

# TEST REPORT



**CTK Co., Ltd.**  
(Ho-dong), 113, Yejik-ro, Cheoin-gu,  
Yongin-si, Gyeonggi-do, Korea  
Tel: +82-31-339-9970  
Fax: +82-31-624-9501

Report No.:  
CTK-2022-03104  
Page (1) / (71) Pages

## 1. Applicant

- Name : KAONMEDIA Co., Ltd.
- Address : KAONMEDIA Building, 884-3 Seongnam-daero, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea
- Date of Receipt : 2022-08-24

## 2. Manufacturer

- Name : KAONMEDIA Co., Ltd.
- Address : KAONMEDIA Building, 884-3 Seongnam-daero, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea

## 3. Use of Report : For FCC Conformance

## 4. Test Sample / Model: IP Set-top-box(OTT STB) / KSTB6200

## 5. Date of Test : 2022-09-26 to 2022-11-16

## 6. Test Standard(method) used : FCC 47 CFR part 15 subpart C 15.247

## 7. Testing Environment: Temp.: (23 ± 1) °C, Humidity: (48 ± 3) % R.H.

## 8. Test Results : Compliance

## 9. Location of Test : ☒ Permanent Testing Lab ☐ On Site Testing

(Address : 5, Dongbu-ro 221beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea)

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

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|          |                                                                                                                              |                                                                                                                                           |
|----------|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Approval | Tested by<br><br>Ji-Hye, Kim: (Signature) | Technical Manager<br><br>Won-Jae, Hwang: (Signature) |
|----------|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|

Remark. This report is not related to KOLAS accreditation and relevant regulation.

2022-12-01

**CTK Co., Ltd.**

## REPORT REVISION HISTORY

| Date       | Revision                | Page No |
|------------|-------------------------|---------|
| 2022-12-01 | Issued (CTK-2022-03104) | all     |
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# 1. General Product Description

## 1.1 Applicant Information

|                       |                                                                                          |
|-----------------------|------------------------------------------------------------------------------------------|
| <b>Company</b>        | KAONMEDIA Co., Ltd.                                                                      |
| <b>Contact Point</b>  | KAONMEDIA Building, 884-3 Seongnam-daero, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea    |
| <b>Contact Person</b> | Name : Intae Kim<br>E-mail : intae.kim@kaonmedia.com<br>Tel : +82-31-724-8683<br>Fax : - |

## 1.2 Product Information

|                               |                                                                                                                                                  |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>FCC ID</b>                 | WQTKSTB6200                                                                                                                                      |
| <b>ISED</b>                   | 24567-KSTB6200                                                                                                                                   |
| <b>Product Description</b>    | IP Set-top-box(OTT STB)                                                                                                                          |
| <b>Model name</b>             | KSTB6200                                                                                                                                         |
| <b>Variant Model name</b>     | -                                                                                                                                                |
| <b>Operating Frequency</b>    | 2 412 MHz – 2 462 MHz (20MHz_BW)                                                                                                                 |
| <b>RF Output Power</b>        | 802.11b : 20.56 dBm (113.76 mW)<br>802.11g : 15.66 dBm (36.81 mW)<br>802.11n_HT20 : 17.66 dBm (58.34 mW)<br>802.11ax_HE20 : 15.92 dBm (39.08 mW) |
| <b>Antenna Specification</b>  | Antenna type : PCB Antenna<br>Peak Gain : 0.95 dBi (ANT1), 0.85 dBi (ANT2)                                                                       |
| <b>Antenna Configurations</b> | 802.11b : SISO(ANT1, ANT2)<br>802.11g : SISO(ANT1, ANT2)<br>802.11n : MIMO(ANT1+ANT2)<br>802.11ax : MIMO(ANT1+ANT2)                              |
| <b>Number of channels</b>     | 11 (802.11b/g/n_HT20/ax_HE20)                                                                                                                    |
| <b>Type of Modulation</b>     | 802.11b : DSSS<br>802.11g/n : OFDM<br>802.11ax : OFDMA                                                                                           |
| <b>Data Rate</b>              | 802.11b : 11 / 5.5 / 2 / 1 Mbps<br>802.11g : 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6 Mbps<br>802.11n : up to 144 Mbps<br>802.11ax : up to 286 Mbps   |
| <b>Power Source</b>           | DC 12 V                                                                                                                                          |
| <b>Hardware Rev</b>           | V1.0                                                                                                                                             |
| <b>Software Rev</b>           | V1.9.8                                                                                                                                           |

|                                                                                                                                                                                 |                                                                                                                                               |                                                        |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|--|
| <br><b>CTK Co., Ltd.</b><br><small>The Prime Leader of Global Regulatory Certification</small> | <b>CTK Co., Ltd.</b><br>(Ho-dong), 113, Yejik-ro, Cheoin-gu,<br>Yongin-si, Gyeonggi-do, Korea<br>Tel: +82-31-339-9970<br>Fax: +82-31-624-9501 | Report No.:<br>CTK-2022-03104<br>Page (5) / (71) Pages |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|--|

### 1.3 Peripheral Devices

| Device        | Manufacturer                            | Model No.             | Serial No. |
|---------------|-----------------------------------------|-----------------------|------------|
| Note Computer | HP                                      | 15-bs563TU            | CND7253QPR |
| AC/DC Adapter | HP                                      | HSTNN-LA40            | -          |
| AC/DC Adapter | SHENZHEN FRECOM<br>ELECTRONICS CO.,LTD. | F12L33-<br>120100SPAU | -          |

### 1.4 Model Differences

Not applicable

## 2. Accreditations

### 2.1 Laboratory Accreditations and Listings

| Country | Agency | Registration Number |
|---------|--------|---------------------|
| USA     | FCC    | 805871              |
| CANADA  | ISED   | 8737A               |
| KOREA   | NRRA   | KR0025              |

### 2.2 Calibration Details of Equipment Used for Measurement

Test equipment and test accessories are calibrated on regular basis. The maximum time between calibrations is one year or what is recommended by the manufacturer, whichever is less. All test equipment calibrations are traceable to the Korea Research Institute of Standards and Science (KRISS), therefore, all test data recorded in this report is traceable to KRISS.

### 3. Test Specifications

#### 3.1 Standards

| FCC Part Section(s)                                                                                                           | Requirement(s)                     | Status (Note 1) | Test Condition |
|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-----------------|----------------|
| 15.247(a)                                                                                                                     | 6 dB Bandwidth                     | C               | Conducted      |
| 15.247(b)                                                                                                                     | Maximum Output Power               | C               |                |
| 15.247(d)                                                                                                                     | Conducted Spurious emission        | C               |                |
| 15.247(d)                                                                                                                     | Unwanted Emission(Conducted)       | C               |                |
| 15.247(e)                                                                                                                     | Transmitter Power Spectral Density | C               |                |
| 15.209                                                                                                                        | Radiated Emissions                 | C               | Radiated       |
| 15.207                                                                                                                        | AC Conducted Emissions             | C               | Line Conducted |
| <u>Note 1:</u> C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable                                                     |                                    |                 |                |
| <u>Note 2:</u> The data in this test report are traceable to the national or international standards.                         |                                    |                 |                |
| <u>Note 3:</u> The sample was tested according to the following specification: FCC Part 15.247                                |                                    |                 |                |
| <u>Note 4:</u> The tests were performed according to the method of measurements prescribed in KDB No.558074, ANSI C63.10-2013 |                                    |                 |                |

### 3.2 Mode of operation during the test

The EUT is operated in a manner representative of the typical of the equipments.  
 During at testing, system components were manipulated within the confines of typical usage to maximize each emission. All modulation modes were tests.  
 The results are only attached worst cases.

The Output power for the 802.11 ax mode were investigated between all different tones, and we found that the highest tone had the highest output power and lowest tone had the highest PSD readings. Therefore, full testing was performed on both the highest and lowest tones.

#### Test Frequency & Bandwidth

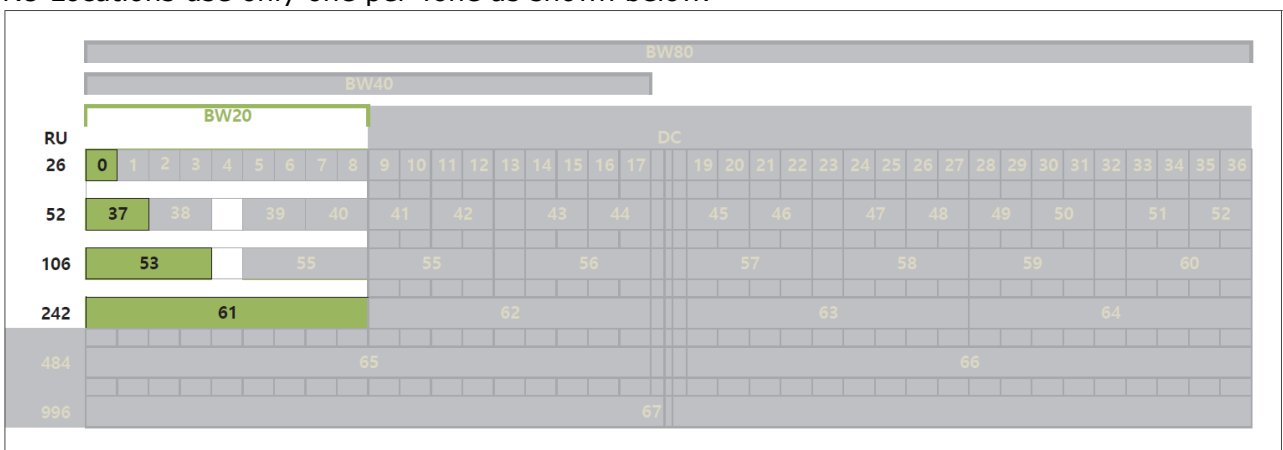
| Bandwidth | Lowest channel | Middle channel | Highest channel |
|-----------|----------------|----------------|-----------------|
| 20 MHz    | 2 412 MHz      | 2 437 MHz      | 2 462 MHz       |

#### Test mode & Worst case

| Test mode          | Modulation | Data rate (Worst case) | Duty Cycle | Duty Cycle Factor |
|--------------------|------------|------------------------|------------|-------------------|
| 802.11b            | DSSS       | 11 Mbps                | 100 %      | 0.00 dB           |
| 802.11g            | OFDM       | 6 Mbps                 | 95.4 %     | 0.21 dB           |
| 802.11n_HT20       | OFDM       | MCS 0                  | 95.3 %     | 0.21 dB           |
| 802.11ax_HE20_26T  | OFDMA      | MCS 0                  | 99.8 %     | 0.00 dB           |
| 802.11ax_HE20_52T  |            |                        | 99.4 %     | 0.00 dB           |
| 802.11ax_HE20_106T |            |                        | 98.2 %     | 0.00 dB           |
| 802.11ax_HE20_242T |            |                        | 96.2 %     | 0.17 dB           |

#### 802.11ax RU Locations in BW 20 MHz

RU Locations use only one per Tone as shown below.



## Test RU Index for Tones

| Mode          | Tones | RU Index |    |
|---------------|-------|----------|----|
| 802.11ax_HE20 | 26T   | Low      | 0  |
|               | 52T   | Low      | 37 |
|               | 106T  | Low      | 53 |
|               | 242T  | 61       | 61 |

Full RU(Resource Unit) 242T mode and SU(Single Unit) mode have no difference in physical waveform. This Report has been reported the Full RU 242T mode with worst output power.

## 3.3 Device Modifications

The following modifications were necessary for compliance:

Not applicable

## 3.4 Maximum Measurement Uncertainty

The value of the measurement uncertainty for the measurement of each parameter.  
 Coverage factor  $k = 2$ , Confidence levels of 95 %

| Description                          | Uncertainty                            |
|--------------------------------------|----------------------------------------|
| Conducted RF Output Power            | 1.5 dB (C.L.: Approx. 95 %, $k = 2$ )  |
| Power Spectral Density               | 1.5 dB (C.L.: Approx. 95 %, $k = 2$ )  |
| Occupied Bandwidth                   | 0.1 MHz (C.L.: Approx. 95 %, $k = 2$ ) |
| Unwanted Emission(conducted)         | 3.0 dB (C.L.: Approx. 95 %, $k = 2$ )  |
| Radiated Emissions ( $f \leq 1$ GHz) | 3.88 dB (C.L.: Approx. 95 %, $k = 2$ ) |
| Radiated Emissions ( $f > 1$ GHz)    | 4.62 dB (C.L.: Approx. 95 %, $k = 2$ ) |
| Line Conducted Emission              | 1.94 dB (C.L.: Approx. 95 %, $k = 2$ ) |

## 3.5 Test Software

|                     |                                      |
|---------------------|--------------------------------------|
| Conducted Test      | Ics Pro Ver. 6.0.3                   |
| Radiated Test       | EP5RE Ver. 6.0.1.0, ES10 Ver. 10.001 |
| Line Conducted Test | EMC32 Ver. 10.50.00                  |

## 4. Technical Characteristic Test

### 4.1 6dB Bandwidth

#### Test Procedures

KDB 558074 - Section 8.2  
ANSI C63.10-2013 - Section 11.8.2

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.

