# FCC PART 15
# TEST REPORT
## No.I22Z60940-IOT03

**for**

**TCL Communication Ltd.**

**Mobile Hot Spot**

**MW513U**

**With**

**FCC ID: 2ACCJB183**

**Hardware Version: 06**

**Software Version: MW513U_ZZ_02.00_06**

**Issued Date: 2022-08-01**

**Note:**

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of CTTL.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S.Government.

**Test Laboratory:**

**CTTL-Telecommunication Technology Labs, CAICT**

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# REPORT HISTORY

| Report Number | Revision | Description | Issue Date |
|---|---|---|---|
| I22Z60940-IOT03 | Rev.0 | 1st edition | 2022-07-19 |
| I22Z60940-IOT03 | Rev.1 | Add modulation type of OFDMA.<br>Add the description of LISN date.<br>Add the information of attenuator.<br>Add mimo result description(CDD&BF).<br>Add the plot of duty cycle.<br>Add the reference Document (KDB 662911). | 2022-08-01 |

# CONTENTS

# 1. TEST LATORATORY

## 1.1. Introduction & Accreditation

**Telecommunication Technology Labs, CAICT** is an ISO/IEC 17025:2017 accredited test laboratory under NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM (NVLAP) with lab code 600118-0, and is also an FCC accredited test laboratory (CN5017), and ISED accredited test laboratory (ISED#: 24849). The detail accreditation scope can be found on NVLAP website.

## 1.2. Testing Location

Testing Location: CTTL(Huayuan North Road)

Address: No. 52, Huayuan North Road, Haidian District, Beijing, P. R. China100191

## 1.3. Testing Environment

Normal Temperature: 15-35℃

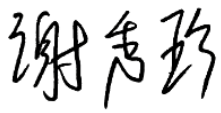
Relative Humidity: 20-75%

## 1.4. Project date

Testing Start Date: 2022-05-11

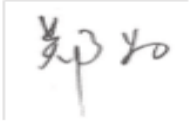
Testing End Date: 2022-07-19

## 1.5. Signature



**Xie Xiuzhen**

**( Prepared this test report )**



**Zheng Wei**

**(Reviewed this test report)**

**Hu Xiaoyu**

**(Approved this test report)**

# 2. CLIENT INFORMATION

## 2.1 Applicant Information

| | |
|---|---|
| Company Name: | TCL Communication Ltd. |
| Address: | 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong |
| City: | Hong Kong |
| Postal Code: | / |
| Country: | China |
| Telephone: | +86075536645759 |
| Fax: | / |

## 2.2 Manufacturer Information

| | |
|---|---|
| Company Name: | TCL Communication Ltd. |
| Address: | 5/F, Building 22E, 22 Science Park East Avenue, Hong Kong Science Park, Shatin, NT, Hong Kong |
| City: | Hong Kong |
| Postal Code: | / |
| Country: | China |
| Telephone: | +86075536645759 |
| Fax: | / |

# 3. EQUIPMENT UNDER TEST (EUT) AND ANCILLARYEQUIPMENT(AE)

## 3.1. About EUT

| | |
|---|---|
| Description | Mobile Hot Spot |
| Model name | MW513U |
| FCC ID | 2ACCJB183 |
| WLAN Frequency Band | ISM Bands:<br>-5150MHz~5250MHz<br>-5250MHz~5350MHz<br>-5470MHz~5725MHz |
| Type of modulation | OFDM/OFDMA |
| Antenna | Integral Antenna |
| Voltage | 3.8V |

## 3.2. Internal Identification of EUT used during the test

| EUT ID* | SN or IMEI | HW Version | SW Version |
|---|---|---|---|
| EUT1 | 352950940201148 | 06 | MW513U_ZZ_02.00_06 |
| EUT2 | 352950940002589 | 06 | MW513U_ZZ_02.00_06 |
| EUT3 | 352950940202708 | 06 | MW513U_ZZ_02.00_06 |

*EUT ID: is used to identify the test sample in the lab internally.

## 3.3. Internal Identification of AE used during the test

| AE ID* | Description | Type |
|---|---|---|
| AE1 | Charger1 | QC13US |

*AE ID: is used to identify the test sample in the lab internally.

## 3.4. General Description

The Equipment under Test (EUT) is a model of Mobile Hot Spot with integrated antenna and inbuilt battery.

It consists of normal options: travel charger, USB cable.

Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the client.

### 3.5. Interpretation of the Test Environment

For the test methods, the test environment uncertainty figures correspond to an expansion factor k=2.

Measurement Uncertainty

| Parameter | Uncertainty |
|---|---|
| temperature | 0.48°C |
| humidity | 2 % |
| DC voltages | 0.003V |

## 4. REFERENCE DOCUMENTS

### 4.1. Documents supplied by applicant

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

### 4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

| | | |
|---|---|---|
| FCC Part15 | Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices | 2018 |
| ANSI C63.10 | Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz | 2013 |
| UNII: KDB 789033 D02 | General U-NII Test Procedures New Rules v02r01 | 2017-12 |
| KDB 662911 D01 | Emissions Testing of Transmitters with Multiple Outputs in the Same Band(e.g., MIMO, Smart Antenna, etc) | 2013-10 |

## 5. LABORATORY ENVIRONMENT

Conducted RF performance testing is performed in shielding room.

EMC performance testing is performed in Semi-anechoic chamber.

# 6. SUMMARY OF TEST RESULTS

## 6.1. Summary of Test Results

| SUMMARY OF MEASUREMENT RESULTS | Sub-clause of Part15E | Sub-clause of IC | Verdict |
|---|---|---|---|
| Maximum Output Power | 15.407 | / | **P** |
| Peak Power Spectral Density | 15.407 | / | **P** |
| Occupied 26dB Bandwidth | 15.403 | / | **P** |
| Band edge compliance (Radiated) | 15.209 | / | **P** |
| Transmitter spurious emissions (Radiated) | 15.407 | / | **P** |
| AC Powerline Conducted Emission (150kHz- 30MHz) | 15.407 | / | **P** |
| Frequency Stability | 15.407 | / | **P** |
| 99% Occupied bandwidth | / | / | **P** |
| Transmit Power Control | 15.407 | / | **NA** |

Please refer to **ANNEX A** for detail.

Terms used in Verdict column

| | |
|---|---|
| P | Pass, The EUT complies with the essential requirements in the standard. |
| NM | Not measured, The test was not measured by CTTL |
| NA | Not Applicable, The test was not applicable |
| F | Fail, The EUT does not comply with the essential requirements in the standard |

## 6.2. Statements

CTTL has evaluated the test cases requested by the client/manufacturer as listed in section 6.1 of this report for the EUT specified in section 3 according to the standards or reference documents listed in section 4.1.

This report only deals with the WLAN function among the features described in section 3.

## 6.3. Test Conditions

For this report, all the test cases are tested under normal temperature and normal voltage, and also under norm humidity, the specific condition is shown as follows:

| | |
|---|---|
| Temperature | 26℃ |
| Voltage | 3.8V |
| Humidity | 44% |

# 7. TEST EQUIPMENTS UTILIZED

## Conducted test system

| No. | Equipment | Model | Serial Number | Manufacturer | Calibration Period | Calibration Due date |
|---|---|---|---|---|---|---|
| 1 | Vector Signal Analyzer | FSQ40 | 200089 | Rohde & Schwarz | 1 year | 2023-05-15 |
| 2 | LISN | ENV216 | 101200 | R&S | 1 year | 2022-06-29 |
| 3 | Test Receiver | ESCI | 100344 | R&S | 1 year | 2023-03-21 |
| 4 | Attenuator | 10dB/2W | / | Rosenberger | / | / |
| 5 | Shielding Room | S81 | / | ETS-Lindgren | / | / |

The LISN was in calibration due date when used for testing

## Radiated emission test system

| No. | Equipment | Model | Serial Number | Manufacturer | Calibration Period | Calibration Due date |
|---|---|---|---|---|---|---|
| 1 | Test Receiver | ESW44 | 103023 | R&S | 1 year | 2022-10-28 |
| 2 | BiLog Antenna | VULB9163 | 9163-302 | Schwarzbeck | 1 year | 2022-12-28 |
| 3 | EMI Antenna | 3115 | 0016725 | ETS-Lindgren | 1 year | 2022-07-01 |

Note:The radiated emission test system was in calibration due date when used for testing.

# 8. Measurement Uncertainty

## 8.1 Transmitter Output Power

Measurement Uncertainty: 0.387dB,k=1.96

## 8.2 Peak Power Spectral Density

Measurement Uncertainty: 0.705dB,k=1.96

## 8.3 Occupied Channel Bandwidth

Measurement Uncertainty: 60.80Hz,k=1.96

## 8.4 Band Edges Compliance

Measurement Uncertainty : 0.62dB,k=1.96

## 8.5 Spurious Emissions

**Conducted (k=1.96)**

| Frequency Range | Uncertainty(dB) |
|---|---|
| 30MHz ≤ f ≤ 2GHz | 1.22 |
| 2GHz ≤ f ≤3.6GHz | 1.22 |
| 3.6GHz ≤ f ≤8GHz | 1.22 |
| 8GHz ≤ f ≤12.75GHz | 1.51 |
| 12.75GHz ≤ f ≤26GHz | 1.51 |
| 26GHz ≤ f ≤40GHz | 1.59 |

**Radiated (k=2)**

| Frequency Range | Uncertainty(dB) |
|---|---|
| 9kHz-30MHz | / |
| 30MHz ≤ f ≤ 1GHz | 5.16 |
| 1GHz ≤ f ≤18GHz | 5.44 |
| 18GHz ≤ f ≤40GHz | 5.28 |

## 8.6. AC Power-line Conducted Emission

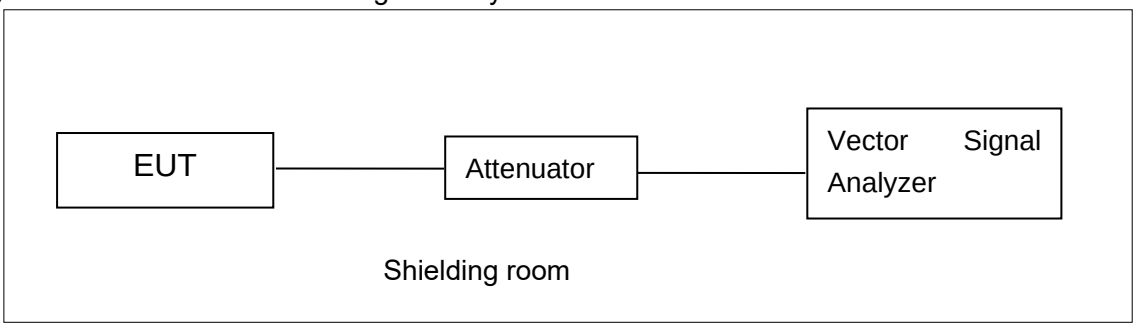
Measurement Uncertainty : 3.08,k=2

# ANNEX A: MEASUREMENT RESULTS

## A.1. Measurement Method

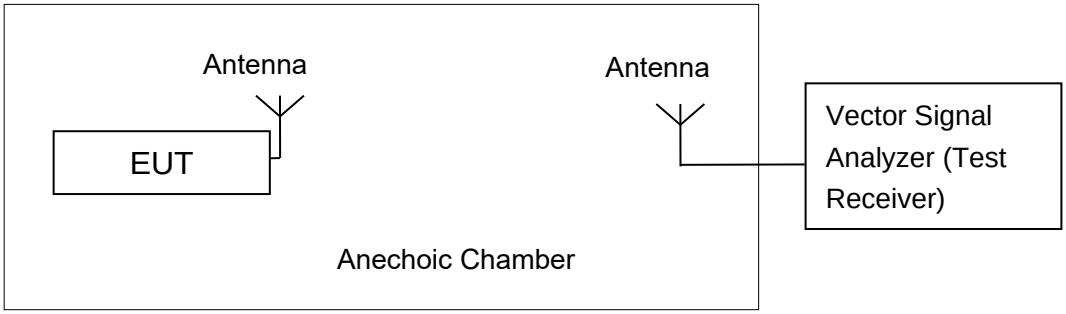
### A.1.1. Conducted Measurements

1). Connect the EUT to the test system correctly.
2). Set the EUT to the required work mode.
3). Set the EUT to the required channel.
4). Set the spectrum analyzer to start measurement.
5). Record the values. Vector Signal Analyzer




### A.1.2. Radiated Emission Measurements

In the case of radiated emission, the used settings are as follows,
Sweep frequency from 30 MHz to 1GHz, RBW = 100 kHz, VBW = 300 kHz;
Sweep frequency from 1 GHz to 26GHz, RBW = 1MHz, VBW = 10Hz;




The measurement is made according to KDB 789033
The radiated emission test is performed in semi-anechoic chamber. The distance from the EUT to the reference point of measurement antenna is 3m. The test is carried out on both vertical and horizontal polarization and only maximization result of both polarizations is kept. During the test, the turntable is rotated 360° and the measurement antenna is moved from 1m to 4m to get the maximization result.

## A.2. Maximum output Power

**Measurement Limit and Method:**

| Standard | Frequency (MHz) | Limit |
|---|---|---|
| FCC CRF Part 15.407(a) | 5150MHz~5250MHz | 1W |
| | 5250MHz~5350MHz | 250mw |
| | 5470MHz~5725MHz | 250mw |

The measurementmethod SA-2 is made according to KDB 789033

**Directional Gain**

| Mode | Ant9(dBi) | Ant10(dBi) | Power(dBi) | PSD(dBi) |
|---|---|---|---|---|
| CDD | 0.9 | 1.2 | 1.2 | 4.06 |
| BF | 0.9 | 1.2 | 4.06 | 4.06 |

For CDD transmissions, directional gain is calculated as:

a) For power, the directional gain GANT is set equal to the antenna having the highest gain, i.e.,

Directional gain = GANT MAX (Ant.1 Gain, Ant.2 Gain, …) + Array Gain, as following table for Power, where Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;

b) For PSD, the directional gain calculation is following:

Directional gain = 10 log [(10G1 /20 + 10G2 /20 + … + 10Gn /20) 2 /NANT] dBi, as following table for PSD. NANT = number of transmit antennas NSS = number of spatial streams. (The worst case directional gain will occur when NSS = 1)

For BF transmissions, power and PSD directional gain is calculated as:

Directional gain = 10 log [(10G1 /20 + 10G2 /20 + … + 10Gn /20) 2 /NANT] dBi, as following table for PSD. NANT = number of transmit antennas NSS = number of spatial streams. (The worst case directional gain will occur when NSS = 1)

**Measurement Results:**

**SISO**

**802.11a**

| Channel | Test Result (dBm) | |
|---|---|---|
| | MCS0 | |
| | Ant9 | Ant10 |
| 5180MHz (Ch36) | 13.71 | 13.60 |
| 5200MHz (Ch40) | 13.34 | 14.39 |
| 5240MHz (Ch48) | 14.49 | 14.08 |

| | | |
|---|---|---|
| 5260MHz (Ch52) | 13.59 | 14.63 |
| 5280MHz (Ch56) | 13.38 | 14.50 |
| 5320MHz (Ch64) | 13.22 | 14.25 |
| 5500MHz (Ch100) | 13.09 | 13.33 |
| 5580MHz (Ch116) | 13.92 | 14.19 |
| 5700MHz (Ch140) | 13.85 | 13.97 |
| 5720MHz (Ch144) | 13.19 | 14.16 |

The data rate 6Mbps is selected as worse condition, and the following cases are performed with this condition.

