**Shenzhen Global Test Service Co.,Ltd.**
No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong

# FCC PART 15 SUBPART C TEST REPORT

## FCC PART 15.247

| | |
|---|---|
| **Report Reference No.....:** | **GTS20200812003-1-1** |
| **FCC ID..... :** | **W9V-DA725-GP** |
| Compiled by ( position+printed name+signature)..: | File administrators Peter Xiao |
| Supervised by ( position+printed name+signature)..: | Test Engineer Moon Tan |
| Approved by ( position+printed name+signature)..: | Manager Simon Hu |
| Date of issue.....: | Sep.02, 2020 |
| **Representative Laboratory Name.:** | **Shenzhen Global Test Service Co.,Ltd.** |
| Address.....: | No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong,China |
| **Applicant's name**.....: | **Green Packet Berhad, Taiwan** |
| Address .....: | 2F, NO.23, LANE 583 RUEIGUANG RD, NEIHU DISTRICT, Taipei City,Taiwan |
| **Test specification .....:** | |
| Standard .....: | **FCC Part 15.247: Operation within the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz** |
| TRF Originator.....: | Shenzhen Global Test Service Co.,Ltd. |
| Master TRF.....: | Dated 2014-12 |



| | |
|---|---|
| **Test item description .....:** | **LTE CPE** |
| Trade Mark .....: | GreenPacket |
| Manufacturer .....: | Green Packet Berhad, Taiwan |
| Model/Type reference.....: | DA-725 |
| Listed Models .....: | N/A |
| Operation Frequency.....: | From 2412MHz to 2462MHz |
| Hardware Version .....: | V1.0 |
| Software Version .....: | V1.0 |
| Rating .....: | DC 12.0V /1.0A by Adapter |
| Result.....: | **PASS** |

# T E S T  R E P O R T

| **Test Report No. :** | **GTS20200812003-1-1** | Sep.02, 2020<br>Date of issue |
|---|---|---|

| | | |
|---|---|---|
| Equipment under Test | : | LTE CPE |
| Model /Type | : | DA-725 |
| Listed Models | : | N/A |
| **Applicant** | : | **Green Packet Berhad, Taiwan** |
| Address | : | 2F, NO.23, LANE 583 RUEIGUANG RD, NEIHU DISTRICT, Taipei City,Taiwan |
| **Manufacturer** | : | **Green Packet Berhad, Taiwan** |
| Address | : | 2F, NO.23, LANE 583 RUEIGUANG RD, NEIHU DISTRICT, Taipei City,Taiwan |

| **Test Result**: | **PASS** |
|---|---|

The test report merely corresponds to the test sample.
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

# Contents

# 1. TEST STANDARDS

The tests were performed according to following standards:

FCC Rules Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.
ANSI C63.10-2013: American National Standard for Testing Unlicensed Wireless Devices
KDB558074 D01 DTS Meas Guidance v05r02: Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating Under §15.247.

# 2. SUMMARY

## 2.1. General Remarks

| | | |
|---|---|---|
| Date of receipt of test sample | : | Aug.24, 2020 |
| | | |
| Testing commenced on | : | Aug.24, 2020 |
| | | |
| Testing concluded on | : | Sep.02, 2020 |

## 2.2. Product Description

| | |
|---|---|
| Product Name | LTE CPE |
| Trade Mark | GreenPacket |
| Model/Type reference | DA-725 |
| List Models | N/A |
| Model Declaration | N/A |
| Power supply: | DC 12.0V /1.0A by Adapter |
| Sample ID | GTS20200812003-1-1-1# & GTS20200812003-1-1-2# |
| WIFI(2.4G Band) | |
| Frequency Range | 2412MHz ~ 2462MHz |
| Channel Spacing | 5MHz |
| Channel Number | 11 Channel for 20MHz bandwidth(2412~2462MHz)<br>7 channels for 40MHz bandwidth(2422~2452MHz) |
| Modulation Type | 802.11b: DSSS; 802.11g/n: OFDM |
| Antenna Description | Two same Internal Antenna, support MIMO technology<br>ANT0 used for WIFI TX/RX, 2.0dBi(Max.) for 2.4G Band<br>ANT1 used for WIFI TX/RX, 2.0dBi(Max.) for 2.4G Band |
| LTE | |
| LTE Operation Frequency Band | LTE Band 41 |
| LTE Release Version | R9 |
| Type Of Modulation | QPSK/16QAM |
| Antenna Description | External Antenna;<br>1.0dBi (max.) |

## 2.3. Equipment Under Test

### Power supply system utilised

| | | | | | |
|---|---|---|---|---|---|
| Power supply voltage | : | ○ | 230V / 50 Hz | ○ | 120V / 60Hz |
| | | ● | 12 V DC | ○ | 24 V DC |
| | | ○ | Other (specified in blank below) | | |

DC 12.0V

## 2.4. Short description of the Equipment under Test (EUT)

This is a LTE CPE.
For more details, refer to the user's manual of the EUT.

## 2.5. EUT operation mode

The application provider specific test software to control sample in continuous TX and RX (Duty Cycle >98%) for testing meet KDB558074 test requirement.

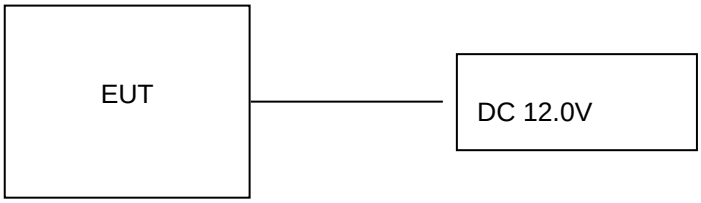
IEEE 802.11b/g/n: Thirteen channels are provided to the EUT.

| Antenna | Chain 0 | | Chain 1 | | Simultaneously |
|---|---|---|---|---|---|
| Bandwidth Mode | 20MHz | 40MHz | 20MHz | 40MHz | / |
| IEEE 802.11b | ☑ | ☐ | ☑ | ☐ | ☐ |
| IEEE 802.11g | ☑ | ☐ | ☑ | ☐ | ☐ |
| IEEE 802.11n | ☑ | ☑ | ☑ | ☑ | ☑ |

| Channel | Frequency(MHz) | Channel | Frequency(MHz) |
|---|---|---|---|
| 1 | 2412 | 8 | 2447 |
| 2 | 2417 | 9 | 2452 |
| 3 | 2422 | 10 | 2457 |
| 4 | 2427 | 11 | 2462 |
| 5 | 2432 | | |
| **6** | 2437 | | |
| 7 | 2442 | | |

The EUT has been tested under operating condition.
AC main conducted emission pre-test voltage at both AC 120V/60Hz and AC 240V/50Hz, recorded worst case;
AC main conducted emission pre-test at charge from PC modes, recorded worst case;
This test was performed with EUT in X, Y, Z position and the worst case was found when EUT in X position.
Worst-case mode and channel used for 9 KHz-1000 MHz radiated emissions was the mode and channel with the highest output power, that was determined to be IEEE 802.11g mode (MCH).

## 2.6. Block Diagram of Test Setup



## 2.7. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: W9V-DA725-GP** filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

## 2.8. EUT Exercise Software

The system was configured for testing in a continuous transmits condition and change test channels by software (QATool_Dbg_0.0.0.60) provided by application.

## 2.9. Special Accessories

| Manufacturer | Description | Model | Serial Number | Certificate |
|---|---|---|---|---|
| TOSHIBA | PC | Satellite S40Dt-A | -- | SDOC |
| Shenzhen Esun Power Technology Co.,Ltd. | Adapter | MKE-1202000DEXD | -- | SDOC |

**Note: The PC is only used for auxiliary testing.**

## 2.10. External I/O Cable

| I/O Port Description | Quantity | Cable |
|---|---|---|
| DC IN Port | 1 | 0.8M, Unscreened Cable |
| LAN Port | 1 | N/A |
| SIM CARD | 1 | N/A |

## 2.11. Modifications

No modifications were implemented to meet testing criteria.

# 3. TEST ENVIRONMENT

## 3.1. Address of the test laboratory

**Shenzhen Global Test Service Co.,Ltd.**
No.7-101 and 8A-104, Building 7 and 8, DCC Cultural and Creative Garden, No.98, Pingxin North Road, Shangmugu Community, Pinghu Street, Longgang District, Shenzhen, Guangdong,China.

## 3.2. Test Facility

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

CNAS (No. CNAS L8169)
Shenzhen Global Test Service Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2019 General Requirements) for the Competence of Testing and Calibration Laboratories.
A2LA (Certificate No. 4758.01)
Shenzhen Global Test Service Co., Ltd. has been assessed by the American Association for Laboratory Accreditation (A2LA). Certificate No. 4758.01.
Industry Canada Registration Number. is 24189.
FCC Designation Number is CN1234.
FCC Registered Test Site Number is165725.

## 3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

| | |
|---|---|
| Temperature: | 15-35 ° C |
| | |
| Humidity: | 30-60 % |
| | |
| Atmospheric pressure: | 950-1050mbar |

## 3.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen Global Test Service Co.,Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen GTS laboratory is reported:

| Test | Range | Measurement Uncertainty | Notes |
|---|---|---|---|
| Radiated Emission | 30~1000MHz | 4.10 dB | (1) |
| Radiated Emission | 1~18GHz | 4.32 dB | (1) |
| Radiated Emission | 18-40GHz | 5.54 dB | (1) |
| Conducted Disturbance | 0.15~30MHz | 3.12 dB | (1) |

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 3.5. Test Description

| Applied Standard: FCC Part 15 Subpart C | | | | |
|---|---|---|---|---|
| ISED Rules | Description of Test | Test Sample | Result | Remark |
| / | On Time and Duty Cycle | GTS20200812003-1-1-1# | / | / |
| §15.247(b) | Maximum Conducted Output Power | GTS20200812003-1-1-1# | Compliant | Note 1 |
| §15.247(e) | Power Spectral Density | GTS20200812003-1-1-1# | Compliant | Note 1 |
| §15.247(a)(2) | 6dB Bandwidth | GTS20200812003-1-1-1# | Compliant | Note 1 |
| §2.1047 | 99% Occupied Bandwidth | | N/A | N/A |
| §15.209, §15.247(d) | Conducted Spurious Emissions | GTS20200812003-1-1-1# | Compliant | Note 1 |
| §15.209, §15.247(d) | Radiated Spurious Emissions | GTS20200812003-1-1-1# GTS20200812003-1-1-2# | Compliant | Note 1 |
| §15.205 | Emissions at Restricted Band | GTS20200812003-1-1-1# | Compliant | Note 1 |
| §15.207(a) | AC Conducted Emissions | GTS20200812003-1-1-2# | Compliant | Note 1 |
| §15.203 | Antenna Requirements | GTS20200812003-1-1-1# | Compliant | Note 1 |
| §15.247(i)§2.1091 | RF Exposure | / | Compliant | Note 2 |

Remark:
1. The measurement uncertainty is not included in the test result.
2. NA = Not Applicable; NP = Not Performed
3. Note 1 – Test results inside test report;
4. Note 2 – Test results in other test report (SAR Report).
5. We tested all test mode and recorded worst case in report

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

| Test Items | Mode | Data Rate | Channel |
|---|---|---|---|
| Maximum Peak Conducted Output Power<br>Power Spectral Density<br>6dB Bandwidth<br>Spurious RF conducted emission<br>Radiated Emission 9kHz~1GHz&<br>Radiated Emission 1GHz~10th Harmonic | 11b/DSSS | 1 Mbps | 1/6/11 |
| | 11g/OFDM | 6 Mbps | 1/6/11 |
| | 11n(20MHz)/OFDM | 6.5Mbps | 1/6/11 |
| | 11n(40MHz)/OFDM | 13.5Mbps | 3/6/11 |
| Band Edge | 11b/DSSS | 1 Mbps | 1/11 |
| | 11g/OFDM | 6 Mbps | 1/11 |
| | 11n(20MHz)/OFDM | 6.5Mbps | 1/11 |
| | 11n(40MHz)/OFDM | 13.5Mbps | 3/9 |

