

# FCC and ISED Test Report

Apple Inc  
Model: A2681

In accordance with FCC 47 CFR Part 15C, ISED  
RSS-247 and ISED RSS-GEN  
(2.4 GHz WLAN)

Prepared for: Apple Inc  
One Apple Park Way, Cupertino  
California, 95014, USA

FCC ID: BCGA2681

IC: 579C-A2681

COMMERCIAL-IN-CONFIDENCE

Document 75954421-11 Issue 01



Add value.  
Inspire trust.

Simon Bennett  
Digitally signed  
by Simon Bennett  
Date: 2022.05.03  
15:02:03 +01'00'

## SIGNATURE

| NAME          | JOB TITLE                   | RESPONSIBLE FOR      | ISSUE DATE  |
|---------------|-----------------------------|----------------------|-------------|
| Simon Bennett | Director Of Test Operations | Authorised Signatory | 03 May 2022 |

Signatures in this approval box have checked this document in line with the requirements of TÜV SÜD document control rules.

## ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC 47 CFR Part 15C, ISED RSS-247 and ISED RSS-GEN. The sample tested was found to comply with the requirements defined in the applied rules.

| RESPONSIBLE FOR   | NAME            | DATE        | SIGNATURE |
|-------------------|-----------------|-------------|-----------|
| Report Generation | Hollie Marshall | 03 May 2022 |           |

FCC Accreditation

90987 Octagon House, Fareham Test Laboratory

ISED Accreditation

12669A Octagon House, Fareham Test Laboratory

## EXECUTIVE SUMMARY

A sample of this product was tested and found to be compliant with FCC 47 CFR Part 15C: 2020, ISED RSS-247: Issue 2 (02-2017) and ISED RSS-GEN: Issue 5 (04-2018) + A2 (02-2021) for the tests detailed in section 1.3.



## DISCLAIMER AND COPYRIGHT

This non-binding report has been prepared by TÜV SÜD with all reasonable skill and care. The document is confidential to the potential Client and TÜV SÜD. No part of this document may be reproduced without the prior written approval of TÜV SÜD. © 2022 TÜV SÜD. This report relates only to the actual item/items tested.

## ACCREDITATION

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation. Results of tests not covered by our UKAS Accreditation Schedule are marked NUA (Not UKAS Accredited).

TÜV SÜD  
is a trading name of TÜV SÜD Ltd  
Registered in Scotland at East Kilbride,  
Glasgow G75 0QF, United Kingdom  
Registered number: SC215164

TÜV SÜD Ltd is a  
TÜV SÜD Group Company

Phone: +44 (0) 1489 558100  
Fax: +44 (0) 1489 558101  
[www.tuvsud.com/en](http://www.tuvsud.com/en)

TÜV SÜD  
Octagon House  
Concorde Way  
Fareham  
Hampshire PO15 5RL  
United Kingdom

TÜV SÜD

TÜV®



Contents

**1      Report Summary .....2**

1.1    Report Modification Record.....2

1.2    Introduction.....2

1.3    Brief Summary of Results .....3

1.4    Product Information .....4

1.5    Deviations from the Standard.....5

1.6    EUT Modification Record .....5

1.7    Test Location .....6

**2      Test Details .....7**

2.1    Restricted Band Edges.....7

2.2    Emission Bandwidth .....27

2.3    Maximum Conducted Output Power .....45

2.4    Spurious Radiated Emissions .....59

2.5    Authorised Band Edges .....96

2.6    Power Spectral Density .....103

**3      Measurement Uncertainty .....111**



## 1 Report Summary

### 1.1 Report Modification Record

Alterations and additions to this report will be issued to the holders of each copy in the form of a complete document.

| Issue | Description of Change | Date of Issue |
|-------|-----------------------|---------------|
| 1     | First Issue           | 03 May 2022   |

**Table 1**

### 1.2 Introduction

|                               |                                                                                                                                                        |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Applicant                     | Apple Inc                                                                                                                                              |
| Manufacturer                  | Apple Inc                                                                                                                                              |
| Model Number(s)               | A2681                                                                                                                                                  |
| Serial Number(s)              | TN4J7KWW5H, DQH576VJ7N and MW4P32N6T0                                                                                                                  |
| Hardware Version(s)           | REV 1.0                                                                                                                                                |
| Software Version(s)           | 21E71860f and 21E61410w                                                                                                                                |
| Number of Samples Tested      | 3                                                                                                                                                      |
| Test Specification/Issue/Date | FCC 47 CFR Part 15C: 2020<br>ISED RSS-247: Issue 2 (02-2017)<br>ISED RSS-GEN: Issue 5 (04-2018) + A2 (02-2021)                                         |
| Order Number                  | 0540246998                                                                                                                                             |
| Date of Receipt of EUT        | 08-February-2022                                                                                                                                       |
| Start of Test                 | 08-February-2022                                                                                                                                       |
| Finish of Test                | 08-April-2022                                                                                                                                          |
| Name of Engineer(s)           | Taha Shafique, Jaiyanth Balendrarajah, Ahmad Javid,<br>Danial Shafique, Faisal Malyar, Thomas Biddlecombe, Ian<br>Hart, Colin Brain and Mohammad Malik |
| Related Document(s)           | ANSI C63.10 (2013)<br>KDB 662911 D01 v02r01                                                                                                            |



1.3 Brief Summary of Results

A brief summary of the tests carried out in accordance with FCC 47 CFR Part 15C, ISSED RSS-247 and ISSED RSS-GEN is shown below.

| Section                              | Specification Clause  |             |              | Test Description               | Result | Comments/Base Standard                                                                              |
|--------------------------------------|-----------------------|-------------|--------------|--------------------------------|--------|-----------------------------------------------------------------------------------------------------|
|                                      | Part 15C              | RSS-247     | RSS-GEN      |                                |        |                                                                                                     |
| Configuration and Mode: 2.4 GHz WLAN |                       |             |              |                                |        |                                                                                                     |
| -                                    | 15.203                | -           | -            | Antenna Requirement            | N/T    | The devices complies with the provisions of this section, as it uses a permanently attached antenna |
| 2.1                                  | 15.205                | 3.1         | 8.10         | Restricted Band Edges          | Pass   |                                                                                                     |
| 2.2                                  | 15.247 (a)(2)         | 5.2         | 6.7          | Emission Bandwidth             | Pass   |                                                                                                     |
| 2.3                                  | 15.247 (b)            | 5.4         | 6.12         | Maximum Conducted Output Power | Pass   |                                                                                                     |
| 2.4                                  | 15.247 (d) and 15.209 | 3.3 and 5.5 | 6.13 and 8.9 | Spurious Radiated Emissions    | Pass   |                                                                                                     |
| 2.5                                  | 15.247 (d)            | 5.5         | -            | Authorised Band Edges          | Pass   |                                                                                                     |
| 2.6                                  | 15.247 (e)            | 5.2         | 6.12         | Power Spectral Density         | Pass   |                                                                                                     |

Table 2



## **1.4 Product Information**

### **1.4.1 Technical Description**

The equipment under test was an Apple laptop computer with Bluetooth® and IEEE 802.11 a/b/g/n/ac/ax Wi-Fi in the 2.4 GHz and 5 GHz bands.

### **1.4.2 Test Modes**

The EUT's 2.4 GHz 802.11 radio supports Single Input/Single Output (SISO) and 2x2 MIMO (Multiple Input/Multiple Output). It supports 802.11b and g for SISO and 802.11n and ax at 20 MHz channel bandwidths for SISO and MIMO. 802.11ax supports RU 26/52/106/242.

The EUT uses different output powers per core dependent on how many cores are used. It uses the same conducted power across all cores in any given mode, but due to the different antenna gains the radiated power per core differs.

After preliminary investigations were performed, the EUT was therefore tested in the following worst-case modes:

SISO Modes (Core 0):

- 802.11b 1 Mbps
- 802.11g 12 Mbps
- 802.11n HT20 MCS2
- 802.11ax HE20 SU MCS2x1, RU26-X\* MCS2x1, RU52-X\* MCS2x1 and RU106-X\* MCS2x1.

2x2 MIMO Modes (Core 0 + Core 1):

- 802.11n HT20 MCS2 – CDD
- 802.11ax HE20 CDD SU MCS2x1, RU26-X\* MCS2x1, RU52-X\* MCS2x1 and RU106-X\* MCS2x1.

\*The position of the resource unit was placed nearest the edge of the operating band as this was deemed worst case.

### **1.4.3 Test Set-up**

For conducted tests the EUT antennas were disconnected and replaced with U.FL to SMA test cables to enable conducted testing on each core. The loss of these test cables were known and compensated for in any conducted measurements.

For all tests, the EUT was put into a continuous transmit test mode with the chipset manufacturer's test commands via a script running on a support laptop. The EUT then transmitted the required type of packeted 802.11 data frames of fixed length, containing the standard headers and with pseudo-random data content, ensuring the measured signals were representative and contained all the symbols at the highest power control level.

All testing was performed with the EUT powered via a 120 V AC, 60 Hz source.



#### 1.4.4 Antenna Gain Table

| Antenna Port | Frequency Range (MHz) | Peak Gain (dBi) | Conducted Cable Loss (dB) |
|--------------|-----------------------|-----------------|---------------------------|
| Core 0       | 2400 to 2480          | 3.77            | 1.0                       |
| Core 1       | 2400 to 2480          | 3.45            | 1.0                       |

**Table 3**

#### 1.5 Deviations from the Standard

No deviations from the applicable test standard were made during testing.

#### 1.6 EUT Modification Record

The table below details modifications made to the EUT during the test programme.

The modifications incorporated during each test are recorded on the appropriate test pages.

| Modification State                      | Description of Modification still fitted to EUT | Modification Fitted By | Date Modification Fitted |
|-----------------------------------------|-------------------------------------------------|------------------------|--------------------------|
| Model: A2681, Serial Number: TN4J7KWW5H |                                                 |                        |                          |
| 0                                       | As supplied by the customer                     | Not Applicable         | Not Applicable           |
| Model: A2681, Serial Number: MW4P32N6T0 |                                                 |                        |                          |
| 0                                       | As supplied by the customer                     | Not Applicable         | Not Applicable           |
| Model: A2681, Serial Number: DQH576VJ7N |                                                 |                        |                          |
| 0                                       | As supplied by the customer                     | Not Applicable         | Not Applicable           |

**Table 4**



## 1.7 Test Location

TÜV SÜD conducted the following tests at our Fareham Test Laboratory.

| Test Name                            | Name of Engineer(s)                                                                   | Accreditation |
|--------------------------------------|---------------------------------------------------------------------------------------|---------------|
| Configuration and Mode: 2.4 GHz WLAN |                                                                                       |               |
| Restricted Band Edges                | Taha Shafique, Jaiyanth Balendrarajah, Ahmad Javid, Danial Shafique and Faisal Malyar | UKAS          |
| Emission Bandwidth                   | Thomas Biddlecombe                                                                    | UKAS          |
| Maximum Conducted Output Power       | Thomas Biddlecombe                                                                    | UKAS          |
| Spurious Radiated Emissions          | Ian Hart, Colin Brain, Mohammad Malik and Ahmad Javid                                 | UKAS          |
| Authorised Band Edges                | Taha Shafique, Jaiyanth Balendrarajah, Ahmad Javid, Danial Shafique and Faisal Malyar | UKAS          |
| Power Spectral Density               | Thomas Biddlecombe                                                                    | UKAS          |

**Table 5**

Office Address:

TÜV SÜD  
Octagon House  
Concorde Way  
Fareham  
Hampshire  
PO15 5RL  
United Kingdom



## 2 Test Details

### 2.1 Restricted Band Edges

#### 2.1.1 Specification Reference

FCC 47 CFR Part 15C, Clause 15.205  
ISED RSS-247, Clause 3.1  
ISED RSS-GEN, Clause 8.10

#### 2.1.2 Equipment Under Test and Modification State

A2681, S/N: DQH576VJ7N - Modification State 0

#### 2.1.3 Date of Test

08-February-2022 to 08-April-2022

#### 2.1.4 Test Method

This test was performed in accordance with ANSI C63.10, clause 6.10.5 and 11.12.1.

Plots for average measurements were taken in accordance with ANSI C63.10, clause 11.12.2.5.2. Where the measured duty cycle was < 98 % the duty cycle was measured and a correction factor of  $10 \cdot \log(1/x)$  was applied to the tabulated data in the tables below.

The following conversion can be applied to convert from dB $\mu$ V/m to  $\mu$ V/m:  
 $10^{(\text{Field Strength in dB}\mu\text{V/m}/20)}$ .

#### 2.1.5 Environmental Conditions

|                     |                |
|---------------------|----------------|
| Ambient Temperature | 18.9 - 23.2 °C |
| Relative Humidity   | 26.9 - 46.5 %  |



## 2.1.6 Test Results

### 2.4 GHz WLAN

| Mode                  | Data Rate /MCS | Resource Size | Resource Index | TX Frequency (MHz) | Band Edge Frequency (MHz) | Peak Level (dBμV/m) | Average Level (dBμV/m) |
|-----------------------|----------------|---------------|----------------|--------------------|---------------------------|---------------------|------------------------|
| 802.11b, Core 0       | 1 Mbps         | -             | -              | 2412               | 2390.0                    | 56.76               | 46.80                  |
| 802.11b, Core 0       | 1 Mbps         | -             | -              | 2462               | 2483.5                    | 58.09               | 49.57                  |
| 802.11b, Core 0       | 1 Mbps         | -             | -              | 2467               | 2483.5                    | 59.78               | 50.20                  |
| 802.11b, Core 0       | 1 Mbps         | -             | -              | 2472               | 2483.5                    | 58.20               | 50.21                  |
| 802.11g, Core 0       | 54 Mbps        | -             | -              | 2412               | 2390.0                    | 66.40               | 50.69                  |
| 802.11g, Core 0       | 12 Mbps        | -             | -              | 2462               | 2483.5                    | 62.44               | 50.80                  |
| 802.11g, Core 0       | 54 Mbps        | -             | -              | 2467               | 2483.5                    | 64.65               | 50.75                  |
| 802.11g, Core 0       | 12 Mbps        | -             | -              | 2472               | 2483.5                    | 62.86               | 50.86                  |
| 802.11n HT20, Core 0  | MCS 4          | -             | -              | 2412               | 2390.0                    | 64.68               | 50.93                  |
| 802.11n HT20, Core 0  | MCS 2          | -             | -              | 2462               | 2483.5                    | 62.44               | 50.75                  |
| 802.11n HT20, Core 0  | MCS 4          | -             | -              | 2467               | 2483.5                    | 63.24               | 50.79                  |
| 802.11n HT20, Core 0  | MCS 4          | -             | -              | 2472               | 2483.5                    | 65.54               | 50.94                  |
| 802.11ax HE20, Core 0 | MCS 9          | SU            | -              | 2412               | 2390.0                    | 66.09               | 50.77                  |
| 802.11ax HE20, Core 0 | MCS 2          | SU            | -              | 2462               | 2483.5                    | 62.80               | 50.95                  |
| 802.11ax HE20, Core 0 | MCS 4          | SU            | -              | 2467               | 2483.5                    | 64.48               | 51.00                  |
| 802.11ax HE20, Core 0 | MCS 2          | SU            | -              | 2472               | 2483.5                    | 65.95               | 50.92                  |
| 802.11ax HE20, Core 0 | MCS 9          | 26            | 0              | 2412               | 2390.0                    | 57.51               | 43.25                  |
| 802.11ax HE20, Core 0 | MCS 9          | 26            | 8              | 2462               | 2483.5                    | 58.58               | 43.97                  |
| 802.11ax HE20, Core 0 | MCS 9          | 26            | 8              | 2467               | 2483.5                    | 61.16               | 45.43                  |
| 802.11ax HE20, Core 0 | MCS 9          | 26            | 8              | 2472               | 2483.5                    | 68.42               | 48.55                  |

