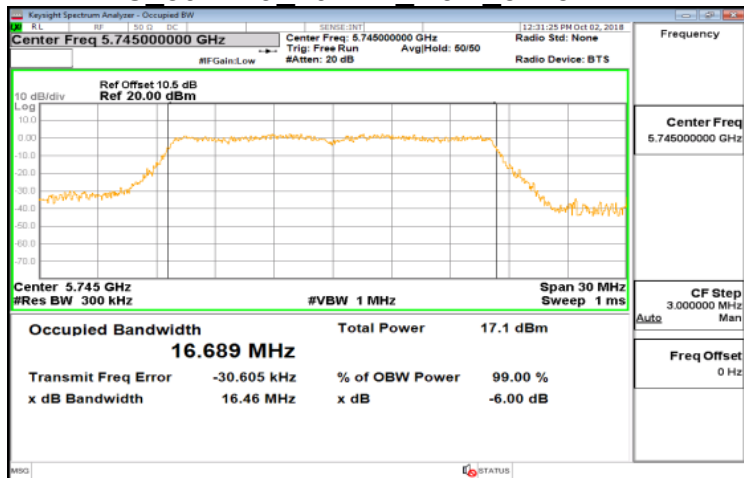
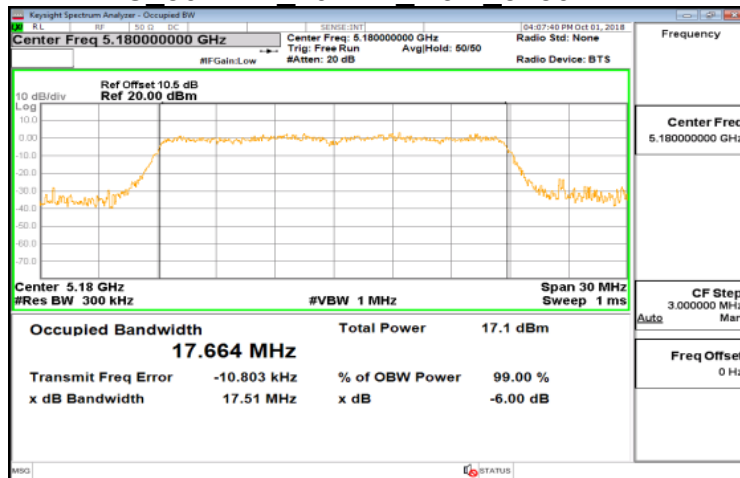


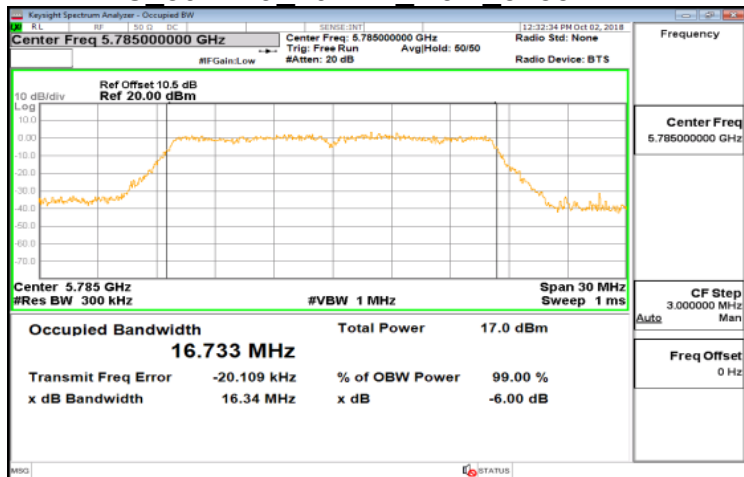
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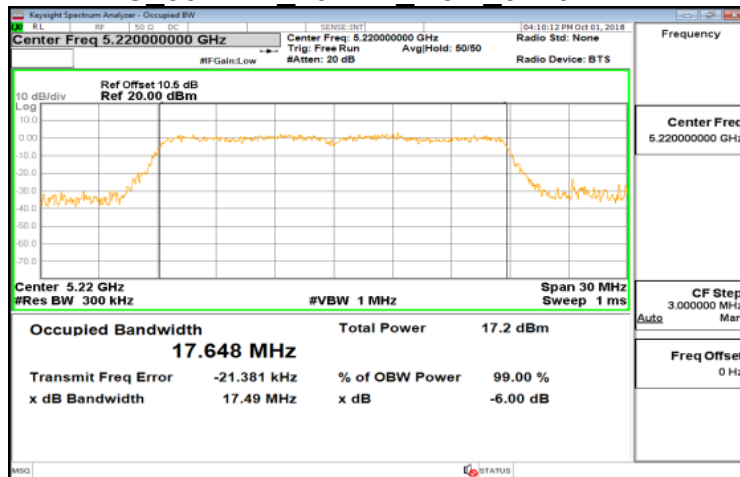
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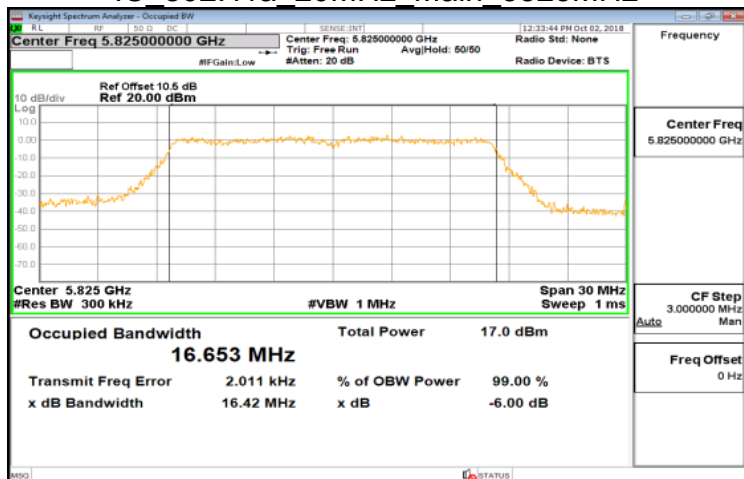
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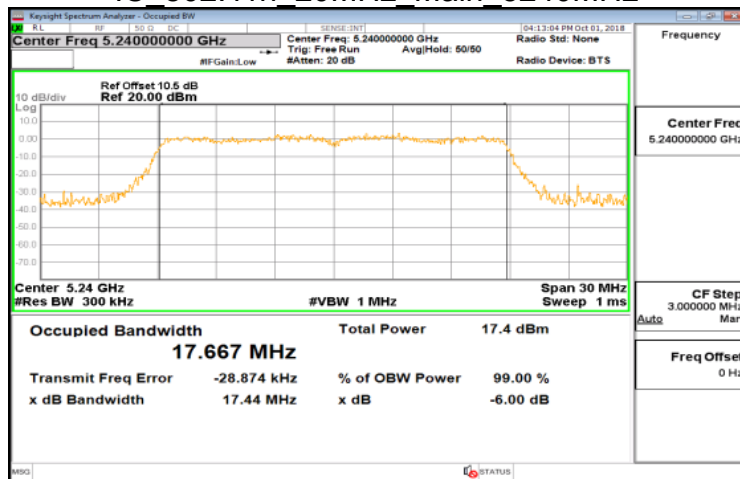
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IC 802.11a 20MHz Main 5825MHz



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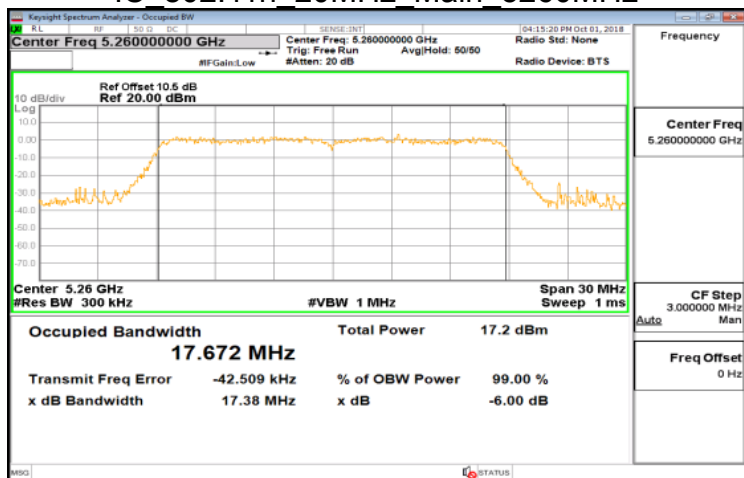


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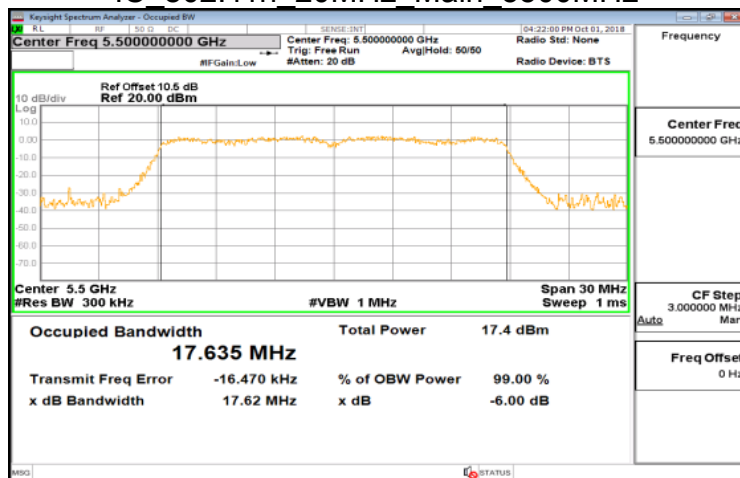
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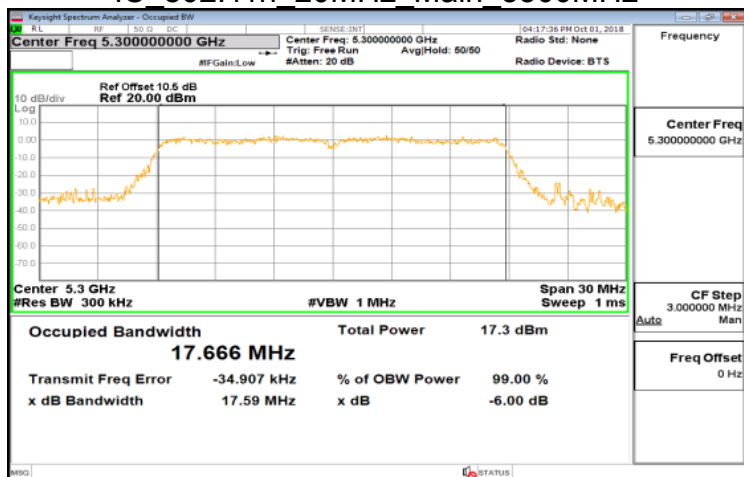
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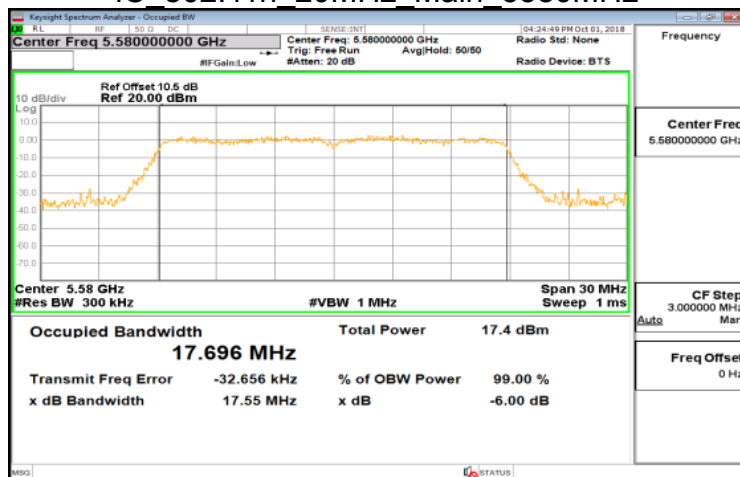
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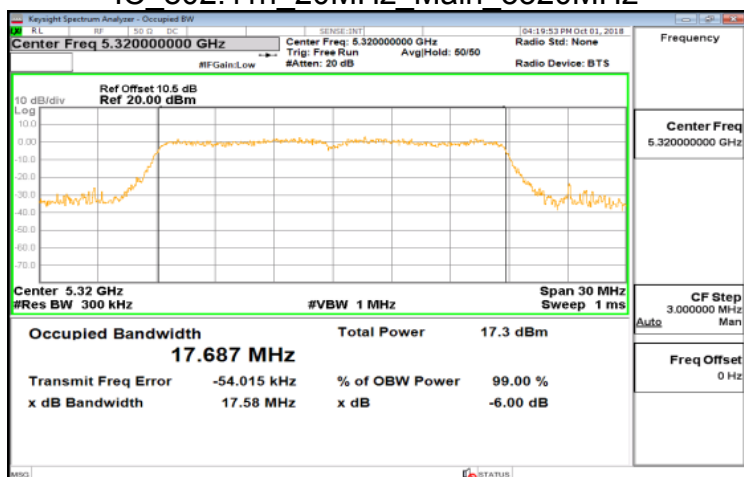
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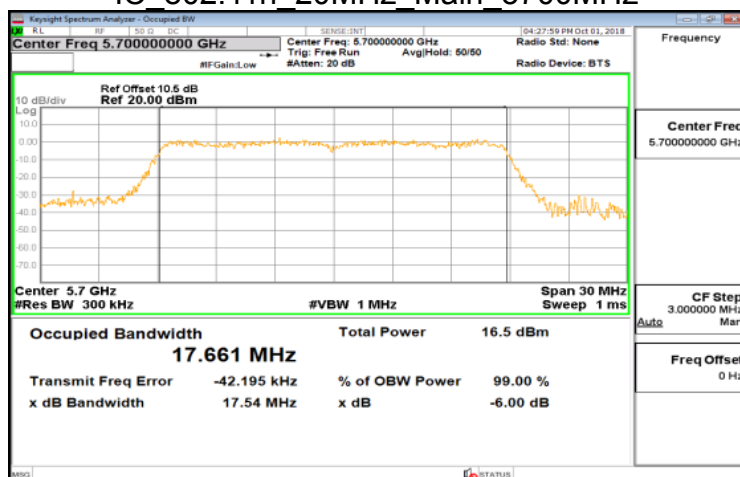
IC 802.11n 20MHz Main 5580MHz



