COMPATIBLE ELECTRONICS

FCC PART 15, SUBPART B and C; FCC SECTION 15.247; RSS-247 and RSS-GEN
TEST REPORT

for

CLEARSKY SMART BRIDGE

MODEL: CSB-HK02

Prepared for

ECOLINK INTELLIGENT TECHNOLOGY, INC.
2055 CORTE DEL NOGAL
CARLSBAD, CALIFORNIA 92011

Prepared by:_____

KYLE FUJIMOTO

Approved by:_____

JAMES ROSS

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

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	REPORT BODY	APPENDICES					TOTAL
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GENERAL REPORT SUMMARY

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

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

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

Device Tested:	ClearSky Smart Bridge Model: CSB-HK02 S/N: N/A
Product Description:	The ClearSky Bridge is an AC powered device that acts as a central hub for ClearSky sensors and acts as the bridge between the sensors and Apple Home Kit application. Clock frequency: 38.4 MHz. Dimensions: 11.5 cm (L) X 2.5 cm (H) X 13.5 cm (H).
Modifications:	The EUT was not modified in order to meet the specifications.
Customer:	Ecolink Intelligent Technology, Inc. 2055 Corte Del Nogal Carlsbad, California 92010
Test Dates:	December 7, 8, and 9 2020

Test Specifications covered by accreditation:

Emissions requirements
CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.207, 15.209, and 15.247;
RSS-247 and RSS-GEN
Test Procedure: ANSI C63.4 and ANSI C63.10

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SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz – 30 MHz	The EUT complies with the **Class B** limits of CFR Title 47, Part 15 Subpart B; the limits of CFR Title 47, Part 15, Subpart C, section 15.207; RSS-247 and RSS-GEN See section 6.3 for Measurement Uncertainty
2	Spurious Radiated RF Emissions, 30 MHz – 1000 MHz	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, section 15.209; RSS-247 and RSS-GEN See section 6.3 for Measurement Uncertainty
3	Spurious Radiated RF Emissions, 9 kHz – 30 MHz and 1000 MHz – 25000 MHz	The EUT complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; CFR Title 47, Part 15, Subpart C, section 15.247(d); RSS-247 and RSS-GEN See section 6.3 for Measurement Uncertainty
4	Fundamental and Emissions produced by the intentional radiator in non-restricted bands, 9 kHz – 25 GHz	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247(d); RSS-247 and RSS-GEN
5	Emissions produced by the intentional radiator in restricted bands, 9 kHz – 25 GHz	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.205, 15.209, section 15.247 (d); RSS-247 and RSS-GEN
6	DTS Bandwidth	Complies with the relevant requirements of FCC Title 47, Part 15, Subpart C, section 15.247 (a)(2); RSS-247
7	Maximum Conducted Output Power	Complies with the relevant requirements of FCC Title 47, Part 15, Subpart C, section 15.247 (b)(3); RSS-247
8	RF Conducted Antenna Test	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247 (d); RSS-247
9	Power Spectral Density from the Intentional Radiator to the Antenna	Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247 (e); RSS-247

1. PURPOSE

This document is a qualification test report based on the emissions tests performed on the ClearSky Smart Bridge, Model: CSB-HK02. The emissions measurements were performed according to the measurement procedure described in ANSI C63.4 and ANSI C63.10. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the **Class B** specification limits defined by CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.207, 15.209, and 15.247; RSS-247 and RSS-Gen.

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	Test Engineer
James Ross	Test Engineer

2.4 Date Test Sample was Received

The test sample was received on prior to the initial test date.

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 test report.

2.6 Abbreviations and Acronyms

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

dB	Decibel
RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
AC	Alternating Current
ITE	Information Technology Equipment
LISN	Line Impedance Stabilization Network
N/A	Not Applicable
Tx	Transmit
Rx	Receive
BLE	Bluetooth Low Energy
DC	Direct Current
FCC	Federal Communications Commission
RSS	Radio Standards Specifications

3. APPLICABLE DOCUMENTS

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

SPEC	TITLE
FCC Title 47, Part 15 Subpart C	FCC Rules – Radio frequency devices (including digital devices) – Intentional Radiators
FCC Title 47, Part 15 Subpart B	FCC Rules – Radio frequency devices (including digital devices) – Unintentional Radiators
558074 D01 DTS Meas Guidance v05 r02	Guidance for Performing Compliance Measurements on Digital Transmissions Systems (DTS) Operating Under Section 15.247
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 for Testing Unlicensed Wireless Devices
RSS-Gen Issue 5 April 2019 Amendment 1	General Requirements for Compliance of Radio Apparatus
RSS-247 Issue 2 February 2017	Digital Transmissions Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

4. DESCRIPTION OF TEST CONFIGURATION

The ClearSky Bridge, Model: CSB-HK02 (EUT) was connnected to its AC Adapter (EUT) and Ethernet Router via its power input and Ethernet ports, respectively. The EUT was continuously transmitting and receiving BLE.

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 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 2-meter cable connecting the EUT to its AC Adapter. The cable has a 3.5 mm power connector at the EUT end and is hard wired into the AC Adapter. The cable contained a molded ferrite at the EUT end and was bundled to 1 meter.

Cable 2 This is a 15.24-meter unshielded cable connecting the EUT to the Ethernet Router. The cable has an RJ-45 connector at each end.

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5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
CLEARSKY BRIDGE (EUT)	ECOLINK INTELLIGENT TECHNOLOGY, INC.	CSB-HK02	N/A	XQC-CSBHK02 IC: 9863B-CSBHK02
AC ADAPTER (EUT)	UMEC	UP0051Q-05PA	CU390A385	N/A
ETHERNET ROUTER	UNIFI	SWITCH 8	N/A	N/A

5.2 Emissions Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CAL. CYCLE
RADIATED EMISSIONS TEST EQUIPMENT					
TDK TestLab	TDK RF Solutions, Inc.	9.22	700145	N/A	N/A
MXE EMI Receiver, 3 Hz – 44 GHz	Keysight Technologies, Inc.	N9038A	MY59050117	October 5, 2020	1 Year
Loop Antenna	Com-Power	AL-130R	121090	February 5, 2019	2 Year
CombiLog Antenna	Com-Power	AC-220	061093	June 5, 2019	2 Year
Horn Antenna	Com-Power	AH-118	10050113	February 4, 2020	2 Year
Preamplifier	Com-Power	PA-118	181653	February 5, 2020	1 Year
Preamplifier	Com-Power	PA-840	711013	April 9, 2020	2 Year
High Pass Filter	Microwave Circuits	H3G020G4	481459	October 9, 2019	2 Year
Horn Antenna	Com-Power	AH-826	71957	N/A	N/A
System Controller	Sunol Sciences Corporation	SC110V	112213-1	N/A	N/A
Turntable	Sunol Sciences Corporation	2011VS	N/A	N/A	N/A
Antenna-Mast	Sunol Sciences Corporation	TWR95-4	112213-3	N/A	N/A
Computer	Hewlett Packard	p6716f	MXX1030PX0	N/A	N/A
LCD Monitor	Hewlett Packard	52031a	3CQ046N3MG	N/A	N/A
LISN (EUT)	Com-Power	LI-215A	191951	July 30, 2020	1 Year
Attenuator 10 dB	SureCall	SC-ATT10	17100025	November 2, 2020	1 Year
POWER VOLTAGE VARIATION TEST EQUIPMENT					
Variable Autotransformer	Superior Electric, Company	Type: 11560	BP142056	N/A	N/A
MXE EMI Receiver, 3 Hz – 44 GHz	Keysight Technologies, Inc.	N9038A	MY59050117	October 5, 2020	1 Year
Multimeter	Fluke	115	36601149WS	November 20, 2019	2 Year

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

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

6.2 EUT Mounting, Bonding and Grounding

For frequencies 1 GHz and below: The EUT was mounted on a 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_{cispr}, 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_{cispr}**	**U_{lab} = 2 uc (y)**
Conducted disturbance (mains port)	(150 kHz – 30 MHz)	3.4 dB	2.73 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(30 MHz – 1 000 MHz)	6.3 dB	3.27 dB (Vertical) 3.19 dB (Horizontal)
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(1 GHz - 6 GHz)	5.2 dB	3.95 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(6 GHz – 18 GHz)	5.5 dB	3.95 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(18 GHz – 26.5 GHz)	N/A	4.69 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site)	(26.5 GHz – 40 GHz)	N/A	4.55 dB

7. CHARACTERISTICS OF THE TRANSMITTER

7.1 Channel Description and Frequencies

The EUT operates on forty channels using BLE. The channel and frequencies are shown below. The channels are spaced 2 MHz apart. Below is the channel and frequencies of the low, middle, and high channels.

Channel 0 – 2402 MHz
Channel 20 – 2442 MHz
Channel 39 – 2480 MHz

7.2 Antenna Gain

The gain of the printed F antenna is -7.985 dBi.

8. TEST PROCEDURES

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

8.1 RF Emissions

8.1.1 Conducted Emissions Test

The 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 2.0.

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, Section 15.207; and RSS-Gen for conducted emissions.

8.1.2 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 at 1 GHz and below were quasi-peaked using the quasi-peak detector of the EMI Receiver.

The frequencies above 1 GHz were averaged using the RMS 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 1.0.

Radiated Emissions Test (Continued)

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

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
9 kHz to 150 kHz	200 Hz	Loop Antenna
150 kHz to 30 MHz	9 kHz	Loop Antenna
30 MHz to 1 GHz	120 kHz	CombiLog Antenna
1 GHz to 25 GHz	1 MHz	Horn Antenna

Test Results:

The EUT complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; the limits of CFR Title 47, Part 15, Subpart C sections 15.205, 15.209 and 15.247; and the limits of RSS-247 and RSS-Gen for radiated emissions.

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8.1.3 RF Emissions Test Results

Table 1.0 RADIATED EMISSION RESULTS
ClearSky Smart Bridge
Model: CSB-HK02

Frequency MHz	EMI Reading (dBuV/m)	Specification Limit (dBuV/m)	Delta (Cor. Reading – Spec. Limit) dB)
4804.00 (H) (Y-Axis)	47.94 (Avg)	53.97	-6.03
4804.00 (H) (X-Axis)	47.32 (Avg)	53.97	-6.65
2483.50 (H) (Y-Axis)	47.53 (Avg)	53.97	-6.44
946.10 (H) (X-Axis)	38.95 (QP)	46.00	-7.05
940.20 (H) (X-Axis)	38.94 (QP)	46.00	-7.06
955.20 (H) (X-Axis)	38.92 (QP)	46.00	-7.08

Notes:
(Avg) Average
(QP) Quasi -Peak
(H) Horizontal
(V) Vertical

Table 2.0 CONDUCTED EMISSION RESULTS
ClearSky Smart Bridge
Model: CSB-HK02

Frequency MHz	EMI Reading (dBuV/m)	Specification Limit (dBuV/m)	Delta (Cor. Reading – Spec. Limit) dB)
0.426 (BL)	40.48 (Avg)	47.38	-6.91
0.414 (BL)	40.34 (Avg)	47.39	-7.06
0.418 (BL)	40.21 (Avg)	47.37	-7.17
0.430 (BL)	40.03 (Avg)	47.34	-7.32
0.422 (BL)	39.40 (Avg)	47.32	-7.92
0.410 (BL)	39.37 (Avg)	47.48	-8.11

Notes:
(BL) Black Lead
(WL) White Lead
(Avg) Average
(QP) Quasi-Peak

8.1.4 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 (μV/m) log x 20 = Specification Limit in dBuV/m
To correct for distance when measuring at a distance other than the specification
For measurements below 30 MHz: (Specification distance / test distance) log x 40 = distance factor
For measurements above 30 MHz: (Specification distance / test distance) log x 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:

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

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.

Sample Calculations (Continued)

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

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

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:

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

or, if the magnetic antenna factor is used:

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

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

8.2 DTS Bandwidth

The DTS Bandwidth was measured using the EMI Receiver. The bandwidth was measured using a direct connection from the EUT. The following steps were performed for measuring the DTS Bandwidth.

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

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (a)(2); and RSS-247.

8.3 Maximum Peak Conducted Output Power

The maximum peak conducted output power was measured using the EMI Receiver. The following steps were performed for measuring the maximum peak conducted output power.

1. Set the RBW ≥ DTS Bandwidth
2. Set the VBW ≥ [3 X RBW]
3. Set span ≥ [3 X RBW]
4. Sweep time = auto couple
5. Detector = peak
6. Trace mode = max hold
7. Allow trace to fully stabilize
8. Use the peak marker function to determine the peak amplitude level

Test Results:

The EUT complies with the relevant requirements of CFR Title 47, Part 15, Subpart C Section 15.247 (b)(3); and RSS-247.

8.4 Emissions in Non-Restricted Bands

The emissions in the non-restricted frequency bands measurements were performed using the EMI receiver directly connected to the EUT. The reference level was established by setting the instrument center frequency to DTS channel center frequency. The span was set to $\geq$ 1.5 times the DTS bandwidth. The RBW was set to 100 kHz and the VBW was set to 300 kHz. A peak detector was used with sweep set to auto. A max hold trace was used and allowed to fully stabilize. The peak marker function was used to determine the level and 20 dB below that was the reference level. For emission level measurement, the center frequency and span were set to encompass the frequency range to be measured. The RBW was set to 100 kHz and the VBW was set to 300 kHz. A peak detector was used with a sweep time set to auto. The number of measurement points were greater than the span/RBW. A max hold trace was used and allowed to fully stabilize. The peak marker function was used to determine the maximum amplitude level. The final qualification data sheets are located in Appendix E.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (d); and RSS-247.

8.5 RF Band Edges

The RF band edges were measured using the EMI Receiver. The RF band edges were measured using a direct connection from the RF out on the EUT into the input of the EMI Receiver. The following steps were performed for measuring the spectral density.

The RF band edges were taken at 2390 MHz when the EUT was on the low channel and 2483.5 MHz when the EUT was on the high channel using the EMI Receiver. A preamplifier was used to boost the signal level, with the plots being taken at a 3 meter test distance. The radiated emissions test procedure as describe in section 8.1.2 of this test report was used to maximize the emission.

The RF band edge was also taken at 2400 MHz when the EUT was on the low channel. The following steps were performed for measuring the band edge at 2400 MHz:

1. Set analyzer center frequency to DTS channel center frequency
2. Set the span wide enough to cover the band edges.
3. Set the RBW to 100 kHz
4. Set the VBW ≥ 3 X RBW
5. Detector = Peak
6. Sweep time = auto couple
7. Allow the trace to stabilize
8. Use the peak marker function to determine the maximum amplitude level

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (d) for band edges; and RSS-247. Please see the data sheets located in Appendix E.

8.6 Spectral Density Test

The spectrum density output was measured using the EMI Receiver. The spectral density output was measured using a direct connection from the RF out on the EUT into the input of the EMI Receiver. The following steps were performed for measuring the spectral density.

1. Set analyzer center frequency to DTS channel center frequency
2. Set the span to at least 1.5 times the OBW.
3. Set the RBW to 3 kHz ≤ RBW ≤ 100 kHz
4. Set the VBW ≥ [3 X RBW]
5. Detector = peak
6. Sweep time = auto couple
7. Trace mode = max hold
8. Allow trace to fully stabilize
9. Use the peak marker function to determine the maximum amplitude level within the RBW
10. If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

Test Results:

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (e); and RSS-247.

8.7 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 A section 15.31 (e); and RSS-247. The variation of the input voltage was varied from 85% to 115% and did not change the amplitude nor the frequency of the fundamental emissions.

8.8 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.

9. CONCLUSIONS

The ClearSky Smart Bridge, Model: CSB-HK02, as tested, meets all of the specification limits defined in FCC Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.207, 15.209, and 15.247; RSS-GEN and RSS-247.

COMPATIBLE ELECTRONICS

APPENDIX A

LABORATORY ACCREDITATIONS AND RECOGNITIONS

LABORATORY ACCREDITATIONS AND RECOGNITIONS

NVLAP TESTING
NVLAP LAB CODE 200528-0

ilac-MRA

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."

ISED Test Site Registration Number: 2154A

APPENDIX B

MODIFICATIONS TO THE EUT

COMPATIBLE ELECTRONICS

MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC Subpart B and FCC 15.247; RSS-GEN and RSS-210 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

ODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

ClearSky Smart Bridge
Model: CSB-HK02
S/N: N/A

There are no additional models covered under this report.