**Table 6 - SISO Restricted Band Edge Results**

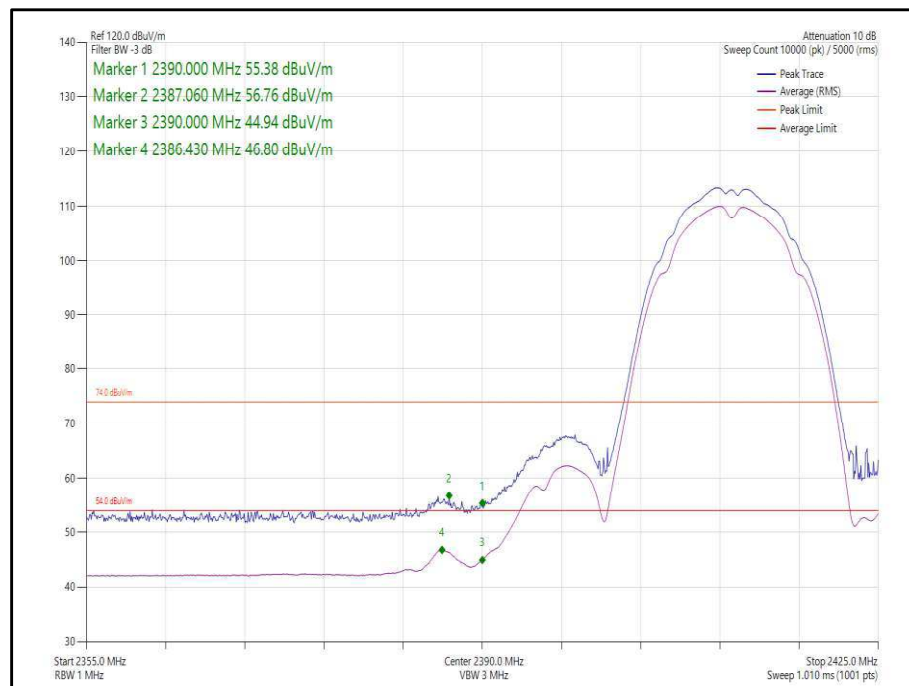


Figure 1 - 802.11b, Core 0 - 2412 MHz, Band Edge Frequency 2390.0 MHz

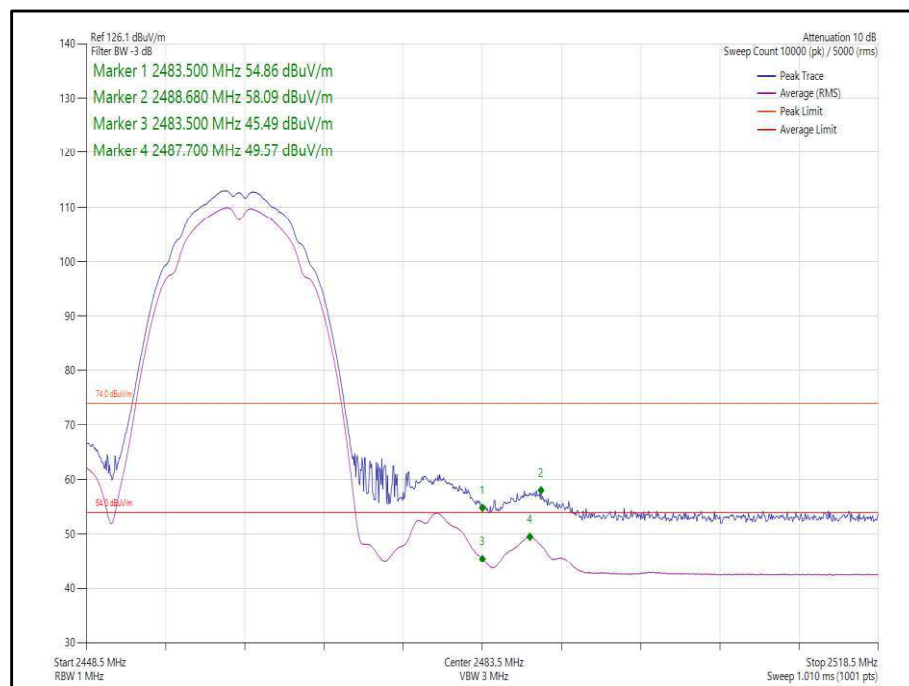


Figure 2 - 802.11b, Core 0 - 2462 MHz, Band Edge Frequency 2483.5 MHz

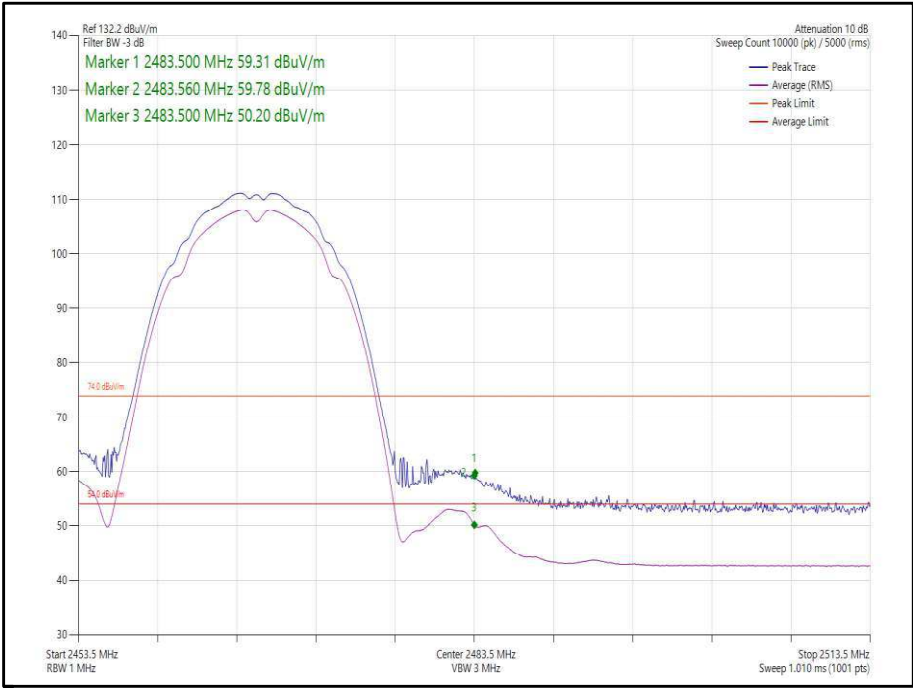


Figure 3 - 802.11b, Core 0 - 2467 MHz, Band Edge Frequency 2483.5 MHz

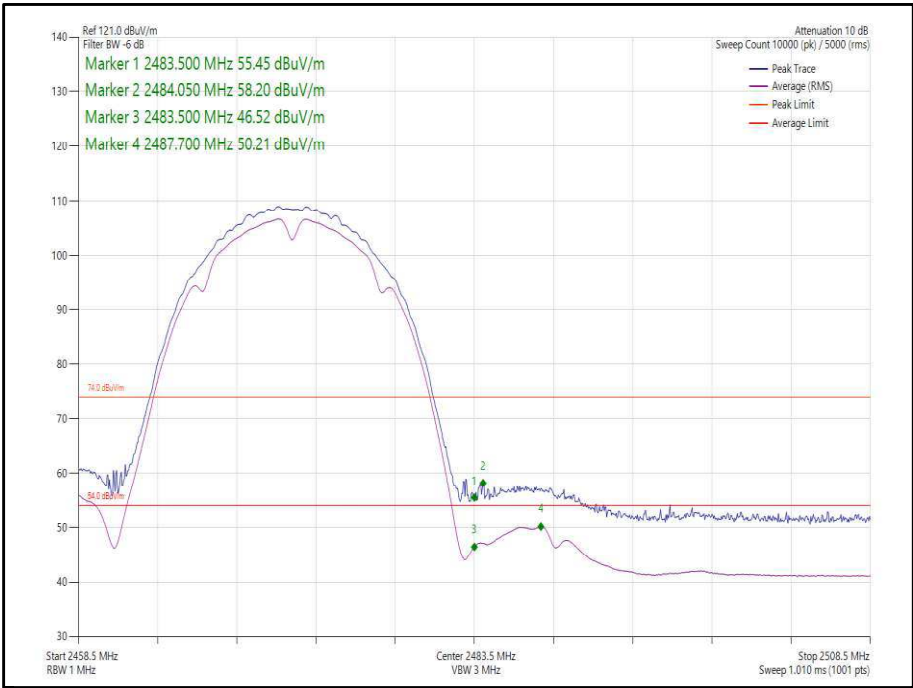


Figure 4 - 802.11b, Core 0 - 2472 MHz, Band Edge Frequency 2483.5 MHz

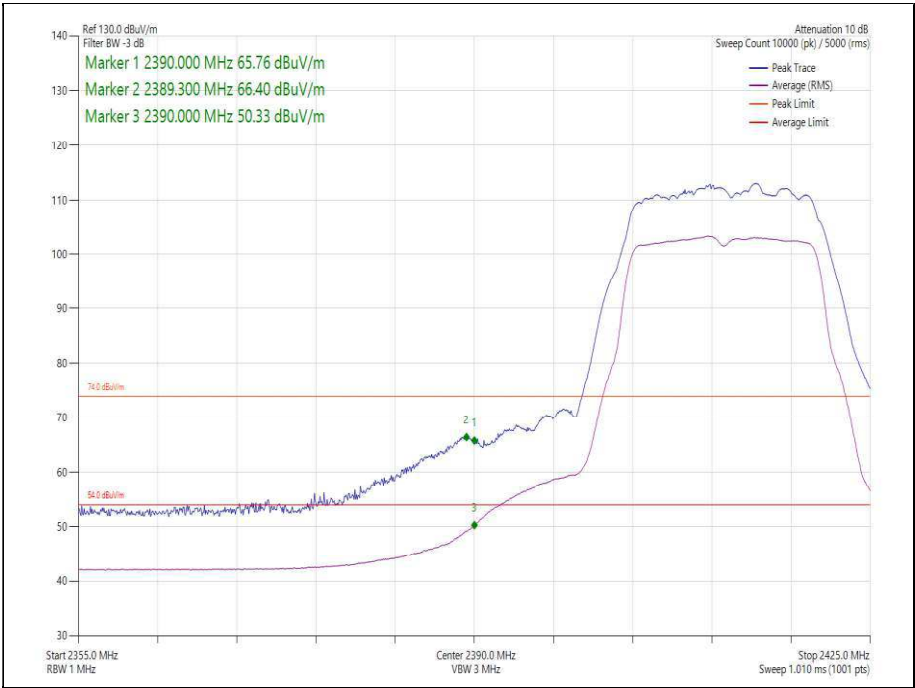


Figure 5 - 802.11g, Core 0 - 2412 MHz, Band Edge Frequency 2390.0 MHz

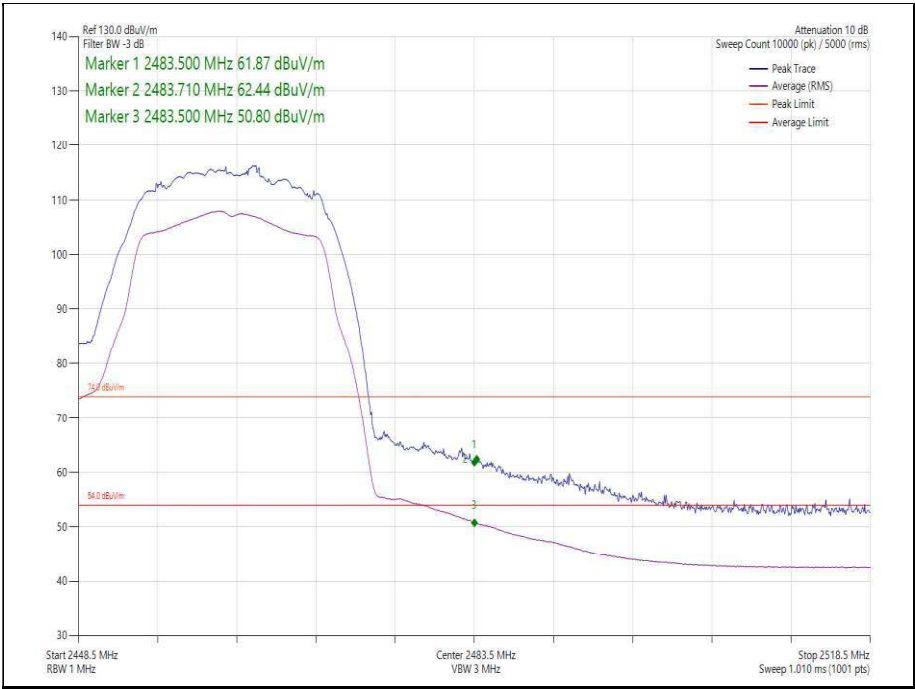


Figure 6 - 802.11g, Core 0 - 2462 MHz, Band Edge Frequency 2483.5 MHz

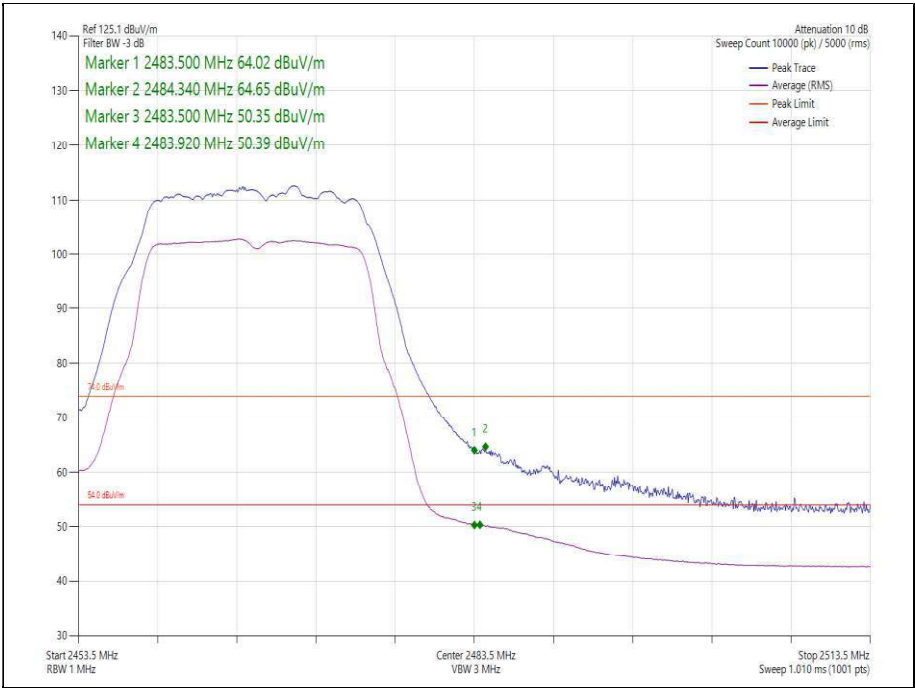


Figure 7 - 802.11g, Core 0 - 2467 MHz, Band Edge Frequency 2483.5 MHz

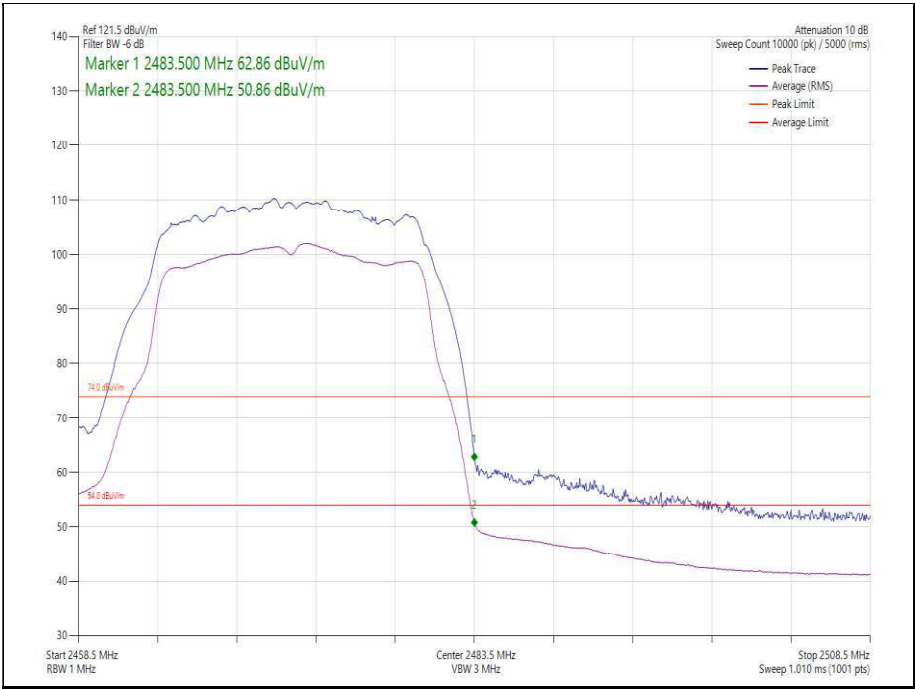


Figure 8 - 802.11g, Core 0 - 2472 MHz, Band Edge Frequency 2483.5 MHz

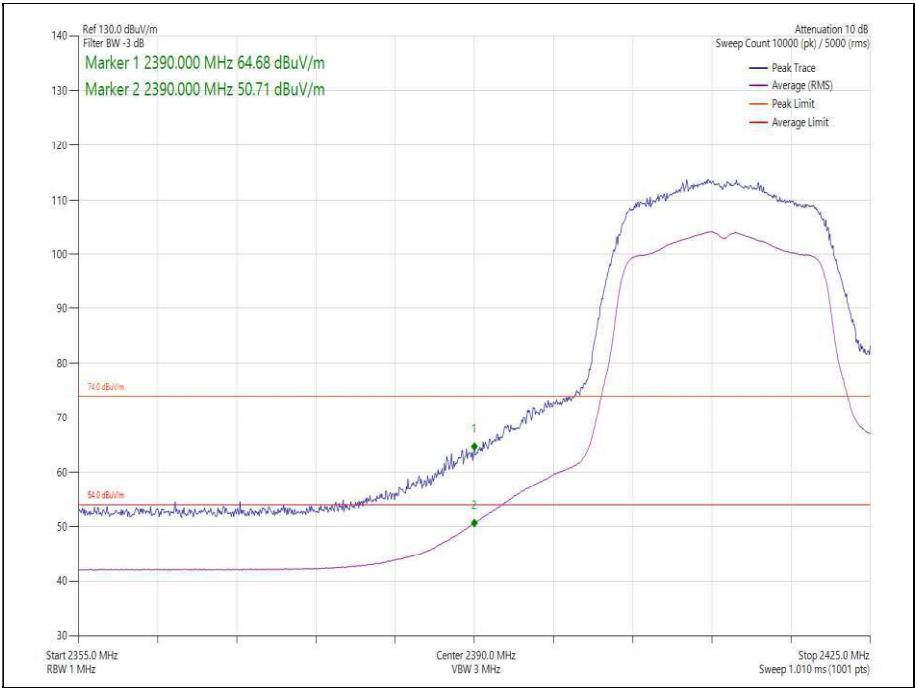


Figure 9 - 802.11n, HT20, Core 0 - 2412 MHz, Band Edge Frequency 2390 MHz

