# FCC Part 15.236, RSS-210

# TEST AND MEASUREMENT REPORT

For

## Lectrosonics, Inc.

581 Laser Road NE,
Rio Rancho, NM 87124, USA

**FCC ID: DBZDCHTB**
**IC: 8024A-DCHTB**

| | |
|---|---|
| **Report Type:** Original Report | **Product Type:** Body-Worn Wireless Microphone Transmitter |
| **Prepared By:** | Xavier Kelley<br>RF Test Engineer |
| **Report Number:** | R2405163-236 |
| **Report Issue Date:** | 2024-08-23 |
| **Reviewed By:** | Christian McCaig<br>RF Lead Engineer |
| Bay Area Compliance Laboratories Corp.<br>1274 Anvilwood Avenue,<br>Sunnyvale, CA 94089, USA<br>Tel: 1 (408) 732-9162<br>Fax: 1 (408) 732-9164 | |

ACCREDITED
CERTIFICATE #3297.02

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# DOCUMENT REVISION HISTORY

| Revision Number | Report Number | Description of Revision | Date of Revision |
|---|---|---|---|
| 0 | R2405163-236 | Original Report | 2024-08-23 |

# 1 General Description

## 1.1 Product Description for Equipment Under Test (EUT)

This test report has been compiled on behalf of *Lectrosonics, Inc.* and their product model: *DCHT-B1C1*, FCC ID: DBZDCHTB, IC: 8024A-DCHTB, which henceforth is referred to as the EUT (Equipment Under Test). The EUT is a body-worn wireless microphone transmitter. The EUT operates in the frequency range: 537.600 MHz – 662.950 MHz.

## 1.2 Mechanical Description of EUT

The EUT measures approximately: 88 cm (L), 6.2 cm (W) x 1.9 cm (H), and weighs approximately 0.185kg oz

*The data gathered are from the typical production sample provided by the Lectrosonics, Inc. with serial number: 843*

## 1.3 Objective

The following test report was prepared on behalf of *Lectrosonics, Inc.* in accordance with Part 15.236 of the Federal Communications Commission rules and ISEDC RSS-210, Issue 10, December 2019.

The objective was to determine compliance with Part 15.236 of the FCC Rules, and ISED RSS-210 Issue 10, limits for RF output power, Emission bandwidth, Emission mask, Conducted Transmitter Unwanted Emissions, Field strength of spurious radiation and Frequency stability.

## 1.4 Related Submittal(s)/Grant(s)

FCC Part 74 Equipment Class: TNB with FCC ID: DBZDCHTB.

## 1.5 Test Methodology

All measurements contained in this report were conducted in accordance with ANSI/TIA-603-E-2016, FCC KDB 971168 D01 Power Meas License Digital Systems v03r01, ANSI C63.10-2013, KDB 206256 D01v02 and EN 300 422-1 v1.4.2 Electromagnetic compatibility and Radio Spectrum Matters; Wireless microphones in the 25MHz to 3GHz frequency range.

All tests were performed at Bay Area Compliance Laboratories Corp.

## 1.6 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

| Parameter | Measurement uncertainty |
|---|---|
| Occupied Channel Bandwidth | ±5% |
| RF output power, conducted | ±0.57 dB |
| Power Spectral Density, conducted | ±1.48 dB |
| Unwanted Emissions, conducted | ±1.57 dB |
| All emissions, radiated | ±4.0 dB |
| AC power line Conducted Emission | ±2.0 dB |
| Temperature | ±2ºC |
| Humidity | ±5% |
| DC and low frequency voltages | ±1.0% |
| Time | ±2% |
| Duty Cycle | ±3% |

## 1.7 Test Facility Registrations

BACLs test facilities that are used to perform Radiated and Conducted Emissions tests are currently recognized by the Federal Communications Commission as Accredited with NIST Designation Number US1129.

BACL's test facilities that are used to perform Radiated and Conducted Emissions tests are currently registered with Innovation, Science and Economic development Canada under Registration Numbers: 3062A-1, 3062A-2, and 3062A-3.

BACL is a Chinese Taipei Bureau of Standards Metrology and Inspection (BSMI) validated Conformity Assessment Body (CAB), under Appendix B, Phase I Procedures of the APEC Mutual Recognition Arrangement (MRA). BACL's BSMI Lab Code Number is: SL2-IN-E-1002R

BACL's test facilities that are used to perform AC Line Conducted Emissions, Telecommunications Line Conducted Emissions, Radiated Emissions from 30 MHz to 1 GHz, and Radiated Emissions from 1 GHz to 6 GHz are currently recognized as Accredited in accordance with the Voluntary Control Council for Interference [VCCI] Article 15 procedures under Registration Number A-0027.

## 1.8 Test Facility Accreditations

Bay Area Compliance Laboratories Corp. (BACL) is:

**A-** ***An independent, 3rd-Party, Commercial Test Laboratory accredited to ISO/IEC 17025:2017 by A2LA (Test Laboratory Accreditation Certificate Number 3297.02),*** in the fields of: Electromagnetic Compatibility and Telecommunications. Unless noted by an Asterisk (*) in the Compliance Matrix (See Section 3 of this Test Report), BACL's ISO/IEC 17025:2017 Scope of Accreditation includes all of the Test Method Standards and/or the Product Family Standards detailed in this Test Report..

BACL's ISO/IEC 17025:2017 Scope of Accreditation includes a comprehensive suite of EMC Emissions, EMC Immunity, Radio, RF Exposure, Safety and wireline Telecommunications test methods applicable to a wide range of product categories. These product categories include Central Office Telecommunications Equipment [including NEBS - Network Equipment Building Systems], Unlicensed and Licensed Wireless and RF devices,

Information Technology Equipment (ITE); Telecommunications Terminal Equipment (TTE); Medical Electrical Equipment; Industrial, Scientific and Medical Test Equipment; Professional Audio and Video Equipment; Industrial and Scientific Instruments and Laboratory Apparatus; Cable Distribution Systems, and Energy Efficient Lighting.

B- ***A Product Certification Body accredited to ISO/IEC 17065:2012 by A2LA (Product Certification Body***
- - For the USA (Federal Communications Commission):
    1- All Unlicensed radio frequency devices within FCC Scopes A1, A2, A3, and A4;
    2- All Licensed radio frequency devices within FCC Scopes B1, B2, B3, and B4;
    3- All Telephone Terminal Equipment within FCC Scope C.
- For the Canada (Innovation, Science and Economic development Canada - ISEDC):
    1- All Scope 1-Licence-Exempt Radio Frequency Devices;
    2- All Scope 2-Licensed Personal Mobile Radio Services;
    3- All Scope 3-Licensed General Mobile & Fixed Radio Services;
    4- All Scope 4-Licensed Maritime & Aviation Radio Services;
    5- All Scope 5-Licensed Fixed Microwave Radio Services
    6- All Broadcasting Technical Standards (BETS) in the Category I Equipment Standards List.

For Singapore (Infocomm Media Development Authority - IMDA):
    1 All Line Terminal Equipment: All Technical Specifications for Line Terminal Equipment – Table 1 of IMDA MRA Recognition Scheme: 2011, Annex 2
    2. All Radio-Communication Equipment: All Technical Specifications for Radio-Communication Equipment – Table 2 of IMDA MRA Recognition Scheme: 2011, Annex 2

- For the Hong Kong Special Administrative Region:
    1 All Radio Equipment, per KHCA 10XX-series Specifications;
    2 All GMDSS Marine Radio Equipment, per HKCA 12XX-series Specifications;
    3 All Fixed Network Equipment, per HKCA 20XX-series Specifications.
- For Japan:
    1 MIC Telecommunication Business Law (Terminal Equipment):
        - All Scope A1 - Terminal Equipment for the Purpose of Calls;
        - All Scope A2 - Other Terminal Equipment
    2 Radio Law (Radio Equipment):
        - All Scope B1 - Specified Radio Equipment specified in Article 38-2-2, paragraph 1, item 1 of the Radio Law
        - All Scope B2 - Specified Radio Equipment specified in Article 38-2-2, paragraph 1, item 2 of the Radio Law
        - All Scope B3 - Specified Radio Equipment specified in Article 38-2-2, paragraph 1, item 3 of the Radio Law

C- ***A Product Certification Body accredited to ISO/IEC 17065:2012 by A2LA (Product Certification Body Accreditation Certificate Number 3297.01)*** to certify Products to USA's Environmental Protection Agency (EPA) ENERGY STAR Product Specifications for:
    1 Electronics and Office Equipment:
        - for Telephony (ver. 3.0)
        - for Audio/Video (ver. 3.0)
        - for Battery Charging Systems (ver. 1.1)
        - for Set-top Boxes & Cable Boxes (ver. 4.1)
        - for Televisions (ver. 6.1)
        - for Computers (ver. 6.0)
        - for Displays (ver. 6.0)
        - for Imaging Equipment (ver. 2.0)
        - for Computer Servers (ver. 2.0)
    2 Commercial Food Service Equipment
        - for Commercial Dishwashers (ver. 2.0)

- for Commercial Ice Machines (ver. 2.0)
- for Commercial Ovens (ver. 2.1)
- for Commercial Refrigerators and Freezers

3 Lighting Products
- For Decorative Light Strings (ver. 1.5)
- For Luminaires (including sub-components) and Lamps (ver. 1.2)
- For Compact Fluorescent Lamps (CFLs) (ver. 4.3)
- For Integral LED Lamps (ver. 1.4)

4 Heating, Ventilation, and AC Products
- for Residential Ceiling Fans (ver. 3.0)
- for Residential Ventilating Fans (ver. 3.2)

5 Other
- For Water Coolers (ver. 3.0)

***D. A NIST Designated Phase-I and Phase-II Conformity Assessment Body (CAB) for the following economies and regulatory authorities under the terms of the stated MRAs/Treaties:***

- Australia: ACMA (Australian Communication and Media Authority) – APEC Tel MRA -Phase I;
- Canada: (Innovation, Science and Economic development Canada - ISEDC) Foreign Certification Body – FCB – APEC Tel MRA -Phase I & Phase II;
- Chinese Taipei (Republic of China – Taiwan):
  - BSMI (Bureau of Standards, Metrology and Inspection) APEC Tel MRA -Phase I;
  - NCC (National Communications Commission) APEC Tel MRA -Phase I;
- European Union:
  - EMC Directive 2014/30/EU US-EU EMC & Telecom MRA CAB (NB)
  - Radio Equipment (RE) Directive 2014/53/EU US-EU EMC & Telecom MRA CAB (NB)
  - Low Voltage Directive (LVD) 2014/35/EU
- Hong Kong Special Administrative Region: (Office of the Telecommunications Authority – OFTA) APEC Tel MRA -Phase I & Phase II
- Israel – US-Israel MRA Phase I
- Republic of Korea (Ministry of Communications - Radio Research Laboratory) APEC Tel MRA -Phase I
- Singapore: (Infocomm Media Development Authority - IMDA) APEC Tel MRA -Phase I & Phase II;
- Japan: VCCI - Voluntary Control Council for Interference US-Japan Telecom Treaty VCCI Side Letter
- USA:
  - ENERGY STAR Recognized Test Laboratory – US EPA
  - Telecommunications Certification Body (TCB) – US FCC;
  - Nationally Recognized Test Laboratory (NRTL) – US OSHA
- Vietnam: APEC Tel MRA -Phase I;

# 2 EUT Test Configuration

## 2.1 Justification

The EUT was configured for testing according to ANSI/TIA-603-E-2016, ANSI C63.26-2015, and KDB 971168 D01 v03r01.

## 2.2 EUT Exercise Software

EUT configurations were managed via an integrated menu within the device. Options to change the frequency and power were displayed on the screen of the EUT.

**Power Setting:**

**TX: 537.600 – 662.950 MHz**

| Modulation | Frequency (MHz) | Power Setting (mW) |
|---|---|---|
| 8PSK | 537.600 | 50 |
| | 572.775 | 50 |
| | 607.950 | 50 |
| | 614.050 | 20 |
| | 614.550 | 20 |
| | 615.950 | 20 |
| | 657.050 | 20 |
| | 660 | 20 |
| | 662.950 | 20 |

## 2.3 Special Equipment

There were no special accessories were required, included, or intended for use with EUT during these tests.

## 2.4 Equipment Modifications

None

## 2.5 Local Support Equipment

None

## 2.6 Interface Ports and Cables

None

# 3 Summary of Test Results

| FCC & ISEDC Rules | Descriptions of Test | Result (s) |
|---|---|---|
| §15.236 (d)<br>RSS-210 G.1 | RF Output Power | Compliant |
| FCC 2.1093<br>ISEDC RSS-102 | RF Exposure | Compliant[1] |
| §15.236 (f.2,g)<br>RSS-210 G.2 | Operating Bandwidth & Emission Mask | Compliant |
| §15.236 (g)<br>RSS-210 G.1<br>ETSI EN 300 422-1(4.2.4) | Spurious Emissions at the Antenna Port | Compliant |
| | Field Strength of Spurious Emissions | Compliant |
| §15.236 (f.3)<br>RSS-210 G.2 | Frequency Stability | Compliant |

*BACL is responsible for all the information provided in this report, except when information is provided by the customer as identified in this report. Information provided by the customer, e.g., antenna gain, can affect the validity of results.*

Note[1]: Refer to SAR test report

# 4 FCC §15.236 (d) & RSS-210 G.1 – RF Output Power

## 4.1 Applicable Standards

According to FCC §15.236 (d) the maximum radiated power shall not exceed the following values:

(1) In the bands allocated and assigned for broadcast television and in the 600 MHz service band: 50 mW EIRP.

(2) In the 600 MHz guard band and the 600 MHz duplex gap: 20 mW EIRP.

According to ISEDC RSS-210 Section G.1 the transmit power shall be measured in average value as a conducted emission over any period of continuous transmission.

The frequency bands, transmit e.i.r.p., authorized bandwidth and frequency stability limits for devices are provided in table G1.

**Table G1 — Specifications for wireless microphones**

| Frequency bands (MHz) | Transmit e.i.r.p. (mW) | Authorized bandwidth (kHz) | Frequency stability (± ppm) |
|---|---|---|---|
| 54-72<br>76-88<br>174-216 | 50 | 200 | 50 |
| 470-608 | 250 | 200 | 50 |
| 614-616<br>653-663 | 20 | 200 | 50 |

## 4.2 Test Procedure

KDB 971168 D01 v03r01

## 4.3 Test Equipment List and Details

| BACL No. | Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Interval |
|---|---|---|---|---|---|---|
| 697 | ETS-LINDGREN | Power Sensor | 7002-006 | 160097 | 2024-03-06 | 1 year |
| | - | RF Cable | - | - | Each time[1] | N/A |

Note[1]: cable included in the test set-up will be checked each time before testing.

***Statement of Traceability: BACL Corp.*** *attests that all of the calibrations on the equipment items listed above were traceable to NIST or to another internationally recognized National Metrology Institute (NMI), and were compliant with the latest version of A2LA policy P102 "A2LA Policy on Metrological Traceability".*

## 4.4 Test Environmental Conditions

| | |
|---|---|
| **Temperature:** | 22ºC |
| **Relative Humidity:** | 45% |
| **ATM Pressure:** | 101.2 kPa |

*The testing was performed by Xavier Kelley on 2024-06-11 to 2024-06-13 at RF site.*

## 4.5 Test Setup Diagram

## 4.6 Test Results

| Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | EIRP (dBm) | FCC EIRP Limit (dBm) | IC EIRP Limit (dBm) |
|---|---|---|---|---|---|
| 537.6 | 12.91 | 2.15 | 15.06 | 16.99 | 23.94 |
| 572.775 | 12.84 | 2.15 | 14.99 | 16.99 | 23.94 |
| 607.95 | 12.87 | 2.15 | 15.02 | 16.99 | 23.94 |

| Frequency (MHz) | Conducted Power (dBm) | Antenna Gain (dBi) | EIRP (dBm) | Limit (dBm) |
|---|---|---|---|---|
| 614.05 | 8.65 | 2.15 | 10.8 | 13.01 |
| 614.55 | 8.83 | 2.15 | 10.98 | 13.01 |
| 615.95 | 8.76 | 2.15 | 10.91 | 13.01 |
| 657.05 | 8.38 | 2.15 | 10.53 | 13.01 |
| 660 | 8.34 | 2.15 | 10.5 | 13.01 |
| 662.95 | 8.33 | 2.15 | 10.48 | 13.01 |

**Below For Reference Purposes Only:**

**Max Power @ 50mW (Peak)**

| Frequency (MHz) | Conducted Power (dBm) |
|---|---|
| 537.6 | 15.90 |
| 572.775 | 15.76 |
| 607.95 | 15.16 |

**Max Power @ 20mW (Peak)**

| Frequency (MHz) | Conducted Power (dBm) |
|---|---|
| 614.05 | 11.53 |
| 614.55 | 11.73 |
| 615.95 | 11.62 |
| 653.05 | 11.78 |
| 657.05 | 11.90 |
| 660 | 11.92 |
| 662.95 | 11.85 |

# 5 FCC §15.236(f2,g) & RSS-210 G.2 – Occupied Bandwidth & Emission Mask

## 5.1 Applicable Standards

According to FCC §15.236(f2,g):

The operating frequency within a permissible band of operation as defined in paragraph (c) must comply with the following requirements.

(1) The frequency selection shall be offset from the upper or lower band limits by 25 kHz or an integral multiple thereof.

(2) One or more adjacent 25 kHz segments within the assignable frequencies may be combined to form a channel whose maximum bandwidth shall not exceed 200 kHz. The operating bandwidth shall not exceed 200 kHz.

(3) The frequency tolerance of the carrier signal shall be maintained within ±0.005% of the operating frequency over a temperature variation of −20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. Battery operated equipment shall be tested using a new battery.

Emissions within the band from one megahertz below to one megahertz above the carrier frequency shall comply with the emission mask in § 8.3 of ETSI EN 300 422-1 V1.4.2 (2011-08), Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless microphones in the 25 MHz to 3 GHz frequency range; Part 1: Technical characteristics and methods of measurement. Emissions outside of this band shall comply with the limits specified in section 8.4 of ETSI EN 300 422-1 V1.4.2 (2011-08).

According to RSS-210 the occupied bandwidth for wireless microphones shall not exceed the authorized bandwidth specified in table G1 (below).

**Table G1 — Specifications for wireless microphones**

| Frequency bands (MHz) | Transmit e.i.r.p. (mW) | Authorized bandwidth (kHz) | Frequency stability (± ppm) |
|---|---|---|---|
| 54-72<br>76-88<br>174-216 | 50 | 200 | 50 |
| 470-608 | 250 | 200 | 50 |
| 614-616<br>653-663 | 20 | 200 | 50 |

## 5.2 Test Procedure

The OBW is according to KDB 971168 D01 v03r01

The Emission mask is according to sections 8.3 of ETSI EN 300 422-1 V1.4.2 (2011-08).

## 5.3 Test Equipment List and Details

| BACL No. | Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Interval |
|---|---|---|---|---|---|---|
| 1128 | Agilent | EXA Signal Analyzer | N9010A | MY48030852 | 2024-05-23 | 1 year |
| 912 | Rhode & Schwarz | Signal Analyzer | FSV40 | 1321.3008k39 -101203-UW | 2023-06-02 | 13 months |
| | - | RF Cable | - | - | Each time[1] | N/A |

Note[1]: cable included in the test set-up will be checked each time before testing.

***Statement of Traceability: BACL Corp.*** *attests that all of the calibrations on the equipment items listed above were traceable to NIST or to another internationally recognized National Metrology Institute (NMI), and were compliant with the latest version of A2LA policy P102 "A2LA Policy on Metrological Traceability".*

## 5.4 Test Environmental Conditions

| | |
|---|---|
| **Temperature:** | 22ºC |
| **Relative Humidity:** | 45% |
| **ATM Pressure:** | 101.2 kPa |

*The testing was performed by Xavier Kelley on 2024-06-11 to 2024-06-13 at RF site.*

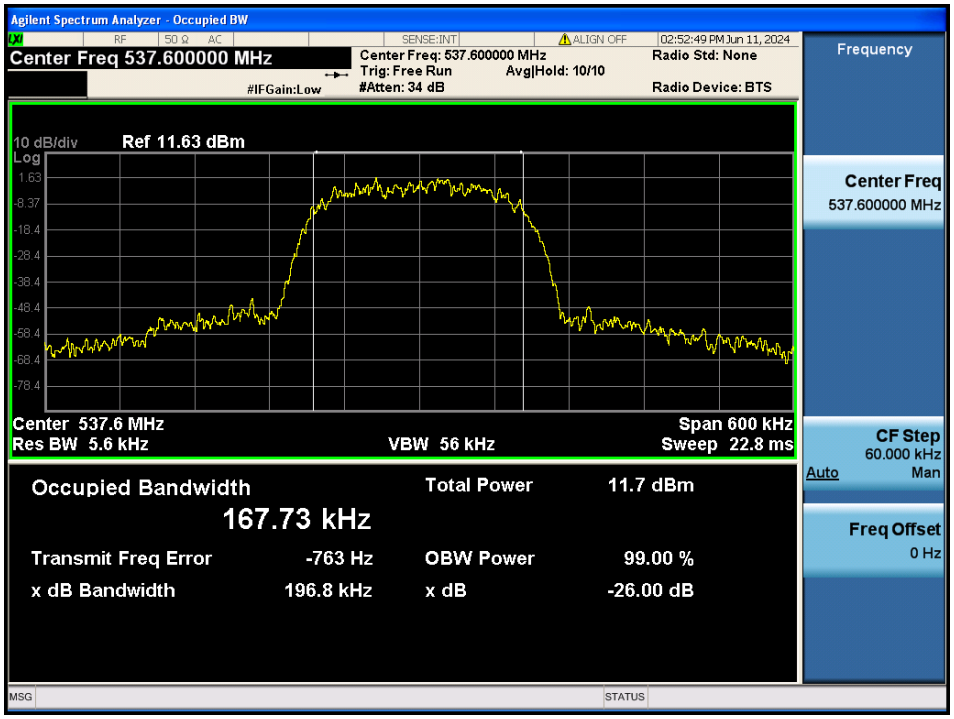
## 5.5 Test Setup Diagram

## 5.6 Test Results

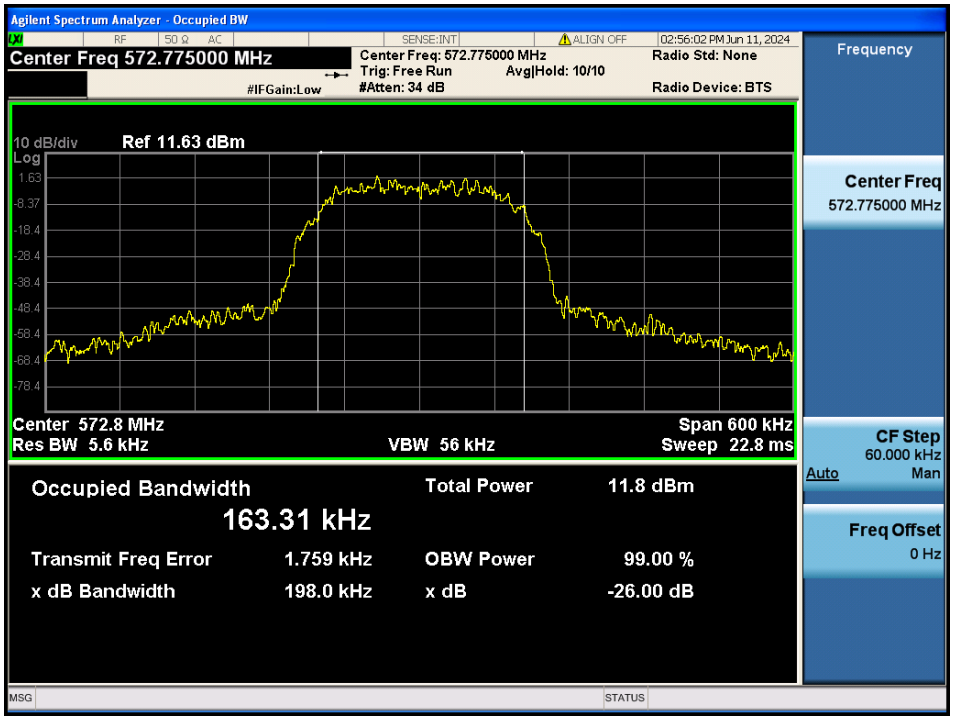
| Center Frequency (MHz) | Power Setting (mW) | 99% Bandwidth (kHz) | Limit (kHz) | Result |
|---|---|---|---|---|
| 537.6 | 50 | 167.72 | <200 | Pass |
| 572.775 | 50 | 163.31 | <200 | Pass |
| 607.95 | 50 | 166.17 | <200 | Pass |
| 614.05 | 20 | 167.31 | <200 | Pass |
| 614.55 | 20 | 167.18 | <200 | Pass |
| 615.95 | 20 | 166 | <200 | Pass |
| 657.05 | 20 | 169.75 | <200 | Pass |
| 660 | 20 | 162.99 | <200 | Pass |
| 662.95 | 20 | 164.23 | <200 | Pass |