IC 802.11n 20MHz Main 5320MHz



IC 802.11n 20MHz Main 5700MHz



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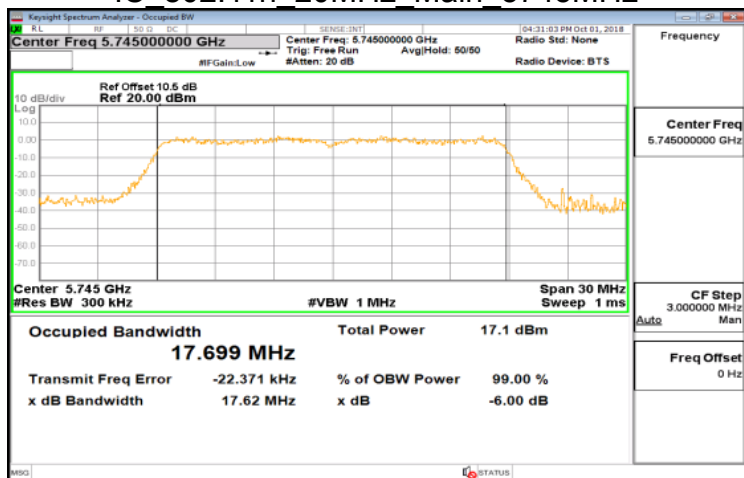
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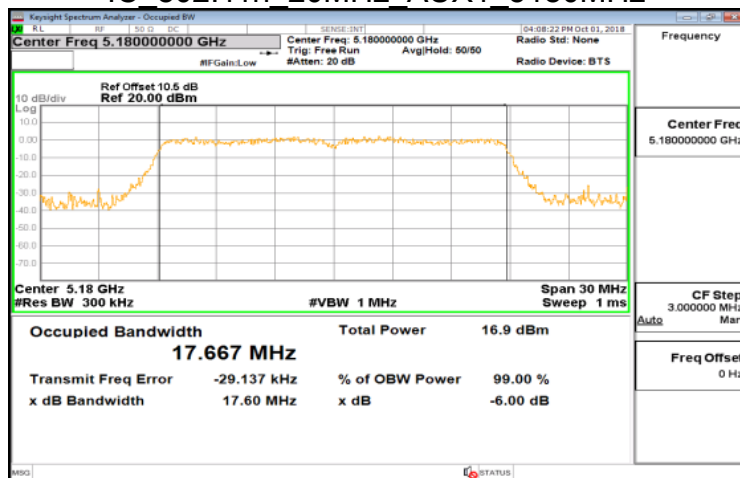
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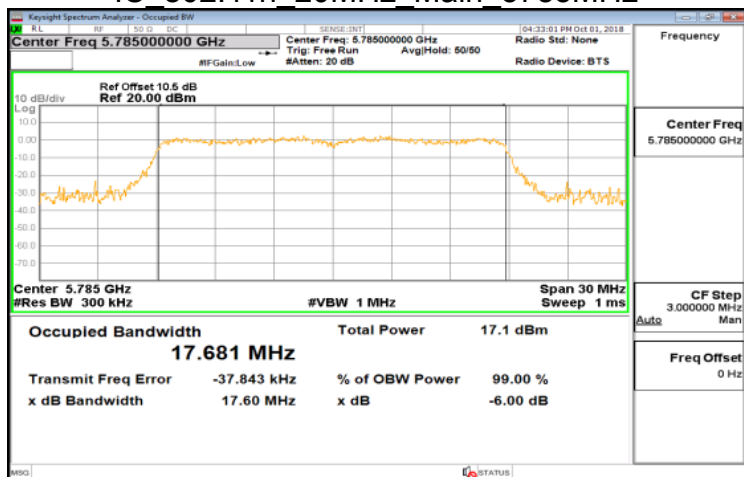
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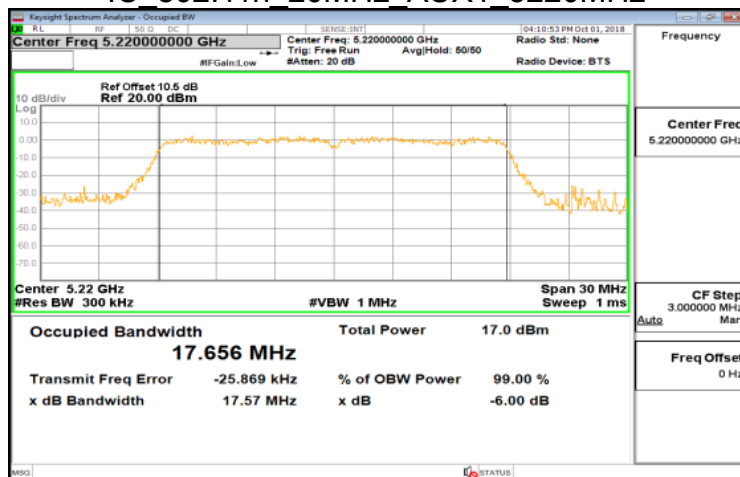
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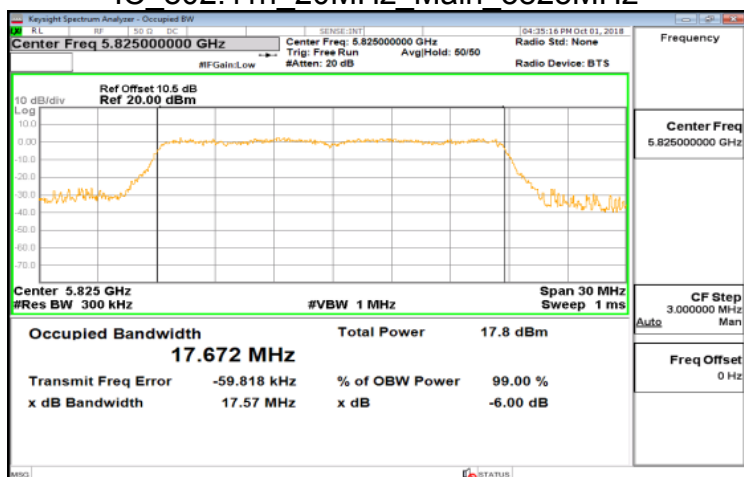
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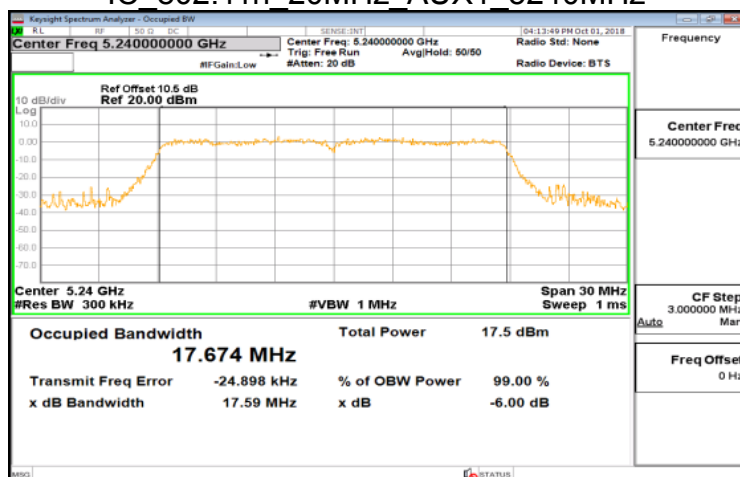
IC 802.11n 20MHz AUX1 5220MHz



IC 802.11n 20MHz Main 5825MHz



IC 802.11n 20MHz AUX1 5240MHz



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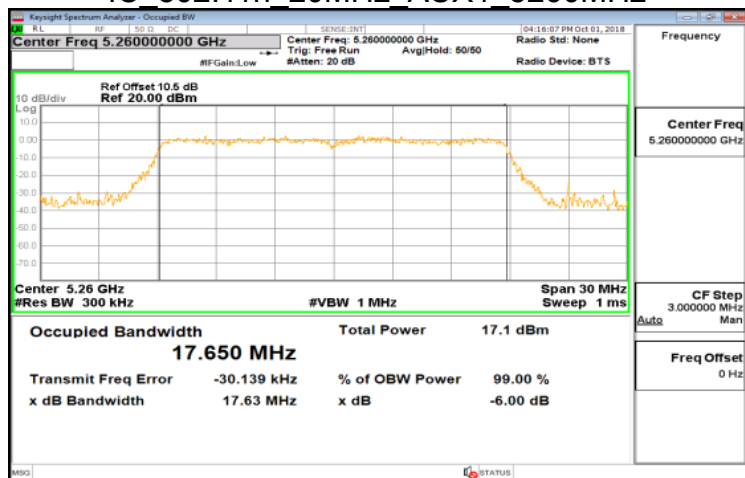
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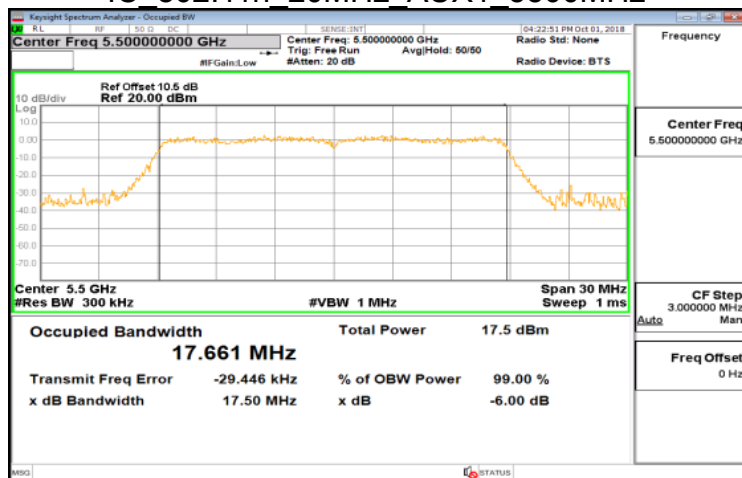
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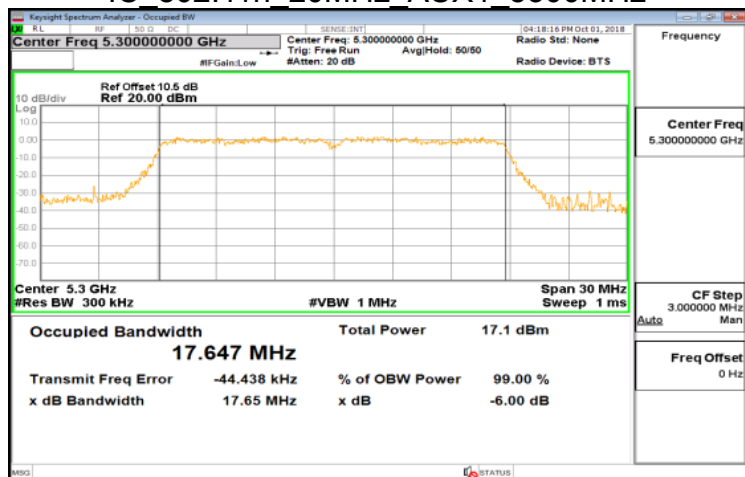
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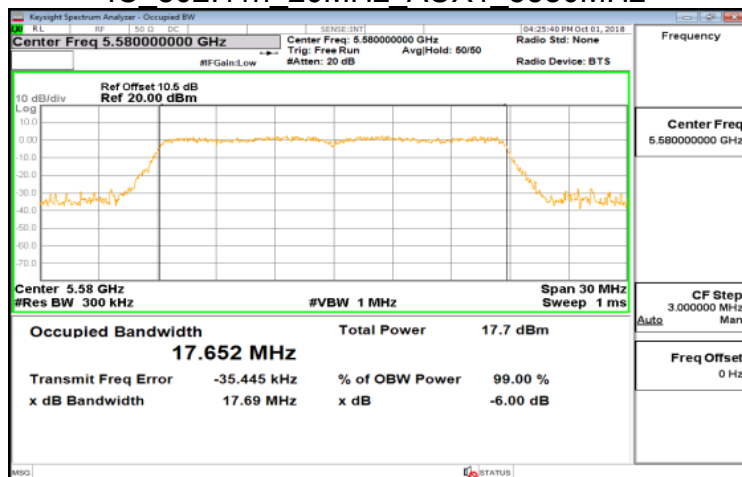
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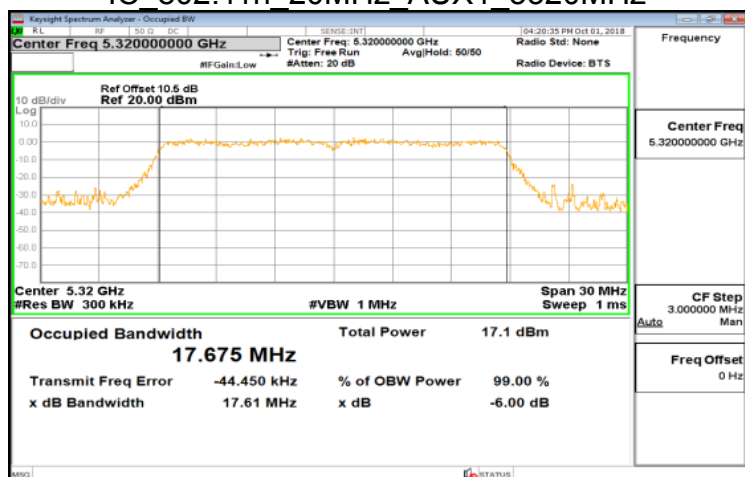
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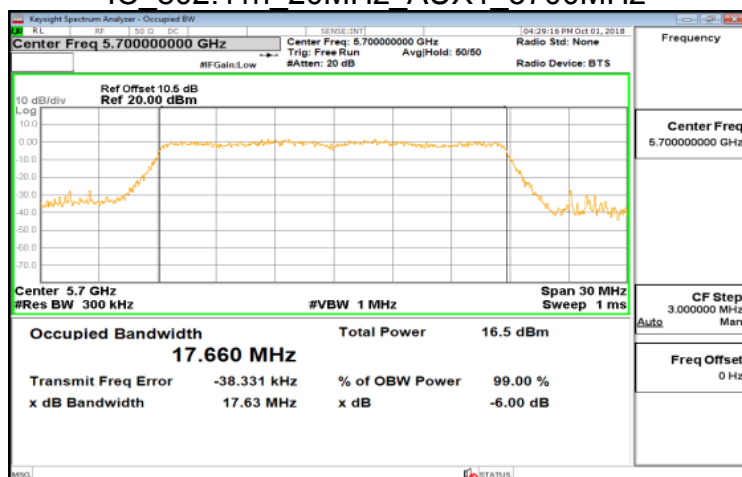
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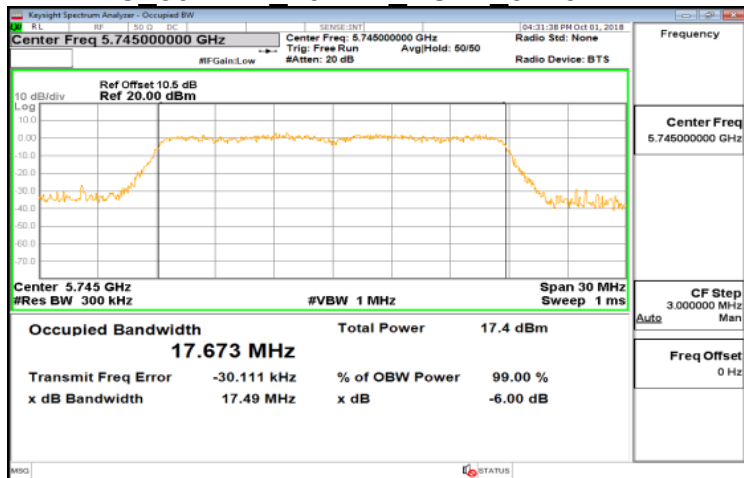