APPENDIX D

DIAGRAMS AND CHARTS

COMPATIBLE ELECTRONICS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

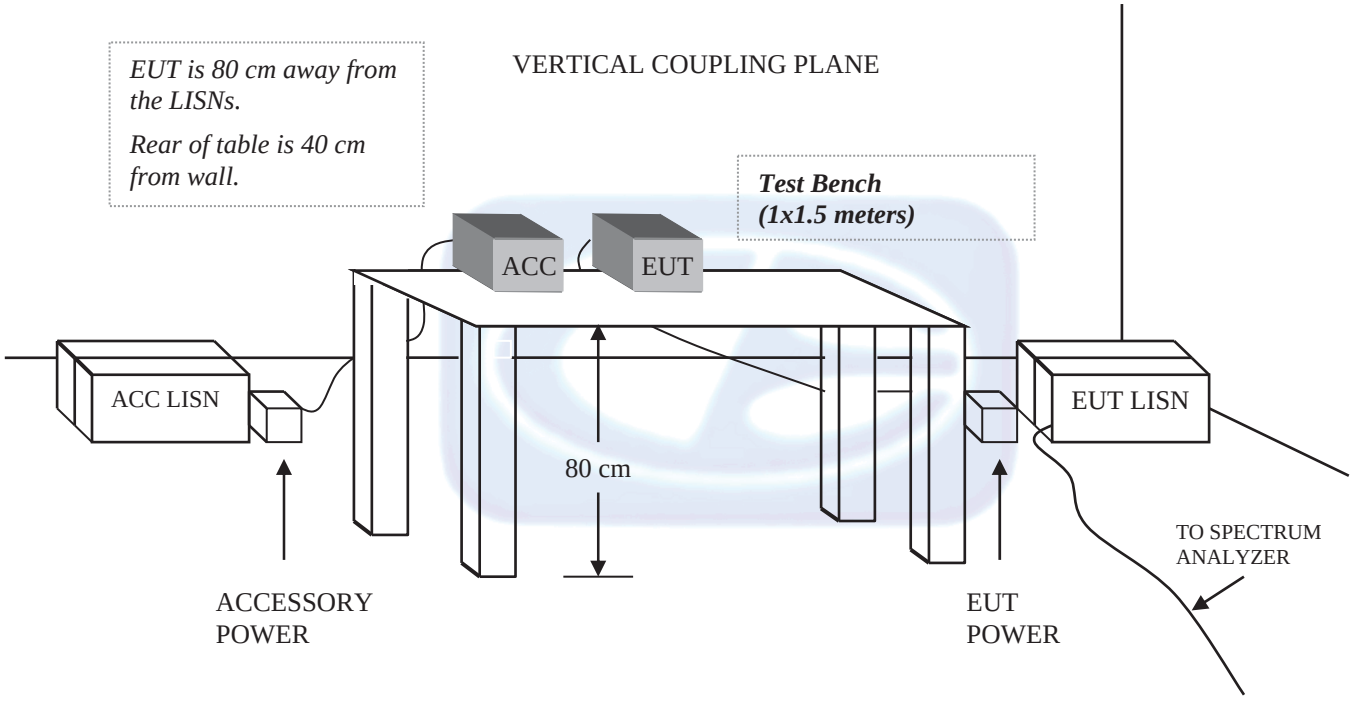
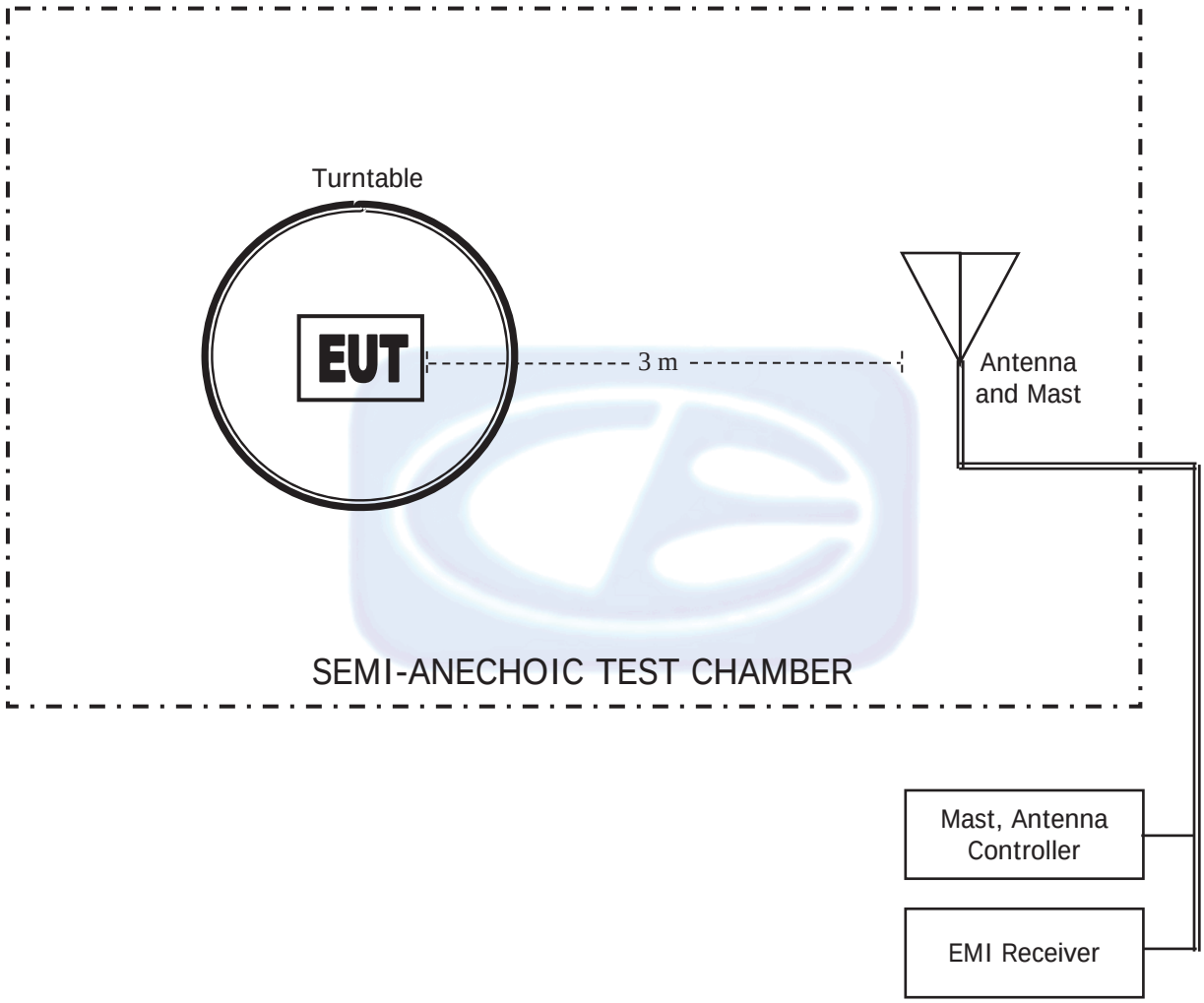


FIGURE 2: LAYOUT OF THE SEMI-ANECHOIC TEST CHAMBER



COMPATIBLE ELECTRONICS

COM-POWER AL-130R

LOOP ANTENNA

S/N: 121090

CALIBRATION DATE: FEBRUARY 5, 2019

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	16.1	-35.4
0.01	15.6	-35.9
0.02	14.8	-36.7
0.03	15.6	-35.9
0.04	15.1	-36.4
0.05	14.4	-37.0
0.06	14.6	-36.9
0.07	14.4	-37.1
0.08	14.3	-37.1
0.09	14.5	-36.9
0.10	14.1	-37.3
0.20	14.1	-37.3
0.30	14.0	-37.4
0.40	14.0	-37.4
0.50	14.2	-37.2
0.60	14.2	-37.2
0.70	14.2	-37.2
0.80	14.2	-37.3
0.90	14.3	-37.2
1.00	14.5	-37.0
2.00	14.5	-36.9
3.00	14.5	-36.9
4.00	14.7	-36.8
5.00	14.6	-36.9
6.00	14.6	-36.9
7.00	14.6	-36.9
8.00	14.6	-36.9
9.00	14.6	-36.9
10.00	14.8	-36.6
11.00	14.9	-36.6
12.00	14.8	-36.6
13.00	14.8	-36.7
14.00	14.6	-36.8
15.00	14.5	-36.9
16.00	14.5	-37.0
17.00	14.6	-36.9
18.00	14.7	-36.7
19.00	14.8	-36.6
20.00	14.9	-36.6
21.00	14.6	-36.8
22.00	14.2	-37.2
23.00	13.7	-37.7
24.00	13.3	-38.2
25.00	13.0	-38.5
26.00	12.9	-38.6
27.00	13.0	-38.5
28.00	13.1	-38.4
29.00	13.1	-38.4
30.00	12.9	-38.5

COM-POWER AC-220

COMBILOG ANTENNA

S/N: 61093

CALIBRATION DATE: JUNE 5, 2019

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

COM POWER AH-118

HORN ANTENNA

S/N: 10050113

CALIBRATION DATE: FEBRUARY 4, 2020

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	24.343	10.0	38.826
1.5	25.419	10.5	39.102
2.0	28.838	11.0	38.259
2.5	28.971	11.5	39.920
3.0	29.919	12.0	40.149
3.5	30.674	12.5	40.576
4.0	31.670	13.0	40.264
4.5	32.437	13.5	40.364
5.0	33.414	14.0	40.424
5.5	34.003	14.5	41.677
6.0	34.799	15.0	43.010
6.5	35.381	15.5	39.799
7.0	37.024	16.0	40.187
7.5	37.403	16.5	40.155
8.0	37.445	17.0	40.507
8.5	37.390	17.5	41.963
9.0	38.076	18.0	43.196
9.5	38.809		

COM-POWER PA-118

PREAMPLIFIER

S/N: 181653

CALIBRATION DATE: FEBRUARY 5, 2020

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

COM-POWER AH-826

HORN ANTENNA

S/N: 71957

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

COM-POWER PA-840

MICROWAVE PREAMPLIFIER

S/N: 711013

CALIBRATION DATE: APRIL 9, 2020

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
18.0	26.88	31.5	25.99
19.0	25.52	32.0	25.35
20.0	26.26	32.5	25.77
21.0	24.96	33.0	27.22
22.0	24.74	33.5	25.18
23.0	25.45	34.0	23.14
24.0	26.65	34.5	25.81
25.0	26.02	35.0	27.63
26.0	27.16	35.5	26.35
26.5	28.08	36.0	24.41
27.0	25.99	36.5	27.02
27.5	25.35	37.0	25.42
28.0	25.77	37.5	24.71
28.5	27.22	38.0	24.36
29.0	28.38	38.5	23.16
29.5	25.63	39.0	21.44
30.0	27.08	39.5	21.15
30.5	26.10	40.0	21.20
31.0	28.08		

FRONT VIEW

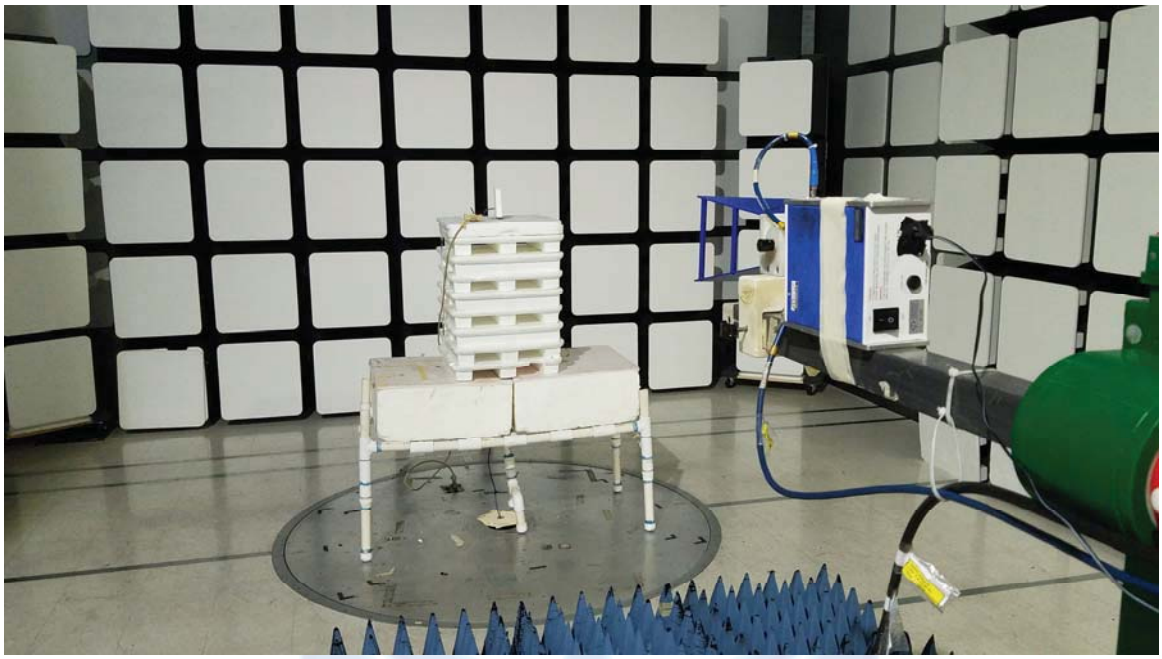
ECOLINK INTELLIGENT TECHNOLOGY, INC.
CLEARSKY SMART BRIDGE
MODEL: CSB-HK02
FCC SUBPART B AND C; RSS-GEN and RSS-247 – RADIATED EMISSIONS – 30 MHz to 1000 MHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

ECOLINK INTELLIGENT TECHNOLOGY, INC.
CLEARSKY SMART BRIDGE
MODEL: CSB-HK02
FCC SUBPART B AND C; RSS-GEN and RSS-247 – RADIATED EMISSIONS – 30 MHz to 1000 MHz

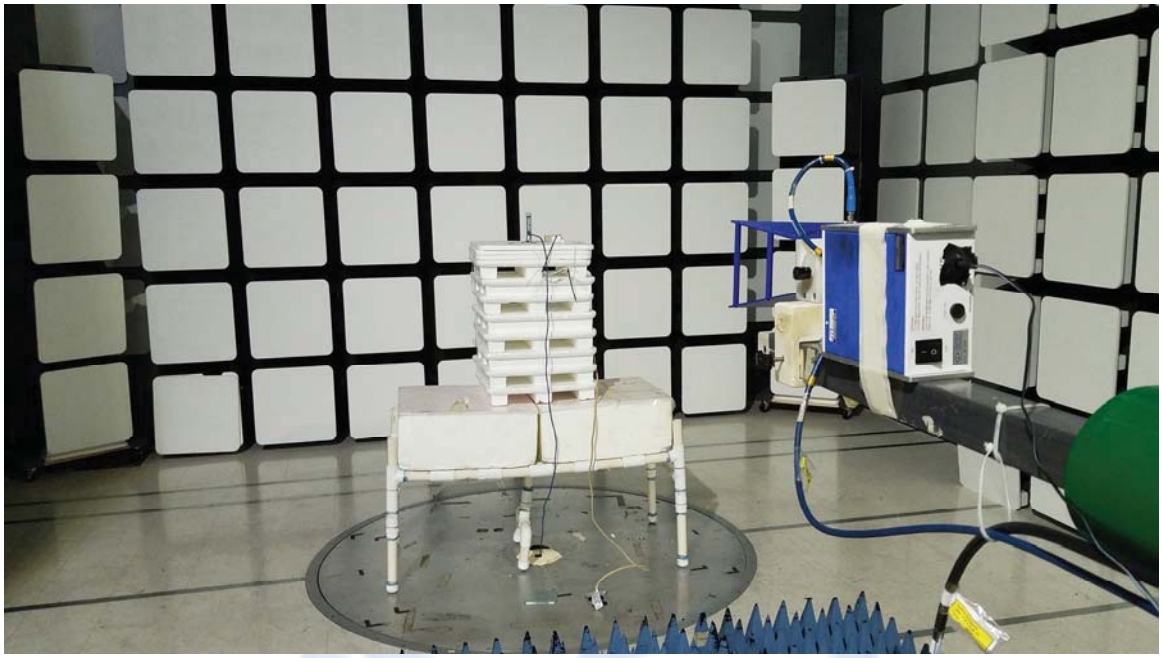
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



FRONT VIEW

ECOLINK INTELLIGENT TECHNOLOGY, INC.
CLEARSKY SMART BRIDGE
MODEL: CSB-HK02
FCC SUBPART B AND C; RSS-GEN and RSS-247 – RADIATED EMISSIONS – ABOVE 1 GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

ECOLINK INTELLIGENT TECHNOLOGY, INC.
CLEARSKY SMART BRIDGE
MODEL: CSB-HK02
FCC SUBPART B AND C; RSS-GEN and RSS-247 – RADIATED EMISSIONS – ABOVE 1 GHz

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

FRONT VIEW

ECOLINK INTELLIGENT TECHNOLOGY, INC.
CLEARSKY SMART BRIDGE
MODEL: CSB-HK02
FCC SUBPART B AND C; and RSS-GEN – CONDUCTED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

ECOLINK INTELLIGENT TECHNOLOGY, INC.
CLEARSKY SMART BRIDGE
MODEL: CSB-HK02
FCC SUBPART B AND C; and RSS-GEN – CONDUCTED EMISSIONS

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

COMPATIBLE ELECTRONICS

APPENDIX E

DATA SHEETS

RADIATED EMISSIONS DATA SHEETS

COMPATIBLE ELECTRONICS

FCC 15.247

Ecolink Intelligent Technology, Inc.
ClearSky Smart Bridge
Model: CSB-HK02

Date: 12/7/2020
Lab: D
Tested By: Kyle Fujimoto

Harmonics - Low Channel
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4804.00	48.63	V	73.97	-25.34	Peak	174.00	142.44	
4804.00	45.88	V	53.97	-8.09	Avg	174.00	142.44	
7206.00								**Not in Restricted Band**
7206.00								**Done Via Conducted**
9608.00								**Not in Restricted Band**
9608.00								**Done Via Conducted**
12010.00	44.71	V	73.97	-29.26	Peak	350.00	120.29	
12010.00	34.59	V	53.97	-19.38	Avg	350.00	120.29	
14412.00								**Not in Restricted Band**
14412.00								**Done Via Conducted**
16814.00								**Not in Restricted Band**
16814.00								**Done Via Conducted**
19216.00								**No Emission**
19216.00								**Detected**
21618.00								**No Emission**
21618.00								**Detected**
24020.00								**No Emission**
24020.00								**Detected**

COMPATIBLE ELECTRONICS

FCC 15.247
Ecolink Intelligent Technology, Inc.
ClearSky Smart Bridge
Model: CSB-HK02

Date: 12/7/2020
Lab: D
Tested By: Kyle Fujimoto

Harmonics - Low Channel
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4804.00	46.43	V	73.97	-27.54	Peak	322.50	154.26	
4804.00	41.91	V	53.97	-12.06	Avg	322.50	154.26	
7206.00								**Not in Restricted Band**
7206.00								**Done Via Conducted**
9608.00								**Not in Restricted Band**
9608.00								**Done Via Conducted**
12010.00	49.87	V	73.97	-24.10	Peak	74.25	127.76	
12010.00	34.60	V	53.97	-19.37	Avg	74.25	127.76	
14412.00								**Not in Restricted Band**
14412.00								**Done Via Conducted**
16814.00								**Not in Restricted Band**
16814.00								**Done Via Conducted**
19216.00								**No Emission**
19216.00								**Detected**
21618.00								**No Emission**
21618.00								**Detected**
24020.00								**No Emission**
24020.00								**Detected**

COMPATIBLE ELECTRONICS

FCC 15.247
Ecolink Intelligent Technology, Inc.
ClearSky Smart Bridge
Model: CSB-HK02

Date: 12/7/2020
Lab: D
Tested By: Kyle Fujimoto

Harmonics - Low Channel
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4804.00	47.45	V	73.97	-26.52	Peak	26.75	125.85	
4804.00	41.60	V	53.97	-12.37	Avg	26.75	125.85	
7206.00								**Not in Restricted Band**
7206.00								**Done Via Conducted**
9608.00								**Not in Restricted Band**
9608.00								**Done Via Conducted**
12010.00	47.85	V	73.97	-26.12	Peak	29.75	100.05	
12010.00	34.62	V	53.97	-19.35	Avg	29.75	100.05	
14412.00								**Not in Restricted Band**
14412.00								**Done Via Conducted**
16814.00								**Not in Restricted Band**
16814.00								**Done Via Conducted**
19216.00								**No Emission**
19216.00								**Detected**
21618.00								**No Emission**
21618.00								**Detected**
24020.00								**No Emission**
24020.00								**Detected**

