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# MEASUREMENT REPORT

## FCC Part 15.407 802.11a/ax/be WiFi 6GHz (OFDM & OFDMA)

**Applicant Name:**
Samsung Electronics Co., Ltd.
129, Samsung-ro,
Yeongtong-gu, Suwon-si
Gyeonggi-do, 16677, Korea

**Date of Testing:**
08/01/2025 – 08/05/2025
**Test Report Issue Date:**
08/13/2025
**Test Site/Location:**
Element Lab., Columbia, MD, USA
**Test Report Serial No.:**
1M2507300071-02.A3L

| | |
|---|---|
| **FCC ID:** | **A3LSMI610** |
| **APPLICANT:** | **Samsung Electronics Co., Ltd.** |

| | |
|---|---|
| **Application Type:** | Class II Permissive Change |
| **Model:** | SM-I610 |
| **EUT Type:** | Portable Device |
| **Frequency Range:** | 5935 – 7115MHz |
| **Modulation Type:** | OFDM |
| **FCC Classification:** | 15E 6GHz Indoor Client (6XD) |
| **FCC Rule Part(s):** | Part 15 Subpart E (15.407) |
| **Test Procedure(s):** | ANSI C63.10:2020, KDB 987594 D02 v03 |
| **Class II Permissive Change:** | Please see FCC change document |
| **Original Grant Date:** | 08/11/2025 |

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.10:2020. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

RJ Ortanez
Executive Vice President

ACCREDITED
CERT #2041.01

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| Channel Bandwidth [MHz] | UNII Band | Tx Frequency [MHz] | MIMO | |
|---|---|---|---|---|
| | | | Max. Power [mW] | Max. Power [dBm] |
| 80 | 5 | 5985 - 6385 | 16.60 | 12.20 |
| | 6 | 6465 | 18.03 | 12.56 |
| | 7 | 6545 - 6865 | 16.48 | 12.17 |
| | 8 | 6945 - 7025 | 15.38 | 11.87 |
| 160 | 5 | 6025 - 6345 | 17.41 | 12.41 |
| | 6 | 6505 | 18.00 | 12.55 |
| | 7 | 6665 - 6825 | 17.79 | 12.50 |
| | 8 | 6985 | 15.13 | 11.80 |
| 320 | 5 | 6105 - 6265 | 17.18 | 12.35 |
| | 6 | 6425 | 18.60 | 12.70 |
| | 7 | 6585 - 6745 | 17.82 | 12.51 |
| | 8 | 6905 | 15.85 | 12.00 |

**EUT Overview – EIRP – OFDM**

| Channel Bandwidth [MHz] | UNII Band | Tx Frequency [MHz] | MIMO | |
|---|---|---|---|---|
| | | | Max. Power [mW] | Max. Power [dBm] |
| 80 | 5 | 5985 - 6385 | 16.17 | 12.09 |
| | 6 | 6465 | 18.57 | 12.69 |
| | 7 | 6545 - 6865 | 17.45 | 12.42 |
| | 8 | 6945 - 7025 | 16.27 | 12.12 |
| 160 | 5 | 6025 - 6345 | 17.27 | 12.37 |
| | 6 | 6505 | 18.06 | 12.57 |
| | 7 | 6665 - 6825 | 16.96 | 12.30 |
| | 8 | 6985 | 16.55 | 12.19 |
| 320 | 5 | 6105 - 6265 | 16.23 | 12.10 |
| | 6 | 6425 | 18.07 | 12.57 |
| | 7 | 6585 - 6745 | 18.47 | 12.67 |
| | 8 | 6905 | 16.06 | 12.06 |

**EUT Overview – EIRP – OFDMA**

# 1.0 INTRODUCTION

## 1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission and the Innovation, Science and Economic Development Canada.

## 1.2 Element Test Location

Measurements were conducted at the Element laboratory(ies) indicated in Section 1.3 below. All measurement facilities are compliant with the test site requirements specified in ANSI C63.4-2014 and KDB 414788 D01 v01r01.

## 1.3 Test Facility / Accreditations

**Measurements were performed at Element lab located in Columbia, MD 21046, U.S.A.**

- Element Washington DC LLC is an ISO 17025-2017 accredited test facility under the American Association for Laboratory Accreditation (A2LA) with Certificate number 2041.01 for Specific Absorption Rate (SAR), Hearing Aid Compatibility (HAC) testing, where applicable, and Electromagnetic Compatibility (EMC) testing for FCC and Innovation, Science, and Economic Development Canada rules.

- Element Washington DC LLC TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC 17065-2012 by A2LA (Certificate number 2041.03) in all scopes of FCC Rules and ISED Standards (RSS).

- Element Washington DC LLC facility is a registered (2451B) test laboratory with the site description on file with ISED.

- Element Washington DC LLC is a Recognized U.S. Certification Assessment Body (CAB # US0110) for ISED Canada as designated by NIST under the U.S. and Canada Mutual Recognition Agreements (MRAs).

# 2.0 PRODUCT INFORMATION

## 2.1 Equipment Description

The Equipment Under Test (EUT) is the **Samsung Electronics Co., Ltd. Portable Device FCC ID: A3LSMI610**. The test data contained in this report pertains only to the emissions due to the EUT's UNII transmitter while operating in the 6GHz band in Indoor Client (LPI+SP) mode.

This report is being issued as a Class II Permissive Change due to a software update. Full details are provided in the change description. The test data in this report demonstrates the continued compliance to FCC Part Subpart E (15.407).

**Test Device Serial No.:** *1192M, 1166M, 1266M, 06HDV, 03H9B, 06JJP*

## 2.2 Device Capabilities

This device contains the following capabilities:

802.11b/g/n/ax/be WLAN, 802.11a/n/ac/ax/be UNII (5GHz and 6GHz), Bluetooth (1x, EDR, LE), ESB

| Band 5 | | Band 6 | | Band 7 | | Band 8 | |
|---|---|---|---|---|---|---|---|
| **Ch.** | **Frequency (MHz)** | **Ch.** | **Frequency (MHz)** | **Ch.** | **Frequency (MHz)** | **Ch.** | **Frequency (MHz)** |
| 2 | 5935 | 97 | 6435 | 117 | 6535 | 189 | 6895 |
| : | : | : | : | : | : | : | : |
| 45 | 6175 | 105 | 6475 | 149 | 6695 | 209 | 6995 |
| : | : | : | : | : | : | : | : |
| 93 | 6415 | 113 | 6515 | 185 | 6875 | 233 | 7115 |

**Table 2-1. 802.11a/ax/be (20MHz) Frequency / Channel Operations**

| Band 5 | | Band 6 | | Band 7 | | Band 8 | |
|---|---|---|---|---|---|---|---|
| **Ch.** | **Frequency (MHz)** | **Ch.** | **Frequency (MHz)** | **Ch.** | **Frequency (MHz)** | **Ch.** | **Frequency (MHz)** |
| 3 | 5965 | 99 | 6445 | 123 | 6565 | 187 | 6885 |
| : | : | : | : | : | : | : | : |
| 43 | 6165 | 107 | 6485 | 155 | 6725 | 211 | 7005 |
| : | : | : | : | : | : | : | : |
| 91 | 6405 | 115 | 6525 | 179 | 6845 | 227 | 7085 |

**Table 2-2. 802.11ax/be (40MHz BW) Frequency / Channel Operations**

| Band 5 | | Band 6 | | Band 7 | | Band 8 | |
|---|---|---|---|---|---|---|---|
| **Ch.** | **Frequency (MHz)** | **Ch.** | **Frequency (MHz)** | **Ch.** | **Frequency (MHz)** | **Ch.** | **Frequency (MHz)** |
| 7 | 5985 | 103 | 6465 | 119 | 6545 | 199 | 6945 |
| : | : | | | : | : | : | : |
| 39 | 6145 | | | 151 | 6705 | 215 | 7025 |
| : | : | | | : | : | | |
| 87 | 6385 | | | 183 | 6865 | | |

**Table 2-3. 802.11ax/be (80MHz BW) Frequency / Channel Operations**

| Band 5 | | Band 6 | | Band 7 | | Band 8 | |
|---|---|---|---|---|---|---|---|
| Ch. | Frequency (MHz) | Ch. | Frequency (MHz) | Ch. | Frequency (MHz) | Ch. | Frequency (MHz) |
| 15 | 6025 | 111 | 6505 | 143 | 6665 | 207 | 6985 |
| 47 | 6185 | | | 175 | 6825 | | |
| 79 | 6345 | | | | | | |

**Table 2-4. 802.11ax/be (160MHz BW) Frequency / Channel Operations**

| Band 5 | | Band 6 | | Band 7 | | Band 8 | |
|---|---|---|---|---|---|---|---|
| Ch. | Frequency (MHz) | Ch. | Frequency (MHz) | Ch. | Frequency (MHz) | Ch. | Frequency (MHz) |
| 31 | 6105 | 95 | 6425 | 127 | 6585 | 191 | 6905 |
| 63 | 6265 | | | 159 | 6745 | | |

**Table 2-5. 802.11be (320MHz BW) Frequency / Channel Operations**

**Notes:**

1. 6GHz NII operation is possible in 20MHz, 40MHz, 80MHz, 160MHz, and 320MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, and detector = peak per the guidance of Section B)2)b) of ANSI C63.10:2020. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

| 802.11 Mode/Band | | ANT1 | | | | ANT2 | | | | MIMO (1+2) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Duty Cycle [%] | Pulse Width | Period | Radiated DCCF [dB] | Duty Cycle [%] | Pulse Width | Period | Radiated DCCF [dB] | Duty Cycle [%] | Pulse Width | Period | Radiated DCCF [dB] |
| 6GHz | a | 93.47 | 1.461 | 1.563 | 0.29 | 96.51 | 2.824 | 2.926 | 0.15 | 93.71 | 1.475 | 1.574 | 0.28 |
| | ax (HE20) | 99.63 | 5.442 | 5.462 | N/A | 98.99 | 1.961 | 1.981 | N/A | 99.04 | 1.962 | 1.981 | N/A |
| | be (EHT20) | 99.63 | 5.450 | 5.470 | N/A | 98.89 | 1.961 | 1.983 | N/A | 99.04 | 1.962 | 1.981 | N/A |
| | ax (HE40) | 99.27 | 5.432 | 5.472 | N/A | 99.52 | 5.433 | 5.459 | N/A | 99.09 | 1.962 | 1.980 | N/A |
| | be (EHT40) | 99.38 | 5.438 | 5.472 | N/A | 99.52 | 5.436 | 5.462 | N/A | 99.14 | 1.963 | 1.980 | N/A |
| | ax (HE80) | 99.38 | 5.428 | 5.462 | N/A | 99.51 | 5.433 | 5.460 | N/A | 99.09 | 1.962 | 1.980 | N/A |
| | be (EHT80) | 98.80 | 5.430 | 5.496 | N/A | 99.52 | 5.446 | 5.472 | N/A | 99.09 | 1.962 | 1.980 | N/A |
| | ax (HE160) | 99.49 | 5.442 | 5.470 | N/A | 99.56 | 5.436 | 5.460 | N/A | 99.14 | 1.963 | 1.980 | N/A |
| | be (EHT160) | 99.53 | 5.448 | 5.474 | N/A | 99.58 | 5.449 | 5.472 | N/A | 99.09 | 1.962 | 1.980 | N/A |
| | be (EHT320) | 99.62 | 5.451 | 5.472 | N/A | 99.58 | 5.456 | 5.479 | N/A | 99.69 | 5.448 | 5.465 | N/A |

**Table 2-6. Measured Duty Cycles**

2. The device employs MIMO technology. Below are the possible configurations.

| WiFi Configurations | | SISO | | CDD | | SDM | |
|---|---|---|---|---|---|---|---|
| | | ANT1 | ANT2 | ANT1 | ANT2 | ANT1 | ANT2 |
| 6GHz | 11a | ✓ | ✓ | ✓ | ✓ | × | × |
| | 11ax | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 11be | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

**Table 2-7. Antenna / Technology Configurations**

✓= Support; ×= NOT Support
**SISO** = Single Input Single Output
**SDM** = Spatial Diversity Multiplexing – MIMO function
**CDD** = Cyclic Delay Diversity – 2Tx Function

3. The device supports the following data rates (shown in Mbps):

| 802.11a | MCS Index | | Spatial Stream | OFDM (802.11ax/be) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20MHz | | | | 20MHz | | | 40MHz | | | 80MHz | | | 160MHz | | | 320MHz | | | |
| | HT | EHT | | 0.8µs GI | 1.6µs GI | 3.2µs GI | 0.8µs GI | 1.6µs GI | 3.2µs GI | 0.8µs GI | 1.6µs GI | 3.2µs GI | 0.8µs GI | 1.6µs GI | 3.2µs GI | 0.8µs GI | 1.6µs GI | 3.2µs GI | |
| 6 | 0 | 0 | 1 | 8.6 | 8.1 | 7.3 | 17.2 | 16.3 | 14.6 | 36 | 34 | 30.6 | 72.1 | 68.1 | 61.3 | 144.1 | 136.1 | 122.5 | |
| 9 | 1 | 1 | 1 | 17.2 | 16.3 | 14.6 | 34.4 | 32.5 | 29.3 | 72.1 | 68.1 | 61.3 | 144.1 | 136.1 | 122.5 | 288.2 | 272.2 | 245 | |
| 12 | 2 | 2 | 1 | 25.8 | 24.4 | 21.9 | 51.6 | 48.8 | 43.9 | 108.1 | 102.1 | 91.9 | 216.2 | 204.2 | 183.8 | 432.4 | 408.3 | 367.5 | |
| 18 | 3 | 3 | 1 | 34.4 | 32.5 | 29.3 | 68.8 | 65 | 58.5 | 144.1 | 136.1 | 122.5 | 288.2 | 272.2 | 245 | 576.5 | 544.4 | 490 | |
| 24 | 4 | 4 | 1 | 51.6 | 48.8 | 43.9 | 103.2 | 97.5 | 87.8 | 216.2 | 204.2 | 183.8 | 432.4 | 408.3 | 367.5 | 864.7 | 816.7 | 735 | |
| 36 | 5 | 5 | 1 | 68.8 | 65 | 58.5 | 137.6 | 130 | 117 | 288.2 | 272.2 | 245 | 576.5 | 544.4 | 490 | 1152.9 | 1088.9 | 980 | |
| 48 | 7 | 6 | 1 | 77.4 | 73.1 | 65.8 | 154.9 | 146.3 | 131.6 | 324.3 | 306.3 | 275.6 | 648.5 | 612.5 | 551.3 | 1297.1 | 1225 | 1102.5 | |
| 54 | | 7 | 1 | 86 | 81.3 | 73.1 | 172.1 | 162.5 | 146.3 | 360.3 | 340.3 | 306.3 | 720.6 | 680.6 | 612.5 | 1441.2 | 1361.1 | 1225 | |
| | | 8 | 1 | 103.2 | 97.5 | 87.8 | 206.5 | 195 | 175.5 | 432.4 | 408.3 | 367.5 | 864.7 | 816.7 | 735 | 1729.4 | 1633.3 | 1470 | |
| | | 9 | 1 | 114.7 | 108.3 | 97.5 | 229.4 | 216.7 | 195 | 480.4 | 453.7 | 408.3 | 960.8 | 907.4 | 816.7 | 1921.6 | 1814.8 | 1633.3 | |
| | | 10 | 1 | 129 | 121.9 | 109.7 | 258.1 | 243.8 | 219.4 | 540.4 | 510.4 | 459.4 | 1080.9 | 1020.8 | 918.8 | 2161.8 | 2041.7 | 1837.5 | |
| | | 11 | 1 | 143.4 | 135.4 | 121.9 | 286.8 | 270.8 | 243.8 | 600.5 | 567.1 | 510.4 | 1201 | 1134.3 | 1020.8 | 2402 | 2268.5 | 2041.7 | |
| | | 12 | 1 | 154.9 | 146.3 | 131.6 | 309.7 | 292.5 | 263.3 | 648.5 | 612.5 | 551.3 | 1297.1 | 1225 | 1102.5 | 2594.1 | 2450 | 2205 | |
| | | 13 | 1 | 172.1 | 162.5 | 146.3 | 344.1 | 325 | 292.5 | 720.6 | 680.6 | 612.5 | 1441.2 | 1361.1 | 1225 | 2882.4 | 2722.2 | 2450 | |
| 6 | 8 | 0 | 2 | 17.2 | 16.3 | 14.6 | 34.4 | 32.5 | 29.3 | 72.1 | 68.1 | 61.3 | 144.1 | 136.1 | 122.5 | 288.2 | 272.2 | 245 | |
| 9 | 9 | 1 | 2 | 34.4 | 32.5 | 29.3 | 68.8 | 65 | 58.5 | 144.1 | 136.1 | 122.5 | 288.2 | 272.2 | 245 | 576.5 | 544.4 | 490 | |
| 12 | 10 | 2 | 2 | 51.6 | 48.8 | 43.9 | 103.2 | 97.5 | 87.8 | 216.2 | 204.2 | 183.8 | 432.4 | 408.3 | 367.5 | 864.7 | 816.7 | 735 | |
| 18 | 11 | 3 | 2 | 68.8 | 65 | 58.5 | 137.6 | 130 | 117 | 288.2 | 272.2 | 245 | 576.5 | 544.4 | 490 | 1152.9 | 1088.9 | 980 | |
| 24 | 12 | 4 | 2 | 103.2 | 97.5 | 87.8 | 206.5 | 195 | 175.5 | 432.4 | 408.3 | 367.5 | 864.7 | 816.7 | 735 | 1729.4 | 1633.3 | 1470 | |
| 36 | 13 | 5 | 2 | 137.6 | 130 | 117 | 275.3 | 260 | 234 | 576.5 | 544.4 | 490 | 1152.9 | 1088.9 | 980 | 2305.9 | 2177.8 | 1960 | |
| 48 | 14 | 6 | 2 | 154.9 | 146.3 | 131.6 | 309.7 | 292.5 | 263.3 | 648.5 | 612.5 | 551.3 | 1297.1 | 1225 | 1102.5 | 2594.1 | 2450 | 2205 | |
| 54 | 15 | 7 | 2 | 172.1 | 162.5 | 146.3 | 344.1 | 325 | 292.5 | 720.6 | 680.6 | 612.5 | 1441.2 | 1361.1 | 1225 | 2882.4 | 2722.2 | 2450 | |
| | | 8 | 2 | 206.5 | 195 | 175.5 | 412.9 | 390 | 351 | 864.7 | 816.7 | 735 | 1729.4 | 1633.3 | 1470 | 3458.8 | 3266.7 | 2940 | |
| | | 9 | 2 | 229.4 | 216.7 | 195 | 458.8 | 433.3 | 390 | 960.8 | 907.4 | 816.7 | 1921.6 | 1814.8 | 1633.3 | 3843.1 | 3629.6 | 3266.7 | |
| | | 10 | 2 | 258.1 | 243.8 | 219.4 | 516.2 | 487.5 | 438.8 | 1080.9 | 1020.8 | 918.8 | 2161.8 | 2041.7 | 1837.5 | 4323.5 | 4083.3 | 3675 | |
| | | 11 | 2 | 286.8 | 270.8 | 243.8 | 573.5 | 541.7 | 487.5 | 1201 | 1134.3 | 1020.8 | 2402 | 2268.5 | 2041.7 | 4803.9 | 4537 | 4083.3 | |
| | | 12 | 2 | 309.7 | 292.5 | 263.3 | 619.4 | 585 | 526.5 | 1297.1 | 1225 | 1102.5 | 2594.1 | 2450 | 2205 | 5188.2 | 4900 | 4410 | |
| | | 13 | 2 | 344.1 | 325 | 292.5 | 688.2 | 650 | 585 | 1441.2 | 1361.1 | 1225 | 2882.4 | 2722.2 | 2450 | 5764.7 | 5444.4 | 4900 | |

