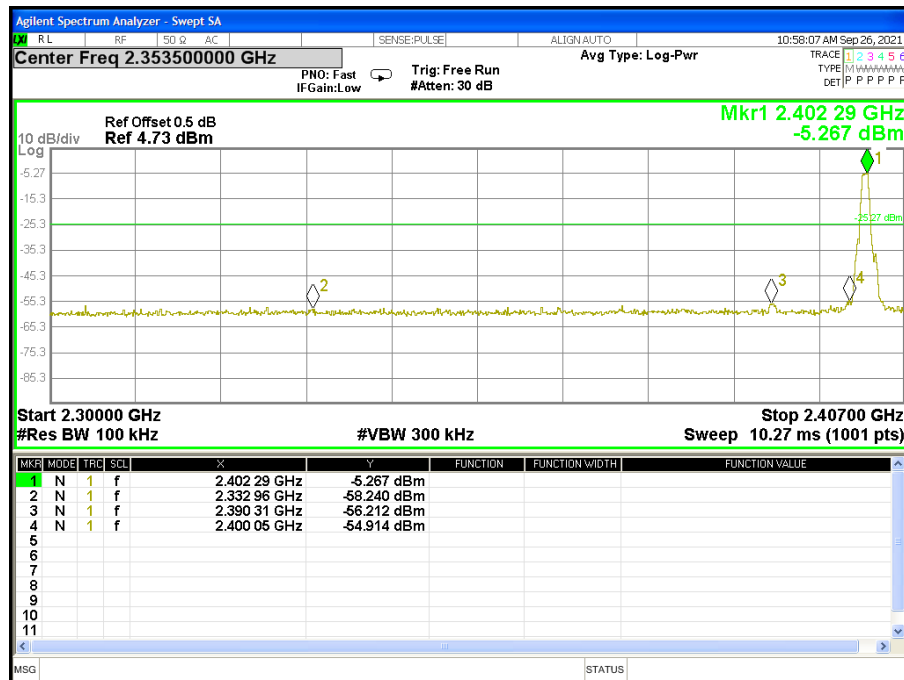


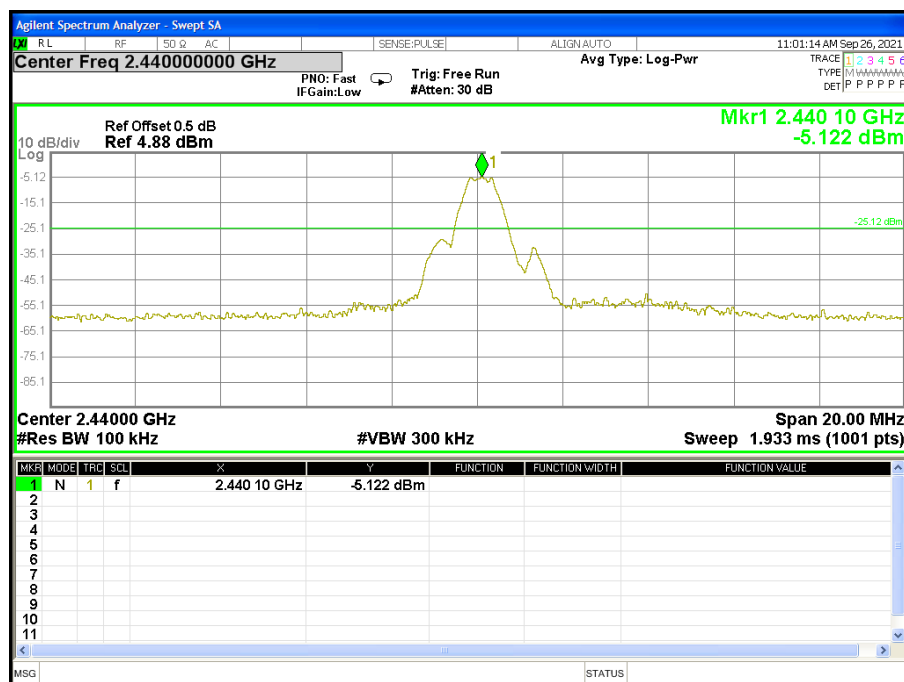


For Band edge(it's also the reference level for conducted spurious emission)

