COMPATIBLE ELECTRONICS

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

*for*

# Diamond Display

# Model Number: 3.5

Prepared for

COMODULE OÜ
DUNKRI 9
TALLINN, ESTONIA 10123

Prepared by: _____

JAMES ROSS

Approved by: _____

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DATE: JULY 29, 2022

| | REPORT | 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 U.S. government.

| | |
|---|---|
| Device Tested: | Diamond Display<br>Model: 3.5<br>S/N: N/A |
| Product Description: | The EUT is used to communicate with an e-bike via a cable and send the usage metrics to the mobile device over BLE 2.4 GHz ISM band. Clock Frequencies: 32 MHz and 32.768 kHz (Dimensions: 60 mm x 40 mm x 50 mm) |
| Modifications: | The EUT was not modified in order to meet the specifications. |
| Customer: | Comodule OÜ<br>Dunkri 9<br>Tallinn, Estonia 10123 |
| Test Dates: | June 29 and 30, 2022 |

Test Specification covered by accreditation:

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| | |
|---|---|
| Test Specifications: | Emissions requirements<br>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 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 | 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<br>Highest reading in relation to spec limit 32.47 (Avg) dBµV @ 0.222 MHz (*U = 2.72 dB) |
| 2 | Radiated RF Emissions, 9 kHz – 25000 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, 15.205, 15.209 and 15.247 (d); RSS-247 and RSS-GEN<br>Highest reading in relation to spec limit 40.14 dBµV/m (QP) @ 868.50 MHz (*U = 3.30 dB) |
| 3 | DTS Bandwidth | Complies with the relevant requirements of CFR Title 47, Part 15, Subpart C, section 15.247 (a)(2); RSS-247 |
| 4 | Peak Output Power | Complies with the relevant requirements of FCC Title 47, Part 15, Subpart C, section 15.247 (b)(3); RSS-247 |
| 5 | RF Band Edges | Complies with the relevant requirements of FCC Title 47, Part 15, Subpart C, section 15.247 (d); RSS-247 |
| 6 | Spectral Density | Complies with the relevant requirements of FCC Title 47, Part 15, Subpart C, section 15.247 (e); RSS-247 |

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# 1. PURPOSE

This document is a qualification test report based on the emissions tests performed on the Diamond Display, Model: 3.5 (EUT). The emissions measurements were performed according to the measurement procedure described in ANSI C 63.4 and ANSI C 63.10. 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 consideration 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

Comodule OÜ

| | |
|---|---|
| Kristjan Maruste | Co-Founder |
| Teet Praks | Member of Board |

Compatible Electronics Inc.

| | |
|---|---|
| James Ross | Sr. Test Engineer |
| Kyle Fujimoto | Sr. Test Engineer |

## 2.4 Date Test Sample was Received

The test sample was received as described in the product description just prior to the initial testing.

## 2.5 Disposition of the Test Sample

The test sample has not been returned to Comodule OÜ as of the date of this test report.

## 2.6 Abbreviations and Acronyms

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

| | | | |
|---|---|---|---|
| EMI | Electromagnetic Interference | LIN | Line |
| EUT | Equipment Under Test | GND | Ground |
| S/N | Serial Number | Tx | Transmit |
| ITE | Information Technology Equipment | Rx | Receive |
| DoC | Declaration of Conformity | Inc. | Incorporated |
| N/A | Not Applicable | RF | Radio Frequency |
| P/N | Part Number | BLE | Bluetooth Low Energy |
| IR | Infrared | M/N | Model Number |
| OU | Osauhinglt (limited liability company) | | |
| UART | Universal Asynchronous Receiver/Transmitter | | |
| GmbH | Gesellschaft mit beschränkter Haftung (company with limited liability) | | |

## 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 v05r02 | 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 License-Exempt Local Area Network (LE-LAN) Devices |

## 4. DESCRIPTION OF TEST CONFIGURATION

The EUT was connected to a 1-meter HIGO 6-pin extension cable. The 6-pin extension cable was connected to a red banana plug, a black banana plug, D-9 connector, and a switch with a 10k ohm resistor.

The red and black banana plugs are also connected to an AC/DC adapter. The D-9 connector is connected to a Kvaser Leaf Light v2. The Kvaser Leaf Light v2 is also connected to a laptop. The laptop is also connected to an AC/DC Adapter and ethernet router via its power and ethernet ports, respectively.

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 mounted horizontally. 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 on the laptop allows the EUT to continuously transmit at the low, middle, or high channels.

The firmware is stored on the company's servers.

The radiated and conducted data was taken in the continuously exercising mode of operation. All initial investigations were performed with the EMI Receiver in manual mode scanning the frequency range continuously. The cables were bundled and routed as shown in the photographs in Appendix D.

### 4.1.1 Cable Construction and Termination

**Cable 1** This is a 25-centimeter unshielded cable connecting the EUT to cable #2. The cable has a HIGO 6-pin connector at the Cable #2 end and is hard wired at the EUT end.

**Cable 2** This is a 1-meter unshielded cable connecting cable #1 to a black banana plug, red banana plug, switch with 10000 ohm resistor, and a D-9 connector. The cable has a HIGO 6-Pin connector at the Cable #1 end and is hard wired at the other end.

**Cable 3** This is a 5-centimeter unshielded cable connecting the switch with 10000 ohm resistor to the red banana plug. The cable is hard wired at each end.

**Cable 4** This is a 5-centimeter unshielded cable connecting the black banana plugs to the D-9 connector. The cable is hard wired at each end.

**Cable 5** This is a 25-centimeter unshielded cable connecting the Kvaser Leaf Light v2 to the D-9 connector. The cable is hard wired at the Kvaser Leaf Light end and hard wired into the D-9 connector.

**Cable 6** This is a 2-meter braid shielded cable connecting the Kvaser Leaf Light v2 to the laptop. The cable has a USB type 'A' connector at the laptop end and is hard wired into the Kvaser Leaf Light v2. The cable is bundled to a length of 1-meter. The shield of the cable is grounded to the chassis via the connector.

**Cable 7** This is a 2-meter unshielded cable connecting the red and black banana plus to the AC/DC Adapter. The cable is hared wired at each end.

**Cable 8** This is a 2-meter unshielded cable connecting the AC/DC Adapter to the laptop The cable has a rectangular power connector at the laptop end and is hared wired into the AC/DC Adapter.

**Cable 9**

This was a 15.24-meter unshielded Ethernet cable connecting the laptop to the Ethernet router. The cable contained an RJ-45 connector at each end.

# 5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

## 5.1 EUT and Accessory List

| EQUIPMENT | MANUFACTURER | MODEL NUMBER | SERIAL NUMBER | FCC ID / ISED ID |
|---|---|---|---|---|
| DIAMOND DISPLAY (EUT) | COMODULE OÜ | 3.5 | N/A | FCC ID: 2AQHS-DMD3X<br>ISED ID: 25027-DMD3X |
| KVASER LEAF LIGHT v2 | KVASER | 73-30130-00685-0 | 079758 | N/A |
| SWITCH WITH 10 kΩ RESISTOR | N/A | N/A | N/A | N/A |
| LAPTOP COMPUTER | LENOVO | T450s | N/A | N/A |
| AC/DC ADAPTER (FOR LAPTOP) | LENOVO | ADLX4NCC2A | N/A | N/A |
| AC/DC ADAPTER (FOR EUT) | NETGEAR | DV-1280-3 | N/A | N/A |
| RED BANANA PLUG | N/A | N/A | N/A | N/A |
| BLACK BANANA PLUG | N/A | N/A | N/A | N/A |
| ETHERNET ROUTER | NETGEAR | EN 108 | ENT8114202 | N/A |

## 5.2 Emissions Test Equipment

| EQUIPMENT TYPE | MANU-FACTURER | 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 | MY51210510 | September 17, 2021 | September 17, 2022 |
| 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, 2024 |
| 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 |
| Horn Antenna | Com-Power | AH-826 | 71957 | N/A | N/A |
| Preamplifier | Com-Power | PA-840 | 711013 | April 8, 2022 | April 8, 2024 |
| Variable Autotransformer | Staco Energy Products | 3PN2210 | 003 | N/A | N/A |
| LISN (EUT) | Com-Power | LI-215A | 191951 | August 4, 2021 | August 4, 2022 |
| LISN (ACCY) | Com-Power | LI-215A | 191952 | August 4, 2021 | August 4, 2022 |
| Attenuator 10 dB | SureCall | SC-ATT-10 | 17100174 | December 7, 2021 | December 7, 2022 |
| 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 and 7.1 of this report for emissions test location.

## 6.2 EUT Mounting, Bonding and Grounding

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

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

The EUT was not grounded.

## 6.3 Measurement Uncertainty

"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.

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

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

| Measurement | | $U_{cispr}$ | $U_{lab}$ = 2uc(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)<br>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 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. CHARACTERISTICS OF THE TRANSMITTER

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

## 7.1 Channel Number and Frequencies

The EUT uses a total of 40 channels which are spaced 2 MHz apart.

The lowest channel is 2402 MHz
The highest channel is 2480 MHz

## 7.2 Antenna

The EUT has a 0 dBi gain PCB trace antenna.

# 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 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; 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. Preamplifiers were used to increase the sensitivity of the instrument. The EMI Receiver was initially used with the Analyzer mode feature activated. In this mode, the EMI receiver can then record the actual frequency to be measured. This final reading is then taken accurately in the EMI Receiver mode, which takes into account the cable loss, amplifier gain and antenna factors, so that a true reading is compared to the true limit. The effective measurement bandwidth used for the radiated emissions test was according to the frequency measured.

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

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

The EMI test chamber of Compatible Electronics, Inc. was used for radiated emissions testing. This test site is in full compliance with ANSI C63.4. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna in order to ensure accurate results.

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

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 CONDUCTED EMISSION RESULTS
DIAMOND DISPLAY
Model: 3.5

| Frequency (MHz) | Average Emission Level* (dBµV/m) | Average Specification Limit (dBµV/m) | Delta (Emission – Spec limit) (dB) |
|---|---|---|---|
| 0.222 (BL) | 32.47 | 52.41 | -19.94 |
| 0.158 (BL) | 34.88 | 54.95 | -20.07 |
| 0.178 (BL) | 34.54 | 54.70 | -20.17 |
| 0.262 (BL) | 25.16 | 50.84 | -25.68 |
| 0.282 (BL) | 24.82 | 50.54 | -25.72 |
| 0.274 (BL) | 24.90 | 50.64 | -25.74 |

Table 2 RADIATED EMISSION RESULTS
DIAMOND DISPLAY
Model: 3.5

| Frequency (MHz) | EMI Reading (dBµV/m) | Specification Limit (dBµV/m) | Delta (Cor. Reading – Spec. Limit) (dB) |
|---|---|---|---|
| 868.50 (H) (Spurious) (Y-Axis) | 40.14 (QP) | 46.00 | -5.86 |
| 864.00 (H) (Spurious) (Y-Axis) | 38.48 (QP) | 46.00 | -7.52 |
| 12010.00 (V) (Low Channel) (Y-Axis) | 45.07 (AV) | 53.97 | -8.90 |
| 4880.00 (H) (Mid Channel) (Y-Axis) | 43.19 (AV) | 53.97 | -10.78 |
| 12010.00 (H) (Low Channel) (X-Axis) | 43.00 (AV) | 53.97 | -10.97 |
| 12200.00 (V) (Mid Channel) (Y-Axis) | 42.72 (AV) | 53.97 | -11.25 |

Notes: * The complete emissions data is given in Appendix E of this report.
(BL) Black Lead
(WL) White Lead
(V) Vertical
(H) Horizontal
(QP) Quasi-Peak
(AV) Average

### 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.

## 8.2 DTS Bandwidth

The DTS Bandwidth was measured using the EMI Receiver. 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 Maximum Peak Conducted Output Power was measured using the procedure described in section 11.9.1.1 of ANSI C63.10. The Maximum Peak Conducted Output Power was then taken. The following steps were performed for measuring the Maximum Peak Conducted Output Power.

1. Set the RBW ≥ DTS bandwidth
2. Set 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 peak marker function to determine the peak amplitude level

**Test Results:**

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (b) (3); and RSS-247. The maximum peak output power is less than 1 Watt. Please see the data sheets located in Appendix E.

## 8.4 Emissions in Non-restricted Frequency 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 the 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 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 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.

**Test Results:**

The EUT complies with the relevant requirements of FCC Title 47, Part 15, Subpart C section 15.247 (d); and RSS-247. The RF power at the restricted bands closest to the band edges at 2390 MHz and 2483.5 MHz also meet the limits of section 15.209. Please see the data sheets located in Appendix E.

## 8.6 Spectral Density Test

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

1. Set analyzer center frequency to DTS channel center frequency
2. Set the span to 1.5 times the 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 the trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

**Test Results:**

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

## 8.7 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.

## 8.8 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.

## 9. CONCLUSIONS

The Diamond Display, Model: 3.5 (EUT), 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.

# 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 the Management Systems Requirements of ISO/IEC 17025, General Requirements for the competence of testing and calibration laboratories:

"A laboratory's fulfilment of the requirements of ISO/IEC 17025 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 are written in language relevant to laboratory operations and operate generally in accordance with the principles of ISO 9001"

ISED Test Site Registration Number: 2154A

# APPENDIX B

# *MODIFICATIONS TO THE EUT*

# MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC Subpart B and FCC 15.247; RSS-GEN and RSS-247 specifications.

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

No modifications were made to the EUT during the testing.

COMPATIBLE ELECTRONICS

# APPENDIX C

## *MODELS COVERED UNDER THIS REPORT*

# MODELS COVERED UNDER THIS REPORT

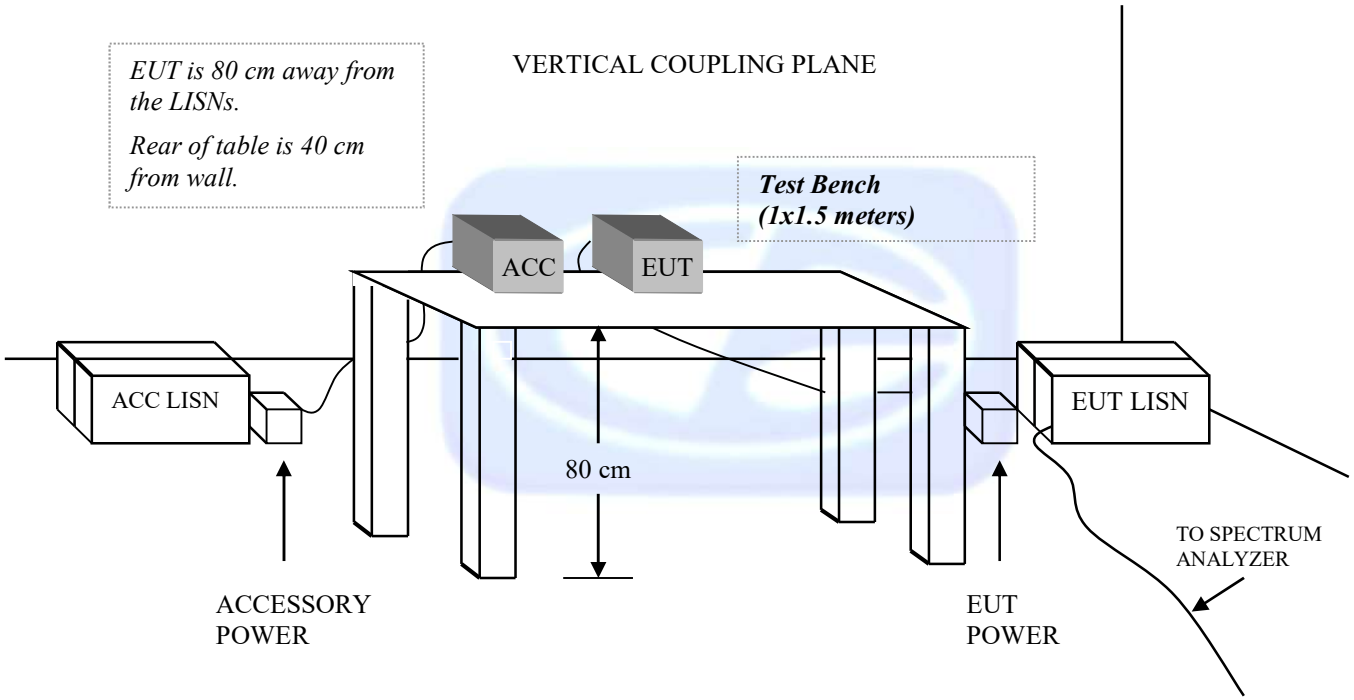
| | |
|---|---|
| USED FOR THE PRIMARY TEST | Diamond Display<br>Model: 3.5<br>S/N: N/A |

There are no additional models covered under this report.