#### Test Procedures

ANSI C63.10-2013 - Section 6.9  
RSS-Gen - Section 6.7

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.

Use the 99% power bandwidth function of the instrument and report the measured bandwidth.

#### Test Settings :

Center frequency = the highest, middle and the lowest channels

- a) RBW = 100 kHz
- b) VBW  $\geq 3 \times$  RBW
- c) Detector = peak
- d) Trace mode = Max hold
- e) Sweep = auto couple
- f) Allow trace to fully stabilize
- g) 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.

#### **Minimum Standard :**

---

6 dB Bandwidth > 500 kHz

---

## Test Data :

### ANT1

| Mode      | 6 dB Bandwidth and 99 % Bandwidth (MHz) |       |         |       |              |       |
|-----------|-----------------------------------------|-------|---------|-------|--------------|-------|
|           | 802.11b                                 |       | 802.11g |       | 802.11n_HT20 |       |
| Frequency | 6 dB                                    | 99 %  | 6 dB    | 99 %  | 6 dB         | 99 %  |
| 2 412 MHz | 7.57                                    | 11.00 | 16.42   | 16.50 | 17.64        | 17.71 |
| 2 437 MHz | 7.13                                    | 11.04 | 16.39   | 16.51 | 17.64        | 17.68 |
| 2 462 MHz | 7.55                                    | 11.09 | 16.43   | 16.50 | 17.64        | 17.69 |

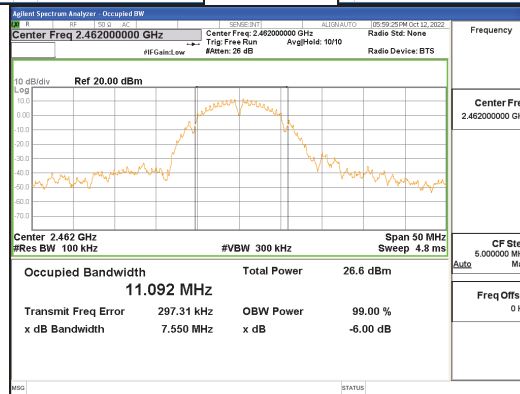
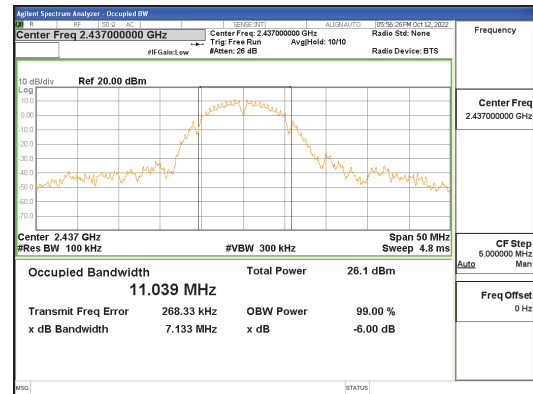
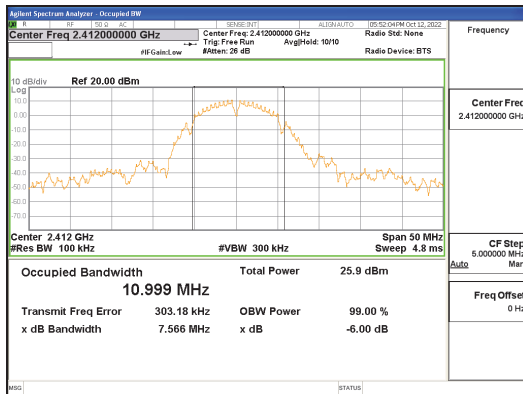
| Mode      | 6 dB Bandwidth and 99 % Bandwidth (MHz) |       |                    |       |
|-----------|-----------------------------------------|-------|--------------------|-------|
|           | 802.11ax_HE20_26T                       |       | 802.11ax_HE20_242T |       |
| Frequency | 6 dB                                    | 99 %  | 6 dB               | 99 %  |
| 2 412 MHz | 2.10                                    | 18.25 | 19.19              | 19.04 |
| 2 437 MHz | 2.04                                    | 18.22 | 19.12              | 18.99 |
| 2 462 MHz | 2.11                                    | 18.32 | 19.14              | 19.00 |

### ANT2

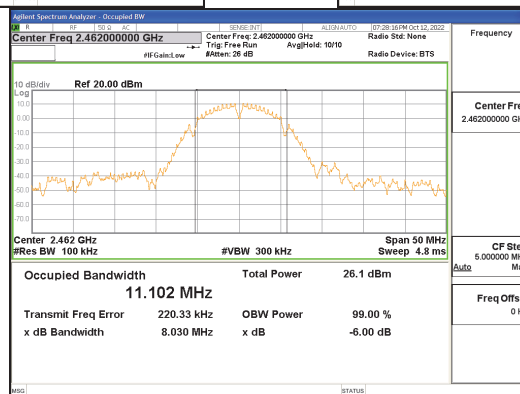
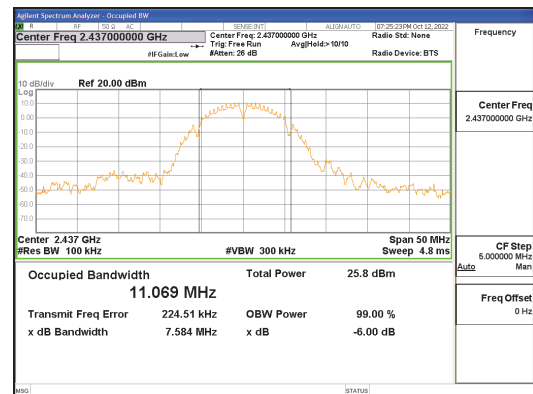
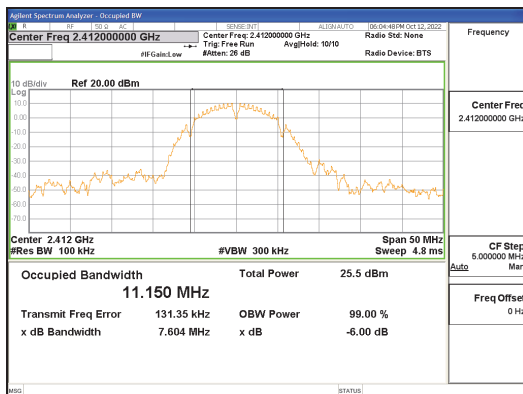
| Mode      | 6 dB Bandwidth and 99 % Bandwidth (MHz) |       |         |       |              |       |
|-----------|-----------------------------------------|-------|---------|-------|--------------|-------|
|           | 802.11b                                 |       | 802.11g |       | 802.11n_HT20 |       |
| Frequency | 6 dB                                    | 99 %  | 6 dB    | 99 %  | 6 dB         | 99 %  |
| 2 412 MHz | 7.60                                    | 11.15 | 16.39   | 16.51 | 17.67        | 17.65 |
| 2 437 MHz | 7.58                                    | 11.07 | 16.40   | 16.52 | 17.67        | 17.65 |
| 2 462 MHz | 8.03                                    | 11.10 | 16.40   | 16.50 | 17.63        | 17.66 |

| Mode      | 6 dB Bandwidth and 99 % Bandwidth (MHz) |       |                    |       |
|-----------|-----------------------------------------|-------|--------------------|-------|
|           | 802.11ax_HE20_26T                       |       | 802.11ax_HE20_242T |       |
| Frequency | 6 dB                                    | 99 %  | 6 dB               | 99 %  |
| 2 412 MHz | 2.11                                    | 18.20 | 19.16              | 19.01 |
| 2 437 MHz | 2.17                                    | 18.26 | 19.06              | 18.95 |
| 2 462 MHz | 2.14                                    | 18.21 | 19.08              | 18.95 |

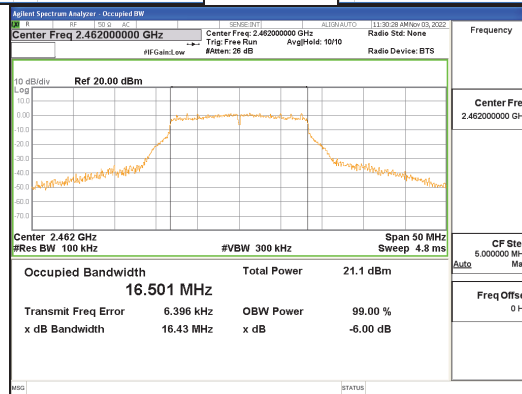
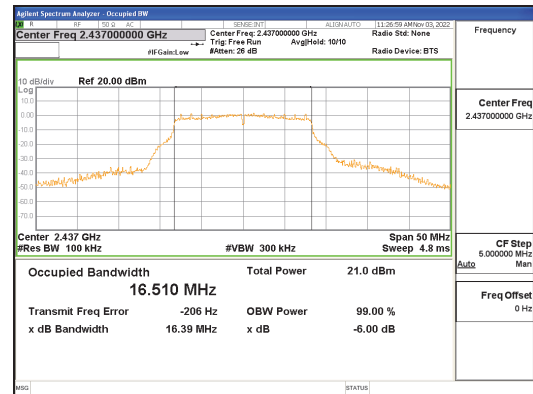
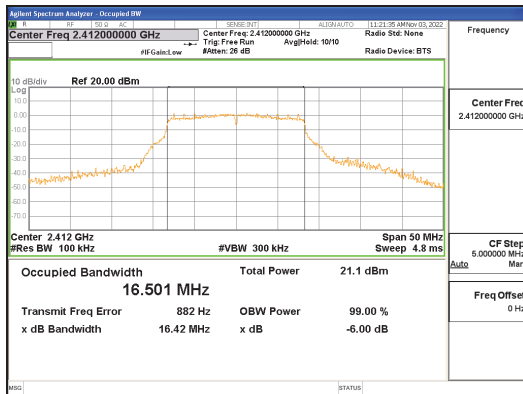
See next pages for actual measured spectrum plots.



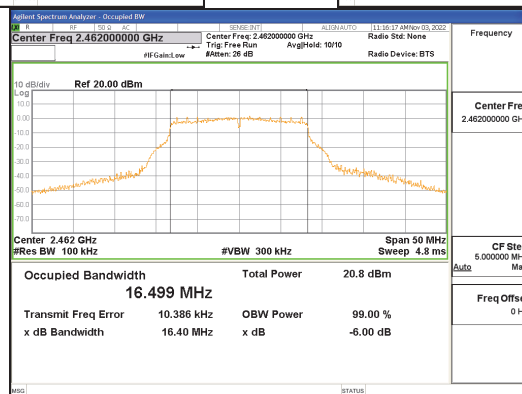
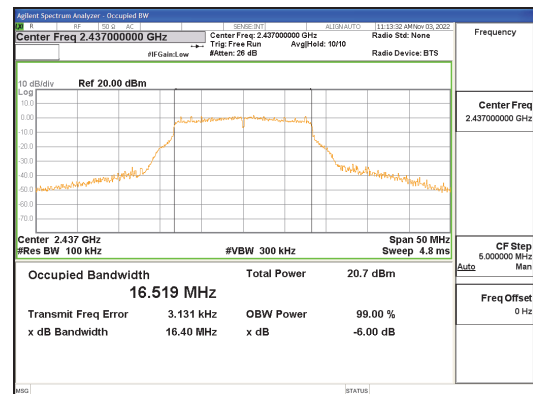
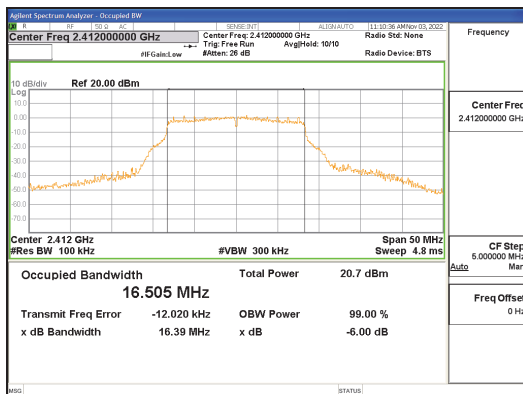
**ANT1, 802.11b**