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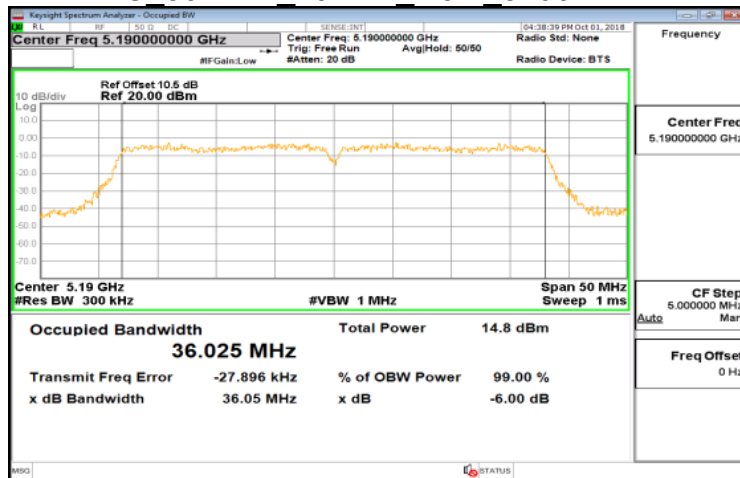
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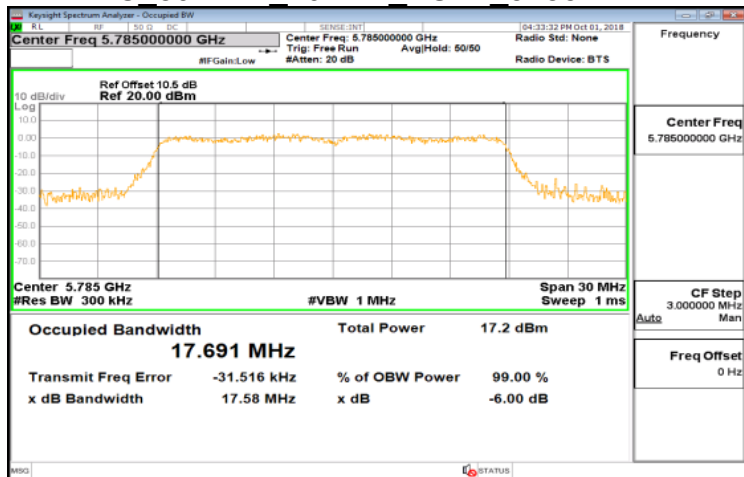
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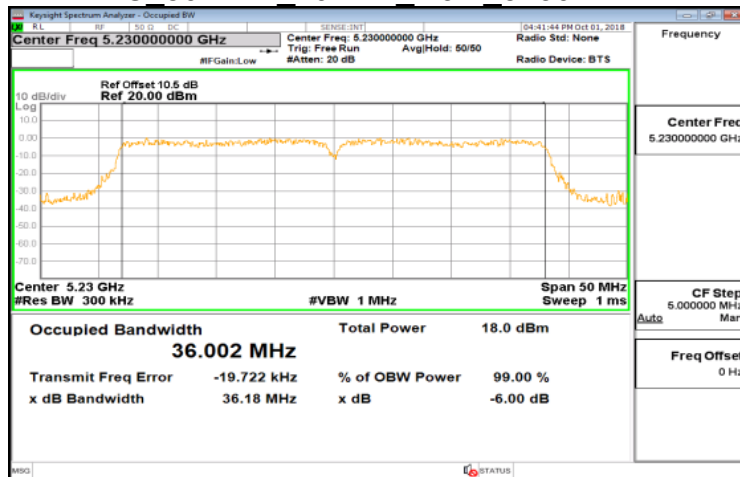
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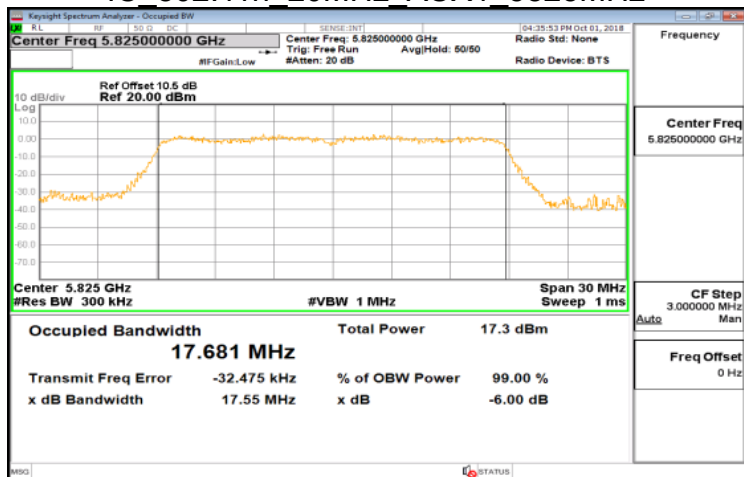
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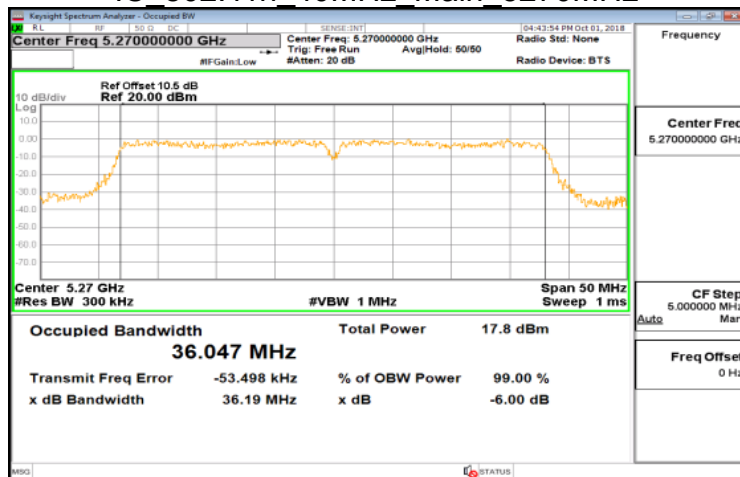
IC 802.11n 40MHz Main 5230MHz



IC 802.11n 20MHz AUX1 5825MHz



IC 802.11n 40MHz Main 5270MHz



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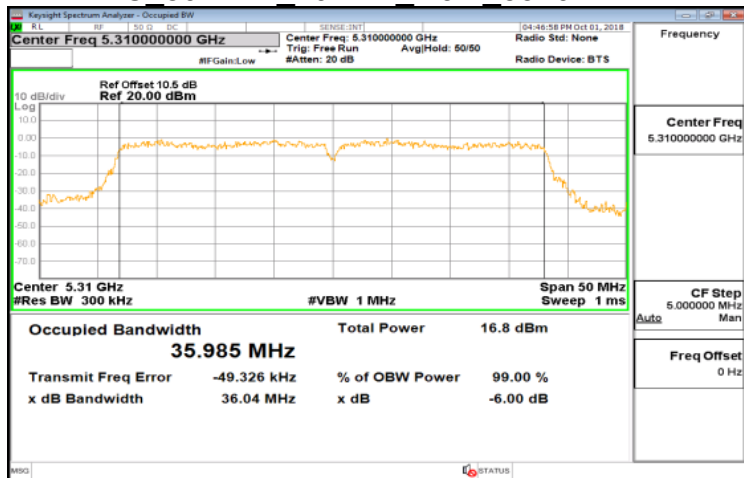
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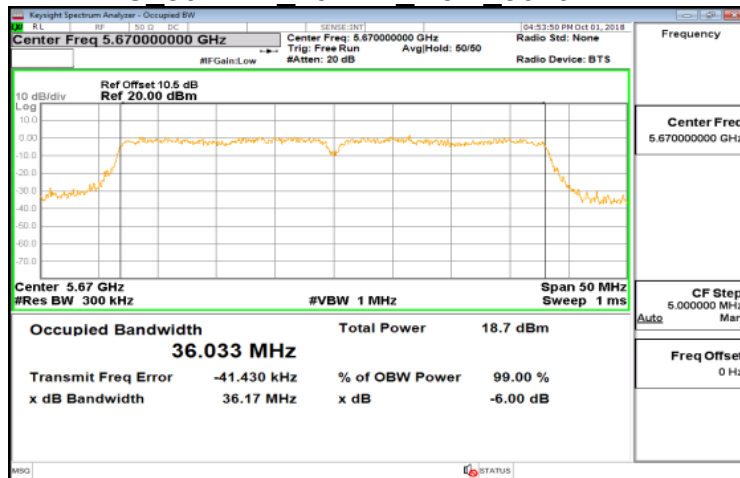
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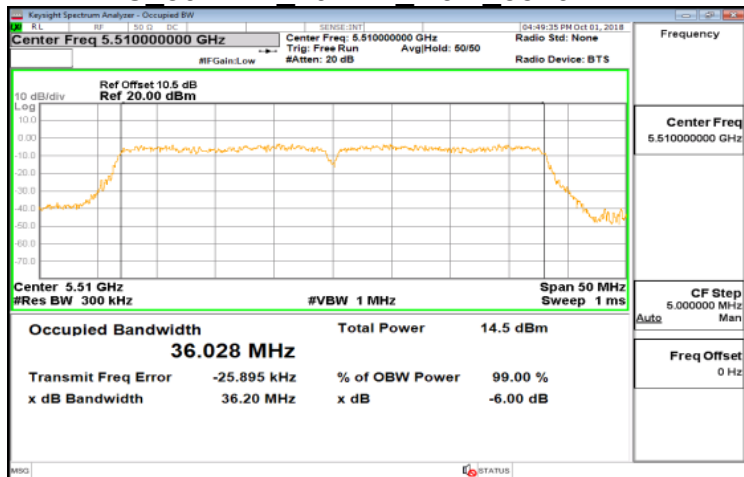
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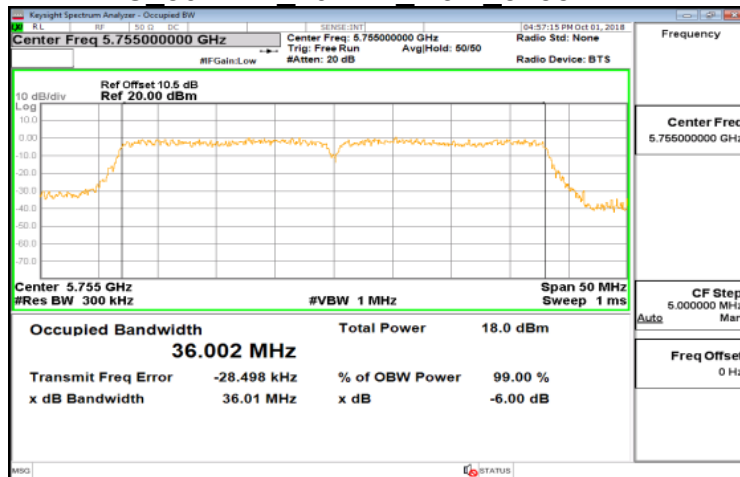
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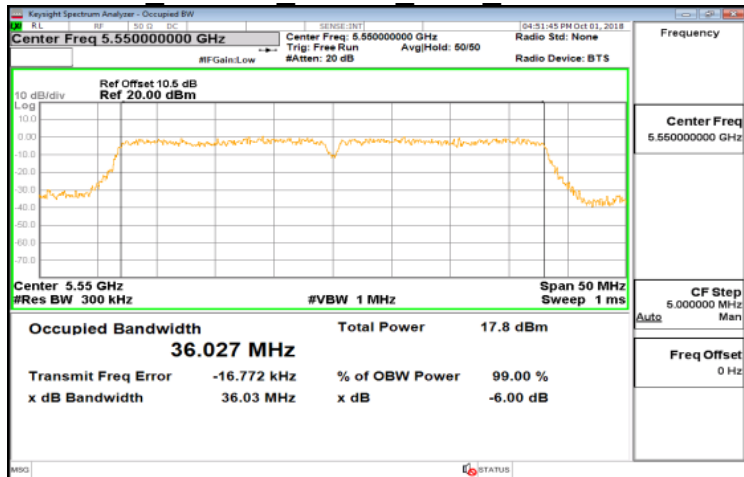
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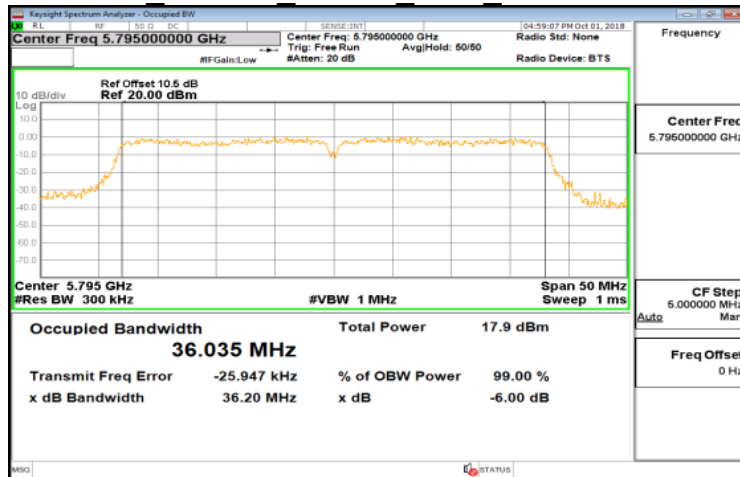
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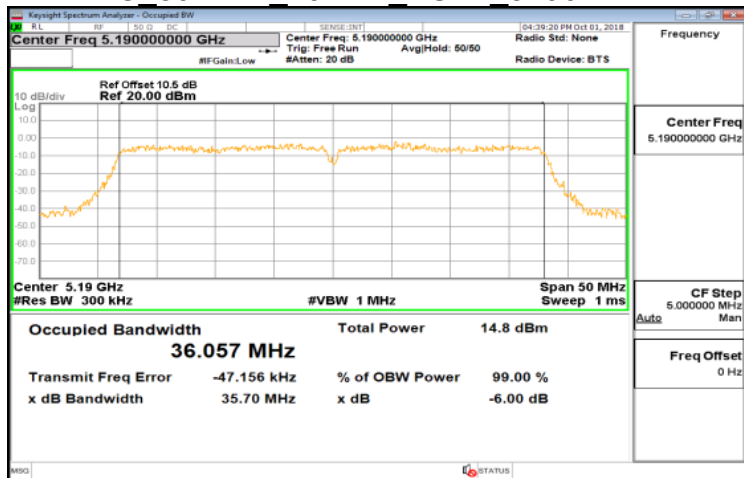