*Please refer to the following plots for detailed test results*

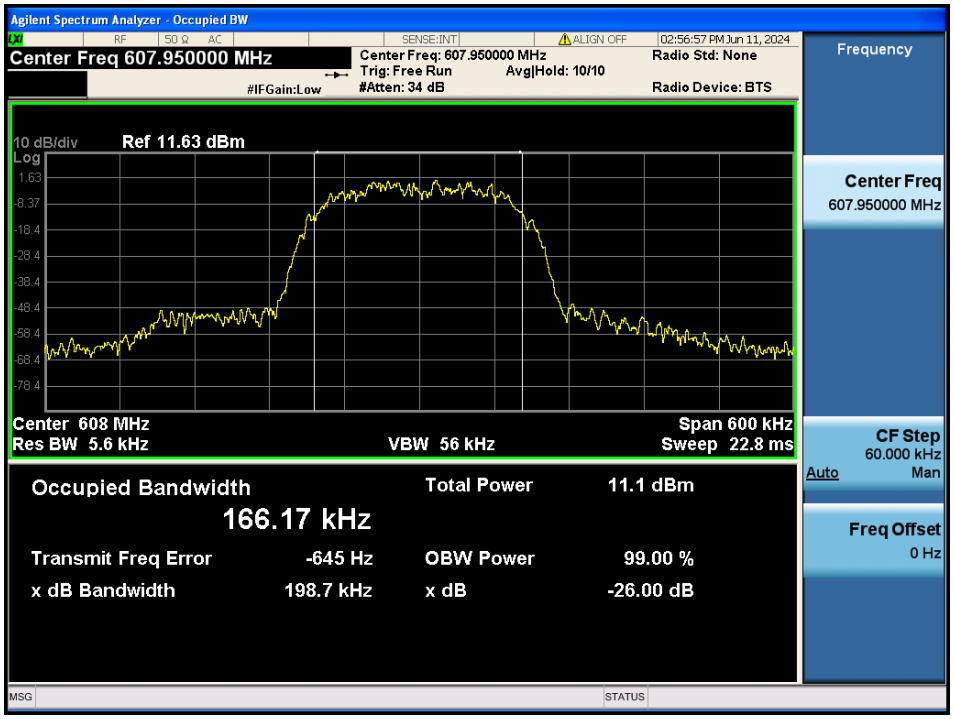
**537.6 MHz, 50mW, 99% OBW**



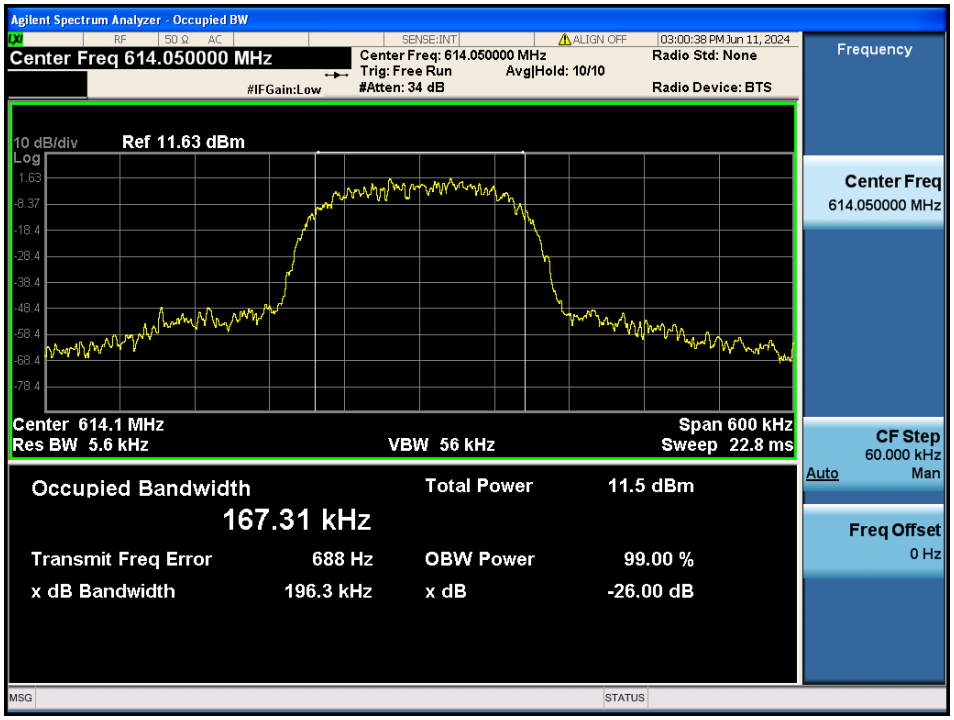

**572.775 50mW, 99% OBW**



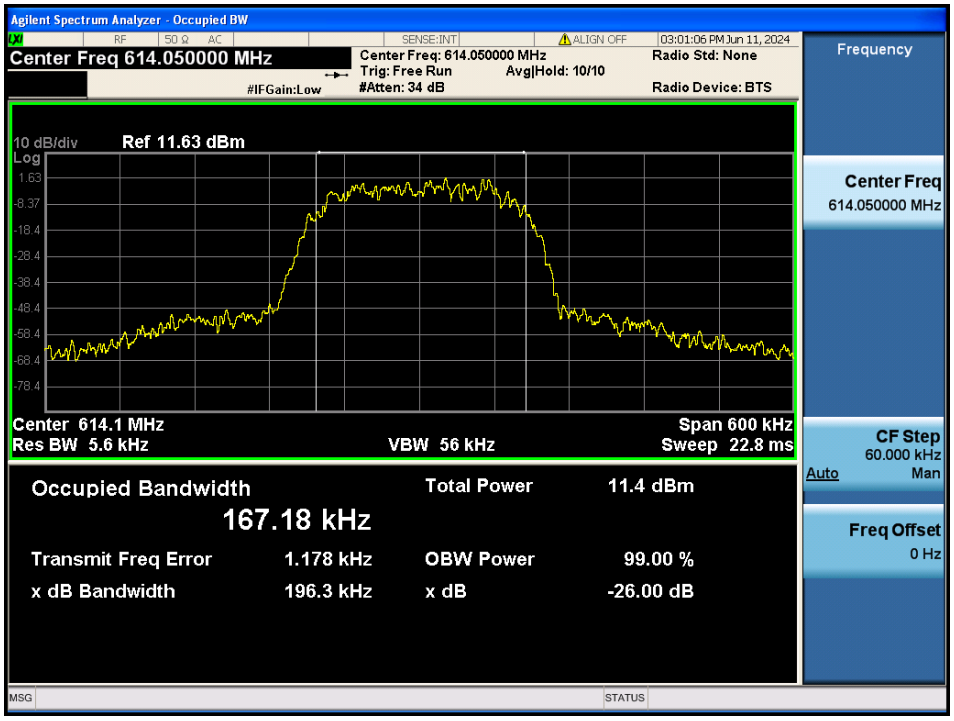
### 607.95 MHz, 50mW, 99% OBW



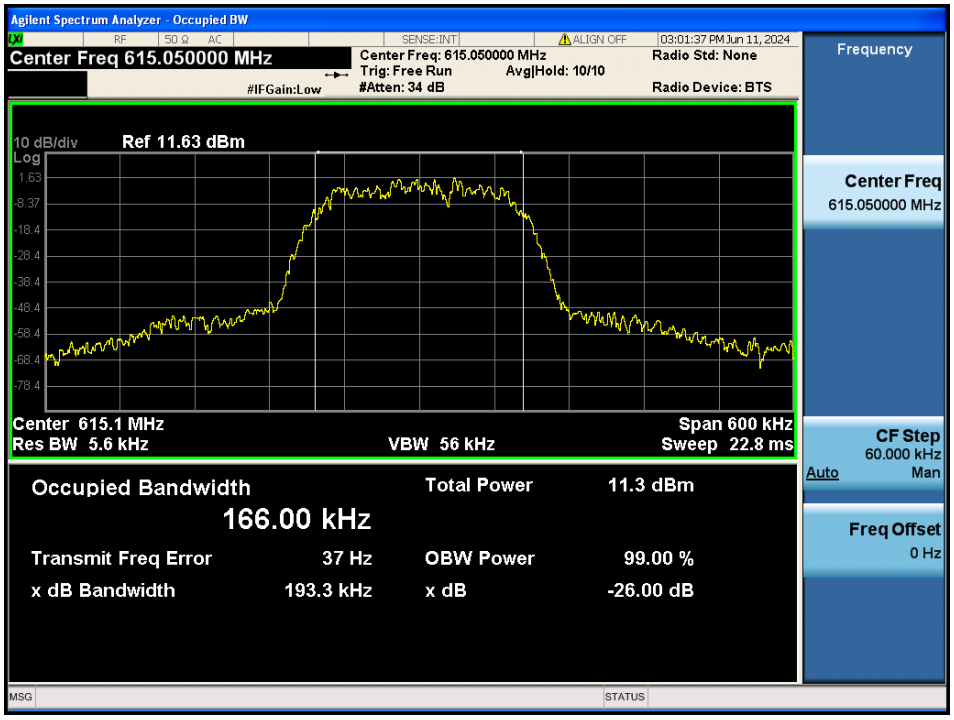

### 614.05 MHz, 20mW, 99% OBW



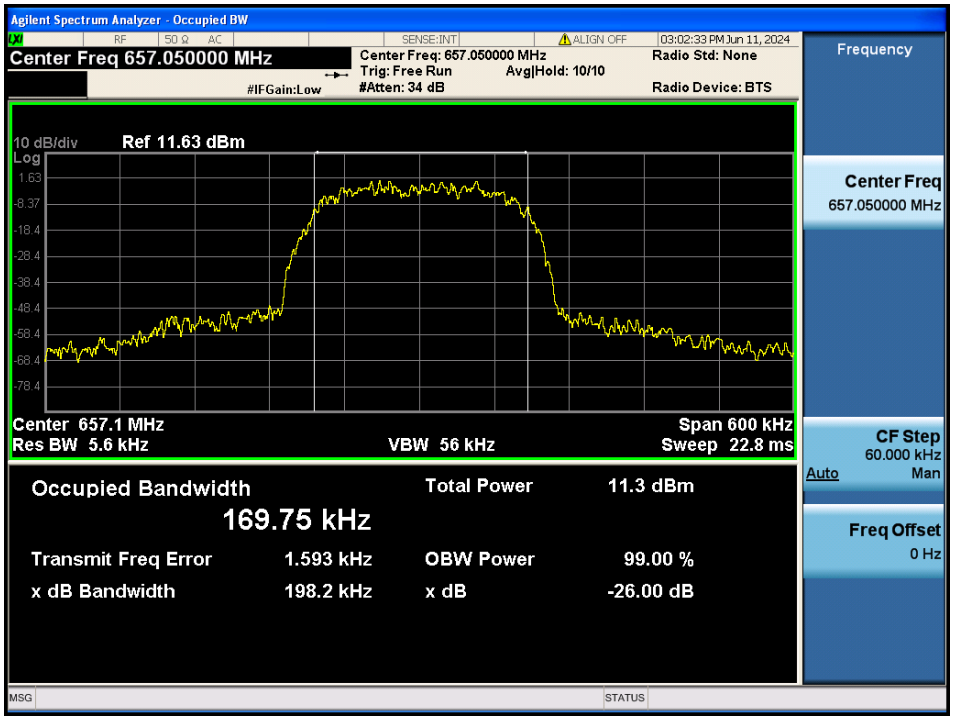
**614.55 MHz, 20mW, 99% OBW**



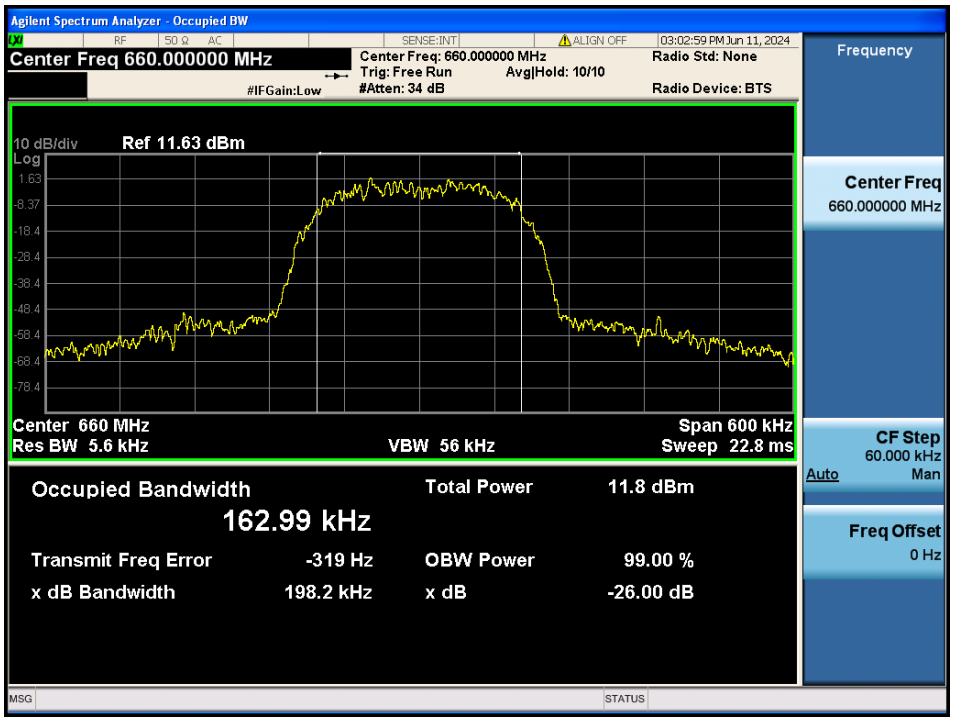

**615.95 MHz, 20mW, 99% OBW**



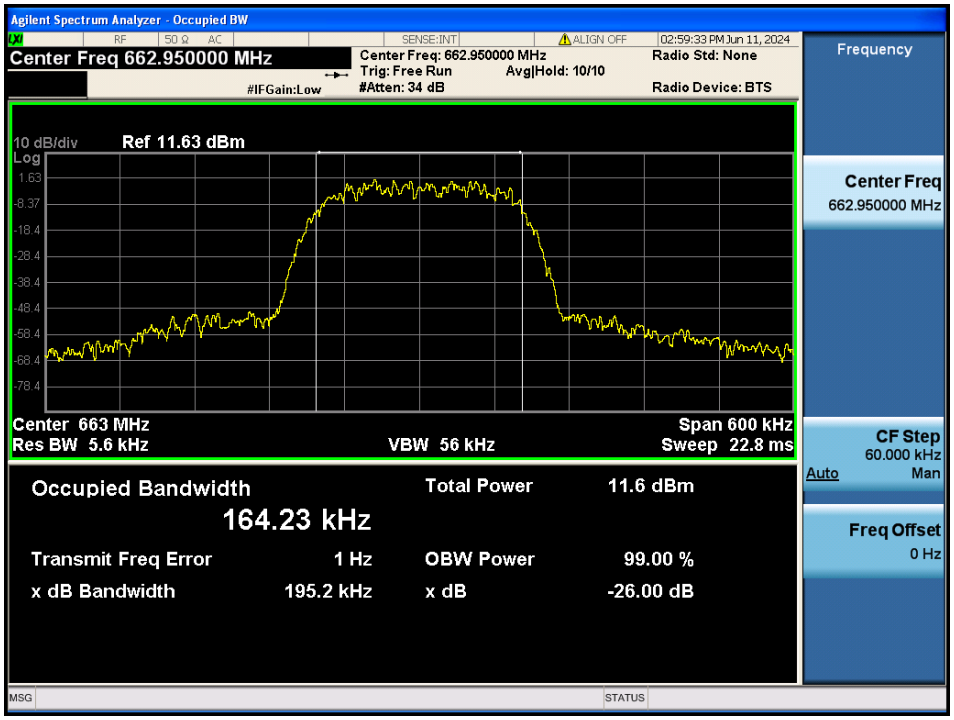
**657.05 MHz, 20mW, 99% OBW**



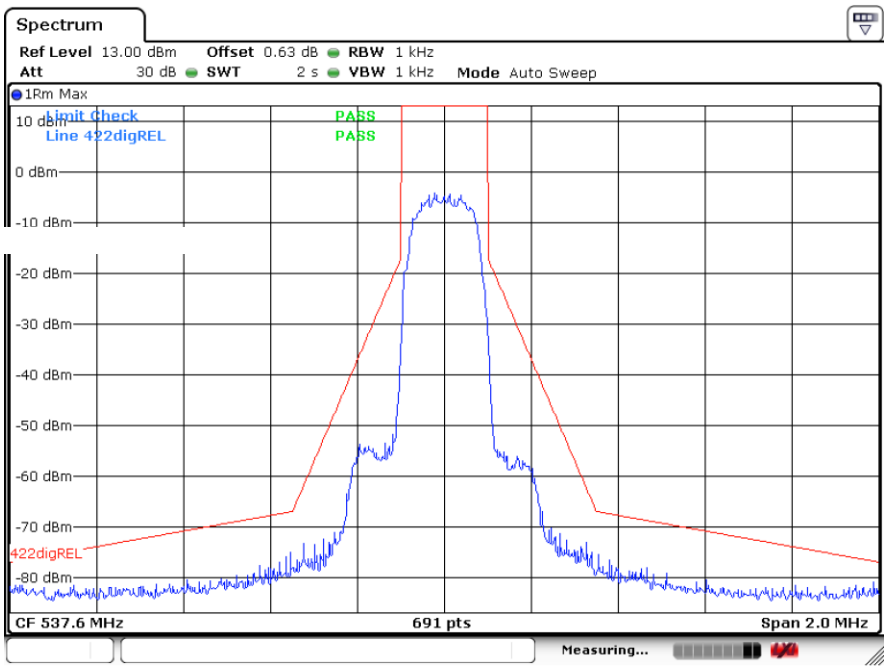

**660 MHz, 20mW, 99% OBW**



**662.95 MHz, 20mW, 99% OBW**



## 537.60 MHz, 50mW Emission Mask

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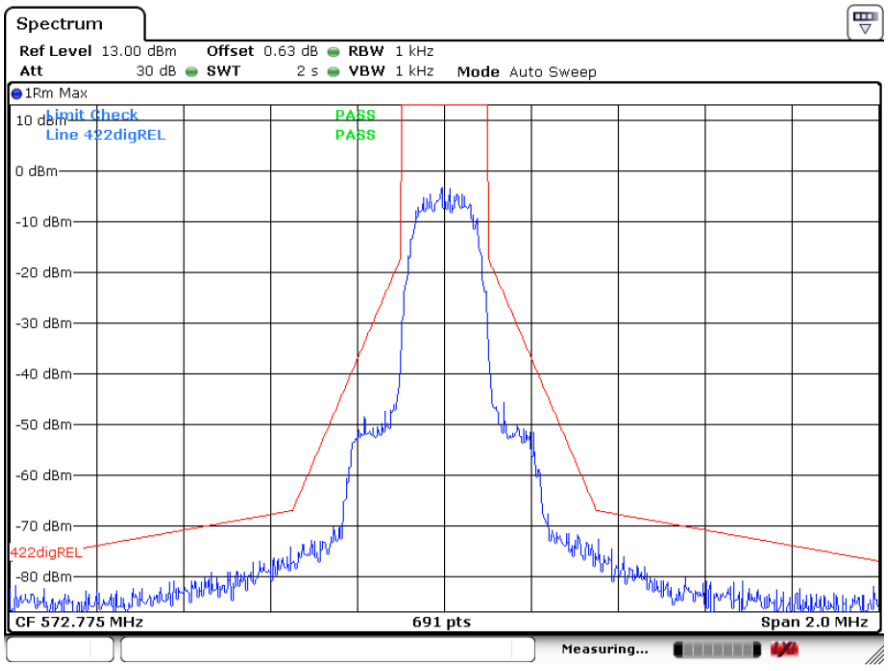
## 572.775 MHz, 50 mW Emission Mask

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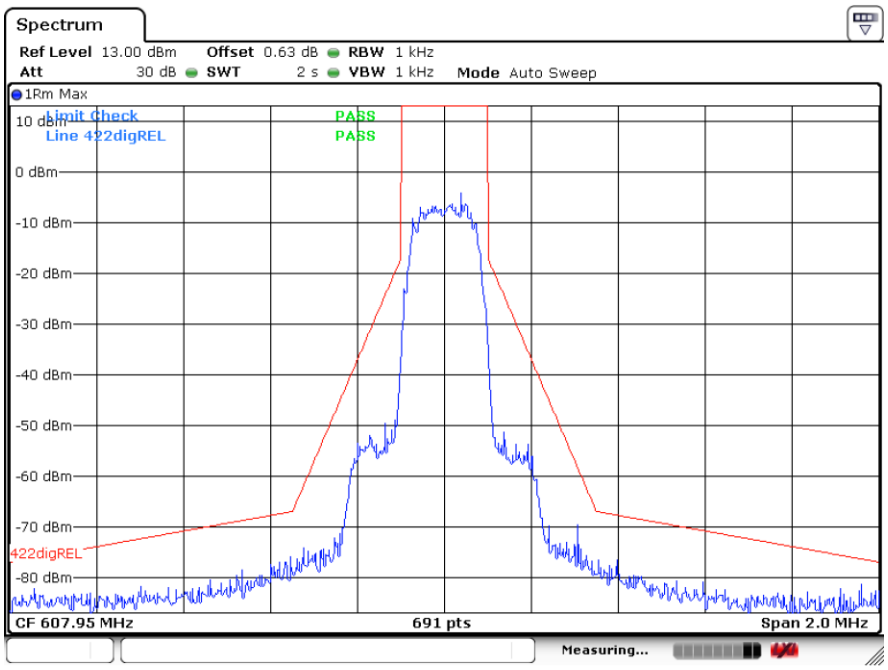
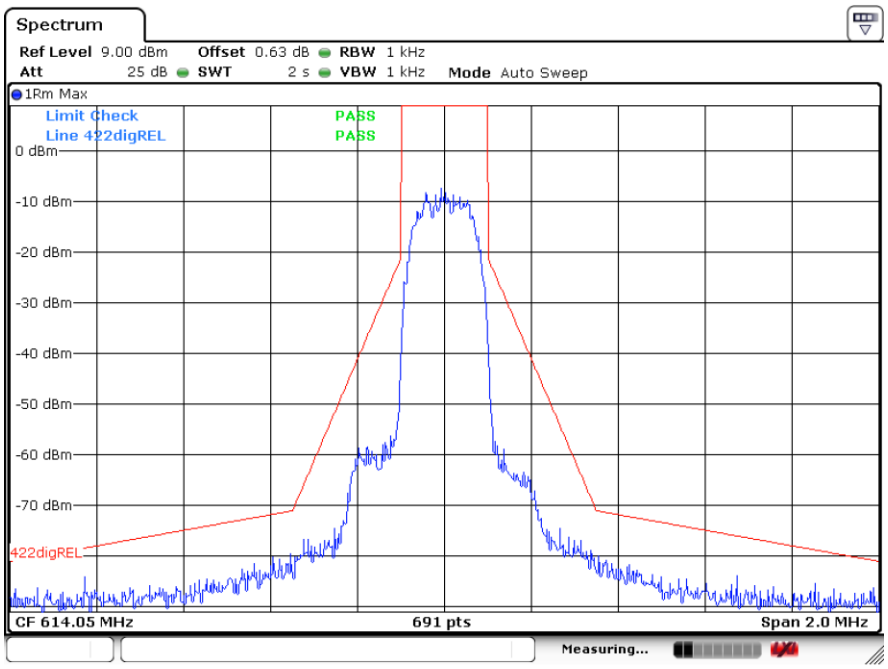
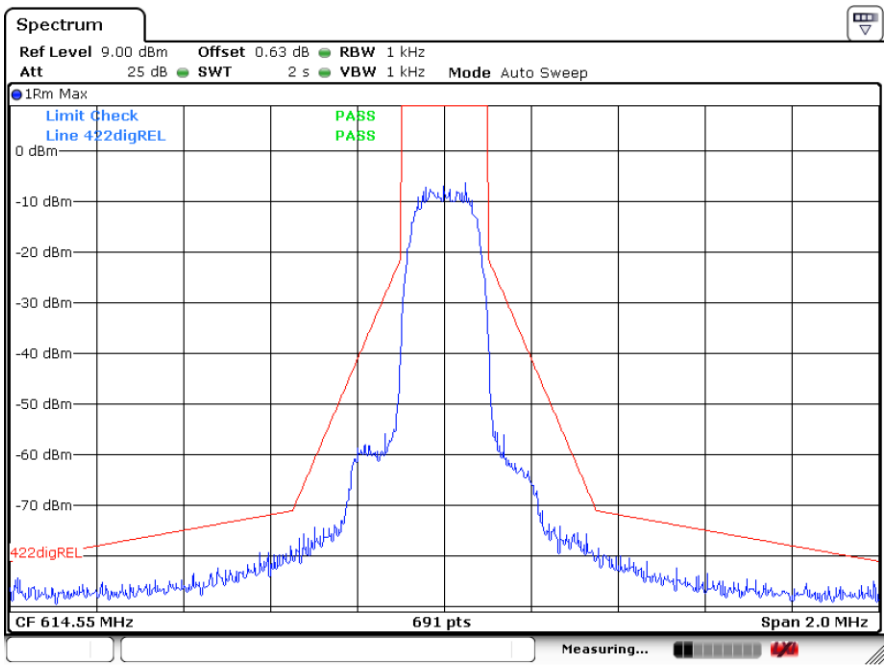
## 607.95 MHz, 50 mW Emission Mask



## 614.05 MHz, 20 mW Emission Mask



## 614.55 MHz, 20 mW Emission Mask

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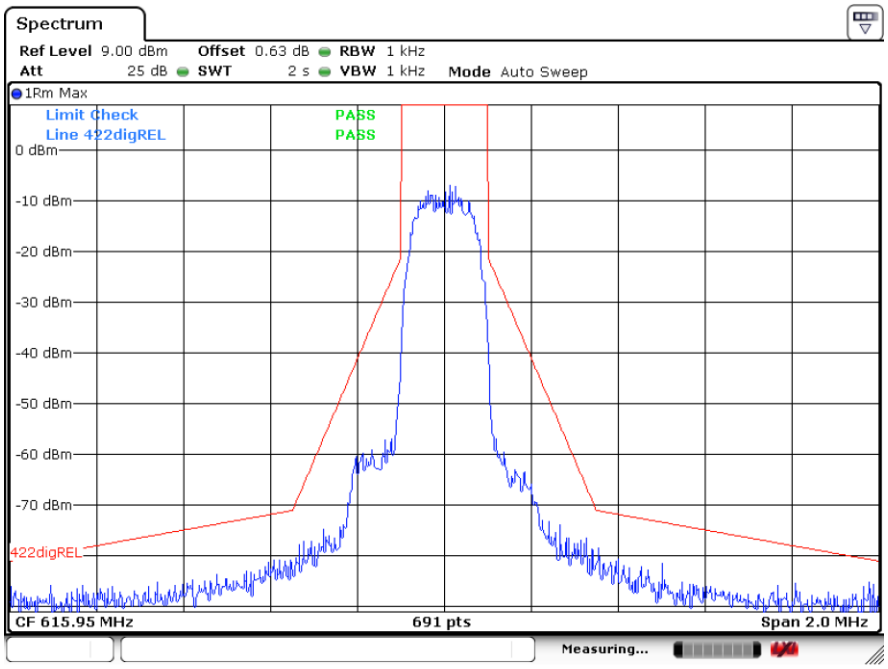
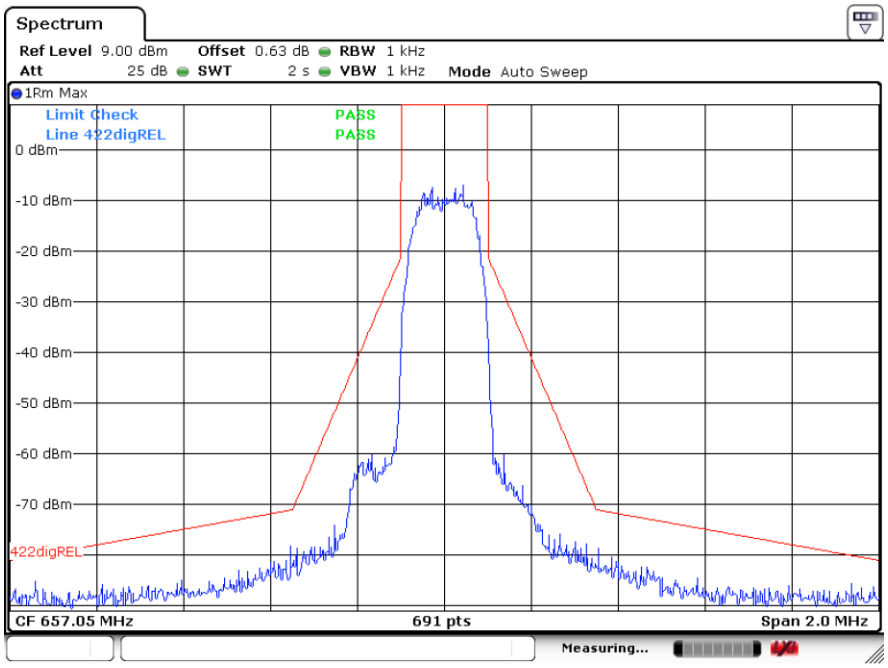
## 615.95 MHz, 20 mW Emission Mask

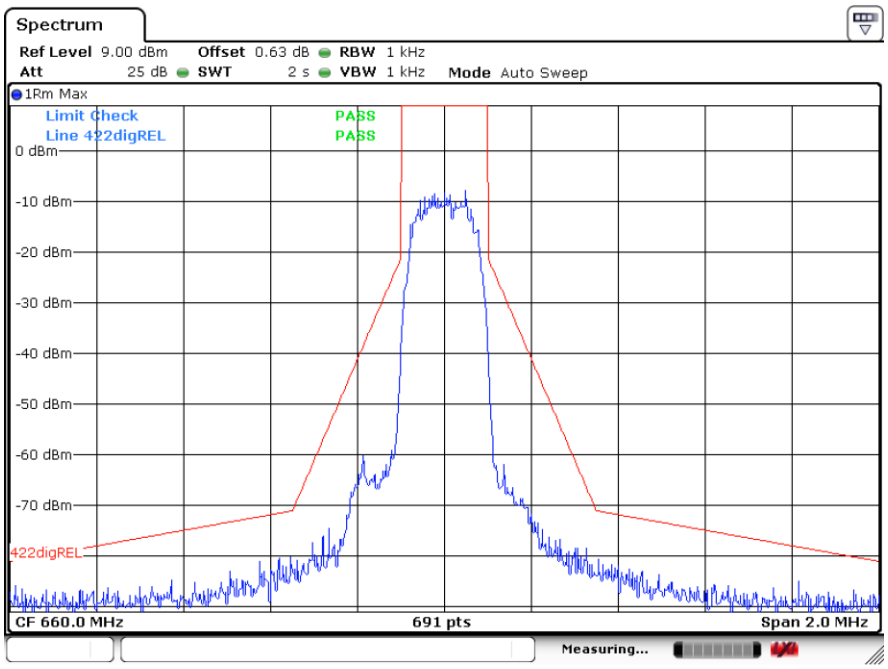



Date: 13.JUN.2024 10:34:25

## 657.05 MHz, 20 mW Emission Mask

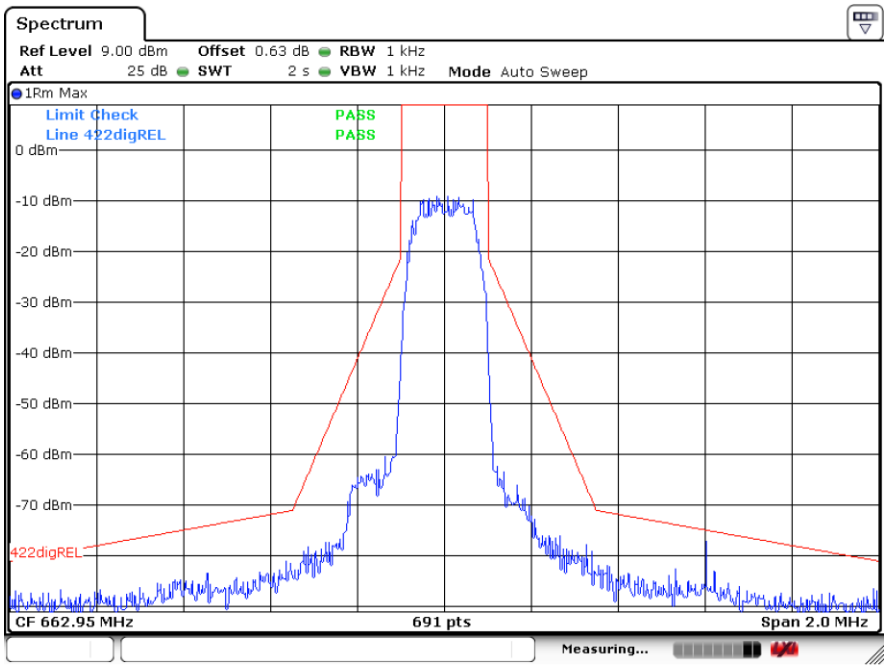


## 660 MHz, 20 mW Emission Mask




Date: 13.JUN.2024 10:37:15

## 662.95 MHz, 20 mW Emission Mask




Date: 13.JUN.2024 10:37:57

# 6 FCC §15.236 (g), RSS-210 G.1, & ETSI EN 300 422-1(4.2.4) – Conduced Transmitter Unwanted Emissions

## 6.1 Applicable Standards

According to FCC §15.236(g):

Emissions within the band from one megahertz below to one megahertz above the carrier frequency shall comply with the emission mask in § 8.3 of ETSI EN 300 422-1 V1.4.2 (2011-08), *Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless microphones in the 25 MHz to 3 GHz frequency range; Part 1: Technical characteristics and methods of measurement*. Emissions outside of this band shall comply with the limits specified in section 8.4 of ETSI EN 300 422-1 V1.4.2 (2011-08).

According to RSS-210 the transmit power shall be measured in average value as a conducted emission over any period of continuous transmission.

The frequency bands, transmit e.i.r.p., authorized bandwidth and frequency stability limits for devices are provided in table G1

**Table G1 — Specifications for wireless microphones**

| Frequency bands (MHz) | Transmit e.i.r.p. (mW) | Authorized bandwidth (kHz) | Frequency stability (± ppm) |
|---|---|---|---|
| 54-72<br>76-88<br>174-216 | 50 | 200 | 50 |
| 470-608 | 250 | 200 | 50 |
| 614-616<br>653-663 | 20 | 200 | 50 |

## 6.2 Test Procedure

KDB 971168 D01 v03r01 and ETSI EN 300 422-1 V1.4.2 (2011-08).

## 6.3 Test Equipment List and Details

| BACL No. | Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Interval |
|---|---|---|---|---|---|---|
| 1128 | Agilent | EXA Signal Analyzer | N9010A | MY48030852 | 2024-05-23 | 1 year |
| | - | RF Cable | - | - | Each time[1] | N/A |

Note[1]: cable included in the test set-up will be checked each time before testing.

***Statement of Traceability: BACL Corp.*** *attests that all of the calibrations on the equipment items listed above were traceable to NIST or to another internationally recognized National Metrology Institute (NMI), and were compliant with the latest version of A2LA policy P102 "A2LA Policy on Metrological Traceability".*

## 6.4 Test Environmental Conditions

| | |
|---|---|
| **Temperature:** | 22ºC |
| **Relative Humidity:** | 45% |
| **ATM Pressure:** | 101.2 kPa |

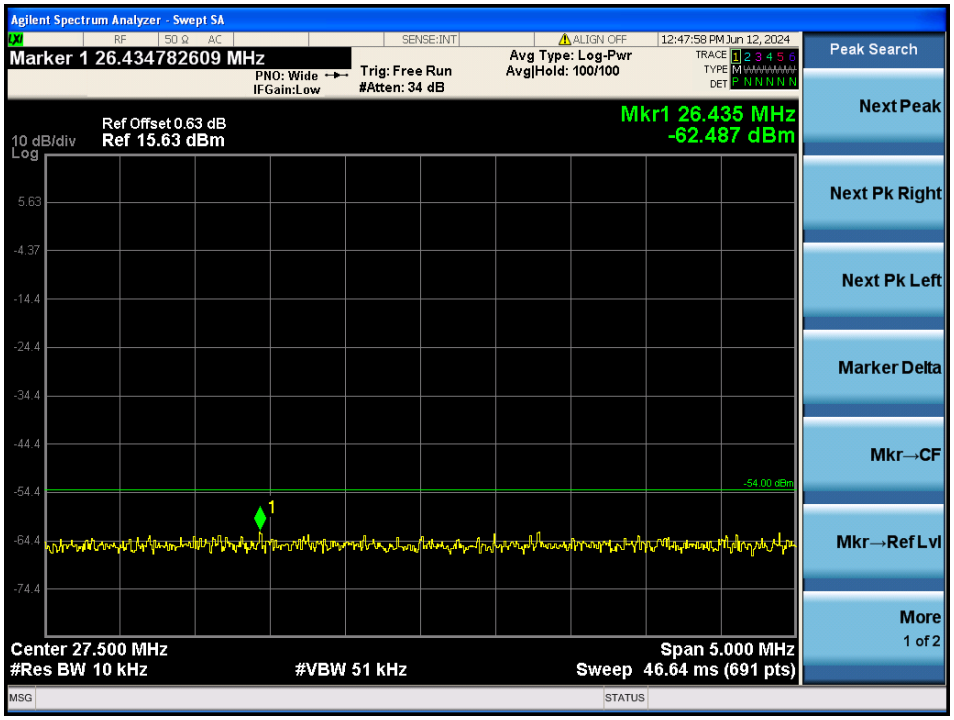
*The testing was performed by Xavier Kelley on 2024-06-11 to 2024-06-13 at RF site.*