00 CH

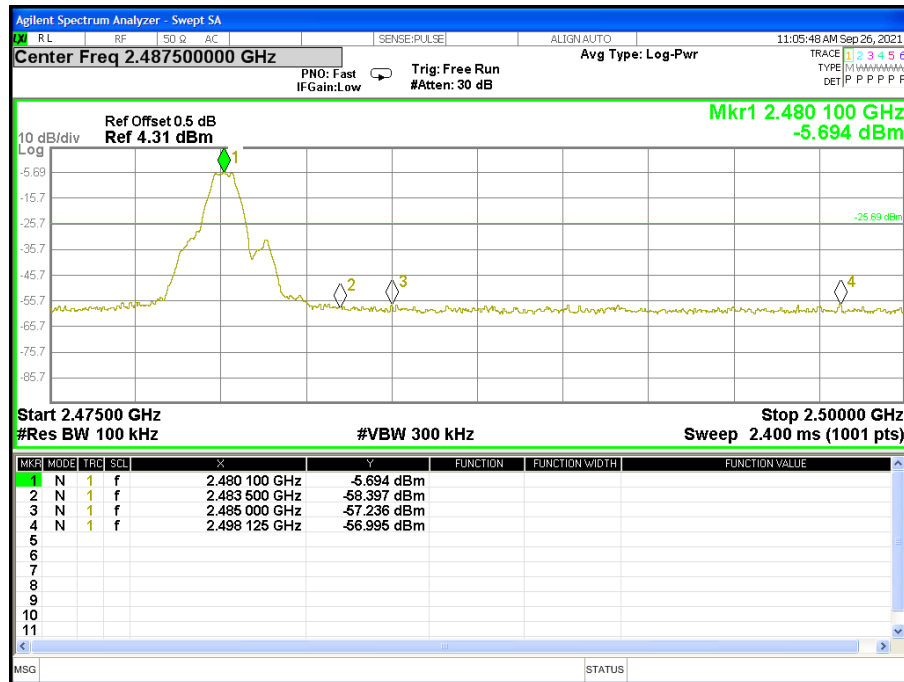


19 CH





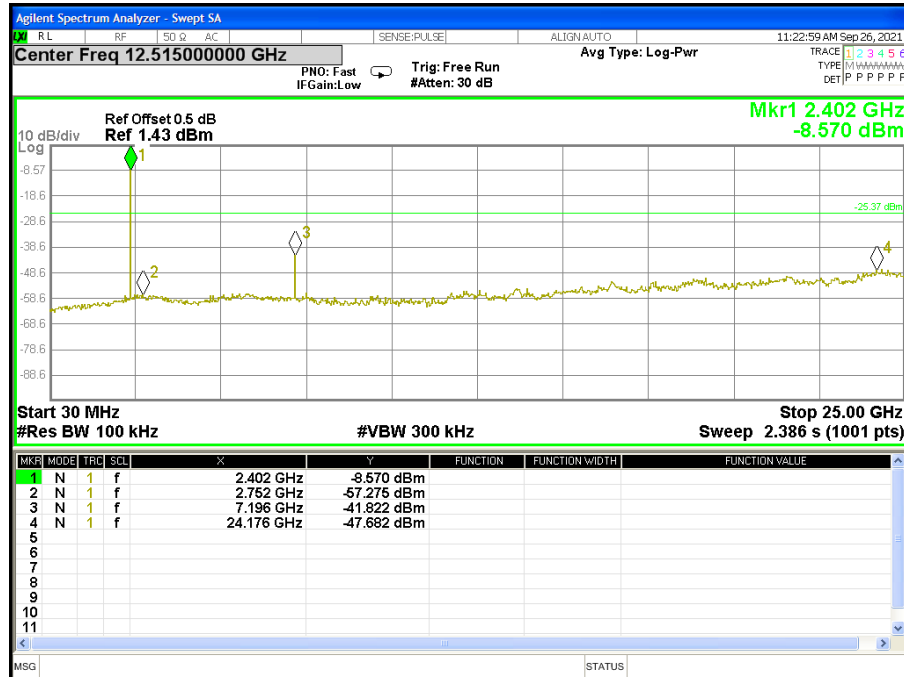
## 39 CH



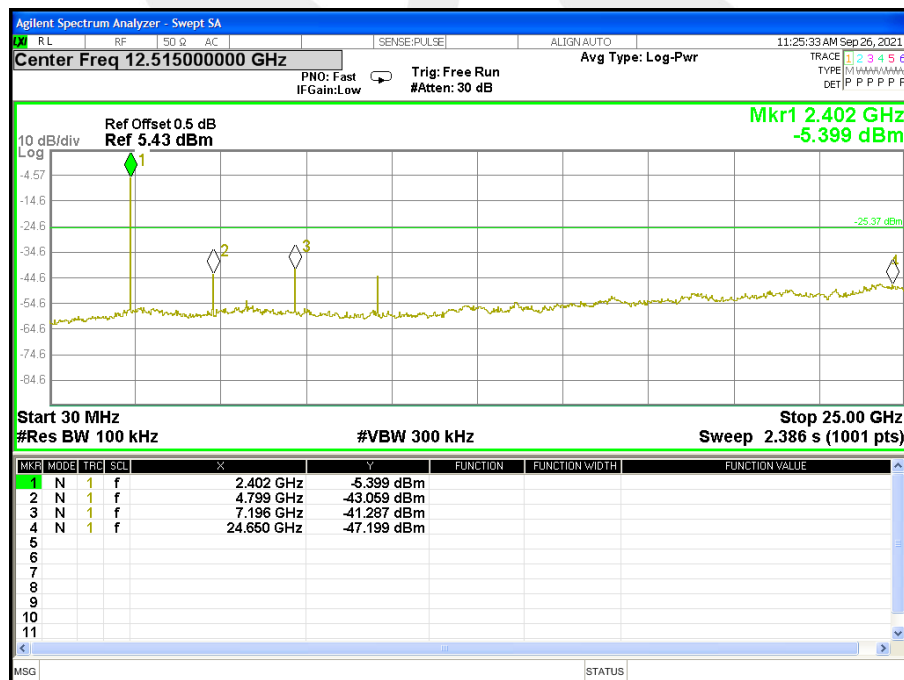


2M PHY

00 CH

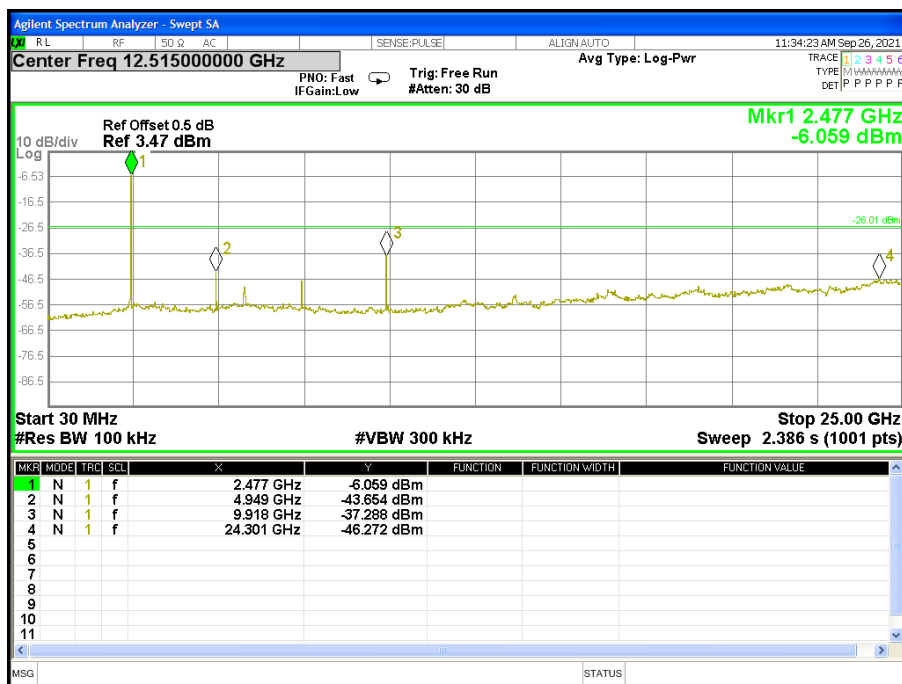


19 CH





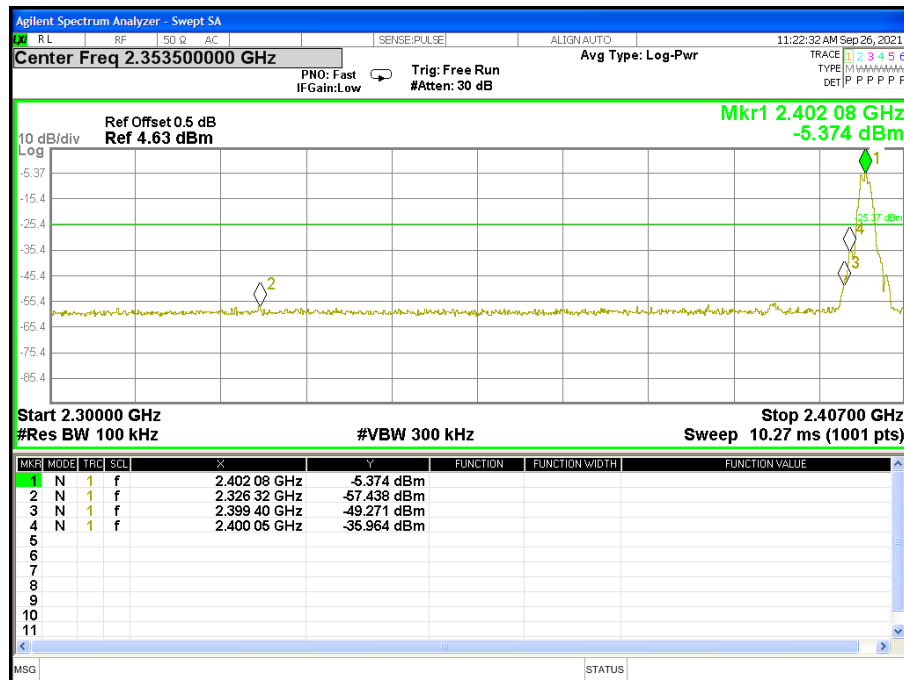
39 CH



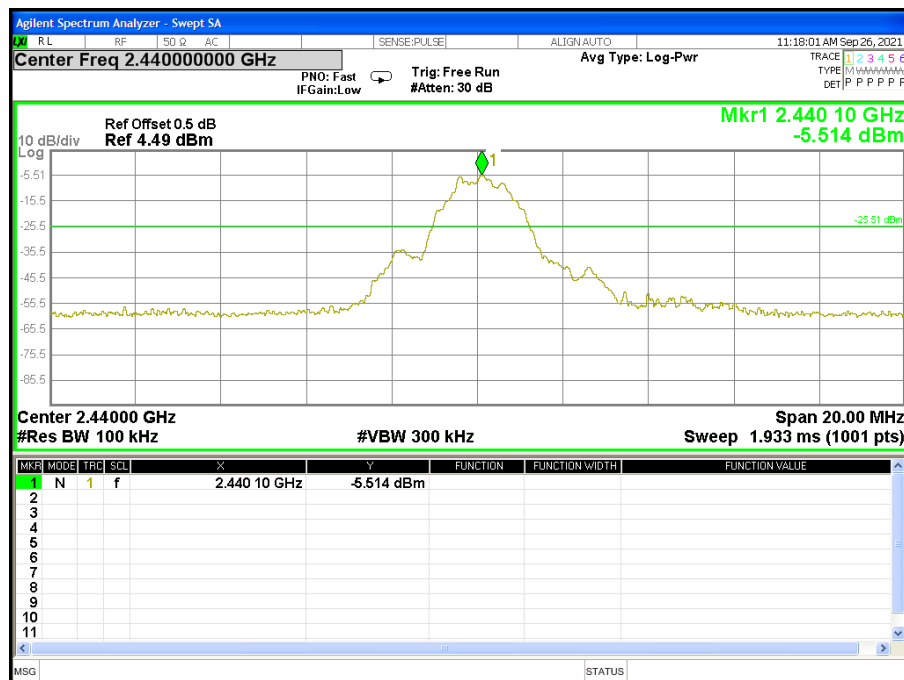


For Band edge(it's also the reference level for conducted spurious emission)

### 00 CH

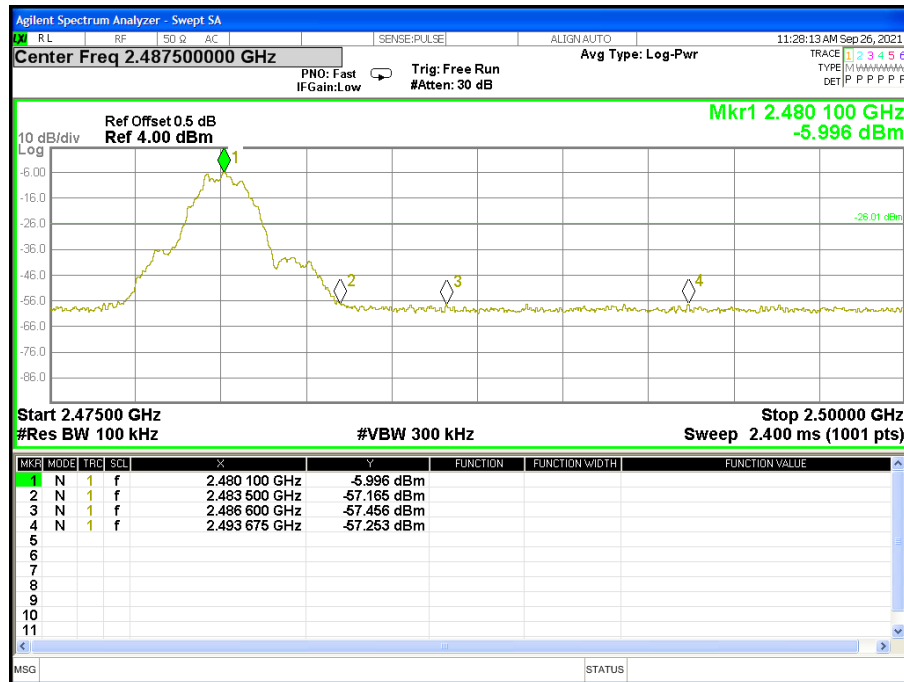


### 19 CH





## 39 CH





## 6. POWER SPECTRAL DENSITY TEST

### 6.1 LIMIT

| FCC Part 15.247, Subpart C<br>RSS-247 Issue 2 |                        |                                    |                       |        |
|-----------------------------------------------|------------------------|------------------------------------|-----------------------|--------|
| Section                                       | Test Item              | Limit                              | Frequency Range (MHz) | Result |
| 15.247(e)<br>RSS-247<br>Issue 2               | Power Spectral Density | $\leq 8$ dBm<br>(RBW $\geq 3$ KHz) | 2400-2483.5           | PASS   |

### 6.2 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the RBW to:  $100 \text{ kHz} \geq \text{RBW} \geq 3 \text{ kHz}$ .
4. Set the VBW  $\geq 3 \times \text{RBW}$ .
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.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

### 6.3 TEST SETUP



### 6.4 EUT OPERATION CONDITIONS

Please refer to section 3.4 of this report.