**802.11n-HT20 mode**

| Channel | Test Result (dBm) | |
|---|---|---|
| | MCS0 | |
| | Ant9 | Ant10 |
| 5180MHz (Ch36) | 6.79 | 9.61 |
| 5200MHz (Ch40) | 7.03 | 10.02 |
| 5240MHz (Ch48) | 7.39 | 10.02 |
| 5260MHz (Ch52) | 7.79 | 10.05 |
| 5280MHz (Ch56) | 7.98 | 10.30 |
| 5320MHz (Ch64) | 8.01 | 9.92 |
| 5500MHz (Ch100) | 7.29 | 7.94 |
| 5580MHz (Ch116) | 8.55 | 8.78 |
| 5700MHz (Ch140) | 7.16 | 9.77 |
| 5720MHz (Ch144) | 6.93 | 9.51 |

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

**802.11ac-VHT20 mode**

| Channel | Test Result (dBm) | |
|---|---|---|
| | MCS0 | |
| | Ant9 | Ant10 |
| 5180MHz (Ch36) | 8.42 | 9.31 |
| 5200MHz (Ch40) | 8.66 | 9.71 |
| 5240MHz (Ch48) | 9.00 | 9.71 |
| 5260MHz (Ch52) | 9.21 | 9.72 |
| 5280MHz (Ch56) | 8.65 | 9.97 |
| 5320MHz (Ch64) | 8.75 | 9.61 |
| 5500MHz (Ch100) | 9.00 | 7.60 |
| 5580MHz (Ch116) | 10.27 | 8.49 |
| 5700MHz (Ch140) | 8.86 | 9.46 |
| 5720MHz (Ch144) | 8.93 | 9.50 |

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

**802.11n-HT40 mode**

| Channel | Test Result (dBm) | |
|---|---|---|
| | MCS0 | |
| | Ant9 | Ant10 |
| 5190MHz (Ch38) | 8.61 | 9.59 |
| 5230MHz (Ch46) | 9.00 | 10.33 |
| 5270MHz (Ch54) | 8.51 | 9.83 |
| 5310MHz (Ch62) | 8.60 | 9.62 |
| 5510MHz (Ch102) | 8.67 | 8.57 |
| 5550MHz (Ch110) | 9.20 | 8.89 |

| | | |
|---|---|---|
| 5670MHz (Ch134) | 10.11 | 10.62 |
| 5710MHz (Ch142) | 9.12 | 10.61 |

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

**802.11ac-VHT40 mode**

| Channel | Test Result (dBm) | |
|---|---|---|
| | MCS0 | |
| | Ant9 | Ant10 |
| 5190MHz (Ch38) | 9.12 | 10.65 |
| 5230MHz (Ch46) | 9.31 | 11.46 |
| 5270MHz (Ch54) | 9.13 | 10.91 |
| 5310MHz (Ch62) | 8.83 | 10.59 |
| 5510MHz (Ch102) | 8.96 | 8.61 |
| 5550MHz (Ch110) | 9.70 | 10.64 |
| 5670MHz (Ch134) | 10.10 | 10.62 |
| 5710MHz (Ch142) | 10.50 | 10.62 |

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

**802.11ac-VHT80 mode**

| Channel | Test Result (dBm) | |
|---|---|---|
| | MCS0 | |
| | Ant9 | Ant10 |
| 5210MHz (Ch42) | 8.05 | 10.53 |
| 5290MHz (Ch58) | 7.78 | 10.68 |
| 5530MHz (Ch106) | 8.48 | 9.30 |
| 5610MHz (Ch122) | 9.72 | 10.29 |

| | | |
|---|---|---|
| 5690MHz (Ch138) | 8.13 | 11.09 |

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

**802.11ac-VHT160 mode**

| Channel | Test Result (dBm) | |
|---|---|---|
| | MCS0 | |
| | Ant9 | Ant10 |
| 5250MHz (Ch50) | 8.01 | 10.12 |
| 5570MHz (Ch114) | 9.62 | 9.65 |

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

**802.11ax-HE20 mode(full RU)**

| Channel | Test Result (dBm) | |
|---|---|---|
| | MCS0 | |
| | Ant9 | Ant10 |
| 5180MHz (Ch36) | 8.54 | 8.79 |
| 5200MHz (Ch40) | 8.60 | 9.21 |
| 5240MHz (Ch48) | 8.90 | 9.25 |
| 5260MHz (Ch52) | 8.92 | 9.21 |
| 5280MHz (Ch56) | 8.91 | 9.52 |
| 5320MHz (Ch64) | 8.91 | 9.15 |
| 5500MHz (Ch100) | 9.14 | 8.26 |
| 5580MHz (Ch116) | 9.78 | 9.15 |
| 5700MHz (Ch140) | 9.30 | 9.80 |
| 5720MHz (Ch144) | 9.43 | 9.70 |

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

**802.11ax-HE40 mode(full RU)**

| Channel | Test Result (dBm) | |
|---|---|---|
| | MCS0 | |
| | Ant9 | Ant10 |
| 5190MHz (Ch38) | 8.88 | 9.13 |
| 5230MHz (Ch46) | 9.15 | 9.95 |
| 5270MHz (Ch54) | 9.05 | 9.34 |
| 5310MHz (Ch62) | 8.60 | 9.16 |
| 5510MHz (Ch102) | 8.17 | 9.22 |
| 5550MHz (Ch110) | 8.85 | 9.30 |
| 5670MHz (Ch134) | 9.78 | 10.90 |
| 5710MHz (Ch142) | 9.30 | 9.30 |

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

**802.11ax-HE80 mode(full RU)**

| Channel | Test Result (dBm) | |
|---|---|---|
| | MCS0 | |
| | Ant9 | Ant10 |
| 5210MHz (Ch42) | 9.90 | 9.22 |
| 5290MHz (Ch58) | 9.39 | 9.21 |
| 5530MHz (Ch106) | 9.79 | 8.00 |
| 5610MHz (Ch122) | 9.18 | 8.90 |
| 5690MHz (Ch138) | 9.90 | 9.90 |

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

**802.11ax-HE160 mode(full RU)**

| Channel | Test Result (dBm) | |
|---|---|---|
| | MCS0 | |
| | Ant9 | Ant10 |
| 5250MHz (Ch50) | 8.70 | 9.66 |
| 5570MHz (Ch114) | 9.36 | 9.00 |

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

**MIMO（CDD&BF）**

**802.11n-HT20**

| Channel | Test Result (dBm) | | |
|---|---|---|---|
| | MCS0 | | |
| | Ant9 | Ant10 | Sum |
| 5180MHz (Ch36) | 6.99 | 9.40 | 11.37 |
| 5200MHz (Ch40) | 7.12 | 9.89 | 11.73 |
| 5240MHz (Ch48) | 7.32 | 9.90 | 11.81 |
| 5260MHz (Ch52) | 7.78 | 9.95 | 12.01 |
| 5280MHz (Ch56) | 7.96 | 10.25 | 12.26 |
| 5320MHz (Ch64) | 8.07 | 9.83 | 12.05 |
| 5500MHz (Ch100) | 6.83 | 7.77 | 10.34 |
| 5580MHz (Ch116) | 8.33 | 8.71 | 11.53 |
| 5700MHz (Ch140) | 6.77 | 9.72 | 11.50 |
| 5720MHz (Ch144) | 6.50 | 9.40 | 11.20 |

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

**802.11ac-VHT20 mode**

| Channel | Test Result (dBm) | | |
|---|---|---|---|
| | MCS0 | | |
| | Ant9 | Ant10 | Sum |
| 5180MHz (Ch36) | 8.76 | 11.39 | 13.28 |
| 5200MHz (Ch40) | 8.92 | 11.75 | 13.57 |
| 5240MHz (Ch48) | 9.12 | 11.71 | 13.61 |
| 5260MHz (Ch52) | 9.31 | 11.70 | 13.68 |
| 5280MHz (Ch56) | 9.49 | 11.98 | 13.92 |
| 5320MHz (Ch64) | 9.63 | 11.58 | 13.72 |
| 5500MHz (Ch100) | 9.38 | 10.39 | 12.92 |
| 5580MHz (Ch116) | 9.97 | 10.51 | 13.26 |
| 5700MHz (Ch140) | 8.85 | 11.38 | 13.31 |
| 5720MHz (Ch144) | 9.00 | 11.40 | 13.37 |

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

**802.11n-HT40 mode**

| Channel | Test Result (dBm) | | |
|---|---|---|---|
| | MCS0 | | |
| | Ant9 | Ant10 | Sum |
| 5190MHz (Ch38) | 8.07 | 10.49 | 12.46 |
| 5230MHz (Ch46) | 8.20 | 11.23 | 12.98 |
| 5270MHz (Ch54) | 8.70 | 10.69 | 12.82 |
| 5310MHz (Ch62) | 8.88 | 10.46 | 12.75 |
| 5510MHz (Ch102) | 8.05 | 9.50 | 11.85 |
| 5550MHz (Ch110) | 8.79 | 9.72 | 12.29 |

| | | | |
|---|---|---|---|
| 5670MHz (Ch134) | 9.73 | 11.52 | 13.73 |
| 5710MHz (Ch142) | 8.66 | 11.47 | 13.30 |

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

**802.11ac-VHT40 mode**

| Channel | Test Result (dBm) | | |
|---|---|---|---|
| | MCS0 | | |
| | Ant9 | Ant10 | Sum |
| 5190MHz (Ch38) | 9.63 | 11.65 | 13.77 |
| 5230MHz (Ch46) | 9.75 | 11.37 | 13.64 |
| 5270MHz (Ch54) | 9.14 | 11.85 | 13.72 |
| 5310MHz (Ch62) | 9.37 | 11.56 | 13.61 |
| 5510MHz (Ch102) | 8.11 | 9.48 | 11.86 |
| 5550MHz (Ch110) | 8.69 | 9.74 | 12.26 |
| 5670MHz (Ch134) | 9.77 | 11.49 | 13.73 |
| 5710MHz (Ch142) | 8.55 | 10.63 | 12.72 |

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

**802.11ac-VHT80 mode**

| Channel | Test Result (dBm) | | |
|---|---|---|---|
| | MCS0 | | |
| | Ant9 | Ant10 | Sum |
| 5210MHz (Ch42) | 7.34 | 10.33 | 12.10 |
| 5290MHz (Ch58) | 8.12 | 10.51 | 12.49 |
| 5530MHz (Ch106) | 8.40 | 9.14 | 11.80 |
| 5610MHz (Ch122) | 9.64 | 10.16 | 12.92 |

| | | | |
|---|---|---|---|
| 5690MHz (Ch138) | 8.38 | 11.09 | 12.95 |

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

**802.11ac-VHT160 mode**

| Channel | Test Result (dBm) | | |
|---|---|---|---|
| | MCS0 | | |
| | Ant9 | Ant10 | Sum |
| 5250MHz (Ch50) | 8.30 | 10.87 | 12.78 |
| 5570MHz (Ch114) | 9.93 | 10.25 | 13.10 |

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

**802.11ax-HE20 mode(full RU)**

| Antenna | Frequency[MHz] | Result [dBm] |
|---|---|---|
| Ant9 | 5180 | 8.17 |
| Ant10 | 5180 | 10.95 |
| total | 5180 | 12.79 |
| Ant9 | 5200 | 8.33 |
| Ant10 | 5200 | 11.53 |
| total | 5200 | 13.23 |
| Ant9 | 5240 | 9.12 |
| Ant10 | 5240 | 11.44 |
| total | 5240 | 13.44 |
| Ant9 | 5260 | 8.72 |
| Ant10 | 5260 | 11.23 |
| total | 5260 | 13.16 |
| Ant9 | 5280 | 9.32 |
| Ant10 | 5280 | 11.74 |
| total | 5280 | 13.71 |
| Ant9 | 5320 | 9.05 |
| Ant10 | 5320 | 11.28 |
| total | 5320 | 13.32 |
| Ant9 | 5500 | 9.45 |
| Ant10 | 5500 | 10.93 |
| total | 5500 | 13.26 |
| Ant9 | 5580 | 10.11 |
| Ant10 | 5580 | 10.92 |

| | | |
|---|---|---|
| total | 5580 | 13.54 |
| Ant9 | 5700 | 9.00 |
| Ant10 | 5700 | 12.20 |
| total | 5700 | 13.90 |
| Ant9 | 5720 | 9.70 |
| Ant10 | 5720 | 11.14 |
| total | 5720 | 13.49 |

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

**802.11ax-HE40 mode(full RU)**

| Antenna | Frequency[MHz] | Result [dBm] |
|---|---|---|
| Ant9 | 5190 | 8.56 |
| Ant10 | 5190 | 11.49 |
| total | 5190 | 13.28 |
| Ant9 | 5270 | 9.31 |
| Ant10 | 5270 | 11.91 |
| total | 5270 | 13.81 |
| Ant9 | 5310 | 8.58 |
| Ant10 | 5310 | 10.44 |
| total | 5310 | 12.62 |
| Ant9 | 5510 | 8.35 |
| Ant10 | 5510 | 10.34 |
| total | 5510 | 12.47 |
| Ant9 | 5550 | 8.83 |
| Ant10 | 5550 | 10.04 |
| total | 5550 | 12.49 |
| Ant9 | 5670 | 9.84 |
| Ant10 | 5670 | 11.87 |
| total | 5670 | 13.98 |
| Ant9 | 5710 | 8.91 |
| Ant10 | 5710 | 10.63 |
| total | 5710 | 12.86 |

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

**802.11ax-HE80 mode(full RU)**

| Antenna | Frequency[MHz] | Result [dBm] |
|---|---|---|
| Ant9 | 5210 | 8.70 |
| Ant10 | 5210 | 11.87 |
| total | 5210 | 13.58 |

| | | |
|---|---|---|
| Ant9 | 5290 | 9.40 |
| Ant10 | 5290 | 12.05 |
| total | 5290 | 13.93 |
| Ant9 | 5530 | 9.06 |
| Ant10 | 5530 | 10.27 |
| total | 5530 | 12.72 |
| Ant9 | 5610 | 8.60 |
| Ant10 | 5610 | 9.35 |
| total | 5610 | 12.00 |
| Ant9 | 5690 | 8.18 |
| Ant10 | 5690 | 9.59 |
| total | 5690 | 11.95 |

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

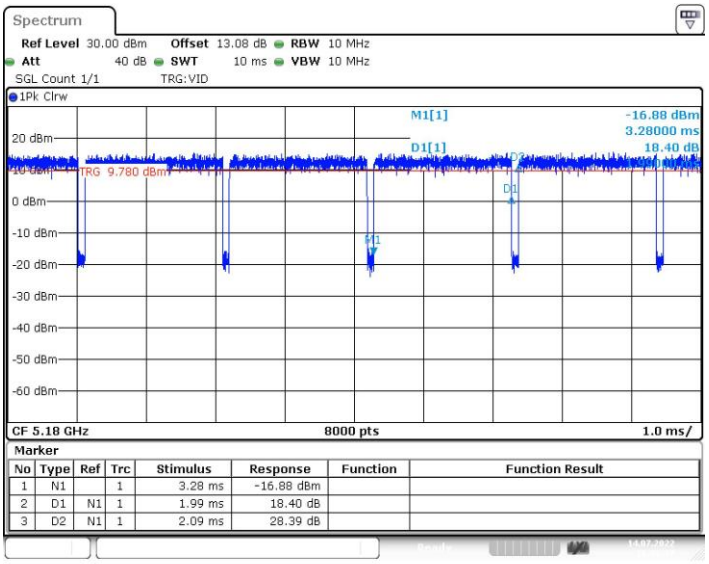
**802.11ax-HE160 mode(full RU)**

| Antenna | Frequency[MHz] | Result [dBm] |
|---|---|---|
| Ant9 | 5250 | 8.78 |
| Ant10 | 5250 | 11.42 |
| total | 5250 | 13.31 |
| Ant9 | 5570 | 9.68 |
| Ant10 | 5570 | 9.57 |
| total | 5570 | 12.64 |

The data rate MCS0 is selected as worse condition, and the following cases are performed with this condition.