## 6.5 Test Setup Diagram

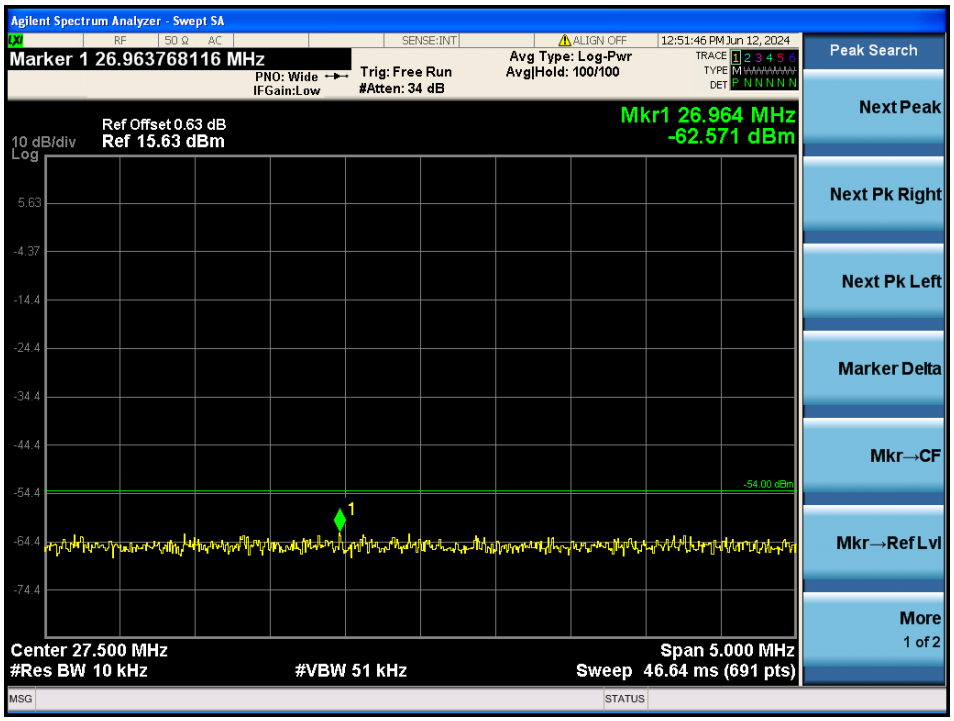
## 6.6 Test Results

**25 MHz to 30 MHz**

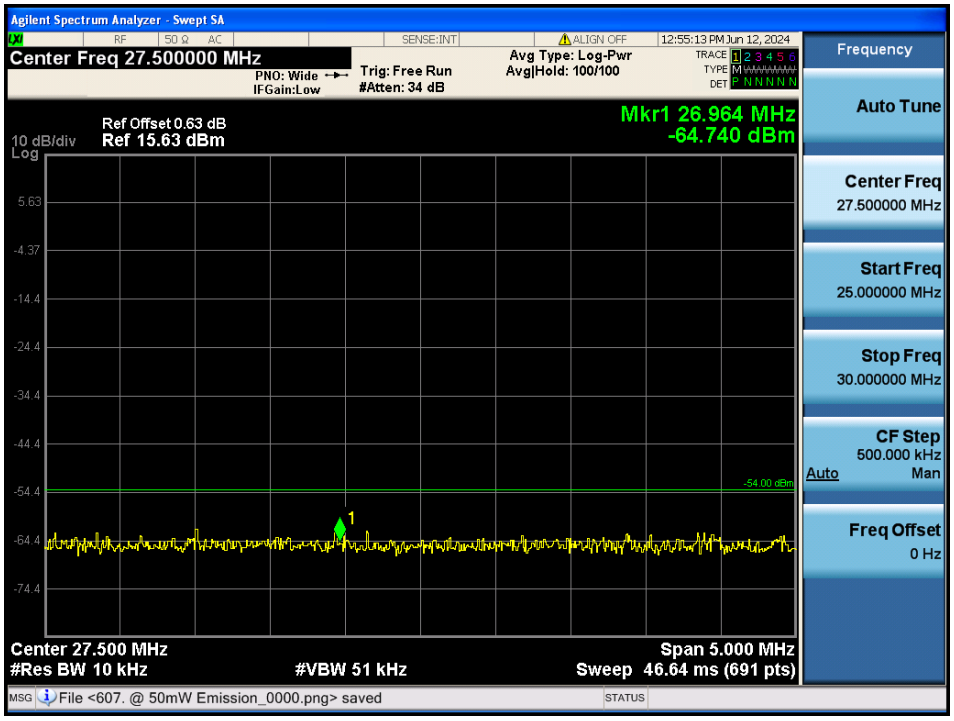
### 537.6 MHz, 50mW, Spurious Emission



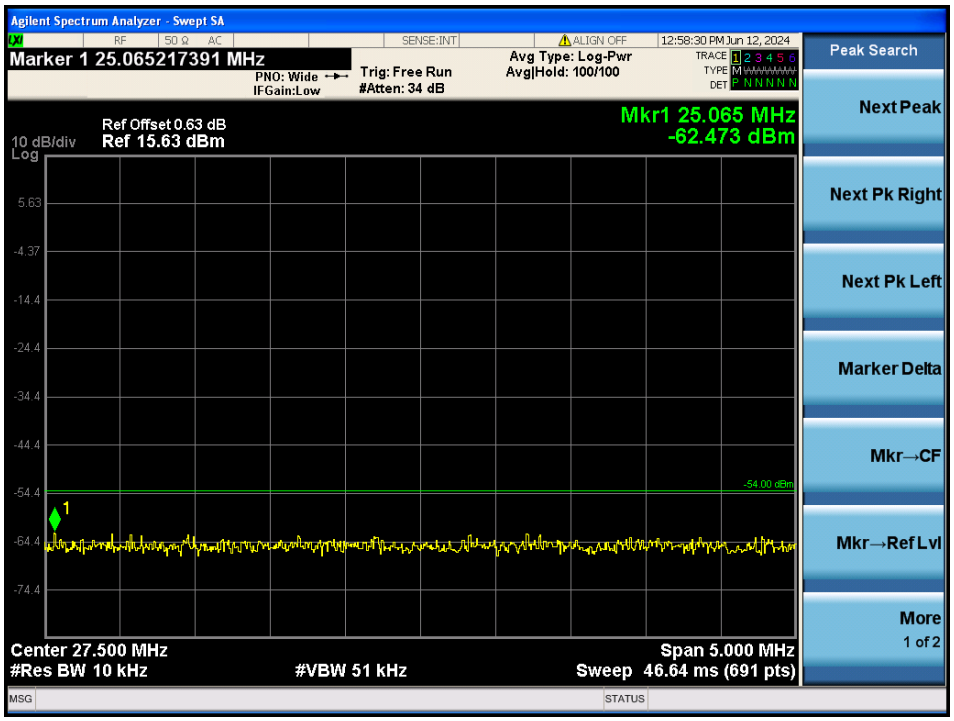

### 572.77 MHz, 50mW, Spurious Emission



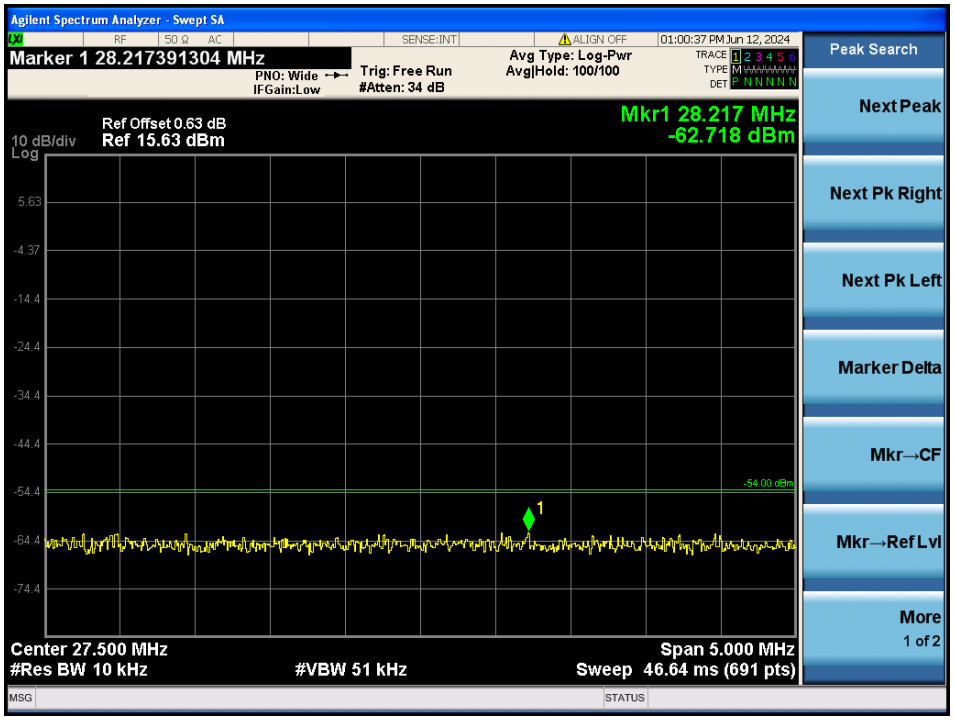
## 607.95 MHz, 50mW, Spurious Emission



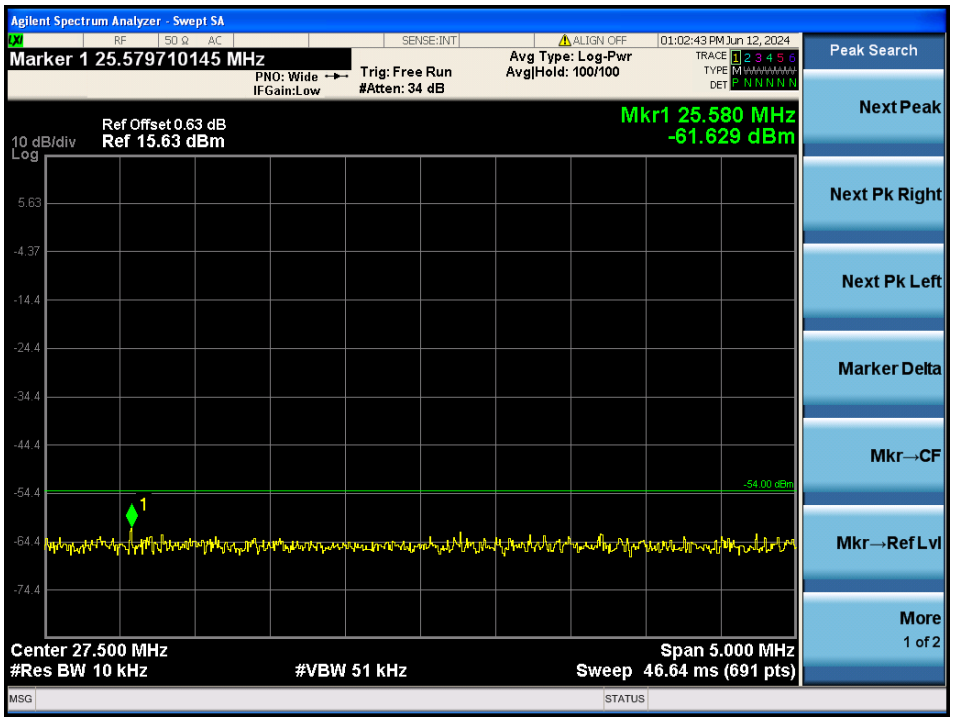

## 614.05 MHz, 20mW, Spurious Emission



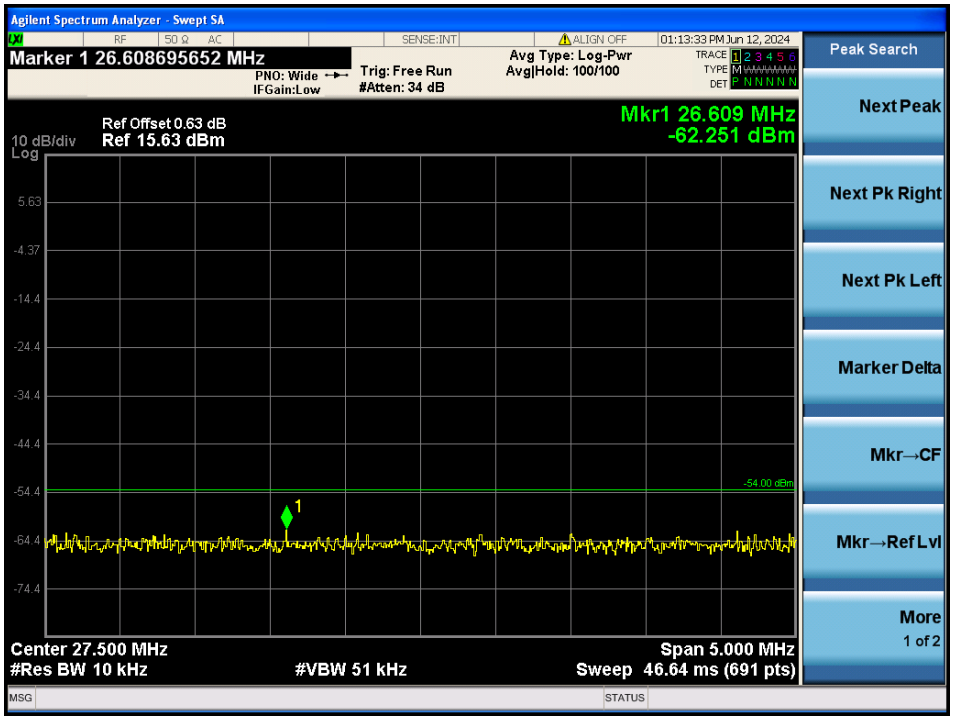
## 614.55 MHz, 20mW, Spurious Emission



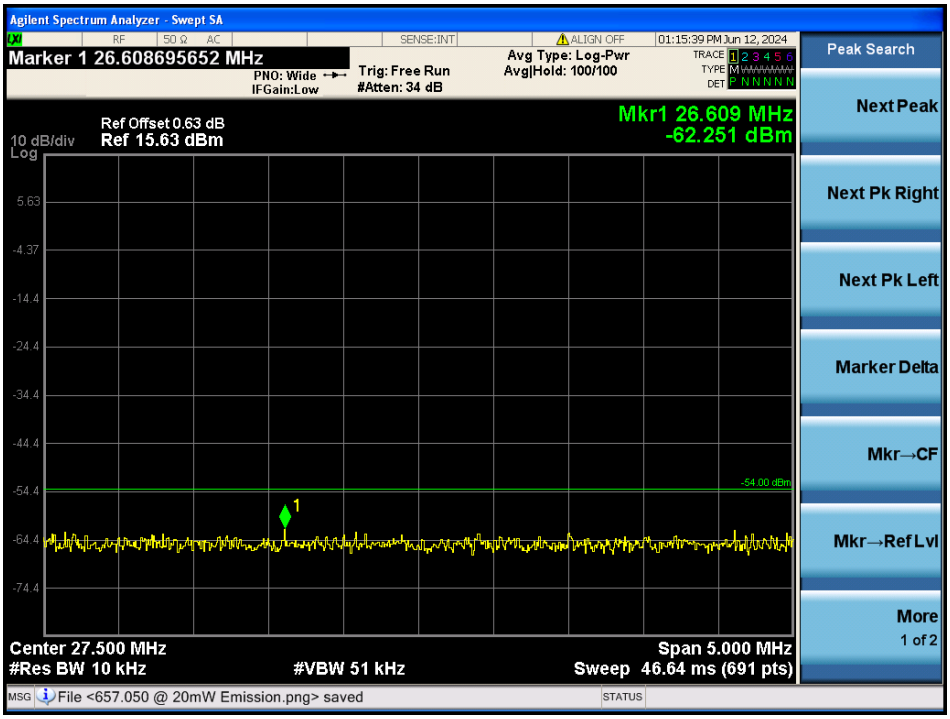

## 615.95 MHz, 20mW, Spurious Emission



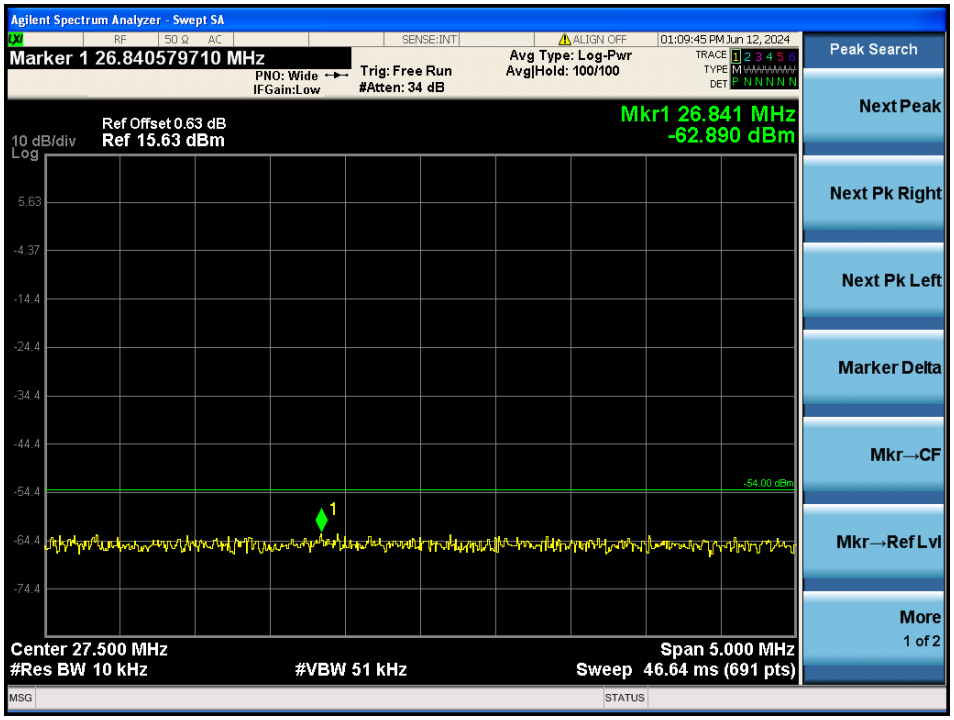
## 657.050 MHz, 20mW, Spurious Emission




## 660 MHz, 20mW, Spurious Emission



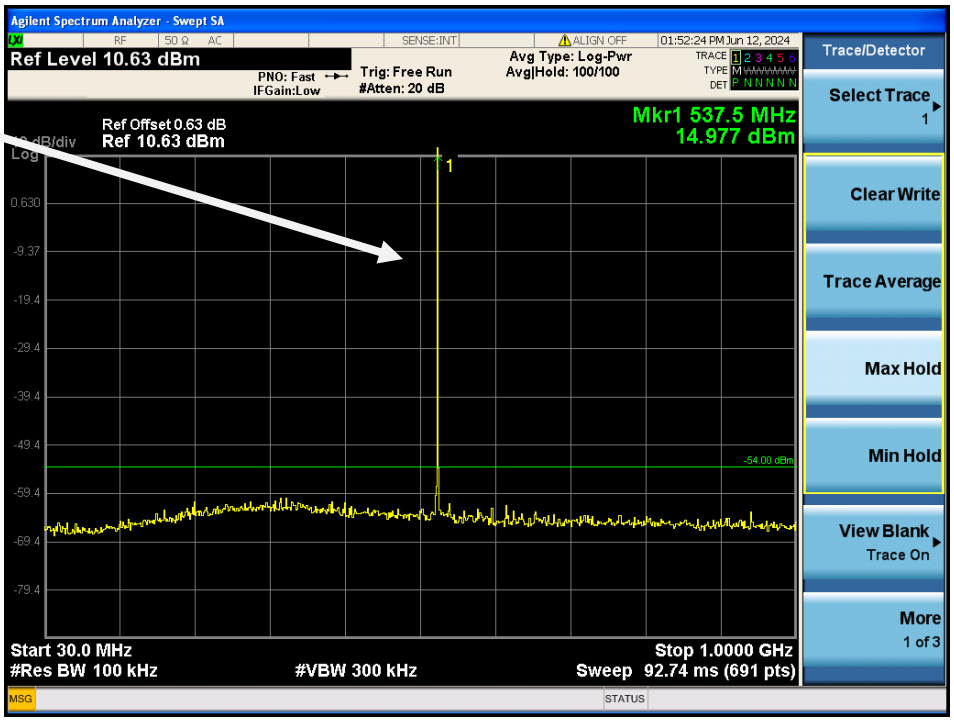
## 662.90 MHz, 20mW, Spurious Emission



## 30 MHz – 1 GHz

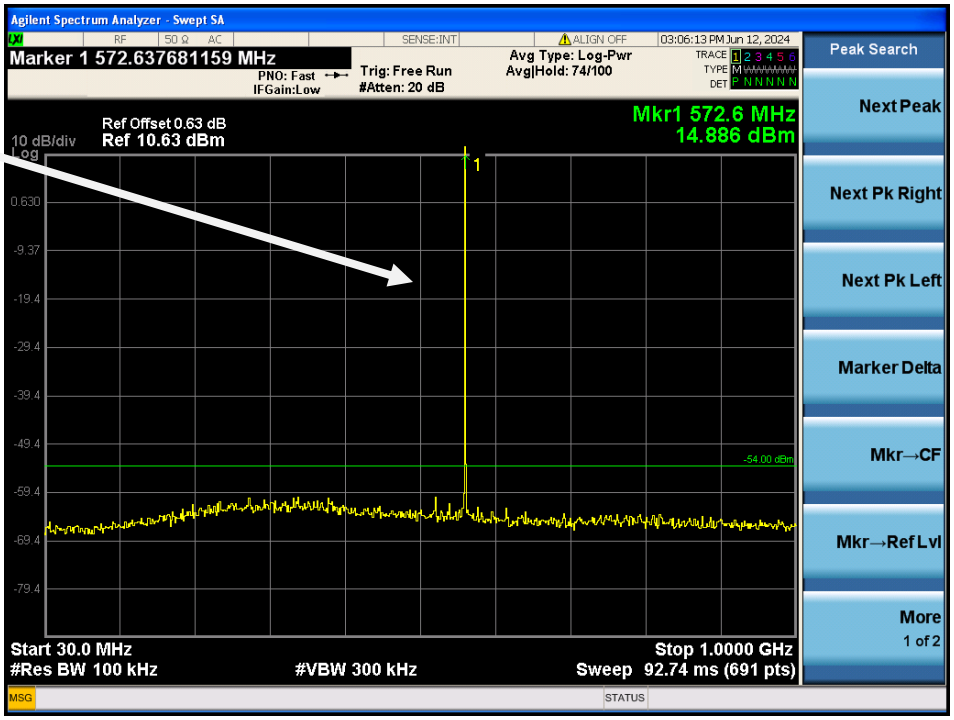
### 537.6 MHz, 50mW, Spurious Emission

Fundamental



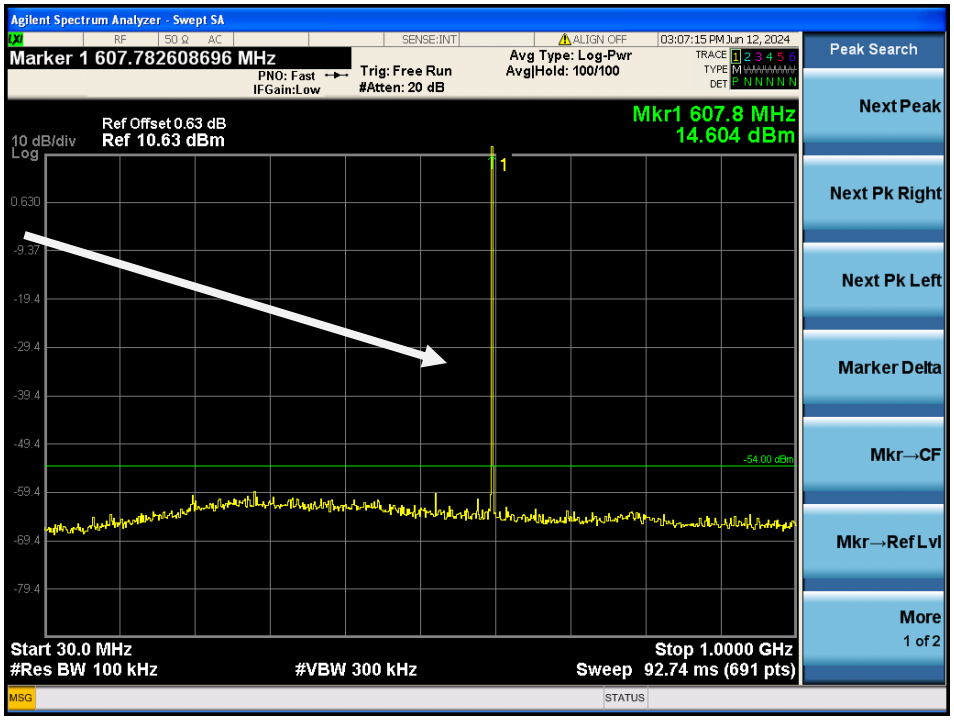

### 572.77 MHz, 50mW, Spurious Emission

Fundamental



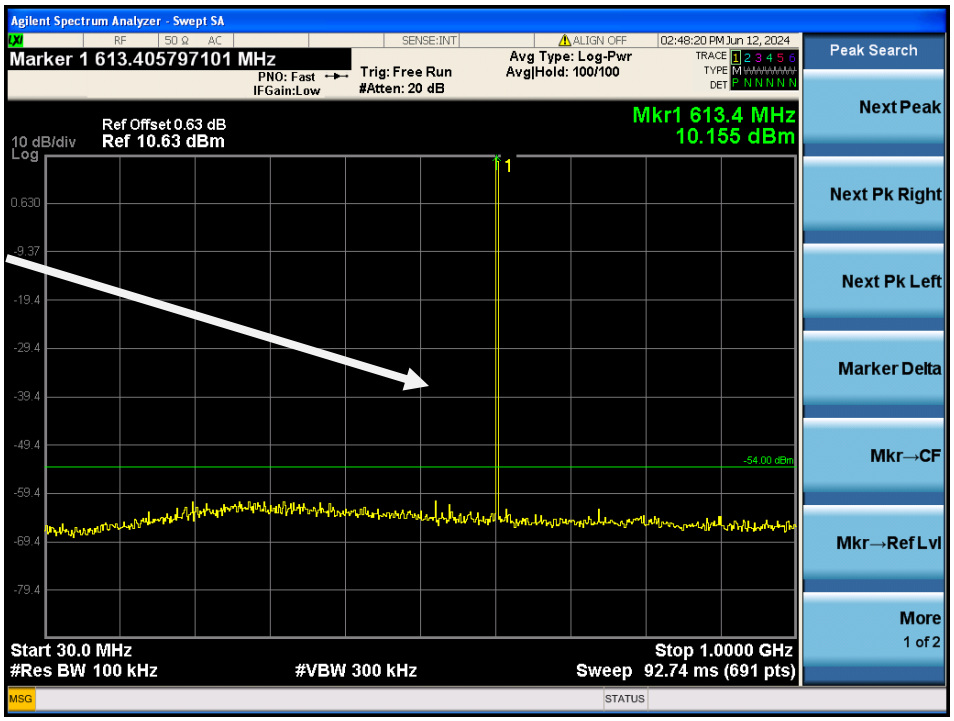
## 607.90 MHz, 50mW, Spurious Emission

Fundamental



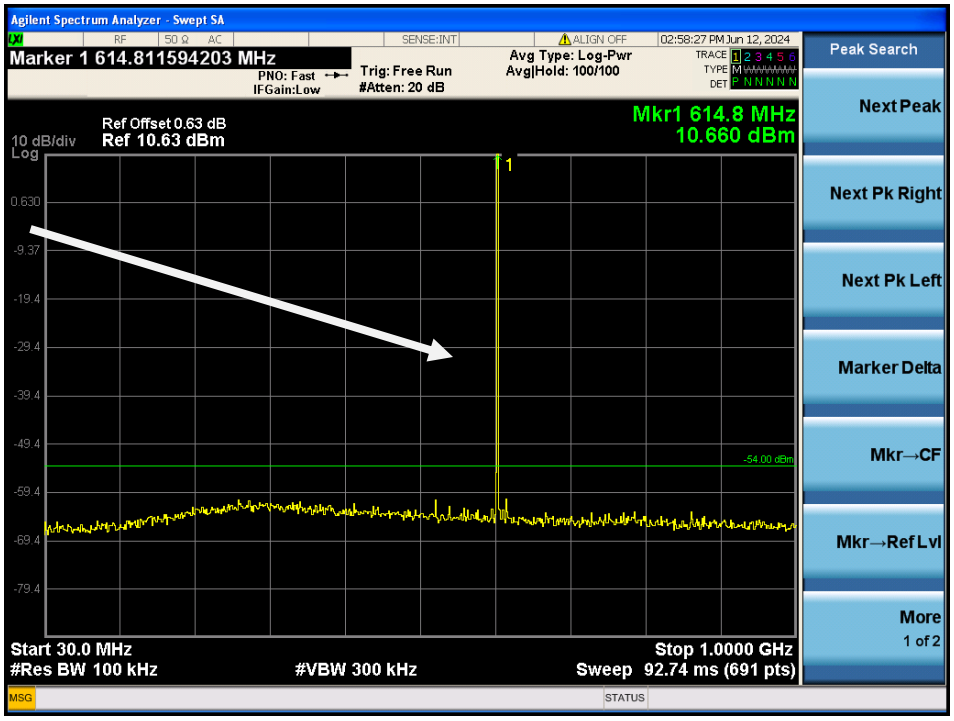

## 614.05 MHz, 20mW, Spurious Emission

Fundamental



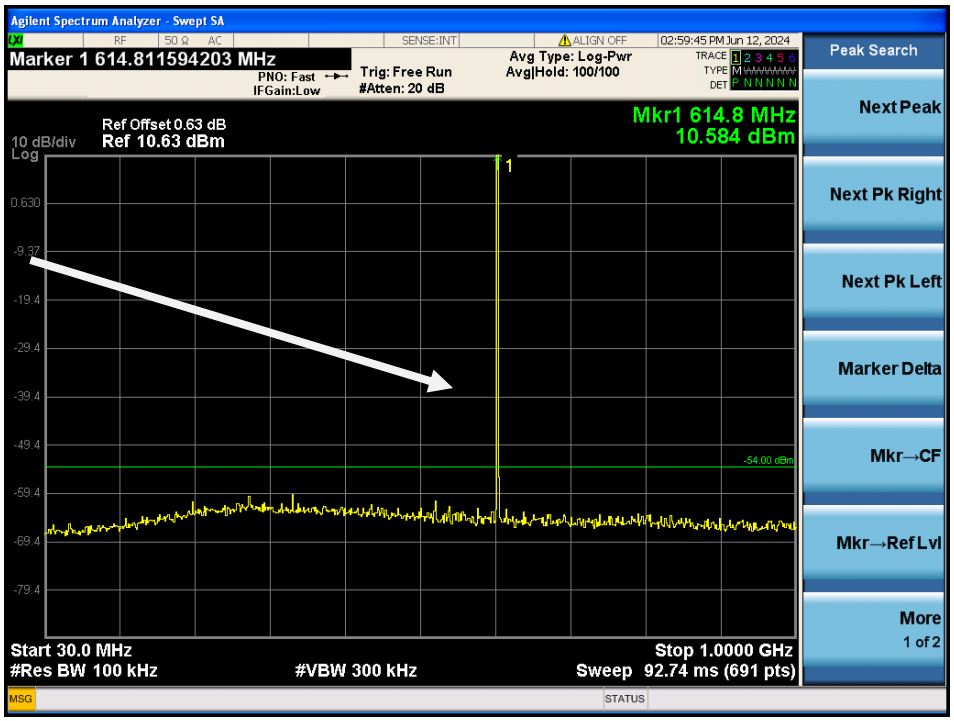
## 614.55 MHz, 20mW, Spurious Emission

Fundamental



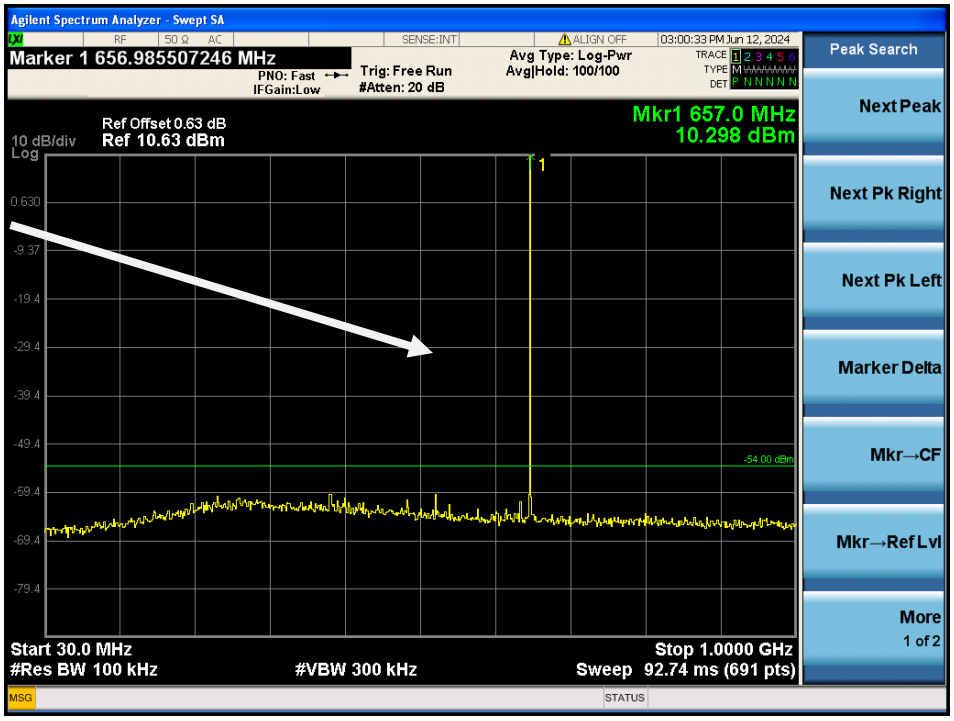

## 615.95 MHz, 20mW, Spurious Emission

Fundamental



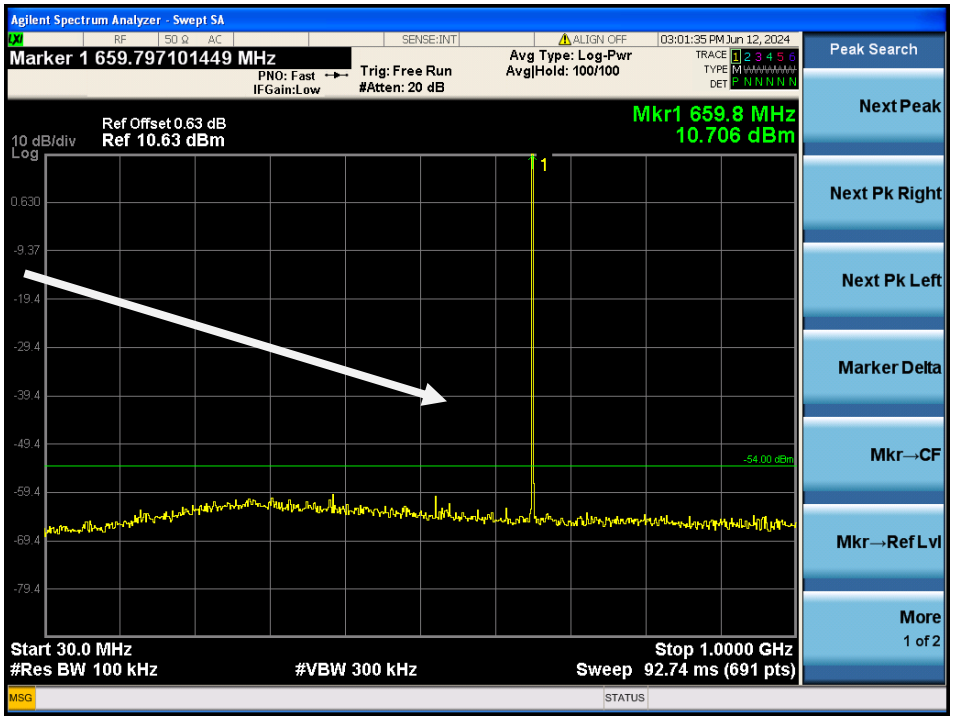
## 657.05 MHz, 20mW, Spurious Emission

Fundamental



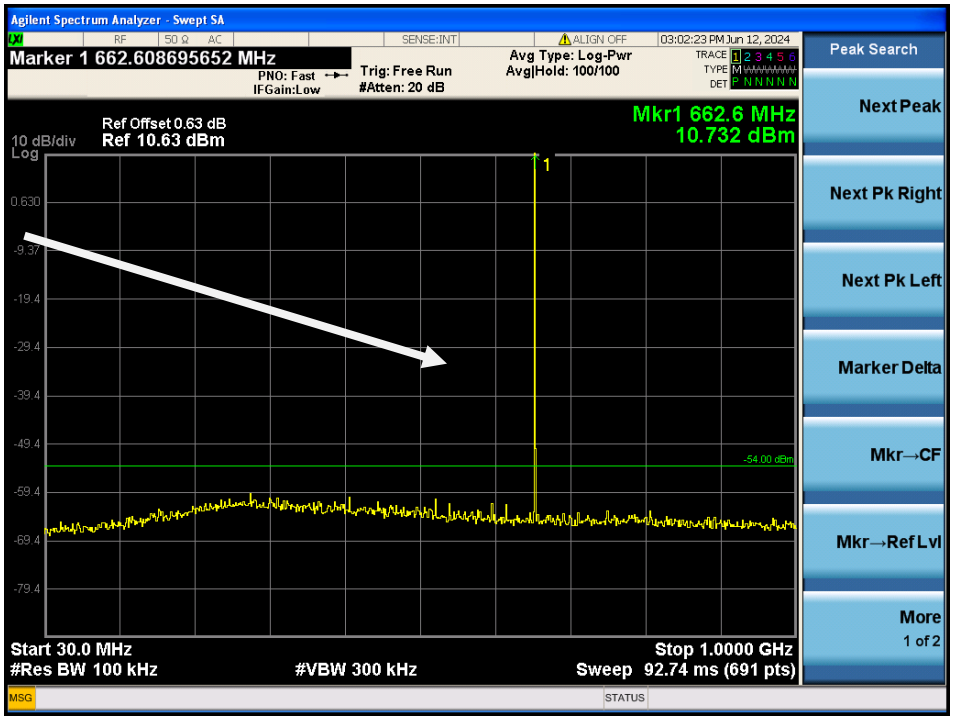

## 660 MHz, 20mW, Spurious Emission

Fundamental



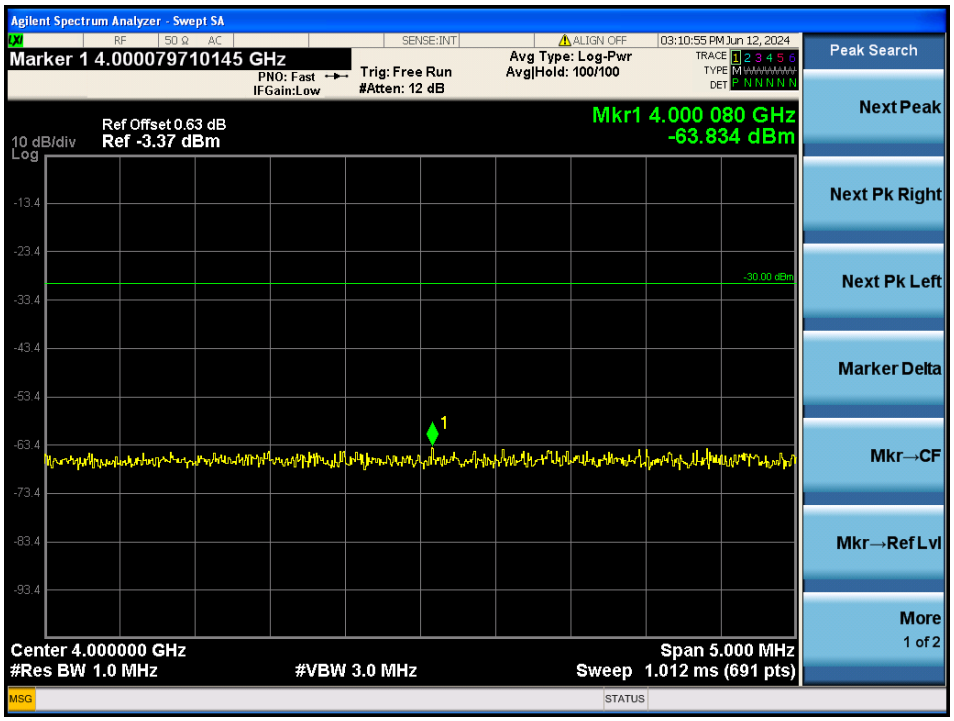
**662.95 MHz, 20mW, Spurious Emission**

Fundamental

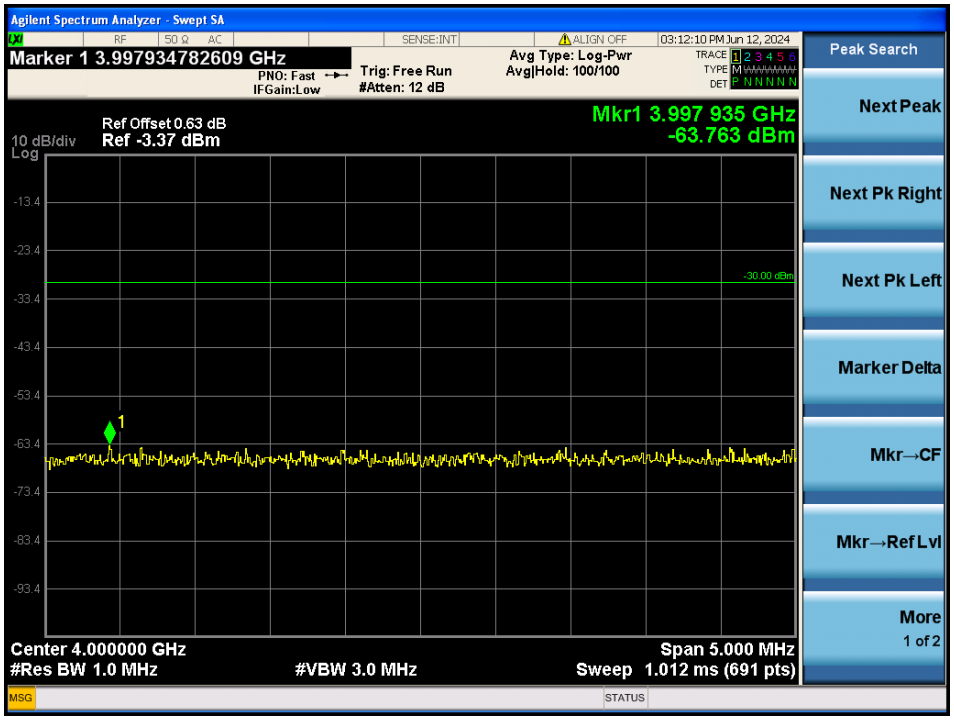


## 1 GHz to 7 GHz

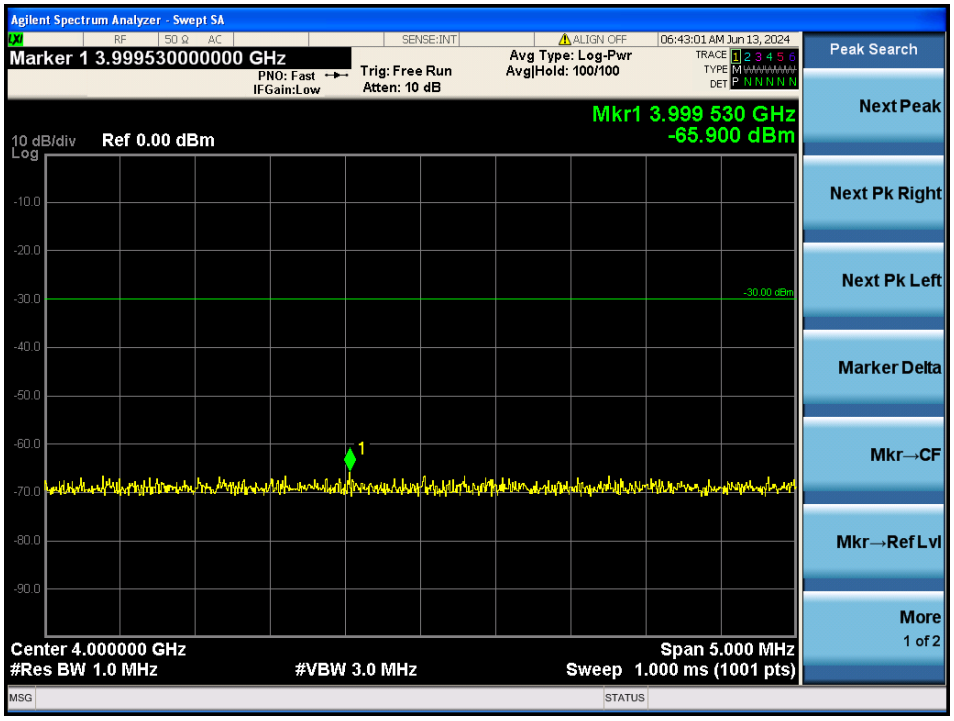
### 537.6 MHz, 50mW, Spurious Emission



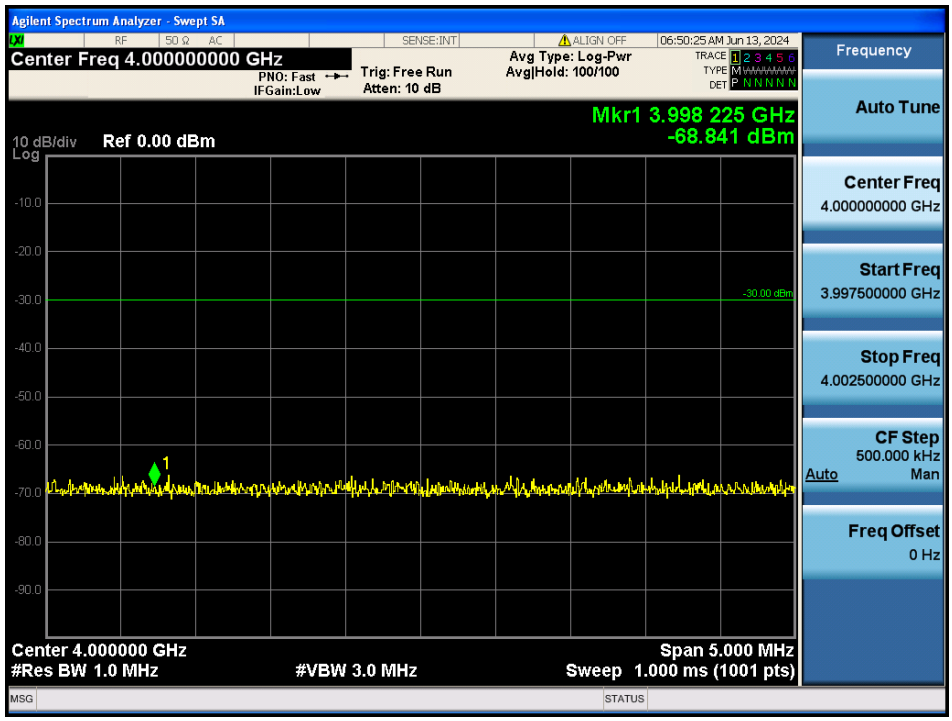

### 572.77 MHz, 50mW, Spurious Emission



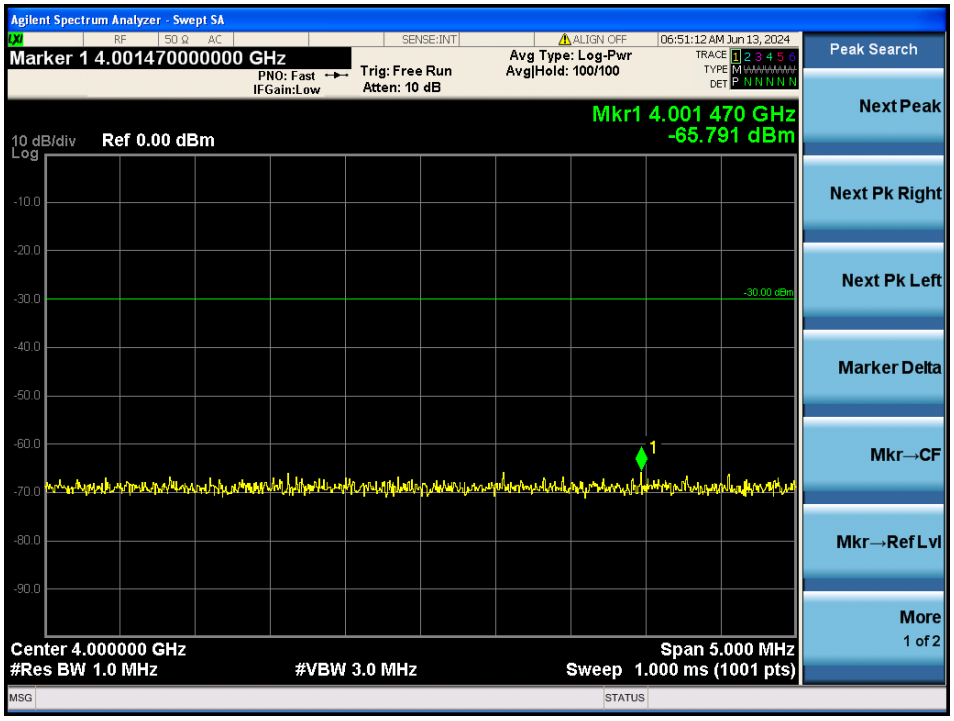
## 607.95 MHz, 50mW, Spurious Emission



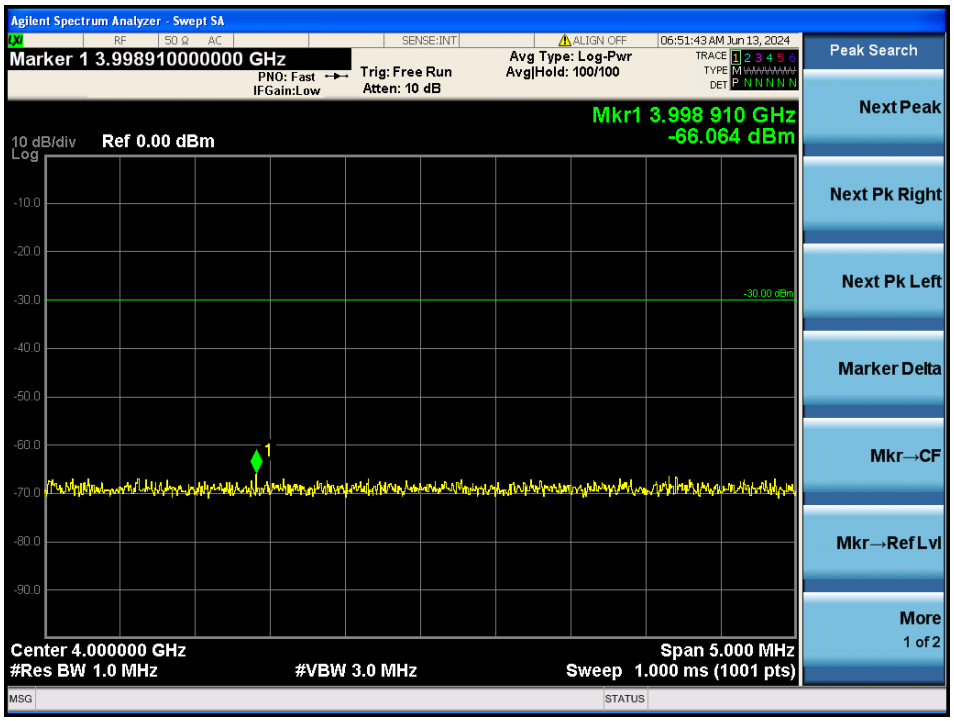

## 614.05 MHz, 20mW, Spurious Emission



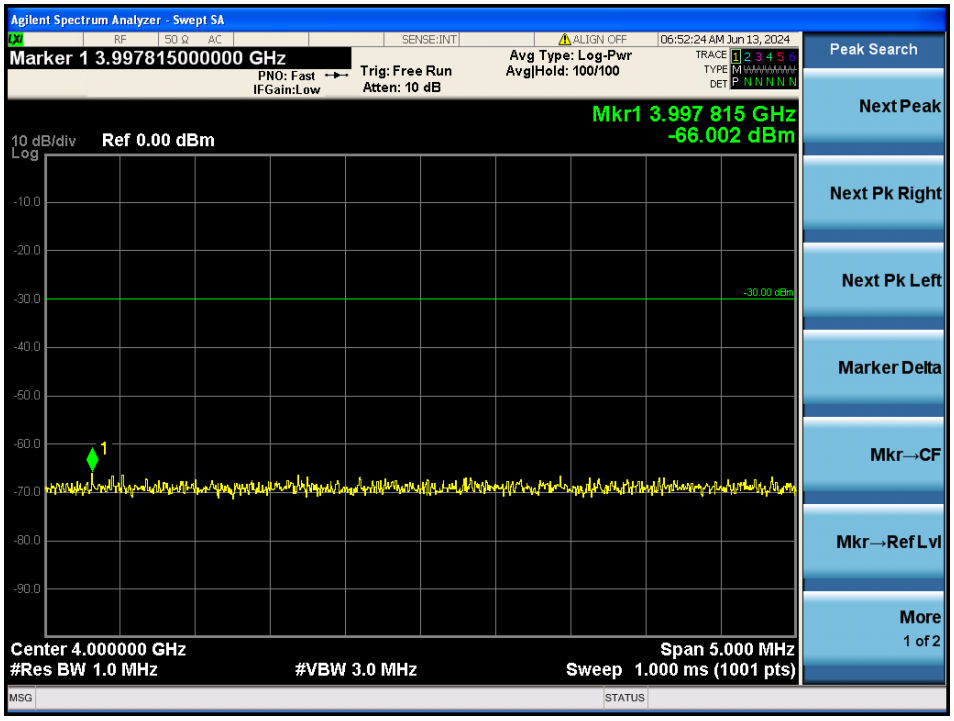
## 614.55 MHz, 20mW, Spurious Emission



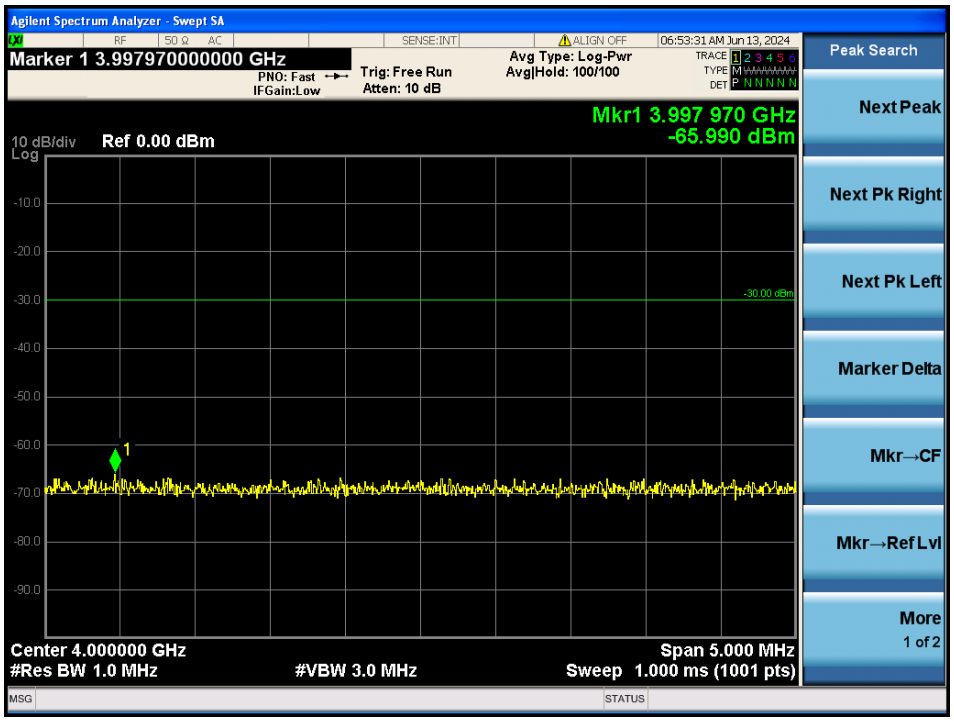

## 615.95 MHz, 20mW, Spurious Emission



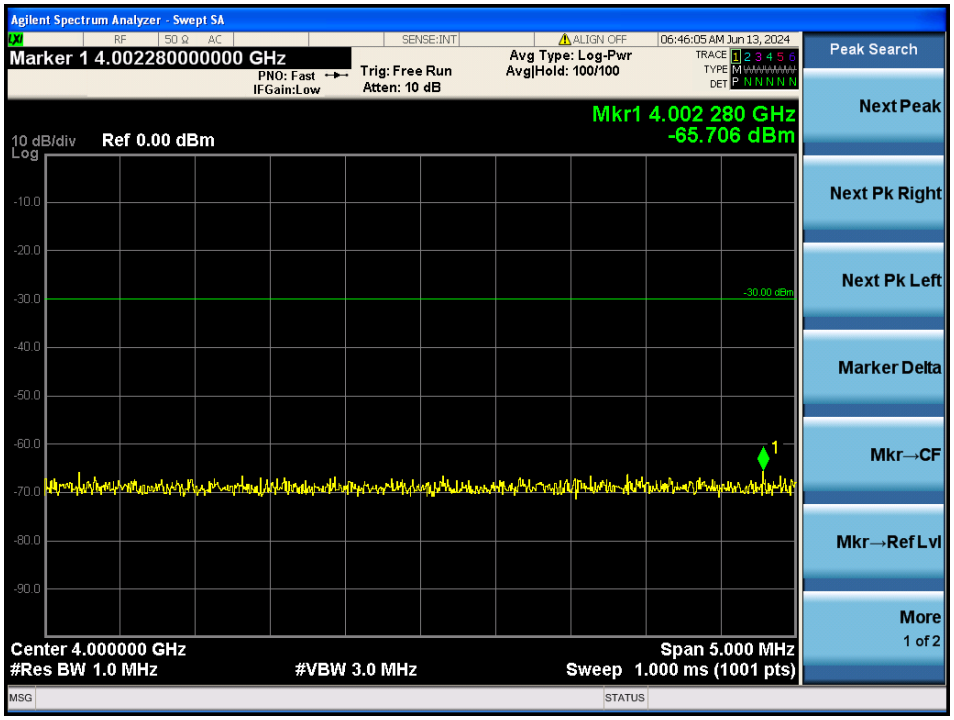
## 657.050 MHz, 20mW, Spurious Emission




## 660 MHz, 20mW, Spurious Emission



## 662.95 MHz, 20mW, Spurious Emission



# 7 FCC §15.236 (g), RSS-210 G.1, & ETSI EN 300 422-1(4.2.4) – Field Strength of Spurious Radiation

## 7.1 Applicable Standards

According to FCC §15.236(g):

Emissions within the band from one megahertz below to one megahertz above the carrier frequency shall comply with the emission mask in § 8.3 of ETSI EN 300 422-1 V1.4.2 (2011-08), *Electromagnetic compatibility and Radio spectrum Matters (ERM); Wireless microphones in the 25 MHz to 3 GHz frequency range; Part 1: Technical characteristics and methods of measurement*. Emissions outside of this band shall comply with the limits specified in section 8.4 of ETSI EN 300 422-1 V1.4.2 (2011-08).

According to RSS-210 the transmit power shall be measured in average value as a conducted emission over any period of continuous transmission.

The frequency bands, transmit e.i.r.p., authorized bandwidth and frequency stability limits for devices are provided in table G1

**Table G1 — Specifications for wireless microphones**

| Frequency bands (MHz) | Transmit e.i.r.p. (mW) | Authorized bandwidth (kHz) | Frequency stability (± ppm) |
|---|---|---|---|
| 54-72<br>76-88<br>174-216 | 50 | 200 | 50 |
| 470-608 | 250 | 200 | 50 |
| 614-616<br>653-663 | 20 | 200 | 50 |

As Per FCC §15.205(a) except as show in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz | MHz | MHz | GHz |
|---|---|---|---|
| 0.090 – 0.110<br>0.495 – 0.505<br>2.1735 – 2.1905<br>4.125 – 4.128<br>4.17725 – 4.17775<br>4.20725 – 4.20775<br>6.215 – 6.218<br>6.26775 – 6.26825<br>6.31175 – 6.31225<br>8.291 – 8.294<br>8.362 – 8.366<br>8.37625 – 8.38675<br>8.41425 – 8.41475<br>12.29 – 12.293<br>12.51975 – 12.52025<br>12.57675 – 12.57725<br>13.36 – 13.41 | 16.42 – 16.423<br>16.69475 – 16.69525<br>25.5 – 25.67<br>37.5 – 38.25<br>73 – 74.6<br>74.8 – 75.2<br>108 – 121.94<br>123 – 138<br>149.9 – 150.05<br>156.52475 – 156.52525<br>156.7 – 156.9<br>162.0125 –167.17<br>167.72 – 173.2<br>240 – 285<br>322 – 335.4<br>399.9 – 410<br>608 – 614 | 960 – 1240<br>1300 – 1427<br>1435 – 1626.5<br>1645.5 – 1646.5<br>1660 – 1710<br>1718.8 – 1722.2<br>2200 – 2300<br>2310 – 2390<br>2483.5 – 2500<br>2690 – 2900<br>3260 – 3267<br>3.332 – 3.339<br>3 3458 – 3 358<br>3.600 – 4.400 | 4. 5 – 5. 15<br>5. 35 – 5. 46<br>7.25 – 7.75<br>8.025 – 8.5<br>9.0 – 9.2<br>9.3 – 9.5<br>10.6 – 12.7<br>13.25 – 13.4<br>14.47 – 14.5<br>15.35 – 16.2<br>17.7 – 21.4<br>22.01 – 23.12<br>23.6 – 24.0<br>31.2 – 31.8<br>36.43 – 36.5<br>Above 38.6 |

As per FCC §15.209(a): Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table

| Frequency (MHz) | Field Strength (micro volts/meter) | Measurement Distance (meters) |
|---|---|---|
| 0.009 - 0.490 | 2400/F(kHz) | 300 |
| 0.490 - 1.705 | 24000/F(kHz) | 30 |
| 1.705 - 30.0 | 30 | 30 |
| 30 - 88 | 100** | 3 |
| 88 - 216 | 150** | 3 |
| 216 - 960 | 200** | 3 |
| Above 960 | 500 | 3 |

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

## 7.2 Test Procedure

KDB 971168 D01 v03r01 and ETSI EN 300 422-1 V1.4.2 (2011-08).

## 7.3 Test Equipment List and Details

**Substitution Method**

| BACL No. | Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Interval |
|---|---|---|---|---|---|---|
| 1128 | Agilent | EXA Signal Analyzer | N9010A | MY48030852 | 2024-05-23 | 1 year |
| 327 | Sunol Science Corp | System Controller | SC110V | 122303-1 | N/R | N/R |
| 321 | Sunol Sciences | Biconi-Log Antenna | JB3 | A020106-2; 1504 | 2023-12-18 | 2 years |
| 1192 | ETS Lindgren | Horn Antenna | 3117 | 00218973 | 2022-09-29 | 2 years |
