
File: 4 - Keysight - Final Scan - Y-Axis - 390 MHz - FCC Class B - 01-11-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously transmitting at 390 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005
Y-Axis (Worst Case)

1/11/2023 10:37:26 AM
Sequence: Final Measurements

FCC Class B

Freq (MHz)	Pol	(PEAK) EMI (dBμV/m)	(OP) EMI (dBμV/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dBμV/m)	Transducer (dB)	Cable (dB)	Ttbl Aql (deg)	Twr Ht (cm)
30.90	V	25.81	20.21	-14.19	-19.79	40.00	22.12	0.37	285.25	286.61
33.10	V	30.35	23.57	-9.65	-16.43	40.00	21.77	0.38	4.25	175.08
34.00	V	32.88	26.20	-7.12	-13.80	40.00	21.53	0.39	319.50	175.20
34.50	V	32.26	26.79	-7.74	-13.21	40.00	21.44	0.39	233.75	127.32
66.10	V	26.19	20.75	-13.81	-19.25	40.00	13.75	0.57	327.00	159.86
66.90	V	24.98	20.39	-15.02	-19.61	40.00	13.50	0.57	345.75	143.20





FUNDAMENTAL AND HARMONICS

DATA SHEETS



FCC 15.231

Ecolink Intelligent Technology, Inc.
Z-Wave Garage Door Controller
Model: GDZW7-ECO

Date: 01/09/2023
Lab: D
Tested By: Kyle Fujimoto

Fundamental

18.12% Duty Cycle.

[illegible]

**FCC 15.231**Ecolink Intelligent Technology, Inc.
Z-Wave Garage Door Controller
Model: GDZW7-ECO

Date: 01/09/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics**Transmit Mode - X-Axis****18.12% Duty Cycle**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
620.00	40.93	V	75.32	-34.39	Peak	25.75	137.29	
620.00	26.10	V	55.32	-29.22	Avg	25.75	137.29	
930.00	44.75	V	75.32	-30.57	Peak	294.25	145.17	
930.00	29.92	V	55.32	-25.40	Avg	294.25	145.17	
1240.00	30.47	V	73.97	-43.50	Peak	343.00	111.38	
1240.00	15.64	V	53.97	-38.33	Avg	343.00	111.38	
1550.00	30.77	V	73.97	-43.20	Peak	309.50	207.26	
1550.00	15.94	V	53.97	-38.03	Avg	309.50	207.26	
1860.00	32.75	V	75.32	-42.57	Peak	25.50	239.02	
1860.00	17.92	V	55.32	-37.40	Avg	25.50	239.02	
2170.00	37.09	V	75.32	-38.23	Peak	204.25	223.08	
2170.00	22.26	V	55.32	-33.06	Avg	204.25	223.08	
2480.00	35.77	V	75.32	-39.55	Peak	14.25	127.14	
2480.00	20.94	V	55.32	-34.38	Avg	14.25	127.14	
2790.00	36.45	V	73.97	-37.52	Peak	191.25	206.97	
2790.00	21.62	V	53.97	-32.35	Avg	191.25	206.97	
3100.00	39.68	V	75.32	-35.64	Peak	0.50	111.20	
3100.00	24.85	V	55.32	-30.47	Avg	0.50	111.20	

FCC 15.231

Ecolink Intelligent Technology, Inc.

Z-Wave Garage Door Controller

Model: GDZW7-ECO

Date: 01/09/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics

Transmit Mode - Y-Axis

18.12% Duty Cycle

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
620.00	42.91	V	75.32	-32.41	Peak	279.00	155.62	
620.00	28.08	V	55.32	-27.24	Avg	279.00	155.62	
930.00	44.75	V	75.32	-30.57	Peak	0.00	154.62	
930.00	29.92	V	55.32	-25.40	Avg	0.00	154.62	
1240.00	30.64	V	73.97	-43.33	Peak	358.00	239.50	
1240.00	15.81	V	53.97	-38.16	Avg	358.00	239.50	
1550.00	31.19	V	73.97	-42.78	Peak	184.00	143.20	
1550.00	16.36	V	53.97	-37.61	Avg	184.00	143.20	
1860.00	34.64	V	75.32	-40.68	Peak	217.75	127.26	
1860.00	19.81	V	55.32	-35.51	Avg	217.75	127.26	
2170.00	36.68	V	75.32	-38.64	Peak	305.50	159.38	
2170.00	21.85	V	55.32	-33.47	Avg	305.50	159.38	
2480.00	37.61	V	75.32	-37.71	Peak	118.50	175.32	
2480.00	22.78	V	55.32	-32.54	Avg	118.50	175.32	
2790.00	35.85	V	73.97	-38.12	Peak	273.25	127.20	
2790.00	21.02	V	53.97	-32.95	Avg	273.25	127.20	
3100.00	40.01	V	75.32	-35.31	Peak	285.25	127.26	
3100.00	25.18	V	55.32	-30.14	Avg	285.25	127.26	

FCC 15.231

Ecolink Intelligent Technology, Inc.

Z-Wave Garage Door Controller

Model: GDZW7-ECO

Date: 01/09/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics

Transmit Mode - Z-Axis

18.12% Duty Cycle

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
620.00	42.48	V	75.32	-32.84	Peak	149.50	159.50	
620.00	27.65	V	55.32	-27.67	Avg	149.50	159.50	
930.00	41.93	V	75.32	-33.39	Peak	3.75	126.43	
930.00	27.10	V	55.32	-28.22	Avg	3.75	126.43	
1240.00	30.67	V	73.97	-43.30	Peak	27.25	159.26	
1240.00	15.84	V	53.97	-38.13	Avg	27.25	159.26	
1550.00	31.14	V	73.97	-42.83	Peak	136.25	207.68	
1550.00	16.31	V	53.97	-37.66	Avg	136.25	207.68	
1860.00	36.41	V	75.32	-38.91	Peak	190.25	159.44	
1860.00	21.58	V	55.32	-33.74	Avg	190.25	159.44	
2170.00	36.06	V	75.32	-39.26	Peak	78.00	159.50	
2170.00	21.23	V	55.32	-34.09	Avg	78.00	159.50	
2480.00	37.03	V	75.32	-38.29	Peak	196.00	239.08	
2480.00	22.20	V	55.32	-33.12	Avg	196.00	239.08	
2790.00	36.81	V	73.97	-37.16	Peak	61.00	175.14	
2790.00	21.98	V	53.97	-31.99	Avg	61.00	175.14	
3100.00	38.78	V	75.32	-36.54	Peak	168.75	207.32	
3100.00	23.95	V	55.32	-31.37	Avg	168.75	207.32	

**FCC 15.231**Ecolink Intelligent Technology, Inc.
Z-Wave Garage Door Controller
Model: GDZW7-ECO

Date: 01/09/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics**Transmit Mode - X-Axis****18.12% Duty Cycle**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
620.00	42.49	H	75.32	-32.83	Peak	130.75	145.89	
620.00	27.66	H	55.32	-27.66	Avg	130.75	145.89	
930.00	45.95	H	75.32	-29.37	Peak	185.00	166.19	
930.00	31.12	H	55.32	-24.20	Avg	185.00	166.19	
1240.00	30.74	H	73.97	-43.23	Peak	128.75	175.56	
1240.00	15.91	H	53.97	-38.06	Avg	128.75	175.56	
1550.00	31.97	H	73.97	-42.00	Peak	154.75	144.58	
1550.00	17.14	H	53.97	-36.83	Avg	154.75	144.58	
1860.00	36.13	H	75.32	-39.19	Peak	133.75	192.40	
1860.00	21.30	H	55.32	-34.02	Avg	133.75	192.40	
2170.00	36.04	H	75.32	-39.28	Peak	257.00	127.14	
2170.00	21.21	H	55.32	-34.11	Avg	257.00	127.14	
2480.00	37.31	H	75.32	-38.01	Peak	173.50	223.38	
2480.00	22.48	H	55.32	-32.84	Avg	173.50	223.38	
2790.00	36.46	H	73.97	-37.51	Peak	311.25	159.32	
2790.00	21.63	H	53.97	-32.34	Avg	311.25	159.32	
3100.00	40.76	H	75.32	-34.56	Peak	129.25	143.08	
3100.00	25.93	H	55.32	-29.39	Avg	129.25	143.08	

**FCC 15.231**Ecolink Intelligent Technology, Inc.
Z-Wave Garage Door Controller
Model: GDZW7-ECO

Date: 01/09/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics**Transmit Mode - Y-Axis****18.12% Duty Cycle**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
620.00	40.99	H	75.32	-34.33	Peak	10.25	146.79	
620.00	26.16	H	55.32	-29.16	Avg	10.25	146.79	
930.00	44.56	H	75.32	-30.76	Peak	137.75	101.11	
930.00	29.73	H	55.32	-25.59	Avg	137.75	101.11	
1240.00	30.84	H	73.97	-43.13	Peak	85.50	223.38	
1240.00	16.01	H	53.97	-37.96	Avg	85.50	223.38	
1550.00	31.32	H	73.97	-42.65	Peak	164.25	239.08	
1550.00	16.49	H	53.97	-37.48	Avg	164.25	239.08	
1860.00	32.74	H	75.32	-42.58	Peak	202.50	126.97	
1860.00	17.91	H	55.32	-37.41	Avg	202.50	126.97	
2170.00	37.21	H	75.32	-38.11	Peak	0.25	207.44	
2170.00	22.38	H	55.32	-32.94	Avg	0.25	207.44	
2480.00	36.41	H	75.32	-38.91	Peak	72.25	249.01	
2480.00	21.58	H	55.32	-33.74	Avg	72.25	249.01	
2790.00	36.13	H	73.97	-37.84	Peak	315.75	127.20	
2790.00	21.30	H	53.97	-32.67	Avg	315.75	127.20	
3100.00	39.93	H	75.32	-35.39	Peak	260.75	111.56	
3100.00	25.10	H	55.32	-30.22	Avg	260.75	111.56	

FCC 15.231

Ecolink Intelligent Technology, Inc.

Z-Wave Garage Door Controller

Model: GDZW7-ECO

Date: 01/09/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics

Transmit Mode - Z-Axis

18.12% Duty Cycle

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
620.00	40.33	H	75.32	-34.99	Peak	303.25	100.00	
620.00	25.50	H	55.32	-29.82	Avg	303.25	100.00	
930.00	46.20	H	75.32	-29.12	Peak	10.25	100.05	
930.00	31.37	H	55.32	-23.95	Avg	10.25	100.05	
1240.00	30.68	H	73.97	-43.29	Peak	272.00	111.20	
1240.00	15.85	H	53.97	-38.12	Avg	272.00	111.20	
1550.00	30.81	H	73.97	-43.16	Peak	242.25	175.38	
1550.00	15.98	H	53.97	-37.99	Avg	242.25	175.38	
1860.00	35.78	H	75.32	-39.54	Peak	132.00	159.02	
1860.00	20.95	H	55.32	-34.37	Avg	132.00	159.02	
2170.00	36.60	H	75.32	-38.72	Peak	43.00	249.95	
2170.00	21.77	H	55.32	-33.55	Avg	43.00	249.95	
2480.00	36.02	H	75.32	-39.30	Peak	330.50	126.97	
2480.00	21.19	H	55.32	-34.13	Avg	330.50	126.97	
2790.00	36.32	H	73.97	-37.65	Peak	269.00	191.02	
2790.00	21.49	H	53.97	-32.48	Avg	269.00	191.02	
3100.00	36.02	H	75.32	-39.30	Peak	304.50	127.20	
3100.00	21.19	H	55.32	-34.13	Avg	304.50	127.20	



FCC Class B and FCC 15.231

Ecolink Intelligent Technology, Inc.
Z-Wave Garage Door Controller
Model: GDZW7-ECO

Date: 01/09/2023

Lab: D

Tested By: Kyle Fujimoto

Non Harmonic Emissions from the Tx and Digital Portion - 9 kHz to 30 MHz

Non Harmonic Emissions from the Tx and Digital Portion - 1 GHz To 3.10 GHz

[illegible]



FCC Class B and RSS-GEN

Ecolink Intelligent Technology, Inc.
Z-Wave Garage Door Controller
Model: GDZW7-ECO

Date: 01/09/2023

Lab: D

Tested By: Kyle Fujimoto

Receive Mode - 1 GHz to 3.1 GHz

310 MHz Receiver

[illegible]

FCC 15.231Ecolink Intelligent Technology, Inc.
Z-Wave Garage Door Controller
Model: GDZW7-ECODate: 01/09/2023
Lab: D
Tested By: Kyle Fujimoto**Fundamental
21.91% Duty Cycle**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
315.00	67.39	V	95.62	-28.23	Peak	242.50	100.25	X-Axis
315.00	54.21	V	75.62	-21.41	Avg	242.50	100.25	Vertical Polarization
315.00	71.17	V	95.62	-24.45	Peak	32.75	158.01	Y-Axis
315.00	57.99	V	75.62	-17.63	Avg	32.75	158.01	Vertical Polarization
315.00	73.67	V	95.62	-21.95	Peak	25.00	134.61	Z-Axis
315.00	60.49	V	75.62	-15.13	Avg	25.00	134.61	Vertical Polarization
315.00	74.68	H	95.62	-20.94	Peak	166.75	100.00	X-Axis
315.00	61.50	H	75.62	-14.12	Avg	166.75	100.00	Horizontal Polarization
315.00	71.88	H	95.62	-23.74	Peak	297.50	147.20	Y-Axis
315.00	58.70	H	75.62	-16.92	Avg	297.50	147.20	Horizontal Polarization
315.00	72.16	H	95.62	-23.46	Peak	283.00	100.01	Z-Axis
315.00	58.98	H	75.62	-16.64	Avg	283.00	100.01	Horizontal Polarization

**FCC 15.231**Ecolink Intelligent Technology, Inc.
Z-Wave Garage Door Controller
Model: GDZW7-ECO

Date: 01/10/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics**Transmit Mode - X-Axis****21.91% Duty Cycle**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
630.00	41.11	V	75.62	-34.51	Peak	221.00	133.95	
630.00	27.93	V	55.62	-27.69	Avg	221.00	133.95	
945.00	44.87	V	75.62	-30.75	Peak	350.00	132.28	
945.00	31.69	V	55.62	-23.93	Avg	350.00	132.28	
1260.00	31.06	V	73.97	-42.91	Peak	297.00	127.20	
1260.00	17.88	V	53.97	-36.09	Avg	297.00	127.20	
1575.00	30.80	V	73.97	-43.17	Peak	224.00	238.91	
1575.00	17.62	V	53.97	-36.35	Avg	224.00	238.91	
1890.00	33.65	V	75.62	-41.97	Peak	311.00	111.26	
1890.00	20.47	V	55.62	-35.15	Avg	311.00	111.26	
2205.00	36.58	V	73.97	-37.39	Peak	312.75	223.20	
2205.00	23.40	V	53.97	-30.57	Avg	312.75	223.20	
2520.00	36.96	V	75.62	-38.66	Peak	103.75	249.07	
2520.00	23.78	V	55.62	-31.84	Avg	103.75	249.07	
2835.00	36.84	V	73.97	-37.13	Peak	267.75	207.20	
2835.00	23.66	V	53.97	-30.31	Avg	267.75	207.20	
3150.00	38.99	V	75.62	-36.63	Peak	0.75	127.20	
3150.00	25.81	V	55.62	-29.81	Avg	0.75	127.20	

FCC 15.231

Ecolink Intelligent Technology, Inc.

Z-Wave Garage Door Controller

Model: GDZW7-ECO

Date: 01/10/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics

Transmit Mode - Y-Axis

21.91% Duty Cycle

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
630.00	43.13	V	75.62	-32.49	Peak	349.50	177.00	
630.00	29.95	V	55.62	-25.67	Avg	349.50	177.00	
945.00	47.26	V	75.62	-28.36	Peak	180.25	145.26	
945.00	34.08	V	55.62	-21.54	Avg	180.25	145.26	
1260.00	30.35	V	73.97	-43.62	Peak	221.50	175.62	
1260.00	17.17	V	53.97	-36.80	Avg	221.50	175.62	
1575.00	31.28	V	73.97	-42.69	Peak	190.25	159.26	
1575.00	18.10	V	53.97	-35.87	Avg	190.25	159.26	
1890.00	33.16	V	75.62	-42.46	Peak	265.75	239.38	
1890.00	19.98	V	55.62	-35.64	Avg	265.75	239.38	
2205.00	37.09	V	73.97	-36.88	Peak	32.25	159.20	
2205.00	23.91	V	53.97	-30.06	Avg	32.25	159.20	
2520.00	37.43	V	75.62	-38.19	Peak	343.75	127.20	
2520.00	24.25	V	55.62	-31.37	Avg	343.75	127.20	
2835.00	36.77	V	73.97	-37.20	Peak	247.00	207.20	
2835.00	23.59	V	53.97	-30.38	Avg	247.00	207.20	
3150.00	40.18	V	75.62	-35.44	Peak	309.00	111.26	
3150.00	27.00	V	55.62	-28.62	Avg	309.00	111.26	

FCC 15.231

Ecolink Intelligent Technology, Inc.

Z-Wave Garage Door Controller

Model: GDZW7-ECO

Date: 01/10/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics
Transmit Mode - Z-Axis
21.91% Duty Cycle

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
630.00	41.02	V	75.62	-34.60	Peak	137.00	134.61	
630.00	27.84	V	55.62	-27.78	Avg	137.00	134.61	
945.00	45.04	V	75.62	-30.58	Peak	100.25	124.04	
945.00	31.86	V	55.62	-23.76	Avg	100.25	124.04	
1260.00	30.88	V	73.97	-43.09	Peak	156.25	223.62	
1260.00	17.70	V	53.97	-36.27	Avg	156.25	223.62	
1575.00	30.83	V	73.97	-43.14	Peak	69.00	249.01	
1575.00	17.65	V	53.97	-36.32	Avg	69.00	249.01	
1890.00	33.56	V	75.62	-42.06	Peak	139.25	127.26	
1890.00	20.38	V	55.62	-35.24	Avg	139.25	127.26	
2205.00	36.78	V	73.97	-37.19	Peak	70.25	247.08	
2205.00	23.60	V	53.97	-30.37	Avg	70.25	247.08	
2520.00	39.24	V	75.62	-36.38	Peak	163.75	143.80	
2520.00	26.06	V	55.62	-29.56	Avg	163.75	143.80	
2835.00	36.83	V	73.97	-37.14	Peak	124.50	239.20	
2835.00	23.65	V	53.97	-30.32	Avg	124.50	239.20	
3150.00	39.85	V	75.62	-35.77	Peak	151.25	159.26	
3150.00	26.67	V	55.62	-28.95	Avg	151.25	159.26	

**FCC 15.231**Ecolink Intelligent Technology, Inc.
Z-Wave Garage Door Controller
Model: GDZW7-ECO

Date: 01/10/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics**Transmit Mode - X-Axis****21.91% Duty Cycle**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
630.00	45.32	H	75.62	-30.31	Peak	257.00	163.86	
630.00	32.14	H	55.62	-23.49	Avg	257.00	163.86	
945.00	44.92	H	75.62	-30.70	Peak	302.50	163.86	
945.00	31.74	H	55.62	-23.88	Avg	302.50	163.86	
1260.00	30.78	H	73.97	-43.19	Peak	216.25	127.26	
1260.00	17.60	H	53.97	-36.37	Avg	216.25	127.26	
1575.00	31.00	H	73.97	-42.97	Peak	131.50	127.26	
1575.00	17.82	H	53.97	-36.15	Avg	131.50	127.26	
1890.00	34.15	H	75.62	-41.47	Peak	118.50	127.32	
1890.00	20.97	H	55.62	-34.65	Avg	118.50	127.32	
2205.00	37.10	H	73.97	-36.87	Peak	44.00	111.44	
2205.00	23.92	H	53.97	-30.05	Avg	44.00	111.44	
2520.00	39.41	H	75.62	-36.21	Peak	172.00	174.97	
2520.00	26.23	H	55.62	-29.39	Avg	172.00	174.97	
2835.00	37.50	H	73.97	-36.47	Peak	226.00	249.95	
2835.00	24.32	H	53.97	-29.65	Avg	226.00	249.95	
3150.00	39.60	H	75.62	-36.02	Peak	114.00	111.20	
3150.00	26.42	H	55.62	-29.20	Avg	114.00	111.20	

FCC 15.231

Ecolink Intelligent Technology, Inc.

Z-Wave Garage Door Controller

Model: GDZW7-ECO

Date: 01/10/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics

Transmit Mode - Y-Axis

21.91% Duty Cycle

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
630.00	41.11	H	75.62	-34.51	Peak	10.00	147.20	
630.00	27.93	H	55.62	-27.69	Avg	10.00	147.20	
945.00	43.17	H	75.62	-32.45	Peak	350.00	145.50	
945.00	29.99	H	55.62	-25.63	Avg	350.00	145.50	
1260.00	31.30	H	73.97	-42.67	Peak	50.00	239.38	
1260.00	18.12	H	53.97	-35.85	Avg	50.00	239.38	
1575.00	31.26	H	73.97	-42.71	Peak	136.50	190.79	
1575.00	18.08	H	53.97	-35.89	Avg	136.50	190.79	
1890.00	33.46	H	75.62	-42.16	Peak	153.00	126.79	
1890.00	20.28	H	55.62	-35.34	Avg	153.00	126.79	
2205.00	36.18	H	73.97	-37.79	Peak	142.25	239.38	
2205.00	23.00	H	53.97	-30.97	Avg	142.25	239.38	
2520.00	38.60	H	75.62	-37.02	Peak	264.25	127.32	
2520.00	25.42	H	55.62	-30.20	Avg	264.25	127.32	
2835.00	36.69	H	73.97	-37.28	Peak	266.75	175.44	
2835.00	23.51	H	53.97	-30.46	Avg	266.75	175.44	
3150.00	39.07	H	75.62	-36.55	Peak	267.50	111.38	
3150.00	25.89	H	55.62	-29.73	Avg	267.50	111.38	

**FCC 15.231**Ecolink Intelligent Technology, Inc.
Z-Wave Garage Door Controller
Model: GDZW7-ECO

Date: 01/10/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics**Transmit Mode - Z-Axis****21.91% Duty Cycle**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
630.00	40.15	H	75.62	-35.47	Peak	36.00	172.10	
630.00	26.97	H	55.62	-28.65	Avg	36.00	172.10	
945.00	45.48	H	75.62	-30.14	Peak	315.50	173.25	
945.00	32.30	H	55.62	-23.32	Avg	315.50	173.25	
1260.00	30.47	H	73.97	-43.50	Peak	55.00	127.14	
1260.00	17.29	H	53.97	-36.68	Avg	55.00	127.14	
1575.00	31.53	H	73.97	-42.44	Peak	32.75	223.26	
1575.00	18.35	H	53.97	-35.62	Avg	32.75	223.26	
1890.00	35.64	H	75.62	-39.98	Peak	111.25	159.14	
1890.00	22.46	H	55.62	-33.16	Avg	111.25	159.14	
2205.00	35.61	H	73.97	-38.36	Peak	243.00	127.26	
2205.00	22.43	H	53.97	-31.54	Avg	243.00	127.26	
2520.00	38.68	H	75.62	-36.94	Peak	119.25	207.02	
2520.00	25.50	H	55.62	-30.12	Avg	119.25	207.02	
2835.00	36.57	H	73.97	-37.40	Peak	227.75	127.20	
2835.00	23.39	H	53.97	-30.58	Avg	227.75	127.20	
3150.00	40.98	H	75.62	-34.64	Peak	310.25	175.08	
3150.00	27.80	H	55.62	-27.82	Avg	310.25	175.08	



FCC Class B and FCC 15.231

Ecolink Intelligent Technology, Inc.
Z-Wave Garage Door Controller
Model: GDZW7-ECO

Date: 01/10/2023

Lab: D

Tested By: Kyle Fujimoto

Non Harmonic Emissions from the Tx and Digital Portion - 9 kHz to 30 MHz

Non Harmonic Emissions from the Tx and Digital Portion - 1 GHz To 3.15 GHz

[illegible]

FCC 15.231Ecolink Intelligent Technology, Inc.
Z-Wave Garage Door Controller
Model: GDZW7-ECO

Date: 01/09/2023

Lab: D

Tested By: Kyle Fujimoto

Fundamental
12.84% Duty Cycle

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
345.00	89.50	V	97.26	-7.76	Peak	350.00	141.59	X-Axis
345.00	71.68	V	77.26	-5.58	Avg	350.00	141.59	Vertical Polarization
345.00	94.49	V	97.26	-2.77	Peak	39.75	100.02	Y-Axis
345.00	76.67	V	77.26	-0.59	Avg	39.75	100.02	Vertical Polarization
345.00	92.86	V	97.26	-4.40	Peak	221.00	169.00	Z-Axis
345.00	75.04	V	77.26	-2.22	Avg	221.00	169.00	Vertical Polarization
345.00	93.40	H	97.26	-3.86	Peak	207.50	102.91	X-Axis
345.00	75.58	H	77.26	-1.68	Avg	207.50	102.91	Horizontal Polarization
345.00	92.58	H	97.26	-4.68	Peak	285.50	100.32	Y-Axis
345.00	74.76	H	77.26	-2.50	Avg	285.50	100.32	Horizontal Polarization
345.00	87.24	H	97.26	-10.02	Peak	250.00	110.61	Z-Axis
345.00	74.06	H	77.26	-3.20	Avg	250.00	110.61	Horizontal Polarization

FCC 15.231

Ecolink Intelligent Technology, Inc.

Z-Wave Garage Door Controller

Model: GDZW7-ECO

Date: 01/09/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics

Transmit Mode - X-Axis

12.84% Duty Cycle

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
690.00	52.80	V	77.26	-24.46	Peak	271.50	125.59	
690.00	34.98	V	57.26	-22.28	Avg	271.50	125.59	
1035.00	30.07	V	73.97	-43.90	Peak	195.00	239.20	
1035.00	12.25	V	53.97	-41.72	Avg	195.00	239.20	
1380.00	31.27	V	73.97	-42.70	Peak	165.75	239.14	
1380.00	13.45	V	53.97	-40.52	Avg	165.75	239.14	
1725.00	31.53	V	77.26	-45.73	Peak	227.50	159.26	
1725.00	13.71	V	57.26	-43.55	Avg	227.50	159.26	
2070.00	35.79	V	77.26	-41.47	Peak	31.25	175.56	
2070.00	17.97	V	57.26	-39.29	Avg	31.25	175.56	
2415.00	38.22	V	77.26	-39.04	Peak	56.50	127.44	
2415.00	20.40	V	57.26	-36.86	Avg	56.50	127.44	
2760.00	36.18	V	73.97	-37.79	Peak	112.75	127.08	
2760.00	18.36	V	53.97	-35.61	Avg	112.75	127.08	
3105.00	36.93	V	77.26	-40.33	Peak	195.25	111.38	
3105.00	19.11	V	57.26	-38.15	Avg	195.25	111.38	
3450.00	50.50	V	77.26	-26.76	Peak	277.50	111.50	
3450.00	32.68	V	57.26	-24.58	Avg	277.50	111.50	

FCC 15.231

Ecolink Intelligent Technology, Inc.

Z-Wave Garage Door Controller

Model: GDZW7-ECO

Date: 01/09/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics

Transmit Mode - Y-Axis

12.84% Duty Cycle

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
690.00	50.71	V	77.26	-26.55	Peak	350.00	110.13	
690.00	32.89	V	57.26	-24.37	Avg	350.00	110.13	
1035.00	29.71	V	73.97	-44.26	Peak	47.00	223.14	
1035.00	11.89	V	53.97	-42.08	Avg	47.00	223.14	
1380.00	30.98	V	73.97	-42.99	Peak	300.25	175.14	
1380.00	13.16	V	53.97	-40.81	Avg	300.25	175.14	
1725.00	31.78	V	77.26	-45.48	Peak	337.25	175.62	
1725.00	13.96	V	57.26	-43.30	Avg	337.25	175.62	
2070.00	35.98	V	77.26	-41.28	Peak	62.50	239.32	
2070.00	18.16	V	57.26	-39.10	Avg	62.50	239.32	
2415.00	39.50	V	77.26	-37.76	Peak	118.75	127.14	
2415.00	21.68	V	57.26	-35.58	Avg	118.75	127.14	
2760.00	36.24	V	73.97	-37.73	Peak	45.25	191.26	
2760.00	18.42	V	53.97	-35.55	Avg	45.25	191.26	
3105.00	36.94	V	77.26	-40.32	Peak	195.25	127.38	
3105.00	19.12	V	57.26	-38.14	Avg	195.25	127.38	
3450.00	49.38	V	77.26	-27.88	Peak	86.50	111.56	
3450.00	31.56	V	57.26	-25.70	Avg	86.50	111.56	

FCC 15.231

Ecolink Intelligent Technology, Inc.

Z-Wave Garage Door Controller

Model: GDZW7-ECO

Date: 01/10/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics

Transmit Mode - Z-Axis

12.84% Duty Cycle

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
690.00	51.10	V	77.26	-26.16	Peak	359.75	100.02	
690.00	33.28	V	57.26	-23.98	Avg	359.75	100.02	
1035.00	30.30	V	73.97	-43.67	Peak	265.75	175.50	
1035.00	12.48	V	53.97	-41.49	Avg	265.75	175.50	
1380.00	31.43	V	73.97	-42.54	Peak	231.00	225.77	
1380.00	13.61	V	53.97	-40.36	Avg	231.00	225.77	
1725.00	31.80	V	77.26	-45.46	Peak	19.75	191.44	
1725.00	13.98	V	57.26	-43.28	Avg	19.75	191.44	
2070.00	35.88	V	77.26	-41.38	Peak	155.75	110.37	
2070.00	18.06	V	57.26	-39.20	Avg	155.75	110.37	
2415.00	40.96	V	77.26	-36.30	Peak	180.75	191.20	
2415.00	23.14	V	57.26	-34.12	Avg	180.75	191.20	
2760.00	37.62	V	73.97	-36.35	Peak	148.00	159.20	
2760.00	19.80	V	53.97	-34.17	Avg	148.00	159.20	
3105.00	36.24	V	77.26	-41.02	Peak	358.25	159.08	
3105.00	18.42	V	57.26	-38.84	Avg	358.25	159.08	
3450.00	49.12	V	77.26	-28.14	Peak	139.75	143.20	
3450.00	31.30	V	57.26	-25.96	Avg	139.75	143.20	

FCC 15.231

Ecolink Intelligent Technology, Inc.