Duty Cycle

| Mode | 11a | 11n20 | 11ac20 | 11ax20 | 11n40 | 11ac40 | 11ax40 | 11ac80 | 11ax80 | 11ac160 | 11ax160 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Duty Cycle | 95% | 95% | 95% | 95% | 95% | 95% | 95% | 95% | 95% | 95% | 95% |




Note: The following cases are performed with this condition:

a) 802.11a/n20/ac40/ac80/ac160/ax20/ax40/ax80/ax160 mode (Ant10) are selected as the worst condition (SISO);

b) 802.11ac20/ac40/ac80/ac160/ax20/ax40/ax80/ax160 mode (Ant10) are selected as the worst condition (MIMO);

c) The 802.11ax20 full RU mode (compare with 802.11n20/ac20), 802.11ax40 full RU mode (compare with 802.11n40/ac40), 802.11ax80 full RU mode (compare with 802.11ac80), 802.11ax160 full RU mode (compare with 802.11ac160) are selected as the worst condition (MIMO);

d) The 802.11n20 mode (compare with 802.11ax20/ac20), 802.11n40 mode (compare with 802.11ax40/ac40), 802.11ac80 mode (compare with 802.11ax80), 802.11ac160 mode (compare with 802.11ax160) are selected as the worst condition (SISO Ant10).

e) The device only support full RU(11ax20-RU242/11ax40-RU484/11ax80-RU996/11ax160-RU996*2);

f) Both of the CDD mode and BF mode have the same power setting.

**Conclusion: PASS**

## A.3. Peak Power Spectral Density (conducted)

**Measurement Limit:**

| Standard | Frequency (MHz) | Limit (dBm/MHz) |
|---|---|---|
| FCC CRF Part 15.407(a) | 5150MHz~5250MHz | 17 |
| | 5250MHz~5350MHz | 11 |
| | 5470MHz~5725MHz | 11 |

The output power measurement method Section F is made according to KDB 789033

**Measurement Results:**

**SISO-Ant10**

| Mode | Frequency | Power Spectral Density (dBm/MHz) | Conclusion |
|---|---|---|---|
| 802.11a | 5180 MHz | 6.26 | P |
| | 5200 MHz | 6.63 | P |
| | 5240 MHz | 6.94 | P |
| | 5260 MHz | 6.55 | P |
| | 5280 MHz | 6.82 | P |
| | 5320 MHz | 6.49 | P |
| | 5500 MHz | 4.08 | P |
| | 5580 MHz | 4.39 | P |
| | 5700 MHz | 4.39 | P |
| | 5720 MHz | 5.12 | P |
| 802.11n HT20 | 5180 MHz | 0.25 | P |
| | 5200 MHz | -0.04 | P |
| | 5240 MHz | -0.10 | P |
| | 5260 MHz | -0.69 | P |
| | 5280 MHz | -0.64 | P |
| | 5320 MHz | -1.18 | P |
| | 5500 MHz | -1.91 | P |
| | 5580 MHz | -1.28 | P |
| | 5700 MHz | -1.63 | P |
| | 5720 MHz | -1.73 | P |
| 802.11ac VHT40 | 5190 MHz | -1.8 | P |
| | 5230 MHz | -1.22 | P |
| | 5270 MHz | -3.49 | P |
| | 5310 MHz | -3.78 | P |
| | 5510 MHz | -4.00 | P |
| | 5550 MHz | -4.02 | P |
| | 5670 MHz | -3.31 | P |
| | 5710 MHz | -3.78 | P |
| 802.11ac VHT80 | 5210MHz | -5.45 | P |
| | 5290MHz | -5.72 | P |

| | | | |
|---|---|---|---|
| | 5530MHz | -6.59 | P |
| | 5610MHz | -6.34 | P |
| | 5690MHz | -5.75 | P |
| 802.11ac VHT160 | 5250MHz | -9.54 | P |
| | 5570MHz | -9.96 | P |

| Mode | Frequency | Power Spectral Density (dBm/MHz) | Conclusion |
|---|---|---|---|
| 802.11ax HE20(full RU) | 5180 MHz | -1.10 | P |
| | 5200 MHz | -1.89 | P |
| | 5240 MHz | -1.27 | P |
| | 5260 MHz | -2.22 | P |
| | 5280 MHz | -2.21 | P |
| | 5320 MHz | -2.51 | P |
| | 5500 MHz | -2.37 | P |
| | 5580 MHz | -1.78 | P |
| | 5700 MHz | -1.25 | P |
| | 5720 MHz | -1.83 | P |
| 802.11ax HE40(full RU) | 5190 MHz | -3.81 | P |
| | 5230 MHz | -2.86 | P |
| | 5270 MHz | -4.38 | P |
| | 5310 MHz | -4.42 | P |
| | 5510 MHz | -4.44 | P |
| | 5550 MHz | -4.70 | P |
| | 5670 MHz | -3.62 | P |
| | 5710 MHz | -4.14 | P |
| 802.11ax HE80(full RU) | 5210MHz | -6.35 | P |
| | 5290MHz | -6.73 | P |
| | 5530MHz | -7.47 | P |
| | 5610MHz | -7.14 | P |
| | 5690MHz | -6.73 | P |
| 802.11ax HE160(full RU) | 5250MHz | -9.25 | P |
| | 5570MHz | -10.00 | P |

**MIMO**

| Mode | Antenna | Frequency | Result | Conclusion |
|---|---|---|---|---|
| 11AC20MIMO | Ant9 | 5180 | -1.69 | P |
| | Ant10 | 5180 | 1.49 | P |
| | total | 5180 | 3.20 | P |
| | Ant9 | 5200 | -1.59 | P |
| | Ant10 | 5200 | 1.37 | P |

| | | | | |
|---|---|---|---|---|
| | total | 5200 | 3.15 | P |
| | Ant9 | 5240 | -0.54 | P |
| | Ant10 | 5240 | 1.80 | P |
| | total | 5240 | 3.80 | P |
| | Ant9 | 5260 | -0.72 | P |
| | Ant10 | 5260 | 0.85 | P |
| | total | 5260 | 3.15 | P |
| | Ant9 | 5280 | -0.68 | P |
| | Ant10 | 5280 | 1.02 | P |
| | total | 5280 | 3.26 | P |
| | Ant9 | 5320 | -0.63 | P |
| | Ant10 | 5320 | 0.72 | P |
| | total | 5320 | 3.11 | P |
| | Ant9 | 5500 | 0.25 | P |
| | Ant10 | 5500 | 0.90 | P |
| | total | 5500 | 3.60 | P |
| | Ant9 | 5580 | 1.56 | P |
| | Ant10 | 5580 | 1.50 | P |
| | total | 5580 | 4.54 | P |
| | Ant9 | 5700 | 0.89 | P |
| | Ant10 | 5700 | 1.85 | P |
| | total | 5700 | 4.41 | P |
| | Ant9 | 5720 | -0.51 | P |
| | Ant10 | 5720 | 0.64 | P |
| | total | 5720 | 3.11 | P |
| 11AC40MIMO | Ant9 | 5190 | -3.45 | P |
| | Ant10 | 5190 | -0.36 | P |
| | total | 5190 | 1.37 | P |
| | Ant9 | 5230 | -2.55 | P |
| | Ant10 | 5230 | 0.66 | P |
| | total | 5230 | 2.36 | P |
| | Ant9 | 5270 | -2.73 | P |
| | Ant10 | 5270 | -0.92 | P |
| | total | 5270 | 1.28 | P |
| | Ant9 | 5310 | -2.13 | P |
| | Ant10 | 5310 | -0.71 | P |
| | total | 5310 | 1.65 | P |
| | Ant9 | 5510 | -1.55 | P |
| | Ant10 | 5510 | -1.02 | P |
| | total | 5510 | 1.73 | P |
| | Ant9 | 5550 | -1.48 | P |
| | Ant10 | 5550 | -0.87 | P |

| | | | | |
|---|---|---|---|---|
| | total | 5550 | 1.85 | P |
| | Ant9 | 5670 | -0.35 | P |
| | Ant10 | 5670 | 0.03 | P |
| | total | 5670 | 2.85 | P |
| | Ant9 | 5710 | -2.35 | P |
| | Ant10 | 5710 | -1.93 | P |
| | total | 5710 | 0.88 | P |
| 11AC80MIMO | Ant9 | 5210 | -6.38 | P |
| | Ant10 | 5210 | -3.76 | P |
| | total | 5210 | -1.87 | P |
| | Ant9 | 5290 | -6.13 | P |
| | Ant10 | 5290 | -3.70 | P |
| | total | 5290 | -1.74 | P |
| | Ant9 | 5530 | -5.52 | P |
| | Ant10 | 5530 | -4.11 | P |
| | total | 5530 | -1.75 | P |
| | Ant9 | 5610 | -4.83 | P |
| | Ant10 | 5610 | -6.17 | P |
| | total | 5610 | -2.44 | P |
| | Ant9 | 5690 | -6.14 | P |
| | Ant10 | 5690 | -5.47 | P |
| | total | 5690 | -2.78 | P |
| 11AC160MIMO | Ant9 | 5250 | -9.75 | P |
| | Ant10 | 5250 | -7.64 | P |
| | total | 5250 | -5.56 | P |
| | Ant9 | 5570 | -7.65 | P |
| | Ant10 | 5570 | -7.99 | P |
| | total | 5570 | -4.81 | P |
| 11AX20MIMO | Ant9 | 5180 | -2.39 | P |
| | Ant10 | 5180 | 0.75 | P |
| | total | 5180 | 2.47 | P |
| | Ant9 | 5200 | -2.84 | P |
| | Ant10 | 5200 | 0.09 | P |
| | total | 5200 | 1.88 | P |
| | Ant9 | 5240 | -1.70 | P |
| | Ant10 | 5240 | 0.35 | P |
| | total | 5240 | 2.46 | P |
| | Ant9 | 5260 | -2.21 | P |
| | Ant10 | 5260 | -0.50 | P |
| | total | 5260 | 1.74 | P |
| | Ant9 | 5280 | -1.57 | P |
| | Ant10 | 5280 | -0.16 | P |

| | | | | |
|---|---|---|---|---|
| | total | 5280 | 2.20 | P |
| | Ant9 | 5320 | -1.38 | P |
| | Ant10 | 5320 | -0.88 | P |
| | total | 5320 | 1.89 | P |
| | Ant9 | 5500 | -1.11 | P |
| | Ant10 | 5500 | -0.48 | P |
| | total | 5500 | 2.23 | P |
| | Ant9 | 5580 | 0.08 | P |
| | Ant10 | 5580 | -0.2 | P |
| | total | 5580 | 2.95 | P |
| | Ant9 | 5700 | -0.99 | P |
| | Ant10 | 5700 | 0.23 | P |
| | total | 5700 | 2.67 | P |
| | Ant9 | 5720 | -1.27 | P |
| | Ant10 | 5720 | -0.60 | P |
| | total | 5720 | 2.09 | P |
| 11AX40MIMO | Ant9 | 5190 | -5.80 | P |
| | Ant10 | 5190 | -2.52 | P |
| | total | 5190 | -0.85 | P |
| | Ant9 | 5230 | -4.93 | P |
| | Ant10 | 5230 | -1.80 | P |
| | total | 5230 | -0.08 | P |
| | Ant9 | 5270 | -6.47 | P |
| | Ant10 | 5270 | -4.56 | P |
| | total | 5270 | -2.40 | P |
| | Ant9 | 5310 | -5.29 | P |
| | Ant10 | 5310 | -4.44 | P |
| | total | 5310 | -1.83 | P |
| | Ant9 | 5510 | -4.59 | P |
| | Ant10 | 5510 | -4.23 | P |
| | total | 5510 | -1.40 | P |
| | Ant9 | 5550 | -5.45 | P |
| | Ant10 | 5550 | -4.41 | P |
| | total | 5550 | -1.89 | P |
| | Ant9 | 5670 | -4.10 | P |
| | Ant10 | 5670 | -3.28 | P |
| | total | 5670 | -0.66 | P |
| | Ant9 | 5710 | -4.97 | P |
| | Ant10 | 5710 | -4.40 | P |
| | total | 5710 | -1.67 | P |
| 11AX80MIMO | Ant9 | 5210 | -9.49 | P |
| | Ant10 | 5210 | -5.28 | P |

| | | | | |
|---|---|---|---|---|
| | total | 5210 | -3.88 | P |
| | Ant9 | 5290 | -7.20 | P |
| | Ant10 | 5290 | -5.64 | P |
| | total | 5290 | -3.34 | P |
| | Ant9 | 5530 | -8.39 | P |
| | Ant10 | 5530 | -8.19 | P |
| | total | 5530 | -5.28 | P |
| | Ant9 | 5610 | -7.78 | P |
| | Ant10 | 5610 | -7.78 | P |
| | total | 5610 | -4.77 | P |
| | Ant9 | 5690 | -8.09 | P |
| | Ant10 | 5690 | -7.26 | P |
| | total | 5690 | -4.64 | P |
| 11AX160MIMO | Ant9 | 5250 | -11.5 | P |
| | Ant10 | 5250 | -9.17 | P |
| | total | 5250 | -7.17 | P |
| | Ant9 | 5570 | -10.46 | P |
| | Ant10 | 5570 | -10.63 | P |
| | total | 5570 | -7.53 | P |