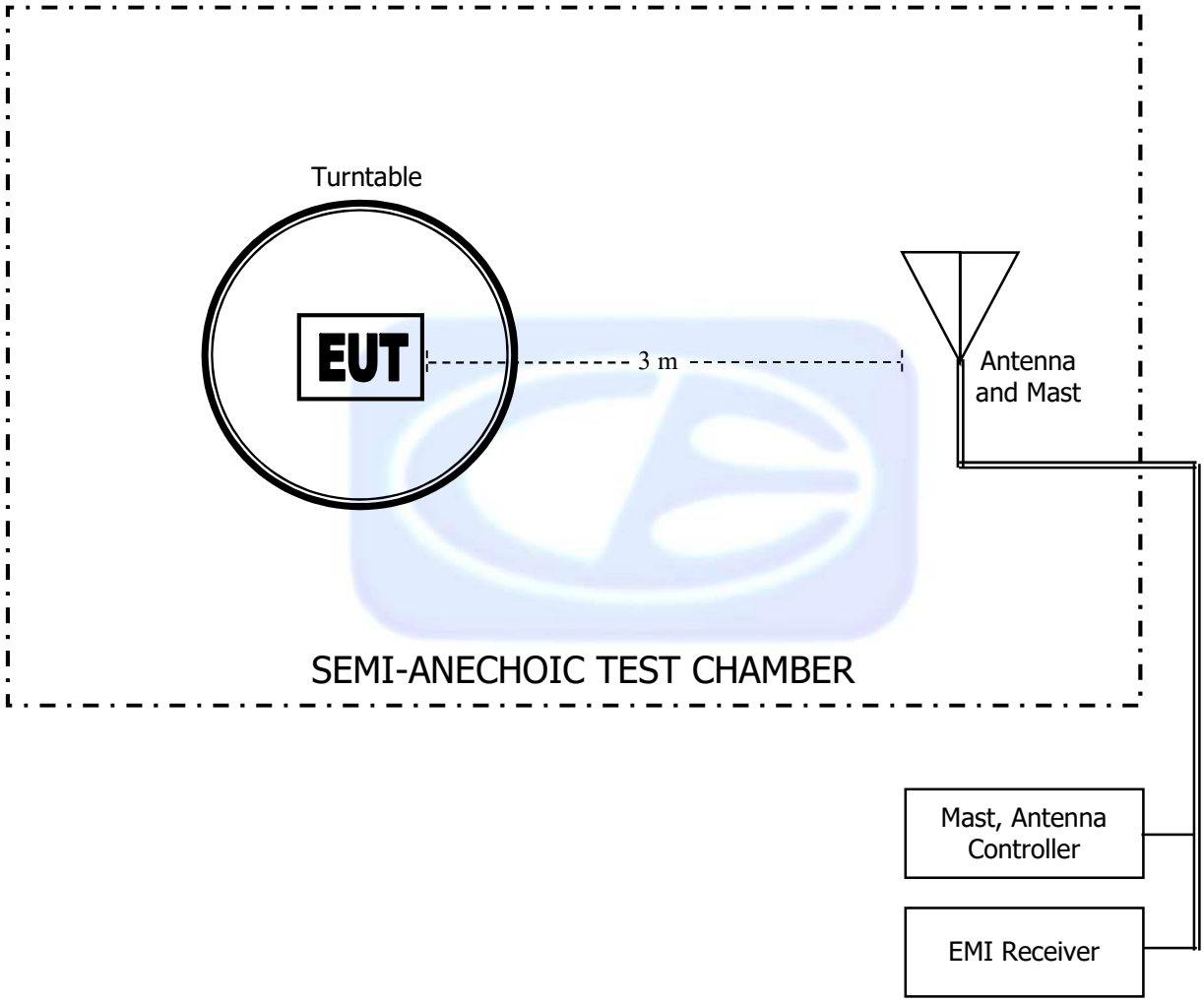
# APPENDIX D

# *DIAGRAMS AND CHARTS*

# *FIGURE 1: CONDUCTED EMISSIONS TEST SETUP*



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



COMPATIBLE ELECTRONICS

# 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 |

COMPATIBLE ELECTRONICS

# 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 |

COMPATIBLE ELECTRONICS

# 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 | | |

COMPATIBLE ELECTRONICS

# 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 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 | | |

COMPATIBLE ELECTRONICS

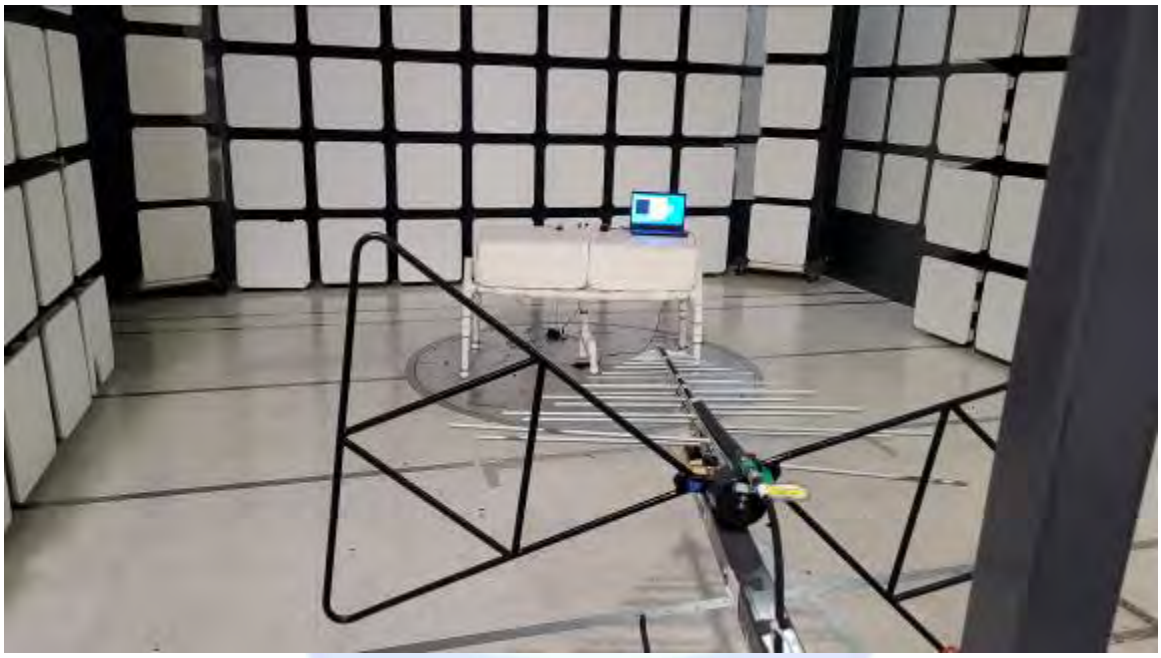
# COM-POWER PA-840

# MICROWAVE PREAMPLIFIER

## S/N: 711013

## CALIBRATION DATE: APRIL 8, 2022

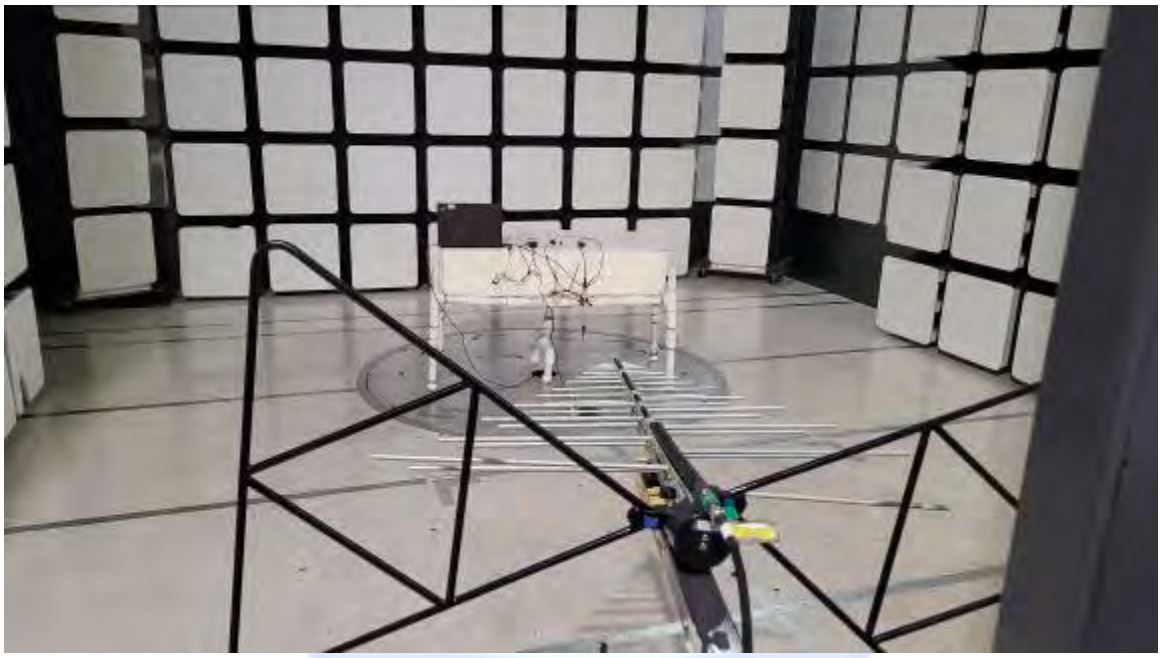
| FREQUENCY (GHz) | FACTOR (dB) |
|---|---|
| 18.0 | 24.85 |
| 19.0 | 24.25 |
| 20.0 | 22.69 |
| 21.0 | 22.17 |
| 22.0 | 22.78 |
| 23.0 | 23.23 |
| 24.0 | 23.72 |
| 25.0 | 24.13 |
| 26.0 | 24.28 |
| 26.5 | 25.06 |



**FRONT VIEW**

COMODULE OÜ
DIAMOND DISPLAY
MODEL: 3.5
FCC SUBPART B AND C; RSS-GEN and RSS-247 – RADIATED EMISSIONS – BELOW 1 GHz

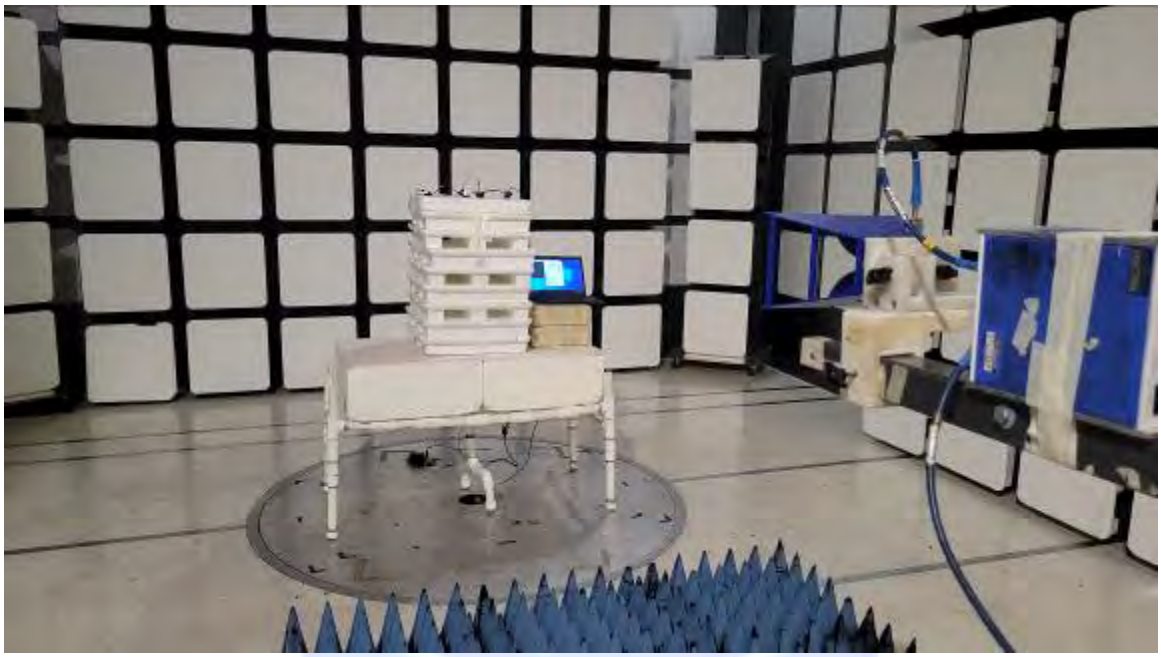
## PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



**REAR VIEW**

COMODULE OÜ
DIAMOND DISPLAY
MODEL: 3.5
FCC SUBPART B AND C; RSS-GEN and RSS-247 – RADIATED EMISSIONS – BELOW 1 GHz

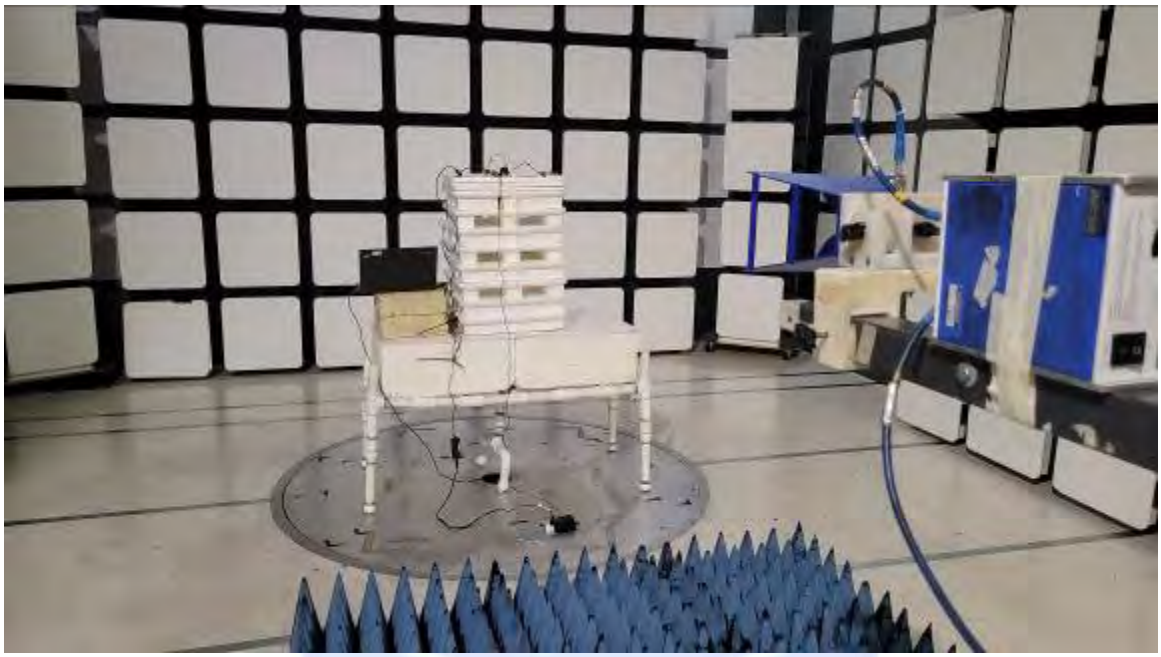
## PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



**FRONT VIEW**

COMODULE OÜ
DIAMOND DISPLAY
MODEL: 3.5
FCC SUBPART B AND C; RSS-GEN and RSS-247 – RADIATED EMISSIONS – ABOVE 1 GHz

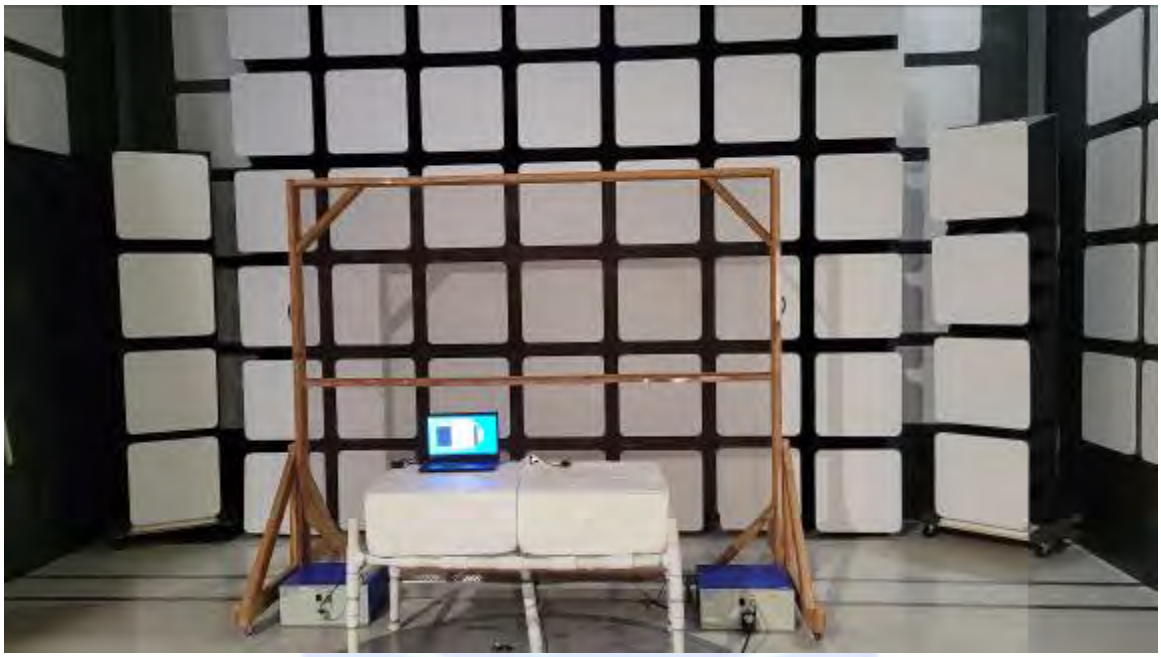
## PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



**REAR VIEW**

COMODULE OÜ
DIAMOND DISPLAY
MODEL: 3.5
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**

COMODULE OÜ
DIAMOND DISPLAY
MODEL: 3.5
FCC SUBPART B AND C; and RSS-GEN – CONDUCTED EMISSIONS

## PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

**REAR VIEW**

COMODULE OÜ
DIAMOND DISPLAY
MODEL: 3.5
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
Comodule OU
Diamond Display
Model: 3.5

Date: 06/29/2022
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 | 45.15 | V | 73.97 | -28.82 | Peak | 286.75 | 111.40 | |
| 4804.00 | 37.33 | V | 53.97 | -16.64 | Avg | 286.75 | 111.40 | |
| 7206.00 | | | | | | | | Not in Restricted Band |
| 7206.00 | | | | | | | | Done Via Conducted |
| 9608.00 | | | | | | | | Not in Restricted Band |
| 9608.00 | | | | | | | | Done Via Conducted |
| 12010.00 | 48.77 | V | 73.97 | -25.20 | Peak | 130.25 | 159.10 | |
| 12010.00 | 37.49 | V | 53.97 | -16.48 | Avg | 130.25 | 159.10 | |
| 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**
Comodule OU
Diamond Display
Model: 3.5

Date: 06/29/2022
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 | 47.73 | V | 73.97 | -26.24 | Peak | 123.25 | 112.59 | |
| 4804.00 | 35.31 | V | 53.97 | -18.66 | Avg | 123.25 | 112.59 | |
| 7206.00 | | | | | | | | Not in Restricted Band |
| 7206.00 | | | | | | | | Done Via Conducted |
| 9608.00 | | | | | | | | Not in Restricted Band |
| 9608.00 | | | | | | | | Done Via Conducted |
| 12010.00 | 53.75 | V | 73.97 | -20.22 | Peak | 256.25 | 127.34 | |
| 12010.00 | 45.07 | V | 53.97 | -8.90 | Avg | 256.25 | 127.34 | |
| 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
Comodule OU
Diamond Display
Model: 3.5

Date: 06/29/2022
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 | 48.18 | V | 73.97 | -25.79 | Peak | 321.25 | 111.40 | |
| 4804.00 | 39.20 | V | 53.97 | -14.77 | Avg | 321.25 | 111.40 | |
| 7206.00 | | | | | | | | Not in Restricted Band |
| 7206.00 | | | | | | | | Done Via Conducted |
| 9608.00 | | | | | | | | Not in Restricted Band |
| 9608.00 | | | | | | | | Done Via Conducted |
| 12010.00 | 50.69 | V | 73.97 | -23.28 | Peak | 156.00 | 222.92 | |
| 12010.00 | 40.53 | V | 53.97 | -13.44 | Avg | 156.00 | 222.92 | |
| 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
Comodule OU
Diamond Display
Model: 3.5

Date: 06/29/2022
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 | 46.18 | H | 73.97 | -27.79 | Peak | 137.50 | 110.92 | |
| 4804.00 | 38.46 | H | 53.97 | -15.51 | Avg | 137.50 | 110.92 | |
| 7206.00 | | | | | | | | Not in Restricted Band |
| 7206.00 | | | | | | | | Done Via Conducted |
| 9608.00 | | | | | | | | Not in Restricted Band |
| 9608.00 | | | | | | | | Done Via Conducted |
| 12010.00 | 53.21 | H | 73.97 | -20.76 | Peak | 261.50 | 191.04 | |
| 12010.00 | 43.00 | H | 53.97 | -10.97 | Avg | 261.50 | 191.04 | |
| 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
Comodule OU
Diamond Display
Model: 3.5

Date: 06/29/2022
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 | 49.68 | H | 73.97 | -24.29 | Peak | 170.75 | 159.22 | |
| 4804.00 | 39.70 | H | 53.97 | -14.27 | Avg | 170.75 | 159.22 | |
| 7206.00 | | | | | | | | Not in Restricted Band |
| 7206.00 | | | | | | | | Done Via Conducted |
| 9608.00 | | | | | | | | Not in Restricted Band |
| 9608.00 | | | | | | | | Done Via Conducted |
| 12010.00 | 52.17 | H | 73.97 | -21.80 | Peak | 26.25 | 111.58 | |
| 12010.00 | 42.38 | H | 53.97 | -11.59 | Avg | 26.25 | 111.58 | |
| 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
Comodule OU
Diamond Display
Model: 3.5

Date: 06/29/2022
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 | 47.16 | H | 73.97 | -26.81 | Peak | 118.25 | 143.34 | |
| 4804.00 | 36.91 | H | 53.97 | -17.06 | Avg | 118.25 | 143.34 | |
| 7206.00 | | | | | | | | Not in Restricted Band |
| 7206.00 | | | | | | | | Done Via Conducted |
| 9608.00 | | | | | | | | Not in Restricted Band |
| 9608.00 | | | | | | | | Done Via Conducted |
| 12010.00 | 52.46 | H | 73.97 | -21.51 | Peak | 71.75 | 127.28 | |
| 12010.00 | 42.60 | H | 53.97 | -11.37 | Avg | 71.75 | 127.28 | |
| 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
Comodule OU
Diamond Display
Model: 3.5

