

# FCC RADIO TEST REPORT

**FCC ID: 2AMKRTDXW801**

**Sample :** AUTO DIAGNOSTIC TOOL

**Trade Name :** IDUTEX

**Main Model :** IDUTEX DS810 Plus

IDUTEX DS810, IDUTEX DS810 Pro,  
IDUTEX TS810, IDUTEX TS810 Plus,

**Additional Model :** IDUTEX TS810 Pro, IDUTEX TD830,  
IDUTEX TD830 Pro, IDUTEX TS910 Pro,  
IDUTEX TD 930 Plus, IDUTEX TD930 Pro

**Report No. :** UNIA22022304ER-63

## Prepared for

Shenzhen IDUTEX Tech Co., Ltd

Room 401, Building B11, Yintian Industrial Zone, Yantian, Xixiang, Baoan,  
Shenzhen, China

## Prepared by

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## TEST RESULT CERTIFICATION

**Applicant**.....: Shenzhen IDUTEX Tech Co., Ltd  
**Address**.....: Room 401, Building B11, Yintian Industrial Zone, Yantian, Xixiang, Baoan, Shenzhen, China  
**Manufacturer**.....: Shenzhen IDUTEX Tech Co., Ltd  
**Address**.....: Room 401, Building B11, Yintian Industrial Zone, Yantian, Xixiang, Baoan, Shenzhen, China  
**Product description**  
**Product**.....: AUTO DIAGNOSTIC TOOL  
**Trade Name**.....: IDUTEX  
**Model Name**.....: IDUTEX DS810 Plus, IDUTEX DS810, IDUTEX DS810 Pro, IDUTEX TS810, IDUTEX TS810 Plus, IDUTEX TS810 Pro, IDUTEX TD830, IDUTEX TD830 Pro, IDUTEX TS910 Pro, IDUTEX TD 930 Plus, IDUTEX TD930 Pro  
**Test Methods**.....: FCC Rules and Regulations Part 15 Subpart E Section 15.407 KDB 789033 D02 v02r01

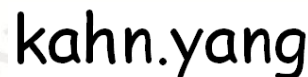
This device described above has been tested by Shenzhen United Testing Technology Co., Ltd., and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report. This report shall not be reproduced except in full, without the written approval of UNI, this document may be altered or revised by Shenzhen United Testing Technology Co., Ltd., personnel only, and shall be noted in the revision of the document.

**Date of Test**.....:  
**Date (s) of performance of tests**.....: Feb. 23, 2022 ~ Apr. 07, 2022  
**Date of Issue**.....: Apr. 08, 2022  
**Test Result**.....: Pass

Prepared by:



Jackson Fang/Editor



Reviewer:

Kahn yang/Supervisor

Approved &amp; Authorized Signer:



Liuze/Manager

|                                                                         |           |
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## 1. GENERAL INFORMATION

### 1.1. PRODUCT DESCRIPTION

|                      |                                                                                                                                                                           |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product:             | AUTO DIAGNOSTIC TOOL                                                                                                                                                      |
| Trade Name:          | IDUTEX                                                                                                                                                                    |
| Main Model:          | IDUTEX DS810 Plus                                                                                                                                                         |
| Additional Model:    | IDUTEX DS810, IDUTEX DS810 Pro, IDUTEX TS810, IDUTEX TS810 Plus, IDUTEX TS810 Pro, IDUTEX TD830, IDUTEX TD830 Pro, IDUTEX TS910 Pro, IDUTEX TD 930 Plus, IDUTEX TD930 Pro |
| Model Difference:    | All model's the function, software and electric circuit are the same, only with a product color and model named different. Test sample model: IDUTEX DS810 Plus.          |
| FCC ID:              | 2AMKRTDXW801                                                                                                                                                              |
| Operation Frequency: | 5.18GHz-5.24GHz                                                                                                                                                           |
| Number of Channels:  | 20MHz: 5CH<br>40MHz: 2CH<br>80MHz: 1CH                                                                                                                                    |
| Modulation Type:     | BPSK, QPSK, 16QAM, 64QAM, 128QAM, 256QAM, OFDM                                                                                                                            |
| Antenna Type:        | Internal Antenna                                                                                                                                                          |
| Antenna Gain:        | 1.26dBi                                                                                                                                                                   |
| Battery:             | DC 3.7V, 8000mAh                                                                                                                                                          |
| Adapter:             | Model: FJ-SW126G1202000N<br>Input: 100-240~, 50/60Hz, 0.6A Max<br>Output: DC 12.0V, 2.0A, 24.0W                                                                           |
| Power Source:        | DC 12V form Adapter or DC 3.7V from Li-battery                                                                                                                            |

#### Note:

1. The EUT is designed as Client without Radar Detection device
2. The device do not support TPC.

## 1.2. TABLE OF CARRIER FREQUENCIES

| Channel List                          |                 |         |                 |         |                 |         |                 |
|---------------------------------------|-----------------|---------|-----------------|---------|-----------------|---------|-----------------|
| 802.11a/n/ac (20MHz) ( 5.15-5.25GHz ) |                 |         |                 |         |                 |         |                 |
| Channel                               | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 36                                    | 5180            | 40      | 5200            | 44      | 5220            | 48      | 5240            |
| 38                                    | 5190            | 42      | 5210            | 46      | 5230            | -       | -               |
| 802.11n/ac (40MHz) ( 5.15-5.25GHz )   |                 |         |                 |         |                 |         |                 |
| Channel                               | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 38                                    | 5190            | 42      | 5210            | 46      | 5230            | -       | -               |
| 40                                    | 5200            | 44      | 5220            | -       | -               | -       | -               |
| 802.11ac (80MHz) ( 5.15-5.25GHz )     |                 |         |                 |         |                 |         |                 |
| Channel                               | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 42                                    | 5210            | -       | -               | -       | -               | -       | -               |

Note:

For 20MHZ bandwidth system use Channel 36,,38,40,46,48.

For 40MHZ bandwidth system use Channel 38,44.

For 80MHZ bandwidth system use Channel 42.

## 2. MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

### A. Conducted Measurement:

| Test Site | Method | Measurement Frequency Range | U, (dB) | NOTE |
|-----------|--------|-----------------------------|---------|------|
| UNI       | ANSI   | 9kHz ~ 150kHz               | 2.96    |      |
|           |        | 150kHz ~ 30MHz              | 2.44    |      |

### B. Radiated Measurement:

| Test Site | Method | Measurement Frequency Range | U, (dB) | NOTE |
|-----------|--------|-----------------------------|---------|------|
| UNI       | ANSI   | 9kHz ~ 30MHz                | 2.50    |      |
|           |        | 30MHz ~ 1000MHz             | 4.80    |      |
|           |        | Above 1000MHz               | 4.13    |      |

## 3. DESCRIPTION OF TEST MODES

| Mode             | Tested channel | Modulation | Date rate(Mbps) |
|------------------|----------------|------------|-----------------|
| 802.11a/n20/ac20 | 149,157, 165   | OFDM       | 6Mbps/MCS0      |
| 802.11n40/ac40   | 151,159        | OFDM       | MCS0            |
| 802.11ac80       | 155            | 42, 155    | OFDM            |

### Note:

1. The EUT has been set to operate continuously on tested channel individually, and the EUT is operating at its maximum duty cycle>or equal 98%.
2. All modes under which configure applicable have been tested and the worst mode test data recording in the test report, if no other mode data.

## 4. SYSTEM TEST CONFIGURATION

### 4.1. CONFIGURATION OF EUT SYSTEM

Configure 1:



### 4.2. EQUIPMENT USED IN EUT SYSTEM

| Item | Equipment            | Mfr/Brand | Model/Type No.    | Remark |
|------|----------------------|-----------|-------------------|--------|
| E-1  | AUTO DIAGNOSTIC TOOL | N/A       | IDUTEX DS810 Plus | EUT    |
|      |                      |           |                   |        |

### 4.3. SUMMARY OF TEST RESULTS

| FCC RULES | DESCRIPTION OF TEST                    | RESULT    |
|-----------|----------------------------------------|-----------|
| §15.407   | 6dB Bandwidth                          | Compliant |
| §15.407   | Emission Bandwidth                     | Compliant |
| §15.407   | Maximum conducted output power         | Compliant |
| §15.407   | Conducted Spurious Emission            | Compliant |
| §15.407   | Maximum Conducted Output Power Density | Compliant |
| §15.209   | Radiated Emission                      | Compliant |
| §15.407   | Band Edges                             | Compliant |
| §15.207   | Line Conduction Emission               | Compliant |

## 5. TEST FACILITY

Test Laboratory : Shenzhen United Testing Technology Co., Ltd.

Address : 2F, Annex Bldg, Jiahuangyuan Tech Park, #365 Baotian 1 Rd, Tiegang Community, Xixiang Str, Bao'an District, Shenzhen, China

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19. The testing quality system of our laboratory meets with ISO/IEC-17025 requirements.

This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

A2LA Certificate Number: 4747.01

The EMC Laboratory has been accredited by A2LA, and in compliance with ISO/IEC 17025:2017 General Requirements for testing Laboratories.

FCC Registration Number: 674885

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission.

IC Registration Number: 21947

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada.

## 6. TEST EQUIPMENT OF CONDUCTED EMISSION TEST

| Item                             | Equipment                           | Manufacturer  | Model No.      | Serial No.    | Calibrated until |
|----------------------------------|-------------------------------------|---------------|----------------|---------------|------------------|
| Conduction Emissions Measurement |                                     |               |                |               |                  |
| 1                                | Conducted Emission Test Software    | EZ-EMC        | Ver.CCS-3A1-CE | N/A           | N/A              |
| 2                                | AMN                                 | Schwarzbeck   | NNLK8121       | 8121370       | 2022.09.22       |
| 3                                | AAN                                 | TESEQ         | T8-Cat6        | 38888         | 2022.09.22       |
| 4                                | Pulse Limiter                       | CYBRTEK       | EM5010         | E115010056    | 2022.05.17       |
| 5                                | EMI Test Receiver                   | Rohde&Schwarz | ESCI           | 101210        | 2022.09.22       |
| Radiated Emissions Measurement   |                                     |               |                |               |                  |
| 1                                | Radiated Emission Test Software     | EZ-EMC        | Ver.CCS-03A1   | N/A           | N/A              |
| 2                                | Horn Antenna                        | Sunol         | DRH-118        | A101415       | 2022.09.27       |
| 3                                | Broadband Hybrid Antenna            | Sunol         | JB1            | A090215       | 2024.02.26       |
| 4                                | PREAMP                              | HP            | 8449B          | 3008A00160    | 2022.09.22       |
| 5                                | PREAMP                              | HP            | 8447D          | 2944A07999    | 2022.05.17       |
| 6                                | EMI TEST RECEIVER                   | Rohde&Schwarz | ESR3           | 101891        | 2022.09.22       |
| 7                                | VECTOR Signal Generator             | Rohde&Schwarz | SMU200A        | 101521        | 2022.09.22       |
| 8                                | Signal Generator                    | Agilent       | E4421B         | MY4335105     | 2022.09.22       |
| 9                                | MXA Signal Analyzer                 | Agilent       | N9020A         | MY50510140    | 2022.09.22       |
| 10                               | MXA Signal Analyzer                 | Keysight      | N9020A         | MY51110104    | 2022.09.22       |
| 11                               | RF Power sensor                     | DARE          | RPR3006W       | 15I00041SNO88 | 2022.05.17       |
| 12                               | RF Power sensor                     | DARE          | RPR3006W       | 15I00041SNO89 | 2022.05.17       |
| 13                               | RF power divider                    | Anritsu       | K241B          | 992289        | 2022.09.22       |
| 14                               | Wideband radio communication tester | Rohde&Schwarz | CMW500         | 154987        | 2022.09.22       |
| 15                               | Active Loop Antenna                 | Com-Power     | AL-130R        | 10160009      | 2022.07.25       |
| 16                               | Broadband Hybrid Antennas           | Schwarzbeck   | VULB9163       | VULB9163#958  | 2022.09.22       |
| 17                               | Horn Antenna                        | Schwarzbeck   | BBHA9120D      | 9120D-1680    | 2022.05.23       |
| 18                               | Horn Antenna                        | A-INFOMW      | LB-180400-KF   | J211060660    | 2022.09.27       |
| 19                               | Microwave Broadband Preamplifier    | Schwarzbeck   | BBV 9721       | 100472        | 2022.09.22       |
| 20                               | Signal Generator                    | Agilent       | N5183A         | MY47420153    | 2022.09.22       |
| 21                               | Spectrum Analyzer                   | Rohde&Schwarz | FSP 40         | 100501        | 2022.09.22       |
| 22                               | Power Meter                         | KEYSIGHT      | N1911A         | MY50520168    | 2022.09.22       |
| 23                               | Frequency Meter                     | VICTOR        | VC2000         | 997406086     | 2022.09.22       |
| 24                               | DC Power Source                     | HYELEC        | HY5020E        | 055161818     | 2022.09.22       |

## 7. MAXIMUM CONDUCTED OUTPUT POWER

### 7.1. MEASUREMENT PROCEDURE

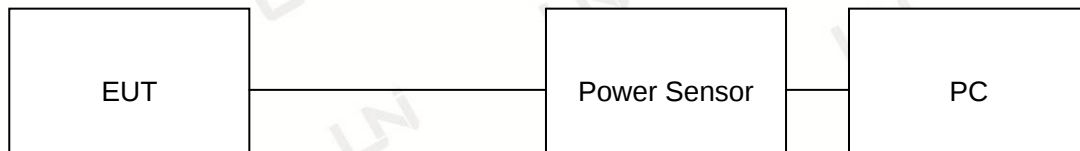
For average power test:

1. Connect EUT RF output port to power sensor through an RF attenuator.
2. Connect the power sensor to the PC.
3. Set the EUT Work on the top, the middle and the bottom operation frequency individually.
4. Record the maximum power from the software.

**Note :** The EUT was tested according to KDB 789033 D02 v02r01 for compliance to FCC 47CFR 15.407 requirements.

### 7.2. TEST SET-UP

#### AVERAGE POWER SETUP



### 7.3. LIMITS AND MEASUREMENT RESULT

| LIMITS AND MEASUREMENT RESULT FOR 802.11A20 MODULATION |                     |                         |              |
|--------------------------------------------------------|---------------------|-------------------------|--------------|
| Frequency (MHz)                                        | Average Power (dBm) | Applicable Limits (dBm) | Pass or Fail |
| 5180                                                   | 7.35                | 30                      | Pass         |
| 5200                                                   | 7.69                | 30                      | Pass         |
| 5240                                                   | 7.58                | 30                      | Pass         |

| LIMITS AND MEASUREMENT RESULT FOR 802.11N20 MODULATION |                     |                         |              |
|--------------------------------------------------------|---------------------|-------------------------|--------------|
| Frequency (MHz)                                        | Average Power (dBm) | Applicable Limits (dBm) | Pass or Fail |
| 5180                                                   | 7.37                | 30                      | Pass         |
| 5200                                                   | 7.65                | 30                      | Pass         |
| 5240                                                   | 7.45                | 30                      | Pass         |

| LIMITS AND MEASUREMENT RESULT FOR 802.11AC20 MODULATION |                     |                         |              |
|---------------------------------------------------------|---------------------|-------------------------|--------------|
| Frequency (MHz)                                         | Average Power (dBm) | Applicable Limits (dBm) | Pass or Fail |
| 5180                                                    | 7.37                | 30                      | Pass         |
| 5200                                                    | 7.44                | 30                      | Pass         |
| 5240                                                    | 7.38                | 30                      | Pass         |

| LIMITS AND MEASUREMENT RESULT FOR 802.11N40 MODULATION |                     |                         |              |
|--------------------------------------------------------|---------------------|-------------------------|--------------|
| Frequency (MHz)                                        | Average Power (dBm) | Applicable Limits (dBm) | Pass or Fail |
| 5190                                                   | 7.84                | 30                      | Pass         |
| 5230                                                   | 7.58                | 30                      | Pass         |

| LIMITS AND MEASUREMENT RESULT FOR 802.11AC40 MODULATION |                     |                         |              |
|---------------------------------------------------------|---------------------|-------------------------|--------------|
| Frequency (MHz)                                         | Average Power (dBm) | Applicable Limits (dBm) | Pass or Fail |
| 5190                                                    | 8.61                | 30                      | Pass         |
| 5230                                                    | 8.56                | 30                      | Pass         |

| LIMITS AND MEASUREMENT RESULT FOR 802.11AC80 MODULATION |                     |                         |              |
|---------------------------------------------------------|---------------------|-------------------------|--------------|
| Frequency (MHz)                                         | Average Power (dBm) | Applicable Limits (dBm) | Pass or Fail |
| 5210                                                    | 8.85                | 30                      | Pass         |

## 8. -26dB BANDWIDTH

### 8.1.1 -26dB BANDWIDTH MEASUREMENT PROCEDURE

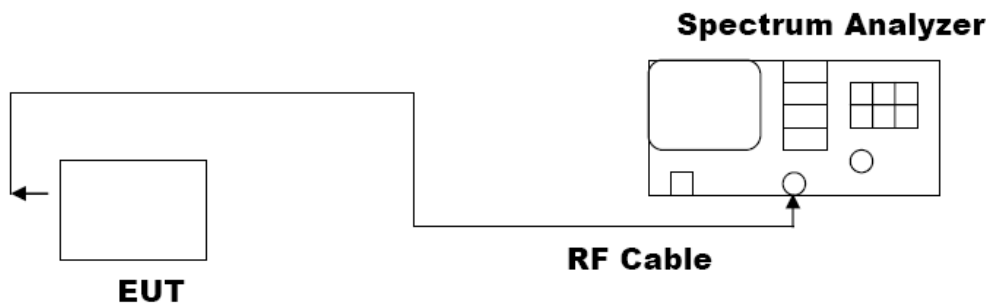
- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- Spectrum Setting: RBW= 300kHz(802.11a/n20/ac20), RBW=510kHz(802.11n40/ac40), RBW=1MHz(802.11ac80),VBW $\geq$ RBW, Sweep time = Auto.

### 8.1.2 99% OCCUPIED BANDWIDTH

- Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
- Set the EUT Work on the top, the middle and the bottom operation frequency individually.
- Set Span = approximately 1.5 to 5 times the OBW, centered on a nominal channel  
The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW and video bandwidth (VBW) shall be approximately three times RBW; Sweep = auto; Detector function = peak
- Set SPA Trace 1 Max hold, then View.

**Note:** The EUT was tested according to KDB 789033 D02 v02r01 for compliance to FCC 47CFR 15.407 requirements.

## 8.2. TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)



### 8.3. LIMITS AND MEASUREMENT RESULTS

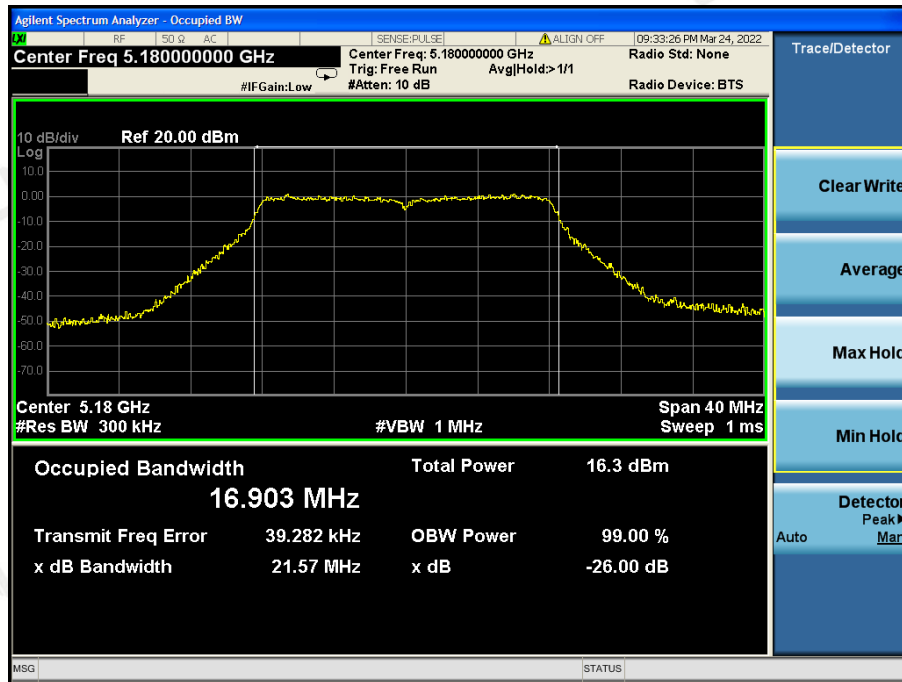
| LIMITS AND MEASUREMENT RESULT FOR 802.11A20 MODULATION |                   |                 |                           |          |
|--------------------------------------------------------|-------------------|-----------------|---------------------------|----------|
| Applicable Limits                                      | Applicable Limits |                 |                           |          |
|                                                        | Test Data (MHz)   |                 |                           | Criteria |
|                                                        | Frequency (MHz)   | -26dB Bandwidth | 99.00% Occupied Bandwidth |          |
| >500KHZ                                                | 5180MHz           | 21.57           | 16.903                    | PASS     |
|                                                        | 5200MHz           | 21.88           | 16.881                    | PASS     |
|                                                        | 5240MHz           | 21.63           | 16.861                    | PASS     |

| LIMITS AND MEASUREMENT RESULT FOR 802.11N20/40 MODULATION |                   |                 |                           |          |
|-----------------------------------------------------------|-------------------|-----------------|---------------------------|----------|
| Applicable Limits                                         | Applicable Limits |                 |                           |          |
|                                                           | Test Data (MHz)   |                 |                           | Criteria |
|                                                           | Frequency (MHz)   | -26dB Bandwidth | 99.00% Occupied Bandwidth |          |
| >500KHZ                                                   | 5180MHz           | 22.00           | 17.938                    | PASS     |
|                                                           | 5200MHz           | 21.97           | 17.891                    | PASS     |
|                                                           | 5240MHz           | 21.96           | 17.916                    | PASS     |
|                                                           | 5190MHz           | 43.55           | 36.627                    | PASS     |
|                                                           | 5230MHz           | 43.85           | 36.524                    | PASS     |

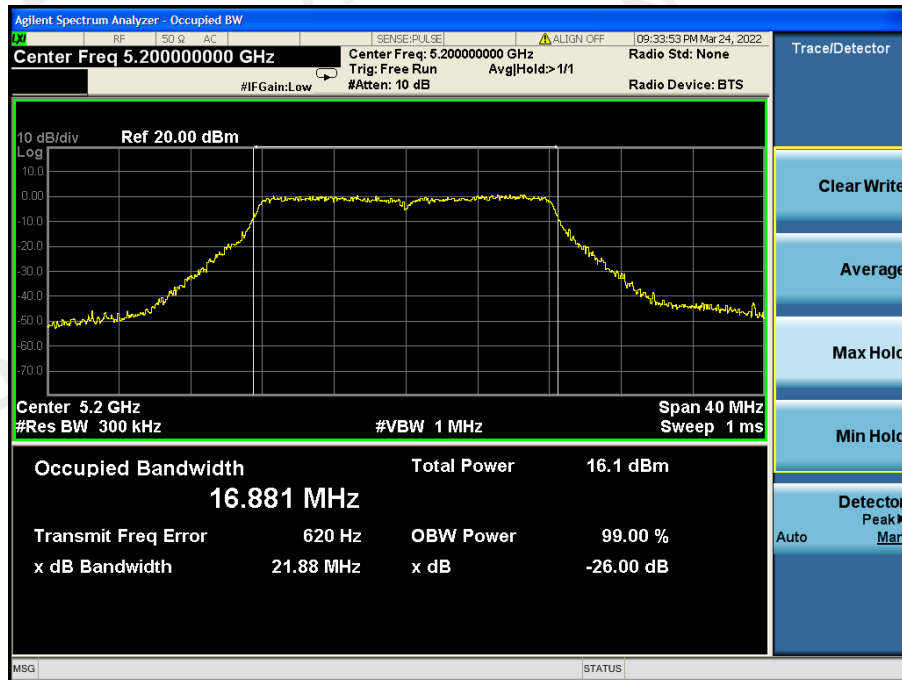
| LIMITS AND MEASUREMENT RESULT FOR 802.11AC20/40/80 MODULATION |                   |                 |                           |          |
|---------------------------------------------------------------|-------------------|-----------------|---------------------------|----------|
| Applicable Limits                                             | Applicable Limits |                 |                           |          |
|                                                               | Test Data (MHz)   |                 |                           | Criteria |
|                                                               | Frequency (MHz)   | -26dB Bandwidth | 99.00% Occupied Bandwidth |          |
| >500KHZ                                                       | 5180MHz           | 22.00           | 17.879                    | PASS     |
|                                                               | 5200MHz           | 21.99           | 17.915                    | PASS     |
|                                                               | 5240MHz           | 21.93           | 17.876                    | PASS     |
|                                                               | 5190MHz           | 43.65           | 36.592                    | PASS     |
|                                                               | 5230MHz           | 43.88           | 36.549                    | PASS     |
|                                                               | 5210MHz           | 81.54           | 75.146                    | PASS     |