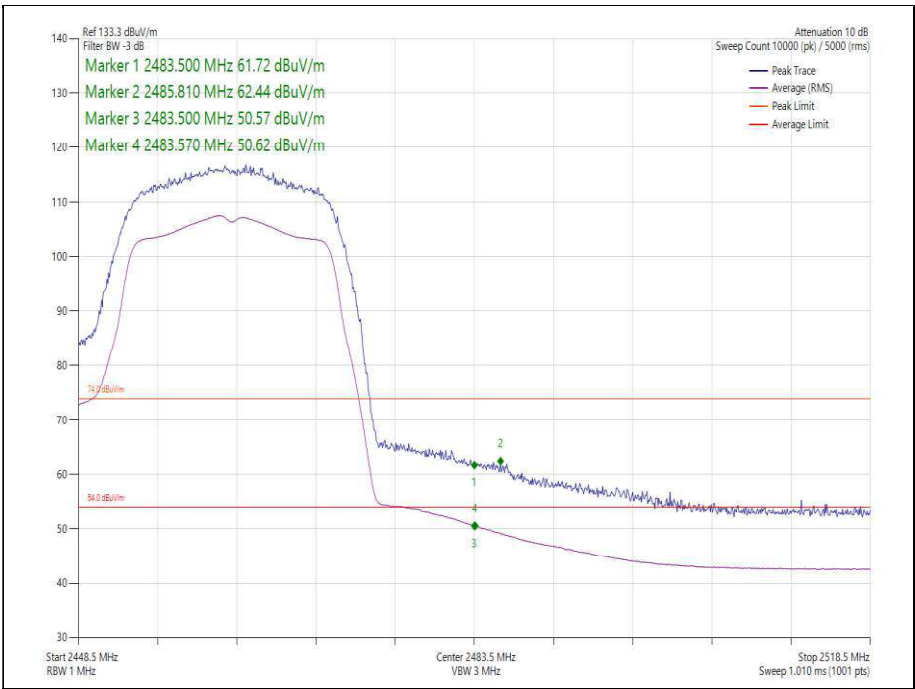


Figure 10 - 802.11n HT20, Core 0 - 2462 MHz, Band Edge Frequency 2483.5 MHz

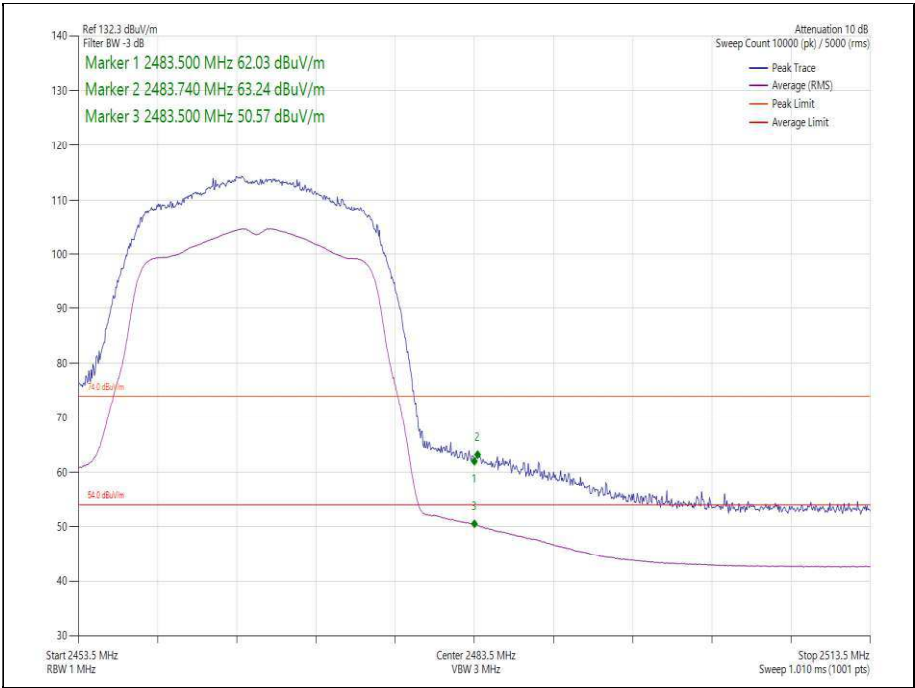


Figure 11 - 802.11n HT20, Core 0 - 2467 MHz, Band Edge Frequency 2483.5 MHz

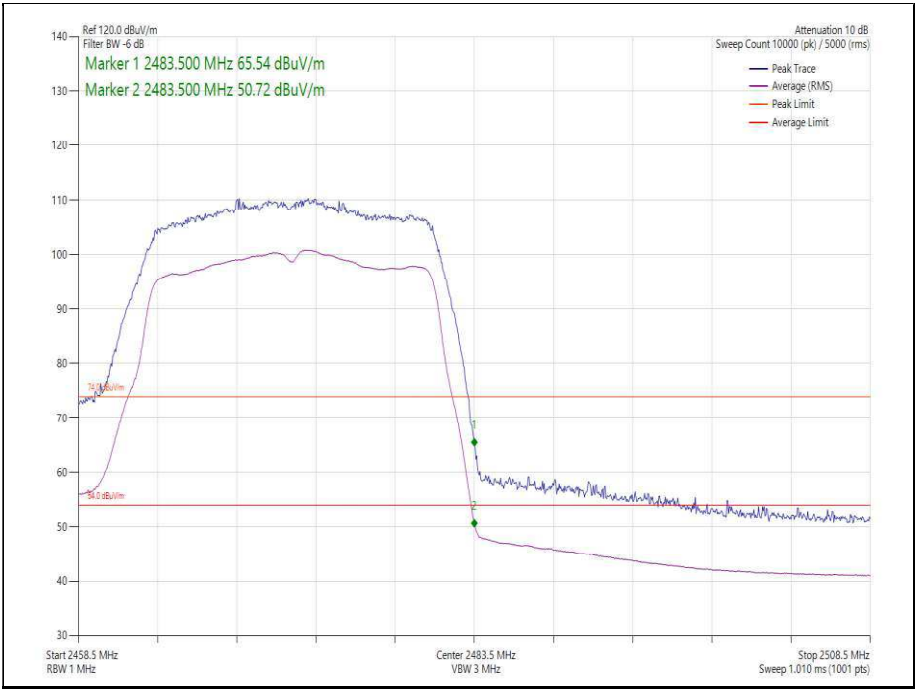


Figure 12 - 802.11n HT20, Core 0 - 2472 MHz, Band Edge Frequency 2483.5 MHz

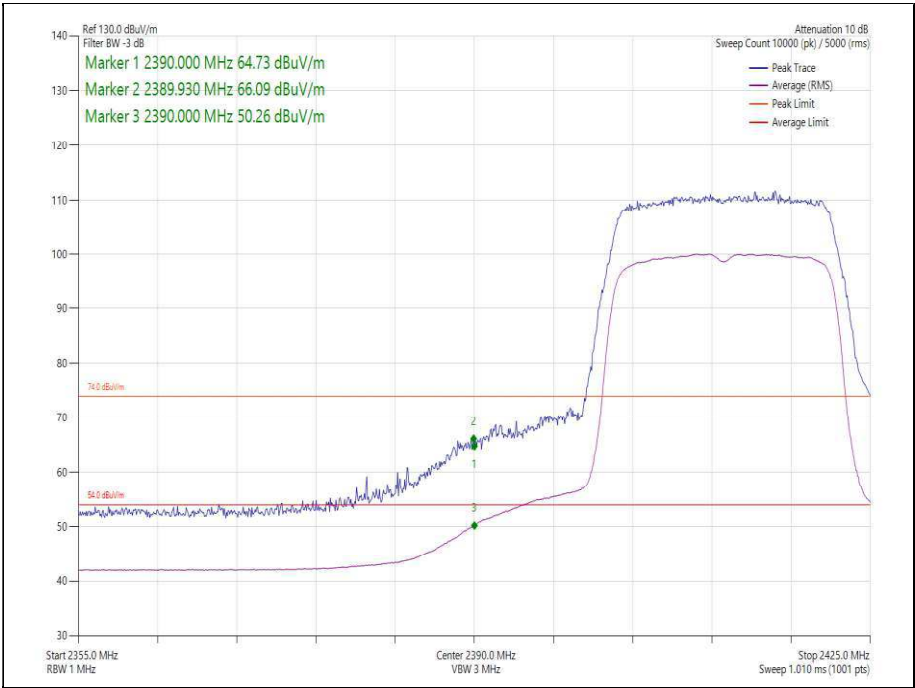


Figure 13 - 802.11ax HE20, Core 0, SU - 2412 MHz, Band Edge Frequency 2390 MHz

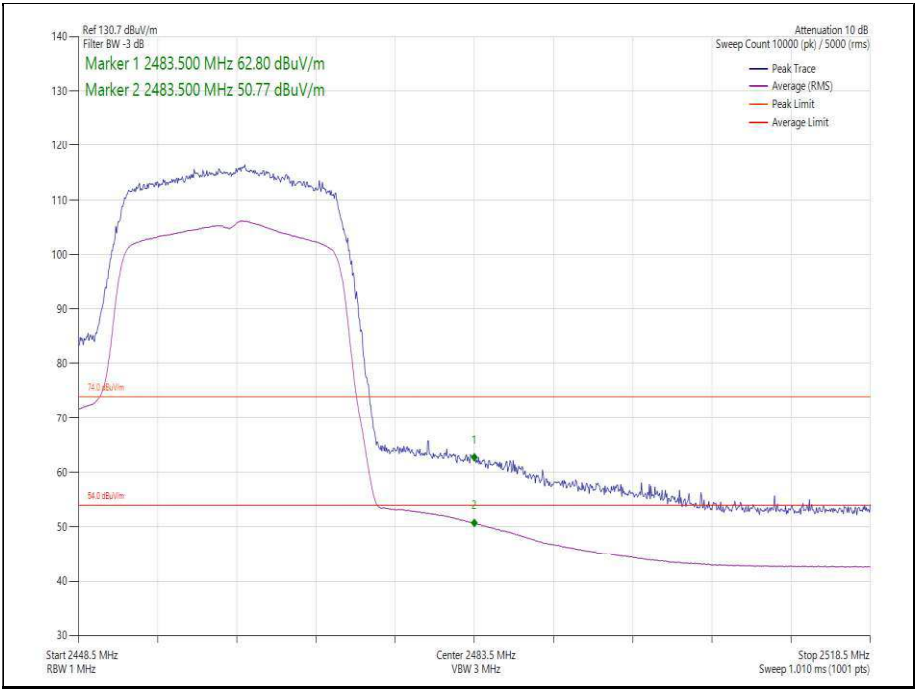


Figure 14 - 802.11ax HE20, Core 0, SU - 2462 MHz, Band Edge Frequency 2483.5 MHz

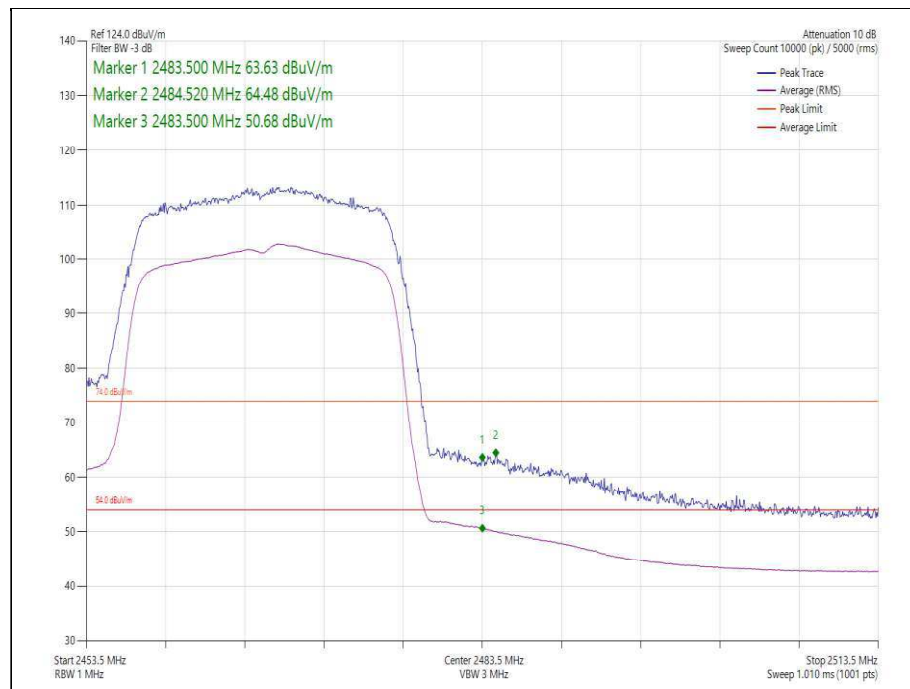


Figure 15 - 802.11ax HE20, Core 0, SU - 2467 MHz, Band Edge Frequency 2483.5 MHz

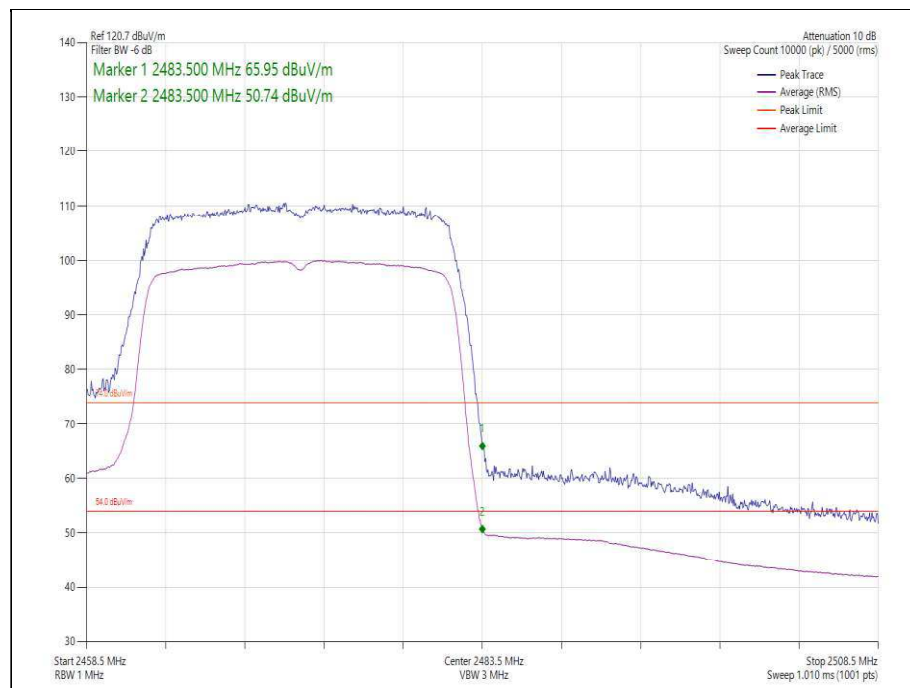


Figure 16 - 802.11ax HE20, Core 0, SU - 2472 MHz, Band Edge Frequency 2483.5 MHz

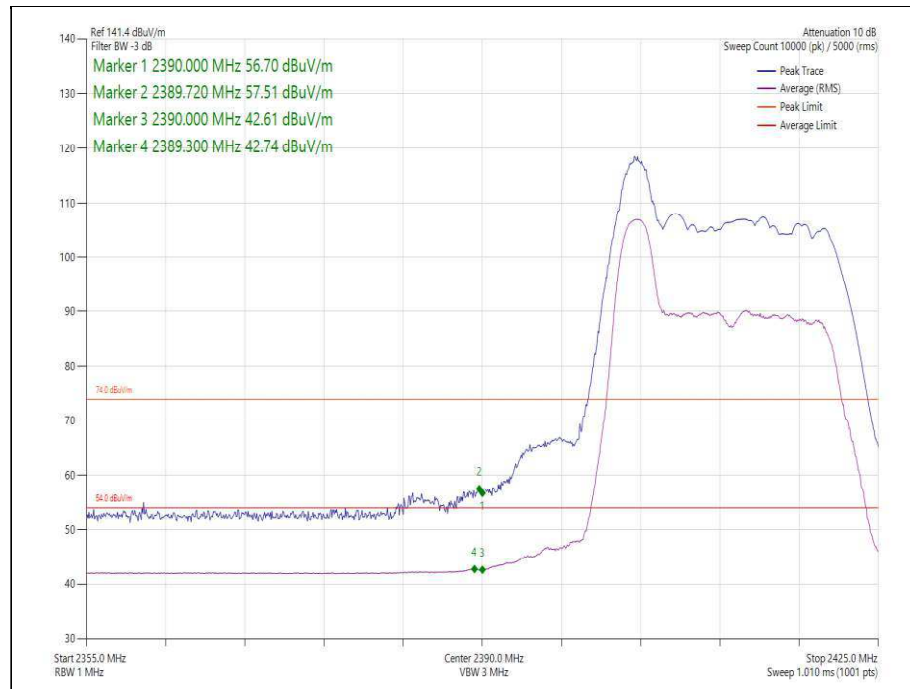


Figure 17 - 802.11ax HE20, Core 0, 26-0 - 2412 MHz, Band Edge Frequency 2390 MHz

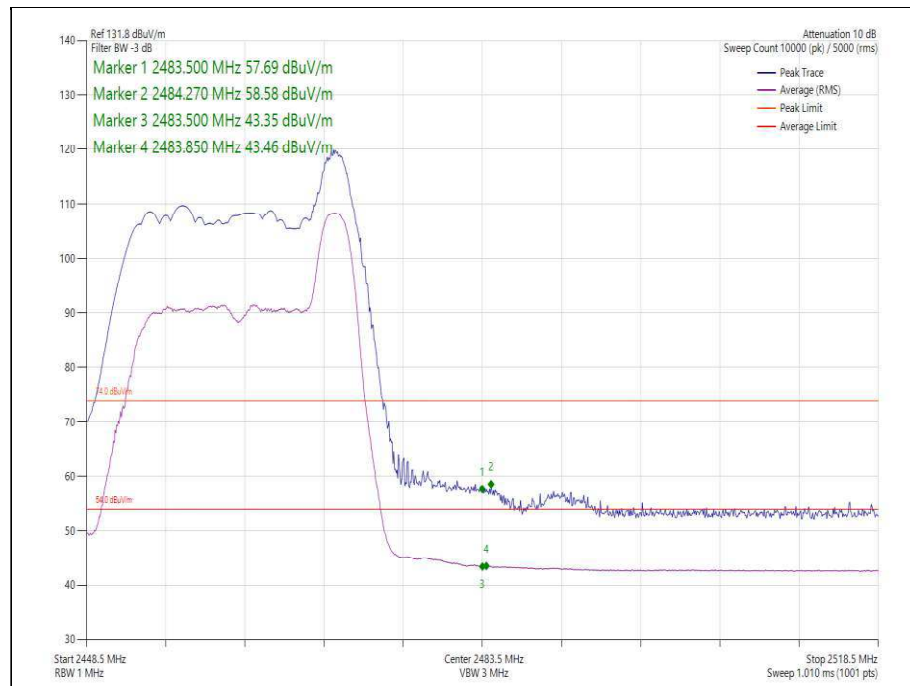


Figure 18 - 802.11ax HE20, Core 0, 26-8 - 2462 MHz, Band Edge Frequency 2483.5 MHz