COMPATIBLE ELECTRONICS

FCC 15.247

Ecolink Intelligent Technology, Inc.
ClearSky Smart Bridge
Model: CSB-HK02

Date: 12/7/2020
Lab: D
Tested By: Kyle Fujimoto

Harmonics - Low Channel
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4804.00	50.59	H	73.97	-23.38	Peak	96.75	168.71	
4804.00	47.32	H	53.97	-6.65	Avg	96.75	168.71	
7206.00								**Not in Restricted Band**
7206.00								**Done Via Conducted**
9608.00								**Not in Restricted Band**
9608.00								**Done Via Conducted**
12010.00	45.77	H	73.97	-28.20	Peak	218.50	112.83	
12010.00	34.70	H	53.97	-19.27	Avg	218.50	112.83	
14412.00								**Not in Restricted Band**
14412.00								**Done Via Conducted**
16814.00								**Not in Restricted Band**
16814.00								**Done Via Conducted**
19216.00								**No Emission**
19216.00								**Detected**
21618.00								**No Emission**
21618.00								**Detected**
24020.00								**No Emission**
24020.00								**Detected**

COMPATIBLE ELECTRONICS

FCC 15.247
Ecolink Intelligent Technology, Inc.
ClearSky Smart Bridge
Model: CSB-HK02

Date: 12/7/2020
Lab: D
Tested By: Kyle Fujimoto

Harmonics - Low Channel
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4804.00	50.56	H	73.97	-23.41	Peak	233.50	138.86	
4804.00	47.94	H	53.97	-6.03	Avg	233.50	138.86	
7206.00								**Not in Restricted Band**
7206.00								**Done Via Conducted**
9608.00								**Not in Restricted Band**
9608.00								**Done Via Conducted**
12010.00	48.45	H	73.97	-25.52	Peak	10.00	138.86	
12010.00	34.59	H	53.97	-19.38	Avg	10.00	138.86	
14412.00								**Not in Restricted Band**
14412.00								**Done Via Conducted**
16814.00								**Not in Restricted Band**
16814.00								**Done Via Conducted**
19216.00								**No Emission**
19216.00								**Detected**
21618.00								**No Emission**
21618.00								**Detected**
24020.00								**No Emission**
24020.00								**Detected**

COMPATIBLE ELECTRONICS

FCC 15.247
Ecolink Intelligent Technology, Inc.
ClearSky Smart Bridge
Model: CSB-HK02

Date: 12/7/2020
Lab: D
Tested By: Kyle Fujimoto

Harmonics - Low Channel
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4804.00	50.25	H	73.97	-23.72	Peak	350.00	184.05	
4804.00	46.51	H	53.97	-7.46	Avg	350.00	184.05	
7206.00								**Not in Restricted Band**
7206.00								**Done Via Conducted**
9608.00								**Not in Restricted Band**
9608.00								**Done Via Conducted**
12010.00	47.84	H	73.97	-26.13	Peak	10.00	184.05	
12010.00	34.47	H	53.97	-19.51	Avg	10.00	184.05	
14412.00								**Not in Restricted Band**
14412.00								**Done Via Conducted**
16814.00								**Not in Restricted Band**
16814.00								**Done Via Conducted**
19216.00								**No Emission**
19216.00								**Detected**
21618.00								**No Emission**
21618.00								**Detected**
24020.00								**No Emission**
24020.00								**Detected**

COMPATIBLE ELECTRONICS

FCC 15.247
Ecolink Intelligent Technology, Inc.
ClearSky Smart Bridge
Model: CSB-HK02

Date: 12/7/2020
Lab: D
Tested By: Kyle Fujimoto

Harmonics - Middle Channel
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4880.00	48.25	V	73.97	-25.72	Peak	183.75	120.77	
4880.00	42.03	V	53.97	-11.94	Avg	183.75	120.77	
7320.00	45.21	V	73.97	-28.76	Peak	181.00	107.76	
7320.00	33.28	V	53.97	-20.69	Avg	181.00	107.76	
9760.00								**Not in Restricted Band**
9760.00								**Done Via Conducted**
12200.00	47.10	V	73.97	-26.87	Peak	42.50	101.31	
12200.00	34.86	V	53.97	-19.11	Avg	42.50	101.31	
14640.00								**Not in Restricted Band**
14640.00								**Done Via Conducted**
17080.00								**Not in Restricted Band**
17080.00								**Done Via Conducted**
19520.00								**No Emission**
19520.00								**Detected**
21960.00								**No Emission**
21960.00								**Detected**
24400.00								**No Emission**
24400.00								**Detected**

COMPATIBLE ELECTRONICS

FCC 15.247
Ecolink Intelligent Technology, Inc.
ClearSky Smart Bridge
Model: CSB-HK02

Date: 12/7/2020
Lab: D
Tested By: Kyle Fujimoto

Harmonics - Middle Channel
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4880.00	48.07	V	73.97	-25.90	Peak	144.00	155.34	
4880.00	42.93	V	53.97	-11.04	Avg	144.00	155.34	
7320.00	44.80	V	73.97	-29.17	Peak	99.50	145.31	
7320.00	32.93	V	53.97	-21.04	Avg	99.50	145.31	
9760.00								**Not in Restricted Band**
9760.00								**Done Via Conducted**
12200.00	47.85	V	73.97	-26.12	Peak	194.25	136.83	
12200.00	34.79	V	53.97	-19.18	Avg	194.25	136.83	
14640.00								**Not in Restricted Band**
14640.00								**Done Via Conducted**
17080.00								**Not in Restricted Band**
17080.00								**Done Via Conducted**
19520.00								**No Emission**
19520.00								**Detected**
21960.00								**No Emission**
21960.00								**Detected**
24400.00								**No Emission**
24400.00								**Detected**

COMPATIBLE ELECTRONICS

FCC 15.247
Ecolink Intelligent Technology, Inc.
ClearSky Smart Bridge
Model: CSB-HK02

Date: 12/7/2020
Lab: D
Tested By: Kyle Fujimoto

Harmonics - Middle Channel
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4880.00	45.53	V	73.97	-28.44	Peak	286.25	126.29	
4880.00	40.61	V	53.97	-13.36	Avg	286.25	126.29	
7320.00	46.80	V	73.97	-27.17	Peak	9.25	196.29	
7320.00	34.26	V	53.97	-19.71	Avg	9.25	196.29	
9760.00								**Not in Restricted Band**
9760.00								**Done Via Conducted**
12200.00	47.22	V	73.97	-26.75	Peak	51.75	196.29	
12200.00	34.80	V	53.97	-19.17	Avg	51.75	196.29	
14640.00								**Not in Restricted Band**
14640.00								**Done Via Conducted**
17080.00								**Not in Restricted Band**
17080.00								**Done Via Conducted**
19520.00								**No Emission**
19520.00								**Detected**
21960.00								**No Emission**
21960.00								**Detected**
24400.00								**No Emission**
24400.00								**Detected**

COMPATIBLE ELECTRONICS

FCC 15.247
Ecolink Intelligent Technology, Inc.
ClearSky Smart Bridge
Model: CSB-HK02

Date: 12/7/2020
Lab: D
Tested By: Kyle Fujimoto

Harmonics - Middle Channel
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4880.00	49.33	H	73.97	-24.64	Peak	226.50	121.97	
4880.00	45.02	H	53.97	-8.95	Avg	226.50	121.97	
7320.00	46.68	H	73.97	-27.29	Peak	204.75	150.26	
7320.00	37.31	H	53.97	-16.66	Avg	204.75	150.26	
9760.00								**Not in Restricted Band**
9760.00								**Done Via Conducted**
12200.00	48.72	H	73.97	-25.25	Peak	90.25	150.26	
12200.00	34.76	H	53.97	-19.21	Avg	90.25	150.26	
14640.00								**Not in Restricted Band**
14640.00								**Done Via Conducted**
17080.00								**Not in Restricted Band**
17080.00								**Done Via Conducted**
19520.00								**No Emission**
19520.00								**Detected**
21960.00								**No Emission**
21960.00								**Detected**
24400.00								**No Emission**
24400.00								**Detected**

COMPATIBLE ELECTRONICS

FCC 15.247
Ecolink Intelligent Technology, Inc.
ClearSky Smart Bridge
Model: CSB-HK02

Date: 12/7/2020
Lab: D
Tested By: Kyle Fujimoto

Harmonics - Middle Channel
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4880.00	50.22	H	73.97	-23.75	Peak	282.75	190.26	
4880.00	46.13	H	53.97	-7.84	Avg	282.75	190.26	
7320.00	44.55	H	73.97	-29.42	Peak	191.75	190.26	
7320.00	34.26	H	53.97	-19.71	Avg	191.75	190.26	
9760.00								**Not in Restricted Band**
9760.00								**Done Via Conducted**
12200.00	46.54	H	73.97	-27.43	Peak	191.75	190.26	
12200.00	34.76	H	53.97	-19.21	Avg	191.75	190.26	
14640.00								**Not in Restricted Band**
14640.00								**Done Via Conducted**
17080.00								**Not in Restricted Band**
17080.00								**Done Via Conducted**
19520.00								**No Emission**
19520.00								**Detected**
21960.00								**No Emission**
21960.00								**Detected**
24400.00								**No Emission**
24400.00								**Detected**

COMPATIBLE ELECTRONICS

FCC 15.247
Ecolink Intelligent Technology, Inc.
ClearSky Smart Bridge
Model: CSB-HK02

Date: 12/7/2020
Lab: D
Tested By: Kyle Fujimoto

Harmonics - Middle Channel
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4880.00	46.36	H	73.97	-27.61	Peak	350.00	222.74	
4880.00	40.48	H	53.97	-13.49	Avg	350.00	222.74	
7320.00	45.25	H	73.97	-28.72	Peak	198.50	197.49	
7320.00	34.83	H	53.97	-19.14	Avg	198.50	197.49	
9760.00								**Not in Restricted Band**
9760.00								**Done Via Conducted**
12200.00	48.55	H	73.97	-25.42	Peak	202.00	198.00	
12200.00	34.70	H	53.97	-19.28	Avg	202.00	198.00	
14640.00								**Not in Restricted Band**
14640.00								**Done Via Conducted**
17080.00								**Not in Restricted Band**
17080.00								**Done Via Conducted**
19520.00								**No Emission**
19520.00								**Detected**
21960.00								**No Emission**
21960.00								**Detected**
24400.00								**No Emission**
24400.00								**Detected**

COMPATIBLE ELECTRONICS

FCC 15.247
Ecolink Intelligent Technology, Inc.
ClearSky Smart Bridge
Model: CSB-HK02

Date: 12/7/2020
Lab: D
Tested By: Kyle Fujimoto

Harmonics - High Channel
Transmit Mode - X-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4960.00	44.73	V	73.97	-29.24	Peak	128.50	139.94	
4960.00	38.03	V	53.97	-15.94	Avg	128.50	139.94	
7440.00	43.99	V	73.97	-29.99	Peak	172.75	139.94	
7440.00	34.94	V	53.97	-19.03	Avg	172.75	139.94	
9920.00								**Not in Restricted Band**
9920.00								**Done Via Conducted**
12400.00	45.20	V	73.97	-28.77	Peak	56.75	134.39	
12400.00	35.40	V	53.97	-18.57	Avg	56.75	134.39	
14880.00								**Not in Restricted Band**
14880.00								**Done Via Conducted**
17360.00								**Not in Restricted Band**
17360.00								**Done Via Conducted**
19840.00								**No Emission**
19840.00								**Detected**
22320.00								**No Emission**
22320.00								**Detected**
24800.00								**No Emission**
24800.00								**Detected**

COMPATIBLE ELECTRONICS

FCC 15.247
Ecolink Intelligent Technology, Inc.
ClearSky Smart Bridge
Model: CSB-HK02

Date: 12/7/2020
Lab: D
Tested By: Kyle Fujimoto

Harmonics - High Channel
Transmit Mode - Y-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4960.00	47.81	V	73.97	-26.16	Peak	9.75	136.11	
4960.00	41.28	V	53.97	-12.69	Avg	9.50	136.11	
7440.00	50.23	V	73.97	-23.74	Peak	257.50	205.85	
7440.00	43.54	V	53.97	-10.43	Avg	257.50	205.85	
9920.00								**Not in Restricted Band**
9920.00								**Done Via Conducted**
12400.00	48.60	V	73.97	-25.37	Peak	350.00	205.65	
12400.00	35.85	V	53.97	-18.12	Avg	350.00	205.65	
14880.00								**Not in Restricted Band**
14880.00								**Done Via Conducted**
17360.00								**Not in Restricted Band**
17360.00								**Done Via Conducted**
19840.00								**No Emission**
19840.00								**Detected**
22320.00								**No Emission**
22320.00								**Detected**
24800.00								**No Emission**
24800.00								**Detected**

COMPATIBLE ELECTRONICS

FCC 15.247
Ecolink Intelligent Technology, Inc.
ClearSky Smart Bridge
Model: CSB-HK02

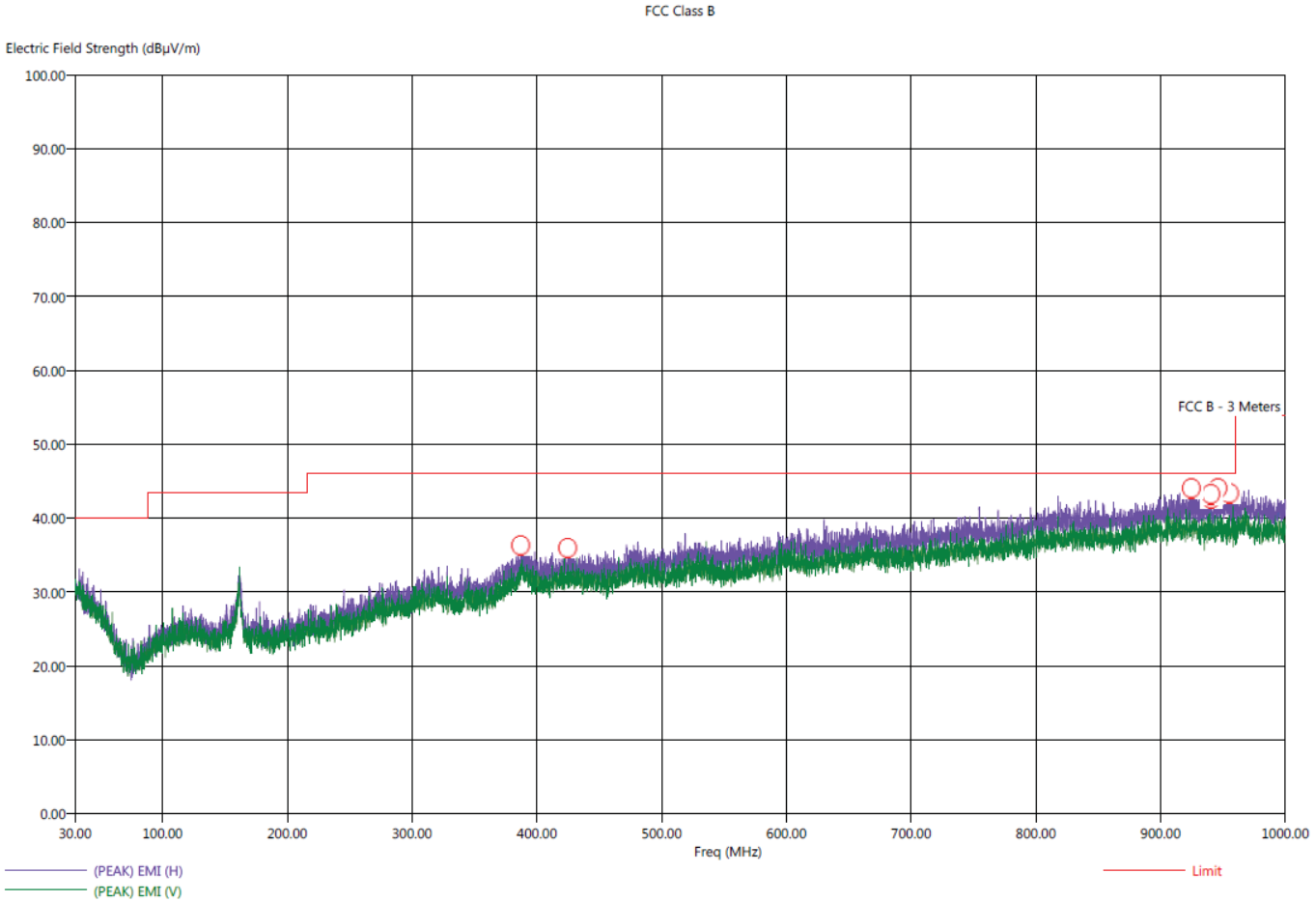
Date: 12/7/2020
Lab: D
Tested By: Kyle Fujimoto

Harmonics - High Channel
Transmit Mode - Z-Axis

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
4960.00	44.33	V	73.97	-29.64	Peak	236.25	187.64	
4960.00	38.44	V	53.97	-15.53	Avg	236.25	187.64	
7440.00	46.34	V	73.97	-27.63	Peak	254.75	162.68	
7440.00	33.96	V	53.97	-20.01	Avg	254.75	162.68	
9920.00								**Not in Restricted Band**
9920.00								**Done Via Conducted**
12400.00	45.18	V	73.97	-28.79	Peak	15.75	102.25	
12400.00	35.92	V	53.97	-18.06	Avg	15.75	102.25	
14880.00								**Not in Restricted Band**
14880.00								**Done Via Conducted**
17360.00								**Not in Restricted Band**
17360.00								**Done Via Conducted**
19840.00								**No Emission**
19840.00								**Detected**
22320.00								**No Emission**
22320.00								**Detected**
24800.00								**No Emission**
24800.00								**Detected**

Title: Pre-Scan - FCC Class B
File: 1 - Keysight - Pre-Scan - X-Axis - CSB-HK02 - FCC Class B - 12-08-2020.set
Operator: Kyle Fujimoto
EUT Type: ClearSky Smart Bridge
EUT Condition: The EUT is continuously transmitting in advertising mode
Company: Ecolink Intelligent Technology, Inc.
Model: CSB-HK02
S/N: N/A
X-Axis (Worst Case)