## 802.11a20 TEST RESULT

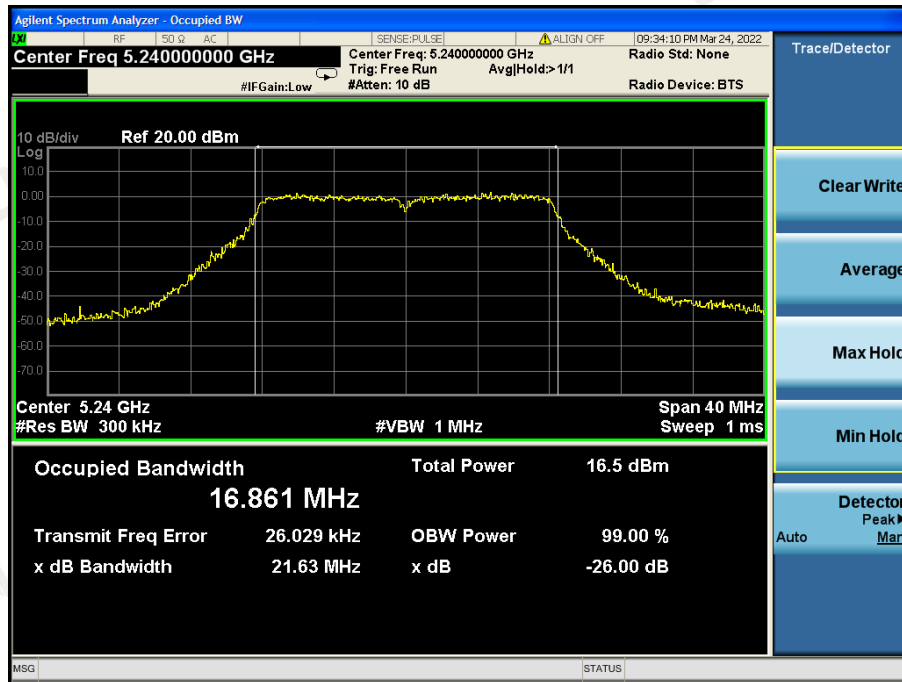
### BANDWIDTH FOR 5180MHz (-26dB BANDWIDTH)



### BANDWIDTH FOR 5200MHz (-26dB BANDWIDTH)

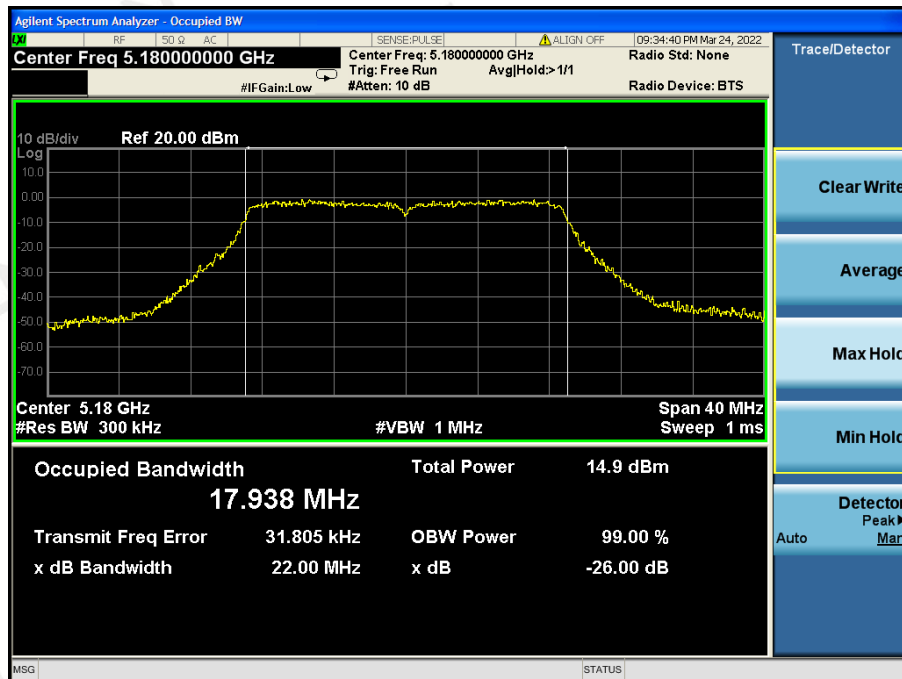


### BANDWIDTH FOR 5240MHz (-26dB BANDWIDTH)

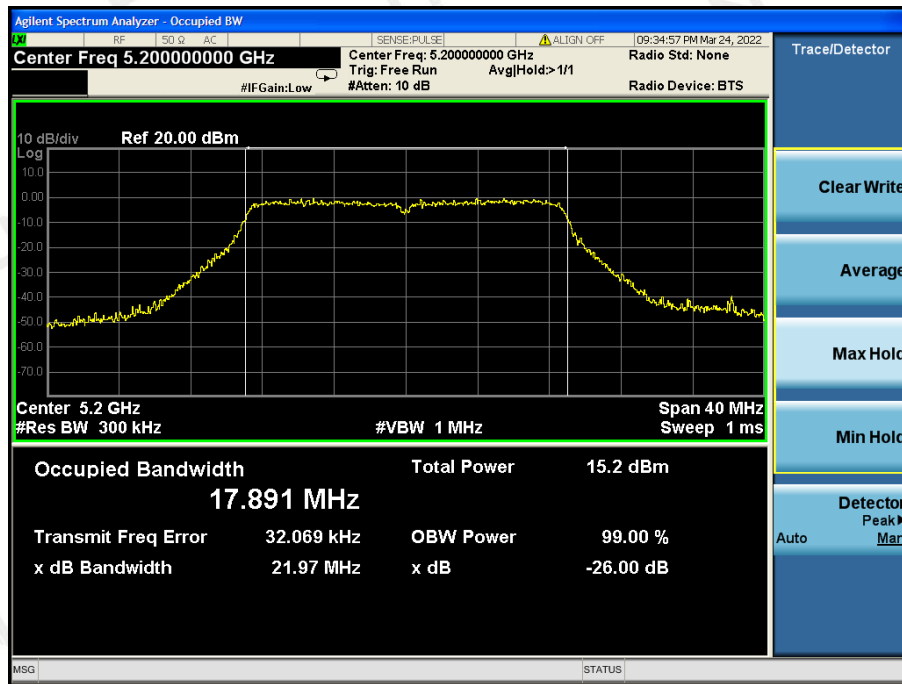


### 802.11n20 TEST RESULT

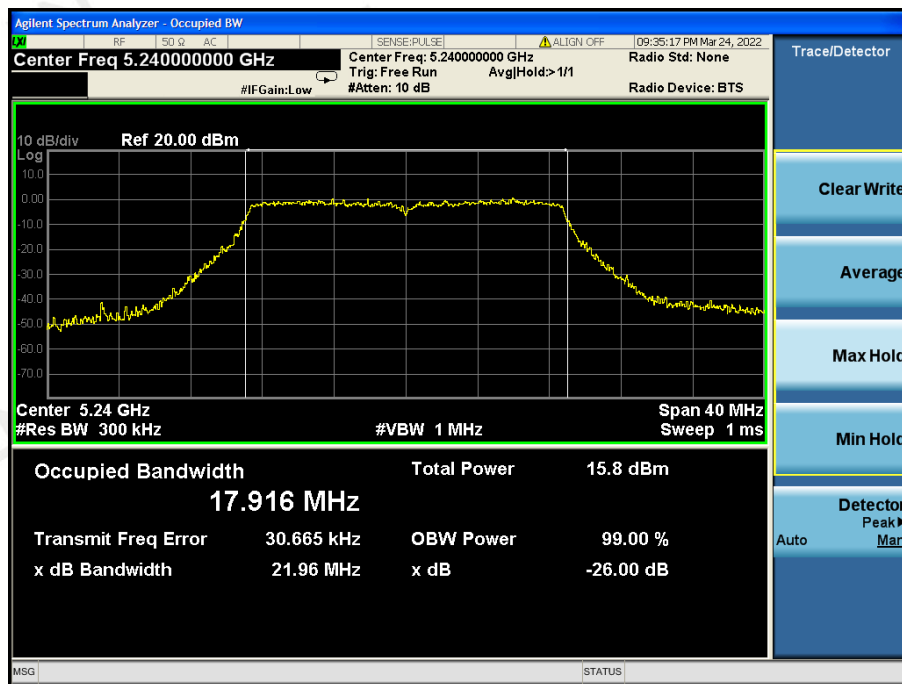
### BANDWIDTH FOR 5180MHz (-26dB BANDWIDTH)



### BANDWIDTH FOR 5200MHz (-26dB BANDWIDTH)

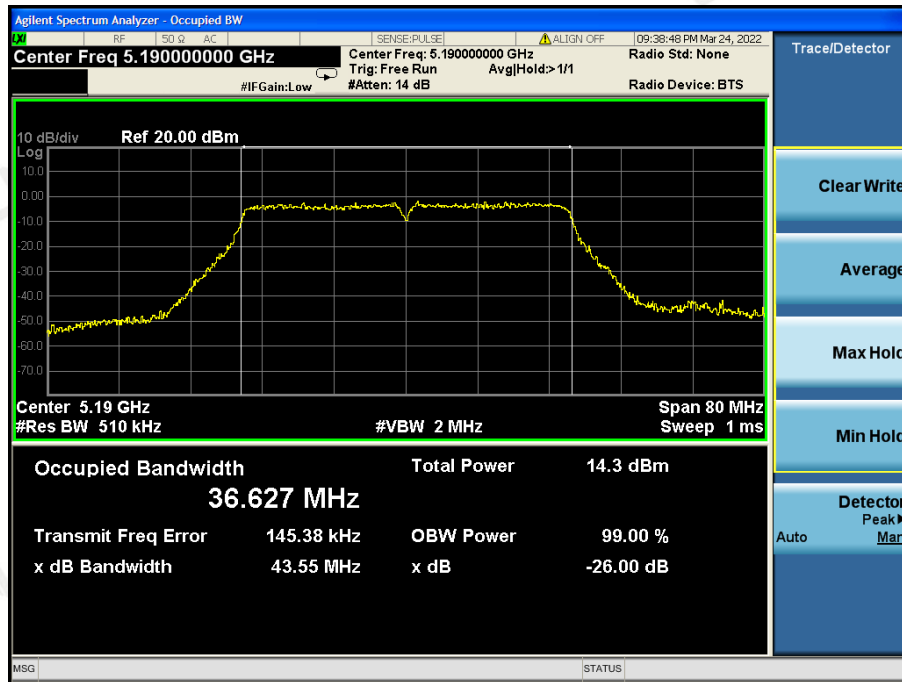


### BANDWIDTH FOR 5240MHz (-26dB BANDWIDTH)

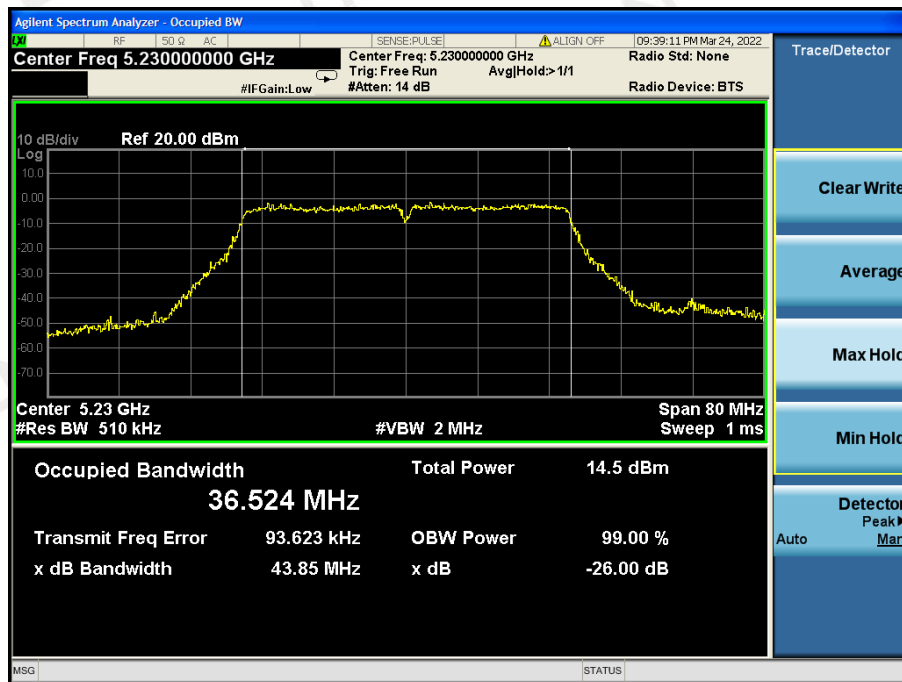


## 802.11n40 TEST RESULT

### BANDWIDTH FOR 5190MHz (-26dB BANDWIDTH)

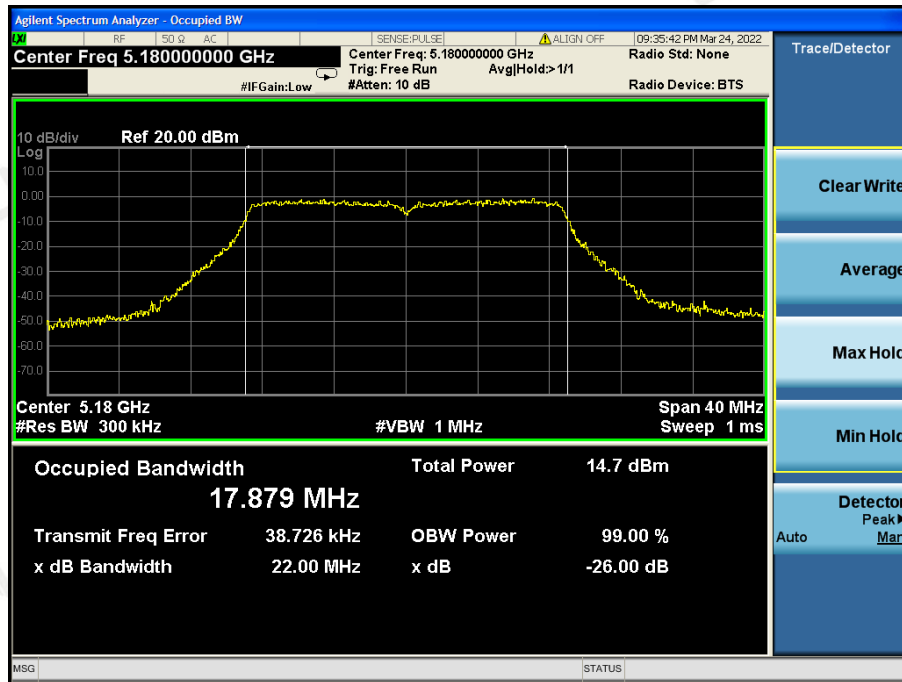


### BANDWIDTH FOR 5230MHz (-26dB BANDWIDTH)

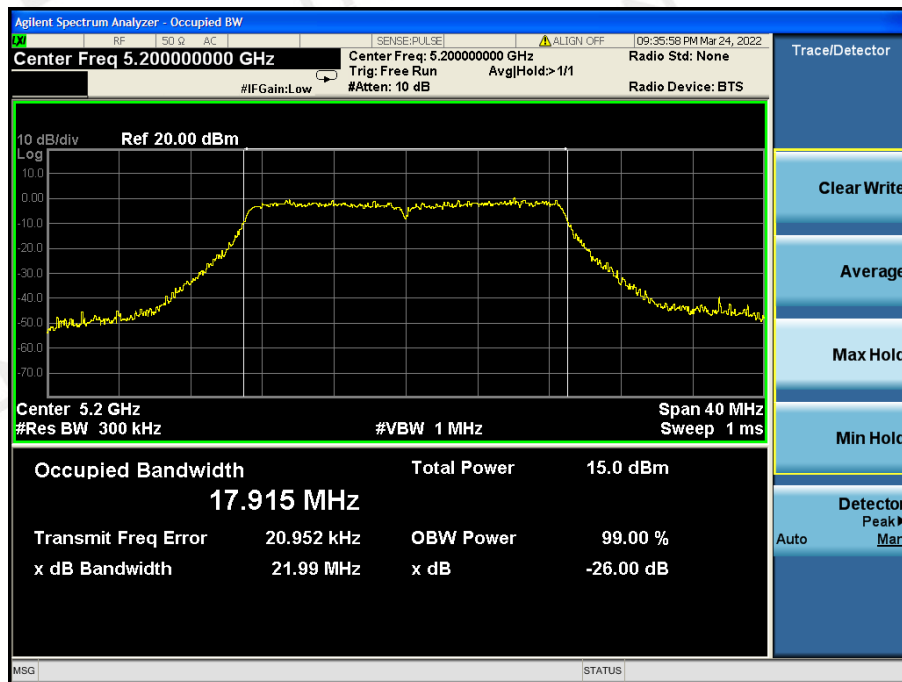


## 802.11ac20 TEST RESULT

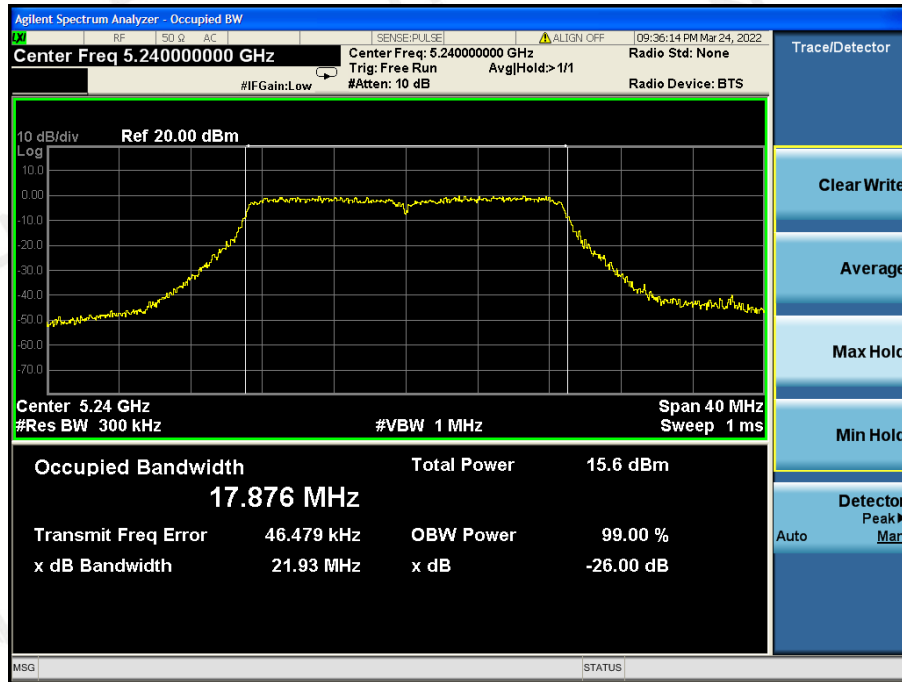
### BANDWIDTH FOR 5180MHz (-26dB BANDWIDTH)



### BANDWIDTH FOR 5200MHz (-26dB BANDWIDTH)

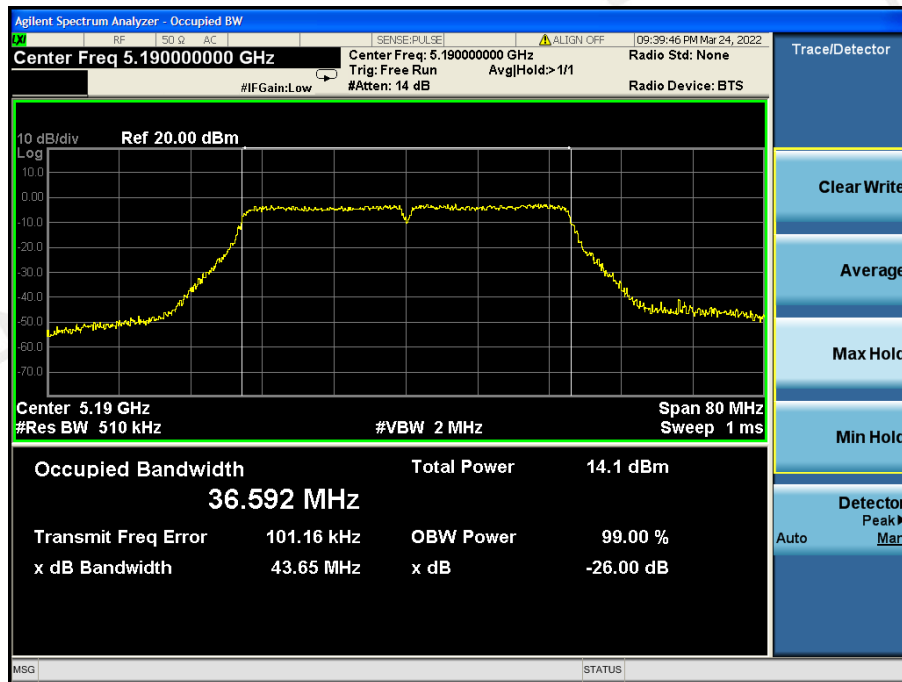


### BANDWIDTH FOR 5240MHz (-26dB BANDWIDTH)

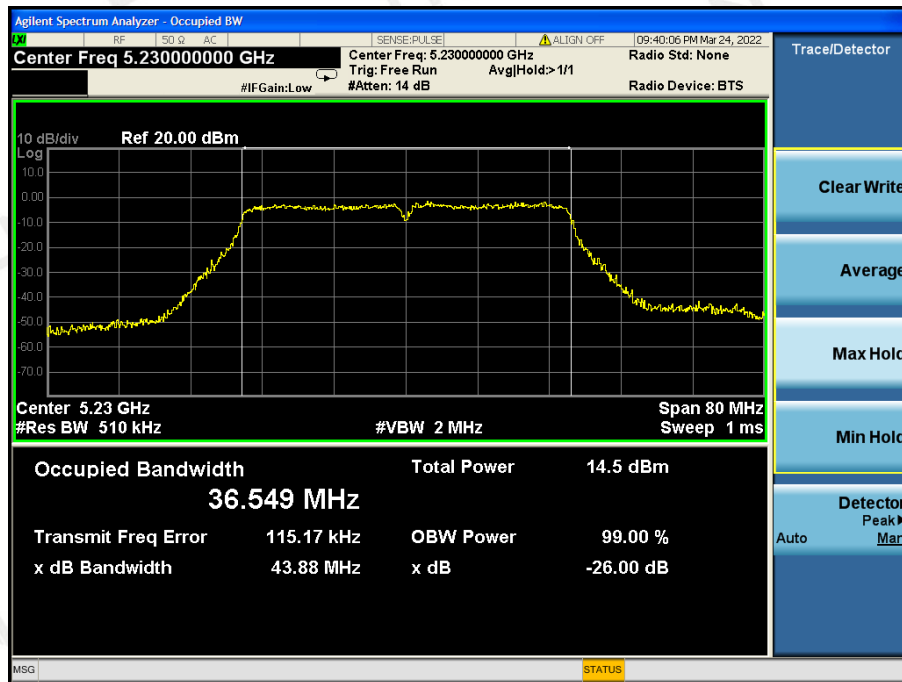


### 802.11ac40 TEST RESULT

### BANDWIDTH FOR 5190MHz (-26dB BANDWIDTH)

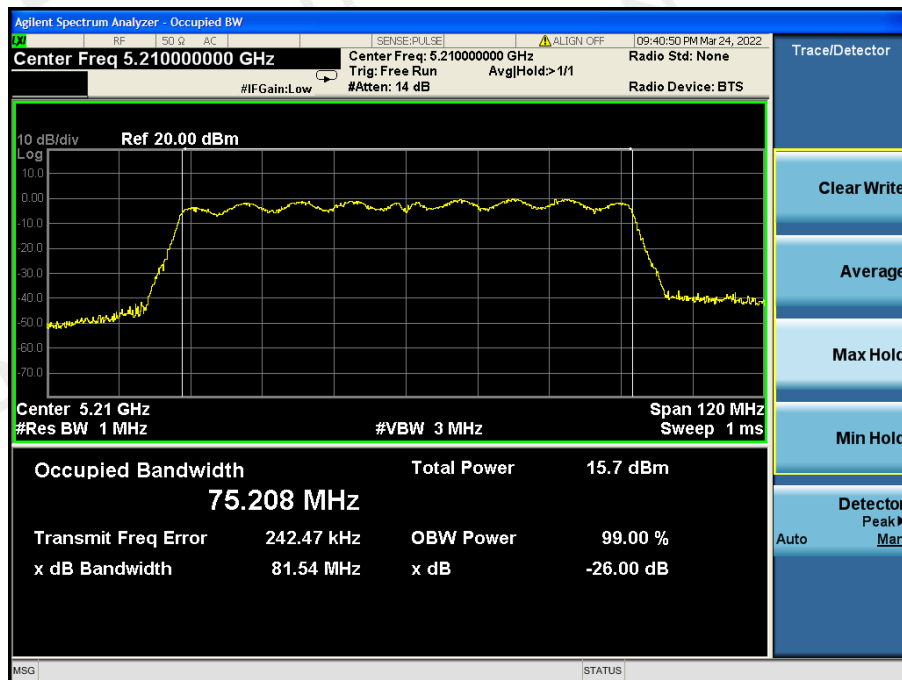


### BANDWIDTH FOR 5230MHz (-26dB BANDWIDTH)



### 802.11ac80 TEST RESULT

### BANDWIDTH FOR 5210MHz (-26dB BANDWIDTH)



## 9. MAXIMUM CONDUCTED OUTPUT AVERAGE POWER SPECTRAL DENSITY

### 9.1 MEASUREMENT PROCEDURE

Refer to KDB 789033 D02 v02r01 section F

### 9.2 TEST SET-UP (BLOCK DIAGRAM OF CONFIGURATION)

Refer To Section 8.2.

### 9.3 MEASUREMENT EQUIPMENT USED

Refer To Section 6.