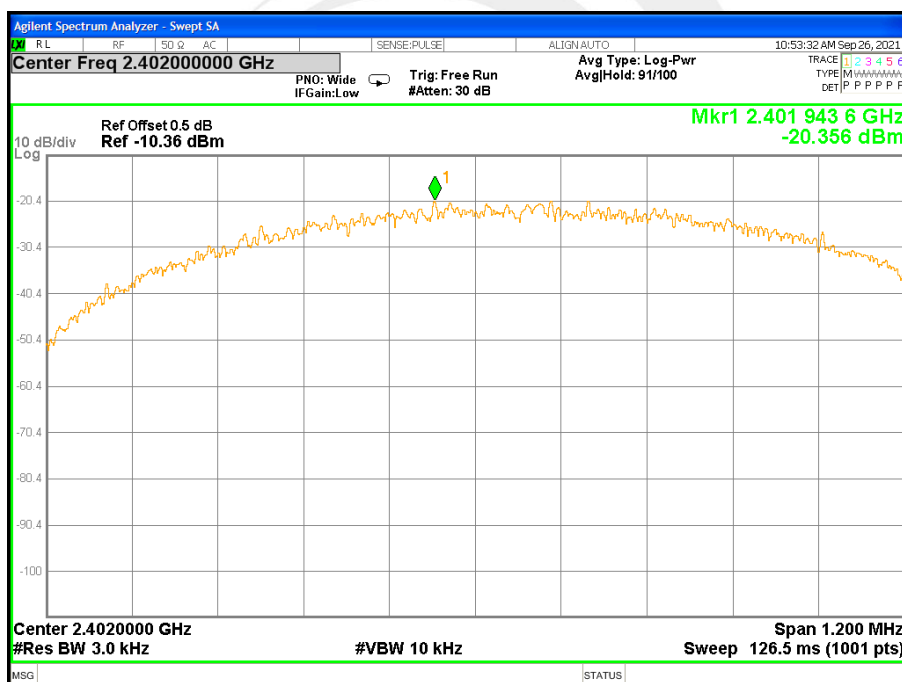
## 6.5 TEST RESULTS

|               |              |                    |                           |
|---------------|--------------|--------------------|---------------------------|
| Temperature:  | 25 °C        | Relative Humidity: | 60%                       |
| Test Voltage: | AC 120V/60Hz | Test Mode:         | TX Mode /CH00, CH19, CH39 |

## 1M PHY

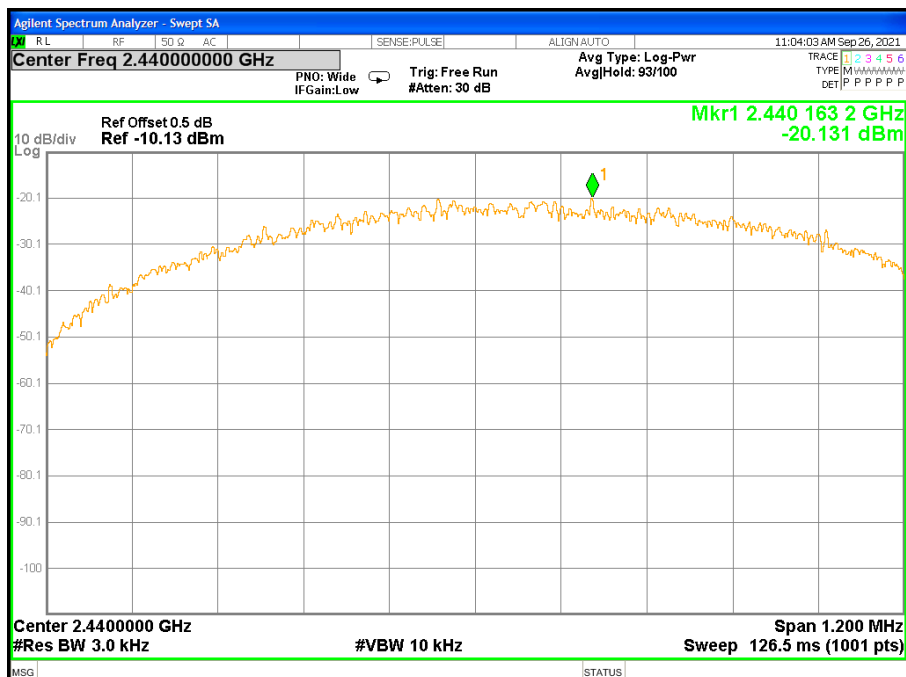
| Frequency | Power Density | Limit (dBm/3KHz) | Result |
|-----------|---------------|------------------|--------|
|           | (dBm/3kHz)    |                  |        |
| 2402 MHz  | -20.356       | ≤8               | PASS   |
| 2440 MHz  | -20.131       | ≤8               | PASS   |
| 2480 MHz  | -20.544       | ≤8               | PASS   |