12/8/2020 12:07:49 PM
Sequence: Preliminary Scan



COMPATIBLE ELECTRONICS

Title: Radiated Final - FCC Class B
File: 1 - Keysight - Final Scan - X-Axis - CSB-HK02 - FCC Class B - 12-08-2020.set
Operator: Kyle Fujimoto
EUT Type: ClearSky Smart Bridge
EUT Condition: The EUT is continuously transmitting in advertising mode
Company: Ecolink Intelligent Technology, Inc.
Model: CSB-HK02
S/N: N/A
X-Axis

12/8/2020 12:38:37 PM
Sequence: Final Measurements

FCC Class B

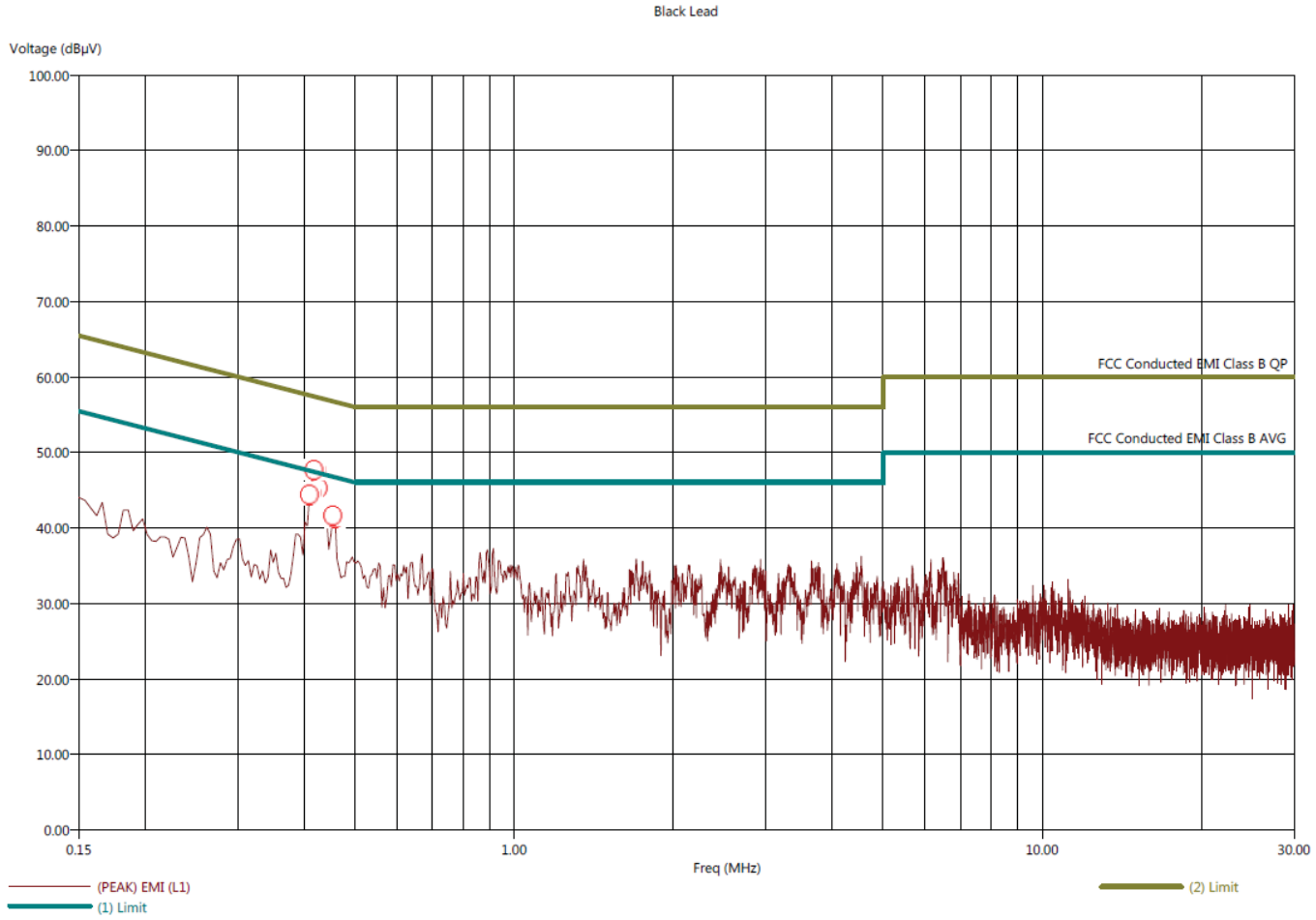
Freq (MHz)	Pol	(PEAK) EMI (dBµV/m)	(QP) EMI (dBµV/m)	(PEAK) Margin (dB)	(QP) Margin (dB)	Limit (dBµV/m)	Transducer (dB)	Cable (dB)	Ttbl Aql (deg)	Twr Ht (cm)
387.10	H	37.07	31.75	-8.93	-14.25	46.00	23.26	1.50	71.50	318.92
424.70	H	36.57	30.90	-9.43	-15.10	46.00	22.10	1.62	112.25	126.92
924.70	H	44.44	38.83	-1.56	-7.17	46.00	27.90	2.55	64.50	366.74
940.20	H	44.17	38.94	-1.83	-7.06	46.00	27.83	2.61	265.00	174.92
940.50	H	45.49	38.88	-0.51	-7.12	46.00	27.83	2.61	208.25	398.50
946.10	H	43.87	38.95	-2.13	-7.05	46.00	27.80	2.63	239.50	318.86
947.20	H	44.39	38.85	-1.61	-7.15	46.00	27.80	2.64	158.00	286.62
955.20	H	43.95	38.92	-2.05	-7.08	46.00	27.79	2.65	161.00	254.80

CONDUCTED EMISSIONS DATA SHEETS

COMPATIBLE ELECTRONICS

Title: FCC Class B - Black Lead
File: 1 - CE - Pre-Scan - Black Lead - Tx Mode - FCC Class B - 12-09-2020.set
Operator: Kyle Fujimoto
EUT Type: ClearSky Smart Bridge
EUT Condition: The EUT is continuously transmitting at 345 MHz and BLE
Company: Ecolink Intelligent Technology, Inc.
Model: CSB-HK02
S/N: N/A

12/9/2020 7:17:06 AM
Sequence: Preliminary Scan



COMPATIBLE ELECTRONICS

Title: FCC Class B - Black Lead
File: 1 - CE - Final Scan - Black Lead - Tx Mode - FCC Class B - 12-09-2020.set
Operator: Kyle Fujimoto
EUT Type: ClearSky Smart Bridge
EUT Condition: The EUT is continuously transmitting at 345 MHz and BLE
Company: Ecolink Intelligent Technology, Inc.
Model: CSB-HK02
S/N: N/A

12/9/2020 7:27:52 AM
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)
0.410	48.18	45.85	-9.30	-11.63	57.48	0.08	0.12	9.70
0.414	50.48	46.84	-6.92	-10.56	57.39	0.08	0.12	9.70
0.418	49.23	46.69	-8.15	-10.69	57.37	0.08	0.12	9.70
0.422	49.09	46.35	-8.23	-10.97	57.32	0.08	0.12	9.70
0.426	49.23	46.77	-8.16	-10.62	57.38	0.08	0.12	9.70
0.430	49.11	46.53	-8.24	-10.82	57.34	0.08	0.12	9.70
0.454	38.64	35.88	-17.99	-20.75	56.63	0.09	0.12	9.70
0.458	39.43	36.44	-17.35	-20.34	56.78	0.09	0.12	9.70

Title: FCC Class B - Black Lead
File: 1 - CE - Final Scan - Black Lead - Tx Mode - FCC Class B - 12-09-2020.set
Operator: Kyle Fujimoto
EUT Type: ClearSky Smart Bridge
EUT Condition: The EUT is continuously transmitting at 345 MHz and BLE
Coompany: Ecolink Intelligent Technology, Inc.
Model: CSB-HK02
S/N: N/A

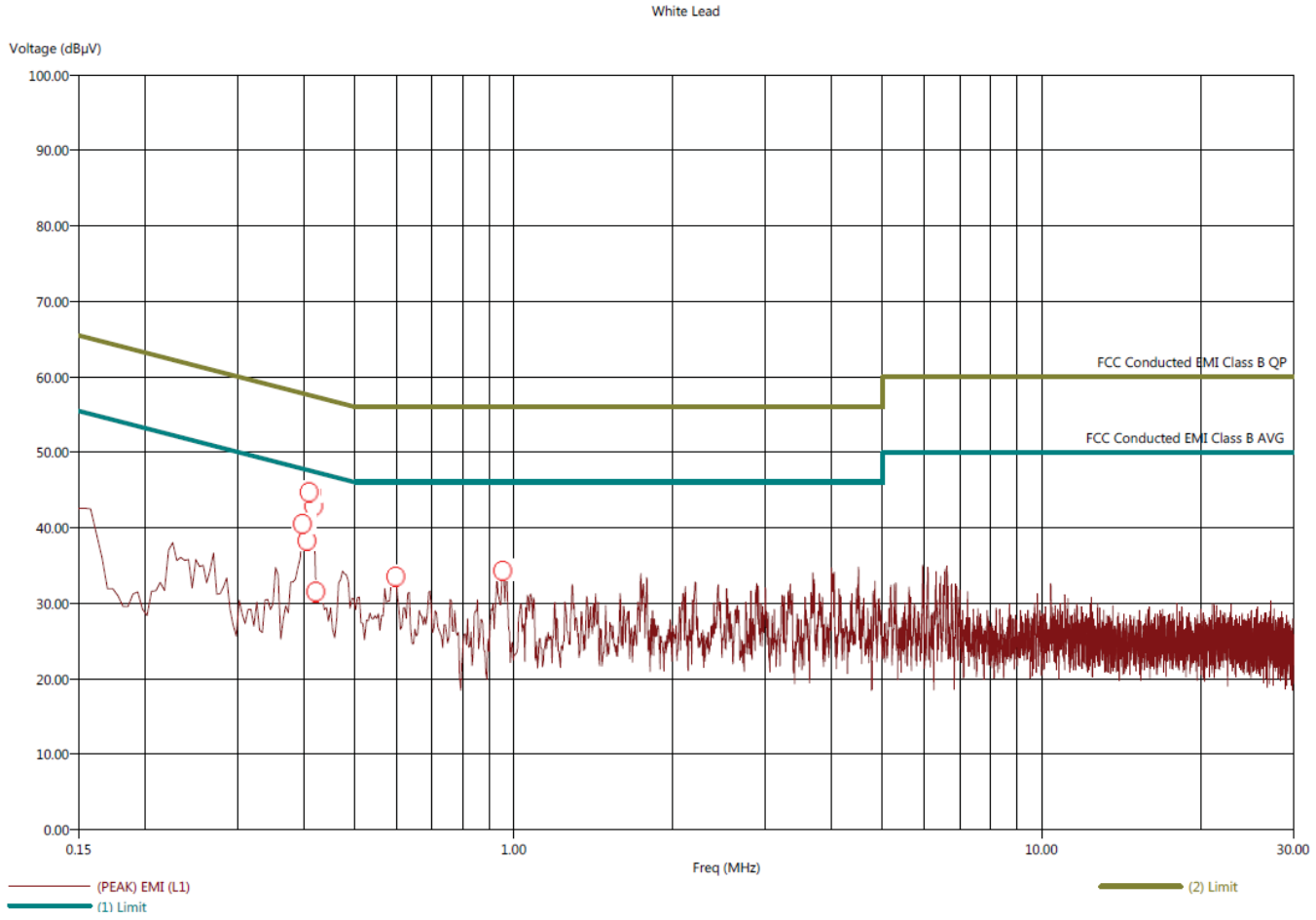
12/9/2020 7:27:52 AM
Sequence: Final Measurements

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)
0.410	48.18	39.37	0.70	-8.11	47.48	0.08	0.12	9.70
0.414	50.48	40.34	3.08	-7.06	47.39	0.08	0.12	9.70
0.418	49.23	40.21	1.85	-7.17	47.37	0.08	0.12	9.70
0.422	49.09	39.40	1.77	-7.92	47.32	0.08	0.12	9.70
0.426	49.23	40.48	1.84	-6.91	47.38	0.08	0.12	9.70
0.430	49.11	40.03	1.76	-7.32	47.34	0.08	0.12	9.70
0.454	38.64	29.74	-7.99	-16.89	46.63	0.09	0.12	9.70
0.458	39.43	29.83	-7.35	-16.95	46.78	0.09	0.12	9.70

Title: FCC Class B - White Lead
File: 2 - CE - Pre-Scan - White Lead - Tx Mode - FCC Class B - 12-09-2020.set
Operator: Kyle Fujimoto
EUT Type: ClearSky Smart Bridge
EUT Condition: The EUT is continuously transmitting at 345 MHz and BLE
Company: Ecolink Intelligent Technology, Inc.
M/N: CSB-HK02
S/N: N/A

12/9/2020 7:31:07 AM
Sequence: Preliminary Scan



COMPATIBLE ELECTRONICS

Title: FCC Class B - White Lead
File: 2 - CE - Final Scan - White Lead - Tx Mode - FCC Class B - 12-09-2020.set
Operator: Kyle Fujimoto
EUT Type: ClearSky Smart Bridge
EUT Condition: The EUT is continuously transmitting at 345 MHz
Company: Ecolink Intelligent Technology, Inc.
Model: CSB-HK02
S/N: N/A

12/9/2020 7:32:23 AM
Sequence: Final Measurements

White 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)
0.398	44.53	40.79	-13.03	-16.77	57.57	0.08	0.12	9.70
0.402	38.29	33.92	-19.60	-23.97	57.89	0.08	0.12	9.70
0.406	43.57	38.88	-14.07	-18.76	57.64	0.08	0.12	9.70
0.410	47.29	44.21	-10.10	-13.18	57.39	0.08	0.12	9.70
0.414	46.86	43.39	-10.46	-13.93	57.32	0.08	0.12	9.70
0.418	45.98	41.92	-11.28	-15.34	57.26	0.08	0.12	9.70
0.422	46.98	44.02	-10.45	-13.41	57.43	0.08	0.12	9.70
0.598	33.87	29.48	-22.13	-26.52	56.00	0.09	0.12	9.68
0.954	33.70	30.01	-22.30	-25.99	56.00	0.10	0.13	9.61

Title: FCC Class B - White Lead
File: 2 - CE - Final Scan - White Lead - Tx Mode - FCC Class B - 12-09-2020.set
Operator: Kyle Fujimoto
EUT Type: ClearSky Smart Bridge
EUT Condition: The EUT is continuously transmitting at 345 MHz and BLE
Coompany: Ecolink Intelligent Technology, Inc.
Model: CSB-HK02
S/N: N/A

12/9/2020 7:32:23 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)
0.398	44.53	29.88	-3.03	-17.68	47.57	0.08	0.12	9.70
0.402	38.29	24.52	-9.60	-23.37	47.89	0.08	0.12	9.70
0.406	43.57	28.40	-4.07	-19.24	47.64	0.08	0.12	9.70
0.410	47.29	33.44	-0.10	-13.95	47.39	0.08	0.12	9.70
0.414	46.86	32.64	-0.46	-14.68	47.32	0.08	0.12	9.70
0.418	45.98	31.10	-1.28	-16.16	47.26	0.08	0.12	9.70
0.422	46.98	33.10	-0.45	-14.33	47.43	0.08	0.12	9.70
0.598	33.87	20.77	-12.13	-25.23	46.00	0.09	0.12	9.68
0.954	33.70	21.04	-12.30	-24.96	46.00	0.10	0.13	9.61

BAND EDGES DATA SHEETS

COMPATIBLE ELECTRONICS

FCC 15.247

Ecolink Intelligent Technology, Inc.
ClearSky Smart Bridge
Model: CSB-HK02

Dates: 12/8/2020 and 12/9/2020
Lab: D
Tested By: Kyle Fujimoto

Band Edges

Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2402.00	105.81	V	--	--	Peak	23.00	184.47	**Fundamental - Low Ch.**
2402.00	104.40	V	--	--	Avg	23.00	184.47	**X-Axis Worst Case**
2363.68	44.88	V	73.97	-29.09	Peak	23.00	184.47	**Band Edge**
2363.68	34.56	V	53.97	-19.41	Avg	23.00	184.47	**X-Axis Worst Case**
2390.00	38.97	V	73.97	-35.00	Peak	23.00	184.47	**Band Edge**
2390.00	28.62	V	53.97	-25.35	Avg	23.00	184.47	**X-Axis Worst Case**
2402.00	106.62	H	--	--	Peak	22.75	152.29	**Fundamental - Low Ch.**
2402.00	105.27	H	--	--	Avg	22.75	152.29	**Y-Axis - Worst Case**
2363.68	46.66	H	73.97	-27.31	Peak	22.75	152.29	**Band Edge**
2363.68	35.28	H	53.97	-18.69	Avg	22.75	152.29	**Y-Axis - Worst Case**
2390.00	40.09	H	73.97	-33.88	Peak	22.75	152.29	**Band Edge**
2390.00	28.94	H	53.97	-25.03	Avg	22.75	152.29	**Y-Axis - Worst Case**