### 9.4 LIMITS AND MEASUREMENT RESULT

| LIMITS AND MEASUREMENT RESULT FOR 802.11A20 MODULATION |                              |                                  |              |
|--------------------------------------------------------|------------------------------|----------------------------------|--------------|
| Frequency (MHz)                                        | Power density (30dBm/500kHz) | Applicable Limits (30dBm/500kHz) | Pass or Fail |
| 5180                                                   | 3.068                        | 30                               | Pass         |
| 5200                                                   | 3.922                        | 30                               | Pass         |
| 5240                                                   | 4.123                        | 30                               | Pass         |

| LIMITS AND MEASUREMENT RESULT FOR 802.11N20 MODULATION |                              |                                  |              |
|--------------------------------------------------------|------------------------------|----------------------------------|--------------|
| Frequency (MHz)                                        | Power density (30dBm/500kHz) | Applicable Limits (30dBm/500kHz) | Pass or Fail |
| 5180                                                   | 2.251                        | 30                               | Pass         |
| 5200                                                   | 2.550                        | 30                               | Pass         |
| 5240                                                   | 2.683                        | 30                               | Pass         |

| LIMITS AND MEASUREMENT RESULT FOR 802.11N40 MODULATION |                              |                                  |              |
|--------------------------------------------------------|------------------------------|----------------------------------|--------------|
| Frequency (MHz)                                        | Power density (30dBm/500kHz) | Applicable Limits (30dBm/500kHz) | Pass or Fail |
| 5190                                                   | -1.331                       | 30                               | Pass         |
| 5230                                                   | -0.812                       | 30                               | Pass         |

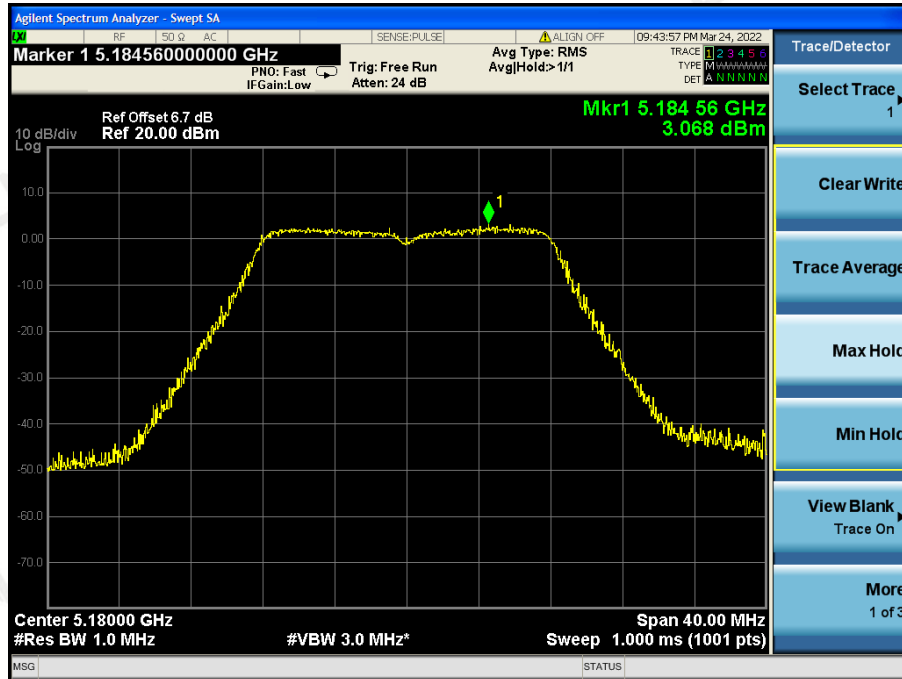
| LIMITS AND MEASUREMENT RESULT FOR 802.11AC20 MODULATION |                              |                                  |              |
|---------------------------------------------------------|------------------------------|----------------------------------|--------------|
| Frequency (MHz)                                         | Power density (30dBm/500kHz) | Applicable Limits (30dBm/500kHz) | Pass or Fail |
| 5180                                                    | 1.914                        | 30                               | Pass         |
| 5200                                                    | 2.113                        | 30                               | Pass         |
| 5240                                                    | 2.938                        | 30                               | Pass         |

| LIMITS AND MEASUREMENT RESULT FOR 802.1AC40 MODULATION |                              |                                  |              |
|--------------------------------------------------------|------------------------------|----------------------------------|--------------|
| Frequency (MHz)                                        | Power density (30dBm/500kHz) | Applicable Limits (30dBm/500kHz) | Pass or Fail |
| 5190                                                   | -1.539                       | 30                               | Pass         |
| 5230                                                   | -0.612                       | 30                               | Pass         |

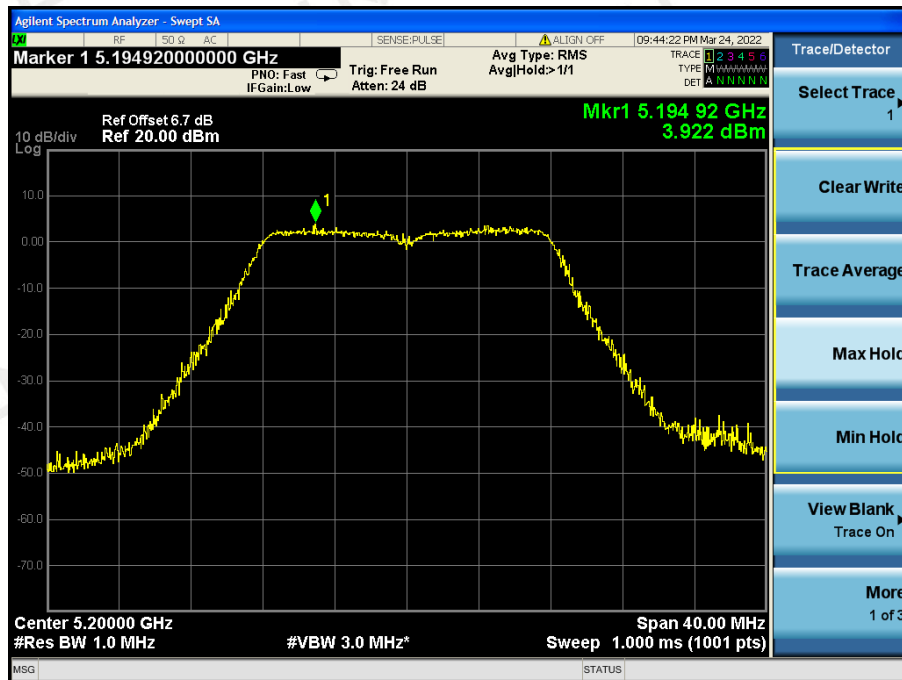
| LIMITS AND MEASUREMENT RESULT FOR 802.1AC80 MODULATION |                              |                                  |              |
|--------------------------------------------------------|------------------------------|----------------------------------|--------------|
| Frequency (MHz)                                        | Power density (30dBm/500kHz) | Applicable Limits (30dBm/500kHz) | Pass or Fail |
| 5210                                                   | -1.858                       | 30                               | Pass         |