Z-Wave Garage Door Controller

Model: GDZW7-ECO

Date: 01/09/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics
Transmit Mode - X-Axis

12.84% Duty Cycle

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
690.00	44.35	H	77.26	-32.91	Peak	294.50	133.65	
690.00	26.53	H	57.26	-30.73	Avg	294.50	133.65	
1035.00	30.00	H	73.97	-43.97	Peak	231.50	192.46	
1035.00	12.18	H	53.97	-41.79	Avg	231.50	192.46	
1380.00	31.13	H	73.97	-42.84	Peak	4.75	175.08	
1380.00	13.31	H	53.97	-40.66	Avg	4.75	175.08	
1725.00	31.95	H	77.26	-45.31	Peak	177.75	239.26	
1725.00	14.13	H	57.26	-43.13	Avg	177.75	239.26	
2070.00	35.68	H	77.26	-41.58	Peak	69.50	190.85	
2070.00	17.86	H	57.26	-39.40	Avg	69.50	190.85	
2415.00	39.21	H	77.26	-38.05	Peak	273.75	159.08	
2415.00	21.39	H	57.26	-35.87	Avg	273.75	159.08	
2760.00	38.51	H	73.97	-35.46	Peak	0.50	127.14	
2760.00	20.69	H	53.97	-33.28	Avg	0.50	127.14	
3105.00	37.87	H	77.26	-39.39	Peak	207.00	127.38	
3105.00	20.05	H	57.26	-37.21	Avg	207.00	127.38	
3450.00	52.34	H	77.26	-24.92	Peak	222.25	127.32	
3450.00	34.52	H	57.26	-22.74	Avg	222.25	127.32	

**FCC 15.231**Ecolink Intelligent Technology, Inc.
Z-Wave Garage Door Controller
Model: GDZW7-ECO

Date: 01/09/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics**Transmit Mode - Y-Axis****12.84% Duty Cycle**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
690.00	53.25	H	77.26	-24.01	Peak	350.00	100.02	
690.00	35.43	H	57.26	-21.83	Avg	350.00	100.02	
1035.00	29.87	H	73.97	-44.10	Peak	176.75	111.44	
1035.00	12.05	H	53.97	-41.92	Avg	176.75	111.44	
1380.00	30.81	H	73.97	-43.16	Peak	19.25	191.20	
1380.00	12.99	H	53.97	-40.98	Avg	19.25	191.20	
1725.00	31.20	H	77.26	-46.06	Peak	277.00	143.32	
1725.00	13.38	H	57.26	-43.88	Avg	277.00	143.32	
2070.00	35.64	H	77.26	-41.62	Peak	116.25	159.32	
2070.00	17.82	H	57.26	-39.44	Avg	116.25	159.32	
2415.00	38.98	H	77.26	-38.28	Peak	236.00	111.44	
2415.00	21.16	H	57.26	-36.10	Avg	236.00	111.44	
2760.00	36.95	H	73.97	-37.02	Peak	193.50	143.26	
2760.00	19.13	H	53.97	-34.84	Avg	193.50	143.26	
3105.00	36.59	H	77.26	-40.67	Peak	24.00	175.50	
3105.00	18.77	H	57.26	-38.49	Avg	24.00	175.50	
3450.00	49.82	H	77.26	-27.44	Peak	359.75	100.02	
3450.00	32.00	H	57.26	-25.26	Avg	359.75	100.02	

FCC 15.231

Ecolink Intelligent Technology, Inc.

Z-Wave Garage Door Controller

Model: GDZW7-ECO

Date: 01/10/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics
Transmit Mode - Z-Axis

12.84% Duty Cycle

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
690.00	56.82	H	77.26	-20.44	Peak	15.25	102.26	
690.00	39.00	H	57.26	-18.26	Avg	15.25	102.26	
1035.00	30.12	H	73.97	-43.85	Peak	287.00	207.26	
1035.00	12.30	H	53.97	-41.67	Avg	287.00	207.26	
1380.00	30.69	H	73.97	-43.28	Peak	309.25	111.26	
1380.00	12.87	H	53.97	-41.10	Avg	309.25	111.26	
1725.00	32.32	H	77.26	-44.94	Peak	116.00	159.02	
1725.00	14.50	H	57.26	-42.76	Avg	116.00	159.02	
2070.00	36.00	H	77.26	-41.26	Peak	213.50	223.14	
2070.00	18.18	H	57.26	-39.08	Avg	213.50	223.14	
2415.00	39.28	H	77.26	-37.98	Peak	127.00	127.20	
2415.00	21.46	H	57.26	-35.80	Avg	127.00	127.20	
2760.00	36.73	H	73.97	-37.24	Peak	253.75	207.08	
2760.00	18.91	H	53.97	-35.06	Avg	253.75	207.08	
3105.00	37.26	H	77.26	-40.00	Peak	309.25	143.14	
3105.00	19.44	H	57.26	-37.82	Avg	309.25	143.14	
3450.00	51.04	H	77.26	-26.22	Peak	193.00	127.20	
3450.00	33.22	H	57.26	-24.04	Avg	193.00	127.20	



FCC Class B and FCC 15.231

Ecolink Intelligent Technology, Inc.
Z-Wave Garage Door Controller
Model: GDZW7-ECO

Date: 01/10/2023

Lab: D

Tested By: Kyle Fujimoto

Non Harmonic Emissions from the Tx and Digital Portion - 9 kHz to 30 MHz

Non Harmonic Emissions from the Tx and Digital Portion - 1 GHz To 3.45 GHz

[illegible]



FCC Class B and RSS-GEN

Ecolink Intelligent Technology, Inc.
Z-Wave Garage Door Controller
Model: GDZW7-ECO

Date: 01/10/2023

Lab: D

Tested By: Kyle Fujimoto

Receive Mode - 1 GHz to 3.45 GHz

345 MHz Receiver

[illegible]



FCC 15.231

Ecolink Intelligent Technology, Inc.
Z-Wave Garage Door
Controller
Model: GDZW7-ECO

Date: 01/09/2023

Lab: D
Tested By: Kyle Fujimoto

Fundamental 21.91% Duty Cycle

[illegible]

**FCC 15.231**Ecolink Intelligent Technology, Inc.
Z-Wave Garage Door Controller
Model: GDZW7-ECO

Date: 01/09/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics**Transmit Mode - X-Axis****21.91% Duty Cycle**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
780.00	41.74	V	79.24	-37.51	Peak	350.00	180.94	
780.00	28.56	V	59.24	-30.69	Avg	350.00	180.94	
1170.00	30.25	V	73.97	-43.72	Peak	77.75	111.38	
1170.00	17.07	V	53.97	-36.90	Avg	77.75	111.38	
1560.00	31.79	V	73.97	-42.18	Peak	98.50	111.62	
1560.00	18.61	V	53.97	-35.36	Avg	98.50	111.62	
1950.00	34.90	V	79.24	-44.34	Peak	127.50	223.38	
1950.00	21.72	V	59.24	-37.52	Avg	127.50	223.38	
2340.00	34.00	V	73.97	-39.97	Peak	58.00	223.20	
2340.00	20.82	V	53.97	-33.15	Avg	58.00	223.20	
2730.00	46.50	V	73.97	-27.47	Peak	112.50	127.20	
2730.00	33.32	V	53.97	-20.65	Avg	112.50	127.20	
3120.00	36.62	V	79.24	-42.62	Peak	229.50	239.14	
3120.00	23.44	V	59.24	-35.80	Avg	229.50	239.14	
3510.00	39.90	V	73.97	-34.07	Peak	190.25	207.20	
3510.00	26.72	V	53.97	-27.25	Avg	190.25	207.20	
3900.00	52.78	V	73.97	-21.19	Peak	46.00	111.20	
3900.00	39.60	V	53.97	-14.37	Avg	46.00	111.20	

FCC 15.231

Ecolink Intelligent Technology, Inc.

Z-Wave Garage Door Controller

Model: GDZW7-ECO

Date: 01/09/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics

Transmit Mode - Y-Axis

21.91% Duty Cycle

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
780.00	42.44	V	79.24	-36.80	Peak	43.50	136.10	
780.00	29.26	V	59.24	-29.98	Avg	43.50	136.10	
1170.00	30.74	V	73.97	-43.23	Peak	269.25	223.20	
1170.00	17.56	V	53.97	-36.41	Avg	269.25	223.20	
1560.00	30.88	V	73.97	-43.09	Peak	37.00	174.79	
1560.00	17.70	V	53.97	-36.27	Avg	37.00	174.79	
1950.00	34.55	V	79.24	-44.69	Peak	255.00	239.02	
1950.00	21.37	V	59.24	-37.87	Avg	255.00	239.02	
2340.00	33.83	V	73.97	-40.14	Peak	0.00	175.02	
2340.00	20.65	V	53.97	-33.32	Avg	0.00	175.02	
2730.00	43.17	V	73.97	-30.80	Peak	314.50	111.38	
2730.00	29.99	V	53.97	-23.98	Avg	314.50	111.38	
3120.00	36.79	V	79.24	-42.45	Peak	318.25	239.26	
3120.00	23.61	V	59.24	-35.63	Avg	318.25	239.26	
3510.00	38.58	V	73.97	-35.39	Peak	307.00	111.14	
3510.00	25.40	V	53.97	-28.57	Avg	307.00	111.14	
3900.00	55.53	V	73.97	-18.44	Peak	79.25	159.50	
3900.00	42.35	V	53.97	-11.62	Avg	79.25	159.50	

FCC 15.231

Ecolink Intelligent Technology, Inc.

Z-Wave Garage Door Controller

Model: GDZW7-ECO

Date: 01/09/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics

Transmit Mode - Z-Axis

21.91% Duty Cycle

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
780.00	43.31	V	79.24	-35.93	Peak	10.25	125.29	
780.00	30.13	V	59.24	-29.11	Avg	10.25	125.29	
1170.00	30.16	V	73.97	-43.81	Peak	0.00	238.97	
1170.00	16.98	V	53.97	-36.99	Avg	0.00	238.97	
1560.00	31.92	V	73.97	-42.05	Peak	264.00	191.08	
1560.00	18.74	V	53.97	-35.23	Avg	264.00	191.08	
1950.00	33.86	V	79.24	-45.38	Peak	109.25	222.97	
1950.00	20.68	V	59.24	-38.56	Avg	109.25	222.97	
2340.00	34.17	V	73.97	-39.80	Peak	314.00	175.08	
2340.00	20.99	V	53.97	-32.98	Avg	314.00	175.08	
2730.00	41.84	V	73.97	-32.13	Peak	307.25	111.20	
2730.00	28.66	V	53.97	-25.31	Avg	307.25	111.20	
3120.00	36.94	V	79.24	-42.30	Peak	174.75	127.20	
3120.00	23.76	V	59.24	-35.48	Avg	174.75	127.20	
3510.00	39.60	V	73.97	-34.37	Peak	170.75	111.20	
3510.00	26.42	V	53.97	-27.55	Avg	170.86	111.20	
3900.00	55.34	V	73.97	-18.63	Peak	160.00	191.02	
3900.00	42.16	V	53.97	-11.81	Avg	160.00	191.02	

**FCC 15.231**Ecolink Intelligent Technology, Inc.
Z-Wave Garage Door Controller
Model: GDZW7-ECO

Date: 01/09/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics**Transmit Mode - X-Axis****21.91% Duty Cycle**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
780.00	43.81	H	79.24	-35.43	Peak	356.50	115.02	
780.00	30.63	H	59.24	-28.61	Avg	356.50	115.02	
1170.00	30.77	H	73.97	-43.20	Peak	264.50	159.26	
1170.00	17.59	H	53.97	-36.38	Avg	264.50	159.26	
1560.00	30.96	H	73.97	-43.01	Peak	128.00	207.50	
1560.00	17.78	H	53.97	-36.19	Avg	128.00	207.50	
1950.00	33.96	H	79.24	-45.28	Peak	318.25	223.32	
1950.00	20.78	H	59.24	-38.46	Avg	318.25	223.32	
2340.00	34.30	H	73.97	-39.67	Peak	29.25	207.14	
2340.00	21.12	H	53.97	-32.85	Avg	29.25	207.14	
2730.00	44.51	H	73.97	-29.46	Peak	275.25	111.26	
2730.00	31.33	H	53.97	-22.64	Avg	275.25	111.26	
3120.00	38.52	H	79.24	-40.72	Peak	132.75	111.50	
3120.00	25.34	H	59.24	-33.90	Avg	132.75	111.50	
3510.00	40.83	H	73.97	-33.14	Peak	150.75	127.26	
3510.00	27.65	H	53.97	-26.32	Avg	150.75	127.26	
3900.00	58.49	H	73.97	-15.48	Peak	143.25	159.20	
3900.00	45.31	H	53.97	-8.66	Avg	143.25	159.20	

FCC 15.231

Ecolink Intelligent Technology, Inc.

Z-Wave Garage Door Controller

Model: GDZW7-ECO

Date: 01/09/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics

Transmit Mode - Y-Axis

21.91% Duty Cycle

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
780.00	41.72	H	79.24	-37.52	Peak	351.25	100.04	
780.00	28.54	H	59.24	-30.70	Avg	351.25	100.04	
1170.00	30.61	H	73.97	-43.36	Peak	175.00	250.01	
1170.00	17.43	H	53.97	-36.54	Avg	175.00	250.01	
1560.00	31.26	H	73.97	-42.71	Peak	251.50	207.26	
1560.00	18.08	H	53.97	-35.89	Avg	251.50	207.26	
1950.00	34.05	H	79.24	-45.19	Peak	113.50	111.14	
1950.00	20.87	H	59.24	-38.37	Avg	113.50	111.14	
2340.00	34.75	H	73.97	-39.22	Peak	117.00	143.32	
2340.00	21.57	H	53.97	-32.40	Avg	117.00	143.32	
2730.00	43.62	H	73.97	-30.35	Peak	206.75	111.14	
2730.00	30.44	H	53.97	-23.53	Avg	206.75	111.14	
3120.00	36.74	H	79.24	-42.50	Peak	242.75	111.56	
3120.00	23.56	H	59.24	-35.68	Avg	242.75	111.56	
3510.00	38.22	H	73.97	-35.75	Peak	284.50	111.32	
3510.00	25.04	H	53.97	-28.93	Avg	284.50	111.32	
3900.00	56.55	H	73.97	-17.42	Peak	261.50	127.38	
3900.00	43.37	H	53.97	-10.60	Avg	261.50	127.38	

**FCC 15.231**Ecolink Intelligent Technology, Inc.
Z-Wave Garage Door Controller
Model: GDZW7-ECO

Date: 01/09/2023

Lab: D

Tested By: Kyle Fujimoto

Harmonics**Transmit Mode - Z-Axis****21.91% Duty Cycle**

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
780.00	41.87	H	79.24	-37.37	Peak	10.25	190.70	
780.00	28.69	H	59.24	-30.55	Avg	10.25	190.70	
1170.00	30.63	H	73.97	-43.34	Peak	325.50	175.20	
1170.00	17.45	H	53.97	-36.52	Avg	325.50	175.20	
1560.00	31.74	H	73.97	-42.23	Peak	3.75	191.08	
1560.00	18.56	H	53.97	-35.41	Avg	3.75	191.08	
1950.00	33.63	H	79.24	-45.61	Peak	121.25	175.14	
1950.00	20.45	H	59.24	-38.79	Avg	121.25	175.14	
2340.00	33.97	H	73.97	-40.00	Peak	222.50	127.20	
2340.00	20.79	H	53.97	-33.18	Avg	222.50	127.20	
2730.00	42.79	H	73.97	-31.18	Peak	22.25	111.44	
2730.00	29.61	H	53.97	-24.36	Avg	22.55	111.44	
3120.00	38.63	H	79.24	-40.61	Peak	292.25	143.04	
3120.00	25.45	H	59.24	-33.79	Avg	292.25	143.04	
3510.00	40.03	H	73.97	-33.94	Peak	206.50	111.32	
3510.00	26.85	H	53.97	-27.12	Avg	206.50	111.32	
3900.00	57.25	H	73.97	-16.72	Peak	142.00	111.32	
3900.00	44.07	H	53.97	-9.90	Avg	142.00	111.32	



FCC Class B and FCC 15.231

Ecolink Intelligent Technology, Inc.
Z-Wave Garage Door Controller
Model: GDZW7-ECO

Date: 01/09/2023

Lab: D

Tested By: Kyle Fujimoto

Non Harmonic Emissions from the Tx and Digital Portion - 9 kHz to 30 MHz

Non Harmonic Emissions from the Tx and Digital Portion - 1 GHz To 3.90 GHz

[illegible]



FCC Class B and RSS-GEN

Ecolink Intelligent Technology, Inc.
Z-Wave Garage Door Controller
Model: GDZW7-
ECO

Date: 01/09/2023
Lab: D
Tested By: Kyle Fujimoto

Receive Mode - 1 GHz to 3.9 GHz

390 MHz Receiver

[illegible]



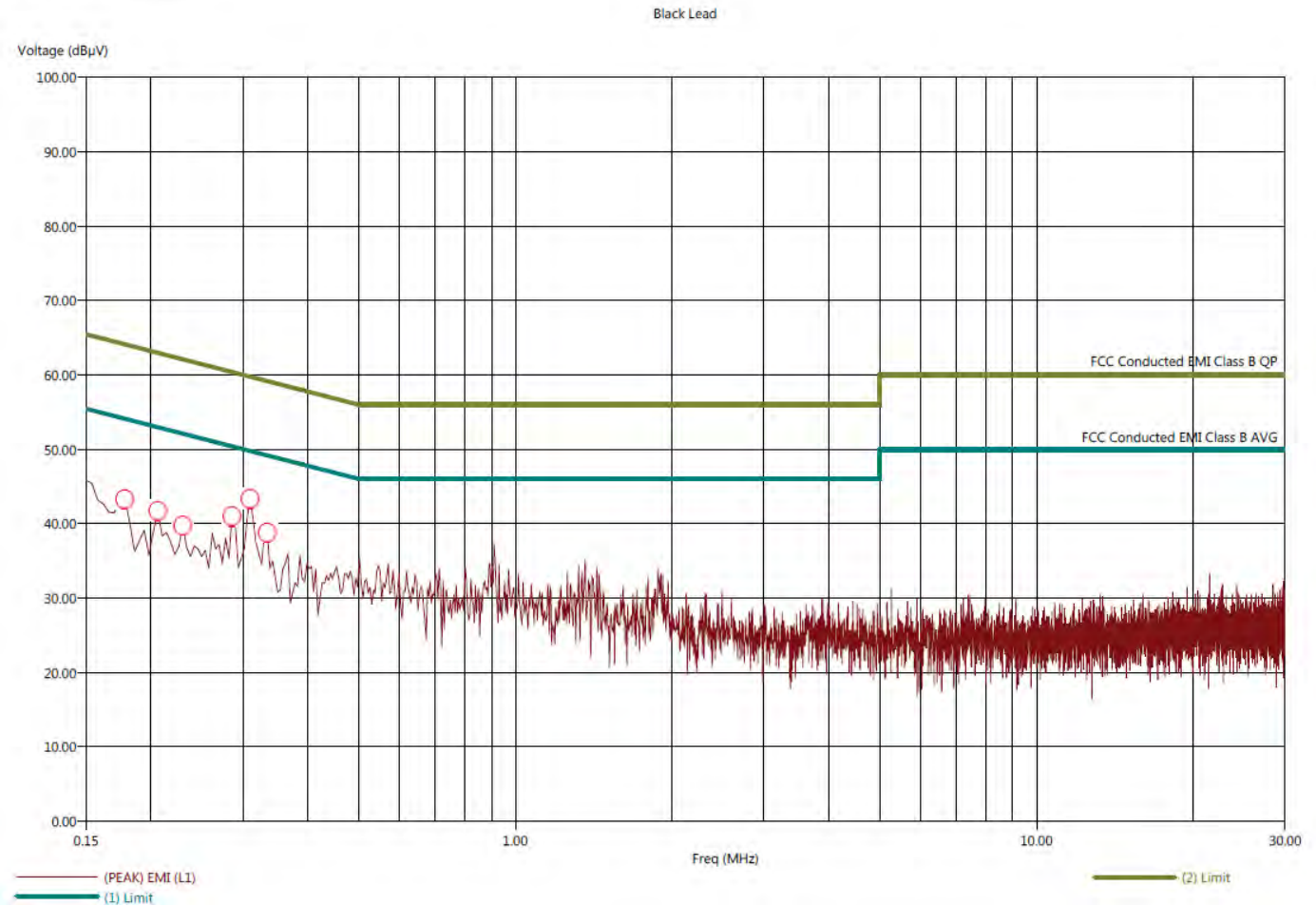
CONDUCTED EMISSIONS

DATA SHEETS



Title: FCC Class B - Black Lead
File: 1 - Pre-Scan - Black Lead - Tx Mode - 310.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously transmitting at 310.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 11:51:43 AM
Sequence: Preliminary Scan





Title: FCC Class B - Black Lead
File: 1 - Final Scan - Black Lead - Tx Mode - 310.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously transmitting at 310.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 11:53:08 AM
Sequence: Final Measurements

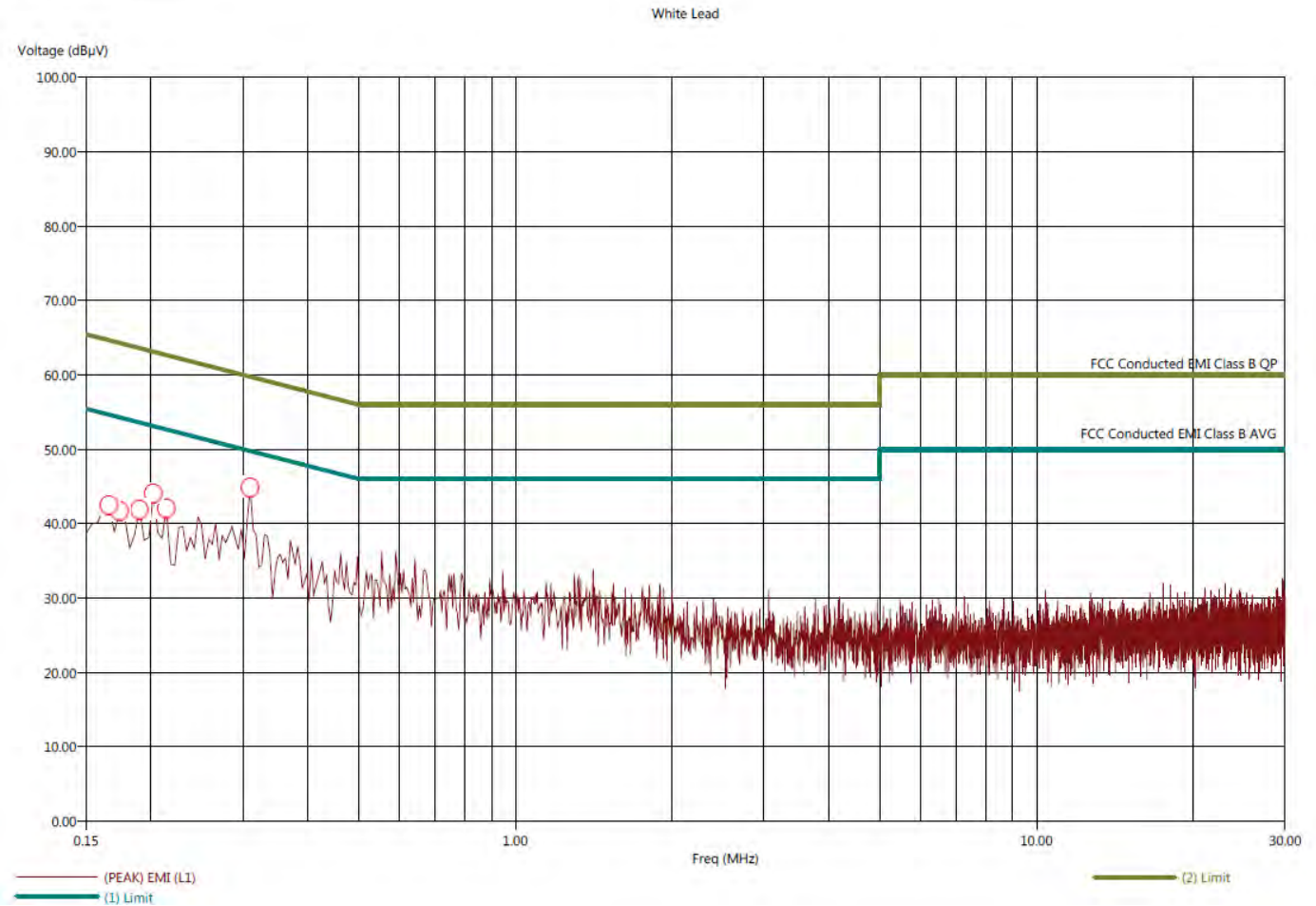
Black Lead									
Freq (MHz)	(PEAK) EMI (dBμV)	(AVG) EMI (dBμV)	(PEAK) Margin (AVG) (dB)	(AVG) Margin (AVG) (dB)	(AVG) Limit (dBμV)	Cable (dB)	Transducer (dB)	Filter (dB)	
0.178	46.33	34.81	-7.37	-18.89	53.70	0.01	0.17	10.10	
0.206	46.79	34.09	-6.26	-18.96	53.05	0.01	0.16	10.10	
0.230	45.53	32.75	-6.37	-19.15	51.91	0.01	0.15	10.10	
0.286	44.35	33.59	-6.08	-16.84	50.43	0.01	0.14	10.10	
0.310	48.40	39.66	-1.38	-10.12	49.78	0.01	0.14	10.10	
0.334	45.26	35.18	-4.03	-14.11	49.29	0.01	0.14	10.10	





Title: FCC Class B - White Lead
File: 2 - Pre-Scan - White Lead - Tx Mode - 310.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously transmitting at 310.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 11:55:39 AM
Sequence: Preliminary Scan





Title: FCC Class B - White Lead
File: 2 - Final Scan - White Lead - Tx Mode - 310.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously transmitting at 310.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 11:56:33 AM
Sequence: Final Measurements

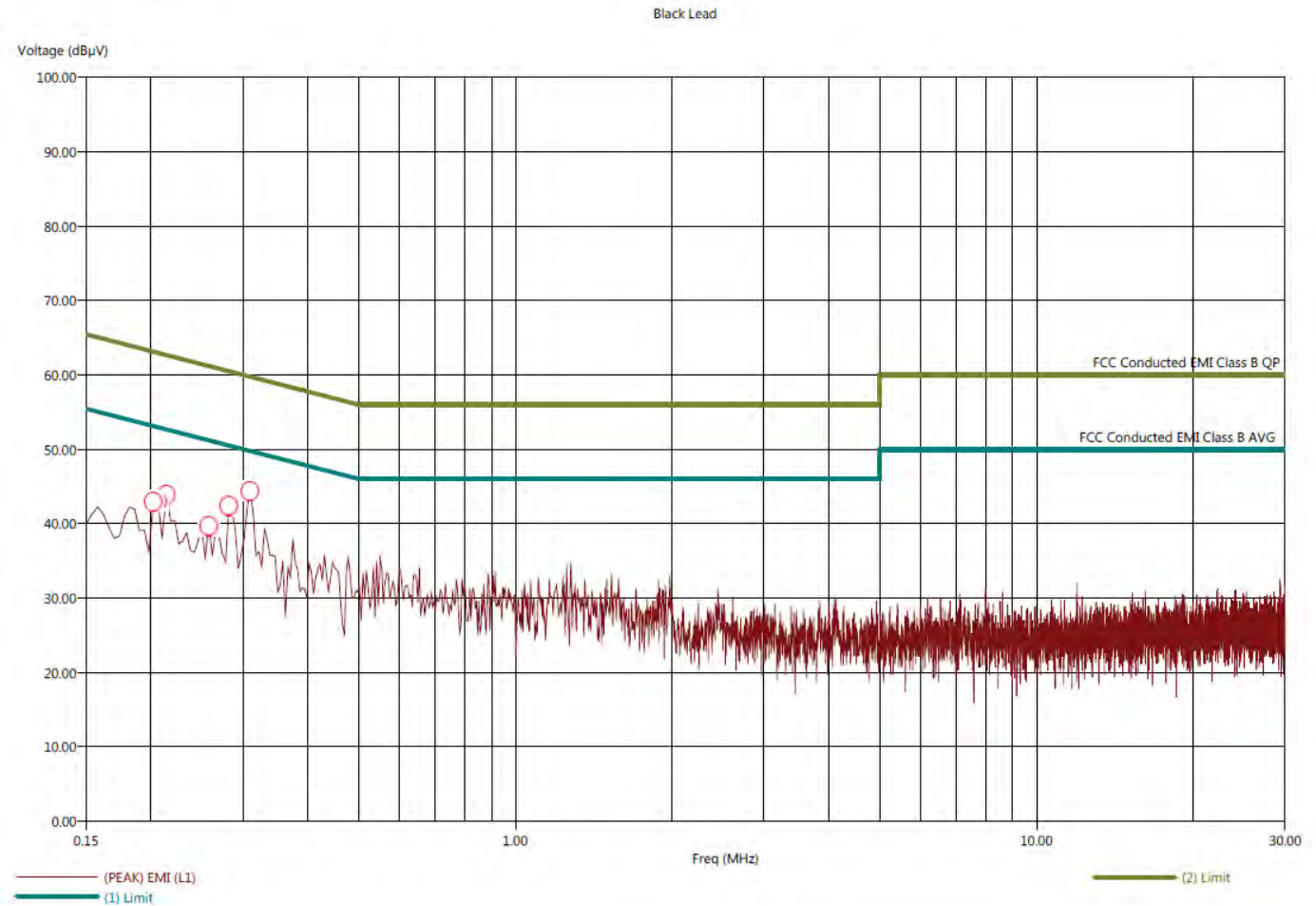
White Lead									
Freq (MHz)	(PEAK) EMI (dBμV)	(AVG) EMI (dBμV)	(PEAK) Margin (AVG) (dB)	(AVG) Margin (AVG) (dB)	(AVG) Limit (dBμV)	Cable (dB)	Transducer (dB)	Filter (dB)	
0.166	41.29	31.26	-13.19	-23.22	54.48	0.01	0.17	10.10	
0.174	43.49	31.66	-11.16	-22.99	54.65	0.01	0.17	10.10	
0.190	42.16	30.81	-11.57	-22.92	53.72	0.01	0.16	10.10	
0.202	41.73	30.17	-11.54	-23.10	53.28	0.01	0.15	10.10	
0.214	40.29	29.63	-12.53	-23.19	52.82	0.01	0.15	10.10	
0.310	45.38	35.03	-4.49	-14.84	49.87	0.01	0.13	10.10	





Title: FCC Class B - Black Lead
File: 3 - Pre-Scan - Black Lead - Tx Mode - 315.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously transmitting at 315.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 11:58:43 AM
Sequence: Preliminary Scan





Title: FCC Class B - Black Lead
File: 3 - Final Scan - Black Lead - Tx Mode - 315.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously transmitting at 315.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 12:00:13 PM
Sequence: Final Measurements

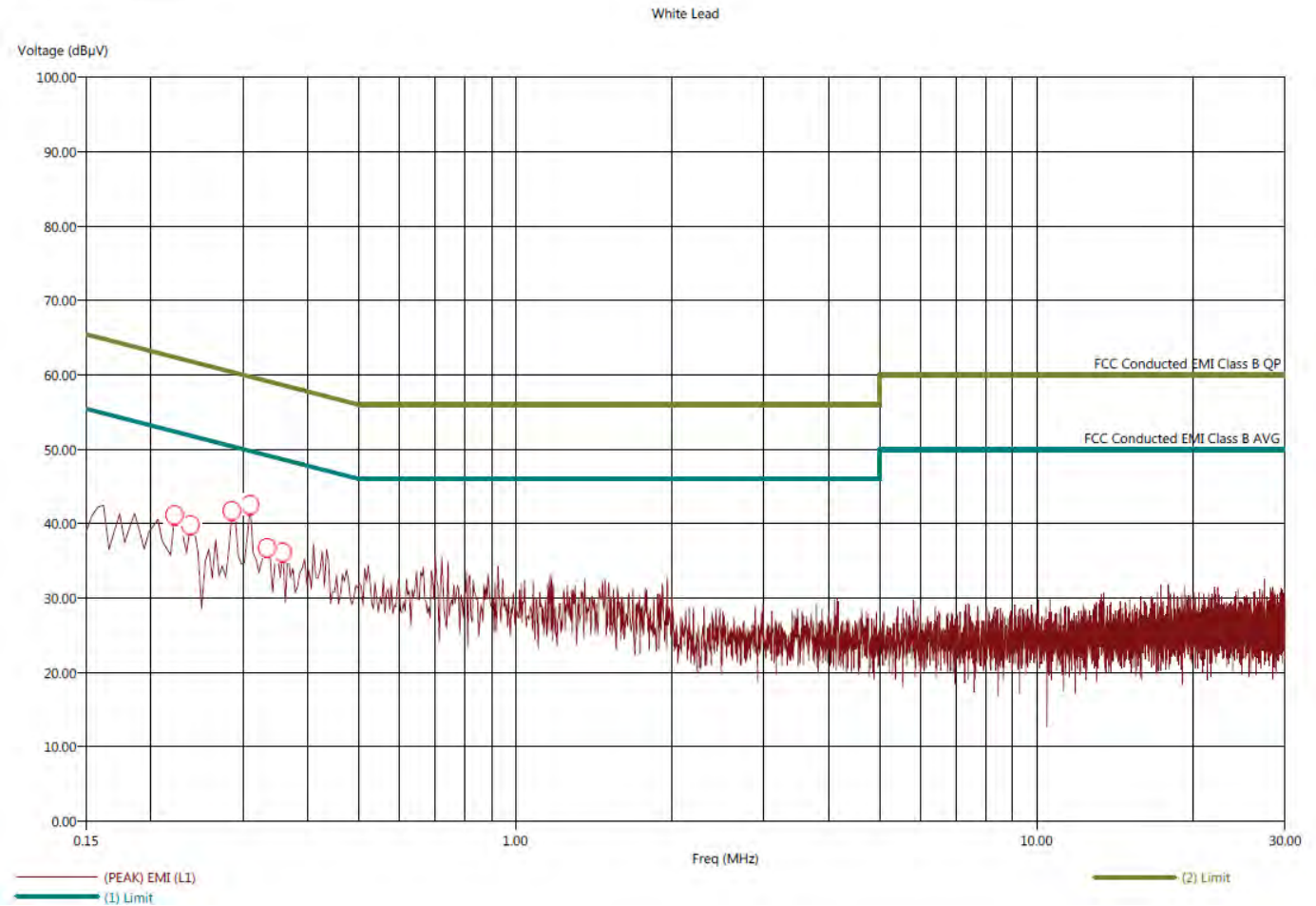
Black Lead									
Freq (MHz)	(PEAK) EMI (dBµV)	(AVG) EMI (dBµV)	(PEAK) Margin (AVG) (dB)	(AVG) Margin (AVG) (dB)	(AVG) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)	
0.202	46.45	33.89	-6.46	-19.02	52.91	0.01	0.16	10.10	
0.206	46.37	33.46	-6.33	-19.24	52.69	0.01	0.16	10.10	
0.214	46.01	34.01	-6.83	-18.83	52.84	0.01	0.16	10.10	
0.258	43.17	32.92	-8.18	-18.43	51.34	0.01	0.15	10.10	
0.282	44.68	35.35	-5.60	-14.93	50.28	0.01	0.14	10.10	
0.310	47.55	38.94	-2.27	-10.88	49.82	0.01	0.14	10.10	