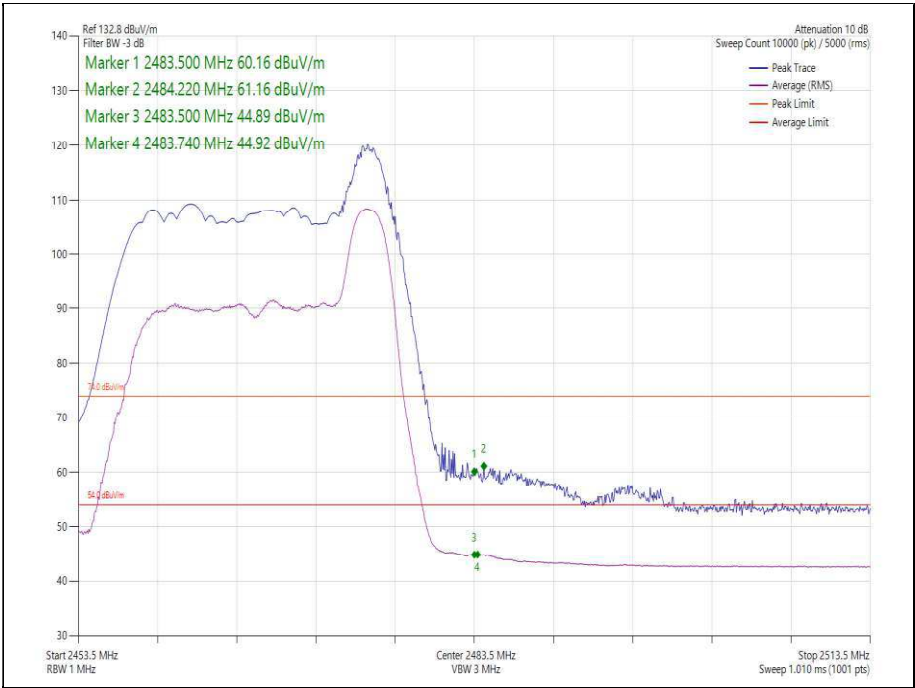


Figure 19 - 802.11ax HE20, Core 0, 26-8 - 2467 MHz, Band Edge Frequency 2483.5 MHz

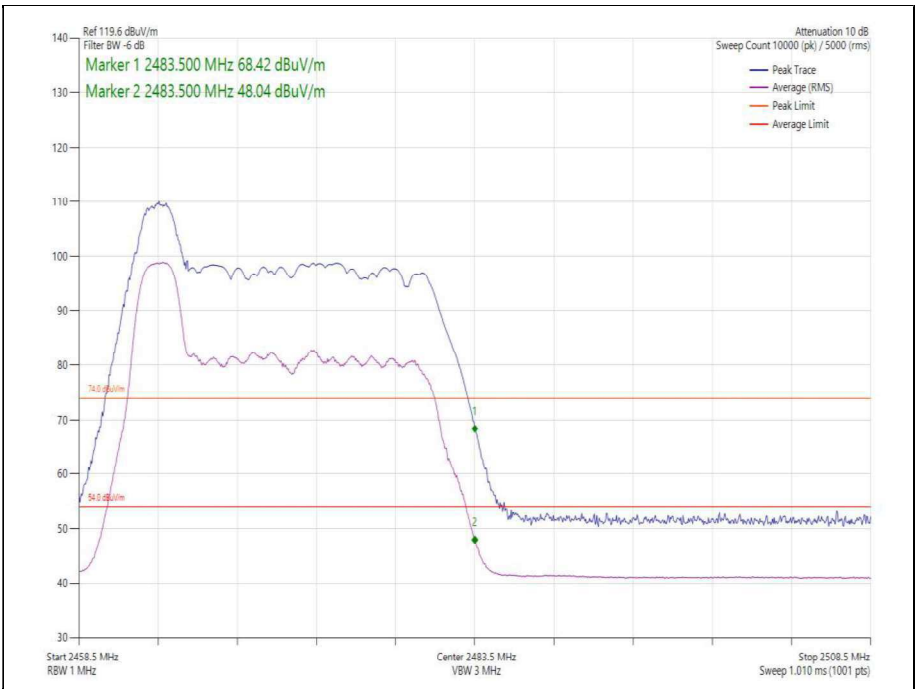
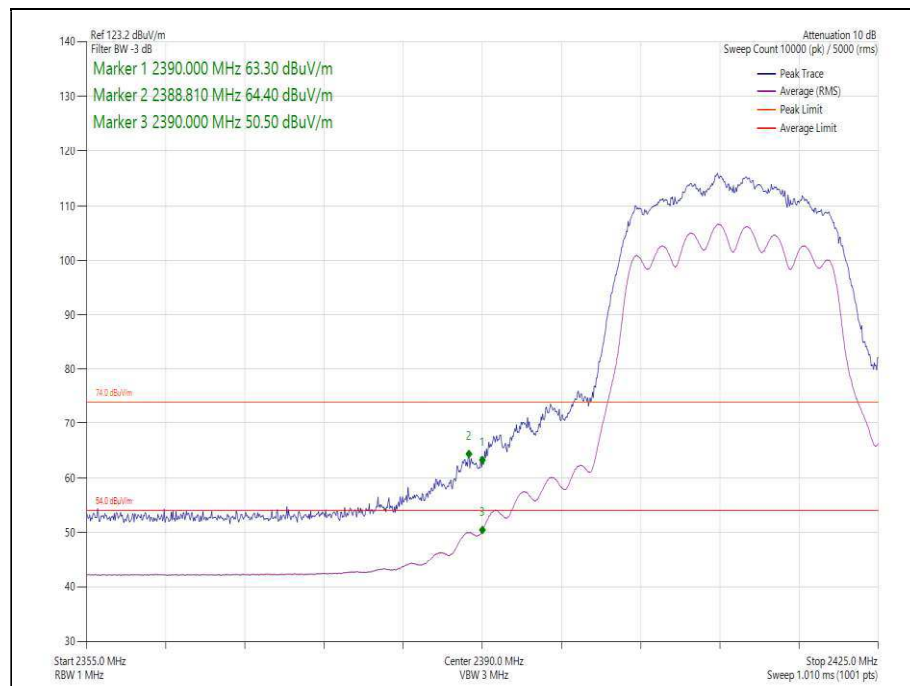


Figure 20 - 802.11ax HE20, Core 0, 26-8 - 2472 MHz, Band Edge Frequency 2483.5 MHz

| Mode                    | Data Rate/<br>MCS | Resource Size | Resource Index | TX Frequency (MHz) | Band Edge Frequency (MHz) | Peak Level (dBμV/m) | Average Level (dBμV/m) |
|-------------------------|-------------------|---------------|----------------|--------------------|---------------------------|---------------------|------------------------|
| 802.11n HT20, Core 0-1  | MCS 4             | -             | -              | 2412               | 2390.0                    | 64.40               | 50.77                  |
| 802.11n HT20, Core 0-1  | MCS 4             | -             | -              | 2462               | 2483.5                    | 63.51               | 50.95                  |
| 802.11n HT20, Core 0-1  | MCS 2             | -             | -              | 2467               | 2483.5                    | 62.46               | 50.93                  |
| 802.11n HT20, Core 0-1  | MCS 2             | -             | -              | 2472               | 2483.5                    | 63.03               | 50.88                  |
| 802.11ax HE20, Core 0-1 | MCS 4             | SU            | -              | 2412               | 2390.0                    | 65.85               | 50.98                  |
| 802.11ax HE20, Core 0-1 | MCS 9             | SU            | -              | 2462               | 2483.5                    | 64.64               | 50.96                  |
| 802.11ax HE20, Core 0-1 | MCS 4             | SU            | -              | 2467               | 2483.5                    | 64.05               | 50.49                  |
| 802.11ax HE20, Core 0-1 | MCS 4             | SU            | -              | 2472               | 2483.5                    | 64.32               | 50.90                  |
| 802.11ax HE20, Core 0-1 | MCS 9             | 26            | 0              | 2412               | 2390.0                    | 62.22               | 44.38                  |
| 802.11ax HE20, Core 0-1 | MCS 9             | 26            | 8              | 2462               | 2483.5                    | 61.13               | 44.48                  |
| 802.11ax HE20, Core 0-1 | MCS 9             | 26            | 8              | 2467               | 2483.5                    | 63.45               | 47.09                  |
| 802.11ax HE20, Core 0-1 | MCS 9             | 26            | 8              | 2472               | 2483.5                    | 68.54               | 48.03                  |