## 802.11a20 TEST RESULT

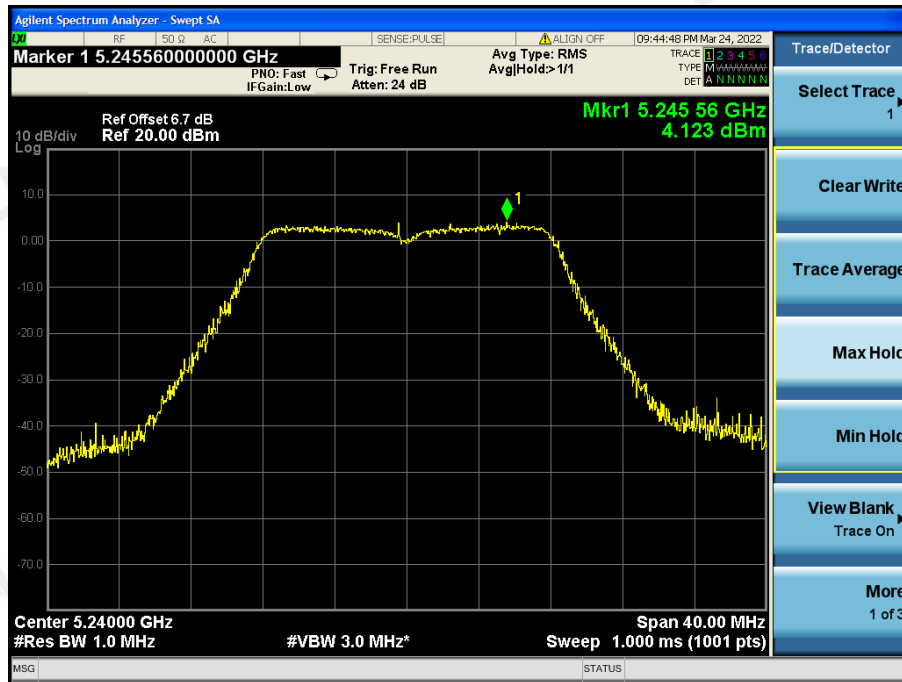
### SPECTRAL DENSITY FOR 5180MHz



### SPECTRAL DENSITY FOR 5200MHz

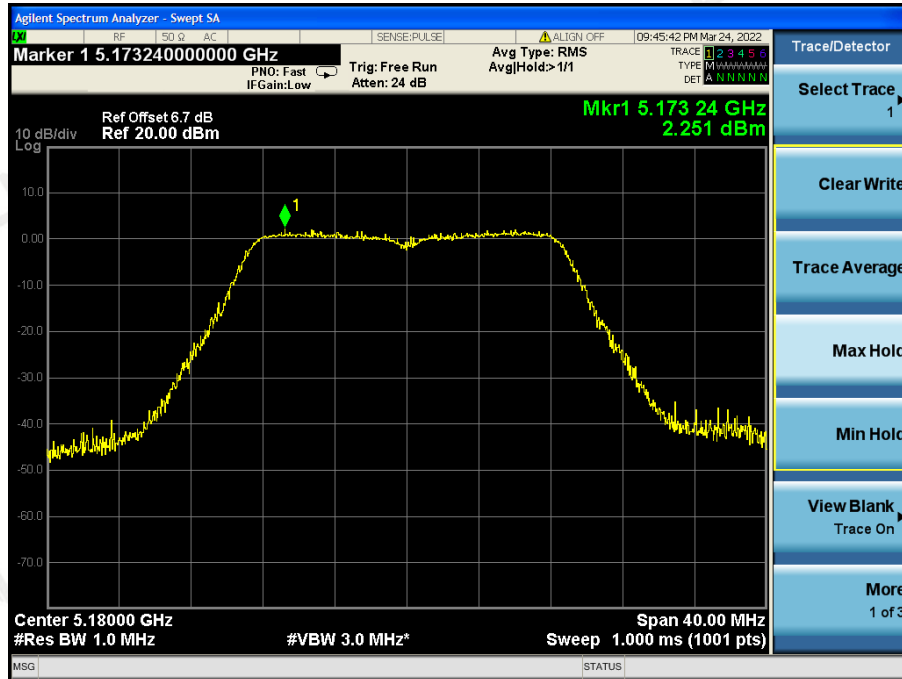


# SPECTRAL DENSITY FOR 5240MHZ

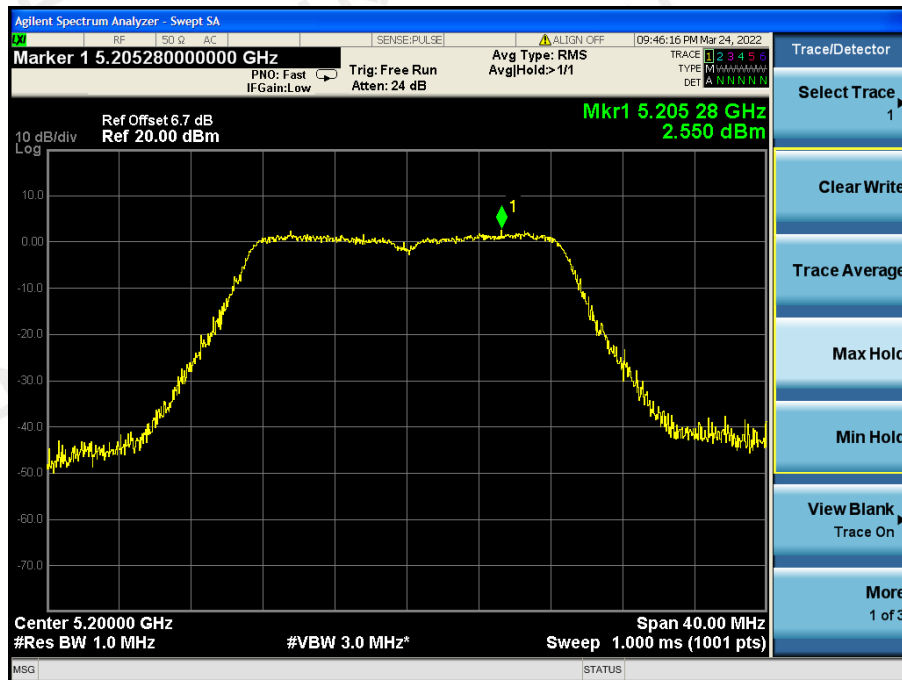


## 802.11n20 TEST RESULT

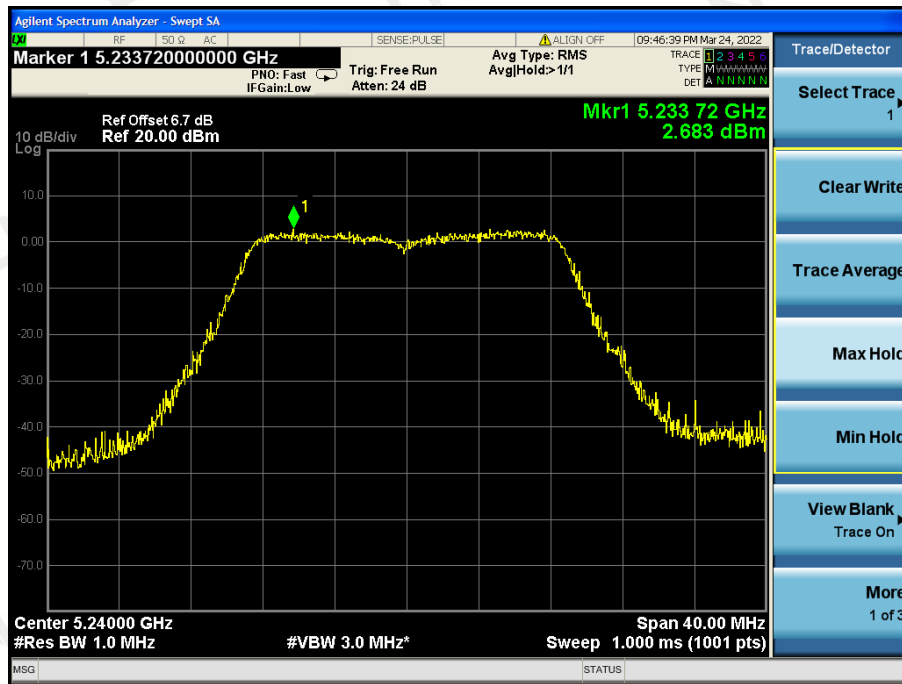
### SPECTRAL DENSITY FOR 5180MHz



### SPECTRAL DENSITY FOR 5200MHz

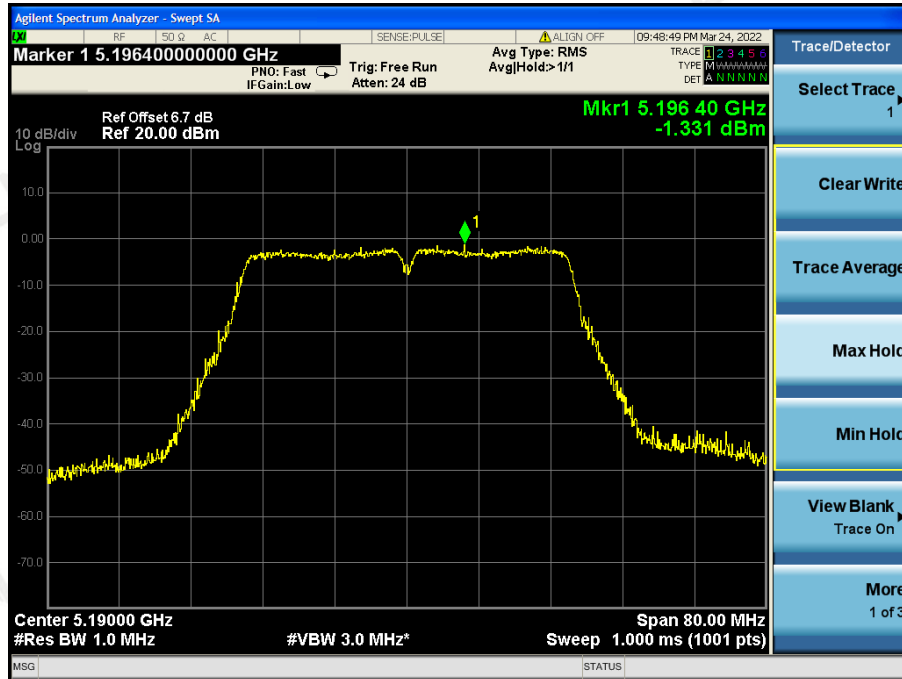


# SPECTRAL DENSITY FOR 5240MHZ

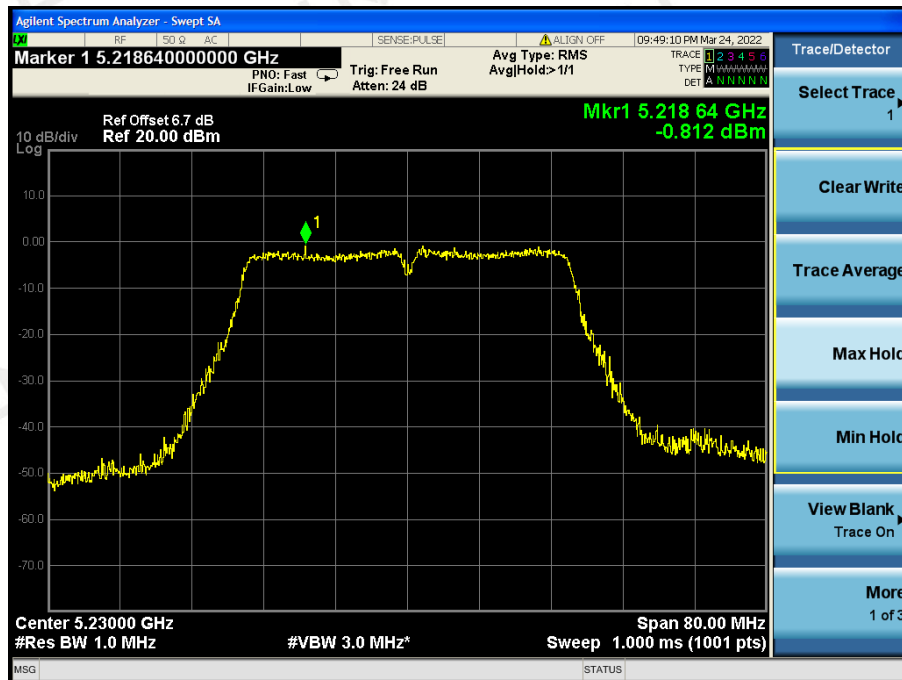


## 802.11n40 TEST RESULT

### SPECTRAL DENSITY FOR 5190MHz

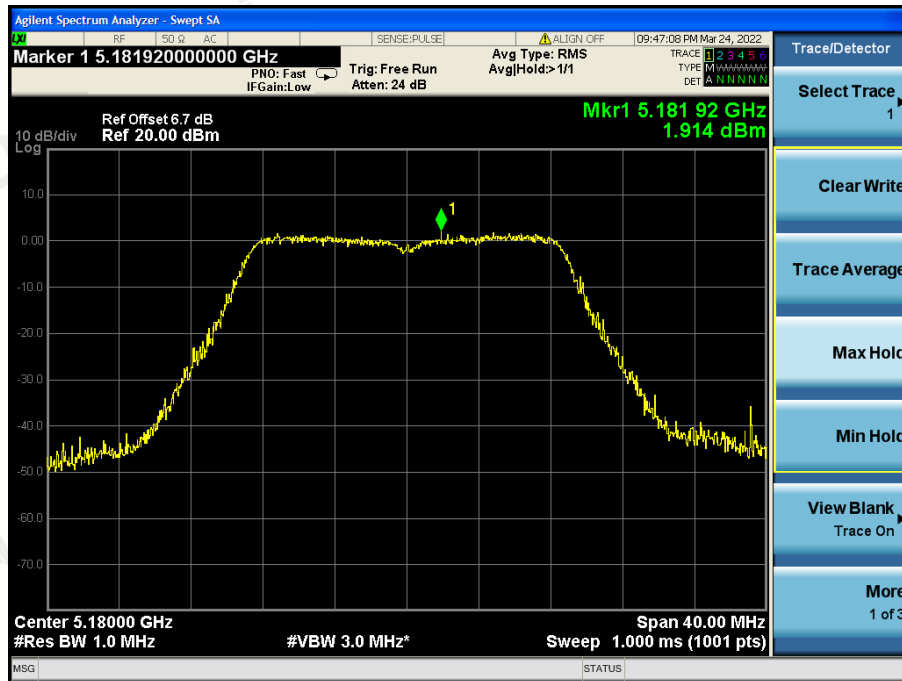


### SPECTRAL DENSITY FOR 5230MHz

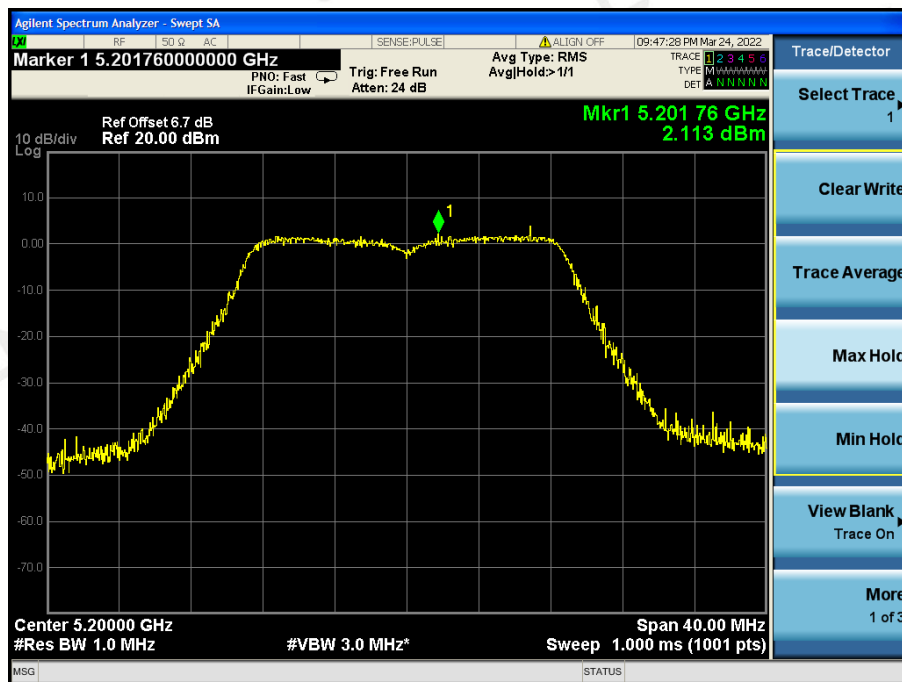


## 802.11ac20 TEST RESULT

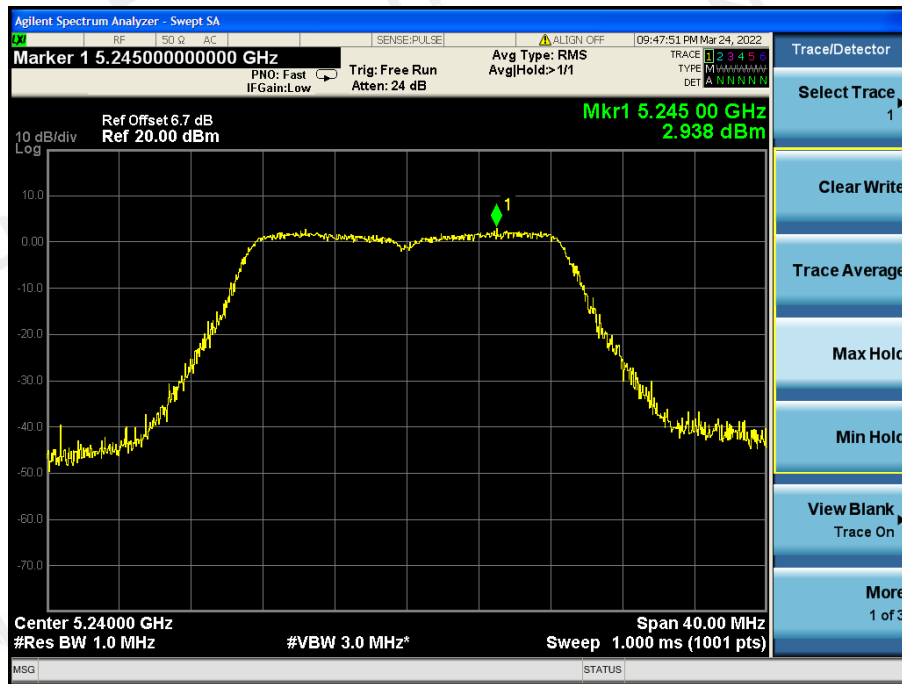
### SPECTRAL DENSITY FOR 5180MHz



### SPECTRAL DENSITY FOR 5200MHz

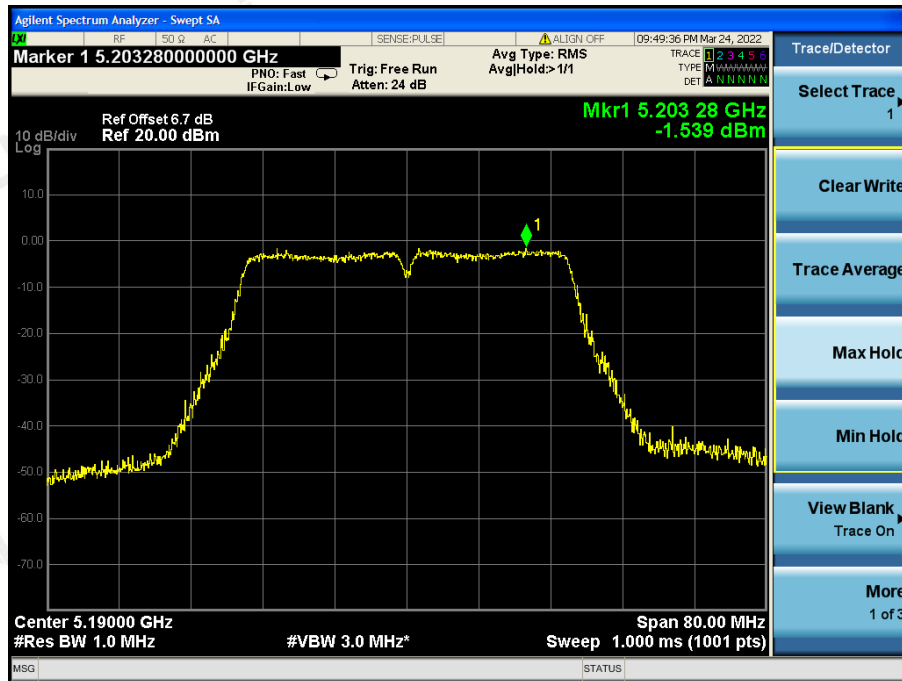


# SPECTRAL DENSITY FOR 5240MHz

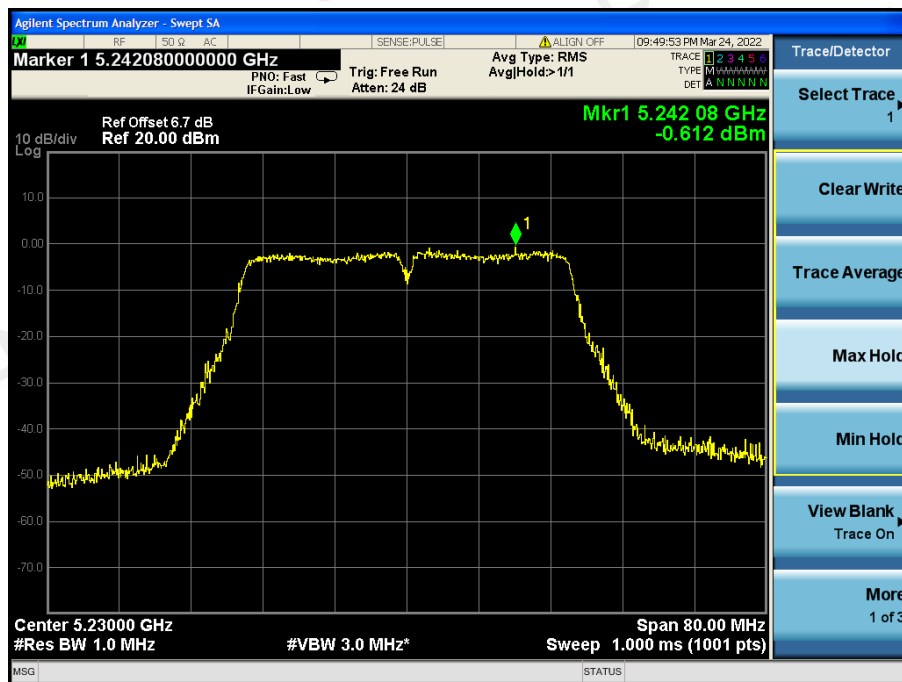


## 802.11ac40 TEST RESULT

### SPECTRAL DENSITY FOR 5190MHz

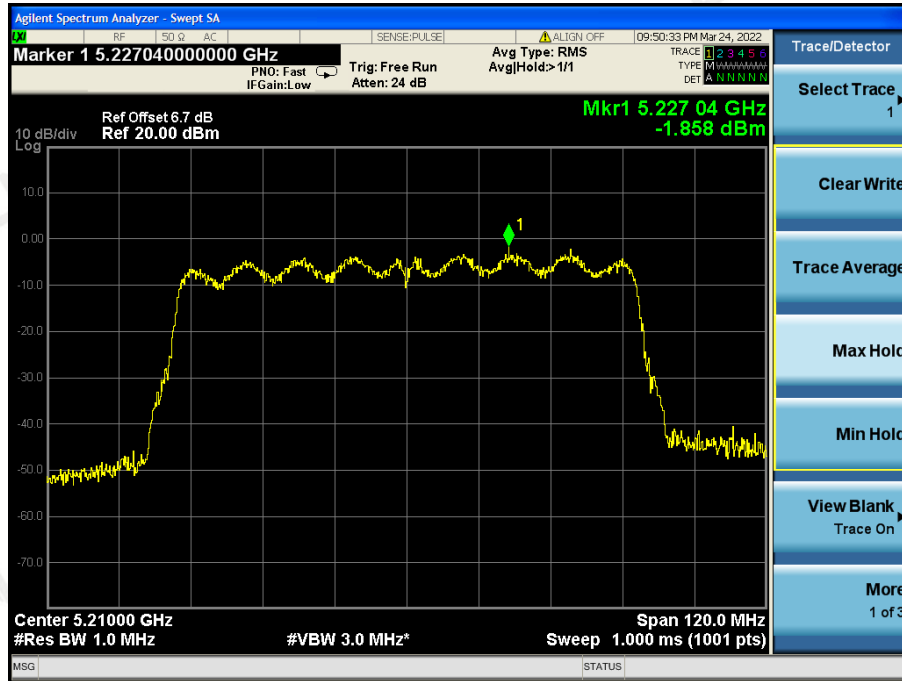


### SPECTRAL DENSITY FOR 5230MHz



## 802.11ac80 TEST RESULT

### TEST PLOT OF SPECTRAL DENSITY FOR 5210MHz



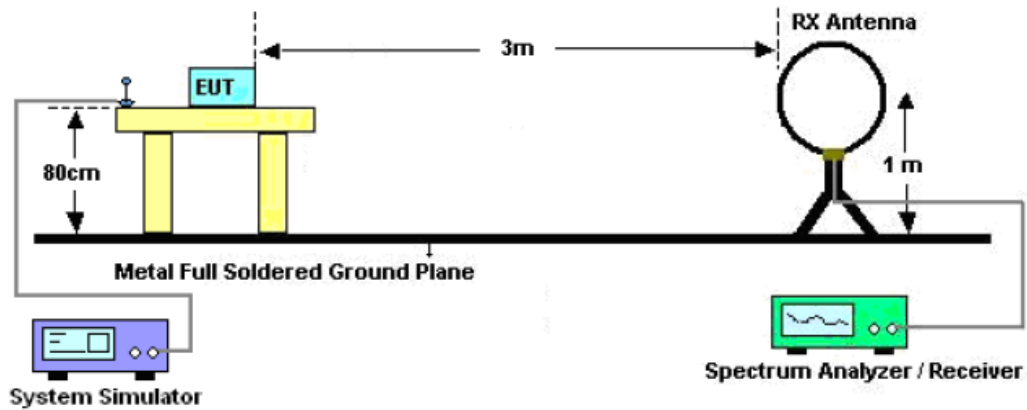
## 10. RADIATED EMISSION

### 10.1. MEASUREMENT PROCEDURE

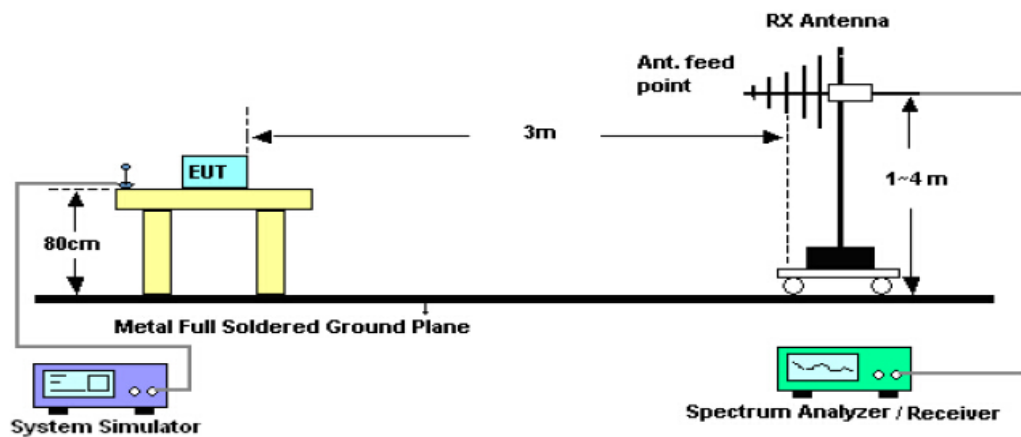
1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emissions, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz RBW and 3M VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.
8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.

## 10.2. TEST SETUP

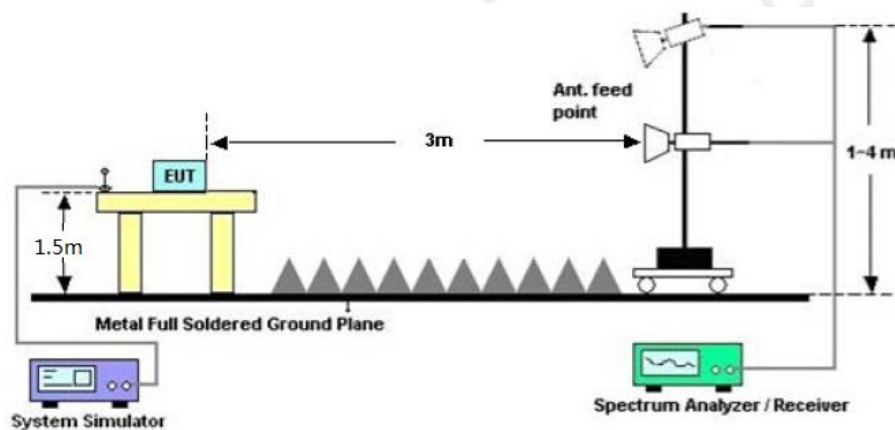
### Radiated Emission Test-Setup Frequency Below 30MHz



### RADIATED EMISSION TEST SETUP 30MHz-1000MHz



### RADIATED EMISSION TEST SETUP ABOVE 1000MHz



### 10.3. LIMITS AND MEASUREMENT RESULT

15.209(a) Limit in the below table has to be followed

| Frequencies<br>(MHz) | Field Strength<br>(micorvolts/meter) | Measurement Distance<br>(meters) |
|----------------------|--------------------------------------|----------------------------------|
| 0.009~0.490          | 2400/F(KHz)                          | 300                              |
| 0.490~1.705          | 24000/F(KHz)                         | 30                               |
| 1.705~30.0           | 30                                   | 30                               |
| 30~88                | 100                                  | 3                                |
| 88~216               | 150                                  | 3                                |
| 216~960              | 200                                  | 3                                |
| Above 960            | 500                                  | 3                                |

Note: All modes were tested For restricted band radiated emission, the test records reported below are the worst result compared to other modes.

### 10.4. TEST RESULT

#### RADIATED EMISSION BELOW 30MHZ

The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.

# RADIATED EMISSION BELOW 1GHz

Between 9KHz – 30 MHz

|               |                              |                     |                   |
|---------------|------------------------------|---------------------|-------------------|
| EUT :         | AUTO DIAGNOSTIC TOOL         | Model Name. :       | IDUTEX DS810 Plus |
| Temperature : | 24 °C                        | Relative Humidity : | 54%               |
| Pressure :    | 1010 hPa                     | Test Date :         | 2022-03-14        |
| Test Mode :   | TX(802.11a CH149 worst case) | Polarization :      | --                |

| Freq. | Reading  | Limit    | Margin | State |
|-------|----------|----------|--------|-------|
| (MHz) | (dBuV/m) | (dBuV/m) | (dB)   | P/F   |
| --    | --       | --       | --     | N/A   |
| --    | --       | --       | --     | N/A   |

Note:

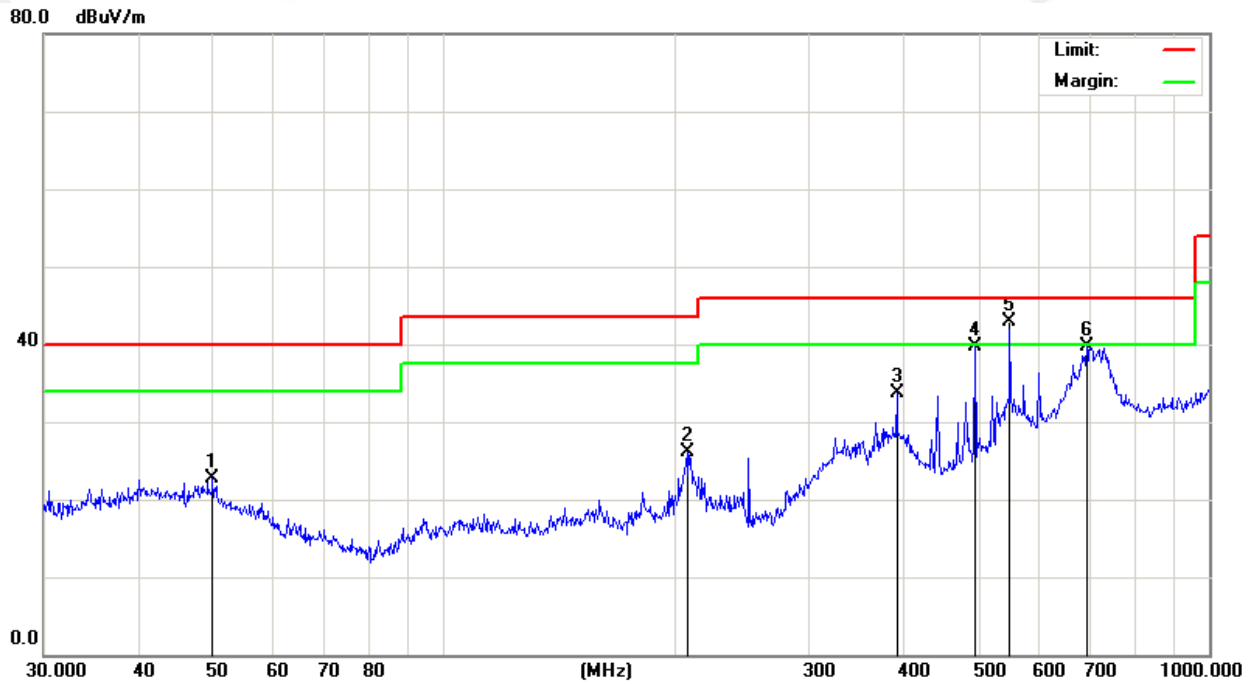
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =  $40 \log (\text{specific distance/test distance})$ (dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.

## Between 30 – 1000 MHz

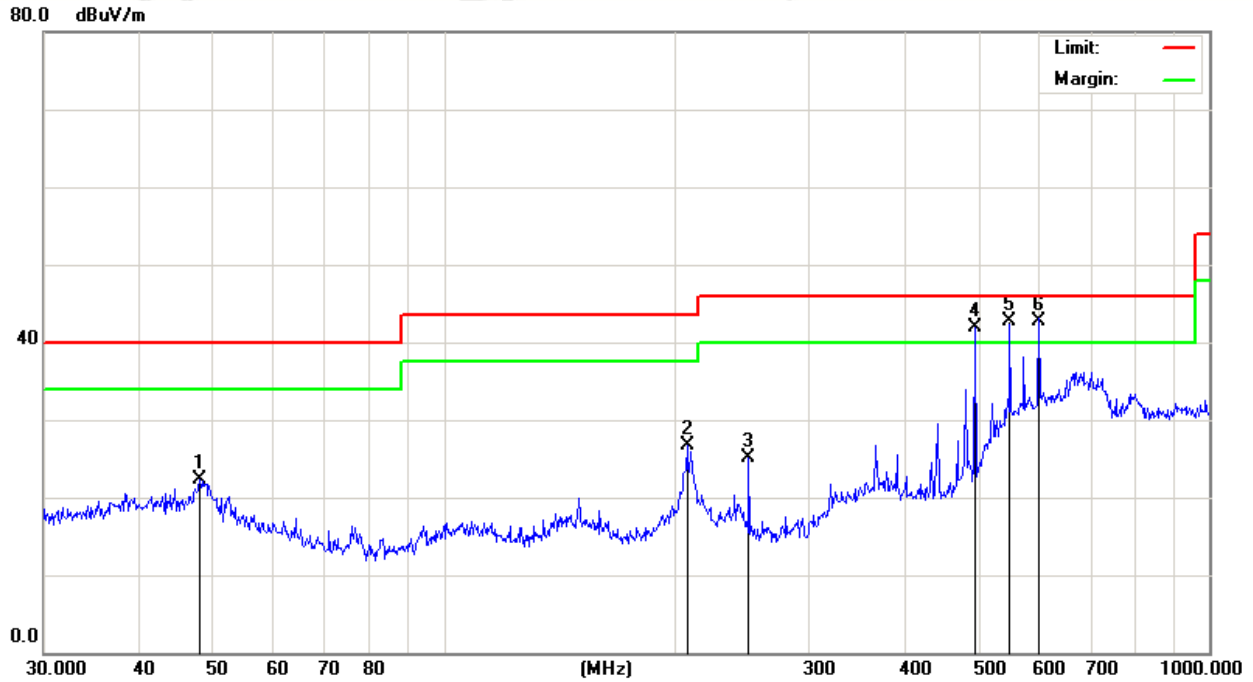
|               |                                      |                    |            |
|---------------|--------------------------------------|--------------------|------------|
| Temperature:  | 24℃                                  | Relative Humidity: | 48%        |
| Test Date:    | Mar. 14, 2022                        | Pressure:          | 1010hPa    |
| Test Voltage: | AC 120V, 60Hz                        | Phase:             | Horizontal |
| Test Mode:    | Transmitting mode of 802.11a 5180MHz |                    |            |



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV/m | Limit<br>dBuV/m | Over<br>dB | Detector |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|-----------------|------------|----------|
| 1   |     | 49.8814      | 25.91                    | -3.22                   | 22.69                      | 40.00           | -17.31     | peak     |
| 2   |     | 207.8501     | 33.35                    | -7.16                   | 26.19                      | 43.50           | -17.31     | peak     |
| 3   |     | 390.7226     | 37.17                    | -3.50                   | 33.67                      | 46.00           | -12.33     | peak     |
| 4   |     | 494.1984     | 38.67                    | 1.07                    | 39.74                      | 46.00           | -6.26      | peak     |
| 5   | *   | 547.0977     | 38.21                    | 4.61                    | 42.82                      | 46.00           | -3.18      | QP       |
| 6   |     | 691.9867     | 32.81                    | 6.97                    | 39.78                      | 46.00           | -6.22      | peak     |

RESULT: PASS

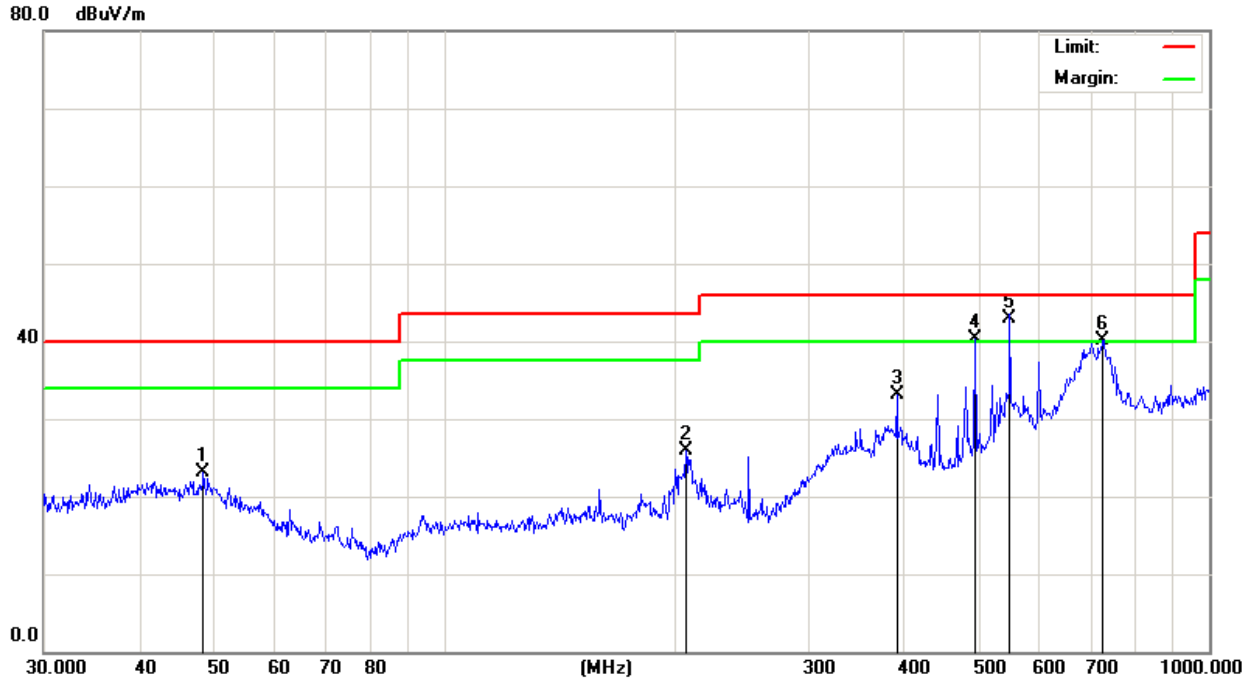
|               |                                      |                    |          |
|---------------|--------------------------------------|--------------------|----------|
| Temperature:  | 24°C                                 | Relative Humidity: | 48%      |
| Test Date:    | Mar. 14, 2022                        | Pressure:          | 1010hPa  |
| Test Voltage: | AC 120V, 60Hz                        | Phase:             | Vertical |
| Test Mode:    | Transmitting mode of 802.11a 5180MHz |                    |          |



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV/m | Limit<br>dBuV/m | Over<br>dB | Detector |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|-----------------|------------|----------|
| 1   |     | 47.9940      | 27.66                    | -5.44                   | 22.22                      | 40.00           | -17.78     | peak     |
| 2   |     | 207.8501     | 31.15                    | -4.45                   | 26.70                      | 43.50           | -16.80     | peak     |
| 3   |     | 250.3012     | 34.00                    | -8.93                   | 25.07                      | 46.00           | -20.93     | peak     |
| 4   | !   | 494.1984     | 44.22                    | -2.24                   | 41.98                      | 46.00           | -4.02      | peak     |
| 5   | !   | 547.0977     | 41.10                    | 1.61                    | 42.71                      | 46.00           | -3.29      | QP       |
| 6   | *   | 599.3212     | 39.50                    | 3.30                    | 42.80                      | 46.00           | -3.20      | peak     |

RESULT: PASS

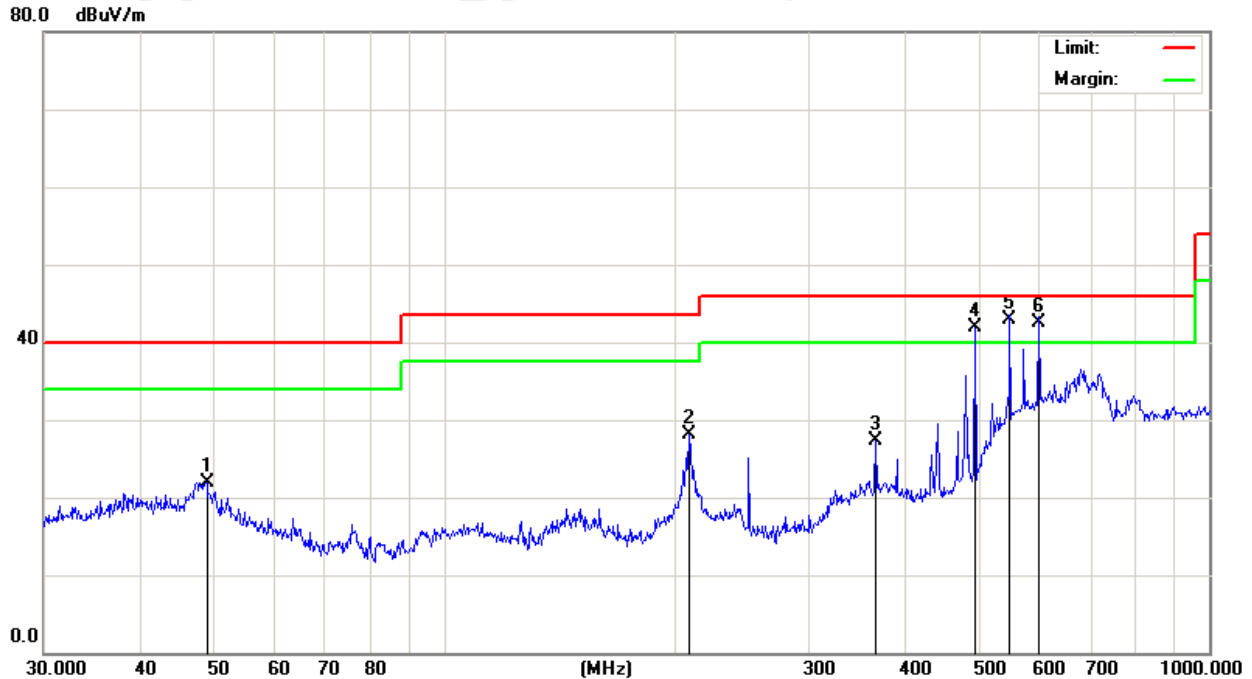
|               |                                      |                    |            |
|---------------|--------------------------------------|--------------------|------------|
| Temperature:  | 24°C                                 | Relative Humidity: | 48%        |
| Test Date:    | Mar. 14, 2022                        | Pressure:          | 1010hPa    |
| Test Voltage: | AC 120V, 60Hz                        | Phase:             | Horizontal |
| Test Mode:    | Transmitting mode of 802.11a 5240MHz |                    |            |



| No. | Mk. | Freq.<br>MHz | Reading<br>Level<br>dBuV | Correct<br>Factor<br>dB | Measure-<br>ment<br>dBuV/m | Limit<br>dBuV/m | Over<br>dB | Detector |
|-----|-----|--------------|--------------------------|-------------------------|----------------------------|-----------------|------------|----------|
| 1   |     | 48.5016      | 26.07                    | -3.05                   | 23.02                      | 40.00           | -16.98     | peak     |
| 2   |     | 207.1226     | 33.16                    | -7.17                   | 25.99                      | 43.50           | -17.51     | peak     |
| 3   |     | 390.7226     | 36.51                    | -3.50                   | 33.01                      | 46.00           | -12.99     | peak     |
| 4   | !   | 494.1984     | 39.22                    | 1.07                    | 40.29                      | 46.00           | -5.71      | peak     |
| 5   | *   | 547.0977     | 38.30                    | 4.61                    | 42.91                      | 46.00           | -3.09      | QP       |
| 6   | !   | 726.8052     | 32.97                    | 7.22                    | 40.19                      | 46.00           | -5.81      | peak     |

RESULT: PASS

|               |                                      |                    |          |
|---------------|--------------------------------------|--------------------|----------|
| Temperature:  | 24℃                                  | Relative Humidity: | 48%      |
| Test Date:    | Mar. 14, 2022                        | Pressure:          | 1010hPa  |
| Test Voltage: | AC 120V, 60Hz                        | Phase:             | Vertical |
| Test Mode:    | Transmitting mode of 802.11a 5240MHz |                    |          |



| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measurement | Limit  | Over   |
|-----|-----|----------|---------------|----------------|-------------|--------|--------|
|     |     | MHz      | dBuV          | dB             | dBuV/m      | dBuV/m | dB     |
| 1   |     | 49.0145  | 27.61         | -5.74          | 21.87       | 40.00  | -18.13 |
| 2   |     | 209.3129 | 32.03         | -3.96          | 28.07       | 43.50  | -15.43 |
| 3   |     | 366.8231 | 31.62         | -4.25          | 27.37       | 46.00  | -18.63 |
| 4   | !   | 494.1984 | 44.12         | -2.24          | 41.88       | 46.00  | -4.12  |
| 5   | *   | 547.0977 | 41.25         | 1.61           | 42.86       | 46.00  | -3.14  |
| 6   | !   | 599.3212 | 39.30         | 3.30           | 42.60       | 46.00  | -3.40  |

## RESULT: PASS

**Note:** All test channels had been tested. The 802.11a20 is the worst case and recorded in the test report..

Factor = Antenna Factor + Cable loss - Amplifier gain, Margin= Limit-Level.