Title: FCC Class B - White Lead
File: 4 - Pre-Scan - White Lead - Tx Mode - 315.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously transmitting at 315.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 12:02:23 PM
Sequence: Preliminary Scan





Title: FCC Class B - White Lead
File: 4 - Final Scan - White Lead - Tx Mode - 315.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously transmitting at 315.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 12:04:46 PM
Sequence: Final Measurements

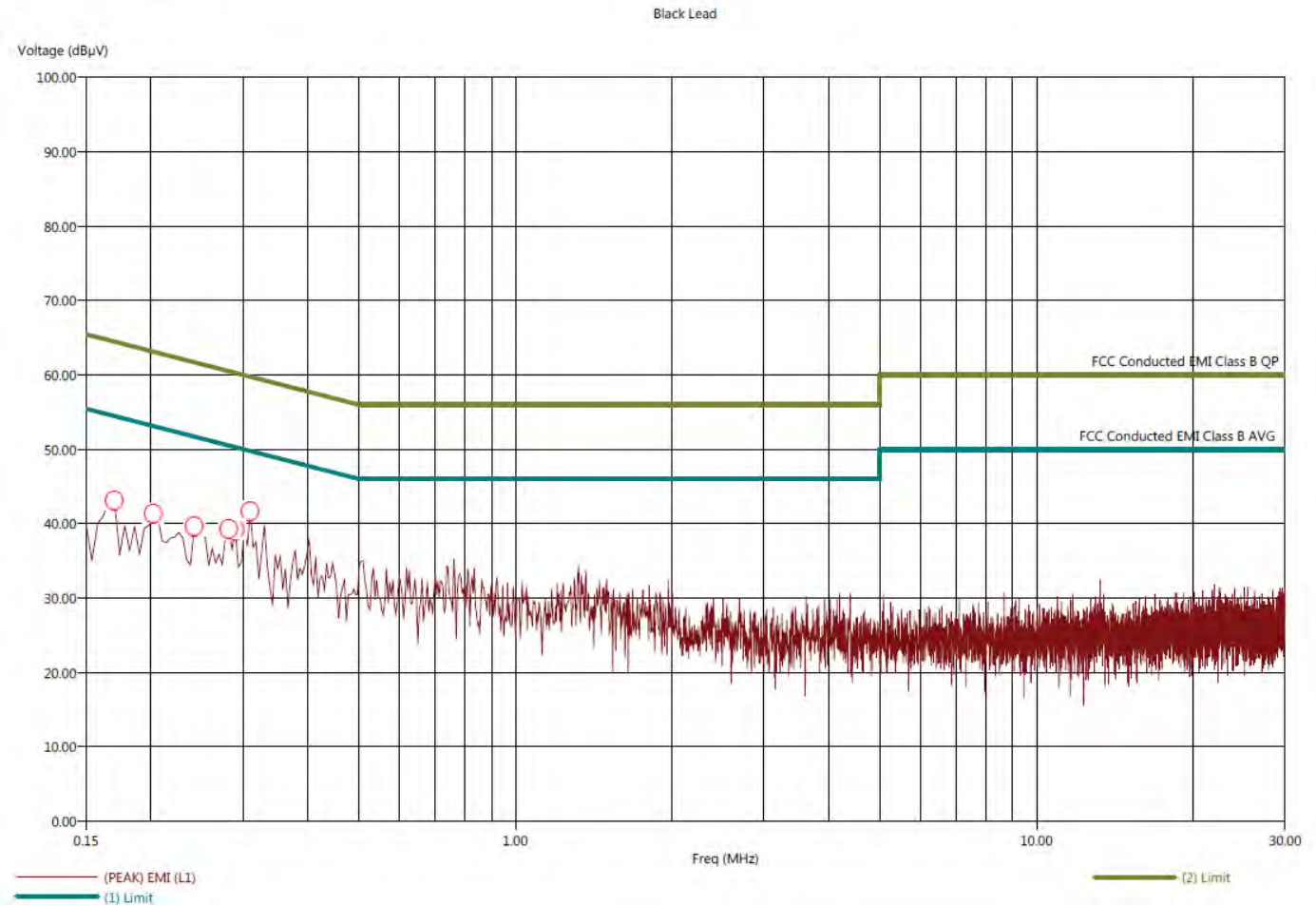
White Lead									
Freq (MHz)	(PEAK) EMI (dBµV)	(AVG) EMI (dBµV)	(PEAK) Margin (AVG) (dB)	(AVG) Margin (AVG) (dB)	(AVG) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)	
0.222	39.22	29.25	-13.35	-23.32	52.56	0.01	0.15	10.10	
0.238	39.39	29.36	-12.74	-22.77	52.13	0.01	0.14	10.10	
0.286	44.12	33.10	-6.27	-17.29	50.39	0.01	0.13	10.10	
0.310	47.84	36.75	-1.90	-12.99	49.74	0.01	0.13	10.10	
0.334	42.88	34.14	-6.28	-15.02	49.16	0.01	0.13	10.10	
0.358	41.06	30.08	-7.62	-18.60	48.68	0.01	0.13	10.10	





Title: FCC Class B - Black Lead
File: 5 - Pre-Scan - Black Lead - Tx Mode - 345.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously transmitting at 345.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 12:07:01 PM
Sequence: Preliminary Scan





Title: FCC Class B - Black Lead
File: 5 - Final Scan - Black Lead - Tx Mode - 345.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously transmitting at 345.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 12:08:09 PM
Sequence: Final Measurements

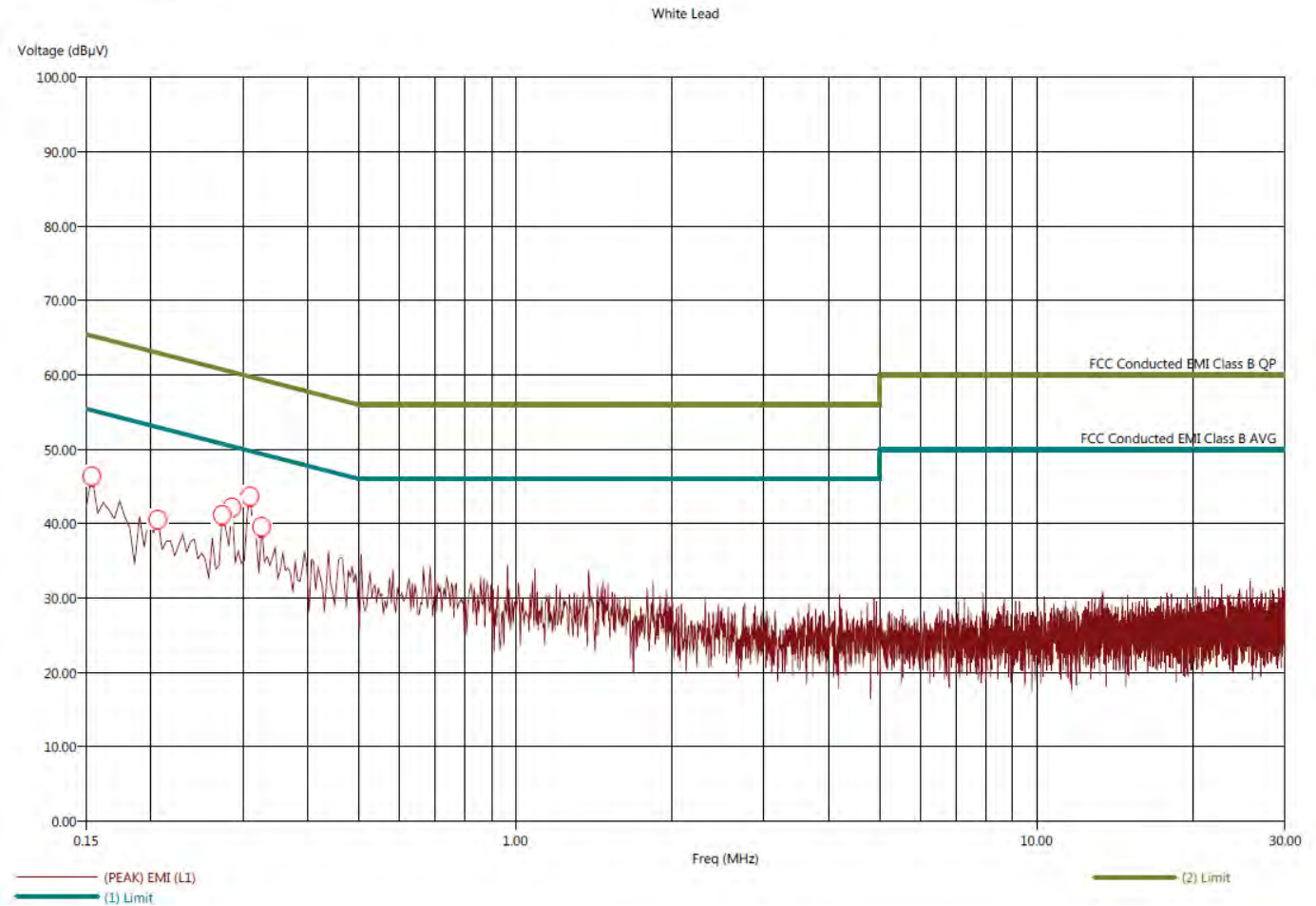
Black Lead									
Freq (MHz)	(PEAK) EMI (dBµV)	(AVG) EMI (dBµV)	(PEAK) Margin (AVG) (dB)	(AVG) Margin (AVG) (dB)	(AVG) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)	
0.170	48.77	35.93	-6.08	-18.92	54.85	0.01	0.18		10.10
0.202	47.44	34.74	-6.33	-19.03	53.77	0.01	0.17		10.10
0.242	45.60	32.83	-6.39	-19.16	51.99	0.01	0.15		10.10
0.282	42.71	32.45	-7.82	-18.08	50.53	0.01	0.14		10.10
0.290	45.42	35.62	-4.95	-14.75	50.38	0.01	0.14		10.10
0.310	47.99	40.60	-1.78	-9.17	49.77	0.01	0.14		10.10





Title: FCC Class B - White Lead
File: 6 - Pre-Scan - White Lead - Tx Mode - 345.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously transmitting at 345.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 12:10:11 PM
Sequence: Preliminary Scan





Title: FCC Class B - White Lead
File: 6 - Final Scan - White Lead - Tx Mode - 345.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously transmitting at 345.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

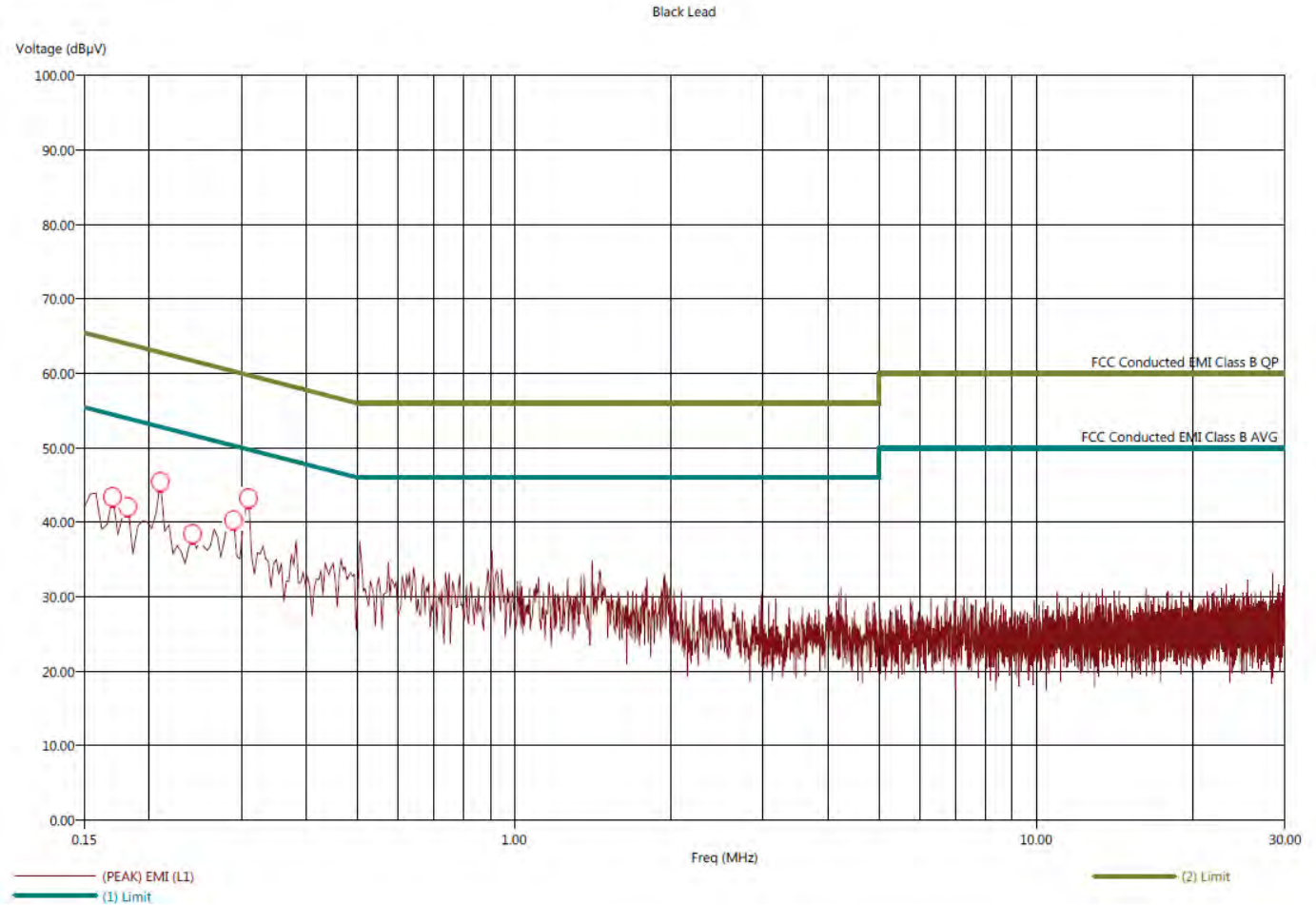
1/17/2023 12:11:36 PM
Sequence: Final Measurements

White Lead									
Freq (MHz)	(PEAK) EMI (dBµV)	(AVG) EMI (dBµV)	(PEAK) Margin (AVG) (dB)	(AVG) Margin (AVG) (dB)	(AVG) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)	
0.154	42.39	31.97	-12.97	-23.39	55.36	0.01	0.18		10.10
0.206	41.13	30.12	-12.12	-23.13	53.25	0.01	0.15		10.10
0.274	43.86	32.93	-7.12	-18.05	50.97	0.01	0.14		10.10
0.286	44.49	34.33	-5.86	-16.02	50.35	0.01	0.13		10.10
0.310	47.10	37.95	-2.68	-11.83	49.78	0.01	0.13		10.10
0.326	44.08	33.86	-5.20	-15.42	49.28	0.01	0.13		10.10



Title: FCC Class B - Black Lead
File: 7 - Pre-Scan - Black Lead - Tx Mode - 390.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously transmitting at 390.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 12:14:33 PM
Sequence: Preliminary Scan





Title: FCC Class B - Black Lead
File: 7 - Final Scan - Black Lead - Tx Mode - 390.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously transmitting at 390.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

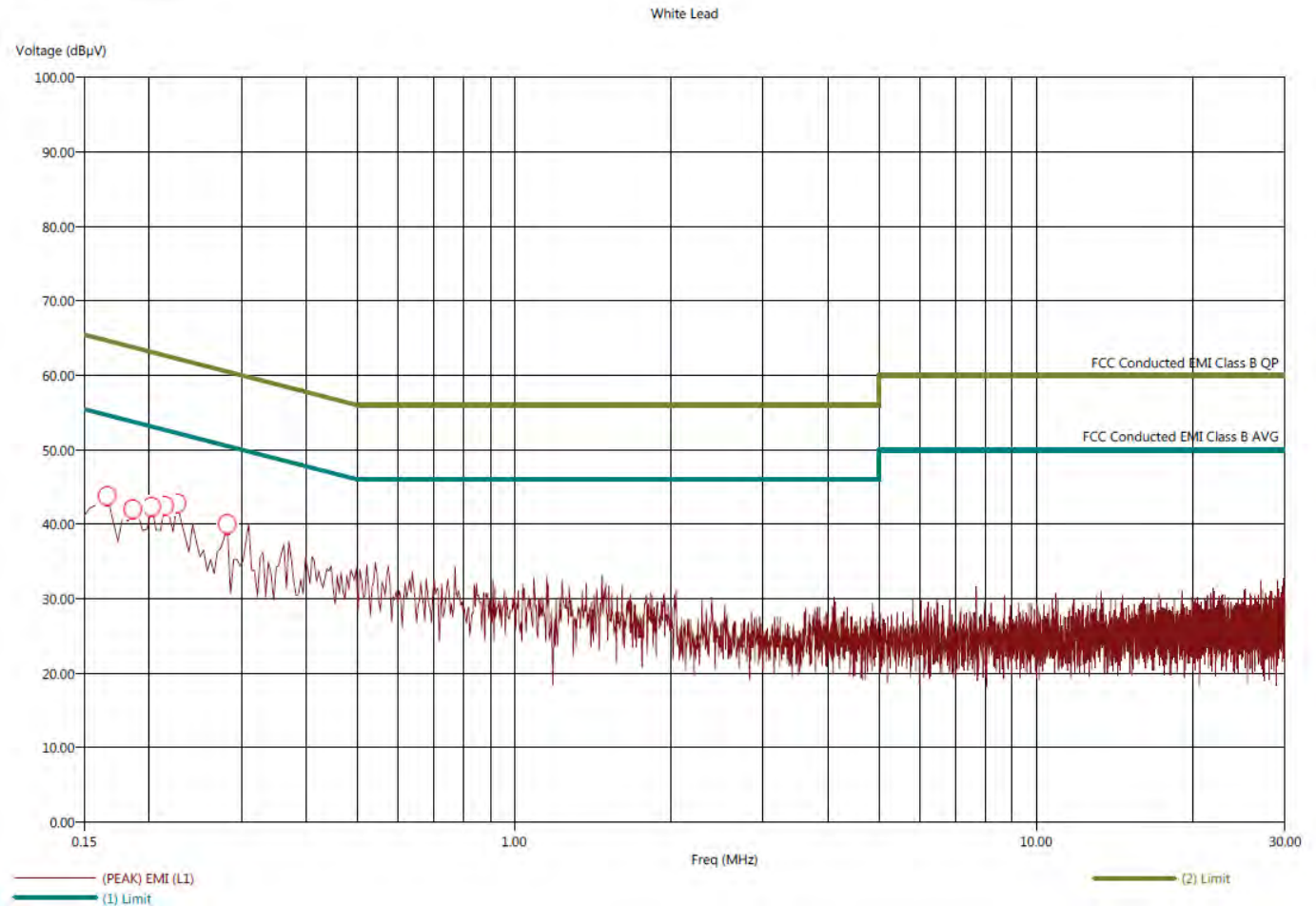
1/17/2023 12:15:43 PM
Sequence: Final Measurements

Black Lead									
Freq (MHz)	(PEAK) EMI (dBµV)	(AVG) EMI (dBµV)	(PEAK) Margin (AVG) (dB)	(AVG) Margin (AVG) (dB)	(AVG) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)	
0.170	47.55	35.33	-6.93	-19.15	54.47	0.01	0.18		10.10
0.182	47.94	34.46	-5.65	-19.13	53.58	0.01	0.17		10.10
0.210	46.24	33.34	-6.31	-19.21	52.55	0.01	0.16		10.10
0.242	45.39	32.85	-6.13	-18.67	51.52	0.01	0.15		10.10
0.290	45.20	35.43	-5.09	-14.86	50.29	0.01	0.14		10.10
0.310	47.75	40.38	-2.05	-9.42	49.80	0.01	0.14		10.10



Title: FCC Class B - White Lead
File: 8 - Pre-Scan - White Lead - Tx Mode - 390.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously transmitting at 390.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 12:18:03 PM
Sequence: Preliminary Scan





Title: FCC Class B - White Lead
File: 8 - Final Scan - White Lead - Tx Mode - 390.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously transmitting at 390.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

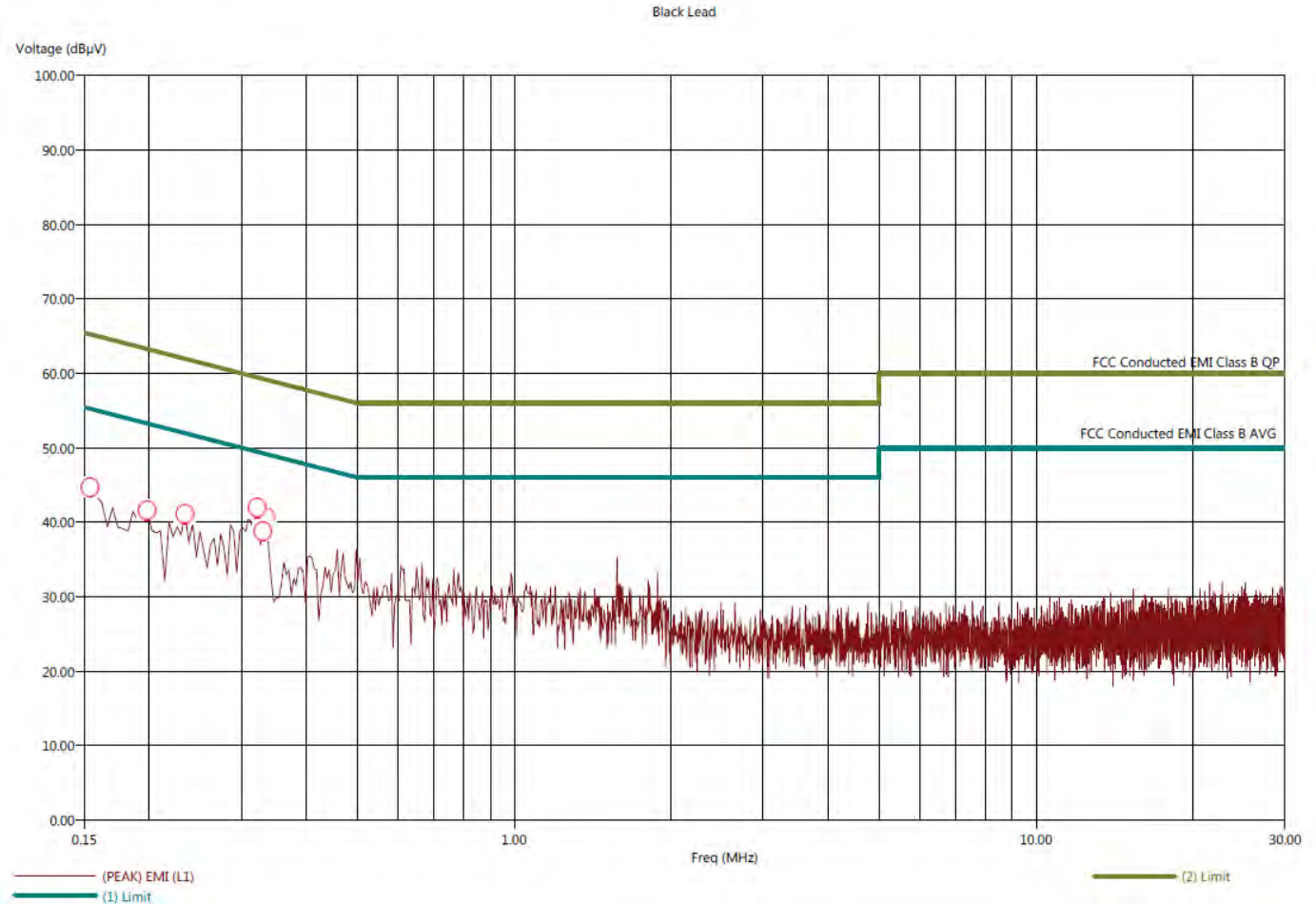
1/17/2023 12:19:42 PM
Sequence: Final Measurements

White Lead									
Freq (MHz)	(PEAK) EMI (dBµV)	(AVG) EMI (dBµV)	(PEAK) Margin (AVG) (dB)	(AVG) Margin (AVG) (dB)	(AVG) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)	
0.166	41.29	31.28	-13.21	-23.22	54.50	0.01	0.17	10.10	
0.186	41.00	30.83	-13.06	-23.23	54.06	0.01	0.16	10.10	
0.202	41.11	29.92	-12.31	-23.50	53.42	0.01	0.15	10.10	
0.214	40.55	29.67	-12.31	-23.19	52.86	0.01	0.15	10.10	
0.226	39.31	29.04	-12.76	-23.03	52.08	0.01	0.14	10.10	
0.282	43.52	33.52	-6.90	-16.90	50.42	0.01	0.13	10.10	



Title: FCC Class B - Black Lead
File: 9 - Pre-Scan - Black Lead - Rx Mode - 310.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously receiving at 310.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 1:07:18 PM
Sequence: Preliminary Scan





Title: FCC Class B - Black Lead
File: 9 - Final Scan - Black Lead - Rx Mode - 310.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously receiving at 310.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 1:08:33 PM
Sequence: Final Measurements

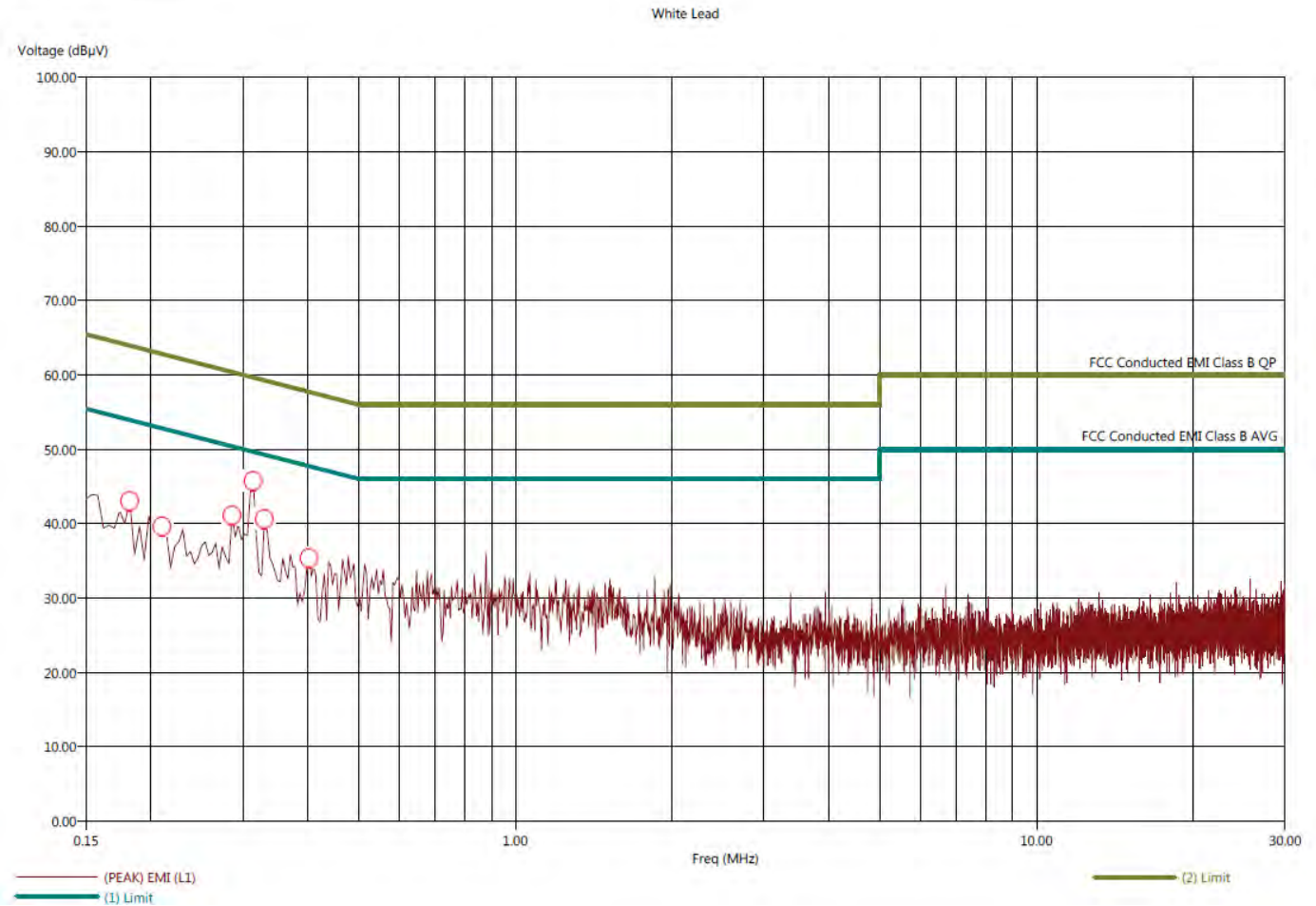
Black Lead									
Freq (MHz)	(PEAK) EMI (dBµV)	(QP) EMI (dBµV)	(PEAK) Margin (QP) (dB)	(QP) Margin (QP) (dB)	(QP) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)	
0.154	42.77	38.16	-22.78	-27.39	65.55	0.01	0.19		10.10
0.198	40.57	36.20	-23.06	-27.43	63.62	0.01	0.17		10.10
0.234	39.23	34.95	-22.66	-26.94	61.89	0.01	0.15		10.10
0.322	46.74	43.29	-12.94	-16.39	59.68	0.01	0.14		10.10
0.330	44.24	39.52	-14.98	-19.70	59.22	0.01	0.14		10.10
0.334	43.94	39.53	-15.29	-19.70	59.23	0.01	0.14		10.10





Title: FCC Class B - White Lead
File: 10 - Pre-Scan - White Lead - Rx Mode - 310.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously receiving at 310.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 1:11:16 PM
Sequence: Preliminary Scan





Title: FCC Class B - White Lead

File: 10 - Final Scan - White Lead - Rx Mode - 310.00 MHz - FCC Class B - 01-17-2023.set

Operator: Kyle Fujimoto

EUT Type: Z-Wave Garage Door Controller

EUT Condition: The EUT is continuously receiving at 310.00 MHz

Company: Ecolink Intelligent Technology, Inc.