| 658 | HP/ Agilant | Pre-Amplifier | 8449B OPT HO2 | 3008A01103 | 2024-06-19 | 1 year |
| 316 | Sonoma Instruments | Preamplifier 10 kHz - 2.5 GHz | 317 | 260406 | 2024-02-27 | 1 year |
| 1186 | Pasternack | Coaxial Cable, RG214 | PE3062-1050CM | N/A | 2024-04-09 | 6 months |
| 183 | Agilent | Generator, Signal | 83650B | 3614A00276 | 2023-08-22 | 1 year |
| 1295 | Carlisle | 10m Ultra Low Loss Coaxial Cable | UFB142A-1-3937-200200 | 64639890912-001 | 2024-05-01 | 6 months |
| 473 | EMCO | Antenna, Horn | 3115 | 9511-4627 | 2022-11-22 | 2 years |
| - | - | RF Cable | - | - | Each time[1] | N/A |
| 568 | COM-POWER | Dipole Antenna | AD-100 | 721033DB1, 2, 3, 521921 | 2023-07-11 | 2 years |
| 1346 | RFMW | 2.92mm 10ft RF cable | KMSE-160SAW-240.0-KSME | N/A | 2024-05-03 | 6 months |
| 1329 | Pasternack | 2.92mm short coaxial cable | PE360-12 | N/A | 2024-05-06 | 6 months |
| 827 | AH Systems | Preamplifier | PAM 1840 VH | 170 | 2024-05-05 | 6 months |
| 1292 | Micro-Tronics | >1GHz High-pass Filter | HPM20242 | 001 | 2024-04-11 | 1 year |
| 393 | Com-Power | Loop antenna | AL-130 | 17043 | 2023-05-26 | 2 years |

**Vasona Scans**

| BACL No. | Manufacturer | Description | Model No. | Serial No. | Calibration Date | Calibration Interval |
|---|---|---|---|---|---|---|
| 310 | Rhode & Schwarz | EMI Test Receiver | ESCI 1166.5950.03 | 100338 | 2024-05-29 | 1 year |
| 424 | Agilent | Spectrum Analyzer | E4440A | US45303156 | 2024-03-06 | 1 year |
| 327 | Sunol Science Corp | System Controller | SC110V | 122303-1 | N/R | N/A |
| 1075 | Sunol Sciences | Boresight Tower | TLT3 | 050119-7 | N/R | N/A |
| 1388 | Sunol Sciences | Flush Mount Turntable | FM | 112005-2 | N/R | N/A |
| 316 | Sonoma Instruments | Preamplifier 10 kHz - 2.5 GHz | 317 | 260406 | 2024-02-27 | 6 months |
| 1449 | BACL | Preamplifier | BACL1313-A100M18G | 4052472 | 2024-07-11 | 6 months |
| 321 | Sunol Sciences | Biconilog Antenna | JB3 | A020106-2; 1504 | 2023-12-18 | 2 years |
| 1192 | ETS Lindgren | Horn Antenna | 3117 | 00218973 | 2022-09-29 | 2 years |
| 1186 | Pasternack | Coaxial Cable, RG214 | PE3062-1050CM | N/A | 2024-04-09 | 6 months |
| 1248 | Pasternack | RG214 COAX Cable | PE3062 | - | 2024-04-04 | 6 months |
| 1249 | Time Microwave | LMR-400 Cable Dc-3 Ghz | AE13684 | 2k80612-56fts | 2024-04-09 | 6 months |
| 1355 | Megaphase | 2.92mm 236in RF Cable DC to 40GHz | GC12-K1K1-236-H | 1 GVT4 20554701001 | 2024-02-27 | 6 months |
| 1356 | Pasternack | N 28ft RF Cable | RG213 | 062421 | 2024-07-02 | 6 months |
| 1329 | Pasternack | 2.92mm short coaxial cable | PE360-12 | NA | 2024-07-10 | 6 months |
| - | - | RF Cable (x2) | - | - | Each Time[1] | - |
| 1245 | - | 6dB Atennuator | PE7390-6 | 01182018A | 2022-11-22 | 2 year |
| 1246 | HP | RF Limiter | 11867A | 01734 | 2024-04-09 | 1 year |

Note[1]: cable included in the test set-up will be checked each time before testing.

***Statement of Traceability: BACL Corp.*** *attests that all of the calibrations on the equipment items listed above were traceable to NIST or to another internationally recognized National Metrology Institute (NMI), and were compliant with the latest version of A2LA policy P102 "A2LA Policy on Metrological Traceability".*

## 7.4 Test Environmental Conditions

| | |
|---|---|
| **Temperature:** | 22ºC |
| **Relative Humidity:** | 40% |
| **ATM Pressure:** | 101.0 kPa |

*Subsitution Method: The testing was performed by Libass Thiaw on 2024-06-24 in 5m3.*

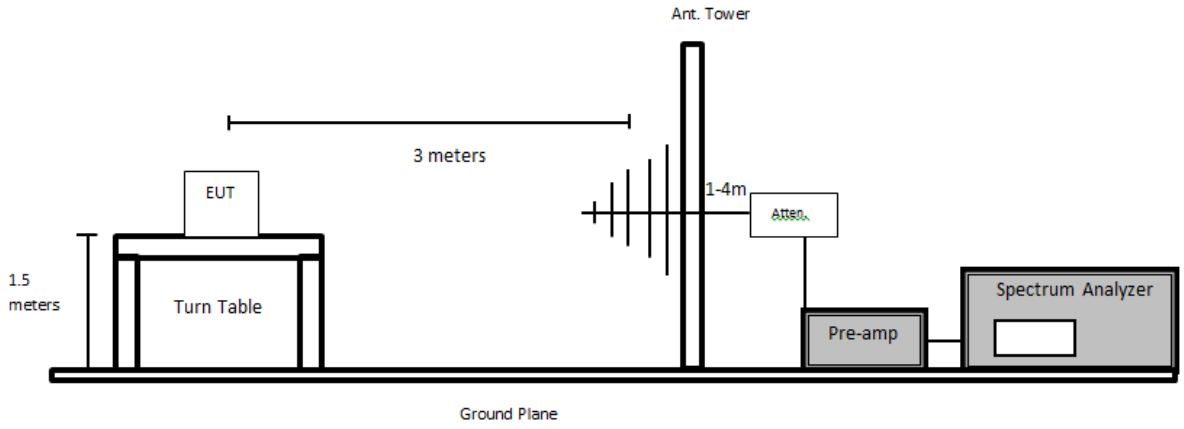
| | |
|---|---|
| **Temperature:** | 23ºC |
| **Relative Humidity:** | 42% |
| **ATM Pressure:** | 101.5 kPa |

*Vasona Scans: The testing was performed by Arturo Reyes from 2024-08-20 to 2024-08-21 in 5m3.*

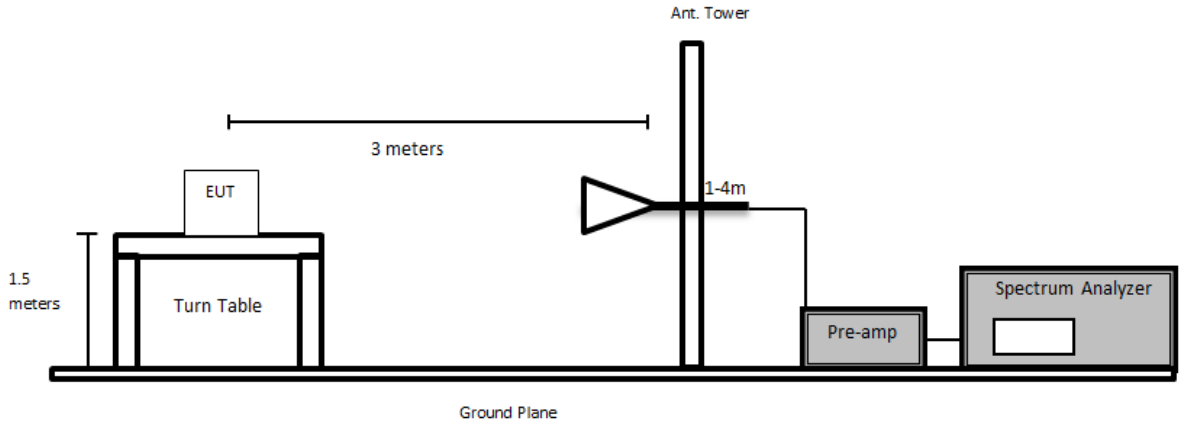
## 7.5 Test Setup Diagram

### Substitution Method

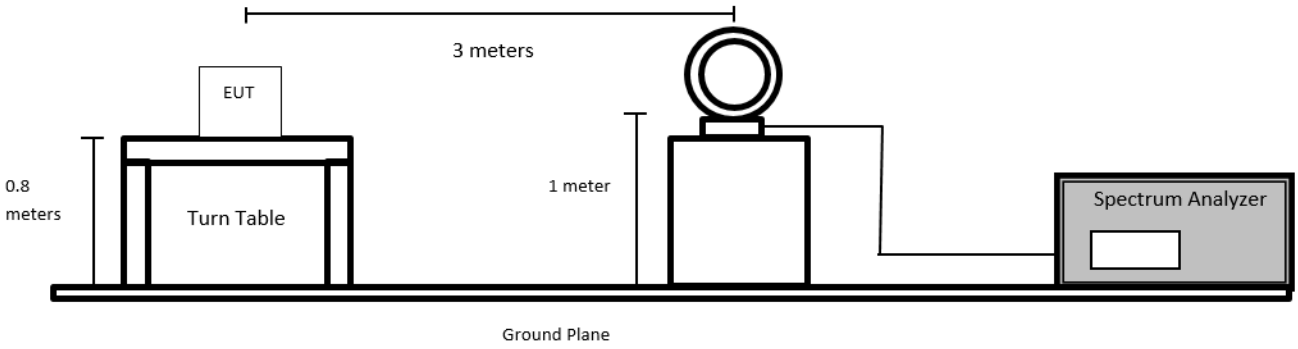
**Below 1 GHz:**




**Above 1 GHz:**

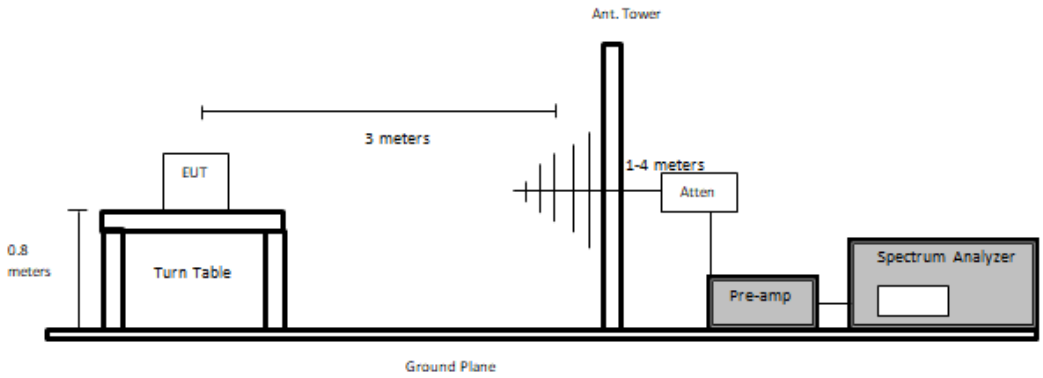



**Below 30 MHz:**

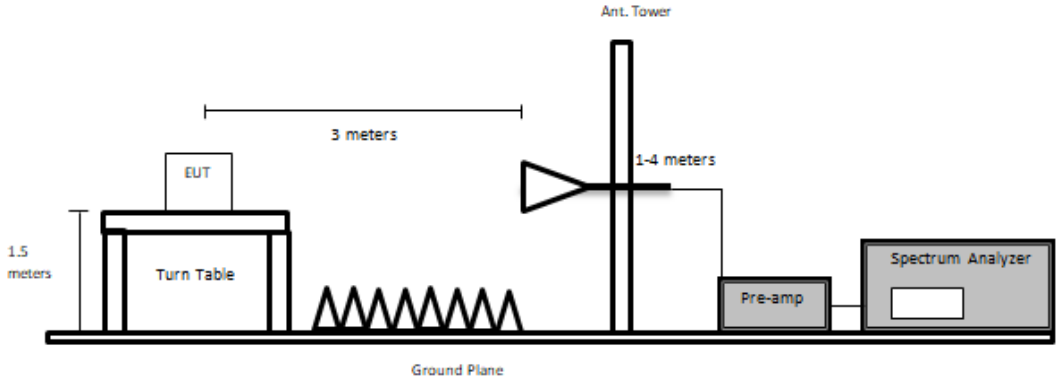


**Vasona Scans**

**Below 1 GHz:**




**Above 1 GHz:**



## 7.6 Test Results (Substitution Method)

TX at the maximum output power:

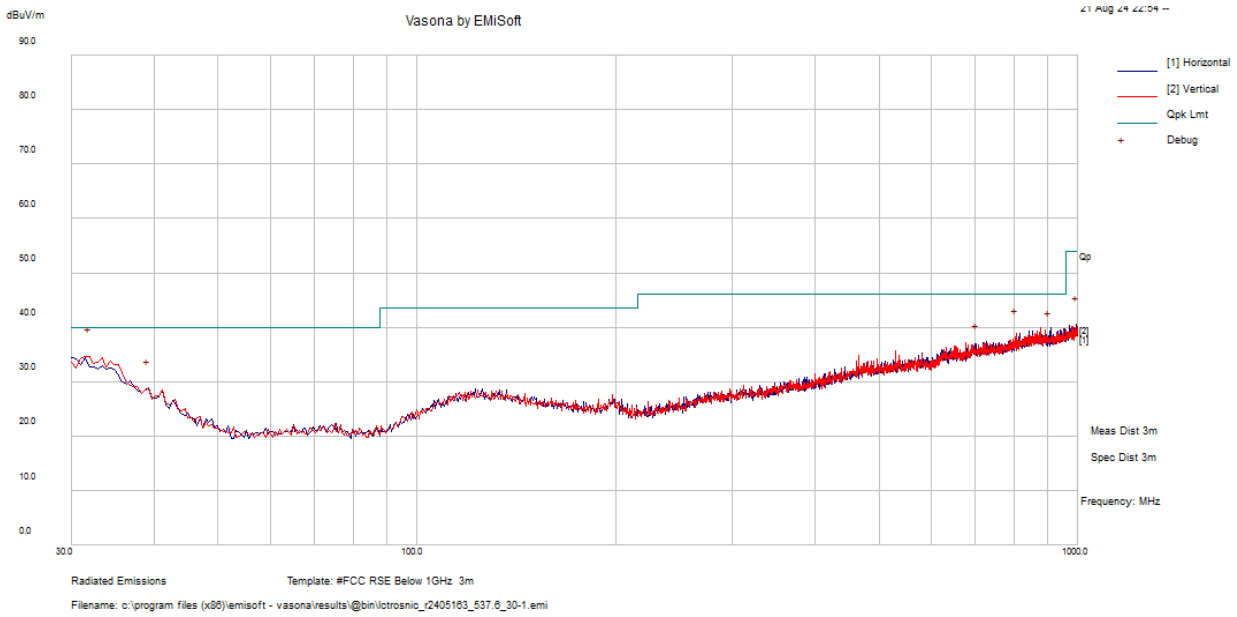
| Freq. (MHz) | S.A. Amp. (dBµV) | Table Azimuth (Degrees) | Test Antenna | | Substitution | | | | Absolute Level (dBm) | Limit (dBm) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Height (cm) | Polar (H/V) | Freq. (MHz) | S.G. Level (dBm) | Antenna Gain (dBi/dBd) | Cable Loss (dB) | | | |
| **572.775 MHz** | | | | | | | | | | | |
| 6891 | 48.32 | 263 | 175 | H | 6891 | -46.21 | 11.63 | 2.67 | -37.25 | -30 | -7.25 |
| 1145 | 42.81 | 99 | 169 | V | 1145 | -69.90 | 6.31 | 1.07 | -64.65 | -30 | -34.65 |
| 88.48 | 37.42 | 118 | 154 | H | 88.48 | -84.33 | 2.10 | 0.31 | -82.55 | -54 | -28.55 |
| 88.48 | 41.04 | 272 | 157 | V | 88.48 | -78.01 | 2.10 | 0.31 | -76.21 | -54 | -22.21 |
| **615 MHz** | | | | | | | | | | | |
| 6925 | 48.34 | 72 | 203 | H | 6925 | -46.19 | 11.69 | 2.67 | -37.17 | -30 | -7.17 |
| 6891 | 48.28 | 111 | 198 | V | 6891 | -45.03 | 11.63 | 2.67 | -36.06 | -30 | -6.06 |
| 88.48 | 37.42 | 118 | 154 | H | 88.48 | -84.33 | 2.10 | 0.31 | -82.55 | -54 | -28.55 |
| 88.48 | 41.04 | 272 | 157 | V | 88.48 | -78.01 | 2.10 | 0.31 | -76.21 | -54 | -22.21 |
| **660 MHz** | | | | | | | | | | | |
| 1723 | 43.488 | 204 | 197 | H | 1723 | -65.961 | 8.658 | 1.2325 | -58.535 | -30 | -28.535 |
| 6976 | 48.467 | 239 | 168 | V | 6976 | -44.852 | 11.741 | 2.6811 | -35.792 | -30 | -5.792 |
| 88.5 | 37.032 | 251 | 156 | H | 88.5 | -84.727 | 2.1 | 0.312 | -82.939 | -54 | -28.939 |
| 88.5 | 43.534 | 212 | 152 | V | 88.5 | -75.515 | 2.1 | 0.312 | -73.727 | -54 | -19.727 |

## 7.7 Test Results (Vasona Scans)

**Note 1:** The test data presented below are the radiated cabinet emissions.
**Note 2:** The EUT is not transmitting at below 30 MHz, thus 9 kHz to 30 MHz was not evaluated for Radiated Spurious Emissions.