## 3.6. Equipments Used during the Test

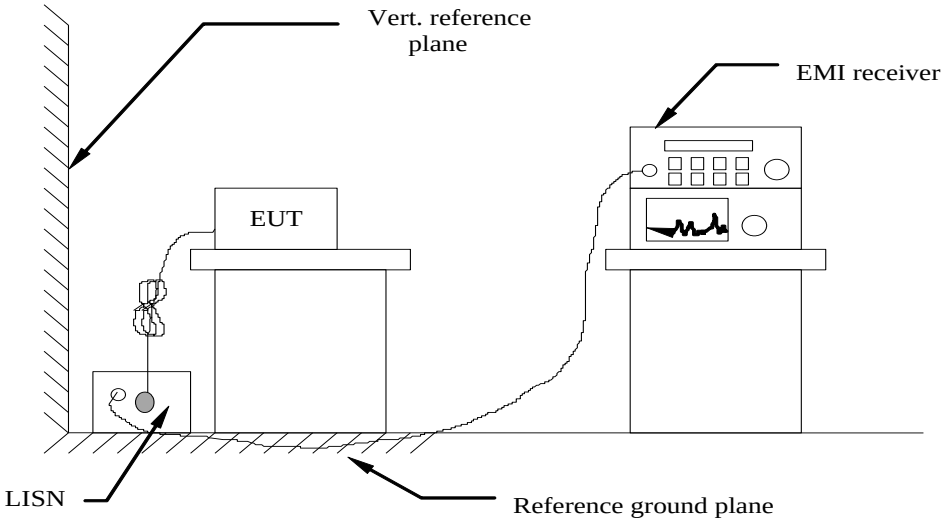
| Test Equipment | Manufacturer | Model No. | Serial No. | Calibration Date | Calibration Due Date |
|---|---|---|---|---|---|
| LISN | R&S | ENV216 | 3560.6550.08 | 2019/09/20 | 2020/09/19 |
| LISN | R&S | ESH2-Z5 | 893606/008 | 2019/09/20 | 2020/09/19 |
| EMI Test Receiver | R&S | ESPI3 | 101841-cd | 2019/09/20 | 2020/09/19 |
| EMI Test Receiver | R&S | ESCI7 | 101102 | 2019/09/20 | 2020/09/19 |
| Spectrum Analyzer | Agilent | N9020A | MY48010425 | 2019/09/20 | 2020/09/19 |
| Spectrum Analyzer | R&S | FSV40 | 100019 | 2019/09/20 | 2020/09/19 |
| Vector Signal generator | Agilent | N5181A | MY49060502 | 2019/09/20 | 2020/09/19 |
| Signal generator | Agilent | E4421B | 3610AO1069 | 2019/09/20 | 2020/09/19 |
| Climate Chamber | ESPEC | EL-10KA | A20120523 | 2019/09/20 | 2020/09/19 |
| Controller | EM Electronics | Controller EM 1000 | N/A | N/A | N/A |
| Horn Antenna | Schwarzbeck | BBHA 9120D | 01622 | 2019/09/23 | 2020/09/22 |
| Active Loop Antenna | Beijing Da Ze Technology Co.,Ltd. | ZN30900C | 15006 | 2019/10/12 | 2020/10/11 |
| Bilog Antenna | Schwarzbeck | VULB9163 | 000976 | 2020/05/26 | 2021/05/25 |
| Broadband Horn Antenna | SCHWARZBECK | BBHA 9170 | 791 | 2019/09/20 | 2020/09/19 |
| Amplifier | Schwarzbeck | BBV 9743 | #202 | 2019/09/20 | 2020/09/19 |
| Amplifier | Schwarzbeck | BBV9179 | 9719-025 | 2019/09/20 | 2020/09/19 |
| Amplifier | EMCI | EMC051845B | 980355 | 2019/09/20 | 2020/09/19 |
| Temperature/Humidity Meter | Gangxing | CTH-608 | 02 | 2019/09/20 | 2020/09/19 |
| High-Pass Filter | K&L | 9SH10-2700/X12750-O/O | KL142031 | 2019/09/20 | 2020/09/19 |
| High-Pass Filter | K&L | 41H10-1375/U12750-O/O | KL142032 | 2019/09/20 | 2020/09/19 |
| RF Cable(below 1GHz) | HUBER+SUHNER | RG214 | RE01 | 2019/09/20 | 2020/09/19 |
| RF Cable(above 1GHz) | HUBER+SUHNER | RG214 | RE02 | 2019/09/20 | 2020/09/19 |
| Data acquisition card | Agilent | U2531A | TW53323507 | 2019/09/20 | 2020/09/19 |
| Power Sensor | Agilent | U2021XA | MY5365004 | 2019/09/20 | 2020/09/19 |
| Test Control Unit | Tonscend | JS0806-1 | 178060067 | 2020/06/20 | 2021/06/19 |
| Automated filter bank | Tonscend | JS0806-F | 19F8060177 | 2020/06/20 | 2021/06/19 |
| EMI Test Software | Tonscend | JS1120-1 | Ver 2.6.8.0518 | / | / |
| EMI Test Software | Tonscend | JS1120-3 | Ver 2.5.77.0418 | / | / |
| EMI Test Software | Tonscend | JS32-CE | Ver 2.5 | / | / |
| EMI Test Software | Tonscend | JS32-RE | Ver 2.5.1.8 | / | / |

Note: The Cal.Interval was one year.

# 4. TEST CONDITIONS AND RESULTS

## 4.1. AC Power Conducted Emission

**TEST CONFIGURATION**




**TEST PROCEDURE**

1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. 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 C63.10-2013.
2 Support equipment, if needed, was placed as per ANSI C63.10-2013.
3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10-2013.
4 The EUT received DC 12V power, the adapter received AC120V/60Hz or AC 240V/50Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
5 All support equipments received AC power from a second LISN, if any.
6 The EUT 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.

**AC Power Conducted Emission Limit**

For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following：

| Frequency range (MHz) | Limit (dBuV) | |
|---|---|---|
| | Quasi-peak | Average |
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |
| * Decreases with the logarithm of the frequency. | | |

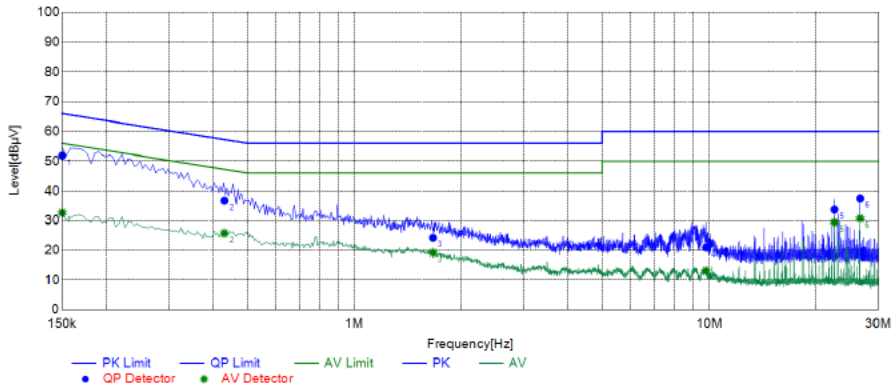
**TEST RESULTS**

Remark: We measured Conducted Emission at 802.11b/802.11g/802.11n HT20/802.11n HT40 mode from 150 KHz to 30MHz in AC120V and the worst case was recorded.

| Temperature | 24.2℃ | Humidity | 54.2% |
|---|---|---|---|
| Test Engineer | Moon Tan | Configurations | IEEE 802.11g (MCH) |

| Power supply: | AC 120V/60Hz | Polarization | L |
|---|---|---|---|

**Test Graph**




**Final Data List**

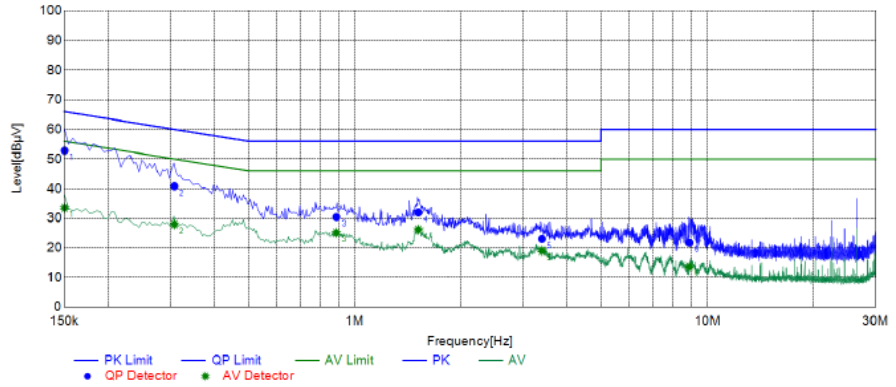
| NO. | Frequency [MHz] | QP Reading [dBµV] | AVG. Reading [dBµV] | Factor [dB] | QP Result [dBµV] | AVG. Result [dBµV] | QP Limit [dBµV] | AVG. Limit [dBµV] | QP Margin [dB] | AVG. Margin [dB] | Line | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.1504 | 41.80 | 22.55 | 10.05 | 51.85 | 32.60 | 65.98 | 55.98 | 14.13 | 23.38 | L1 | PASS |
| 2 | 0.4307 | 26.70 | 15.74 | 10.04 | 36.74 | 25.78 | 57.24 | 47.24 | 20.50 | 21.46 | L1 | PASS |
| 3 | 1.6658 | 14.10 | 9.07 | 10.13 | 24.23 | 19.20 | 56.00 | 46.00 | 31.77 | 26.80 | L1 | PASS |
| 4 | 9.8058 | 10.28 | 2.43 | 10.68 | 20.96 | 13.11 | 60.00 | 50.00 | 39.04 | 36.89 | L1 | PASS |
| 5 | 22.5308 | 22.11 | 17.79 | 11.59 | 33.70 | 29.38 | 60.00 | 50.00 | 26.30 | 20.62 | L1 | PASS |
| 6 | 26.6240 | 25.76 | 19.00 | 11.70 | 37.46 | 30.70 | 60.00 | 50.00 | 22.54 | 19.30 | L1 | PASS |

Note: 1. Result (dBµV) = Reading (dBµV) + Factor (dB).

2. Factor (dB) = Cable loss (dB) + LISN Factor (dB).

| Power supply: | AC 120V/60Hz | Polarization | N |
|---|---|---|---|

**Test Graph**




**Final Data List**

| NO. | Frequency [MHz] | QP Reading [dBµV] | AVG. Reading [dBµV] | Factor [dB] | QP Result [dBµV] | AVG. Result [dBµV] | QP Limit [dBµV] | AVG. Limit [dBµV] | QP Margin [dB] | AVG. Margin [dB] | Line | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.1505 | 42.78 | 23.43 | 10.05 | 52.83 | 33.48 | 65.97 | 55.97 | 13.14 | 22.49 | N | PASS |
| 2 | 0.3084 | 30.83 | 17.98 | 9.98 | 40.81 | 27.96 | 60.01 | 50.01 | 19.20 | 22.05 | N | PASS |
| 3 | 0.8881 | 20.31 | 15.05 | 10.06 | 30.37 | 25.11 | 56.00 | 46.00 | 25.63 | 20.89 | N | PASS |
| 4 | 1.5169 | 21.82 | 16.07 | 10.11 | 31.93 | 26.18 | 56.00 | 46.00 | 24.07 | 19.82 | N | PASS |
| 5 | 3.3968 | 12.71 | 8.72 | 10.33 | 23.04 | 19.05 | 56.00 | 46.00 | 32.96 | 26.95 | N | PASS |
| 6 | 8.8773 | 11.05 | 3.02 | 10.66 | 21.71 | 13.68 | 60.00 | 50.00 | 38.29 | 36.32 | N | PASS |

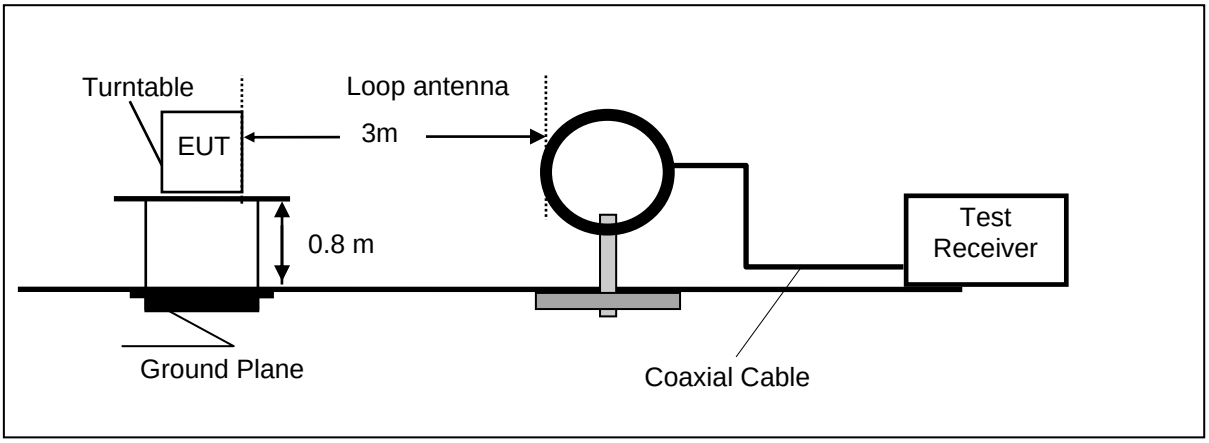
Note: 1. Result (dBµV) = Reading (dBµV) + Factor (dB).