**Conclusion: PASS**

## A.4. Occupied 26dB Bandwidth(conducted)

**Measurement Limit:**

| Standard | Limit (kHz) |
|---|---|
| FCC 47 CFR Part 15.403 (i) | / |

The measurement is made according to KDB 789033

**Measurement Uncertainty:**

| | |
|---|---|
| Measurement Uncertainty | 60.80Hz |

**Measurement Result:**

| Mode | Frequency | Occupied 26dB Bandwidth ( MHz) | | conclusion |
|---|---|---|---|---|
| 802.11a | 5180 MHz | Fig.1 | 18.60 | P |
| | 5200 MHz | Fig.2 | 18.24 | P |
| | 5240 MHz | Fig.3 | 18.36 | P |
| | 5260 MHz | Fig.4 | 18.20 | P |
| | 5280 MHz | Fig.5 | 18.40 | P |
| | 5320 MHz | Fig.6 | 18.52 | P |
| | 5500 MHz | Fig.7 | 18.60 | P |
| | 5580 MHz | Fig.8 | 18.48 | P |
| | 5700 MHz | Fig.9 | 18.80 | P |
| | 5720 MHz | Fig.10 | 19.00 | P |
| 802.11n HT20 | 5180 MHz | Fig.11 | 19.76 | P |
| | 5200 MHz | Fig.12 | 19.64 | P |
| | 5240 MHz | Fig.13 | 19.80 | P |
| | 5260 MHz | Fig.14 | 19.56 | P |
| | 5280 MHz | Fig.15 | 19.44 | P |
| | 5320 MHz | Fig.16 | 19.88 | P |
| | 5500 MHz | Fig.17 | 19.84 | P |
| | 5580 MHz | Fig.18 | 19.92 | P |
| | 5700 MHz | Fig.19 | 19.64 | P |
| | 5720 MHz | Fig.20 | 19.48 | P |
| 802.11n HT40 | 5190 MHz | Fig.21 | 39.84 | P |
| | 5230 MHz | Fig.22 | 40.16 | P |
| | 5270 MHz | Fig.23 | 40.64 | P |
| | 5310 MHz | Fig.24 | 39.84 | P |
| | 5510 MHz | Fig.25 | 39.84 | P |
| | 5550 MHz | Fig.26 | 40.32 | P |
| | 5670 MHz | Fig.27 | 40.16 | P |
| | 5710 MHz | Fig.28 | 40.24 | P |
| 802.11ac VHT80 | 5210MHz | Fig.29 | 81.76 | P |
| | 5290MHz | Fig.30 | 81.12 | P |
| | 5530MHz | Fig.31 | 81.60 | P |

| | | | | |
|---|---|---|---|---|
| | 5610MHz | Fig.32 | 82.08 | P |
| | 5690MHz | Fig.33 | 81.92 | P |
| 802.11ac VHT160 | 5250MHz | Fig.34 | 164.48 | P |
| | 5570MHz | Fig.35 | 164.16 | P |