### 30 MHz – 1 GHz, Measured at 3 meters

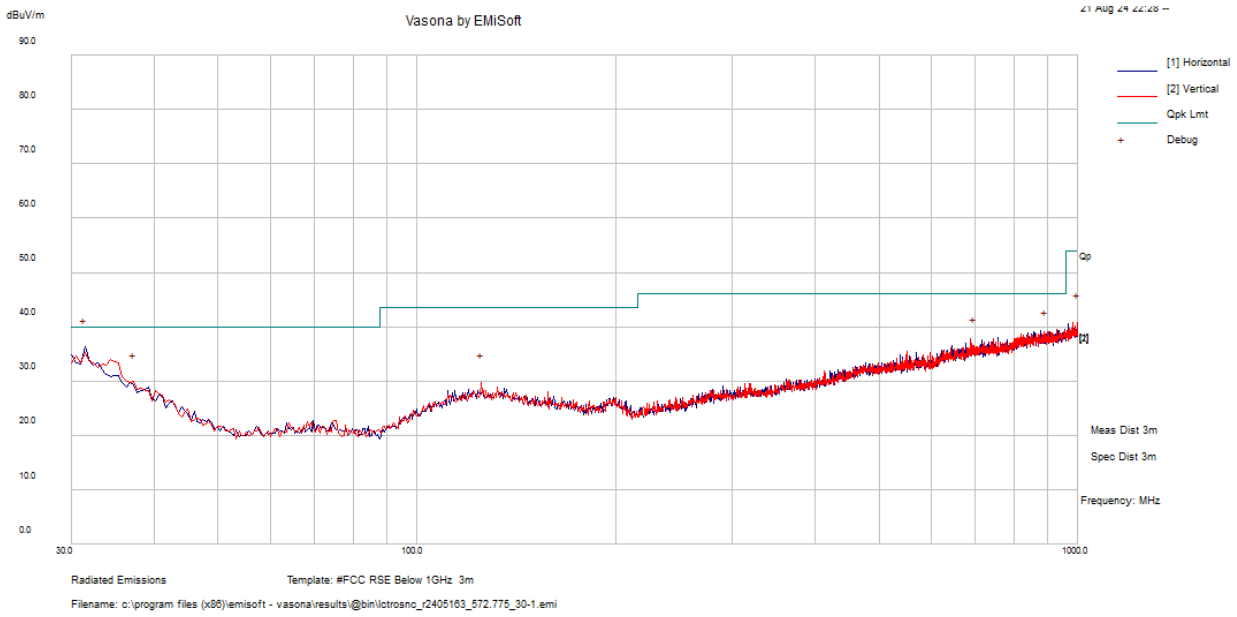
**537.600 MHz**




| Frequency (MHz) | S.A. Reading (dBuV) | Correction Factor (dB/m) | Corrected Amplitude (dBµV/m) | Antenna Polarity (H/V) | Antenna Height (cm) | Turntable Azimuth (degrees) | Limit (dBµV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|---|---|
| 31.94 | 36.94 | -2.31 | 34.63 | V | 200 | 0 | 40 | -5.37 | Peak |
| 39.215 | 35.97 | -7.15 | 28.83 | H | 100 | 0 | 40 | -11.17 | Peak |
| 996.12 | 34.75 | 5.71 | 40.46 | H | 200 | 0 | 54 | -13.54 | Peak |
| 903.309 | 33.38 | 4.28 | 37.66 | H | 100 | 7 | 46 | -8.34 | Peak |
| 804.603 | 34.75 | 3.28 | 38.03 | H | 100 | 7 | 46 | -7.97 | Peak |
| 701.761 | 33.16 | 2.15 | 35.31 | H | 100 | 7 | 46 | -10.69 | Peak |

**Note:** The plot above shows that all peak emissions passed the quasi-peak limits.

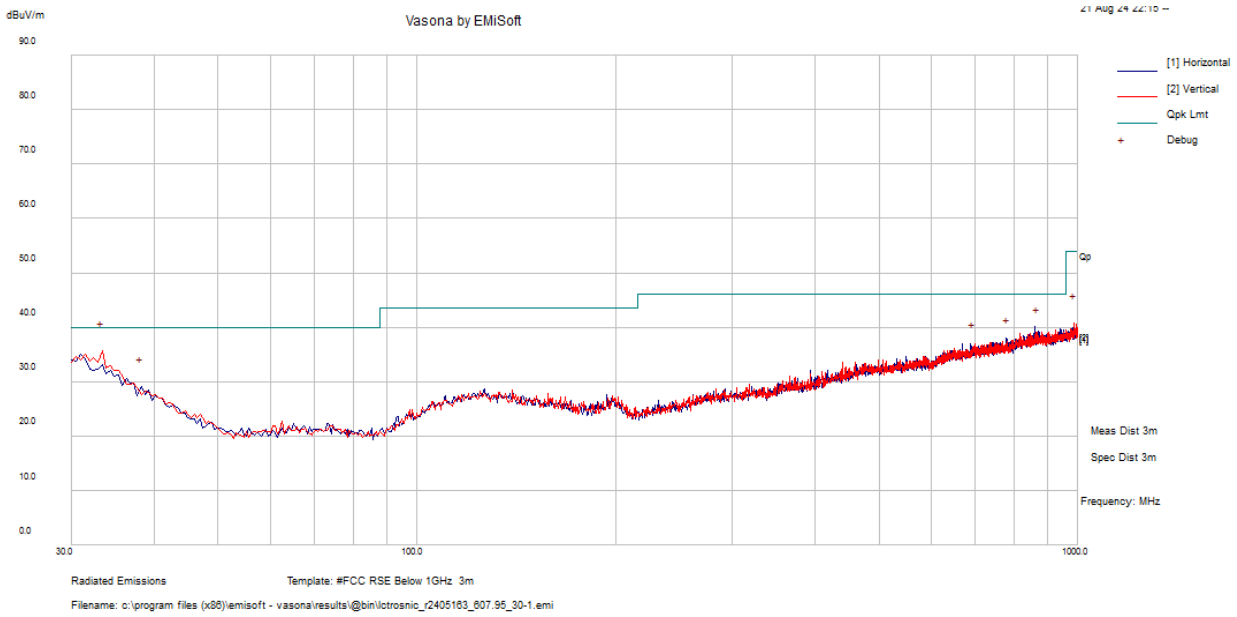
**572.775 MHz**




| Frequency (MHz) | S.A. Reading (dBuV) | Correction Factor (dB/m) | Corrected Amplitude (dBµV/m) | Antenna Polarity (H/V) | Antenna Height (cm) | Turntable Azimuth (degrees) | Limit (dBµV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|---|---|
| 31.455 | 38.16 | -1.93 | 36.23 | H | 200 | 0 | 40 | -3.77 | Peak |
| 37.275 | 35.56 | -5.74 | 29.82 | V | 100 | 0 | 40 | -10.18 | Peak |
| 999.03 | 35.06 | 5.76 | 40.83 | V | 200 | 0 | 54 | -13.17 | Peak |
| 125.06 | 36.42 | -6.64 | 29.78 | V | 100 | 0 | 43.5 | -13.72 | Peak |
| 895.425 | 33.48 | 4.18 | 37.66 | H | 100 | 7 | 46 | -8.34 | Peak |
| 695.636 | 34.18 | 2.1 | 36.27 | H | 100 | 7 | 46 | -9.73 | Peak |

**Note:** The plot above shows that all peak emissions passed the quasi-peak limits.

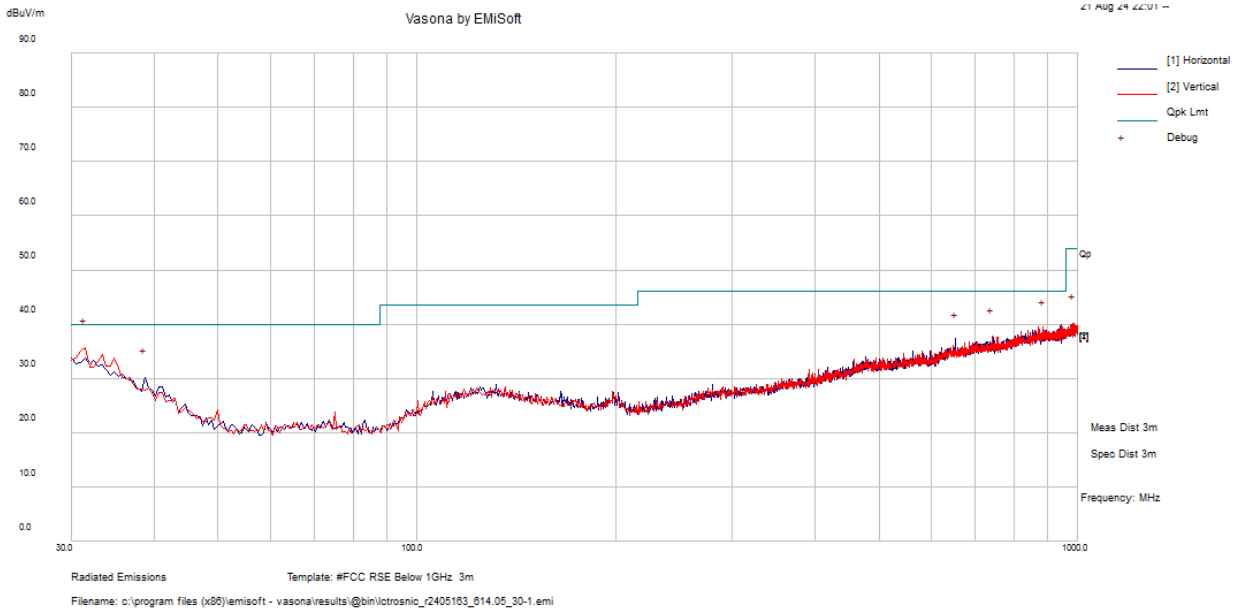
**607.950 MHz**




| Frequency (MHz) | S.A. Reading (dBuV) | Correction Factor (dB/m) | Corrected Amplitude (dBµV/m) | Antenna Polarity (H/V) | Antenna Height (cm) | Turntable Azimuth (degrees) | Limit (dBµV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|---|---|
| 33.395 | 38.94 | -3.28 | 35.67 | V | 100 | 0 | 40 | -4.33 | Peak |
| 38.245 | 35.59 | -6.44 | 29.16 | H | 200 | 0 | 40 | -10.84 | Peak |
| 986.42 | 35.27 | 5.51 | 40.77 | V | 100 | 0 | 54 | -13.23 | Peak |
| 867.608 | 34.19 | 4.12 | 38.32 | H | 101 | 7 | 46 | -7.68 | Peak |
| 782.345 | 33.6 | 2.77 | 36.37 | H | 101 | 7 | 46 | -9.63 | Peak |
| 693.201 | 33.39 | 2.04 | 35.43 | H | 101 | 7 | 46 | -10.57 | Peak |

**Note:** The plot above shows that all peak emissions passed the quasi-peak limits.

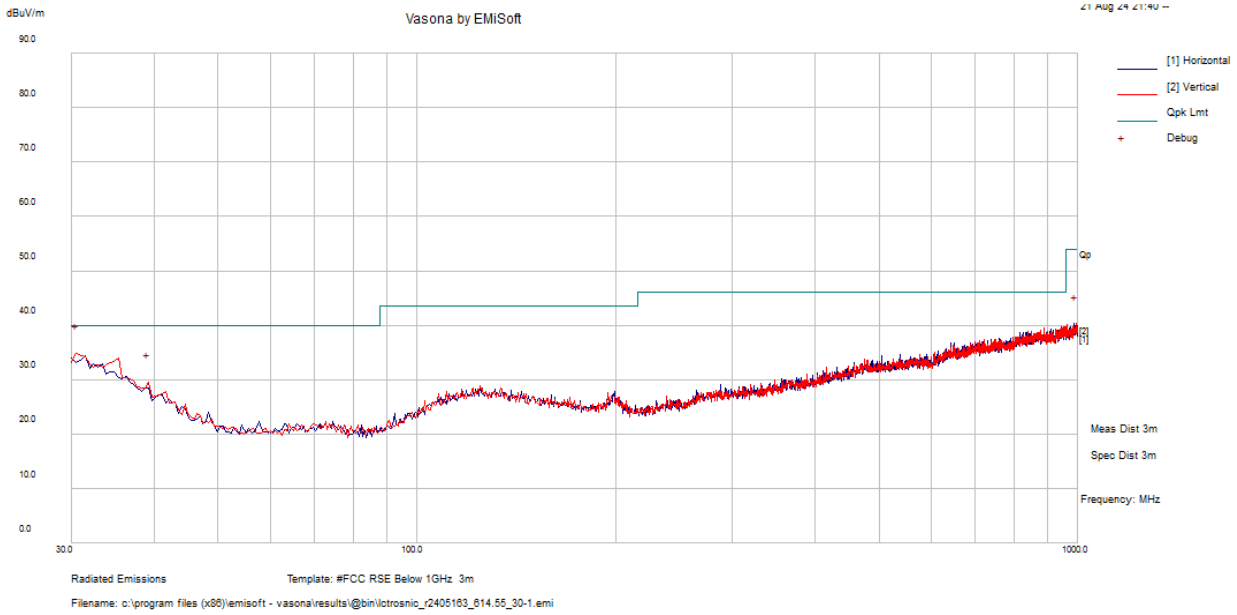
**614.050 MHz**




| Frequency (MHz) | S.A. Reading (dBuV) | Correction Factor (dB/m) | Corrected Amplitude (dBµV/m) | Antenna Polarity (H/V) | Antenna Height (cm) | Turntable Azimuth (degrees) | Limit (dBµV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|---|---|
| 31.455 | 37.58 | -1.93 | 35.65 | V | 200 | 0 | 40 | -4.35 | Peak |
| 38.73 | 36.94 | -6.79 | 30.15 | H | 200 | 0 | 40 | -9.85 | Peak |
| 985.45 | 34.71 | 5.48 | 40.19 | H | 100 | 0 | 54 | -13.81 | Peak |
| 885.65 | 34.88 | 4.17 | 39.05 | H | 100 | 7 | 46 | -6.95 | Peak |
| 740.981 | 35.22 | 2.36 | 37.59 | H | 100 | 7 | 46 | -8.41 | Peak |
| 653.134 | 35.6 | 1.25 | 36.85 | H | 100 | 7 | 46 | -9.15 | Peak |

**Note:** The plot above shows that all peak emissions passed the quasi-peak limits.

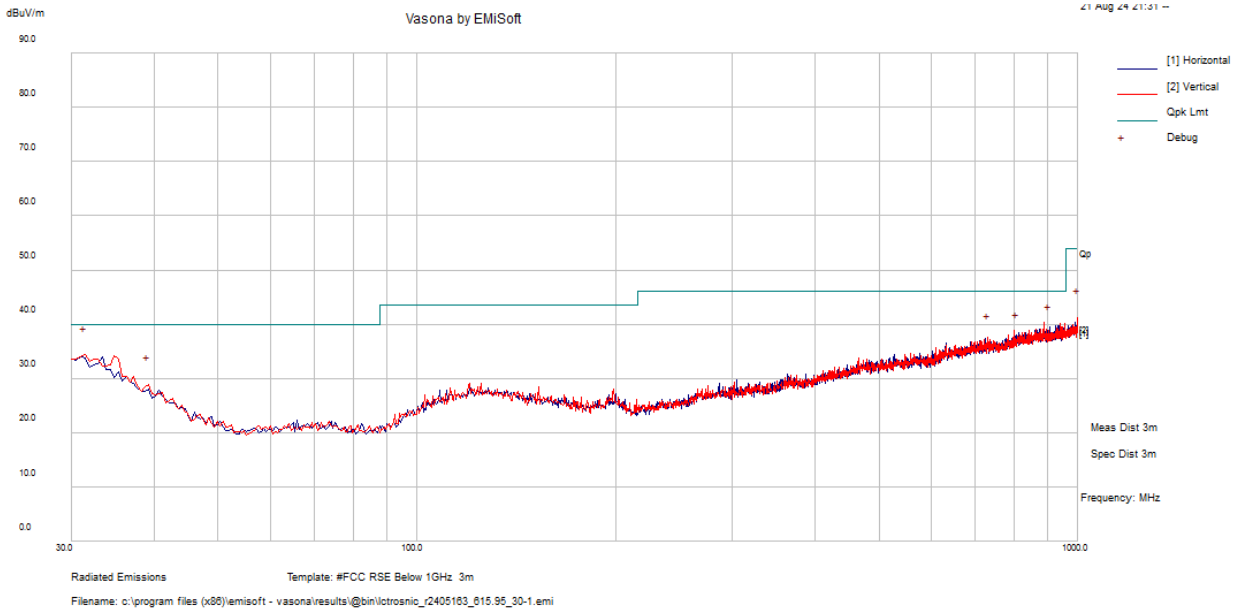
**614.550 MHz**




| Frequency (MHz) | S.A. Reading (dBuV) | Correction Factor (dB/m) | Corrected Amplitude (dBµV/m) | Antenna Polarity (H/V) | Antenna Height (cm) | Turntable Azimuth (degrees) | Limit (dBµV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|---|---|
| 30.485 | 35.98 | -1.17 | 34.81 | V | 200 | 0 | 40 | -5.19 | Peak |
| 39.215 | 36.62 | -7.15 | 29.47 | V | 200 | 0 | 40 | -10.53 | Peak |
| 993.21 | 34.65 | 5.65 | 40.3 | V | 300 | 0 | 54 | -13.7 | Peak |
| 889.607 | 34.64 | 4.18 | 38.82 | H | 100 | 7 | 46 | -7.18 | Peak |
| 721.726 | 34.94 | 2.16 | 37.1 | H | 100 | 7 | 46 | -8.9 | Peak |
| 657.682 | 34.1 | 1.25 | 35.35 | H | 100 | 7 | 46 | -10.65 | Peak |

**Note:** The plot above shows that all peak emissions passed the quasi-peak limits.

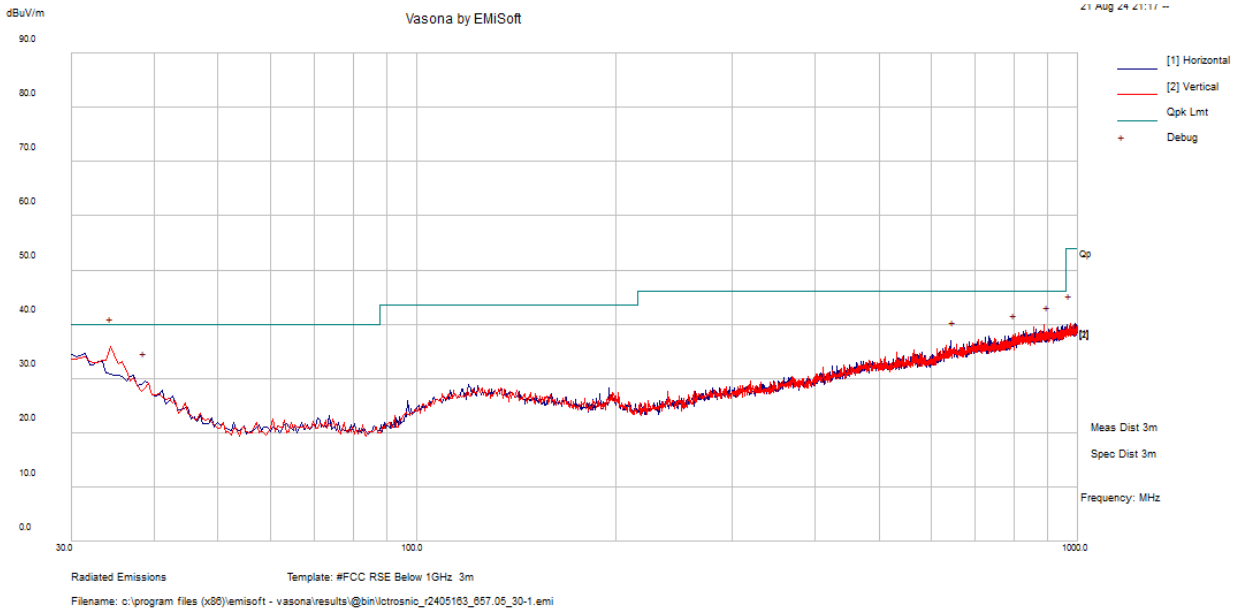
**615.950 MHz**




| Frequency (MHz) | S.A. Reading (dBuV) | Correction Factor (dB/m) | Corrected Amplitude (dBµV/m) | Antenna Polarity (H/V) | Antenna Height (cm) | Turntable Azimuth (degrees) | Limit (dBµV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|---|---|
| 31.455 | 36.22 | -1.93 | 34.29 | V | 300 | 0 | 40 | -5.71 | Peak |
| 39.215 | 36.07 | -7.15 | 28.92 | V | 300 | 0 | 40 | -11.08 | Peak |
| 998.06 | 35.53 | 5.75 | 41.28 | V | 300 | 0 | 54 | -12.72 | Peak |
| 903.309 | 34.04 | 4.28 | 38.32 | H | 100 | 7 | 46 | -7.68 | Peak |
| 807.429 | 33.46 | 3.38 | 36.84 | H | 100 | 7 | 46 | -9.16 | Peak |
| 730.638 | 34.41 | 2.23 | 36.65 | H | 100 | 7 | 46 | -9.35 | Peak |

**Note:** The plot above shows that all peak emissions passed the quasi-peak limits.

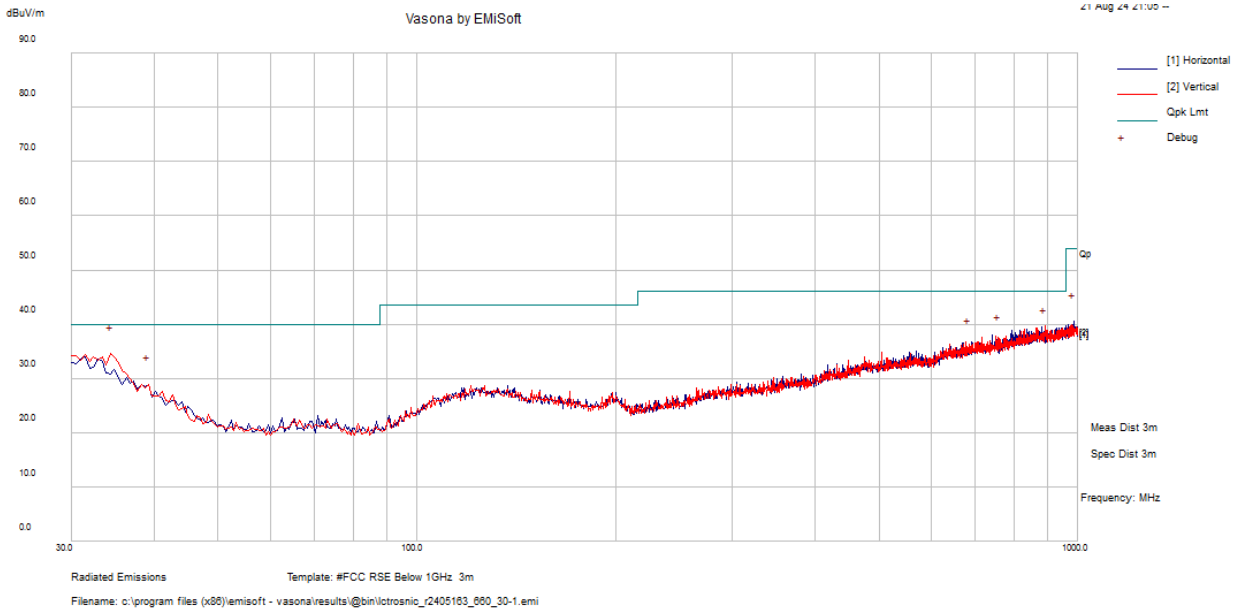
**657.050 MHz**




| Frequency (MHz) | S.A. Reading (dBuV) | Correction Factor (dB/m) | Corrected Amplitude (dBµV/m) | Antenna Polarity (H/V) | Antenna Height (cm) | Turntable Azimuth (degrees) | Limit (dBµV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|---|---|
| 34.365 | 39.79 | -3.85 | 35.94 | V | 200 | 0 | 40 | -4.06 | Peak |
| 38.73 | 36.36 | -6.79 | 29.57 | H | 200 | 0 | 40 | -10.43 | Peak |
| 973.81 | 34.89 | 5.22 | 40.11 | V | 200 | 0 | 54 | -13.89 | Peak |
| 900.147 | 33.86 | 4.24 | 38.1 | H | 100 | 7 | 46 | -7.9 | Peak |
| 800.382 | 33.47 | 3.15 | 36.62 | H | 100 | 7 | 46 | -9.38 | Peak |
| 647.386 | 33.97 | 1.28 | 35.26 | H | 100 | 7 | 46 | -10.74 | Peak |

**Note:** The plot above shows that all peak emissions passed the quasi-peak limits.

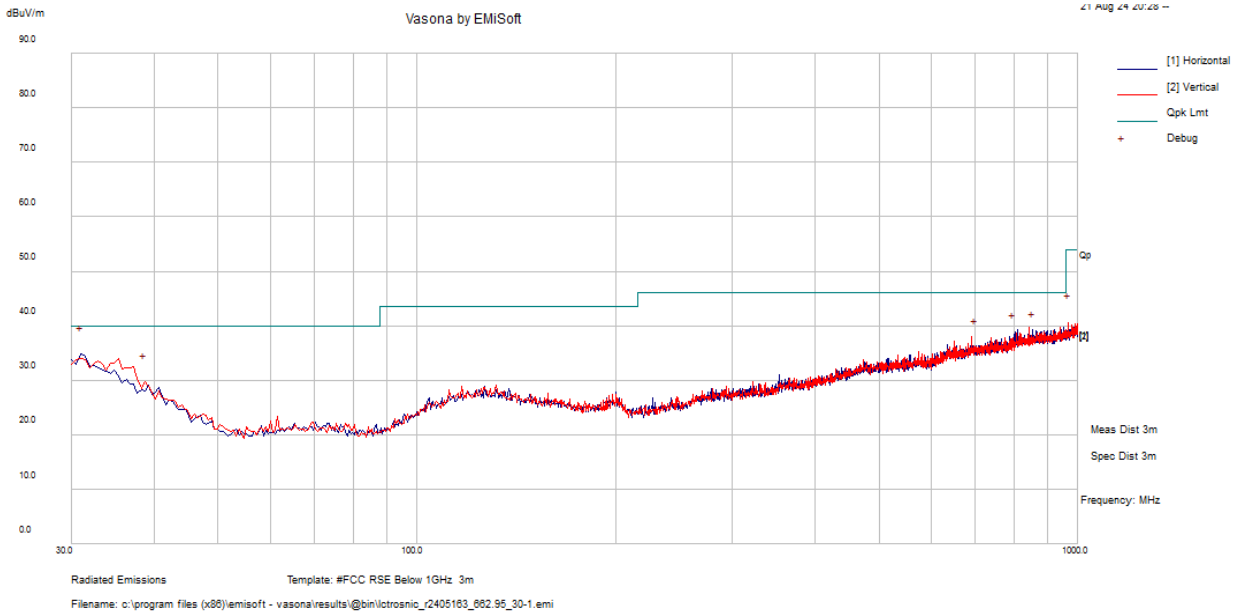
**660.000 MHz**




| Frequency (MHz) | S.A. Reading (dBuV) | Correction Factor (dB/m) | Corrected Amplitude (dBµV/m) | Antenna Polarity (H/V) | Antenna Height (cm) | Turntable Azimuth (degrees) | Limit (dBµV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|---|---|
| 34.365 | 38.39 | -3.85 | 34.54 | V | 200 | 0 | 40 | -5.46 | Peak |
| 39.215 | 36.08 | -7.15 | 28.93 | H | 300 | 0 | 40 | -11.07 | Peak |
| 984.965 | 35.04 | 5.47 | 40.51 | H | 300 | 0 | 54 | -13.49 | Peak |
| 889.167 | 33.44 | 4.18 | 37.62 | H | 100 | 7 | 46 | -8.38 | Peak |
| 756.713 | 33.93 | 2.43 | 36.36 | H | 100 | 7 | 46 | -9.64 | Peak |
| 682.348 | 34.01 | 1.67 | 35.68 | H | 100 | 7 | 46 | -10.32 | Peak |

**Note:** The plot above shows that all peak emissions passed the quasi-peak limits.

**662.950 MHz**




| Frequency (MHz) | S.A. Reading (dBuV) | Correction Factor (dB/m) | Corrected Amplitude (dBµV/m) | Antenna Polarity (H/V) | Antenna Height (cm) | Turntable Azimuth (degrees) | Limit (dBµV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|---|---|
| 30.97 | 36.31 | -1.55 | 34.76 | H | 200 | 0 | 40 | -5.24 | Peak |
| 38.73 | 36.44 | -6.79 | 29.65 | V | 100 | 0 | 40 | -10.35 | Peak |
| 967.505 | 35.46 | 5.12 | 40.59 | V | 200 | 0 | 54 | -13.41 | Peak |
| 854.025 | 33.25 | 4.01 | 37.26 | H | 100 | 7 | 46 | -8.74 | Peak |
| 797.58 | 33.86 | 3.08 | 36.94 | H | 100 | 7 | 46 | -9.06 | Peak |
| 699.305 | 33.91 | 2.14 | 36.04 | H | 100 | 7 | 46 | -9.96 | Peak |

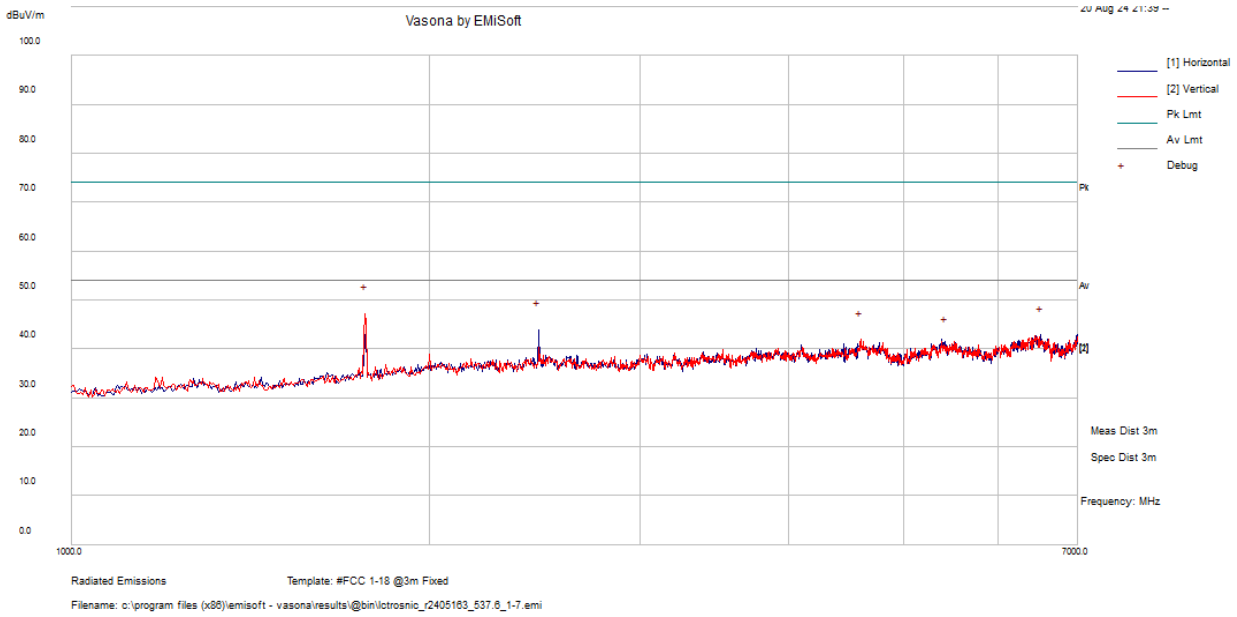
**Note:** The plot above shows that all peak emissions passed the quasi-peak limits.

| FCC/IC Limits for 1 GHz to 26.5 GHz | | | | |
|---|---|---|---|---|
| **Applicability** | **(dBm)** | **(uV/m at 3meters)** | **(dBuV/m at 3meters)** | **(dBuV/m at 1meter)** |
| Restricted Band Average Limit | - | 500 | 54[2] | 64[3] |
| Restricted Band Peak Limit[1] | - | - | 74 | 84 |

Note 1: Restricted Band Peak Limit is defined to be 20dB higher than Average Limit.
Note 2: Above 1GHz limit calculation:
dBuV/m = 20*log(V/m) + 120 = 20*log((500 [uV/m]/1000000)) + 120 = 54 [dBuV/m]
Note 3: Limits at 1 meter are determined by applying a Distance correction factor accounts for extrapolation from 1 meter to 3 meters. Formula used is as follows: 20*log (3 meters / 1 meter) = 9.54 (According to ANSI C63.10-2013 Section 9.4). Extrapolation calculation from 3m to 1m distance:
54 [dBuV/m at 3m] + 9.54 [dB] = 63.54 [dBuV/m at 1m]
Note 4: Ports terminated for radiated measurements.