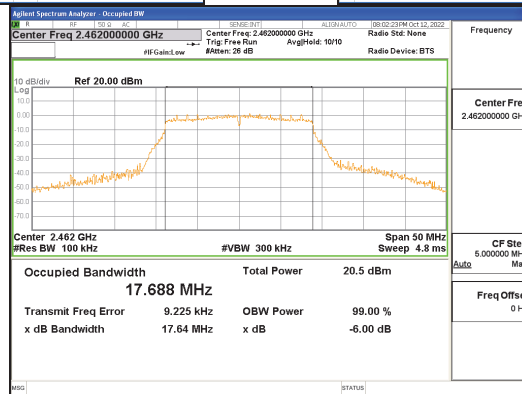
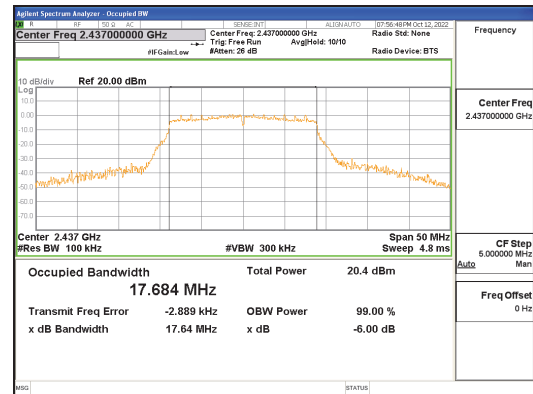
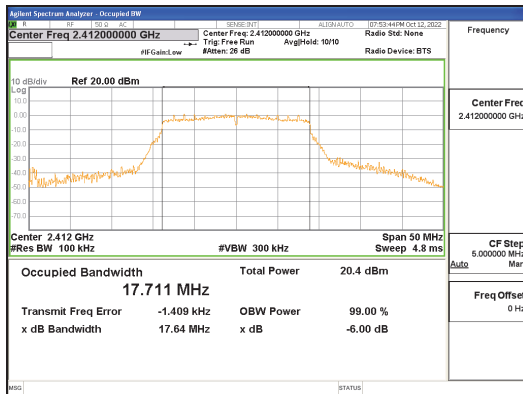
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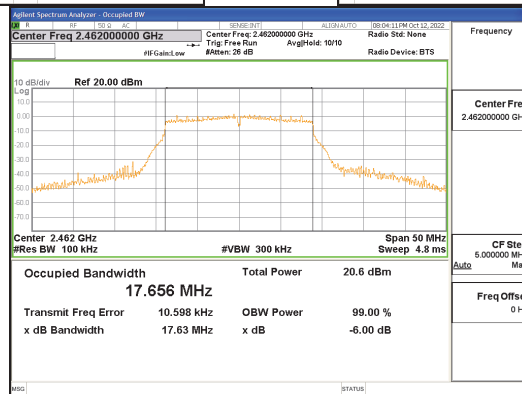
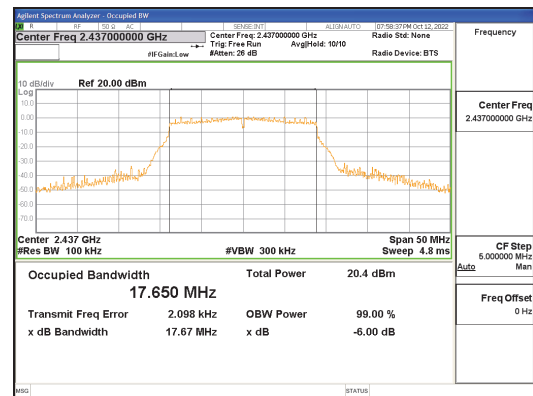
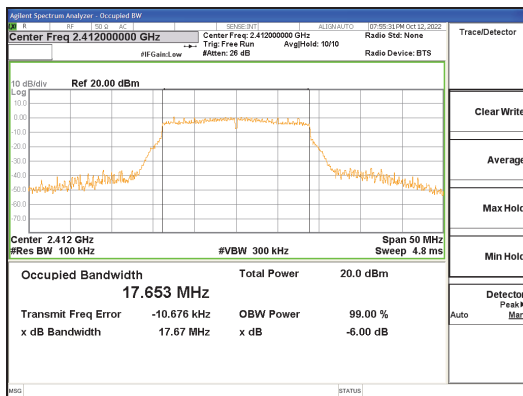
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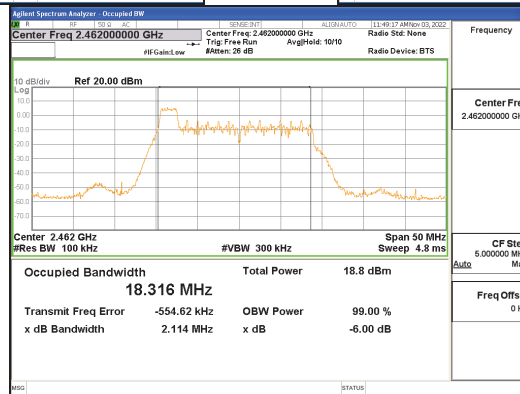
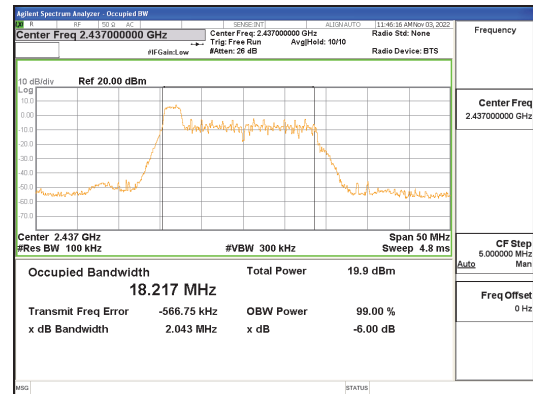
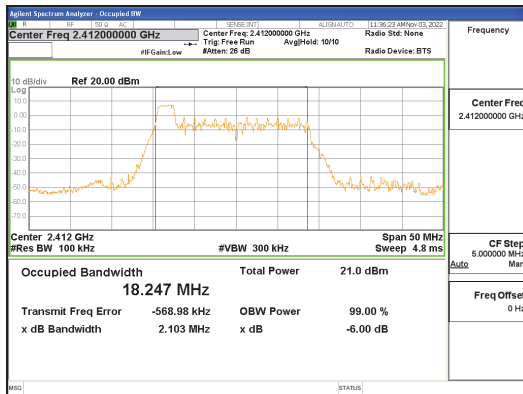
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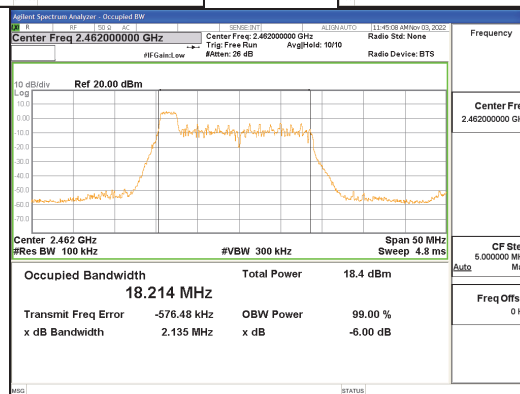
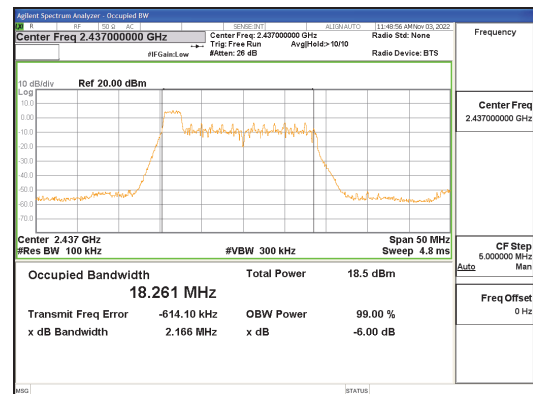
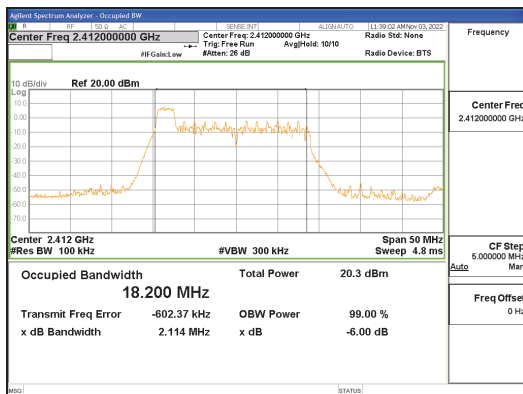
**ANT1, 802.11n\_HT20**



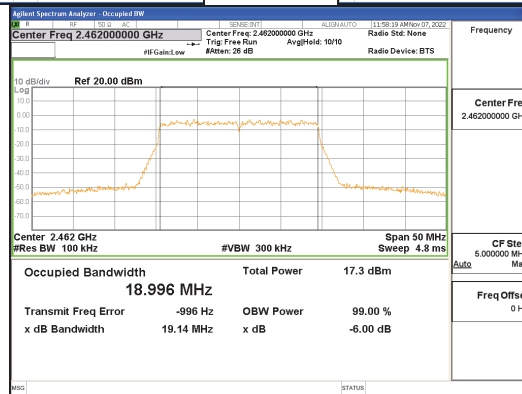
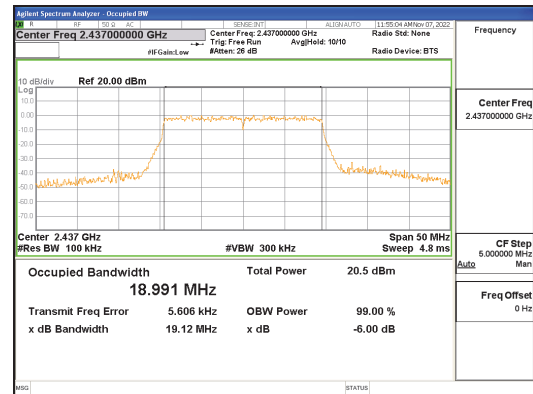
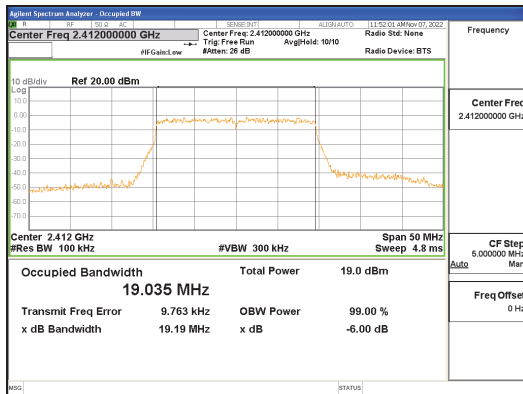
**ANT2, 802.11n\_HT20**



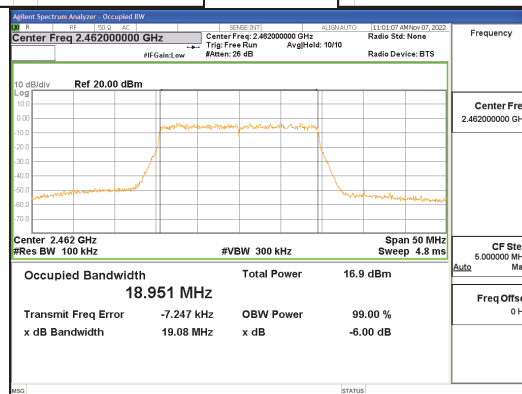
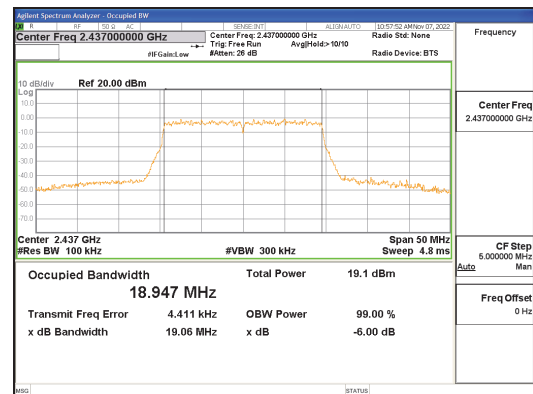
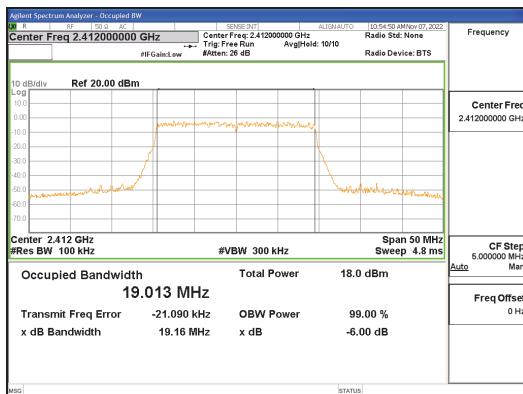
**ANT1, 802.11ax\_HE20\_26T**



**ANT2, 802.11ax\_HE20\_26T**



**ANT1, 802.11ax\_HE20\_242T**



**ANT2, 802.11ax\_HE20\_242T**

## 4.2 OUTPUT POWER

### Test Procedures

<802.11b/g/n\_HT20 mode>

KDB 558074 - Section 8.3.2.2 (Average Power)

ANSI C63.10-2013 - Section 11.9.2.2

KDB 662911 D01, D02 (Multiple Transmitter Output)

The transmitter output is connected to a spectrum analyzer and the analyzer's internal channel power integration function is used to integrate the power over a bandwidth greater than or equal to the 99% bandwidth.