2. Factor (dB) = Cable loss (dB) + LISN Factor (dB).

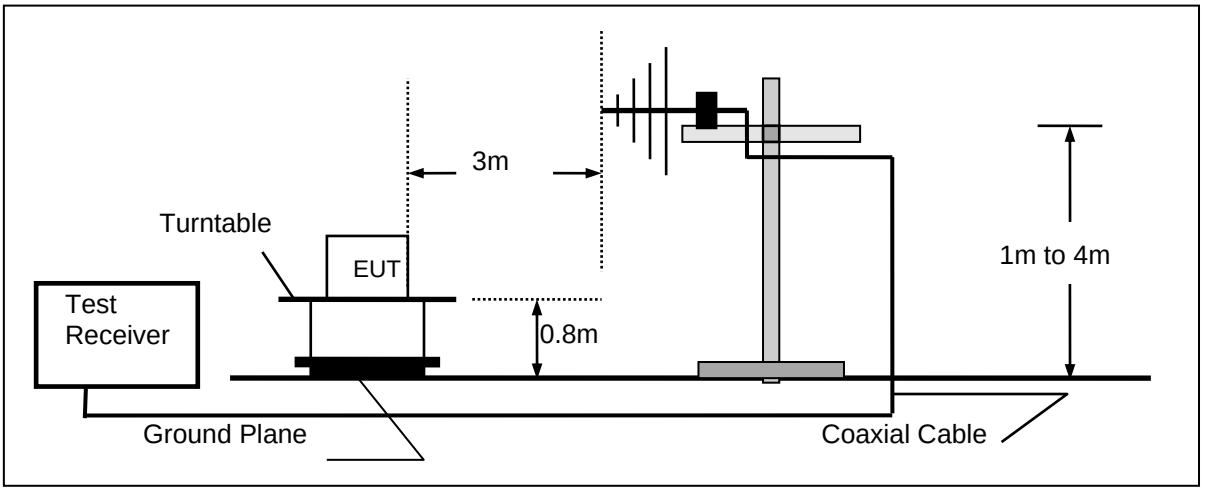
## 4.2. Radiated Emission

**TEST CONFIGURATION**

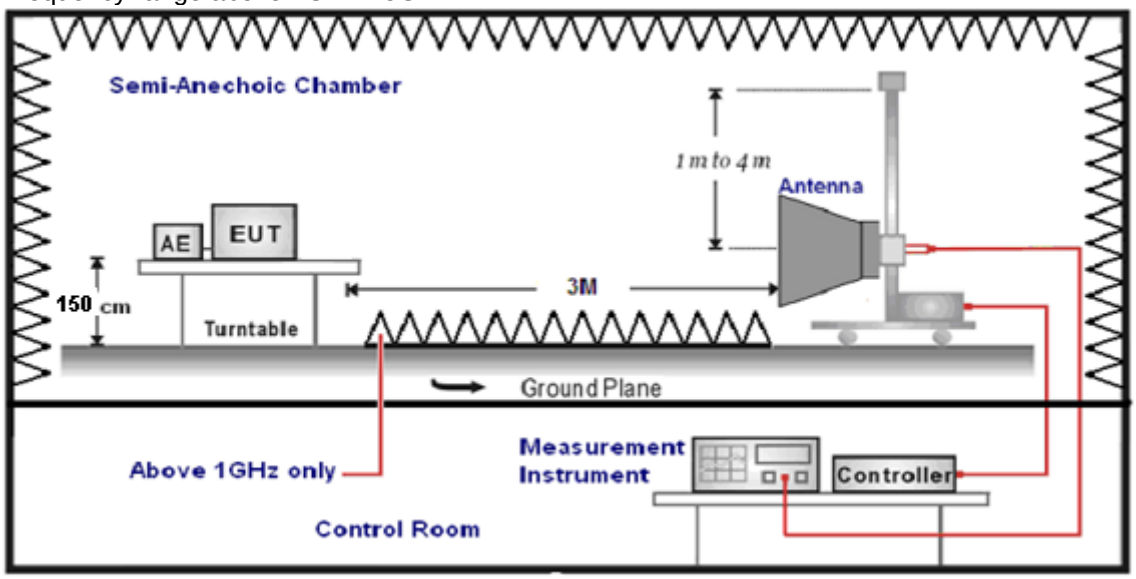
Frequency range 9 KHz – 30MHz




Frequency range 30MHz – 1000MHz




Frequency range above 1GHz-25GHz




**TEST PROCEDURE**

1. The EUT was placed on a turn table which is 0.8m above ground plane when testing frequency range 30MHz –1GHz;the EUT was placed on a turn table which is 1.5m above ground plane when testing frequency range 1GHz – 25GHz.
2. Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0° to 360° to acquire the highest emissions from EUT.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.
5. Radiated emission test frequency band from 30MHz to 25GHz.
6. The distance between test antenna and EUT as following table states:

| Test Frequency range | Test Antenna Type | Test Distance |
|---|---|---|
| 9KHz-30MHz | Active Loop Antenna | 3 |
| 30MHz-1GHz | Ultra-Broadband Antenna | 3 |
| 1GHz-18GHz | Double Ridged Horn Antenna | 3 |
| 18GHz-25GHz | Horn Anternna | 1 |

7. Setting test receiver/spectrum as following table states:

| Test Frequency range | Test Receiver/Spectrum Setting | Detector |
|---|---|---|
| 9KHz-150KHz | RBW=200Hz/VBW=3KHz,Sweep time=Auto | QP |
| 150KHz-30MHz | RBW=9KHz/VBW=100KHz,Sweep time=Auto | QP |
| 30MHz-1GHz | RBW=120KHz/VBW=1000KHz,Sweep time=Auto | QP |
| 1GHz-40GHz | Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto<br>Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto | Peak |

**Field Strength Calculation**

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

**FS = RA + AF + CL - AG**

| | |
|---|---|
| Where FS = Field Strength | CL = Cable Attenuation Factor (Cable Loss) |
| RA = Reading Amplitude | AG = Amplifier Gain |
| AF = Antenna Factor | |

Transd=AF +CL-AG

**RADIATION LIMIT**

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission from intentional radiators at a distance of 3 meters shall not exceed the following table. According to § 15.247(d), in any 100kHz bandwidth outside the frequency band in which the EUT is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the100kHz bandwidth within the band that contains the highest level of desired power.

The pre-test have done for the EUT in three axes and found the worst emission at position shown in test setup photos.

| Frequency (MHz) | Distance (Meters) | Radiated (dBμV/m) | Radiated (μV/m) |
|---|---|---|---|
| 0.009-0.49 | 3 | 20log(2400/F(KHz))+40log(300/3) | 2400/F(KHz) |
| 0.49-1.705 | 3 | 20log(24000/F(KHz))+ 40log(30/3) | 24000/F(KHz) |
| 1.705-30 | 3 | 20log(30)+ 40log(30/3) | 30 |
| 30-88 | 3 | 40.0 | 100 |
| 88-216 | 3 | 43.5 | 150 |
| 216-960 | 3 | 46.0 | 200 |
| Above 960 | 3 | 54.0 | 500 |

## TEST RESULTS

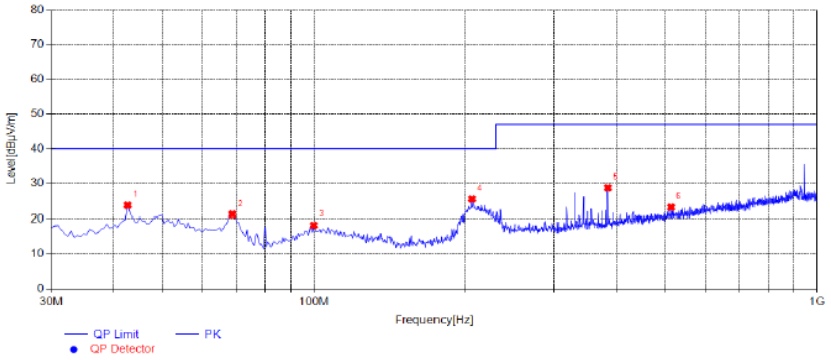
Remark: We measured Radiated Emission at 802.11b/802.11g/802.11n HT20/802.11n HT40 mode from 30 MHz to 25GHz in AC120V and the worst case was recorded.

| Temperature | 23.4℃ | Humidity | 54.5% |
|---|---|---|---|
| Test Engineer | Moon Tan | Configurations | IEEE 802.11g (MCH) |

**For 30MHz-1GHz**

### Horizontal

**Test Graph**




Suspected List

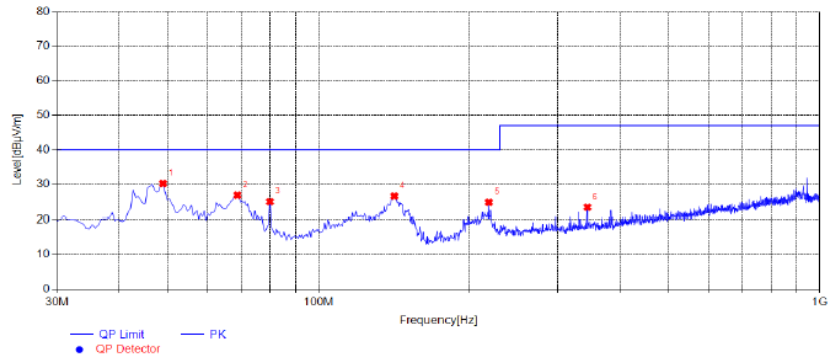
| NO. | Frequency [MHz] | Reading [dBµV/m] | Factor [dB] | Result [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Height [cm] | Angle [°] | Detector | Polarity | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 42.6100 | 30.47 | -6.65 | 23.82 | 40.00 | 16.18 | 100 | 270 | PK | Horizonta | PASS |
| 2 | 68.8000 | 30.78 | -9.56 | 21.22 | 40.00 | 18.78 | 100 | 233 | PK | Horizonta | PASS |
| 3 | 99.8400 | 26.77 | -8.49 | 18.28 | 40.00 | 21.72 | 100 | 193 | PK | Horizonta | PASS |
| 4 | 206.0550 | 35.01 | -9.42 | 25.59 | 40.00 | 14.41 | 100 | 25 | PK | Horizonta | PASS |
| 5 | 384.0500 | 34.58 | -5.81 | 28.77 | 47.00 | 18.23 | 100 | 227 | PK | Horizonta | PASS |
| 6 | 512.5750 | 26.43 | -3.21 | 23.22 | 47.00 | 23.78 | 100 | 85 | PK | Horizonta | PASS |

Note: 1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

### Vertical

**Test Graph**




Suspected List

| NO. | Frequency [MHz] | Reading [dBµV/m] | Factor [dB] | Result [dBµV/m] | Limit [dBµV/m] | Margin [dB] | Height [cm] | Angle [°] | Detector | Polarity | Remark |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 48.9150 | 36.69 | -6.45 | 30.24 | 40.00 | 9.76 | 100 | 74 | PK | Vertical | PASS |
| 2 | 68.8000 | 36.45 | -9.56 | 26.89 | 40.00 | 13.11 | 100 | 248 | PK | Vertical | PASS |
| 3 | 79.9550 | 37.45 | -12.44 | 25.01 | 40.00 | 14.99 | 100 | 326 | PK | Vertical | PASS |
| 4 | 141.5500 | 39.01 | -12.41 | 26.60 | 40.00 | 13.40 | 100 | 124 | PK | Vertical | PASS |
| 5 | 218.6650 | 34.14 | -9.34 | 24.80 | 40.00 | 15.20 | 100 | 353 | PK | Vertical | PASS |
| 6 | 343.7950 | 29.51 | -6.10 | 23.41 | 47.00 | 23.59 | 100 | 286 | PK | Vertical | PASS |

Note: 1. Result (dBµV/m) = Reading(dBµV/m) + Factor (dB) .

2. Factor (dB) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB).

**For 1GHz to 25GHz**

IEEE 802.11b

Channel 1 / 2412 MHz

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4824.00 | 50.63 | 32.44 | 30.25 | 7.95 | 60.77 | 74.00 | -13.23 | Peak | Horizontal |
| 4824.00 | 35.60 | 32.44 | 30.25 | 7.95 | 45.74 | 54.00 | -8.26 | Average | Horizontal |
| 4824.00 | 54.44 | 32.44 | 30.25 | 7.95 | 64.58 | 74.00 | -9.42 | Peak | Vertical |
| 4824.00 | 35.96 | 32.44 | 30.25 | 7.95 | 46.10 | 54.00 | -7.90 | Average | Vertical |

Channel 6 / 2437 MHz

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4874.00 | 50.02 | 32.52 | 30.31 | 8.12 | 60.35 | 74.00 | -13.65 | Peak | Horizontal |
| 4874.00 | 37.87 | 32.52 | 30.31 | 8.12 | 48.20 | 54.00 | -5.80 | Average | Horizontal |
| 4874.00 | 52.65 | 32.52 | 30.31 | 8.12 | 62.98 | 74.00 | -11.02 | Peak | Vertical |
| 4874.00 | 36.27 | 32.52 | 30.31 | 8.12 | 46.60 | 54.00 | -7.40 | Average | Vertical |

Channel 11 / 2462 MHz

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4924.00 | 51.30 | 32.68 | 30.27 | 7.88 | 61.59 | 74.00 | -12.41 | Peak | Horizontal |
| 4924.00 | 36.75 | 32.68 | 30.27 | 7.88 | 47.04 | 54.00 | -6.96 | Average | Horizontal |
| 4924.00 | 49.10 | 32.68 | 30.27 | 7.88 | 59.39 | 74.00 | -14.61 | Peak | Vertical |
| 4924.00 | 31.02 | 32.68 | 30.27 | 7.88 | 41.31 | 54.00 | -12.69 | Average | Vertical |

IEEE 802.11g

Channel 1 / 2412 MHz

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4824.00 | 49.63 | 32.44 | 30.25 | 7.95 | 59.77 | 74.00 | -14.23 | Peak | Horizontal |
| 4824.00 | 34.81 | 32.44 | 30.25 | 7.95 | 44.95 | 54.00 | -9.05 | Average | Horizontal |
| 4824.00 | 53.46 | 32.44 | 30.25 | 7.95 | 63.60 | 74.00 | -10.40 | Peak | Vertical |
| 4824.00 | 34.42 | 32.44 | 30.25 | 7.95 | 44.56 | 54.00 | -9.44 | Average | Vertical |

Channel 6 / 2437 MHz

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4874.00 | 49.98 | 32.52 | 30.31 | 8.12 | 60.31 | 74.00 | -13.69 | Peak | Horizontal |
| 4874.00 | 36.79 | 32.52 | 30.31 | 8.12 | 47.12 | 54.00 | -6.88 | Average | Horizontal |
| 4874.00 | 52.49 | 32.52 | 30.31 | 8.12 | 62.82 | 74.00 | -11.18 | Peak | Vertical |
| 4874.00 | 35.44 | 32.52 | 30.31 | 8.12 | 45.77 | 54.00 | -8.23 | Average | Vertical |

Channel 11 / 2462 MHz

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4924.00 | 50.12 | 32.68 | 30.27 | 7.88 | 60.41 | 74.00 | -13.59 | Peak | Horizontal |
| 4924.00 | 35.99 | 32.68 | 30.27 | 7.88 | 46.28 | 54.00 | -7.72 | Average | Horizontal |
| 4924.00 | 49.80 | 32.68 | 30.27 | 7.88 | 60.09 | 74.00 | -13.91 | Peak | Vertical |
| 4924.00 | 31.22 | 32.68 | 30.27 | 7.88 | 41.51 | 54.00 | -12.49 | Average | Vertical |