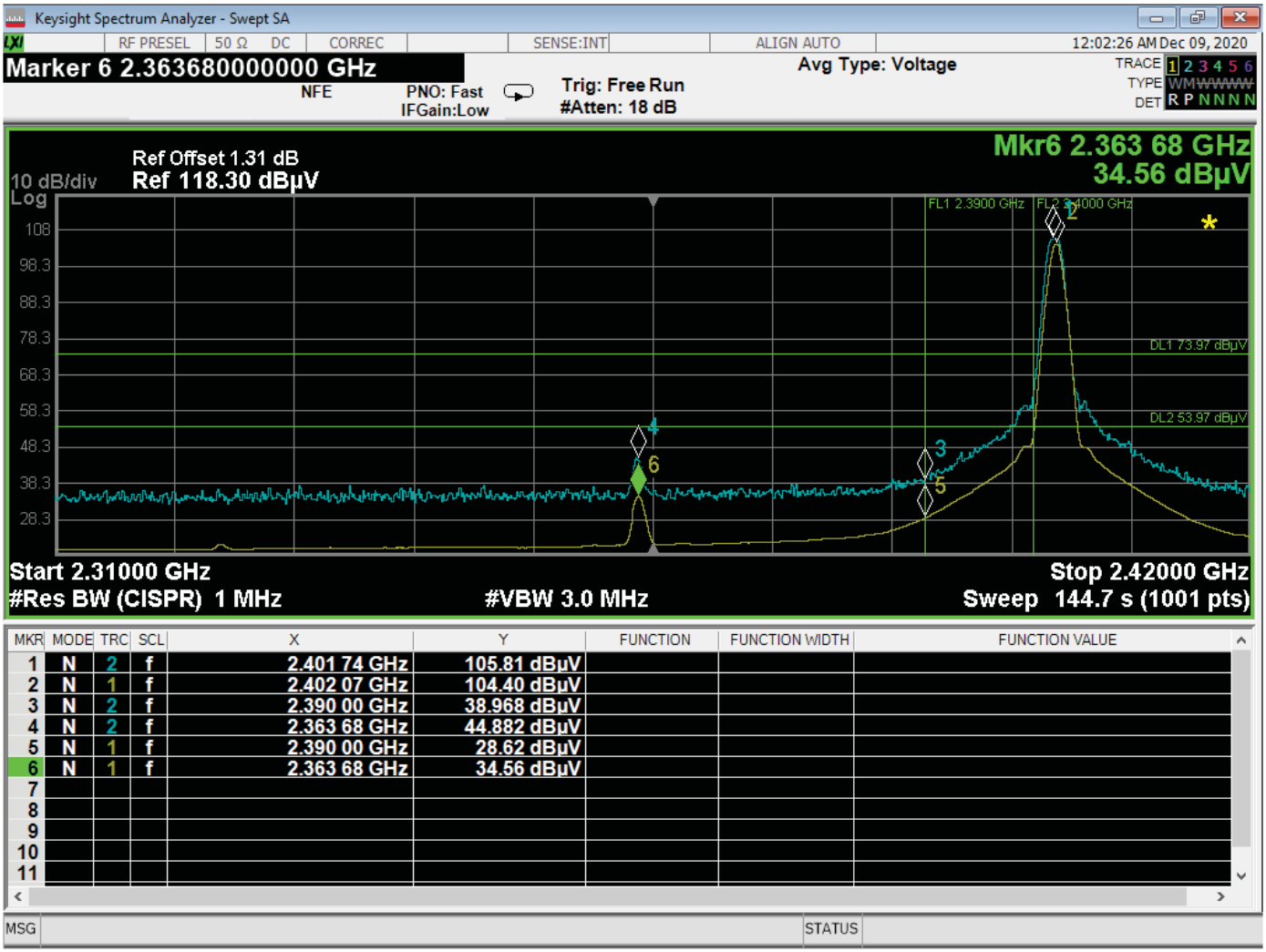
COMPATIBLE ELECTRONICS

FCC 15.247
Ecolink Intelligent Technology, Inc.
ClearSky Smart Bridge
Model: CSB-HK02

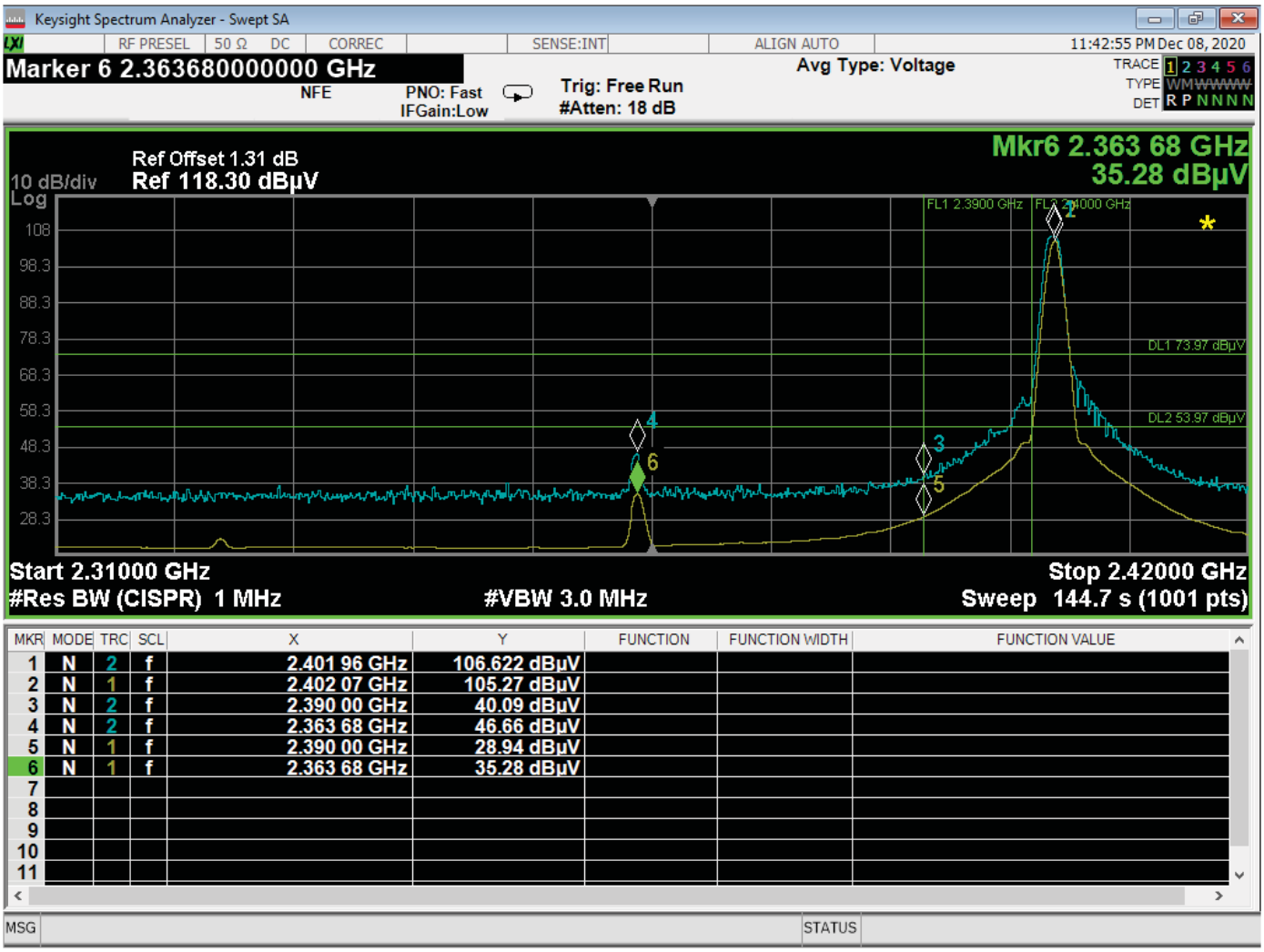
Date: 12/9/2020
Lab: D
Tested By: Kyle Fujimoto

Band Edges

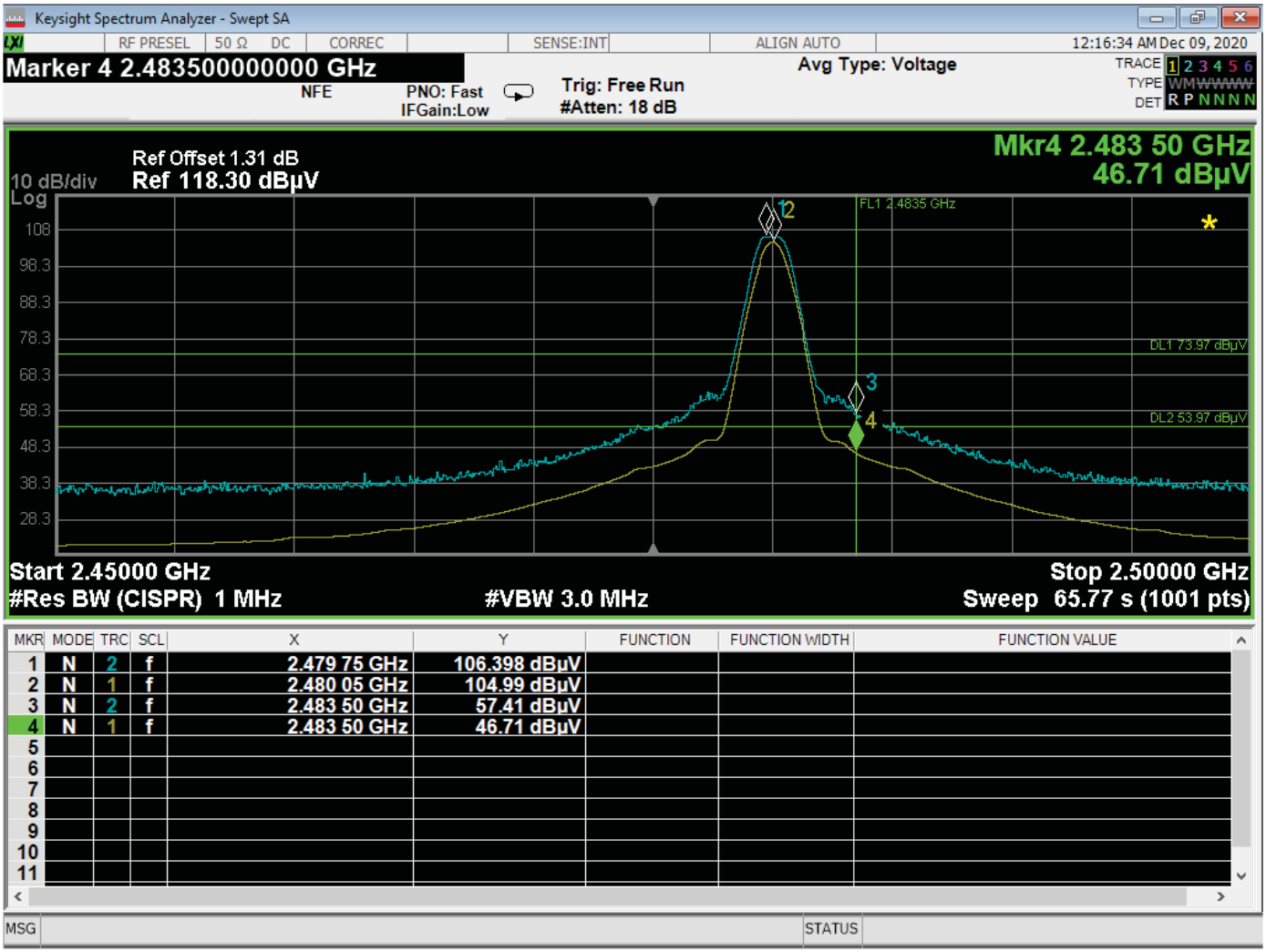
Freq. (MHz)	Level (dBuV/m)	Pol (v/h)	Limit	Margin	Peak / QP / Avg	Table Angle (deg)	Ant. Height (cm)	Comments
2480.00	106.40	V	--	--	Peak	323.25	243.82	**Fundamental - High Ch.**
2480.00	104.99	V	--	--	Avg	323.25	243.82	**X-Axis - Worst Case**
2483.50	57.41	V	73.97	-16.56	Peak	323.25	243.82	**Band Edge**
2483.50	46.71	V	53.97	-7.26	Avg	323.25	243.82	**X-Axis - Worst Case**
2480.00	106.76	H	--	--	Peak	60.25	156.29	**Fundamental - High Ch.**
2480.00	105.38	H	--	--	Avg	60.25	156.29	**Y-Axis - Worst Case**
2483.50	58.66	H	73.97	-15.31	Peak	60.25	156.29	**Band Edge**
2483.50	47.53	H	53.97	-6.44	Avg	60.25	156.29	**Y-Axis - Worst Case**



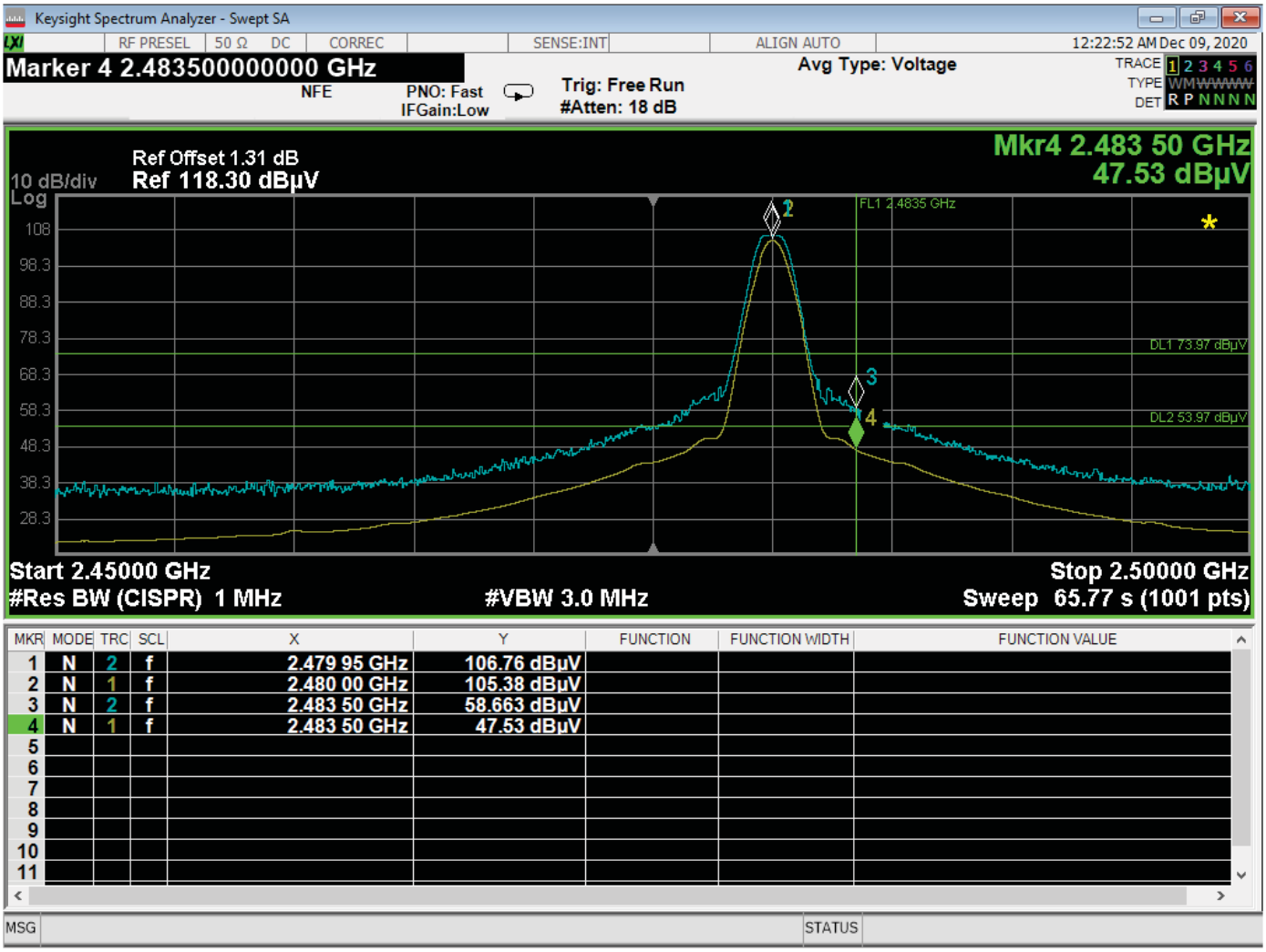
Band Edge – Low Channel – Vertical Polarization – X-Axis



Band Edge – Low Channel – Horizontal Polarization – Y-Axis



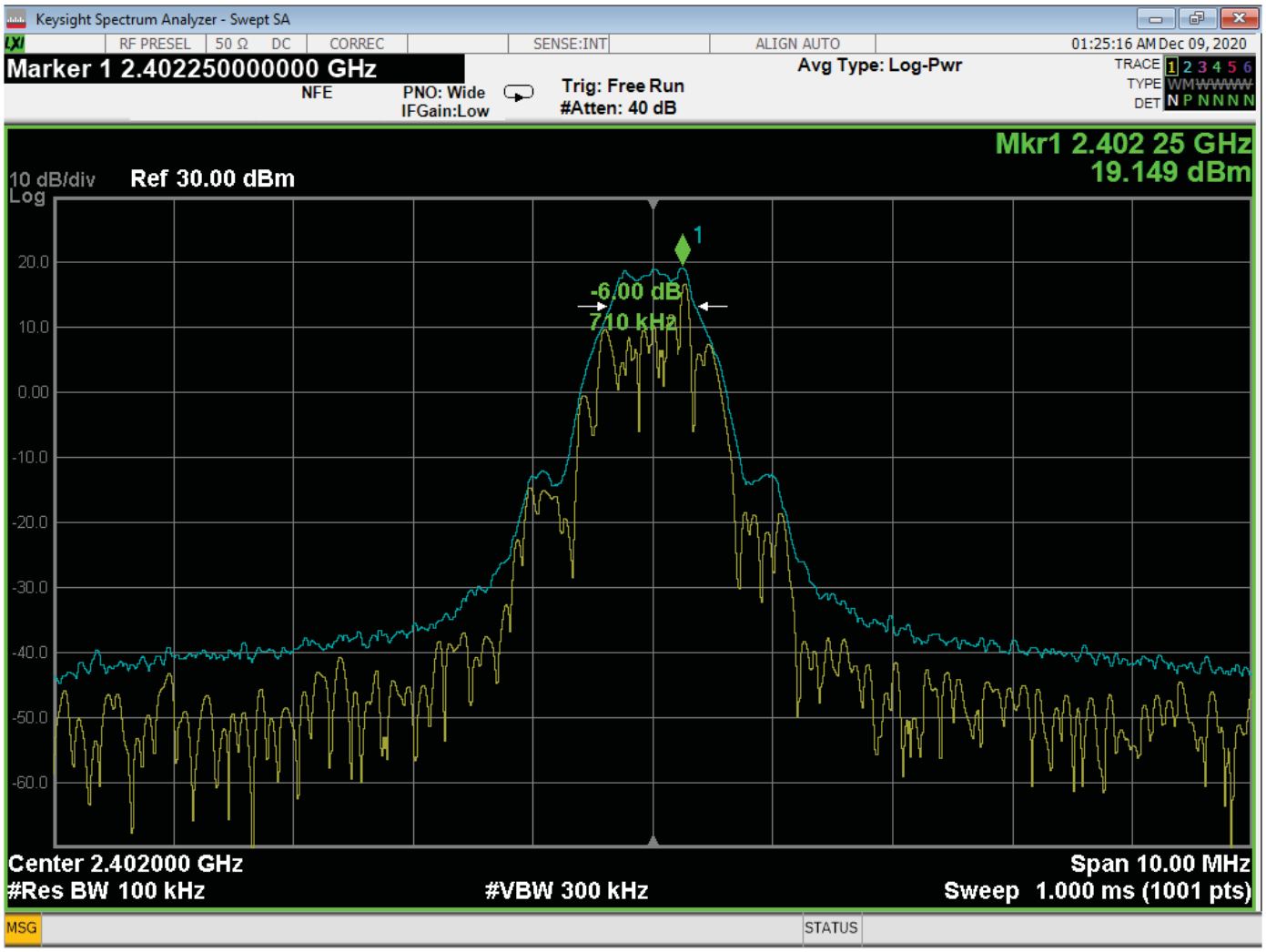
Band Edge – High Channel – Vertical Polarization – X-Axis