### Test Settings:

Center frequency = the highest, middle and the lowest channels

a) span  $\geq 1.5 \times \text{OBW}$

b) RBW = 1 MHz

c) VBW  $\geq 3 \times \text{RBW}$

d) Sweep time = auto

e) Detector = RMS

f) average at least 100

g) Duty cycle factor =  $10\log(1/x)$

| Test mode    | Duty Cycle Factor |
|--------------|-------------------|
| 802.11b      | 0.00 dB           |
| 802.11g      | 0.21 dB           |
| 802.11n_HT20 | 0.21 dB           |

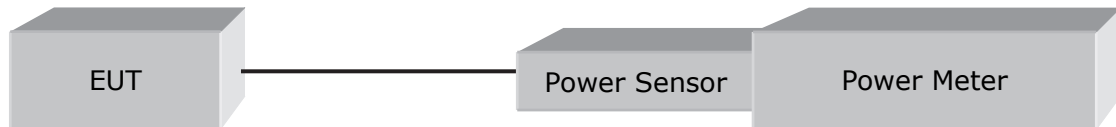
< 802.11ax\_HE20 mode>

KDB 558074 - Section 8.3.2.3

ANSI C63.10-2013 - Section 11.9.2.3

KDB 662911 D01, D02 (Multiple Transmitter Output)

The transmitter output is connected to a average power meter.



#### Test Settings :

Center frequency = the highest, middle and the lowest channels

a) Measure the average power of the transmitter.

b) Duty cycle factor =  $10\log(1/x)$

| Test mode          | Duty Cycle Factor |
|--------------------|-------------------|
| 802.11ax_HE20_26T  | 0.00 dB           |
| 802.11ax_HE20_52T  | 0.00 dB           |
| 802.11ax_HE20_106T | 0.00 dB           |
| 802.11ax_HE20_242T | 0.17 dB           |

#### **Limit**

| Operating Mode | Mode       | ANT Configuration | ANT Gain (dBi) | Limit (dBm) |
|----------------|------------|-------------------|----------------|-------------|
| SISO           | 802.11b/g  | ANT1              | 0.95           | 30.00       |
| SISO           | 802.11b/g  | ANT2              | 0.85           | 30.00       |
| MIMO (2Tx)     | 802.11n/ax | ANT1 + ANT2       | 3.91           | 30.00       |

## Test Data :

### ANT1

| Test Mode | Frequency (MHz) | Measured Output Power (dBm) | Duty cycle Factor (dB) | Result Output Power (dBm) | Limit (dBm) | Margin (dB) |
|-----------|-----------------|-----------------------------|------------------------|---------------------------|-------------|-------------|
| 802.11b   | 2 412           | 19.85                       | 0.00                   | 19.85                     | 30.00       | 10.15       |
|           | 2 437           | 19.92                       | 0.00                   | 19.92                     | 30.00       | 10.08       |
|           | 2 462           | 20.56                       | 0.00                   | 20.56                     | 30.00       | 9.44        |
| 802.11g   | 2 412           | 15.45                       | 0.21                   | 15.66                     | 30.00       | 14.34       |
|           | 2 437           | 15.17                       | 0.21                   | 15.38                     | 30.00       | 14.62       |
|           | 2 462           | 15.29                       | 0.21                   | 15.50                     | 30.00       | 14.50       |

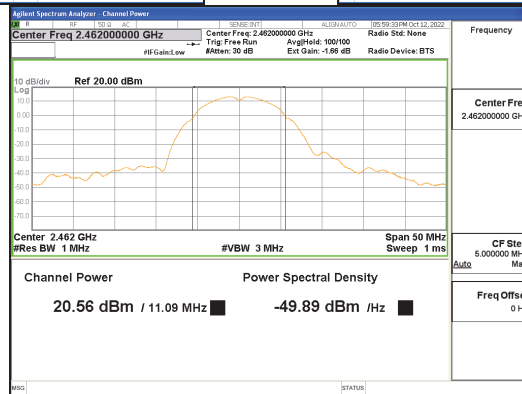
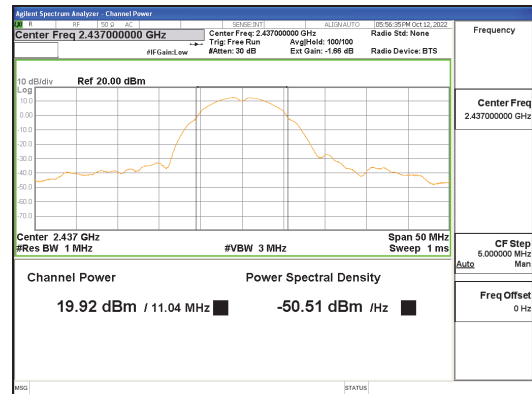
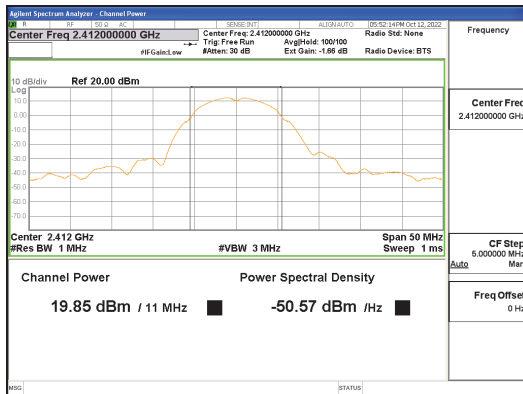
### ANT2

| Test Mode | Frequency (MHz) | Measured Output Power (dBm) | Duty cycle Factor (dB) | Result Output Power (dBm) | Limit (dBm) | Margin (dB) |
|-----------|-----------------|-----------------------------|------------------------|---------------------------|-------------|-------------|
| 802.11b   | 2 412           | 19.42                       | 0.00                   | 19.42                     | 30.00       | 10.58       |
|           | 2 437           | 19.60                       | 0.00                   | 19.60                     | 30.00       | 10.40       |
|           | 2 462           | 19.98                       | 0.00                   | 19.98                     | 30.00       | 10.02       |
| 802.11g   | 2 412           | 14.88                       | 0.21                   | 15.09                     | 30.00       | 14.91       |
|           | 2 437           | 14.75                       | 0.21                   | 14.96                     | 30.00       | 15.04       |
|           | 2 462           | 14.86                       | 0.21                   | 15.07                     | 30.00       | 14.93       |

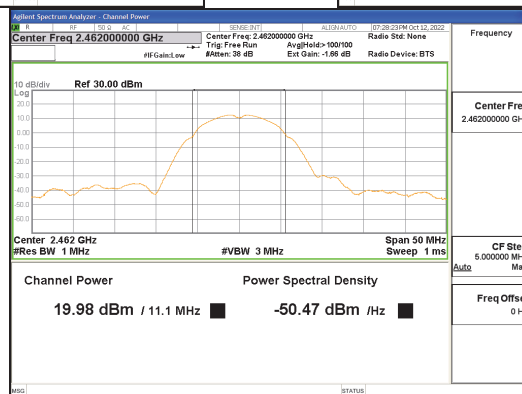
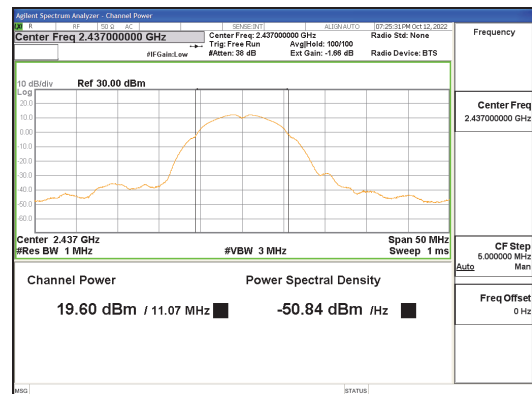
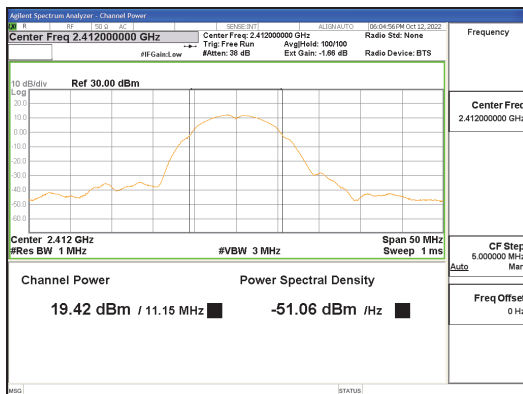
### ANT1 + ANT2 (MIMO)

| Test Mode                  | Frequency (MHz) | Measured Output Power (dBm) | Duty cycle Factor (dB) | Result Output Power (dBm) | Limit (dBm) | Margin (dB) |
|----------------------------|-----------------|-----------------------------|------------------------|---------------------------|-------------|-------------|
| 802.11n<br>_HT20           | 2 412           | 17.25                       | 0.21                   | 17.46                     | 30.00       | 12.54       |
|                            | 2 437           | 17.26                       | 0.21                   | 17.47                     | 30.00       | 12.53       |
|                            | 2 462           | 17.45                       | 0.21                   | 17.66                     | 30.00       | 12.34       |
| 802.11ax<br>_HE20<br>_26T  | 2 412           | 15.72                       | 0.00                   | 15.72                     | 30.00       | 14.28       |
|                            | 2 437           | 14.87                       | 0.00                   | 14.87                     | 30.00       | 15.13       |
|                            | 2 462           | 14.09                       | 0.00                   | 14.09                     | 30.00       | 15.91       |
| 802.11ax<br>_HE20<br>_52T  | 2 412           | 15.92                       | 0.00                   | 15.92                     | 30.00       | 14.08       |
|                            | 2 437           | 15.32                       | 0.00                   | 15.32                     | 30.00       | 14.68       |
|                            | 2 462           | 14.64                       | 0.00                   | 14.64                     | 30.00       | 15.36       |
| 802.11ax<br>_HE20<br>_106T | 2 412           | 15.90                       | 0.00                   | 15.90                     | 30.00       | 14.10       |
|                            | 2 437           | 15.16                       | 0.00                   | 15.16                     | 30.00       | 14.84       |
|                            | 2 462           | 14.49                       | 0.00                   | 14.49                     | 30.00       | 15.51       |
| 802.11ax<br>_HE20<br>_242T | 2 412           | 15.75                       | 0.17                   | 15.92                     | 30.00       | 14.08       |
|                            | 2 437           | 14.92                       | 0.17                   | 15.09                     | 30.00       | 14.91       |
|                            | 2 462           | 14.24                       | 0.17                   | 14.41                     | 30.00       | 15.59       |

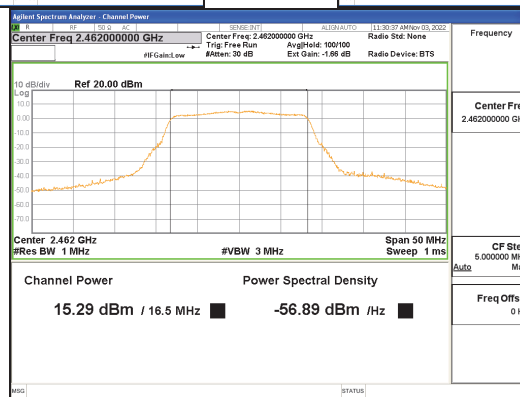
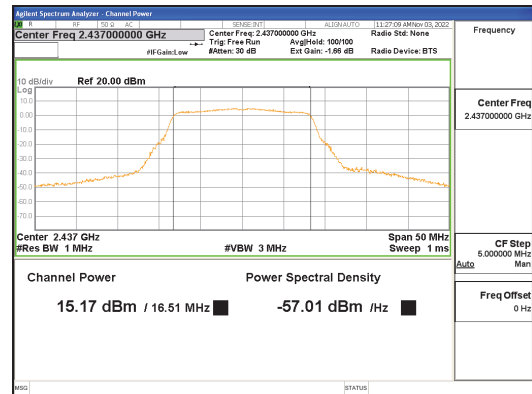
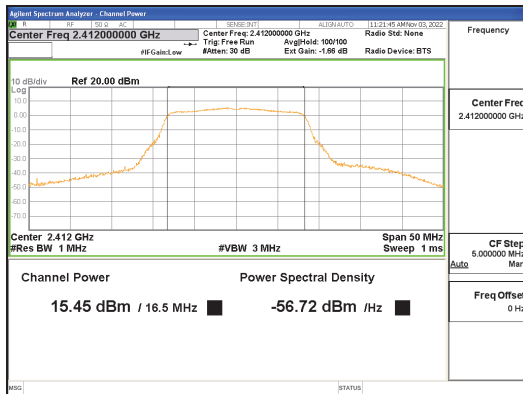
See next pages for actual measured spectrum plots.