**Table 2-8. Supported Data Rates**

4. The device supports either or Low Power Indoor (LPI) or Very Low Power (VLP) operation in the following UNII bands:

| UNII Band | Standard Power (SP) | Low Power Indoor (LPI) | Very Low Power (VLP) |
|---|---|---|---|
| UNII 5 | × | ✓ | ✓ |
| UNII 6 | × | ✓ | ✓ |
| UNII 7 | × | ✓ | ✓ |
| UNII 8 | × | ✓ | ✓ |

**Table 2-9. Power Operation**

✓= Support; × = NOT Support

## 2.3 Antenna Description

The following antenna gains are used in this device per the "Unlicensed Band Antenna Gain" document provided by the client. This document is also included in the filing as a public exhibit.

| Frequency [MHz] | Ant1 Peak Gain [dBi] | Ant2 Peak Gain [dBi] | Directional Gain [dBi] |
|---|---|---|---|
| 5925 | -4.64 | -3.84 | -1.22 |
| 6025 | -4.03 | -4.46 | -1.23 |
| 6125 | -4.12 | -4.85 | -1.47 |
| 6225 | -4.55 | -4.57 | -1.55 |
| 6325 | -4.88 | -5.01 | -1.93 |
| 6425 | -3.53 | -3.16 | -0.33 |
| 6525 | -3.04 | -3.84 | -0.42 |
| 6625 | -3.75 | -3.53 | -0.63 |
| 6725 | -3.85 | -4.68 | -1.24 |
| 6825 | -4.11 | -4.36 | -1.22 |
| 6925 | -4.51 | -4.16 | -1.32 |
| 7025 | -3.77 | -4.01 | -0.88 |
| 7125 | -3.62 | -3.76 | -0.68 |

**Table 2-10. Antenna Peak Gain by Frequency**

| | Ant1 Peak Gain [dBi] | Ant2 Peak Gain [dBi] | Directional Gain [dBi] |
|---|---|---|---|
| 5925 – 6425 MHz | -3.53 | -3.16 | -0.33 |
| 6425 – 6525 MHz | -3.04 | -3.16 | -0.09 |
| 6525 – 6875 MHz | -3.04 | -3.53 | -0.27 |
| 6875 – 7125 MHz | -3.62 | -3.76 | -0.68 |

**Table 2-11. Antenna Peak Gain by Band**

## 2.4 Test Configuration

The EUT was tested per the guidance of ANSI C63.10:2020 and KDB 987594 D02 v01r01. ANSI C63.10:2020 was used to reference the appropriate EUT setup for radiated spurious emissions testing and AC line conducted testing. See Sections 3.2 for AC line conducted emissions test setups, 3.3 for radiated emissions test setups, and 7.2, 7.3, 7.4, 7.5 and 7.6 for antenna port conducted emissions test setups.

This device supports operation under control of either a low-power indoor access point or standard power access point or very low power access point

This device operates in the 5.925-7.125 GHz band when under control of an indoor access point.

## 2.5 Software and Firmware

The test was conducted with firmware version I610UEU0AXGP installed on the EUT.

## 2.6 EMI Suppression Device(s) / Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

# 3.0 DESCRIPTION OF TESTS

## 3.1 Evaluation Procedure

The measurement procedures described in the American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices (ANSI C63.10:2020) and the guidance provided in KDB 987594 D02 v01r01 were used in the measurement of the EUT.

**Deviation from measurement procedure……..…….....None**

## 3.2 Radiated Emissions

The radiated test facilities consisted of an indoor 3-meter semi-anechoic chamber used for final measurements and exploratory measurements, when necessary. The measurement area is contained within the semi-anechoic chamber which is shielded from any ambient interference. The test site inside the chamber is a 6m x 5.2m elliptical, obstruction-free area in accordance with Figure 5.7 of Clause 5 in ANSI C63.4-2014. Absorbers are arranged on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections for measurements above 1GHz. An 80cm tall test table made of Styrodur is placed on top of the turn table. For measurements above 1GHz, an additional Styrodur pedestal is placed on top of the test table to bring the total table height to 1.5m.

For all measurements, the spectrum was scanned through all EUT azimuths and from 1 to 4 meter receive antenna height using a broadband antenna from 30MHz up to the upper frequency shown in 15.33 depending on the highest frequency generated or used in the device or on which the device operates or tunes. For frequencies above 1GHz, linearly polarized double ridge horn antennas were used. For frequencies below 30MHz, a calibrated loop antenna was used. When exploratory measurements were necessary, they were performed at 1 meter test distance inside the semi-anechoic chamber using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequencies and modes producing the maximum emissions. Sufficient time for the EUT, support equipment, and test equipment was allowed for them to warm up to their normal operating condition. The test set-up was placed on top of the 1 x 1.5 meter table. The EUT, support equipment, and interconnecting cables were arranged and manipulated to maximize each emission. Appropriate precautions were taken to ensure that all emissions from the EUT were maximized and investigated. The system configuration, mode of operation, turntable azimuth, and receive antenna height were noted for each frequency found.

Final measurements were made in the semi-anechoic chamber using calibrated, linearly polarized broadband and horn antennas. The test setup was configured to the setup that produced the worst-case emissions. The spectrum analyzer was set to investigate all frequencies required for testing to compare the highest radiated disturbances with respect to the specified limits. The turntable containing the EUT was rotated through 360 degrees and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by changing the orientation of the EUT through three orthogonal planes and changing the polarity of the receive antenna, whichever produced the worst-case emissions.

All radiated measurements are performed in a chamber that meets the site requirements per ANSI C63.4-2014. Additionally, radiated emissions below 30MHz are also validated on an Open Area Test Site to assert correlation with the chamber measurements per the requirements of KDB 414788 D01 v01r01.

## 3.3 Environmental Conditions

The temperature is controlled within range of 15°C to 35°C. The relative humidity is controlled within range of 10% to 75%. The atmospheric pressure is monitored within the range 86-106kPa (860-1060mbar).

# 4.0 ANTENNA REQUIREMENTS

**Excerpt from §15.203 of the FCC Rules/Regulations:**
"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section."

- The antennas of the EUT are **permanently attached.**
- There are no provisions for connection to an external antenna.

**Conclusion:**

The EUT complies with the requirement of §15.203.

# 5.0 MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10:2020. All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95% level of confidence. The measurement uncertainty shown below meets or exceeds the $U_{CISPR}$ measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

| Contribution | Expanded Uncertainty (±dB) |
|---|---|
| Contention Based Protocol Conducted Measurements | 0.86 |
| Conducted Bench Top Measurements | 1.13 |
| Line Conducted Disturbance | 3.09 |
| Radiated Disturbance (<1GHz) | 4.98 |
| Radiated Disturbance (>1GHz) | 5.07 |
| Radiated Disturbance (>18GHz) | 5.09 |

**Table 5-1. Measurement Uncertainty Budget**

# 6.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST). Measurements antennas used during testing were calibrated in accordance to the requirements of ANSI C63.5-2017.

| Manufacturer | Model | Description | Cal Date | Cal Interval | Cal Due | Serial Number |
|---|---|---|---|---|---|---|
| - | WL25-1 | Conducted Cable Set (25GHz) | 2/25/2025 | Annual | 2/25/2026 | WL25-1 |
| - | WL25-2 | Conducted Cable Set (25GHz) | 2/25/2025 | Annual | 2/25/2026 | WL25-2 |
| - | WL40-1 | Conducted Cable Set (40GHz) | 2/25/2025 | Annual | 2/25/2026 | WL40-1 |
| - | MD 1M 18-40 | EMC Cable and Switch System | 2/25/2025 | Annual | 2/25/2026 | MD 1M 18-40 |
| - | AP2-001 | EMC Cable and Switch System | 2/25/2025 | Annual | 2/25/2026 | AP2-001 |
| - | ETS-001 | EMC Cable and Switch System | 2/25/2025 | Annual | 2/25/2026 | ETS-001 |
| Agilent | N9038A | MXE EMI Receiver | 9/16/2024 | Annual | 9/16/2025 | MY51210133 |
| Agilent | N9020A | MXA Signal Analyzer | 5/7/2025 | Annual | 5/7/2026 | US46470561 |
| Agilent | N9030A | PXA Signal Analyzer (44GHz) | 10/16/2024 | Annual | 10/16/2025 | MY49430494 |
| Anritsu | MA24408A | Microwave Peak Power Sensor | 10/2/2024 | Annual | 10/2/2025 | 11675 |
| EMCO | 3115 | Horn Antenna (1-18GHz) | 9/6/2024 | Biennial | 9/6/2025 | 9704-5182 |
| EMCO | 3116 | Horn Antenna (18-40GHz) | 7/5/2023 | Biennial | 7/5/2025 | 9203-2178 |
| ETS-Lindgren | 3116C | Horn Antenna (18-40GHz) | 4/22/2025 | Biennial | 4/22/2027 | 218893 |
| Keysight Technologies | N9020A | MXA Signal Analyzer | 2/7/2025 | Annual | 2/7/2026 | MY53421544 |
| Keysight Technologies | N9030A | PXA Signal Analyzer | 8/26/2024 | Annual | 8/26/2025 | MY54490576 |
| Keysight Technologies | N9030B | PXA Signal Analyzer | 9/19/2024 | Annual | 9/19/2025 | MY57141001 |
| Pasternack | NMLC-2 | Line Condcuted Emissions Cable | 3/25/2025 | Annual | 3/25/2026 | NMLC-2 |
| Rohde & Schwarz | TC-TA18 | Vivaldi Antenna | 4/15/2024 | Biennial | 4/15/2026 | 101058 |
| Rohde & Schwarz | ESU26 | EMI Test Receiver (26.5GHz) | 10/16/2024 | Annual | 10/16/2025 | 100342 |
| Rohde & Schwarz | ESU40 | EMI Test Receiver (40GHz) | 11/25/2024 | Annual | 11/25/2025 | 100348 |
| Rohde & Schwarz | ESW44 | EMI Test Receiver (44GHz) | 3/25/2025 | Annual | 3/25/2026 | 101716 |
| Sunol | JB6 | Bi-Log Antenna (20M-6GHz) | 3/24/2025 | Biennial | 3/25/2027 | A082816 |
| Sunol | JB5 | Bi-Log Antenna (20M-5GHz) | 9/11/2024 | Biennial | 9/11/2026 | A051107 |

**Table 6-1. Test Equipment Calibration Table – MD**

**Note:**

For equipment listed above that has a calibration date or calibration due date that falls within the test date range, care was taken to ensure that this equipment was used after the calibration date and before the calibration due date.

| Component | Serial Number |
|---|---|
| MegaPhase Cable TM26-S1S1-36 | 18160103 003 |
| Pasternack 6dB Attenuator PE7005-6 | N/A |

**Table 6-2. WL25-1 Conducted Cable Set Components**

| Component | Serial Number |
|---|---|
| MiniCircuirs Cable CBL-2FT-SMSM+ | 77743 |
| MCL 6dB Attenuator BW-S6W2+ | 1314 |

**Table 6-3. WL25-2 Conducted Cable Set Components**

| Component | Serial Number |
|---|---|
| MegaPhase Cable TM40K1K1-36 | 18160102 001 |
| MCL 10dB Attenuator BW-K10 2W44+ | 1902 |

**Table 6-4. WL40-1 Conducted Cable Set Components**

| Component | Serial Number |
|---|---|
| Pasternak Cable RG214/U | 111815 |
| Sucoflex Cable 106A | 246420-001 |
| Rohde & Schwarz SF Unit | 102134 |

**Table 6-5. ETS-001 EMC Cable and Switch System Components**

| Component | Serial Number |
|---|---|
| MiniCircuits Cable CBL-0.5M-SMNM+ | 47261 |
| Micro-Coax Utiflex Cable UFB311A-Q-3346-50U50U MFR 64639 | 231978-001 |
| Micro-Coax Utiflex Cable UFB311A-1-0629-50U50U MFR 64639 | 231986-002 |
| MegaPhase Cable NC29-N1N1-324 | 19046401 001 |
| MegaPhase Flex Cable 10511-1 | 15044701-006 |
| Micro-Coas Utiflex Cable UFB311A-Q-3446-50U50U MFR 64639 | 231978-002 |
| Micro-Coas Utiflex Cable UFB311A-1-0629-50U50U MFR 64639 | 231986-001 |
| Micro-Coas Utiflex Cable UFB142A-0-0659-50U50U MFR 64639 | 232069-001 |
| Rohde & Schwarz SF Unit | 102138 |

**Table 6-6. AP2-001 EMC Cable and Switch System Components**

| Component | Serial Number |
|---|---|
| MegaPhase Cable TM40-K1K1-30 | 20233002-004 |
| UTIPLEX Cable | 64639 232063-001 |
| Rohde & Schwarz Pre-amp RS-PR1840 18G-40G | 9037.7670.02 |

**Table 6-7. MD 1M 18-40 EMC Cable and Switch System Components**

# 7.0 TEST RESULTS

## 7.1 Summary

Company Name: Samsung Electronics Co., Ltd.
FCC ID: A3LSMI610
FCC Classification: 15E 6GHz Low Power Indoor Client (6XD)

| FCC Part Section(s) | Test Description | Test Limit | Test Condition | Test Result | Reference |
|---|---|---|---|---|---|
| 2.1046, 15.407(a)(11) | Maximum Conducted Output Power | N/A | CONDUCTED | PASS | Section 7.2 |
| 15.407(a)(8), 15.407(a)(7) | Maximum Radiated Output Power | < 24dBm over the frequency band of operation | | PASS | Section 7.2 |
| 15.407(d)(6) | Contention Based Protocol | EUT must detect AWGN signal with 90% (or better) certainty | RADIATED | PASS | Section 7.3 |
| 15.407(b)(6) | Undesirable Emissions | < -27dBm/MHz e.i.r.p. outside of the 5.925 – 7.125GHz band | | PASS | Section 7.4 |
| 15.205, 15.209 | General Field Strength Limits (Restricted Bands and Radiated Emission Limits) | Emissions in restricted bands must meet the radiated limits detailed in 15.209 | | PASS | Section 7.4 |

**Table 7-1. Summary of Test Results**

**Notes:**

1) All channels, modes, and modulations/data rates were investigated among all UNII bands. The test results shown in the following sections represent the worst-case emissions.
2) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
3) All antenna port conducted emissions testing was performed on a test bench with the antenna port of the EUT connected to the spectrum analyzer through calibrated cables and attenuators.
4) For conducted spurious emissions, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is Element "EMC Software Tool" Version 2.3.0.
5) For radiated band edge, automated test software was used to measure emissions and capture the corresponding plots necessary to show compliance. The measurement software utilized is Element "Chamber Automation," Version 1.6.1.

## 7.2 UNII Output Power Measurement

**Test Overview and Limits**

A transmitter antenna terminal of the EUT is connected to the input of an RF pulse power sensor. Measurement is made using a broadband average power meter while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10:2020 and KDB 789033 D02 v02r01, and at the appropriate frequencies.

**For client devices operating under the control of an indoor access point in the 5.925-7.125 GHz bands, the maximum e.i.r.p. over the frequency band of operation must not exceed 24 dBm.**

**Test Procedure Used**

ANSI C63.10:2020 – Section 12.4.3.2 Method PM-G
ANSI C63.10:2020 – Section 14.5.2.3 Measure-and-Sum Technique

**Test Settings**

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter. The trace was averaged over 100 traces to obtain the final measured average power.

**Test Setup**

The EUT and measurement equipment were set up as shown in the diagram below.


**Figure 7-1. Test Instrument & Measurement Setup**

**Test Notes**

None.

## MIMO Maximum Conducted Output Power Measurements – OFDM

| 6GHz WIFI (80MHz 802.11ax MIMO) | | | | | | Directional Ant. Gain [dBi] | Max e.i.r.p [dBm] | e.i.r.p Limit [dBm] | e.i.r.p Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|
| Band | Freq [MHz] | Channel | Avg. Conducted Powers [dBm] | | | | | | |
| | | | ANT1 | ANT2 | MIMO | | | | |
| UNII-5 | 5985 | 7 | 9.99 | 8.99 | 12.53 | -0.33 | 12.20 | 24.00 | -11.80 |
| | 6145 | 39 | 7.41 | 9.68 | 11.70 | -0.33 | 11.37 | 24.00 | -12.63 |
| | 6305 | 71 | 9.80 | 8.72 | 12.30 | -0.33 | 11.97 | 24.00 | -12.03 |
| | 6385 | 87 | 9.85 | 9.09 | 12.50 | -0.33 | 12.17 | 24.00 | -11.83 |
| UNII-6 | 6465 | 103 | 9.62 | 9.65 | 12.65 | -0.09 | 12.56 | 24.00 | -11.44 |
| UNII-7 | 6545 | 119 | 9.58 | 9.24 | 12.42 | -0.27 | 12.15 | 24.00 | -11.85 |
| | 6705 | 151 | 9.70 | 8.65 | 12.22 | -0.27 | 11.95 | 24.00 | -12.05 |
| | 6785 | 167 | 9.73 | 8.44 | 12.14 | -0.27 | 11.87 | 24.00 | -12.13 |
| | 6865 | 183 | 9.99 | 7.32 | 11.87 | -0.27 | 11.60 | 24.00 | -12.40 |
| UNII-8 | 6945 | 199 | 9.69 | 9.37 | 12.54 | -0.68 | 11.86 | 24.00 | -12.14 |
| | 7025 | 215 | 9.60 | 9.31 | 12.47 | -0.68 | 11.79 | 24.00 | -12.21 |

**Table 7-2. MIMO 80MHz BW 802.11ax (UNII) Maximum Conducted Output Power – LPI**

| 6GHz WIFI (80MHz 802.11be MIMO) | | | | | | Directional Ant. Gain [dBi] | Max e.i.r.p [dBm] | e.i.r.p Limit [dBm] | e.i.r.p Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|
| Band | Freq [MHz] | Channel | Avg. Conducted Powers [dBm] | | | | | | |
| | | | ANT1 | ANT2 | MIMO | | | | |
| UNII-5 | 5985 | 7 | 9.99 | 8.98 | 12.52 | -0.33 | 12.19 | 24.00 | -11.81 |
| | 6145 | 39 | 7.40 | 9.66 | 11.69 | -0.33 | 11.36 | 24.00 | -12.64 |
| | 6305 | 71 | 9.78 | 8.79 | 12.32 | -0.33 | 11.99 | 24.00 | -12.01 |
| | 6385 | 87 | 9.87 | 9.09 | 12.51 | -0.33 | 12.18 | 24.00 | -11.82 |
| UNII-6 | 6465 | 103 | 9.62 | 9.62 | 12.63 | -0.09 | 12.54 | 24.00 | -11.46 |
| UNII-7 | 6545 | 119 | 9.61 | 9.25 | 12.44 | -0.27 | 12.17 | 24.00 | -11.83 |
| | 6705 | 151 | 9.72 | 8.66 | 12.23 | -0.27 | 11.96 | 24.00 | -12.04 |
| | 6785 | 167 | 9.68 | 8.45 | 12.12 | -0.27 | 11.85 | 24.00 | -12.15 |
| | 6865 | 183 | 9.99 | 7.33 | 11.87 | -0.27 | 11.60 | 24.00 | -12.40 |
| UNII-8 | 6945 | 199 | 9.68 | 9.39 | 12.55 | -0.68 | 11.87 | 24.00 | -12.13 |
| | 7025 | 215 | 9.61 | 9.35 | 12.49 | -0.68 | 11.81 | 24.00 | -12.19 |