**1 GHz – 7 GHz, Measured at 3 meters**

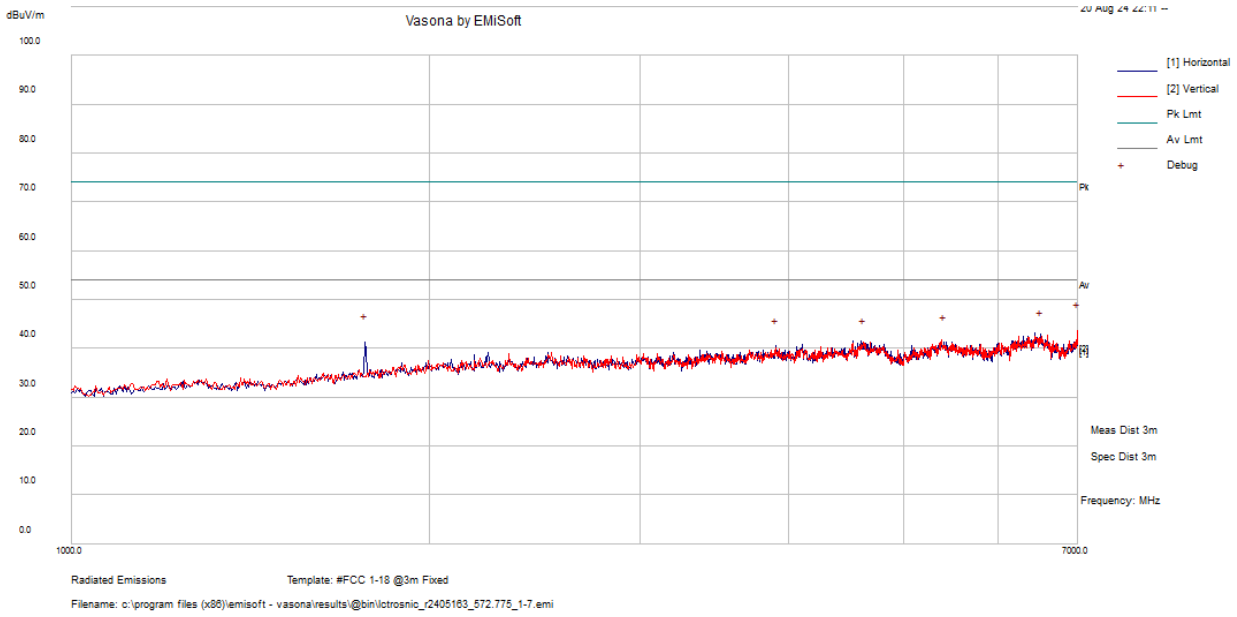
**537.600 MHz**




| Frequency (MHz) | S.A. Reading (dBuV) | Correction Factor (dB/m) | Corrected Amplitude (dBµV/m) | Antenna Polarity (H/V) | Antenna Height (cm) | Turntable Azimuth (degrees) | Limit (dBµV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|---|---|
| 1765 | 56.74 | -9.59 | 47.15 | V | 100 | 0 | 54 | -6.85 | Peak |
| 2466.25 | 50.77 | -6.89 | 43.88 | H | 100 | 0 | 54 | -10.12 | Peak |
| 6512.5 | 45.42 | -2.53 | 42.89 | H | 300 | 0 | 54 | -11.11 | Peak |
| 7000 | 44.26 | -2.8 | 41.46 | V | 101 | 7 | 54 | -12.54 | Peak |
| 5414.335 | 43.69 | -3 | 40.69 | V | 101 | 7 | 54 | -13.31 | Peak |
| 4600.125 | 46.56 | -4.71 | 41.85 | V | 101 | 7 | 54 | -12.15 | Peak |

**Note:** The plot above shows that all peak emissions passed the average limits.

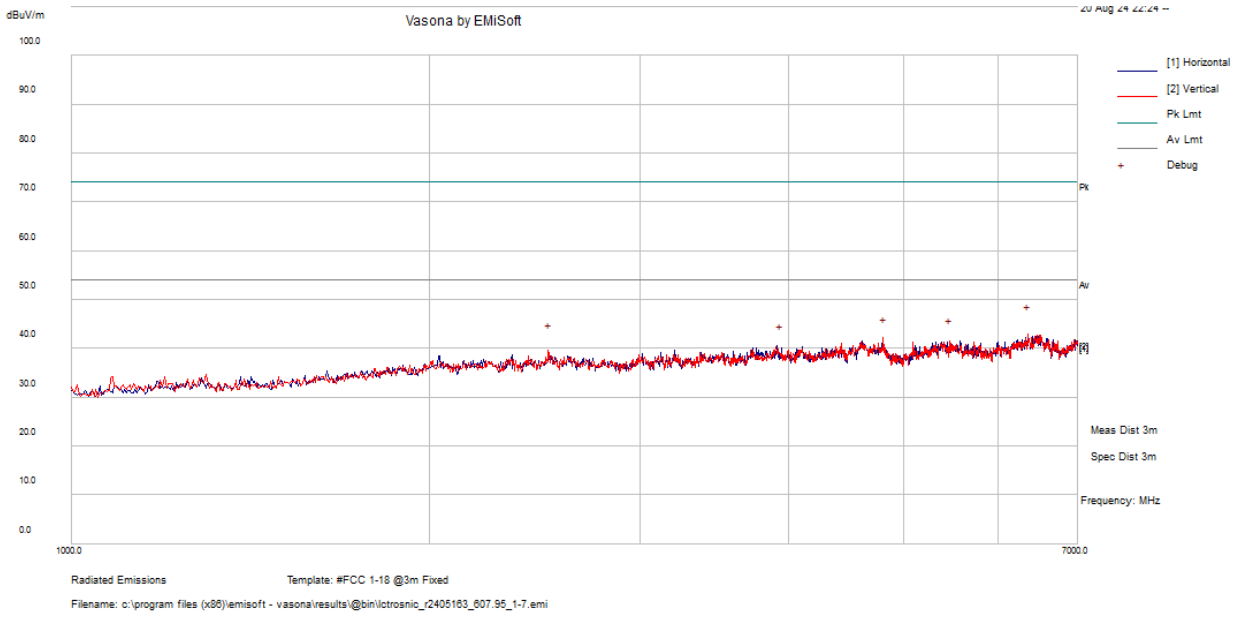
**572.775 MHz**




| Frequency (MHz) | S.A. Reading (dBuV) | Correction Factor (dB/m) | Corrected Amplitude (dBµV/m) | Antenna Polarity (H/V) | Antenna Height (cm) | Turntable Azimuth (degrees) | Limit (dBµV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|---|---|
| 6996.25 | 46.43 | -2.83 | 43.6 | V | 300 | 0 | 54 | -10.4 | Peak |
| 1765 | 50.82 | -9.59 | 41.23 | H | 300 | 0 | 54 | -12.78 | Peak |
| 6513.725 | 44.36 | -2.53 | 41.83 | V | 100 | 352 | 54 | -12.17 | Peak |
| 5403.809 | 43.72 | -2.91 | 40.81 | V | 100 | 352 | 54 | -13.19 | Peak |
| 4624.791 | 44.87 | -4.71 | 40.16 | V | 100 | 352 | 54 | -13.84 | Peak |
| 3904.529 | 46.02 | -5.83 | 40.19 | V | 100 | 352 | 54 | -13.81 | Peak |

**Note:** The plot above shows that all peak emissions passed the average limits.

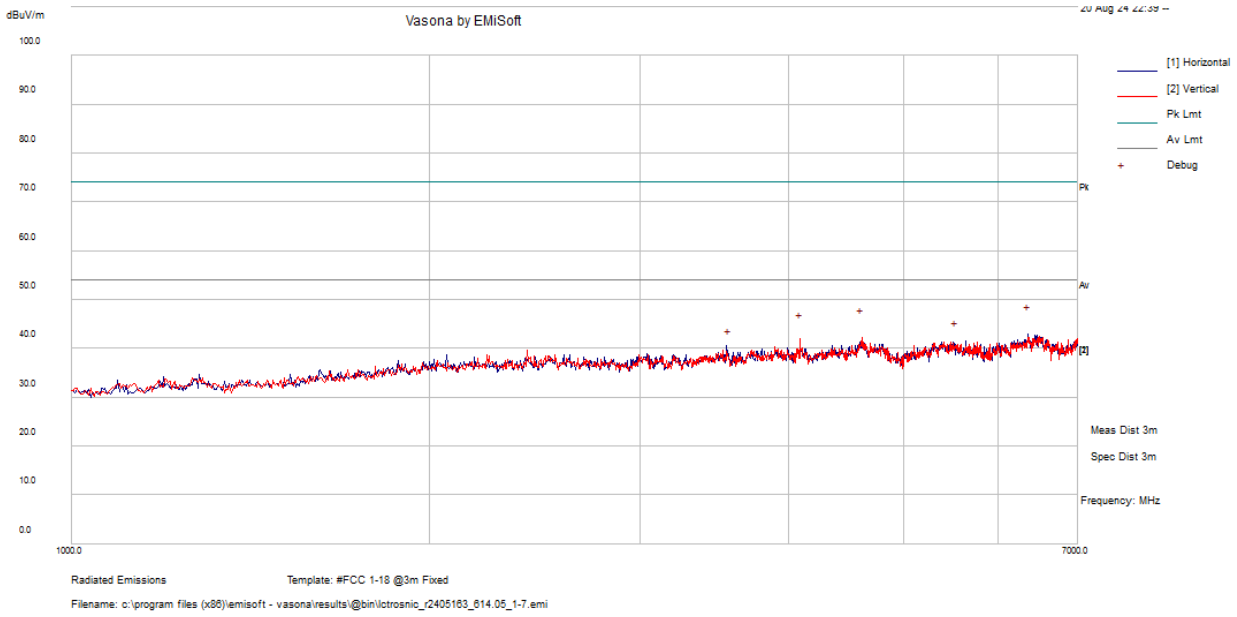
**607.950 MHz**




| Frequency (MHz) | S.A. Reading (dBuV) | Correction Factor (dB/m) | Corrected Amplitude (dBµV/m) | Antenna Polarity (H/V) | Antenna Height (cm) | Turntable Azimuth (degrees) | Limit (dBµV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|---|---|
| 6358.75 | 45.74 | -2.76 | 42.98 | V | 100 | 0 | 54 | -11.02 | Peak |
| 7000 | 43.85 | -2.8 | 41.05 | V | 101 | 352 | 54 | -12.95 | Peak |
| 5461.954 | 43.73 | -3.49 | 40.24 | V | 101 | 352 | 54 | -13.76 | Peak |
| 4813.009 | 45.11 | -4.59 | 40.52 | V | 101 | 352 | 54 | -13.48 | Peak |
| 3938.869 | 44.71 | -5.8 | 38.91 | V | 101 | 352 | 54 | -15.09 | Peak |
| 2517.671 | 45.76 | -6.63 | 39.12 | V | 101 | 352 | 54 | -14.88 | Peak |

**Note:** The plot above shows that all peak emissions passed the average limits.

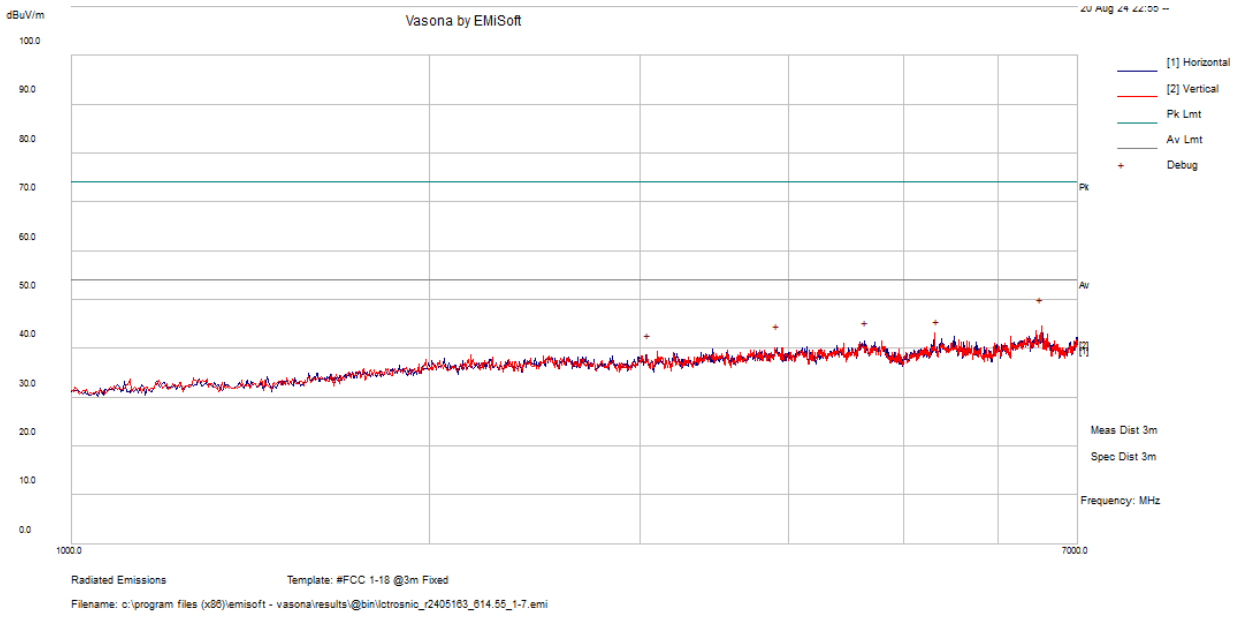
**614.050 MHz**




| Frequency (MHz) | S.A. Reading (dBuV) | Correction Factor (dB/m) | Corrected Amplitude (dBµV/m) | Antenna Polarity (H/V) | Antenna Height (cm) | Turntable Azimuth (degrees) | Limit (dBµV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|---|---|
| 6355 | 45.81 | -2.82 | 42.99 | H | 100 | 0 | 54 | -11.01 | Peak |
| 4611.25 | 46.97 | -4.71 | 42.26 | V | 300 | 0 | 54 | -11.74 | Peak |
| 5526.099 | 43.53 | -3.89 | 39.64 | V | 100 | 352 | 54 | -14.36 | Peak |
| 4090.772 | 46.57 | -5.14 | 41.43 | V | 100 | 352 | 54 | -12.57 | Peak |
| 7000 | 43.66 | -2.8 | 40.86 | V | 100 | 352 | 54 | -13.14 | Peak |
| 3563.272 | 44 | -5.85 | 38.15 | V | 100 | 352 | 54 | -15.85 | Peak |

**Note:** The plot above shows that all peak emissions passed the average limits.

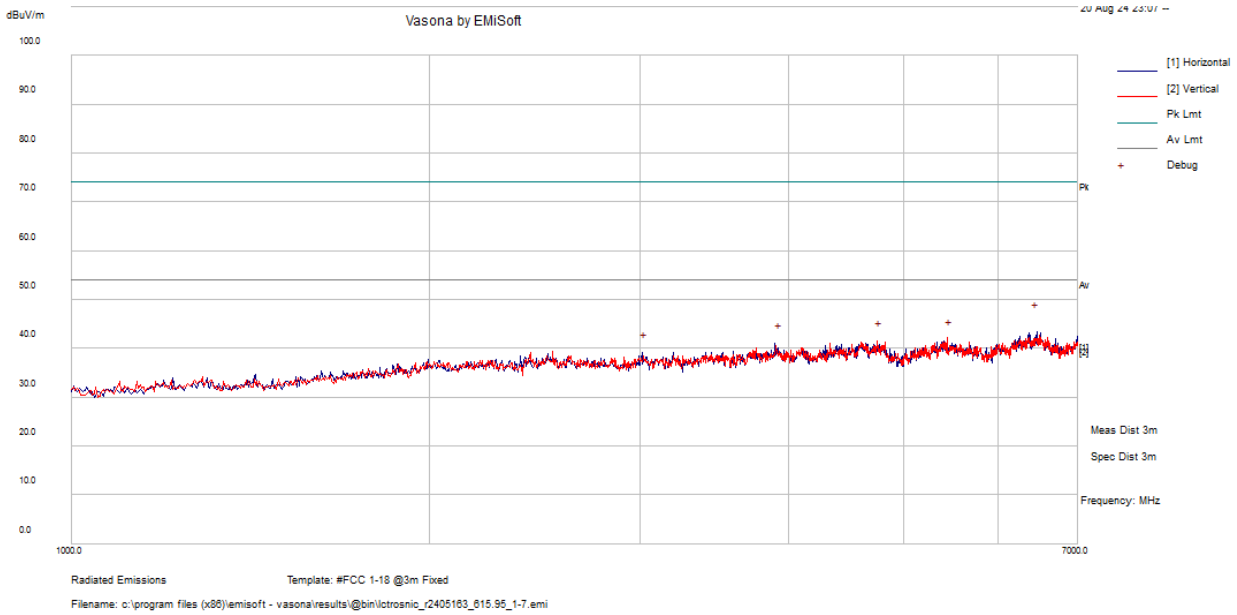
**614.550 MHz**




| Frequency (MHz) | S.A. Reading (dBuV) | Correction Factor (dB/m) | Corrected Amplitude (dBµV/m) | Antenna Polarity (H/V) | Antenna Height (cm) | Turntable Azimuth (degrees) | Limit (dBµV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|---|---|
| 6523.75 | 47.02 | -2.53 | 44.48 | V | 100 | 0 | 54 | -9.52 | Peak |
| 7000 | 43.39 | -2.8 | 40.59 | V | 100 | 352 | 54 | -13.41 | Peak |
| 5330.701 | 43.59 | -3.58 | 40.01 | V | 100 | 352 | 54 | -13.99 | Peak |
| 4651.869 | 44.4 | -4.7 | 39.7 | V | 100 | 352 | 54 | -14.3 | Peak |
| 3919.754 | 44.77 | -5.81 | 38.95 | V | 100 | 352 | 54 | -15.05 | Peak |
| 3049.588 | 43.22 | -6.01 | 37.21 | V | 100 | 352 | 54 | -16.79 | Peak |

**Note:** The plot above shows that all peak emissions passed the average limits.

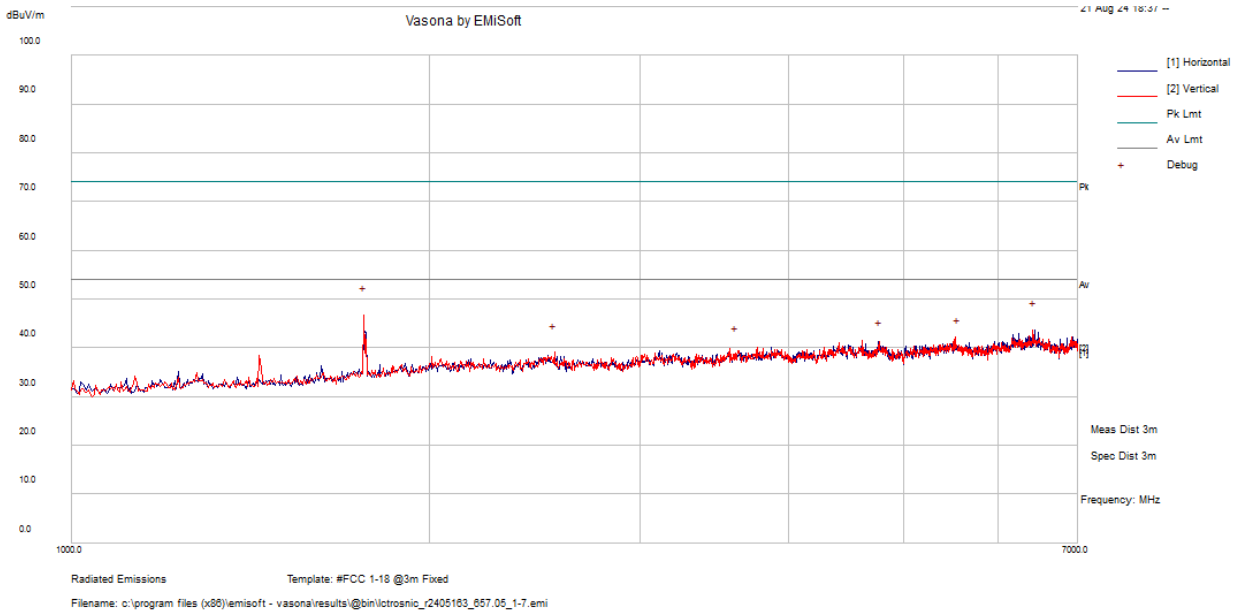
**615.950 MHz**




| Frequency (MHz) | S.A. Reading (dBuV) | Correction Factor (dB/m) | Corrected Amplitude (dBµV/m) | Antenna Polarity (H/V) | Antenna Height (cm) | Turntable Azimuth (degrees) | Limit (dBµV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|---|---|
| 6463.75 | 45.66 | -2.22 | 43.44 | H | 300 | 0 | 54 | -10.56 | Peak |
| 7000 | 44.18 | -2.8 | 41.38 | V | 100 | 352 | 54 | -12.62 | Peak |
| 5461.954 | 43.36 | -3.49 | 39.87 | V | 100 | 352 | 54 | -14.13 | Peak |
| 4771.047 | 44.6 | -4.83 | 39.77 | V | 100 | 352 | 54 | -14.23 | Peak |
| 3931.212 | 44.97 | -5.81 | 39.16 | V | 100 | 352 | 54 | -14.84 | Peak |
| 3028.889 | 43.56 | -6.12 | 37.45 | V | 100 | 352 | 54 | -16.55 | Peak |

**Note:** The plot above shows that all peak emissions passed the average limits.

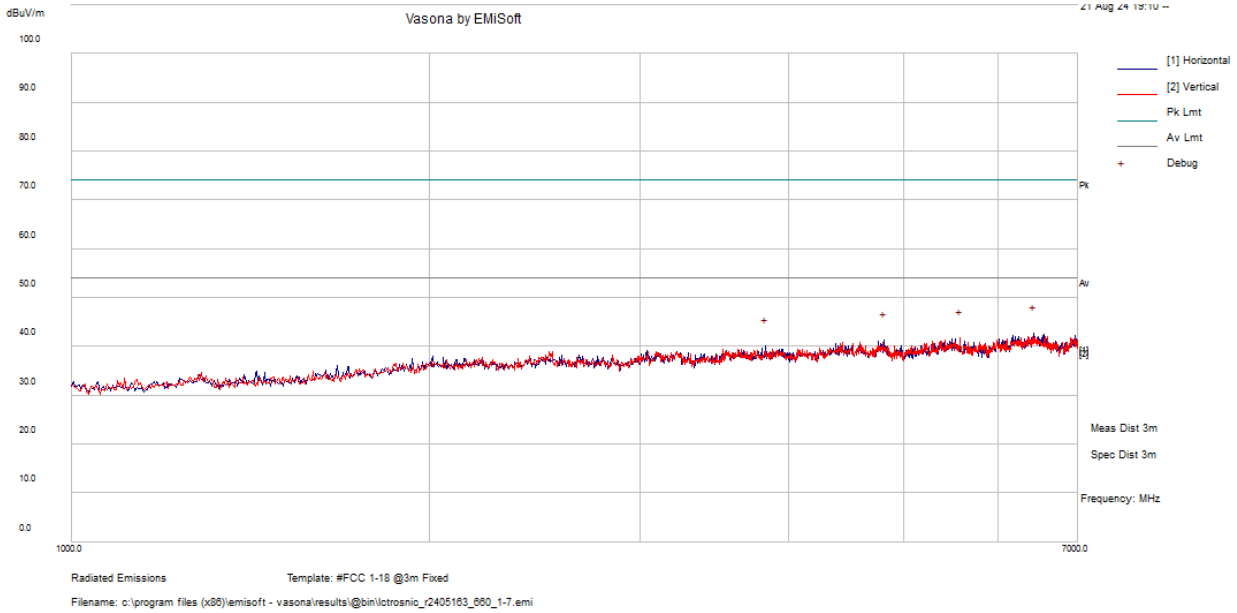
**657.050 MHz**




| Frequency (MHz) | S.A. Reading (dBuV) | Correction Factor (dB/m) | Corrected Amplitude (dBµV/m) | Antenna Polarity (H/V) | Antenna Height (cm) | Turntable Azimuth (degrees) | Limit (dBµV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|---|---|
| 1761.25 | 56.56 | -9.8 | 46.77 | V | 100 | 0 | 54 | -7.23 | Peak |
| 6437.5 | 46.38 | -2.78 | 43.61 | H | 300 | 0 | 54 | -10.39 | Peak |
| 5547.647 | 44.47 | -4.32 | 40.16 | V | 100 | 352 | 54 | -13.84 | Peak |
| 4771.047 | 44.43 | -4.72 | 39.71 | V | 100 | 352 | 54 | -14.29 | Peak |
| 3612.141 | 44.01 | -5.59 | 38.42 | V | 100 | 352 | 54 | -15.58 | Peak |
| 2545.391 | 45.83 | -6.87 | 38.96 | V | 100 | 352 | 54 | -15.04 | Peak |

**Note:** The plot above shows that all peak emissions passed the average limits.

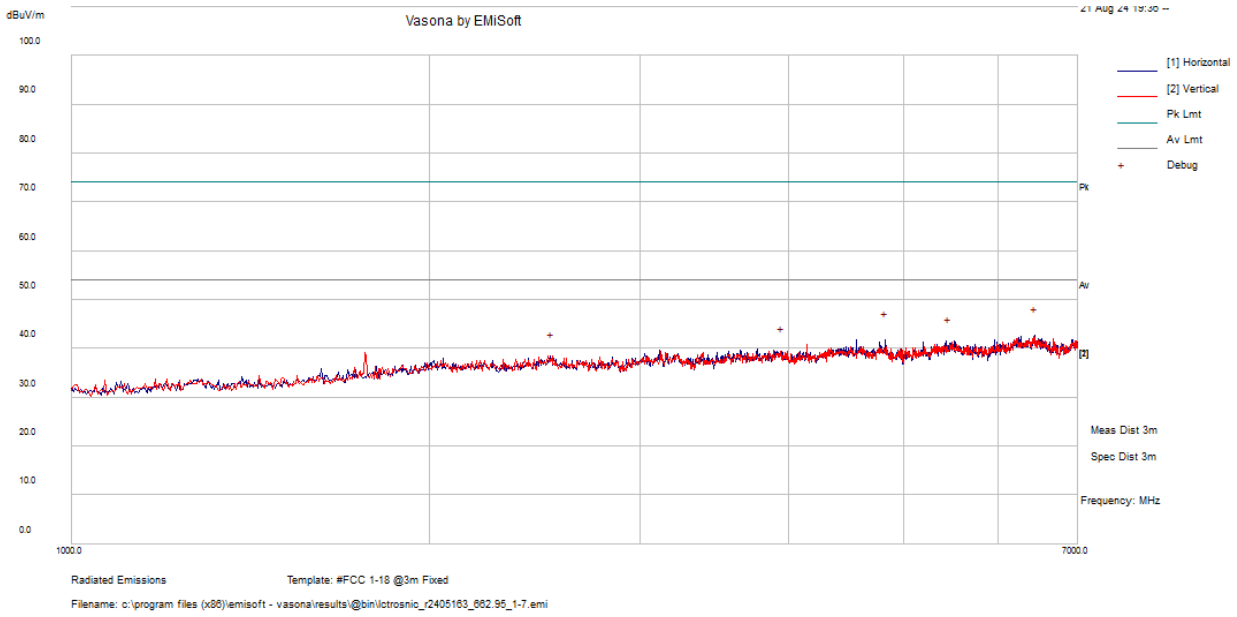
**660.000 MHz**




| Frequency (MHz) | S.A. Reading (dBuV) | Correction Factor (dB/m) | Corrected Amplitude (dBµV/m) | Antenna Polarity (H/V) | Antenna Height (cm) | Turntable Azimuth (degrees) | Limit (dBµV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|---|---|
| 6426.25 | 45.33 | -2.71 | 42.62 | H | 200 | 0 | 54 | -11.38 | Peak |
| 7000 | 43.22 | -2.99 | 40.23 | V | 102 | 352 | 54 | -13.77 | Peak |
| 5575.126 | 45.95 | -4.28 | 41.67 | V | 102 | 352 | 54 | -12.33 | Peak |
| 4813.637 | 45.93 | -4.74 | 41.19 | V | 102 | 352 | 54 | -12.81 | Peak |
| 3827.706 | 45.53 | -5.65 | 39.88 | V | 102 | 352 | 54 | -14.12 | Peak |
| 2534.877 | 45.04 | -6.83 | 38.21 | V | 102 | 352 | 54 | -15.79 | Peak |

**Note:** The plot above shows that all peak emissions passed the average limits.

**662.950 MHz**




| Frequency (MHz) | S.A. Reading (dBuV) | Correction Factor (dB/m) | Corrected Amplitude (dBµV/m) | Antenna Polarity (H/V) | Antenna Height (cm) | Turntable Azimuth (degrees) | Limit (dBµV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|---|---|
| 6445 | 45.47 | -2.82 | 42.66 | H | 100 | 0 | 54 | -11.34 | Peak |
| 7000 | 42.99 | -2.99 | 40 | V | 101 | 352 | 54 | -14 | Peak |
| 5451.336 | 44.07 | -3.68 | 40.38 | V | 101 | 352 | 54 | -13.62 | Peak |
| 4825.392 | 46.41 | -4.84 | 41.57 | V | 101 | 352 | 54 | -12.43 | Peak |
| 3946.541 | 44.36 | -5.91 | 38.45 | V | 101 | 352 | 54 | -15.55 | Peak |
| 2529.949 | 44.28 | -6.82 | 37.46 | V | 101 | 352 | 54 | -16.54 | Peak |

**Note:** The plot above shows that all peak emissions passed the average limits.

# 8 FCC §15.236(f.3) & RSS-210 G.2 – Frequency Stability

## 8.1 Applicable Standards

According to FCC §15.236 The frequency tolerance of the carrier signal shall be maintained within ±0.005% of the operating frequency over a temperature variation of −20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. Battery operated equipment shall be tested using a new battery.

According to RSS-210 G.2:

**Table G1 — Specifications for wireless microphones**

| Frequency bands (MHz) | Transmit e.i.r.p. (mW) | Authorized bandwidth (kHz) | Frequency stability (± ppm) |
|---|---|---|---|
| 54-72<br>76-88<br>174-216 | 50 | 200 | 50 |
| 470-608 | 250 | 200 | 50 |
| 614-616<br>653-663 | 20 | 200 | 50 |

The occupied bandwidth for wireless microphones shall not exceed the authorized bandwidth specified in table G1 (above)

## 8.2 Test Procedure

According to FCC 2.1055, (a) the frequency stability shall be measured with variation of ambient temperature as follows:
(1) From −30° to + 50° centigrade for all equipment except that specified in paragraphs (a) (2) and (3) of this section.
(2) From −20° to + 50° centigrade for equipment to be licensed for use in the Maritime Services under part 80 of this chapter, except for Class A, B, and S Emergency Position Indicating Radio beacons (EPIRBS), and equipment to be licensed for use above 952 MHz at operational fixed stations in all services, stations in the Local Television Transmission Service and Point-to-Point Microwave Radio Service under part 21 of this chapter, equipment licensed for use aboard aircraft in the Aviation Services under part 87 of this chapter, and equipment authorized for use in the Family Radio Service under part 95 of this chapter.
(3) From 0° to + 50° centigrade for equipment to be licensed for use in the Radio Broadcast Services under part 73 of this chapter.

(b) Frequency measurements shall be made at the extremes of the specified temperature range and at intervals of not more than 10° centigrade through the range. A period of time sufficient to stabilize all of the components of the oscillator circuit at each temperature level shall be allowed prior to frequency measurement. The short term

transient effects on the frequency of the transmitter due to keying (except for broadcast transmitters) and any heating element cycling normally occurring at each ambient temperature level also shall be shown. Only the portion or portions of the transmitter containing the frequency determining and stabilizing circuitry need be subjected to the temperature variation test.

(d) The frequency stability shall be measured with variation of primary supply voltage as follows:
(1) Vary primary supply voltage from 85 to 115 percent of the nominal value for other than hand carried battery equipment.
(3) The supply voltage shall be measured at the input to the cable normally provided with the equipment, or at the power supply terminals if cables are not normally provided. Effects on frequency of transmitter keying (except for broadcast transmitters) and any heating element cycling at the nominal supply voltage and at each extreme also shall be shown.

If an unmodulated carrier is not available, the measurement method shall be described in the test report.

## 8.3 Test Equipment List and Details

| BACL No. | Manufacturer | Description | Model | Serial Number | Calibration Date | Calibration Interval |
|---|---|---|---|---|---|---|
| 1128 | Agilent | EXA Signal Analyzer | N9010A | MY48030852 | 2024-05-23 | 1 year |
| 1060 | BACL | Temp and Humi Chamber | BTH-150-40 | 30078 | 2023-11-22 | 1 year |
| | - | RF Cable | - | - | Each time[1] | N/A |

Note[1]: cable included in the test set-up will be checked each time before testing.

***Statement of Traceability: BACL Corp.*** *attests that all of the calibrations on the equipment items listed above were traceable to NIST or to another internationally recognized National Metrology Institute (NMI), and were compliant with the latest version of A2LA policy P102 "A2LA Policy on Metrological Traceability".*

## 8.4 Test Environmental Conditions

| | |
|---|---|
| **Temperature:** | 23ºC |
| **Relative Humidity:** | 43% |
| **ATM Pressure:** | 101.1 kPa |

*The testing was performed by Xavier Kelley on 2024-06-11 to 2024-06-13 at RF site.*

## 8.5 Test Setup Diagram

## 8.6 Test Results

**572.775 MHz:**

**Varying temperature:**

| Temp. (℃) | Left Frequency (MHz) | Right Frequency (MHz) | Center Frequency (MHz) | Channel Frequency (MHz) | Frequency Tolerance (%) | Limits (%) | Results (ppm) | Limits (ppm) |
|---|---|---|---|---|---|---|---|---|
| -30 | 572.68145 | 572.86807 | 572.77476 | 572.7750 | -0.00004 | 0.005% | -0.41901 | ±50 |
| -20 | 572.68145 | 572.868.01 | 572.77473 | 572.7750 | -0.00004 | 0.005% | -0.47139 | ±50 |
| -10 | 572.68145 | 572.86801 | 572.77473 | 572.7750 | -0.00004 | 0.005% | -0.47139 | ±50 |
| 0 | 572.68183 | 572.86715 | 572.774915 | 572.7750 | -0.00008 | 0.005% | -0.1484 | ±50 |
| 10 | 572.68225 | 572.86665 | 572.774915 | 572.7750 | -0.00009 | 0.005% | -0.1484 | ±50 |
| 20 | 572.68219 | 572.86785 | 572.77502 | 572.7750 | 0.000003 | 0.005% | 0.034918 | ±50 |
| 30 | 572.68309 | 572.86851 | 572.7758 | 572.7750 | 0.0001 | 0.005% | 1.396709 | ±50 |
| 40 | 572.68249 | 572.86797 | 572.77523 | 572.7750 | 0.00004 | 0.005% | 0.401554 | ±50 |
| 50 | 572.68285 | 572.86701 | 572.77493 | 572.7750 | -0.00005 | 0.005% | -0.12221 | ±50 |

**Varying supply voltage (+/-15%V):**

| Voltage | Left Frequency (MHz) | Right Frequency (MHz) | Center Frequency (MHz) | Channel Frequency (MHz) | Frequency Tolerance (%) | Limits (%) | Results (ppm) | Limits (ppm) |
|---|---|---|---|---|---|---|---|---|
| 1.275v (Low) | 572.68229 | 572.86807 | 572.77518 | 572.7750 | 0.00003 | 0.005% | 0.31426 | ±50 |
| 1.725v (High) | 572.67887 | 572.86849 | 572.77368 | 572.7750 | -0.0002 | 0.005% | -2.30457 | ±50 |

**615 MHz:**

**Varying temperature:**

| Temp. (℃) | Left Frequency (MHz) | Right Frequency (MHz) | Center Frequency (MHz) | Channel Frequency (MHz) | Frequency Tolerance (%) | Limits (%) | Results (ppm) | Limits (ppm) |
|---|---|---|---|---|---|---|---|---|
| -30 | 614.90537 | 615.09277 | 614.99907 | 615 | -0.0001 | 0.005% | -1.5122 | ±50 |
| -20 | 614.90735 | 615.09232 | 614.999835 | 615 | -0.00002 | 0.005% | -0.26829 | ±50 |
| -10 | 614.90735 | 615.09286 | 615.000105 | 615 | 0.00001 | 0.005% | 0.17073 | ±50 |
| 0 | 614.90789 | 615.09007 | 614.99898 | 615 | -0.0001 | 0.005% | -1.65854 | ±50 |
| 10 | 614.91005 | 615.09061 | 615.00033 | 615 | -0.00005 | 0.005% | 0.53659 | ±50 |
| 20 | 614.90741 | 615.08995 | 614.99868 | 615 | -0.0002 | 0.005% | -2.14634 | ±50 |
| 30 | 614.90909 | 615.09079 | 615.49994 | 615 | 0.000001 | 0.005% | -0.97561 | ±50 |
| 40 | 614.90807 | 614.09169 | 614.99988 | 615 | -0.00001 | 0.005% | -0.19512 | ±50 |
| 50 | 614.90957 | 615.09097 | 615.00027 | 615 | 0.00004 | 0.005% | 4.39024 | ±50 |

**Varying supply voltage (+/-15%V):**

| Voltage | Left Frequency (MHz) | Right Frequency (MHz) | Center Frequency (MHz) | Channel Frequency (MHz) | Frequency Tolerance (%) | Limits (%) | Results (ppm) | Limits (ppm) |
|---|---|---|---|---|---|---|---|---|
| 1.275v (Low) | 614.90567 | 615.09253 | 614.9991 | 615 | -1.62602 | 0.005% | -1.46341 | ±50 |
| 1.725v (High) | 615.90735 | 615.09145 | 614.9994 | 615 | 0.00005 | 0.005% | -0.91057 | ±50 |

**660 MHz:**

**Varying temperature:**

| Temp. (℃) | Left Frequency (MHz) | Right Frequency (MHz) | Center Frequency (MHz) | Channel Frequency (MHz) | Frequency Tolerance (%) | Limits (%) | Results (ppm) | Limits (ppm) |
|---|---|---|---|---|---|---|---|---|
| -30 | 659.90441 | 660.09379 | 659.9991 | 660 | -0.0001 | 0.005% | -1.36364 | ±50 |
| -20 | 659.90471 | 660.09391 | 659.99931 | 660 | -0.0001 | 0.005% | -1.04545 | ±50 |
| -10 | 659.90537 | 660.09475 | 660.00006 | 660 | 0.000009 | 0.005% | 0.90909 | ±50 |
| 0 | 659.91071 | 660.08875 | 659.99973 | 660 | -0.00004 | 0.005% | -0.40909 | ±50 |
| 10 | 659.91077 | 660.08905 | 659.99991 | 660 | -0.00001 | 0.005% | -0.13636 | ±50 |
| 20 | 659.90867 | 660.08989 | 659.99928 | 660 | -0.0001 | 0.005% | -1.09091 | ±50 |
| 30 | 659.90927 | 660.08953 | 659.9994 | 660 | -0.00009 | 0.005% | -0.90909 | ±50 |
| 40 | 659.90735 | 660.09295 | 660.00015 | 660 | 0.00002 | 0.005% | 0.22727 | ±50 |
| 50 | 659.90735 | 660.09355 | 660.00045 | 660 | 0.00006 | 0.005% | 0.68182 | ±50 |

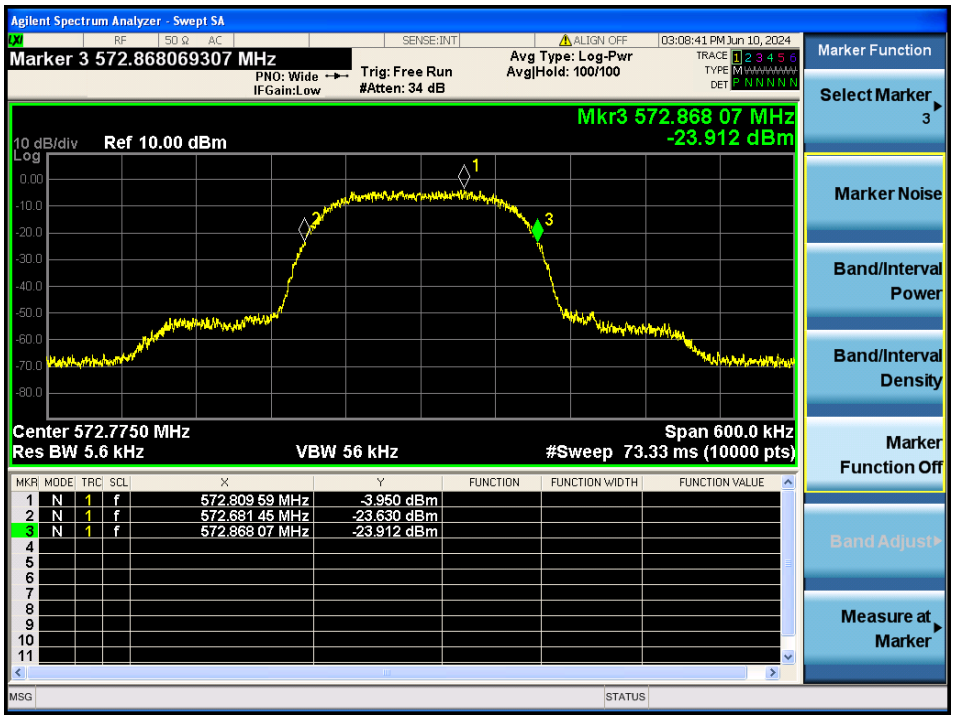
**Varying supply voltage (+/-15%V):**

| Voltage | Left Frequency (MHz) | Right Frequency (MHz) | Center Frequency (MHz) | Channel Frequency (MHz) | Frequency Tolerance (ppm) | Limits (ppm) | Results (ppm) | Limits (ppm) |
|---|---|---|---|---|---|---|---|---|
| 1.275v (Low) | 659.90615 | 660.09484 | 660.000495 | 660 | 0.00007 | 0.005% | 0.75 | ±50 |
| 1.725v (High) | 659.90639 | 660.09445 | 660.00042 | 660 | 0.00006 | 0.005% | 0.63636 | ±50 |