The "Factor" value can be calculated automatically by software of measurement system.

# Above 1 GHz Test Results:

## 802.11a20 Mode:

|                  |   |       |       |       |       |       |        |      |
|------------------|---|-------|-------|-------|-------|-------|--------|------|
| 802.11a-5180 MHz | H | 11490 | 32.32 | 16.82 | 49.14 | 74.00 | -24.86 | PEAK |
|                  | H | 17235 | 29.33 | 22.93 | 52.26 | 74.00 | -21.74 | PEAK |
|                  | V | 11490 | 30.75 | 16.82 | 47.57 | 74.00 | -26.43 | PEAK |
|                  | V | 17235 | 29.41 | 22.93 | 52.34 | 74.00 | -21.66 | PEAK |

|                  |   |       |       |       |       |       |        |      |
|------------------|---|-------|-------|-------|-------|-------|--------|------|
| 802.11a-5200 MHz | H | 11570 | 32.45 | 16.71 | 49.16 | 74.00 | -24.84 | PEAK |
|                  | H | 17355 | 27.44 | 24.37 | 51.81 | 74.00 | -22.19 | PEAK |
|                  | V | 11570 | 30.26 | 16.71 | 46.97 | 74.00 | -27.03 | PEAK |
|                  | V | 17355 | 28.42 | 24.37 | 52.79 | 74.00 | -21.21 | PEAK |

|                  |   |       |       |       |       |       |        |      |
|------------------|---|-------|-------|-------|-------|-------|--------|------|
| 802.11a-5240 MHz | H | 11650 | 34.13 | 16.61 | 50.74 | 74.00 | -23.26 | PEAK |
|                  | H | 17475 | 27.30 | 25.01 | 52.31 | 74.00 | -21.69 | PEAK |
|                  | V | 11650 | 32.12 | 16.61 | 48.73 | 74.00 | -25.27 | PEAK |
|                  | V | 17475 | 28.75 | 25.01 | 53.76 | 74.00 | -20.24 | PEAK |

### Note:

1. Measure Level = Reading Level + Factor.
2. The test trace is same as the ambient noise (the test frequency range: 18GHz~40GHz), therefore no data appear in the report.
3. All test channels had been tested. The 802.11a20 is the worst case and recorded in the test report. Other frequencies radiation emission from 1 to 40GHz at least have 20dB margin and not recorded in the test report.

## 11. BAND EDGE EMISSION

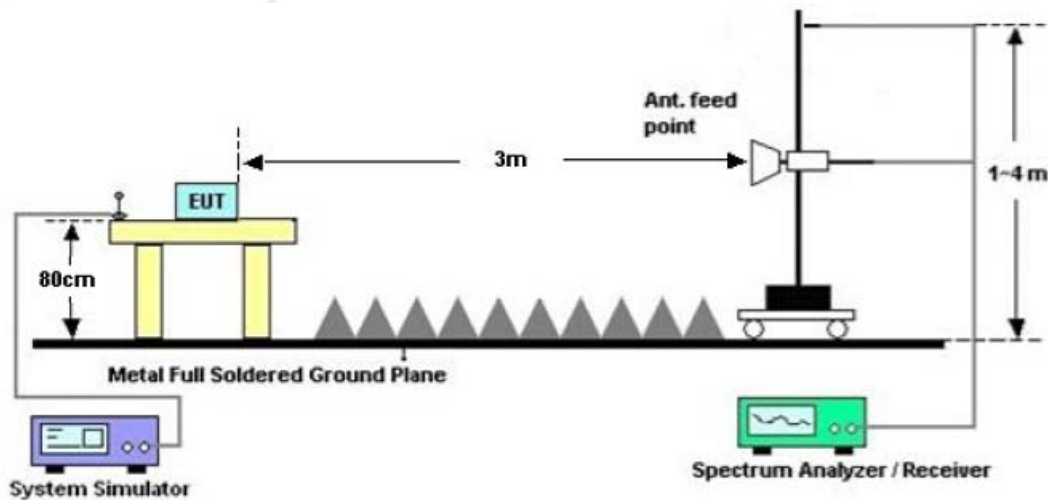
### 11.1. MEASUREMENT PROCEDURE

1. The EUT operates at transmitting mode. The operate channel is tested to verify the largest transmission and spurious emissions power at the continuous transmission mode.
2. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission: (a) PEAK: RBW=1MHz, VBW=3MHz / Sweep=AUTO  
(b) AVERAGE: RBW=1MHz ; VBW=3MHz/ Sweep=AUTO
3. Other procedures refer to clause 11.2.

#### Note:

1. Factor=Antenna Factor + Cable loss - Amplifier gain. Field Strength=Factor + Reading level
2. The factor had been edited in the "Input Correction" of the Spectrum Analyzer. So the Amplitude of test plots is equal to Reading level plus the Factor in dB. Use the A dB( $\mu$ V) to represent the Amplitude. Use the F dB( $\mu$ V/m) to represent the Field Strength. So A=F.
3. Only the data of band edge emission at the restricted band 4.5GHz-5.15GHz record in the report. Other restricted band 5.35GHz-5.46GHz and 7.25GHz-7.77GHz were considered as ambient noise. No recording in the test report.

### 11.2. TEST SET-UP



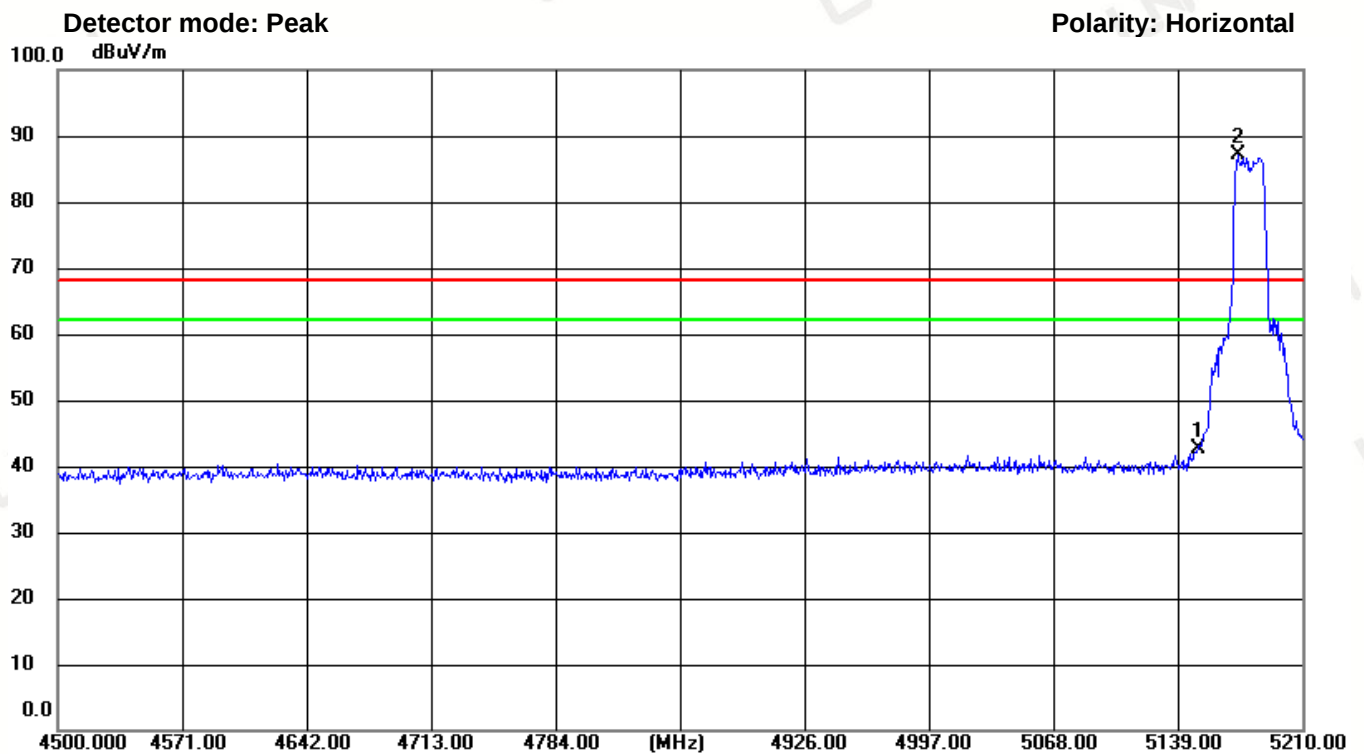
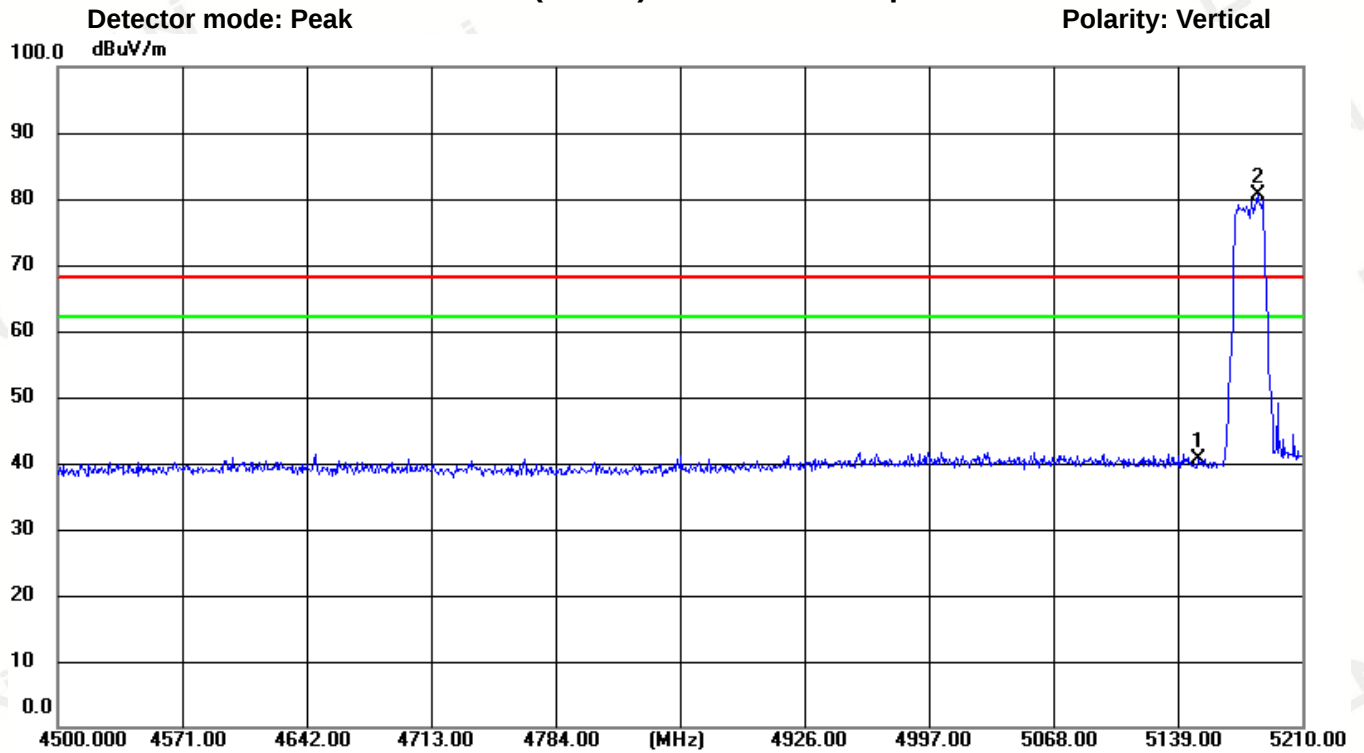
### 11.3. TEST RESULT

RESULT: PASS

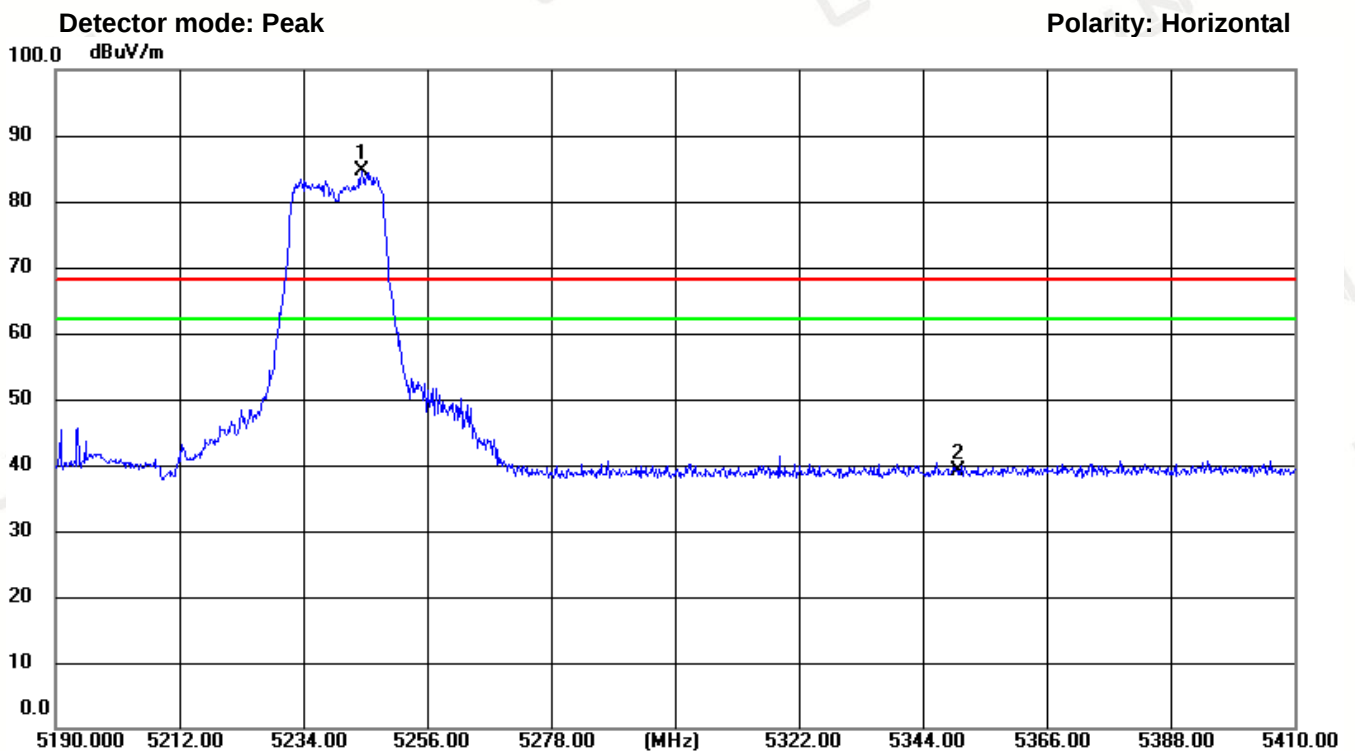
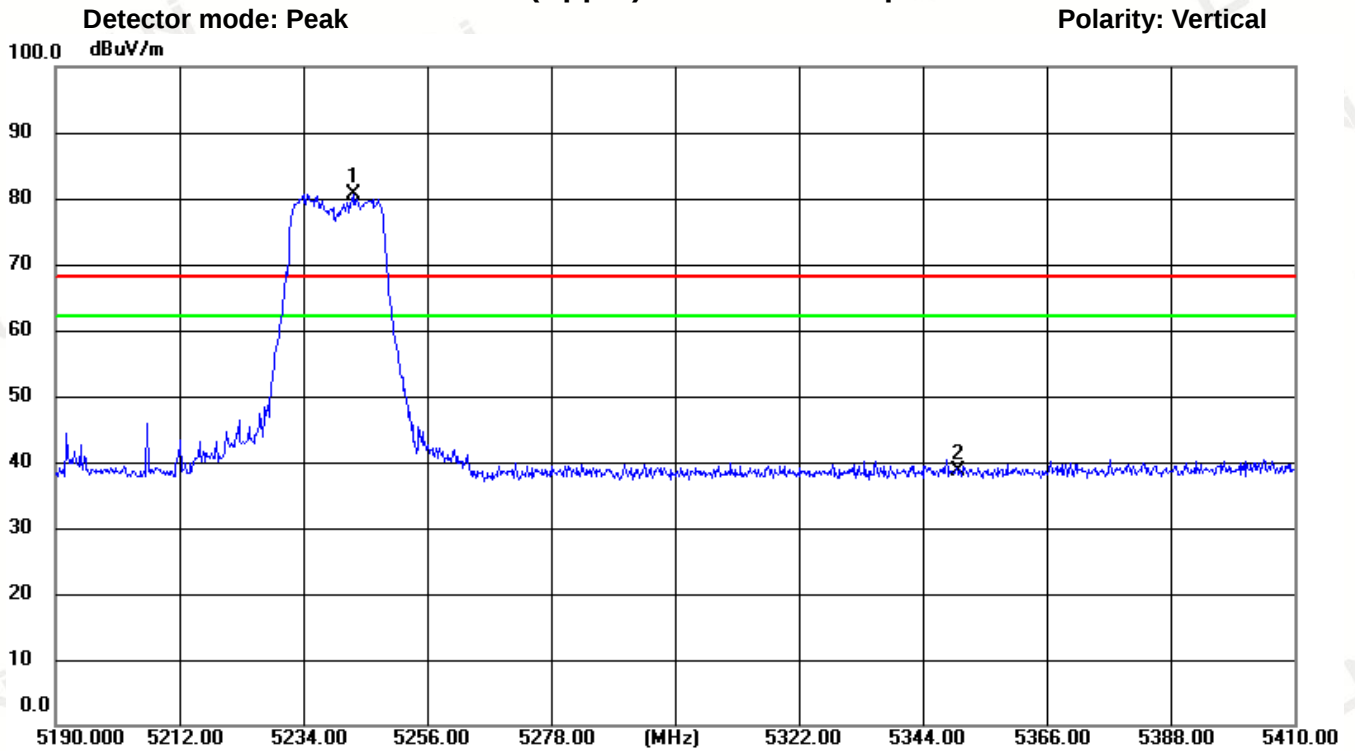
|               |                                                                                                                                                                                                         |                     |                    |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|
| EUT :         | AUTO DIAGNOSTIC TOOL                                                                                                                                                                                    | Model Name :        | IDUTEX DS810 Plus  |
| Temperature : | 25 °C                                                                                                                                                                                                   | Relative Humidity : | 56%                |
| Pressure :    | 1010 hPa                                                                                                                                                                                                | Test Voltage :      | DC12V from adapter |
| Test Mode :   | 802.11a                                                                                                                                                                                                 |                     |                    |
| Test Date :   | 2022-03-14                                                                                                                                                                                              |                     |                    |
| Note :        | In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power. |                     |                    |

| Freq.<br>(MHz)<br>(Peak) | Ant.Pol.<br>H/V | Reading        | Ant/CF       | Act              | Limit            | Note |
|--------------------------|-----------------|----------------|--------------|------------------|------------------|------|
|                          |                 | Peak<br>(dBuv) | Peak<br>(dB) | Peak<br>(dBuv/m) | Peak<br>(dBuv/m) |      |
| 5150.000                 | V               | 35.81          | 4.78         | 40.59            | 68.20            | CH36 |
| 5184.440                 | V               | 76.01          | 4.67         | ---              | ---              | CH36 |
| 5150.000                 | H               | 37.73          | 4.78         | 42.51            | 68.20            | CH36 |
| 5173.080                 | H               | 82.48          | 4.71         | ---              | ---              | CH36 |
| 5243.020                 | V               | 76.22          | 4.52         | ---              | ---              | CH48 |
| 5350.000                 | V               | 34.40          | 4.30         | 38.70            | 68.20            | CH48 |
| 5244.340                 | H               | 80.00          | 4.52         | ---              | ---              | CH48 |
| 5350.000                 | H               | 34.80          | 4.30         | 39.10            | 68.20            | CH48 |

# 802.11a (5.15GHz-5.25GHz) CH 36 (Lower) Data rate 6Mbps



# 802.11a (5.15GHz-5.25GHz) CH 48 (Upper) Data rate 6Mbps



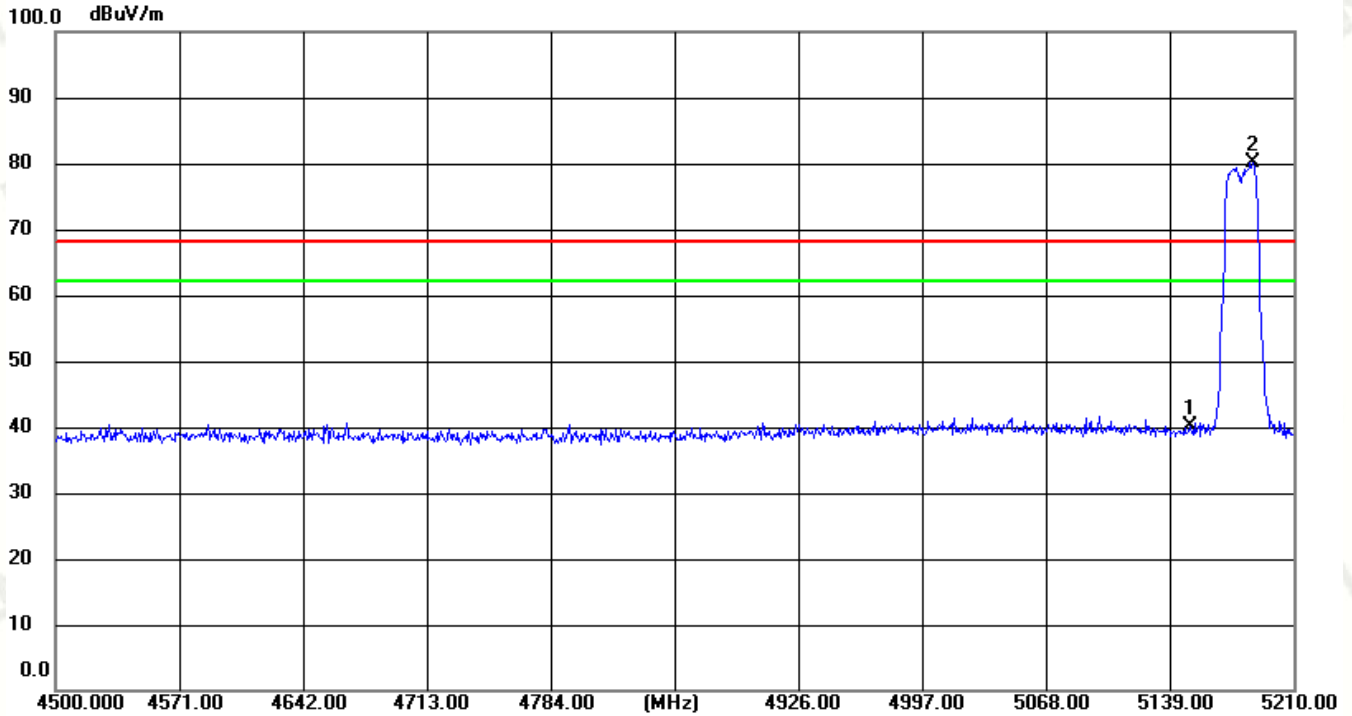
|               |                                                                                                                                                                                                         |                     |                    |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|
| EUT :         | AUTO DIAGNOSTIC TOOL                                                                                                                                                                                    | Model Name :        | IDUTEX DS810 Plus  |
| Temperature : | 25 °C                                                                                                                                                                                                   | Relative Humidity : | 56%                |
| Pressure :    | 1010 hPa                                                                                                                                                                                                | Test Voltage :      | DC12V from adapter |
| Test Mode :   | 802.11n BW20MHz                                                                                                                                                                                         |                     |                    |
| Test Date :   | 2022-03-14                                                                                                                                                                                              |                     |                    |
| Note :        | In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power. |                     |                    |

| Freq.<br>(MHz)<br>(Peak) | Ant.Pol.<br>H/V | Reading        | Ant/CF       | Act              | Limit            | Note |
|--------------------------|-----------------|----------------|--------------|------------------|------------------|------|
|                          |                 | Peak<br>(dBuv) | Peak<br>(dB) | Peak<br>(dBuv/m) | Peak<br>(dBuv/m) |      |
| 5150.000                 | V               | 35.40          | 4.78         | 40.18            | 68.20            | CH36 |
| 5186.570                 | V               | 75.46          | 4.66         | ---              | ---              | CH36 |
| 5150.000                 | H               | 34.50          | 4.78         | 39.28            | 68.20            | CH36 |
| 5186.570                 | H               | 80.68          | 4.66         | ---              | ---              | CH36 |
| 5246.760                 | V               | 73.74          | 4.51         | ---              | ---              | CH48 |
| 5350.000                 | V               | 34.09          | 4.30         | 38.39            | 68.20            | CH48 |
| 5245.660                 | H               | 81.51          | 4.51         | ---              | ---              | CH48 |
| 5350.000                 | H               | 35.26          | 4.30         | 39.56            | 68.20            | CH48 |