**Table 7-3. MIMO 80MHz BW 802.11be (UNII) Maximum Conducted Output Power – LPI**

| 6GHz WIFI (160MHz 802.11ax MIMO) | | | | | | Directional Ant. Gain [dBi] | Max e.i.r.p [dBm] | e.i.r.p Limit [dBm] | e.i.r.p Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|
| Band | Freq [MHz] | Channel | Avg. Conducted Powers [dBm] | | | | | | |
| | | | ANT1 | ANT2 | MIMO | | | | |
| UNII-5 | 6025 | 15 | 9.62 | 8.10 | 11.94 | -0.33 | 11.61 | 24.00 | -12.39 |
| | 6185 | 47 | 7.81 | 8.98 | 11.44 | -0.33 | 11.11 | 24.00 | -12.89 |
| | 6345 | 79 | 9.55 | 7.82 | 11.78 | -0.33 | 11.45 | 24.00 | -12.55 |
| UNII-6 | 6505 | 111 | 9.43 | 8.18 | 11.86 | -0.09 | 11.77 | 24.00 | -12.23 |
| UNII-7 | 6665 | 143 | 9.72 | 7.91 | 11.92 | -0.27 | 11.65 | 24.00 | -12.35 |
| | 6825 | 175 | 9.85 | 6.24 | 11.42 | -0.27 | 11.15 | 24.00 | -12.85 |
| UNII-8 | 6985 | 207 | 9.61 | 8.42 | 12.07 | -0.68 | 11.39 | 24.00 | -12.61 |

**Table 7-4. MIMO 160MHz BW 802.11ax (UNII) Maximum Conducted Output Power – LPI**

| 6GHz WIFI (160MHz 802.11be MIMO) | | | | | | Directional Ant. Gain [dBi] | Max e.i.r.p [dBm] | e.i.r.p Limit [dBm] | e.i.r.p Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|
| Band | Freq [MHz] | Channel | Avg. Conducted Powers [dBm] | | | | | | |
| | | | ANT1 | ANT2 | MIMO | | | | |
| UNII-5 | 6025 | 15 | 9.60 | 8.12 | 11.93 | -0.33 | 11.60 | 24.00 | -12.40 |
| | 6185 | 47 | 8.46 | 9.87 | 12.23 | -0.33 | 11.90 | 24.00 | -12.10 |
| | 6345 | 79 | 9.58 | 7.82 | 11.80 | -0.33 | 11.47 | 24.00 | -12.53 |
| UNII-6 | 6505 | 111 | 9.84 | 8.67 | 12.30 | -0.09 | 12.21 | 24.00 | -11.79 |
| UNII-7 | 6665 | 143 | 9.88 | 8.20 | 12.13 | -0.27 | 11.86 | 24.00 | -12.14 |
| | 6825 | 175 | 9.79 | 6.53 | 11.47 | -0.27 | 11.20 | 24.00 | -12.80 |
| UNII-8 | 6985 | 207 | 9.64 | 8.28 | 12.02 | -0.68 | 11.34 | 24.00 | -12.66 |

**Table 7-5. MIMO 160MHz BW 802.11be (UNII) Maximum Conducted Output Power – LPI**

| 6GHz WIFI (320MHz 802.11be MIMO) | | | | | | Directional Ant. Gain [dBi] | Max e.i.r.p [dBm] | e.i.r.p Limit [dBm] | e.i.r.p Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|
| Band | Freq [MHz] | Channel | Avg. Conducted Powers [dBm] | | | | | | |
| | | | ANT1 | ANT2 | MIMO | | | | |
| UNII-5 | 6105 | 31 | 9.85 | 9.48 | 12.68 | -0.33 | 12.35 | 24.00 | -11.65 |
| UNII-5 | 6265 | 63 | 9.63 | 9.31 | 12.48 | -0.33 | 12.15 | 24.00 | -11.85 |
| UNII-6 | 6425 | 95 | 9.54 | 8.76 | 12.18 | -0.09 | 12.09 | 24.00 | -11.91 |
| UNII-7 | 6585 | 127 | 9.84 | 9.21 | 12.55 | -0.27 | 12.28 | 24.00 | -11.72 |
| UNII-7 | 6745 | 159 | 9.98 | 9.55 | 12.78 | -0.27 | 12.51 | 24.00 | -11.49 |
| UNII-8 | 6905 | 191 | 9.86 | 9.47 | 12.68 | -0.68 | 12.00 | 24.00 | -12.00 |

**Table 7-6. MIMO 320MHz BW 802.11be (UNII) Maximum Conducted Output Power – LPI**

| 160MHz BW | Band | Freq [MHz] | Channel | Puncture Size | Average Conducted Power (dBm) | | | | | | | | | Dir. Ant. Gain [dBi] | Max e.i.r.p [dBm] | e.i.r.p Limit [dBm] | e.i.r.p Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Puncture Case | | | | | | | | | | | | |
| | | | | | 96 | | | 99 | | | 1098 | | | | | | |
| | | | | | ANT1 | ANT2 | MIMO | ANT1 | ANT2 | MIMO | ANT1 | ANT2 | MIMO | | | | |
| | 5 | 6025 | 15 | 20MHz | 9.99 | 9.45 | 12.74 | 9.99 | 9.45 | 12.74 | 9.99 | 9.45 | 12.74 | -0.33 | 12.4 | 24.0 | -11.59 |
| | | 6185 | 47 | 20MHz | 7.75 | 9.91 | 11.97 | 7.69 | 9.89 | 11.94 | 7.65 | 9.88 | 11.92 | -0.33 | 11.6 | 24.0 | -12.36 |
| | | 6345 | 79 | 20MHz | 9.65 | 8.61 | 12.17 | 9.65 | 8.62 | 12.18 | 9.55 | 8.60 | 12.11 | -0.33 | 11.8 | 24.0 | -12.15 |
| | 6 | 6505 | 111 | 20MHz | 9.74 | 9.52 | 12.64 | 9.73 | 9.45 | 12.60 | 9.72 | 9.49 | 12.62 | -0.09 | 12.6 | 24.0 | -11.45 |
| | 7 | 6665 | 143 | 20MHz | 9.86 | 9.62 | 12.75 | 9.89 | 9.63 | 12.77 | 9.88 | 9.62 | 12.76 | -0.27 | 12.5 | 24.0 | -11.50 |
| | | 6825 | 175 | 20MHz | 9.83 | 7.74 | 11.92 | 9.85 | 7.81 | 11.96 | 9.89 | 7.75 | 11.96 | -0.27 | 11.7 | 24.0 | -12.31 |
| | 8 | 6985 | 207 | 20MHz | 9.29 | 9.54 | 12.43 | 9.28 | 9.60 | 12.45 | 9.27 | 9.66 | 12.48 | -0.68 | 11.8 | 24.0 | -12.20 |

**Table 7-7. MIMO 160MHz BW 802.11be (UNII) Maximum Conducted Output Power – 20MHz Puncture– LPI**

| 160MHz BW | Band | Freq [MHz] | Channel | Puncture Size | Average Conducted Power (dBm) | | | | | | | | | Dir. Ant. Gain [dBi] | Max e.i.r.p [dBm] | e.i.r.p Limit [dBm] | e.i.r.p Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Puncture Case | | | | | | | | | | | | |
| | | | | | 94 | | | 95 | | | 1095 | | | | | | |
| | | | | | ANT1 | ANT2 | MIMO | ANT1 | ANT2 | MIMO | ANT1 | ANT2 | MIMO | | | | |
| | 5 | 6025 | 15 | 40MHz | 9.84 | 9.41 | 12.64 | 9.89 | 9.33 | 12.63 | 9.86 | 9.28 | 12.59 | -0.33 | 12.3 | 24.0 | -11.69 |
| | | 6185 | 47 | 40MHz | 7.77 | 9.92 | 11.99 | 7.66 | 9.78 | 11.86 | 7.56 | 9.89 | 11.89 | -0.33 | 11.7 | 24.0 | -12.34 |
| | | 6345 | 79 | 40MHz | 9.61 | 8.58 | 12.14 | 9.60 | 8.59 | 12.13 | 9.47 | 8.60 | 12.07 | -0.33 | 11.8 | 24.0 | -12.19 |
| | 6 | 6505 | 111 | 40MHz | 9.68 | 9.50 | 12.60 | 9.68 | 9.48 | 12.59 | 9.72 | 9.45 | 12.60 | -0.09 | 12.5 | 24.0 | -11.49 |
| | 7 | 6665 | 143 | 40MHz | 9.82 | 9.56 | 12.70 | 9.87 | 9.59 | 12.74 | 9.86 | 9.61 | 12.75 | -0.27 | 12.5 | 24.0 | -11.52 |
| | | 6825 | 175 | 40MHz | 9.72 | 7.73 | 11.85 | 9.82 | 7.71 | 11.90 | 9.92 | 7.78 | 11.99 | -0.27 | 11.7 | 24.0 | -12.28 |
| | 8 | 6985 | 207 | 40MHz | 9.28 | 9.52 | 12.41 | 9.28 | 9.55 | 12.43 | 9.17 | 9.60 | 12.40 | -0.68 | 11.7 | 24.0 | -12.25 |

**Table 7-8. MIMO 160MHz BW 802.11be (UNII) Maximum Conducted Output Power – 40MHz Puncture – LPI**

| 320MHz BW | Band | Freq [MHz] | Channel | Puncture Size | Average Conducted Power (dBm) | | | | | | | | | Dir. Ant. Gain [dBi] | Max e.i.r.p [dBm] | e.i.r.p Limit [dBm] | e.i.r.p Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Puncture Case | | | | | | | | | | | | |
| | | | | | 106 | | | 10105 | | | 11106 | | | | | | |
| | | | | | ANT1 | ANT2 | MIMO | ANT1 | ANT2 | MIMO | ANT1 | ANT2 | MIMO | | | | |
| | 5 | 6105 | 31 | 40MHz | 7.87 | 9.85 | 11.98 | 7.56 | 9.62 | 11.72 | 7.86 | 9.82 | 11.96 | -0.33 | 11.7 | 24.0 | -12.35 |
| | | 6265 | 63 | 40MHz | 9.88 | 8.21 | 12.14 | 9.97 | 8.27 | 12.21 | 9.99 | 8.98 | 12.52 | -0.33 | 12.2 | 24.0 | -11.81 |
| | 6 | 6425 | 95 | 40MHz | 9.77 | 9.53 | 12.66 | 9.97 | 9.56 | 12.78 | 9.86 | 9.57 | 12.73 | -0.09 | 12.7 | 24.0 | -11.31 |
| | 7 | 6585 | 127 | 40MHz | 9.76 | 8.72 | 12.28 | 9.87 | 8.22 | 12.13 | 9.99 | 9.01 | 12.54 | -0.27 | 12.3 | 24.0 | -11.73 |
| | | 6745 | 159 | 40MHz | 9.48 | 8.35 | 11.96 | 9.99 | 8.55 | 12.34 | 9.99 | 8.86 | 12.47 | -0.27 | 12.2 | 24.0 | -11.80 |
| | 8 | 6905 | 191 | 40MHz | 9.69 | 7.95 | 11.92 | 9.77 | 7.46 | 11.78 | 9.82 | 8.20 | 12.10 | -0.68 | 11.4 | 24.0 | -12.58 |

**Table 7-9. MIMO 320MHz BW 802.11be (UNII) Maximum Conducted Output Power – 40MHz Puncture– LPI**

| 320MHz BW | Band | Freq [MHz] | Channel | Puncture Size | Average Conducted Power (dBm) | | | | | | | | | Dir. Ant. Gain [dBi] | Max e.i.r.p [dBm] | e.i.r.p Limit [dBm] | e.i.r.p Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Puncture Case | | | | | | | | | | | | |
| | | | | | 104 | | | 10104 | | | 11104 | | | | | | |
| | | | | | ANT1 | ANT2 | MIMO | ANT1 | ANT2 | MIMO | ANT1 | ANT2 | MIMO | | | | |
| | 5 | 6105 | 31 | 80MHz | 7.93 | 9.99 | 12.09 | 7.58 | 9.45 | 11.63 | 7.63 | 9.65 | 11.77 | -0.33 | 11.8 | 24.0 | -12.24 |
| | | 6265 | 63 | 80MHz | 9.85 | 8.38 | 12.19 | 9.84 | 8.99 | 12.45 | 9.87 | 8.56 | 12.27 | -0.33 | 12.1 | 24.0 | -11.88 |
| | 6 | 6425 | 95 | 80MHz | 9.99 | 9.46 | 12.74 | 9.99 | 9.55 | 12.79 | 9.56 | 8.97 | 12.29 | -0.09 | 12.7 | 24.0 | -11.30 |
| | 7 | 6585 | 127 | 80MHz | 9.99 | 9.24 | 12.64 | 9.76 | 8.65 | 12.25 | 9.95 | 8.91 | 12.47 | -0.27 | 12.4 | 24.0 | -11.63 |
| | | 6745 | 159 | 80MHz | 9.63 | 8.57 | 12.14 | 9.99 | 8.97 | 12.52 | 9.90 | 8.62 | 12.32 | -0.27 | 12.3 | 24.0 | -11.75 |
| | 8 | 6905 | 191 | 80MHz | 9.78 | 7.86 | 11.94 | 9.99 | 8.23 | 12.21 | 9.99 | 8.87 | 12.48 | -0.68 | 11.8 | 24.0 | -12.20 |

**Table 7-10. MIMO 320MHz BW 802.11be (UNII) Maximum Conducted Output Power – 80MHz Puncture– LPI**

| 320MHz BW | Band | Freq [MHz] | Channel | Puncture Size | Average Conducted Power (dBm) | | | | | | | | | Dir. Ant. Gain [dBi] | Max e.i.r.p [dBm] | e.i.r.p Limit [dBm] | e.i.r.p Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Puncture Case | | | | | | | | | | | | |
| | | | | | 101 | | | 1101 | | | 11102 | | | | | | |
| | | | | | ANT1 | ANT2 | MIMO | ANT1 | ANT2 | MIMO | ANT1 | ANT2 | MIMO | | | | |
| | 5 | 6105 | 31 | 120MHz | 7.78 | 9.82 | 11.93 | 7.88 | 9.99 | 12.07 | 7.65 | 9.60 | 11.74 | -0.33 | 11.7 | 24.0 | -12.26 |
| | | 6265 | 63 | 120MHz | 9.52 | 8.14 | 11.89 | 8.65 | 8.11 | 11.40 | 9.60 | 8.47 | 12.08 | -0.33 | 11.8 | 24.0 | -12.25 |
| | 6 | 6425 | 95 | 120MHz | 9.62 | 9.13 | 12.39 | 9.72 | 9.03 | 12.40 | 9.77 | 8.89 | 12.36 | -0.09 | 12.3 | 24.0 | -11.69 |
| | 7 | 6585 | 127 | 120MHz | 9.92 | 9.34 | 12.65 | 9.99 | 8.84 | 12.46 | 9.99 | 9.13 | 12.59 | -0.27 | 12.4 | 24.0 | -11.62 |
| | | 6745 | 159 | 120MHz | 9.54 | 7.49 | 11.65 | 9.92 | 7.82 | 12.01 | 9.76 | 7.68 | 11.85 | -0.27 | 11.7 | 24.0 | -12.26 |
| | 8 | 6905 | 191 | 120MHz | 9.50 | 7.77 | 11.73 | 9.55 | 8.02 | 11.86 | 9.87 | 8.23 | 12.14 | -0.68 | 11.5 | 24.0 | -12.54 |

**Table 7-11. MIMO 320MHz BW 802.11be (UNII) Maximum Conducted Output Power – 120MHz Puncture– LPI**

# MIMO Maximum Conducted Output Power Measurements – OFDMA

## MIMO Maximum Conducted Output Power Measurements (996 Tones)

| | Band | Freq [MHz] | Channel | Tones | Average Conducted Power (dBm) RU Index 67 | | | Dir. Ant. Gain [dBi] | Max e.i.r.p [dBm] | e.i.r.p Limit [dBm] | e.i.r.p Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | ANT1 | ANT2 | MIMO | | | | |
| 80MHz BW | 5 | 5985 | 7 | 996T | 9.83 | 8.52 | 12.23 | -0.33 | 11.90 | 24.00 | -12.10 |
| | | 6145 | 39 | 996T | 7.59 | 9.82 | 11.86 | -0.33 | 11.52 | 24.00 | -12.48 |
| | | 6385 | 87 | 996T | 9.55 | 8.79 | 12.20 | -0.33 | 11.86 | 24.00 | -12.14 |
| | 6 | 6465 | 103 | 996T | 9.49 | 9.78 | 12.65 | -0.09 | 12.56 | 24.00 | -11.44 |
| | 7 | 6545 | 119 | 996T | 9.35 | 9.32 | 12.35 | -0.27 | 12.08 | 24.00 | -11.92 |
| | | 6705 | 151 | 996T | 9.70 | 8.81 | 12.29 | -0.27 | 12.02 | 24.00 | -11.98 |
| | | 6865 | 183 | 996T | 9.72 | 7.30 | 11.69 | -0.27 | 11.42 | 24.00 | -12.58 |
| | 8 | 6945 | 199 | 996T | 9.84 | 9.48 | 12.67 | -0.68 | 11.99 | 24.00 | -12.01 |
| | | 7025 | 215 | 996T | 9.72 | 9.47 | 12.61 | -0.68 | 11.93 | 24.00 | -12.07 |

**Table 7-12. MIMO 80MHz BW 802.11ax/be (UNII) Maximum Conducted Output Power – LPI**

## MIMO Maximum Conducted Output Power Measurements (2x996 Tones)

| | Band | Freq [MHz] | Channel | Tones | Average Conducted Power (dBm) RU Index 68 | | | Dir. Ant. Gain [dBi] | Max e.i.r.p [dBm] | e.i.r.p Limit [dBm] | e.i.r.p Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | ANT1 | ANT2 | MIMO | | | | |
| 160MHz BW | 5 | 6025 | 15 | 2x996T | 9.81 | 9.09 | 12.48 | -0.33 | 12.14 | 24.00 | -11.86 |
| | | 6185 | 47 | 2x996T | 7.32 | 9.73 | 11.70 | -0.33 | 11.37 | 24.00 | -12.63 |
| | | 6345 | 79 | 2x996T | 9.55 | 8.54 | 12.08 | -0.33 | 11.75 | 24.00 | -12.25 |
| | 6 | 6505 | 111 | 2x996T | 9.54 | 9.23 | 12.40 | -0.09 | 12.31 | 24.00 | -11.69 |
| | 7 | 6665 | 143 | 2x996T | 9.55 | 9.20 | 12.39 | -0.27 | 12.12 | 24.00 | -11.88 |
| | | 6825 | 175 | 2x996T | 9.86 | 7.78 | 11.95 | -0.27 | 11.68 | 24.00 | -12.32 |
| | 8 | 6985 | 207 | 2x996T | 9.69 | 9.99 | 12.85 | -0.68 | 12.17 | 24.00 | -11.83 |