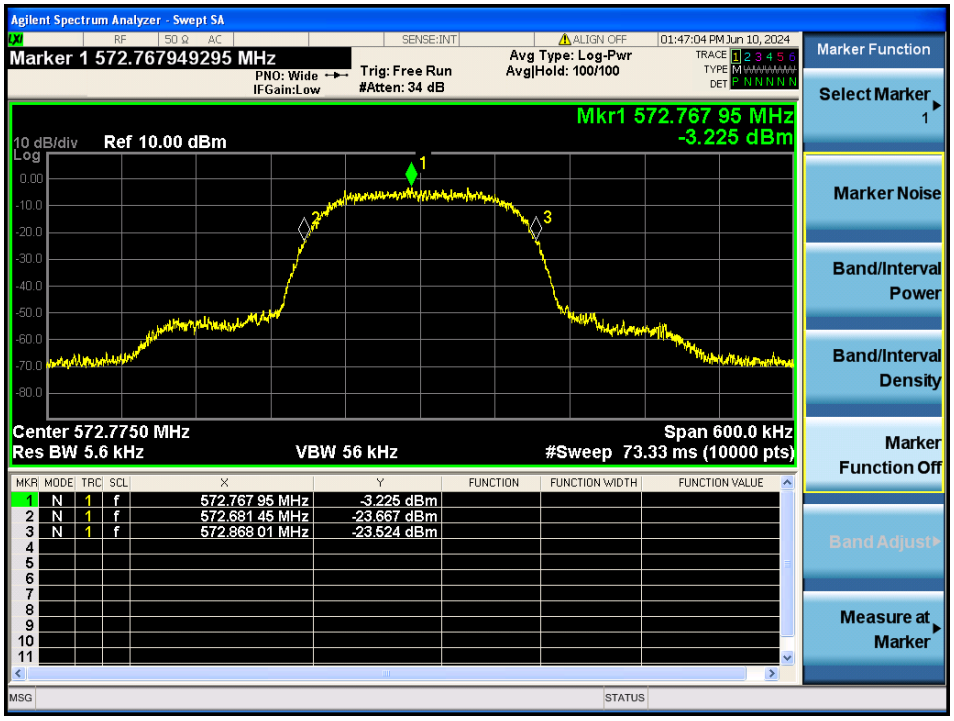
*Note: Center Frequency (MHz) = Left Frequency(MHz) + Right Frequency(MHz)/2*

*Note: PPM = Center Frequency(MHz) – Channel Frequency(MHz)/Channel Frequency(MHz) * 1,000,000*