## TX CH00

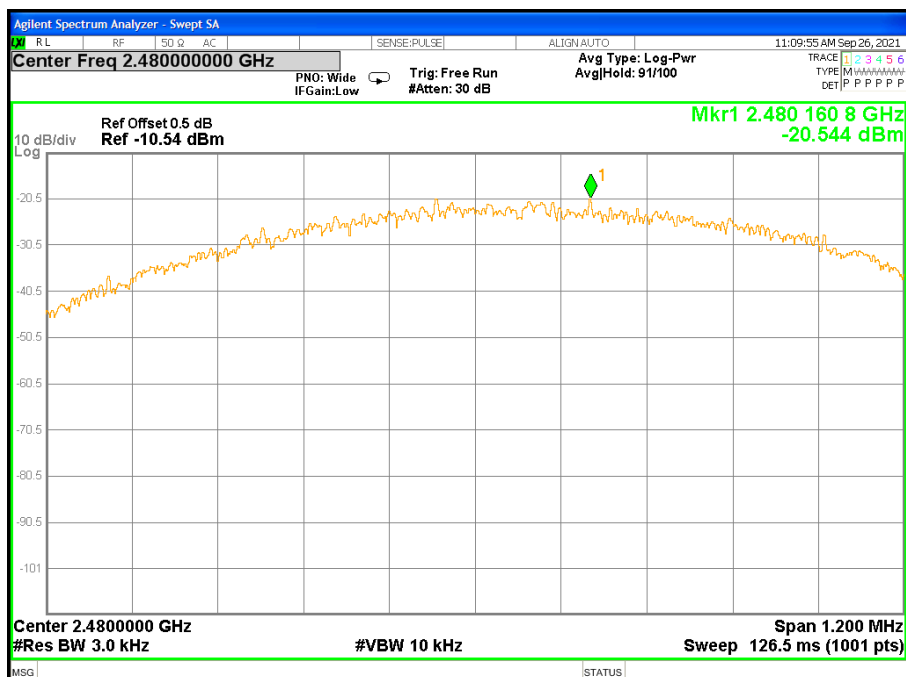




## TX CH19



## TX CH39

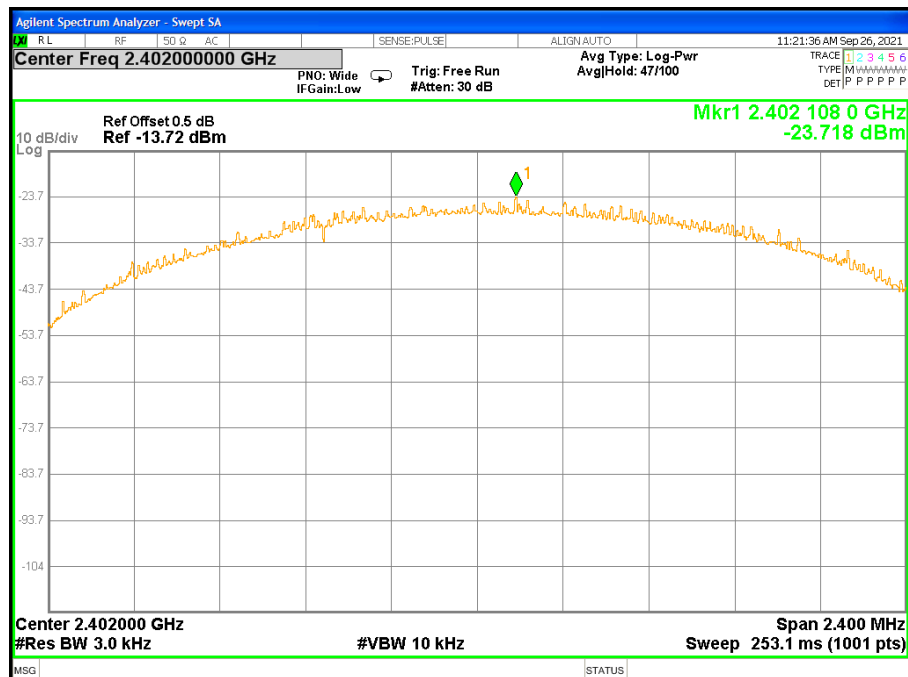




## 2M PHY

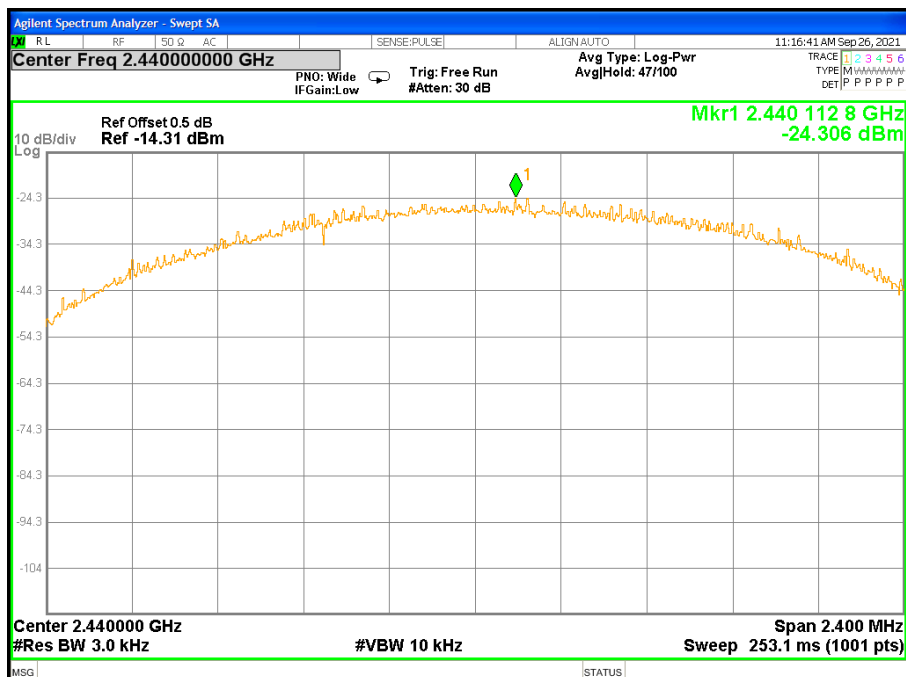
| Frequency | Power Density | Limit (dBm/3KHz) | Result |
|-----------|---------------|------------------|--------|
|           | (dBm/3kHz)    |                  |        |
| 2402 MHz  | -23.718       | ≤8               | PASS   |
| 2440 MHz  | -24.306       | ≤8               | PASS   |
| 2480 MHz  | -24.636       | ≤8               | PASS   |

## TX CH00

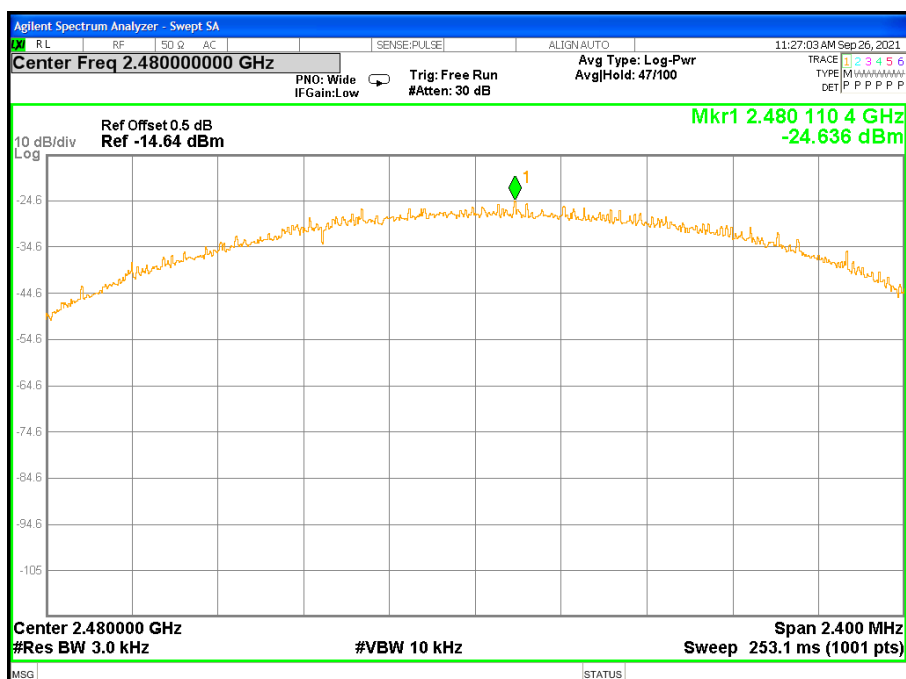




## TX CH19



## TX CH39





## 7. BANDWIDTH TEST

### 7.1 LIMIT

| FCC Part 15.247, Subpart C<br>RSS-Gen Clause 6.7 |                  |                                         |                       |        |
|--------------------------------------------------|------------------|-----------------------------------------|-----------------------|--------|
| Section                                          | Test Item        | Limit                                   | Frequency Range (MHz) | Result |
| 15.247(a)(2)<br>RSS-247 5.2 (a)                  | Bandwidth        | $\geq 500\text{KHz}$<br>(6dB bandwidth) | 2400-2483.5           | PASS   |
| RSS-Gen<br>Clause 6.7                            | 99%<br>Bandwidth | For reporting<br>purposes only          | 2400-2483.5           | PASS   |

### 7.2 TEST PROCEDURE

Connect the UUT to the spectrum analyser and use the following settings:

|                  |                                                                                                           |
|------------------|-----------------------------------------------------------------------------------------------------------|
| Center Frequency | The centre frequency of the channel under test                                                            |
| Detector         | Peak                                                                                                      |
| RBW              | For 6 dB Bandwidth : 100KHz<br>For 99% Bandwidth : 1% to 5% of the occupied bandwidth                     |
| VBW              | For 6dB Bandwidth : $\geq 3 \times \text{RBW}$<br>For 99% Bandwidth : approximately $3 \times \text{RBW}$ |
| Trace            | Max hold                                                                                                  |
| Sweep            | Auto                                                                                                      |

Allow the trace to stabilize and 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 and 99% relative to the maximum level measured in the fundamental emission.

### 7.3 TEST SETUP



### 7.4 EUT OPERATION CONDITIONS

Please refer to section 3.4 of this report.



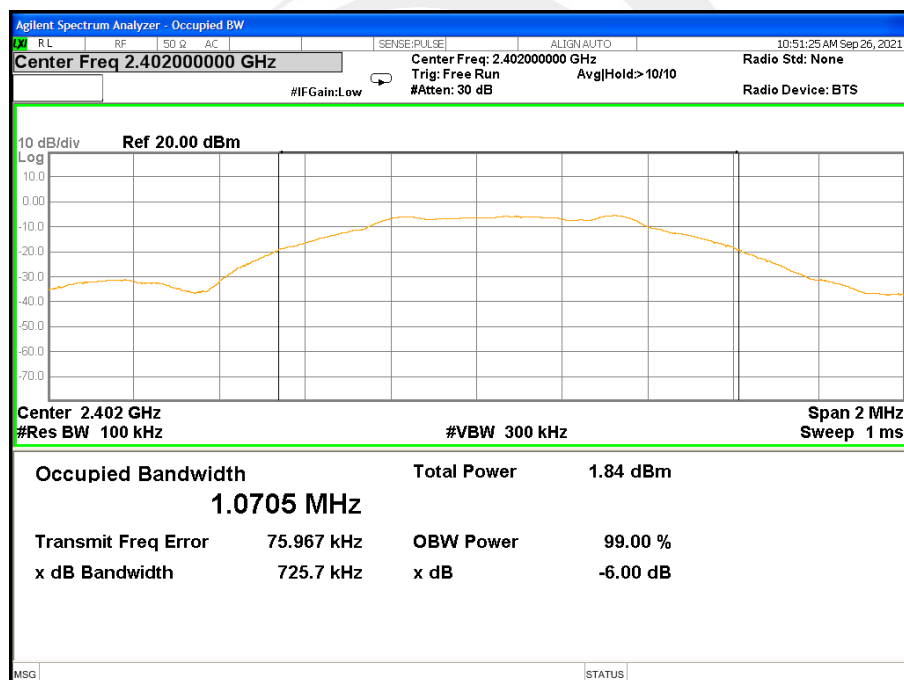
## 7.5 TEST RESULTS

|               |              |                    |                           |
|---------------|--------------|--------------------|---------------------------|
| Temperature:  | 25 °C        | Relative Humidity: | 60%                       |
| Test Voltage: | AC 120V/60Hz | Test Mode:         | TX Mode /CH00, CH19, CH39 |