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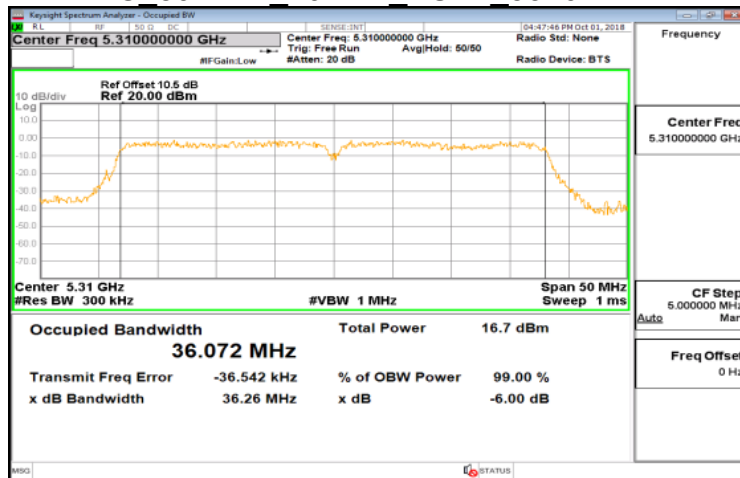
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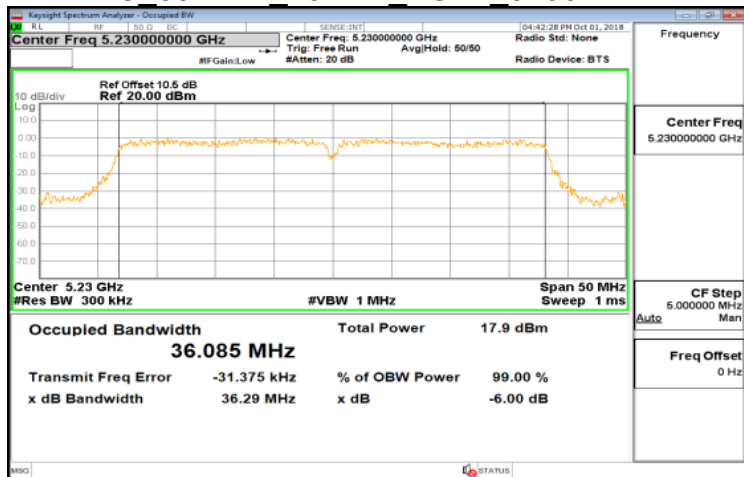
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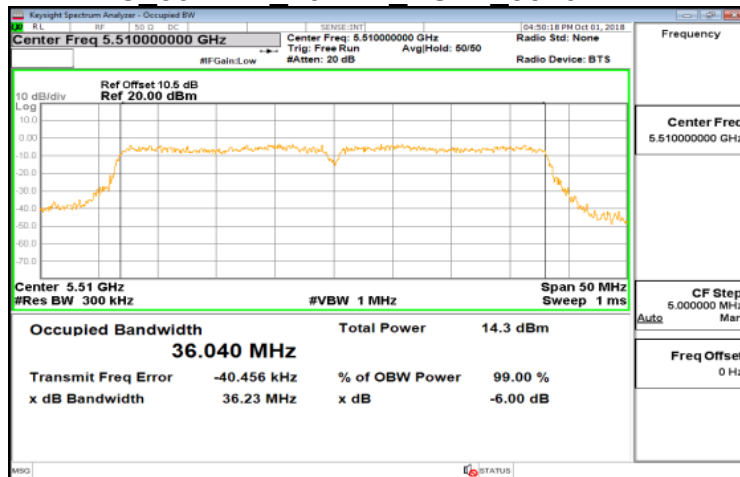
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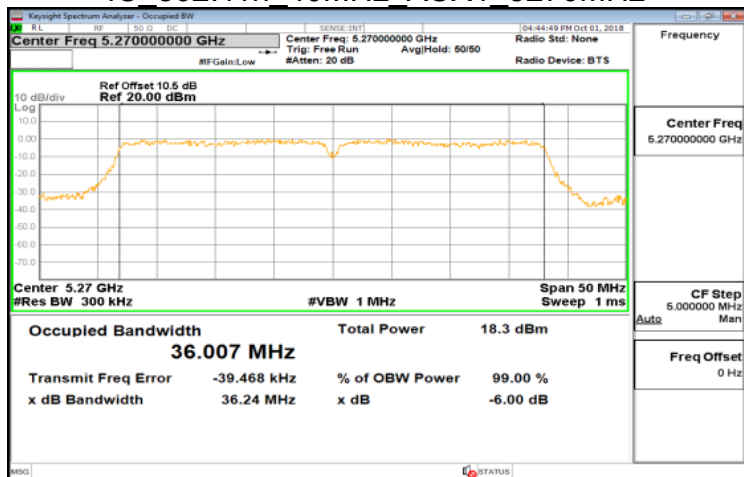
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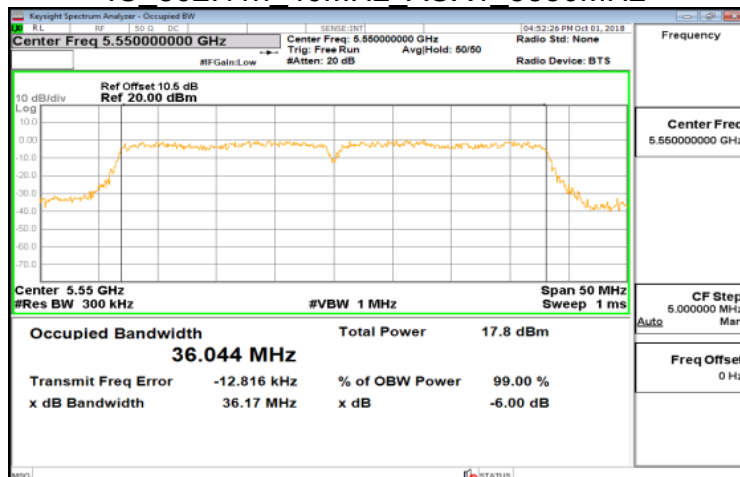
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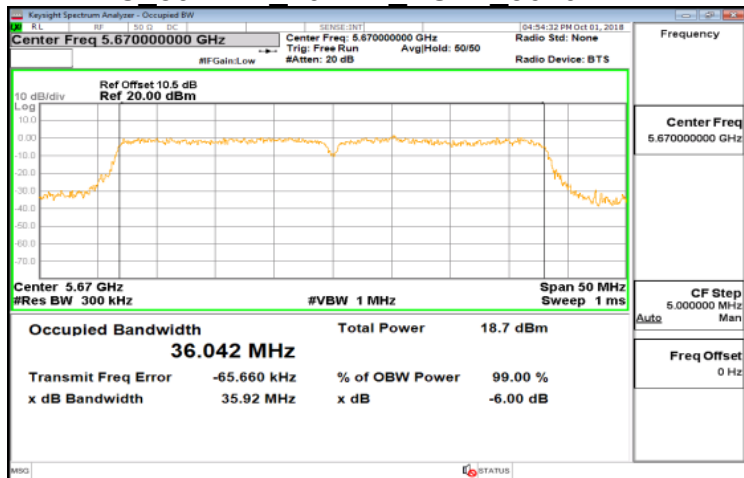


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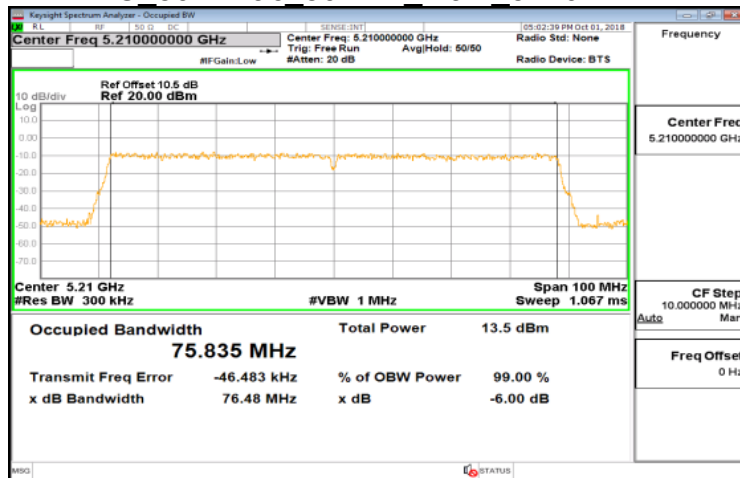
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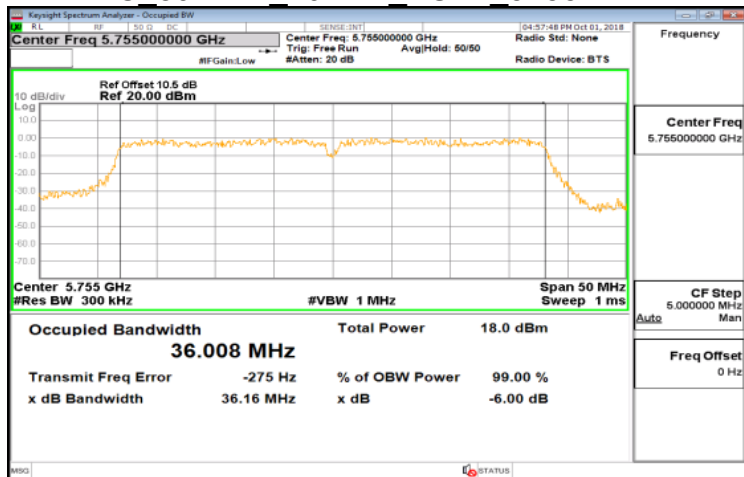
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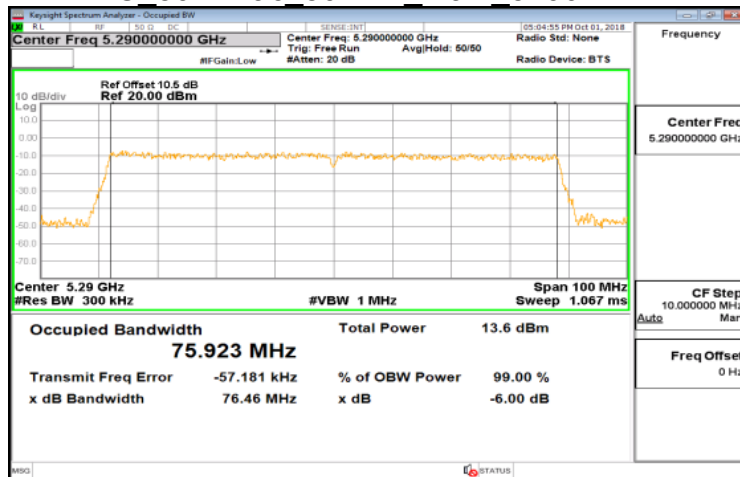
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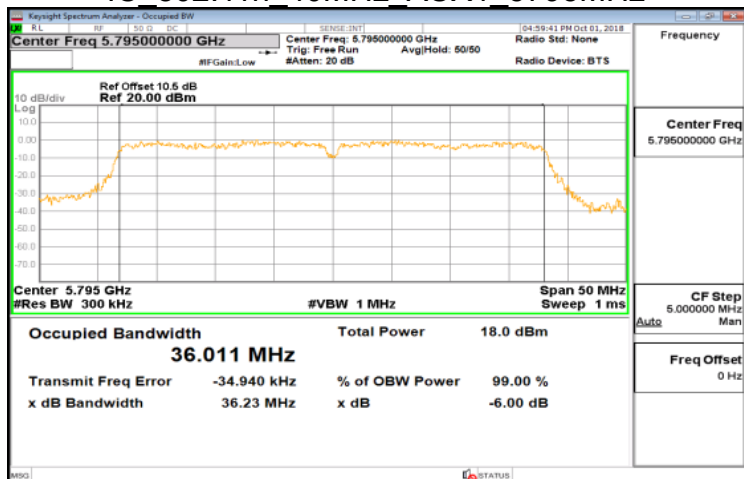
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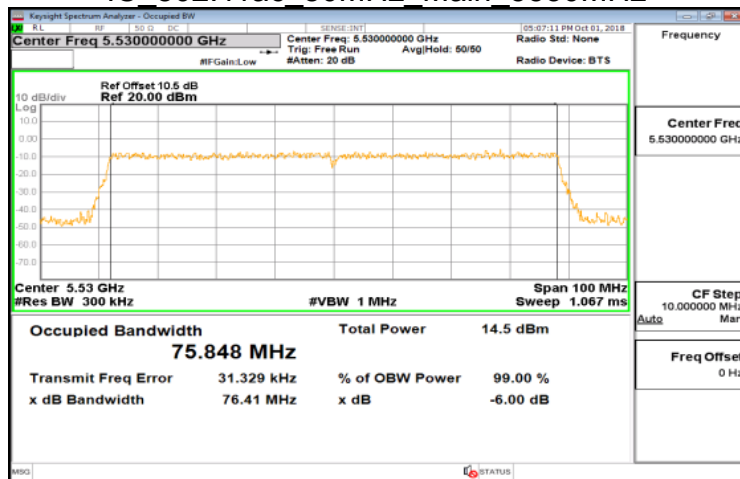
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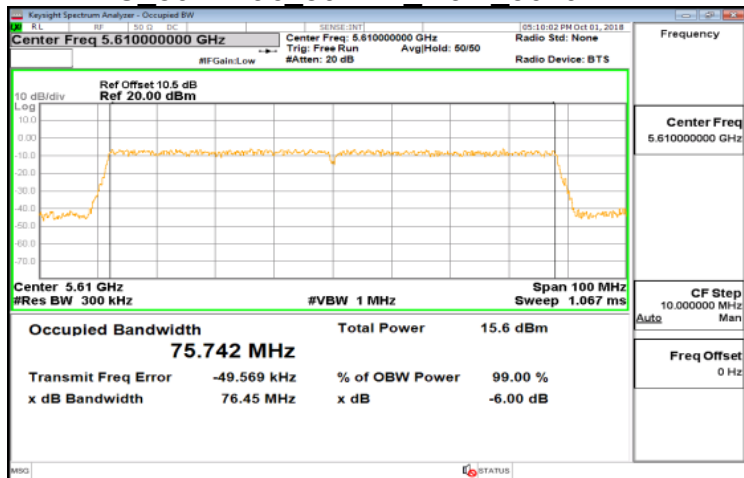