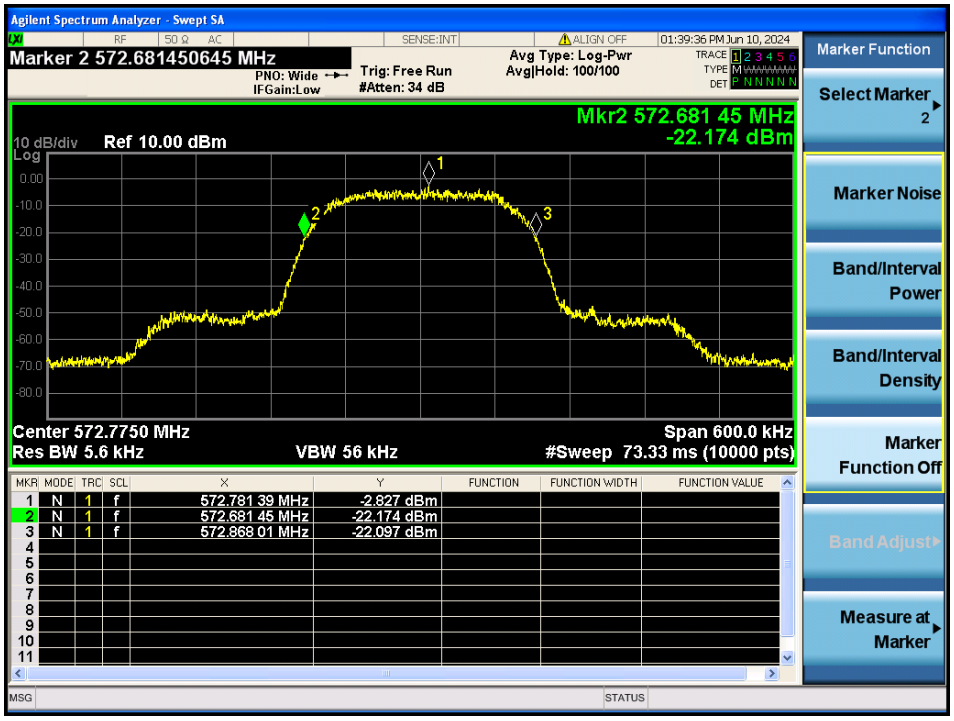
**572.775 MHz @ -30**



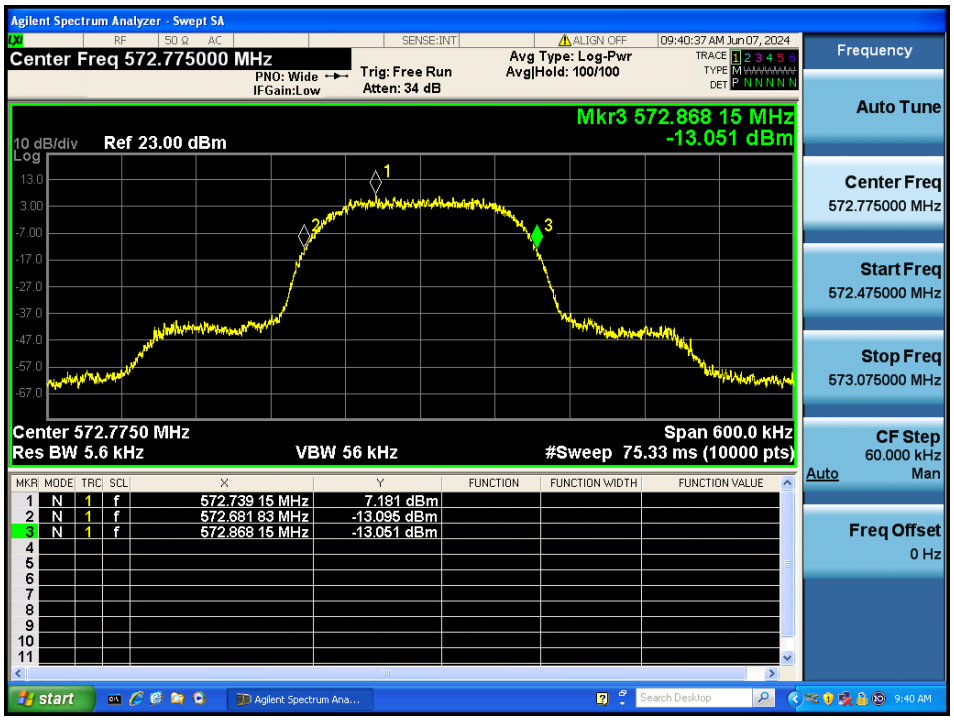

**572.775 MHz @ -20**



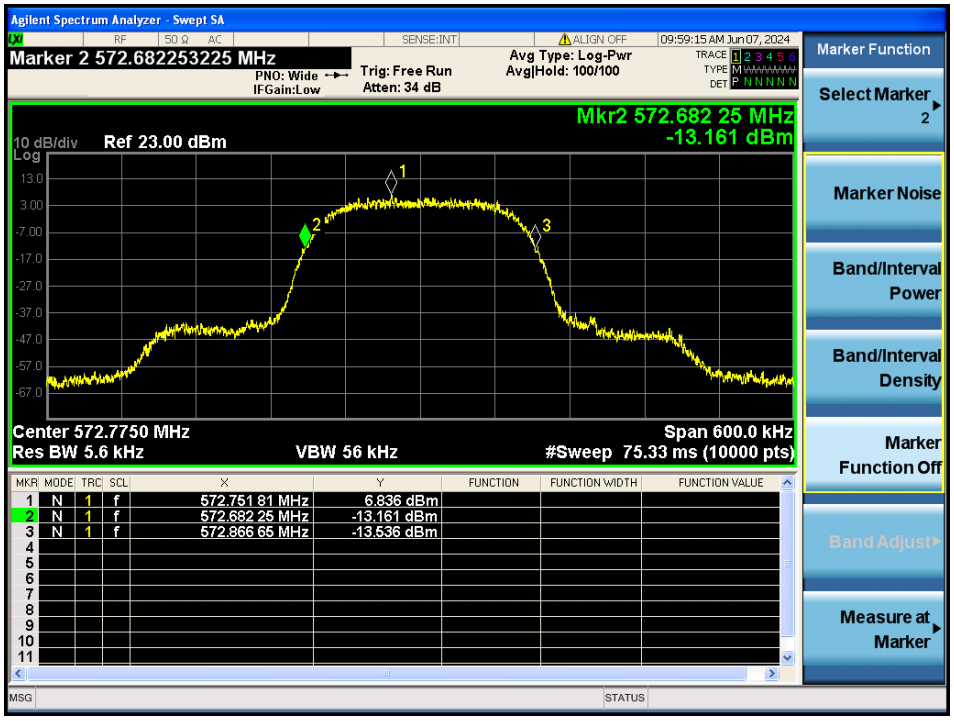
**572.775 MHz @ -10**



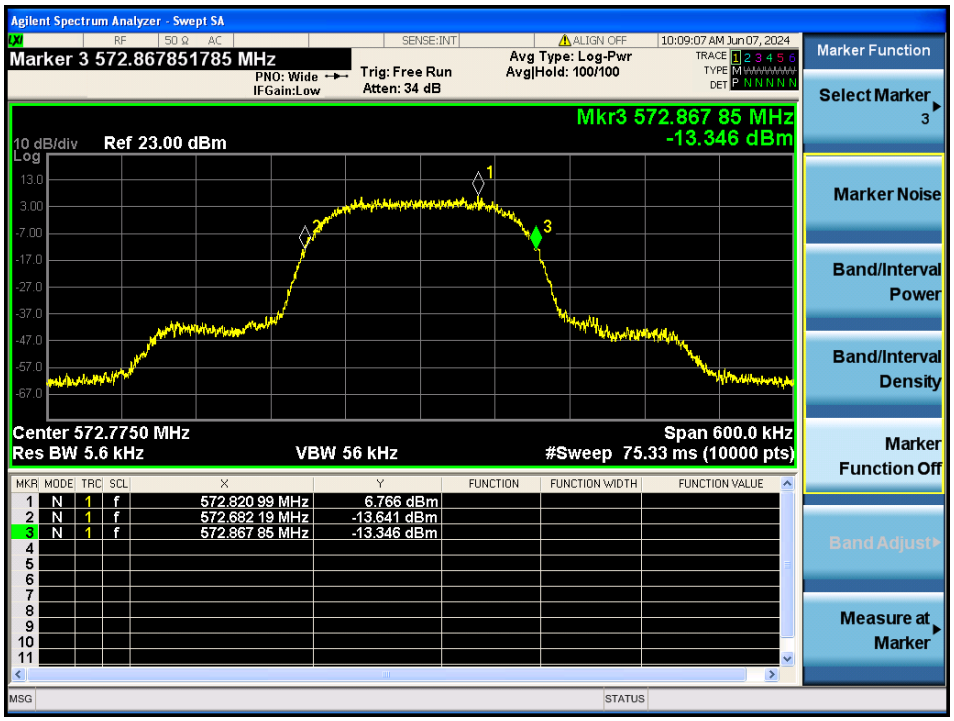

**572.775 MHz @ 0**



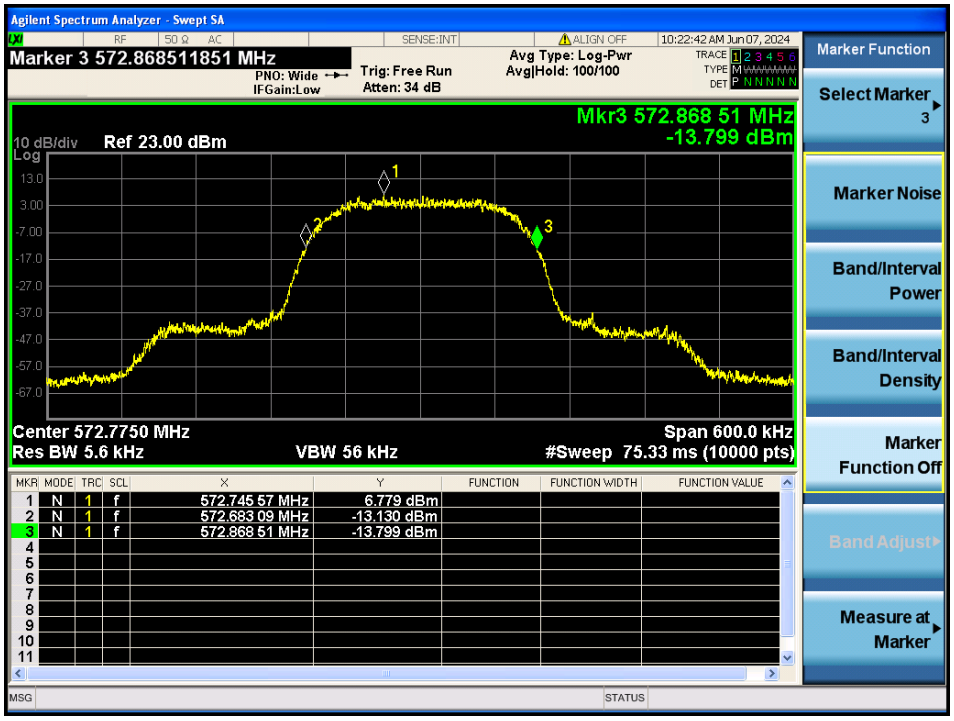
**572.775 MHz @ 10**



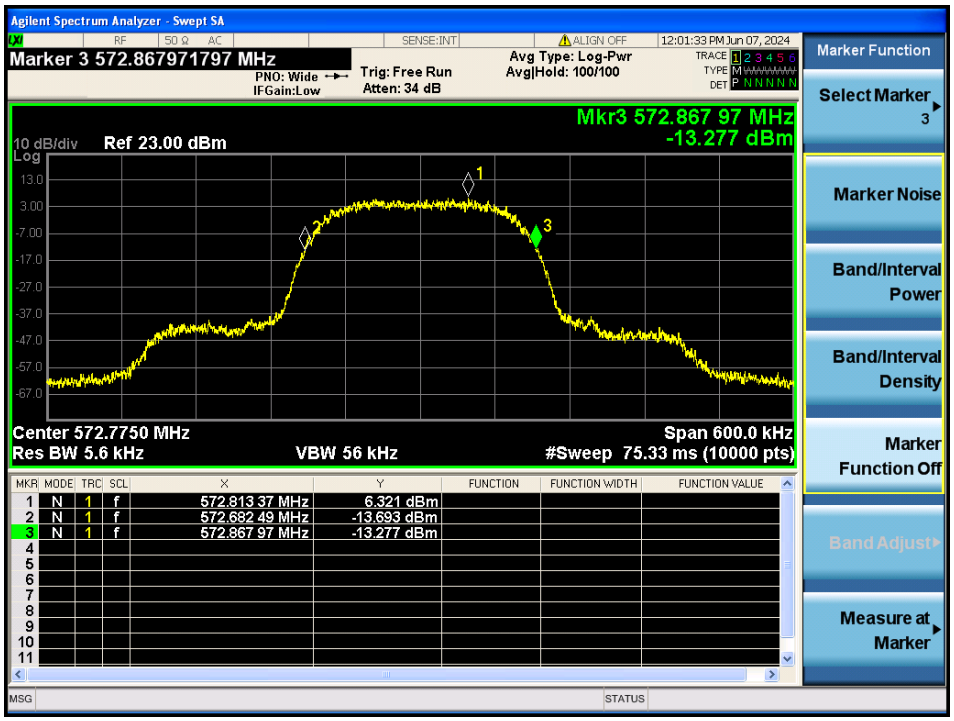

**572.775 MHz @ 20**



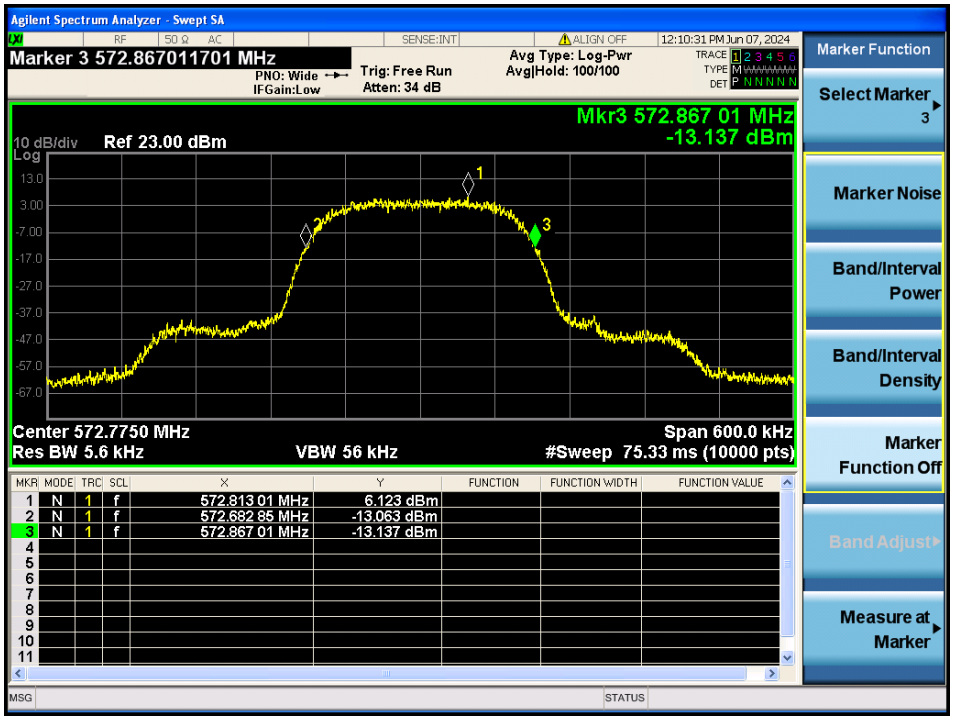
**572.775 MHz @ 30**



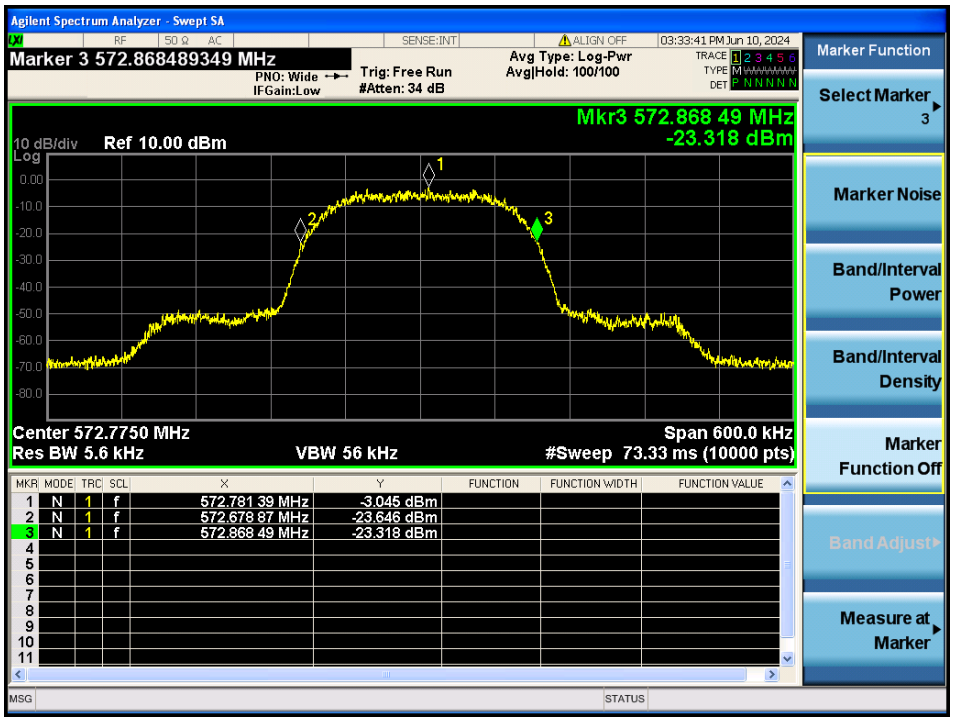

**572.775 MHz @ 40**



**572.775 MHz @ 50**

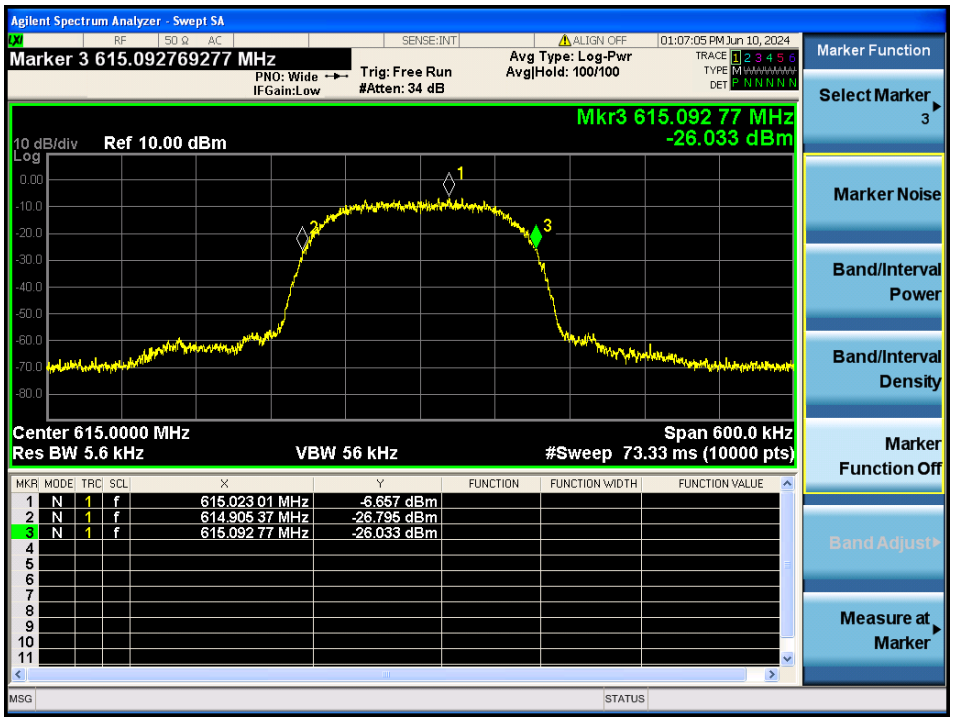



**572.775 MHz @ High Voltage**

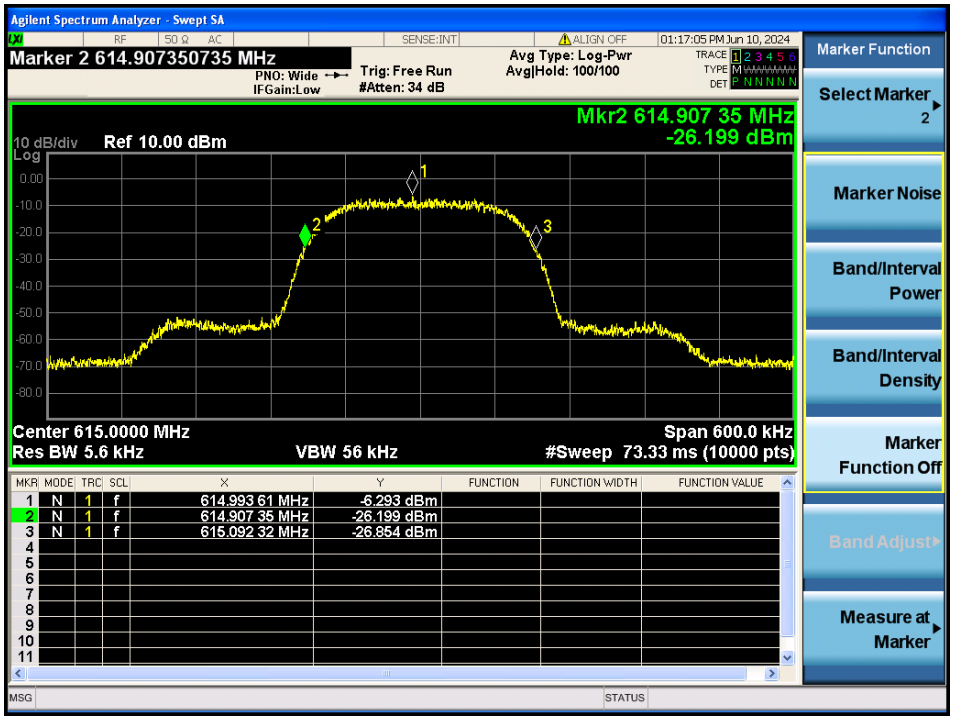


**572.775 MHz @ Low Voltage**

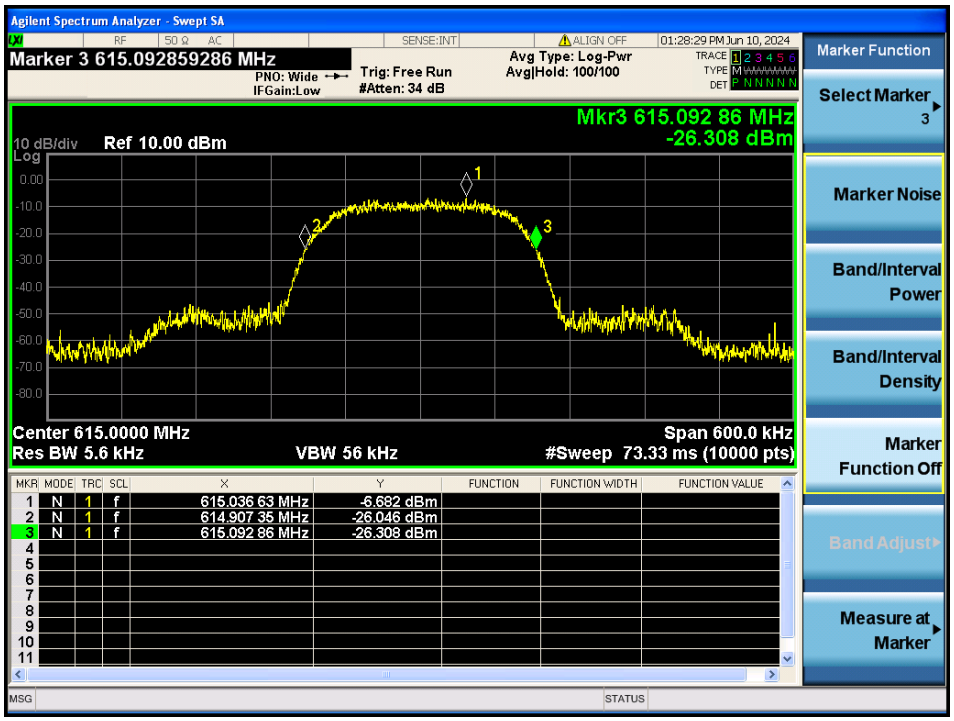

**615 MHz @ -30**



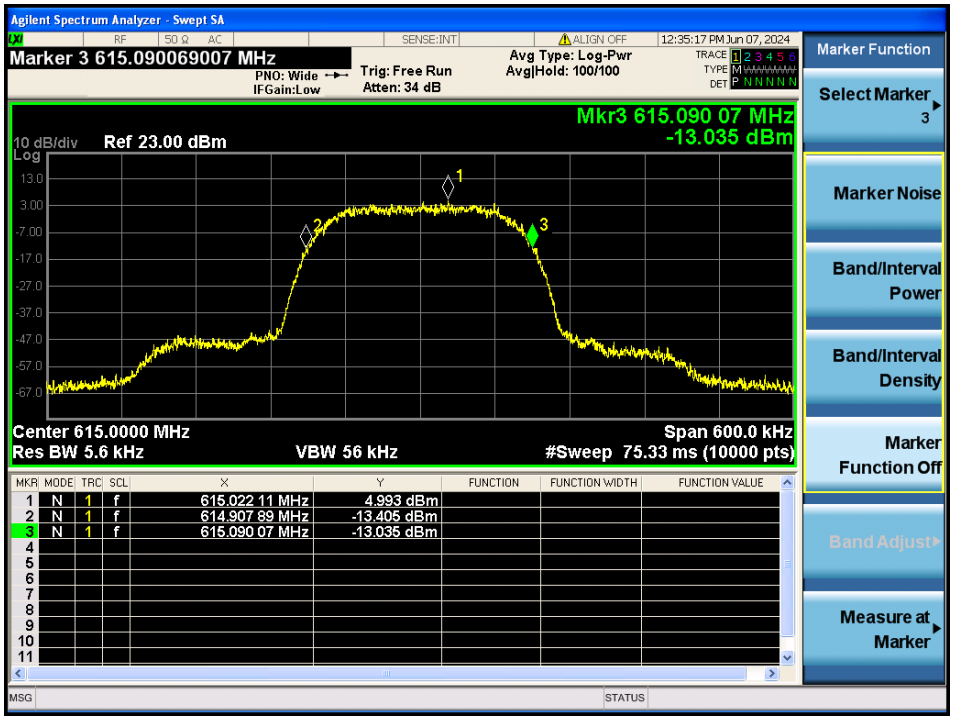
**615 MHz @ -20**



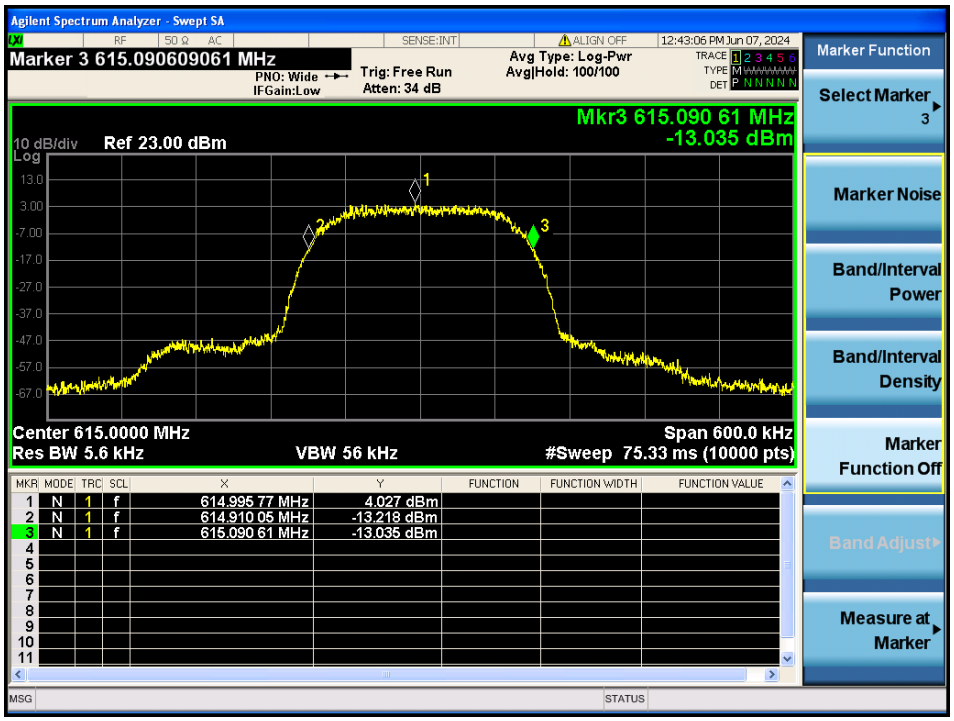

**615 MHz @ -10**



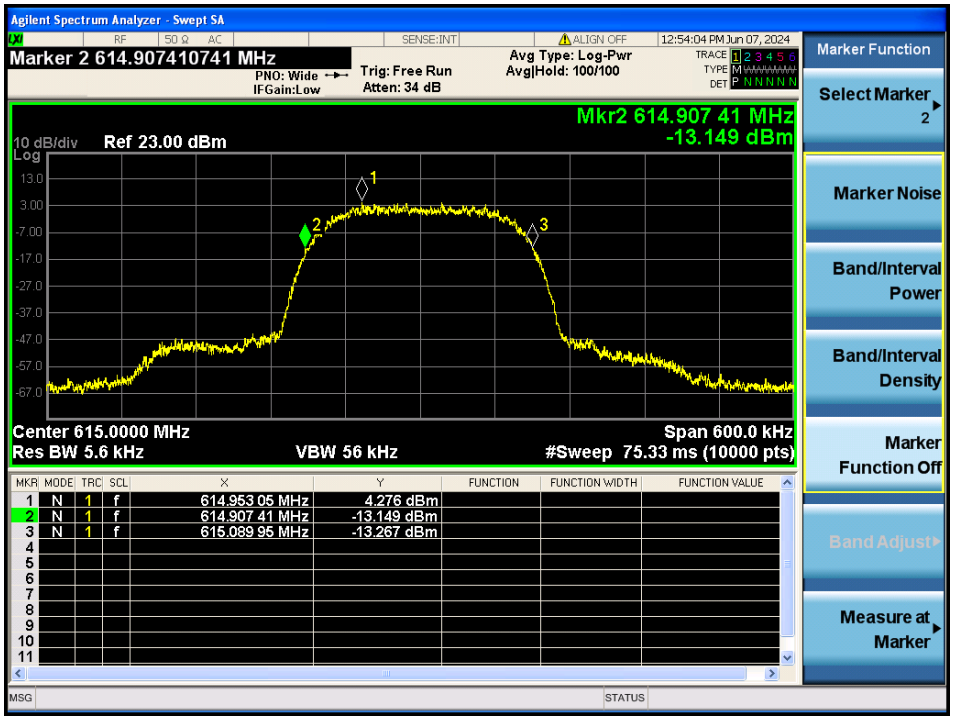
**615 MHz @ 0**



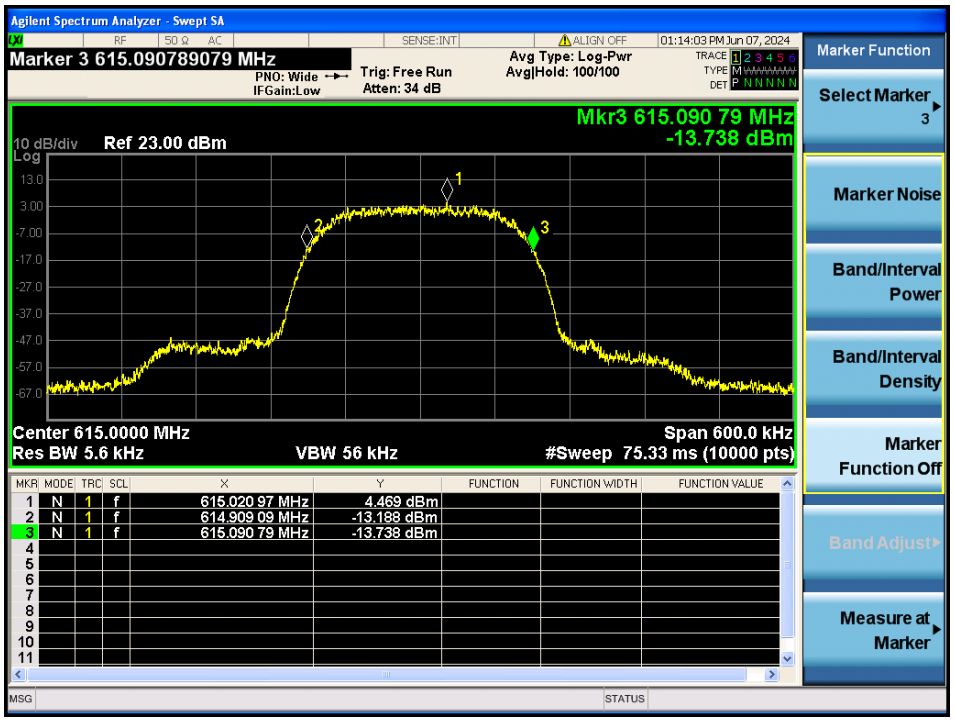

**615 MHz @ 10**



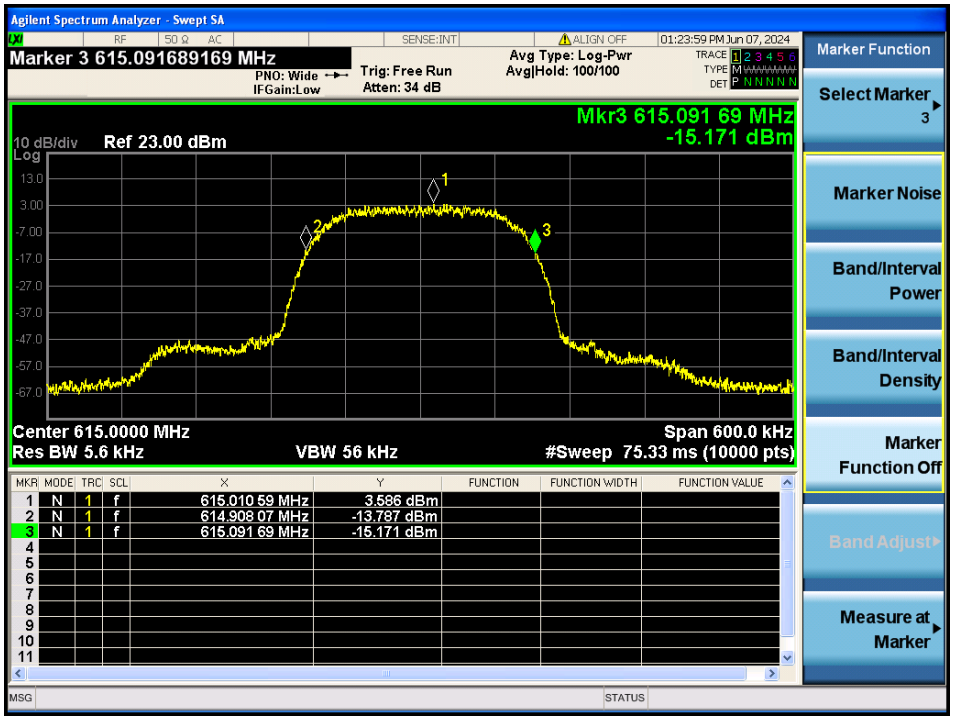
**615 MHz @ 20**



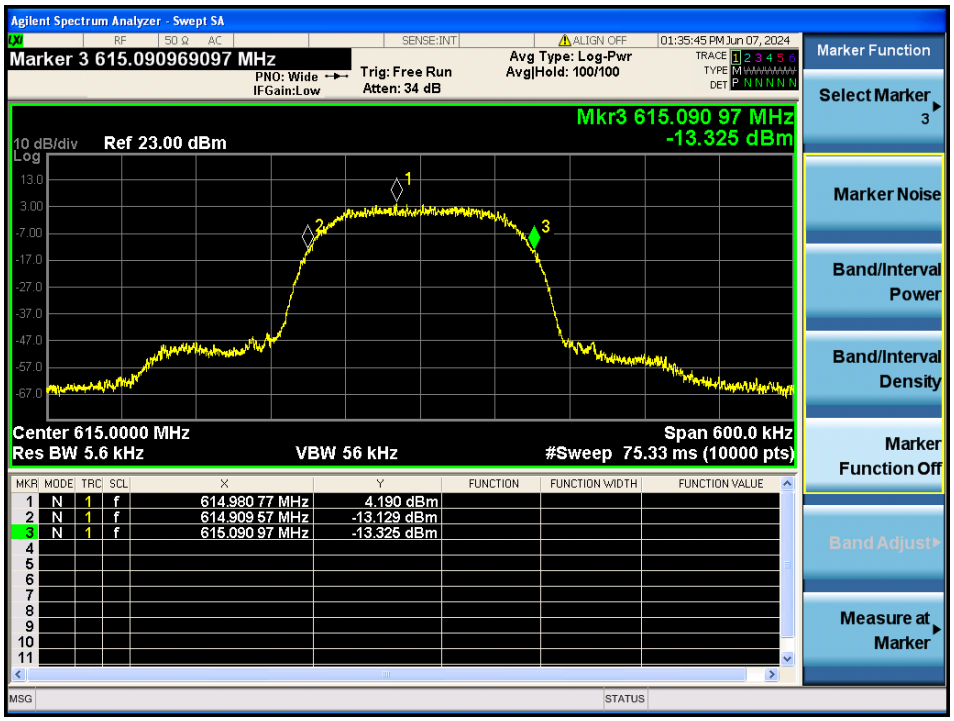

**615 MHz @ 30**



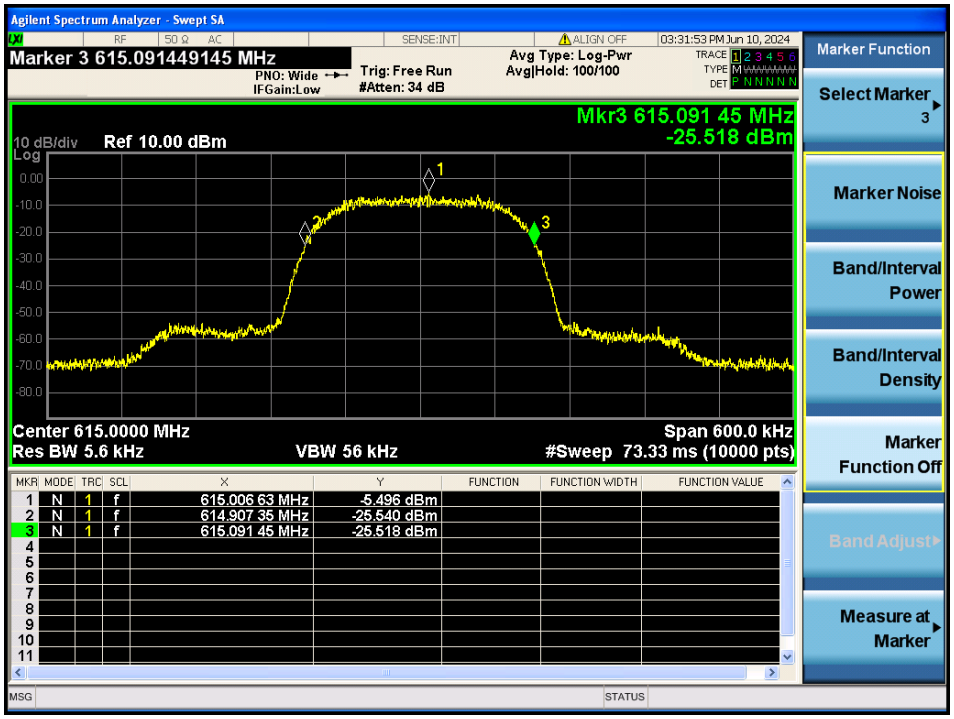
**615 MHz @ 40**



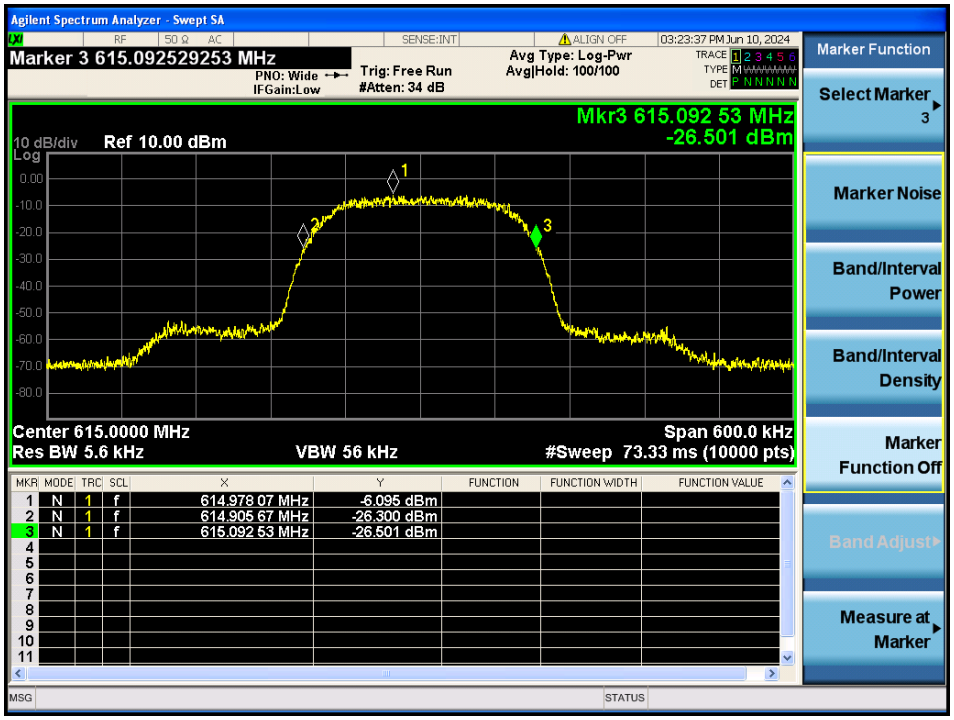

**615 MHz @ 50**



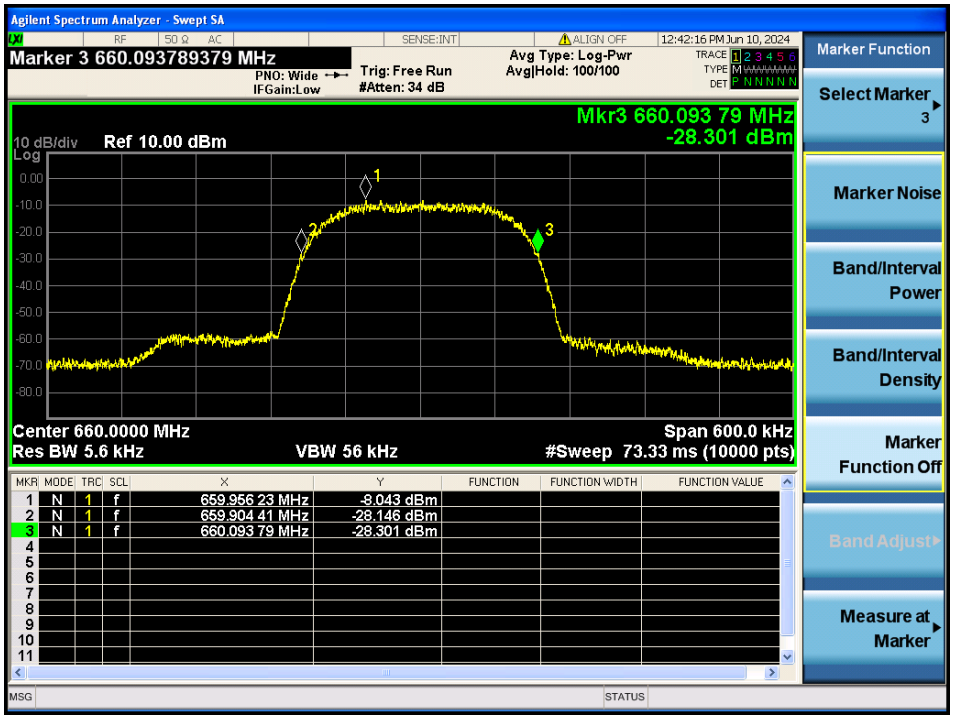
## 615 MHz @ High Voltage



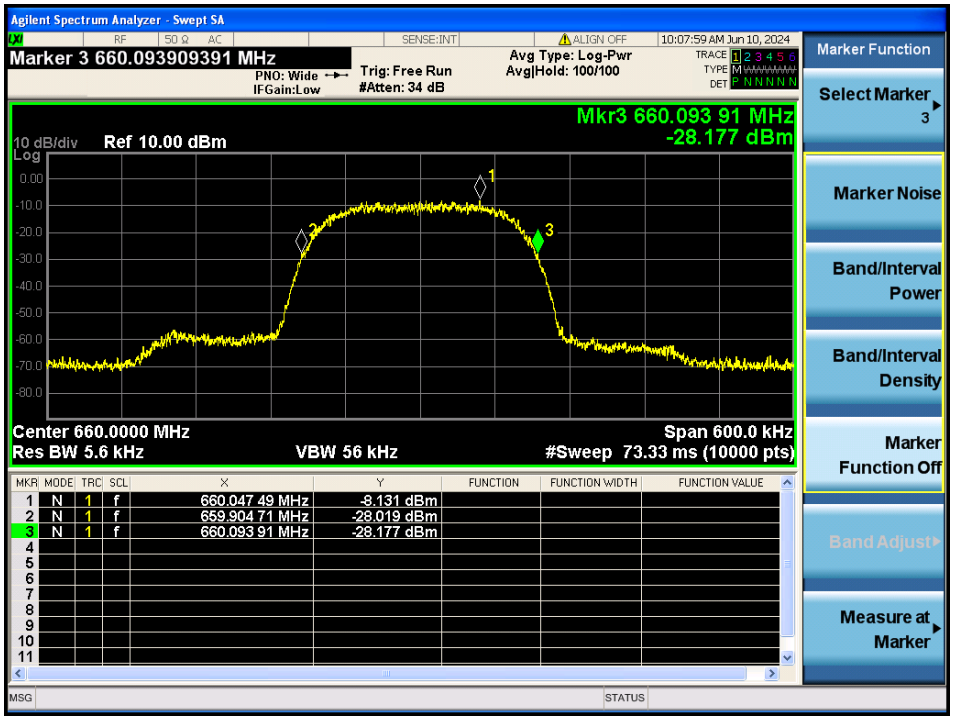

## 615 MHz @ Low Voltage



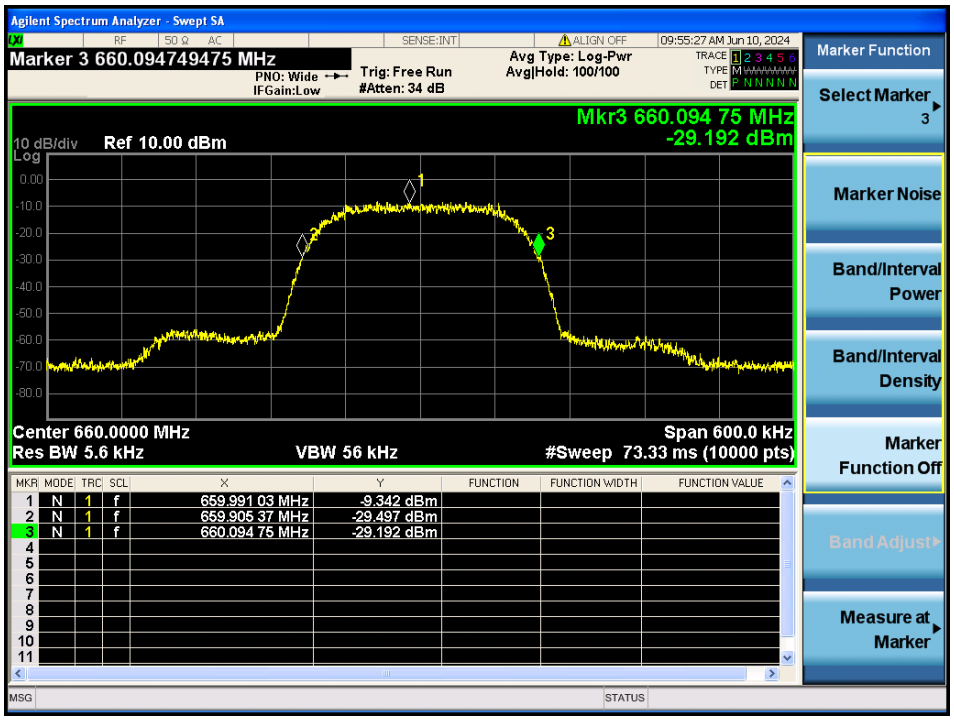
**660 MHz @ -30**


Agilent Spectrum Analyzer - Swept SA
Marker 3 660.093789379 MHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 34 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
12:42:16 PM Jun 10, 2024
Mkr3 660.093 79 MHz
-28.301 dBm
10 dB/div
Log
Ref 10.00 dBm
Center 660.0000 MHz
Res BW 5.6 kHz
VBW 56 kHz
Span 600.0 kHz
#Sweep 73.33 ms (10000 pts)
1 N 1 f 659.956 23 MHz -8.043 dBm
2 N 1 f 659.904 41 MHz -28.146 dBm
3 N 1 f 660.093 79 MHz -28.301 dBm
Marker Function
Select Marker 3
Marker Noise
Band/Interval Power
Band/Interval Density
Marker Function Off
Band Adjust
Measure at Marker

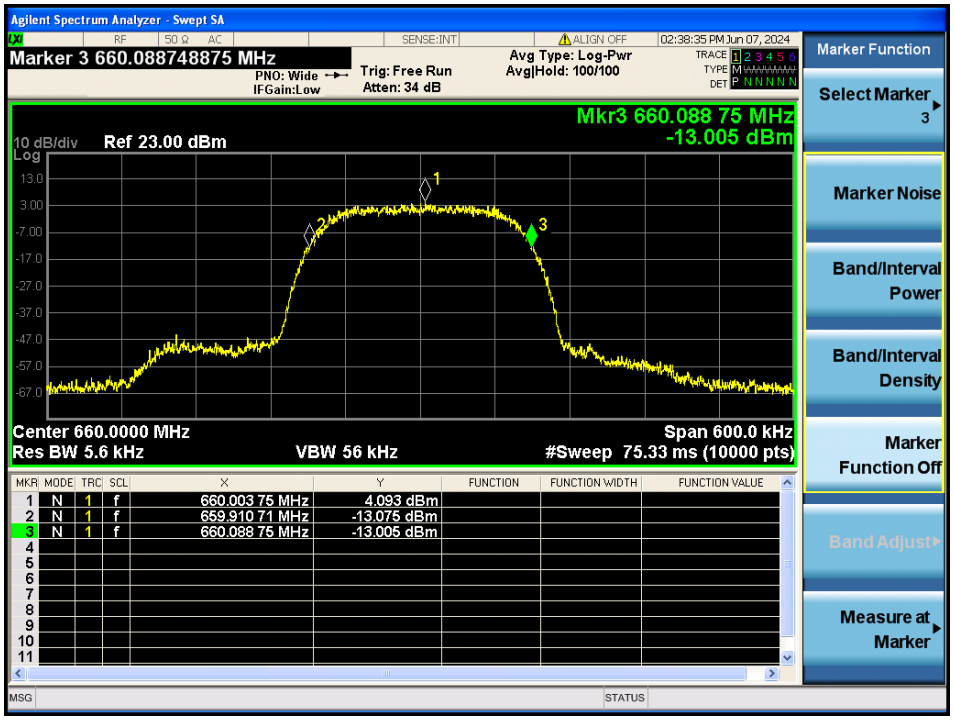
**660 MHz @ -20**



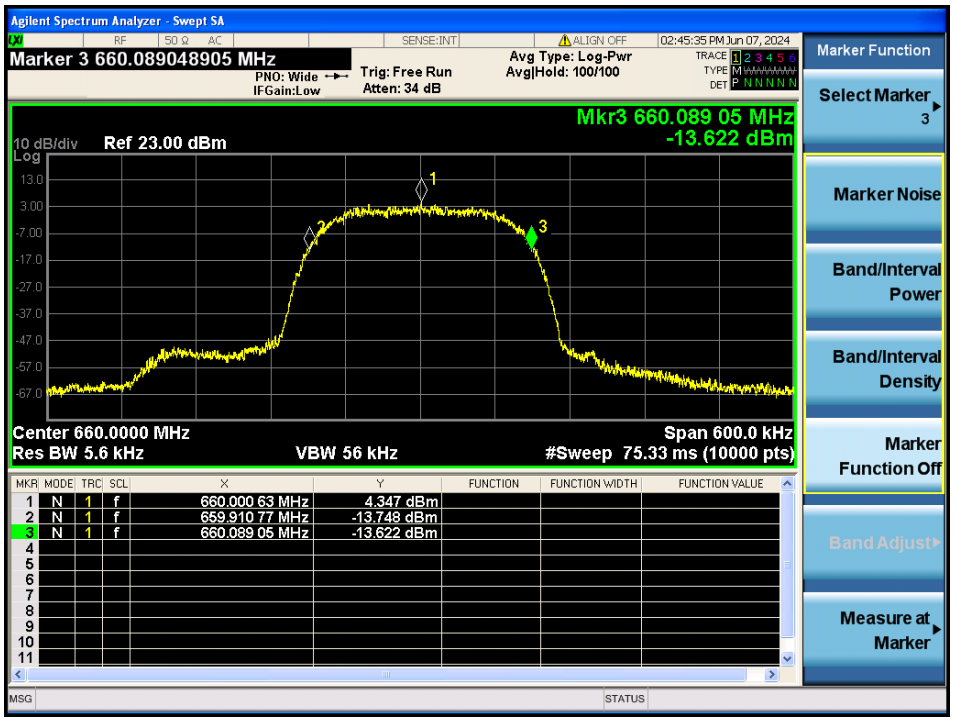

**660 MHz @ -10**



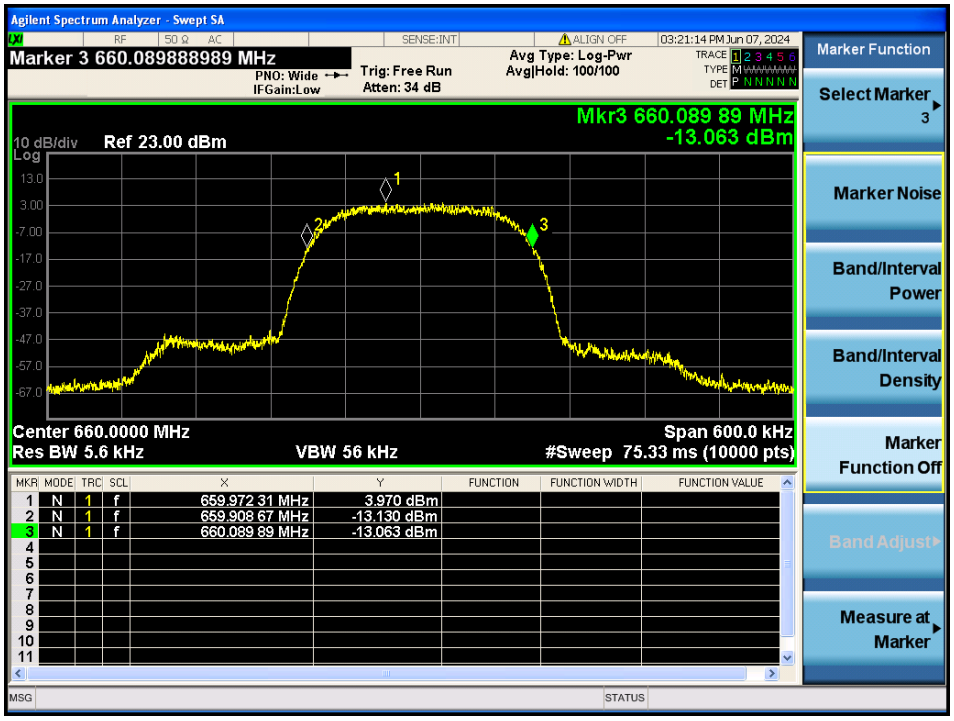
**660 MHz @ 0**



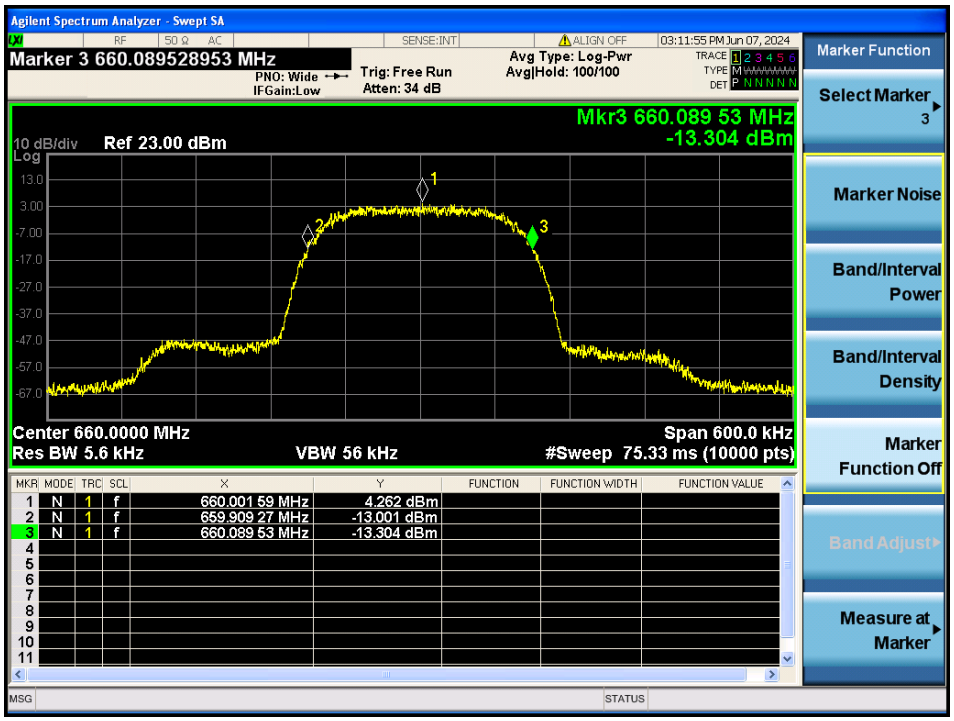

**660 MHz @ 10**



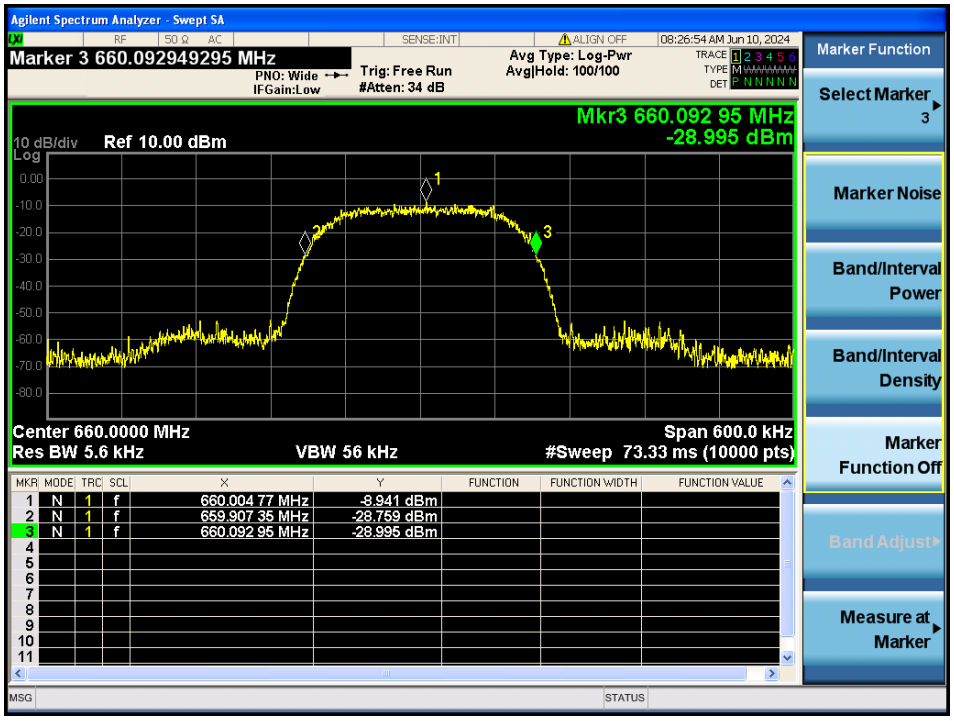
**660 MHz @ 20**



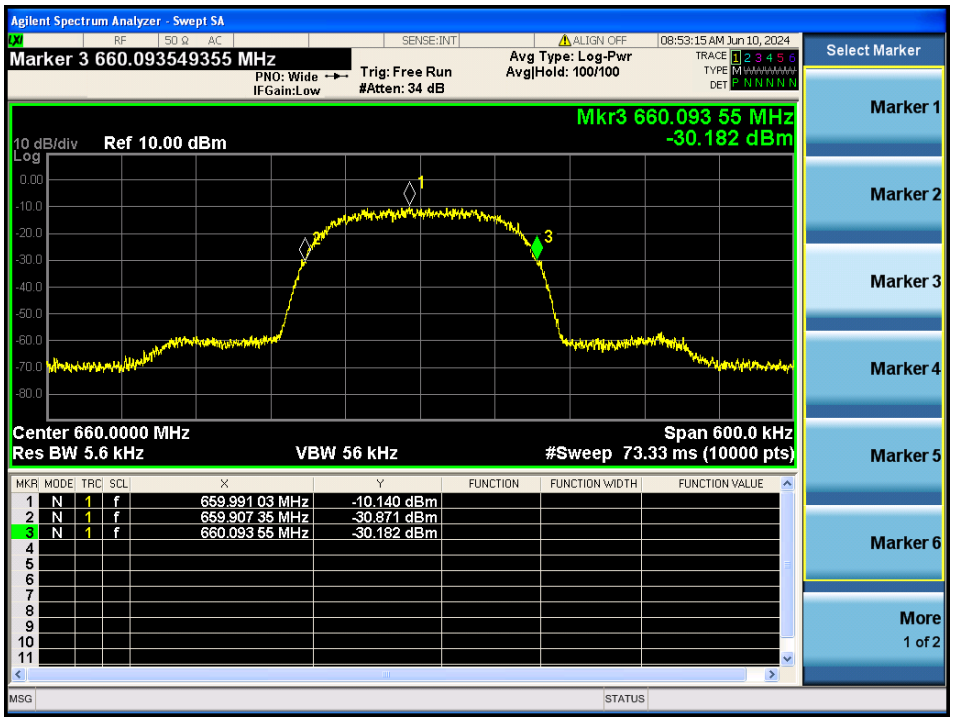

**660 MHz @ 30**



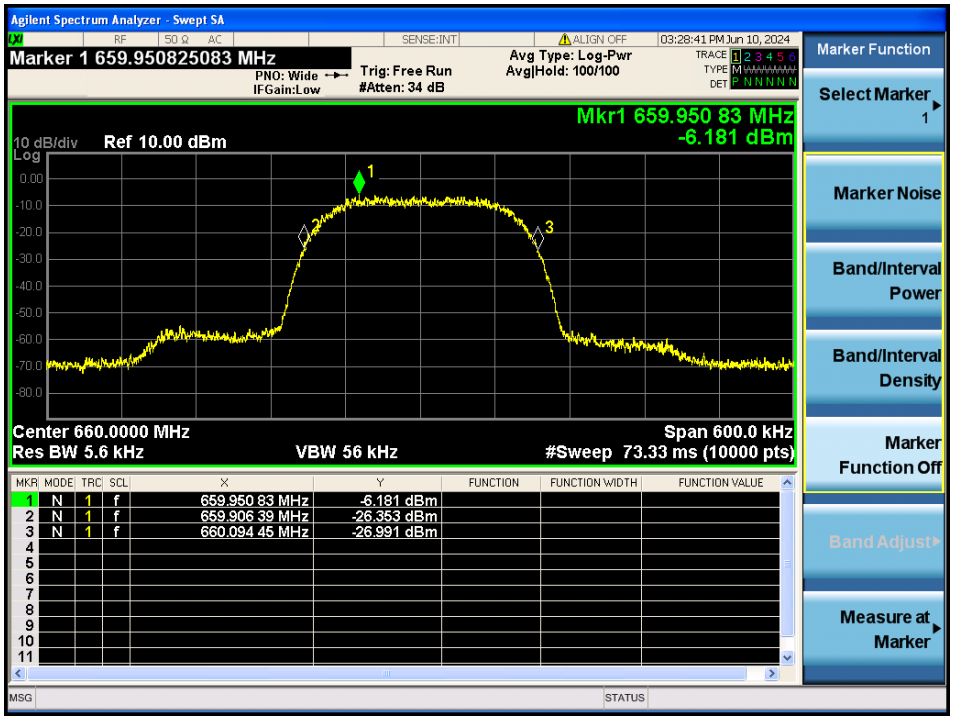
**660 MHz @ 40**



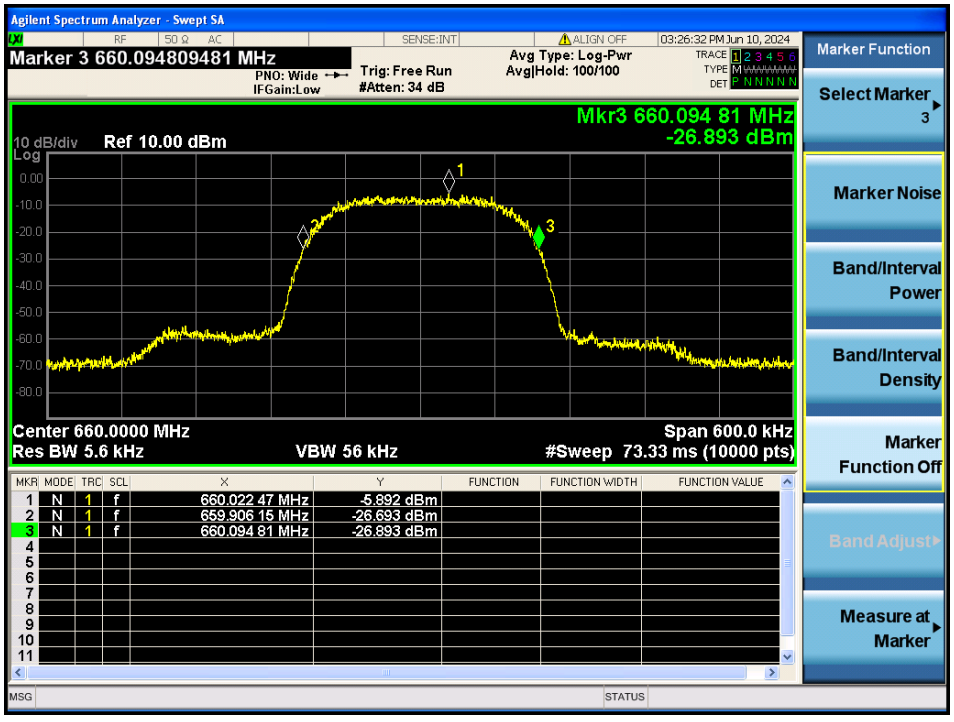

**660 MHz @ 50**



## 660 MHz @ High Voltage




## 660 MHz @ Low Voltage



# 9 Annex A – EUT Test Setup Photographs

Please refer to the attachment

# 10 Annex B - EUT Internal Photographs

Please refer to the attachment

# 11 Annex C – EUT External Photographs

Please refer to the attachment

# Annex E (Normative) - A2LA Electrical Testing Certificate

## Accredited Laboratory

A2LA has accredited

**BAY AREA COMPLIANCE LABORATORIES CORP.**

*Sunnyvale, CA*

for technical competence in the field of

Electrical Testing

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets A2LA *R222 - Specific Requirements EPA ENERGY STAR Accreditation Program*. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system *(refer to joint ISO-ILAC-IAF Communiqué dated April 2017)*.

Presented this 21st day of December 2022.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 3297.02
Valid to September 30, 2024

*For the tests to which this accreditation applies, please refer to the laboratory's Electrical Scope of Accreditation.*

Please follow the web link below for a full ISO 17025 scope.

https://www.a2la.org/scopepdf/3297-02.pdf

**--- END OF REPORT ---**