## 1M PHY

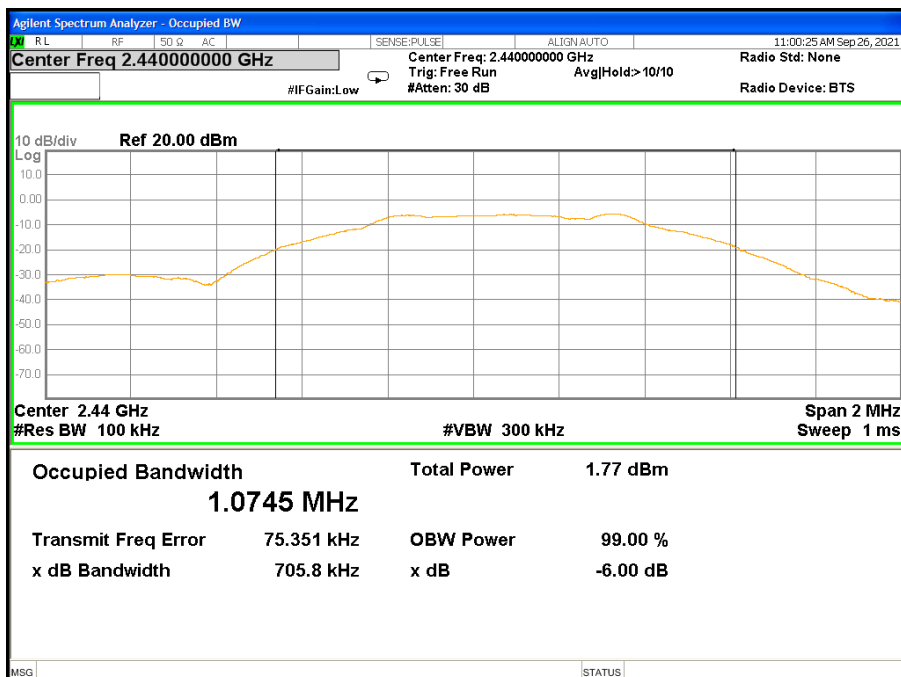
| Frequency | 6dB Bandwidth (KHz) | 99% Bandwidth (KHz) | 6dB Bandwidth Limit (KHz) | Result |
|-----------|---------------------|---------------------|---------------------------|--------|
| 2402 MHz  | 725.700             | 1070.000            | ≥500KHz                   | PASS   |
| 2440 MHz  | 705.800             | 1075.700            | ≥500KHz                   | PASS   |
| 2480 MHz  | 708.600             | 1101.900            | ≥500KHz                   | PASS   |