**Conclusion: PASS**

**Test graphs as below:**

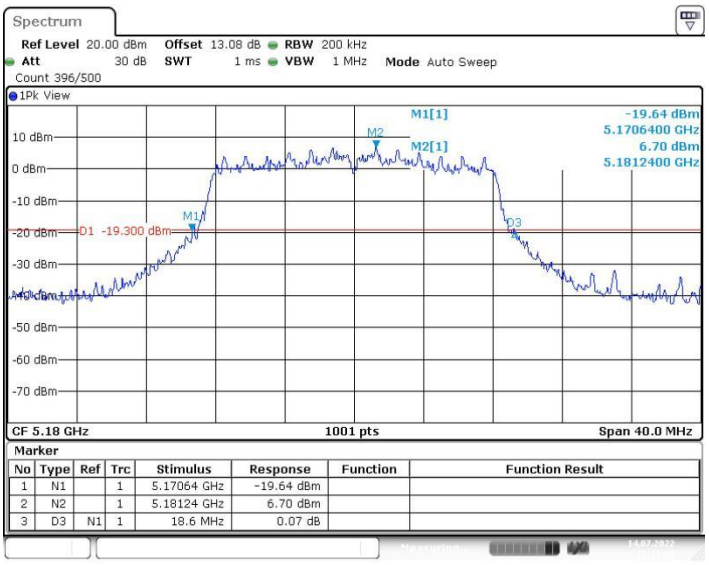



**Fig.1 Occupied 26dB Bandwidth (802.11a, 5180MHz)**

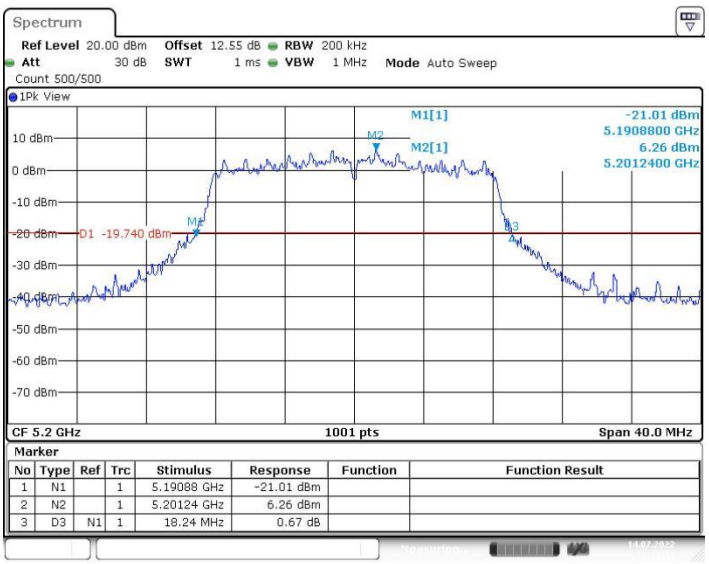



**Fig.2 Occupied 26dB Bandwidth (802.11a, 5200MHz)**

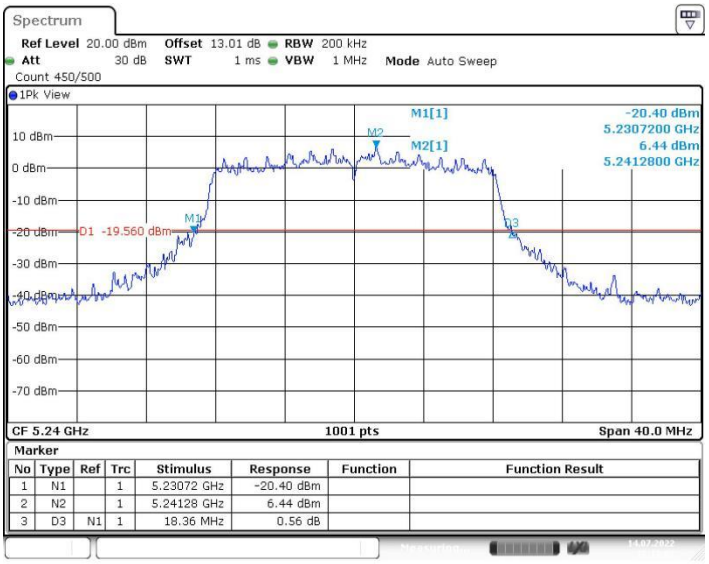



**Fig.3 Occupied 26dB Bandwidth (802.11a, 5240MHz)**

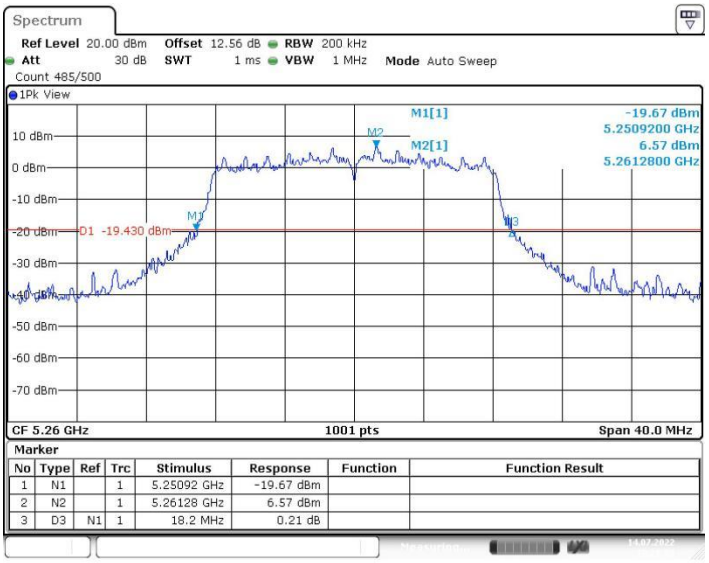



**Fig.4 Occupied 26dB Bandwidth (802.11a, 5260MHz)**

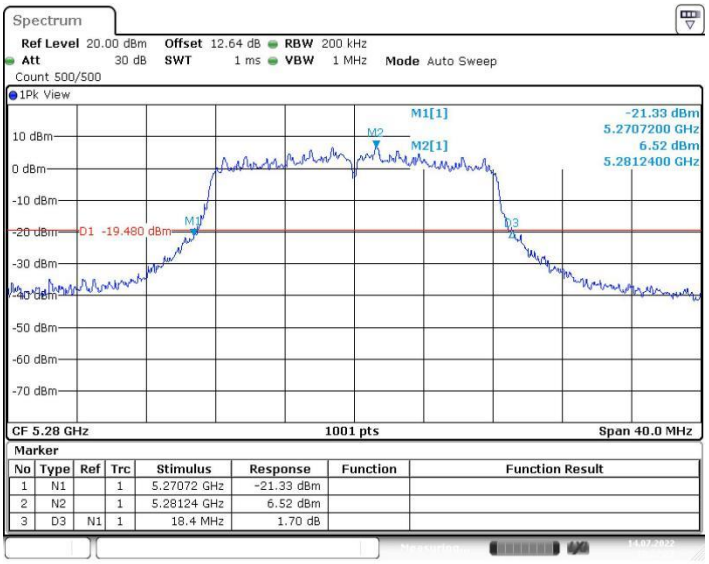



**Fig.5 Occupied 26dB Bandwidth (802.11a, 5280MHz)**

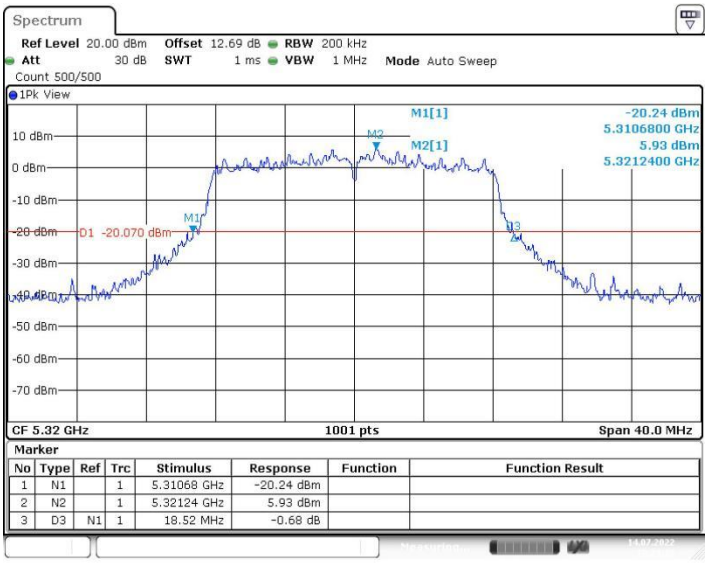



**Fig.6 Occupied 26dB Bandwidth (802.11a, 5320MHz)**

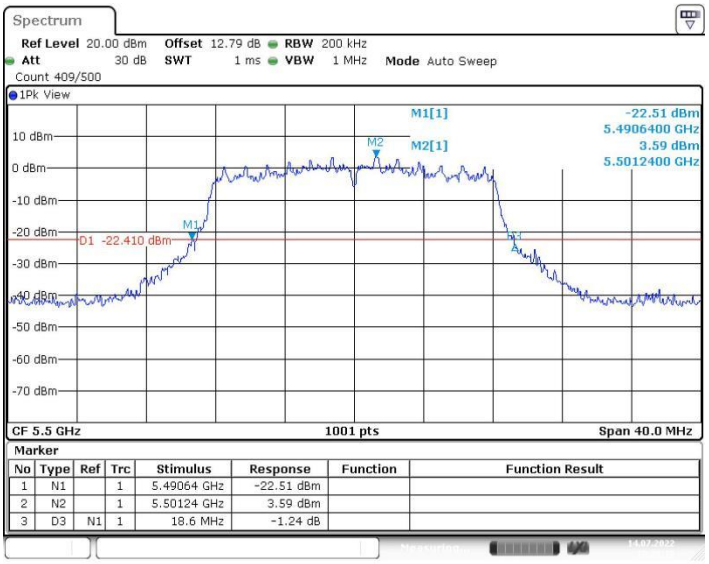



**Fig.7 Occupied 26dB Bandwidth (802.11a, 5500MHz)**

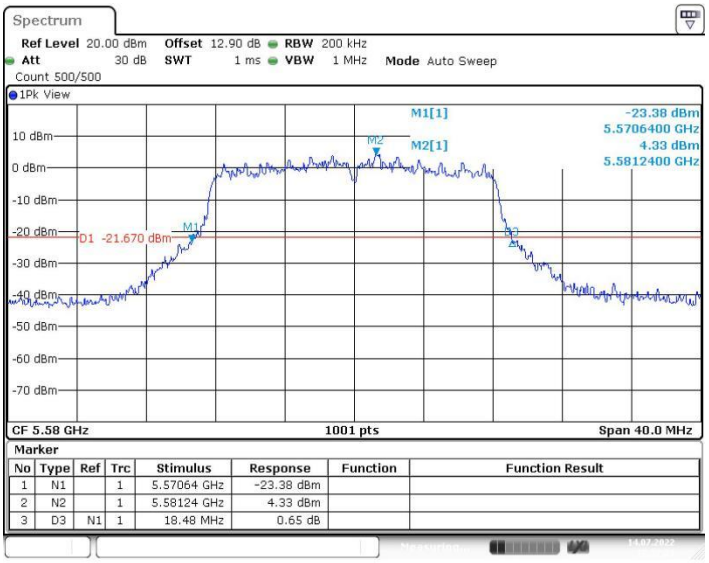



**Fig.8 Occupied 26dB Bandwidth (802.11a, 5580MHz)**

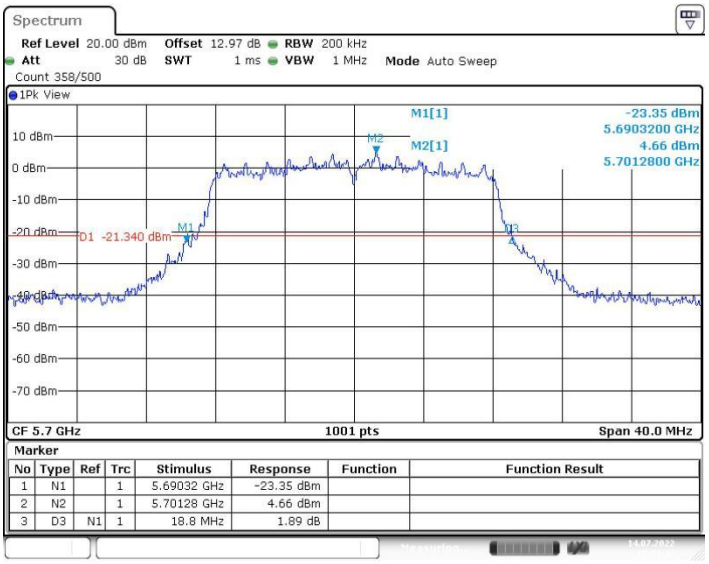



**Fig.9 Occupied 26dB Bandwidth (802.11a, 5700MHz)**

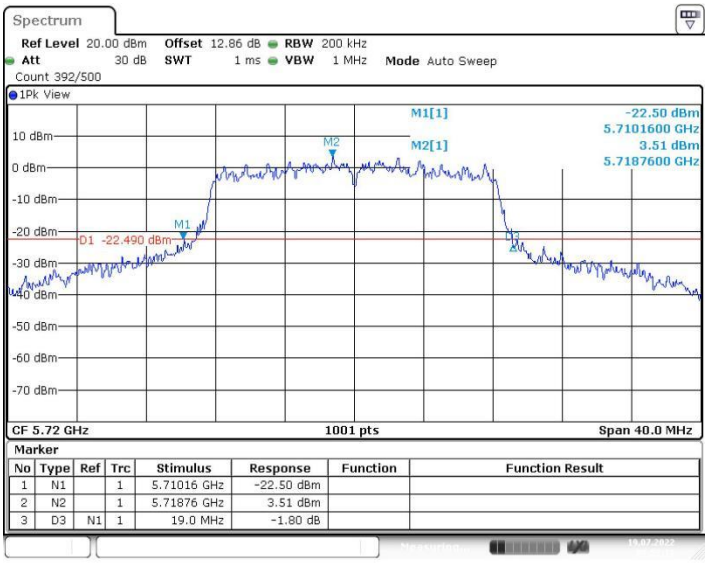



**Fig.10 Occupied 26dB Bandwidth (802.11a, 5720MHz)**

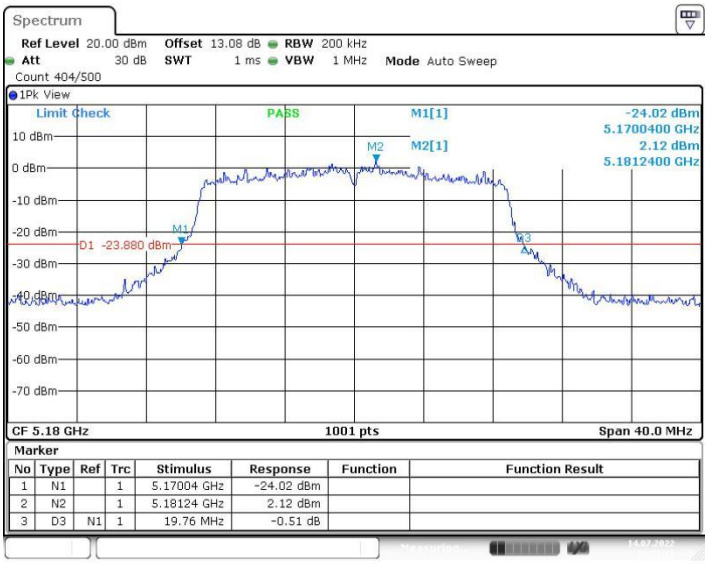



**Fig.11 Occupied 26dB Bandwidth (802.11an-HT20, 5180MHz)**

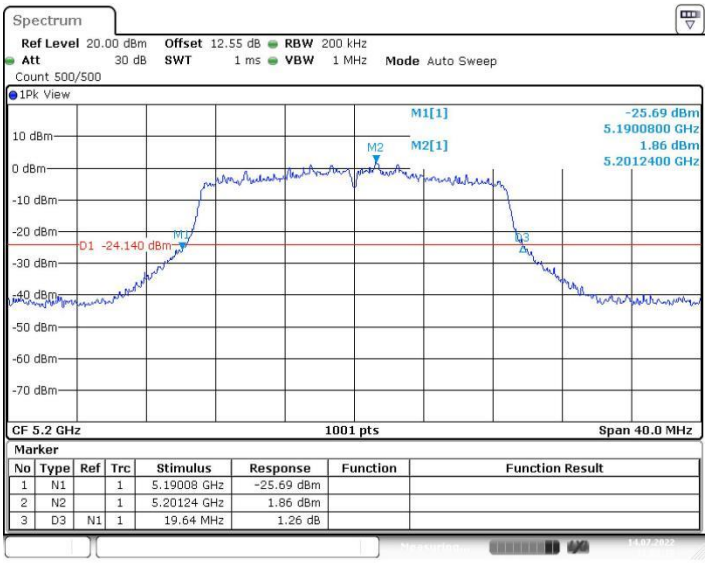



**Fig.12 Occupied 26dB Bandwidth (802.11an-HT20, 5200MHz)**

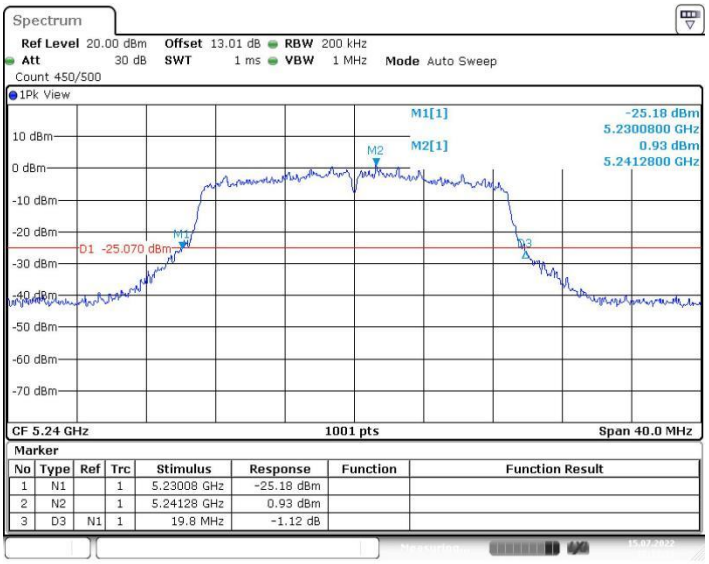



**Fig.13 Occupied 26dB Bandwidth (802.11an-HT20, 5240MHz)**

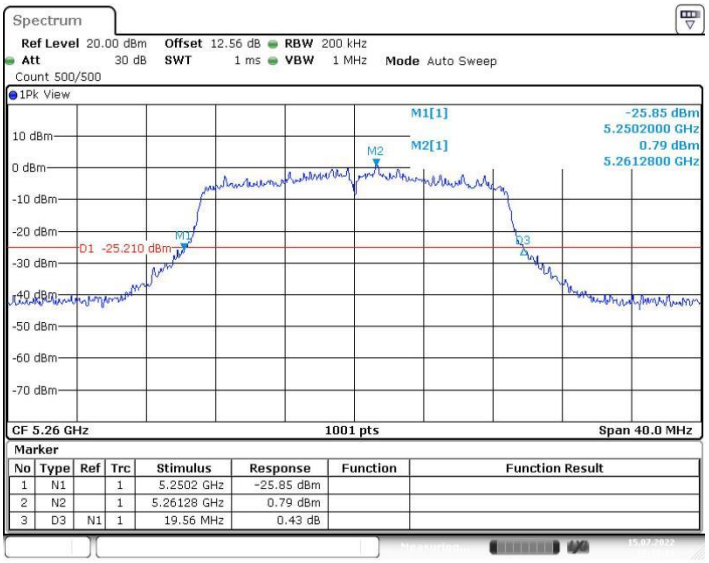



**Fig.14 Occupied 26dB Bandwidth (802.11an-HT20, 5260MHz)**

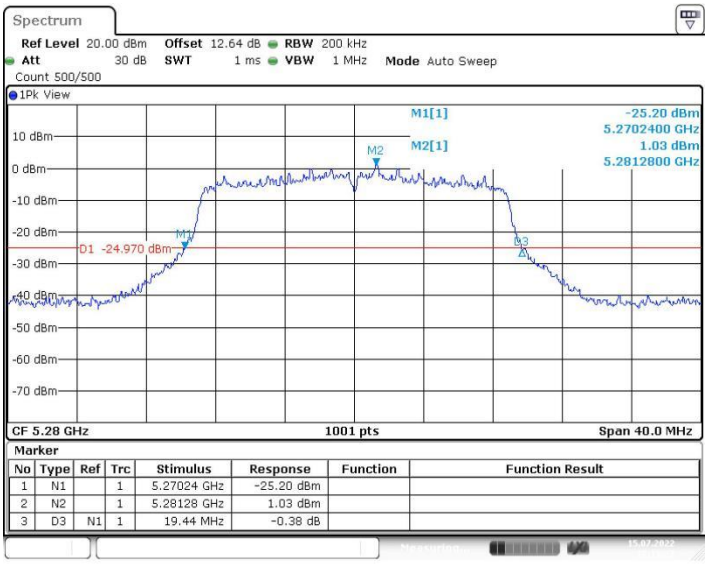



**Fig.15 Occupied 26dB Bandwidth (802.11an-HT20, 5280MHz)**

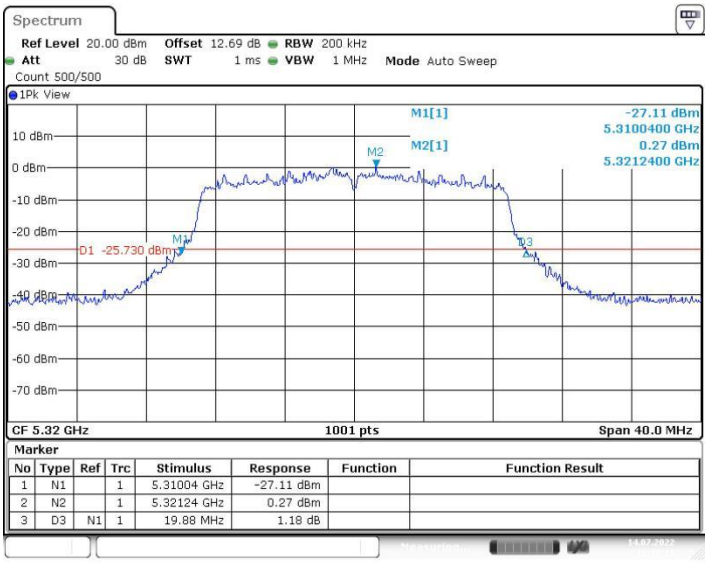



**Fig.16 Occupied 26dB Bandwidth (802.11an-HT20, 5320MHz)**

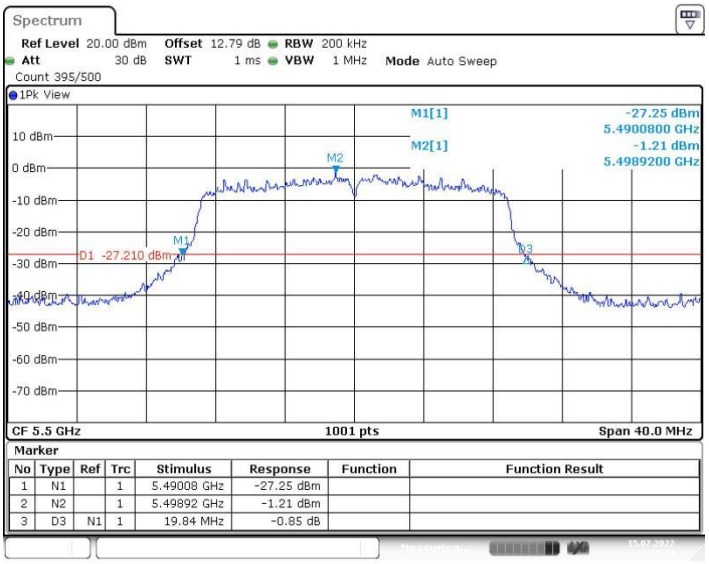



**Fig.17 Occupied 26dB Bandwidth (802.11an-HT20, 5500MHz)**

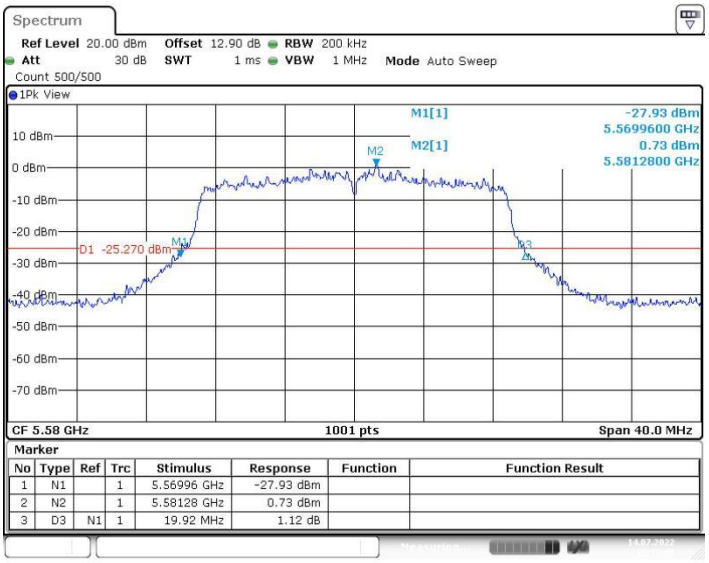



**Fig.18 Occupied 26dB Bandwidth (802.11an-HT20, 5580MHz)**

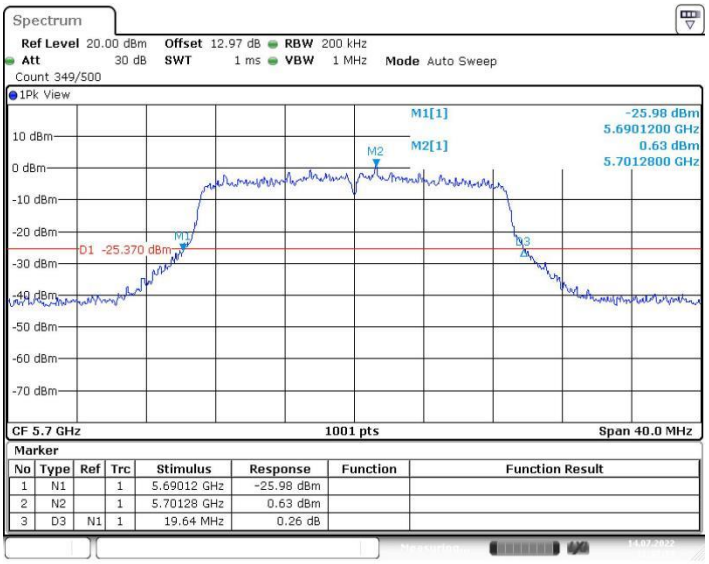