IEEE802.11 n HT20

Channel 1 / 2412 MHz

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4824.00 | 50.79 | 32.44 | 30.25 | 7.95 | 60.93 | 74.00 | -13.07 | Peak | Horizontal |
| 4824.00 | 35.16 | 32.44 | 30.25 | 7.95 | 45.30 | 54.00 | -8.70 | Average | Horizontal |
| 4824.00 | 53.00 | 32.44 | 30.25 | 7.95 | 63.14 | 74.00 | -10.86 | Peak | Vertical |
| 4824.00 | 34.63 | 32.44 | 30.25 | 7.95 | 44.77 | 54.00 | -9.23 | Average | Vertical |

Channel 6 / 2437 MHz

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4874.00 | 49.67 | 32.52 | 30.31 | 8.12 | 60.00 | 74.00 | -14.00 | Peak | Horizontal |
| 4874.00 | 36.96 | 32.52 | 30.31 | 8.12 | 47.29 | 54.00 | -6.71 | Average | Horizontal |
| 4874.00 | 51.10 | 32.52 | 30.31 | 8.12 | 61.43 | 74.00 | -12.57 | Peak | Vertical |
| 4874.00 | 36.13 | 32.52 | 30.31 | 8.12 | 46.46 | 54.00 | -7.54 | Average | Vertical |

Channel 11 / 2462 MHz

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4924.00 | 51.72 | 32.68 | 30.27 | 7.88 | 62.01 | 74.00 | -11.99 | Peak | Horizontal |
| 4924.00 | 36.55 | 32.68 | 30.27 | 7.88 | 46.84 | 54.00 | -7.16 | Average | Horizontal |
| 4924.00 | 48.77 | 32.68 | 30.27 | 7.88 | 59.06 | 74.00 | -14.94 | Peak | Vertical |
| 4924.00 | 32.55 | 32.68 | 30.27 | 7.88 | 42.84 | 54.00 | -11.16 | Average | Vertical |

IEEE802.11 n HT40

Channel 3 / 2422 MHz

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4844.00 | 50.87 | 32.44 | 30.25 | 7.95 | 61.01 | 74.00 | -12.99 | Peak | Horizontal |
| 4844.00 | 34.88 | 32.44 | 30.25 | 7.95 | 45.02 | 54.00 | -8.98 | Average | Horizontal |
| 4844.00 | 53.42 | 32.44 | 30.25 | 7.95 | 63.56 | 74.00 | -10.44 | Peak | Vertical |
| 4844.00 | 34.67 | 32.44 | 30.25 | 7.95 | 44.81 | 54.00 | -9.19 | Average | Vertical |

Channel 6 / 2437 MHz

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4874.00 | 49.34 | 32.52 | 30.31 | 8.12 | 59.67 | 74.00 | -14.33 | Peak | Horizontal |
| 4874.00 | 37.79 | 32.52 | 30.31 | 8.12 | 48.12 | 54.00 | -5.88 | Average | Horizontal |
| 4874.00 | 50.86 | 32.52 | 30.31 | 8.12 | 61.19 | 74.00 | -12.81 | Peak | Vertical |
| 4874.00 | 36.69 | 32.52 | 30.31 | 8.12 | 47.02 | 54.00 | -6.98 | Average | Vertical |

Channel 09 / 2452 MHz

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4904.00 | 50.61 | 32.68 | 30.27 | 7.88 | 60.90 | 74.00 | -13.10 | Peak | Horizontal |
| 4904.00 | 35.48 | 32.68 | 30.27 | 7.88 | 45.77 | 54.00 | -8.23 | Average | Horizontal |
| 4904.00 | 49.71 | 32.68 | 30.27 | 7.88 | 60.00 | 74.00 | -14.00 | Peak | Vertical |
| 4904.00 | 30.85 | 32.68 | 30.27 | 7.88 | 41.14 | 54.00 | -12.86 | Average | Vertical |

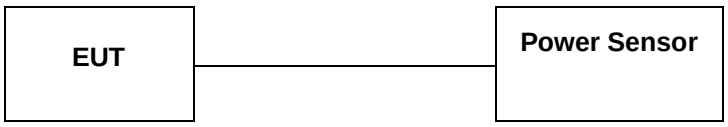
REMARKS:

1. Emission level (dBuV/m) =Raw Value (dBuV)+Correction Factor (dB/m)
2. Correction Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
3. Margin value = Limit value- Emission level.
4. -- Mean the PK detector measured value is below average limit.
5. The other emission levels were very low against the limit.

**NOTE: We measured Radiated Emission at Antenna 0 & Antenna 1 mode from 1GHz to 25GHz and the worst case was recorded(Antenna 0).**

## 4.3. Maximum Peak Output Power

**TEST CONFIGURATION**




**TEST PROCEDURE**

According to KDB558074 D01 DTS Measurement Guidance Section 9.1 Maximum peak conducted output power,9.1.2. and Average conducted output power, 9.2.3.1.

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

The maximum Average conducted output power may be measured using a wideband RF power meter with a thermocouple derector or equivalent. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

**LIMIT**

The Maximum Peak Output Power Measurement is 30dBm.

**TEST RESULTS**

| Temperature | 24.2℃ | Humidity | 54.9% |
|---|---|---|---|
| Test Engineer | Moon Tan | Configurations | IEEE 802.11b/g/n |

**Antenna 0:**

| Type | Channel | Output power PK (dBm) | Output power AV (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|
| 802.11b | 01 | 16.02 | 13.91 | 30.00 | Pass |
| | 06 | 16.10 | 13.28 | | |
| | 11 | 16.68 | 13.12 | | |
| 802.11g | 01 | 16.17 | 13.01 | 30.00 | Pass |
| | 06 | 16.22 | 13.19 | | |
| | 11 | 16.27 | 13.20 | | |
| 802.11n(HT20) | 01 | 16.99 | 12.69 | 30.00 | Pass |
| | 06 | 16.31 | 12.75 | | |
| | 11 | 16.82 | 12.82 | | |
| 802.11n(HT40) | 03 | 15.10 | 10.93 | 30.00 | Pass |
| | 06 | 15.93 | 10.33 | | |
| | 09 | 15.13 | 10.66 | | |

**Antenna 1:**

| Type | Channel | Output power PK (dBm) | Output power AV (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|
| 802.11b | 01 | 16.90 | 13.84 | 30.00 | Pass |
| | 06 | 16.81 | 13.37 | | |
| | 11 | 16.75 | 13.02 | | |
| 802.11g | 01 | 16.11 | 13.47 | 30.00 | Pass |
| | 06 | 16.13 | 13.73 | | |
| | 11 | 16.36 | 13.04 | | |
| 802.11n(HT20) | 01 | 16.30 | 12.18 | 30.00 | Pass |
| | 06 | 16.22 | 12.55 | | |
| | 11 | 16.50 | 12.57 | | |
| 802.11n(HT40) | 03 | 15.85 | 10.53 | 30.00 | Pass |
| | 06 | 15.30 | 10.43 | | |
| | 09 | 15.09 | 10.57 | | |

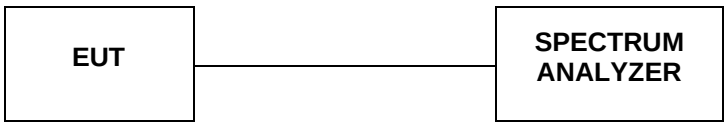
Note: 1.The test results including the cable lose.
Duty cycle used in all test items: 100%

**MIMO*2**

| Type | Channel | Peak Output power ANT0 (dBm) | Peak Output power ANT1 (dBm) | average Output power ANT0 (dBm) | average Output power ANT1 (dBm) | Peak Output power Total (dBm) | average Output power Total (dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|---|---|---|---|
| 802.11n (HT20) | 01 | 16.99 | 16.30 | 12.69 | 12.18 | 19.67 | 15.45 | 30.00 | Pass |
| | 06 | 16.31 | 16.22 | 12.75 | 12.55 | 19.28 | 15.66 | | |
| | 11 | 16.82 | 16.50 | 12.82 | 12.57 | 19.67 | 15.71 | | |
| 802.11n (HT40) | 03 | 15.10 | 15.85 | 10.93 | 10.53 | 18.50 | 13.74 | 30.00 | Pass |
| | 06 | 15.93 | 15.30 | 10.33 | 10.43 | 18.64 | 13.39 | | |
| | 09 | 15.13 | 15.09 | 10.66 | 10.57 | 18.12 | 13.63 | | |

## 4.4. Power Spectral Density

**TEST CONFIGURATION**




**TEST PROCEDURE**

According to KDB 558074 D01 Method PKPSD (peak PSD) This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance, and is optional if the maximum conducted (average) output power was used to demonstrate compliance.

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
4. Set the VBW ≥ 3 RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

**LIMIT**

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

**TEST RESULTS**

| Temperature | 24.2℃ | Humidity | 54.9% |
|---|---|---|---|
| Test Engineer | Moon Tan | Configurations | IEEE 802.11b/g/n |

**Antenna 0:**

| Type | Channel | Power Spectral Density (dBm/3KHz) | Limit (dBm/3KHz) | Result |
|---|---|---|---|---|
| 802.11b | 01 | -16.95 | 8.00 | Pass |
| | 06 | -17.04 | | |
| | 11 | -17.89 | | |
| 802.11g | 01 | -14.70 | 8.00 | Pass |
| | 06 | -15.37 | | |
| | 11 | -16.80 | | |
| 802.11n(HT20) | 01 | -15.45 | 8.00 | Pass |
| | 06 | -15.69 | | |
| | 11 | -16.66 | | |
| 802.11n(HT40) | 03 | -17.26 | 8.00 | Pass |
| | 06 | -17.62 | | |
| | 09 | -17.28 | | |

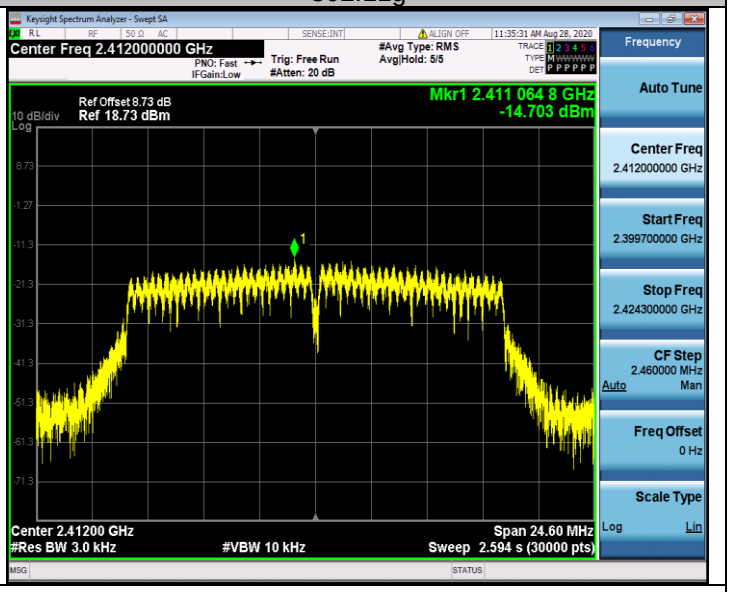
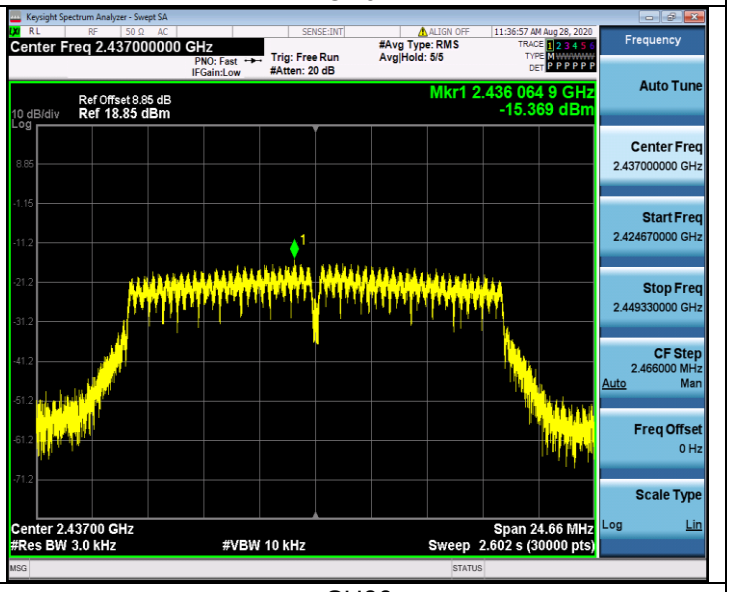
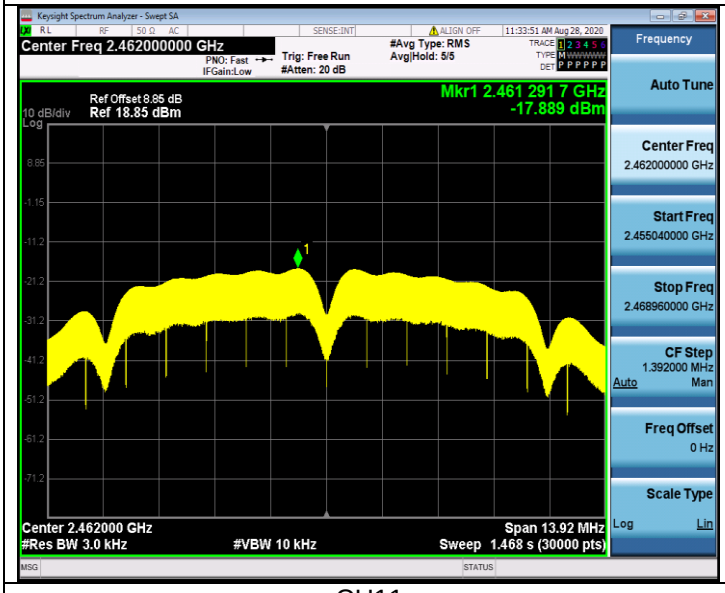
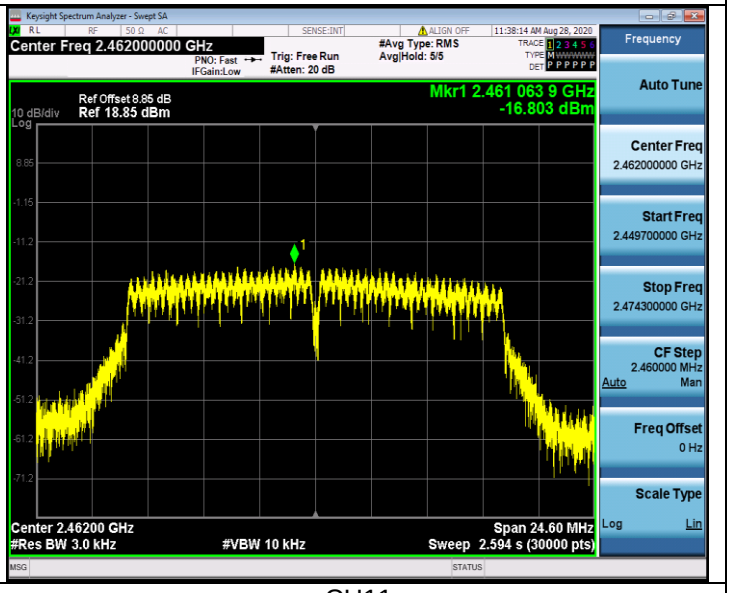
**Antenna 1:**