Model: GDZW7-ECO

S/N: N/A

1/17/2023 1:12:29 PM

Sequence: Final Measurements

White Lead

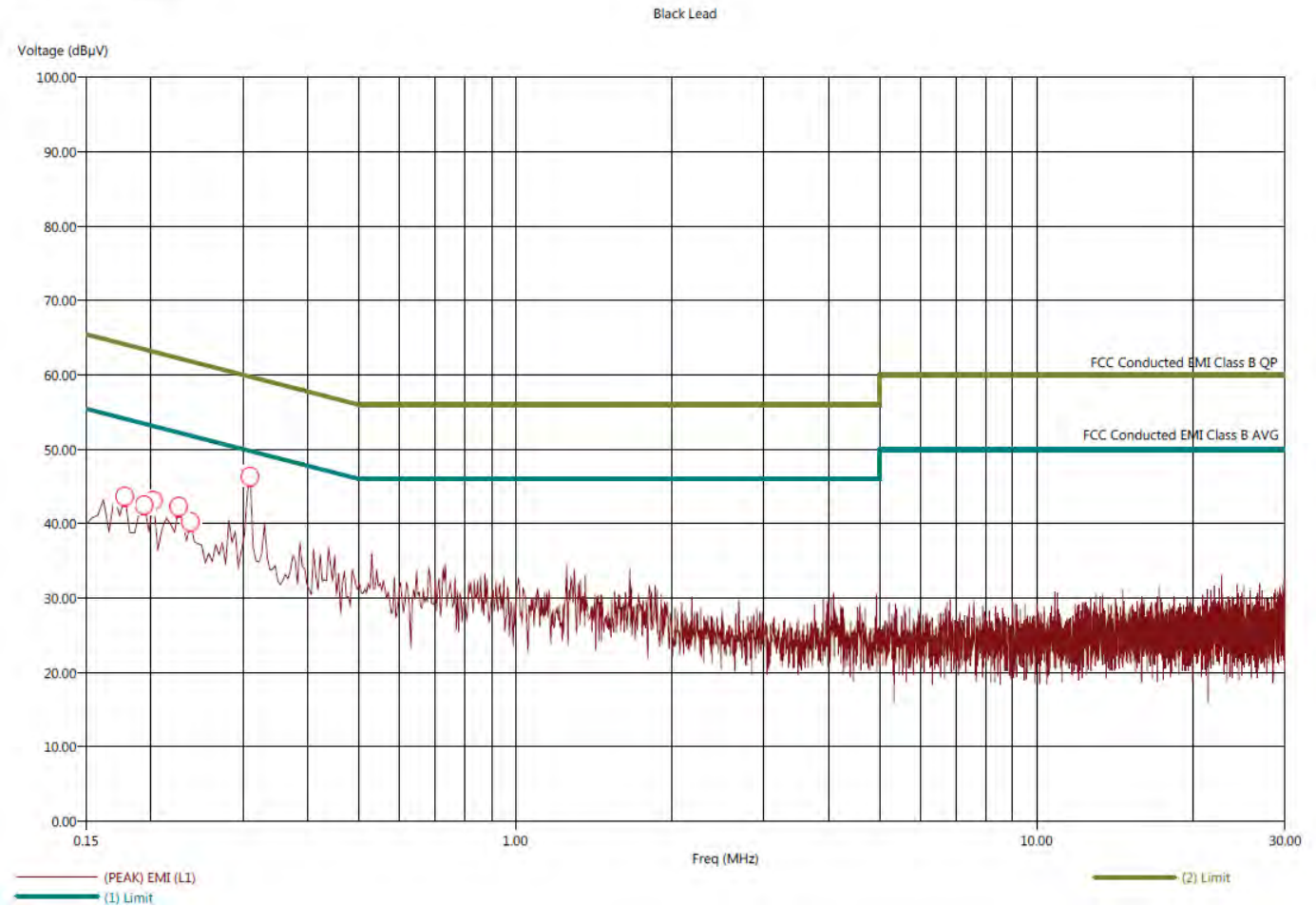
Freq (MHz)	(PEAK) EMI (dBμV)	(AVG) EMI (dBμV)	(PEAK) Margin (AVG) (dB)	(AVG) Margin (AVG) (dB)	(AVG) Limit (dBμV)	Cable (dB)	Transducer (dB)	Filter (dB)
0.182	47.21	34.75	-6.60	-19.06	53.81	0.01	0.16	10.10
0.210	45.98	33.77	-6.59	-18.80	52.56	0.01	0.15	10.10
0.286	44.17	34.95	-5.97	-15.19	50.14	0.01	0.13	10.10
0.314	48.36	39.92	-1.34	-9.78	49.70	0.01	0.13	10.10
0.330	44.93	33.80	-4.34	-15.47	49.27	0.01	0.13	10.10
0.402	40.09	29.64	-7.54	-17.99	47.63	0.01	0.13	10.10





Title: FCC Class B - Black Lead
File: 11 - Pre-Scan - Black Lead - Rx Mode - 315.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously receiving at 315.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 1:15:37 PM
Sequence: Preliminary Scan





Title: FCC Class B - Black Lead
File: 11 - Final Scan - Black Lead - Rx Mode - 315.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously receiving at 315.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 1:16:51 PM
Sequence: Final Measurements

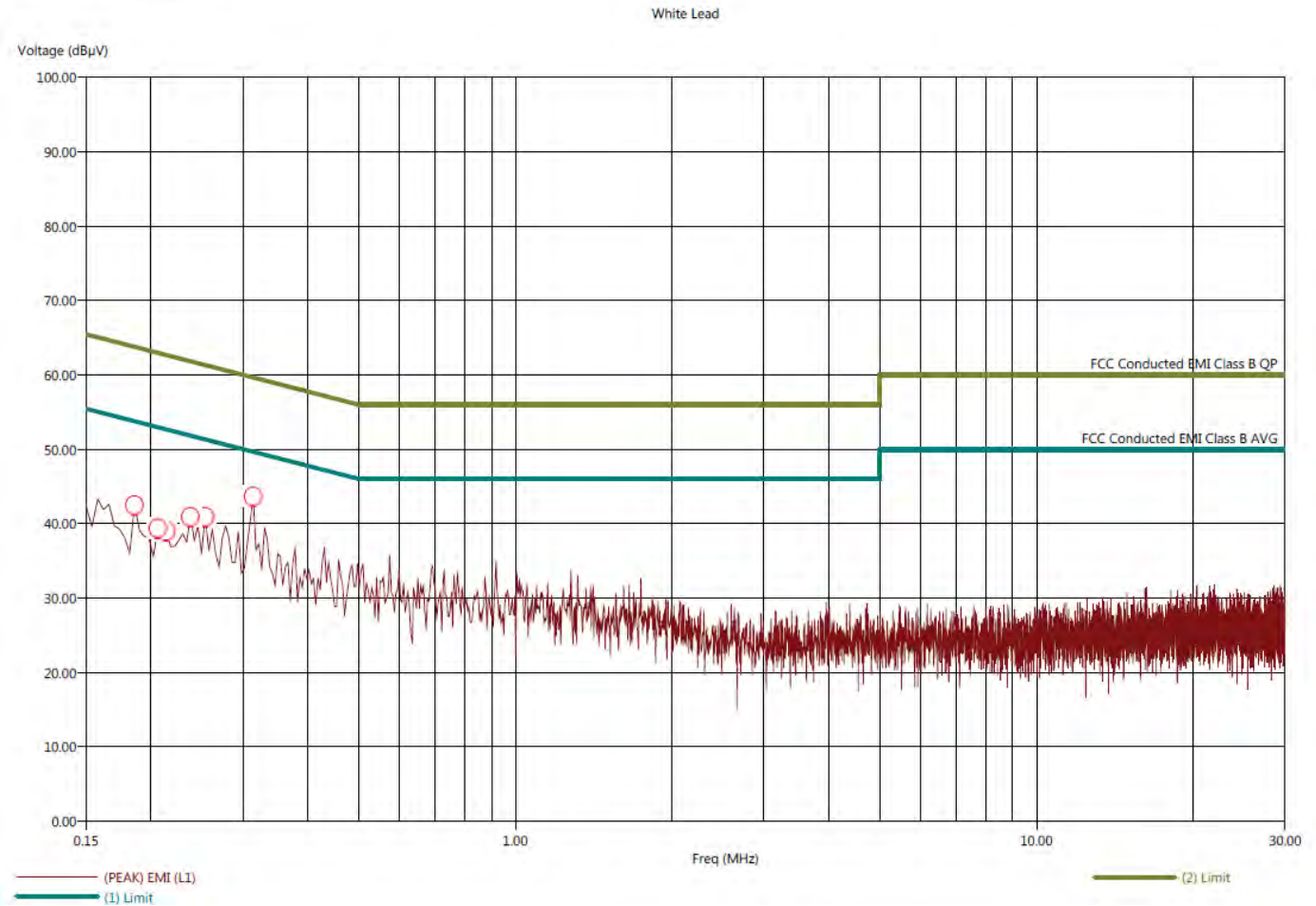
Black Lead									
Freq (MHz)	(PEAK) EMI (dBµV)	(AVG) EMI (dBµV)	(PEAK) Margin (AVG) (dB)	(AVG) Margin (AVG) (dB)	(AVG) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)	
0.178	47.48	34.55	-6.25	-19.18	53.73	0.01	0.17		10.10
0.194	47.16	34.61	-6.56	-19.11	53.72	0.01	0.17		10.10
0.202	48.29	34.11	-5.04	-19.22	53.33	0.01	0.16		10.10
0.226	46.49	33.01	-5.54	-19.02	52.03	0.01	0.15		10.10
0.238	44.89	32.94	-7.08	-19.03	51.97	0.01	0.15		10.10
0.310	47.41	39.35	-2.26	-10.32	49.67	0.01	0.14		10.10





Title: FCC Class B - White Lead
File: 12 - Pre-Scan - White Lead - Rx Mode - 315.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously receiving at 315.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 1:19:10 PM
Sequence: Preliminary Scan





Title: FCC Class B - White Lead
File: 12 - Final Scan - White Lead - Rx Mode - 315.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously receiving at 315.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 1:20:16 PM
Sequence: Final Measurements

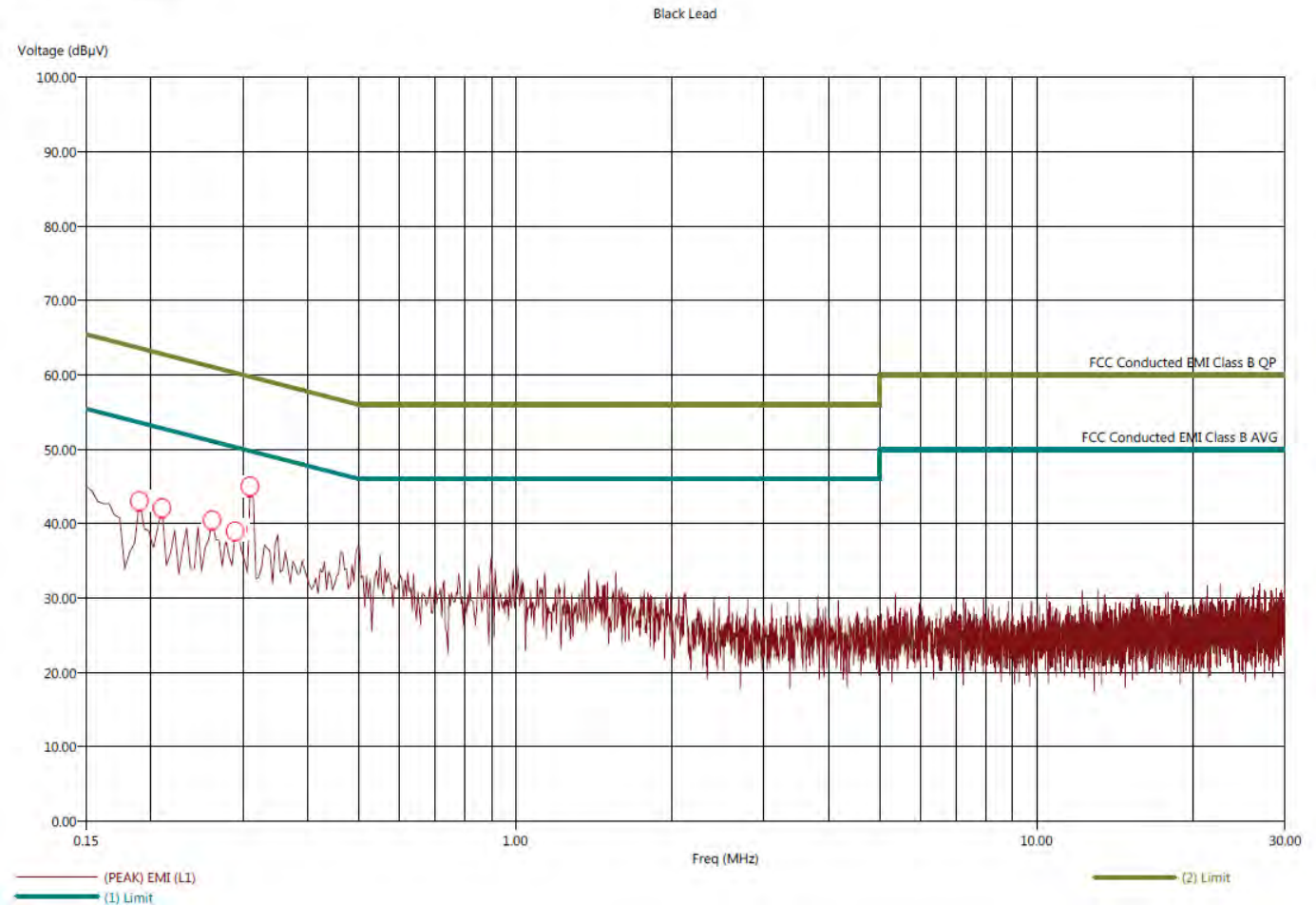
White Lead									
Freq (MHz)	(PEAK) EMI (dBµV)	(AVG) EMI (dBµV)	(PEAK) Margin (AVG) (dB)	(AVG) Margin (AVG) (dB)	(AVG) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)	
0.186	40.17	30.40	-13.43	-23.20	53.60	0.01	0.16	10.10	
0.206	40.10	30.29	-13.10	-22.91	53.20	0.01	0.15	10.10	
0.214	40.05	29.51	-12.77	-23.31	52.82	0.01	0.15	10.10	
0.238	39.63	29.05	-12.18	-22.76	51.82	0.01	0.14	10.10	
0.254	42.50	32.99	-8.76	-18.27	51.26	0.01	0.14	10.10	
0.314	47.89	37.39	-1.81	-12.31	49.70	0.01	0.13	10.10	





Title: FCC Class B - Black Lead
File: 13 - Pre-Scan - Black Lead - Rx Mode - 345.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously receiving at 345.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 1:23:20 PM
Sequence: Preliminary Scan





Title: FCC Class B - Black Lead
File: 13 - Final Scan - Black Lead - Rx Mode - 345.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously receiving at 345.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

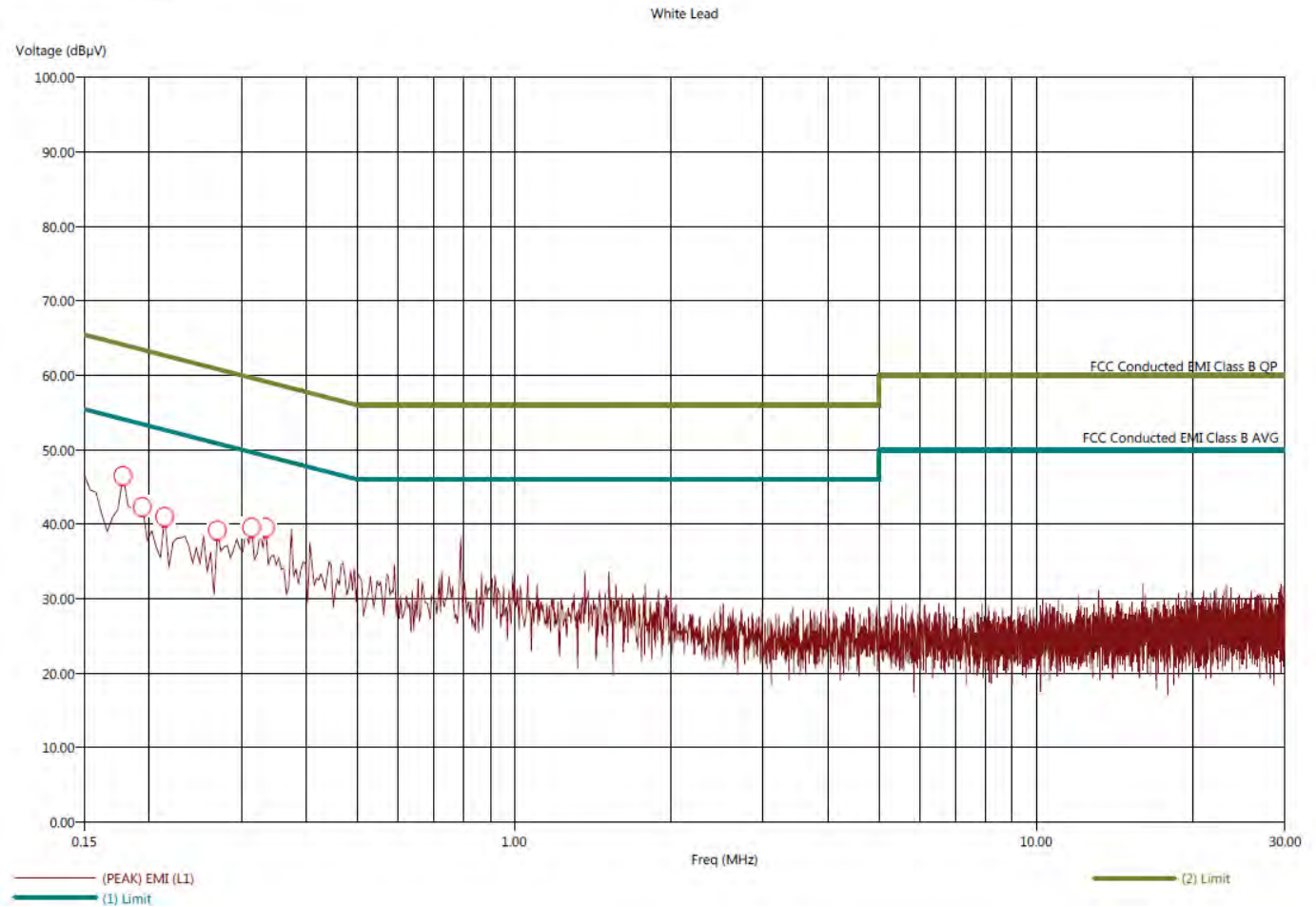
1/17/2023 1:24:26 PM
Sequence: Final Measurements

Black Lead									
Freq (MHz)	(PEAK) EMI (dBµV)	(AVG) EMI (dBµV)	(PEAK) Margin (AVG) (dB)	(AVG) Margin (AVG) (dB)	(AVG) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)	
0.186	46.47	34.25	-6.95	-19.17	53.42	0.01	0.16	10.10	
0.206	46.20	34.30	-6.99	-18.89	53.19	0.01	0.16	10.10	
0.222	46.24	33.67	-6.38	-18.95	52.61	0.01	0.16	10.10	
0.238	46.35	33.42	-6.08	-19.01	52.43	0.01	0.16	10.10	
0.270	42.92	33.20	-7.81	-17.53	50.74	0.01	0.14	10.10	
0.310	47.66	39.71	-2.02	-9.97	49.68	0.01	0.14	10.10	



Title: FCC Class B - White Lead
File: 14 - Pre-Scan - White Lead - Rx Mode - 345.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously receiving at 345.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 1:28:01 PM
Sequence: Preliminary Scan





Title: FCC Class B - White Lead
File: 14 - Final Scan - White Lead - Rx Mode - 345.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously receiving at 345.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 1:29:36 PM
Sequence: Final Measurements

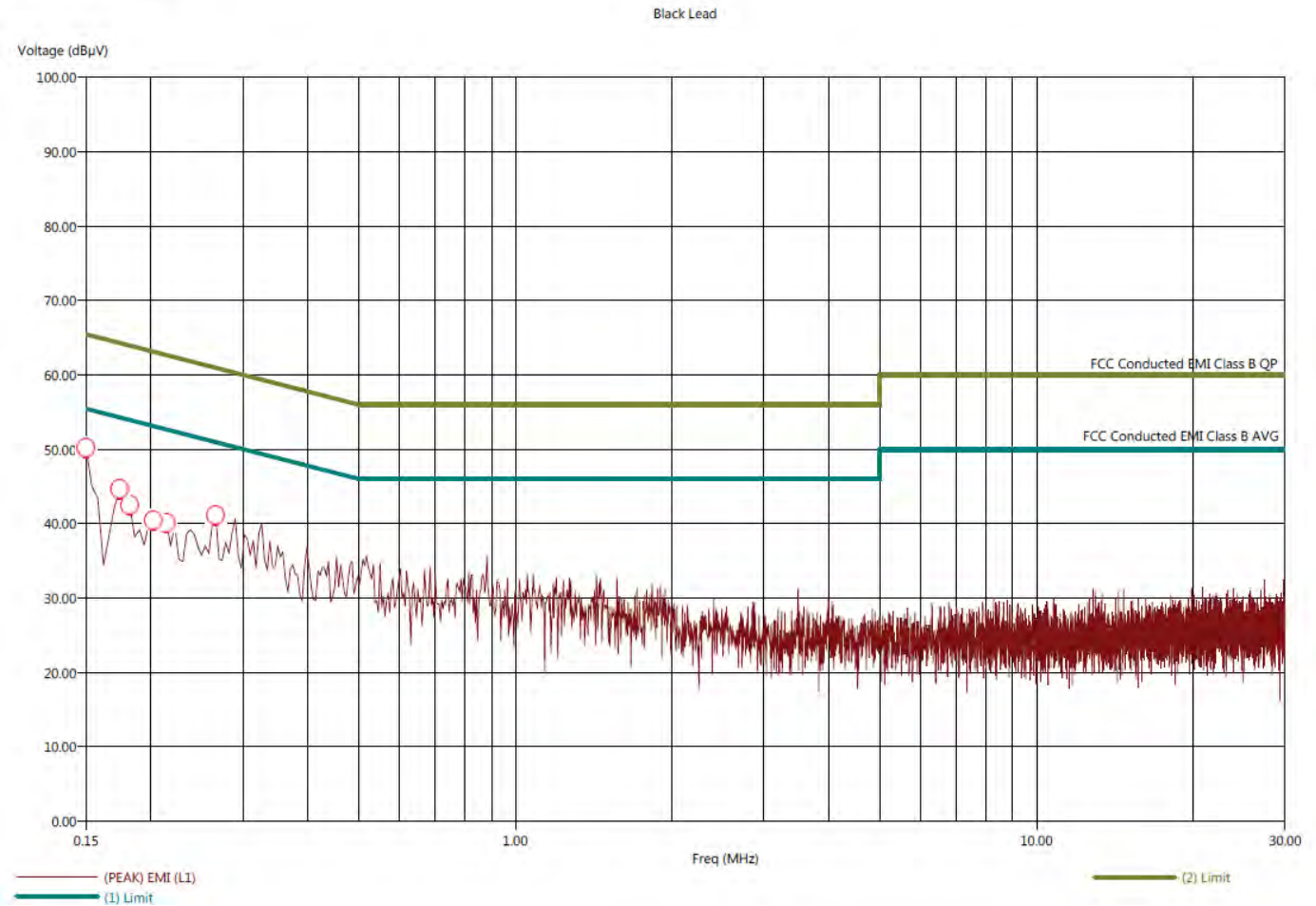
White Lead									
Freq (MHz)	(PEAK) EMI (dBµV)	(AVG) EMI (dBµV)	(PEAK) Margin (AVG) (dB)	(AVG) Margin (AVG) (dB)	(AVG) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)	
0.178	42.47	31.11	-11.40	-22.76	53.87	0.01	0.16	10.10	
0.194	41.18	30.20	-12.01	-22.99	53.19	0.01	0.15	10.10	
0.214	40.27	29.44	-12.24	-23.07	52.51	0.01	0.15	10.10	
0.270	42.68	32.59	-7.94	-18.03	50.63	0.01	0.13	10.10	
0.314	47.19	37.31	-2.50	-12.38	49.69	0.01	0.13	10.10	
0.334	43.36	34.21	-5.81	-14.96	49.17	0.01	0.13	10.10	





Title: FCC Class B - Black Lead
File: 15 - Pre-Scan - Black Lead - Rx Mode - 390.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously receiving at 390.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 1:33:59 PM
Sequence: Preliminary Scan





Title: FCC Class B - Black Lead
File: 15 - Final Scan - Black Lead - Rx Mode - 390.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously receiving at 390.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 1:35:07 PM
Sequence: Final Measurements

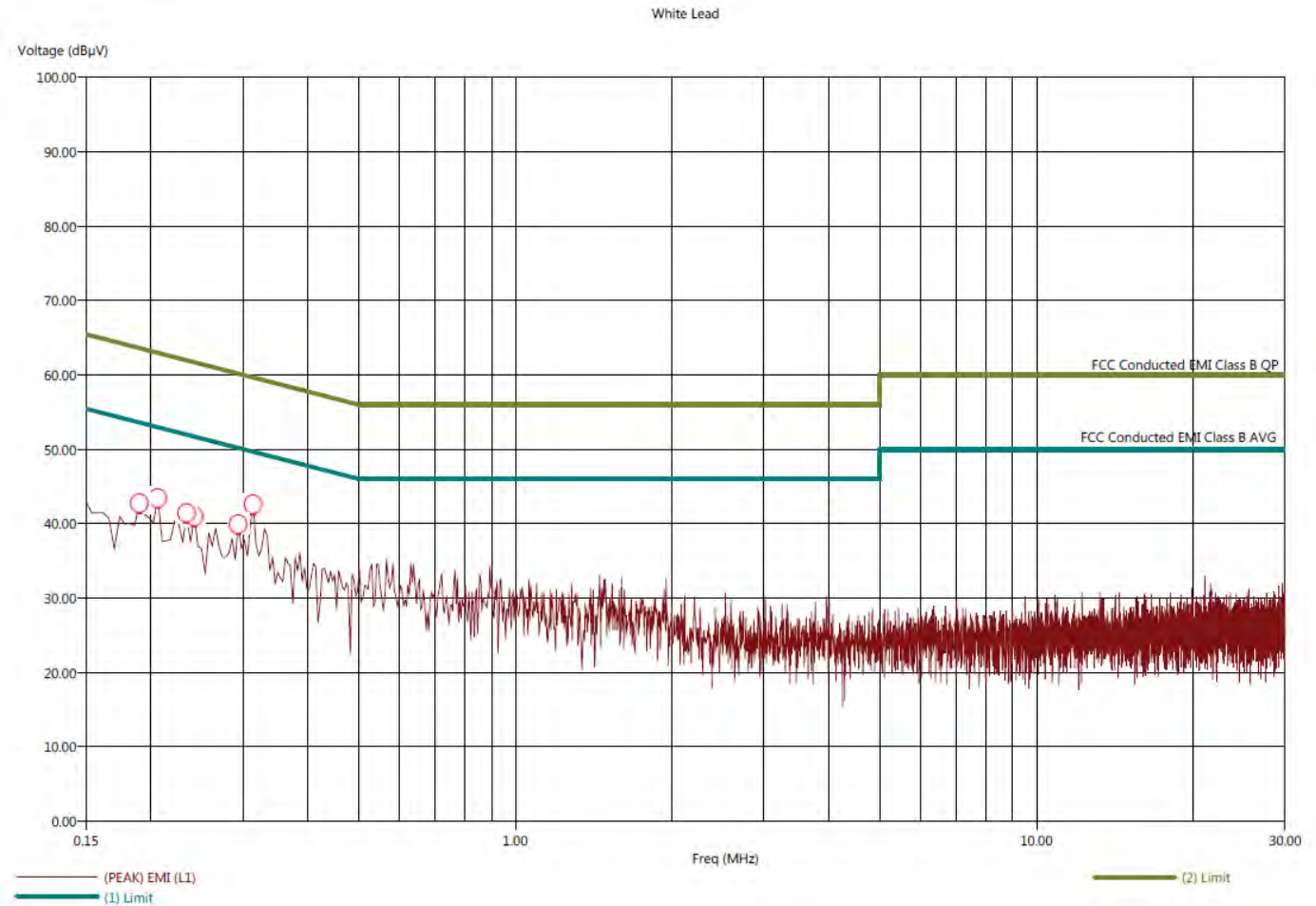
Black Lead									
Freq (MHz)	(PEAK) EMI (dBµV)	(AVG) EMI (dBµV)	(PEAK) Margin (AVG) (dB)	(AVG) Margin (AVG) (dB)	(AVG) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)	
0.150	50.01	36.80	-5.67	-18.88	55.68	0.01	0.20		10.10
0.174	46.97	35.13	-7.30	-19.14	54.27	0.01	0.18		10.10
0.182	49.06	35.29	-5.19	-18.96	54.24	0.01	0.18		10.10
0.202	46.47	34.29	-6.83	-19.01	53.30	0.01	0.16		10.10
0.214	45.87	33.56	-6.86	-19.17	52.73	0.01	0.16		10.10
0.266	42.42	32.57	-8.60	-18.45	51.02	0.01	0.15		10.10





Title: FCC Class B - White Lead
File: 16 - Pre-Scan - White Lead - Rx Mode - 390.00 MHz - FCC Class B - 01-17-2023.set
Operator: Kyle Fujimoto
EUT Type: Z-Wave Garage Door Controller
EUT Condition: The EUT is continuously receiving at 390.00 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: GDZW7-ECO
S/N: ELGLCR2217TW00005

1/17/2023 1:38:28 PM
Sequence: Preliminary Scan





Title: FCC Class B - White Lead

File: 16 - Final Scan - White Lead - Rx Mode - 390.00 MHz - FCC Class B - 01-17-2023.set

Operator: Kyle Fujimoto

EUT Type: Z-Wave Garage Door Controller

EUT Condition: The EUT is continuously receiving at 390.00 MHz

Company: Ecolink Intelligent Technology, Inc.