# 802.11n(20M) (5.15GHz-5.25GHz) CH 36 (Lower) Data rate 7.2Mbps

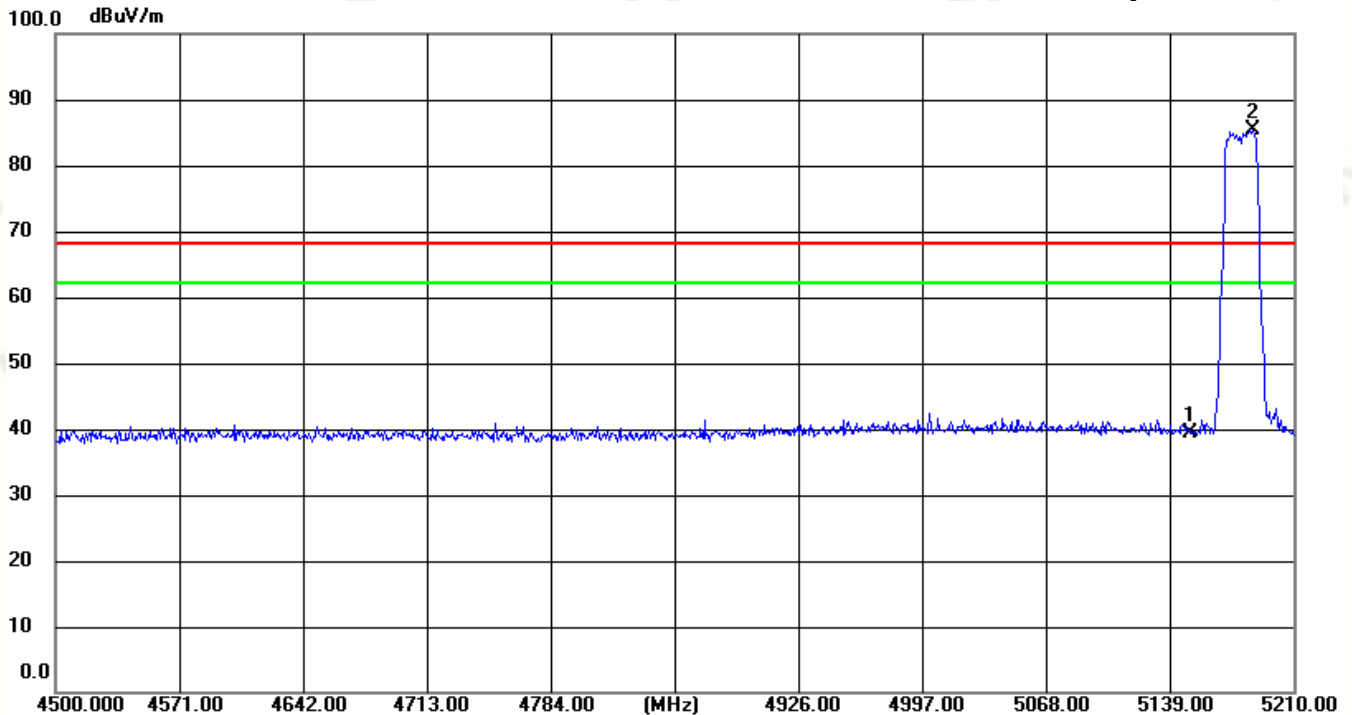
Detector mode: Peak

Polarity: Vertical



Detector mode: Peak

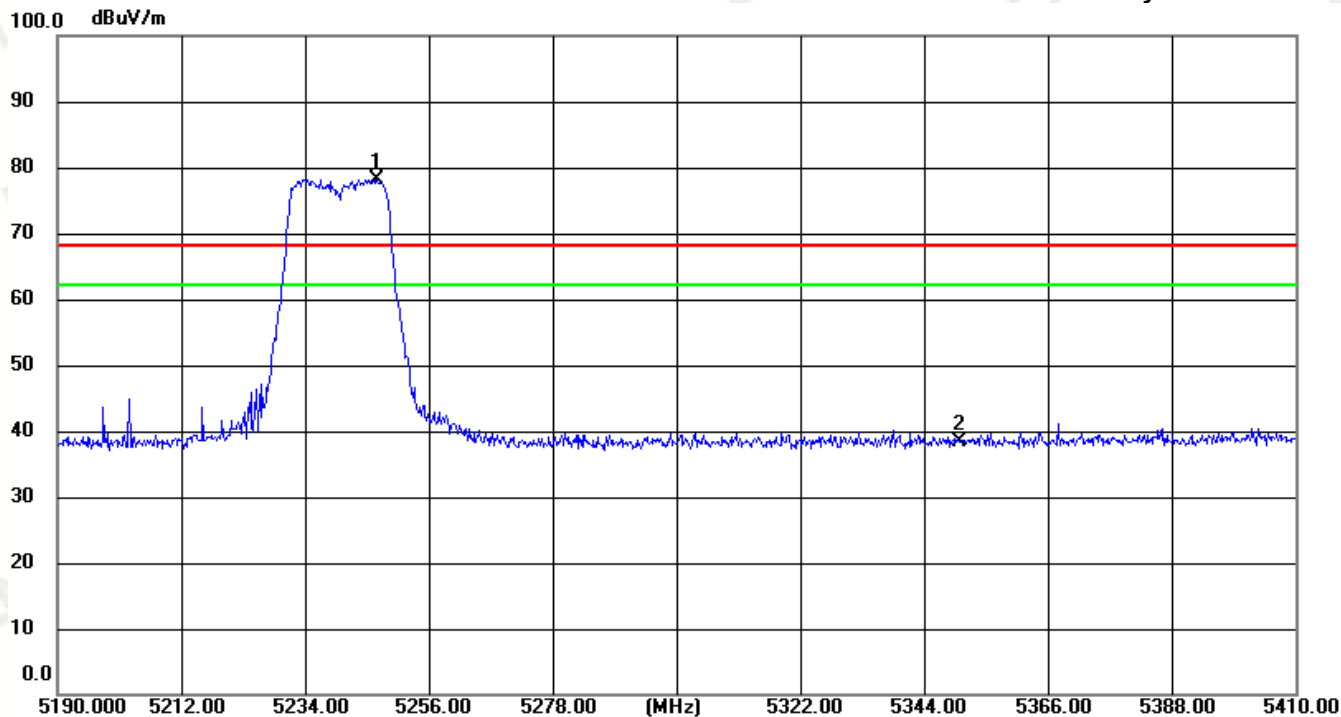
Polarity: Horizontal



# 802.11n(20M) (5.15GHz-5.25GHz) CH 48(Upper) Data rate 7.2Mbps

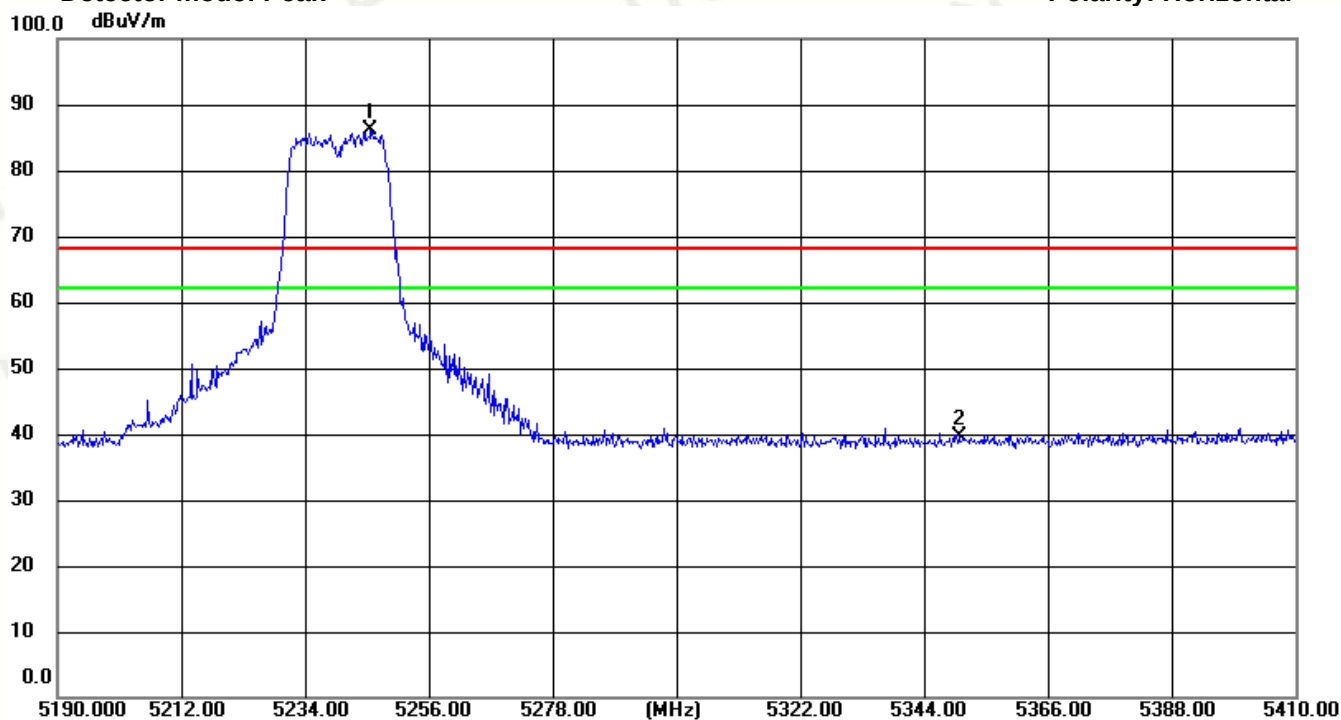
Detector mode: Peak

Polarity: Vertical



Detector mode: Peak

Polarity: Horizontal



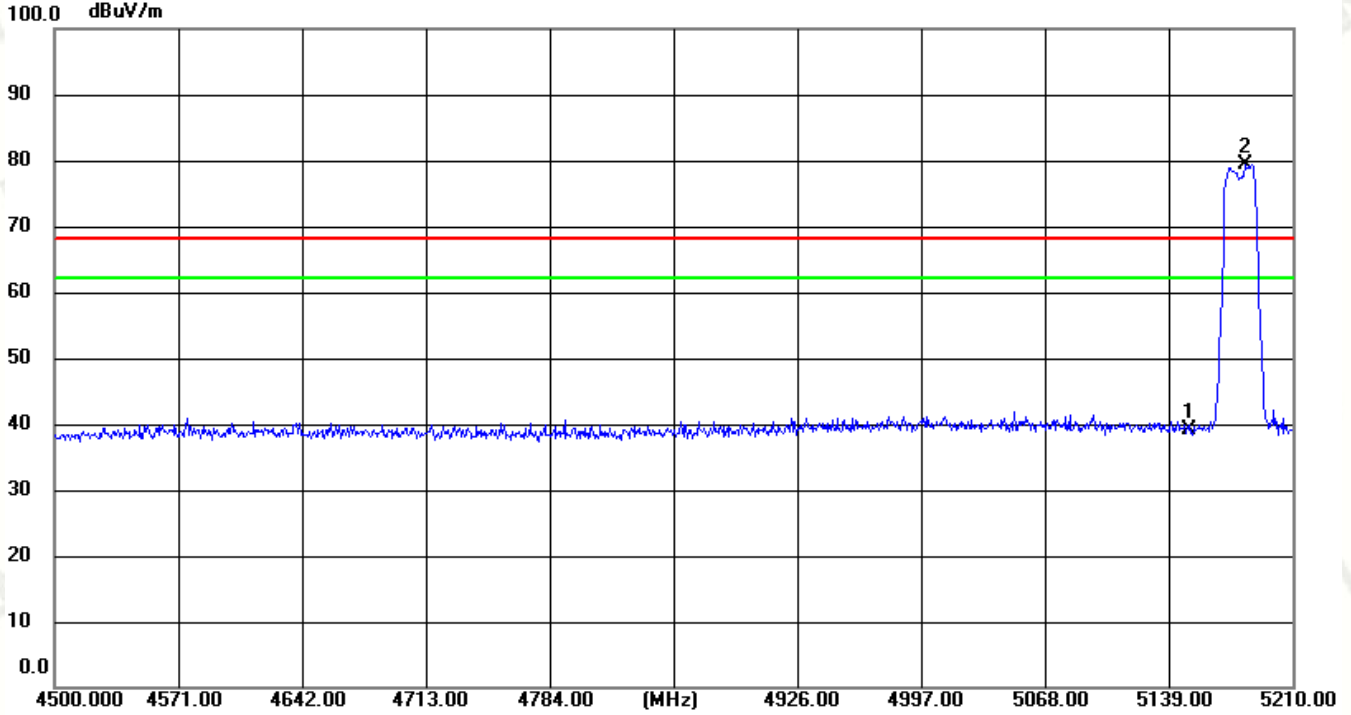
|               |                                                                                                                                                                                                         |                     |                    |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|
| EUT :         | AUTO DIAGNOSTIC TOOL                                                                                                                                                                                    | Model Name :        | IDUTEX DS810 Plus  |
| Temperature : | 25 °C                                                                                                                                                                                                   | Relative Humidity : | 56%                |
| Pressure :    | 1010 hPa                                                                                                                                                                                                | Test Voltage :      | DC12V from adapter |
| Test Mode :   | 802.11ac BW20MHz                                                                                                                                                                                        |                     |                    |
| Test Date :   | 2022-03-14                                                                                                                                                                                              |                     |                    |
| Note :        | In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power. |                     |                    |

| Freq.<br>(MHz)<br>(Peak) | Ant.Pol.<br>H/V | Reading        | Ant/CF       | Act              | Limit            | Note |
|--------------------------|-----------------|----------------|--------------|------------------|------------------|------|
|                          |                 | Peak<br>(dBuv) | Peak<br>(dB) | Peak<br>(dBuv/m) | Peak<br>(dBuv/m) |      |
| 5150.000                 | V               | 34.28          | 4.78         | 39.06            | 68.20            | CH36 |
| 5183.020                 | V               | 74.79          | 4.67         | ---              | ---              | CH36 |
| 5150.000                 | H               | 34.98          | 4.78         | 39.76            | 68.20            | CH36 |
| 5173.080                 | H               | 82.29          | 4.71         | ---              | ---              | CH36 |
| 5245.880                 | V               | 75.51          | 4.51         | ---              | ---              | CH48 |
| 5350.000                 | V               | 33.27          | 4.30         | 37.57            | 68.20            | CH48 |
| 5246.100                 | H               | 82.53          | 4.51         | ---              | ---              | CH48 |
| 5350.000                 | H               | 34.14          | 4.30         | 38.44            | 68.20            | CH48 |

# 802.11ac(20M) (5.15GHz-5.25GHz) CH 36 (Lower) Data rate 7.2Mbps

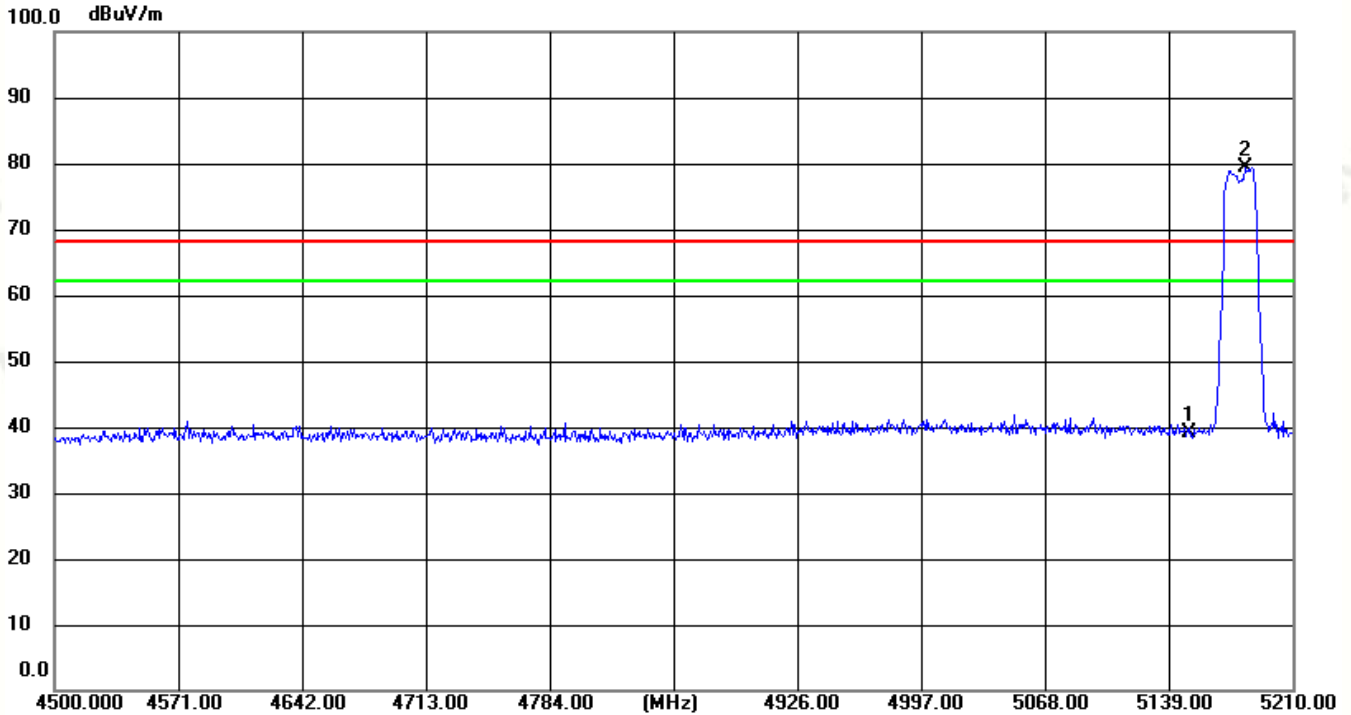
Detector mode: Peak

Polarity: Vertical

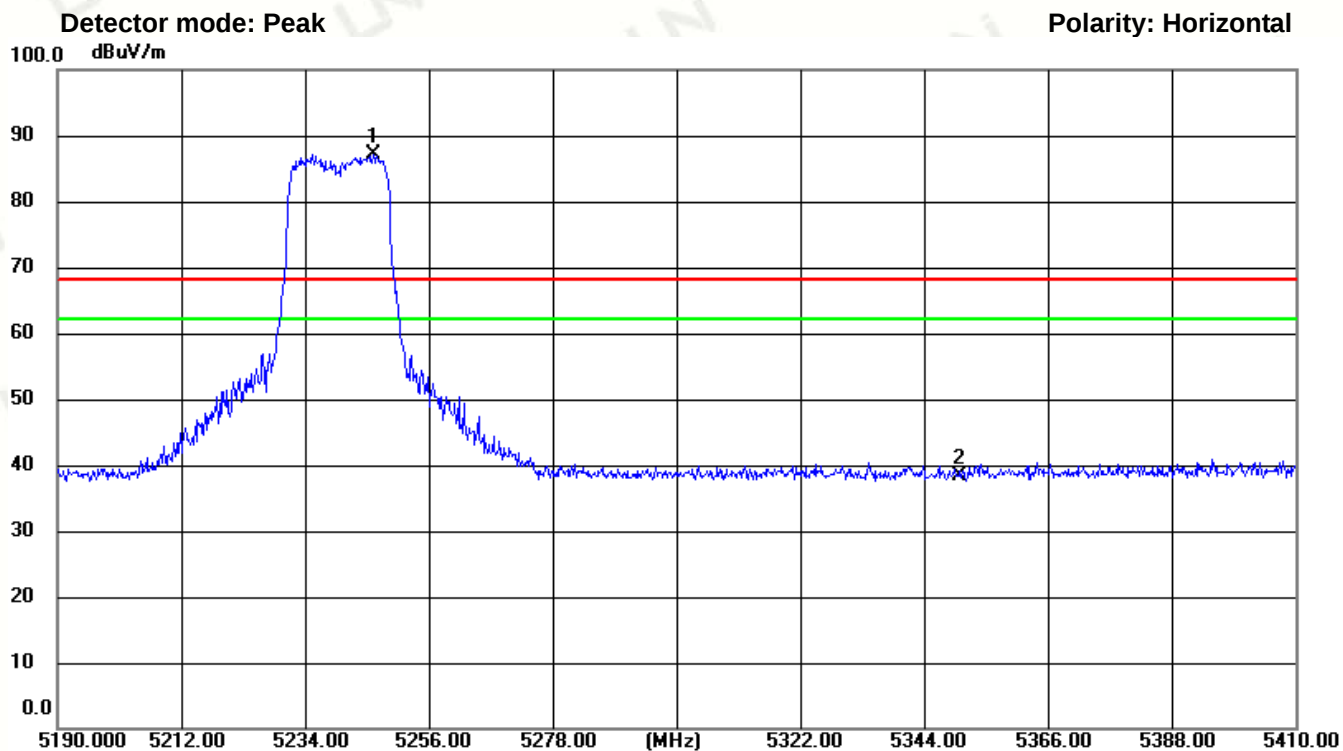
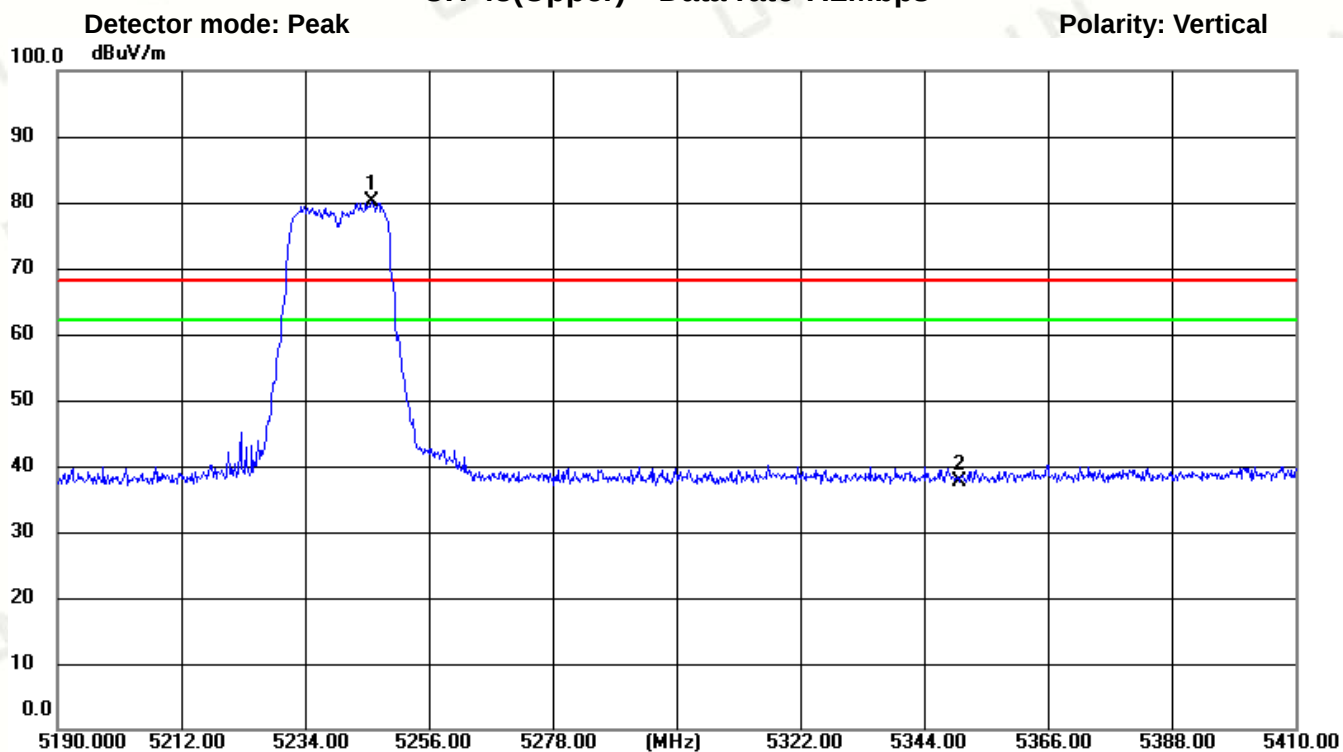