Date: 06/29/2022
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 | 45.81 | V | 73.97 | -28.16 | Peak | 230.50 | 143.34 | |
| 4880.00 | 38.03 | V | 53.97 | -15.94 | Avg | 230.50 | 143.34 | |
| 7320.00 | 46.78 | V | 73.97 | -27.19 | Peak | 218.00 | 111.40 | |
| 7320.00 | 35.40 | V | 53.97 | -18.57 | Avg | 218.00 | 111.40 | |
| 9760.00 | | | | | | | | Not in Restricted Band |
| 9760.00 | | | | | | | | Done Via Conducted |
| 12200.00 | 51.63 | V | 73.97 | -22.34 | Peak | 94.50 | 190.98 | |
| 12200.00 | 41.56 | V | 53.97 | -12.41 | Avg | 94.50 | 190.98 | |
| 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
Comodule OÜ
Diamond Display
Model: 3.5

Date: 06/29/2022
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 | 44.34 | V | 73.97 | -29.63 | Peak | 249.75 | 171.16 | |
| 4880.00 | 35.60 | V | 53.97 | -18.37 | Avg | 249.75 | 171.16 | |
| 7320.00 | 45.63 | V | 73.97 | -28.34 | Peak | 228.25 | 110.44 | |
| 7320.00 | 33.47 | V | 53.97 | -20.50 | Avg | 228.25 | 110.44 | |
| 9760.00 | | | | | | | | Not in Restricted Band |
| 9760.00 | | | | | | | | Done Via Conducted |
| 12200.00 | 53.14 | V | 73.97 | -20.83 | Peak | 101.25 | 191.04 | |
| 12200.00 | 42.72 | V | 53.97 | -11.25 | Avg | 101.25 | 191.04 | |
| 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
Comodule OÜ
Diamond Display
Model: 3.5

Date: 06/29/2022
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 | 51.79 | V | 73.97 | -22.18 | Peak | 100.75 | 142.98 | |
| 4880.00 | 41.40 | V | 53.97 | -12.57 | Avg | 100.75 | 142.98 | |
| 7320.00 | 48.01 | V | 73.97 | -25.96 | Peak | 116.75 | 110.98 | |
| 7320.00 | 38.47 | V | 53.97 | -15.50 | Avg | 116.75 | 110.98 | |
| 9760.00 | | | | | | | | Not in Restricted Band |
| 9760.00 | | | | | | | | Done Via Conducted |
| 12200.00 | 51.30 | V | 73.97 | -22.67 | Peak | 146.25 | 143.10 | |
| 12200.00 | 39.60 | V | 53.97 | -14.37 | Avg | 146.25 | 143.10 | |
| 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
Comodule OU
Diamond Display
Model: 3.5

Date: 06/29/2022
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 | 46.47 | H | 73.97 | -27.50 | Peak | 37.75 | 191.10 | |
| 4880.00 | 38.22 | H | 53.97 | -15.75 | Avg | 37.75 | 191.10 | |
| 7320.00 | 44.98 | H | 73.97 | -28.99 | Peak | 104.25 | 111.46 | |
| 7320.00 | 33.46 | H | 53.97 | -20.51 | Avg | 104.25 | 111.46 | |
| 9760.00 | | | | | | | | Not in Restricted Band |
| 9760.00 | | | | | | | | Done Via Conducted |
| 12200.00 | 51.93 | H | 73.97 | -22.04 | Peak | 67.00 | 143.40 | |
| 12200.00 | 41.58 | H | 53.97 | -12.39 | Avg | 67.00 | 143.40 | |
| 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
Comodule OU
Diamond Display
Model: 3.5

Date: 06/29/2022
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 | 52.31 | H | 73.97 | -21.66 | Peak | 162.00 | 190.92 | |
| 4880.00 | 43.19 | H | 53.97 | -10.78 | Avg | 162.00 | 190.92 | |
| 7320.00 | 47.72 | H | 73.97 | -26.25 | Peak | 104.50 | 111.58 | |
| 7320.00 | 38.13 | H | 53.97 | -15.84 | Avg | 104.50 | 111.58 | |
| 9760.00 | | | | | | | | Not in Restricted Band |
| 9760.00 | | | | | | | | Done Via Conducted |
| 12200.00 | 51.41 | H | 73.97 | -22.56 | Peak | 167.00 | 207.22 | |
| 12200.00 | 41.14 | H | 53.97 | -12.83 | Avg | 167.00 | 207.22 | |
| 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 |

FCC 15.247
Comodule OÜ
Diamond Display
Model: 3.5

Date: 08/29/2022
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 | 46.37 | H | 73.97 | -27.60 | Peak | 114.50 | 111.28 | |
| 4880.00 | 35.60 | H | 53.97 | -18.37 | Avg | 114.50 | 111.28 | |
| 7320.00 | 45.33 | H | 73.97 | -28.64 | Peak | 90.75 | 143.28 | |
| 7320.00 | 33.96 | H | 53.97 | -20.01 | Avg | 90.75 | 143.28 | |
| 9760.00 | | | | | | | | Not in Restricted Band |
| 9760.00 | | | | | | | | Done Via Conducted |
| 12200.00 | 52.29 | H | 73.97 | -21.68 | Peak | 65.50 | 159.28 | |
| 12200.00 | 42.10 | H | 53.97 | -11.87 | Avg | 65.50 | 159.28 | |
| 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
Comodule OU
Diamond Display
Model: 3.5

Date: 06/29/2022
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 | 44.81 | V | 73.97 | -29.16 | Peak | 149.25 | 111.40 | |
| 4960.00 | 37.27 | V | 53.97 | -16.70 | Avg | 149.25 | 111.40 | |
| 7440.00 | 43.54 | V | 73.97 | -30.43 | Peak | 202.50 | 159.22 | |
| 7440.00 | 32.52 | V | 53.97 | -21.45 | Avg | 202.50 | 159.22 | |
| 9920.00 | | | | | | | | Not in Restricted Band |
| 9920.00 | | | | | | | | Done Via Conducted |
| 12400.00 | 51.50 | V | 73.97 | -22.47 | Peak | 246.75 | 190.86 | |
| 12400.00 | 41.32 | V | 53.97 | -12.65 | Avg | 246.75 | 190.86 | |
| 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
Comodule OU
Diamond Display
Model: 3.5

Date: 06/29/2022
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 | 42.13 | V | 73.97 | -31.84 | Peak | 135.50 | 143.28 | |
| 4960.00 | 32.98 | V | 53.97 | -20.99 | Avg | 135.50 | 143.28 | |
| 7440.00 | 45.60 | V | 73.97 | -28.37 | Peak | 50.25 | 143.40 | |
| 7440.00 | 34.46 | V | 53.97 | -19.51 | Avg | 50.25 | 143.40 | |
| 9920.00 | | | | | | | | Not in Restricted Band |
| 9920.00 | | | | | | | | Done Via Conducted |
| 12400.00 | 50.52 | V | 73.97 | -23.45 | Peak | 287.00 | 207.10 | |
| 12400.00 | 37.85 | V | 53.97 | -16.12 | Avg | 287.00 | 207.10 | |
| 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
Comodule OU
Diamond Display
Model: 3.5

Date: 06/29/2022
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 | 47.10 | V | 73.97 | -26.87 | Peak | 216.00 | 127.22 | |
| 4960.00 | 37.48 | V | 53.97 | -16.49 | Avg | 216.00 | 127.22 | |
| 7440.00 | 45.55 | V | 73.97 | -28.42 | Peak | 147.50 | 175.22 | |
| 7440.00 | 34.01 | V | 53.97 | -19.96 | Avg | 147.50 | 175.22 | |
| 9920.00 | | | | | | | | Not in Restricted Band |
| 9920.00 | | | | | | | | Done Via Conducted |
| 12400.00 | 49.77 | V | 73.97 | -24.20 | Peak | 111.40 | 70.25 | |
| 12400.00 | 37.67 | V | 53.97 | -16.30 | Avg | 111.40 | 70.25 | |
| 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 |

COMPATIBLE ELECTRONICS

FCC 15.247
Comodule OÜ
Diamond Display
Model: 3.5

Date: 06/29/2022
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 | 45.80 | H | 73.97 | -28.17 | Peak | 158.00 | 175.16 | |
| 4960.00 | 37.48 | H | 53.97 | -16.49 | Avg | 158.00 | 175.16 | |
| 7440.00 | 46.38 | H | 73.97 | -27.59 | Peak | 328.50 | 222.68 | |
| 7440.00 | 36.31 | H | 53.97 | -17.66 | Avg | 328.50 | 222.68 | |
| 9920.00 | | | | | | | | Not in Restricted Band |
| 9920.00 | | | | | | | | Done Via Conducted |
| 12400.00 | 54.73 | H | 73.97 | -19.24 | Peak | 89.50 | 111.40 | |
| 12400.00 | 41.26 | H | 53.97 | -12.71 | Avg | 89.50 | 111.40 | |
| 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 |

FCC 15.247
Comodule OÜ
Diamond Display
Model: 3.5

Date: 06/29/2022
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 | 47.19 | H | 73.97 | -26.78 | Peak | 153.00 | 127.46 | |
| 4960.00 | 39.73 | H | 53.97 | -14.24 | Avg | 153.00 | 127.46 | |
| 7440.00 | 47.05 | H | 73.97 | -26.92 | Peak | 236.00 | 207.04 | |
| 7440.00 | 36.66 | H | 53.97 | -17.31 | Avg | 236.00 | 207.04 | |
| 9920.00 | | | | | | | | Not in Restricted Band |
| 9920.00 | | | | | | | | Done Via Conducted |
| 12400.00 | 51.56 | H | 73.97 | -22.41 | Peak | 157.75 | 127.16 | |
| 12400.00 | 40.42 | H | 53.97 | -13.55 | Avg | 157.75 | 127.16 | |
| 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
Comodule OÜ
Diamond Display
Model: 3.5

Date: 06/29/2022
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 | 45.02 | H | 73.97 | -28.95 | Peak | 234.25 | 175.10 | |
| 4960.00 | 34.72 | H | 53.97 | -19.25 | Avg | 234.25 | 175.10 | |
| 7440.00 | 43.57 | H | 73.97 | -30.40 | Peak | 85.75 | 206.92 | |
| 7440.00 | 31.35 | H | 53.97 | -22.62 | Avg | 85.75 | 206.92 | |
| 9920.00 | | | | | | | | Not in Restricted Band |
| 9920.00 | | | | | | | | Done Via Conducted |
| 12400.00 | 51.31 | H | 73.97 | -22.66 | Peak | 232.25 | 127.28 | |
| 12400.00 | 40.32 | H | 53.97 | -13.65 | Avg | 232.25 | 127.28 | |
| 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 |

**FCC 15.247 and FCC Class B**
Comodule OD
Diamond Display
Model: 3.5

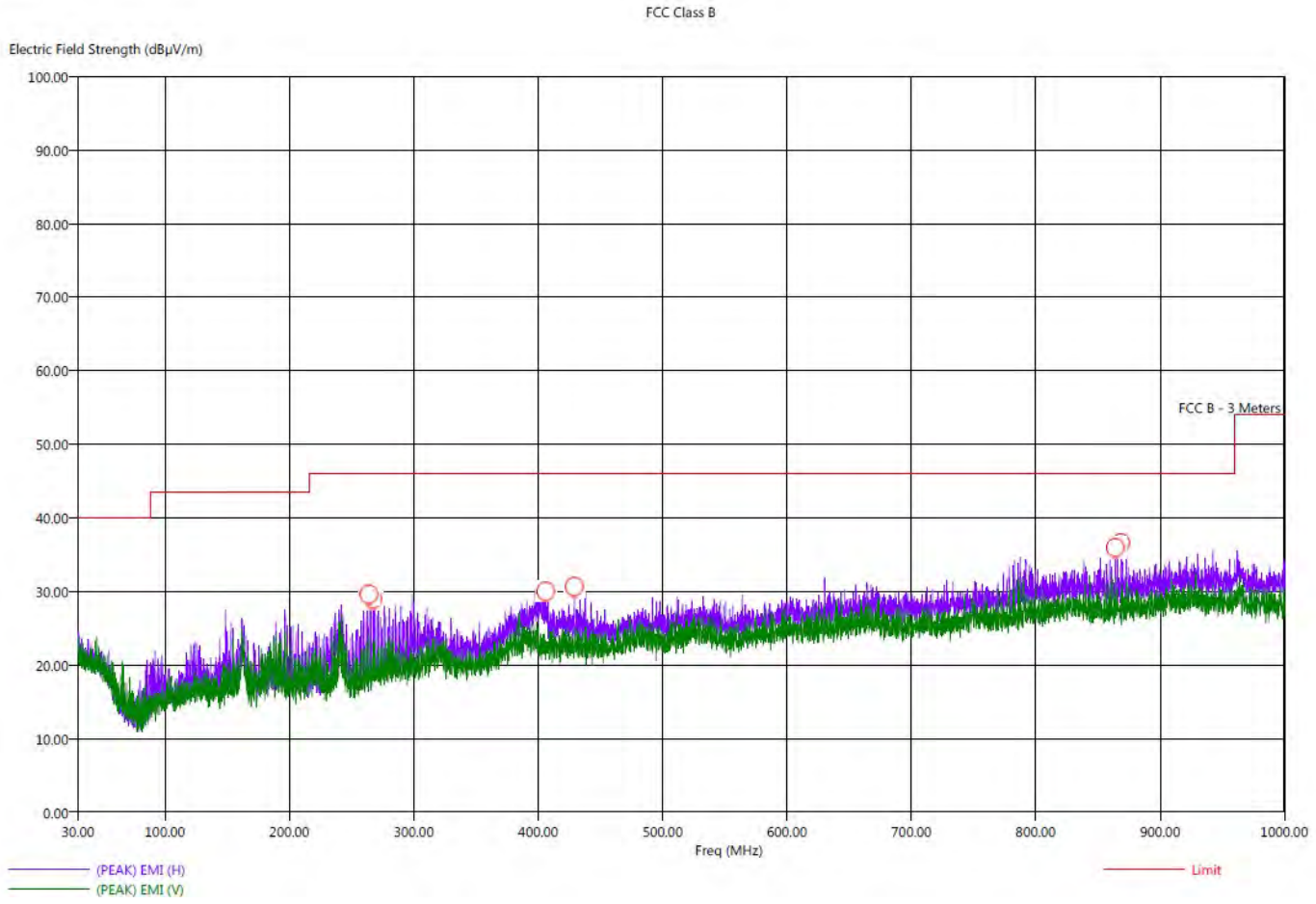
Date: 06/29/2022
Lab: D
Tested By: Kyle Fujimoto

**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 25 GHz**

| Freq. (MHz) | Level (dBuV/m) | Pol (v/h) | Limit | Margin | Peak / QP / Avg | Table Angle (deg) | Ant. Height (cm) | Comments |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | No Emissions Detected |
| | | | | | | | | from 9 kHz to 30 MHz |
| | | | | | | | | for the digital portion |
| | | | | | | | | of the EUT |
| | | | | | | | | |
| | | | | | | | | No Emissions Detected |
| | | | | | | | | from 9 kHz to 30 MHz |
| | | | | | | | | for the Non-Harmonic Emissions |
| | | | | | | | | |
| | | | | | | | | No Emissions Detected |
| | | | | | | | | from 1 GHz to 25 GHz |
| | | | | | | | | for the digital portion |
| | | | | | | | | of the EUT |
| | | | | | | | | |
| | | | | | | | | No Emissions Detected |
| | | | | | | | | from 1 GHz to 25 GHz |
| | | | | | | | | for the Non-Harmonic Emissions |
| | | | | | | | | of the Transmitter for the EUT |
| | | | | | | | | |
| | | | | | | | | Investigated in the X-Axis, |
| | | | | | | | | Y-Axis, and Z-Axis |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Title: Pre-Scan - FCC Class B
File: Keysight - Pre-Scan - Y-Axis - FCC Class B - 30 MHz to 1000 MHz - 06-28-2022.set
Operator: Kyle Fujimoto
EUT Type: Diamond Display
EUT Condition: EUT is continuously sending speed data to app on phone via BLE on a continuous basis
Company: Comodule OÜ
Model: 3.5
S/N: N/A
Y-Axis

6/29/2022 7:06:46 AM
Sequence: Preliminary Scan



Title: Radiated Final - FCC Class B
File: Keysight - Final Scan - Y-Axis - FCC Class B - 30 MHz to 1000 MHz - 06-28-2022.set
Operator: Kyle Fujimoto
EUT Type: Diamond Display
EUT Condition: EUT is continuously sending speed data to app on phone via BLE on a continuous basis
Company: Comodule OÜ
Model: 3.5
S/N: N/A
Y-Axis Worst Case

6/29/2022 7:32:58 AM
Sequence: Final Measurements

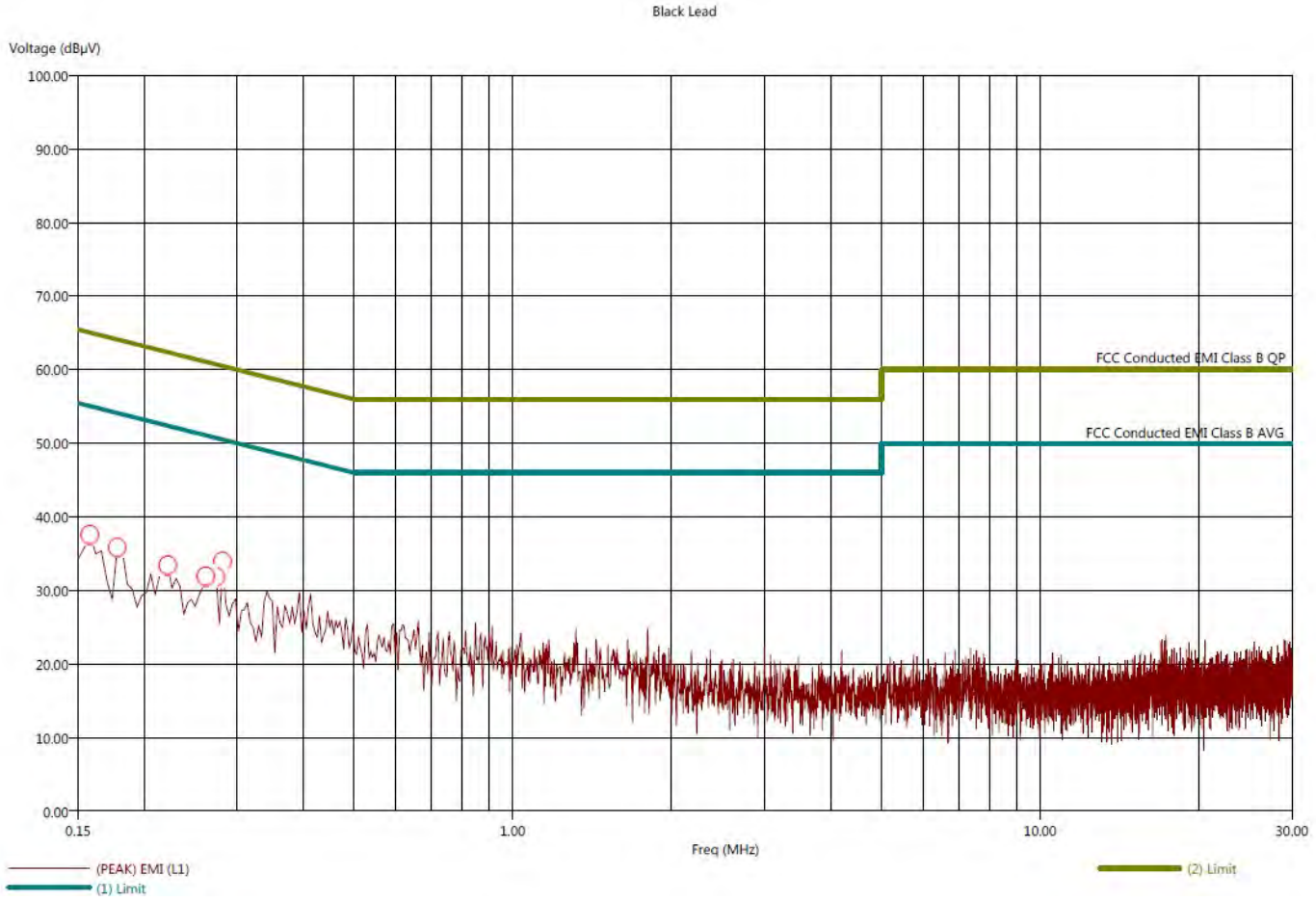
FCC Class B

| 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 Agl (deg) | Twr Ht (cm) |
|---|---|---|---|---|---|---|---|---|---|---|
| 264.00 | H | 33.91 | 32.23 | -12.09 | -13.77 | 46.00 | 18.30 | 1.42 | 214.25 | 127.16 |
| 267.00 | H | 32.82 | 30.02 | -13.18 | -15.98 | 46.00 | 18.60 | 1.43 | 189.25 | 111.46 |
| 406.10 | H | 27.22 | 22.27 | -18.78 | -23.73 | 46.00 | 21.80 | 1.73 | 81.00 | 222.86 |
| 429.00 | H | 32.09 | 29.63 | -13.91 | -16.37 | 46.00 | 22.60 | 1.76 | 285.25 | 111.52 |
| 864.00 | H | 41.00 | 38.48 | -5.00 | -7.52 | 46.00 | 26.90 | 2.58 | 343.25 | 111.46 |
| 868.50 | H | 42.19 | 40.14 | -3.81 | -5.86 | 46.00 | 27.10 | 2.59 | 342.50 | 111.40 |