Model: GDZW7-ECO

S/N: ELGLCR2217TW00005

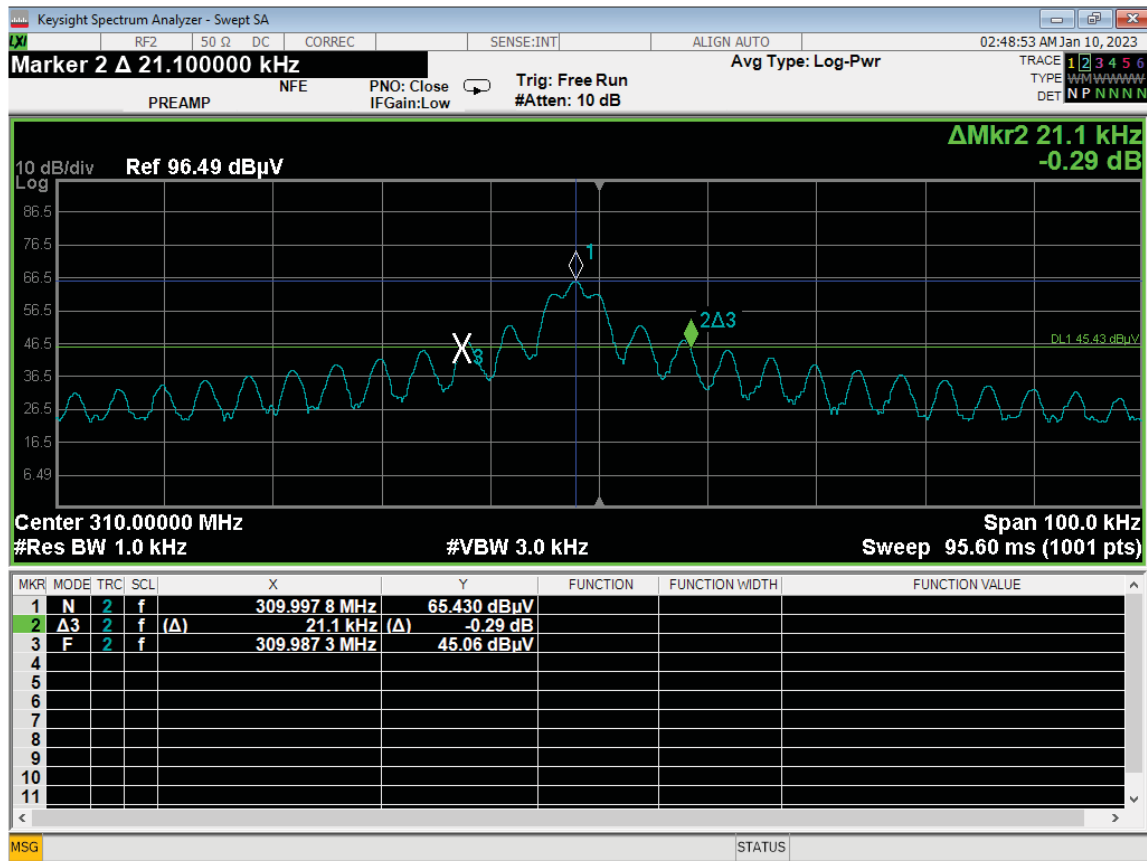
1/17/2023 1:39:37 PM
Sequence: Final Measurements

White Lead									
Freq (MHz)	(PEAK) EMI (dBµV)	(AVG) EMI (dBµV)	(PEAK) Margin (AVG) (dB)	(AVG) Margin (AVG) (dB)	(AVG) Limit (dBµV)	Cable (dB)	Transducer (dB)	Filter (dB)	
0.190	41.38	30.55	-12.11	-22.94	53.49	0.01	0.15	10.10	
0.206	40.49	30.11	-12.72	-23.10	53.21	0.01	0.15	10.10	
0.234	39.36	29.20	-12.88	-23.04	52.24	0.01	0.14	10.10	
0.242	38.37	28.93	-13.10	-22.54	51.47	0.01	0.14	10.10	
0.294	42.75	32.04	-7.62	-18.33	50.37	0.01	0.13	10.10	
0.314	47.91	37.04	-1.83	-12.70	49.74	0.01	0.13	10.10	

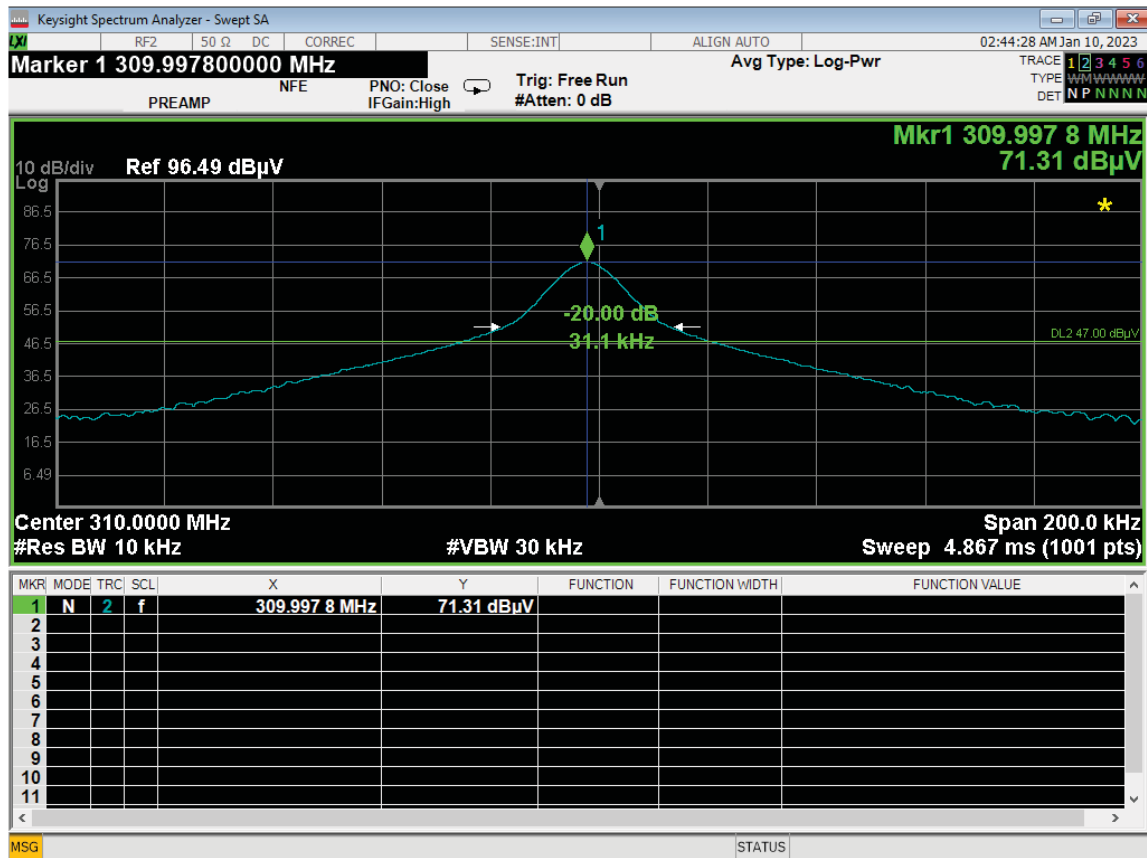




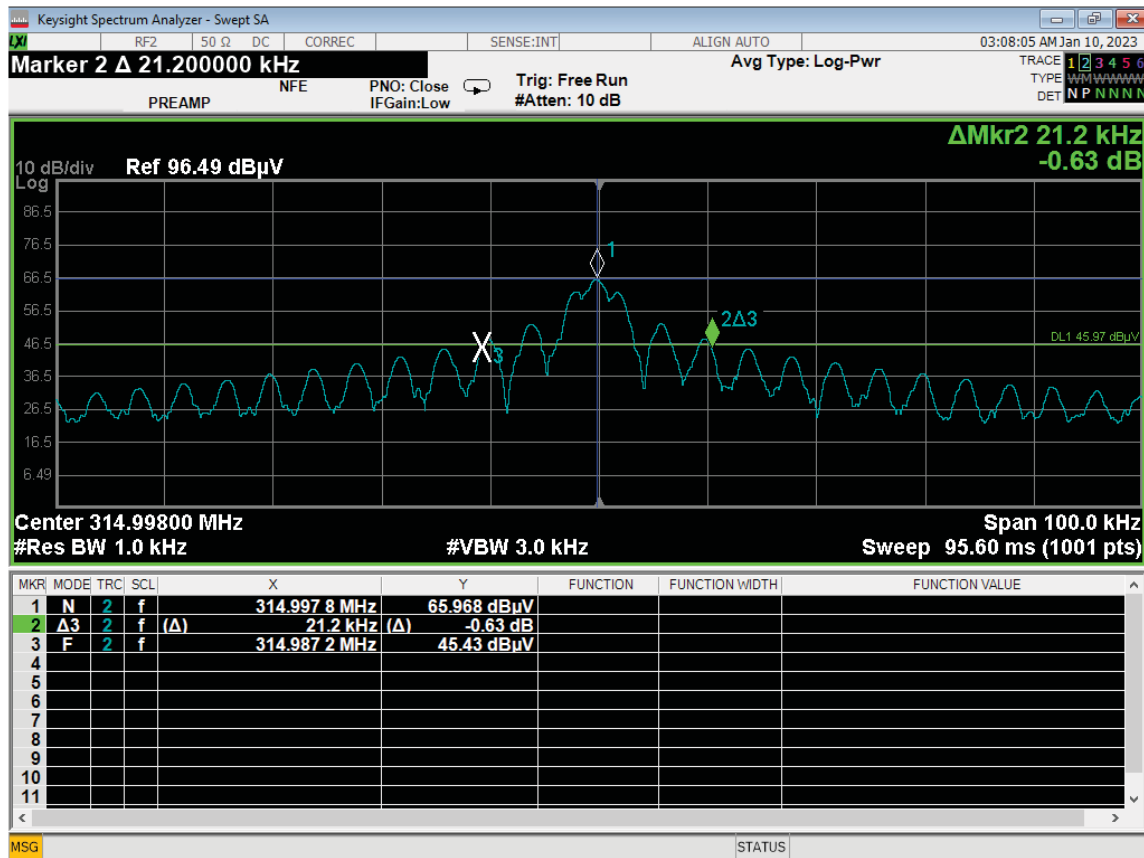
***-20 dB BANDWIDTH PLOT
DATA SHEET***



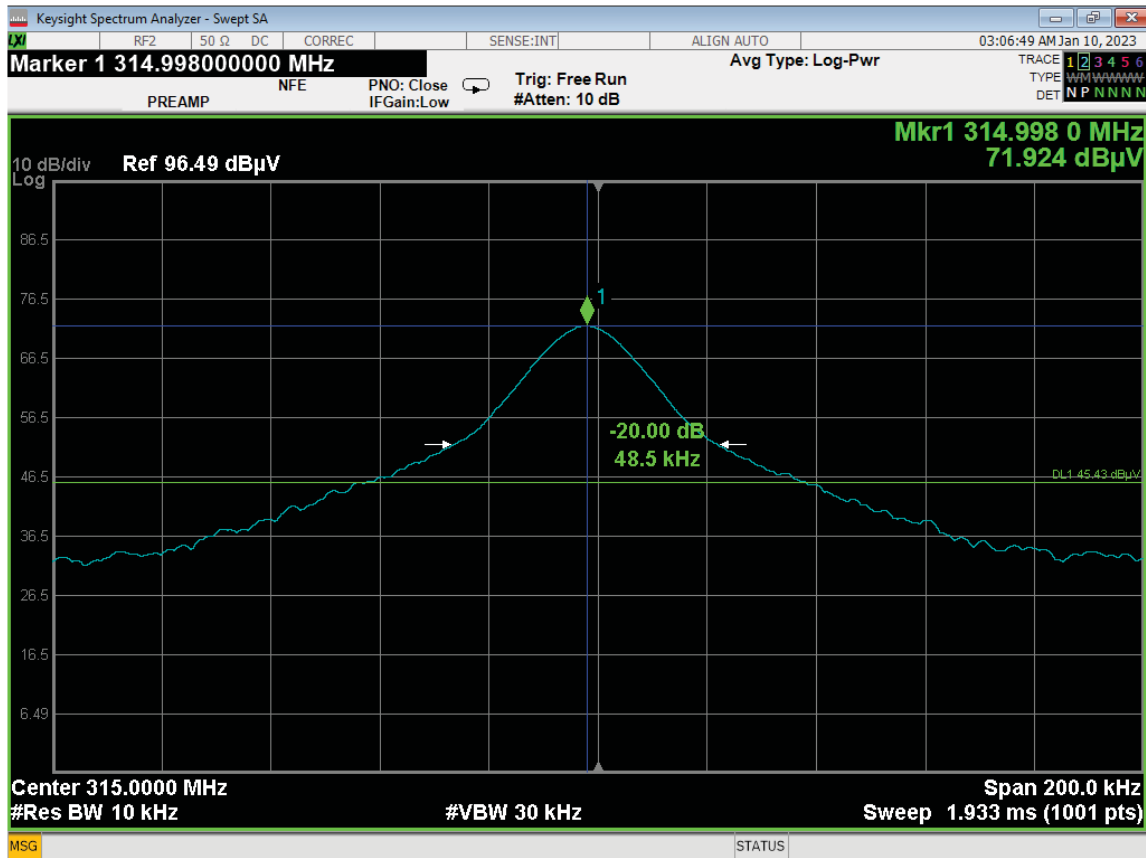
-20 dB Bandwidth Plot - 310 MHz - Version II - 1 kHz RBW



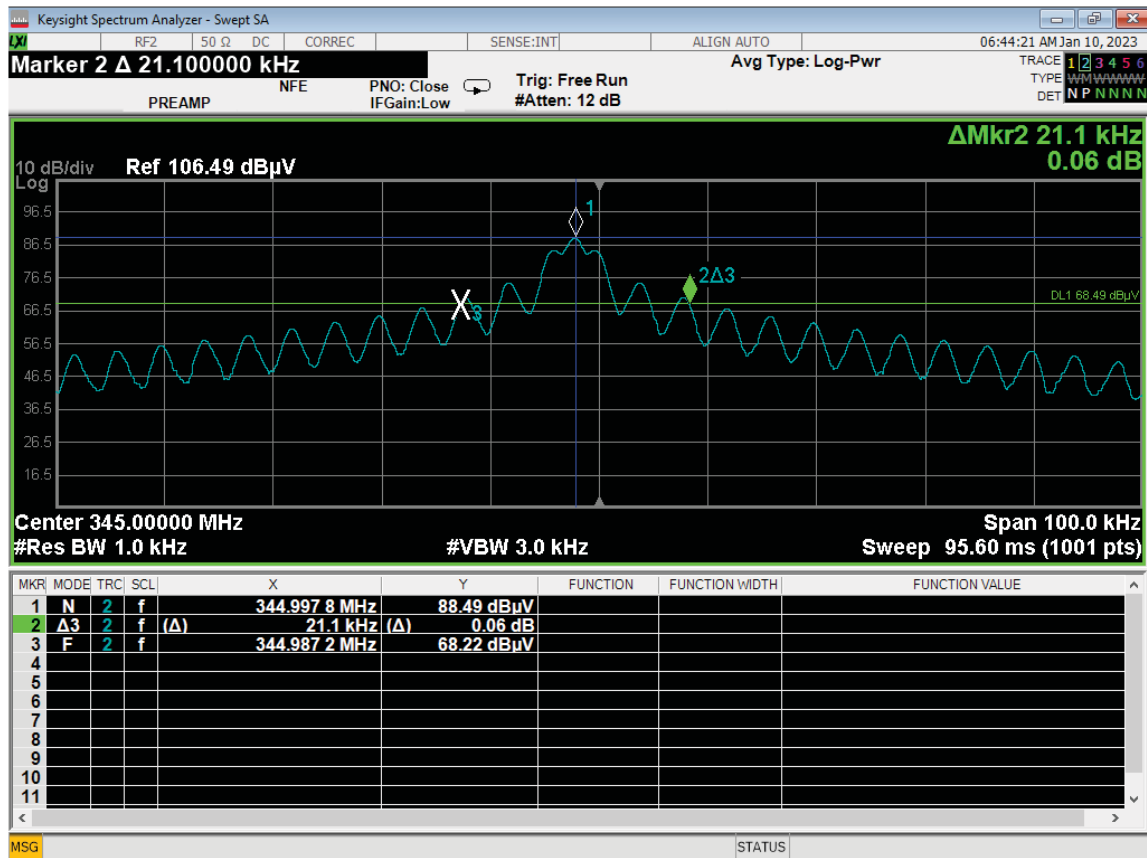
-20 dB Bandwidth Plot - 310 MHz - Version II - 10 kHz RBW



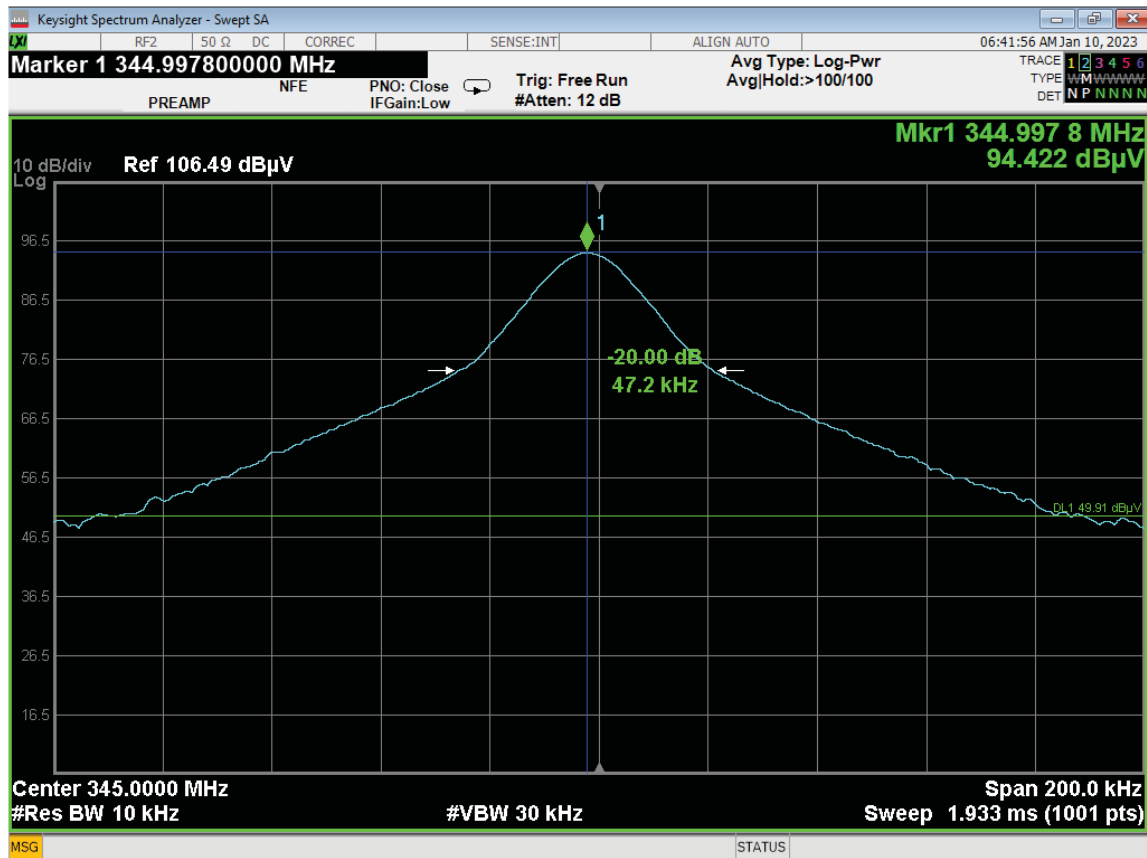
-20 dB Bandwidth Plot - 315 MHz - Version I - Worst Case - 1 kHz RBW



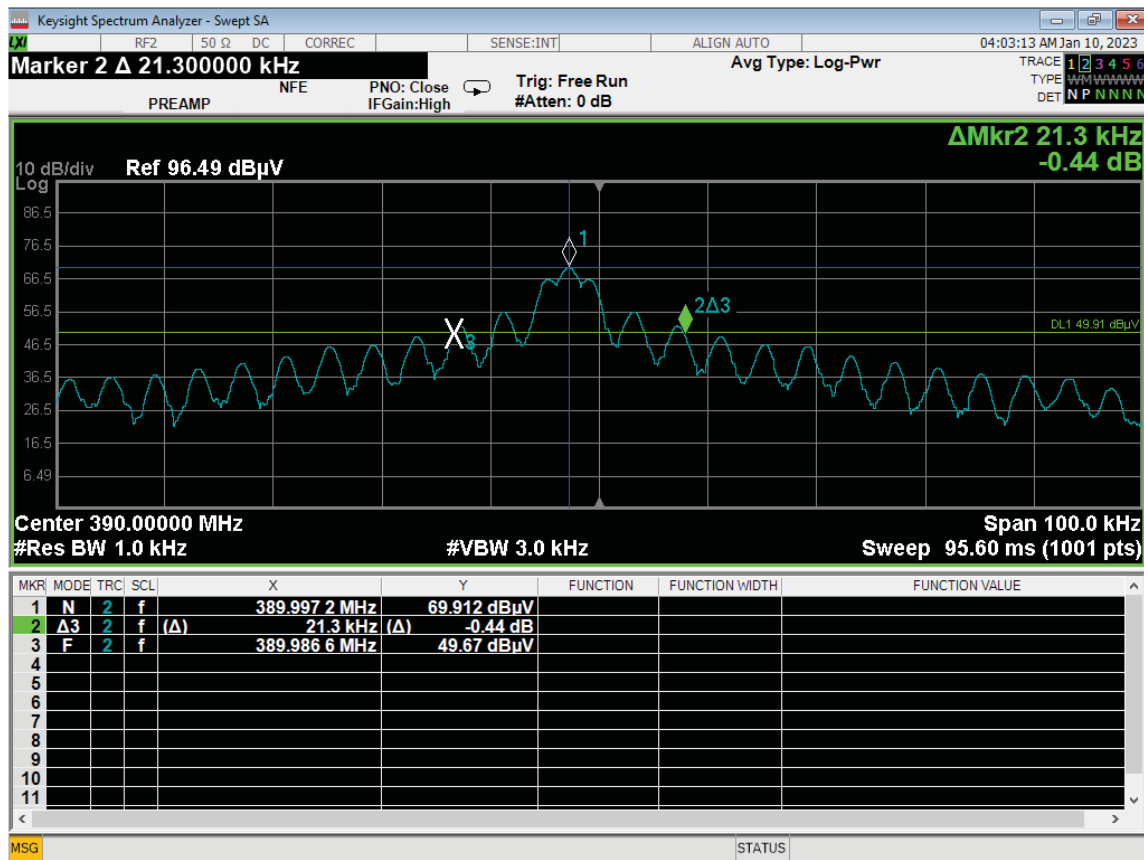
-20 dB Bandwidth Plot - 315 MHz - Version I - Worst Case - 10 kHz RBW



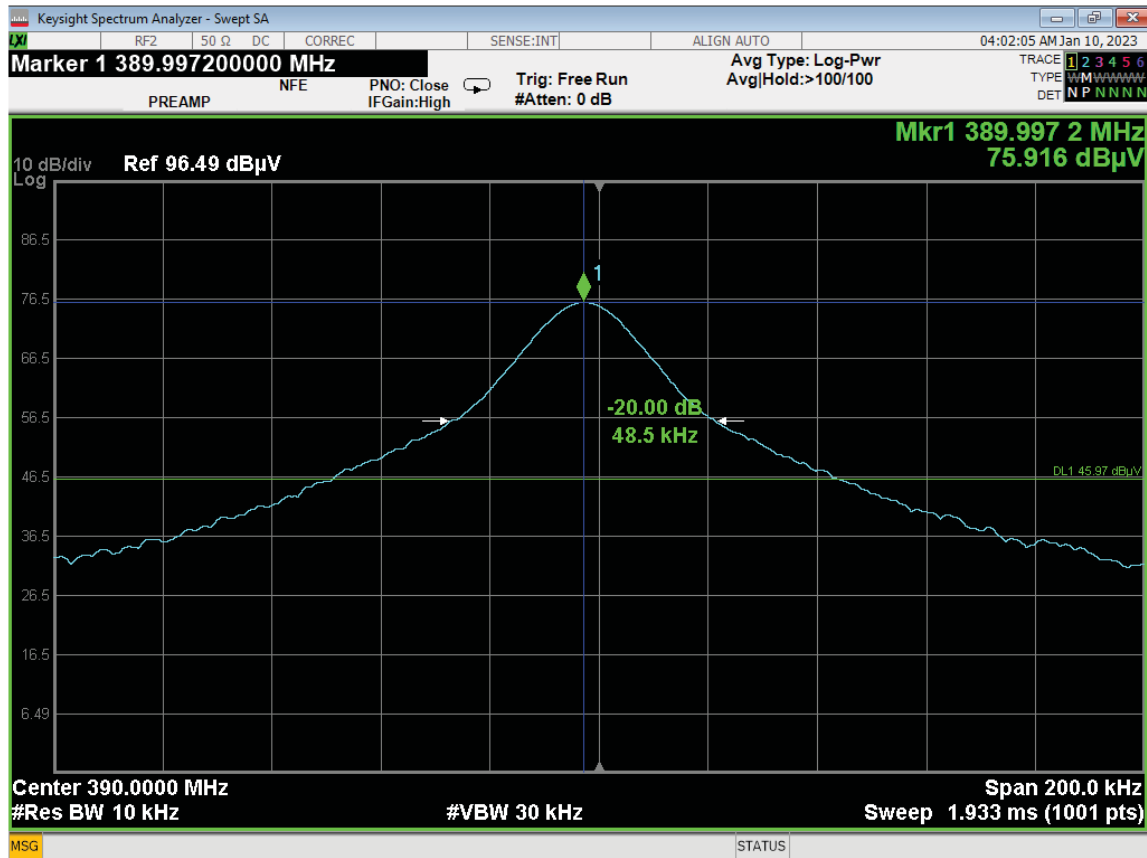
-20 dB Bandwidth Plot - 345 MHz - Honeywell - 1 kHz RBW



-20 dB Bandwidth Plot - 345 MHz - Honeywell - 10 kHz RBW



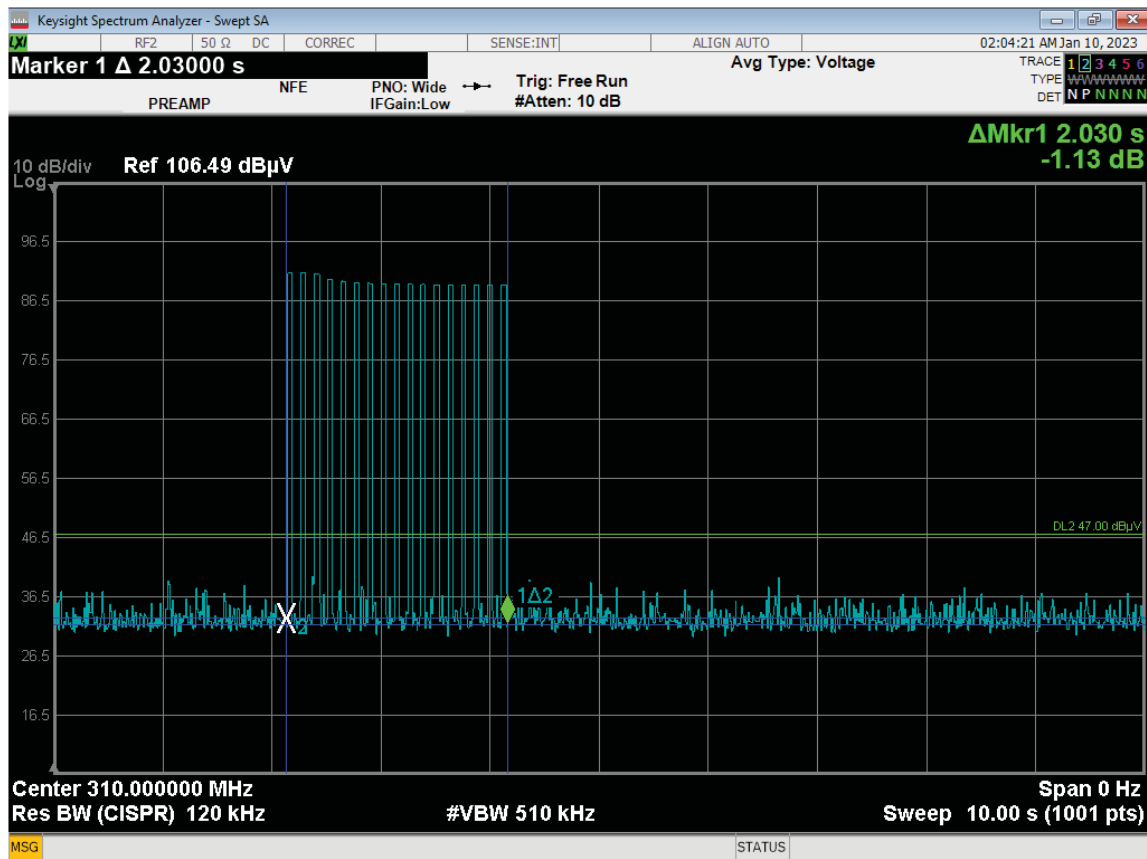
-20 dB Bandwidth Plot - 390 MHz - Version I - Worst Case - 1 kHz RBW



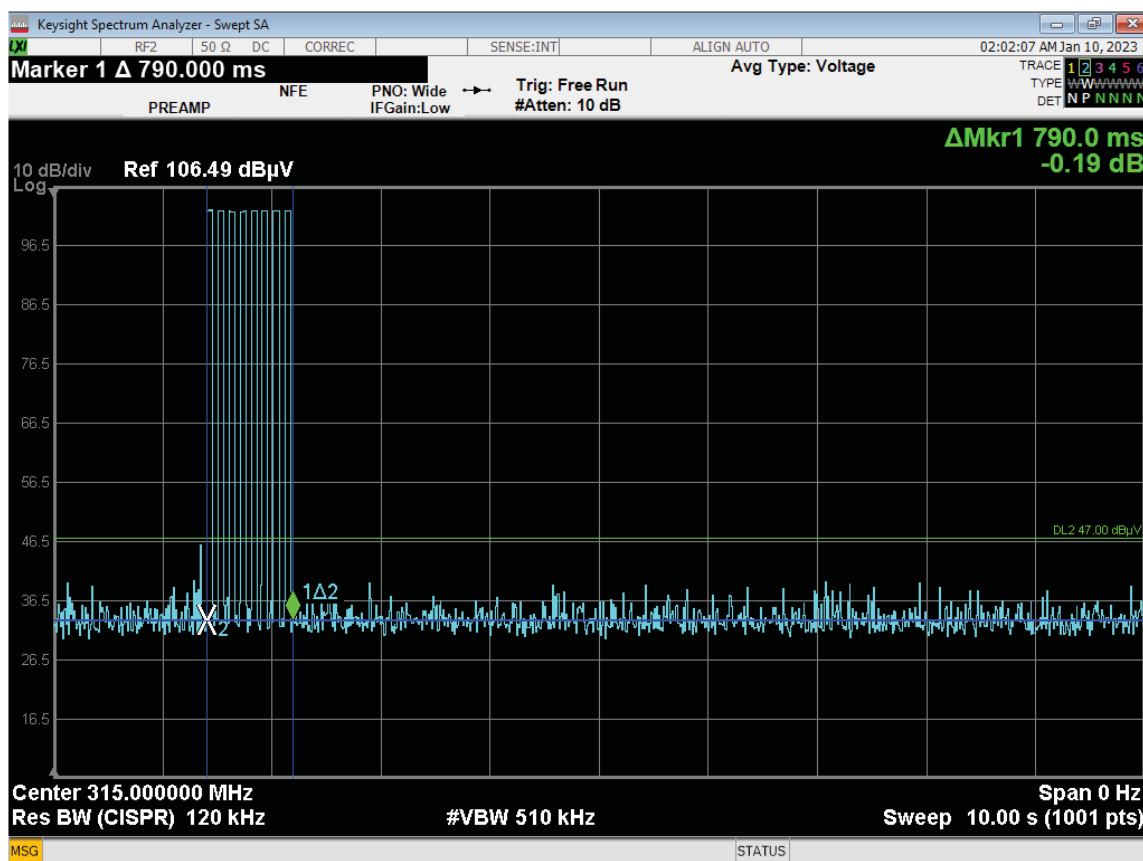
-20 dB Bandwidth Plot - 390 MHz - Version I - Worst Case - 10 kHz RBW