**Fig.19 Occupied 26dB Bandwidth (802.11an-HT20, 5700MHz)**

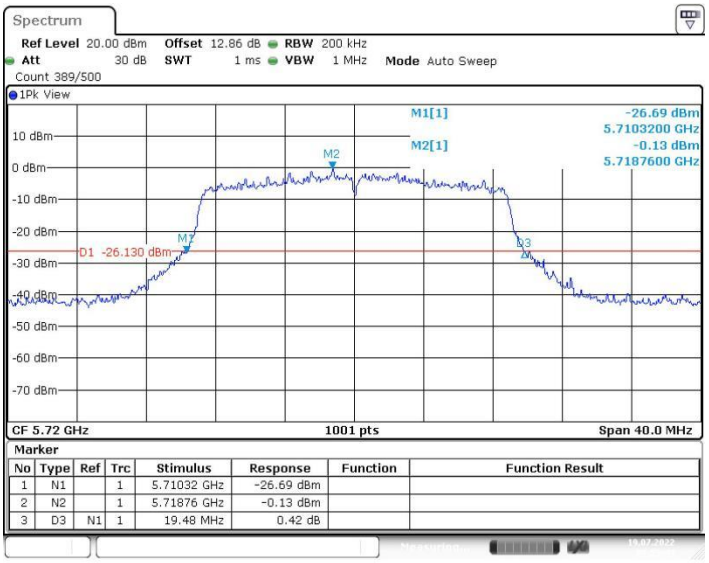



**Fig.20 Occupied 26dB Bandwidth (802.11an-HT20, 5720MHz)**

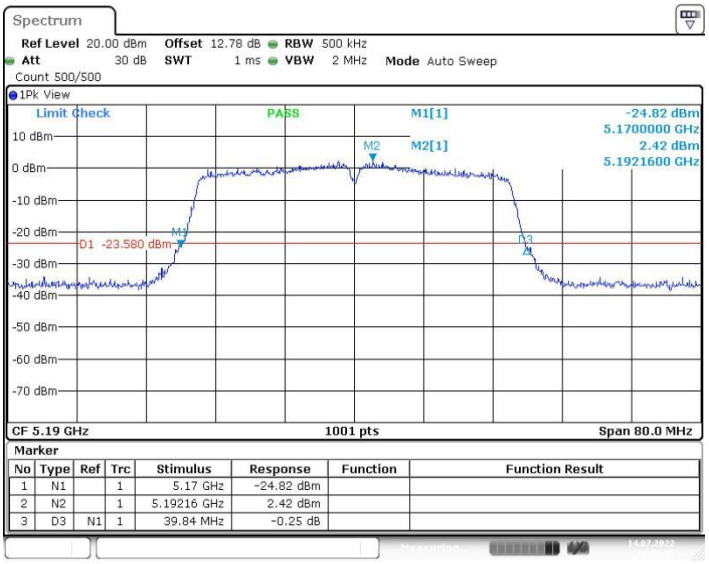



**Fig.21 Occupied 26dB Bandwidth (802.11an-HT40, 5190MHz)**

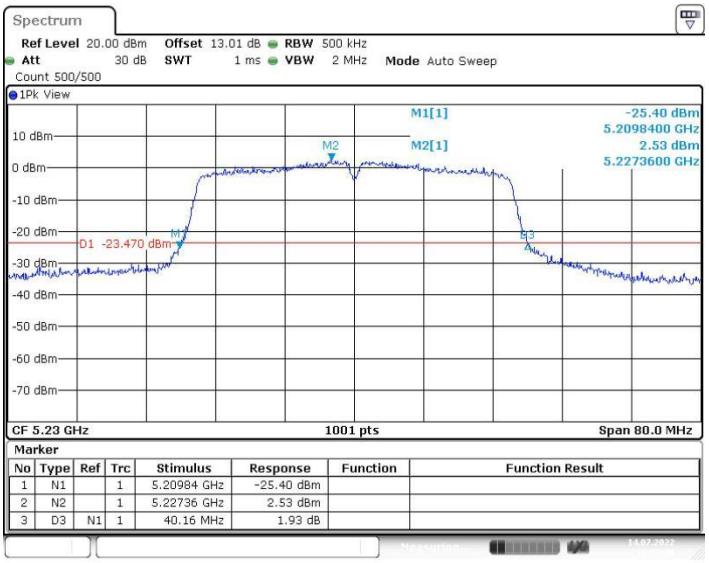



**Fig.22 Occupied 26dB Bandwidth (802.11an-HT40, 5230MHz)**

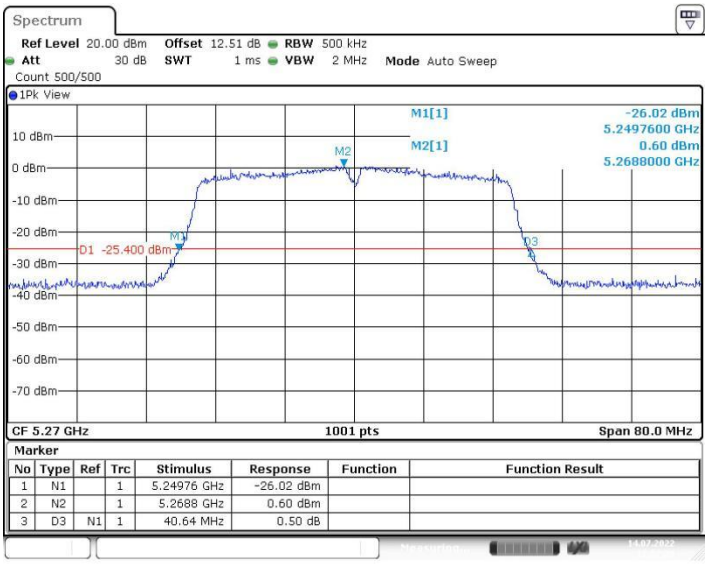



**Fig.23 Occupied 26dB Bandwidth (802.11an-HT40, 5270MHz)**

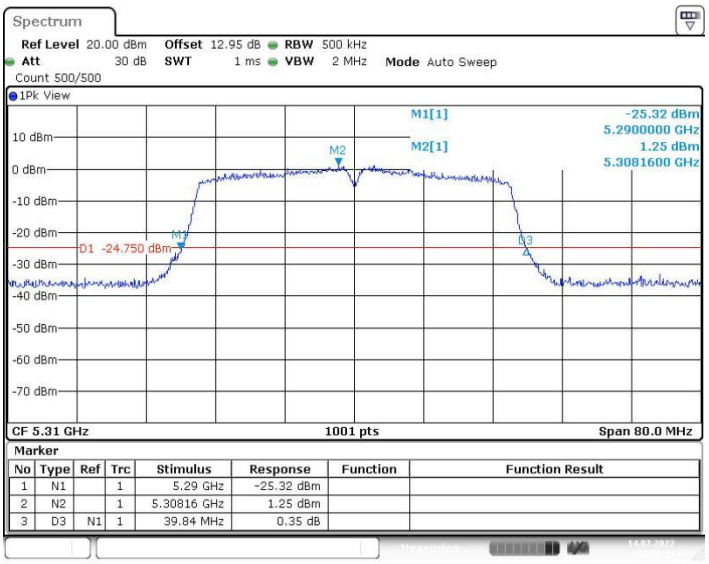



**Fig.24 Occupied 26dB Bandwidth (802.11an-HT40, 5310MHz)**

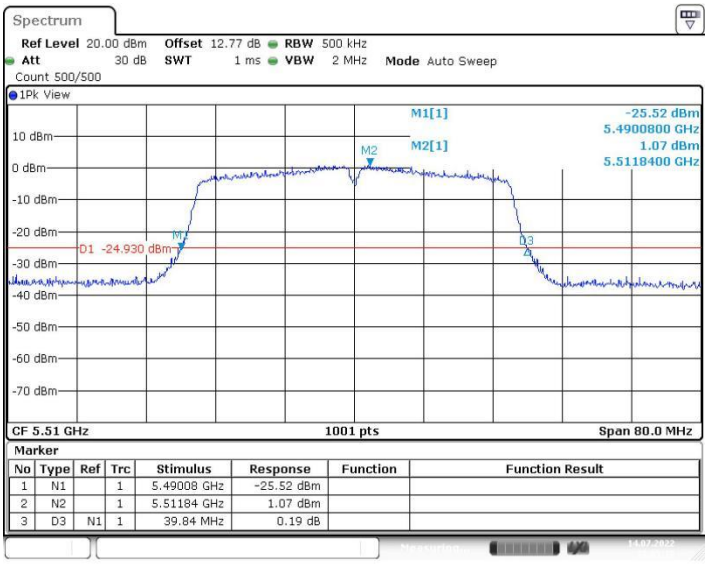



**Fig.25 Occupied 26dB Bandwidth (802.11an-HT40, 5510MHz)**

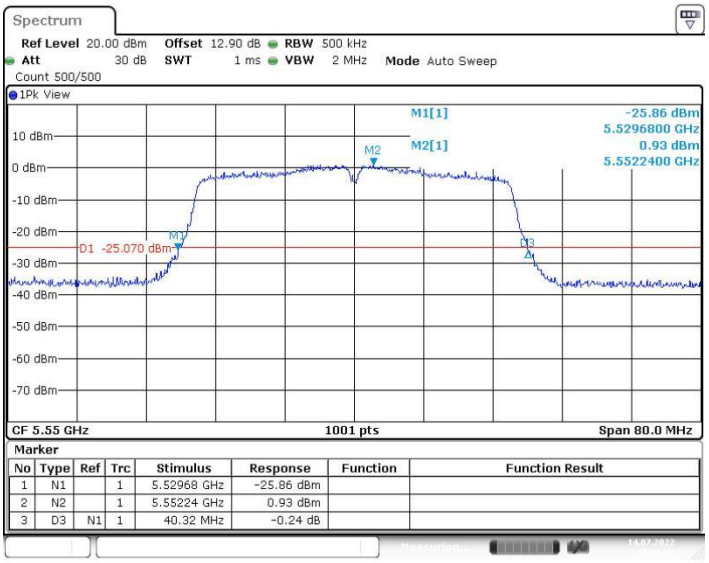



**Fig.26 Occupied 26dB Bandwidth (802.11an-HT40, 5590MHz)**

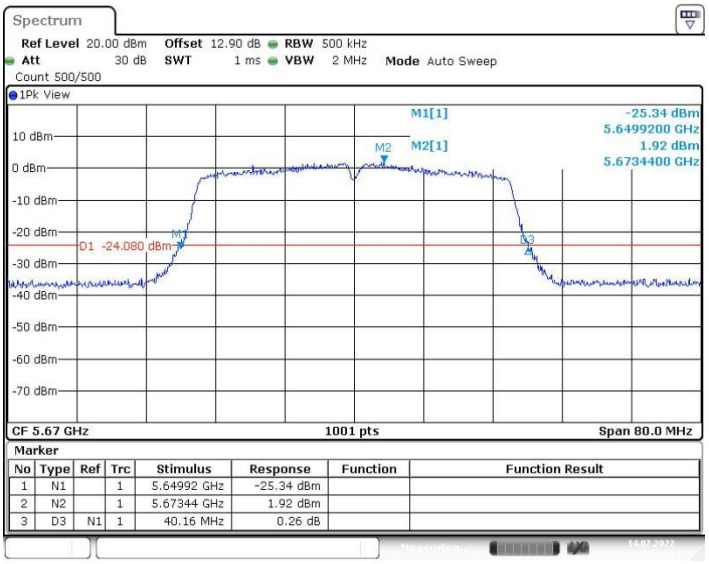



**Fig.27 Occupied 26dB Bandwidth (802.11an-HT40, 5670MHz)**

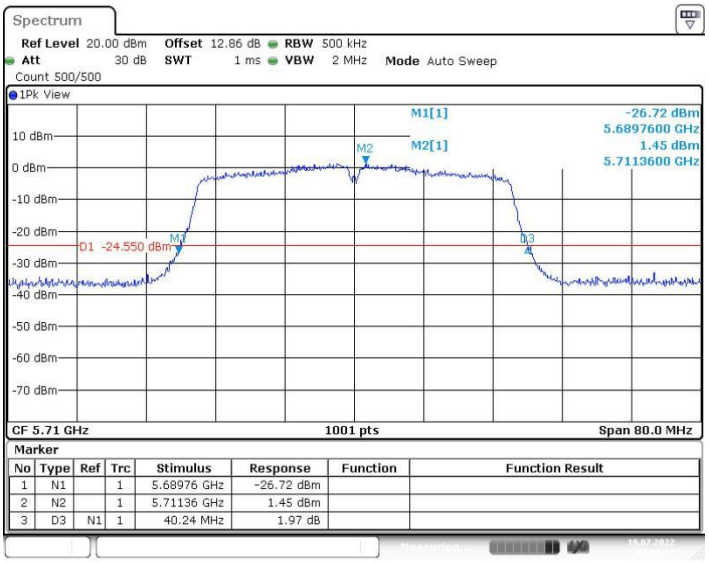



**Fig.28 Occupied 26dB Bandwidth (802.11an-HT40, 5710MHz)**

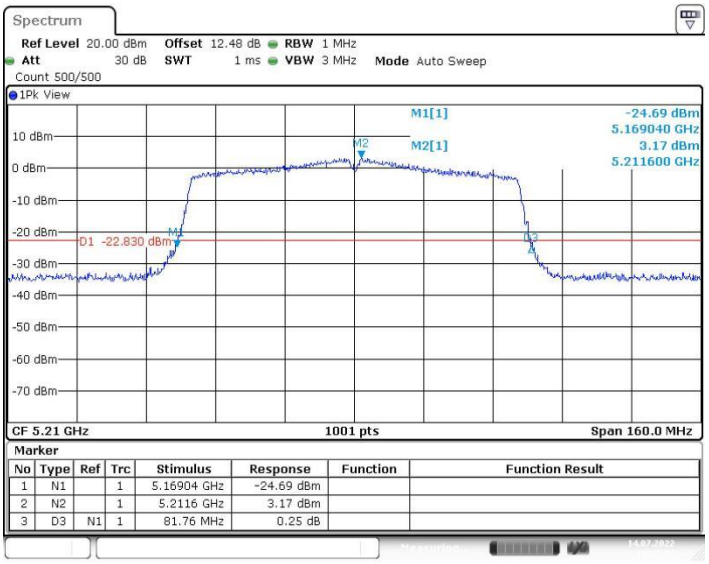



**Fig.29 Occupied 26dB Bandwidth (802. 11ac-VHT80, 5210MHz)**

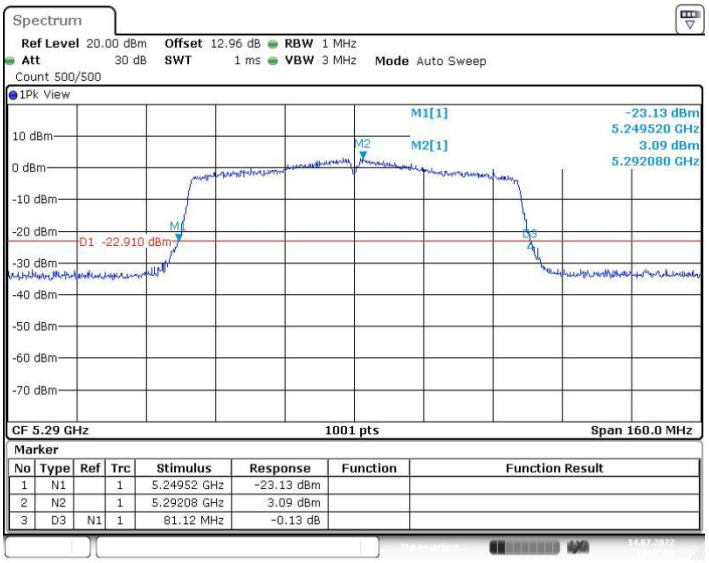



**Fig.30 Occupied 26dB Bandwidth (802. 11ac-VHT80, 5290MHz)**

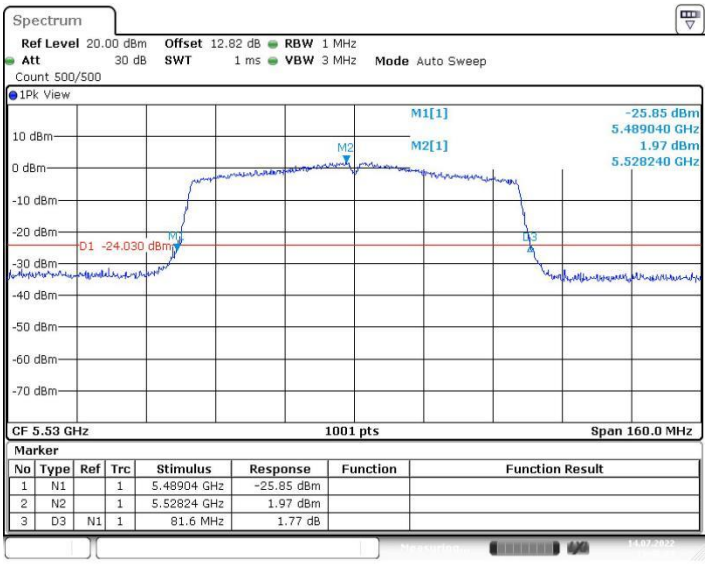



**Fig.31 Occupied 26dB Bandwidth (802. 11ac-VHT80, 5530MHz)**

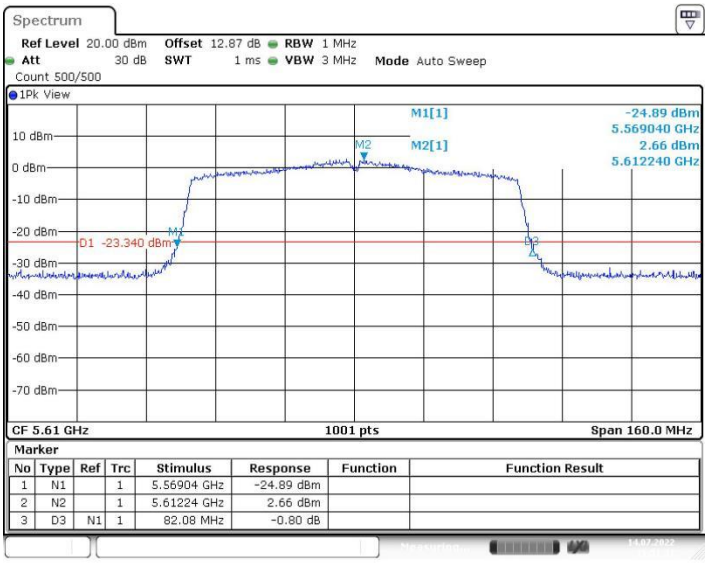



**Fig.32 Occupied 26dB Bandwidth (802. 11ac-VHT80, 5610MHz)**

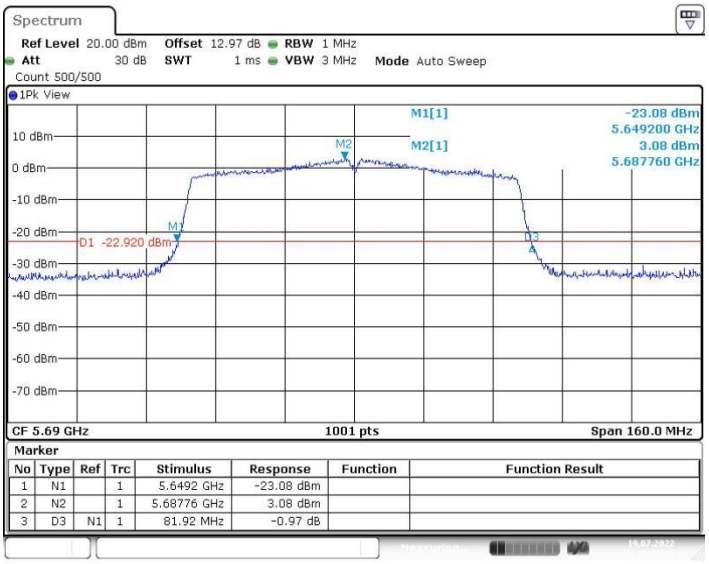



**Fig.33 Occupied 26dB Bandwidth (802. 11ac-VHT80, 5690MHz)**

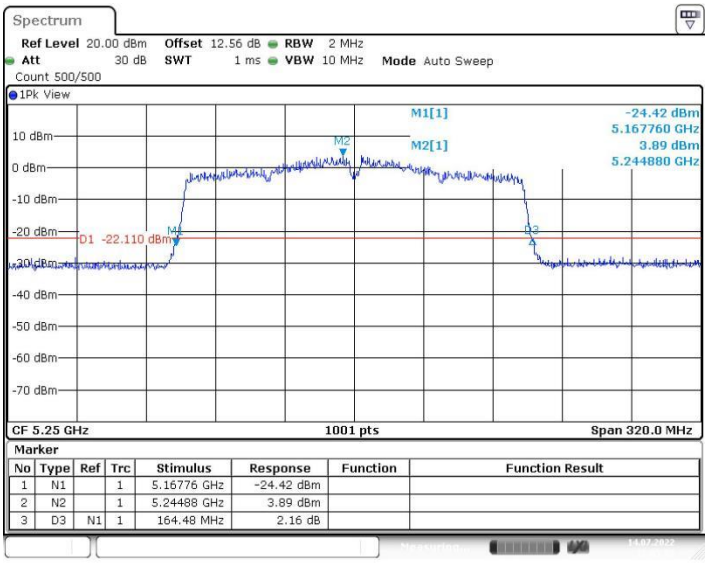



**Fig.34 Occupied 26dB Bandwidth (802. 11ac-VHT160, 5250MHz)**

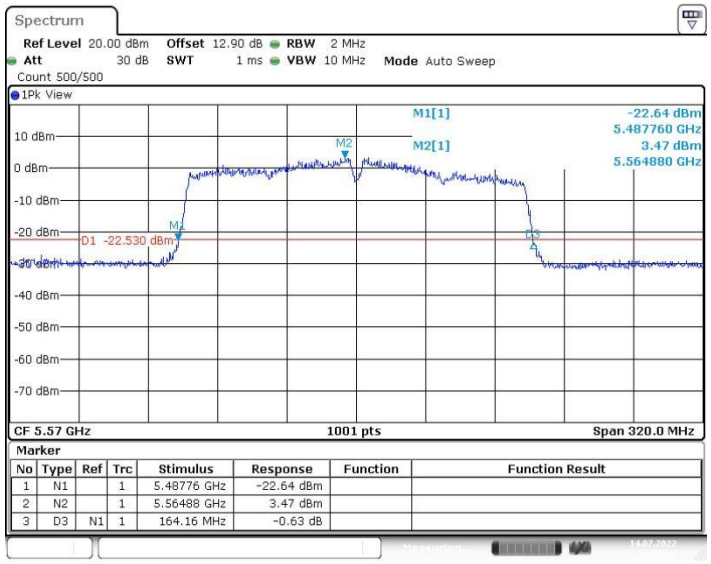



**Fig.35 Occupied 26dB Bandwidth (802. 11ac-VHT160, 5570MHz)**

## A.5. Band Edges Compliance

### A5.1 Band Edges - Radiated

**Measurement Limit:**

| Standard | Limit |