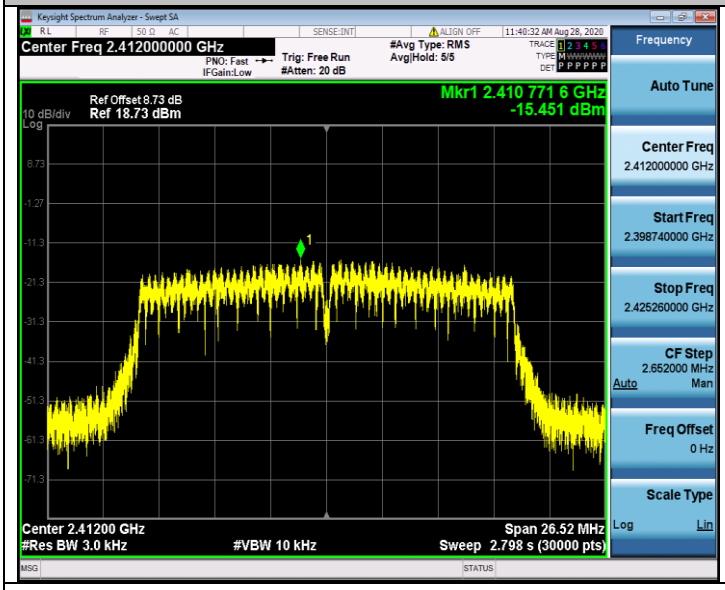
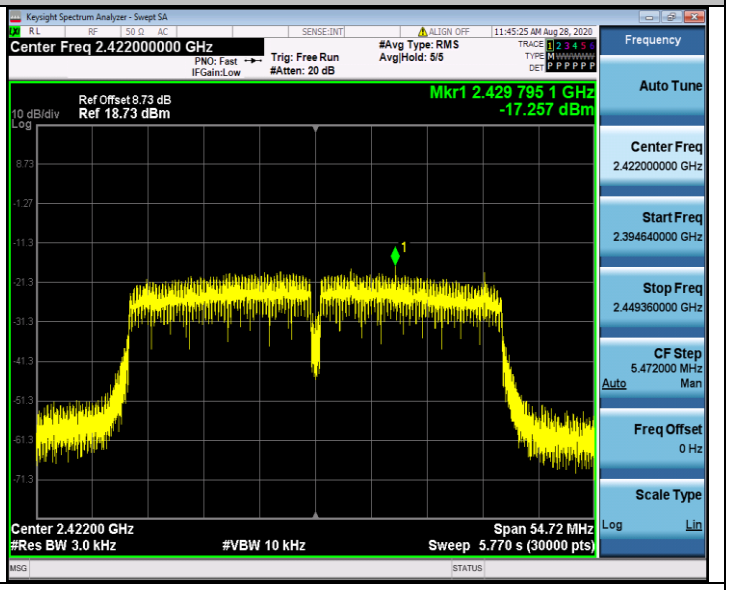
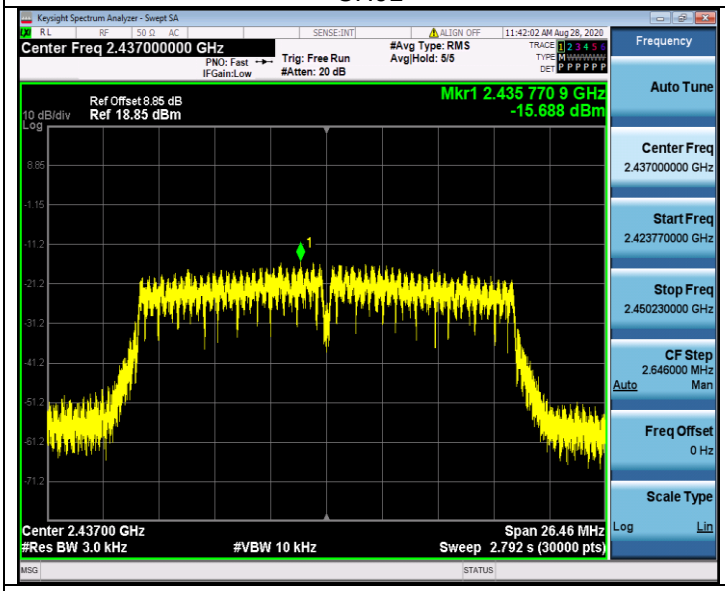
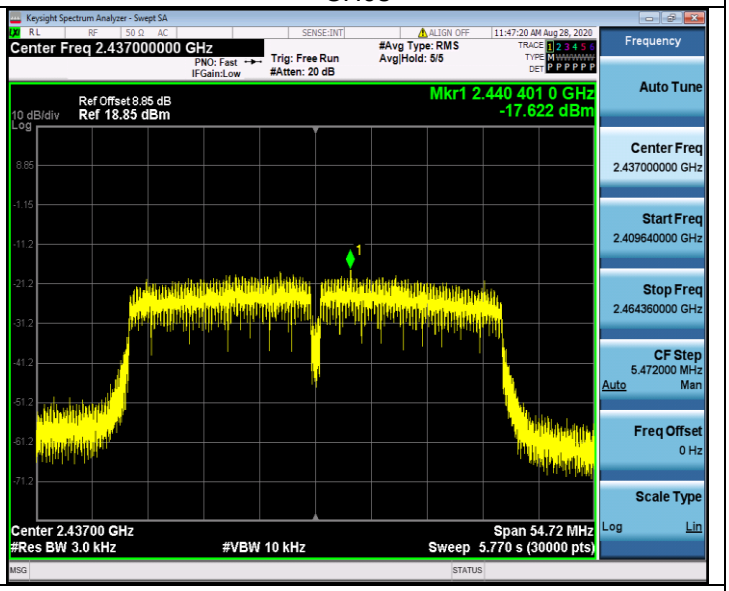
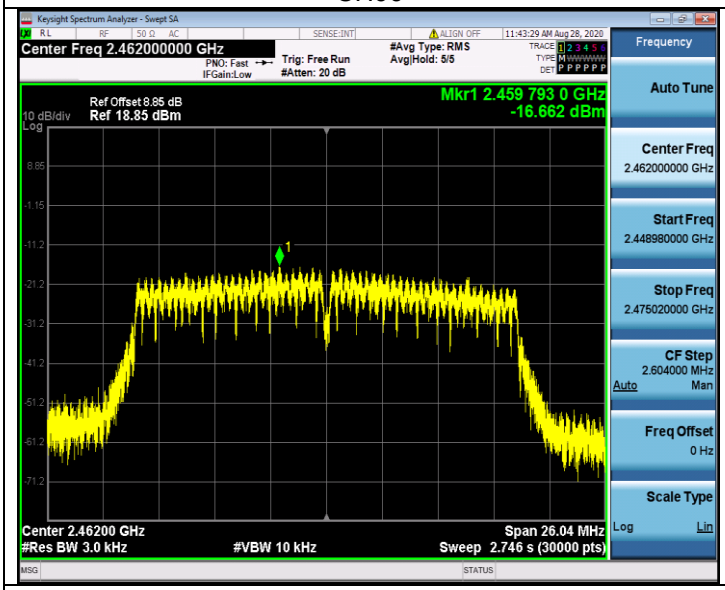
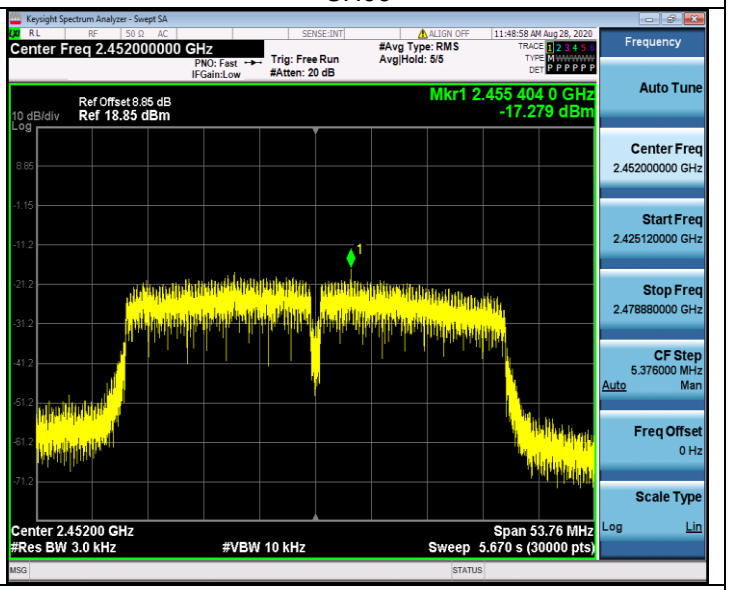
| Type | Channel | Power Spectral Density (dBm/3KHz) | Limit (dBm/3KHz) | Result |
|---|---|---|---|---|
| 802.11b | 01 | -17.16 | 8.00 | Pass |
| | 06 | -17.19 | | |
| | 11 | -18.11 | | |
| 802.11g | 01 | -15.15 | 8.00 | Pass |
| | 06 | -15.75 | | |
| | 11 | -16.20 | | |
| 802.11n(HT20) | 01 | -15.57 | 8.00 | Pass |
| | 06 | -15.88 | | |
| | 11 | -16.56 | | |
| 802.11n(HT40) | 03 | -17.54 | 8.00 | Pass |
| | 06 | -16.83 | | |
| | 09 | -17.13 | | |