# *CONDUCTED EMISSIONS DATA SHEETS*

Title: FCC Class B - Black Lead
File: Keysight - Pre-Scan - Black Lead - FCC Class B - 06-29-2022.set
Operator: Kyle Fujimoto
EUT Type: Diamond Display
EUT Condition: EUT is continuously sending speed data to app on phone via BLE on a continuous basis
Company: Comodule OU
Model: 3.5
S/N: N/A

6/29/2022 2:32:47 PM
Sequence: Preliminary Scan



Title: FCC Class B - Black Lead
File: Keysight - Final Scan - Black Lead - FCC Class B - 06-29-2022.set
Operator: Kyle Fujimoto
EUT Type: Diamond Display
EUT Condition: EUT is continuously sending speed data to app on phone via BLE on a continuous basis
Company: Comodule OÜ
Model: 3.5
S/N: N/A

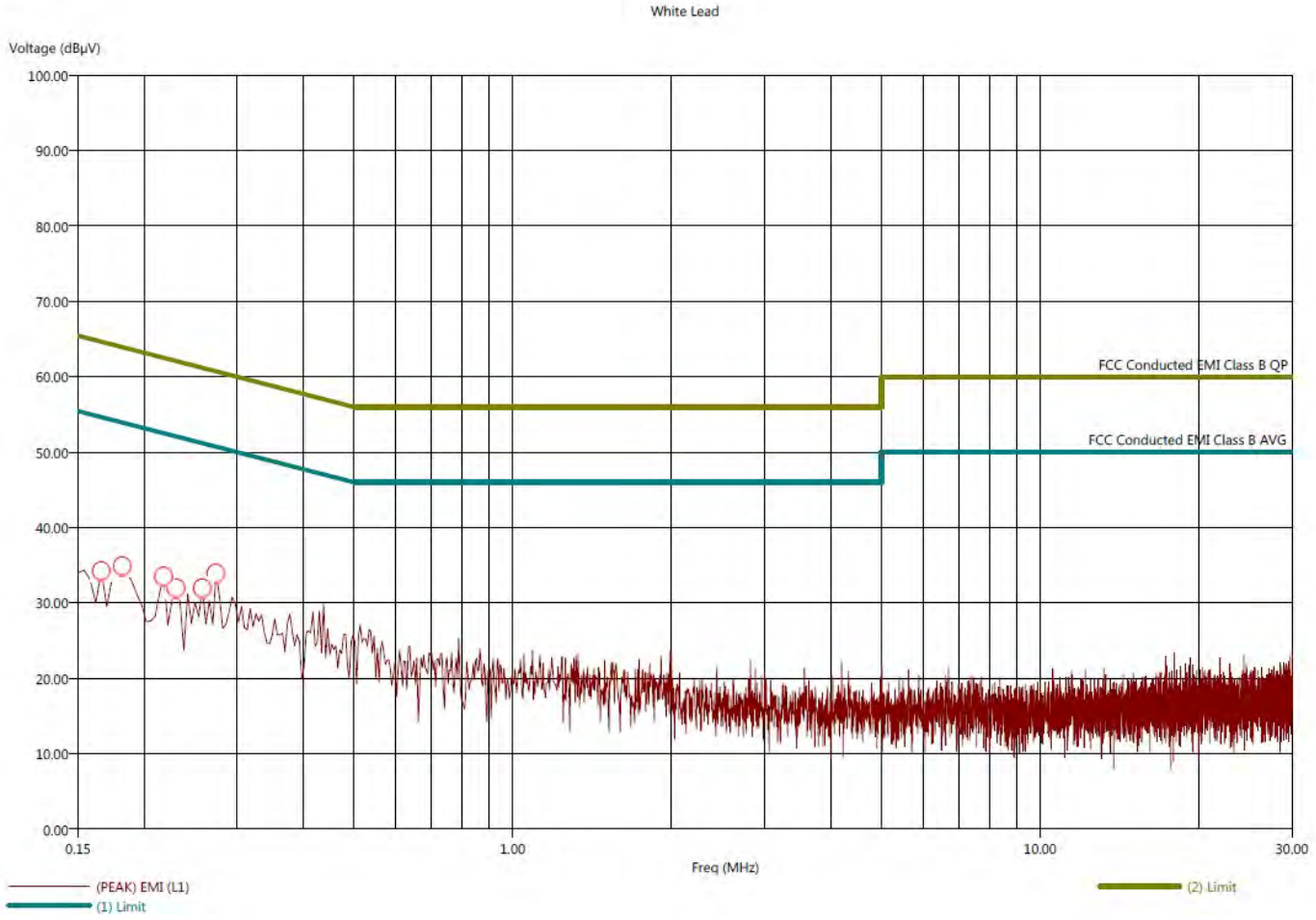
6/29/2022 2:33:45 PM
Sequence: Final Measurements

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) |
|---|---|---|---|---|---|---|---|---|
| 0.158 | 48.34 | 34.88 | -6.61 | -20.07 | 54.95 | 0.13 | 0.14 | 10.00 |
| 0.178 | 47.56 | 34.54 | -7.15 | -20.17 | 54.70 | 0.13 | 0.14 | 10.00 |
| 0.222 | 45.55 | 32.47 | -6.86 | -19.94 | 52.41 | 0.12 | 0.11 | 10.00 |
| 0.262 | 34.65 | 25.16 | -16.19 | -25.68 | 50.84 | 0.13 | 0.10 | 10.00 |
| 0.274 | 34.43 | 24.90 | -16.21 | -25.74 | 50.64 | 0.13 | 0.10 | 10.00 |
| 0.282 | 35.08 | 24.82 | -15.46 | -25.72 | 50.54 | 0.13 | 0.10 | 10.00 |

Title: FCC Class B - White Lead
File: Keysight - Pre-Scan - White Lead - FCC Class B - 06-29-2022.set
Operator: Kyle Fujimoto
EUT Type: Diamond Display
EUT Condition: EUT is continuously sending speed data to app on phone via BLE on a continuous basis
Company: Comodule OU
Model: 3.5
S/N: N/A

6/29/2022 2:36:10 PM
Sequence: Preliminary Scan



Title: FCC Class B - White Lead
File: Keysight - Final Scan - White Lead - FCC Class B - 06-29-2022.set
Operator: Kyle Fujimoto
EUT Type: Diamond Display
EUT Condition: EUT is continuously sending speed data to app on phone via BLE on a continuous basis
Company: Comodule OÜ
Model: 3.5
S/N: N/A

6/29/2022 2:37:54 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 | 36.03 | 25.10 | -18.83 | -29.76 | 54.86 | 0.13 | 0.14 | 10.00 |
| 0.182 | 36.41 | 24.98 | -18.10 | -29.53 | 54.51 | 0.13 | 0.13 | 10.00 |
| 0.218 | 35.54 | 23.39 | -17.26 | -29.41 | 52.80 | 0.12 | 0.11 | 10.00 |
| 0.230 | 33.73 | 22.99 | -18.19 | -28.93 | 51.91 | 0.12 | 0.10 | 10.00 |
| 0.258 | 34.88 | 25.31 | -16.21 | -25.78 | 51.09 | 0.13 | 0.10 | 10.00 |
| 0.274 | 36.09 | 24.73 | -14.49 | -25.85 | 50.58 | 0.13 | 0.09 | 10.00 |

# *BAND EDGES DATA SHEETS*

COMPATIBLE ELECTRONICS

FCC 15.247
Comodule OÜ
Diamond Display
Model: 3.5

Date: 06/30/2022
Lab: D
Tested By: Kyle Fujimoto

Band Edge - Low Channel

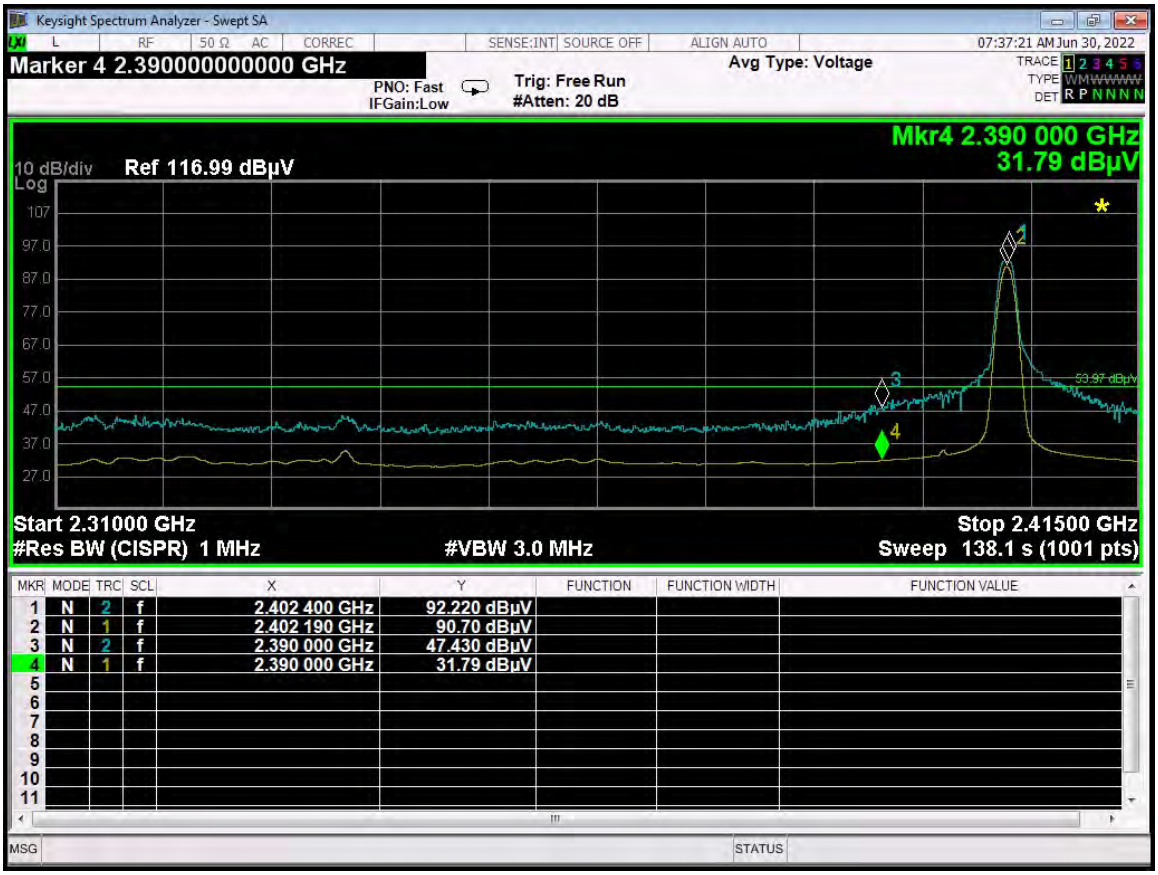
| Freq. (MHz) | Level (dBuV/m) | Pol (v/h) | Limit | Margin | Peak / QP / Avg | Table Angle (deg) | Ant. Height (cm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 2402.00 | 91.85 | V | -- | -- | Peak | 165.75 | 204.83 | Fundamental - Low Ch. |
| 2402.00 | 90.37 | V | -- | -- | Avg | 165.75 | 204.83 | Y-Axis Worst Case |
| 2390.00 | 47.21 | V | 73.97 | -26.76 | Peak | 165.75 | 204.83 | Band Edge |
| 2390.00 | 31.94 | V | 53.97 | -22.03 | Avg | 165.75 | 204.83 | Y-Axis Worst Case |
| 2402.00 | 92.22 | H | -- | -- | Peak | 205.25 | 150.92 | Fundamental - Low Ch. |
| 2402.00 | 90.70 | H | -- | -- | Avg | 205.25 | 150.92 | X-Axis - Worst Case |
| 2390.00 | 47.43 | H | 73.97 | -26.54 | Peak | 205.25 | 150.92 | Band Edge |
| 2390.00 | 31.79 | H | 53.97 | -22.18 | Avg | 205.25 | 150.92 | X-Axis - Worst Case |

FCC 15.247
Comodule OÜ
Diamond Display
Model: 3.5

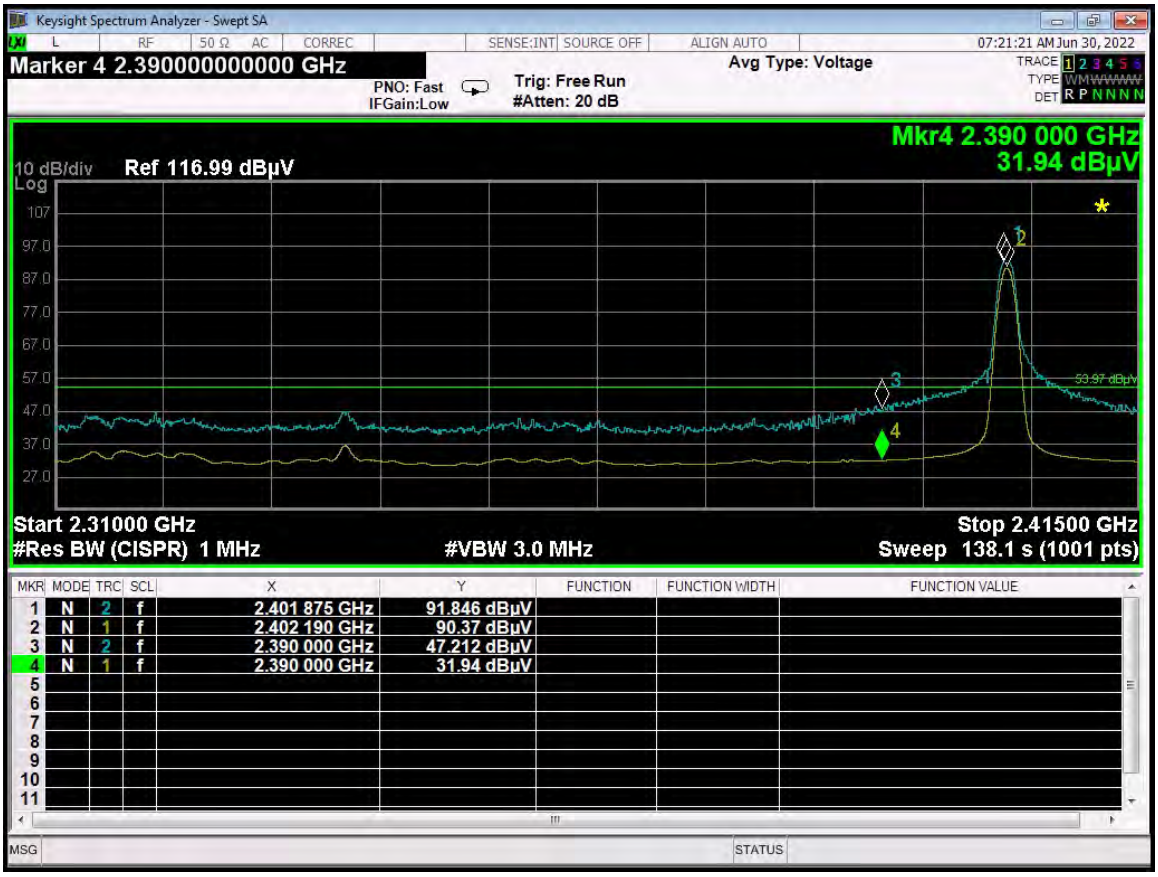
Date: 06/30/2022
Lab: D
Tested By: Kyle Fujimoto

Band Edge - High Channel

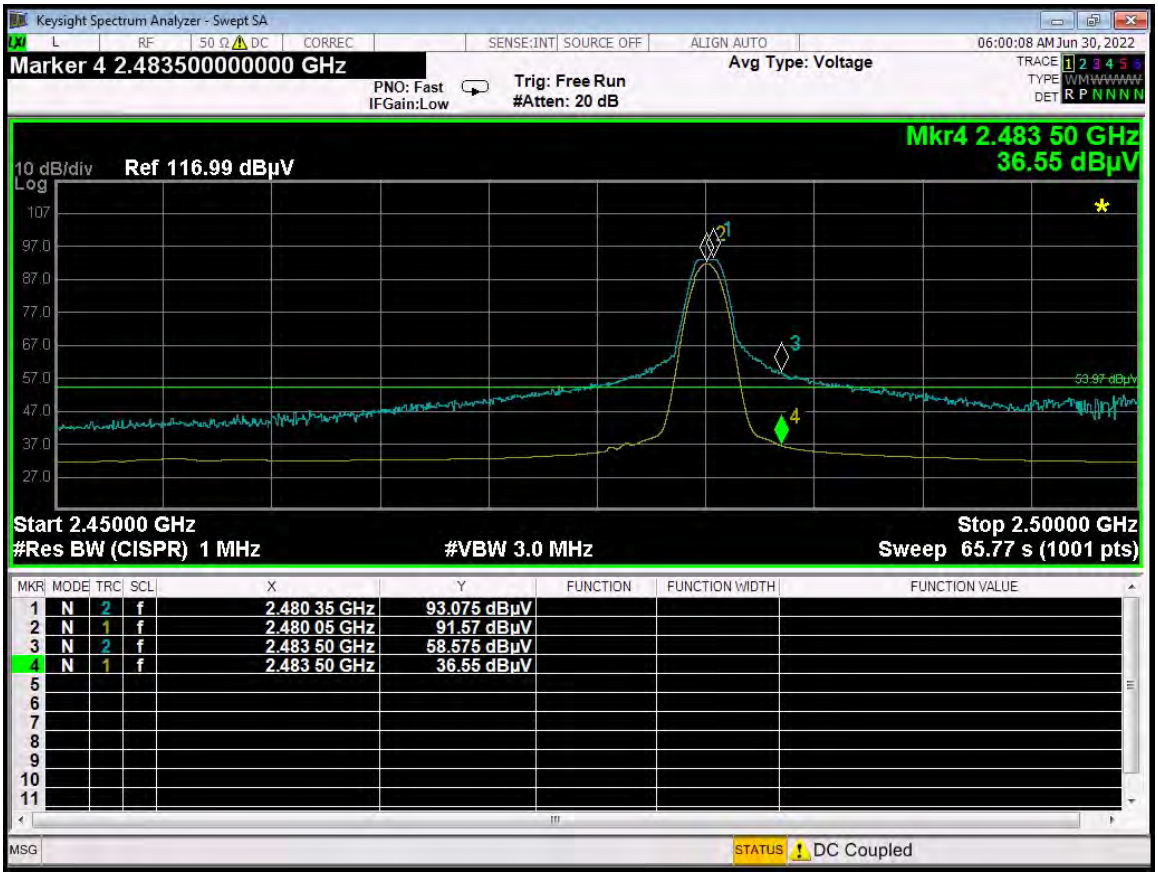
| Freq. (MHz) | Level (dBuV/m) | Pol (v/h) | Limit | Margin | Peak / QP / Avg | Table Angle (deg) | Ant. Height (cm) | Comments |
|---|---|---|---|---|---|---|---|---|
| 2480.00 | 90.86 | V | -- | -- | Peak | 159.25 | 130.20 | Fundamental - High Ch. |
| 2480.00 | 89.19 | V | -- | -- | Avg | 159.25 | 130.20 | Y-Axis Worst Case |
| 2483.50 | 56.04 | V | 73.97 | -17.93 | Peak | 159.25 | 130.20 | Band Edge |
| 2483.50 | 34.61 | V | 53.97 | -19.36 | Avg | 159.25 | 130.20 | Y-Axis Worst Case |
| 2480.00 | 93.08 | H | -- | -- | Peak | 268.50 | 216.11 | Fundamental - High Ch. |
| 2480.00 | 91.57 | H | -- | -- | Avg | 268.50 | 216.11 | X-Axis - Worst Case |
| 2483.50 | 58.58 | H | 73.97 | -15.40 | Peak | 268.50 | 216.11 | Band Edge |
| 2483.50 | 36.55 | H | 53.97 | -17.42 | Avg | 268.50 | 216.11 | X-Axis - Worst Case |