Detector mode: Peak

Polarity: Horizontal



# 802.11 ac(20M) (5.15GHz-5.25GHz) CH 48(Upper) Data rate 7.2Mbps



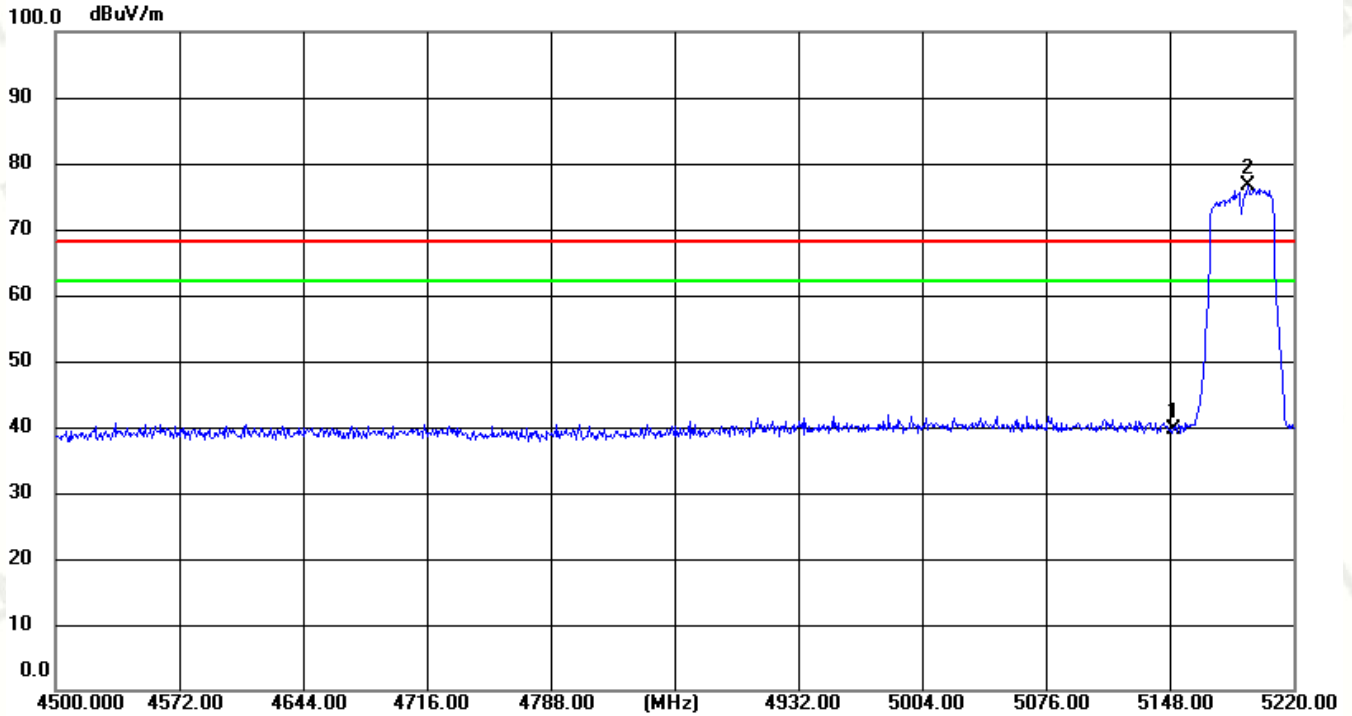
|               |                                                                                                                                                                                                         |                     |                    |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|
| EUT :         | AUTO DIAGNOSTIC TOOL                                                                                                                                                                                    | Model Name :        | IDUTEX DS810 Plus  |
| Temperature : | 25 °C                                                                                                                                                                                                   | Relative Humidity : | 56%                |
| Pressure :    | 1010 hPa                                                                                                                                                                                                | Test Voltage :      | DC12V from adapter |
| Test Mode :   | 802.11n BW40MHz                                                                                                                                                                                         |                     |                    |
| Test Date :   | 2022-03-14                                                                                                                                                                                              |                     |                    |
| Note :        | In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power. |                     |                    |

| Freq.<br>(MHz)<br>(Peak) | Ant.Pol.<br>H/V | Reading        | Ant/CF       | Act              | Limit            | Note |
|--------------------------|-----------------|----------------|--------------|------------------|------------------|------|
|                          |                 | Peak<br>(dBuv) | Peak<br>(dB) | Peak<br>(dBuv/m) | Peak<br>(dBuv/m) |      |
| 5150.000                 | V               | 34.93          | 4.78         | 39.71            | 68.20            | CH38 |
| 5193.360                 | V               | 71.88          | 4.64         | ---              | ---              | CH38 |
| 5150.000                 | H               | 34.07          | 4.78         | 38.85            | 68.20            | CH38 |
| 5196.960                 | H               | 79.58          | 4.63         | ---              | ---              | CH38 |
| 5233.340                 | V               | 72.89          | 4.54         | ---              | ---              | CH46 |
| 5350.000                 | V               | 34.83          | 4.30         | 39.13            | 68.20            | CH46 |
| 5243.020                 | H               | 78.39          | 4.52         | ---              | ---              | CH46 |
| 5350.000                 | H               | 34.28          | 4.30         | 38.58            | 68.20            | CH46 |

# 802.11n(40M) (5.15GHz-5.25GHz) CH 38 (Lower) Data rate 7.2Mbps

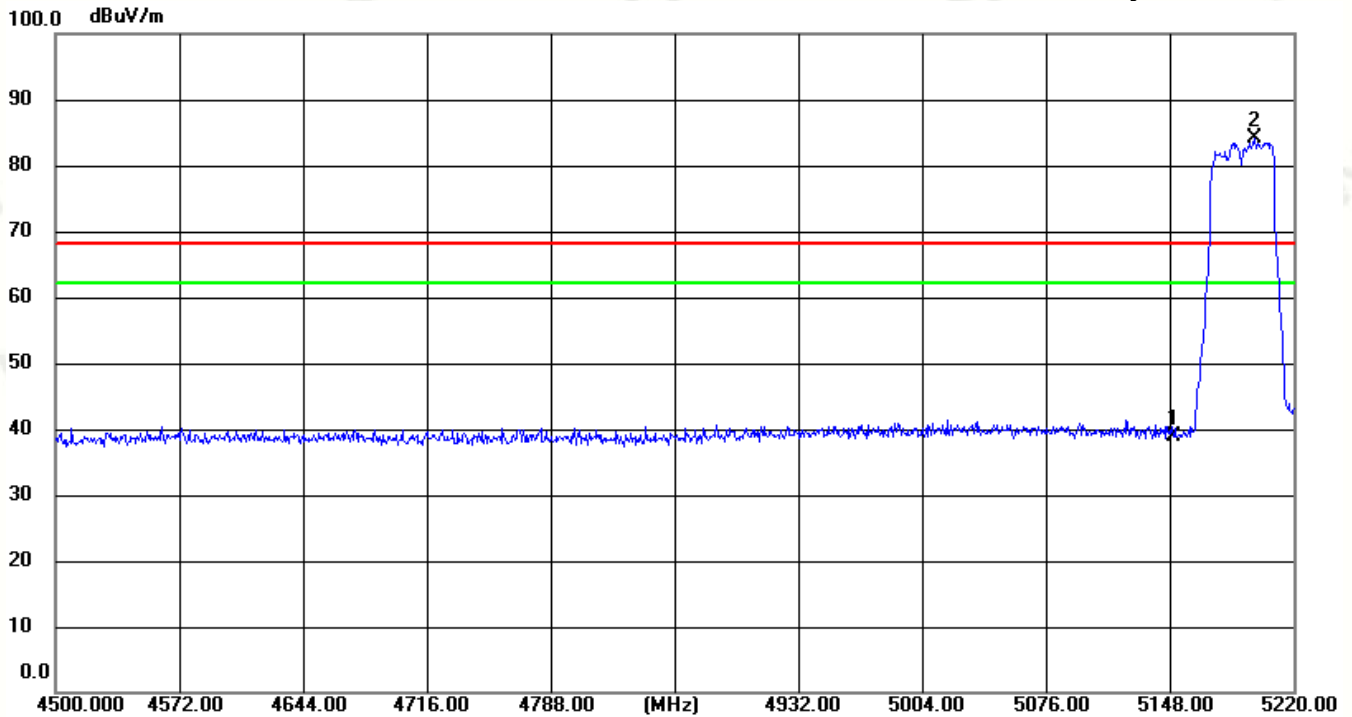
Detector mode: Peak

Polarity: Vertical



Detector mode: Peak

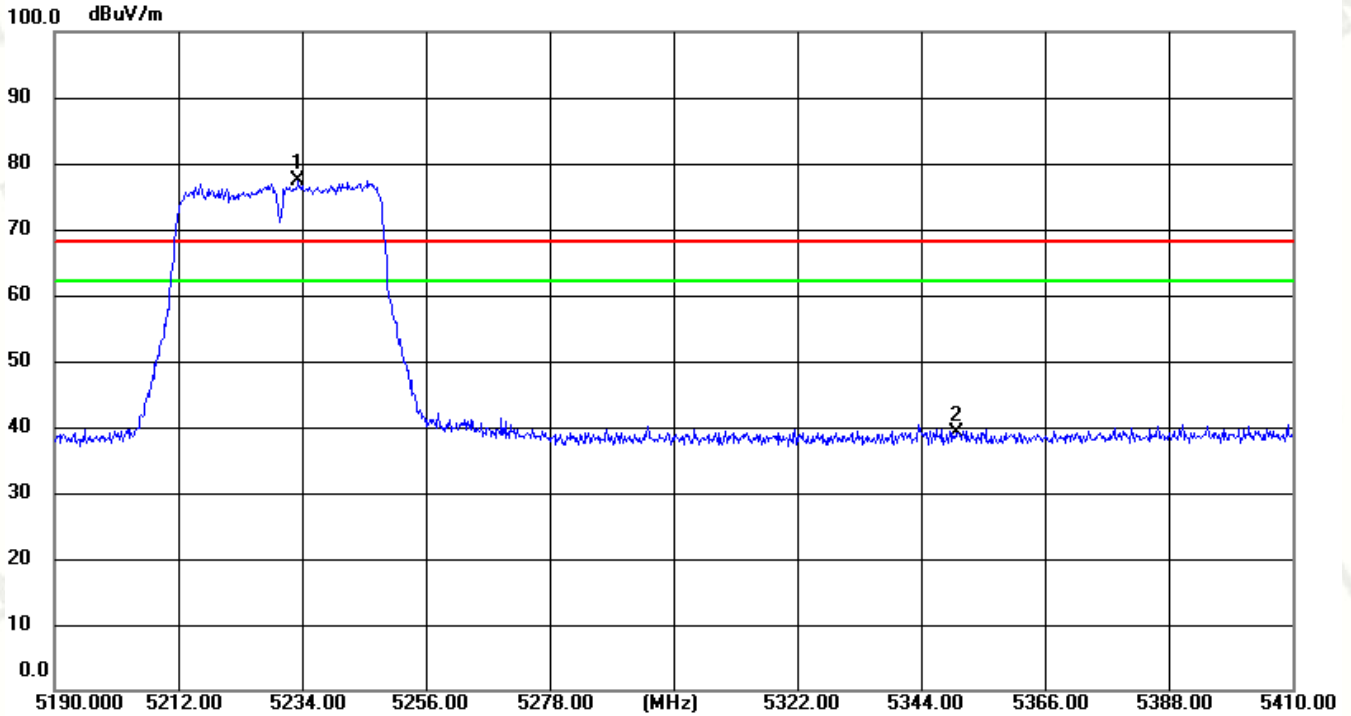
Polarity: Horizontal



# 802.11n(40M) (5.15GHz-5.25GHz) CH 46(Upper) Data rate 7.2Mbps

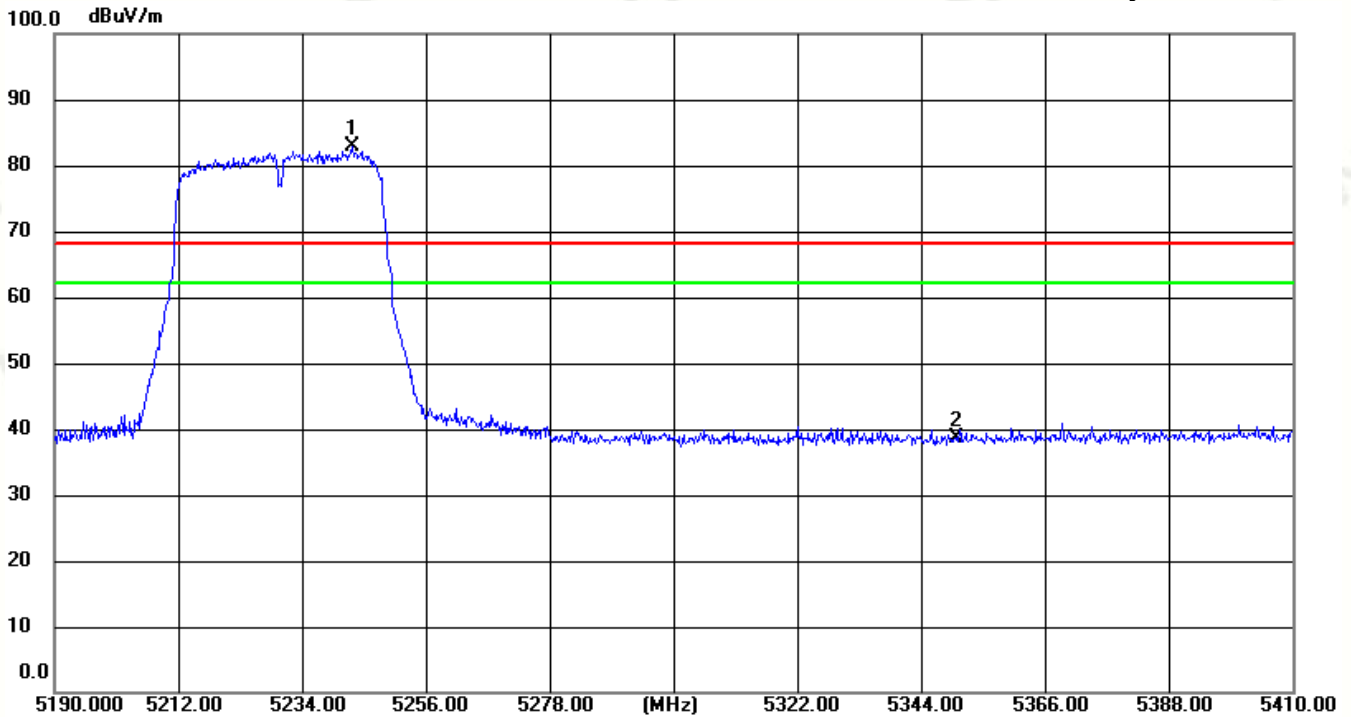
Detector mode: Peak

Polarity: Vertical



Detector mode: Peak

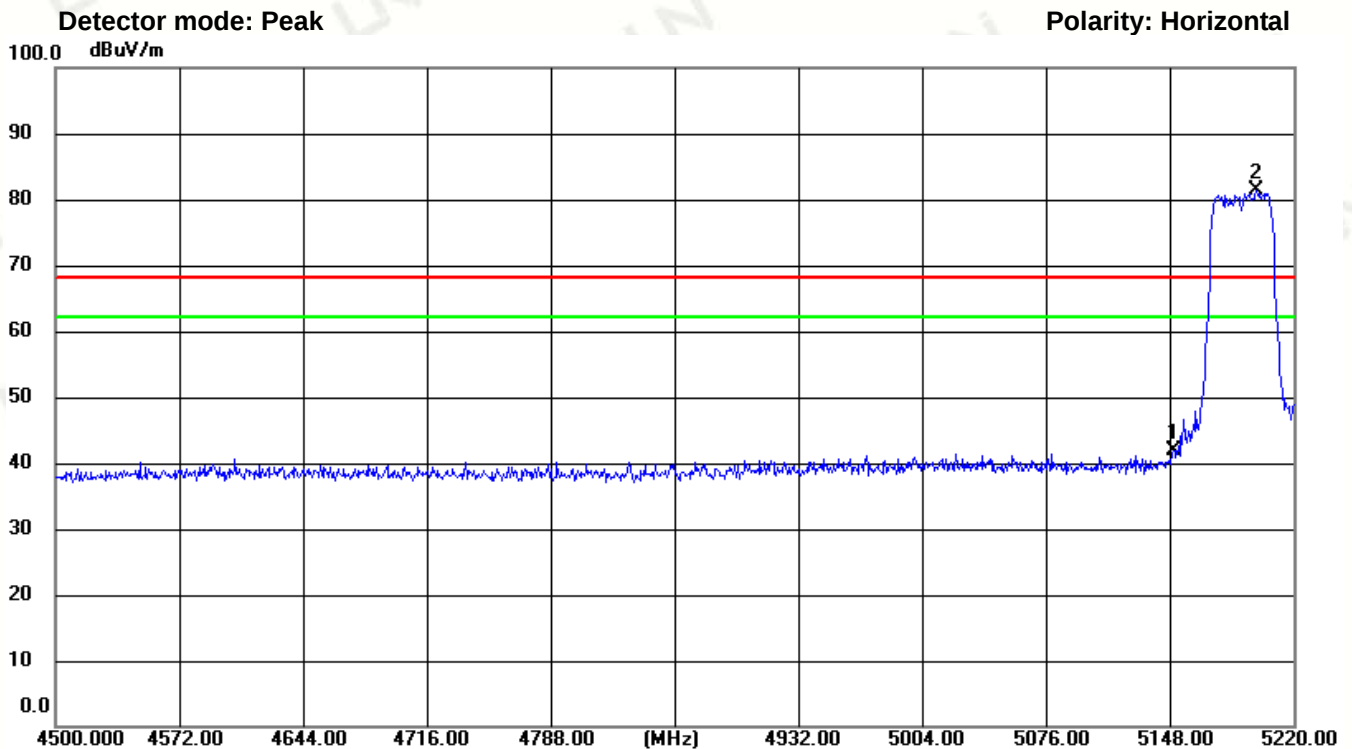
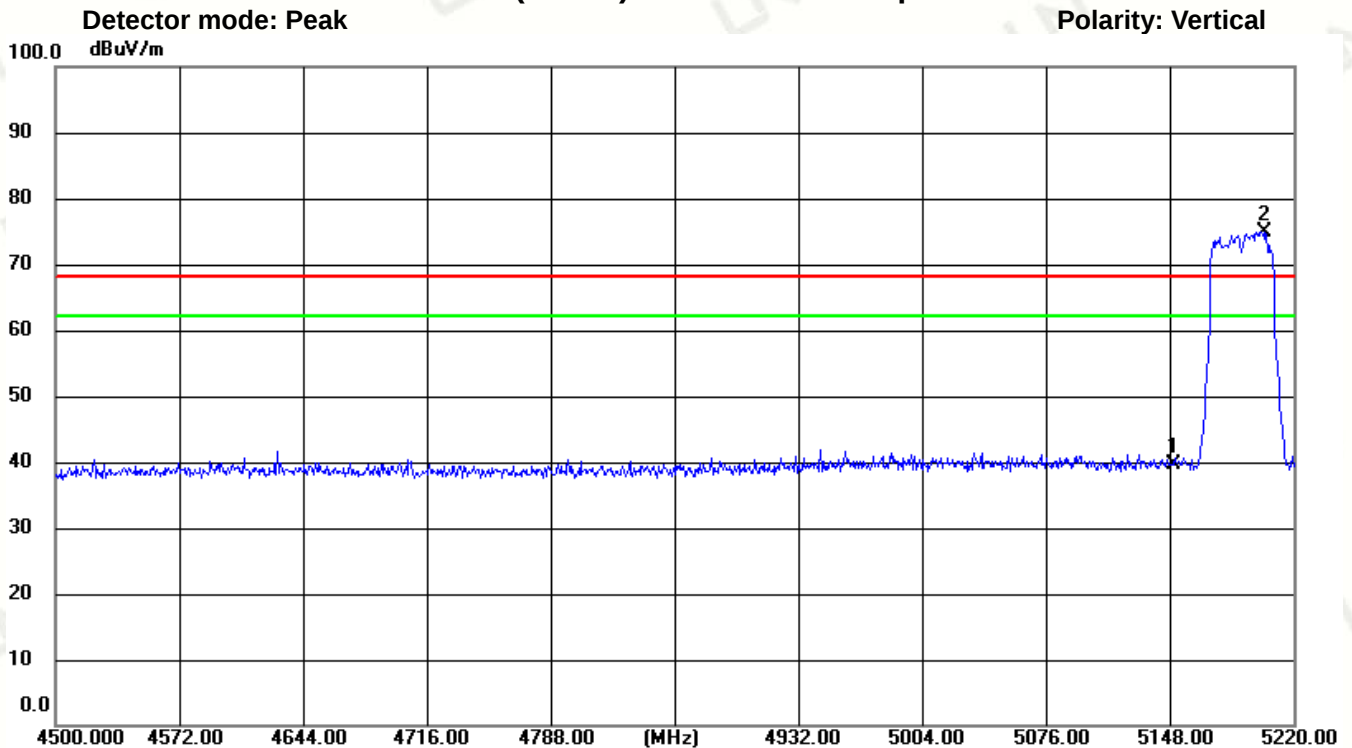
Polarity: Horizontal



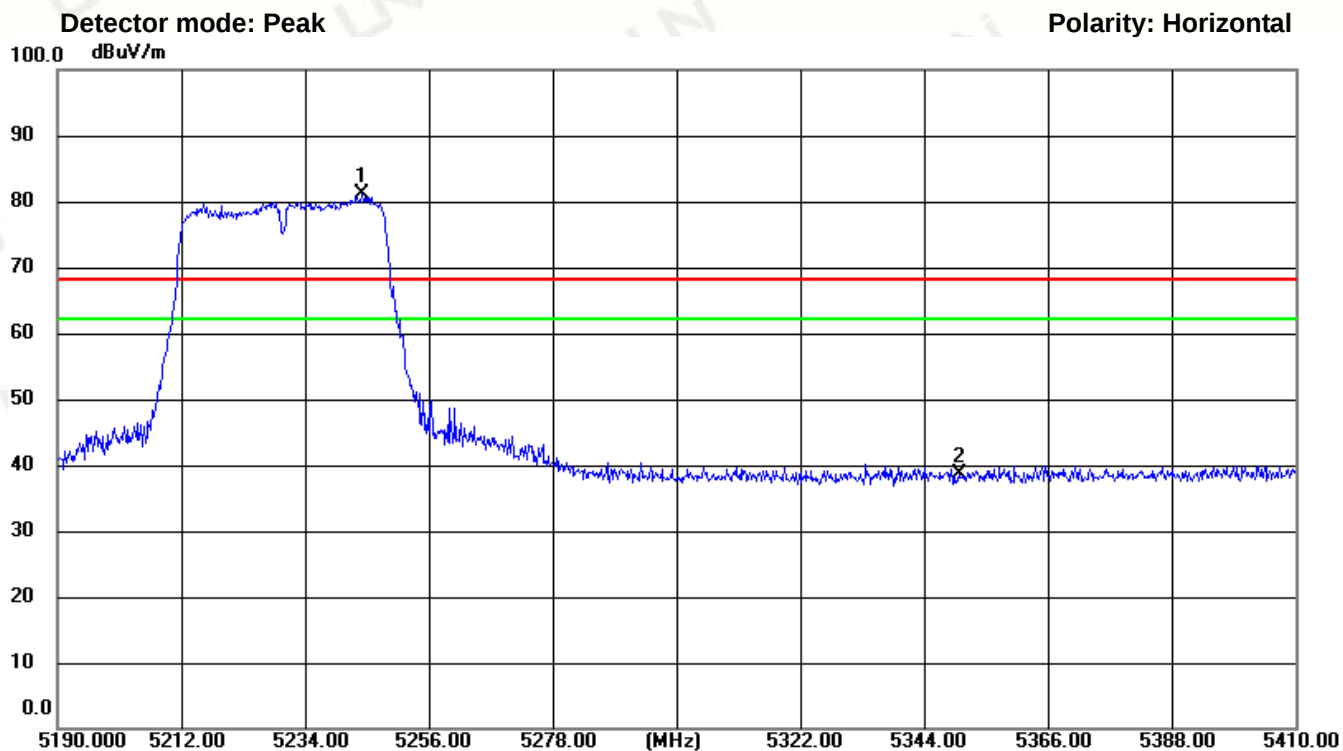
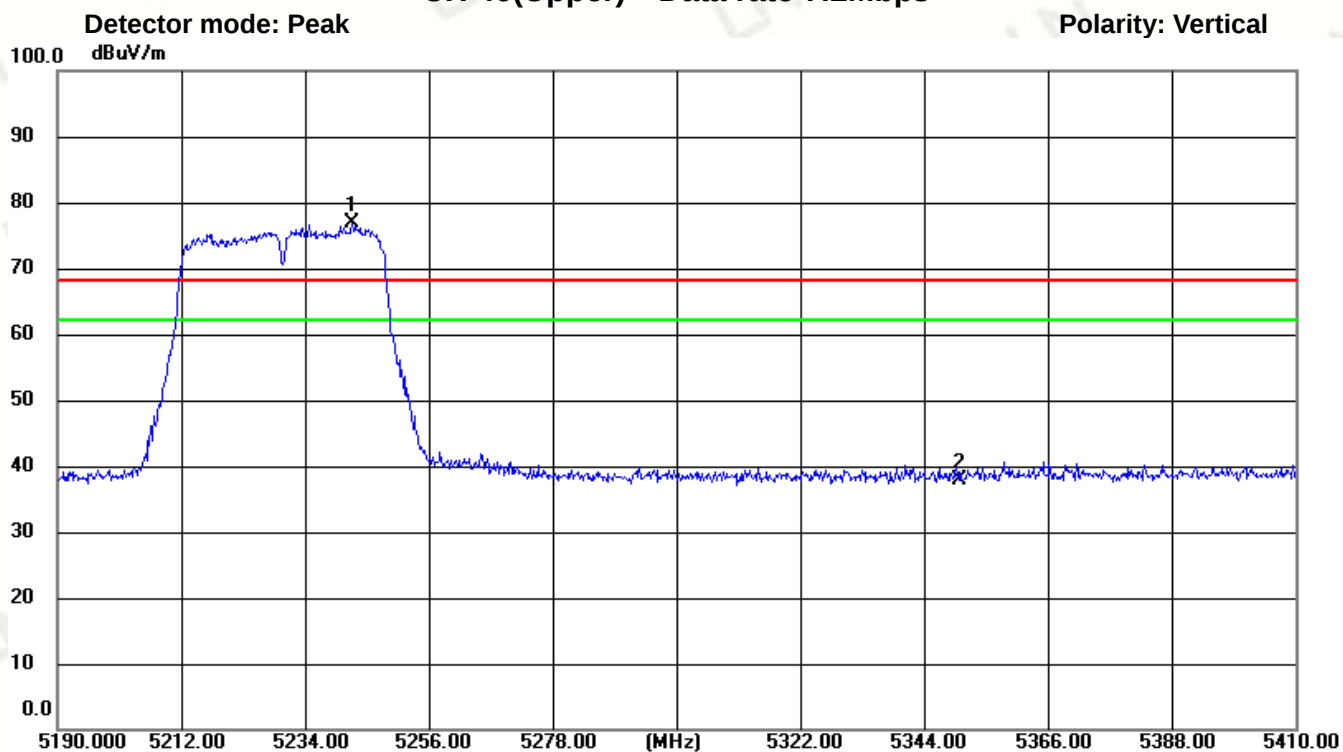
|               |                                                                                                                                                                                                         |                     |                    |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|
| EUT :         | AUTO DIAGNOSTIC TOOL                                                                                                                                                                                    | Model Name :        | IDUTEX DS810 Plus  |
| Temperature : | 25 °C                                                                                                                                                                                                   | Relative Humidity : | 56%                |
| Pressure :    | 1010 hPa                                                                                                                                                                                                | Test Voltage :      | DC12V from adapter |
| Test Mode :   | 802.11ac BW40MHz                                                                                                                                                                                        |                     |                    |
| Test Date :   | 2022-03-14                                                                                                                                                                                              |                     |                    |
| Note :        | In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power. |                     |                    |

| Freq.<br>(MHz)<br>(Peak) | Ant.Pol.<br>H/V | Reading        | Ant/CF       | Act              | Limit            | Note |
|--------------------------|-----------------|----------------|--------------|------------------|------------------|------|
|                          |                 | Peak<br>(dBuv) | Peak<br>(dB) | Peak<br>(dBuv/m) | Peak<br>(dBuv/m) |      |
| 5150.000                 | V               | 34.86          | 4.78         | 39.64            | 68.20            | CH38 |
| 5203.440                 | V               | 70.40          | 4.60         | ---              | ---              | CH38 |
| 5150.000                 | H               | 37.04          | 4.78         | 41.82            | 68.20            | CH38 |
| 5198.400                 | H               | 76.75          | 4.62         | ---              | ---              | CH38 |
| 5242.360                 | V               | 72.33          | 4.52         | ---              | ---              | CH46 |
| 5350.000                 | V               | 33.68          | 4.30         | 37.98            | 68.20            | CH46 |
| 5244.120                 | H               | 76.54          | 4.52         | ---              | ---              | CH46 |
| 5350.000                 | H               | 34.23          | 4.30         | 38.53            | 68.20            | CH46 |