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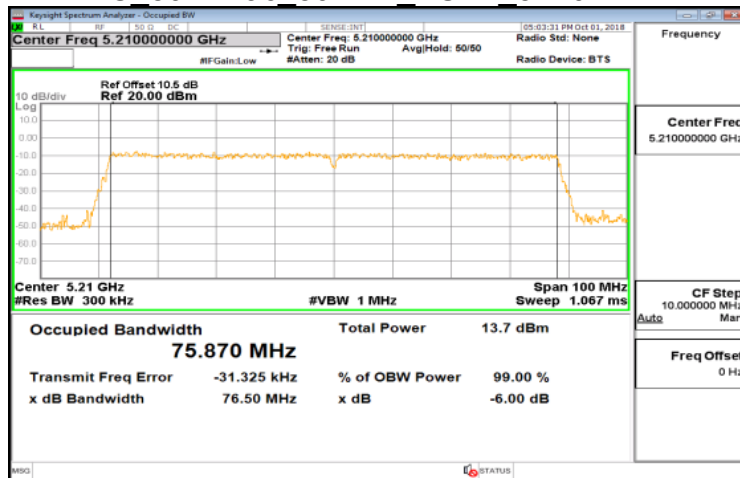
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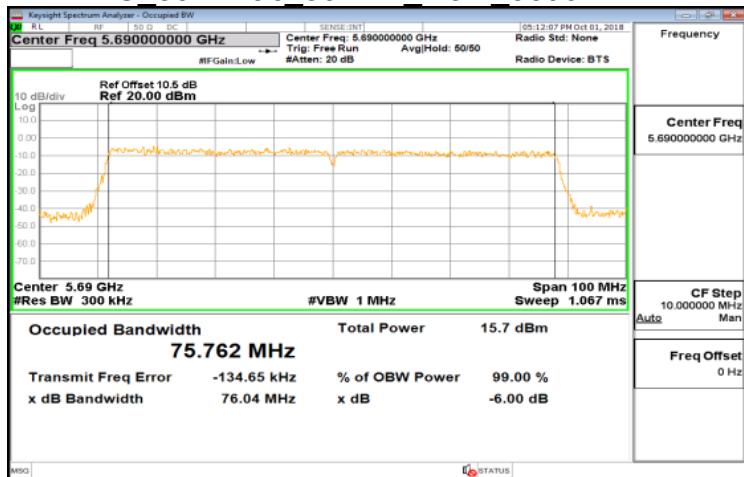
IC 802.11ac 80MHz Main 5610MHz



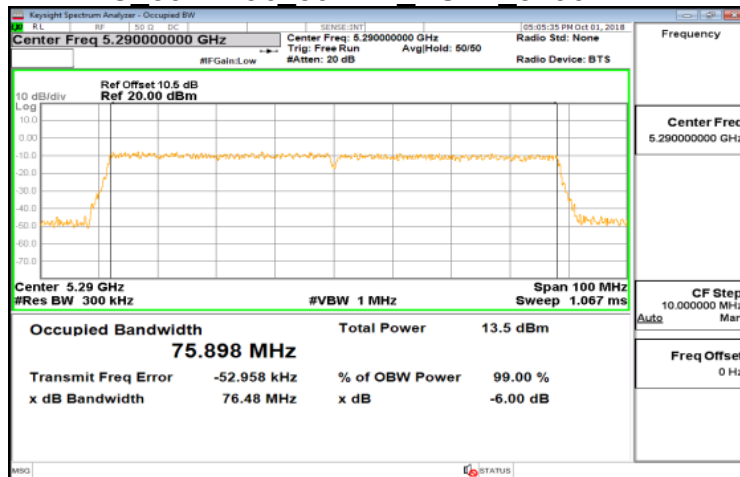
IC 802.11ac 80MHz AUX1 5210MHz



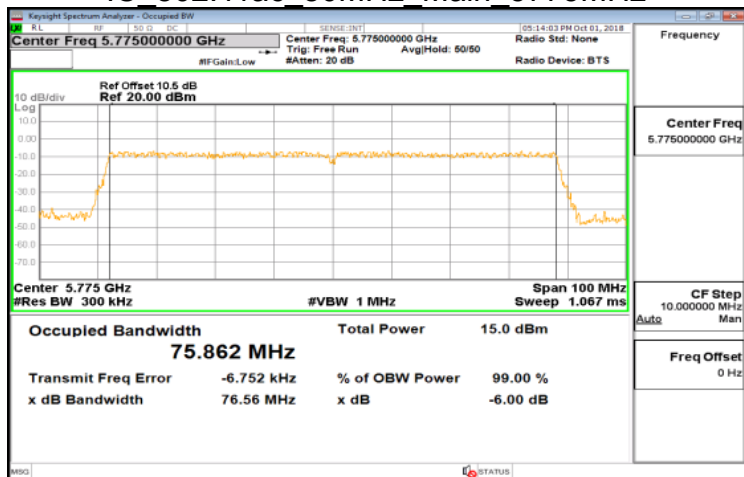
IC 802.11ac 80MHz Main 5690MHz



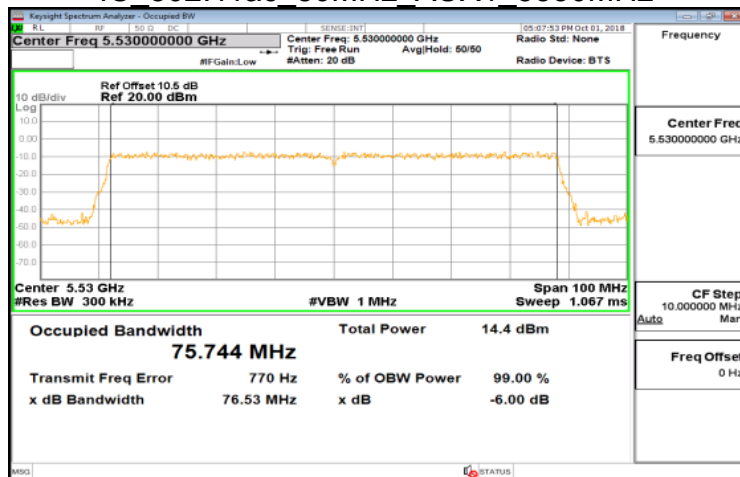
IC 802.11ac 80MHz AUX1 5290MHz



IC 802.11ac 80MHz Main 5775MHz



IC 802.11ac 80MHz AUX1 5530MHz

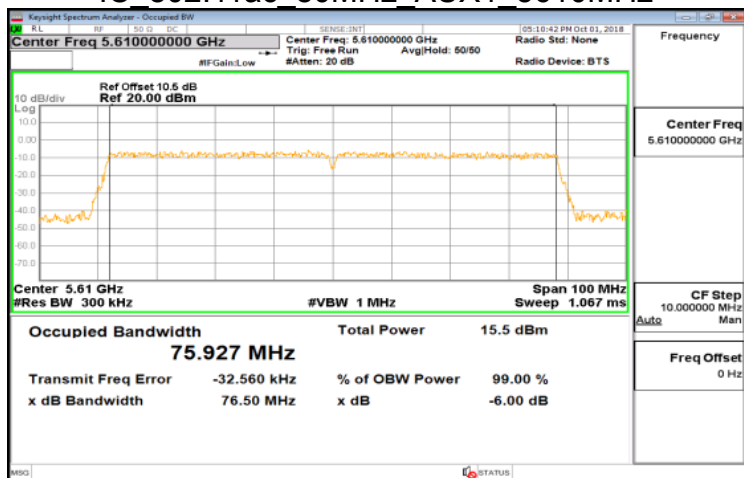


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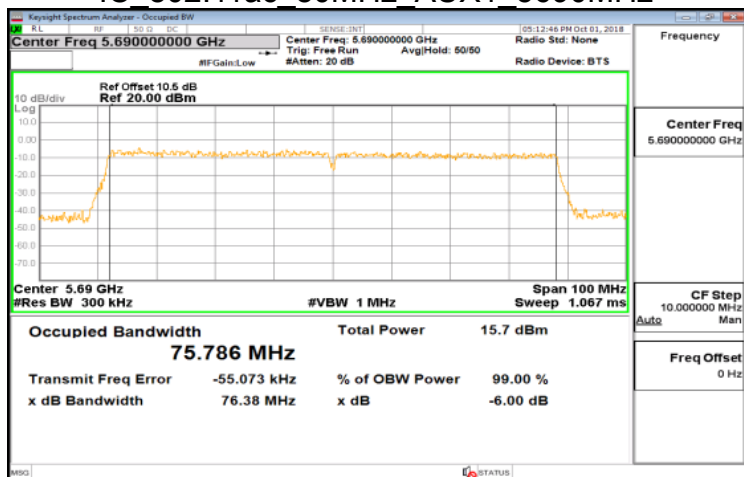
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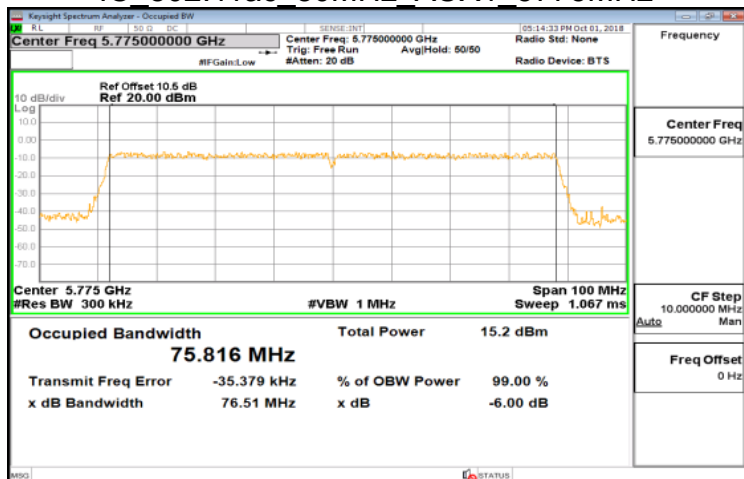
## IC 802.11ac 80MHz AUX1 5610MHz



## IC 802.11ac 80MHz AUX1 5690MHz



## IC 802.11ac 80MHz AUX1 5775MHz



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## 9 MAXIMUM CONDUCTED OUTPUT POWER MEASUREMENT

### 9.1 Standard Applicable

#### FCC

| OPERZTION Band                                                                                                                                                                                     | EUT CATEGORY |                                   | LIMIT                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------------------------|-----------------------------------|
| U-NII-1                                                                                                                                                                                            |              | Access Point (Master device )     | 1 Watt(30dBm)                     |
|                                                                                                                                                                                                    |              | Fixed point-to-point Access Ponit | 1 Watt(30dBm)                     |
|                                                                                                                                                                                                    | √            | Mobile and portable client device | 250mW(23.98dBm)                   |
| U-NII-2A                                                                                                                                                                                           | √            |                                   | 250mW(23.98dBm) or 11dBm+10 log B |
| U-NII-2C                                                                                                                                                                                           | √            |                                   | 250mW(23.98dBm) or 11dBm+10 log B |
| U-NII-3                                                                                                                                                                                            | √            |                                   | 1 Watt(30dBm)                     |
| If transmitting antennas of directional gain greater than 6 dBi are used, the Maximum transmit power shall be reduced by the amount in dB that the direction-al gain of the antenna exceeds 6 dBi. |              |                                   |                                   |

#### ISED

| OPERZTION FREQUENCY BAND                                                                                                                                                                                                                                    | LIMIT                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| 5150~5250 MHz                                                                                                                                                                                                                                               | EIRP shall not exceed 200 mW or $10 + 10 \log_{10} B$ , dBm                                                                           |
| 5250~5350 MHz                                                                                                                                                                                                                                               | Conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$<br>EIRP shall not exceed 1.0 W or $17 + 10 \log_{10} B$ , dBm |
| 5470-5600 MHz and 5650-5725 MHz                                                                                                                                                                                                                             | Conducted output power shall not exceed 250 mW or $11 + 10 \log_{10} B$<br>EIRP shall not exceed 1.0 W or $17 + 10 \log_{10} B$ , dBm |
| 5725~5850 MHz                                                                                                                                                                                                                                               | Conducted output power shall not exceed 1 W                                                                                           |
| For equipment operating in the band <b>5725-5850</b> MHz, If transmitting antennas of directional gain greater than 6 dBi are used, the Maximum transmit power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. |                                                                                                                                       |

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**Note:**

As per FCC KDB 662911 D01

Unequal antenna gains, with equal transmit powers. For antenna gains given by  $G_1, G_2, \dots, G_N$  dBi.

(i) If transmit signals are correlated, then Directional gain

$$= 10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{ANT}] \text{ dBi}$$

[Note the “20”s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

The antenna gain is not greater than 6 dBi. Therefore, reduction of power is not required.

**9.2 Measurement Procedure**

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter
4. Power Meter is used as the auxiliary test equipment to conduct the output power measurement.
5. Record the max. reading and add  $10 \log(1/\text{duty cycle})$ .
6. Repeat above procedures until all frequency (low, middle, and high channel) measured were complete.