**Table 7-13. MIMO 160MHz BW 802.11ax/be (UNII) Maximum Conducted Output Power – LPI**

## MIMO Maximum Conducted Output Power Measurements (4x996 Tones)

| | Band | Freq [MHz] | Channel | Tones | Average Conducted Power (dBm) RU Index 69 | | | Dir. Ant. Gain [dBi] | Max e.i.r.p [dBm] | e.i.r.p Limit [dBm] | e.i.r.p Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | ANT1 | ANT2 | MIMO | | | | |
| 320MHz BW | 5 | 6105 | 31 | 4x996T | 7.34 | 9.58 | 11.61 | -0.33 | 11.28 | 24.00 | -12.72 |
| | | 6265 | 63 | 4x996T | 9.34 | 7.28 | 11.44 | -0.33 | 11.11 | 24.00 | -12.89 |
| | 6 | 6425 | 95 | 4x996T | 9.65 | 9.42 | 12.55 | -0.09 | 12.46 | 24.00 | -11.54 |
| | 7 | 6585 | 127 | 4x996T | 9.72 | 9.45 | 12.60 | -0.27 | 12.33 | 24.00 | -11.67 |
| | | 6745 | 159 | 4x996T | 9.32 | 8.86 | 12.11 | -0.27 | 11.84 | 24.00 | -12.16 |
| | 8 | 6905 | 191 | 4x996T | 9.83 | 9.62 | 12.74 | -0.68 | 12.06 | 24.00 | -11.94 |

**Table 7-14. MIMO 320MHz BW 802.11be (UNII) Maximum Conducted Output Power – LPI**

# MIMO Maximum Conducted Output Power Measurements (MRU)

| 80MHz BW | Band | Freq [MHz] | Channel | Tones | Average Conducted Power (dBm) | | | | | | | | | Dir. Ant. Gain [dBi] | Max e.i.r.p [dBm] | e.i.r.p Limit [dBm] | e.i.r.p Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MRU Index | | | | | | | | | | | | |
| | | | | | 90 | | | 91 | | | 92 | | | | | | |
| | | | | | ANT1 | ANT2 | MIMO | ANT1 | ANT2 | MIMO | ANT1 | ANT2 | MIMO | | | | |
| | 5 | 5985 | 7 | 242+484T | 9.99 | 8.74 | 12.42 | 9.72 | 8.38 | 12.11 | 9.91 | 8.58 | 12.31 | -0.33 | 12.09 | 24.00 | -11.91 |
| | | 6145 | 39 | 242+484T | 7.78 | 9.96 | 12.02 | 7.75 | 9.94 | 11.99 | 7.68 | 9.85 | 11.91 | -0.33 | 11.68 | 24.00 | -12.32 |
| | | 6385 | 87 | 242+484T | 9.69 | 8.88 | 12.31 | 9.66 | 8.88 | 12.30 | 9.65 | 8.85 | 12.28 | -0.33 | 11.98 | 24.00 | -12.02 |
| | 6 | 6465 | 103 | 242+484T | 9.63 | 9.87 | 12.76 | 9.61 | 9.92 | 12.78 | 9.62 | 9.86 | 12.75 | -0.09 | 12.69 | 24.00 | -11.31 |
| | 7 | 6545 | 119 | 242+484T | 9.85 | 9.48 | 12.68 | 9.85 | 9.50 | 12.69 | 9.88 | 9.45 | 12.68 | -0.27 | 12.42 | 24.00 | -11.58 |
| | | 6705 | 151 | 242+484T | 9.79 | 8.92 | 12.39 | 9.79 | 8.91 | 12.38 | 9.81 | 8.86 | 12.37 | -0.27 | 12.12 | 24.00 | -11.88 |
| | | 6865 | 183 | 242+484T | 9.81 | 7.41 | 11.78 | 9.81 | 7.37 | 11.77 | 9.81 | 7.36 | 11.77 | -0.27 | 11.51 | 24.00 | -12.49 |
| | 8 | 6945 | 199 | 242+484T | 9.91 | 9.53 | 12.73 | 9.93 | 9.58 | 12.77 | 9.94 | 9.56 | 12.76 | -0.68 | 12.09 | 24.00 | -11.91 |
| | | 7025 | 215 | 242+484T | 9.97 | 9.59 | 12.79 | 9.86 | 9.62 | 12.75 | 9.80 | 9.58 | 12.70 | -0.68 | 12.12 | 24.00 | -11.88 |

**Table 7-15. MIMO 80MHz BW 802.11be (UNII) Maximum Conducted Output Power (484+242 Tones) – LPI**

| 160MHz BW | Band | Freq [MHz] | Channel | Tones | Average Conducted Power (dBm) | | | | | | | | | Dir. Ant. Gain [dBi] | Max e.i.r.p [dBm] | e.i.r.p Limit [dBm] | e.i.r.p Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MRU Index | | | | | | | | | | | | |
| | | | | | 94 | | | 95 | | | 1095 | | | | | | |
| | | | | | ANT1 | ANT2 | MIMO | ANT1 | ANT2 | MIMO | ANT1 | ANT2 | MIMO | | | | |
| | 5 | 6025 | 15 | 996+484T | 9.97 | 9.33 | 12.67 | 9.98 | 9.33 | 12.68 | 9.99 | 9.38 | 12.71 | -0.33 | 12.37 | 24.00 | -11.63 |
| | | 6185 | 47 | 996+484T | 7.75 | 9.83 | 11.92 | 7.69 | 9.76 | 11.86 | 7.56 | 9.82 | 11.84 | -0.33 | 11.59 | 24.00 | -12.41 |
| | | 6345 | 79 | 996+484T | 9.67 | 8.52 | 12.14 | 9.62 | 8.55 | 12.13 | 9.55 | 8.54 | 12.08 | -0.33 | 11.81 | 24.00 | -12.19 |
| | 6 | 6505 | 111 | 996+484T | 9.77 | 9.52 | 12.66 | 9.62 | 9.23 | 12.44 | 9.63 | 9.17 | 12.42 | -0.09 | 12.57 | 24.00 | -11.43 |
| | 7 | 6665 | 143 | 996+484T | 9.63 | 9.24 | 12.45 | 9.66 | 9.33 | 12.51 | 9.76 | 9.34 | 12.57 | -0.27 | 12.30 | 24.00 | -11.70 |
| | | 6825 | 175 | 996+484T | 9.93 | 7.84 | 12.02 | 9.59 | 7.54 | 11.70 | 9.78 | 7.56 | 11.82 | -0.27 | 11.75 | 24.00 | -12.25 |
| | 8 | 6985 | 207 | 996+484T | 9.72 | 9.99 | 12.87 | 9.63 | 9.72 | 12.69 | 9.44 | 9.78 | 12.62 | -0.68 | 12.19 | 24.00 | -11.81 |

**Table 7-16. MIMO 160MHz BW 802.11be (UNII) Maximum Conducted Output Power (996+484 Tones) – LPI**

| 320MHz BW | Band | Freq [MHz] | Channel | Tones | Average Conducted Power (dBm) | | | | | | | | | Dir. Ant. Gain [dBi] | Max e.i.r.p [dBm] | e.i.r.p Limit [dBm] | e.i.r.p Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MRU Index | | | | | | | | | | | | |
| | | | | | 00100 | | | 01100 | | | 11103 | | | | | | |
| | | | | | ANT1 | ANT2 | MIMO | ANT1 | ANT2 | MIMO | ANT1 | ANT2 | MIMO | | | | |
| | 5 | 6105 | 31 | 2x996+484T | 7.53 | 9.84 | 11.85 | 7.82 | 9.89 | 11.99 | 7.35 | 9.84 | 11.78 | -0.33 | 11.65 | 24.00 | -12.35 |
| | | 6265 | 63 | 2x996+484T | 9.66 | 8.68 | 12.21 | 9.65 | 8.78 | 12.25 | 9.82 | 8.99 | 12.44 | -0.33 | 12.10 | 24.00 | -11.90 |
| | 6 | 6425 | 95 | 2x996+484T | 9.73 | 9.16 | 12.46 | 9.68 | 9.42 | 12.56 | 9.52 | 9.24 | 12.39 | -0.09 | 12.47 | 24.00 | -11.53 |
| | 7 | 6585 | 127 | 2x996+484T | 9.86 | 9.77 | 12.83 | 9.96 | 9.58 | 12.78 | 9.98 | 9.87 | 12.94 | -0.27 | 12.67 | 24.00 | -11.33 |
| | | 6745 | 159 | 2x996+484T | 9.58 | 9.16 | 12.39 | 9.78 | 9.47 | 12.64 | 9.73 | 9.32 | 12.54 | -0.27 | 12.37 | 24.00 | -11.63 |
| | 8 | 6905 | 191 | 2x996+484T | 9.42 | 7.86 | 11.72 | 9.99 | 8.43 | 12.29 | 9.70 | 8.42 | 12.12 | -0.68 | 11.61 | 24.00 | -12.39 |

**Table 7-17. MIMO 320MHz BW 802.11be (UNII) Maximum Conducted Output Power (2*996+484 Tones) – LPI**

| 320MHz BW | Band | Freq [MHz] | Channel | Tones | Average Conducted Power (dBm) | | | | | | | | | Dir. Ant. Gain [dBi] | Max e.i.r.p [dBm] | e.i.r.p Limit [dBm] | e.i.r.p Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MRU Index | | | | | | | | | | | | |
| | | | | | 00104 | | | 01104 | | | 11104 | | | | | | |
| | | | | | ANT1 | ANT2 | MIMO | ANT1 | ANT2 | MIMO | ANT1 | ANT2 | MIMO | | | | |
| | 5 | 6105 | 31 | 3x996T | 7.76 | 9.84 | 11.93 | 7.12 | 9.48 | 11.47 | 7.63 | 9.57 | 11.72 | -0.33 | 11.60 | 24.00 | -12.40 |
| | | 6265 | 63 | 3x996T | 9.58 | 8.62 | 12.14 | 9.57 | 8.42 | 12.04 | 9.46 | 8.76 | 12.13 | -0.33 | 11.80 | 24.00 | -12.20 |
| | 6 | 6425 | 95 | 3x996T | 9.53 | 9.42 | 12.49 | 9.47 | 9.34 | 12.42 | 9.82 | 9.47 | 12.66 | -0.09 | 12.57 | 24.00 | -11.43 |
| | 7 | 6585 | 127 | 3x996T | 9.53 | 9.24 | 12.40 | 9.86 | 9.47 | 12.68 | 9.63 | 9.15 | 12.41 | -0.27 | 12.41 | 24.00 | -11.59 |
| | | 6745 | 159 | 3x996T | 9.83 | 9.54 | 12.70 | 9.83 | 9.31 | 12.59 | 9.89 | 9.31 | 12.62 | -0.27 | 12.43 | 24.00 | -11.57 |
| | 8 | 6905 | 191 | 3x996T | 9.40 | 7.56 | 11.59 | 9.65 | 8.21 | 12.00 | 9.62 | 8.10 | 11.94 | -0.68 | 11.32 | 24.00 | -12.68 |

**Table 7-18. MIMO 320MHz BW 802.11be (UNII) Maximum Conducted Output Power (3*996 Tones) – LPI**

| 320MHz BW | Band | Freq [MHz] | Channel | Tones | Average Conducted Power (dBm) | | | | | | | | | Dir. Ant. Gain [dBi] | Max e.i.r.p [dBm] | e.i.r.p Limit [dBm] | e.i.r.p Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | MRU Index | | | | | | | | | | | | |
| | | | | | 00105 | | | 01106 | | | 11106 | | | | | | |
| | | | | | ANT1 | ANT2 | MIMO | ANT1 | ANT2 | MIMO | ANT1 | ANT2 | MIMO | | | | |
| | 5 | 6105 | 31 | 3x996+484T | 7.78 | 9.95 | 12.01 | 7.12 | 9.54 | 11.51 | 7.56 | 9.63 | 11.73 | -0.33 | 11.68 | 24.00 | -12.32 |
| | | 6265 | 63 | 3x996+484T | 9.14 | 8.25 | 11.73 | 9.53 | 8.97 | 12.27 | 9.43 | 8.60 | 12.05 | -0.33 | 11.94 | 24.00 | -12.06 |
| | 6 | 6425 | 95 | 3x996+484T | 9.55 | 9.23 | 12.40 | 9.28 | 9.31 | 12.31 | 9.63 | 9.32 | 12.49 | -0.09 | 12.40 | 24.00 | -11.60 |
| | 7 | 6585 | 127 | 3x996+484T | 9.24 | 9.01 | 12.14 | 9.64 | 9.22 | 12.45 | 9.50 | 8.93 | 12.23 | -0.27 | 12.18 | 24.00 | -11.82 |
| | | 6745 | 159 | 3x996+484T | 9.54 | 8.91 | 12.25 | 9.63 | 9.20 | 12.43 | 9.41 | 8.62 | 12.04 | -0.27 | 12.16 | 24.00 | -11.84 |
| | 8 | 6905 | 191 | 3x996+484T | 9.76 | 8.23 | 12.07 | 9.88 | 8.76 | 12.37 | 9.53 | 7.96 | 11.83 | -0.68 | 11.69 | 24.00 | -12.31 |

**Table 7-19. MIMO 320MHz BW 802.11be (UNII) Maximum Conducted Output Power (3*996+484 Tones) – LPI**

**Sample MIMO Calculation:**

At 5985MHz in 802.11ax (80MHz BW) mode, the average conducted output power was measured to be 9.99 dBm for Antenna-1 and 8.99 dBm for Antenna-2.

Antenna 1 + Antenna 2 = MIMO

(9.99 dBm + 8.99 dBm) = (9.977 mW + 7.925 mW) = 17.902 mW = 12.53 dBm

**Sample Directional Gain Calculation:**

Per ANSI C63.10:2020 Section 14.4.3, the directional gain is calculated using the following formula, where GN is the gain of the nth antenna and NANT, the total number of antennas used.

$$\text{Directional gain} = 10 \log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}] \text{ dBi}$$

**Sample e.i.r.p. Calculation:**

At 5985MHz in 802.11ax (80MHz BW) mode, the average MIMO conducted power was calculated to be dBm with directional gain of -0.33 dBi.

e.i.r.p. (dBm) = Conducted Power (dBm) + Ant gain (dBi)

12.53 dBm + -0.33 dBi = 12.20 dBm

## 7.3 Contention Based Protocol

**Test Overview and Limit**

Indoor access points, subordinate devices and client devices operating in the 5.925-7.125 GHz band (herein referred to as unlicensed devices) are required to use technologies that include a contention-based protocol to avoid co-channel interference with incumbent devices sharing the band. To ensure incumbent co-channel operations are detected in a technology-agnostic manner, unlicensed devices are required to detect co-channel radio frequency energy (energy detect) and avoid simultaneous transmission.

Unlicensed indoor low-power devices must detect co-channel radio frequency power that is at least -62 dBm or lower. Upon detection of energy in the band, unlicensed low power indoor devices must vacate the channel and stay off the channel if detected radio frequency power is equal to or greater than the threshold (-62 dBm). The -62 dBm (or lower) threshold is referenced to a 0 dBi antenna gain.

To ensure incumbent operations are reliably detected in the band, low power indoor devices must detect RF energy throughout their intended operating channel.

**Test Procedure Used**

KDB 987594 D02 v01r01

**Test Settings**

1. Configure the EUT to transmit with a constant duty cycle.
2. Set the operating parameters of the EUT including power level, operating frequency, modulation, and bandwidth.
3. Set the signal analyzer center frequency to the nominal EUT channel center frequency. The span range of the signal analyzer shall be between two times and five times the OBW of the EUT. Connect the output port of the EUT to the signal analyzer 2. Ensure that the attenuator 2 provides enough attenuation to not overload the signal analyzer 2 receiver.
4. Monitoring the signal analyzer 2, verify the EUT is operating and transmitting with the parameters set at step two.
5. Using an AWGN signal source, generate (but do not transmit, i.e., RF OFF) a 10 MHz-wide AWGN signal. Use Table 1 to determine the center frequency of the 10 MHz AWGN signal relative to the EUT's channel bandwidth and center frequency.
6. Set the AWGN signal power to an extremely low level (more than 20 dB below the -62 dBm threshold). Connect the AWGN signal source, via a 3-dB splitter, to the signal analyzer 1 and the EUT as shown in Figure 2.
7. Transmit the AWGN signal (RF ON) and verify its characteristics on the signal analyzer 1.
8. Monitor the signal analyzer 2 to verify if the AWGN signal has been detected and the EUT has ceased transmission. If the EUT continues to transmit, then incrementally increase the AWGN signal power level until the EUT stops transmitting.
9. (Including all losses in the RF paths) Determine and record the AWGN signal power level (at the EUT's antenna port) at which the EUT ceased transmission. Repeat the procedure at least 10 times to verify the EUT can detect an AWGN signal with 90% (or better) level of certainty.
10. Refer to Table 1 of KDB 987594 D02 v01r01 to determine the number of times the detection threshold testing needs to be repeated. If testing is required more than once, then go back to step 5, choose a different center frequency for the AWGN signal, and repeat the process.

## Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

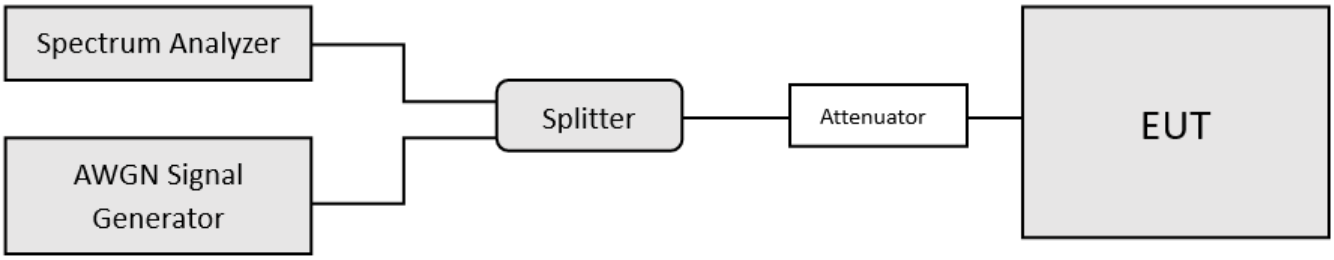



**Figure 7-2. Contention-based protocol test setup conducted method.**

## Test Notes

1. Per guidance from KDB 987594 D02 v01r01, contention-based protocol was tested using an AWGN signal with a bandwidth of 10MHz (see Plot 7-1). The amplitude of the signal was increased until detected by the EUT, signaled by the ceasing of transmission (see Plot 7-2), M1 indicates the point at which the AWGN signal is introduced. D1 indicates where the AWGN signal is terminated, at least 10 seconds following M1.
2. 15 trials were run to assure that at least 90% of certainty was met.
3. Per Guidance from KDB 987594 D04 v01, contention-based protocol was tested with receiver with the lowest antenna gain.
4. All CBP Timing Plots shown are for the ceased condition. Some spikes that may be shown are from adjacent portions of the spectrum that are still transmitting.
5. In the presence of an AWGN signal, the EUT was shown to either completely move out of the channel or to reduce its bandwidth for the purpose of incumbent avoidance. Representative channel move plots are included for one sub-band to show how the channel reduces when the AWGN is injected at the lower edge, the center, and the upper edge of a channel.
6. This device only punctures to optimize network performance and never to avoid licensed incumbents.
7. For the channel move demonstration in Section 7.6.3, only plots from UNII-5 band are included. Additionally, the AWGN signal is not visible because the AWGN level is well below the noise floor.