## 6dB Bandwidth TX CH 00

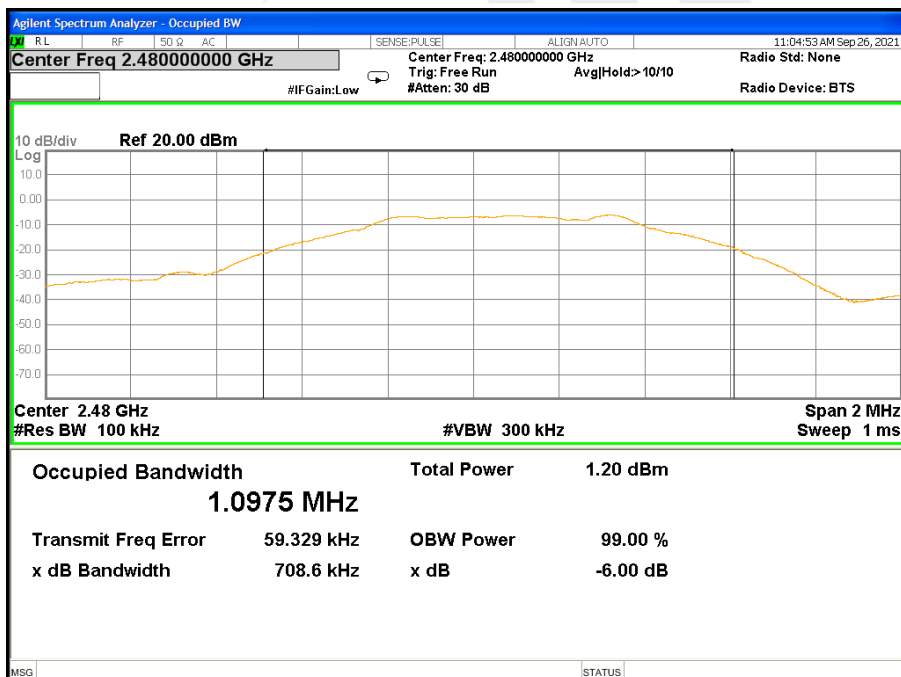




## 6dB Bandwidth TX CH 19

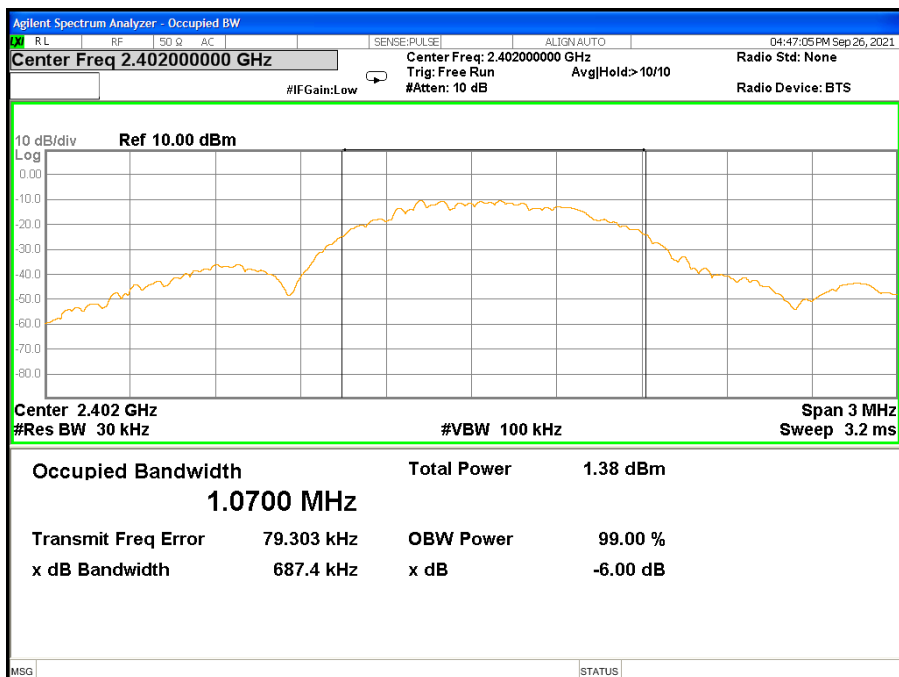


## 6dB Bandwidth TX CH 39

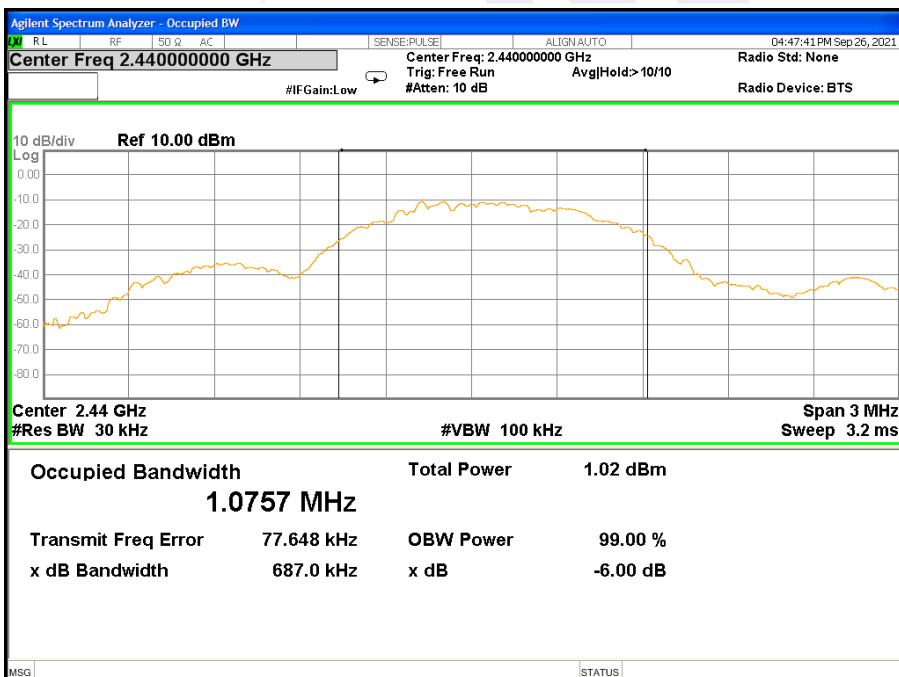




## 99% Bandwidth TX CH 00

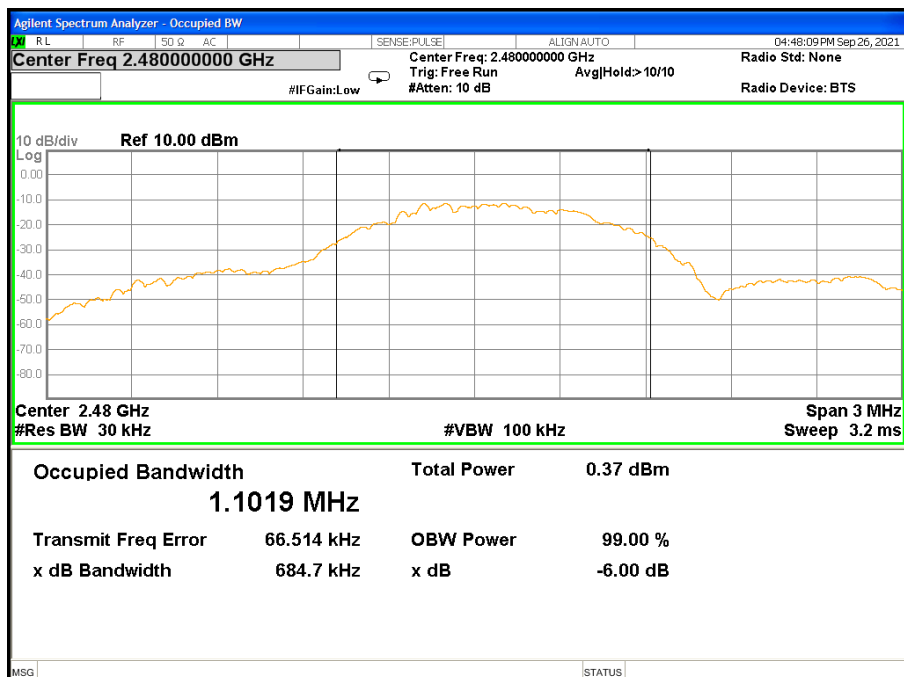


## 99% Bandwidth TX CH 19





## 99% Bandwidth TX CH 39

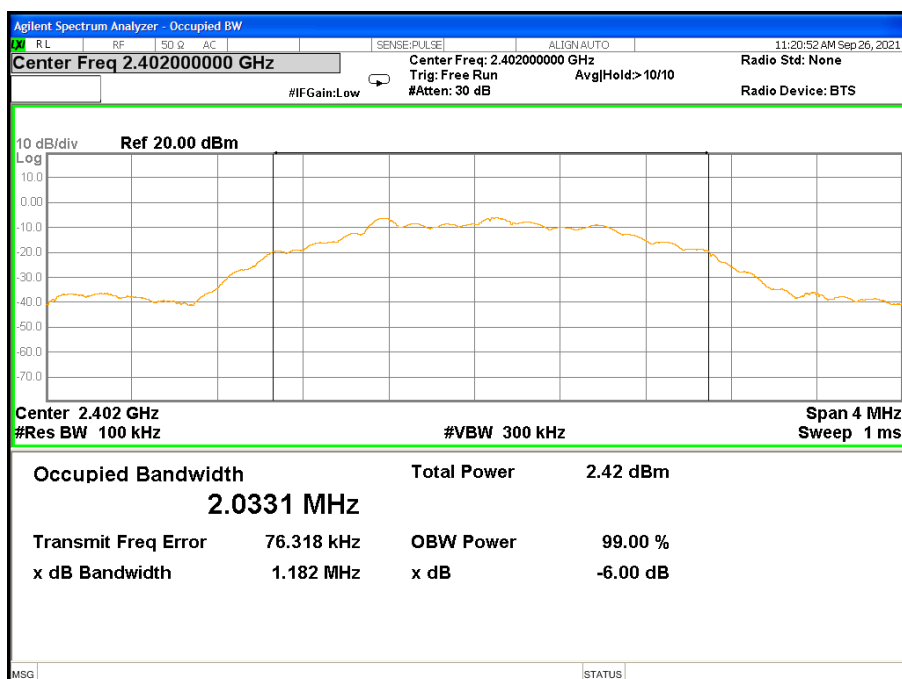




## 2M PHY

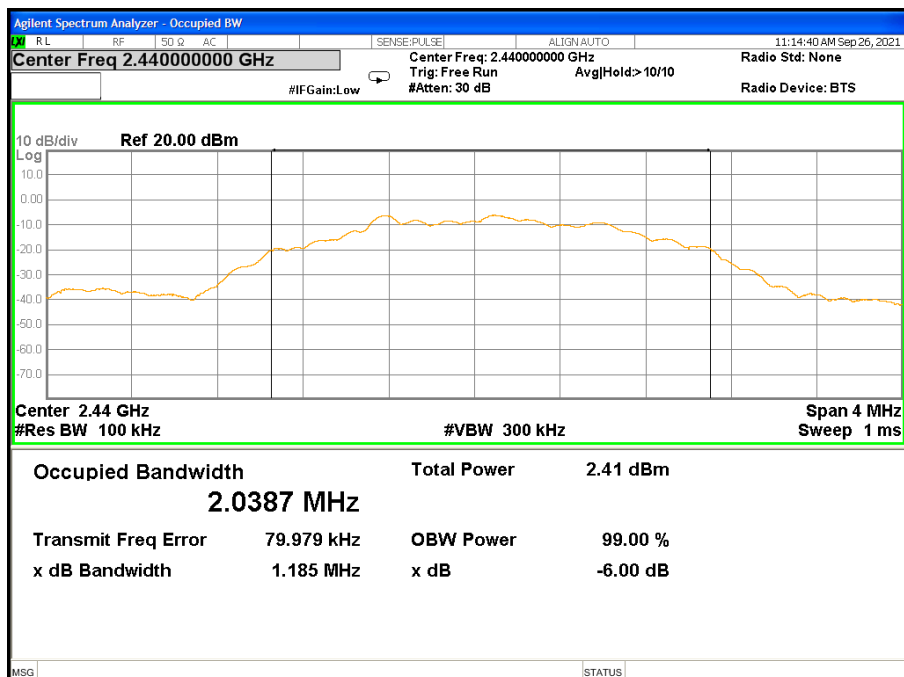
| Frequency | 6dB Bandwidth (KHz) | 99% Bandwidth (KHz) | 6dB Bandwidth Limit (KHz) | Result |
|-----------|---------------------|---------------------|---------------------------|--------|
| 2402 MHz  | 1182.000            | 2058.000            | ≥500KHz                   | PASS   |
| 2440 MHz  | 1185.000            | 2065.100            | ≥500KHz                   | PASS   |
| 2480 MHz  | 1181.000            | 2064.400            | ≥500KHz                   | PASS   |