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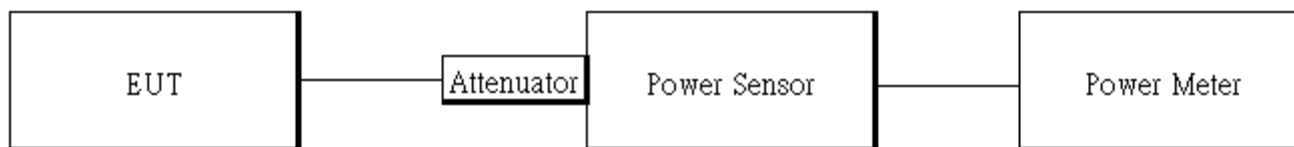
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### 9.3 Measurement Equipment Used

| SGS Conducted Room |               |             |               |                  |                 |
|--------------------|---------------|-------------|---------------|------------------|-----------------|
| Name of Equip-ment | Manufacturer  | Model       | Serial Number | Calibration Date | Calibration Due |
| Power Meter        | Anritsu       | ML2496A     | 1804001       | 2018/02/01       | 2019/01/31      |
| Power Sensor       | Anritsu       | MA2411B     | 1726104       | 2018/02/01       | 2019/01/31      |
| Power Sensor       | Anritsu       | MA2411B     | 1726107       | 2018/02/01       | 2019/01/31      |
| DC Power Supply    | Anritsu       | E3640A      | MY52410006    | 2017/11/28       | 2018/11/27      |
| Attenuator         | Mini-Circuit  | BW-S10W2+   | 2             | 2018/01/02       | 2019/01/01      |
| DC Block           | Mini-Circuits | BLK-18-S+   | 1             | 2018/01/02       | 2019/01/01      |
| Coaxial Cables     | N/A           | WK CE Cable | N/A           | 2018/01/02       | 2019/01/01      |
| Notebook           | Lenovo        | L430        | R9-WGNK5      | N/A              | N/A             |

### 9.4 Test Set-up



### 9.5 Measurement Result

#### Conducted output power (FCC)

#### SISO

#### 802.11n\_HT20\_Ch0

| CH  | Frequency (MHz) | Data Rate | TOTAL POWER (dBm) | TOTAL POWER (mW) | REQUIRED LIMIT (dBm)            | RESULT |
|-----|-----------------|-----------|-------------------|------------------|---------------------------------|--------|
| 140 | 5700            | MCS0      | 12.68             | 18.519           | 23.98 or $11+10\log(B) = 23.85$ | PASS   |

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## 802.11n\_HT40\_Ch0

| CH  | Frequency (MHz) | Data Rate | TOTAL POWER (dBm) | TOTAL POWER (mW) | REQUIRED LIMIT (dBm)            | RESULT |
|-----|-----------------|-----------|-------------------|------------------|---------------------------------|--------|
| 38  | 5190            | MCS0      | 11.25             | 13.331           | 23.98                           | PASS   |
| 62  | 5310            | MCS0      | <b>12.42</b>      | 17.453           | 23.98 or $11+10\log(B) = 26.81$ | PASS   |
| 102 | 5510            | MCS0      | <b>10.31</b>      | 10.736           | 23.98 or $11+10\log(B) = 26.82$ | PASS   |

## 802.11ac\_VHT80\_Ch0

| CH | Frequency (MHz) | Data Rate | TOTAL POWER (dBm) | TOTAL POWER (mW) | REQUIRED LIMIT (dBm)            | RESULT |
|----|-----------------|-----------|-------------------|------------------|---------------------------------|--------|
| 42 | 5210            | MCS0      | 8.37              | 6.866            | 23.98                           | PASS   |
| 58 | 5290            | MCS0      | <b>9.34</b>       | 8.585            | 23.98 or $11+10\log(B) = 29.98$ | PASS   |

## MIMO

## 802.11a\_Ch0

| CH  | Frequency (MHz) | Data Rate | TOTAL POWER (dBm) | TOTAL POWER (mW) | REQUIRED LIMIT (dBm)            | RESULT |
|-----|-----------------|-----------|-------------------|------------------|---------------------------------|--------|
| 36  | 5180            | 6         | 12.36             | 17.235           | 23.98                           | PASS   |
| 44  | 5220            | 6         | 12.48             | 17.718           | 23.98                           | PASS   |
| 48  | 5240            | 6         | 12.38             | 17.314           | 23.98                           | PASS   |
| 52  | 5260            | 6         | 12.47             | 17.677           | 23.98 or $11+10\log(B) = 23.72$ | PASS   |
| 60  | 5300            | 6         | <b>12.51</b>      | 17.841           | 23.98 or $11+10\log(B) = 23.71$ | PASS   |
| 64  | 5320            | 6         | 12.29             | 16.959           | 23.98 or $11+10\log(B) = 23.67$ | PASS   |
| 100 | 5500            | 6         | 12.17             | 16.497           | 23.98 or $11+10\log(B) = 23.70$ | PASS   |
| 116 | 5580            | 6         | 12.20             | 16.611           | 23.98 or $11+10\log(B) = 23.68$ | PASS   |
| 140 | 5700            | 6         | <b>12.35</b>      | 17.195           | 23.98 or $11+10\log(B) = 23.66$ | PASS   |
| 144 | 5720(U-NII 2C)  | 6         | 9.752532          | 9.446            | 23.98 or $11+10\log(B) = 22.69$ | PASS   |
| 144 | 5720 (U-NII 3)  | 6         | 3.171555          | 2.076            | 30                              | PASS   |
| 149 | 5745            | 6         | <b>12.42</b>      | 17.475           | 30                              | PASS   |
| 157 | 5785            | 6         | 12.05             | 16.048           | 30                              | PASS   |
| 165 | 5825            | 6         | 12.07             | 16.122           | 30                              | PASS   |

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## 802.11n\_HT20\_MIMO

| CH  | Frequency (MHz) | Data Rate | g. POWER (dB) |      | TOTAL POWER (dBm) | TOTAL POWER (mW) | REQUIRED LIMIT (dBm)            | RESULT |
|-----|-----------------|-----------|---------------|------|-------------------|------------------|---------------------------------|--------|
|     |                 |           | CH 0          | CH 1 |                   |                  |                                 |        |
| 36  | 5180            | MCS8      | 12.7          | 12.6 | 15.79             | 37.072           | 23.98                           | PASS   |
| 44  | 5220            | MCS8      | 12.8          | 12.7 | 15.83             | 37.461           | 23.98                           | PASS   |
| 48  | 5240            | MCS8      | 12.6          | 12.2 | 15.51             | 34.789           | 23.98                           | PASS   |
| 52  | 5260            | MCS8      | 12.6          | 12.5 | 15.63             | 35.774           | 23.98 or $11+10\log(B) = 24.01$ | PASS   |
| 60  | 5300            | MCS8      | 12.4          | 12.3 | 15.42             | 34.083           | 23.98 or $11+10\log(B) = 23.97$ | PASS   |
| 64  | 5320            | MCS8      | 12.2          | 12.1 | 15.26             | 32.816           | 23.98 or $11+10\log(B) = 23.86$ | PASS   |
| 100 | 5500            | MCS8      | 12.4          | 12.2 | 15.40             | 33.929           | 23.98 or $11+10\log(B) = 23.91$ | PASS   |
| 116 | 5580            | MCS8      | 12.3          | 12.2 | 15.35             | 33.538           | 23.98 or $11+10\log(B) = 23.95$ | PASS   |
| 140 | 5700            | MCS8      | 11.4          | 11.4 | 14.49             | 27.513           | 23.98 or $11+10\log(B) = 23.97$ | PASS   |
| 144 | 5720(U-NII 2C)  | MCS8      | 9.5           | 8.93 | 11.61             | 16.719           | 23.98 or $11+10\log(B) = 22.70$ | PASS   |
| 144 | 5720 (U-NII 3)  | MCS8      | 3.05          | 2.96 | 3.73              | 3.997            | 30                              | PASS   |
| 149 | 5745            | MCS8      | 12            | 12.3 | 15.27             | 32.946           | 30                              | PASS   |
| 157 | 5785            | MCS8      | 12            | 12.3 | 15.26             | 32.824           | 30                              | PASS   |
| 165 | 5825            | MCS8      | 12.1          | 12.3 | 15.32             | 33.320           | 30                              | PASS   |

## 802.11n\_HT40\_MIMO

| CH  | Frequency (MHz) | Data Rate | g. POWER (dB) |      | TOTAL POWER (dBm) | TOTAL POWER (mW) | REQUIRED LIMIT (dBm)            | RESULT |
|-----|-----------------|-----------|---------------|------|-------------------|------------------|---------------------------------|--------|
|     |                 |           | CH 0          | CH 1 |                   |                  |                                 |        |
| 38  | 5190            | MCS8      | 9.29          | 8.97 | 12.33             | 16.380           | 23.98                           | PASS   |
| 46  | 5230            | MCS8      | 12.6          | 12.3 | 15.64             | 35.057           | 23.98                           | PASS   |
| 54  | 5270            | MCS8      | 12.4          | 12.2 | 15.49             | 33.930           | 23.98 or $11+10\log(B) = 27.03$ | PASS   |
| 62  | 5310            | MCS8      | 11.2          | 11   | 14.29             | 25.738           | 23.98 or $11+10\log(B) = 27.03$ | PASS   |
| 102 | 5510            | MCS8      | 8.98          | 8.94 | 12.16             | 15.741           | 23.98 or $11+10\log(B) = 27.01$ | PASS   |
| 110 | 5550            | MCS8      | 12.3          | 12.3 | 15.49             | 33.926           | 23.98 or $11+10\log(B) = 27.01$ | PASS   |
| 134 | 5670            | MCS8      | 12.3          | 12.5 | 15.63             | 35.046           | 23.98 or $11+10\log(B) = 27.01$ | PASS   |
| 142 | 5710(U-NII 2C)  | MCS8      | 10.7          | 11   | 13.62             | 24.088           | 23.98 or $11+10\log(B) = 26.42$ | PASS   |
| 142 | 5720 (U-NII 3)  | MCS8      | 1.52          | 1.6  | 1.95              | 2.864            | 30                              | PASS   |
| 151 | 5755            | MCS8      | 11.9          | 12.2 | 15.22             | 31.869           | 30                              | PASS   |
| 159 | 5795            | MCS8      | 11.9          | 12.3 | 15.30             | 32.428           | 30                              | PASS   |

## 802.11ac\_VHT80\_MIMO

| CH  | Frequency (MHz) | Data Rate | g. POWER (dB) |      | TOTAL POWER (dBm) | TOTAL POWER (mW) | REQUIRED LIMIT (dBm)            | RESULT |
|-----|-----------------|-----------|---------------|------|-------------------|------------------|---------------------------------|--------|
|     |                 |           | CH 0          | CH 1 |                   |                  |                                 |        |
| 42  | 5210            | MCS0      | 7.21          | 7.13 | 10.38             | 10.424           | 23.98                           | PASS   |
| 58  | 5290            | MCS0      | 7.43          | 7.28 | 10.56             | 10.879           | 23.98 or $11+10\log(B) = 30.09$ | PASS   |
| 106 | 5530            | MCS0      | 8.19          | 8.08 | 11.34             | 13.019           | 23.98 or $11+10\log(B) = 30.09$ | PASS   |
| 122 | 5610            | MCS0      | 9.07          | 9.39 | 12.44             | 16.762           | 23.98 or $11+10\log(B) = 30.12$ | PASS   |
| 138 | 5690(U-NII 2C)  | MCS0      | 8.47          | 8.58 | 11.58             | 14.241           | 23.98 or $11+10\log(B) = 29.77$ | PASS   |
| 138 | 5690 (U-NII 3)  | MCS0      | 0.56          | 0.66 | 0.77              | 2.302            | 30                              | PASS   |
| 155 | 5775            | MCS0      | 8.89          | 9.21 | 12.26             | 16.081           | 30                              | PASS   |

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## Conducted output power (IC)

### SISO

#### 802.11n\_HT20\_Ch0

| CH  | Frequency (MHz) | TOTAL POWER (dBm) | TOTAL POWER (mW) | REQUIRED LIMIT (dBm)            | RESULT |
|-----|-----------------|-------------------|------------------|---------------------------------|--------|
| 140 | 5700            | 12.68             | 18.519           | 23.98 or $11+10\log(B) = 23.47$ | PASS   |

#### 802.11n\_HT40\_Ch0

| CH  | Frequency (MHz) | TOTAL POWER (dBm) | TOTAL POWER (mW) | REQUIRED LIMIT (dBm)            | RESULT |
|-----|-----------------|-------------------|------------------|---------------------------------|--------|
| 62  | 5310            | 12.42             | 17.453           | 23.98 or $11+10\log(B) = 26.57$ | PASS   |
| 102 | 5510            | 10.31             | 10.736           | 23.98 or $11+10\log(B) = 26.57$ | PASS   |

#### 802.11ac\_VHT80\_Ch0

| CH | Frequency (MHz) | TOTAL POWER (dBm) | TOTAL POWER (mW) | REQUIRED LIMIT (dBm)            | RESULT |
|----|-----------------|-------------------|------------------|---------------------------------|--------|
| 58 | 5290            | 9.34              | 8.585            | 23.98 or $11+10\log(B) = 29.80$ | PASS   |

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## MIMO

## 802.11a\_Ch0

| CH  | Frequency (MHz) | TOTAL POWER (dBm) | TOTAL POWER (mW) | REQUIRED LIMIT (dBm)            | RESULT |
|-----|-----------------|-------------------|------------------|---------------------------------|--------|
| 52  | 5260            | 12.47             | 17.677           | 23.98 or $11+10\log(B) = 23.22$ | PASS   |
| 60  | 5300            | <b>12.51</b>      | <b>17.841</b>    | 23.98 or $11+10\log(B) = 23.23$ | PASS   |
| 64  | 5320            | 12.29             | 16.959           | 23.98 or $11+10\log(B) = 23.21$ | PASS   |
| 100 | 5500            | 12.17             | 16.497           | 23.98 or $11+10\log(B) = 23.22$ | PASS   |
| 116 | 5580            | 12.20             | 16.611           | 23.98 or $11+10\log(B) = 23.23$ | PASS   |
| 140 | 5700            | 12.35             | <b>17.195</b>    | 23.98 or $11+10\log(B) = 23.20$ | PASS   |
| 149 | 5745            | 12.42             | <b>17.475</b>    | 30                              | PASS   |
| 157 | 5785            | 12.05             | 16.048           | 30                              | PASS   |
| 165 | 5825            | 12.07             | 16.122           | 30                              | PASS   |

## 802.11n\_HT20\_MIMO

| CH  | Frequency (MHz) | AVERAGE POWER |      | TOTAL POWER (dBm) | TOTAL POWER (mW) | REQUIRED LIMIT (dBm)            | RESULT |
|-----|-----------------|---------------|------|-------------------|------------------|---------------------------------|--------|
|     |                 | CH 0          | CH 1 |                   |                  |                                 |        |
| 52  | 5260            | 12.6          | 12.5 | <b>15.63</b>      | <b>36.575</b>    | 23.98 or $11+10\log(B) = 23.47$ | PASS   |
| 60  | 5300            | 12.4          | 12.3 | 15.42             | 34.847           | 23.98 or $11+10\log(B) = 23.47$ | PASS   |
| 64  | 5320            | 12.2          | 12.1 | 15.26             | 33.551           | 23.98 or $11+10\log(B) = 23.47$ | PASS   |
| 100 | 5500            | 12.4          | 12.2 | <b>15.40</b>      | <b>34.688</b>    | 23.98 or $11+10\log(B) = 23.46$ | PASS   |
| 116 | 5580            | 12.3          | 12.2 | 15.35             | 34.289           | 23.98 or $11+10\log(B) = 23.47$ | PASS   |
| 140 | 5700            | 11.4          | 11.4 | <b>14.49</b>      | <b>28.129</b>    | 23.98 or $11+10\log(B) = 23.47$ | PASS   |
| 149 | 5745            | 12            | 12.3 | 15.27             | 33.684           | 30                              | PASS   |
| 157 | 5785            | 12            | 12.3 | 15.26             | 33.559           | 30                              | PASS   |
| 165 | 5825            | 12.1          | 12.3 | <b>15.32</b>      | <b>34.066</b>    | 30                              | PASS   |