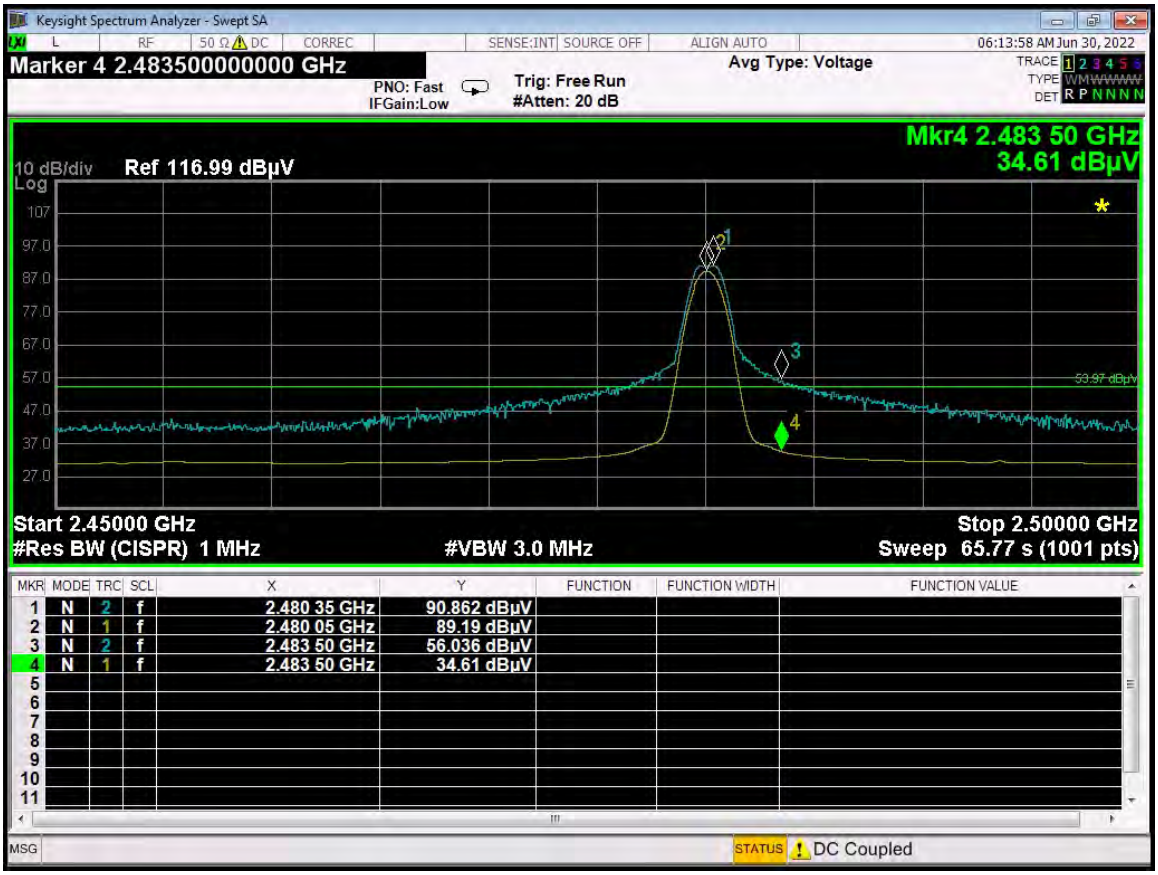

BE - 2402 MHz - Horizontal - X-Axis Worst Case – BLE Mode



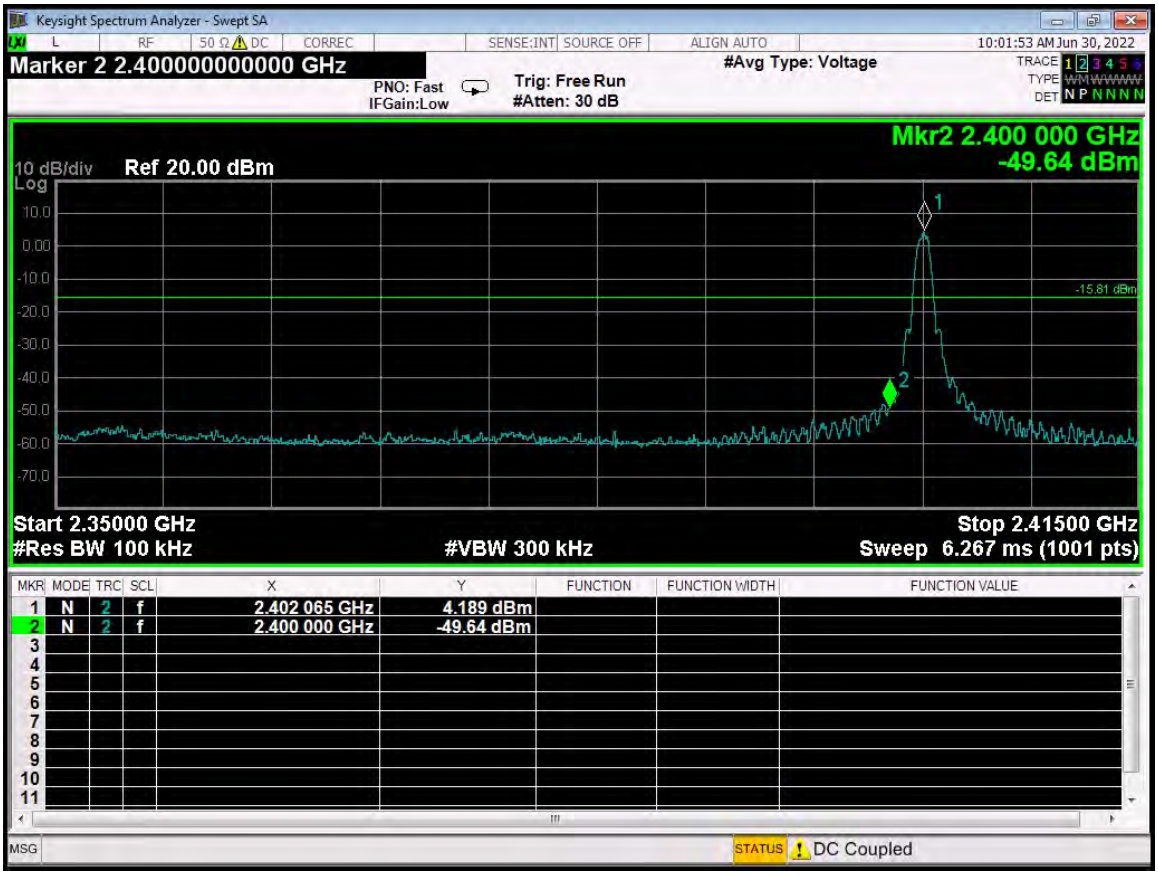

BE - 2402 MHz - Vertical - Y-Axis Worst Case – BLE Mode




BE - 2480 MHz - Horizontal - X-Axis Worst Case – BLE Mode

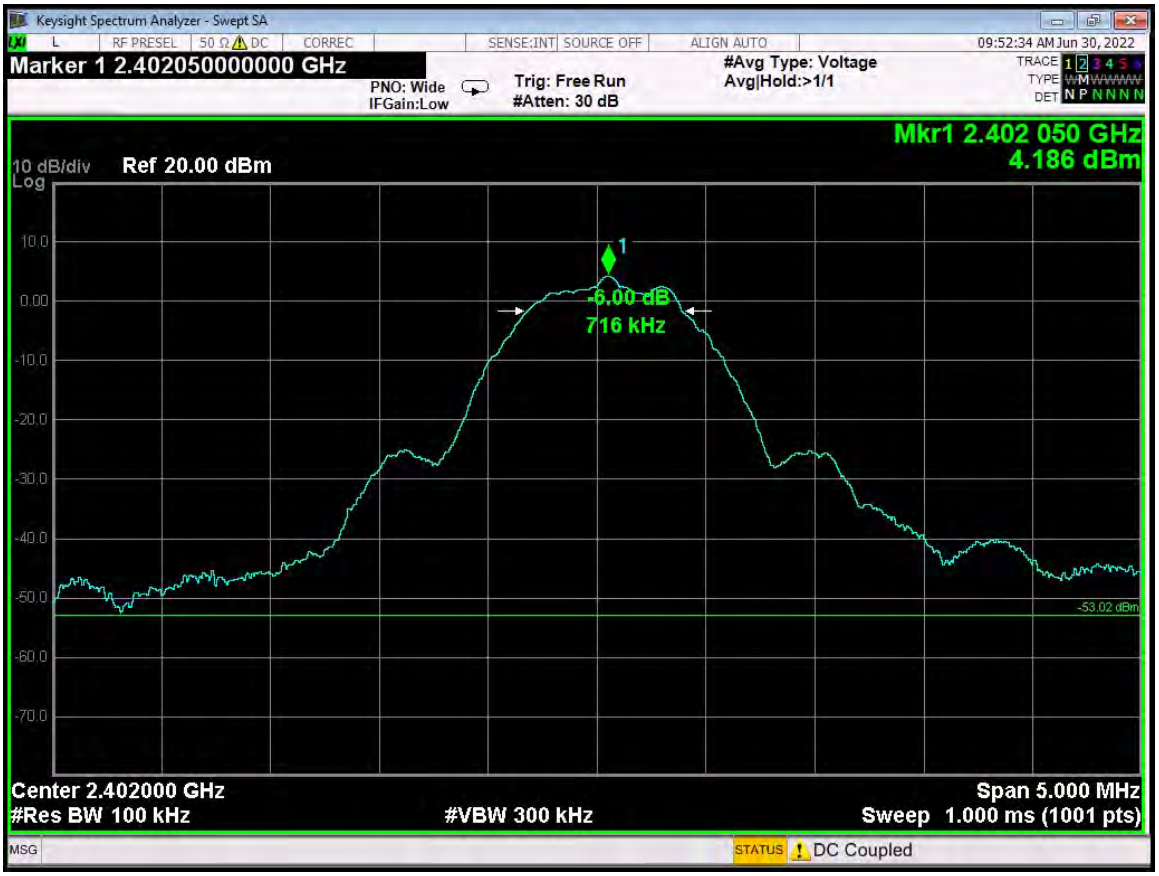



BE - 2480 MHz - Vertical - Y-Axis Worst Case – BLE Mode




BE - 2400 MHz - Conducted

# *DTS BANDWIDTH DATA SHEETS*

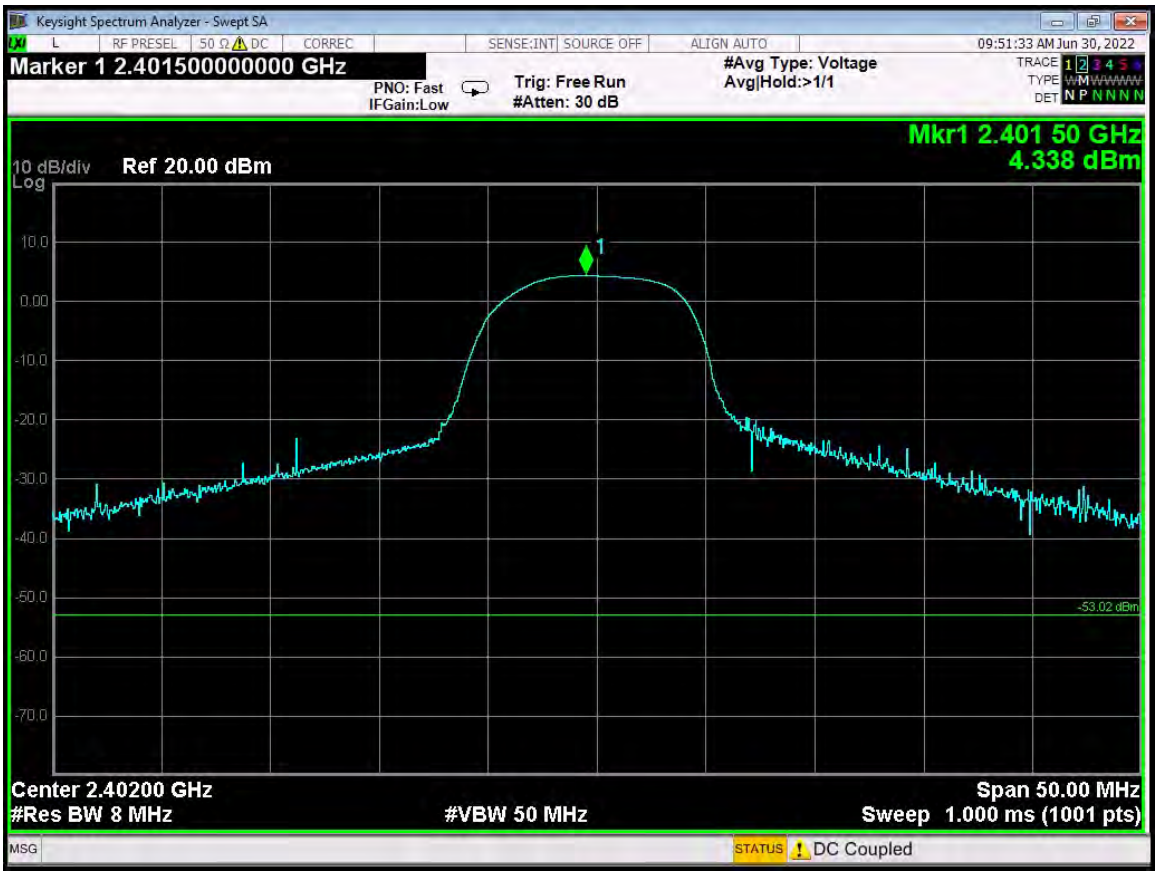



Bandwidth 6 dB - 2402 MHz

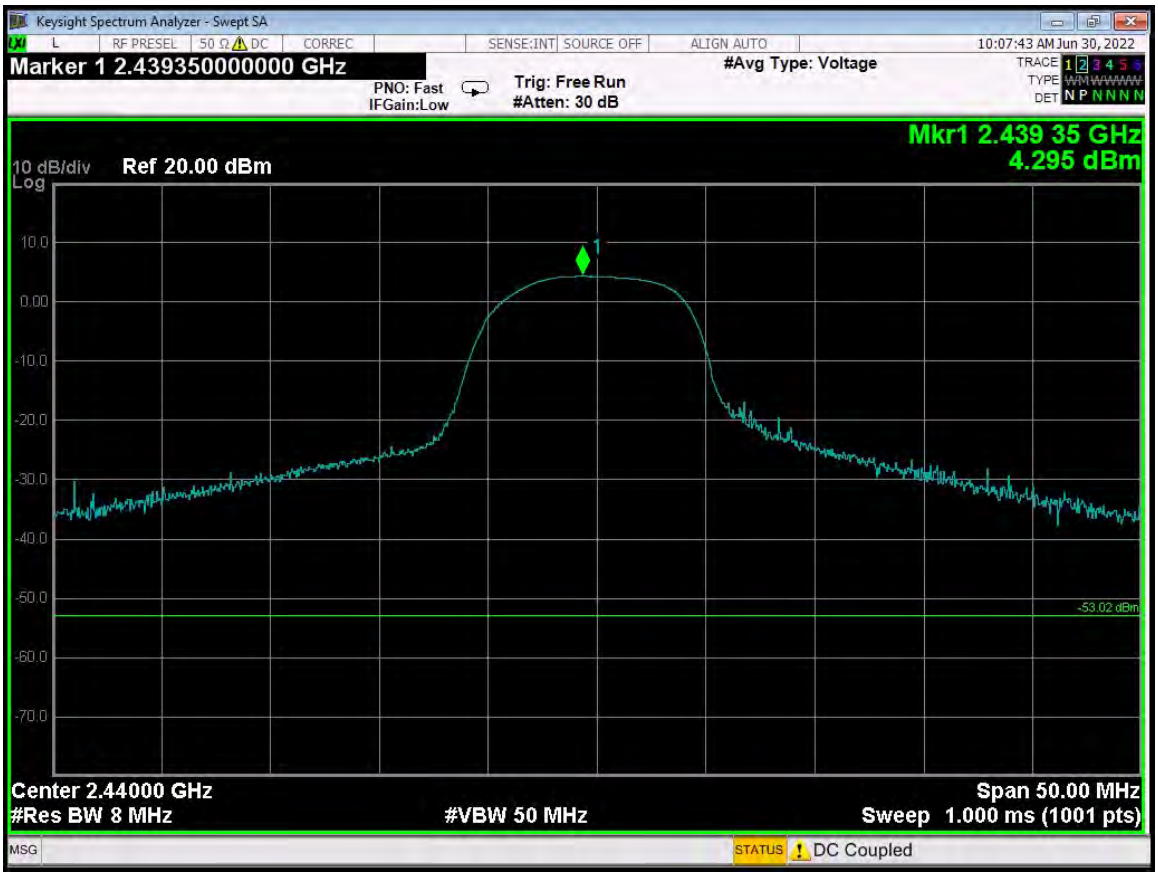

Bandwidth 6 dB - 2440 MHz


Bandwidth 6 dB - 2480 MHz

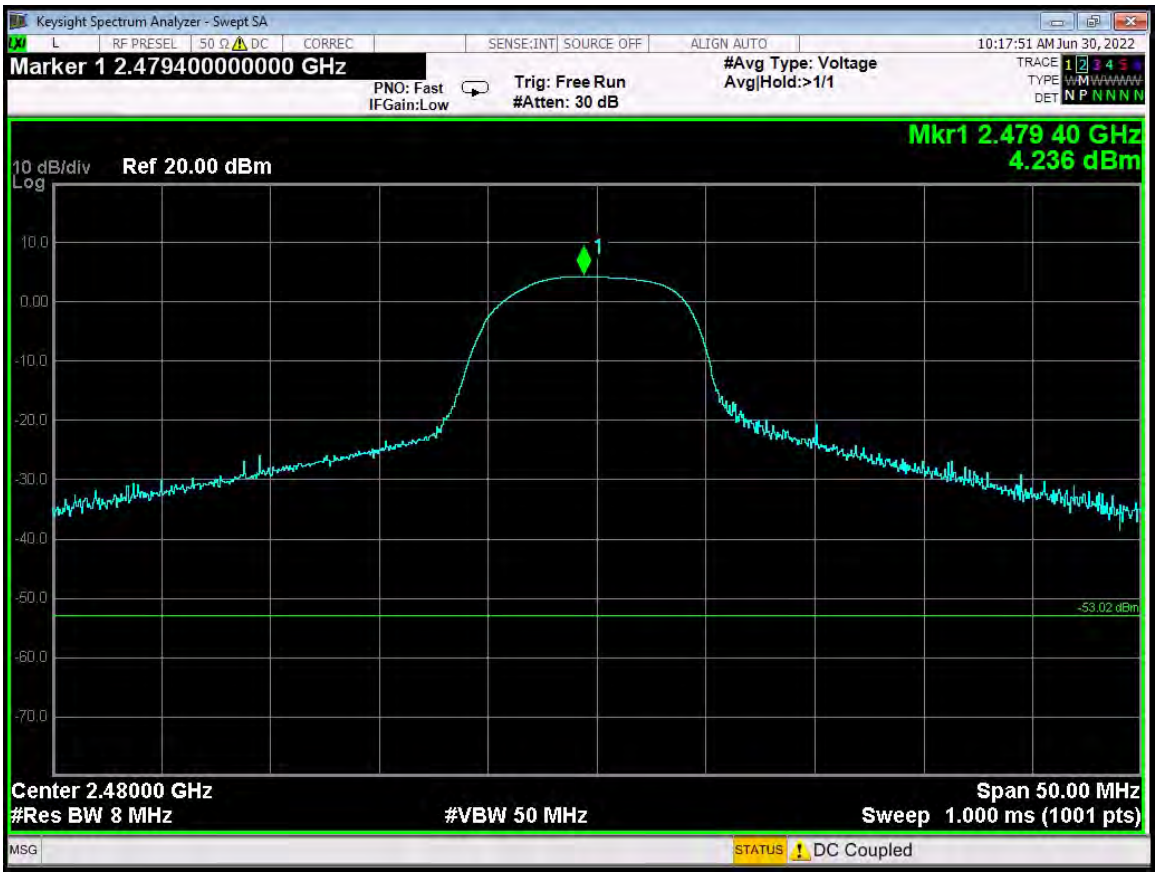
# *PEAK OUTPUT POWER DATA SHEETS*




Peak Power Output - 2402 MHz

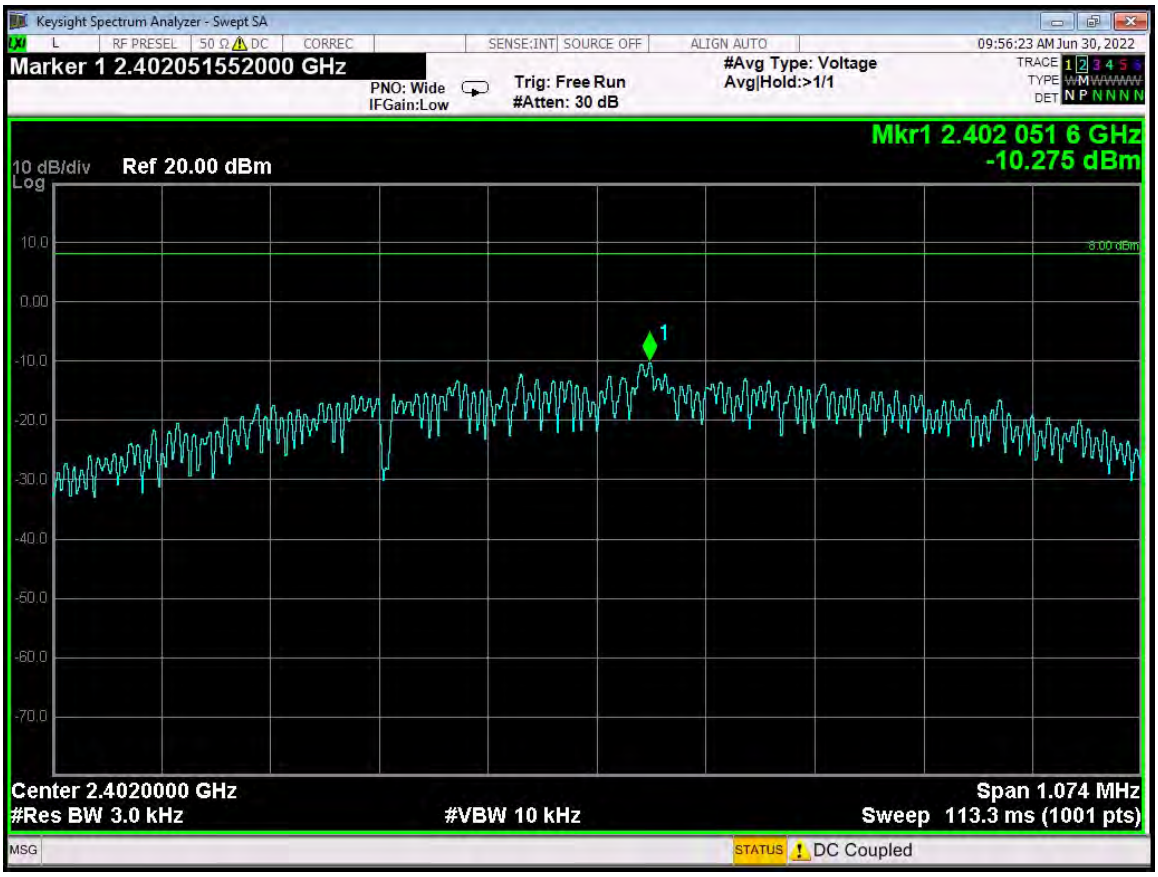



Peak Power Output - 2440 MHz



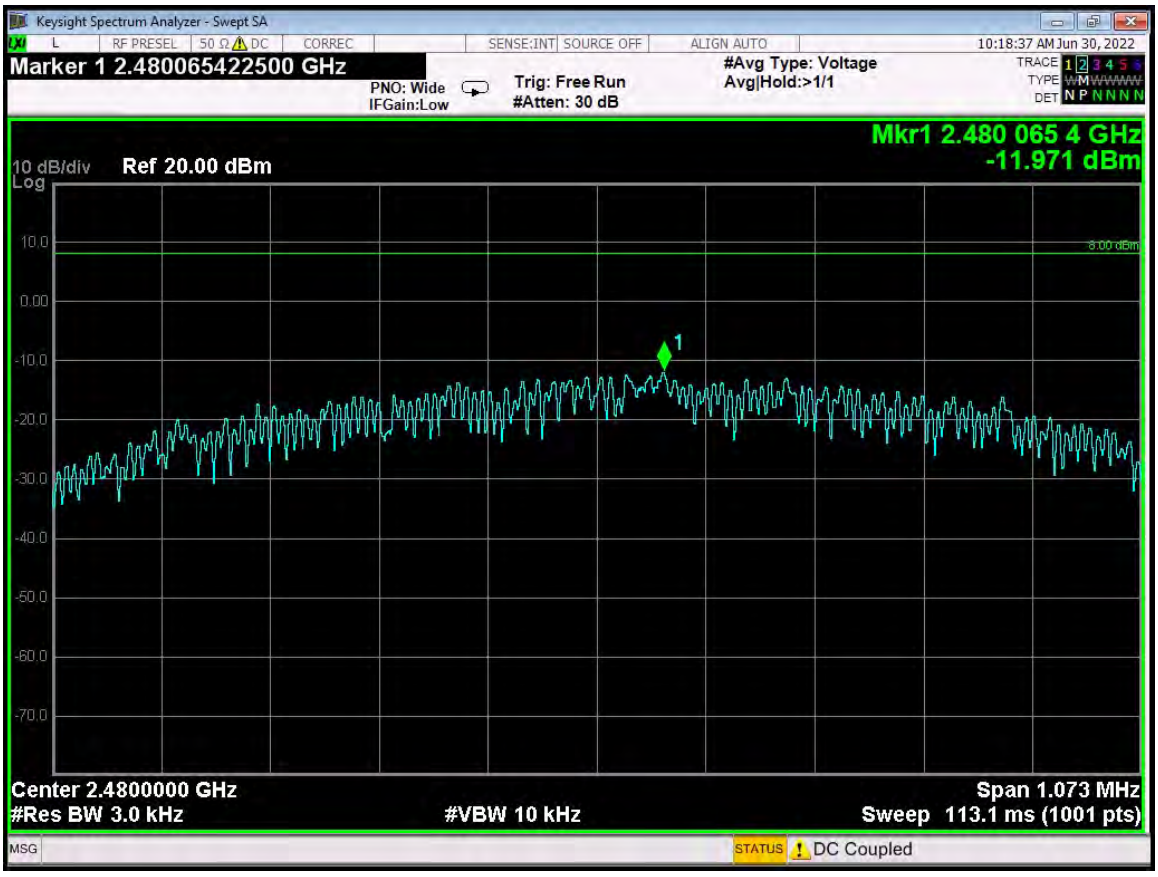

Peak Power Output - 2480 MHz