**Table 7 – MIMO 2TX Restricted Band Edge Results**



**Figure 21 - 802.11n HT20, Core 0-1 - 2412 MHz, Band Edge Frequency 2390 MHz**

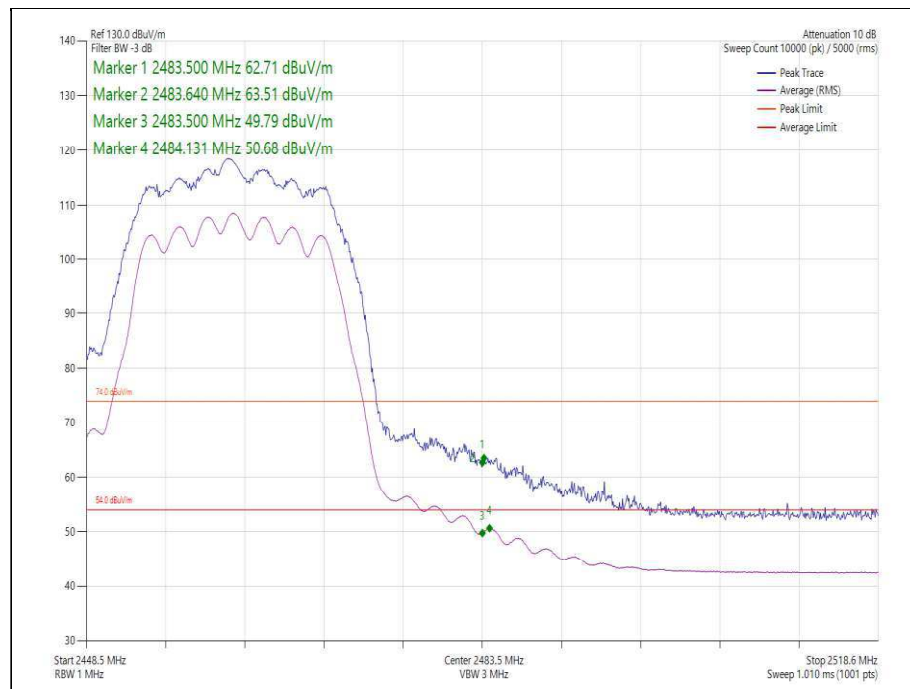


Figure 22 - 802.11n HT20, Core 0-1 - 2462 MHz, Band Edge Frequency 2483.5 MHz

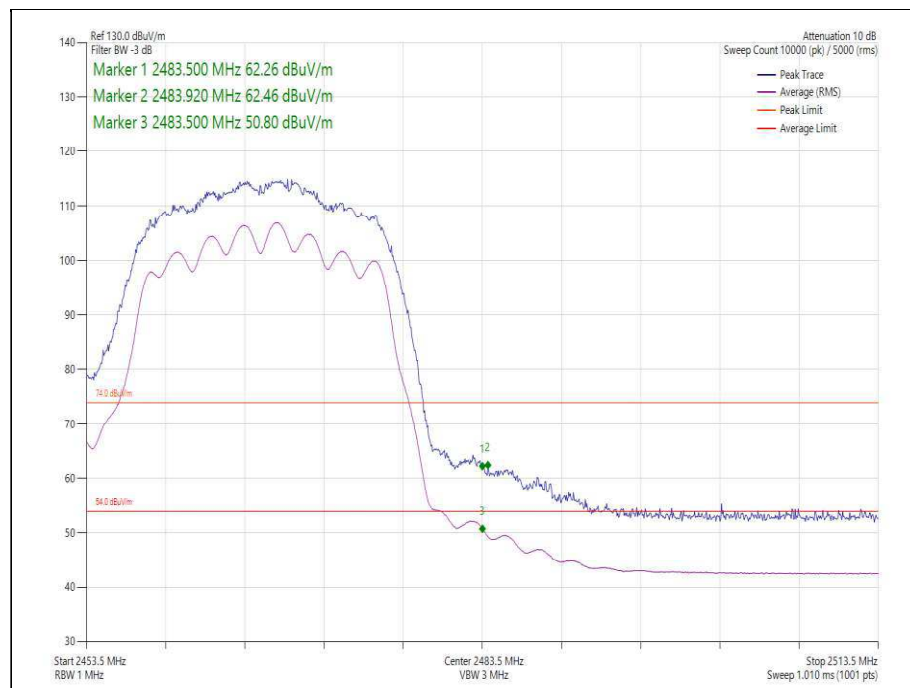


Figure 23 - 802.11n HT20, Core 0-1 - 2467 MHz, Band Edge Frequency 2483.5 MHz

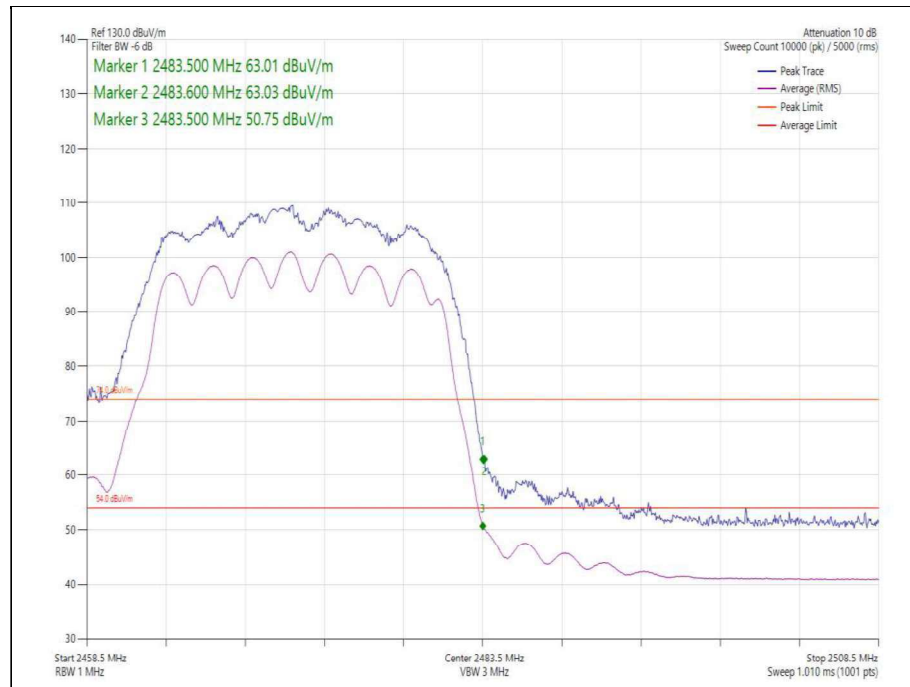


Figure 24 - 802.11n HT20, Core 0-1 - 2472 MHz, Band Edge Frequency 2483.5 MHz

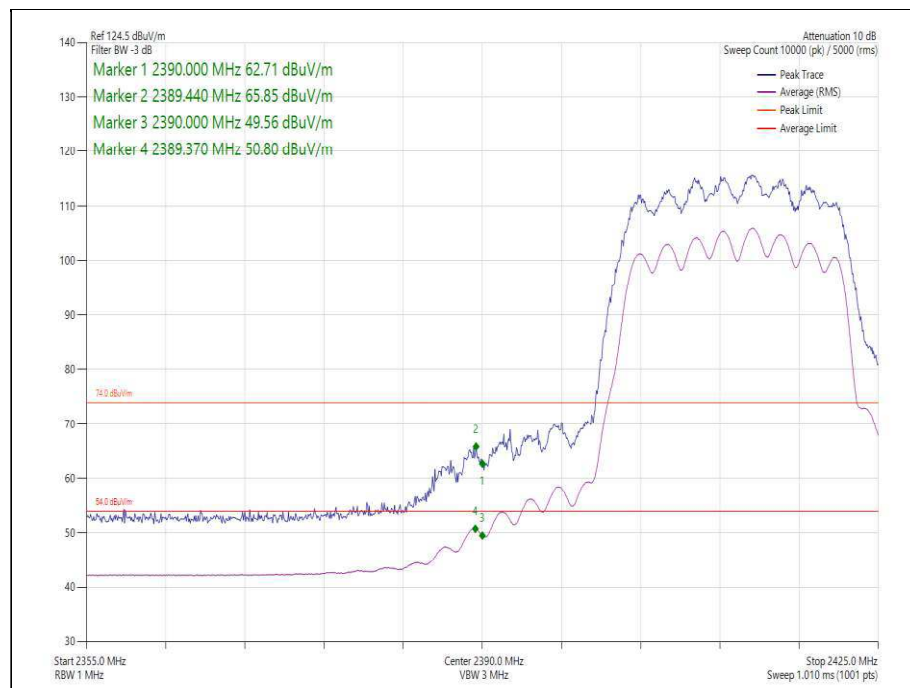


Figure 25 - 802.11ax HE20, Core 0-1, SU - 2412 MHz, Band Edge Frequency 2390 MHz

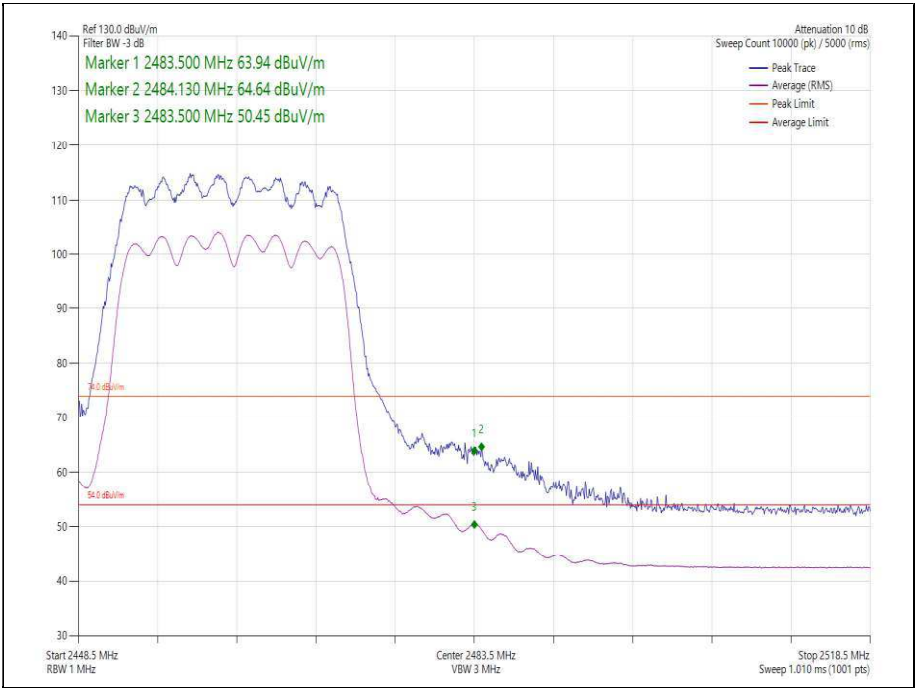


Figure 26 - 802.11ax HE20, Core 0-1, SU - 2462 MHz, Band Edge Frequency 2483.5 MHz

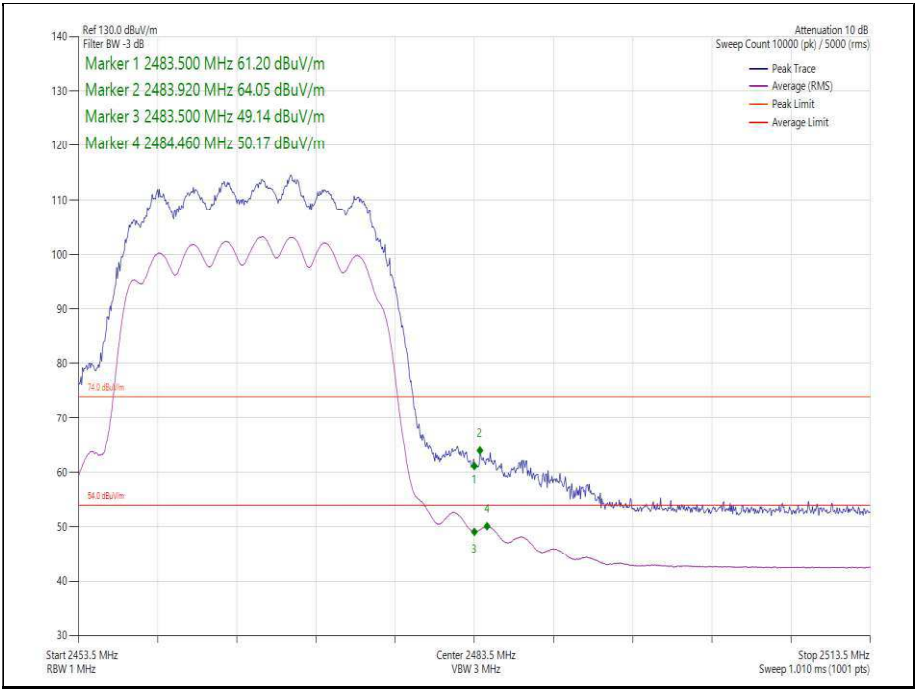


Figure 27 - 802.11ax HE20, Core 0-1, SU - 2467 MHz, Band Edge Frequency 2483.5 MHz

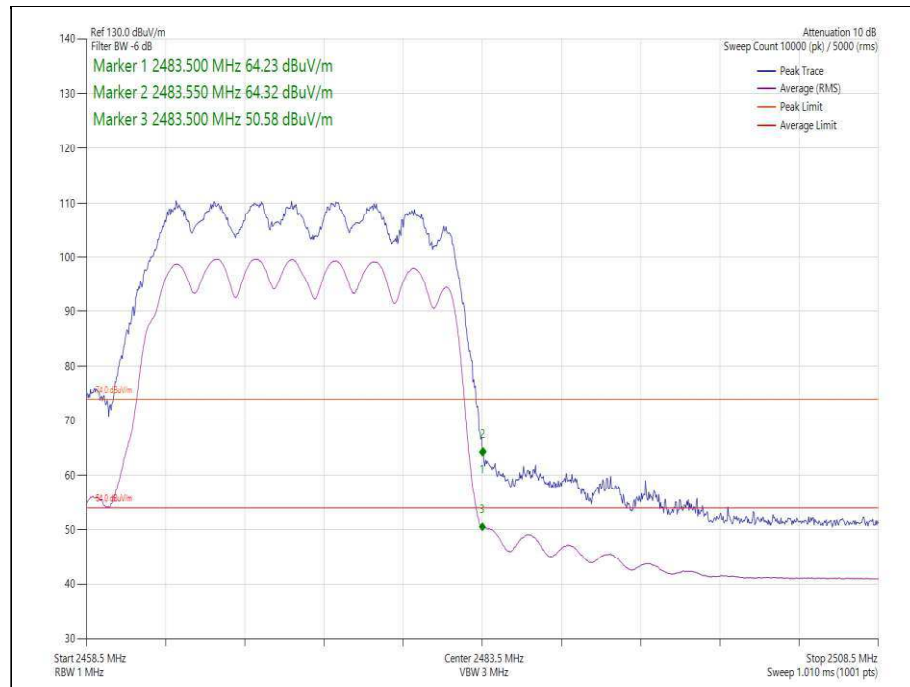


Figure 28 - 802.11ax HE20, Core 0-1, SU - 2472 MHz, Band Edge Frequency 2483.5 MHz

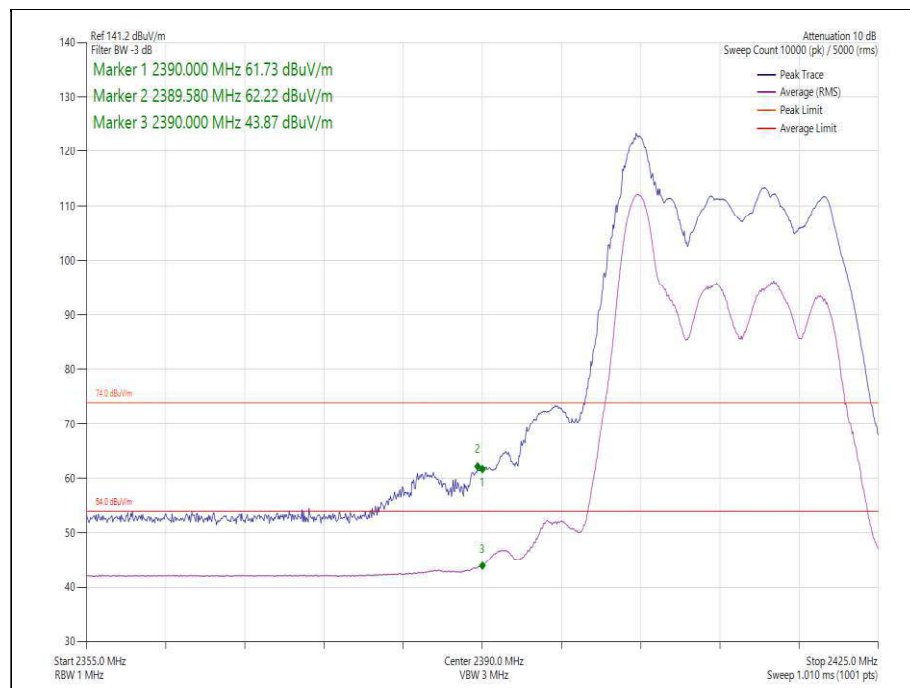


Figure 29 - 802.11ax HE20, Core 0-1, 26-0 - 2412 MHz, Band Edge Frequency 2390 MHz

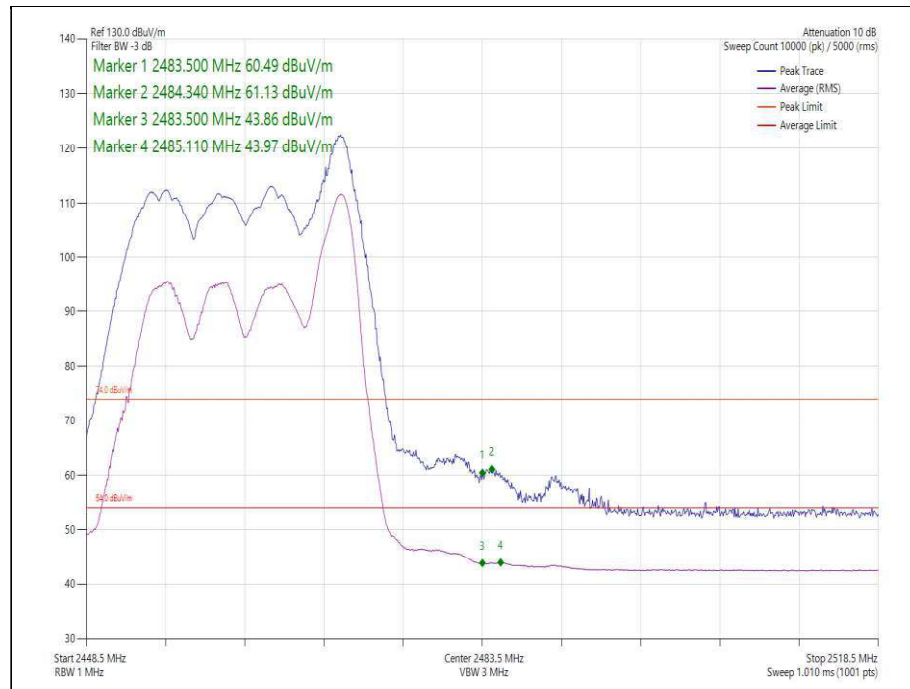


Figure 30 - 802.11ax HE20, Core 0-1, 26-8 - 2462 MHz, Band Edge Frequency 2483.5 MHz

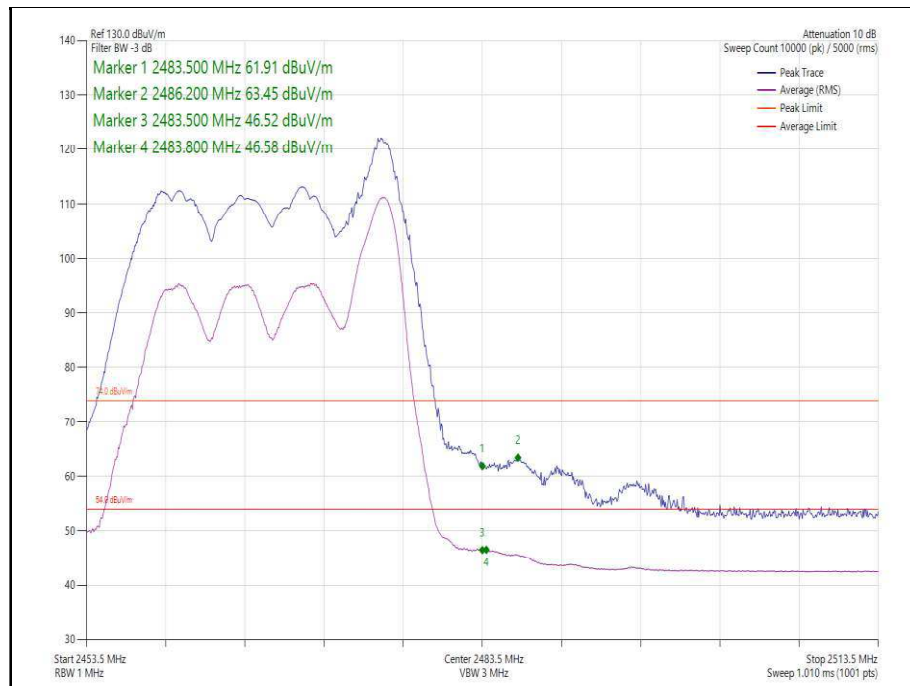


Figure 31 - 802.11ax HE20, Core 0-1, 26-8 - 2467 MHz, Band Edge Frequency 2483.5 MHz

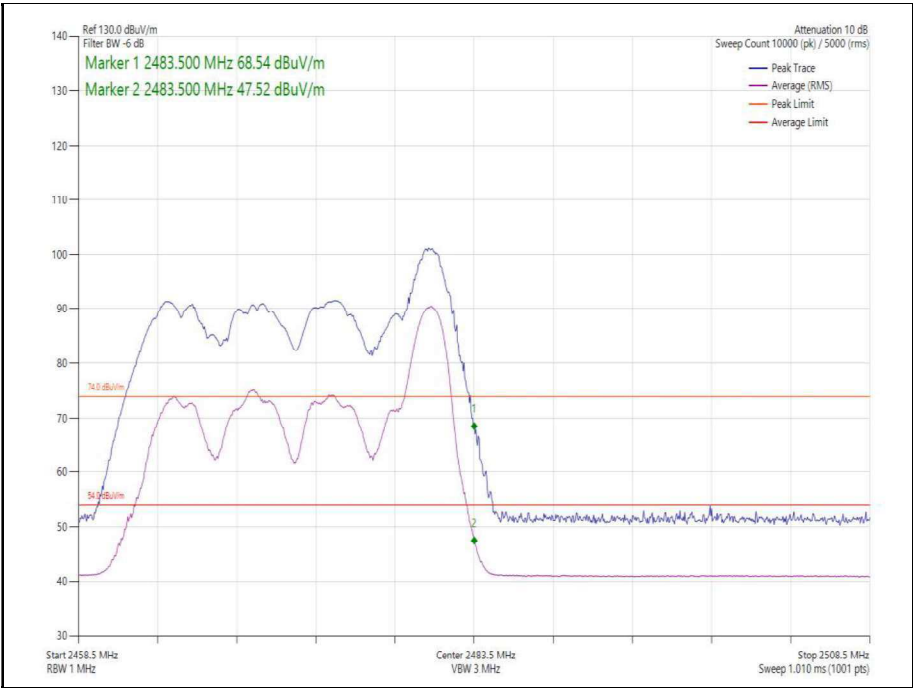


Figure 32 - 802.11ax HE20, Core 0-1, 26-8 - 2472 MHz, Band Edge Frequency 2483.5 MHz

FCC 47 CFR Part 15, Limit Clause 15.209

| Frequency (MHz) | Field Strength ( $\mu\text{V/m}$ at 3 m) |
|-----------------|------------------------------------------|
| 30 to 88        | 100                                      |
| 88 to 216       | 150                                      |
| 216 to 960      | 200                                      |
| Above 960       | 500                                      |

Table 8

ISED RSS-GEN, Limit Clause 8.9

| Frequency (MHz) | Field Strength ( $\mu\text{V/m}$ at 3 m) |
|-----------------|------------------------------------------|
| 30 to 88        | 100                                      |
| 88 to 216       | 150                                      |
| 216 to 960      | 200                                      |
| Above 960*      | 500                                      |

Table 9

\*Unless otherwise specified, for all frequencies greater than 1 GHz, the radiated emission limits for licence-exempt radio apparatus stated in applicable RSSs (including RSS-Gen) are based on measurements using a linear average detector function having a minimum resolution bandwidth of 1 MHz. If an average limit is specified for the EUT, then the peak emission shall also be measured with instrumentation properly adjusted for such factors as pulse desensitization to ensure the peak emission is less than 20 dB above the average limit.