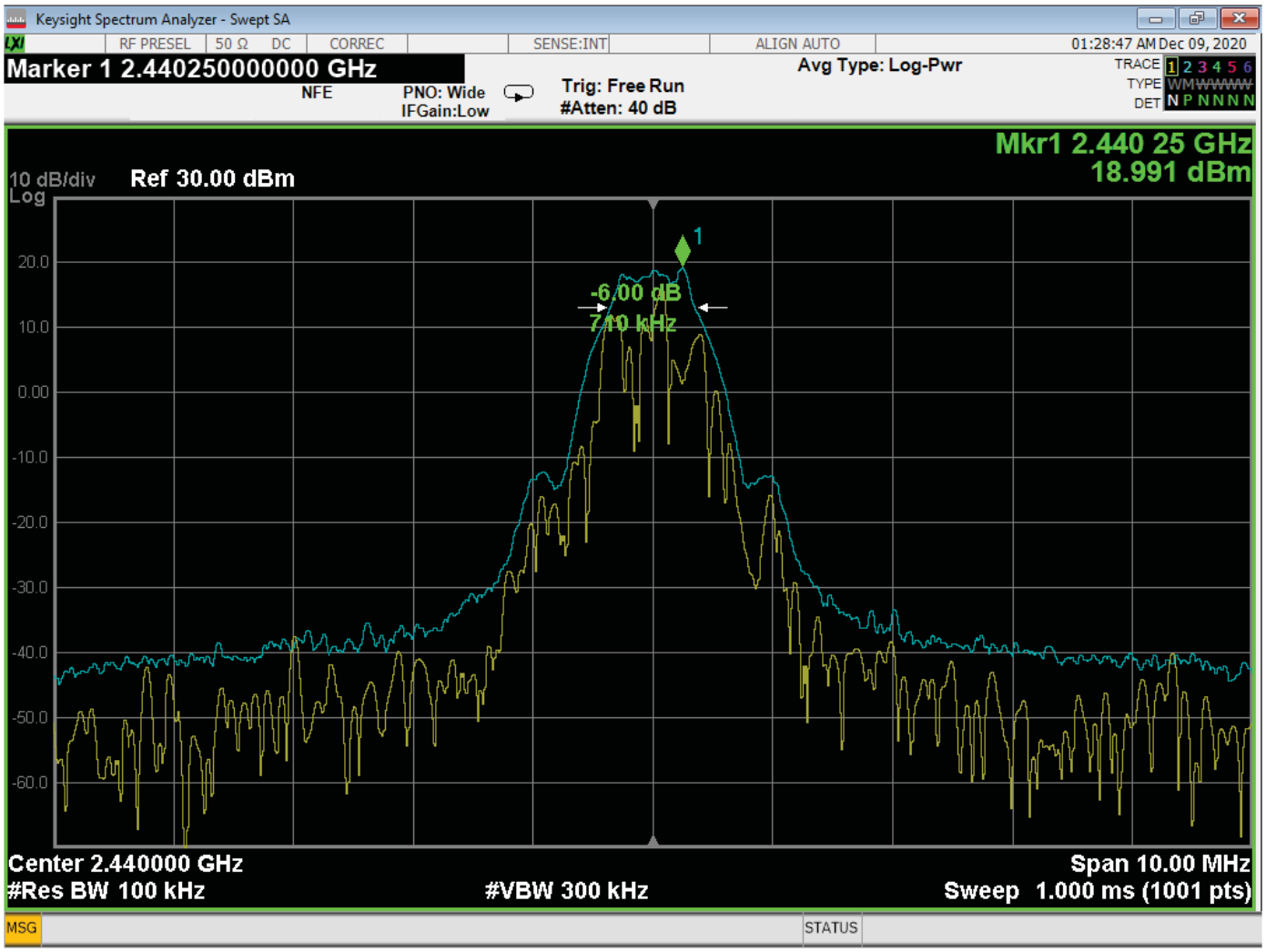
Band Edge – High Channel – Y-Axis – Horizontal Polarization