## 802.11n\_HT40\_MIMO

| CH  | Frequency (MHz) | AVERAGE POWER |      | TOTAL POWER (dBm) | TOTAL POWER (mW) | REQUIRED LIMIT (dBm)            | RESULT |
|-----|-----------------|---------------|------|-------------------|------------------|---------------------------------|--------|
|     |                 | CH 0          | CH 1 |                   |                  |                                 |        |
| 54  | 5270            | 12.4          | 12.2 | 15.49             | 35.436           | 23.98 or $11+10\log(B) = 26.56$ | PASS   |
| 62  | 5310            | 11.2          | 11   | 14.29             | 26.881           | 23.98 or $11+10\log(B) = 26.56$ | PASS   |
| 102 | 5510            | 8.98          | 8.94 | 12.16             | 16.440           | 23.98 or $11+10\log(B) = 26.57$ | PASS   |
| 110 | 5550            | 12.3          | 12.3 | <b>15.49</b>      | <b>35.432</b>    | 23.98 or $11+10\log(B) = 26.57$ | PASS   |
| 134 | 5670            | 12.3          | 12.5 | <b>15.63</b>      | <b>36.601</b>    | 23.98 or $11+10\log(B) = 26.57$ | PASS   |
| 151 | 5755            | 11.9          | 12.2 | 15.22             | 33.283           | 30                              | PASS   |
| 159 | 5795            | 11.9          | 12.3 | <b>15.30</b>      | <b>33.868</b>    | 30                              | PASS   |

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### 802.11ac\_VHT80\_MIMO

| CH  | Frequency<br>(MHz) | AVERAGE<br>POWER |      | TOTAL<br>POWER<br>(dBm) | TOTAL<br>POWER<br>(mW) | REQUIRED<br>LIMIT<br>(dBm)      | RESULT |
|-----|--------------------|------------------|------|-------------------------|------------------------|---------------------------------|--------|
|     |                    | CH 0             | CH 1 |                         |                        |                                 |        |
| 58  | 5290               | 7.43             | 7.28 | <b>10.56</b>            | 11.385                 | 23.98 or $11+10\log(B) = 29.80$ | PASS   |
| 106 | 5530               | 8.19             | 8.08 | 11.34                   | 13.623                 | 23.98 or $11+10\log(B) = 29.79$ | PASS   |
| 122 | 5610               | 9.07             | 9.39 | <b>12.44</b>            | <b>17.541</b>          | 23.98 or $11+10\log(B) = 29.79$ | PASS   |
| 155 | 5775               | 8.89             | 9.21 | <b>12.26</b>            | <b>16.829</b>          | 30                              | PASS   |

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# EIRP

# SISO

## 802.11n\_HT20\_Ch0

| CH  | Frequency (MHz) | TOTAL POWER (dBm) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | REQUIRED LIMIT (dBm)     | RESULT |
|-----|-----------------|-------------------|--------------------|------------|-----------|--------------------------|--------|
| 140 | 5700            | 12.68             | 2.930              | 15.61      | 36.359    | 30 or 17+10log(B)= 29.47 | PASS   |

## 802.11n\_HT40\_Ch0

| CH  | Frequency (MHz) | TOTAL POWER (dBm) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | REQUIRED LIMIT (dBm)        | RESULT |
|-----|-----------------|-------------------|--------------------|------------|-----------|-----------------------------|--------|
| 38  | 5190            | 11.25             | 2.930              | 14.18      | 26.173    | 23.01 or 10+10log(B)= 25.57 | PASS   |
| 62  | 5310            | 12.42             | 2.930              | 15.35      | 34.266    | 30 or 17+10log(B)= 32.57    | PASS   |
| 102 | 5510            | 10.31             | 2.930              | 13.24      | 21.080    | 30 or 17+10log(B)= 32.57    | PASS   |

## 802.11ac\_VHT80\_Ch0

| CH | Frequency (MHz) | TOTAL POWER (dBm) | Antenna Gain (dBi) | EIRP (dBm) | EIRP (mW) | REQUIRED LIMIT (dBm)        | RESULT |
|----|-----------------|-------------------|--------------------|------------|-----------|-----------------------------|--------|
| 42 | 5210            | 8.37              | 2.930              | 11.30      | 13.481    | 23.01 or 10+10log(B)= 28.80 | PASS   |
| 58 | 5290            | 9.34              | 2.930              | 12.27      | 16.855    | 30 or 17+10log(B)= 35.80    | PASS   |

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## MIMO

## 802.11a Ch0

| CH  | Frequency (MHz) | TOTAL POWER (dBm) | Antenna Gain (dBi) | EIRP (dBm)   | EIRP (mW)     | REQUIRED LIMIT (dBm)        | RESULT |
|-----|-----------------|-------------------|--------------------|--------------|---------------|-----------------------------|--------|
| 36  | 5180            | 12.36             | 2.930              | 15.29        | 33.838        | 23.01 or 10+10log(B)= 22.22 | PASS   |
| 44  | 5220            | <b>12.48</b>      | 2.930              | <b>15.41</b> | <b>34.786</b> | 23.01 or 10+10log(B)= 22.23 | PASS   |
| 48  | 5240            | 12.38             | 2.930              | 15.31        | 33.995        | 23.01 or 10+10log(B)= 22.22 | PASS   |
| 52  | 5260            | 12.47             | 2.930              | 15.40        | 34.706        | 30 or 17+10log(B)= 29.22    | PASS   |
| 60  | 5300            | <b>12.51</b>      | 2.930              | <b>15.44</b> | <b>35.027</b> | 30 or 17+10log(B)= 29.23    | PASS   |
| 64  | 5320            | 12.29             | 2.930              | 15.22        | 33.297        | 30 or 17+10log(B)= 29.21    | PASS   |
| 100 | 5500            | 12.17             | 2.930              | 15.10        | 32.390        | 30 or 17+10log(B)= 29.22    | PASS   |
| 116 | 5580            | <b>12.20</b>      | 2.930              | <b>15.13</b> | <b>32.614</b> | 30 or 17+10log(B)= 29.23    | PASS   |
| 140 | 5700            | <b>12.35</b>      | 2.930              | <b>15.28</b> | <b>33.760</b> | 30 or 17+10log(B)= 29.20    | PASS   |

## 802.11n HT20 MIMO

| CH  | Frequency (MHz) | TOTAL POWER (dBm) | Antenna Gain (dBi) | EIRP (dBm)   | EIRP (mW)      | REQUIRED LIMIT (dBm)        | RESULT |
|-----|-----------------|-------------------|--------------------|--------------|----------------|-----------------------------|--------|
| 36  | 5180            | 15.79             | 5.940              | 21.73        | 148.832        | 23.01 or 10+10log(B)= 22.47 | PASS   |
| 44  | 5220            | <b>15.83</b>      | 5.940              | <b>21.77</b> | <b>150.392</b> | 23.01 or 10+10log(B)= 22.47 | PASS   |
| 48  | 5240            | 15.51             | 5.940              | 21.45        | 139.666        | 23.01 or 10+10log(B)= 22.47 | PASS   |
| 52  | 5260            | <b>15.63</b>      | 5.940              | <b>21.57</b> | <b>143.619</b> | 30 or 17+10log(B)= 29.47    | PASS   |
| 60  | 5300            | 15.42             | 5.940              | 21.36        | 136.833        | 30 or 17+10log(B)= 29.47    | PASS   |
| 64  | 5320            | 15.26             | 5.940              | 21.20        | 131.745        | 30 or 17+10log(B)= 29.47    | PASS   |
| 100 | 5500            | <b>15.40</b>      | 5.940              | <b>21.34</b> | <b>136.211</b> | 30 or 17+10log(B)= 29.46    | PASS   |
| 116 | 5580            | 15.35             | 5.940              | 21.29        | 134.643        | 30 or 17+10log(B)= 29.47    | PASS   |
| 140 | 5700            | <b>14.49</b>      | 5.940              | <b>20.43</b> | <b>110.453</b> | 30 or 17+10log(B)= 29.47    | PASS   |

## 802.11n HT40 MIMO

| CH  | Frequency (MHz) | TOTAL POWER (dBm) | Antenna Gain (dBi) | EIRP (dBm)   | EIRP (mW)      | REQUIRED LIMIT (dBm)        | RESULT |
|-----|-----------------|-------------------|--------------------|--------------|----------------|-----------------------------|--------|
| 38  | 5190            | 12.33             | 5.940              | 18.27        | 67.176         | 23.01 or 10+10log(B)= 25.57 | PASS   |
| 46  | 5230            | <b>15.64</b>      | 5.940              | <b>21.58</b> | <b>143.768</b> | 23.01 or 10+10log(B)= 25.56 | PASS   |
| 54  | 5270            | <b>15.49</b>      | 5.940              | <b>21.43</b> | <b>139.146</b> | 30 or 17+10log(B)= 32.56    | PASS   |
| 62  | 5310            | 14.29             | 5.940              | 20.23        | 105.553        | 30 or 17+10log(B)= 32.56    | PASS   |
| 102 | 5510            | 12.16             | 5.940              | 18.10        | 64.554         | 30 or 17+10log(B)= 32.57    | PASS   |
| 110 | 5550            | <b>15.49</b>      | 5.940              | <b>21.43</b> | <b>139.131</b> | 30 or 17+10log(B)= 32.57    | PASS   |
| 134 | 5670            | <b>15.63</b>      | 5.940              | <b>21.58</b> | <b>143.723</b> | 30 or 17+10log(B)= 32.57    | PASS   |

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## 802.11ac\_VHT80\_MIMO

| CH  | Frequency<br>(MHz) | TOTAL<br>POWER<br>(dBm) | Antenna<br>Gain<br>(dBi) | EIRP<br>(dBm) | EIRP<br>(mW) | REQUIRED<br>LIMIT<br>(dBm) |                    |       | RESULT |
|-----|--------------------|-------------------------|--------------------------|---------------|--------------|----------------------------|--------------------|-------|--------|
| 42  | 5210               | 10.38                   | 5.940                    | 16.32         | 42.835       | 23.01                      | or $10+10\log(B)=$ | 28.80 | PASS   |
| 58  | 5290               | 10.56                   | 5.940                    | 16.50         | 44.704       | 30                         | or $17+10\log(B)=$ | 35.80 | PASS   |
| 106 | 5530               | 11.34                   | 5.940                    | 17.28         | 53.496       | 30                         | or $17+10\log(B)=$ | 35.79 | PASS   |

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## 10 MAXIMUM POWER SPECTRAL DENSITY

### 10.1 Standard Applicable

#### FCC

| OPERZTION Band | EUT CATEGORY |                                   | LIMIT         |
|----------------|--------------|-----------------------------------|---------------|
| U-NII-1        |              | Access Point (Master device )     | 17dBm/ MHz    |
|                |              | Fixed point-to-point Access Ponit |               |
|                | √            | Mobile and portable client device | 11dBm/ MHz    |
| U-NII-2A       | √            |                                   | 11dBm/ MHz    |
| U-NII-2C       | √            |                                   | 11dBm/ MHz    |
| U-NII-3        | √            |                                   | 30dBm/ 500kHz |

If transmitting antennas of directional gain greater than 6 dBi are used, the Maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### ISED

| OPERZTION FREQUENCY BAND        | LIMIT                              |
|---------------------------------|------------------------------------|
| 5150~5250 MHz                   | EIRP spectral density 10 dBm / MHz |
| 5250~5350 MHz                   | 11dBm / MHz                        |
| 5470-5600 MHz and 5650-5725 MHz | 11dBm / MHz                        |
| 5725~5850 MHz                   | 30dBm / 500 kHz                    |

For equipment operating in the band **5725-5850** MHz, If transmitting antennas of directional gain greater than 6 dBi are used, the Maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

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**Note:**

As per FCC KDB 662911 D01

Unequal antenna gains, with equal transmit powers. For antenna gains given by  $G_1, G_2, \dots, G_N$  dBi.

(i) If transmit signals are correlated, then Directional gain

$$= 10 \log[(10^{G_1/20} + 10^{G_2/20} + \dots + 10^{G_N/20})^2 / N_{ANT}] \text{ dBi}$$

[Note the “20”s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

The antenna gain is not greater than 6 dBi. Therefore, reduction of power is not required.

**10.2 Measurement Procedure**

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Spectrum.
4. **For U-NII1, U-NII-2A, U-NII-2C Band:**  
Set RBW=1MHz, VBW=3MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)  
**For U-NII-3 Band:**  
Set RBW=500 kHz, VBW $\geq$  3RBW, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)
5. Use the cursor on spectrum to peak search the highest level of trace
6. Record the max. reading and add  $10 \log(1/\text{duty cycle})$ .
7. Repeat above procedures until all default test channel (low, middle, and high) was complete.

**Note: For the test of PSD at MIMO mode, the highest emission of worst case employing Measure and add  $10 \log(N)$  technical is reported on this report after the comparison between Main Antenna at single transmitting mode and Aux that yields the higher value. The MIMO transmitting mode produces higher value of outcome**

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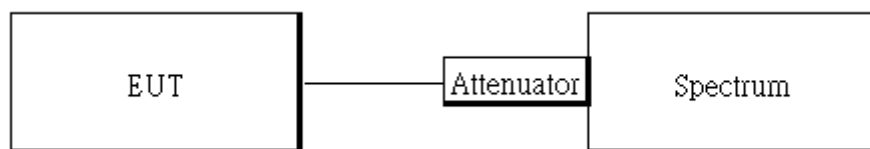
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### 10.3 Measurement Equipment Used

| SGS Conducted Room  |               |             |               |                  |                 |
|---------------------|---------------|-------------|---------------|------------------|-----------------|
| Name of Equipment   | Manufacturer  | Model       | Serial Number | Calibration Date | Calibration Due |
| Spectrum Analyzer   | R&S           | FSV-30      | 101398        | 2017/10/19       | 2018/10/18      |
| DC Power Supply     | Anritsu       | E3640A      | MY52410006    | 2017/11/28       | 2018/11/27      |
| Temperature Chamber | TERCHY        | MHG-120LF   | 911009        | 2018/05/18       | 2019/05/17      |
| Attenuator          | Mini-Circuit  | BW-S10W2+   | 2             | 2018/01/02       | 2019/01/01      |
| DC Block            | Mini-Circuits | BLK-18-S+   | 1             | 2018/01/02       | 2019/01/01      |
| Coaxial Cables      | N/A           | WK CE Cable | N/A           | 2018/01/02       | 2019/01/01      |
| Notebook            | Lenovo        | L430        | R9-WGNK5      | N/A              | N/A             |

### 10.4 Test Set-up



### 10.5 Measurement Result

#### SISO

| POWER DENSITY 802.11n HT20 MODE |                           |        |             |                             |             |             |
|---------------------------------|---------------------------|--------|-------------|-----------------------------|-------------|-------------|
| Frequency (MHz)                 | PSD W/O Duty Factor (dBm) | Offset | Duty Factor | PPSD With Duty Factor (dBm) | Limit (dBm) | Margin (dB) |
| 5700                            | 1.28                      | 10.50  | 0.10        | 1.38                        | 11          | -9.62       |

| POWER DENSITY 802.11n HT40 MODE |                           |        |             |                             |             |             |
|---------------------------------|---------------------------|--------|-------------|-----------------------------|-------------|-------------|
| Frequency (MHz)                 | PSD W/O Duty Factor (dBm) | Offset | Duty Factor | PPSD With Duty Factor (dBm) | Limit (dBm) | Margin (dB) |
| 5190                            | -4.96                     | 10.50  | 0.19        | -4.77                       | 11          | -15.77      |
| 5310                            | -3.25                     | 10.50  | 0.19        | -3.06                       | 11          | -14.06      |
| 5510                            | -5.4                      | 10.50  | 0.19        | -5.21                       | 11          | -16.21      |

| POWER DENSITY 802.11ac VHT80 MODE |                           |        |             |                             |             |             |
|-----------------------------------|---------------------------|--------|-------------|-----------------------------|-------------|-------------|
| Frequency (MHz)                   | PSD W/O Duty Factor (dBm) | Offset | Duty Factor | PPSD With Duty Factor (dBm) | Limit (dBm) | Margin (dB) |
| 5210                              | -10.90                    | 10.50  | 0.20        | -10.70                      | 11          | -21.70      |
| 5290                              | -9.54                     | 10.50  | 0.20        | -9.34                       | 11          | -20.34      |