Detection Level = Injected AWGN Power (dBm) – Antenna Gain (dBi) + Path Loss (dB)

**Equation 7-1. Detection Level Calculation**

| Band | Channel | Channel Freq [MHz] | Channel BW [MHz] | Incumbent Freq [MHz] | Antenna Gain [dBi] | EUT Transmission Status Adjusted AWGN Power (dBm) | | | Detection Limit [dBm] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Normal | Minimal | Ceased | | |
| UNII Band 5 | 53 | 6215 | 20 | 6215 | -4.57 | -70.48 | -69.76 | -69.03 | -62.0 | -7.03 |
| | 63 | 6265 | 320 | 6110 | -4.85 | -67.49 | -67.25 | -66.52 | -62.0 | -4.52 |
| | | | | 6265 | -5.01 | -65.53 | -64.81 | -64.08 | -62.0 | -2.08 |
| | | | | 6420 | -3.53 | -68.34 | -67.97 | -67.73 | -62.0 | -5.73 |
| UNII Band 6 | 101 | 6455 | 20 | 6455 | -3.53 | -71.67 | -71.07 | -70.34 | -62.0 | -8.34 |
| | 95 | 6425 | 320 | 6270 | -4.57 | -70.82 | -70.46 | -69.85 | -62.0 | -7.85 |
| | | | | 6425 | -3.53 | -69.31 | -68.71 | -67.98 | -62.0 | -5.98 |
| | | | | 6580 | -3.75 | -70.32 | -69.95 | -69.59 | -62.0 | -7.59 |
| UNII Band 7 | 149 | 6695 | 20 | 6695 | -4.68 | -64.19 | -63.47 | -62.74 | -62.0 | -0.74 |
| | 159 | 6745 | 320 | 6590 | -3.75 | -71.13 | -70.52 | -70.16 | -62.0 | -8.16 |
| | | | | 6745 | -4.68 | -66.87 | -66.62 | -66.14 | -62.0 | -4.14 |
| | | | | 6900 | -4.51 | -69.37 | -69.12 | -68.64 | -62.0 | -6.64 |
| UNII Band 8 | 197 | 6935 | 20 | 6935 | -4.51 | -68.38 | -67.65 | -67.29 | -62.0 | -5.29 |
| | 191 | 6905 | 320 | 6750 | -4.68 | -69.99 | -69.51 | -68.90 | -62.0 | -6.90 |
| | | | | 6905 | -4.51 | -66.46 | -65.97 | -65.49 | -62.0 | -3.49 |
| | | | | 7060 | -4.01 | -67.04 | -66.31 | -65.83 | -62.0 | -3.83 |

**Table 7-20. Contention Based Protocol – Incumbent Detection Results**

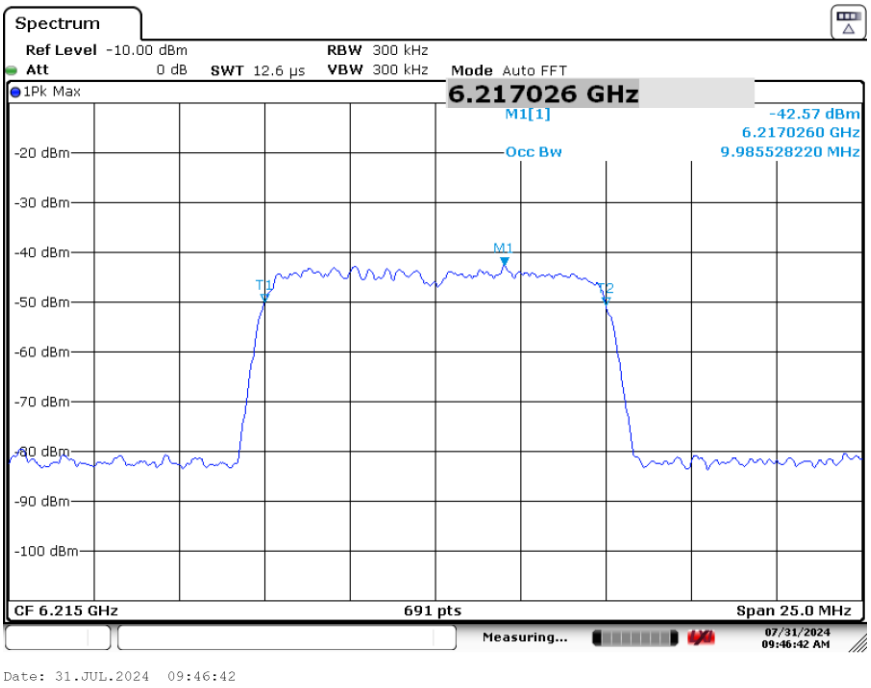
| Band | Channel | Channel Freq [MHz] | Channel BW [MHz] | Incumbent Freq [MHz] | AWGN Power Setting | Injected (AWGN) [dBm] | Antenna Gain [dBi] | Path Loss (dB) | Adjusted Power Level [dBm] | Detection Limit [dBm] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| UNII Band 5 | 53 | 6215 | 20 | 6215 | -59.10 | -74.03 | -4.57 | 1.10 | -68.36 | -62.0 | -6.36 |
| | 63 | 6265 | 320 | 6110 | -60.2 | -74.95 | -4.85 | 1.10 | -69.00 | -62.0 | -7.00 |
| | | | | 6265 | -55.20 | -68.74 | -5.01 | 1.10 | -62.63 | -62.0 | -0.63 |
| | | | | 6420 | -61.60 | -74.93 | -3.53 | 1.10 | -70.30 | -62.0 | -8.30 |
| UNII Band 6 | 101 | 6455 | 20 | 6455 | -62.60 | -76.02 | -3.53 | 1.10 | -71.39 | -62.0 | -9.39 |
| | 95 | 6425 | 320 | 6270 | -62.40 | -76.75 | -4.57 | 1.10 | -71.08 | -62.0 | -9.08 |
| | | | | 6425 | -58.70 | -71.82 | -3.53 | 1.10 | -67.19 | -62.0 | -5.19 |
| | | | | 6580 | -65.20 | -79.42 | -3.75 | 1.10 | -74.57 | -62.0 | -12.57 |
| UNII Band 7 | 149 | 6695 | 20 | 6695 | -65.00 | -78.73 | -4.68 | 1.10 | -72.95 | -62.0 | -10.95 |
| | 159 | 6745 | 320 | 6590 | -65.20 | -80.08 | -3.75 | 1.10 | -75.23 | -62.0 | -13.23 |
| | | | | 6745 | -60.80 | -76.87 | -4.68 | 1.10 | -71.09 | -62.0 | -9.09 |
| | | | | 6900 | -71.00 | -81.76 | -4.51 | 1.10 | -76.15 | -62.0 | -14.15 |
| UNII Band 8 | 197 | 6935 | 20 | 6935 | -62.00 | -75.30 | -4.51 | 1.10 | -69.69 | -62.0 | -7.69 |
| | 191 | 6905 | 320 | 6750 | -64.60 | -80.13 | -4.68 | 1.10 | -74.35 | -62.0 | -12.35 |
| | | | | 6905 | -59.30 | -73.53 | -4.51 | 1.10 | -67.92 | -62.0 | -5.92 |
| | | | | 7060 | -56.50 | -71.40 | -4.01 | 1.10 | -66.29 | -62.0 | -4.29 |

**Table 7-21. Contention Based Protocol – Detection Results – All Tx Cases**

| CBP Detection (1 = Detection, Blank = No Detection) | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Band | Channel | Channel Freq [MHz] | Channel BW [MHz] | Incumbent Freq [MHz] | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Detection Rate (%) |
| UNII Band 5 | 53 | 6215 | 20 | 6215 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| | 63 | 6265 | 320 | 6110 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| | | | | 6265 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| | | | | 6420 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| UNII Band 6 | 101 | 6455 | 20 | 6455 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| | 95 | 6425 | 320 | 6270 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| | | | | 6425 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| | | | | 6580 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| UNII Band 7 | 149 | 6695 | 20 | 6695 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| | 159 | 6745 | 320 | 6590 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| | | | | 6745 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| | | | | 6900 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| UNII Band 8 | 197 | 6935 | 20 | 6935 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| | 191 | 6905 | 320 | 6750 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| | | | | 6905 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |
| | | | | 7060 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 100 |

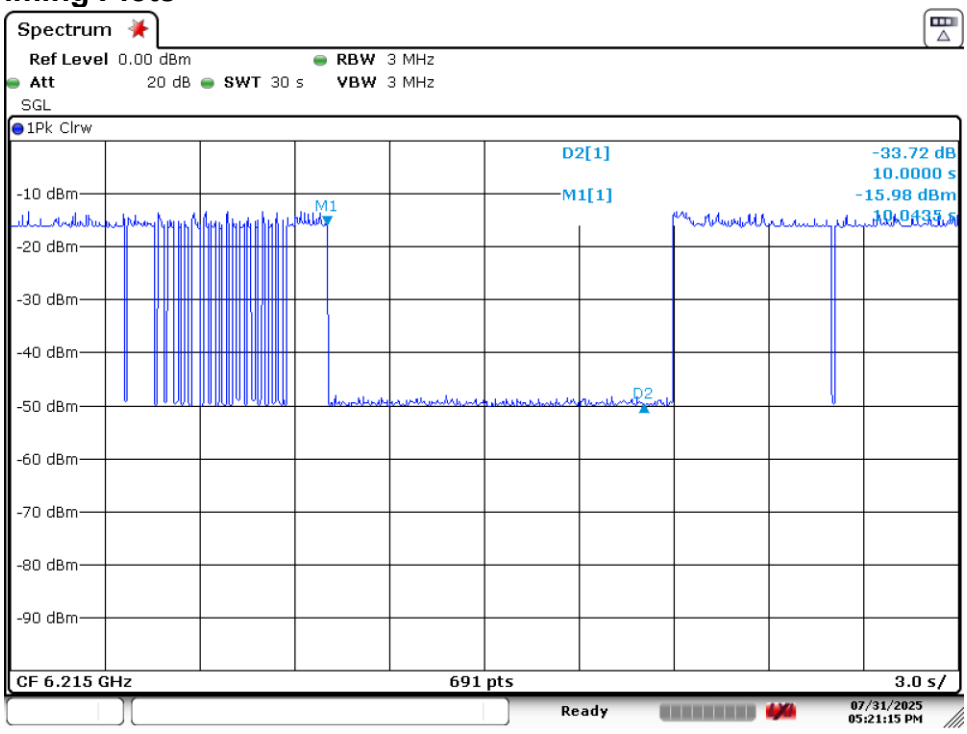
**Table 7-22. Contention Based Protocol – Incumbent Detection Trial Results**