|---|---|
| FCC 47 CFR Part 15.407 | -27 dBm/MHz |

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

**Limit in restricted band:**

| Frequency of emission (MHz) | Field strength(uV/m) | Field strength(dBuV/m) | Measurement distance(m) |
|---|---|---|---|
| 30-88 | 100 | 40 | 3 |
| 88-216 | 150 | 43.5 | 3 |
| 216-960 | 200 | 46 | 3 |
| Above 960 | 500 | 54 | 3 |

The measurement is made according to ANSI C63.10-2013 and KDB 789033

**Measurement Result:**

| Mode | Channel | Test Results | Conclusion |
|---|---|---|---|
| 802.11a | 5180 MHz | Fig.36 | P |
| | 5320 MHz | Fig.37 | P |
| | 5500 MHz | Fig.38 | P |
| | 5700 MHz | Fig.39 | P |
| 802.11n HT20 | 5180 MHz | Fig.40 | P |
| | 5320 MHz | Fig.41 | P |
| | 5500 MHz | Fig.42 | P |
| | 5700 MHz | Fig.43 | P |

| | | | |
|---|---|---|---|
| 802.11ac HT20 | 5180 MHz | Fig.44 | P |
| | 5320 MHz | Fig.45 | P |
| | 5500 MHz | Fig.46 | P |
| | 5700 MHz | Fig.47 | P |
| 802.11ax HT20 | 5180 MHz | Fig.48 | P |
| | 5320 MHz | Fig.49 | P |
| | 5500 MHz | Fig.50 | P |
| | 5700 MHz | Fig.51 | P |
| 802.11n HT40 | 5190 MHz | Fig.52 | P |
| | 5310 MHz | Fig.53 | P |
| | 5510 MHz | Fig.54 | P |
| | 5670 MHz | Fig.55 | P |
| 802.11ac HT40 | 5190 MHz | Fig.56 | P |
| | 5310 MHz | Fig.57 | P |
| | 5510 MHz | Fig.58 | P |
| | 5670 MHz | Fig.59 | P |
| 802.11ax HT40 | 5190 MHz | Fig.60 | P |
| | 5310 MHz | Fig.61 | P |
| | 5510 MHz | Fig.62 | P |
| | 5670 MHz | Fig.63 | P |
| 802.11ac HT80 | 5210MHz | Fig.64 | P |
| | 5290MHz | Fig.65 | P |
| | 5530MHz | Fig.66 | P |
| | 5610MHz | Fig.67 | P |
| 802.11ax HT80 | 5210MHz | Fig.68 | P |
| | 5290MHz | Fig.69 | P |
| | 5530MHz | Fig.70 | P |
| | 5610MHz | Fig.71 | P |
| 802.11ac HT160 | 5250MHz | Fig.72 | P |
| | 5570MHz | Fig.73 | P |
| 802.11ax HT160 | 5250MHz | Fig.74 | P |
| | 5570MHz | Fig.75 | P |