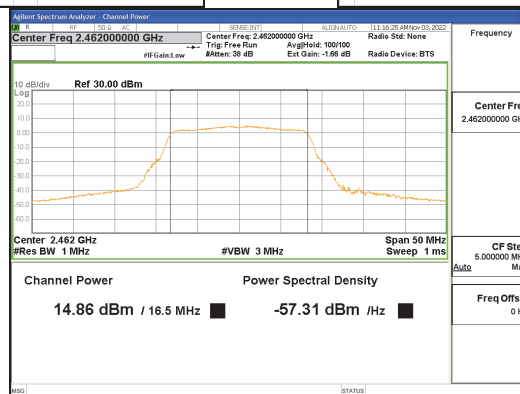
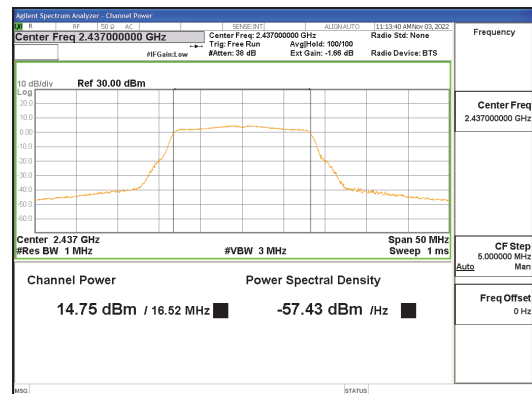
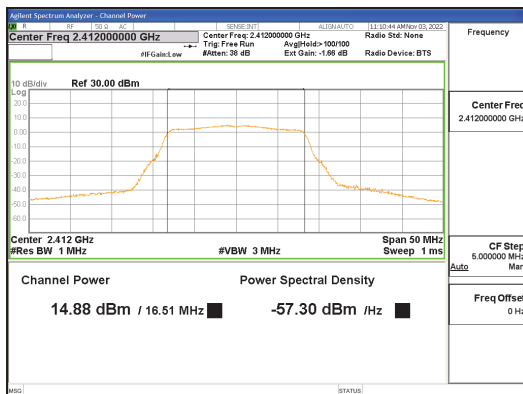
**ANT1, 802.11b**



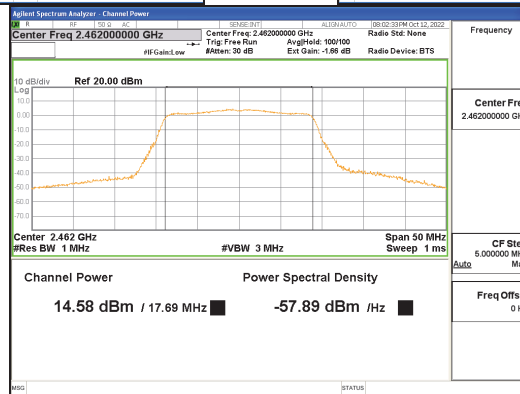
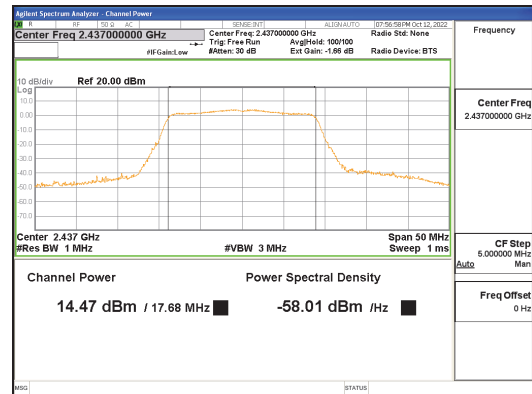
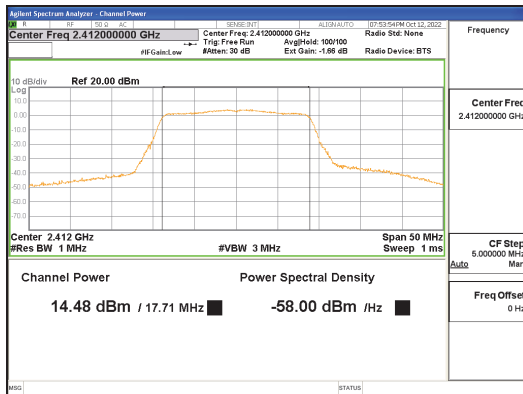
**ANT2, 802.11b**



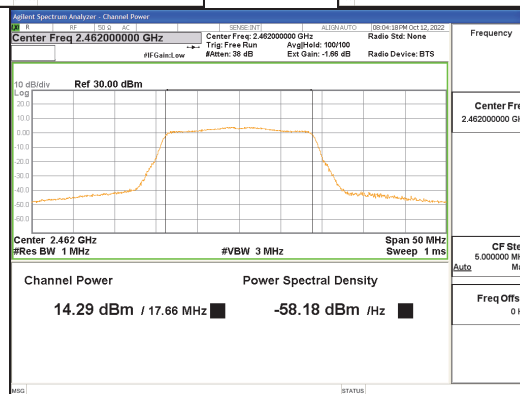
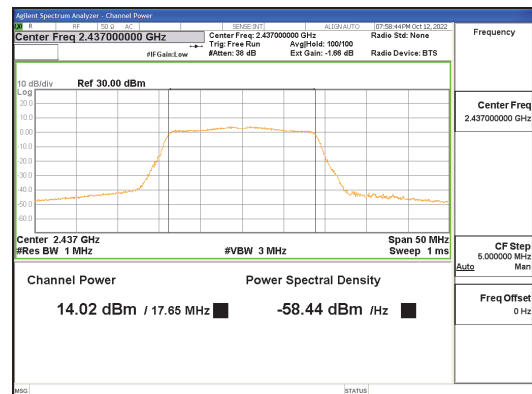
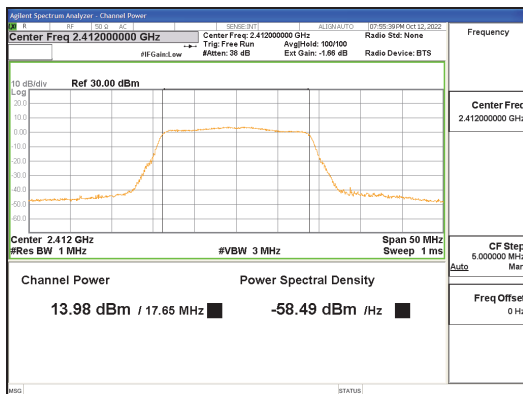
**ANT1, 802.11g**



**ANT2, 802.11g**



**ANT1, 802.11n\_HT20**



**ANT2, 802.11n\_HT20**

## 4.3 Transmitter Power Spectral Density

### Test Procedures

KDB 558074 - Section 8.4  
ANSI C63.10-2013 - Section 11.10.2  
KDB 662911 D01, D02 (Multiple Transmitter Output)

This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance.

#### Test Settings:

Center frequency = the highest, middle and the lowest channels

- a) RBW :  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$
- b) VBW  $\geq 3 \times \text{RBW}$
- c) span  $\geq 1.5 \times \text{DTS bandwidth}$
- d) Sweep time = auto couple
- e) Detector = peak
- f) Trace mode = max hold
- g) Allow trace to fully stabilize
- h) Use the peak marker function to determine the maximum amplitude level within the RBW.

### Limit

| Operating Mode | Mode       | ANT Configuration | ANT Gain (dBi) | Limit (dBm) |
|----------------|------------|-------------------|----------------|-------------|
| SISO           | 802.11b/g  | ANT1              | 0.95           | 8.00        |
| SISO           | 802.11b/g  | ANT2              | 0.85           | 8.00        |
| MIMO (2Tx)     | 802.11n/ax | ANT1 + ANT2       | 3.91           | 8.00        |

## Test Data

### ANT1

| Test Mode | Frequency (MHz) | Measured Power Density (dBm) | Limit (dBm) | Margin(dB) |
|-----------|-----------------|------------------------------|-------------|------------|
| 802.11b   | 2 412           | -1.23                        | 8.00        | 9.23       |
|           | 2 437           | 0.39                         | 8.00        | 7.61       |
|           | 2 462           | -0.91                        | 8.00        | 8.91       |
| 802.11g   | 2 412           | -8.70                        | 8.00        | 16.70      |
|           | 2 437           | -7.92                        | 8.00        | 15.92      |
|           | 2 462           | -8.44                        | 8.00        | 16.44      |

### ANT2

| Test Mode | Frequency (MHz) | Measured Power Density (dBm) | Limit (dBm) | Margin(dB) |
|-----------|-----------------|------------------------------|-------------|------------|
| 802.11b   | 2 412           | -2.04                        | 8.00        | 10.04      |
|           | 2 437           | -1.95                        | 8.00        | 9.95       |
|           | 2 462           | -2.07                        | 8.00        | 10.07      |
| 802.11g   | 2 412           | -9.27                        | 8.00        | 17.27      |
|           | 2 437           | -8.16                        | 8.00        | 16.16      |
|           | 2 462           | -8.64                        | 8.00        | 16.64      |

### ANT1 + ANT2 (MIMO)

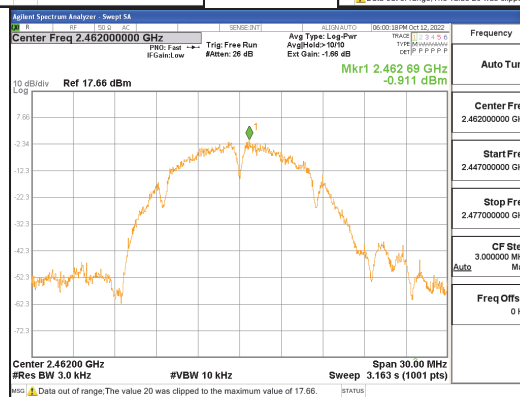
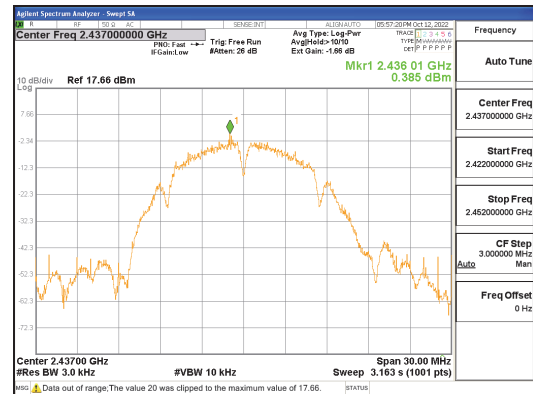
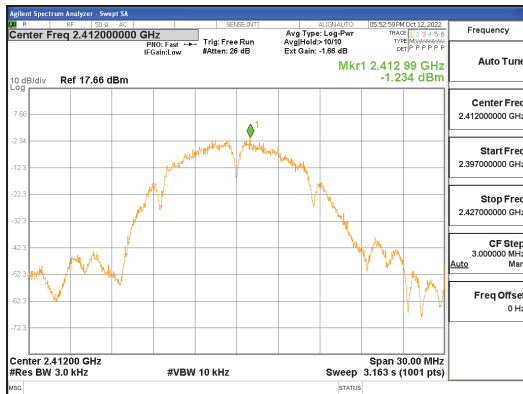
| Test Mode                  | Frequency (MHz) | Measured Power Density (dBm) | Limit (dBm) | Margin(dB) |
|----------------------------|-----------------|------------------------------|-------------|------------|
| 802.11n<br>_HT20           | 2 412           | -6.48                        | 8.00        | 14.48      |
|                            | 2 437           | -6.27                        | 8.00        | 14.27      |
|                            | 2 462           | -5.94                        | 8.00        | 13.94      |
| 802.11ax<br>_HE20<br>_26T  | 2 412           | -0.66                        | 8.00        | 8.66       |
|                            | 2 437           | -2.96                        | 8.00        | 10.96      |
|                            | 2 462           | -3.35                        | 8.00        | 11.35      |
| 802.11ax<br>_HE20<br>_242T | 2 412           | -10.94                       | 8.00        | 18.94      |
|                            | 2 437           | -9.80                        | 8.00        | 17.80      |
|                            | 2 462           | -11.90                       | 8.00        | 19.90      |

See next pages for actual measured spectrum plots.