## 2.1.7 Test Location and Test Equipment Used

This test was carried out in RF Chamber 11.

| Instrument                          | Manufacturer    | Type No              | TE No | Calibration Period (months) | Calibration Expires |
|-------------------------------------|-----------------|----------------------|-------|-----------------------------|---------------------|
| Screened Room (5)                   | Rainford        | Rainford             | 1545  | 36                          | 15-Apr-2024         |
| Double Ridge Broadband Horn Antenna | Schwarzbeck     | BBHA 9120 B          | 4848  | 12                          | 01-Apr-2022         |
| Screened Room (11)                  | Rainford        | Rainford             | 5136  | 36                          | 24-Nov-2024         |
| Double Ridge Broadband Horn Antenna | Schwarzbeck     | BBHA 9120 B          | 5215  | 12                          | 01-May-2022         |
| Preamplifier (30dB 1GHz to 18GHz)   | Schwarzbeck     | BBV 9718 C           | 5261  | 12                          | 08-Apr-2022         |
| Attenuator 5W 10dB DC-18GHz         | Aaren           | AT40A-4041-D18-10    | 5495  | 12                          | 14-Apr-2022         |
| 1m -SMA Cable                       | Junkosha        | MWX221-01000AMSAMS/A | 5513  | 12                          | 09-Apr-2022         |
| 2m SMA Cable                        | Junkosha        | MWX221-02000AMSAMS/A | 5517  | 12                          | 09-Apr-2022         |
| 2m SMA Cable                        | Junkosha        | MWX221-02000AMSAMS/A | 5518  | 12                          | 09-Apr-2022         |
| 8m N-Type Cable                     | Junkosha        | MWX221-08000NMSNMS/B | 5520  | 12                          | 24-Mar-2023*        |
| 8m N Type Cable                     | Junkosha        | MWX221-08000NMSNMS/B | 5522  | 12                          | 24-Mar-2023*        |
| EMI Test Receiver                   | Rohde & Schwarz | ESW44                | 5527  | 12                          | 15-Apr-2022         |
| Thermo-Hygro-Barometer              | PCE Instruments | PCE-THB 40           | 5604  | 12                          | 22-Sep-2022         |
| Thermo-Hygro-Barometer              | PCE Instruments | PCE-THB 40           | 5605  | 12                          | 23-Sep-2022         |
| EMI Test Receiver                   | Rohde & Schwarz | ESW44                | 5911  | 12                          | 24-Feb-2023         |

**Table 10**

\*All test equipment was within its calibration period at the time of testing.



## **2.2 Emission Bandwidth**

### **2.2.1 Specification Reference**

FCC 47 CFR Part 15C, Clause 15.247 (a)(2)  
ISED RSS-247, Clause 5.2  
ISED RSS-GEN, Clause, 6.7

### **2.2.2 Equipment Under Test and Modification State**

A2681, S/N: TN4J7KWW5H - Modification State 0

### **2.2.3 Date of Test**

24-March-2022

### **2.2.4 Test Method**

This test was performed in accordance with ANSI C63.10, clause 11.8.1 for 6 dB BW and 6.9.3 for 99% occupied bandwidth measurements.

### **2.2.5 Environmental Conditions**

|                     |         |
|---------------------|---------|
| Ambient Temperature | 23.4 °C |
| Relative Humidity   | 22.7 %  |

## 2.2.6 Test Results

### 2.4 GHz WLAN

#### 6 dB Bandwidth Summary

| Protocol         | 6 dB Bandwidth (MHz) |         |
|------------------|----------------------|---------|
|                  | Minimum              | Maximum |
| 802.11b          | 8.160                | 8.600   |
| 802.11g          | 15.240               | 15.840  |
| 802.11n HT20     | 15.240               | 17.340  |
| 802.11ax HE20 SU | 16.620               | 18.900  |

Table 11 - 6 dB Bandwidth Summary Results



Figure 33 - 802.11b Minimum 6 dB EBW



Figure 34 - 802.11b Maximum 6 dB EBW



Figure 35 - 802.11g Minimum 6 dB EBW



Figure 36 - 802.11g Maximum 6 dB EBW



Figure 37 - 802.11n HT20 Minimum 6 dB EBW



Figure 38 - 802.11n HT20 Maximum 6 dB EBW



Figure 39 - 802.11ax HE20 SU Minimum 6 dB  
EBW



Figure 40 - 802.11ax HE20 SU Maximum 6 dB  
EBW

## 99 % Bandwidth Summary

| Protocol         | 99% Bandwidth (MHz) |         |
|------------------|---------------------|---------|
|                  | Minimum             | Maximum |
| 802.11b          | 12.720              | 12.900  |
| 802.11g          | 16.320              | 16.620  |
| 802.11n HT20     | 17.520              | 17.760  |
| 802.11ax HE20 SU | 18.780              | 18.960  |

Table 12 - 99% Bandwidth Summary Results



Figure 41 - 802.11b Minimum 99% OBW



Figure 42 - 802.11b Maximum 99% OBW



Figure 43 - 802.11g Minimum 99% OBW



Figure 44 - 802.11g Maximum 99% OBW



Figure 45 - 802.11n HT20 Minimum 99% OBW



Figure 46 - 802.11n HT20 Maximum 99% OBW



Figure 47 - 802.11ax HE20 SU Minimum 99% OBW



Figure 48 - 802.11ax HE20 SU Maximum 99% OBW



| Test Configuration       |                                 |                 |                               |
|--------------------------|---------------------------------|-----------------|-------------------------------|
| Frequency Range:         | 2400-2483.5 MHz                 | Band:           | 2.4 GHz                       |
| Limit Clause(s):         | 15.247 (a)(2)<br>RSS-247 5.2 a) | Test Method(s): | C63.10 6.9.3<br>C63.10 11.8.1 |
| Additional Reference(s): | -                               |                 |                               |

| DUT Configuration      |            |                          |   |
|------------------------|------------|--------------------------|---|
| Mode:                  | 802.11b    | Duty Cycle (%):          | - |
| Data Rate:             | 1 Mbps     | DCCF (dB):               | - |
| Antenna Configuration: | SISO       | Peak Antenna Gain (dBi): | - |
| Active Port(s):        | A (Core 0) | Active Chain(s):         | 0 |

| Test Frequency (MHz) | 6 dB Bandwidth (MHz) |   |   |   | Limit (kHz) |
|----------------------|----------------------|---|---|---|-------------|
|                      | A                    | B | C | D |             |
| 2412                 | 8.600                | - | - | - | ≥500.0      |
| 2442                 | 8.160                | - | - | - | ≥500.0      |
| 2472                 | 8.160                | - | - | - | ≥500.0      |

**Table 13 - 6 dB Bandwidth Results**

| Test Frequency (MHz) | 99% Bandwidth (MHz) |   |   |   | Limit (kHz) |
|----------------------|---------------------|---|---|---|-------------|
|                      | A                   | B | C | D |             |
| 2412                 | 12.720              | - | - | - | -           |
| 2442                 | 12.720              | - | - | - | -           |
| 2472                 | 12.900              | - | - | - | -           |

**Table 14 - 99% Bandwidth Results**



| Test Configuration       |                                 |                 |                               |
|--------------------------|---------------------------------|-----------------|-------------------------------|
| Frequency Range:         | 2400-2483.5 MHz                 | Band:           | 2.4 GHz                       |
| Limit Clause(s):         | 15.247 (a)(2)<br>RSS-247 5.2 a) | Test Method(s): | C63.10 6.9.3<br>C63.10 11.8.1 |
| Additional Reference(s): | -                               |                 |                               |

| DUT Configuration      |            |                          |   |
|------------------------|------------|--------------------------|---|
| Mode:                  | 802.11g    | Duty Cycle (%):          | - |
| Data Rate:             | 12 Mbps    | DCCF (dB):               | - |
| Antenna Configuration: | SISO       | Peak Antenna Gain (dBi): | - |
| Active Port(s):        | A (Core 0) | Active Chain(s):         | 0 |

| Test Frequency (MHz) | 6 dB Bandwidth (MHz) |   |   |   | Limit (kHz) |
|----------------------|----------------------|---|---|---|-------------|
|                      | A                    | B | C | D |             |
| 2412                 | 15.240               | - | - | - | ≥500.0      |
| 2442                 | 15.240               | - | - | - | ≥500.0      |
| 2472                 | 15.840               | - | - | - | ≥500.0      |

**Table 15 - 6 dB Bandwidth Results**

| Test Frequency (MHz) | 99% Bandwidth (MHz) |   |   |   | Limit (kHz) |
|----------------------|---------------------|---|---|---|-------------|
|                      | A                   | B | C | D |             |
| 2412                 | 16.620              | - | - | - | -           |
| 2442                 | 16.320              | - | - | - | -           |
| 2472                 | 16.500              | - | - | - | -           |

**Table 16 - 99% Bandwidth Results**



| Test Configuration       |                                 |                 |                               |
|--------------------------|---------------------------------|-----------------|-------------------------------|
| Frequency Range:         | 2400-2483.5 MHz                 | Band:           | 2.4 GHz                       |
| Limit Clause(s):         | 15.247 (a)(2)<br>RSS-247 5.2 a) | Test Method(s): | C63.10 6.9.3<br>C63.10 11.8.1 |
| Additional Reference(s): | -                               |                 |                               |

| DUT Configuration         |              |                          |   |
|---------------------------|--------------|--------------------------|---|
| Mode:                     | 802.11n HT20 | Duty Cycle (%):          | - |
| Modulation Coding Scheme: | MCS2         | DCCF (dB):               | - |
| Antenna Configuration:    | SISO         | Peak Antenna Gain (dBi): | - |
| Active Port(s):           | A (Core 0)   | Active Chain(s):         | 0 |

| Test Frequency (MHz) | 6 dB Bandwidth (MHz) |   |   |   | Limit (kHz) |
|----------------------|----------------------|---|---|---|-------------|
|                      | A                    | B | C | D |             |
| 2412                 | 17.340               | - | - | - | ≥500.0      |
| 2442                 | 15.240               | - | - | - | ≥500.0      |
| 2472                 | 17.040               | - | - | - | ≥500.0      |

**Table 17 - 6 dB Bandwidth Results**

| Test Frequency (MHz) | 99% Bandwidth (MHz) |   |   |   | Limit (kHz) |
|----------------------|---------------------|---|---|---|-------------|
|                      | A                   | B | C | D |             |
| 2412                 | 17.700              | - | - | - | -           |
| 2442                 | 17.520              | - | - | - | -           |
| 2472                 | 17.640              | - | - | - | -           |

**Table 18 - 99% Bandwidth Results**



| Test Configuration       |                                 |                 |                               |
|--------------------------|---------------------------------|-----------------|-------------------------------|
| Frequency Range:         | 2400-2483.5 MHz                 | Band:           | 2.4 GHz                       |
| Limit Clause(s):         | 15.247 (a)(2)<br>RSS-247 5.2 a) | Test Method(s): | C63.10 6.9.3<br>C63.10 11.8.1 |
| Additional Reference(s): | -                               |                 |                               |

| DUT Configuration         |                       |                          |     |
|---------------------------|-----------------------|--------------------------|-----|
| Mode:                     | 802.11n HT20          | Duty Cycle (%):          | -   |
| Modulation Coding Scheme: | MCS2                  | DCCF (dB):               | -   |
| Antenna Configuration:    | MIMO CDD              | Peak Antenna Gain (dBi): | -   |
| Active Port(s):           | A+B (Core 0 + Core 1) | Active Chain(s):         | 0+1 |

| Test Frequency (MHz) | 6 dB Bandwidth (MHz) |        |   |   | Limit (kHz) |
|----------------------|----------------------|--------|---|---|-------------|
|                      | A                    | B      | C | D |             |
| 2412                 | 16.620               | 16.320 | - | - | ≥500.0      |
| 2442                 | 15.240               | 15.300 | - | - | ≥500.0      |
| 2472                 | 17.340               | 17.280 | - | - | ≥500.0      |

**Table 19 - 6 dB Bandwidth Results**

| Test Frequency (MHz) | 99% Bandwidth (MHz) |        |   |   | Limit (kHz) |
|----------------------|---------------------|--------|---|---|-------------|
|                      | A                   | B      | C | D |             |
| 2412                 | 17.760              | 17.700 | - | - | -           |
| 2442                 | 17.520              | 17.520 | - | - | -           |
| 2472                 | 17.640              | 17.700 | - | - | -           |

**Table 20 - 99% Bandwidth Results**



| Test Configuration       |                                 |                 |                               |
|--------------------------|---------------------------------|-----------------|-------------------------------|
| Frequency Range:         | 2400-2483.5 MHz                 | Band:           | 2.4 GHz                       |
| Limit Clause(s):         | 15.247 (a)(2)<br>RSS-247 5.2 a) | Test Method(s): | C63.10 6.9.3<br>C63.10 11.8.1 |
| Additional Reference(s): | -                               |                 |                               |

| DUT Configuration         |                  |                          |   |
|---------------------------|------------------|--------------------------|---|
| Mode:                     | 802.11ax HE20 SU | Duty Cycle (%):          | - |
| Modulation Coding Scheme: | MCS2x1           | DCCF (dB):               | - |
| Antenna Configuration:    | SISO             | Peak Antenna Gain (dBi): | - |
| Active Port(s):           | A (Core 0)       | Active Chain(s):         | 0 |

| Test Frequency (MHz) | 6 dB Bandwidth (MHz) |   |   |   | Limit (kHz) |
|----------------------|----------------------|---|---|---|-------------|
|                      | A                    | B | C | D |             |
| 2412                 | 17.040               | - | - | - | ≥500.0      |
| 2442                 | 18.780               | - | - | - | ≥500.0      |
| 2472                 | 18.900               | - | - | - | ≥500.0      |

**Table 21 - 6 dB Bandwidth Results**

| Test Frequency (MHz) | 99% Bandwidth (MHz) |   |   |   | Limit (kHz) |
|----------------------|---------------------|---|---|---|-------------|
|                      | A                   | B | C | D |             |
| 2412                 | 18.780              | - | - | - | -           |
| 2442                 | 18.840              | - | - | - | -           |
| 2472                 | 18.900              | - | - | - | -           |

**Table 22 - 99% Bandwidth Results**



| Test Configuration       |                                 |                 |                               |
|--------------------------|---------------------------------|-----------------|-------------------------------|
| Frequency Range:         | 2400-2483.5 MHz                 | Band:           | 2.4 GHz                       |
| Limit Clause(s):         | 15.247 (a)(2)<br>RSS-247 5.2 a) | Test Method(s): | C63.10 6.9.3<br>C63.10 11.8.1 |
| Additional Reference(s): | -                               |                 |                               |

| DUT Configuration         |                       |                          |     |
|---------------------------|-----------------------|--------------------------|-----|
| Mode:                     | 802.11ax HE20 SU      | Duty Cycle (%):          | -   |
| Modulation Coding Scheme: | MCS2x1                | DCCF (dB):               | -   |
| Antenna Configuration:    | MIMO CDD              | Peak Antenna Gain (dBi): | -   |
| Active Port(s):           | A+B (Core 0 + Core 1) | Active Chain(s):         | 0+1 |

| Test Frequency (MHz) | 6 dB Bandwidth (MHz) |        |   |   | Limit (kHz) |
|----------------------|----------------------|--------|---|---|-------------|
|                      | A                    | B      | C | D |             |
| 2412                 | 18.000               | 16.620 | - | - | ≥500.0      |
| 2442                 | 18.780               | 18.360 | - | - | ≥500.0      |
| 2472                 | 18.900               | 18.900 | - | - | ≥500.0      |

**Table 23 - 6 dB Bandwidth Results**

| Test Frequency (MHz) | 99% Bandwidth (MHz) |        |   |   | Limit (kHz) |
|----------------------|---------------------|--------|---|---|-------------|
|                      | A                   | B      | C | D |             |
| 2412                 | 18.900              | 18.840 | - | - | -           |
| 2442                 | 18.840              | 18.900 | - | - | -           |
| 2472                 | 18.900              | 18.960 | - | - | -           |