**MIMO*2**

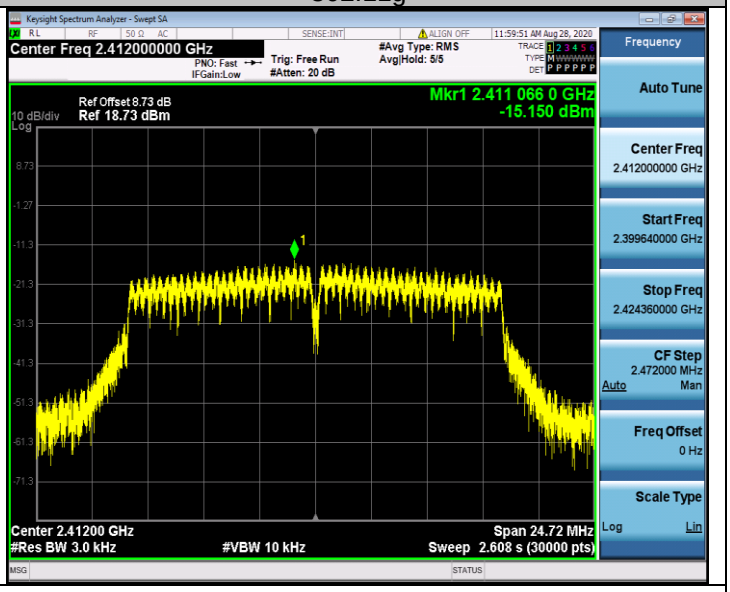
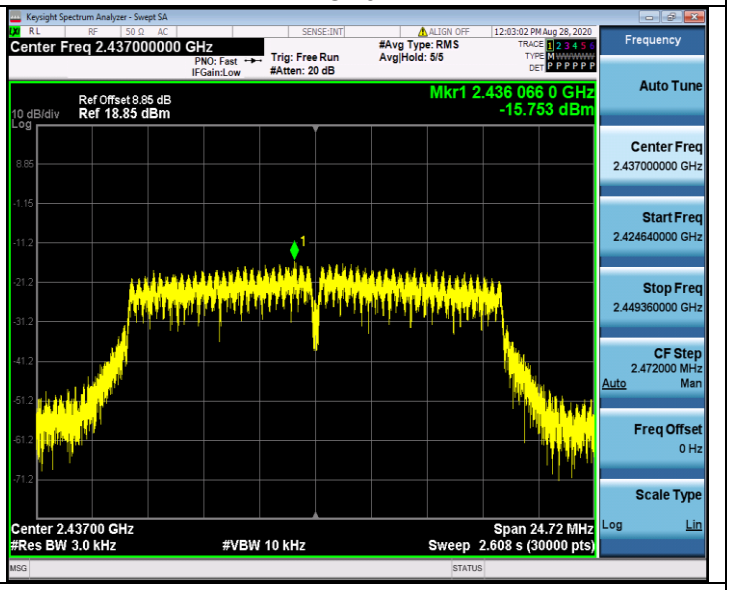
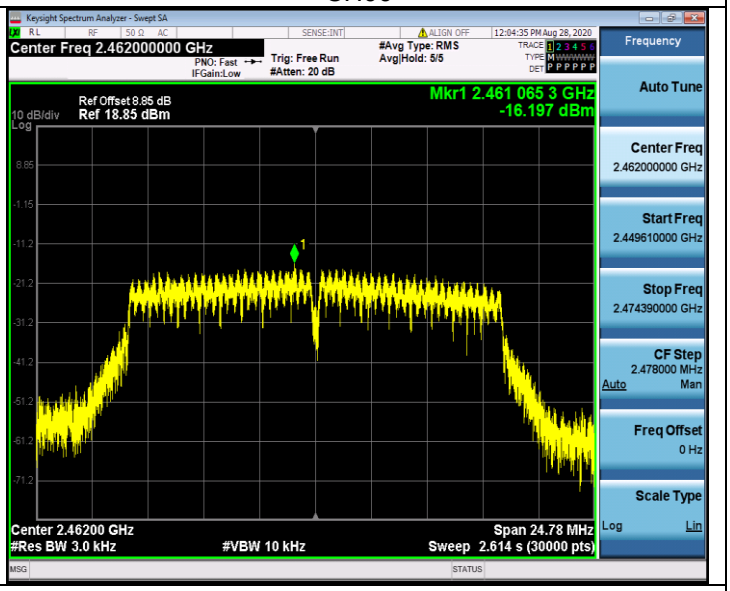
| **Type** | **Channel** | **Power Spectral Density ANT1 (dBm/3KHz)** | **Power Spectral Density ANT2 (dBm/3KHz)** | **Power Spectral Density Total (dBm/3KHz)** | **Limit (dBm/3KHz)** | **Result** |
|---|---|---|---|---|---|---|
| 802.11n(HT20) | 01 | -15.45 | -15.57 | -12.50 | 8.00 | Pass |
| | 06 | -15.69 | -15.88 | -12.77 | | |
| | 11 | -16.66 | -16.56 | -13.60 | | |
| 802.11n(HT40) | 03 | -17.26 | -17.54 | -14.39 | 8.00 | Pass |
| | 06 | -17.62 | -16.83 | -14.20 | | |
| | 09 | -17.28 | -17.13 | -14.19 | | |

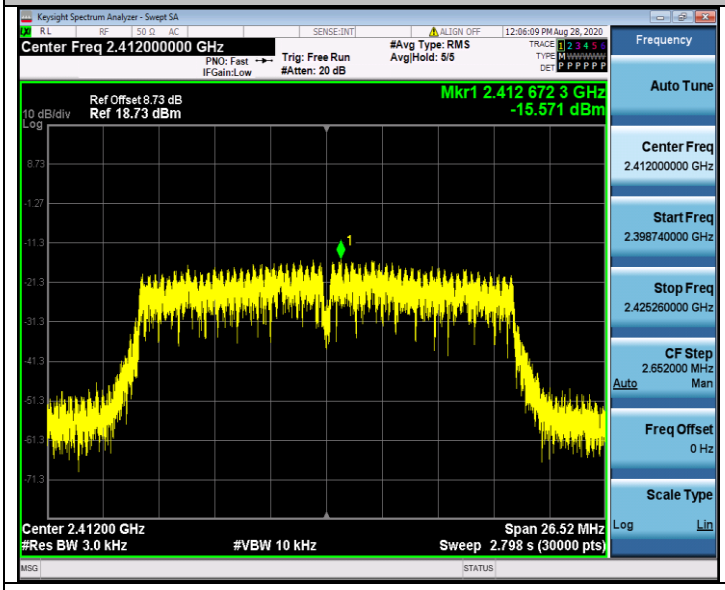
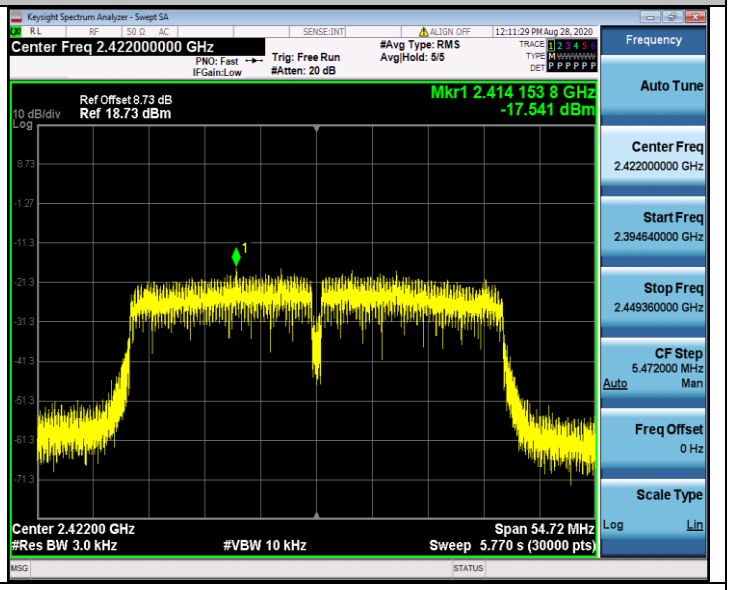
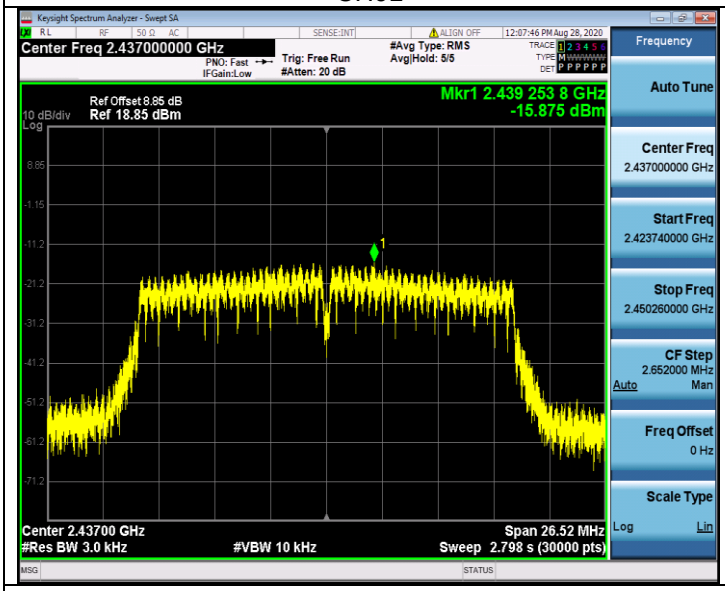
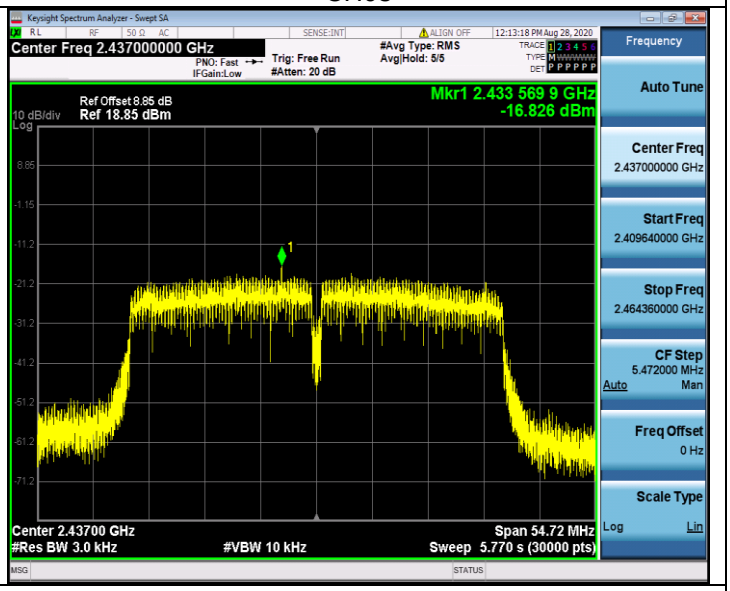
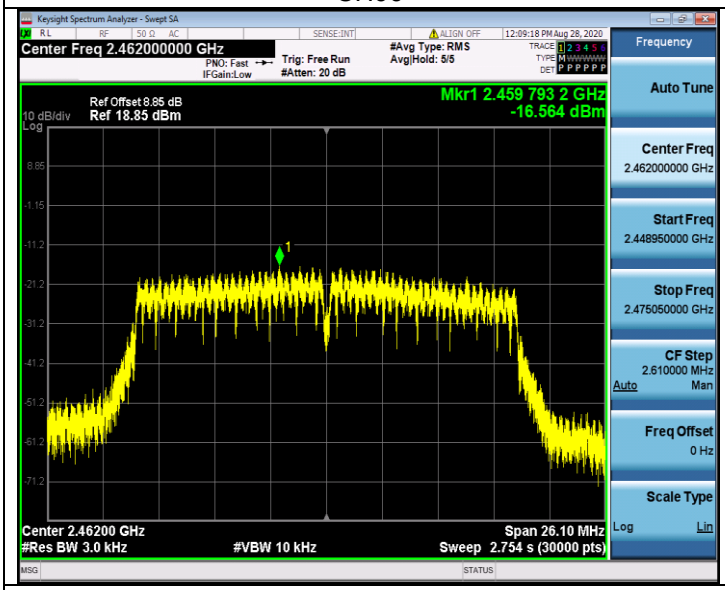
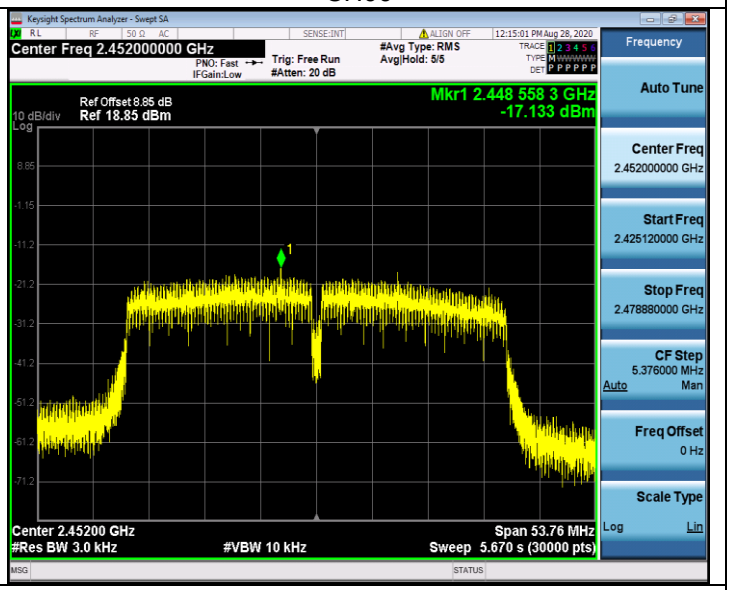
**Antenna 0:**

| 802.11b | 802.11g |
|---|---|
|  |  |
| CH01 | CH01 |
|  |  |
| CH06 | CH06 |
|  |  |
| CH11 | CH11 |

| 802.11 nHT20 | 802.11nHT40 |
|---|---|
|  |  |
| CH01 | CH03 |
|  |  |
| CH06 | CH06 |
|  |  |
| CH11 | CH09 |

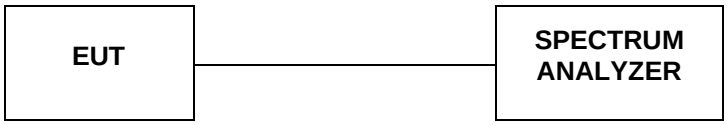
**Antenna 1:**

| 802.11b | 802.11g |
|---|---|
|  |  |
| CH01 | CH01 |
|  |  |
| CH06 | CH06 |
|  |  |
| CH11 | CH11 |

| 802.11 nHT20 | 802.11nHT40 |
|---|---|
|  |  |
| CH01 | CH03 |
|  |  |
| CH06 | CH06 |
|  |  |
| CH11 | CH09 |

## 4.5. 6dB Bandwidth

**TEST CONFIGURATION**




**TEST PROCEDURE**

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with RBW=100 KHz and VBW=300KHz.
The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.
According to KDB558074 D01 for one of the following procedures may be used to determine the modulated DTS device signal bandwidth.
1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

**LIMIT**

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz

**TEST RESULTS**

| Temperature | 24.2℃ | Humidity | 54.9% |
|---|---|---|---|
| Test Engineer | Moon Tan | Configurations | IEEE 802.11b/g/n |