COMPATIBLE ELECTRONICS

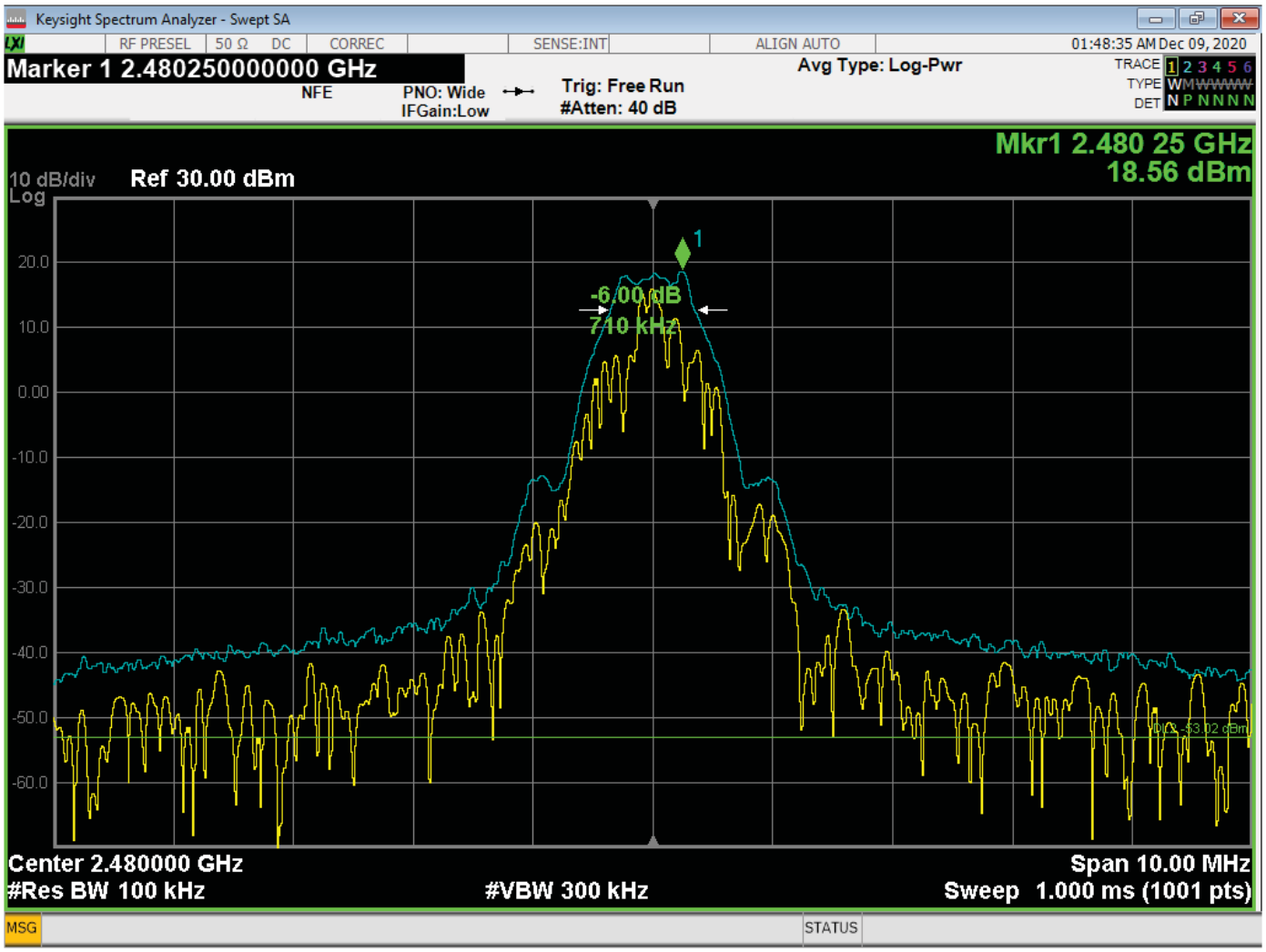
-6 dB BANDWIDTH DATA SHEETS



-6 dB Bandwidth – Low Channel

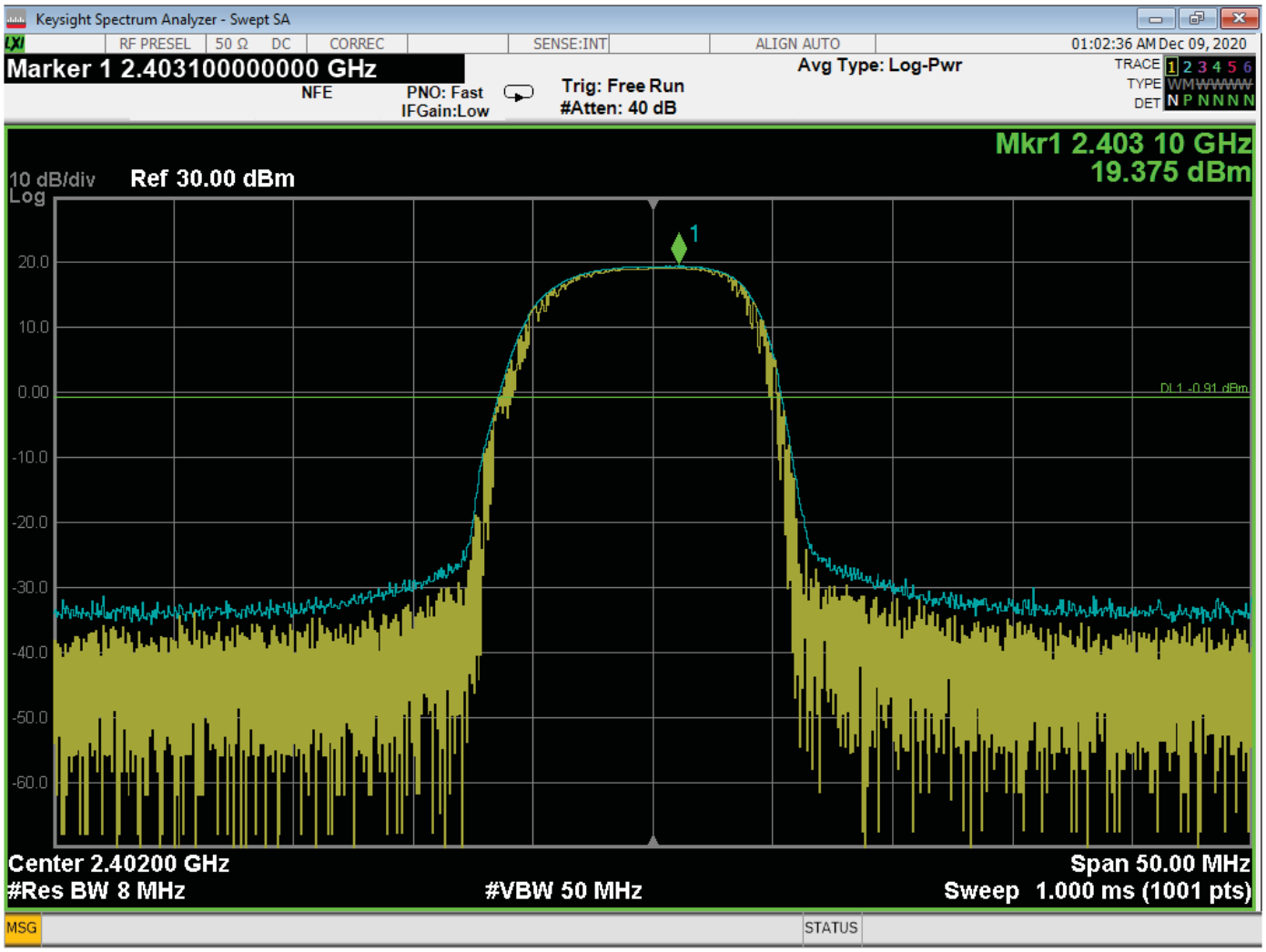


-6 dB Bandwidth – Middle Channel

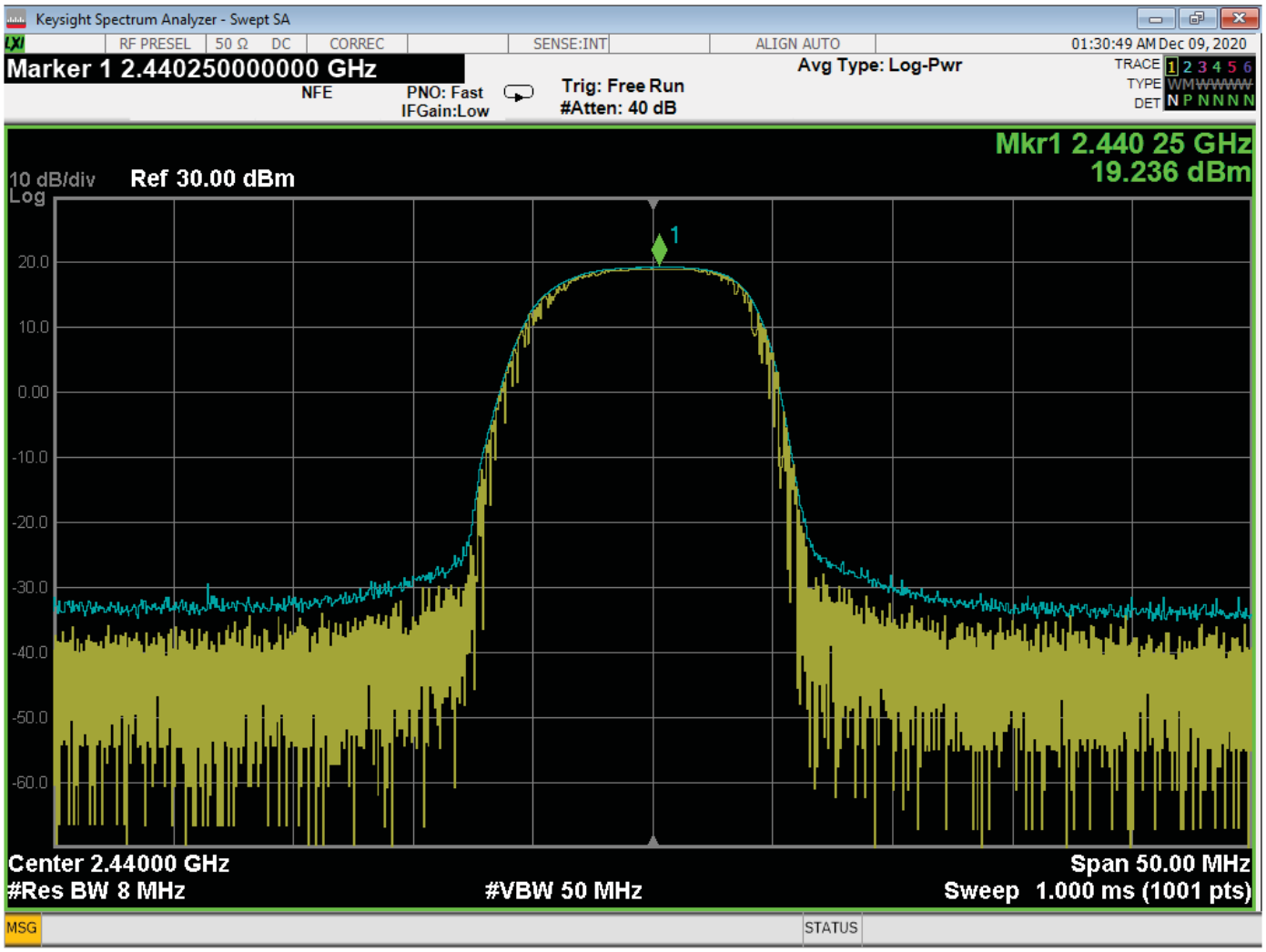


-6 dB Bandwidth – High Channel

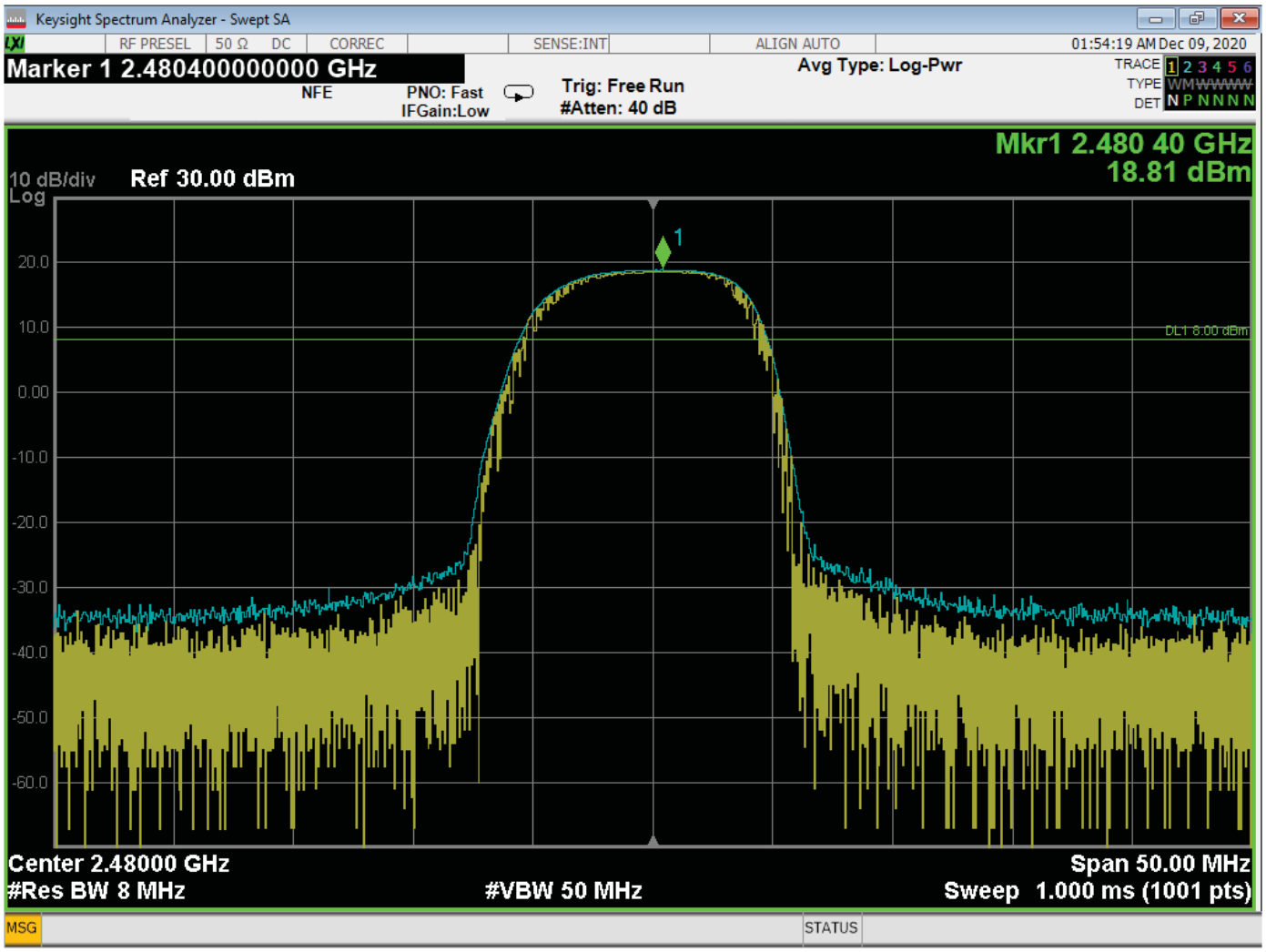
PEAK POWER OUTPUT DATA SHEETS



Peak Power Output – Low Channel



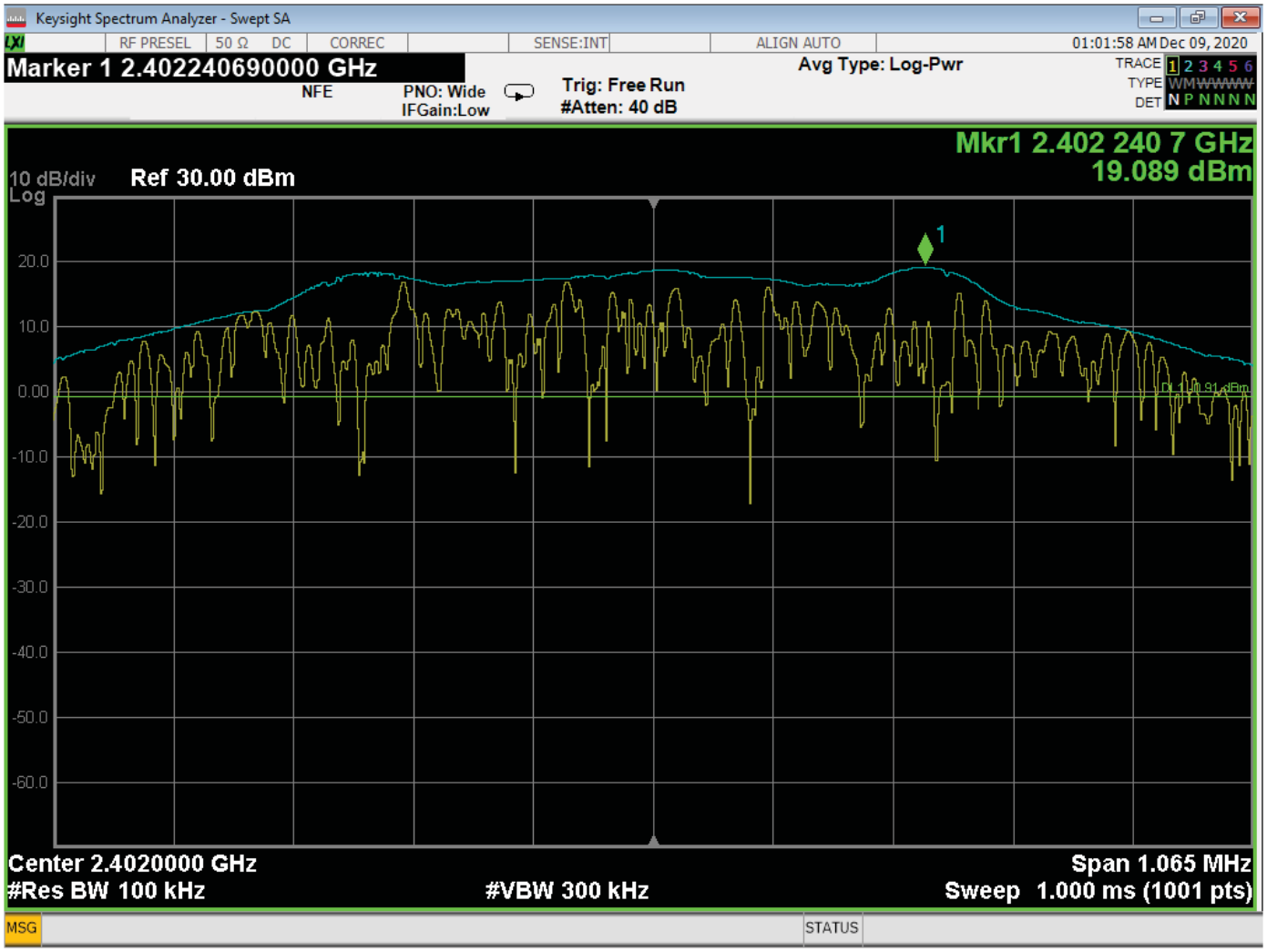
Peak Power Output – Middle Channel



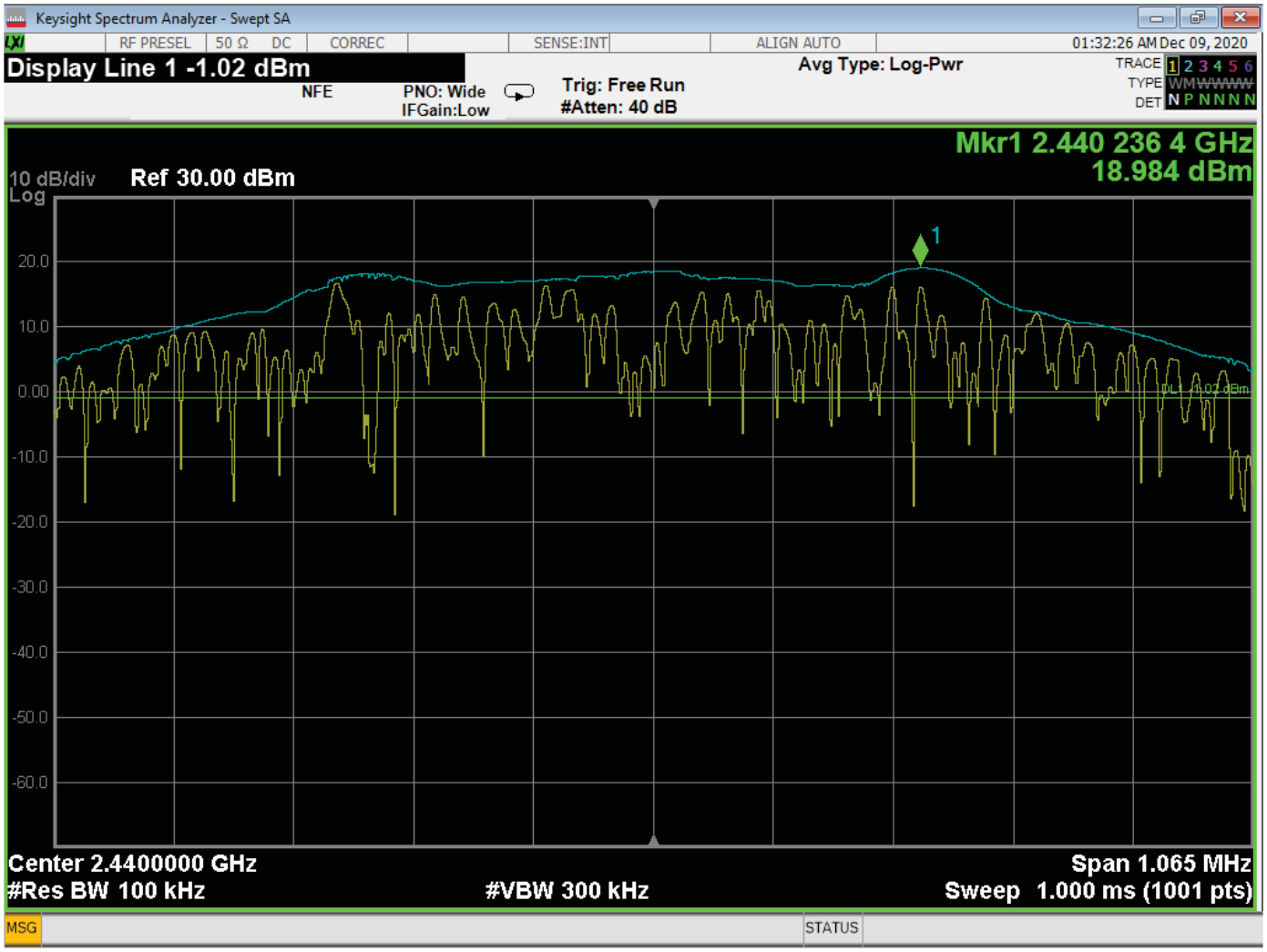
Peak Power Output – High Channel

RF ANTENNA CONDUCTED

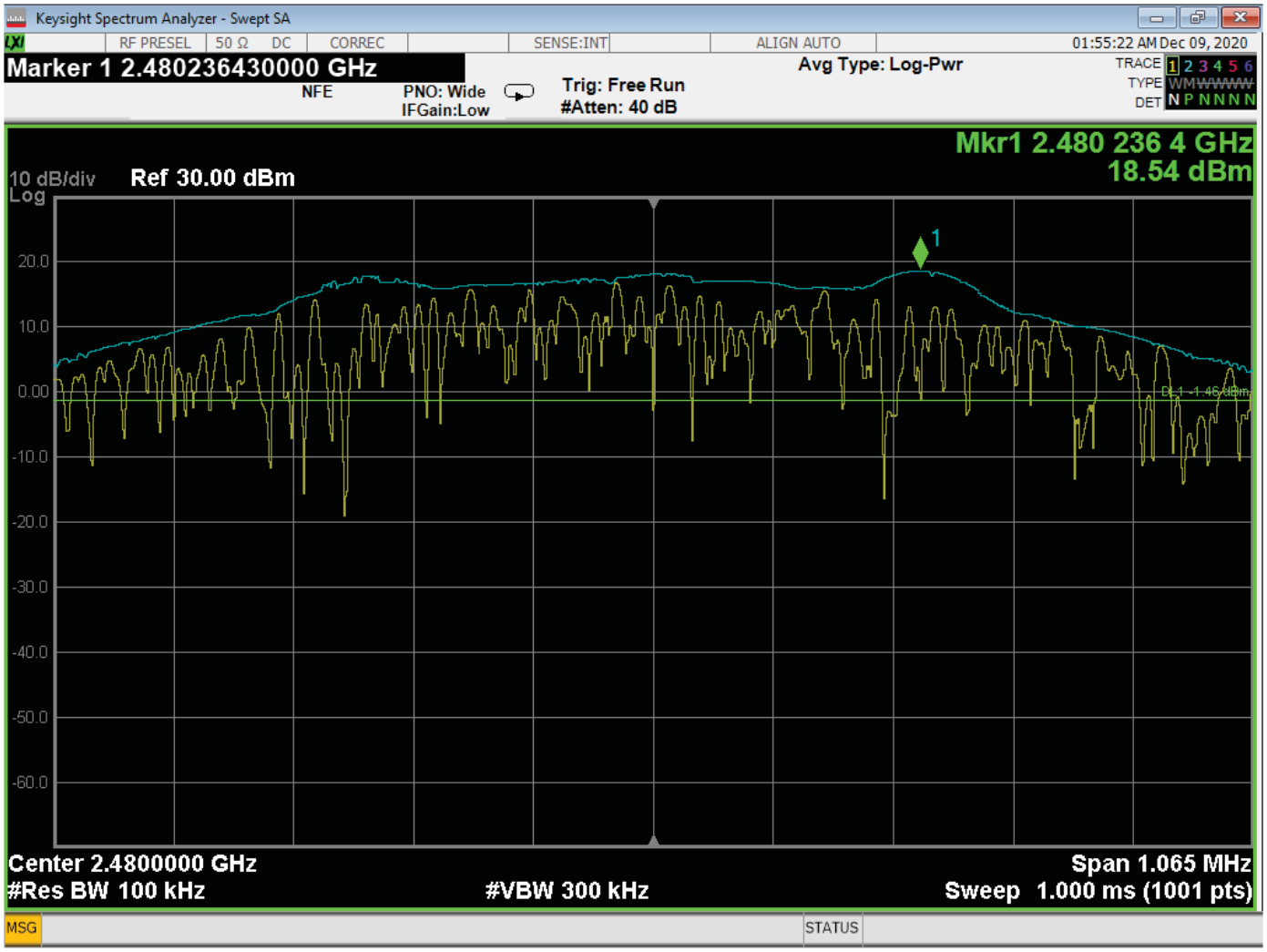
DATA SHEETS



RF Antenna Conducted – Low Channel – Reference Level



RF Antenna Conducted – Middle Channel – Reference Level



RF Antenna Conducted – High Channel – Reference Level

ECOLINK INTELLIGENT TECHNOLOGY, INC.

CKEARSKY SMART BRIDGE

MODEL: CSB-HK02

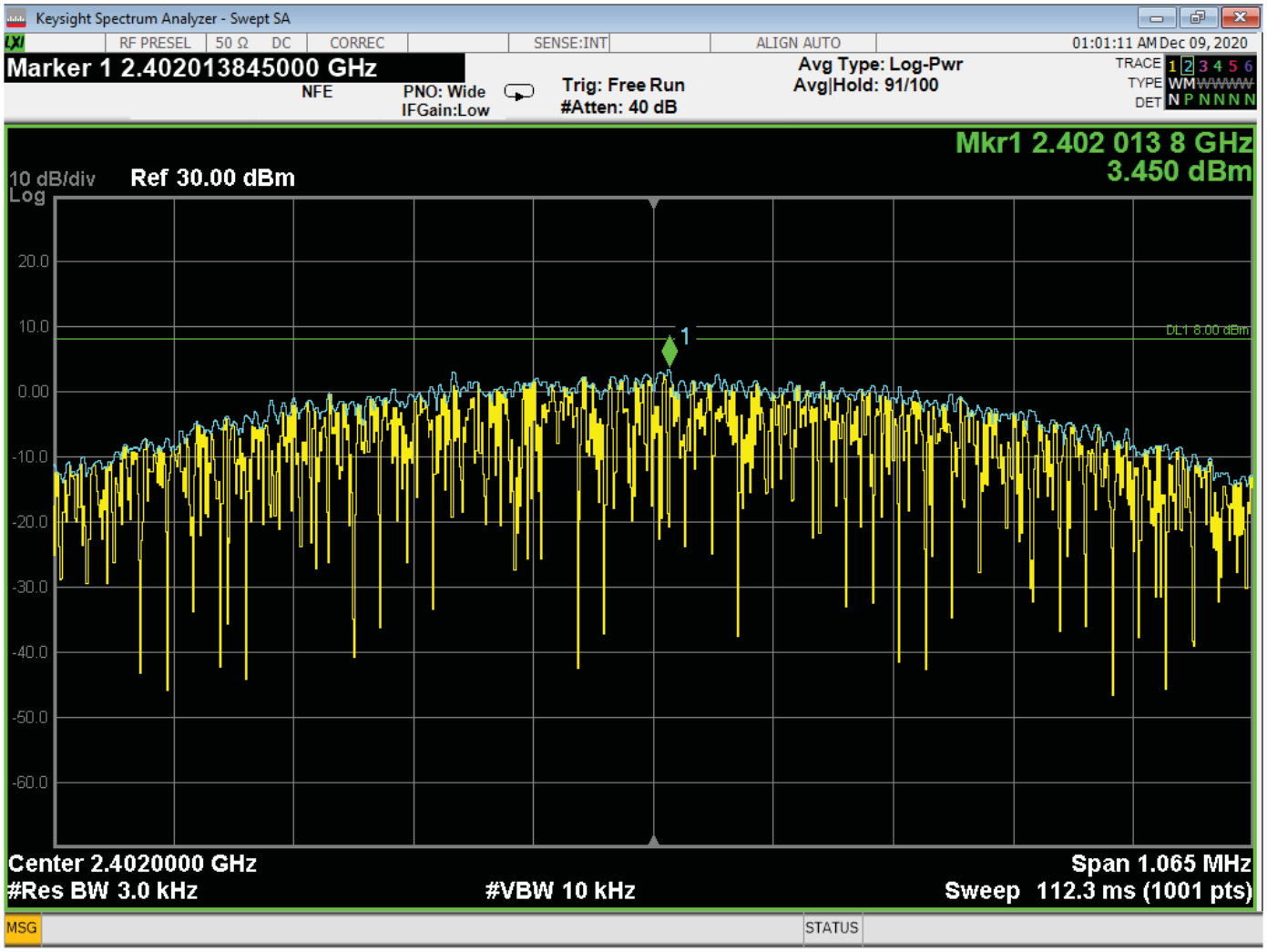
EMISSIONS IN NON-RESTRICTED BANDS

FREQUENCY (MHz)	LEVEL (dBm)	Limit* (dBm)	Margin (dB)
3310	-45.60	-1.016	-44.584
9715	-46.26	-1.46	-44.80
810.85	-51.06	-0.911	-50.149