# *SPECTRAL DENSITY OUTPUT DATA SHEETS*




PPSD - 2402 MHz

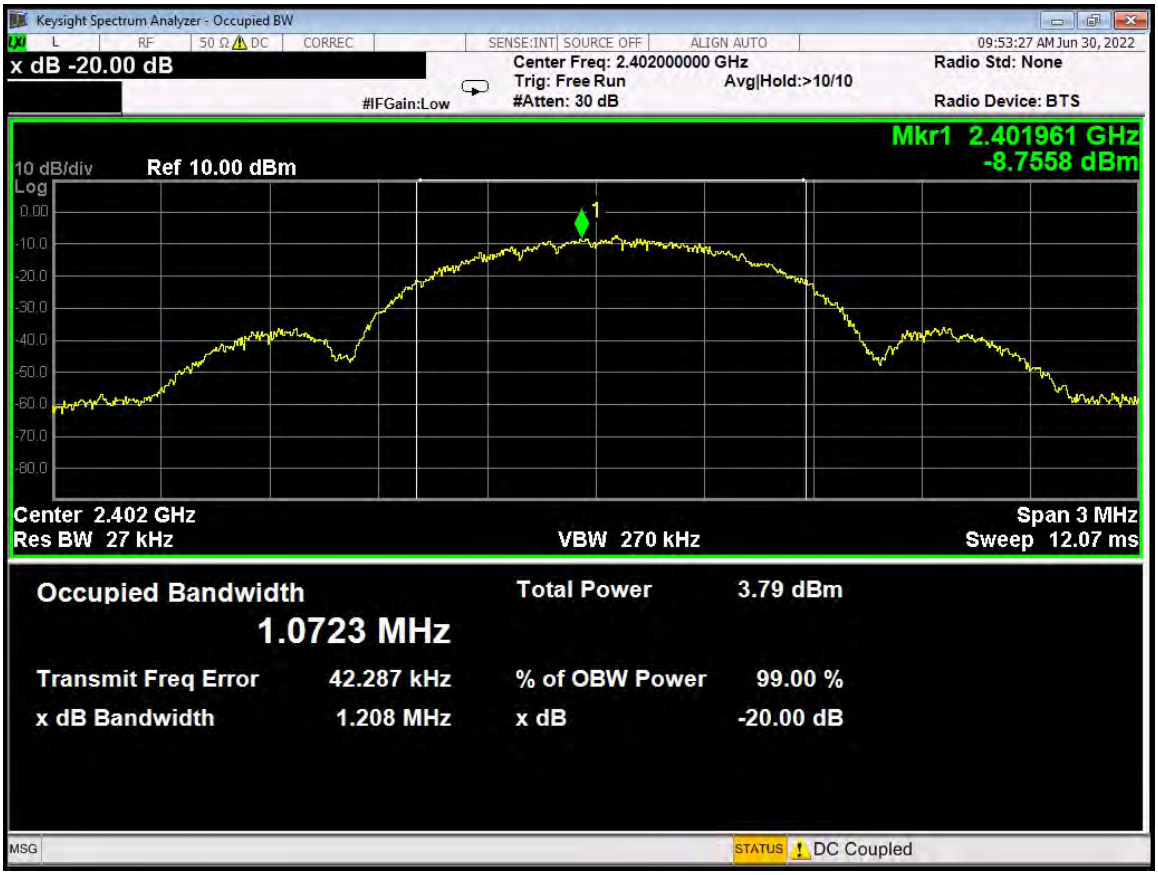

PPSD - 2440 MHz



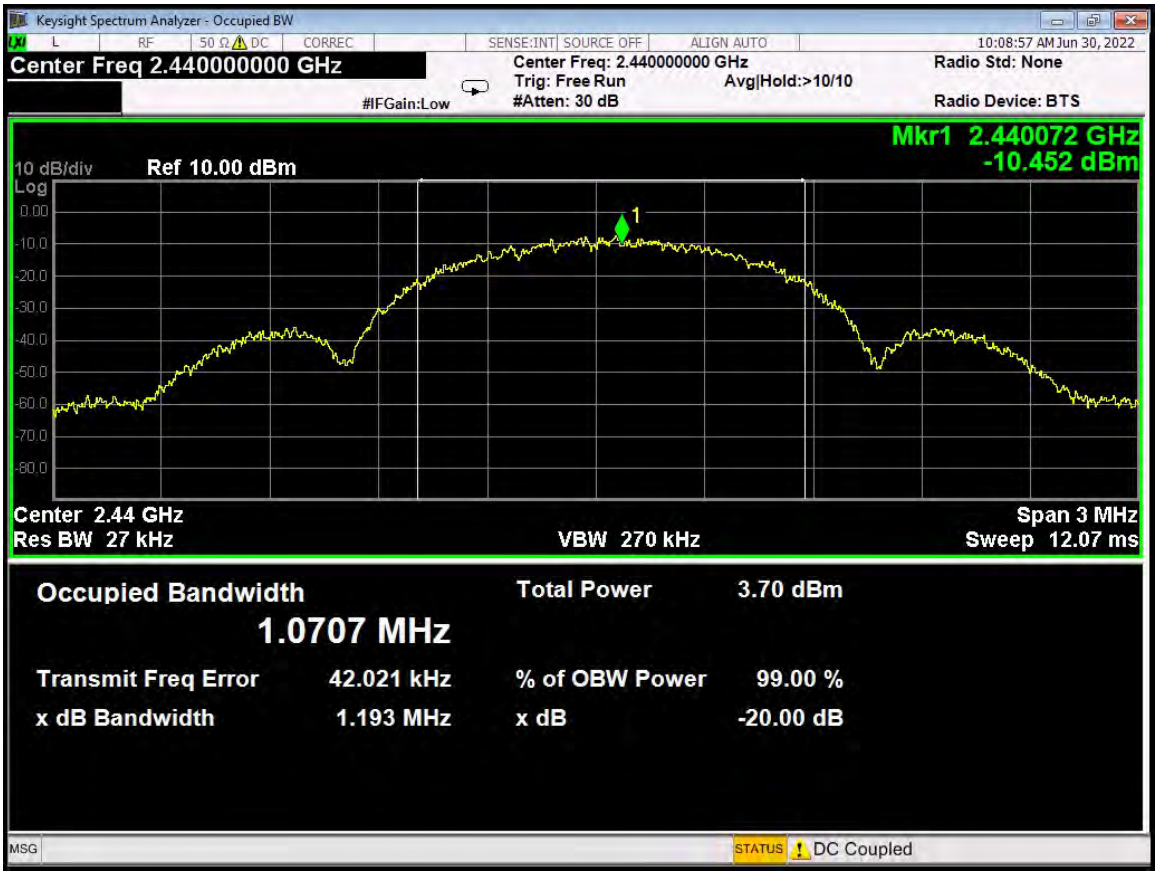

PPSD - 2480 MHz

COMPATIBLE ELECTRONICS

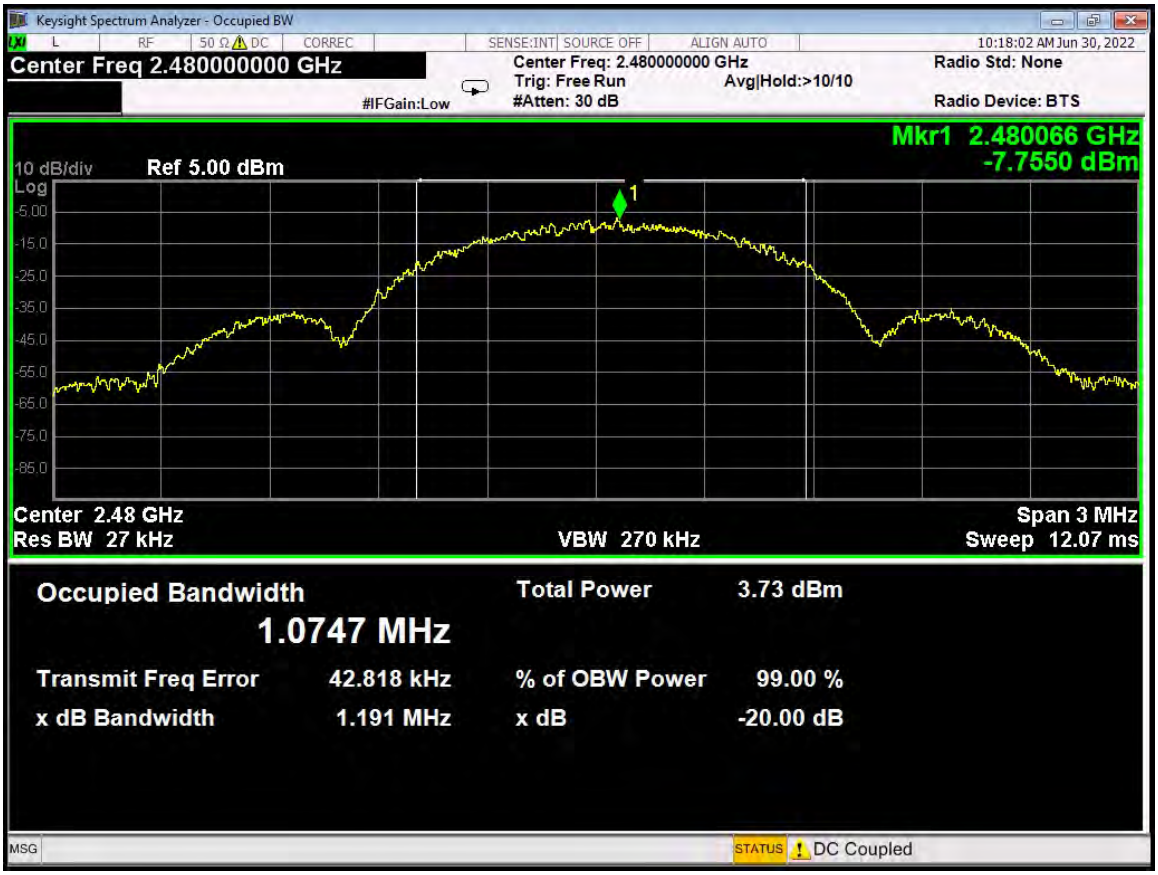
# *99% BANDWIDTH DATA SHEET*


Keysight Spectrum Analyzer - Occupied BW
RF
50 Ω DC
CORREC
SENSE:INT
SOURCE OFF
ALIGN AUTO
09:53:27 AM Jun 30, 2022
x dB -20.00 dB
Center Freq: 2.402000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Mkr1 2.401961 GHz
-8.7558 dBm
10 dB/div
Ref 10.00 dBm
Log
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Center 2.402 GHz
Res BW 27 kHz
VBW 270 kHz
Span 3 MHz
Sweep 12.07 ms
Occupied Bandwidth
1.0723 MHz
Total Power
3.79 dBm
Transmit Freq Error
42.287 kHz
% of OBW Power
99.00 %
x dB Bandwidth
1.208 MHz
x dB
-20.00 dB
MSG
STATUS
DC Coupled