**Table 24 - 99% Bandwidth Results**



| Test Configuration       |                                 |                 |                               |
|--------------------------|---------------------------------|-----------------|-------------------------------|
| Frequency Range:         | 2400-2483.5 MHz                 | Band:           | 2.4 GHz                       |
| Limit Clause(s):         | 15.247 (a)(2)<br>RSS-247 5.2 a) | Test Method(s): | C63.10 6.9.3<br>C63.10 11.8.1 |
| Additional Reference(s): | -                               |                 |                               |

| DUT Configuration         |                    |                          |   |
|---------------------------|--------------------|--------------------------|---|
| Mode:                     | 802.11ax HE20 RU26 | Duty Cycle (%):          | - |
| Modulation Coding Scheme: | MCS2x1             | DCCF (dB):               | - |
| Antenna Configuration:    | SISO               | Peak Antenna Gain (dBi): | - |
| Active Port(s):           | A (Core 0)         | Active Chain(s):         | 0 |

| Test Frequency (MHz) | 6 dB Bandwidth (MHz) |   |   |   | Limit (kHz) |
|----------------------|----------------------|---|---|---|-------------|
|                      | A                    | B | C | D |             |
| 2412                 | 12.120               | - | - | - | ≥500.0      |
| 2442                 | 2.160                | - | - | - | ≥500.0      |
| 2472                 | 15.900               | - | - | - | ≥500.0      |

**Table 25 - 6 dB Bandwidth Results**

| Test Frequency (MHz) | 99% Bandwidth (MHz) |   |   |   | Limit (kHz) |
|----------------------|---------------------|---|---|---|-------------|
|                      | A                   | B | C | D |             |
| 2412                 | 18.420              | - | - | - | -           |
| 2442                 | 18.360              | - | - | - | -           |
| 2472                 | 18.600              | - | - | - | -           |

**Table 26 - 99% Bandwidth Results**



| Test Configuration       |                                 |                 |                               |
|--------------------------|---------------------------------|-----------------|-------------------------------|
| Frequency Range:         | 2400-2483.5 MHz                 | Band:           | 2.4 GHz                       |
| Limit Clause(s):         | 15.247 (a)(2)<br>RSS-247 5.2 a) | Test Method(s): | C63.10 6.9.3<br>C63.10 11.8.1 |
| Additional Reference(s): | -                               |                 |                               |

| DUT Configuration         |                       |                          |     |
|---------------------------|-----------------------|--------------------------|-----|
| Mode:                     | 802.11ax HE20 RU26    | Duty Cycle (%):          | -   |
| Modulation Coding Scheme: | MCS2x1                | DCCF (dB):               | -   |
| Antenna Configuration:    | MIMO CDD              | Peak Antenna Gain (dBi): | -   |
| Active Port(s):           | A+B (Core 0 + Core 1) | Active Chain(s):         | 0+1 |

| Test Frequency (MHz) | 6 dB Bandwidth (MHz) |        |   |   | Limit (kHz) |
|----------------------|----------------------|--------|---|---|-------------|
|                      | A                    | B      | C | D |             |
| 2412                 | 12.120               | 2.160  | - | - | ≥500.0      |
| 2442                 | 2.220                | 2.160  | - | - | ≥500.0      |
| 2472                 | 2.160                | 14.640 | - | - | ≥500.0      |

**Table 27 - 6 dB Bandwidth Results**

| Test Frequency (MHz) | 99% Bandwidth (MHz) |        |   |   | Limit (kHz) |
|----------------------|---------------------|--------|---|---|-------------|
|                      | A                   | B      | C | D |             |
| 2412                 | 18.420              | 18.300 | - | - | -           |
| 2442                 | 18.360              | 18.360 | - | - | -           |
| 2472                 | 18.660              | 18.420 | - | - | -           |

**Table 28 - 99% Bandwidth Results**



| Test Configuration       |                                 |                 |                               |
|--------------------------|---------------------------------|-----------------|-------------------------------|
| Frequency Range:         | 2400-2483.5 MHz                 | Band:           | 2.4 GHz                       |
| Limit Clause(s):         | 15.247 (a)(2)<br>RSS-247 5.2 a) | Test Method(s): | C63.10 6.9.3<br>C63.10 11.8.1 |
| Additional Reference(s): | -                               |                 |                               |

| DUT Configuration         |                    |                          |   |
|---------------------------|--------------------|--------------------------|---|
| Mode:                     | 802.11ax HE20 RU52 | Duty Cycle (%):          | - |
| Modulation Coding Scheme: | MCS2x1             | DCCF (dB):               | - |
| Antenna Configuration:    | SISO               | Peak Antenna Gain (dBi): | - |
| Active Port(s):           | A (Core 0)         | Active Chain(s):         | 0 |

| Test Frequency (MHz) | 6 dB Bandwidth (MHz) |   |   |   | Limit (kHz) |
|----------------------|----------------------|---|---|---|-------------|
|                      | A                    | B | C | D |             |
| 2412                 | 17.040               | - | - | - | ≥500.0      |
| 2442                 | 17.100               | - | - | - | ≥500.0      |
| 2472                 | 17.100               | - | - | - | ≥500.0      |

**Table 29 - 6 dB Bandwidth Results**

| Test Frequency (MHz) | 99% Bandwidth (MHz) |   |   |   | Limit (kHz) |
|----------------------|---------------------|---|---|---|-------------|
|                      | A                   | B | C | D |             |
| 2412                 | 18.240              | - | - | - | -           |
| 2442                 | 18.180              | - | - | - | -           |
| 2472                 | 18.480              | - | - | - | -           |

**Table 30 - 99% Bandwidth Results**



| Test Configuration       |                                 |                 |                               |
|--------------------------|---------------------------------|-----------------|-------------------------------|
| Frequency Range:         | 2400-2483.5 MHz                 | Band:           | 2.4 GHz                       |
| Limit Clause(s):         | 15.247 (a)(2)<br>RSS-247 5.2 a) | Test Method(s): | C63.10 6.9.3<br>C63.10 11.8.1 |
| Additional Reference(s): | -                               |                 |                               |

| DUT Configuration         |                       |                          |     |
|---------------------------|-----------------------|--------------------------|-----|
| Mode:                     | 802.11ax HE20 RU52    | Duty Cycle (%):          | -   |
| Modulation Coding Scheme: | MCS2x1                | DCCF (dB):               | -   |
| Antenna Configuration:    | MIMO CDD              | Peak Antenna Gain (dBi): | -   |
| Active Port(s):           | A+B (Core 0 + Core 1) | Active Chain(s):         | 0+1 |

| Test Frequency (MHz) | 6 dB Bandwidth (MHz) |        |   |   | Limit (kHz) |
|----------------------|----------------------|--------|---|---|-------------|
|                      | A                    | B      | C | D |             |
| 2412                 | 17.160               | 17.100 | - | - | ≥500.0      |
| 2442                 | 17.100               | 17.100 | - | - | ≥500.0      |
| 2472                 | 17.100               | 17.160 | - | - | ≥500.0      |

**Table 31 - 6 dB Bandwidth Results**

| Test Frequency (MHz) | 99% Bandwidth (MHz) |        |   |   | Limit (kHz) |
|----------------------|---------------------|--------|---|---|-------------|
|                      | A                   | B      | C | D |             |
| 2412                 | 18.240              | 18.180 | - | - | -           |
| 2442                 | 18.180              | 18.120 | - | - | -           |
| 2472                 | 18.540              | 18.240 | - | - | -           |

**Table 32 - 99% Bandwidth Results**



| Test Configuration       |                                 |                 |                               |
|--------------------------|---------------------------------|-----------------|-------------------------------|
| Frequency Range:         | 2400-2483.5 MHz                 | Band:           | 2.4 GHz                       |
| Limit Clause(s):         | 15.247 (a)(2)<br>RSS-247 5.2 a) | Test Method(s): | C63.10 6.9.3<br>C63.10 11.8.1 |
| Additional Reference(s): | -                               |                 |                               |

| DUT Configuration         |                     |                          |   |
|---------------------------|---------------------|--------------------------|---|
| Mode:                     | 802.11ax HE20 RU106 | Duty Cycle (%):          | - |
| Modulation Coding Scheme: | MCS2x1              | DCCF (dB):               | - |
| Antenna Configuration:    | SISO                | Peak Antenna Gain (dBi): | - |
| Active Port(s):           | A (Core 0)          | Active Chain(s):         | 0 |

| Test Frequency (MHz) | 6 dB Bandwidth (MHz) |   |   |   | Limit (kHz) |
|----------------------|----------------------|---|---|---|-------------|
|                      | A                    | B | C | D |             |
| 2412                 | 17.220               | - | - | - | ≥500.0      |
| 2442                 | 17.220               | - | - | - | ≥500.0      |
| 2472                 | 17.160               | - | - | - | ≥500.0      |

**Table 33 - 6 dB Bandwidth Results**

| Test Frequency (MHz) | 99% Bandwidth (MHz) |   |   |   | Limit (kHz) |
|----------------------|---------------------|---|---|---|-------------|
|                      | A                   | B | C | D |             |
| 2412                 | 18.180              | - | - | - | -           |
| 2442                 | 18.180              | - | - | - | -           |
| 2472                 | 18.420              | - | - | - | -           |

**Table 34 - 99% Bandwidth Results**



| Test Configuration       |                                 |                 |                               |
|--------------------------|---------------------------------|-----------------|-------------------------------|
| Frequency Range:         | 2400-2483.5 MHz                 | Band:           | 2.4 GHz                       |
| Limit Clause(s):         | 15.247 (a)(2)<br>RSS-247 5.2 a) | Test Method(s): | C63.10 6.9.3<br>C63.10 11.8.1 |
| Additional Reference(s): | -                               |                 |                               |

| DUT Configuration         |                       |                          |     |
|---------------------------|-----------------------|--------------------------|-----|
| Mode:                     | 802.11ax HE20 RU106   | Duty Cycle (%):          | -   |
| Modulation Coding Scheme: | MCS2x1                | DCCF (dB):               | -   |
| Antenna Configuration:    | MIMO CDD              | Peak Antenna Gain (dBi): | -   |
| Active Port(s):           | A+B (Core 0 + Core 1) | Active Chain(s):         | 0+1 |

| Test Frequency (MHz) | 6 dB Bandwidth (MHz) |        |   |   | Limit (kHz) |
|----------------------|----------------------|--------|---|---|-------------|
|                      | A                    | B      | C | D |             |
| 2412                 | 17.220               | 17.160 | - | - | ≥500.0      |
| 2442                 | 17.220               | 17.220 | - | - | ≥500.0      |
| 2472                 | 17.220               | 17.160 | - | - | ≥500.0      |

**Table 35 - 6 dB Bandwidth Results**

| Test Frequency (MHz) | 99% Bandwidth (MHz) |        |   |   | Limit (kHz) |
|----------------------|---------------------|--------|---|---|-------------|
|                      | A                   | B      | C | D |             |
| 2412                 | 18.180              | 18.120 | - | - | -           |
| 2442                 | 18.180              | 18.060 | - | - | -           |
| 2472                 | 18.420              | 18.180 | - | - | -           |

**Table 36 - 99% Bandwidth Results**

FCC 47 CFR Part 15, Limit Clause 15.247(a)(2) and ISED RSS-247, Clause 5.2(a)

The minimum 6 dB Bandwidth shall be at least 500 kHz.



## 2.2.7 Test Location and Test Equipment Used

This test was carried out in RF Laboratory 1.

| Instrument                     | Manufacturer          | Type No                   | TE No | Calibration Period (months) | Calibration Expires |
|--------------------------------|-----------------------|---------------------------|-------|-----------------------------|---------------------|
| Multimeter                     | Iso-tech              | IDM101                    | 2421  | 12                          | 28-Oct-2022         |
| Hygrometer                     | Rotronic              | I-1000                    | 3220  | 12                          | 05-Nov-2022         |
| Frequency Standard             | Spectracom            | SecureSync 1200-0408-0601 | 4393  | 6                           | 30-Jun-2022         |
| AC Programmable Power Supply   | iTech                 | IT7324                    | 5226  | -                           | O/P Mon             |
| MXA Signal Analyser            | Keysight Technologies | N9020B                    | 5529  | 24                          | 06-Jun-2022         |
| Signal Commissioning Unit      | TUV SUD               | SCU002                    | 5759  | 12                          | 30-Jun-2022         |
| USB Power Sensor               | Boonton               | RTP5008                   | 5830  | 12                          | 10-May-2022         |
| USB Power Sensor               | Boonton               | RTP5008                   | 5832  | 12                          | 10-May-2022         |
| USB Power Sensor               | Boonton               | RTP5008                   | 5833  | 12                          | 10-May-2022         |
| USB Power Sensor               | Boonton               | RTP5008                   | 5834  | 12                          | 10-May-2022         |
| Modular Power System Mainframe | Keysight Technologies | N6701C                    | 5835  | -                           | TU                  |
| DC Power Module 60V 20A 300W   | Keysight Technologies | N6754A                    | 5836  | -                           | O/P Mon             |

**Table 37**

TU - Traceability Unscheduled

O/P Mon – Output Monitored using calibrated equipment



## **2.3 Maximum Conducted Output Power**

### **2.3.1 Specification Reference**

FCC 47 CFR Part 15C, Clause 15.247 (b),  
ISED RSS-247, Clause 5.4  
ISED RSS-GEN, Clause 6.12

### **2.3.2 Equipment Under Test and Modification State**

A2681, S/N: TN4J7KWW5H - Modification State 0

### **2.3.3 Date of Test**

24-March-2022

### **2.3.4 Test Method**

The test was performed in accordance with ANSI C63.10 clause 11.9.2.3.2 Method AVGPM-G.

MIMO output port summing was performed in accordance with KDB 662911 D01. For the CDD results, the Directional Gain was calculated in accordance with clause F)2)f)(ii) using the calculations from F)2)f)(i) with worst-case individual gain and an array gain of zero.

### **2.3.5 Environmental Conditions**

|                     |         |
|---------------------|---------|
| Ambient Temperature | 23.4 °C |
| Relative Humidity   | 22.7 %  |



## 2.3.6 Test Results

### 2.4 GHz WLAN

| Test Configuration       |                                 |                 |                   |
|--------------------------|---------------------------------|-----------------|-------------------|
| Frequency Range:         | 2400-2483.5 MHz                 | Band:           | 2.4 GHz           |
| Limit Clause(s):         | 15.247 (b)(3)<br>RSS-247 5.4 d) | Test Method(s): | C63.10 11.9.2.3.2 |
| Additional Reference(s): | -                               |                 |                   |

| DUT Configuration      |            |                          |      |
|------------------------|------------|--------------------------|------|
| Mode:                  | 802.11b    | Duty Cycle (%):          | 98.8 |
| Data Rate:             | 1 Mbps     | DCCF (dB):               | -    |
| Antenna Configuration: | SISO       | Peak Antenna Gain (dBi): | 3.77 |
| Active Port(s):        | A (Core 0) | Active Chain(s):         | 0    |

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) |   |   |   |   | Limit (dBm) | Margin (dB) |
|----------------------|--------------------------------------|---|---|---|---|-------------|-------------|
|                      | A                                    | B | C | D | Σ |             |             |
| 2412                 | 22.47                                | - | - | - | - | 30.00       | -7.53       |
| 2442                 | 22.39                                | - | - | - | - | 30.00       | -7.61       |
| 2472                 | 16.55                                | - | - | - | - | 30.00       | -13.45      |

**Table 38 - FCC Maximum Conducted (average) Output Power Results**

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) |   |   |   |   | Limit (dBm) | Margin (dB) | EIRP (dBm) | EIRP Limit (dBm) | EIRP Margin (dB) |
|----------------------|--------------------------------------|---|---|---|---|-------------|-------------|------------|------------------|------------------|
|                      | A                                    | B | C | D | Σ |             |             |            |                  |                  |
| 2412                 | 22.47                                | - | - | - | - | 30.00       | -7.53       | 26.24      | 36.00            | -9.76            |
| 2442                 | 22.39                                | - | - | - | - | 30.00       | -7.61       | 26.16      | 36.00            | -9.84            |
| 2472                 | 16.55                                | - | - | - | - | 30.00       | -13.45      | 20.32      | 36.00            | -15.68           |

**Table 39 - ISSED Maximum Conducted (average) Output Power Results**



| Test Configuration       |                                 |                 |                   |
|--------------------------|---------------------------------|-----------------|-------------------|
| Frequency Range:         | 2400-2483.5 MHz                 | Band:           | 2.4 GHz           |
| Limit Clause(s):         | 15.247 (b)(3)<br>RSS-247 5.4 d) | Test Method(s): | C63.10 11.9.2.3.2 |
| Additional Reference(s): | -                               |                 |                   |

| DUT Configuration      |            |                          |      |
|------------------------|------------|--------------------------|------|
| Mode:                  | 802.11g    | Duty Cycle (%):          | 97.7 |
| Data Rate:             | 12 Mbps    | DCCF (dB):               | -    |
| Antenna Configuration: | SISO       | Peak Antenna Gain (dBi): | 3.77 |
| Active Port(s):        | A (Core 0) | Active Chain(s):         | 0    |

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) |   |   |   |   | Limit (dBm) | Margin (dB) |
|----------------------|--------------------------------------|---|---|---|---|-------------|-------------|
|                      | A                                    | B | C | D | Σ |             |             |
| 2412                 | 18.96                                | - | - | - | - | 30.00       | -11.04      |
| 2442                 | 22.27                                | - | - | - | - | 30.00       | -7.73       |
| 2472                 | 5.98                                 | - | - | - | - | 30.00       | -24.02      |