**Conclusion: PASS**

**Test graphs as below:**

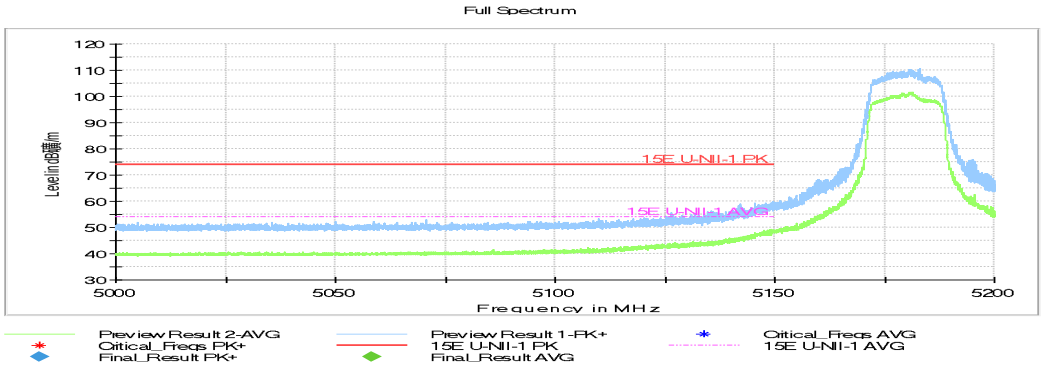



**Fig.36 Band Edges (802.11a Ch36, 5180MHz)**

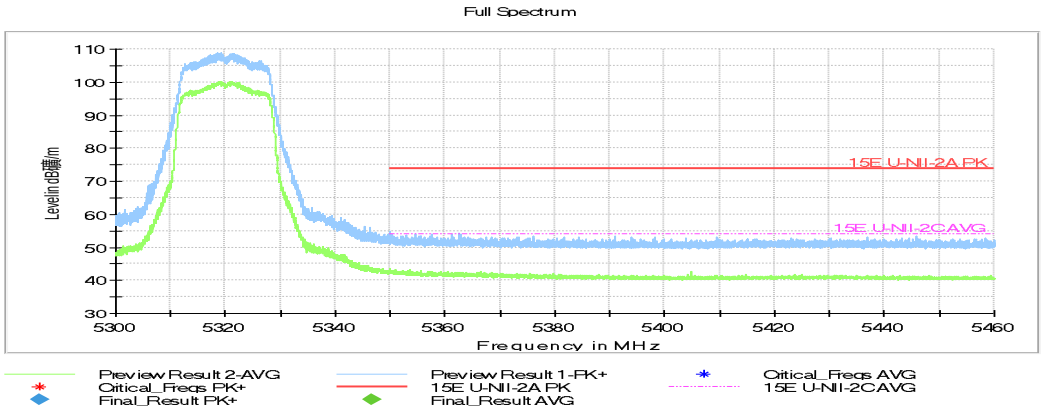



**Fig.37 Band Edges (802.11a Ch64, 5320MHz)**

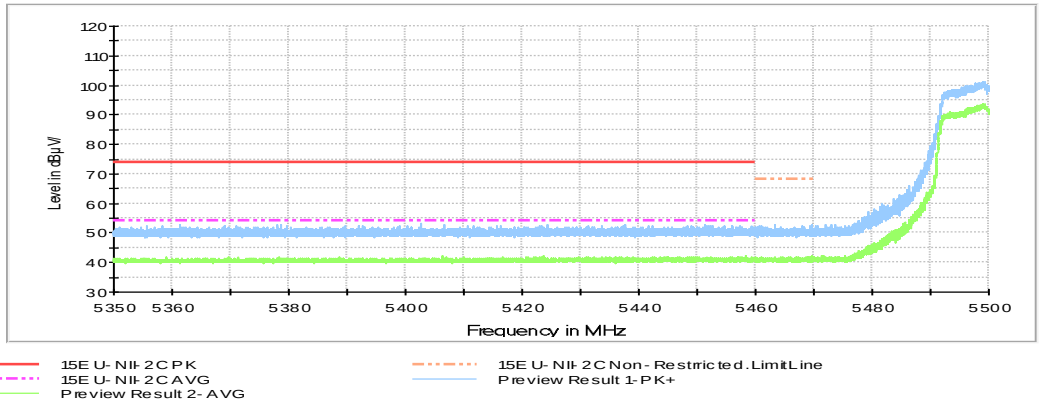



**Fig.38 Band Edges (802.11a Ch100, 5500MHz)**

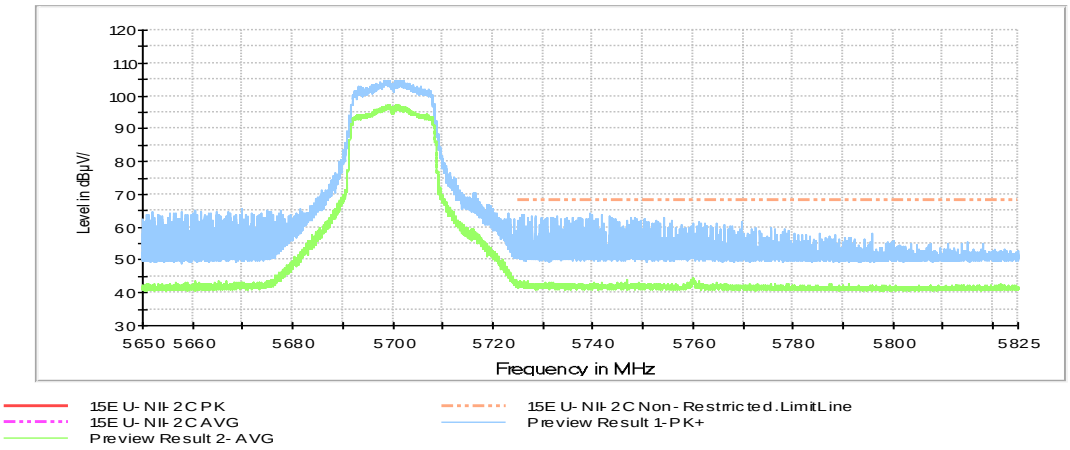



**Fig.39 Band Edges (802.11a Ch140, 5700MHz)**

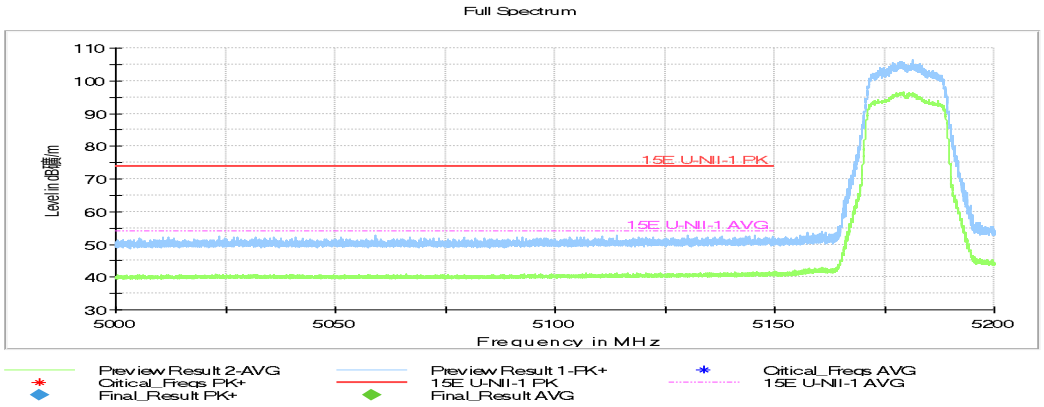



**Fig.40 Band Edges (802.11n-HT20 Ch36, 5180MHz)**

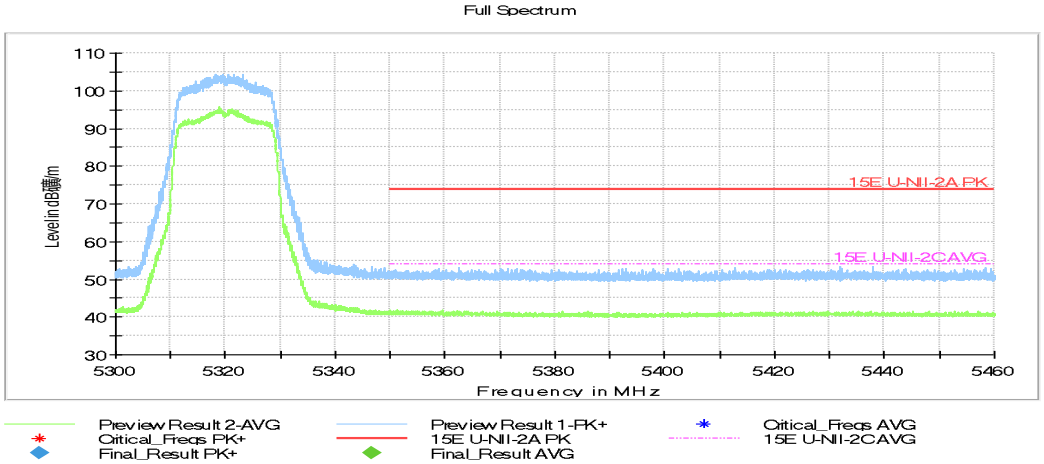



**Fig.41 Band Edges (802.11n-HT20 Ch64, 5320MHz)**

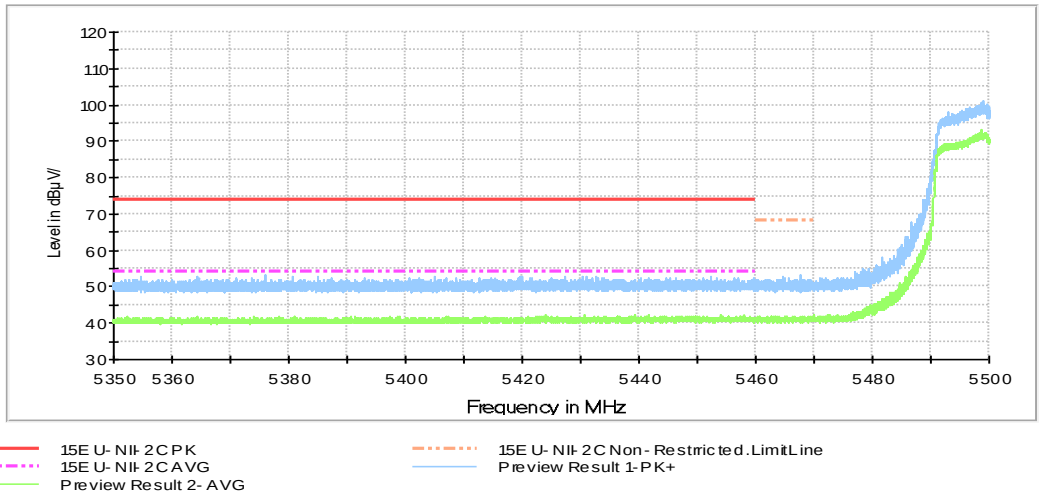



**Fig.42 Band Edges (802.11n-HT20 Ch100, 5500MHz)**

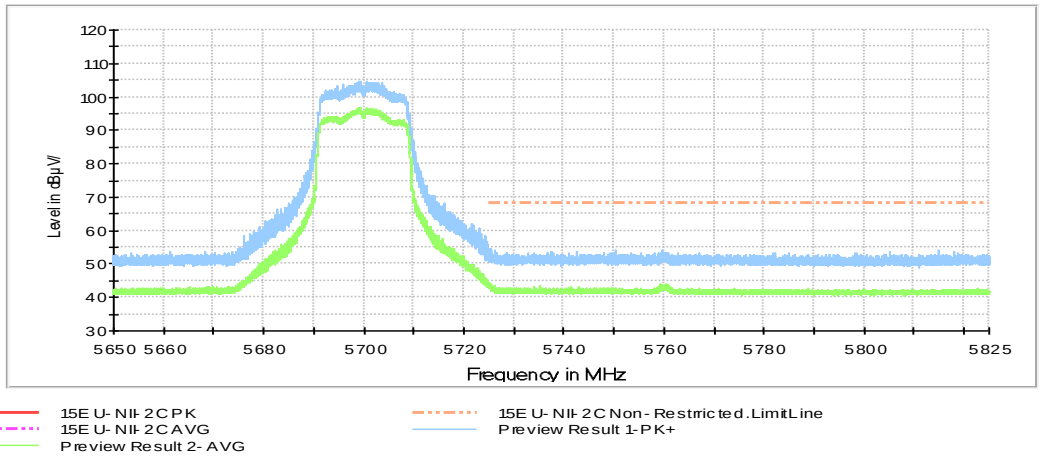



**Fig.43 Band Edges (802.11n-HT20 Ch140, 5700MHz)**

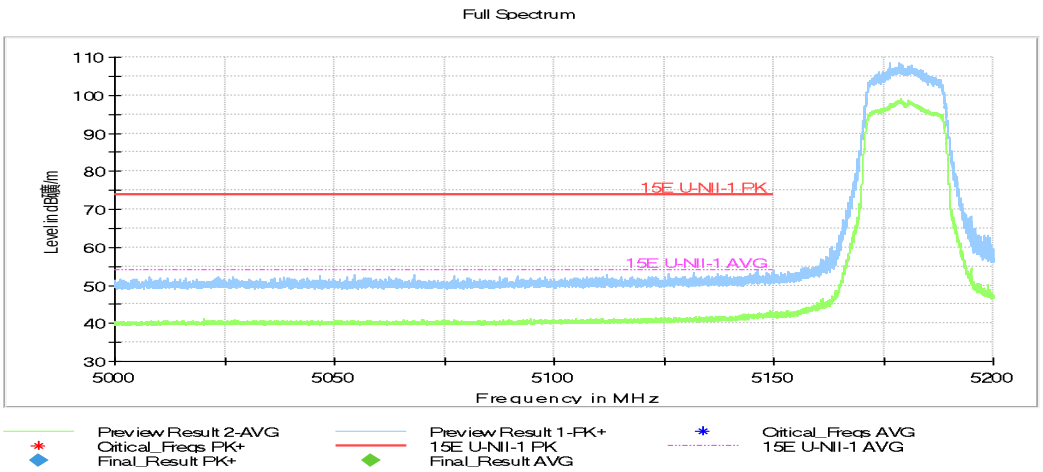



**Fig.44 Band Edges (802.11ac-HT20 Ch36, 5180MHz)**

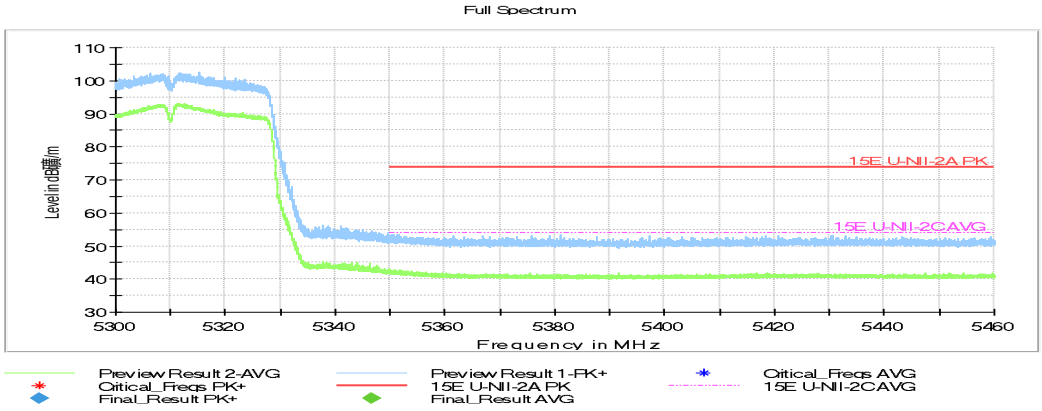



**Fig.45 Band Edges (802.11ac-HT20 Ch64, 5320MHz)**

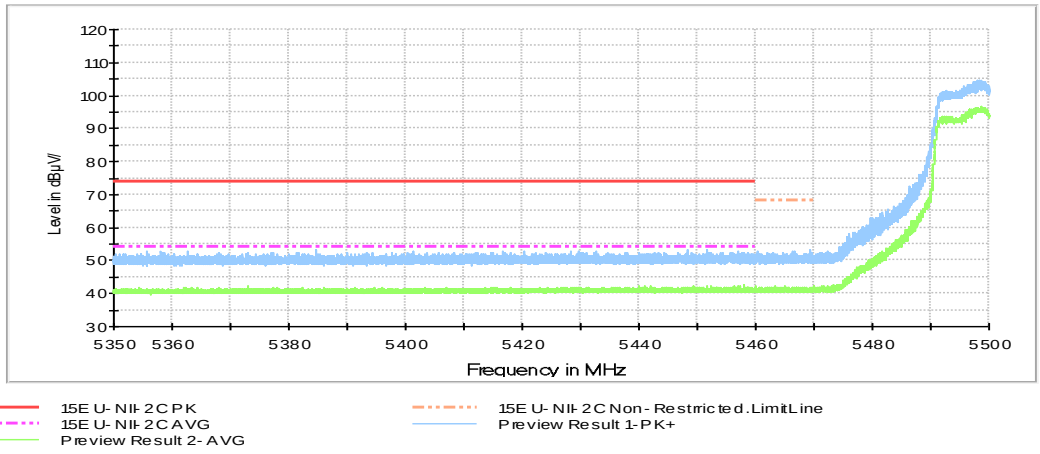



**Fig.46 Band Edges (802.11ac-HT20 Ch100, 5500MHz)**

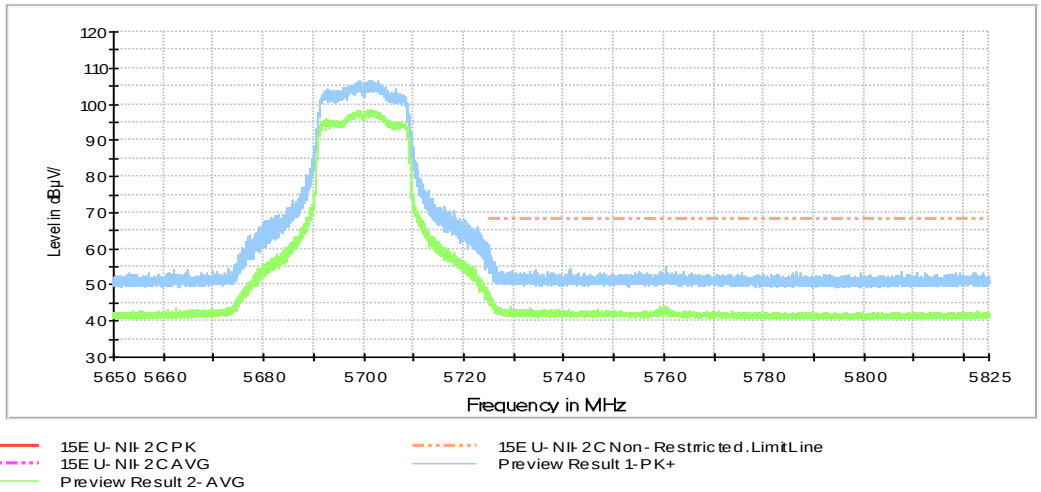



**Fig.47 Band Edges (802.11ac-HT20 Ch140, 5700MHz)**