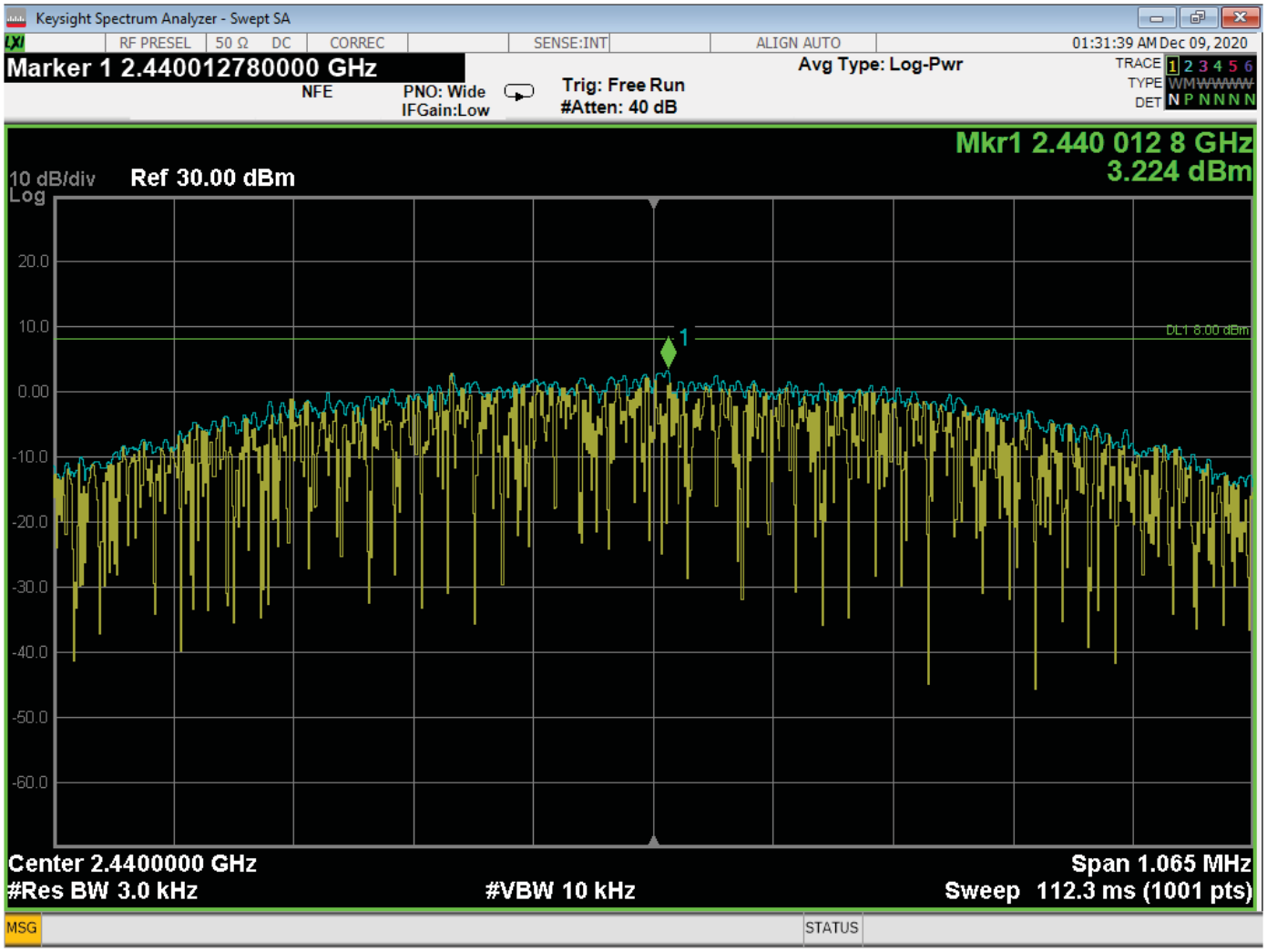
*The Limit is based on 20 dB below the highest reference level obtained on the previous pages per section 11.11.2 of ANSI C63.10.

PEAK POWER SPECTRAL DENSITY

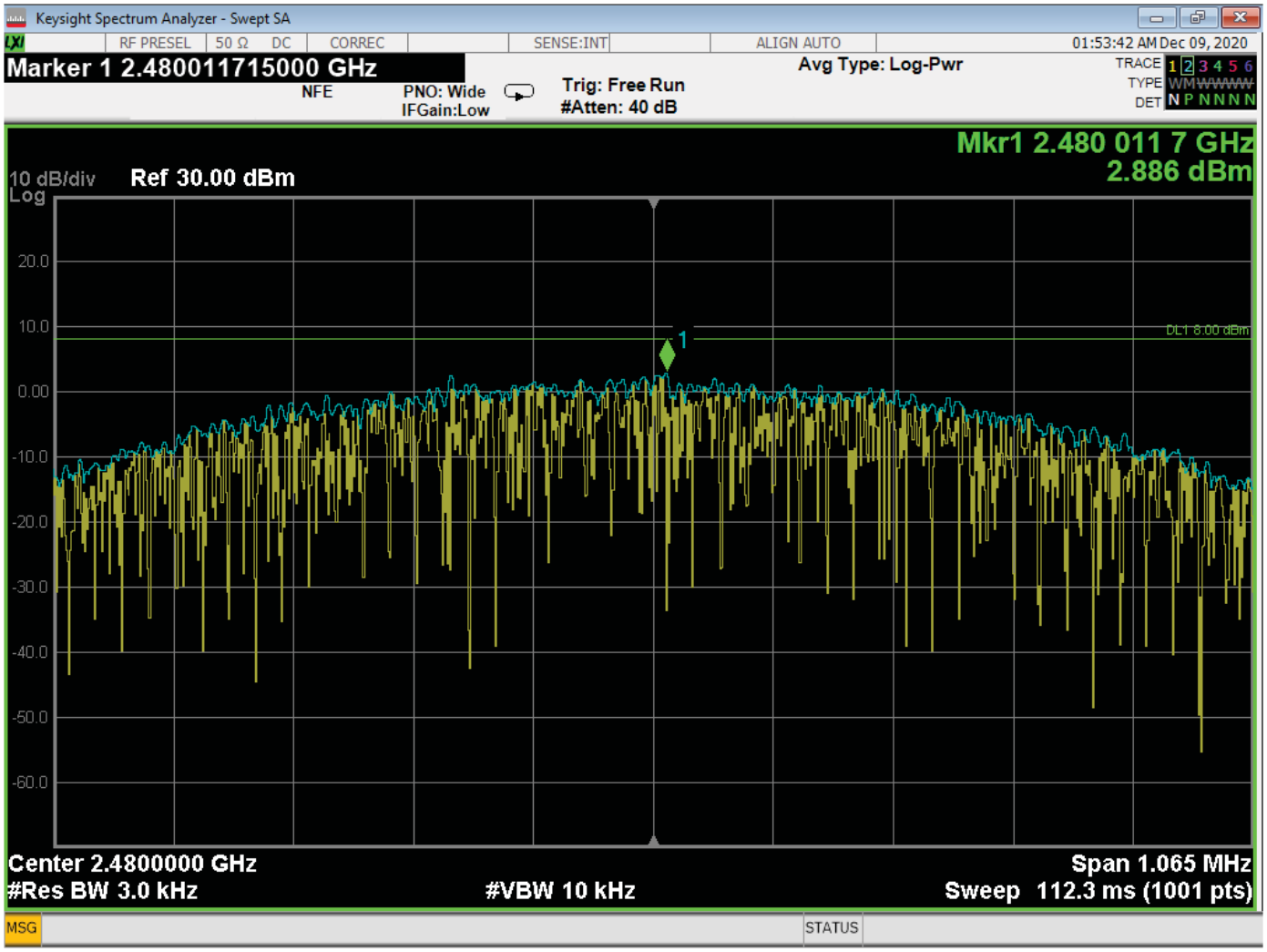
DATA SHEETS



Peak Power Spectral Density – Low Channel



Peak Power Spectral Density – Middle Channel

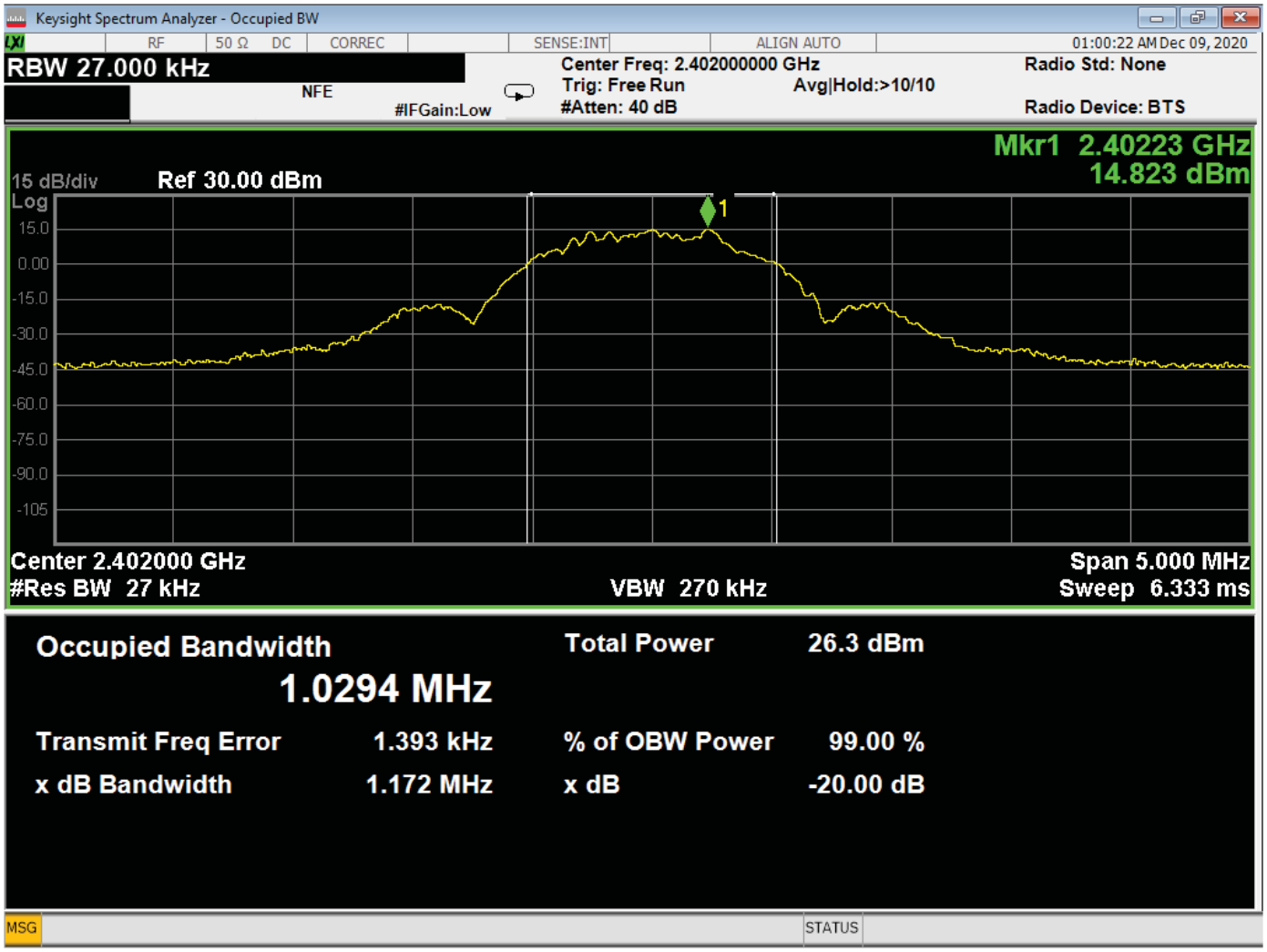


Peak Power Spectral Density – High Channel

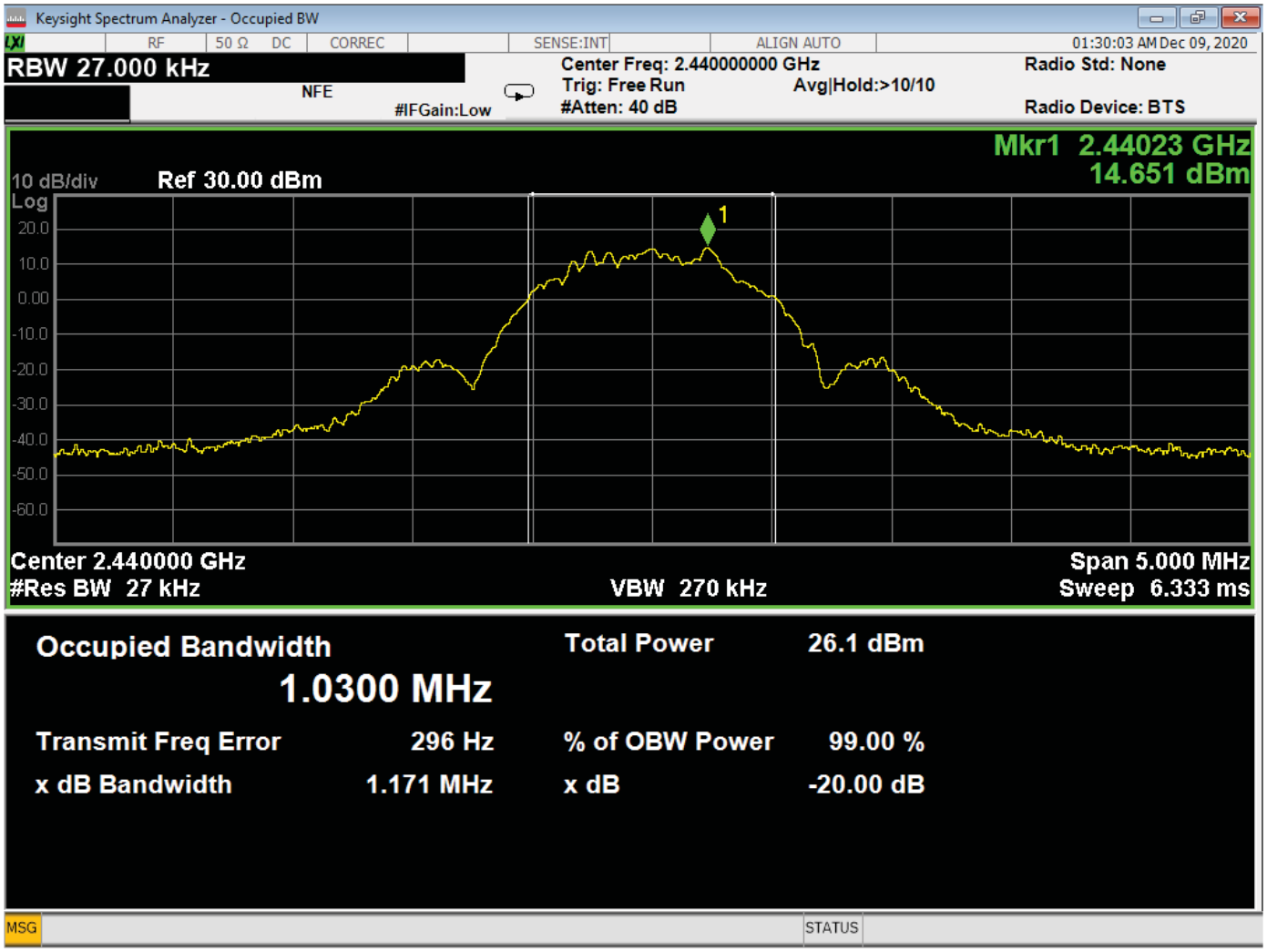
COMPATIBLE ELECTRONICS

99% BANDWIDTH

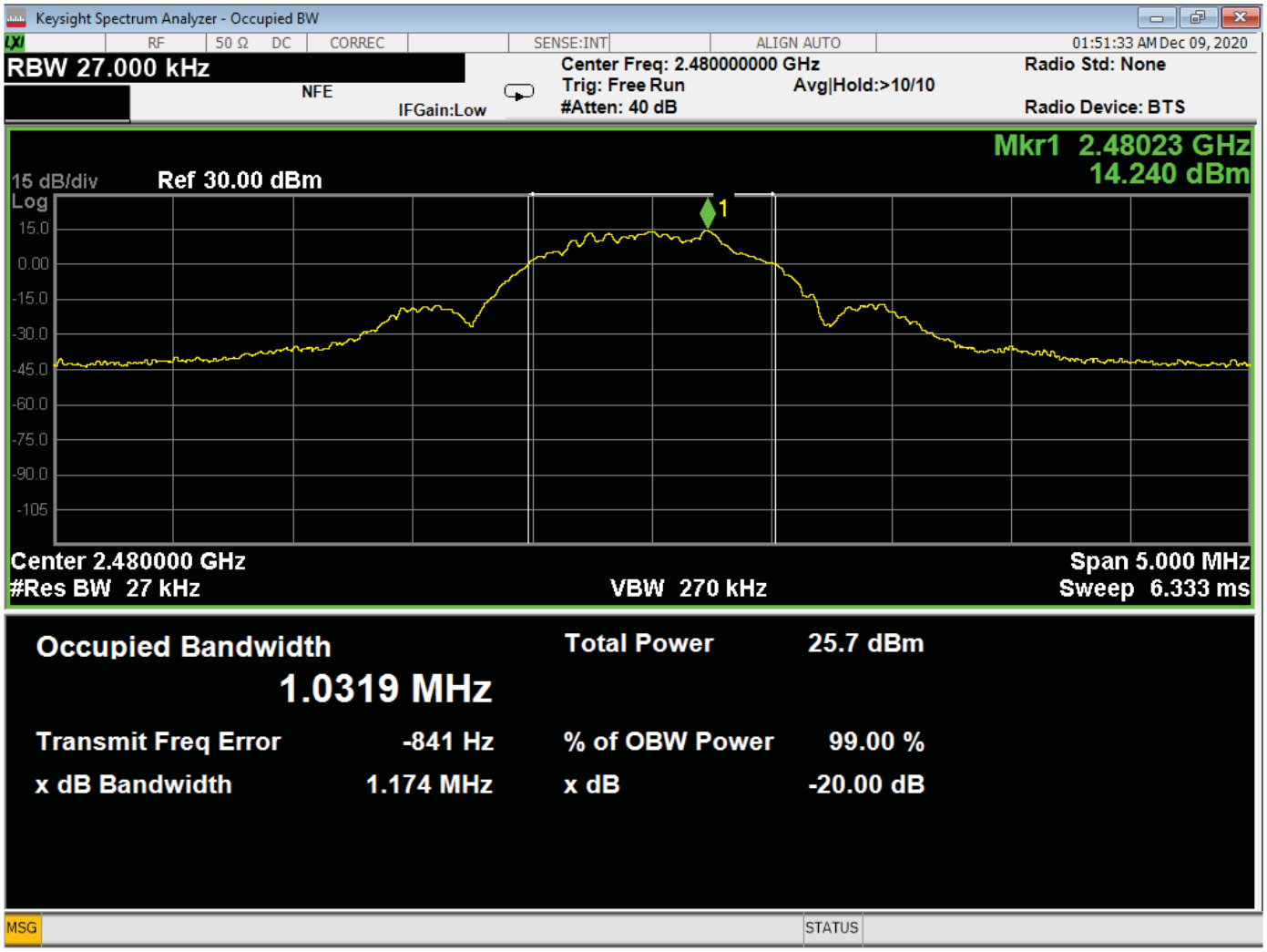
DATA SHEETS



99% Bandwidth – Low Channel



99% Bandwidth – Middle Channel



99% Bandwidth – High Channel