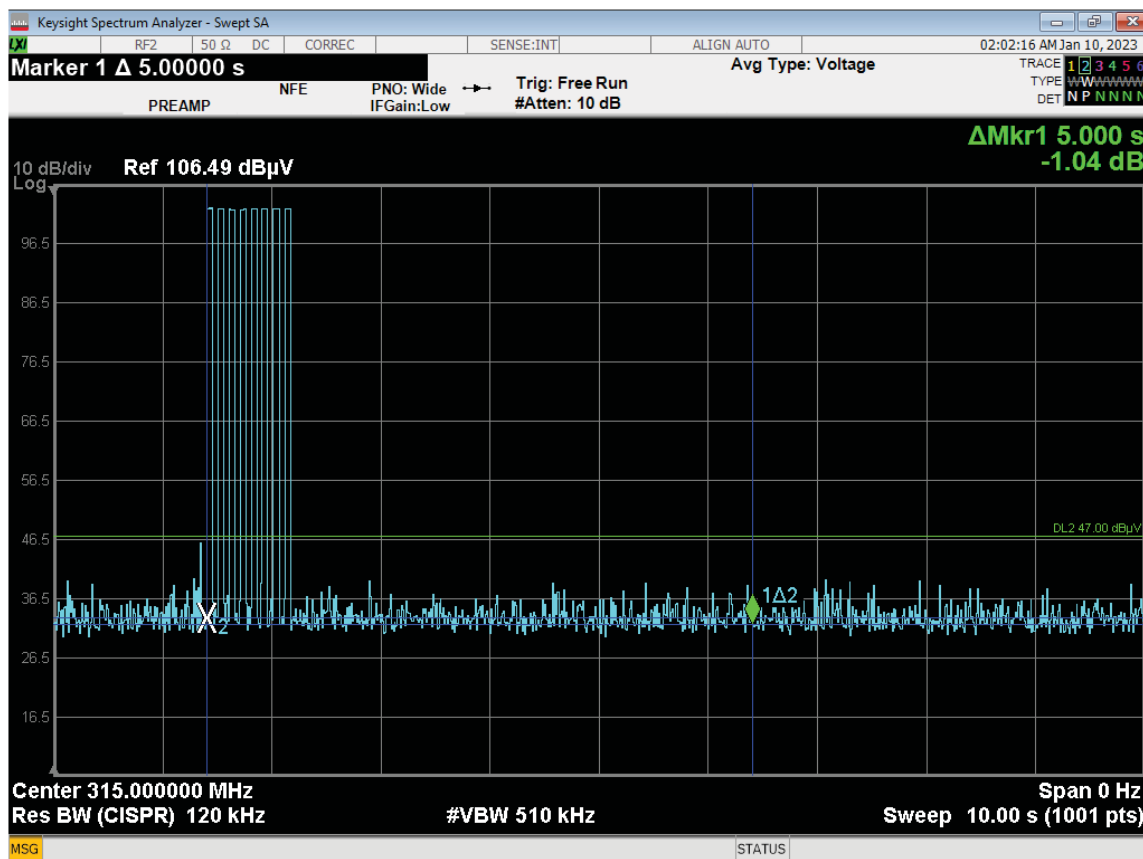
***TRANSMISSION TIME
DATA SHEET***



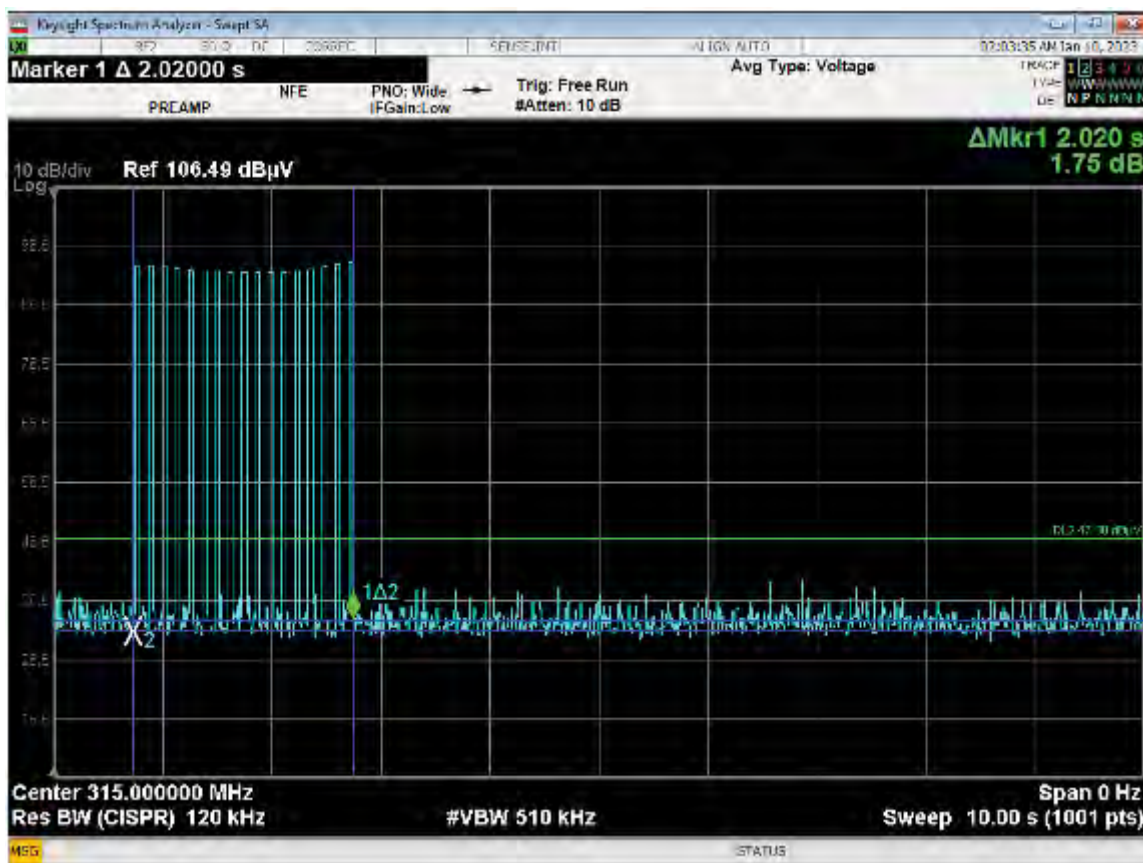
Transmission Time - 310 MHz - Version II



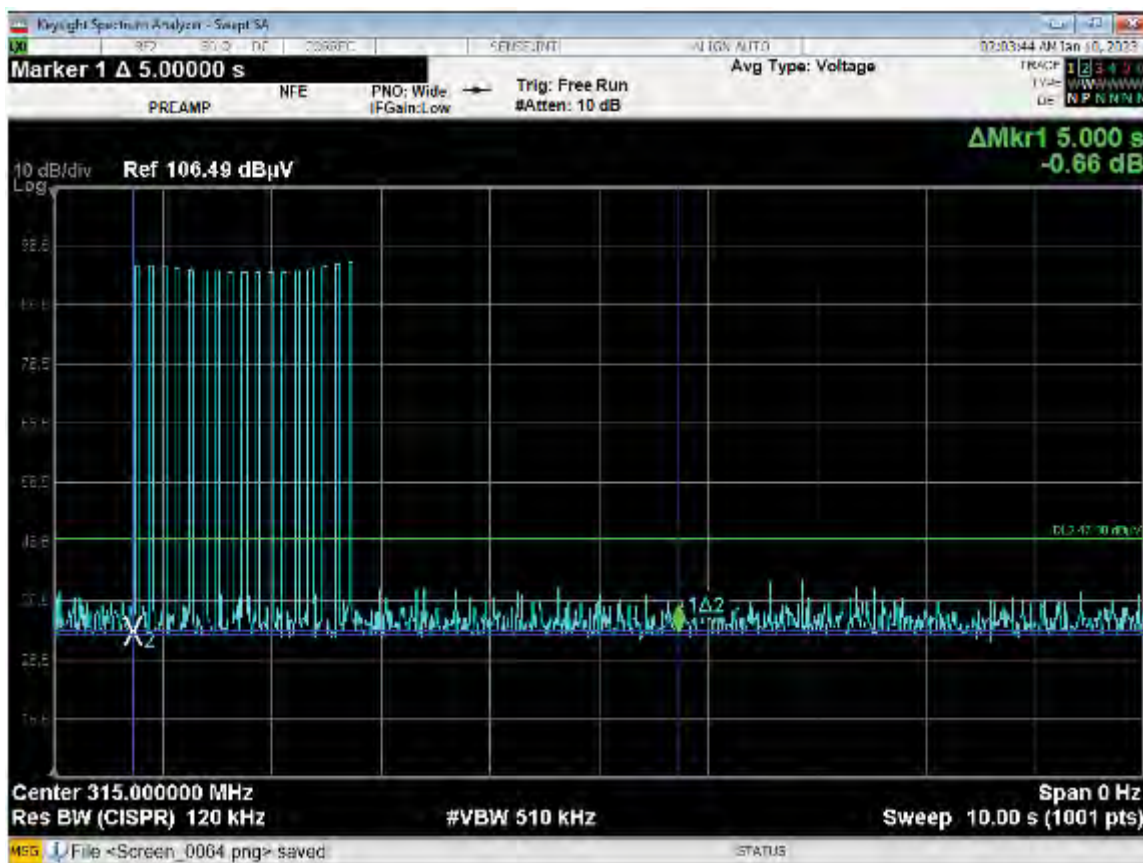
Transmission Time - 315 MHz - Version I



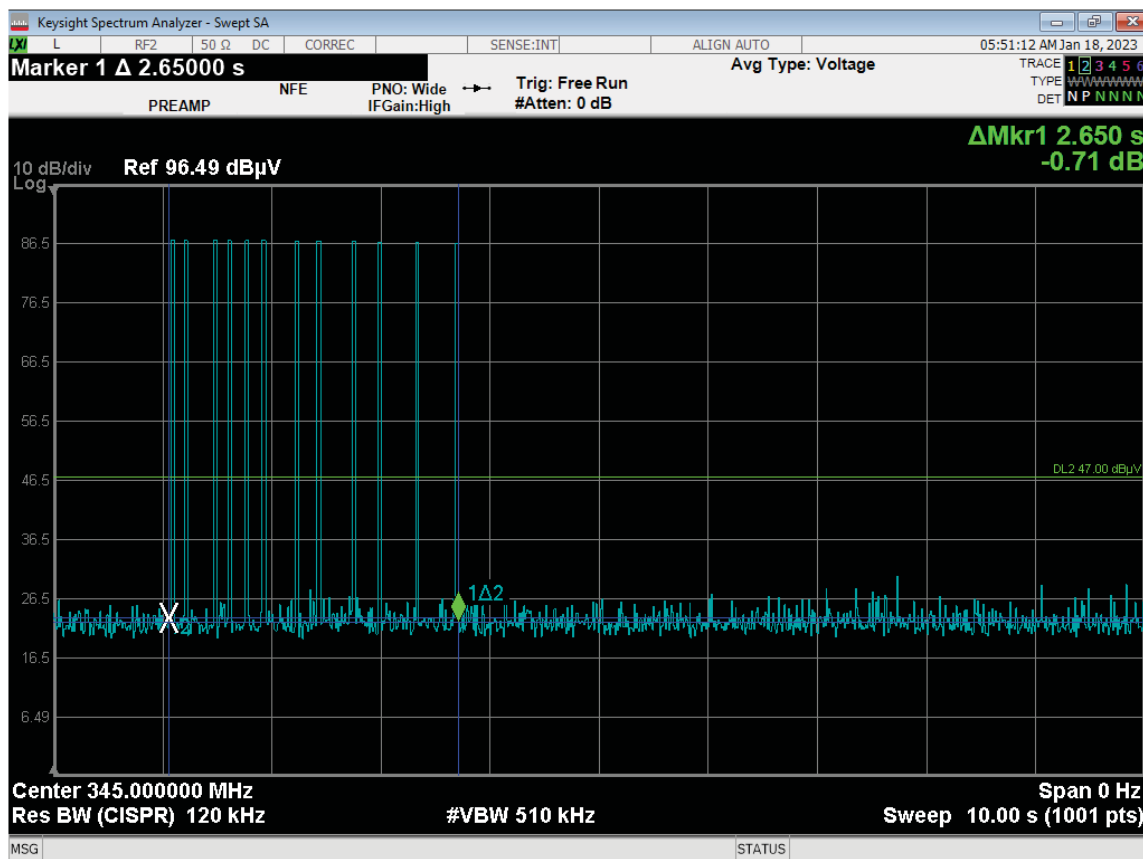
Transmission Time - 315 MHz - Version I - View 2



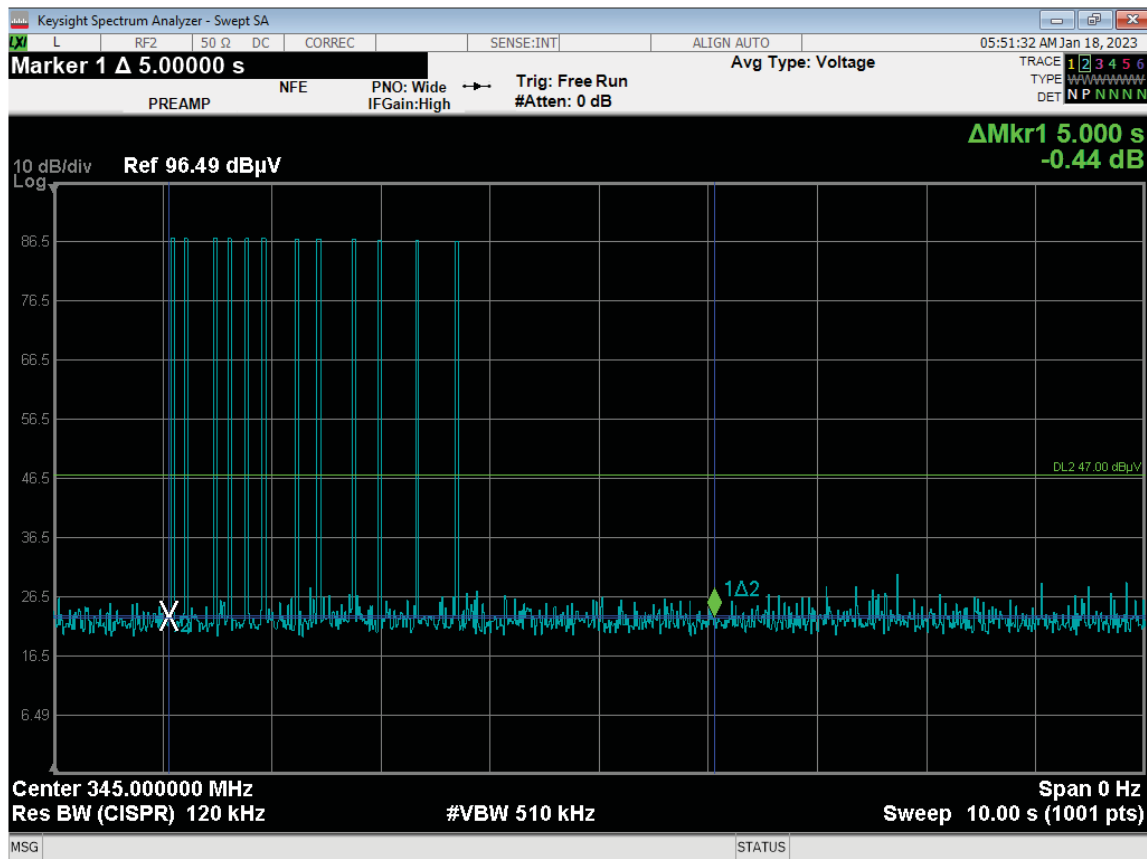
Transmission Time - 315 MHz - Version II



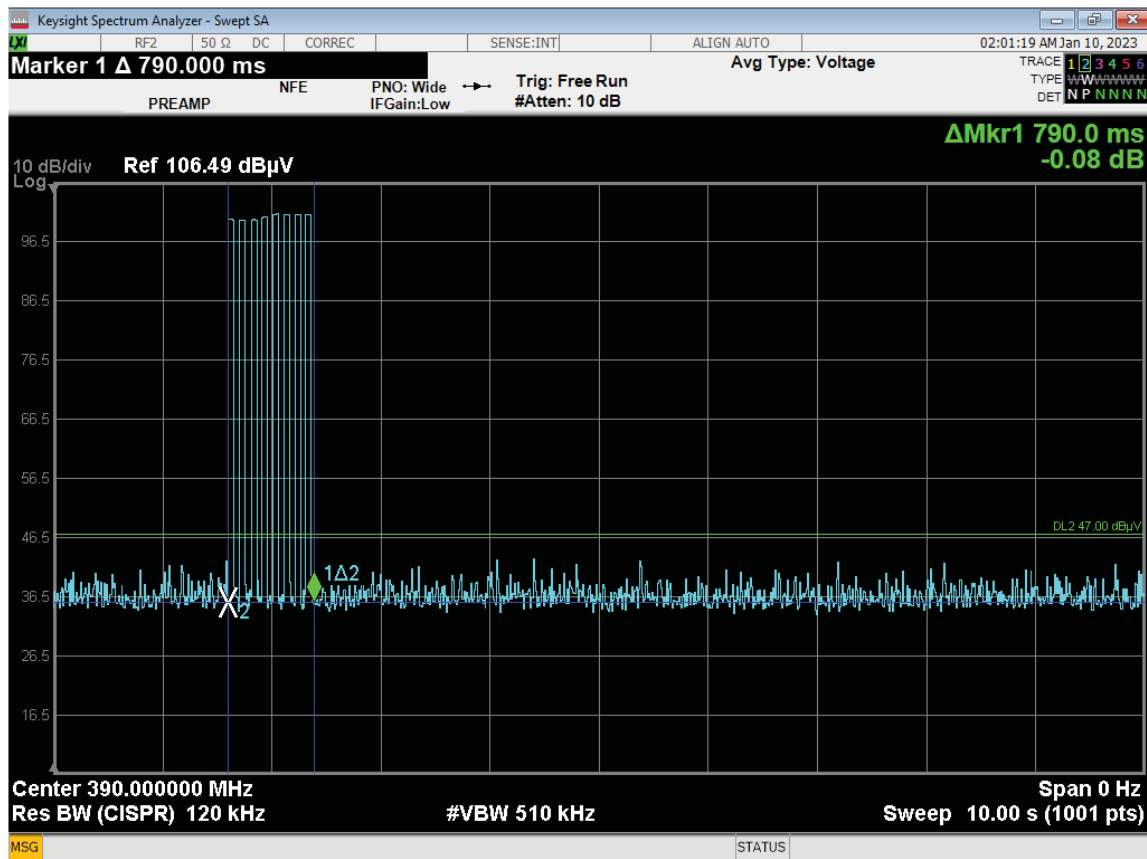
Transmission Time - 315 MHz - Version II - View 2



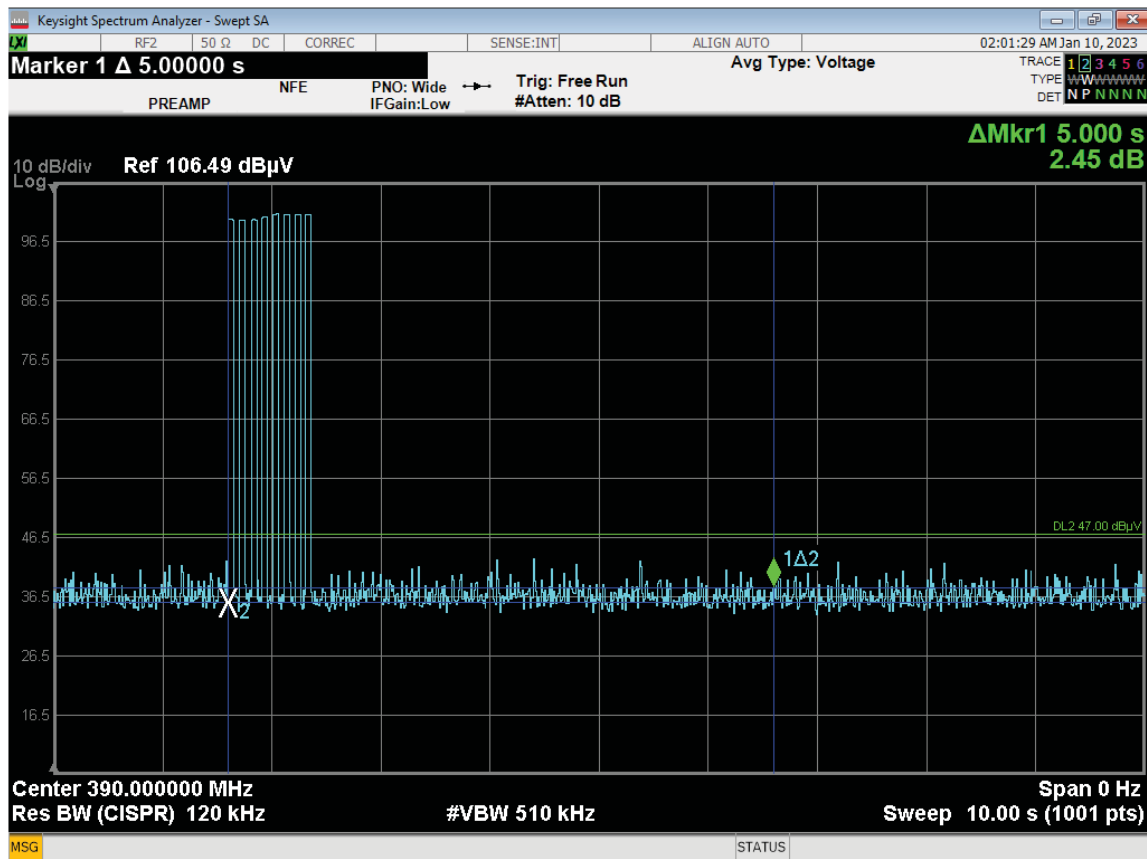
Transmission Time - 345 MHz - Honeywell



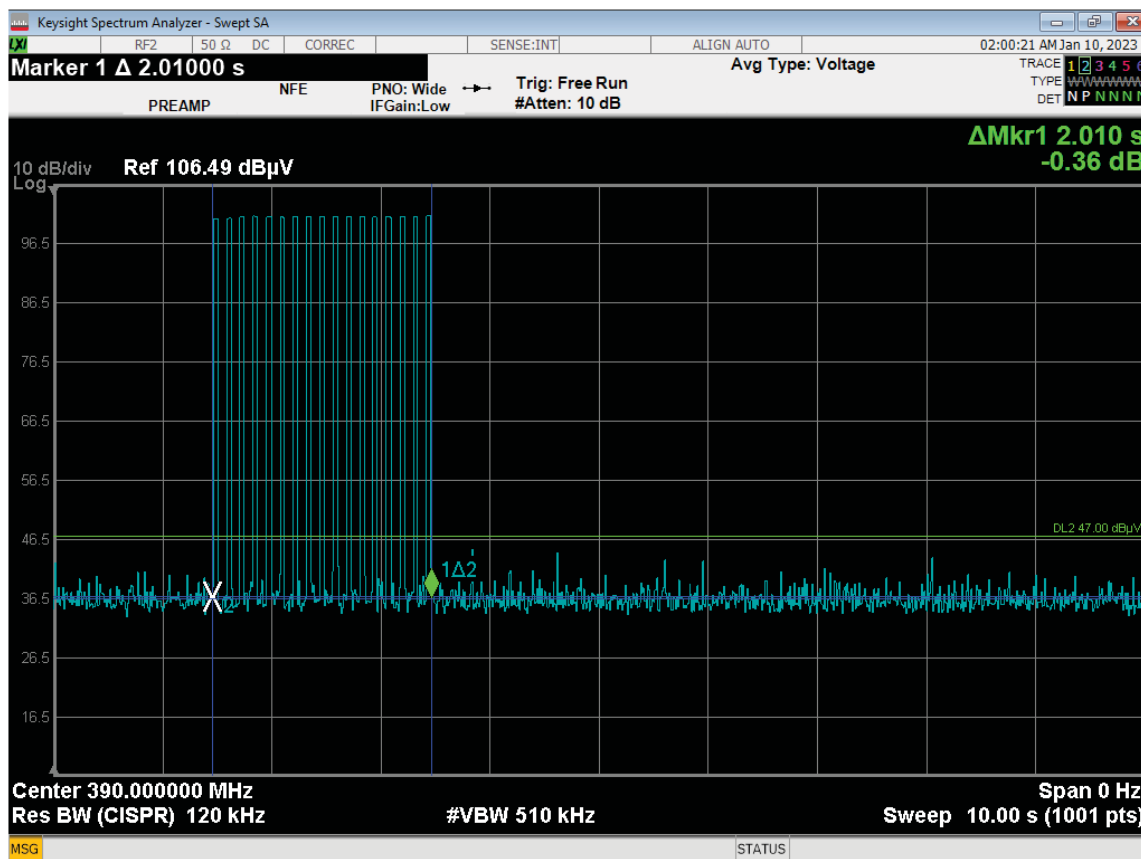
Transmission Time - 345 MHz - Honeywell - View 2