Low Channel

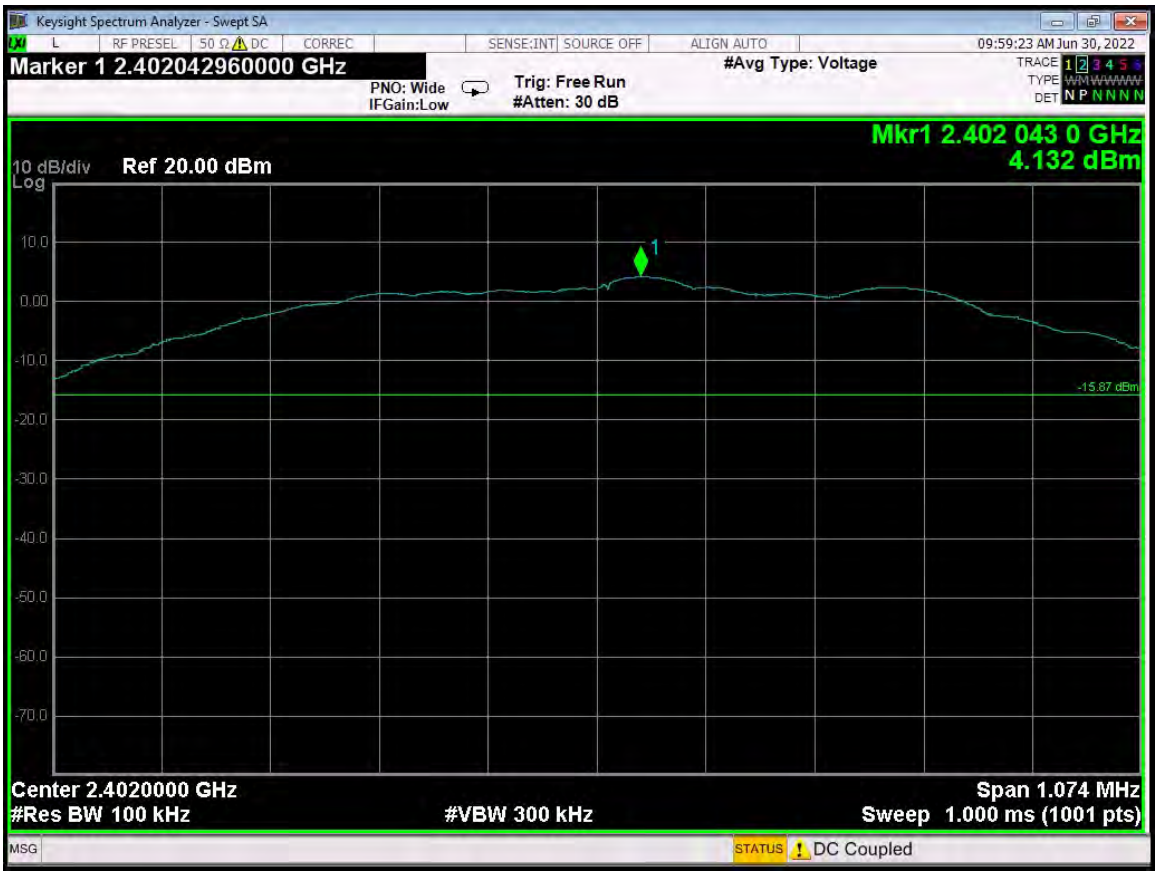

Keysight Spectrum Analyzer - Occupied BW
RF
50 Ω DC
CORREC
SENSE:INT
SOURCE OFF
ALIGN AUTO
10:08:57 AM Jun 30, 2022
Center Freq 2.440000000 GHz
Center Freq: 2.440000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
Mkr1 2.440072 GHz
-10.452 dBm
10 dB/div
Ref 10.00 dBm
Log
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
Center 2.44 GHz
Res BW 27 kHz
VBW 270 kHz
Span 3 MHz
Sweep 12.07 ms
Occupied Bandwidth
1.0707 MHz
Total Power
3.70 dBm
Transmit Freq Error
42.021 kHz
% of OBW Power
99.00 %
x dB Bandwidth
1.193 MHz
x dB
-20.00 dB
MSG
STATUS
DC Coupled