## 7.3.1 AWGN Plots



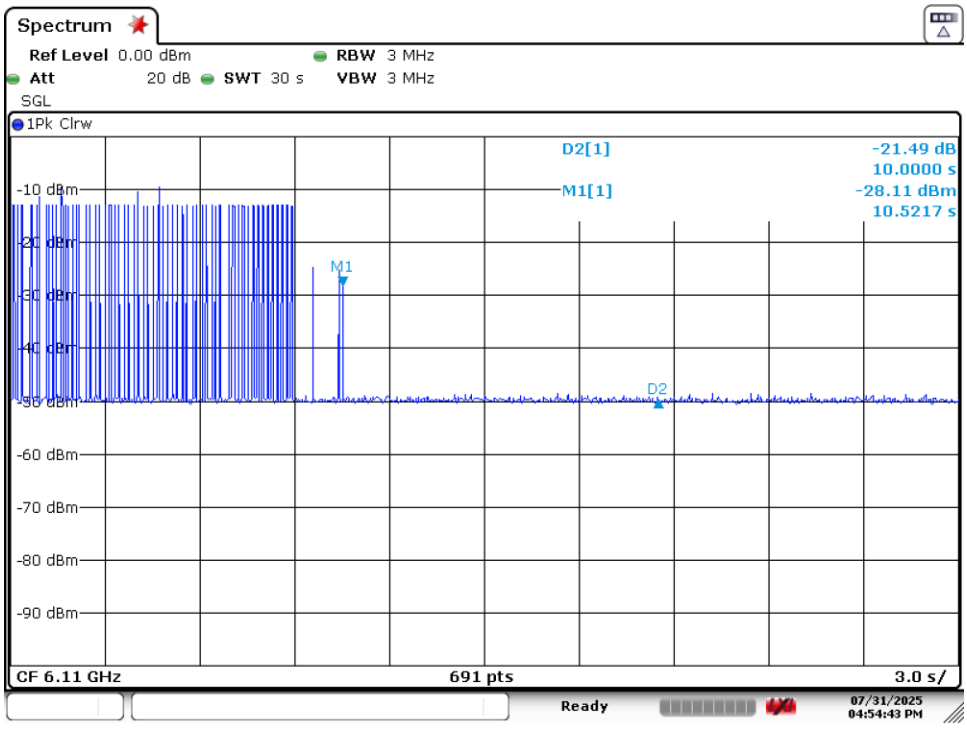

**Plot 7-1. AWGN Signal (Demonstration)**

## 7.3.2 CBP Timing Plots



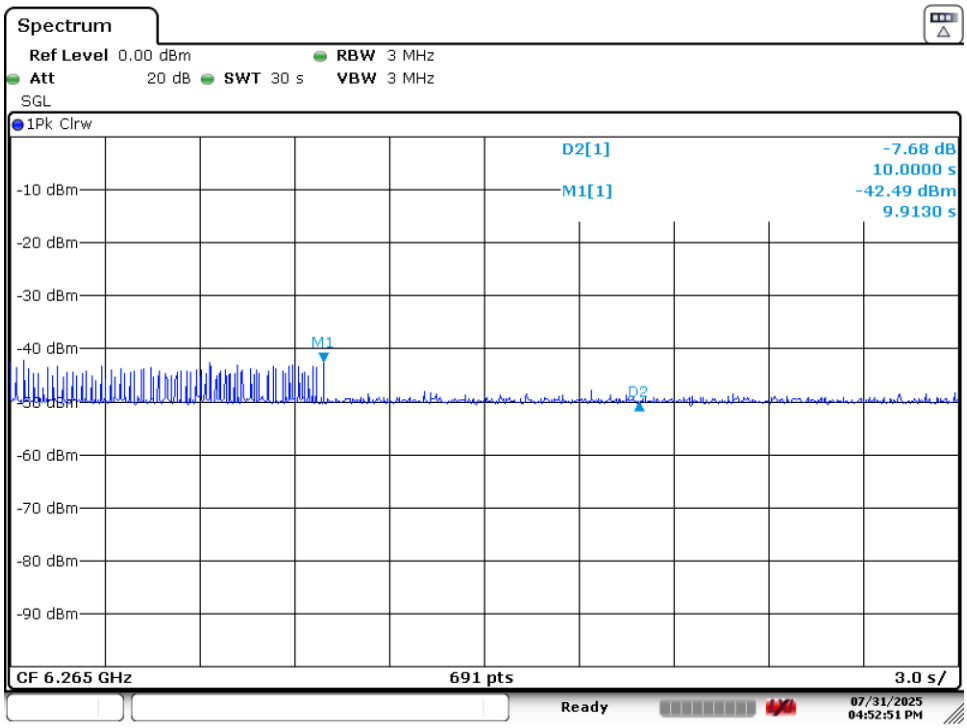

Date: 31.JUL.2025 17:21:15

**Plot 7-2. Contention Based Protocol Timing Plot (20MHz (UNII Band 5) – Ch. 53)**



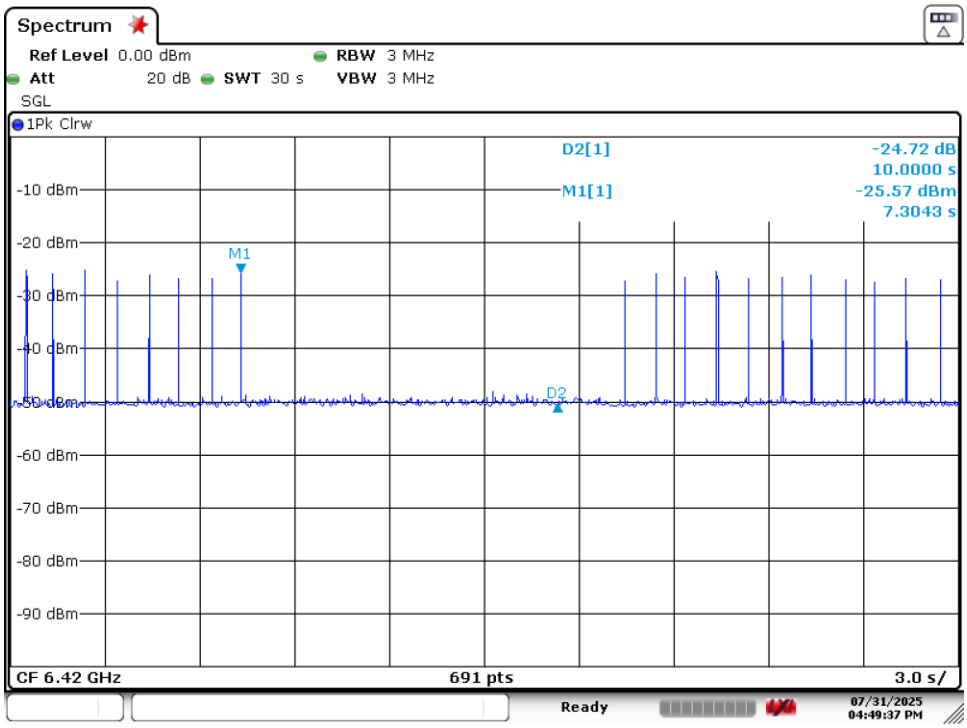

Date: 31.JUL.2025 16:54:43

**Plot 7-3. Contention Based Protocol Timing Plot (320MHz (UNII Band 5) – Ch. 63 Low)**



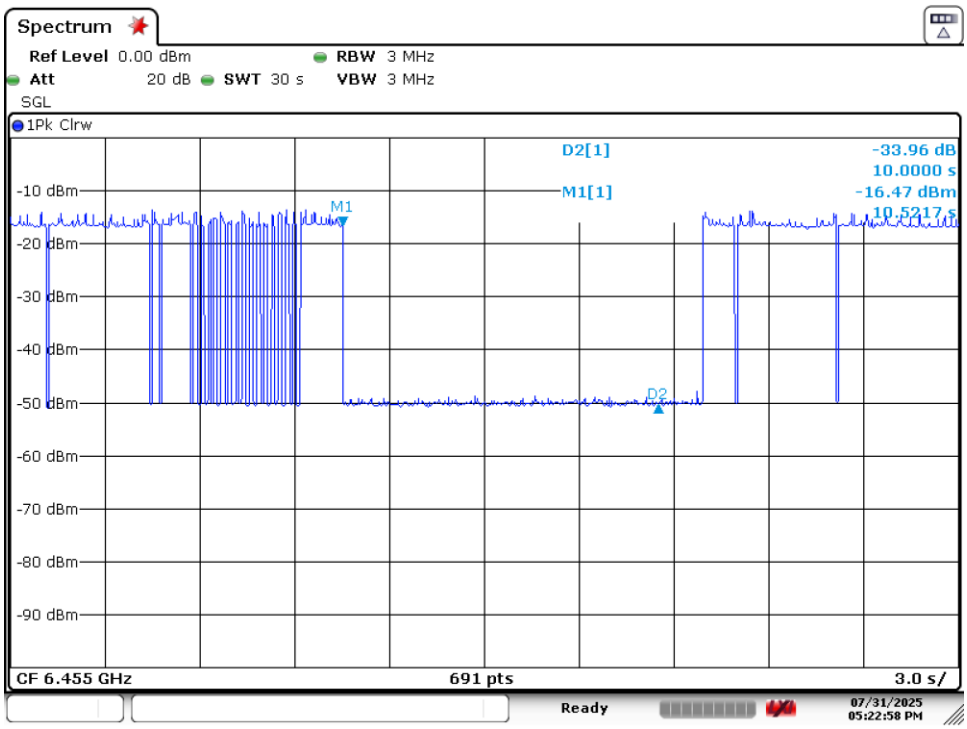

Date: 31.JUL.2025 16:52:52

**Plot 7-4. Contention Based Protocol Timing Plot (320MHz (UNII Band 5) – Ch. 63 Mid)**



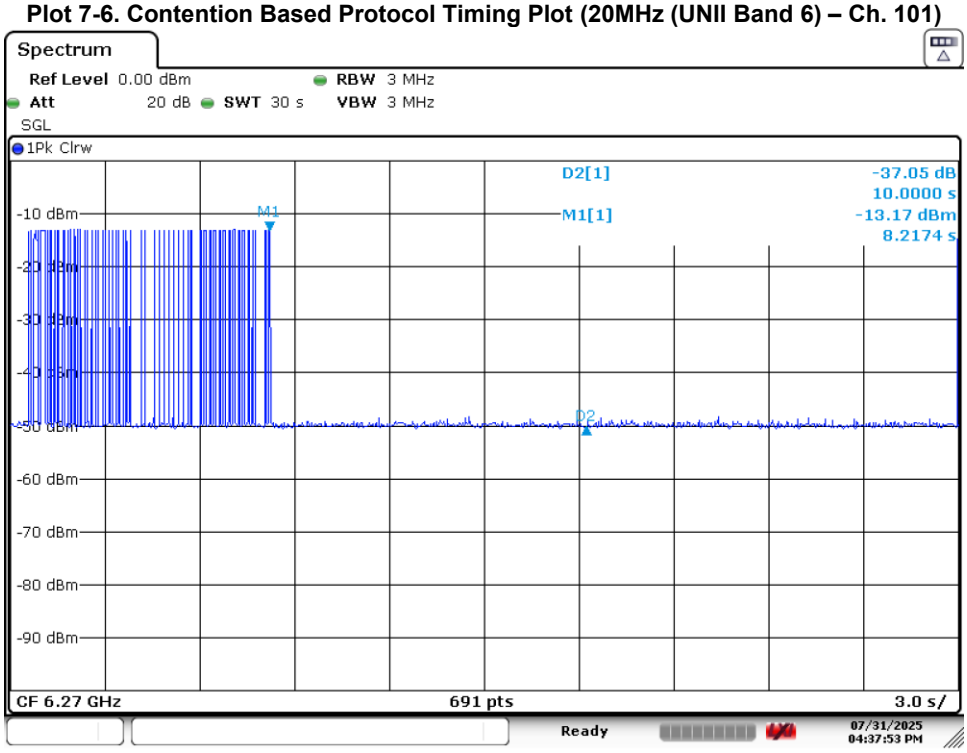

Date: 31.JUL.2025 16:49:37

**Plot 7-5. Contention Based Protocol Timing Plot (320MHz (UNII Band 5) – Ch. 63 High)**



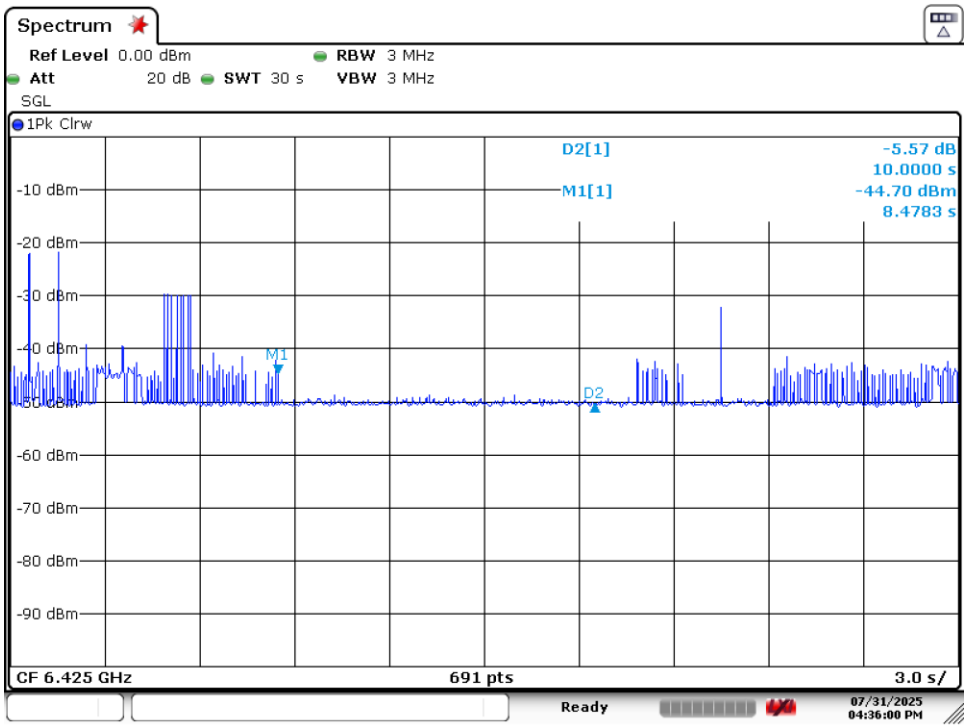

Date: 31.JUL.2025 17:22:58

**Plot 7-6. Contention Based Protocol Timing Plot (20MHz (UNII Band 6) – Ch. 101)**



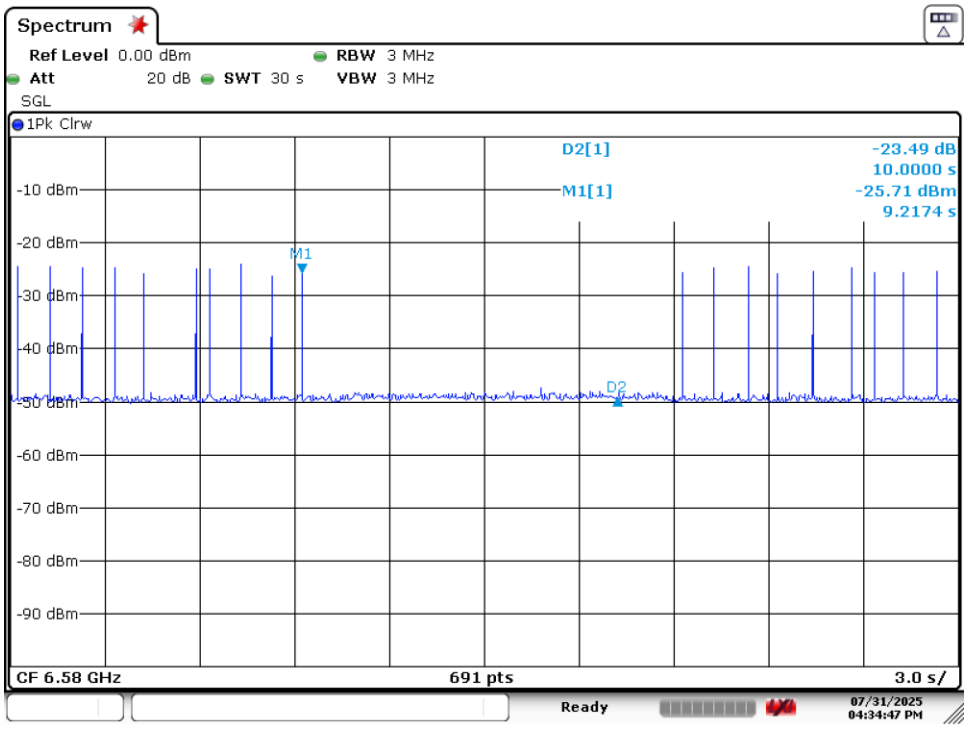

Date: 31.JUL.2025 16:37:53

**Plot 7-7. Contention Based Protocol Timing Plot (320MHz (UNII Band 6) – Ch. 95 Low)**



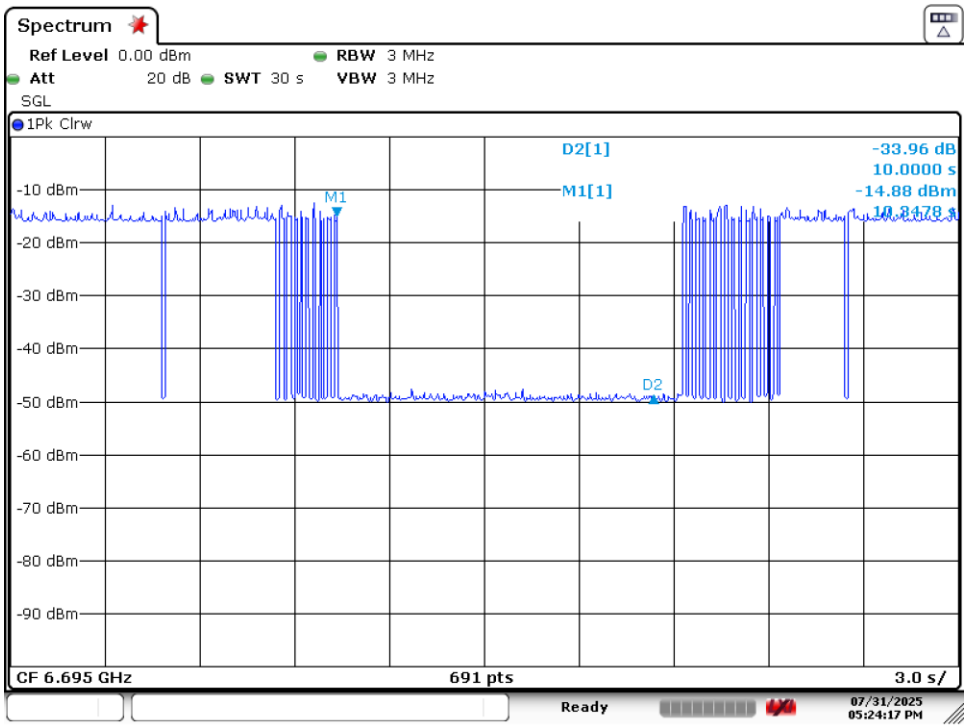

Date: 31.JUL.2025 16:36:00

**Plot 7-8. Contention Based Protocol Timing Plot (320MHz (UNII Band 6) – Ch. 95 Mid)**



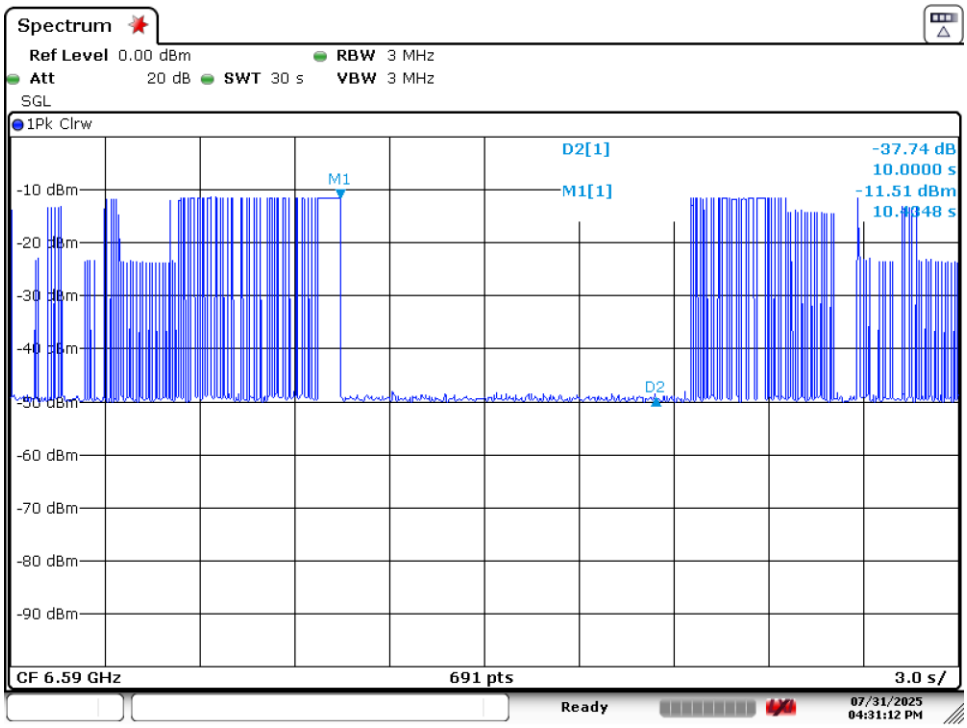

Date: 31.JUL.2025 16:34:47

**Plot 7-9. Contention Based Protocol Timing Plot (320MHz (UNII Band 6) – Ch. 95 High)**



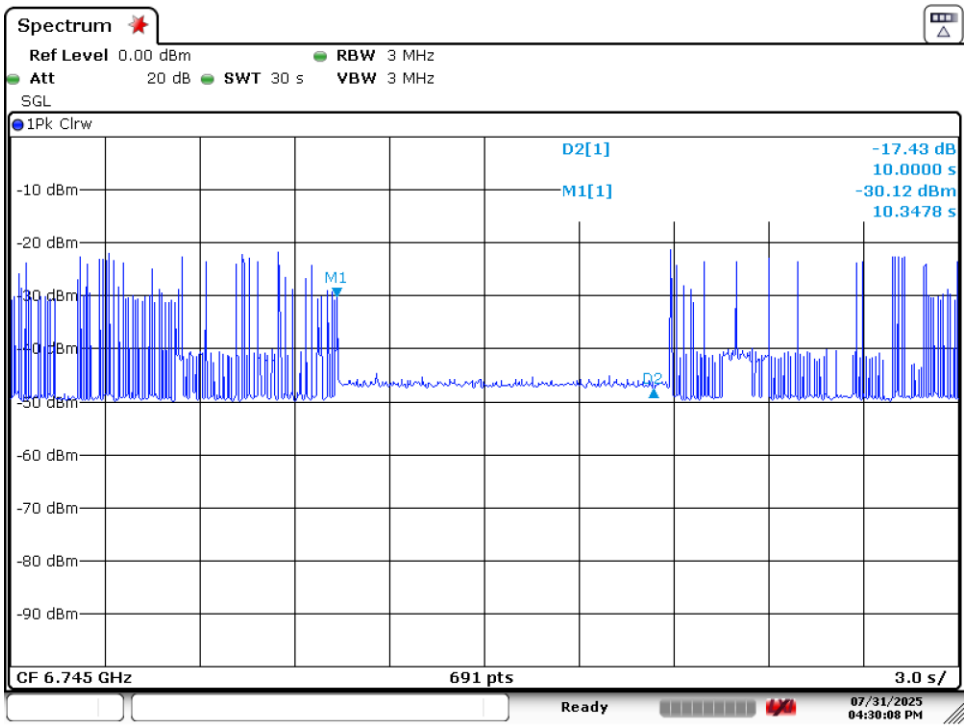

Date: 31.JUL.2025 17:24:17

**Plot 7-10. Contention Based Protocol Timing Plot (20MHz (UNII Band 7) – Ch. 149)**



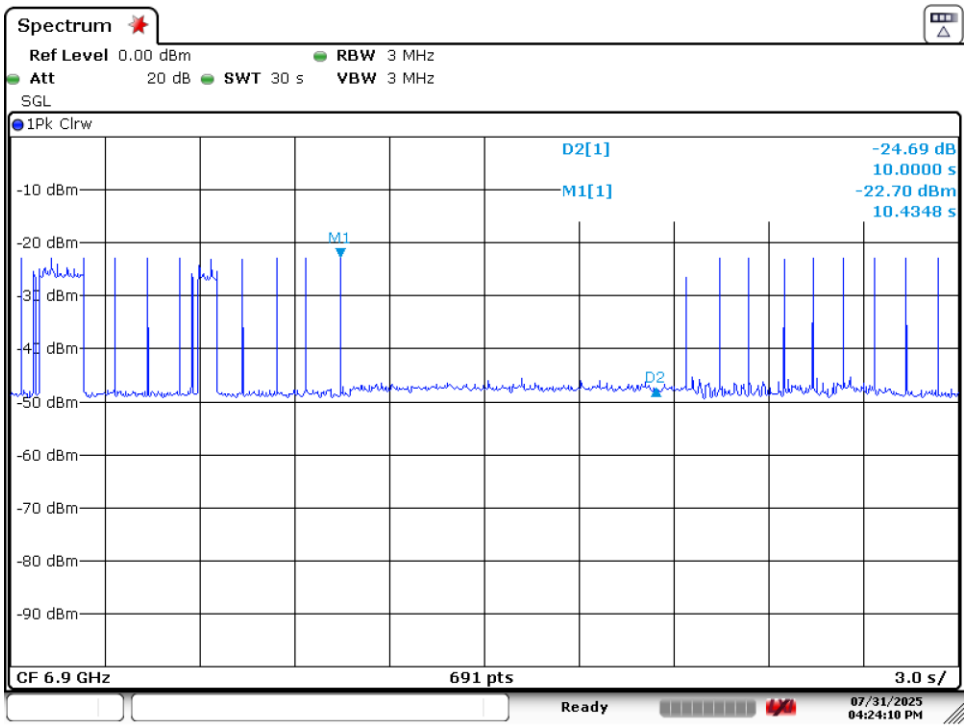

Date: 31.JUL.2025 16:31:12

**Plot 7-11. Contention Based Protocol Timing Plot (320MHz (UNII Band 7) – Ch. 159 Low)**



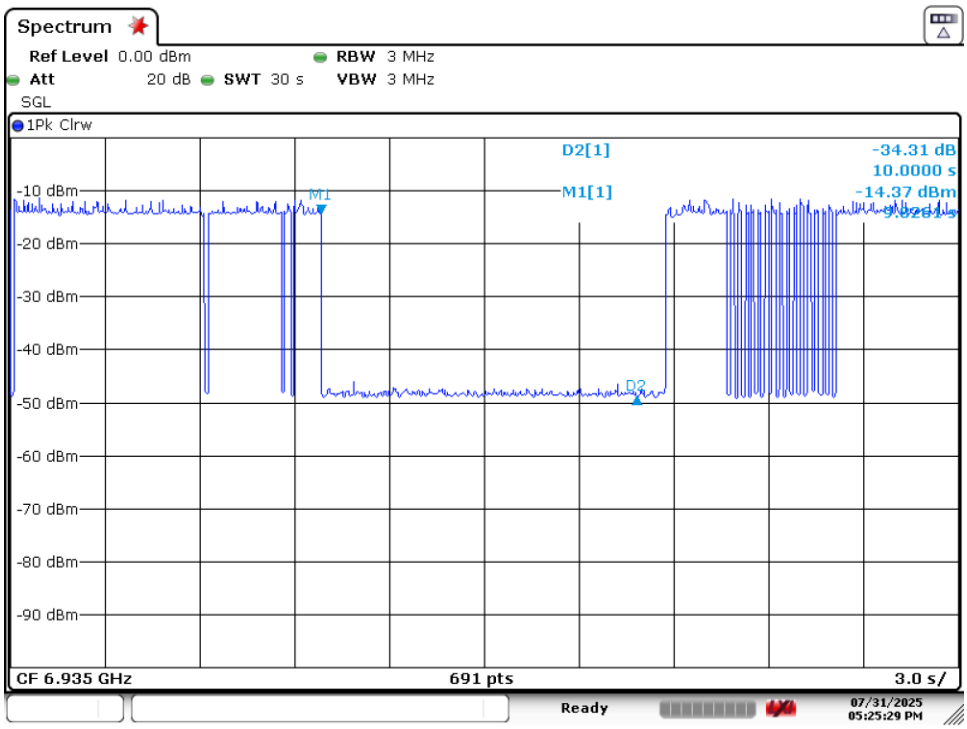

Date: 31.JUL.2025 16:30:08

**Plot 7-12. Contention Based Protocol Timing Plot (320MHz (UNII Band 7) – Ch. 159 Mid)**



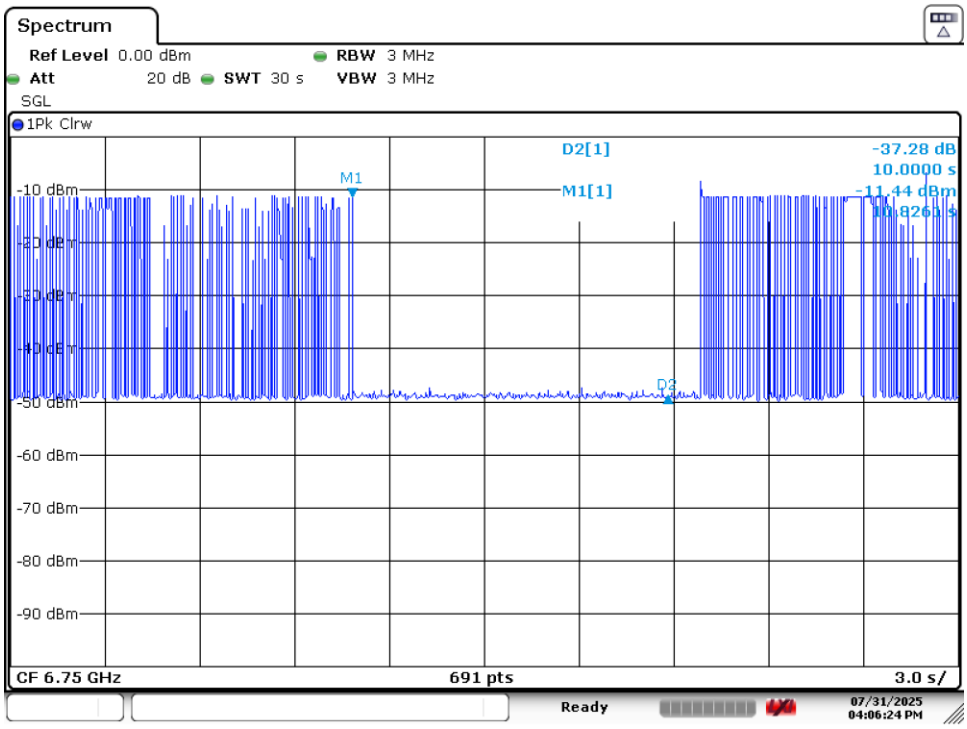

Date: 31.JUL.2025 16:24:11

**Plot 7-13. Contention Based Protocol Timing Plot (320MHz (UNII Band 7) – Ch. 159 High)**



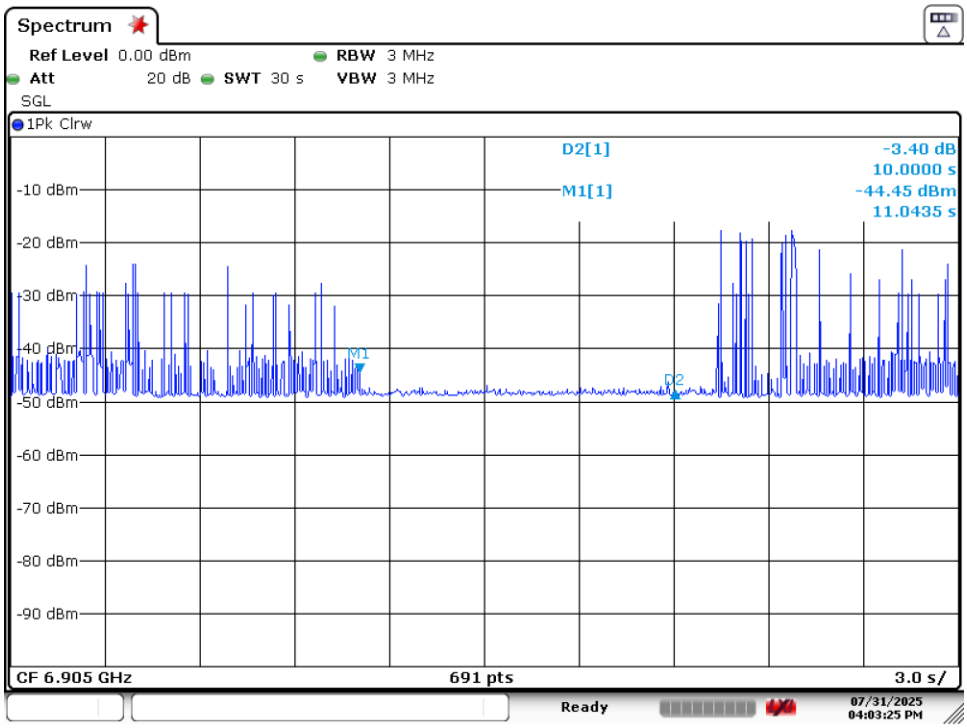

Date: 31.JUL.2025 17:25:30

**Plot 7-14. Contention Based Protocol Timing Plot (20MHz (UNII Band 8) – Ch. 197)**



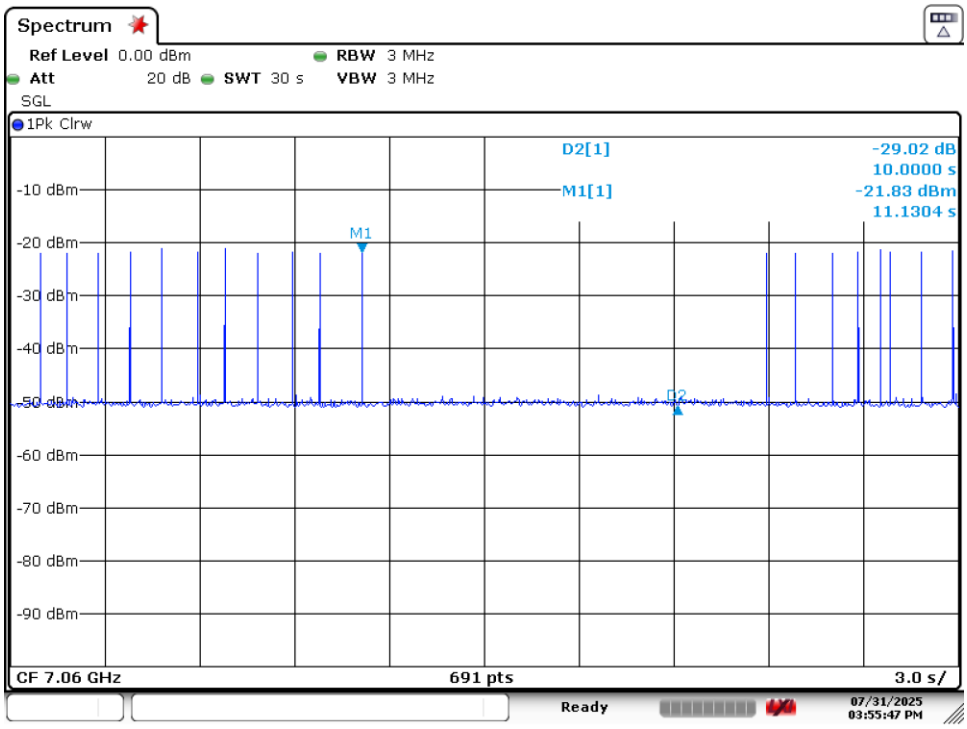

Date: 31.JUL.2025 16:06:24

**Plot 7-15. Contention Based Protocol Timing Plot (320MHz (UNII Band 8) – Ch. 191 Low)**




Date: 31.JUL.2025 16:03:25

**Plot 7-16. Contention Based Protocol Timing Plot (320MHz (UNII Band 8) – Ch. 191 Mid)**



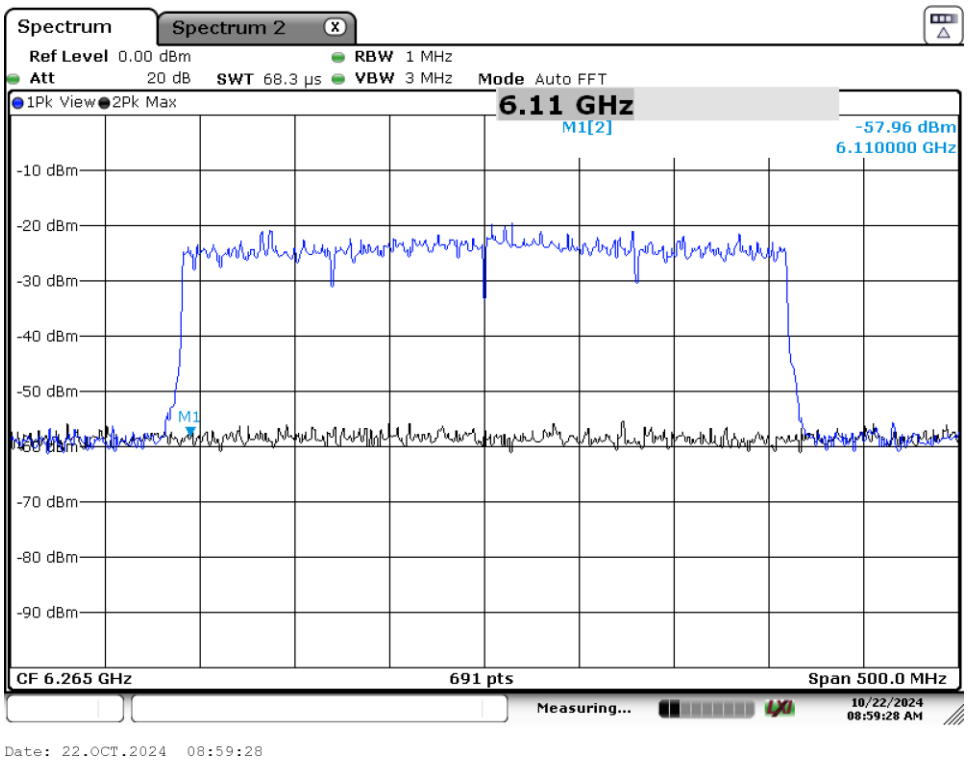

Date: 31.JUL.2025 15:55:47

**Plot 7-17. Contention Based Protocol Timing Plot (320MHz (UNII Band 8) – Ch. 191 High)**

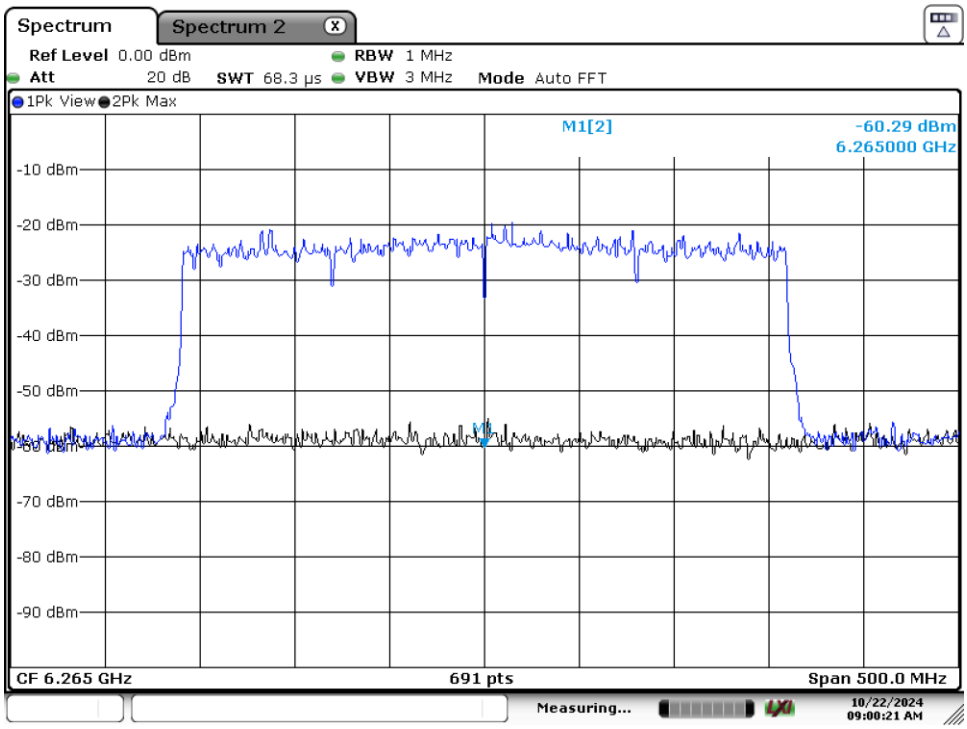
## 7.3.3 Channel Move Plots

This section demonstrates the effect of injecting the AWGN signal at various locations throughout the 802.11be 320MHz signal. The blue trace shows the full 320MHz signal prior to AWGN injection while the black trace shows the spectrum following AWGN injection. The following items were observed as demonstrated in the three plots shown below:

- When a 10 MHz AWGN signal centered at 6110 MHz (lower edge of channel) is injected, the channel completely stops transmitting.
- When a 10 MHz AWGN signal centered at 6265 MHz (middle of channel) is injected, the channel completely stops transmitting.
- When a 10 MHz AWGN signal centered at 6420 MHz (upper edge of channel) is injected, the channel completely stops transmitting.

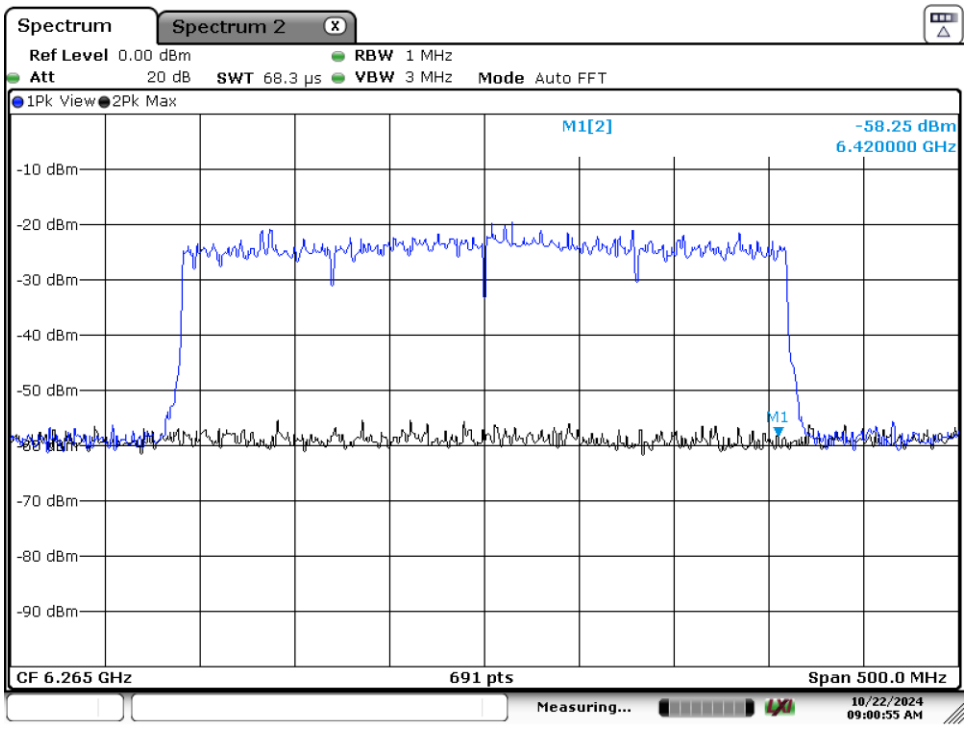



**Plot 7-18. CBP 320MHz Channel - Injection Lower Edge – [6110 MHz]**




Date: 22.OCT.2024 09:00:21

**Plot 7-19. CBP 320MHz Channel - Injection Center – [6265 MHz]**




Date: 22.OCT.2024 09:00:55

**Plot 7-20. CBP 320MHz Channel - Injection Upper Edge – [6420 MHz]**

## 7.4 Radiated Emission Measurements

**Test Overview and Limit**

All out of band radiated spurious emissions are measured with a spectrum analyzer connected to a receive antenna while the EUT is operating at its maximum duty cycle, at its maximum power control level, as defined in ANSI C63.10:2020, and at the appropriate frequencies. All channels, modes (e.g. 802.11a, 802.11ax (20/40/80/160MHz, 802.11be (20/40/80/160/320MHz)), and modulations/data rates were investigated among all UNII bands. Only the radiated emissions of the configuration that produced the worst-case emissions are reported in this section.

***For transmitters operating in the 5.925-7.125 GHz band: All emissions outside of the 5.925-7.125 GHz band shall not exceed an EIRP of -27dBm/MHz (68.2dBuV/m at a 3m distance). Emissions found in a restricted band are subject to the limits of 15.209 as shown in the table below.***

| Frequency | Field Strength [µV/m] | Measured Distance [Meters] |
|---|---|---|
| 0.009 – 0.490 MHz | 2400\F (kHz) | 300 |
| 0.490 – 1.705 MHz | 24000\F (kHz) | 30 |
| 1.705 – 30.00 MHz | 30 | 30 |
| 30.00 – 88.00 MHz | 100 | 3 |
| 88.00 – 216.0 MHz | 150 | 3 |
| 216.0 – 960.0 MHz | 200 | 3 |
| Above 960.0 MHz | 500 | 3 |

**Table 7-23. Radiated Limits**

**Test Procedures Used**

ANSI C63.10:2020 – Sections 12.7.7.2, 12.7.6, 12.7.5

**Test Settings – Above 1GHz**

**Average Field Strength Measurements (Method AD – Average Detection)**

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest.
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = power average (RMS)
5. Number of measurement points = 1001 (Number of points must be ≥ 2 x span/RBW)
6. Sweep time = auto
7. Trace (RMS) averaging was performed over at least 100 traces.

### Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest.
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize.

## Test Settings – Below 1GHz

### Quasi-Peak Field Strength Measurements

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest.
2. RBW = 120kHz (for emissions from 30MHz – 1GHz)
3. Detector = quasi-peak
4. Sweep time = auto couple
5. Trace mode = max hold
6. Trace was allowed to stabilize.

## Test Setup

The EUT and measurement equipment were set up as shown in the diagram below.