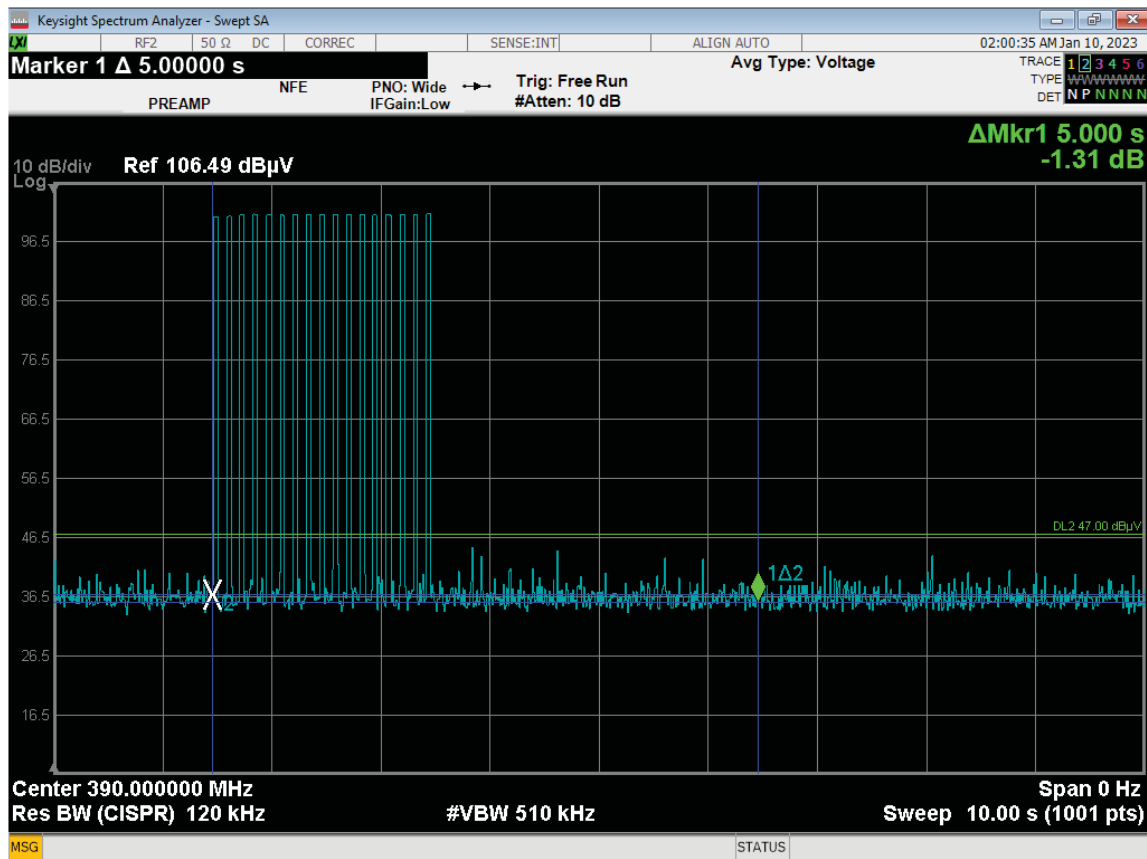
Transmission Time - 390 MHz - Version I



Transmission Time - 390 MHz - Version I - View 2



Transmission Time - 390 MHz - Version II

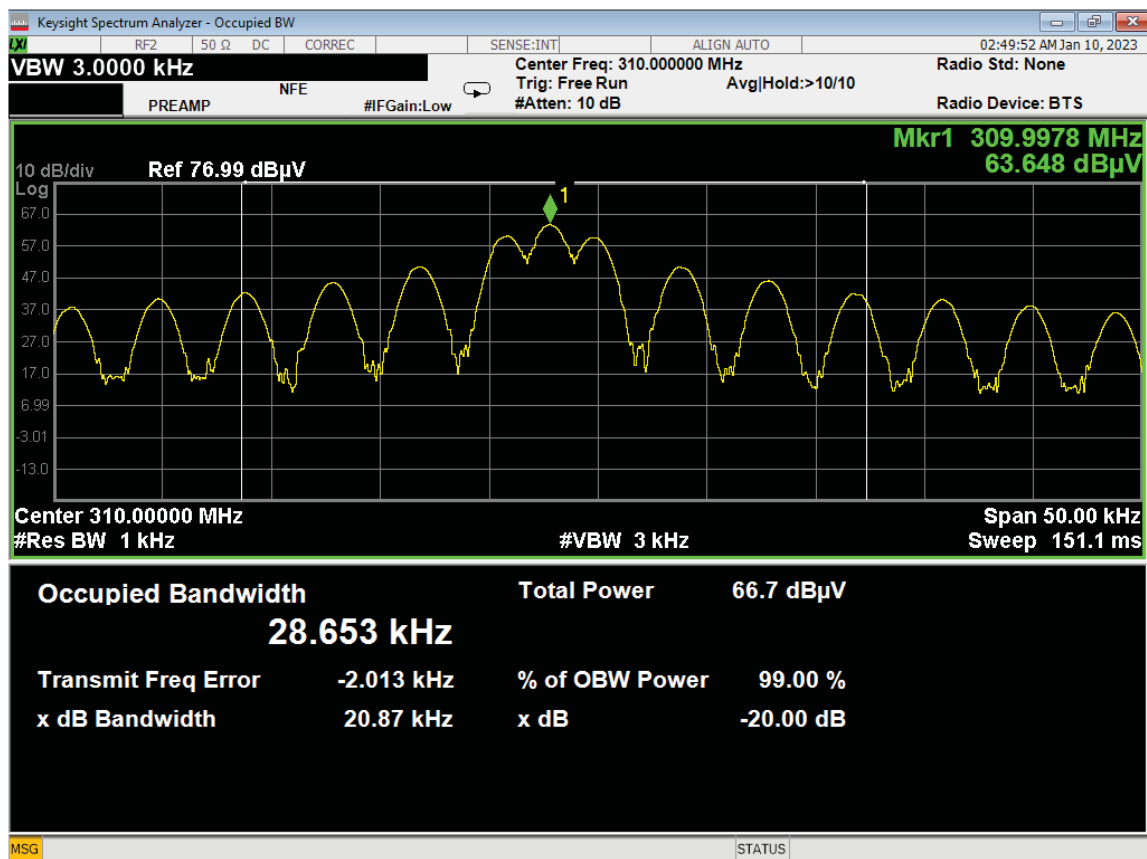


Transmission Time - 390 MHz - Version II - View 2

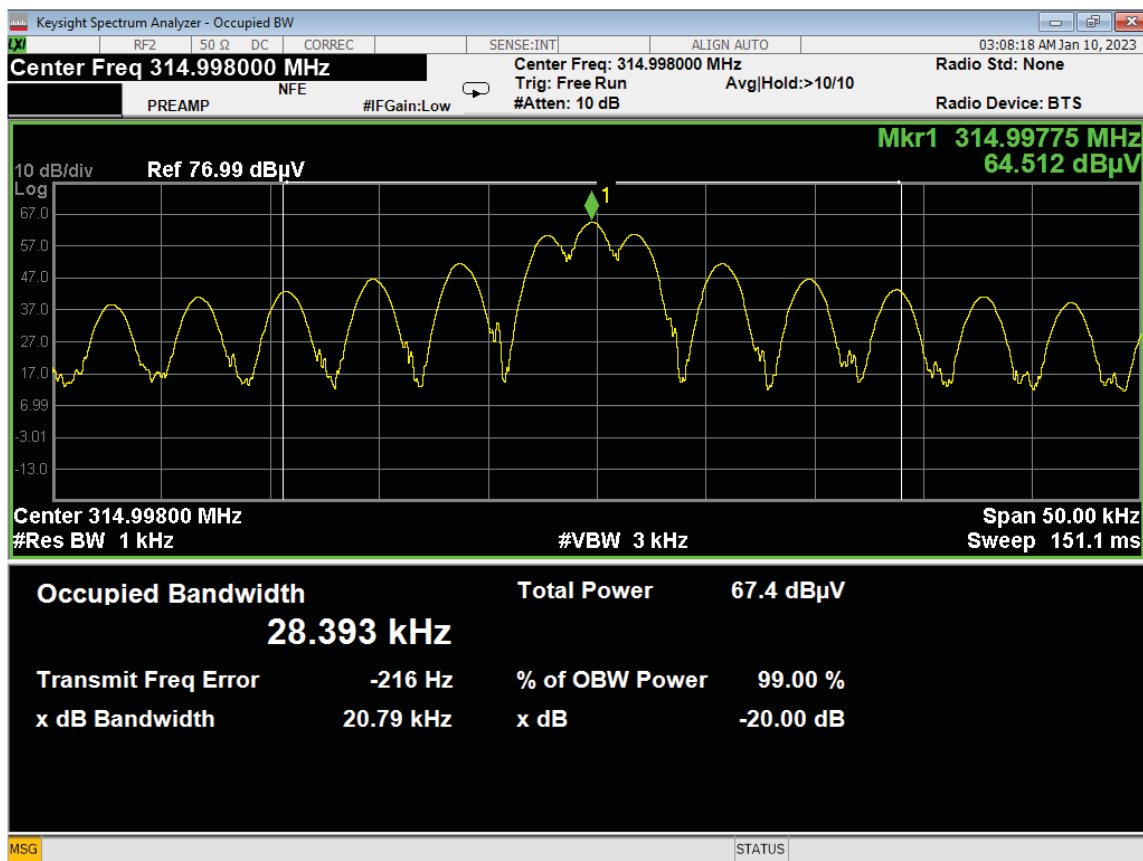


99% BANDWIDTH

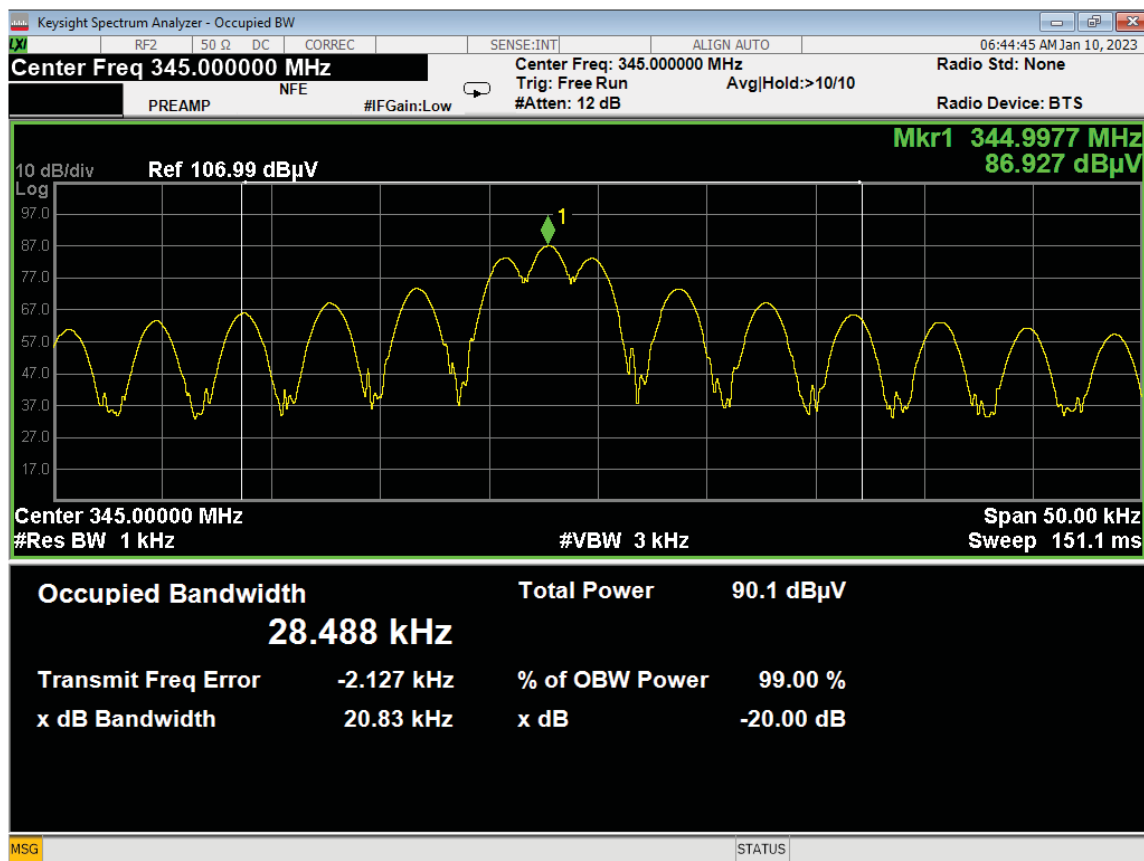
DATA SHEET



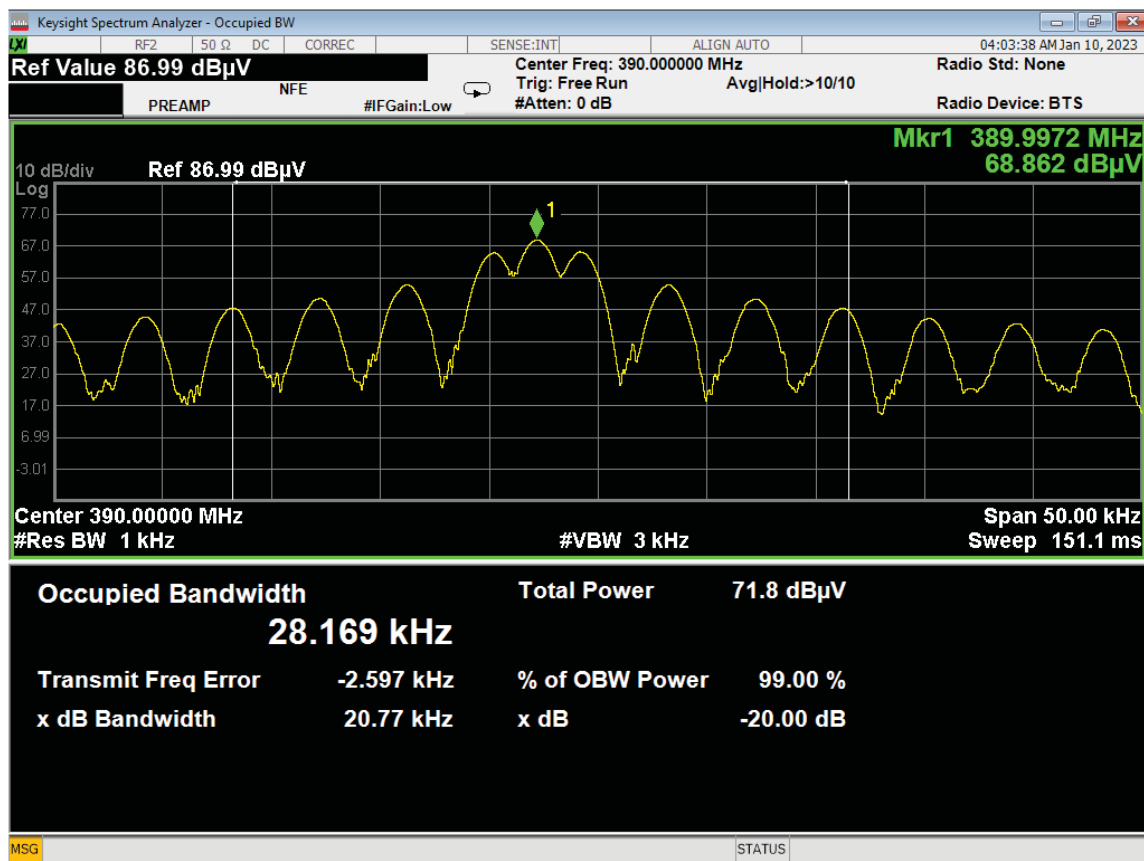
99% Bandwidth Plot – 310 MHz



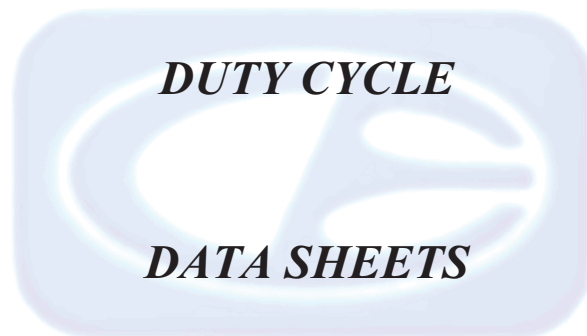
99% Bandwidth Plot – 315 MHz

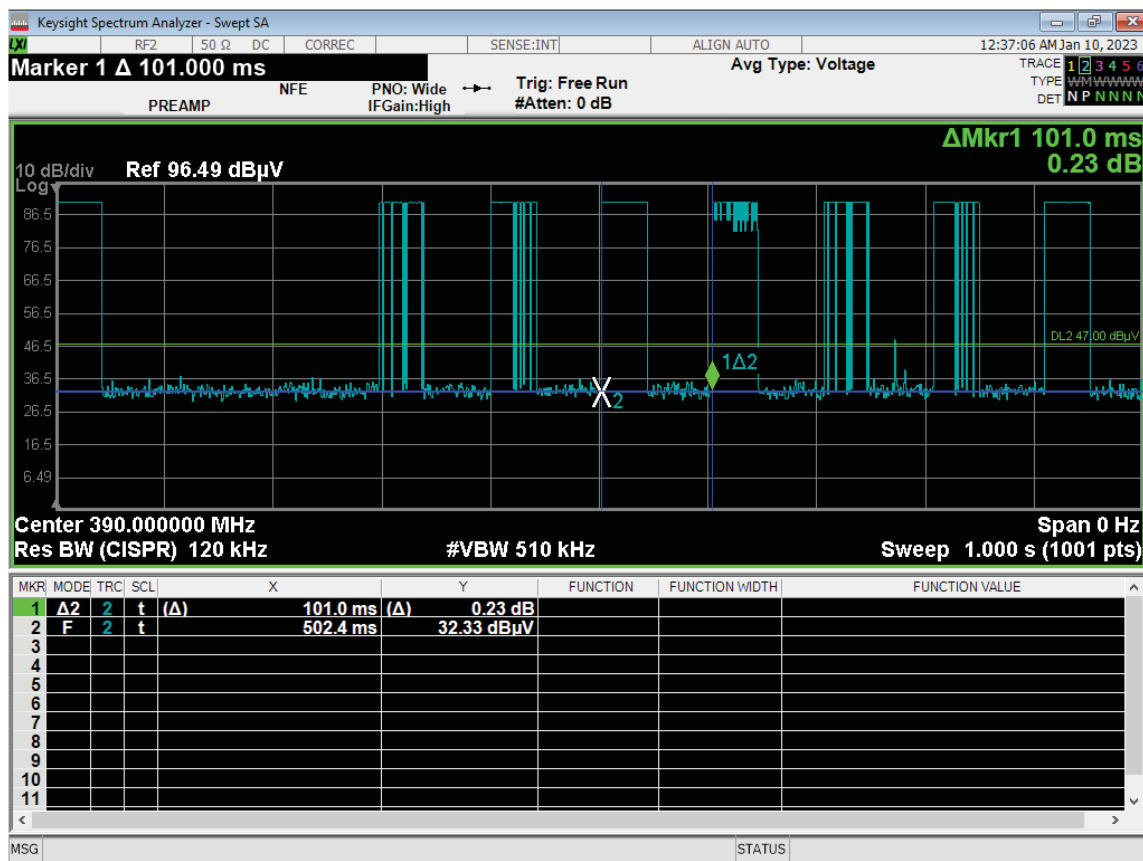


99% Bandwidth Plot – 345 MHz

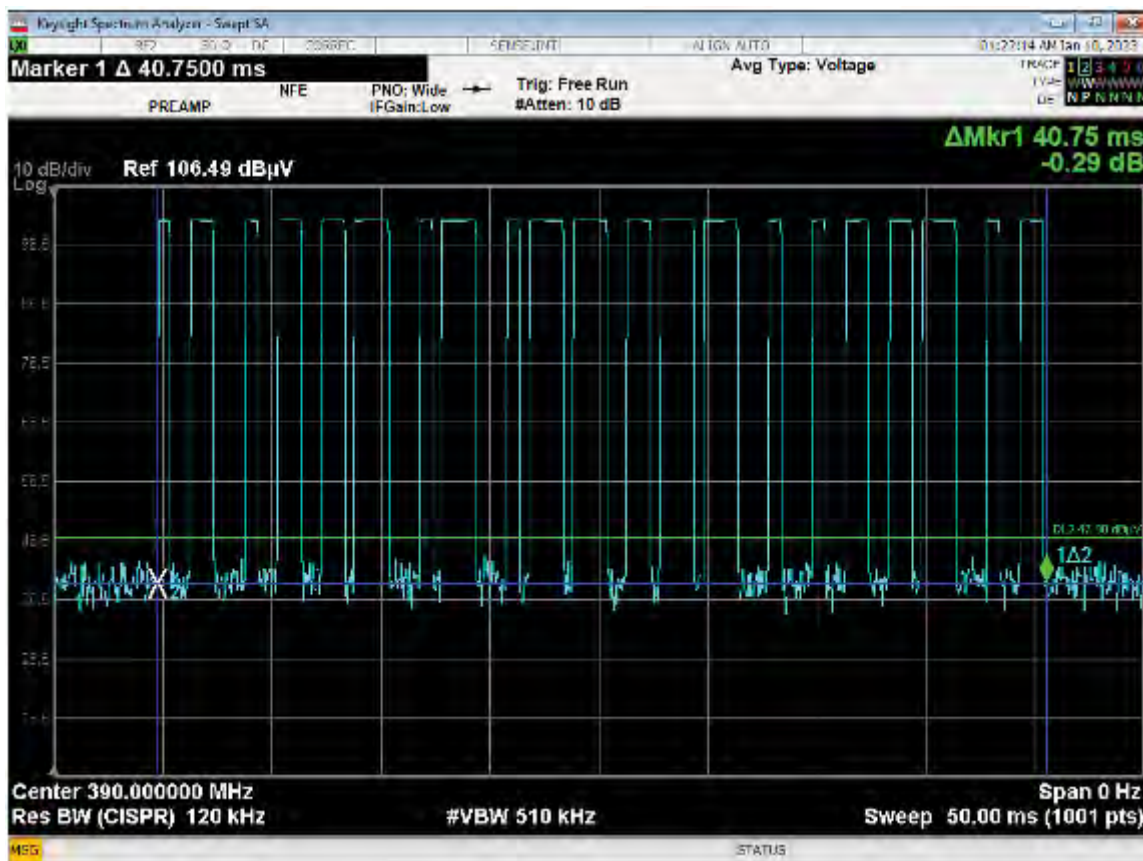


99% Bandwidth Plot – 390 MHz





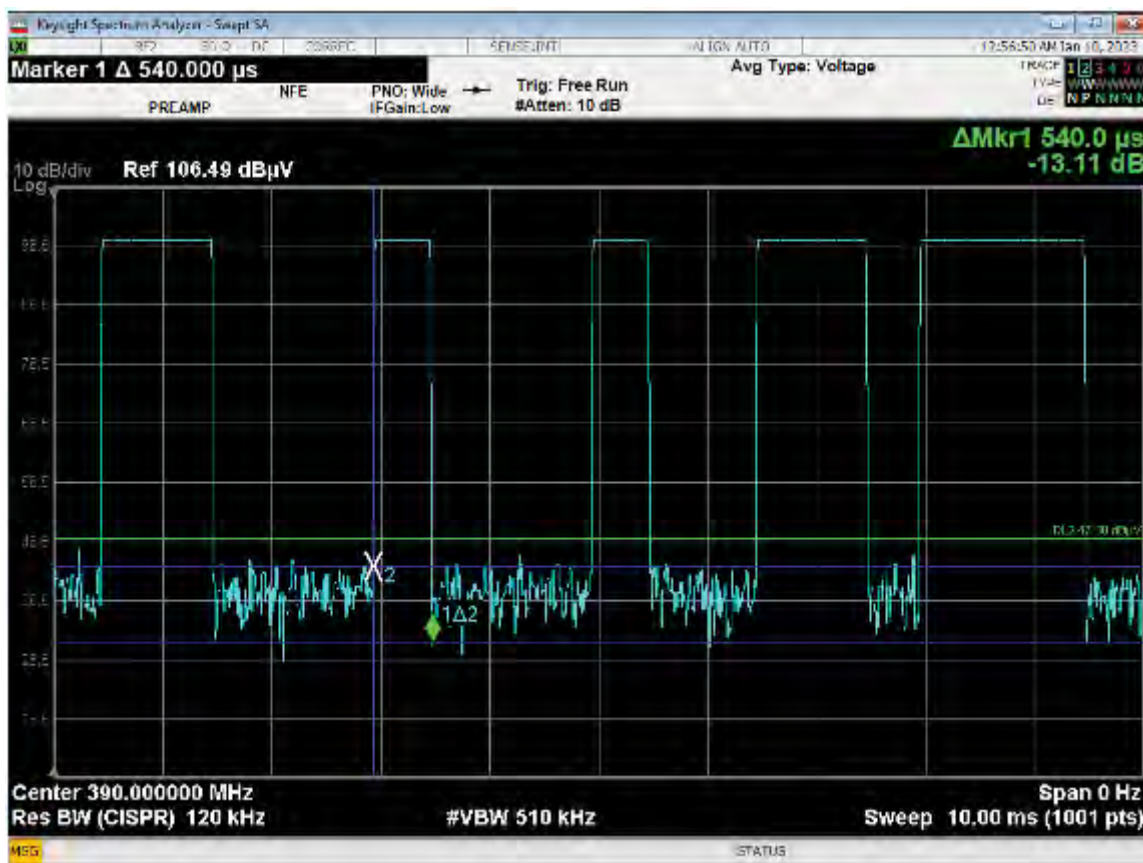
The pulse train repeats every 101 ms – Version I



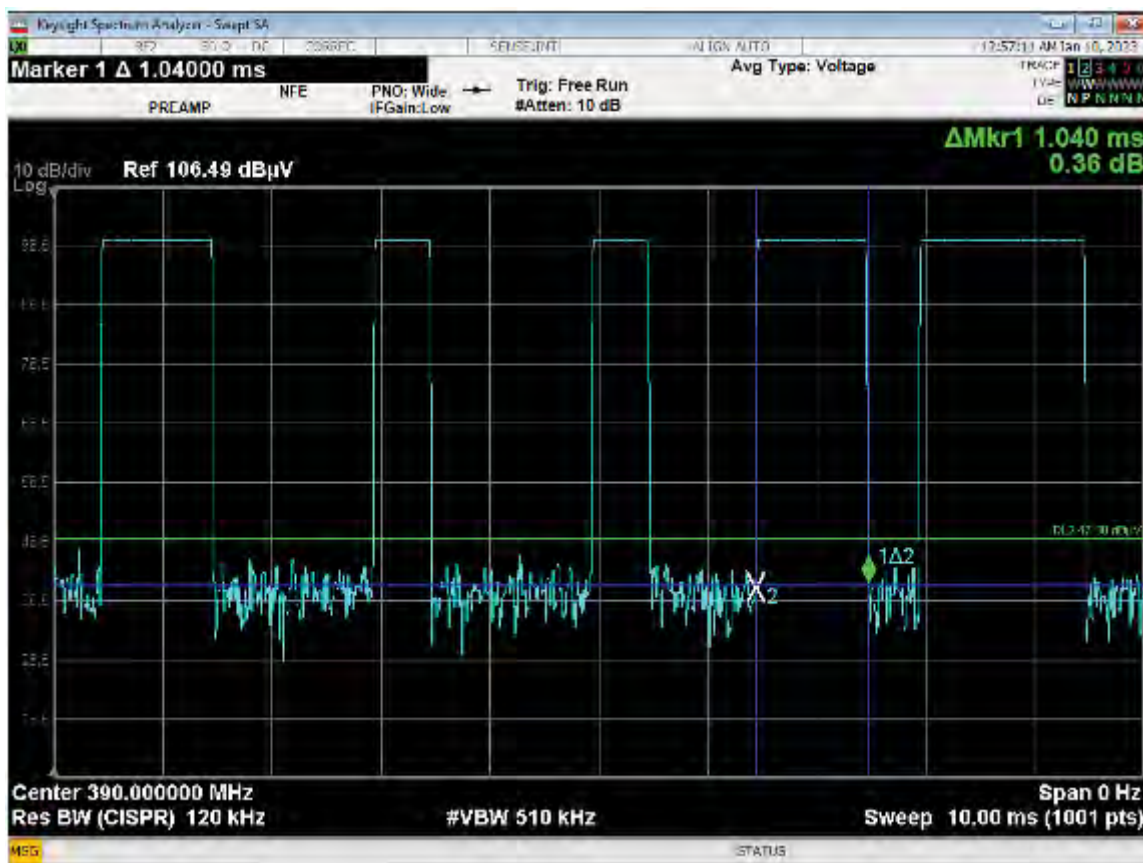
Number of Pulses:

Small = 7 Pulses
Medium = 7 Pulses
Large = 7 Pulses

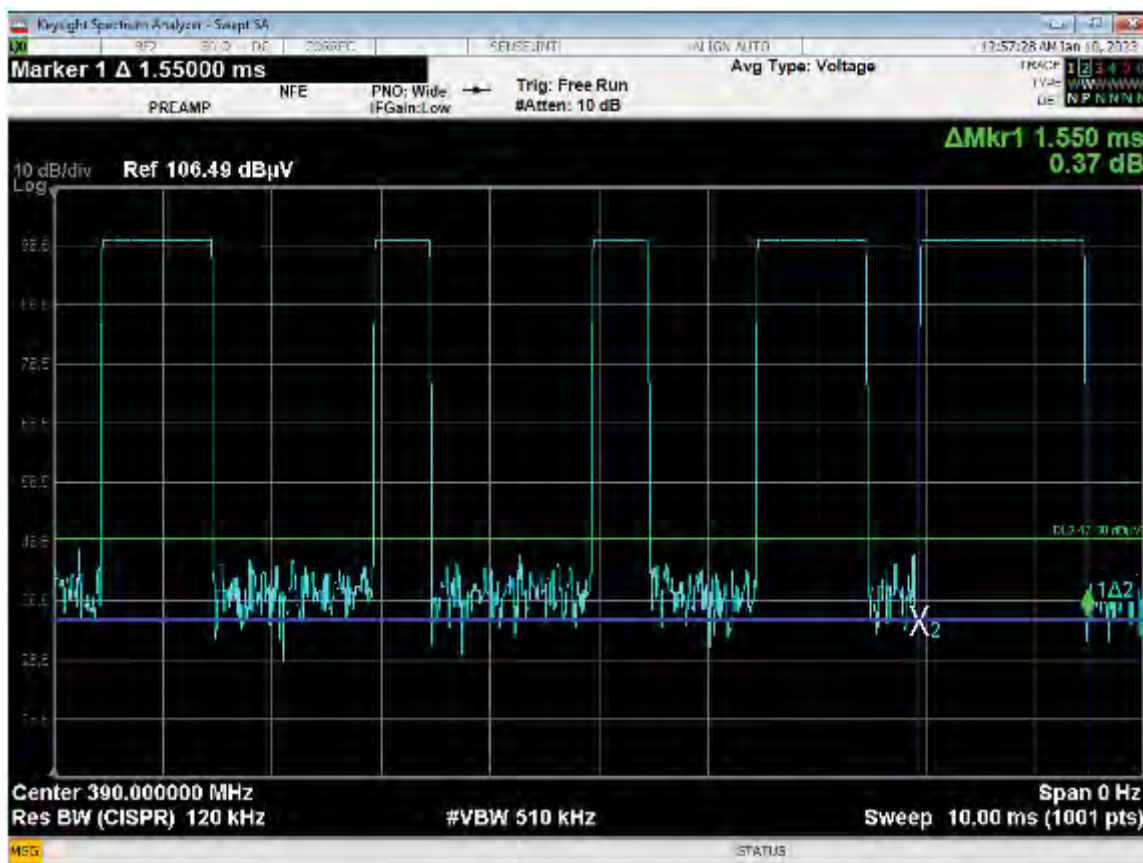
Version I



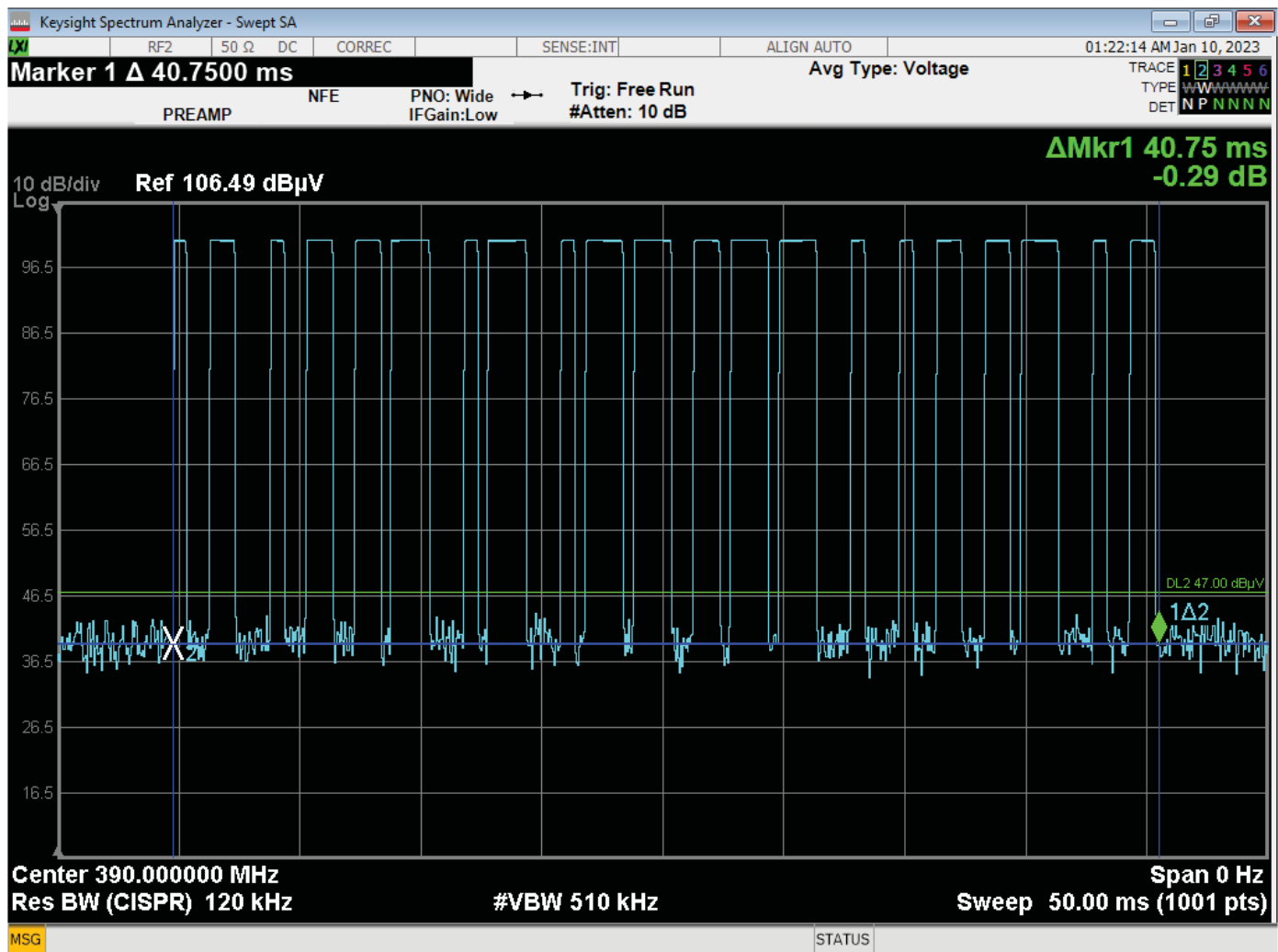
Time of Small Pulse = 540 us – Version I



Time of Medium Pulse = 1.040 ms – Version I



Time of Large Pulse = 1.550 ms – Version I



Total On Time:

7 * 540 us = 3780 us

7 * 1.040 ms = 7280 us

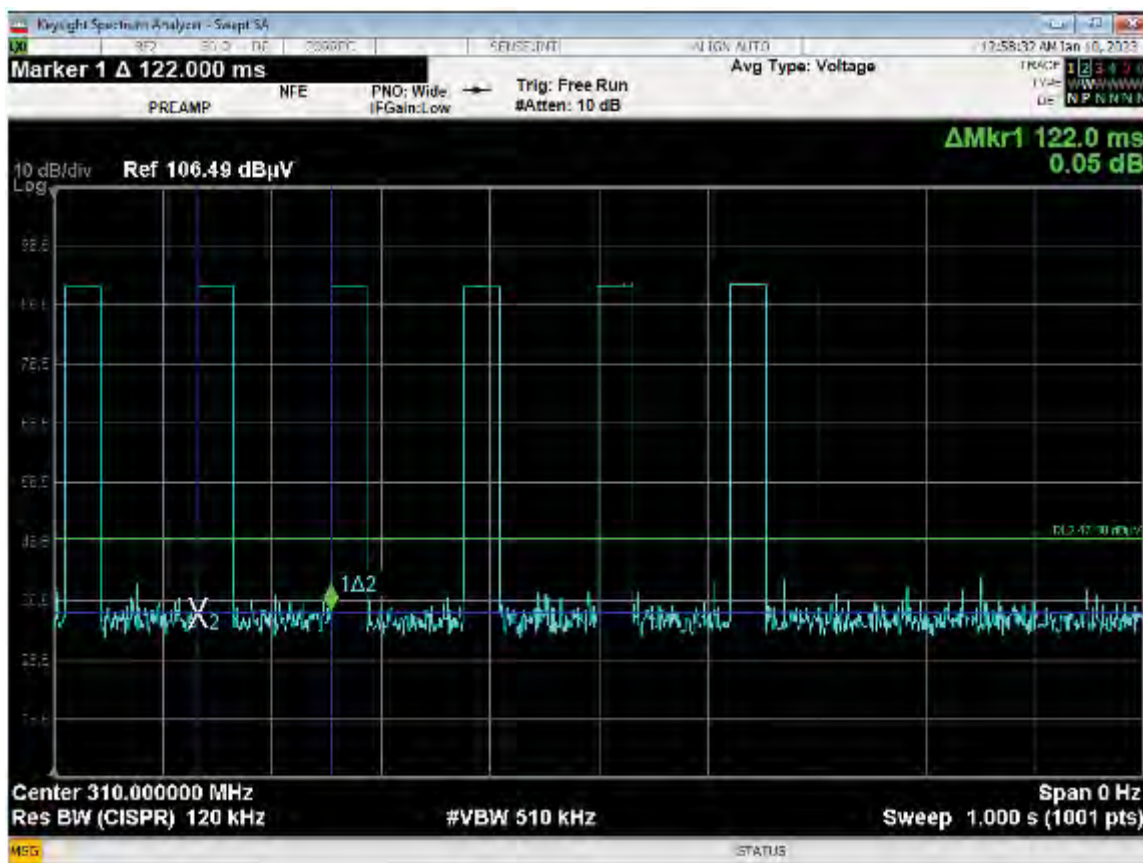
7 * 1.550 ms = 10850 us

Total On Time = 21.910 ms

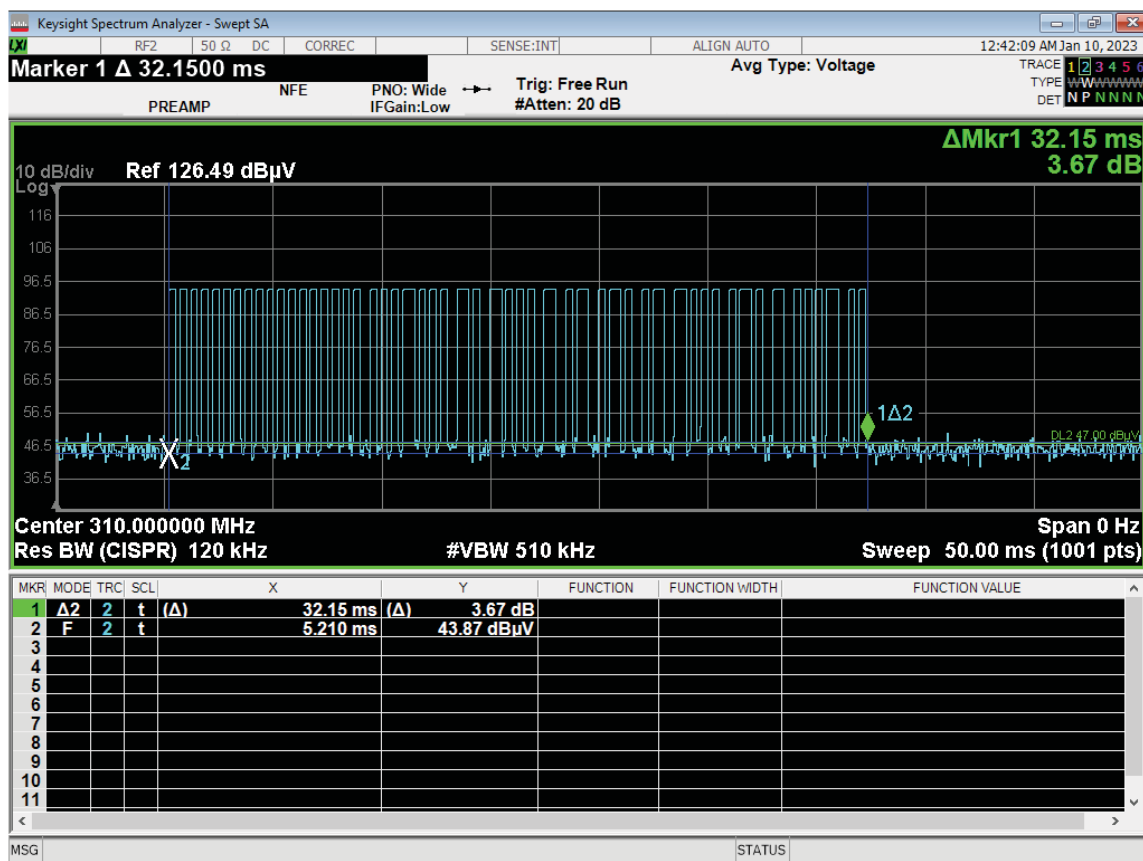
Total Duty Cycle = 21.91 ms / 100 ms = 21.91%