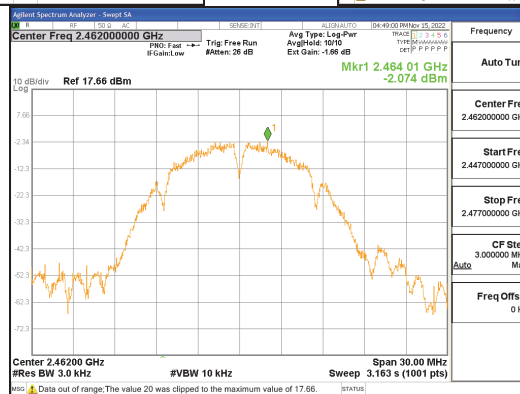
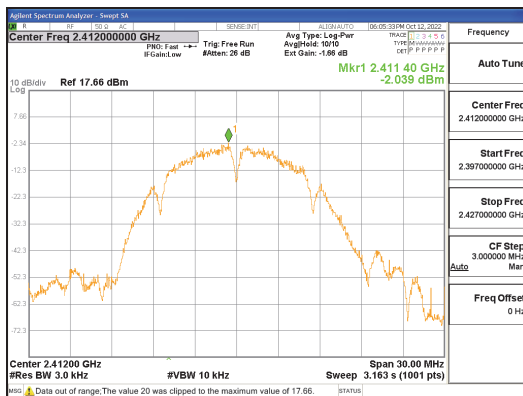


**CTK Co., Ltd.**  
(Ho-dong), 113, Yejik-ro, Cheoin-gu,  
Yongin-si, Gyeonggi-do, Korea  
Tel: +82-31-339-9970  
Fax: +82-31-624-9501

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**ANT1, 802.11b**

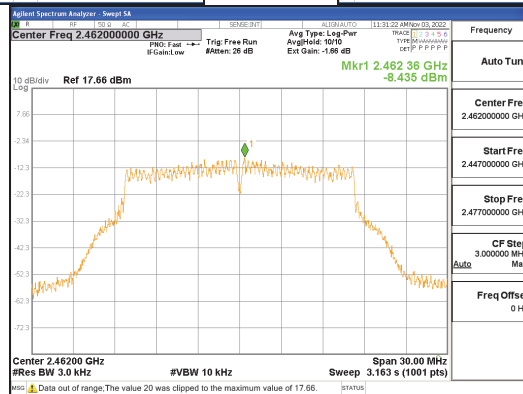
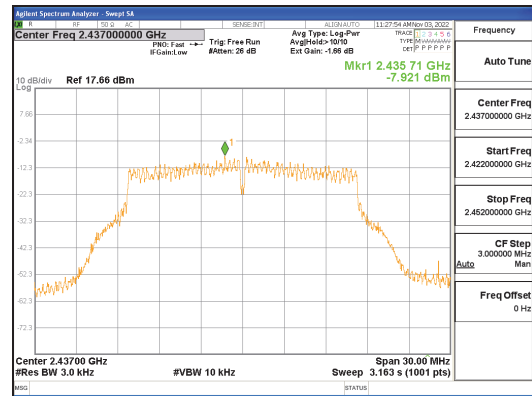
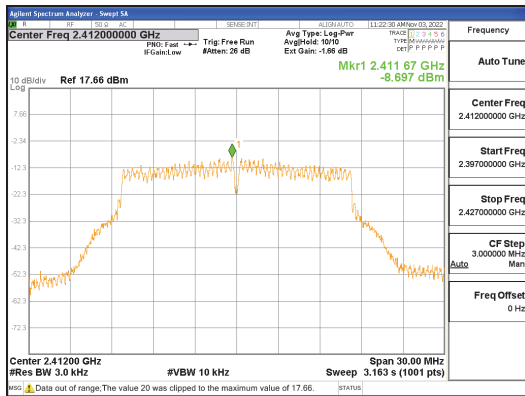


**ANT2, 802.11b**

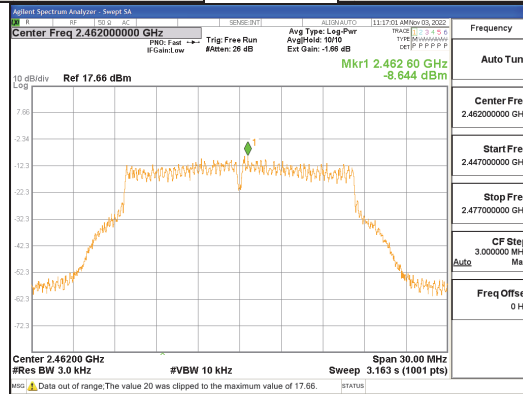
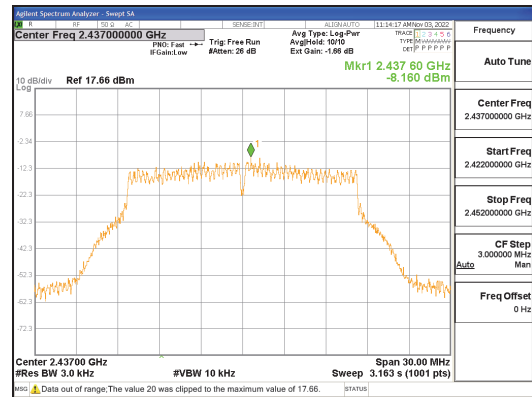
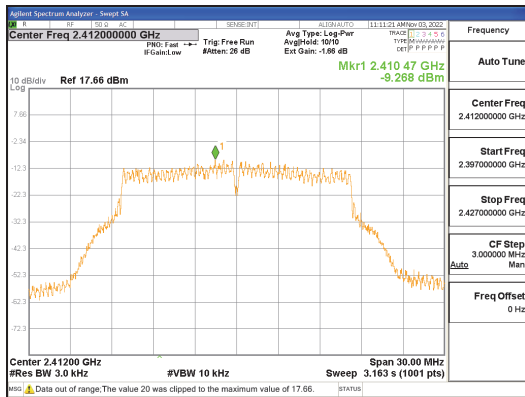


**CTK Co., Ltd.**  
(Ho-dong), 113, Yejik-ro, Cheoin-gu,  
Yongin-si, Gyeonggi-do, Korea  
Tel: +82-31-339-9970  
Fax: +82-31-624-9501

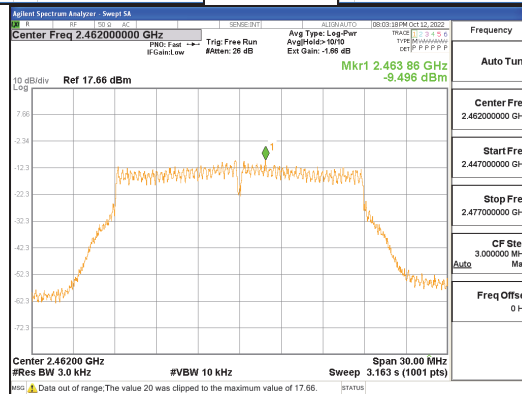
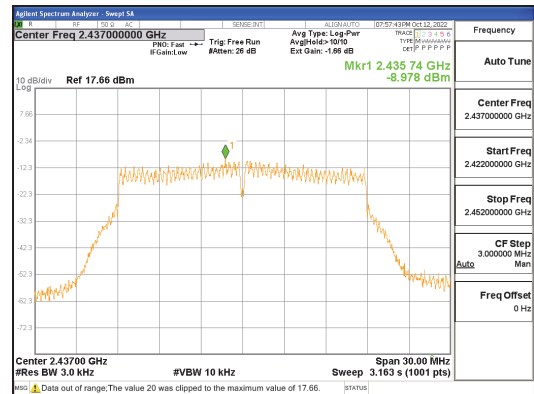
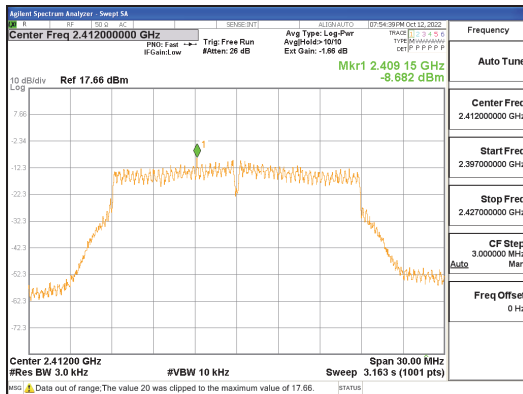
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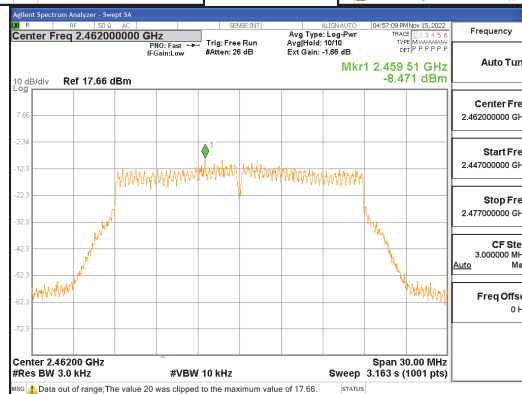
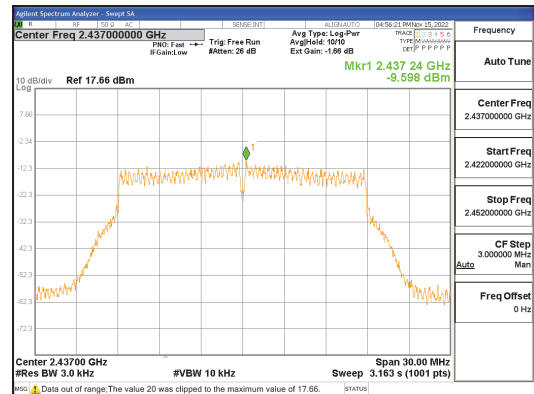
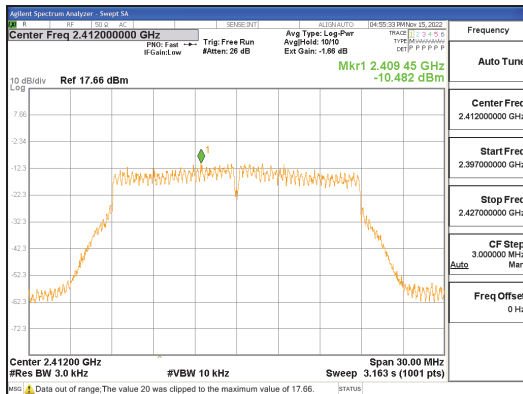
ANT1, 802.11g



ANT2, 802.11g



**ANT1, 802.11n\_HT20**

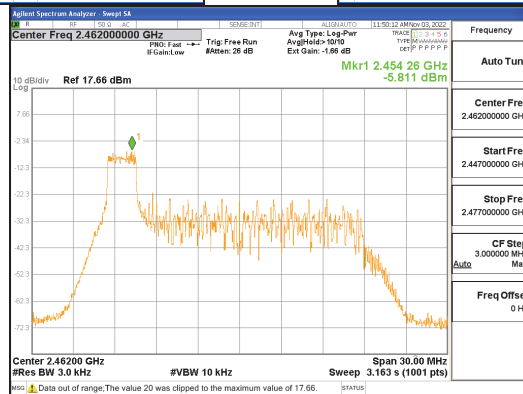
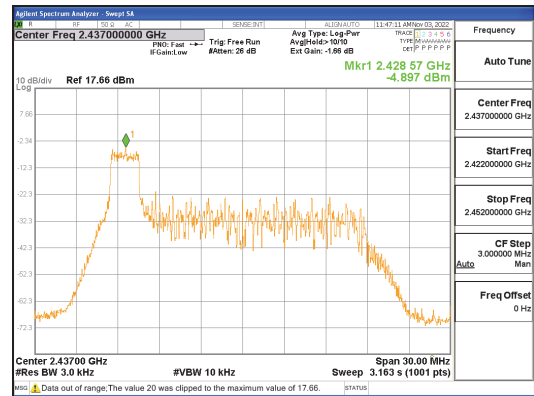
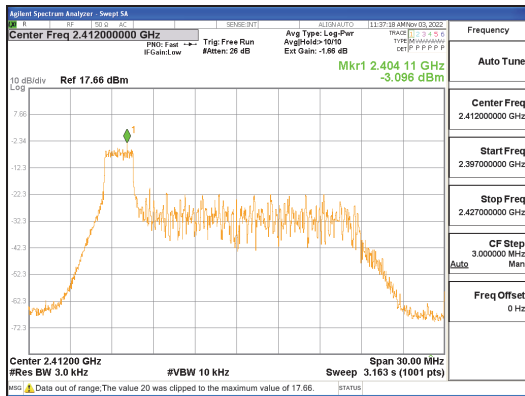