## 6dB Bandwidth TX CH 00

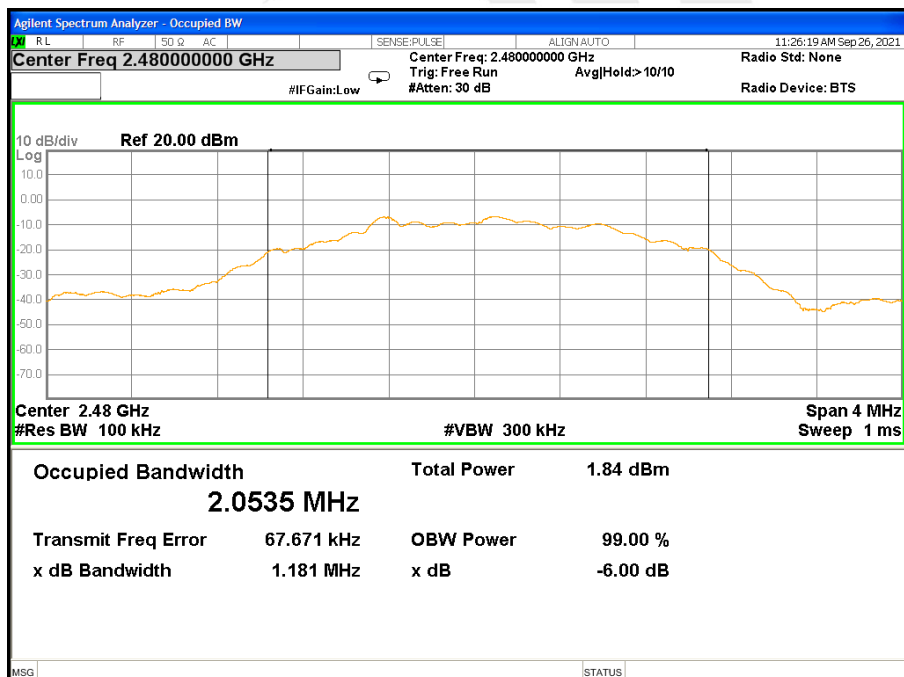




## 6dB Bandwidth TX CH 19

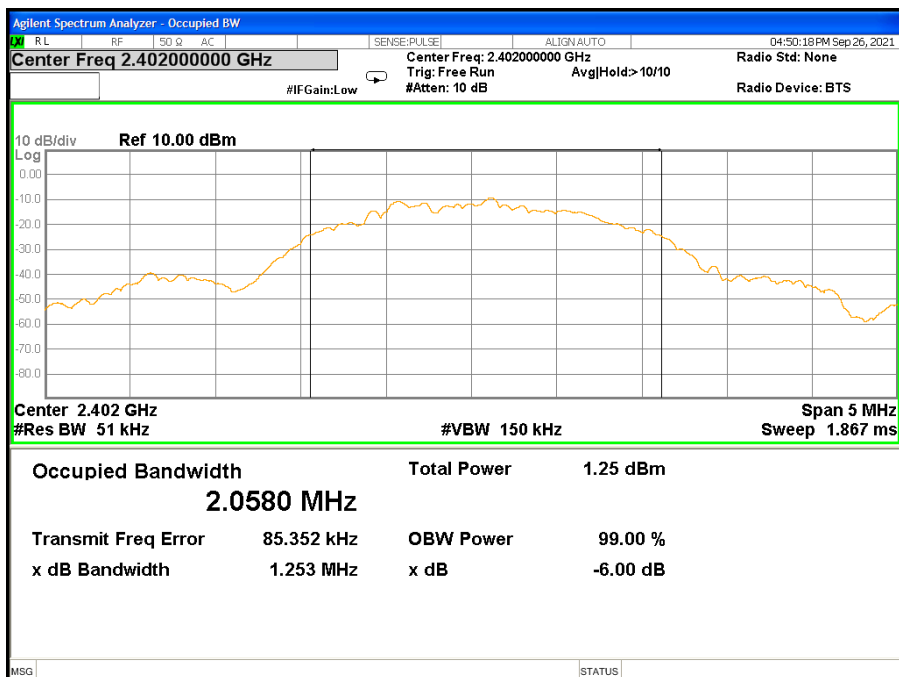


## 6dB Bandwidth TX CH 39

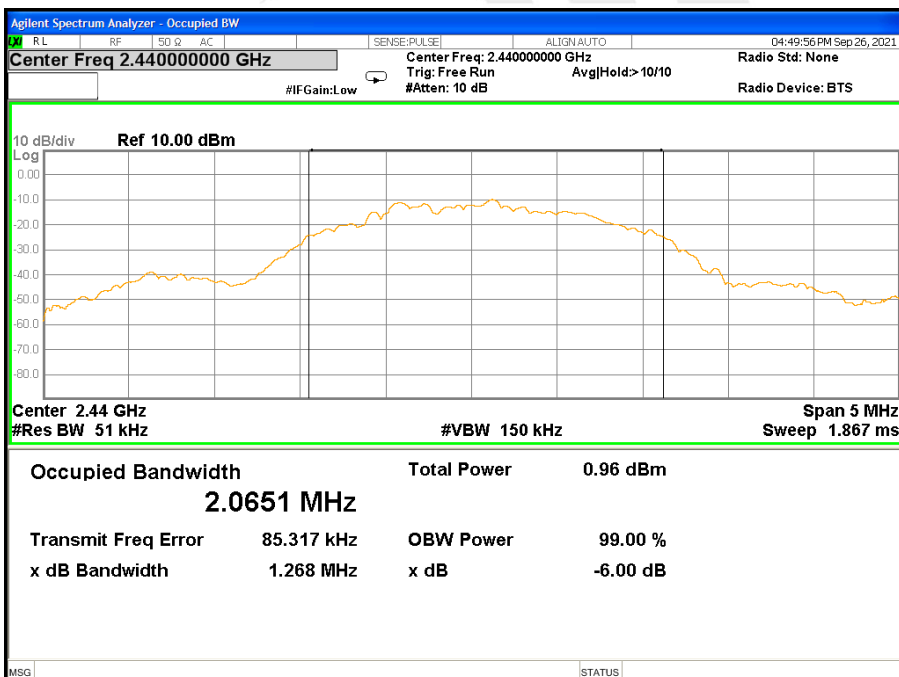




## 99% Bandwidth TX CH 00

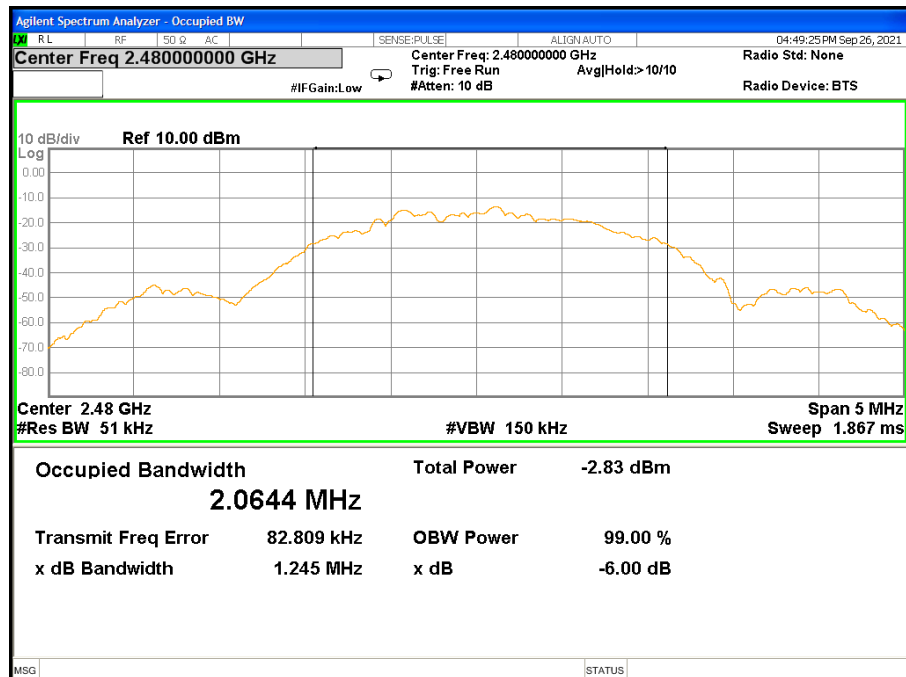


## 99% Bandwidth TX CH 19





## 99% Bandwidth TX CH 39





## 8. PEAK OUTPUT POWER TEST

### 8.1 LIMIT

| FCC Part 15.247, Subpart C<br>RSS-247 Issue 2 |              |                 |                       |        |
|-----------------------------------------------|--------------|-----------------|-----------------------|--------|
| Section                                       | Test Item    | Limit           | Frequency Range (MHz) | Result |
| 15.247(b)(3)<br>RSS 247 Issue 2               | Output Power | 1 watt or 30dBm | 2400-2483.5           | PASS   |
| RSS-247                                       | EIRP         | 4W              | 2400-2483.5           | PASS   |

### 8.2 TEST PROCEDURE

One of the following procedures may be used to determine the maximum peak conducted output power of a DTS EUT.

RBW  $\geq$  DTS bandwidth

The following procedure shall be used when an instrument with a resolution bandwidth that is greater than the DTS bandwidth is available to perform the measurement:

- Set the RBW  $\geq$  DTS bandwidth.
- Set VBW  $\geq$  [3  $\times$  RBW].
- Set span  $\geq$  [3  $\times$  RBW].
- Sweep time = auto couple.
- Detector = peak.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use peak marker function to determine the peak amplitude level.

Integrated band power method:

The following procedure can be used when the maximum available RBW of the instrument is less than the

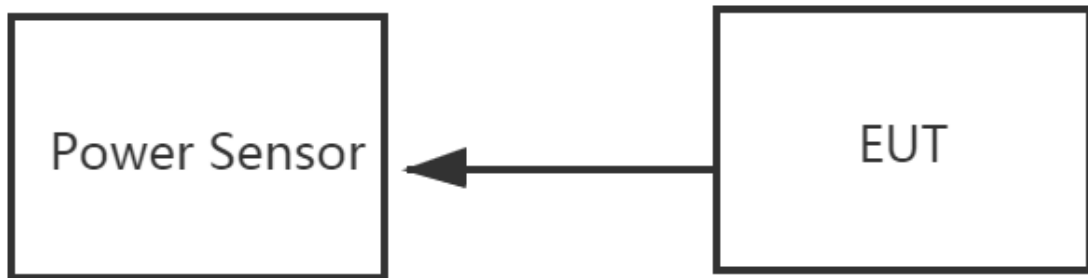
DTS bandwidth:

- Set the RBW = 1 MHz.
- Set the VBW  $\geq$  [3  $\times$  RBW].
- Set the span  $\geq$  [1.5  $\times$  DTS bandwidth].
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some instruments, this may require a manual override to select the peak detector). If the instrument does not have a band power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the DTS channel bandwidth.

PKPM1 Peak power meter method:

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 use a fast-responding diode detector.

### 8.3 TEST SETUP



### 8.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.





## 8.5 TEST RESULTS

|               |              |                    |                           |
|---------------|--------------|--------------------|---------------------------|
| Temperature:  | 25 °C        | Relative Humidity: | 60%                       |
| Test Voltage: | AC 120V/60Hz | Test Mode:         | TX Mode /CH00, CH19, CH39 |

## 1M PHY

| Test Channe | Frequency | Peak Conducted Output Power | Average Conducted Output Power | LIMIT |
|-------------|-----------|-----------------------------|--------------------------------|-------|
|             | (MHz)     | (dBm)                       | (dBm)                          | dBm   |
| CH0         | 2402      | -4.07                       | -5.20                          | 30    |
| CH19        | 2440      | -4.32                       | -5.42                          | 30    |
| CH39        | 2480      | -4.63                       | -5.72                          | 30    |

## 2M PHY

| Test Channe | Frequency | Peak Conducted Output Power | Average Conducted Output Power | LIMIT |
|-------------|-----------|-----------------------------|--------------------------------|-------|
|             | (MHz)     | (dBm)                       | (dBm)                          | dBm   |
| CH0         | 2402      | -4.17                       | -5.32                          | 30    |
| CH19        | 2440      | -4.39                       | -5.53                          | 30    |
| CH39        | 2480      | -4.69                       | -5.82                          | 30    |

Note: Our power sensor test AVG power has no duty cycle display. The power sensor measures AVG power is Burst power. The software has considered the factor of the duty cycle factor, so it is unnecessary to add it again.