Peak to Average Ratio is -13.18 dB

Version I



The pulse train repeats every 122 ms – Version II

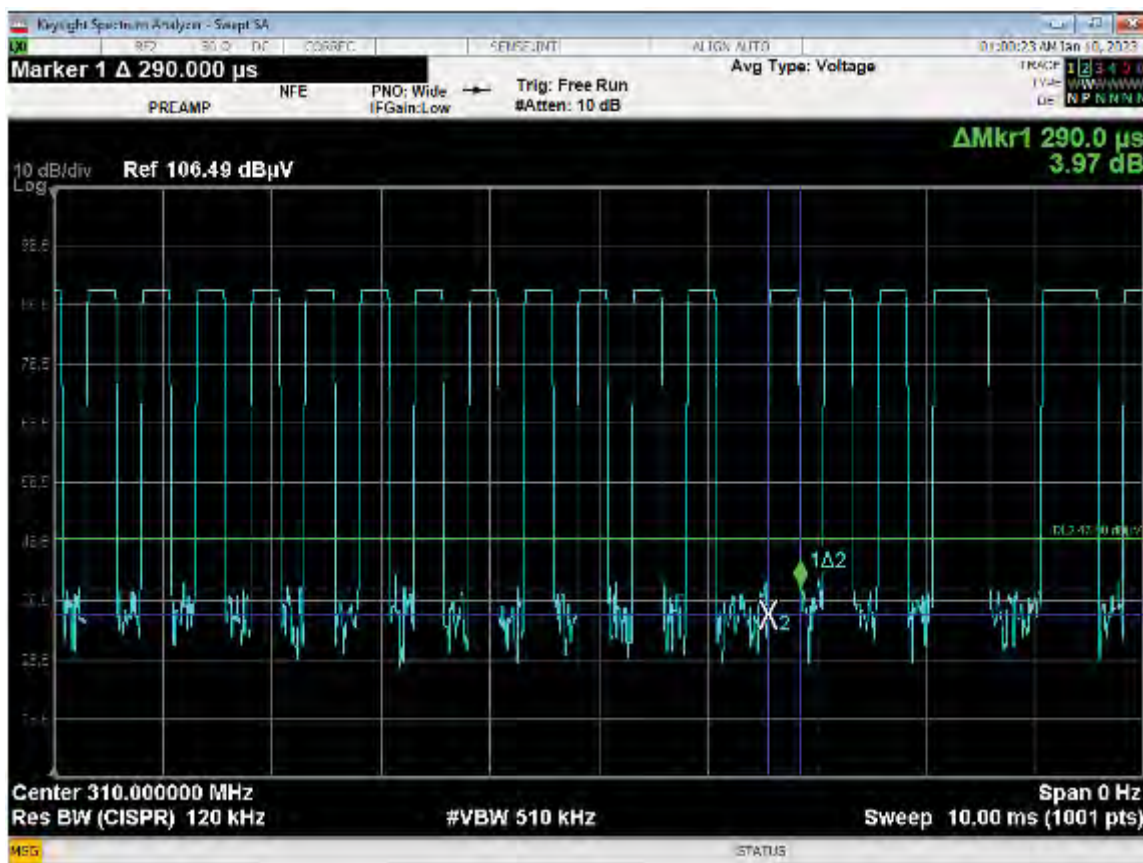


Number of Pulses:

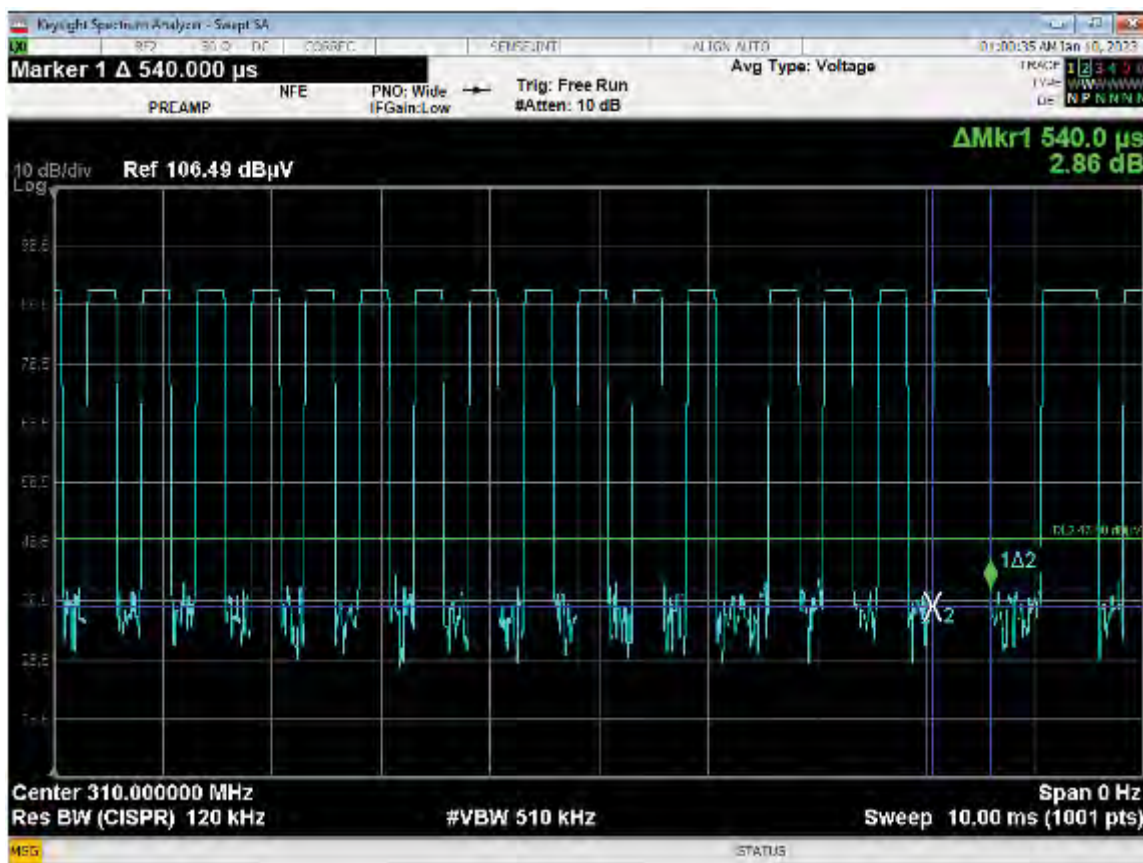
Small = 42 Pulses

Large = 11 Pulses

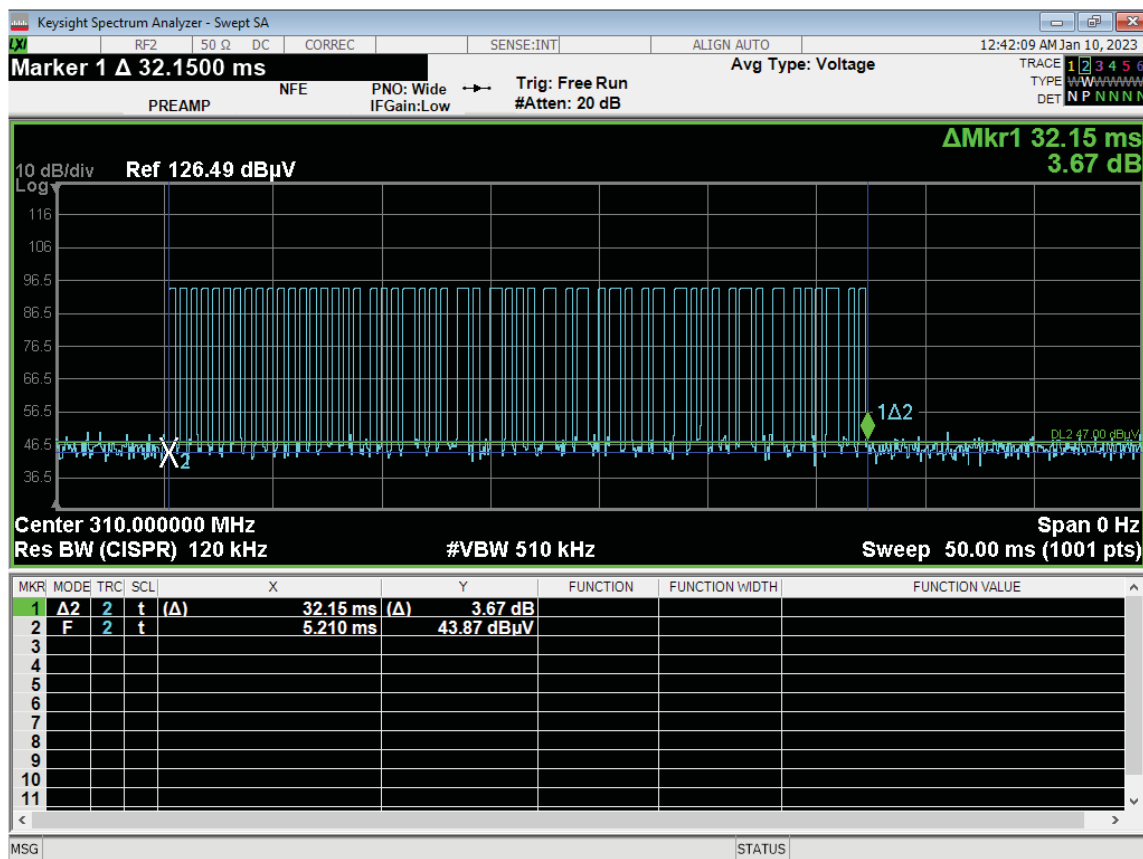
Version II



Time of Small Pulse = 290 us – Version II



Time of Large Pulse = 540 us – Version II



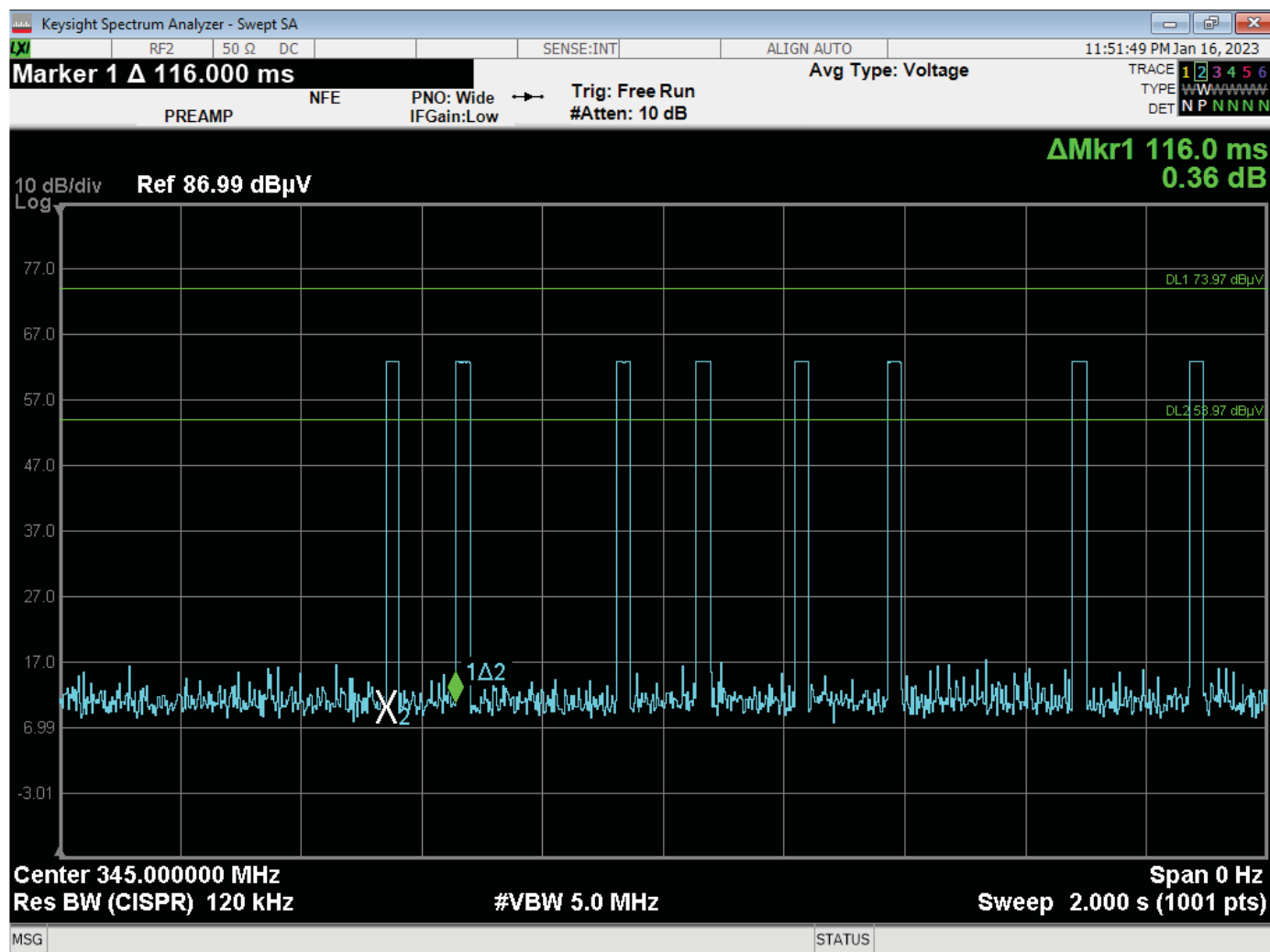
Total On Time:
 $42 * 290 \text{ us} = 12180 \text{ us}$
 $11 * 540 \text{ us} = 5940 \text{ us}$

Total On Time = 18.120 ms

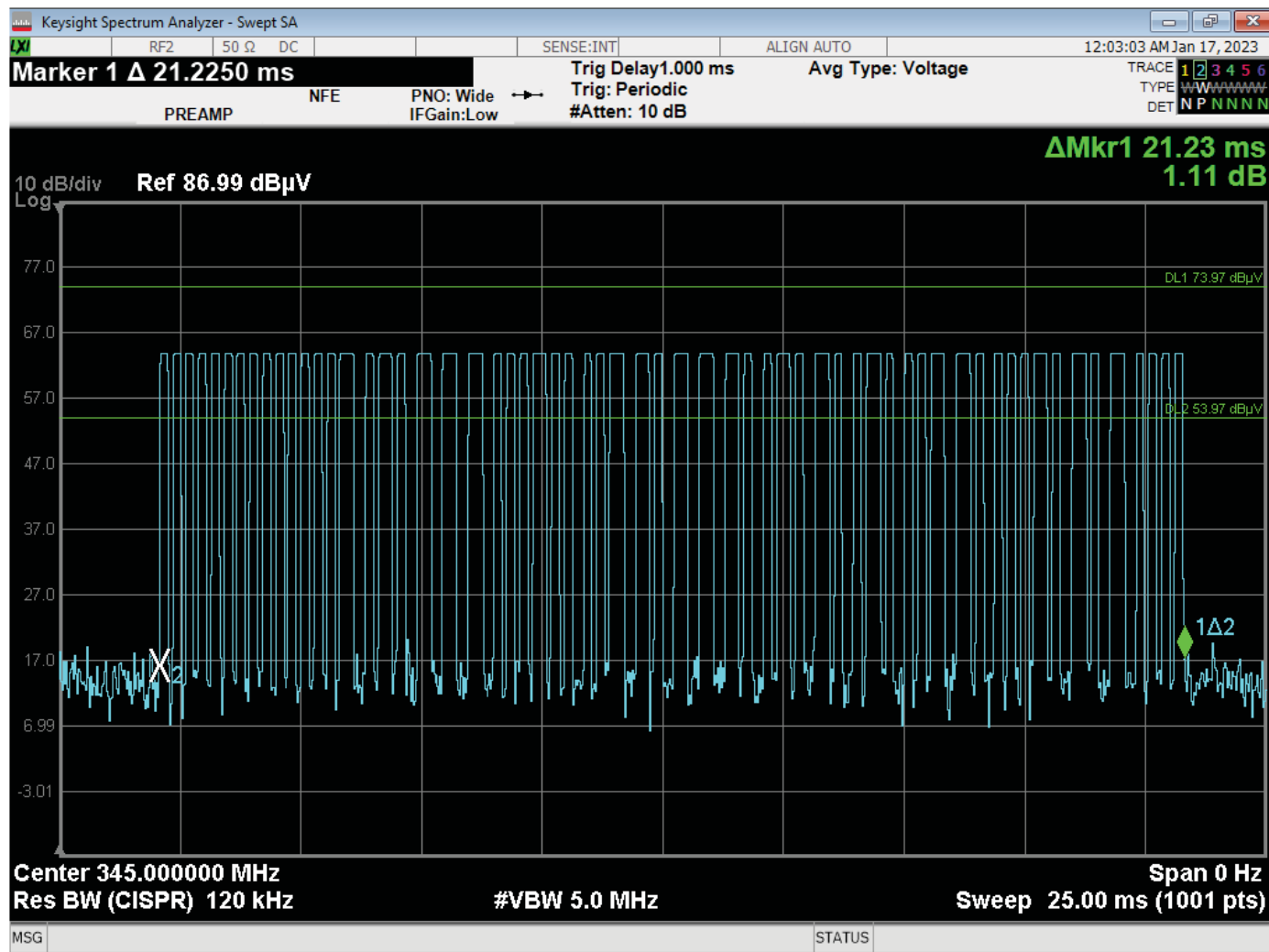
Total Duty Cycle = 18.12 ms / 100 ms = 18.12%

Peak to Average Ratio is -14.83 dB

Version II



The pulse has at least a 100 ms blanking interval – Honeywell

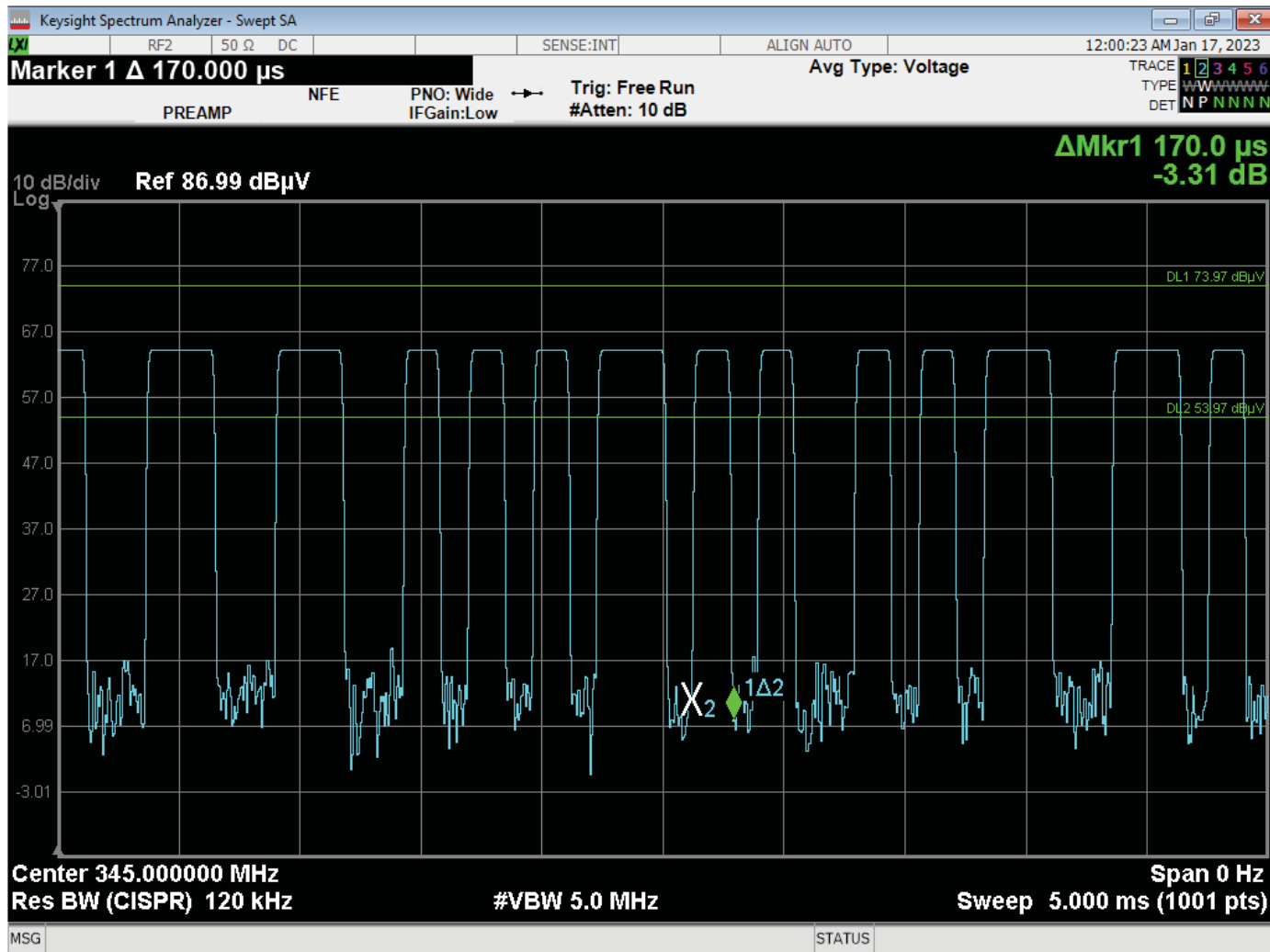


Number of Pulses – Honeywell:

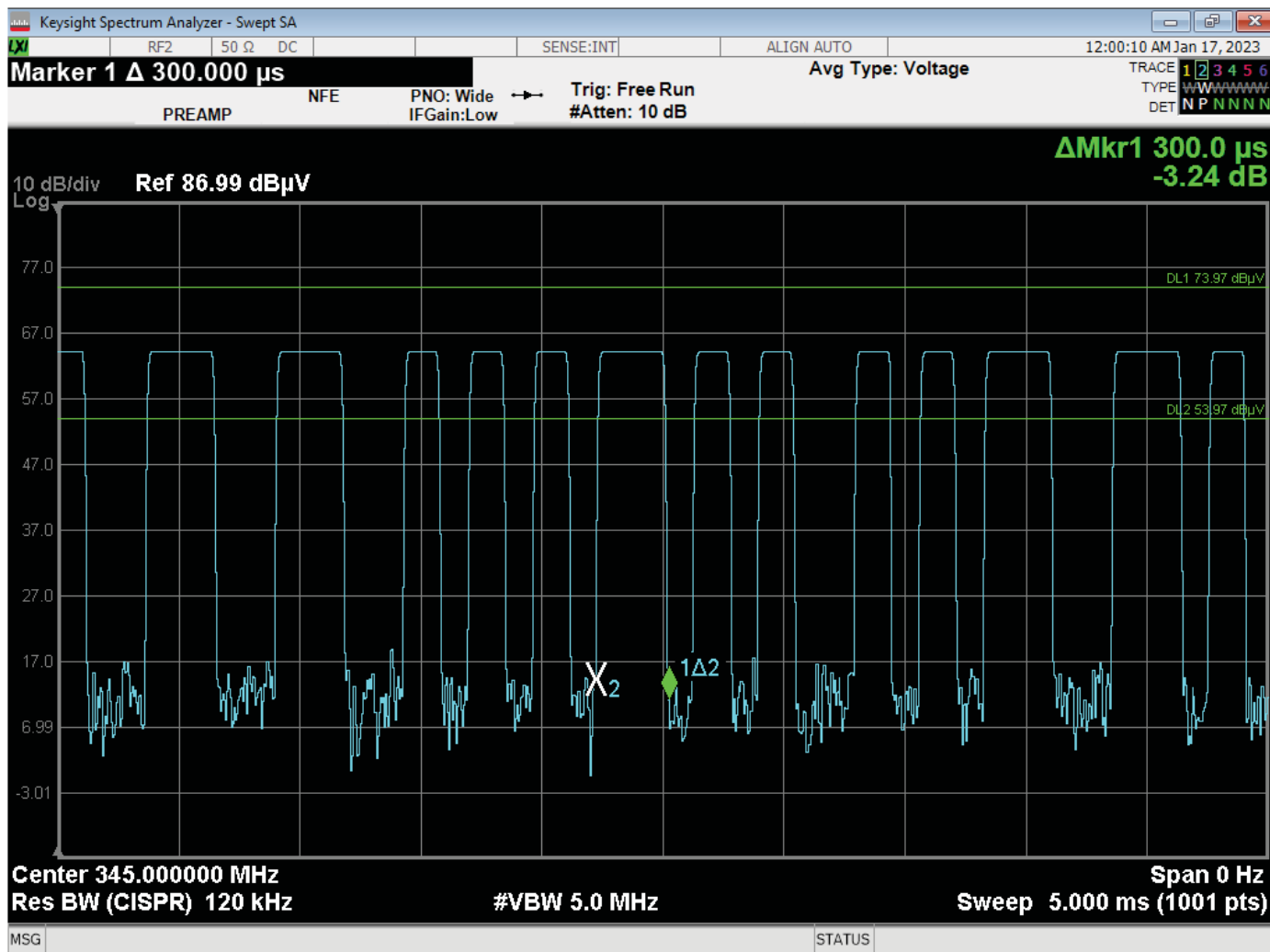
42 Small Pulses

19 Large Pulses

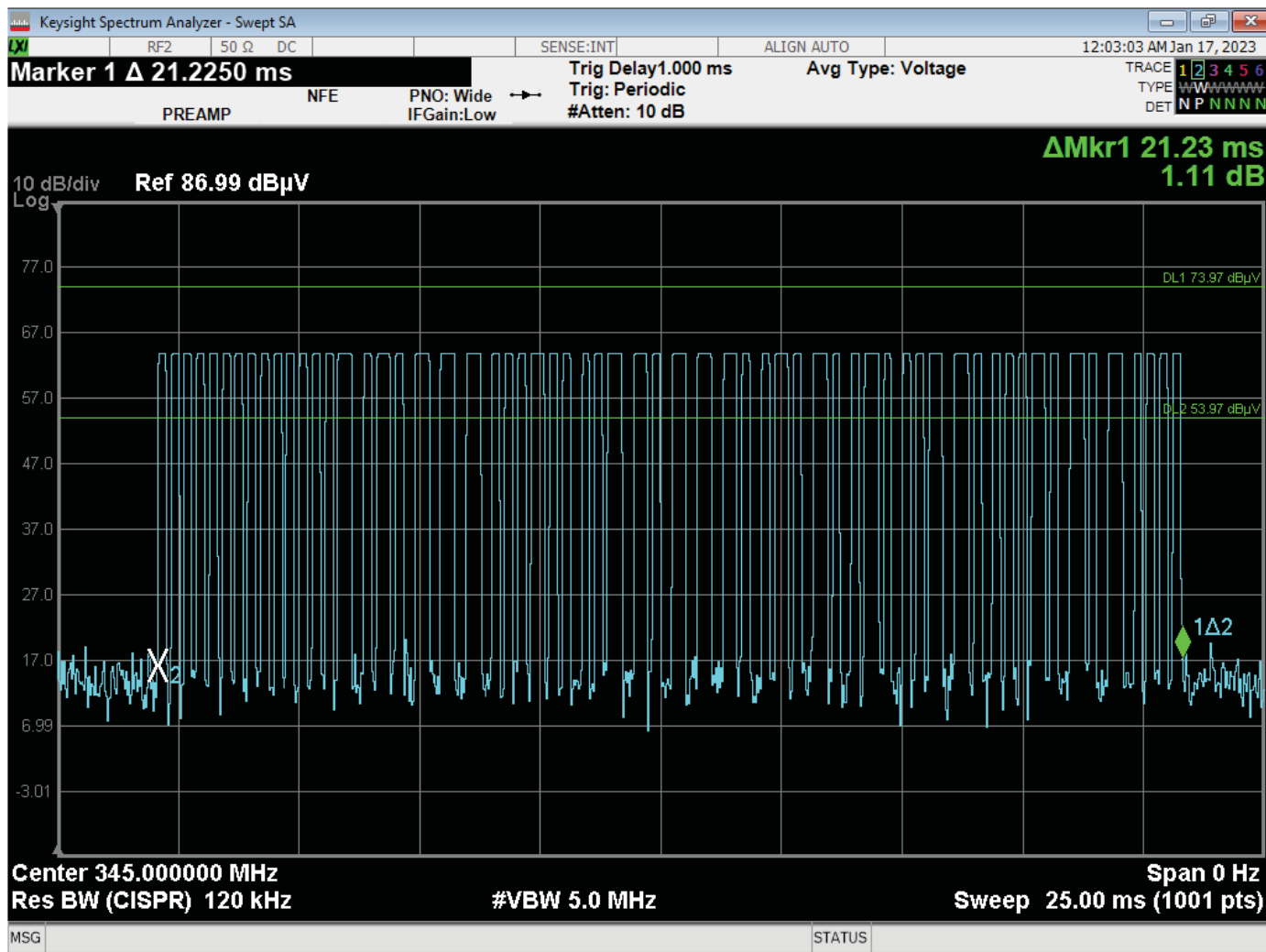
61 Pulses Total



Time of Small Pulse = 170 us – Honeywell



Time of Large Pulse = 300 μ s – Honeywell



Honeywell

Total On Time:

42 * 170 μ s = 7140 μ s

19 * 300 μ s = 5700 μ s

Total On Time = 12.840 ms

Total Duty Cycle = 12.840 ms / 100 ms = 12.840 %

Peak to Average Ratio is -17.82 dB