**ANT2, 802.11n\_HT20**

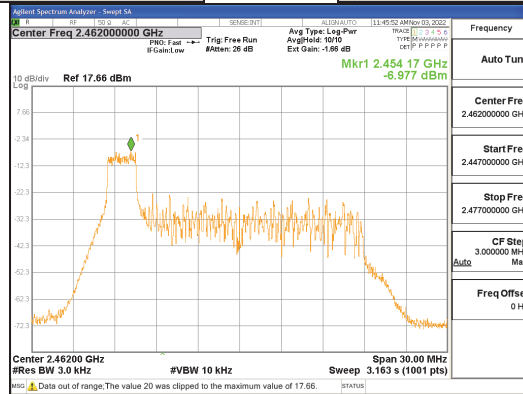
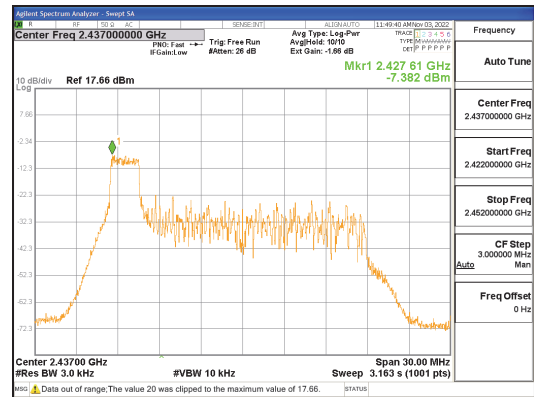
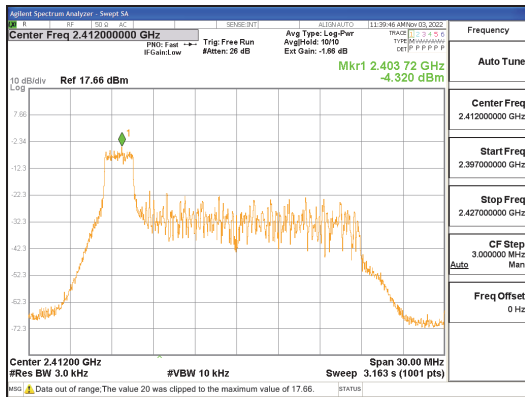


**CTK Co., Ltd.**  
(Ho-dong), 113, Yejik-ro, Cheoin-gu,  
Yongin-si, Gyeonggi-do, Korea  
Tel: +82-31-339-9970  
Fax: +82-31-624-9501

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**ANT1, 802.11ax\_HE20\_26T**

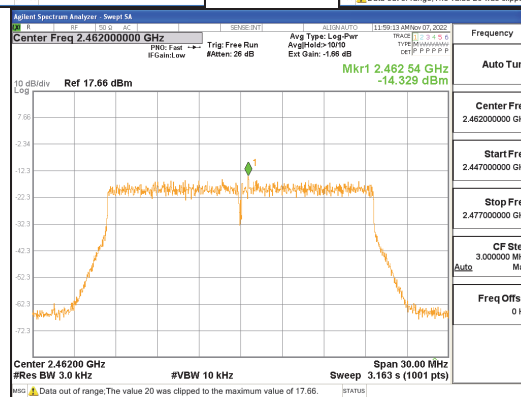
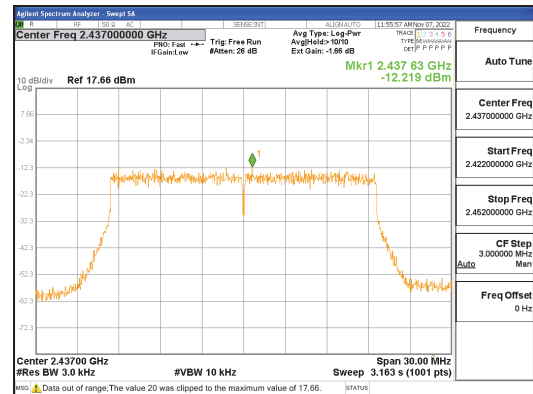
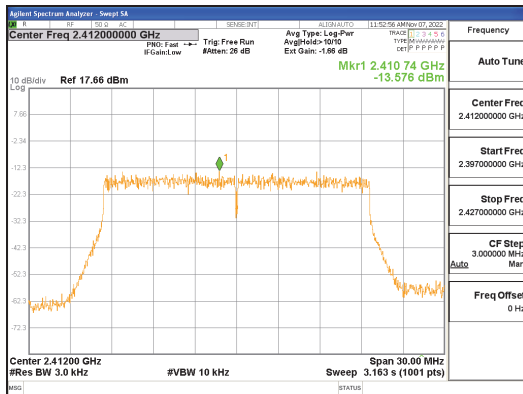


**ANT2, 802.11ax\_HE20\_26T**

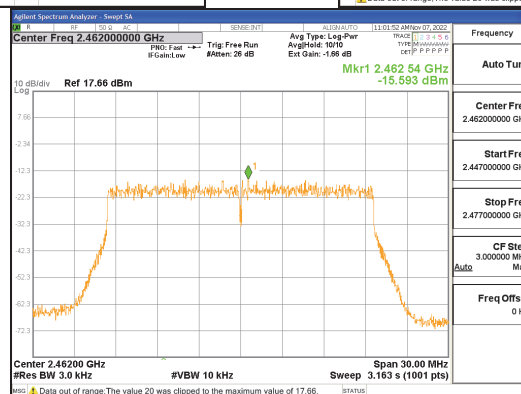
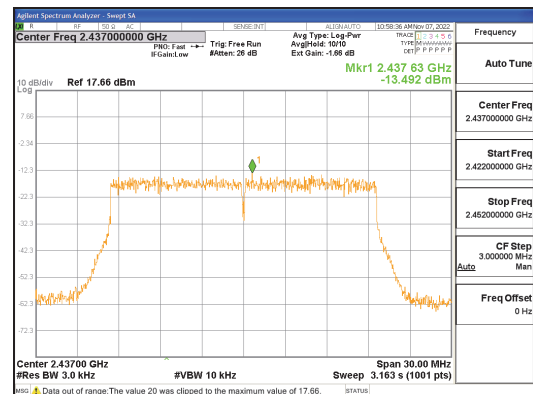
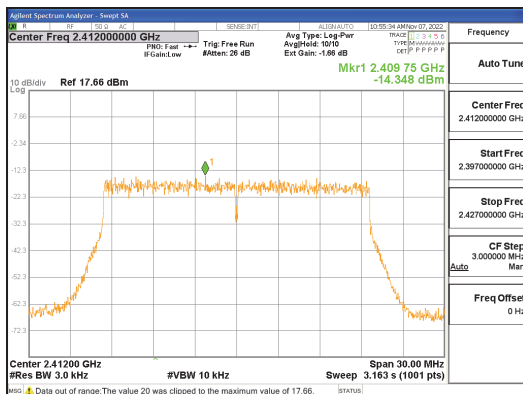


**CTK Co., Ltd.**  
(Ho-dong), 113, Yejik-ro, Cheoin-gu,  
Yongin-si, Gyeonggi-do, Korea  
Tel: +82-31-339-9970  
Fax: +82-31-624-9501

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ANT1, 802.11ax\_HE20\_242T



ANT2, 802.11ax\_HE20\_242T

## 4.4 Conducted Spurious emission

### Test Procedures

KDB 558074 - Section 8.5

ANSI C63.10-2013 - Section 11.11.3

The bandwidth at 20dB down from the highest inband spectral density is measured with a spectrum analyzer connected to the antenna terminal, while EUT is operating in transmission mode at the appropriate frequencies.

After the trace being stable, Use the marker-to-peak function to measure 20 dB down both sides of the intentional emission.

### Test Settings:

Center frequency = the highest, middle and the lowest channels

a) RBW = 100 kHz

b) VBW  $\geq 3 \times$  RBW

c) Detector = peak

d) Sweep time = auto couple

e) Trace mode= max hold

f) Allow trace to fully stabilize

g) Use the peak marker function to determine the maximum amplitude level.

### **Limit :**

---

Emission level < 30 dBc

---

### **Test Data: Complies**

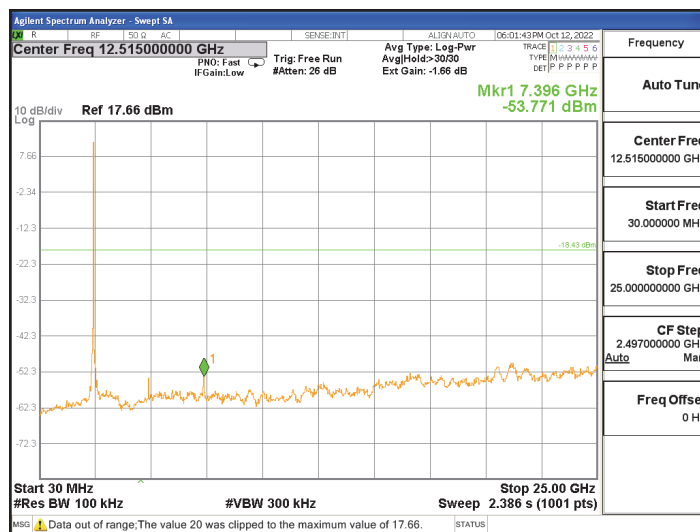
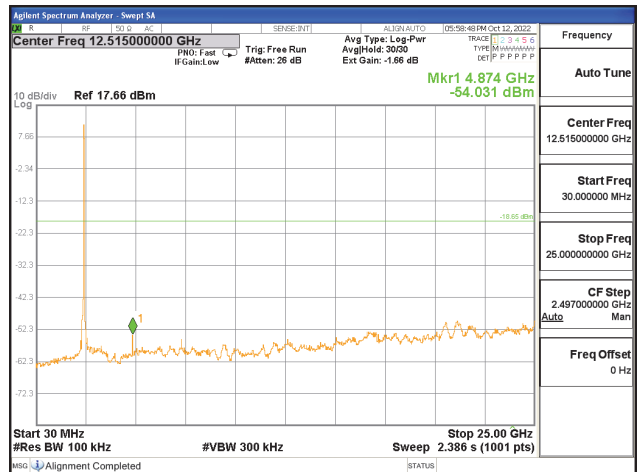
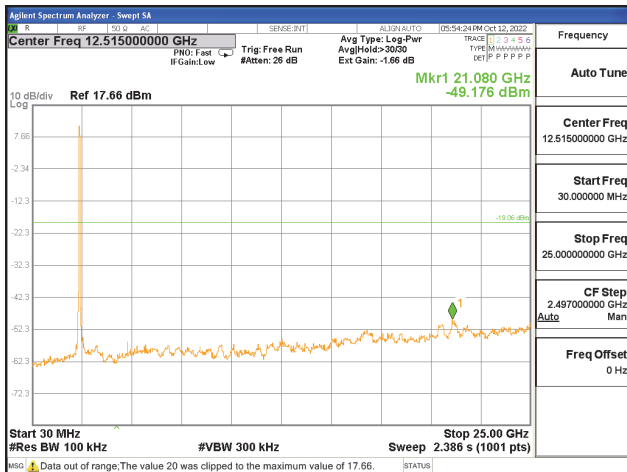
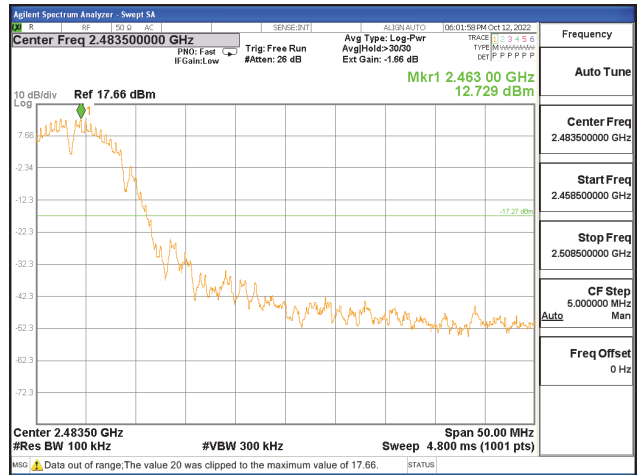
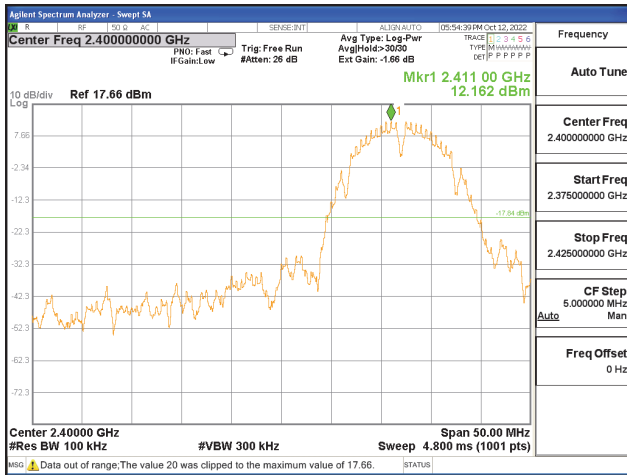
- All conducted emission in any 100 kHz bandwidth outside of the spread spectrum band was at least 30dB lower than the highest inband spectral density. Therefore the applying equipment meets the requirement.

See next pages for actual measured spectrum plots.