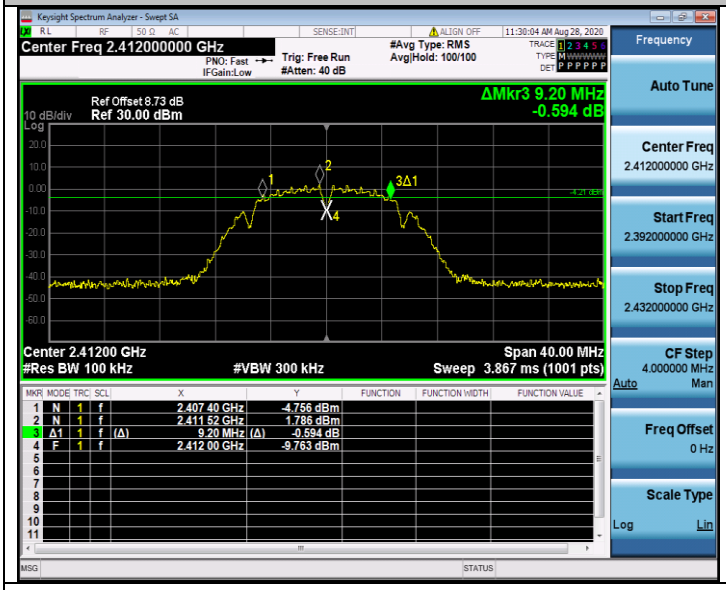
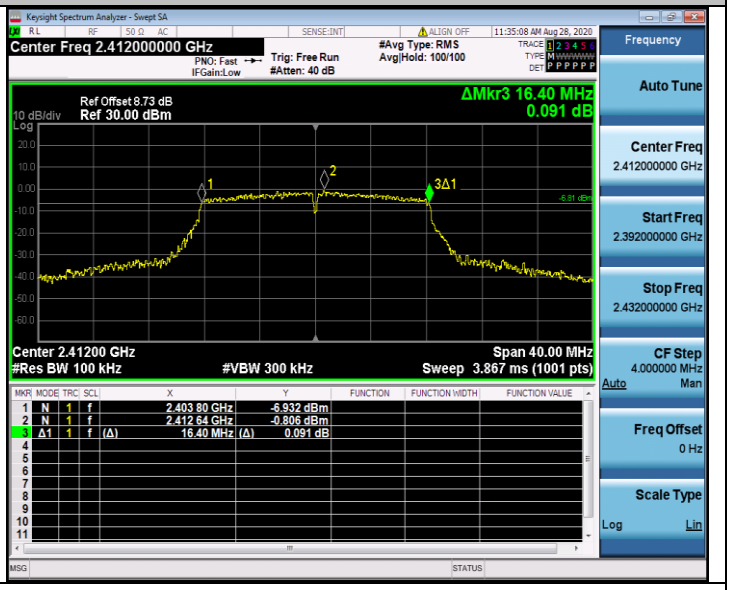
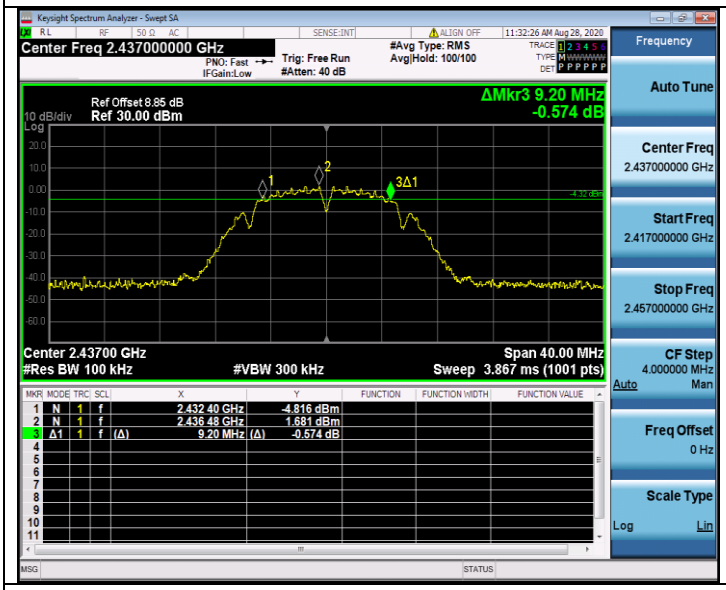
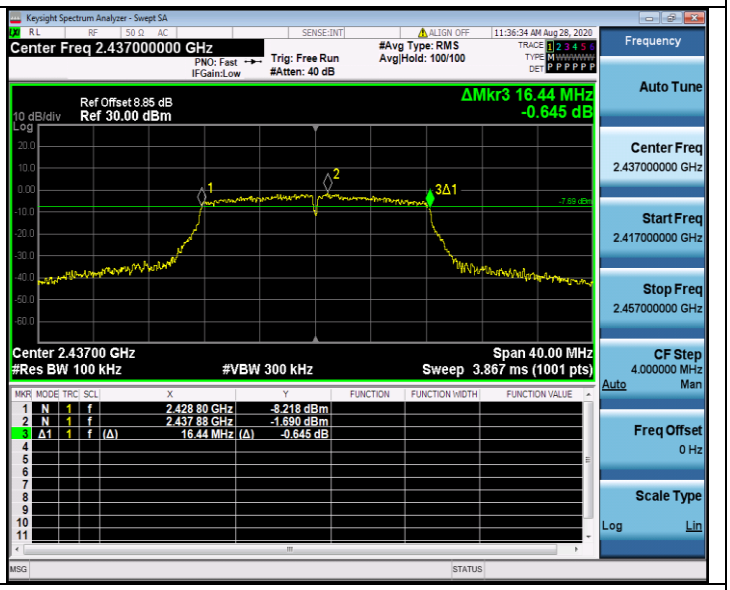
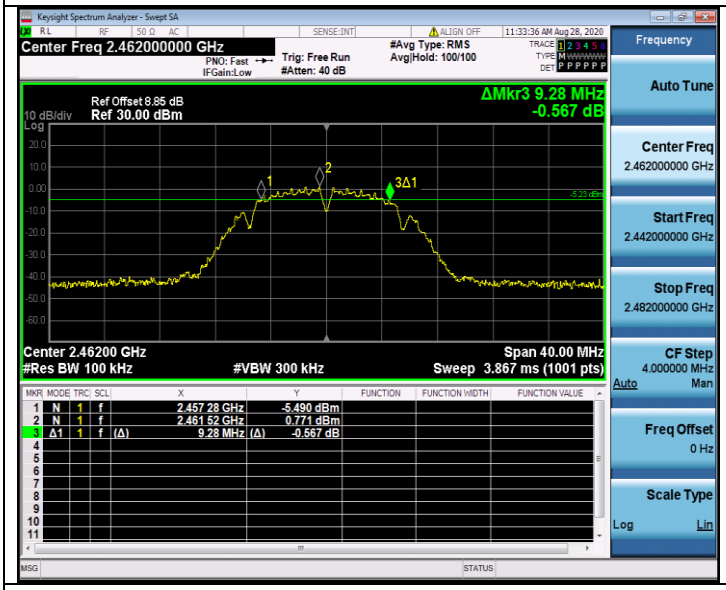
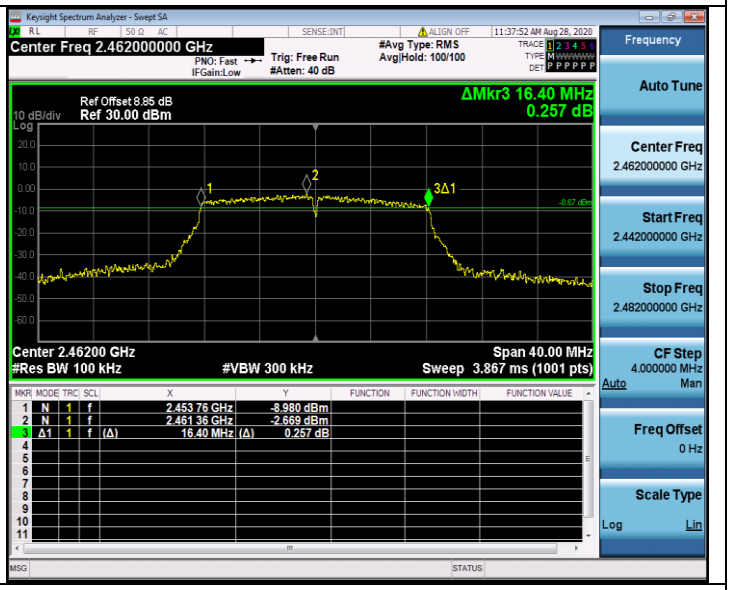
**Antenna 0:**

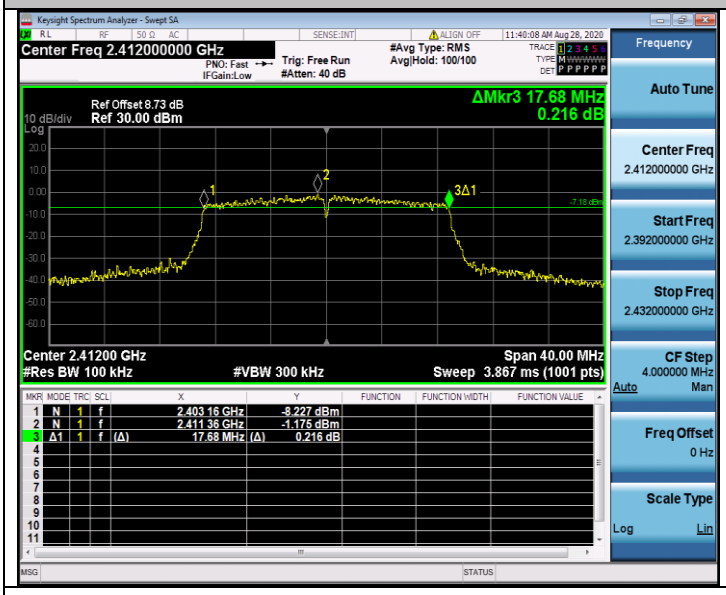
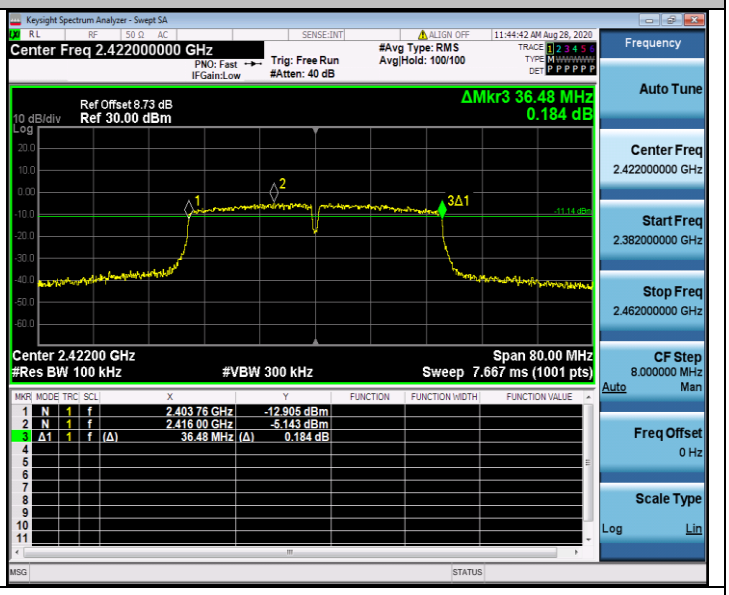
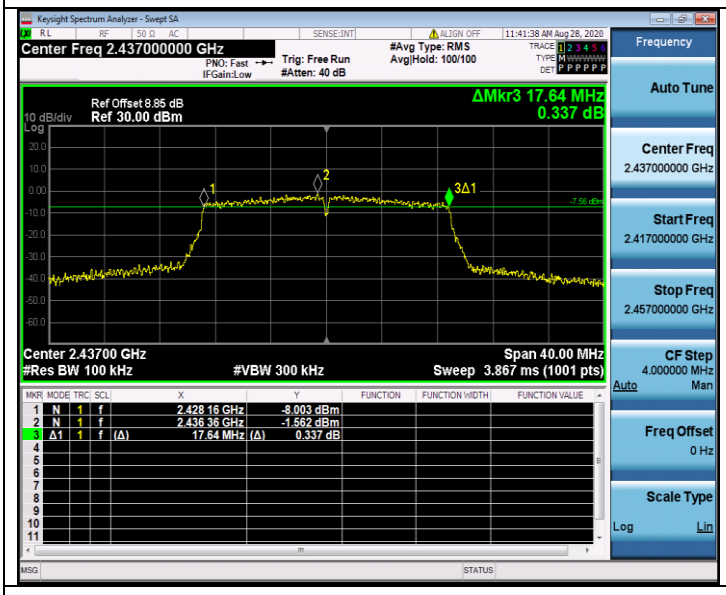
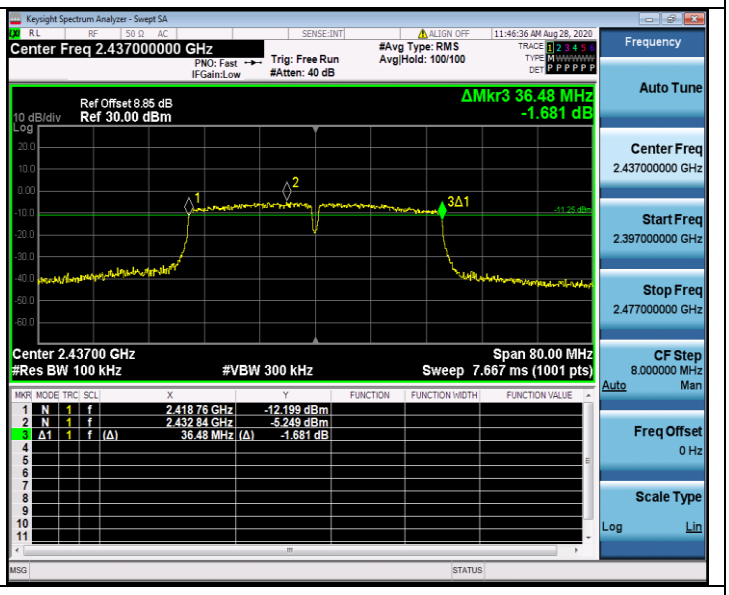
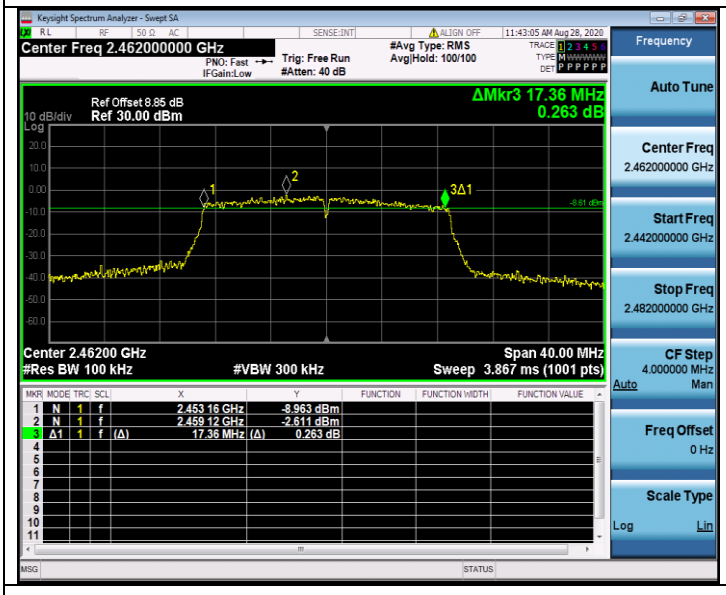
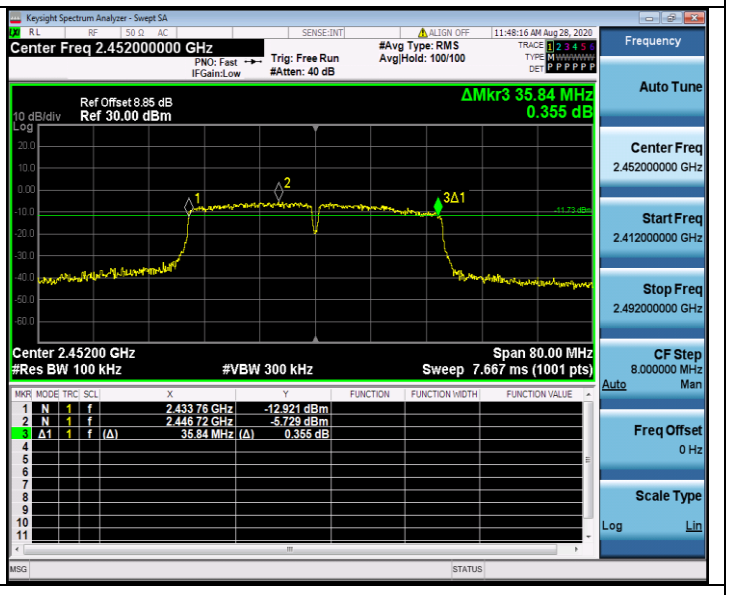
| Type | Channel | 6dB Bandwidth (MHz) | Limit (KHz) | Result |
|---|---|---|---|---|
| 802.11b | 01 | 9.200 | ≥500 | Pass |
| | 06 | 9.200 | | |
| | 11 | 9.280 | | |
| 802.11g | 01 | 16.400 | ≥500 | Pass |
| | 06 | 16.440 | | |
| | 11 | 16.400 | | |
| 802.11nHT20 | 01 | 17.680 | ≥500 | Pass |
| | 06 | 17.640 | | |
| | 11 | 17.360 | | |
| 802.11nHT40 | 03 | 36.480 | ≥500 | Pass |
| | 06 | 36.480 | | |
| | 09 | 35.840 | | |