**Table 40 - FCC Maximum Conducted (average) Output Power Results**

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) |   |   |   |   | Limit (dBm) | Margin (dB) | EIRP (dBm) | EIRP Limit (dBm) | EIRP Margin (dB) |
|----------------------|--------------------------------------|---|---|---|---|-------------|-------------|------------|------------------|------------------|
|                      | A                                    | B | C | D | Σ |             |             |            |                  |                  |
| 2412                 | 18.96                                | - | - | - | - | 30.00       | -11.04      | 22.73      | 36.00            | -13.27           |
| 2442                 | 22.27                                | - | - | - | - | 30.00       | -7.73       | 26.04      | 36.00            | -9.96            |
| 2472                 | 5.98                                 | - | - | - | - | 30.00       | -24.02      | 9.75       | 36.00            | -26.25           |

**Table 41 - ISED Maximum Conducted (average) Output Power Results**



| Test Configuration       |                                 |                 |                   |
|--------------------------|---------------------------------|-----------------|-------------------|
| Frequency Range:         | 2400-2483.5 MHz                 | Band:           | 2.4 GHz           |
| Limit Clause(s):         | 15.247 (b)(3)<br>RSS-247 5.4 d) | Test Method(s): | C63.10 11.9.2.3.2 |
| Additional Reference(s): | -                               |                 |                   |

| DUT Configuration         |              |                          |      |
|---------------------------|--------------|--------------------------|------|
| Mode:                     | 802.11n HT20 | Duty Cycle (%):          | 96.4 |
| Modulation Coding Scheme: | MCS2         | DCCF (dB):               | -    |
| Antenna Configuration:    | SISO         | Peak Antenna Gain (dBi): | 3.77 |
| Active Port(s):           | A (Core 0)   | Active Chain(s):         | 0    |

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) |   |   |   |          | Limit (dBm) | Margin (dB) |
|----------------------|--------------------------------------|---|---|---|----------|-------------|-------------|
|                      | A                                    | B | C | D | $\Sigma$ |             |             |
| 2412                 | 18.64                                | - | - | - | -        | 30.00       | -11.36      |
| 2442                 | 22.26                                | - | - | - | -        | 30.00       | -7.74       |
| 2472                 | 5.84                                 | - | - | - | -        | 30.00       | -24.16      |

**Table 42 - FCC Maximum Conducted (average) Output Power Results**

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) |   |   |   |          | Limit (dBm) | Margin (dB) | EIRP (dBm) | EIRP Limit (dBm) | EIRP Margin (dB) |
|----------------------|--------------------------------------|---|---|---|----------|-------------|-------------|------------|------------------|------------------|
|                      | A                                    | B | C | D | $\Sigma$ |             |             |            |                  |                  |
| 2412                 | 18.64                                | - | - | - | -        | 30.00       | -11.36      | 22.41      | 36.00            | -13.59           |
| 2442                 | 22.26                                | - | - | - | -        | 30.00       | -7.74       | 26.03      | 36.00            | -9.97            |
| 2472                 | 5.84                                 | - | - | - | -        | 30.00       | -24.16      | 9.61       | 36.00            | -26.39           |

**Table 43 - ISD Maximum Conducted (average) Output Power Results**



| Test Configuration       |                                                     |                 |                   |
|--------------------------|-----------------------------------------------------|-----------------|-------------------|
| Frequency Range:         | 2400-2483.5 MHz                                     | Band:           | 2.4 GHz           |
| Limit Clause(s):         | 15.247 (b)(3)<br>RSS-247 5.4 d)                     | Test Method(s): | C63.10 11.9.2.3.2 |
| Additional Reference(s): | 662911 D01 v02r01 F)2)f)(i), 662911 D01 v02r01 E)1) |                 |                   |

| DUT Configuration         |                       |                          |      |
|---------------------------|-----------------------|--------------------------|------|
| Mode:                     | 802.11n HT20          | Duty Cycle (%):          | 96.5 |
| Modulation Coding Scheme: | MCS2                  | DCCF (dB):               | -    |
| Antenna Configuration:    | MIMO CDD              | Peak Antenna Gain (dBi): | 3.77 |
| Active Port(s):           | A+B (Core 0 + Core 1) | Active Chain(s):         | 0+1  |

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) |       |   |   |          | Limit (dBm) | Margin (dB) |
|----------------------|--------------------------------------|-------|---|---|----------|-------------|-------------|
|                      | A                                    | B     | C | D | $\Sigma$ |             |             |
| 2412                 | 16.78                                | 17.17 | - | - | 19.99    | 30.00       | -10.01      |
| 2442                 | 22.22                                | 21.98 | - | - | 25.11    | 30.00       | -4.89       |
| 2472                 | 3.34                                 | 2.97  | - | - | 6.16     | 30.00       | -23.84      |

**Table 44 - FCC Maximum Conducted (average) Output Power Results**

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) |       |   |   |          | Limit (dBm) | Margin (dB) | EIRP (dBm) | EIRP Limit (dBm) | EIRP Margin (dB) |
|----------------------|--------------------------------------|-------|---|---|----------|-------------|-------------|------------|------------------|------------------|
|                      | A                                    | B     | C | D | $\Sigma$ |             |             |            |                  |                  |
| 2412                 | 16.78                                | 17.17 | - | - | 19.99    | 30.00       | -10.01      | 23.76      | 36.00            | -12.24           |
| 2442                 | 22.22                                | 21.98 | - | - | 25.11    | 30.00       | -4.89       | 28.88      | 36.00            | -7.12            |
| 2472                 | 3.34                                 | 2.97  | - | - | 6.16     | 30.00       | -23.84      | 9.93       | 36.00            | -26.07           |

**Table 45 - ISED Maximum Conducted (average) Output Power Results**



| Test Configuration       |                                 |                 |                   |
|--------------------------|---------------------------------|-----------------|-------------------|
| Frequency Range:         | 2400-2483.5 MHz                 | Band:           | 2.4 GHz           |
| Limit Clause(s):         | 15.247 (b)(3)<br>RSS-247 5.4 d) | Test Method(s): | C63.10 11.9.2.3.2 |
| Additional Reference(s): | -                               |                 |                   |

| DUT Configuration         |                  |                          |      |
|---------------------------|------------------|--------------------------|------|
| Mode:                     | 802.11ax HE20 SU | Duty Cycle (%):          | 95.9 |
| Modulation Coding Scheme: | MCS2x1           | DCCF (dB):               | -    |
| Antenna Configuration:    | SISO             | Peak Antenna Gain (dBi): | 3.77 |
| Active Port(s):           | A (Core 0)       | Active Chain(s):         | 0    |

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) |   |   |   |          | Limit (dBm) | Margin (dB) |
|----------------------|--------------------------------------|---|---|---|----------|-------------|-------------|
|                      | A                                    | B | C | D | $\Sigma$ |             |             |
| 2412                 | 17.39                                | - | - | - | -        | 30.00       | -12.61      |
| 2442                 | 22.15                                | - | - | - | -        | 30.00       | -7.85       |
| 2472                 | 4.38                                 | - | - | - | -        | 30.00       | -25.62      |

**Table 46 - FCC Maximum Conducted (average) Output Power Results**

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) |   |   |   |          | Limit (dBm) | Margin (dB) | EIRP (dBm) | EIRP Limit (dBm) | EIRP Margin (dB) |
|----------------------|--------------------------------------|---|---|---|----------|-------------|-------------|------------|------------------|------------------|
|                      | A                                    | B | C | D | $\Sigma$ |             |             |            |                  |                  |
| 2412                 | 17.39                                | - | - | - | -        | 30.00       | -12.61      | 21.16      | 36.00            | -14.84           |
| 2442                 | 22.15                                | - | - | - | -        | 30.00       | -7.85       | 25.92      | 36.00            | -10.08           |
| 2472                 | 4.38                                 | - | - | - | -        | 30.00       | -25.62      | 8.15       | 36.00            | -27.85           |

**Table 47 - ISED Maximum Conducted (average) Output Power Results**



| Test Configuration       |                                                     |                 |                   |
|--------------------------|-----------------------------------------------------|-----------------|-------------------|
| Frequency Range:         | 2400-2483.5 MHz                                     | Band:           | 2.4 GHz           |
| Limit Clause(s):         | 15.247 (b)(3)<br>RSS-247 5.4 d)                     | Test Method(s): | C63.10 11.9.2.3.2 |
| Additional Reference(s): | 662911 D01 v02r01 F)2)f)(i), 662911 D01 v02r01 E)1) |                 |                   |

| DUT Configuration         |                       |                          |      |
|---------------------------|-----------------------|--------------------------|------|
| Mode:                     | 802.11ax HE20 SU      | Duty Cycle (%):          | 95.8 |
| Modulation Coding Scheme: | MCS2x1                | DCCF (dB):               | -    |
| Antenna Configuration:    | MIMO CDD              | Peak Antenna Gain (dBi): | 3.77 |
| Active Port(s):           | A+B (Core 0 + Core 1) | Active Chain(s):         | 0+1  |

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) |       |   |   |          | Limit (dBm) | Margin (dB) |
|----------------------|--------------------------------------|-------|---|---|----------|-------------|-------------|
|                      | A                                    | B     | C | D | $\Sigma$ |             |             |
| 2412                 | 16.12                                | 16.50 | - | - | 19.32    | 30.00       | -10.68      |
| 2442                 | 21.93                                | 21.65 | - | - | 24.79    | 30.00       | -5.21       |
| 2472                 | 1.87                                 | 1.69  | - | - | 4.79     | 30.00       | -25.21      |

**Table 48 - FCC Maximum Conducted (average) Output Power Results**

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) |       |   |   |          | Limit (dBm) | Margin (dB) | EIRP (dBm) | EIRP Limit (dBm) | EIRP Margin (dB) |
|----------------------|--------------------------------------|-------|---|---|----------|-------------|-------------|------------|------------------|------------------|
|                      | A                                    | B     | C | D | $\Sigma$ |             |             |            |                  |                  |
| 2412                 | 16.12                                | 16.50 | - | - | 19.32    | 30.00       | -10.68      | 23.09      | 36.00            | -12.91           |
| 2442                 | 21.93                                | 21.65 | - | - | 24.79    | 30.00       | -5.21       | 28.56      | 36.00            | -7.44            |
| 2472                 | 1.87                                 | 1.69  | - | - | 4.79     | 30.00       | -25.21      | 8.56       | 36.00            | -27.44           |

**Table 49 - ISED Maximum Conducted (average) Output Power Results**



| Test Configuration       |                                 |                 |                   |
|--------------------------|---------------------------------|-----------------|-------------------|
| Frequency Range:         | 2400-2483.5 MHz                 | Band:           | 2.4 GHz           |
| Limit Clause(s):         | 15.247 (b)(3)<br>RSS-247 5.4 d) | Test Method(s): | C63.10 11.9.2.3.2 |
| Additional Reference(s): | -                               |                 |                   |

| DUT Configuration         |                    |                          |      |
|---------------------------|--------------------|--------------------------|------|
| Mode:                     | 802.11ax HE20 RU26 | Duty Cycle (%):          | 96.5 |
| Modulation Coding Scheme: | MCS2x1             | DCCF (dB):               | -    |
| Antenna Configuration:    | SISO               | Peak Antenna Gain (dBi): | 3.77 |
| Active Port(s):           | A (Core 0)         | Active Chain(s):         | 0    |

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) |   |   |   |          | Limit (dBm) | Margin (dB) |
|----------------------|--------------------------------------|---|---|---|----------|-------------|-------------|
|                      | A                                    | B | C | D | $\Sigma$ |             |             |
| 2412                 | 14.21                                | - | - | - | -        | 30.00       | -15.79      |
| 2442                 | 14.20                                | - | - | - | -        | 30.00       | -15.80      |
| 2472                 | -2.39                                | - | - | - | -        | 30.00       | -32.39      |

**Table 50 - FCC Maximum Conducted (average) Output Power Results**

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) |   |   |   |          | Limit (dBm) | Margin (dB) | EIRP (dBm) | EIRP Limit (dBm) | EIRP Margin (dB) |
|----------------------|--------------------------------------|---|---|---|----------|-------------|-------------|------------|------------------|------------------|
|                      | A                                    | B | C | D | $\Sigma$ |             |             |            |                  |                  |
| 2412                 | 14.21                                | - | - | - | -        | 30.00       | -15.79      | 17.98      | 36.00            | -18.02           |
| 2442                 | 14.20                                | - | - | - | -        | 30.00       | -15.80      | 17.97      | 36.00            | -18.03           |
| 2472                 | -2.39                                | - | - | - | -        | 30.00       | -32.39      | 1.38       | 36.00            | -34.62           |

**Table 51 - ISED Maximum Conducted (average) Output Power Results**



| Test Configuration       |                                                     |                 |                   |
|--------------------------|-----------------------------------------------------|-----------------|-------------------|
| Frequency Range:         | 2400-2483.5 MHz                                     | Band:           | 2.4 GHz           |
| Limit Clause(s):         | 15.247 (b)(3)<br>RSS-247 5.4 d)                     | Test Method(s): | C63.10 11.9.2.3.2 |
| Additional Reference(s): | 662911 D01 v02r01 F)2)f)(i), 662911 D01 v02r01 E)1) |                 |                   |

| DUT Configuration         |                       |                          |      |
|---------------------------|-----------------------|--------------------------|------|
| Mode:                     | 802.11ax HE20 RU26    | Duty Cycle (%):          | 96.5 |
| Modulation Coding Scheme: | MCS2x1                | DCCF (dB):               | -    |
| Antenna Configuration:    | MIMO CDD              | Peak Antenna Gain (dBi): | 3.77 |
| Active Port(s):           | A+B (Core 0 + Core 1) | Active Chain(s):         | 0+1  |

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) |       |   |   |          | Limit (dBm) | Margin (dB) |
|----------------------|--------------------------------------|-------|---|---|----------|-------------|-------------|
|                      | A                                    | B     | C | D | $\Sigma$ |             |             |
| 2412                 | 14.29                                | 14.10 | - | - | 17.20    | 30.00       | -12.80      |
| 2442                 | 14.18                                | 13.96 | - | - | 17.07    | 30.00       | -12.93      |
| 2472                 | -5.46                                | -4.94 | - | - | -2.19    | 30.00       | -32.19      |

**Table 52 - FCC Maximum Conducted (average) Output Power Results**

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) |       |   |   |          | Limit (dBm) | Margin (dB) | EIRP (dBm) | EIRP Limit (dBm) | EIRP Margin (dB) |
|----------------------|--------------------------------------|-------|---|---|----------|-------------|-------------|------------|------------------|------------------|
|                      | A                                    | B     | C | D | $\Sigma$ |             |             |            |                  |                  |
| 2412                 | 14.29                                | 14.10 | - | - | 17.20    | 30.00       | -12.80      | 20.97      | 36.00            | -15.03           |
| 2442                 | 14.18                                | 13.96 | - | - | 17.07    | 30.00       | -12.93      | 20.84      | 36.00            | -15.16           |
| 2472                 | -5.46                                | -4.94 | - | - | -2.19    | 30.00       | -32.19      | 1.58       | 36.00            | -34.42           |

**Table 53 - ISED Maximum Conducted (average) Output Power Results**



| Test Configuration       |                                 |                 |                   |
|--------------------------|---------------------------------|-----------------|-------------------|
| Frequency Range:         | 2400-2483.5 MHz                 | Band:           | 2.4 GHz           |
| Limit Clause(s):         | 15.247 (b)(3)<br>RSS-247 5.4 d) | Test Method(s): | C63.10 11.9.2.3.2 |
| Additional Reference(s): | -                               |                 |                   |

| DUT Configuration         |                    |                          |      |
|---------------------------|--------------------|--------------------------|------|
| Mode:                     | 802.11ax HE20 RU52 | Duty Cycle (%):          | 96.4 |
| Modulation Coding Scheme: | MCS2x1             | DCCF (dB):               | -    |
| Antenna Configuration:    | SISO               | Peak Antenna Gain (dBi): | 3.77 |
| Active Port(s):           | A (Core 0)         | Active Chain(s):         | 0    |

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) |   |   |   |          | Limit (dBm) | Margin (dB) |
|----------------------|--------------------------------------|---|---|---|----------|-------------|-------------|
|                      | A                                    | B | C | D | $\Sigma$ |             |             |
| 2412                 | 17.19                                | - | - | - | -        | 30.00       | -12.81      |
| 2442                 | 17.25                                | - | - | - | -        | 30.00       | -12.75      |
| 2472                 | 0.55                                 | - | - | - | -        | 30.00       | -29.45      |

**Table 54 - FCC Maximum Conducted (average) Output Power Results**

| Test Frequency (MHz) | Maximum Conducted Output Power (dBm) |   |   |   |          | Limit (dBm) | Margin (dB) | EIRP (dBm) | EIRP Limit (dBm) | EIRP Margin (dB) |
|----------------------|--------------------------------------|---|---|---|----------|-------------|-------------|------------|------------------|------------------|
|                      | A                                    | B | C | D | $\Sigma$ |             |             |            |                  |                  |
| 2412                 | 17.19                                | - | - | - | -        | 30.00       | -12.81      | 20.96      | 36.00            | -15.04           |
| 2442                 | 17.25                                | - | - | - | -        | 30.00       | -12.75      | 21.02      | 36.00            | -14.98           |
| 2472                 | 0.55                                 | - | - | - | -        | 30.00       | -29.45      | 4.32       | 36.00            | -31.68           |

**Table 55 - ISED Maximum Conducted (average) Output Power Results**