EIRP  
1M PHY

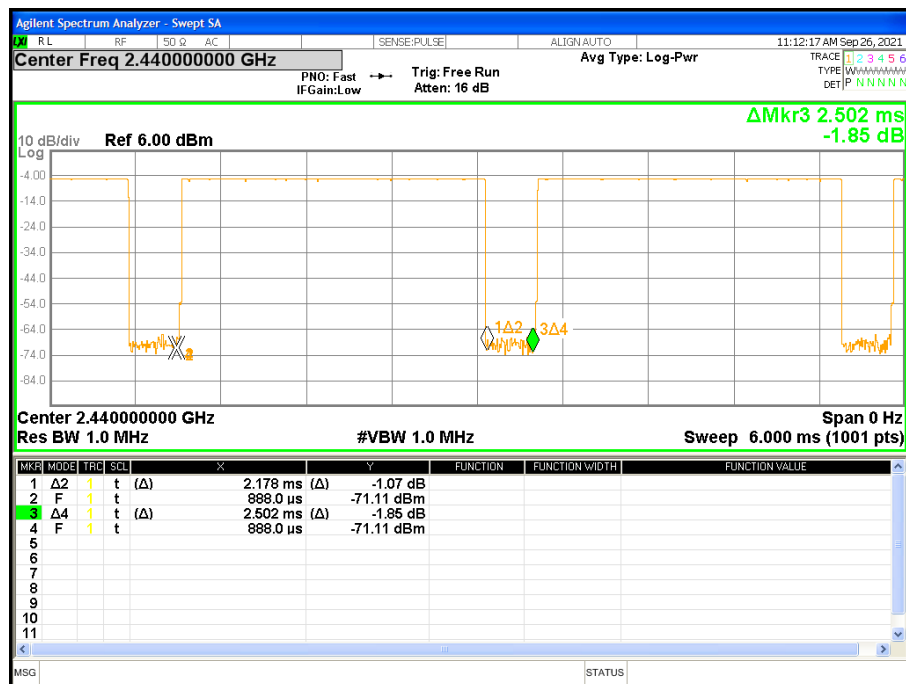
| Test Channel | Frequency | Peak Conducted Output Power | Antenna Gain | EIRP Power | LIMIT |
|--------------|-----------|-----------------------------|--------------|------------|-------|
|              | (MHz)     | (dBm)                       | (dBi)        | (dBm)      | dBm   |
| CH0          | 2402      | -4.07                       | 2.13         | -1.94      | 36.02 |
| CH19         | 2440      | -4.32                       | 2.13         | -2.19      | 36.02 |
| CH39         | 2480      | -4.63                       | 2.13         | -2.50      | 36.02 |

## 2M PHY

| Test Channel | Frequency | Peak Conducted Output Power | Antenna Gain | EIRP Power | LIMIT |
|--------------|-----------|-----------------------------|--------------|------------|-------|
|              | (MHz)     | (dBm)                       | (dBi)        | (dBm)      | dBm   |
| CH0          | 2402      | -4.17                       | 2.13         | -2.04      | 36.02 |
| CH19         | 2440      | -4.39                       | 2.13         | -2.26      | 36.02 |
| CH39         | 2480      | -4.69                       | 2.13         | -2.56      | 36.02 |

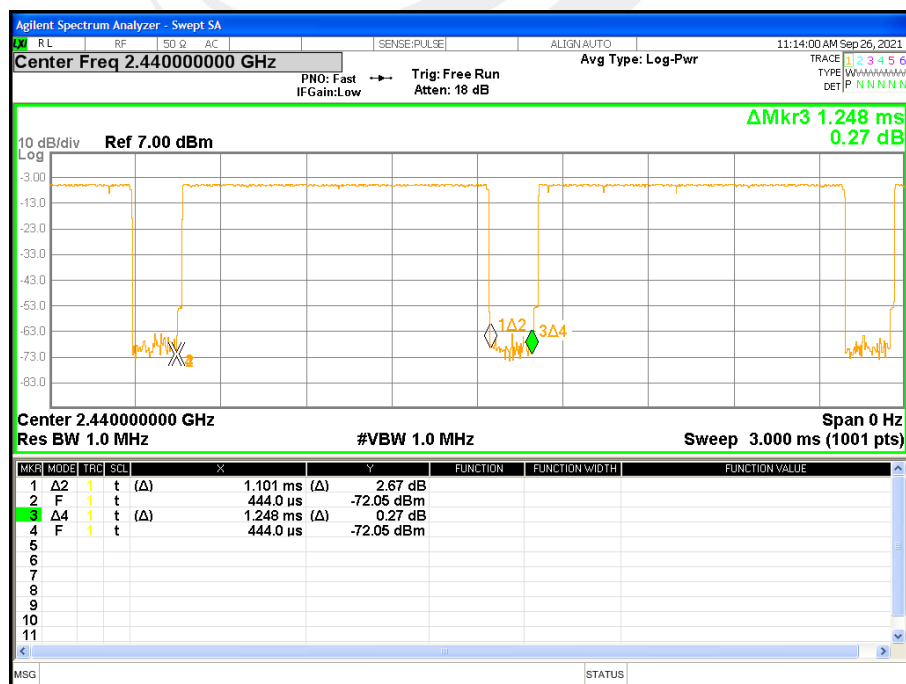


Duty cycle  
1M PHY



| Ton   | Tp    | Duty cycle(%) | Duty factor(dB) |
|-------|-------|---------------|-----------------|
| 2.178 | 2.502 | 87.05%        | 1.20            |

2M PHY



| Ton   | Tp    | Duty cycle(%) | Duty factor(dB) |
|-------|-------|---------------|-----------------|
| 1.101 | 1.248 | 88.22%        | 1.09            |



## 9. ANTENNA REQUIREMENT

### 9.1 STANDARD REQUIREMENT

15.203&RSS Gen Issue 5 requirement: For intentional device, according to 15.203&RSS Gen Issue 5: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

### 9.2 EUT ANTENNA

The EUT antenna is PIFA Antenna. It comply with the standard requirement.





## 10. FREQUENCY STABILITY

### 10.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency tolerance of the carrier signal shall be maintained within +/-0.02% of the operating frequency over a temperature variation of -30 degrees to 50 degrees C at normal supply voltage, and for a variation in primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees.

### 10.2 TEST PROCEDURE

1. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
2. Turn the EUT on and couple its output to spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

### 10.3 TEST RESULT

1M PHY

Channel 19 (2440MHz)

Voltage vs. Frequency Stability

| Voltage(V)         | Measurement Frequency(MHz) |
|--------------------|----------------------------|
| 12.765             | 2440.0020                  |
| 11.1               | 2440.0017                  |
| 9.435              | 2440.0014                  |
| Max.Deviation(MHz) | 0.0020                     |
| Max.Deviation(ppm) | 0.82                       |

Rated working voltage: AC 120V/60Hz

Temperature vs. Frequency Stability

| Temperature(°C)    | Measurement Frequency(MHz) |
|--------------------|----------------------------|
| -30                | 2440.0022                  |
| -20                | 2440.0021                  |
| -10                | 2440.0019                  |
| 0                  | 2440.0017                  |
| 10                 | 2440.0015                  |
| 20                 | 2440.0013                  |
| 30                 | 2440.0019                  |
| 40                 | 2440.0021                  |
| 50                 | 2440.0021                  |
| Max.Deviation(MHz) | 0.0022                     |
| Max.Deviation(ppm) | 0.90                       |



2M PHY

Channel 19 (2440MHz)

Voltage vs. Frequency Stability

| Voltage(V)         | Measurement Frequency(MHz) |
|--------------------|----------------------------|
| 12.765             | 2440.0014                  |
| 11.1               | 2440.0007                  |
| 9.435              | 2440.0008                  |
| Max.Deviation(MHz) | 0.0014                     |
| Max.Deviation(ppm) | 0.57                       |

Rated working voltage: AC 120V/60Hz

Temperature vs. Frequency Stability

| Temperature(°C)    | Measurement Frequency(MHz) |
|--------------------|----------------------------|
| -30                | 2440.0018                  |
| -20                | 2440.0013                  |
| -10                | 2440.0011                  |
| 0                  | 2440.0012                  |
| 10                 | 2440.0012                  |
| 20                 | 2440.0011                  |
| 30                 | 2440.0008                  |
| 40                 | 2440.0014                  |
| 50                 | 2440.0016                  |
| Max.Deviation(MHz) | 0.0018                     |
| Max.Deviation(ppm) | 0.74                       |



## 11. EUT TEST PHOTO

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

※※※※END OF THE REPORT※※※※