Mid Channel

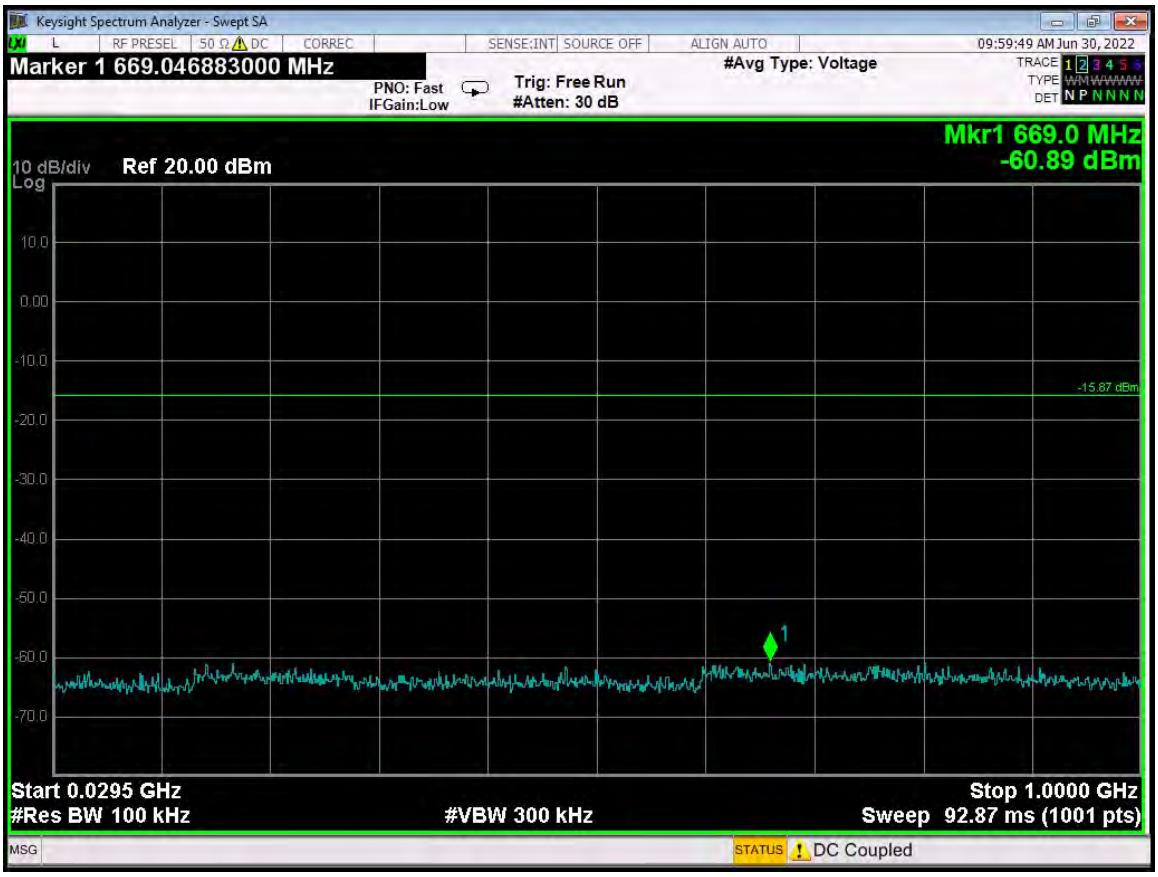



High Channel

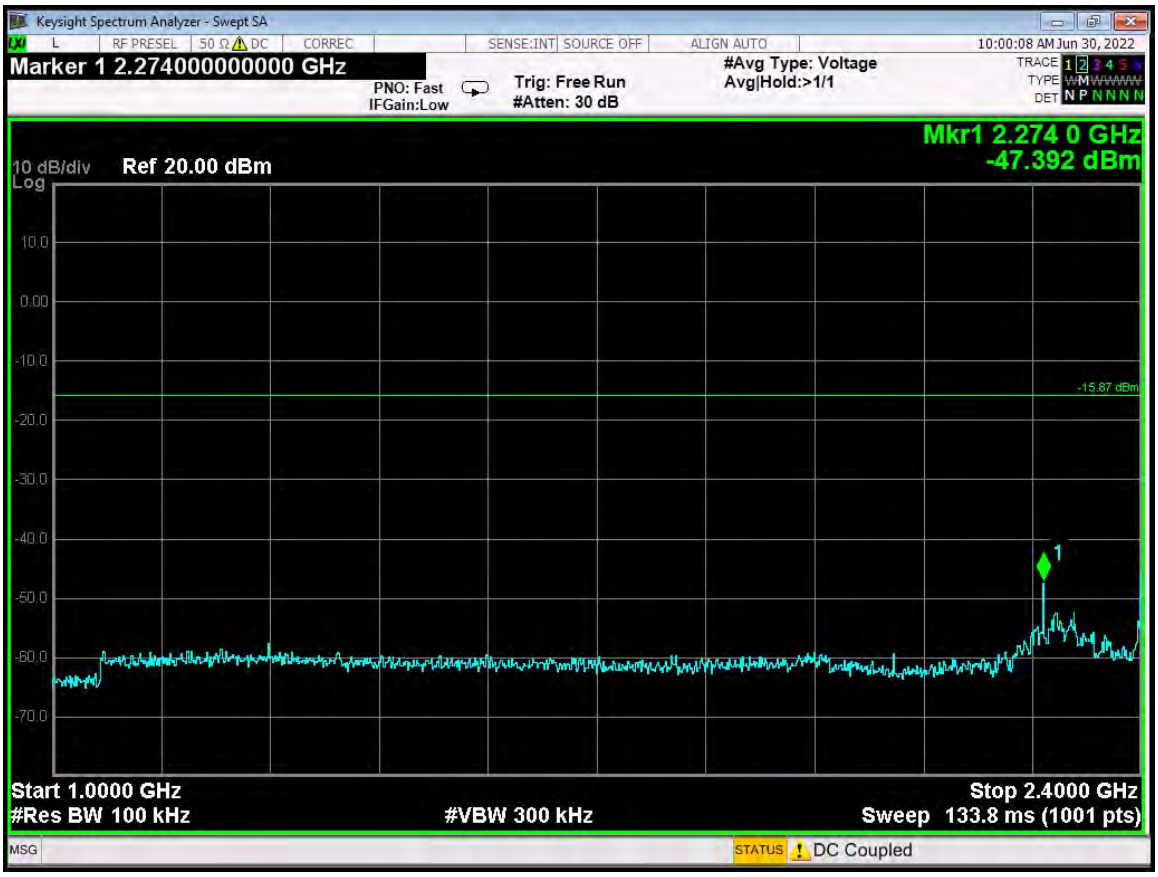
# *RF ANTENNA CONDUCTED DATA SHEETS*



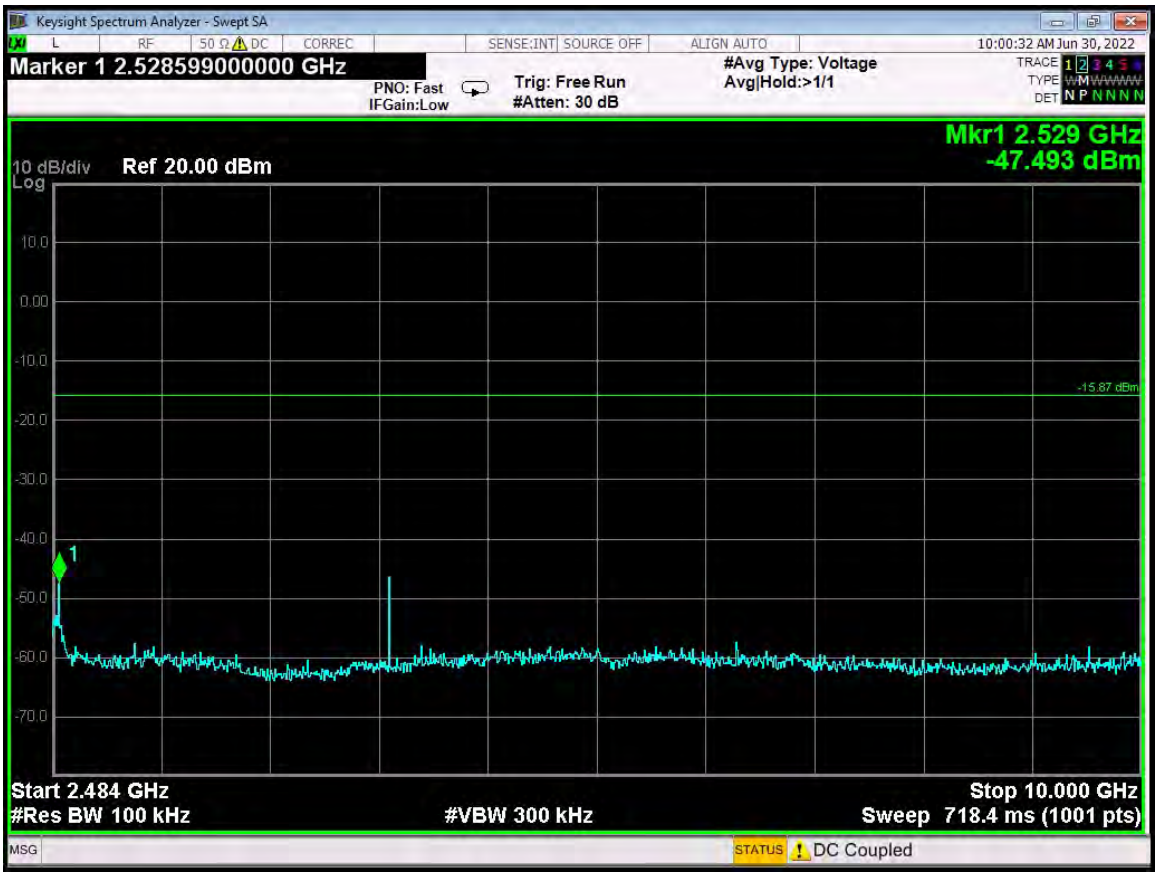

RF Antenna Conducted Test – Low Channel – Reference Level




RF Antenna Conducted Test – Low Channel – 30 MHz to 1 GHz



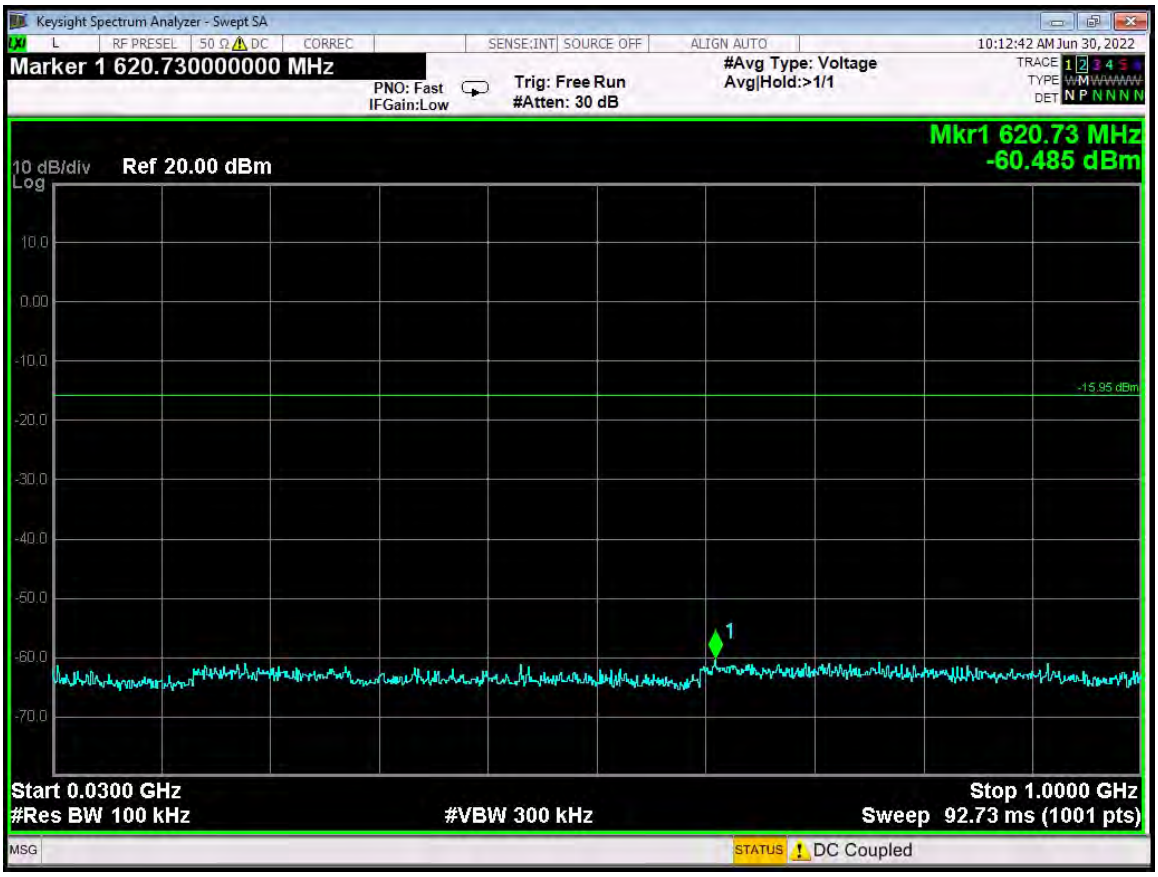

RF Antenna Conducted Test – Low Channel – 1 GHz to 2.4 GHz



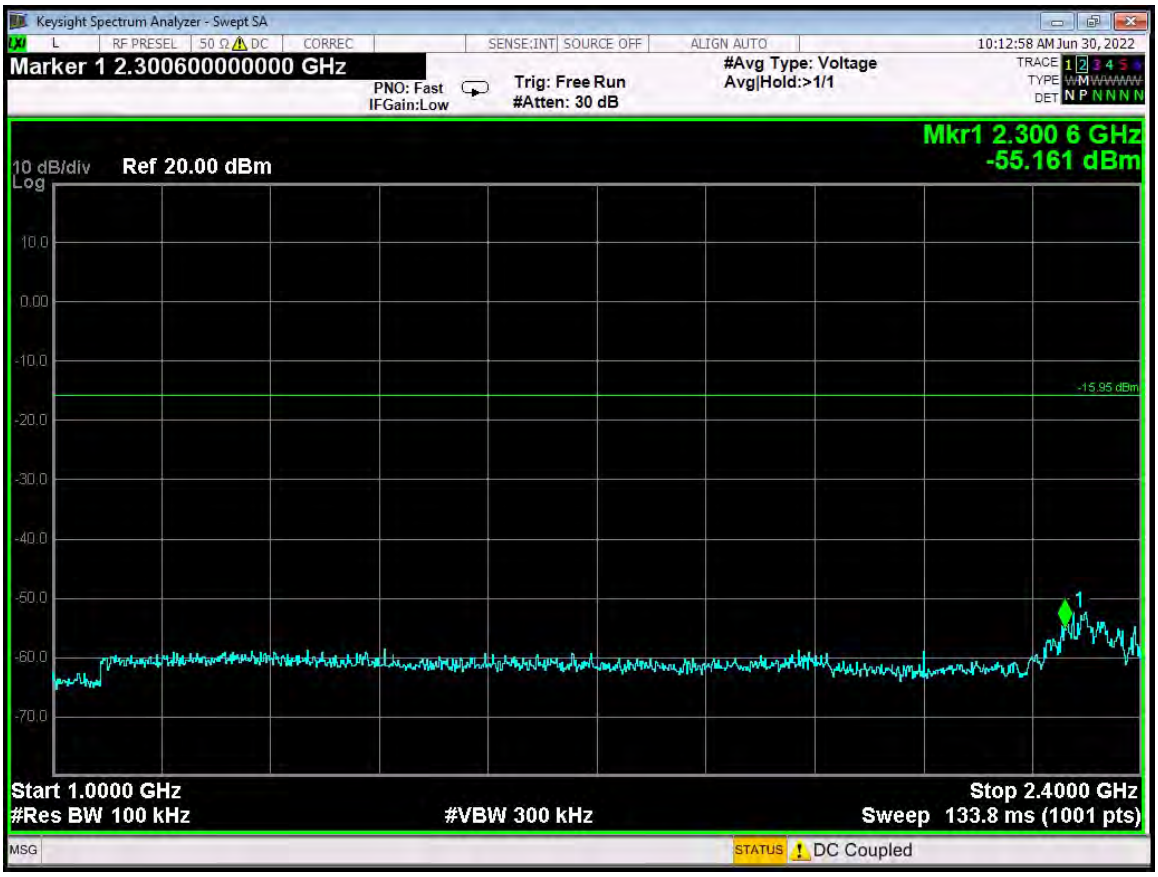

RF Antenna Conducted Test – Low Channel – 2484 MHz to 10 GHz


RF Antenna Conducted Test – Low Channel – 10 GHz to 25 GHz

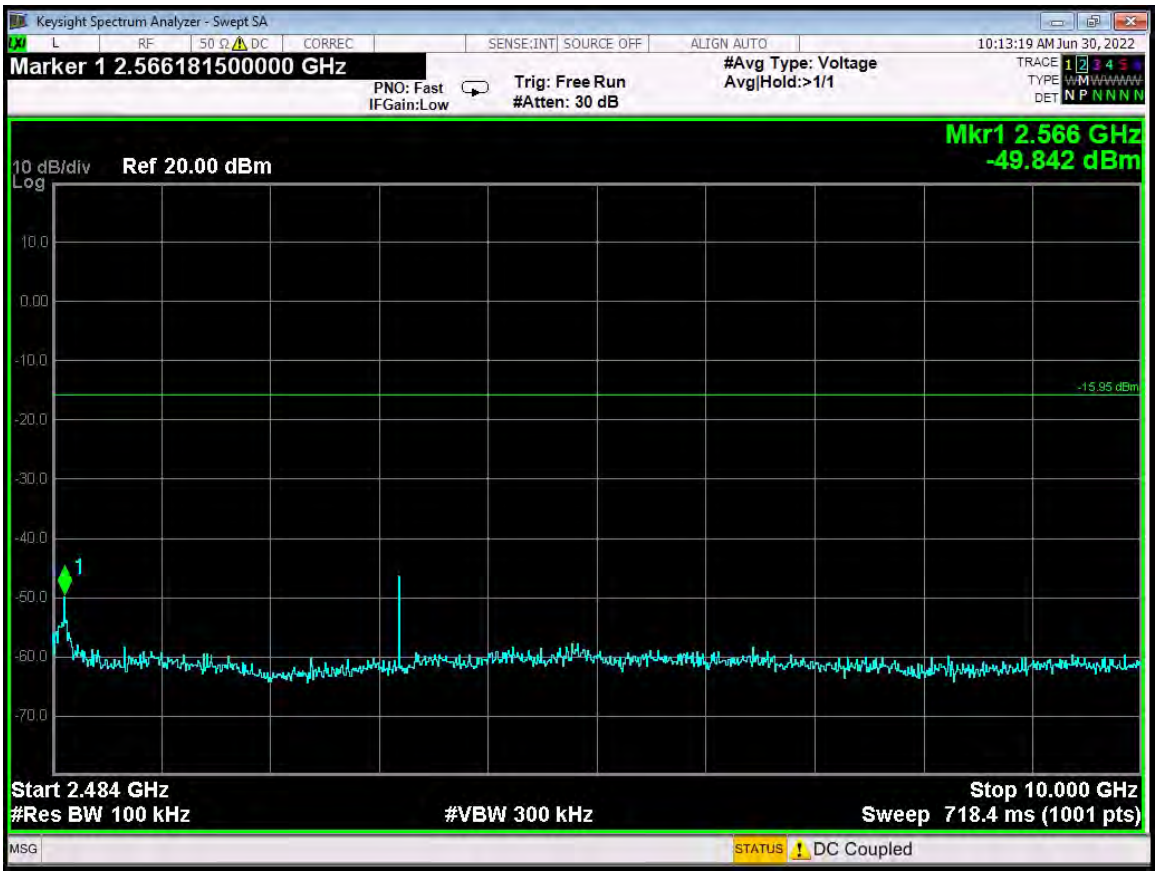

RF Antenna Conducted Test – Middle Channel – Reference Level




RF Antenna Conducted Test – Middle Channel – 30 MHz to 1 GHz

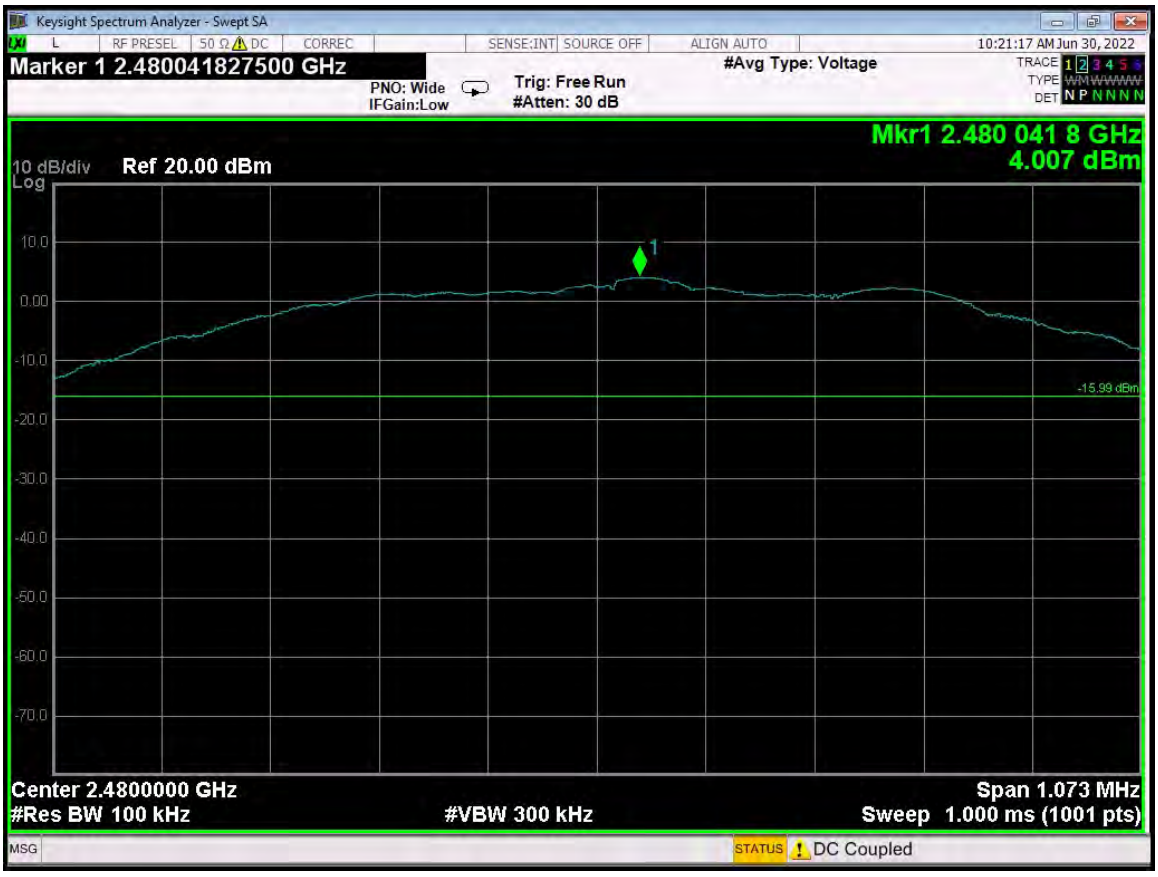



RF Antenna Conducted Test – Middle Channel – 1 GHz to 2.4 GHz

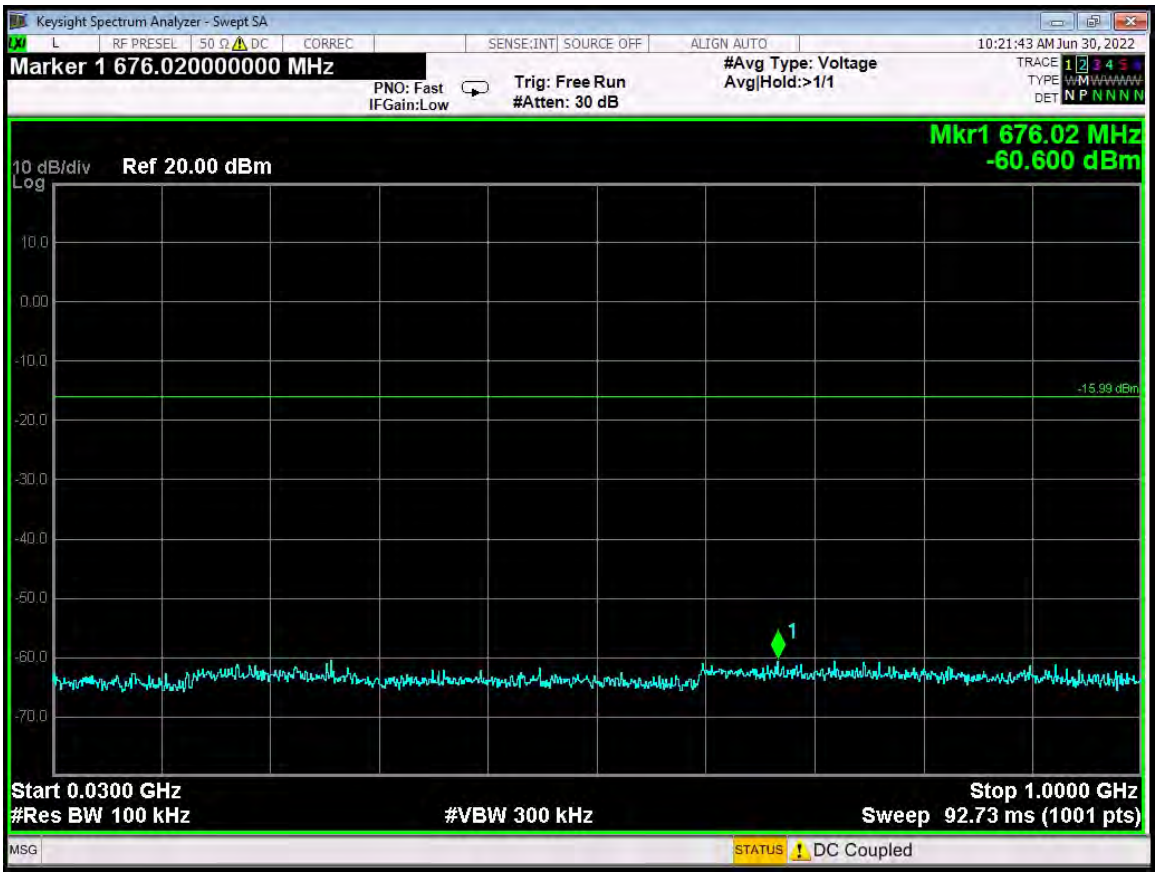



RF Antenna Conducted Test – Middle Channel – 2484 MHz to 10 GHz

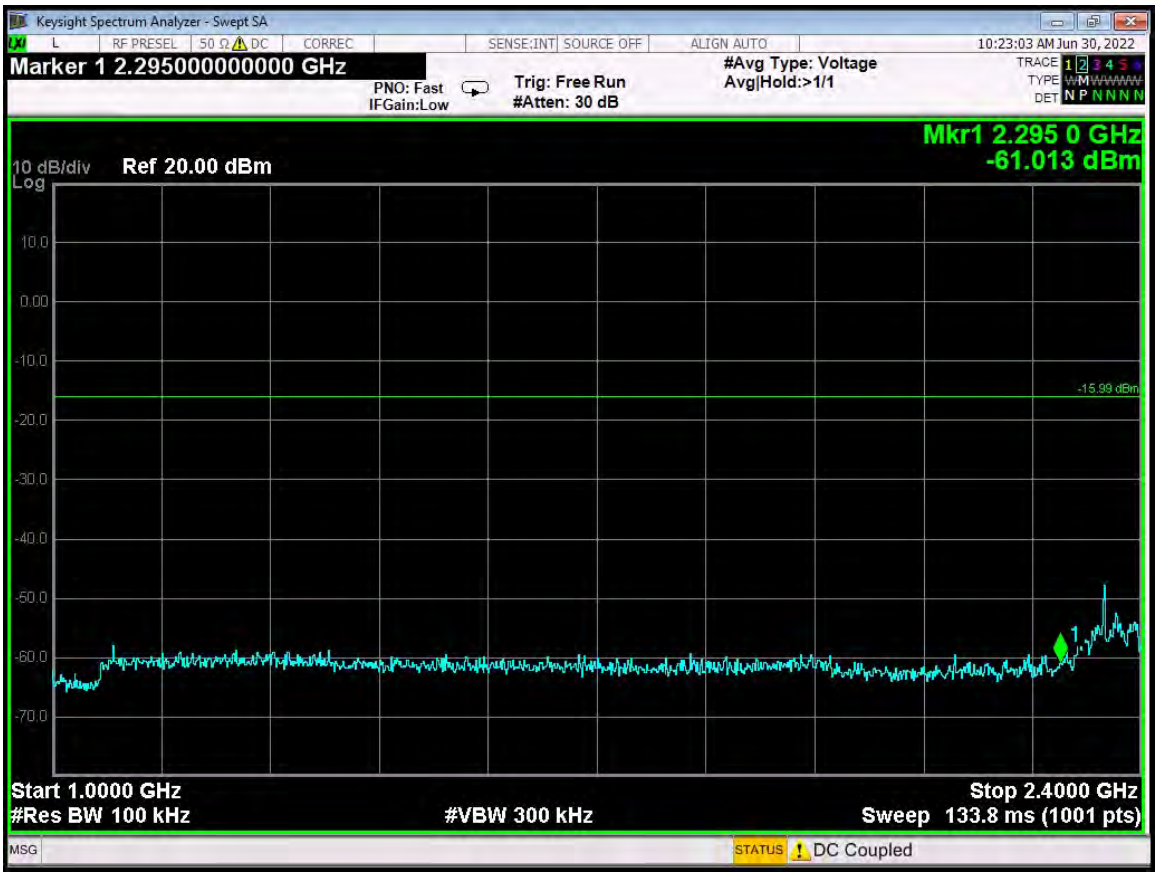

RF Antenna Conducted Test – Middle Channel – 10 GHz to 25 GHz




RF Antenna Conducted Test – High Channel – Reference Level

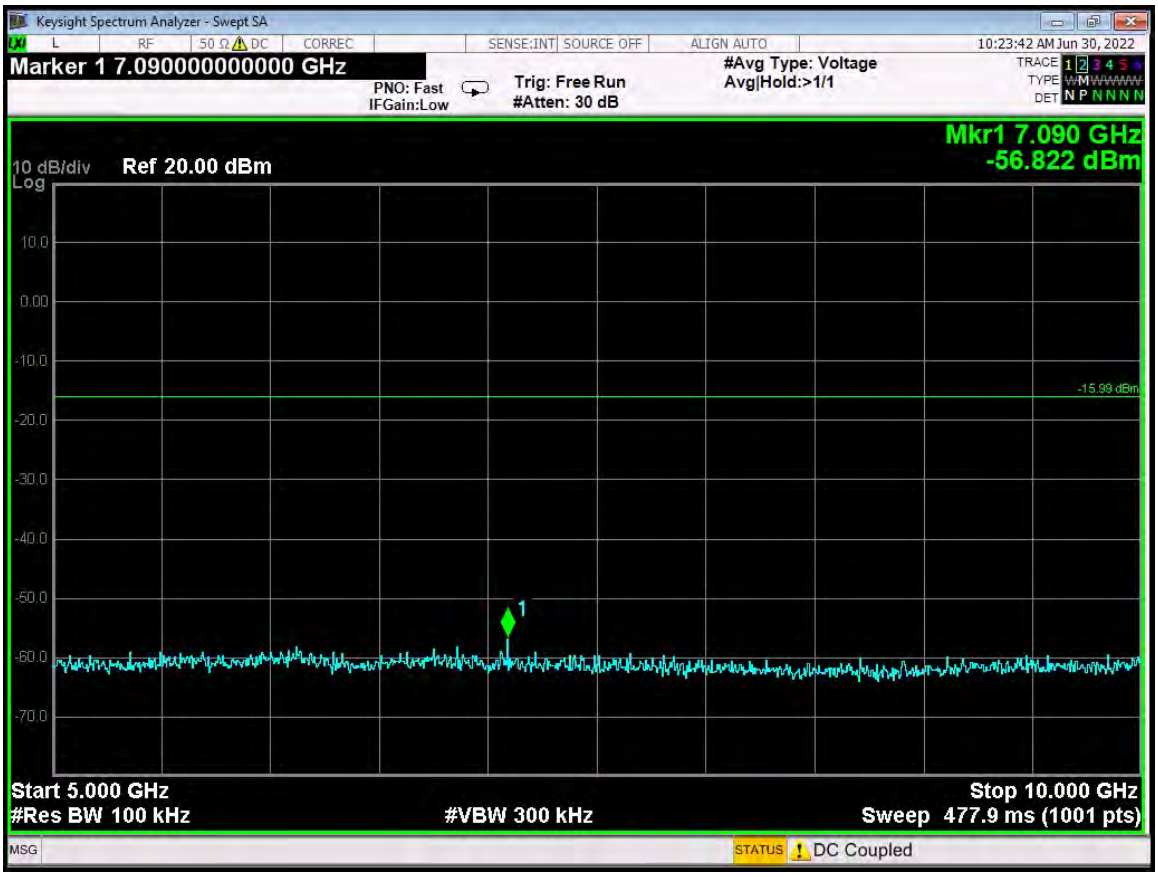



RF Antenna Conducted Test – High Channel – 30 MHz to 1 GHz




RF Antenna Conducted Test – High Channel – 1 GHz to 2.4 GHz


RF Antenna Conducted Test – High Channel – 2484 MHz to 5 GHz




RF Antenna Conducted Test – High Channel – 5 GHz to 10 GHz


RF Antenna Conducted Test – High Channel – 10 GHz to 25 GHz

# COMODULE OÜ

# DIAMOND DISPLAY

# MODEL: 3.5

# EMISSIONS IN NON-RESTRICTED BANDS

| FREQUENCY (MHz) | LEVEL (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|
| 24775.00 | -46.121 | -15.87 | -30.251 |
| 2609.00 | -47.786 | -15.99 | -31.796 |
| 2529.00 | -47.493 | -15.87 | -31.623 |

Note: The three highest non-restricted emissions are reported.