# 802.11ac(40M) (5.15GHz-5.25GHz) CH 38 (Lower) Data rate 7.2Mbps



# 802.11ac(40M) (5.15GHz-5.25GHz) CH 46(Upper) Data rate 7.2Mbps



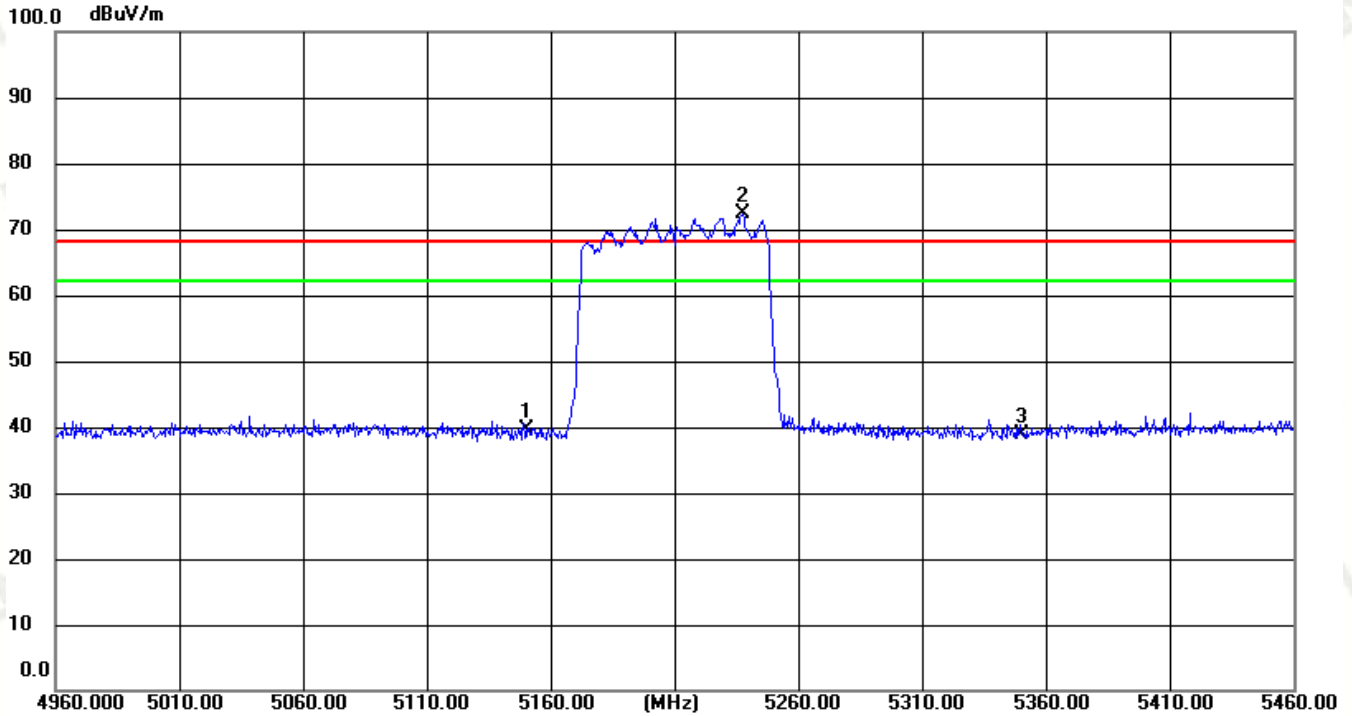
|               |                                                                                                                                                                                                         |                     |                    |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|--------------------|
| EUT :         | AUTO DIAGNOSTIC TOOL                                                                                                                                                                                    | Model Name :        | IDUTEX DS810 Plus  |
| Temperature : | 25 °C                                                                                                                                                                                                   | Relative Humidity : | 56%                |
| Pressure :    | 1010 hPa                                                                                                                                                                                                | Test Voltage :      | DC12V from adapter |
| Test Mode :   | 802.11ac BW80MHz                                                                                                                                                                                        |                     |                    |
| Test Date :   | 2022-03-14                                                                                                                                                                                              |                     |                    |
| Note :        | In any 100kHz bandwidth outside the frequency band, the radio frequency power is at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power. |                     |                    |

| Freq.<br>(MHz)<br>(Peak) | Ant.Pol.<br>H/V | Reading        | Ant/CF       | Act              | Limit            | Note |
|--------------------------|-----------------|----------------|--------------|------------------|------------------|------|
|                          |                 | Peak<br>(dBuv) | Peak<br>(dB) | Peak<br>(dBuv/m) | Peak<br>(dBuv/m) |      |
| 5150.000                 | V               | 34.88          | 4.78         | 39.66            | 68.20            | CH42 |
| 5237.500                 | V               | 67.75          | 4.53         | ---              | ---              | CH42 |
| 5350.000                 | V               | 34.57          | 4.30         | 38.87            | 68.20            | CH42 |
| 5150.000                 | H               | 34.14          | 4.78         | 38.92            | 68.20            | CH42 |
| 5218.000                 | H               | 69.86          | 4.58         | ---              | ---              | CH42 |
| 5350.000                 | H               | 34.88          | 4.30         | 39.00            | 68.20            | CH42 |

# 802.11ac(80M) (5.15GHz-5.25GHz) CH 42 Data rate 7.2Mbps

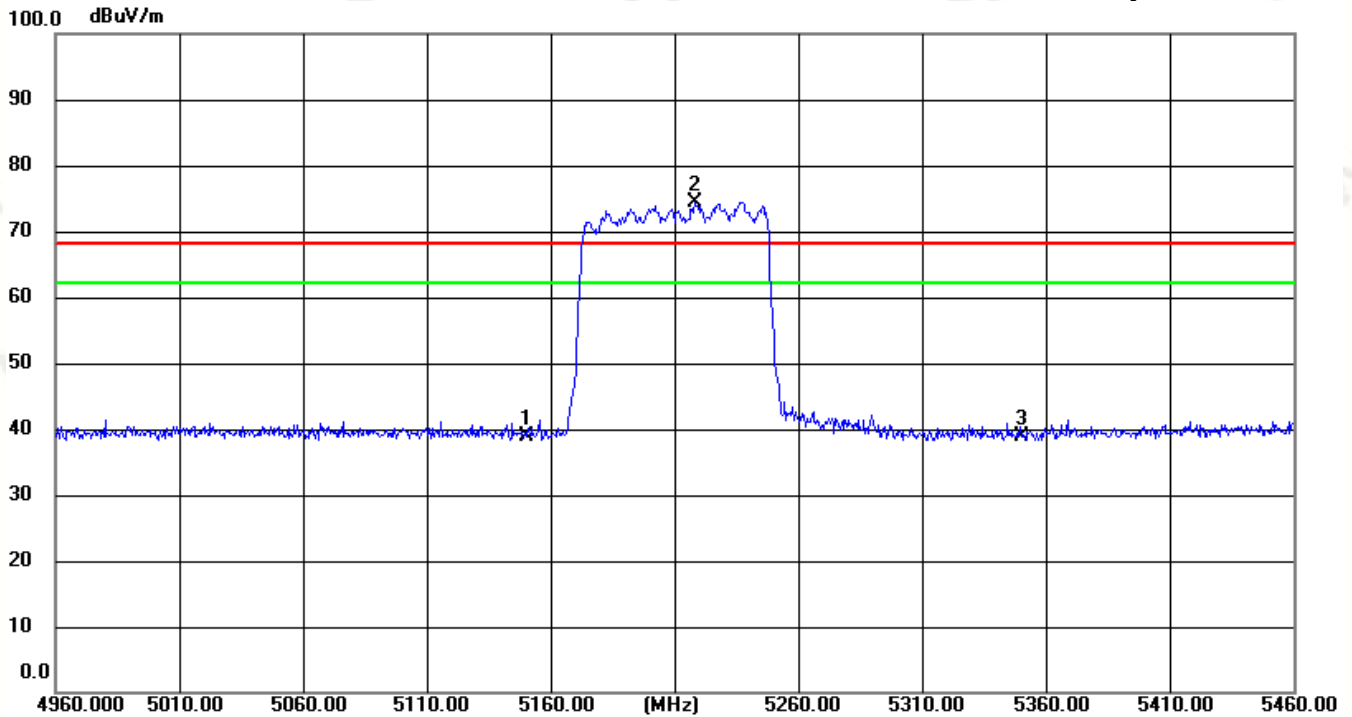
Detector mode: Peak

Polarity: Vertical



Detector mode: Peak

Polarity: Horizontal



## 12. FCC LINE CONDUCTED EMISSION TEST

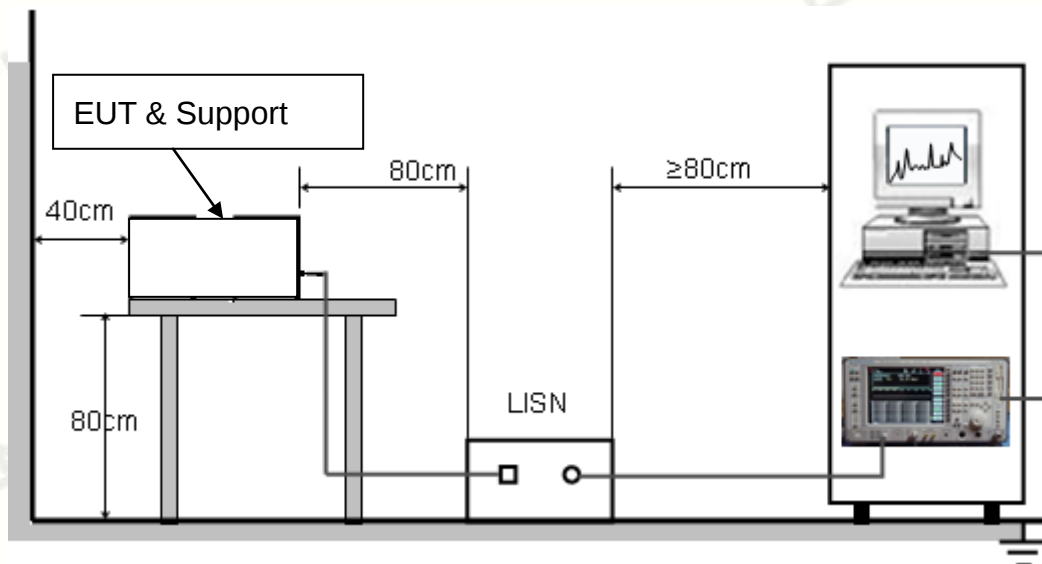
### 12.1. LIMITS OF LINE CONDUCTED EMISSION TEST

| Frequency     | Maximum RF Line Voltage |                |
|---------------|-------------------------|----------------|
|               | Q.P.( dBuV)             | Average( dBuV) |
| 150kHz~500kHz | 66-56                   | 56-46          |
| 500kHz~5MHz   | 56                      | 46             |
| 5MHz~30MHz    | 60                      | 50             |

Note:

1. The lower limit shall apply at the transition frequency.
2. The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50MHz.

### 12.2. BLOCK DIAGRAM OF LINE CONDUCTED EMISSION TEST



### 12.3. PRELIMINARY PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. All support equipments received AC120V/60Hz power from a LISN, if any.
5. The EUT received charging voltage by adapter which received 120V/60Hz power by a LISN.
6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.
9. The test mode(s) were scanned during the preliminary test.

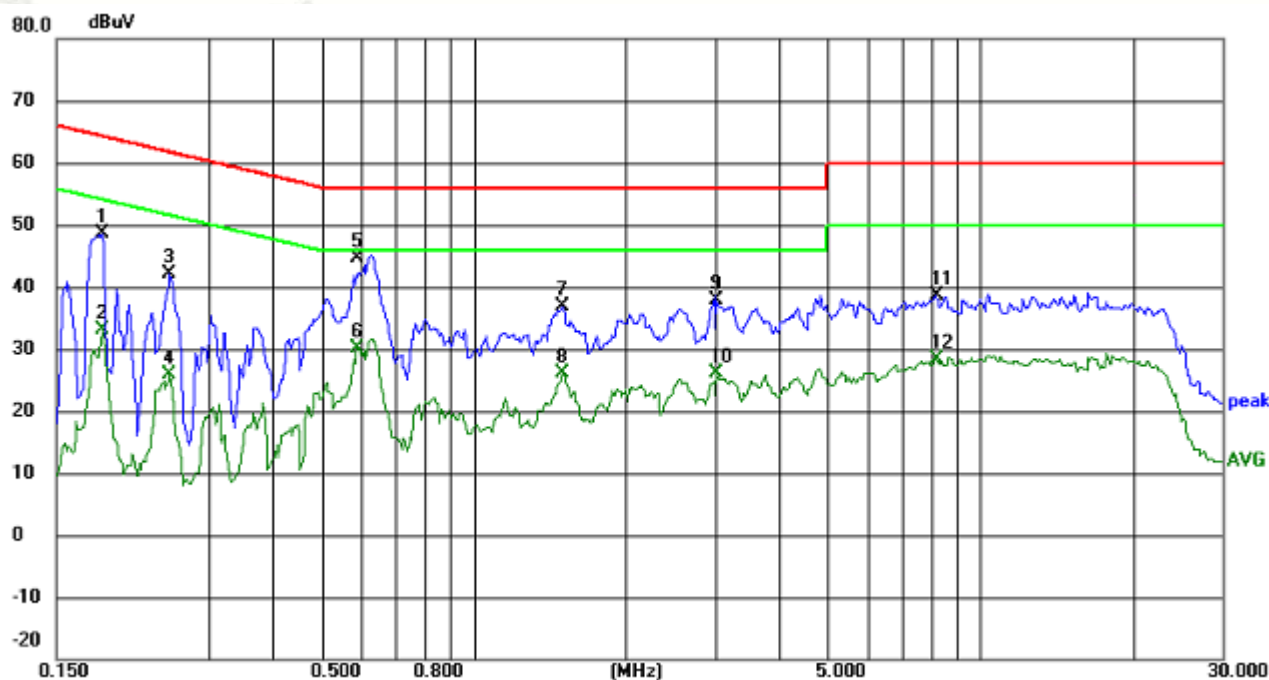
Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

### 12.4. FINAL PROCEDURE OF LINE CONDUCTED EMISSION TEST

1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less -2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
3. The test data of the worst case condition(s) was reported on the Summary Data page.

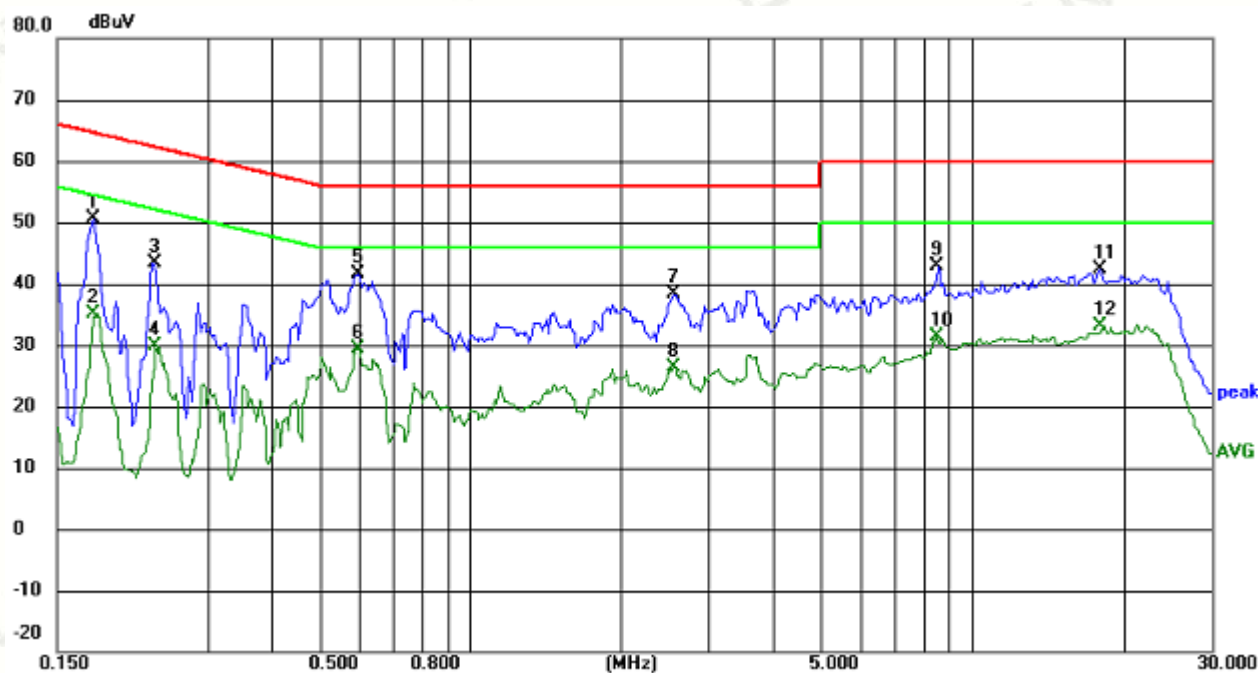
## 12.5. TEST RESULT OF LINE CONDUCTED EMISSION TEST

|               |                                        |                    |         |
|---------------|----------------------------------------|--------------------|---------|
| Temperature:  | 24°C                                   | Relative Humidity: | 48%     |
| Test Date:    | Mar. 11, 2022                          | Pressure:          | 1010hPa |
| Test Voltage: | AC 120V, 60Hz                          | Phase:             | Line    |
| Test Mode:    | Transmitting mode of 802.11a20 5180MHz |                    |         |



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | P/F |
|-----|-----------------|----------------|-------------|--------------|--------------|-------------|----------|-----|
| 1   | 0.1849          | 38.79          | 9.76        | 48.55        | 64.26        | -15.71      | peak     | P   |
| 2   | 0.1849          | 23.43          | 9.76        | 33.19        | 54.26        | -21.07      | AVG      | P   |
| 3   | 0.2514          | 32.27          | 9.75        | 42.02        | 61.71        | -19.69      | peak     | P   |
| 4   | 0.2514          | 16.06          | 9.75        | 25.81        | 51.71        | -25.90      | AVG      | P   |
| 5 * | 0.5885          | 34.90          | 9.77        | 44.67        | 56.00        | -11.33      | peak     | P   |
| 6   | 0.5885          | 20.39          | 9.77        | 30.16        | 46.00        | -15.84      | AVG      | P   |
| 7   | 1.4955          | 27.02          | 9.79        | 36.81        | 56.00        | -19.19      | peak     | P   |
| 8   | 1.4955          | 16.27          | 9.79        | 26.06        | 46.00        | -19.94      | AVG      | P   |
| 9   | 3.0156          | 28.10          | 9.84        | 37.94        | 56.00        | -18.06      | peak     | P   |
| 10  | 3.0156          | 16.20          | 9.84        | 26.04        | 46.00        | -19.96      | AVG      | P   |
| 11  | 8.1555          | 28.53          | 10.07       | 38.60        | 60.00        | -21.40      | peak     | P   |
| 12  | 8.1555          | 18.21          | 10.07       | 28.28        | 50.00        | -21.72      | AVG      | P   |

|               |                                        |                    |         |
|---------------|----------------------------------------|--------------------|---------|
| Temperature:  | 24°C                                   | Relative Humidity: | 48%     |
| Test Date:    | Mar. 11, 2022                          | Pressure:          | 1010hPa |
| Test Voltage: | AC 120V, 60Hz                          | Phase:             | Neutral |
| Test Mode:    | Transmitting mode of 802.11a20 5180MHz |                    |         |



| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB) | Level (dBuV) | Limit (dBuV) | Margin (dB) | Detector | P/F |
|-----|-----------------|----------------|-------------|--------------|--------------|-------------|----------|-----|
| 1 * | 0.1773          | 40.79          | 9.77        | 50.56        | 64.61        | -14.05      | peak     | P   |
| 2   | 0.1773          | 25.39          | 9.77        | 35.16        | 54.61        | -19.45      | AVG      | P   |
| 3   | 0.2358          | 33.55          | 9.75        | 43.30        | 62.24        | -18.94      | peak     | P   |
| 4   | 0.2358          | 20.10          | 9.75        | 29.85        | 52.24        | -22.39      | AVG      | P   |
| 5   | 0.5985          | 31.78          | 9.77        | 41.55        | 56.00        | -14.45      | peak     | P   |
| 6   | 0.5985          | 19.66          | 9.77        | 29.43        | 46.00        | -16.57      | AVG      | P   |
| 7   | 2.5524          | 28.44          | 9.82        | 38.26        | 56.00        | -17.74      | peak     | P   |
| 8   | 2.5524          | 16.66          | 9.82        | 26.48        | 46.00        | -19.52      | AVG      | P   |
| 9   | 8.5029          | 32.69          | 10.09       | 42.78        | 60.00        | -17.22      | peak     | P   |
| 10  | 8.5029          | 21.36          | 10.09       | 31.45        | 50.00        | -18.55      | AVG      | P   |
| 11  | 18.0150         | 13.80          | 28.58       | 42.38        | 60.00        | -17.62      | peak     | P   |
| 12  | 18.0150         | 4.50           | 28.58       | 33.08        | 50.00        | -16.92      | AVG      | P   |

RESULT: PASS

## 13. Frequency Stability

### 13.1. TEST LIMIT

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

### 13.2. BLOCK DIAGRAM OF SETUP



### 13.3 Test Procedure

Determining compliance with the peak excursion requirement shall be done by confirming that the ratio of the maximum of the peak-max-hold spectrum to the maximum of the average spectrum for continuous transmission does not exceed the regulatory requirement. The procedure for this method is as follows:

- a) The following guidance for limiting the number of tests applies only to peak excursion measurements:
  - 1) Testing each modulation mode on a single channel in a single operating band is sufficient to determine compliance with the peak excursion requirement. (If all modulation modes are not available on a single channel in a single band, then testing must be extended to other channels and bands as needed to ensure that all modulation modes are tested.)
  - 2) Tests must include all variations in signal structure, such as:
    - i) All signal types [e.g., direct sequence spread spectrum (DSSS) and OFDM].
    - ii) All modulation types [e.g., binary phase-shift keying (BPSK), quadrature phase-shift keying (QPSK), 16-QAM, 64-QAM, and 256-QAM].
    - iii) All bandwidth modes.
    - iv) All variations in signal parameters (e.g., changes in subcarrier spacing or number of subcarriers).
  - 3) For a given signal structure, testing of multiple error-correction coding rates is not

required (e.g., 1/2, 2/3, and 3/4).

4) For MIMO devices, testing of a single output port is sufficient to determine compliance with the peak excursion requirement. If a given signal structure can be exercised with various combinations of spatial multiplexing (such as different numbers of spatial streams), beamforming, and cyclic delay diversity, peak excursion tests are not required to include those variations.

b) The procedure is as follows:

- 1) Set the span of the spectrum analyzer or EMI receiver to view the entire emission bandwidth or occupied bandwidth.
- 2) Find the maximum of the peak-max-hold spectrum:
  - i) Set RBW = 1 MHz.
  - ii) VBW = 3 MHz.
  - iii) Detector = peak.
  - iv) Trace mode = max-hold.
  - v) Allow the sweeps to continue until the trace stabilizes.
  - vi) Use the peak search function to find the peak of the spectrum.
- 3) Use the procedure found in 12.5 to measure the PPSD.
- 4) Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD.

### 13.4 Deviation From Test Standard

No deviation

### 13.5. TEST RESULT

**801.11a U-NII-3: 5180 MHz:**

| Voltage vs. Frequency Stability     |                             |
|-------------------------------------|-----------------------------|
| Voltage (V)                         | Measurement Frequency (MHz) |
| 4.5                                 | 5180.0154                   |
| 5                                   | 5180.0187                   |
| 5.5                                 | 5180.0365                   |
| Limit Range (MHz)                   | 5150-5250                   |
| Result                              | PASS                        |
| Temperature vs. Frequency Stability |                             |
| Temperature (°C)                    | Measurement Frequency (MHz) |
| 0                                   | 5180.0654                   |
| 10                                  | 5180.0234                   |
| 20                                  | 5180.0242                   |
| 30                                  | 5180.0322                   |
| 40                                  | 5180.0313                   |
| 50                                  | 5180.0334                   |
| Limit Range (MHz)                   | 5150-5250                   |
| Result                              | PASS                        |

## APPENDIX A: PHOTOGRAPHS OF TEST SETUP

### RADIATED EMISSION



# CONDUCTED EMISSION



----END OF REPORT----