**CTK Co., Ltd.**  
(Ho-dong), 113, Yejik-ro, Cheoin-gu,  
Yongin-si, Gyeonggi-do, Korea  
Tel: +82-31-339-9970  
Fax: +82-31-624-9501

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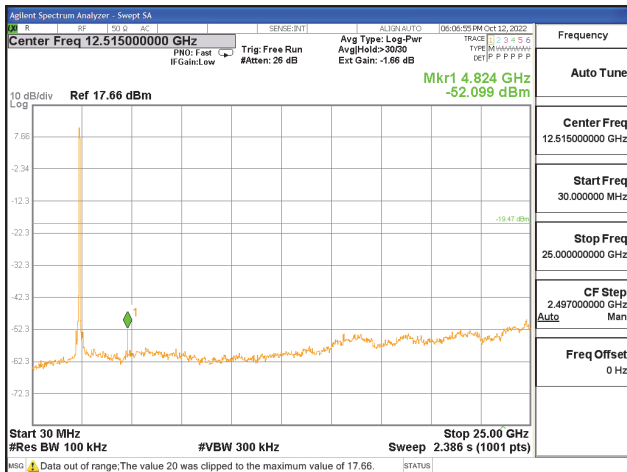
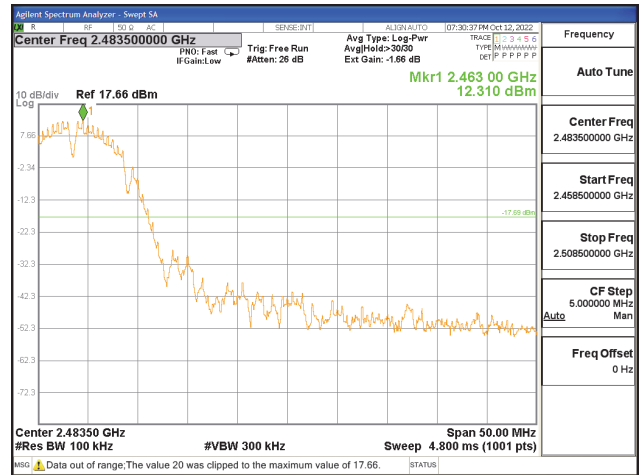
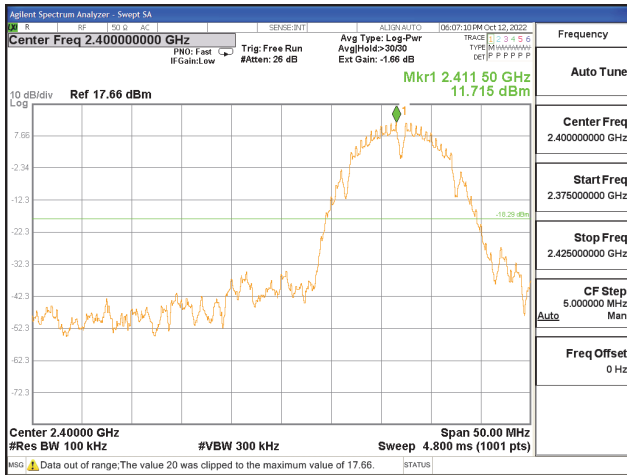


**ANT1, 802.11b**



**CTK Co., Ltd.**  
(Ho-dong), 113, Yejik-ro, Cheoin-gu,  
Yongin-si, Gyeonggi-do, Korea  
Tel: +82-31-339-9970  
Fax: +82-31-624-9501

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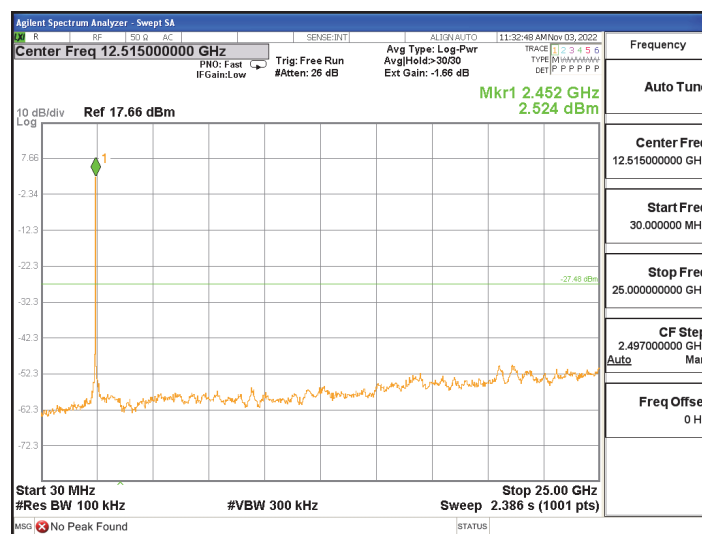
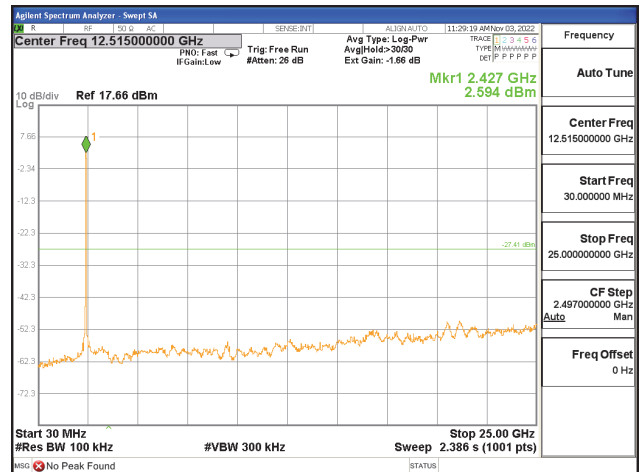
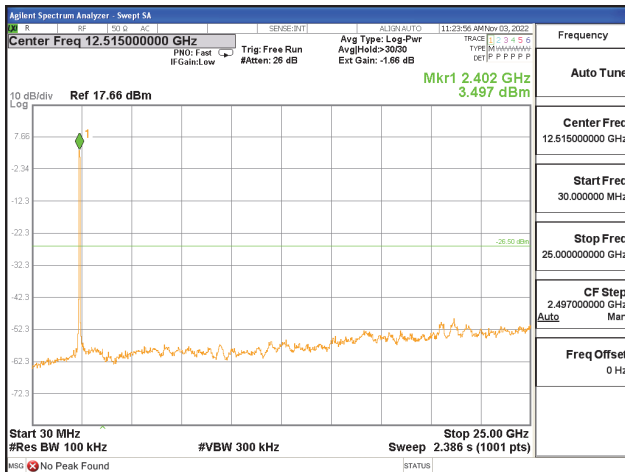
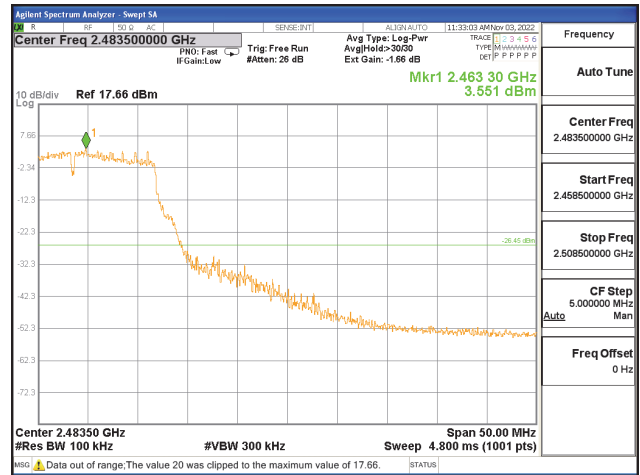
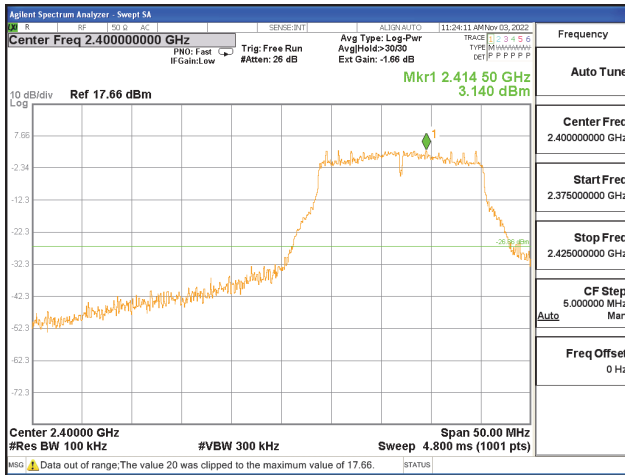


**ANT2, 802.11b**



**CTK Co., Ltd.**  
(Ho-dong), 113, Yejik-ro, Cheoin-gu,  
Yongin-si, Gyeonggi-do, Korea  
Tel: +82-31-339-9970  
Fax: +82-31-624-9501

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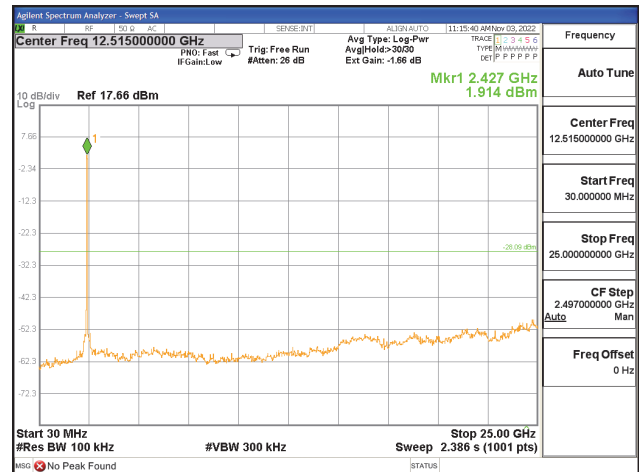
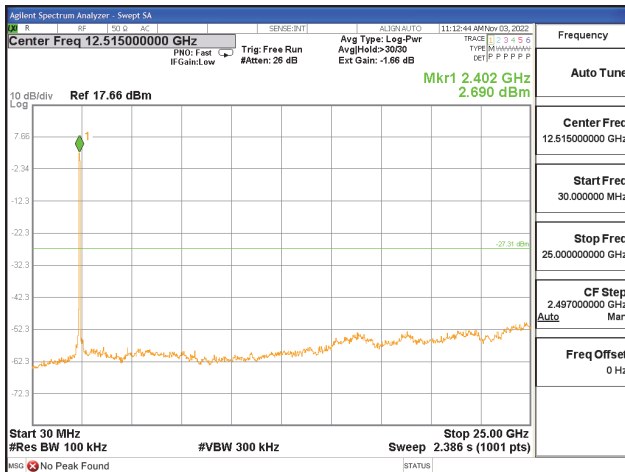
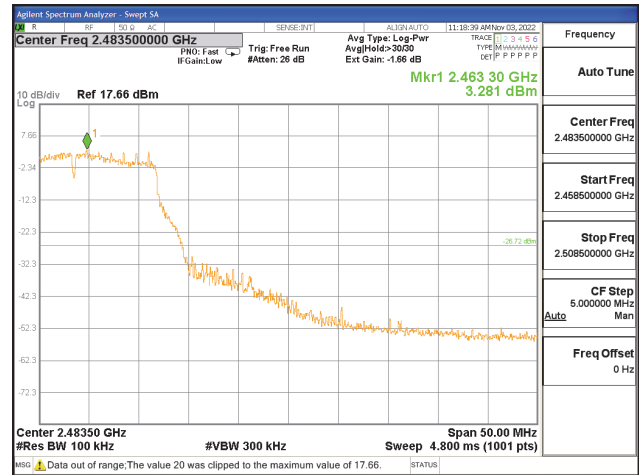
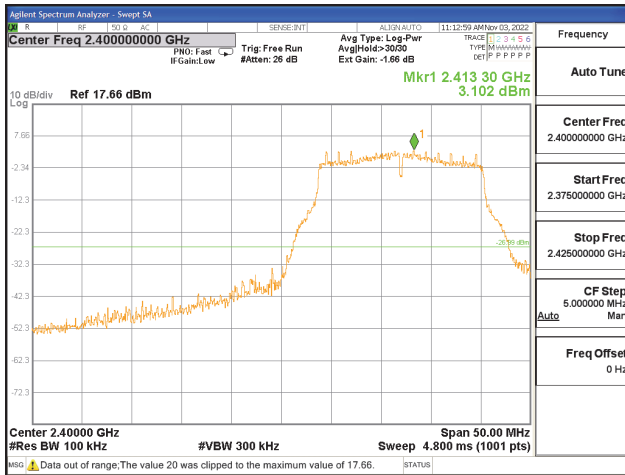


**ANT1, 802.11g**



**CTK Co., Ltd.**  
(Ho-dong), 113, Yejik-ro, Cheoin-gu,  
Yongin-si, Gyeonggi-do, Korea  
Tel: +82-31-339-9970  
Fax: +82-31-624-9501

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**ANT2, 802.11g**