**Antenna 1:**

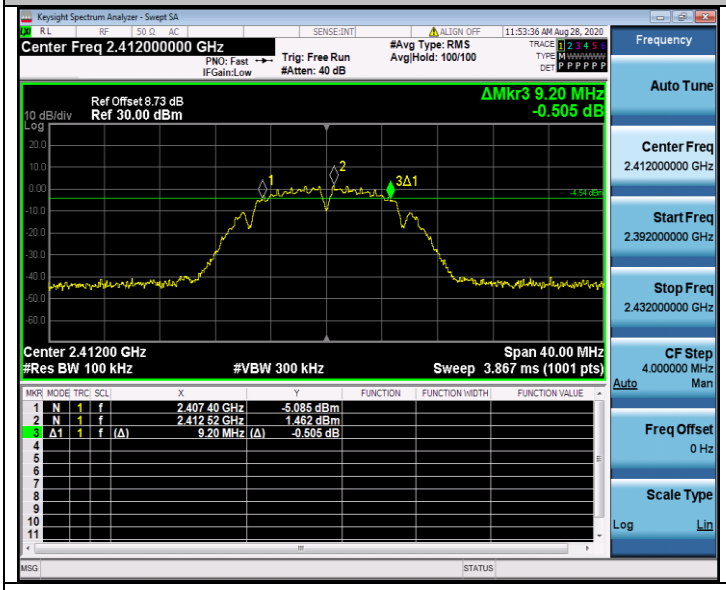
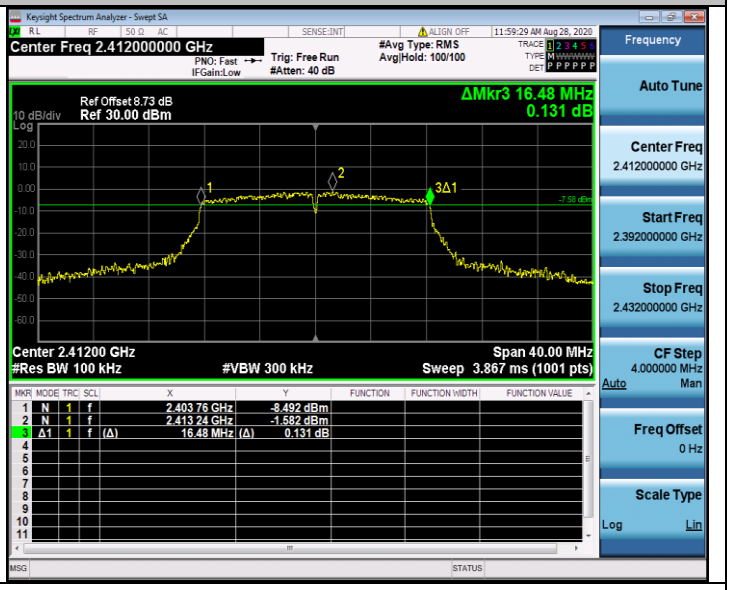
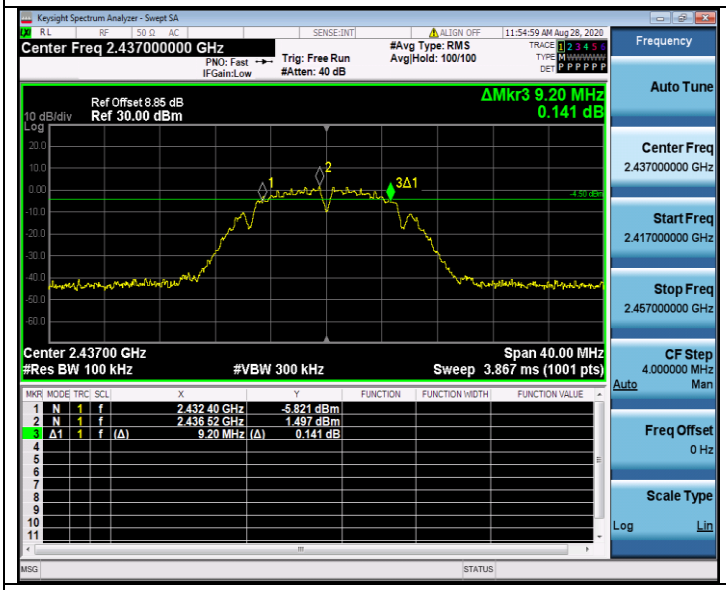
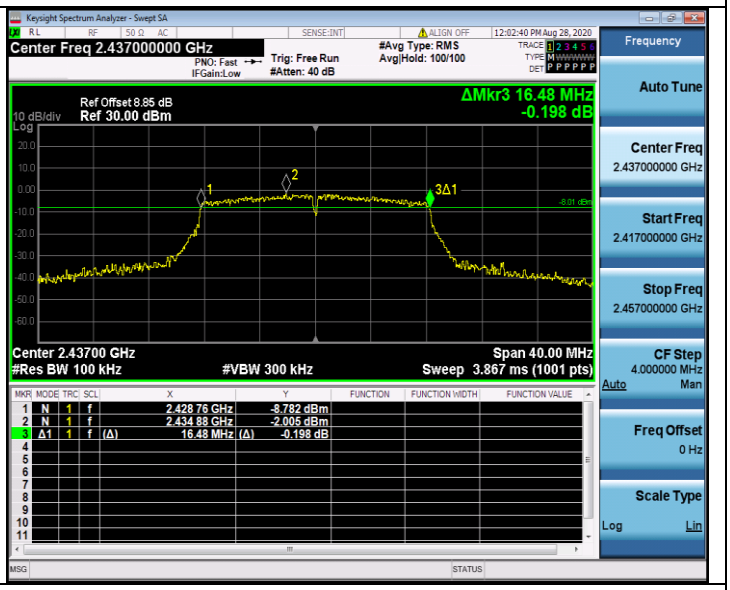
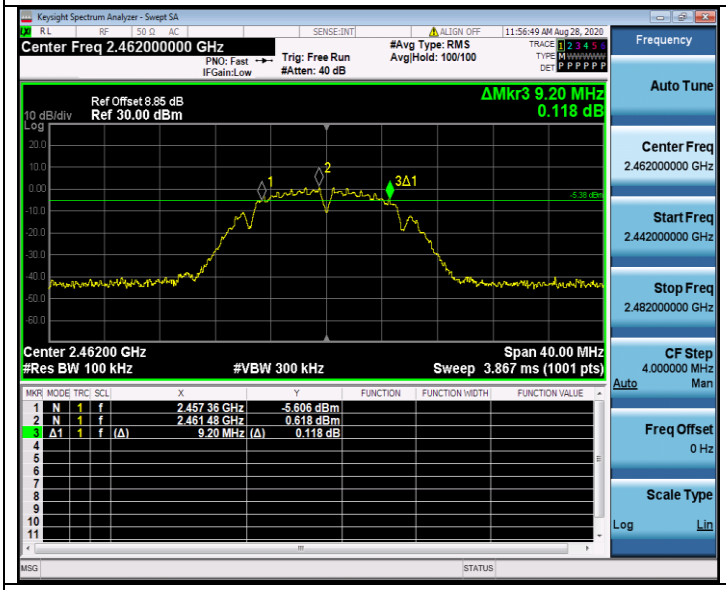
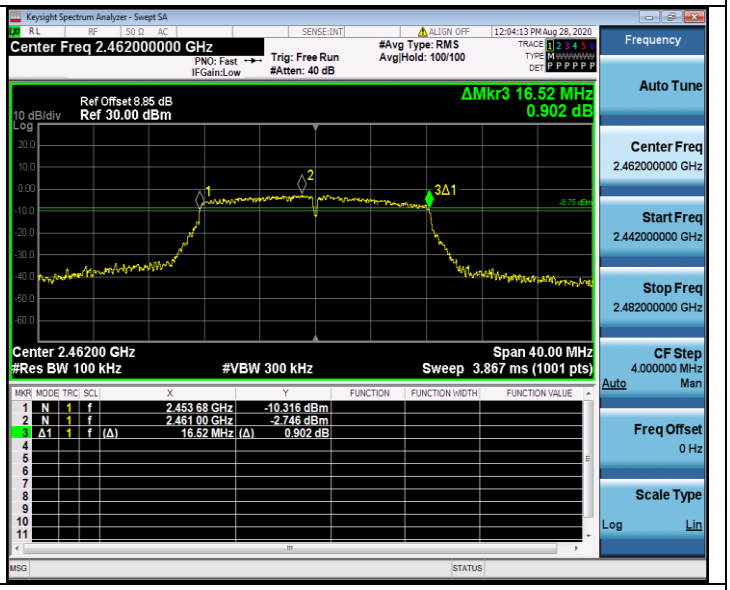
| Type | Channel | 6dB Bandwidth (MHz) | Limit (KHz) | Result |
|---|---|---|---|---|
| 802.11b | 01 | 9.200 | ≥500 | Pass |
| | 06 | 9.200 | | |
| | 11 | 9.200 | | |
| 802.11g | 01 | 16.480 | ≥500 | Pass |
| | 06 | 16.480 | | |
| | 11 | 16.520 | | |
| 802.11nHT20 | 01 | 17.680 | ≥500 | Pass |
| | 06 | 17.680 | | |
| | 11 | 17.400 | | |
| 802.11nHT40 | 03 | 36.480 | ≥500 | Pass |
| | 06 | 36.480 | | |
| | 09 | 35.840 | | |

**Antenna 0:**

| 802.11b | 802.11g |
|---|---|
|  |  |
| CH01 | CH01 |
|  |  |
| CH06 | CH06 |
|  |  |
| CH11 | CH11 |

| 802.11n HT20 | 802.11n HT40 |
| --- | --- |
|  |  |
| CH01 | CH03 |
|  |  |
| CH06 | CH06 |
|  |  |
| CH11 | CH09 |

**Antenna 1:**

| 802.11b | 802.11g |
|---|---|
|  |  |
| CH01 | CH01 |
|  |  |
| CH06 | CH06 |
|  |  |
| CH11 | CH11 |