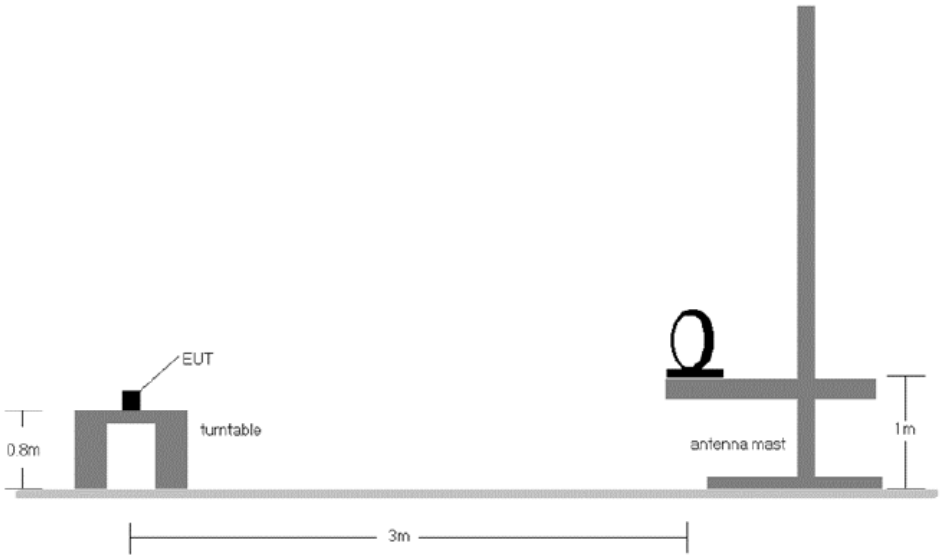



**Figure 7-3. Radiated Test Setup < 30MHz**

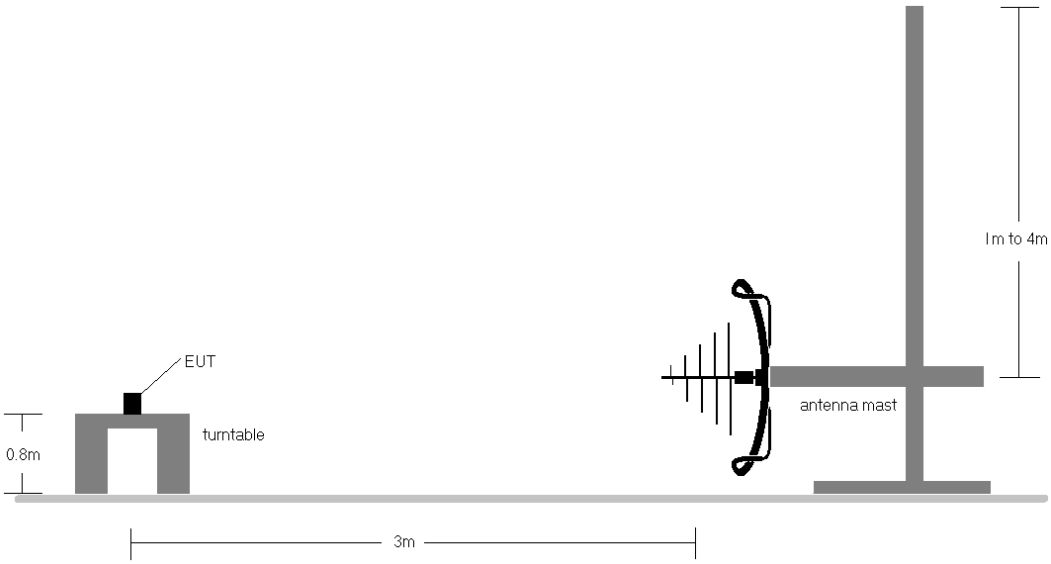



**Figure 7-4. Radiated Test Setup < 1GHz**

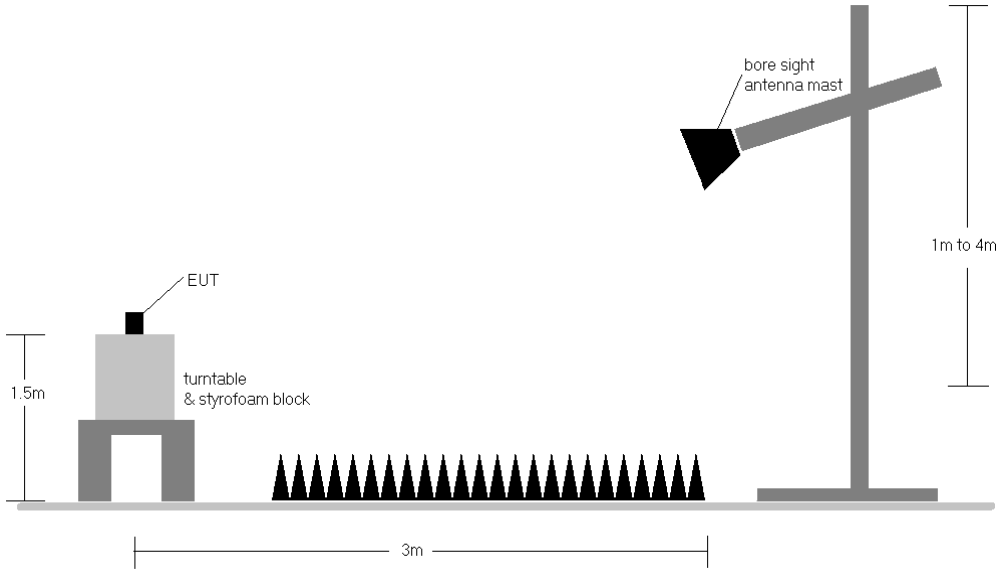



**Figure 7-5. Radiated Test Setup > 1GHz**

## Test Notes

1. All spurious emissions lying in restricted bands specified in §15.205 are below the limits specified in §15.209. All spurious emissions that do not lie in a restricted band are subject to an average limit of -27dBm/MHz. At 3 meters, the field strength limit in dBμV/m can be determined by adding a "conversion" factor of 95.2dB to the EIRP limit of -27dBm/MHz to obtain the limit for out of band spurious emissions of 68.2dBμV/m.
2. All spurious emissions that do not lie in a restricted band are subject to a peak limit not to exceed 20dB of the average limit [68.2dBμV/m]. If a peak measurement passes the average limit, it was determined no further investigation is necessary.
3. The antenna is manipulated through typical positions, polarity, and length during the tests. The EUT is manipulated through three orthogonal planes.
4. This unit was tested with an external battery pack (Model: EB-P3400)
5. The spectrum is measured from 9kHz to the 10th harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHz. Above 1 GHz, average and peak measurements were taken using linearly polarized horn antennas. The worst-case emissions are reported, however emissions whose levels were not within 20dB of the respective limits were not reported.
6. Emissions below 18GHz were measured at a 3-meter test distance while emissions above 18GHz were measured at a 1-meter test distance with the application of a distance correction factor.
7. The wide spectrum spurious emissions plots shown on the following pages are used only for the purpose of emission identification. Any emissions found to be within 20dB of the limit are fully investigated and the results are shown in this section. The "-" shown in the following RSE tables are used to denote a noise floor measurement.
8. In the case where a peak-detector measurement passed the given RMS limit it was determined sufficient to demonstrate compliance.
9. The results recorded using the broadband antenna are known to correlate with the results obtained by using a tuned dipole with an acceptable degree of accuracy. The VSWR for the measurement antenna was found to be less than 2:1.

## Sample Calculations

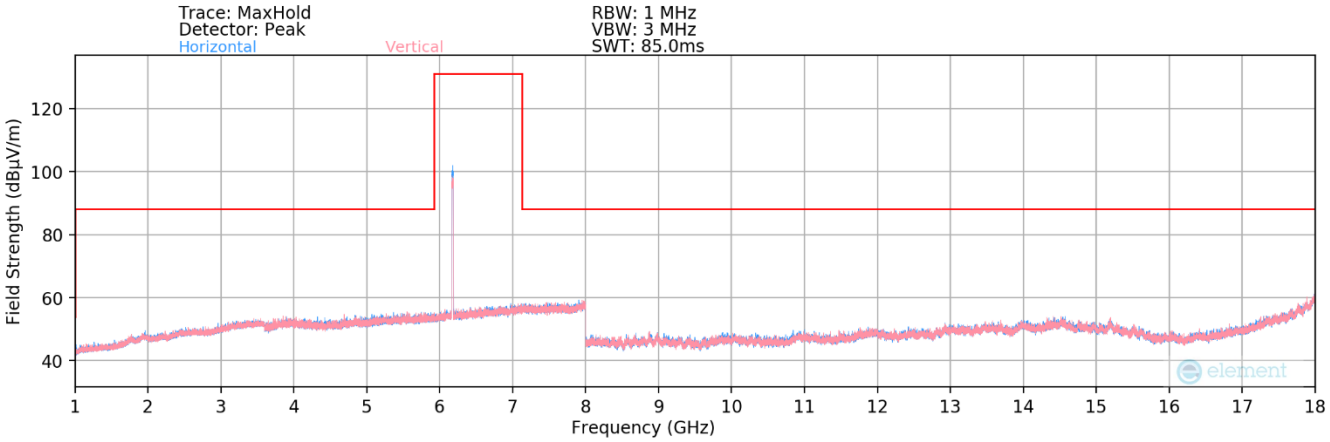
### Determining Spurious Emissions Levels

- Field Strength Level $_{[dB\mu V/m]}$ = Analyzer Level $_{[dBm]}$ + 107 + AFCL $_{[dB/m]}$
- AFCL $_{[dB/m]}$ = Antenna Factor $_{[dB/m]}$ + Cable Loss $_{[dB]}$
- Margin $_{[dB]}$ = Field Strength Level $_{[dB\mu V/m]}$ – Limit $_{[dB\mu V/m]}$

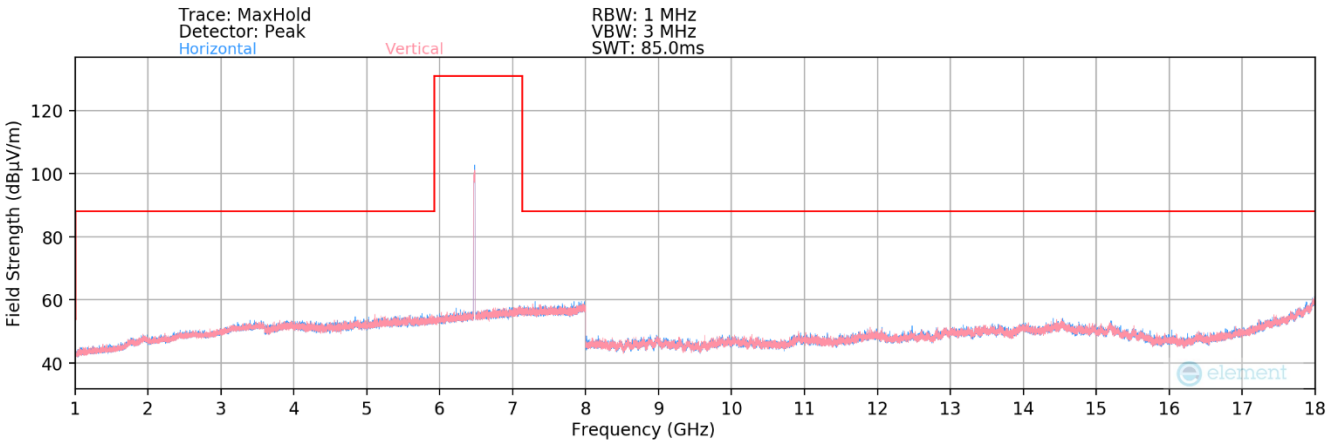
### Radiated Band Edge Measurement Offset

The amplitude offset shown in the radiated restricted band edge plots was calculated using the formula:
Offset (dB) = (Antenna Factor + Cable Loss + Attenuator) – Preamplifier Gain

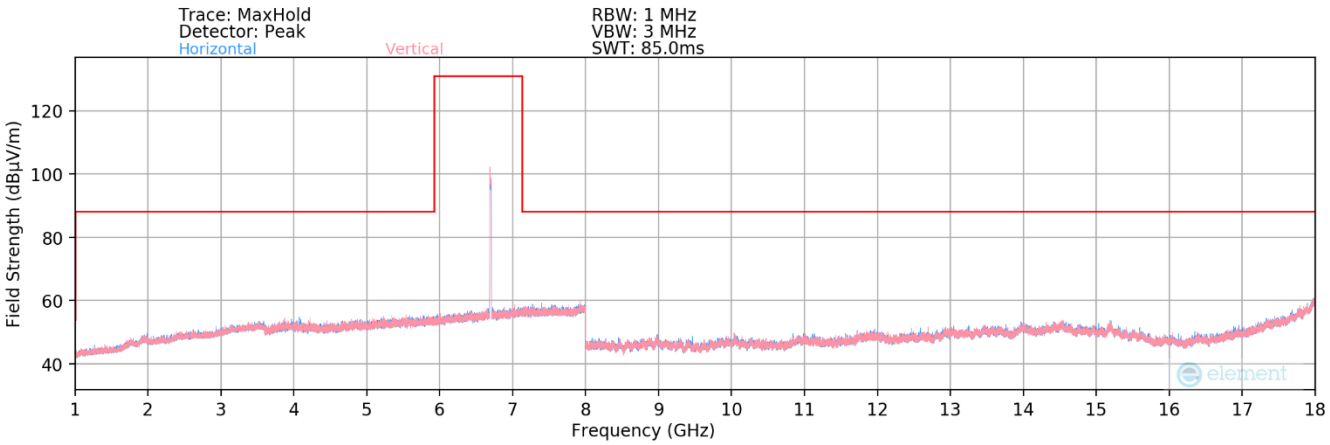
## 7.4.1 MIMO Radiated Spurious Emission Measurements



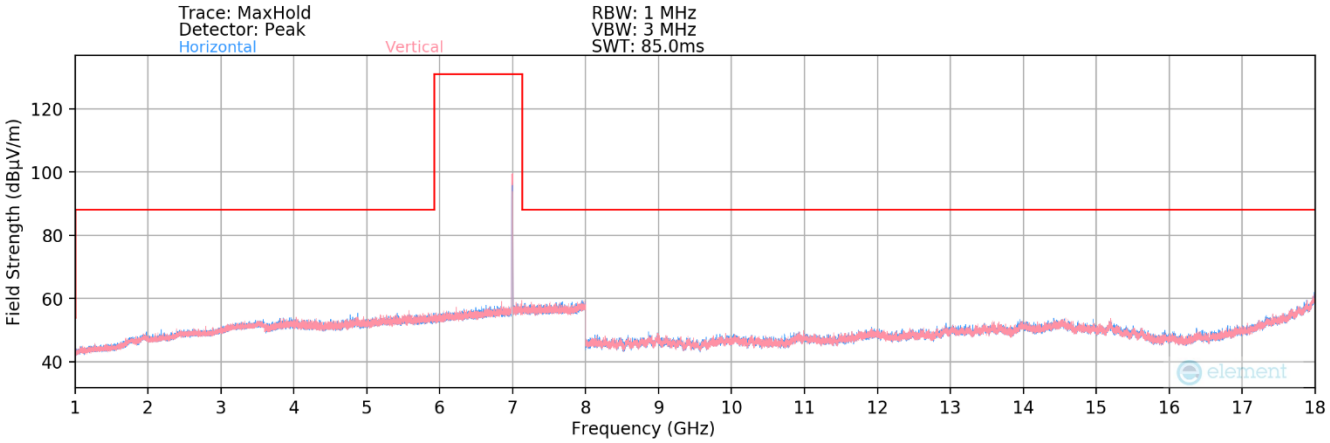

**Plot 7-21. Radiated Spurious Plot 1GHz – 18GHz MIMO (802.11a – UNII Band 5 Ch. 45)**



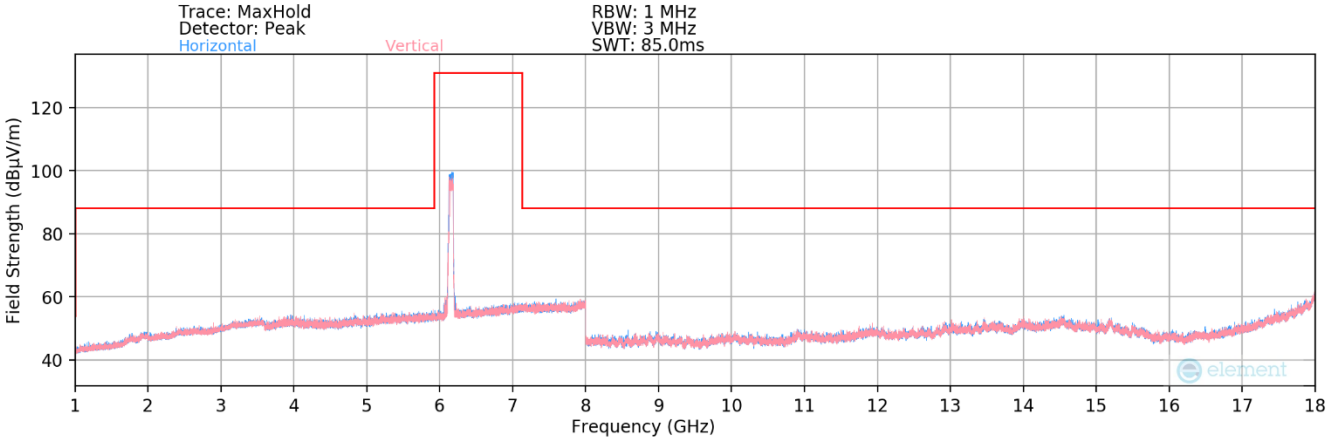

**Plot 7-22. Radiated Spurious Plot 1GHz – 18GHz MIMO (802.11a – UNII Band 6 Ch. 105)**




**Plot 7-23. Radiated Spurious Plot 1GHz – 18GHz MIMO (802.11a – UNII Band 7 Ch. 149)**




**Plot 7-24. Radiated Spurious Plot 1GHz – 18GHz MIMO (802.11a – UNII Band 8 Ch. 209)**




**Plot 7-25. Radiated Spurious Plot 1GHz – 18GHz MIMO (802.11be (20MHz Puncture) – UNII Band 5 Ch. 39)**

## MIMO Radiated Spurious Emission Measurements – UNII Band 5

| Antenna | UNII Band | Channel | Test Channel Freq. [MHz] | Restricted | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MIMO | 5 | 45 | 6175 | * | 12350.00 | Average | H | 141 | 178 | -78.66 | 9.79 | 38.13 | 53.98 | -15.85 |
| | | | | * | 12350.00 | Peak | H | 141 | 178 | -66.84 | 9.79 | 49.95 | 73.98 | -24.03 |

**Table 7-24. Radiated Measurements MIMO**

## MIMO Radiated Spurious Emission Measurements – UNII Band 6

| Antenna | UNII Band | Channel | Test Channel Freq. [MHz] | Restricted | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MIMO | 6 | 105 | 6475 | | 12950.00 | Peak | H | - | - | -66.18 | 10.78 | 51.60 | 68.20 | -16.60 |

**Table 7-25. Radiated Measurements MIMO**

## MIMO Radiated Spurious Emission Measurements – UNII Band 7

| Antenna | UNII Band | Channel | Test Channel Freq. [MHz] | Restricted | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MIMO | 7 | 149 | 6695 | * | 13390.00 | Average | H | - | - | -78.82 | 11.06 | 39.24 | 53.98 | -14.74 |
| | | | | * | 13390.00 | Peak | H | - | - | -67.11 | 11.06 | 50.95 | 73.98 | -23.03 |

**Table 7-26. Radiated Measurements MIMO**

## MIMO Radiated Spurious Emission Measurements – UNII Band 8

| Antenna | UNII Band | Channel | Test Channel Freq. [MHz] | Restricted | Frequency [MHz] | Detector | Ant. Pol. [H/V] | Antenna Height [cm] | Turntable Azimuth [degree] | Analyzer Level [dBm] | AFCL [dB/m] | Field Strength [dBµV/m] | Limit [dBµV/m] | Margin [dB] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MIMO | 8 | 209 | 6995 | | 13990.00 | Peak | H | 344 | 187 | -65.42 | 11.81 | 53.39 | 68.20 | -14.81 |

**Table 7-27. Radiated Measurements MIMO**

# 8.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **Samsung Portable Device FCC ID: A3LSMI610** is in compliance with FCC Part Subpart E (15.407) of the FCC rules for operation as a client device.