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## MIMO

| POWER DENSITY 802.11a MODE |                           |        |             |                            |             |             |
|----------------------------|---------------------------|--------|-------------|----------------------------|-------------|-------------|
| Frequency (MHz)            | PSD W/O Duty Factor (dBm) | Offset | Duty Factor | PSD With Duty Factor (dBm) | Limit (dBm) | Margin (dB) |
| 5180                       | 0.58                      | 10.50  | 0.04        | 0.62                       | 11          | -10.38      |
| 5220                       | -0.20                     | 10.50  | 0.04        | -0.16                      | 11          | -11.16      |
| 5240                       | 0.37                      | 10.50  | 0.04        | 0.41                       | 11          | -10.59      |
| 5260                       | 0.40                      | 10.50  | 0.04        | 0.44                       | 11          | -10.56      |
| 5300                       | -0.03                     | 10.50  | 0.04        | 0.01                       | 11          | -10.99      |
| 5320                       | -0.02                     | 10.50  | 0.04        | 0.02                       | 11          | -10.98      |
| 5500                       | -0.40                     | 10.50  | 0.04        | -0.36                      | 11          | -11.36      |
| 5580                       | 1.72                      | 10.50  | 0.04        | 1.76                       | 11          | -9.24       |
| 5700                       | 1.30                      | 10.50  | 0.04        | 1.34                       | 11          | -9.66       |
| 5720 (U-NII 2C)            | 1.45                      | 10.50  | 0.04        | 1.49                       | 11          | -9.51       |
| 5720 (U-NII 3)             | 0.28                      | 10.50  | 0.04        | 0.33                       | 30          | -29.67      |
| 5745                       | 5.04                      | 10.50  | -           | 5.04                       | 30          | -24.96      |
| 5785                       | 5.08                      | 10.50  | -           | 5.08                       | 30          | -24.92      |
| 5825                       | 5.33                      | 10.50  | -           | 5.33                       | 30          | -24.67      |

| POWER DENSITY 802.11n HT20 MODE |                           |        |             |                            |             |             |
|---------------------------------|---------------------------|--------|-------------|----------------------------|-------------|-------------|
| Frequency (MHz)                 | PSD W/O Duty Factor (dBm) | Offset | Duty Factor | PSD With Duty Factor (dBm) | Limit (dBm) | Margin (dB) |
| 5180                            | 3.59                      | 10.50  | 0.10        | 3.69                       | 11          | -7.31       |
| 5220                            | 3.74                      | 10.50  | 0.10        | 3.84                       | 11          | -7.16       |
| 5240                            | 3.04                      | 10.50  | 0.10        | 3.14                       | 11          | -7.86       |
| 5260                            | 2.71                      | 10.50  | 0.10        | 2.81                       | 11          | -8.19       |
| 5300                            | 2.69                      | 10.50  | 0.10        | 2.79                       | 11          | -8.21       |
| 5320                            | 2.51                      | 10.50  | 0.10        | 2.61                       | 11          | -8.39       |
| 5500                            | 2.28                      | 10.50  | 0.10        | 2.38                       | 11          | -8.62       |
| 5580                            | 2.97                      | 10.50  | 0.10        | 3.07                       | 11          | -7.93       |
| 5700                            | 2.17                      | 10.50  | 0.10        | 2.27                       | 11          | -8.73       |
| 5720 (U-NII 2C)                 | 3.89                      | 10.50  | 0.10        | 3.99                       | 11          | -7.01       |
| 5720 (U-NII 3)                  | 3.12                      | 10.50  | 0.10        | 3.22                       | 30          | -26.78      |
| 5745                            | 7.48                      | 10.50  | -           | 7.48                       | 30          | -22.52      |
| 5785                            | 8.22                      | 10.50  | -           | 8.22                       | 30          | -21.78      |
| 5825                            | 7.47                      | 10.50  | -           | 7.47                       | 30          | -22.53      |

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| POWER DENSITY 802.11n HT40 MODE |                           |        |             |                            |             |             |
|---------------------------------|---------------------------|--------|-------------|----------------------------|-------------|-------------|
| Frequency (MHz)                 | PSD W/O Duty Factor (dBm) | Offset | Duty Factor | PSD With Duty Factor (dBm) | Limit (dBm) | Margin (dB) |
| 5190                            | -3.43                     | 10.50  | 0.19        | -3.24                      | 11          | -14.24      |
| 5230                            | -0.94                     | 10.50  | 0.19        | -0.75                      | 11          | -11.75      |
| 5270                            | -0.66                     | 10.50  | 0.19        | -0.47                      | 11          | -11.47      |
| 5310                            | -1.13                     | 10.50  | 0.19        | -0.94                      | 11          | -11.94      |
| 5510                            | -4                        | 10.50  | 0.19        | -3.81                      | 11          | -14.81      |
| 5550                            | 0.27                      | 10.50  | 0.19        | 0.46                       | 11          | -10.54      |
| 5670                            | 0.50                      | 10.50  | 0.19        | 0.69                       | 11          | -10.31      |
| 5710 (U-NII 2C)                 | 0.66                      | 10.50  | 0.19        | 0.85                       | 11          | -10.15      |
| 5710 (U-NII 3)                  | -1.01                     | 10.50  | 0.19        | -0.82                      | 30          | -30.82      |
| 5755                            | 5.21                      | 10.50  | -           | 5.21                       | 30          | -24.79      |
| 5795                            | 5.31                      | 10.50  | -           | 5.31                       | 30          | -24.69      |

| POWER DENSITY 802.11ac VHT80 MODE |                           |        |             |                            |             |             |
|-----------------------------------|---------------------------|--------|-------------|----------------------------|-------------|-------------|
| Frequency (MHz)                   | PSD W/O Duty Factor (dBm) | Offset | Duty Factor | PSD With Duty Factor (dBm) | Limit (dBm) | Margin (dB) |
| 5210                              | -8.78                     | 10.50  | 0.20        | -8.58                      | 11          | -19.58      |
| 5290                              | -9.12                     | 10.50  | 0.20        | -8.92                      | 11          | -19.92      |
| 5530                              | -8.35                     | 10.50  | 0.20        | -8.15                      | 11          | -19.15      |
| 5610                              | -6.71                     | 10.50  | 0.20        | -6.51                      | 11          | -17.51      |
| 5690 (U-NII 2C)                   | -5.05                     | 10.50  | 0.20        | -4.85                      | 11          | -15.85      |
| 5690 (U-NII 3)                    | -13.95                    | 10.50  | 0.20        | -13.75                     | 30          | -43.75      |
| 5775                              | -1.53                     | 10.50  | -           | -1.53                      | 30          | -31.53      |

SISO

| EIRP spectral density 802.11ac VHT80 MODE |           |                 |               |             |             |
|-------------------------------------------|-----------|-----------------|---------------|-------------|-------------|
| Freq. (MHz)                               | PSD (dBm) | Ant. Gain (dBi) | EIRP SD (dBm) | Limit (dBm) | Margin (dB) |
| 5210                                      | -10.70    | 2.93            | -7.77         | 10          | -17.77      |

MIMO

| EIRP spectral density 802.11a MODE |           |                 |               |             |             | EIRP spectral density 802.11n HT20 MODE |           |                 |               |             |             |
|------------------------------------|-----------|-----------------|---------------|-------------|-------------|-----------------------------------------|-----------|-----------------|---------------|-------------|-------------|
| Freq. (MHz)                        | PSD (dBm) | Ant. Gain (dBi) | EIRP SD (dBm) | Limit (dBm) | Margin (dB) | Freq. (MHz)                             | PSD (dBm) | Ant. Gain (dBi) | EIRP SD (dBm) | Limit (dBm) | Margin (dB) |
| 5180                               | 0.62      | 2.93            | 3.55          | 10          | -6.45       | 5180                                    | 3.69      | 5.94            | 9.63          | 10          | -0.37       |
| 5220                               | -0.16     | 2.93            | 2.77          | 10          | -7.23       | 5220                                    | 3.84      | 5.94            | 9.78          | 10          | -0.22       |
| 5240                               | 0.41      | 2.93            | 3.34          | 10          | -6.66       | 5240                                    | 3.14      | 5.94            | 9.08          | 10          | -0.92       |

| EIRP spectral density 802.11n HT40 MODE |           |                 |               |             |             | EIRP spectral density 802.11ac VHT80 MODE |           |                 |               |             |             |
|-----------------------------------------|-----------|-----------------|---------------|-------------|-------------|-------------------------------------------|-----------|-----------------|---------------|-------------|-------------|
| Freq. (MHz)                             | PSD (dBm) | Ant. Gain (dBi) | EIRP SD (dBm) | Limit (dBm) | Margin (dB) | Freq. (MHz)                               | PSD (dBm) | Ant. Gain (dBi) | EIRP SD (dBm) | Limit (dBm) | Margin (dB) |
| 5180                                    | -3.24     | 5.94            | 2.70          | 10          | -7.30       | 5210                                      | -8.58     | 5.94            | -2.64         | 10          | -12.64      |
| 5220                                    | -0.75     | 5.94            | 5.19          | 10          | -4.81       |                                           |           |                 |               |             |             |

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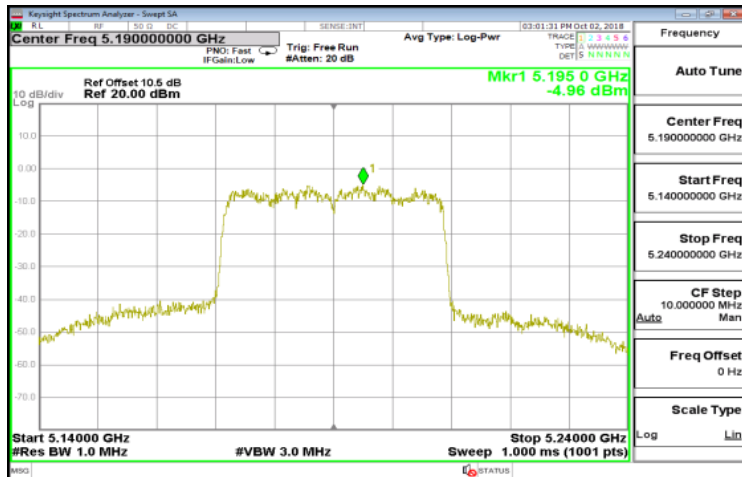
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802.11n\_40MHz\_5510MHz



802.11n\_40MHz\_5190MHz



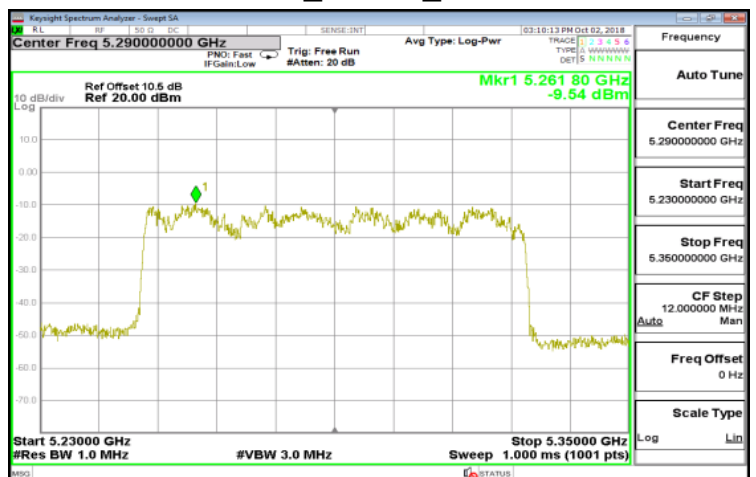
802.11ac\_80MHz\_5210MHz



802.11n\_40MHz\_5310MHz



802.11ac\_80MHz\_5290MHz

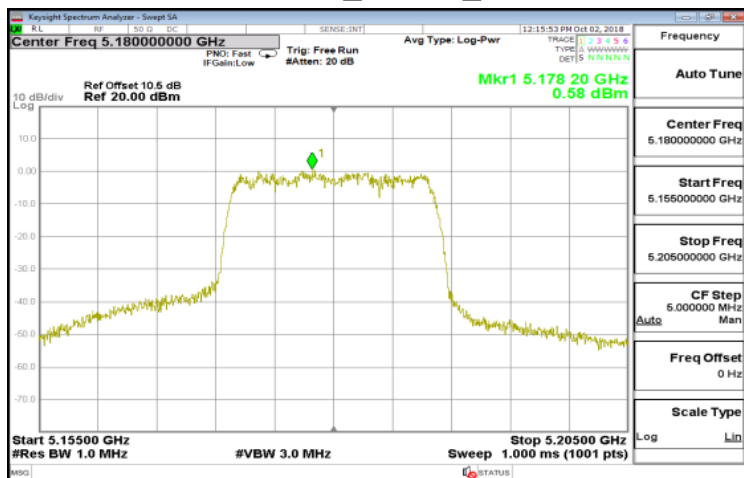


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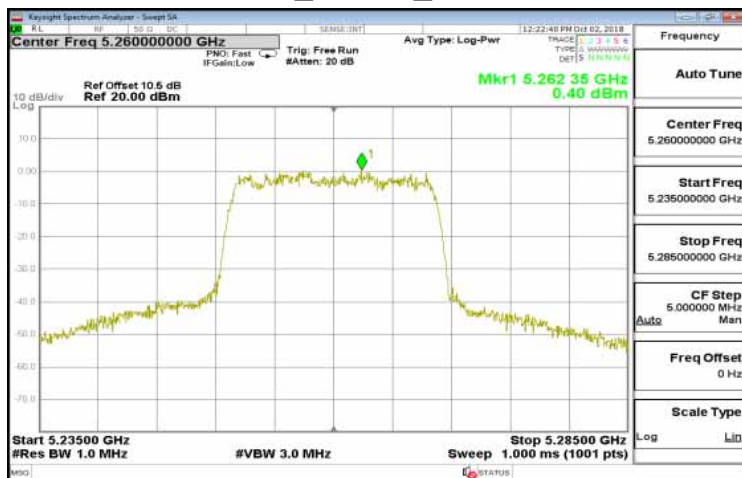
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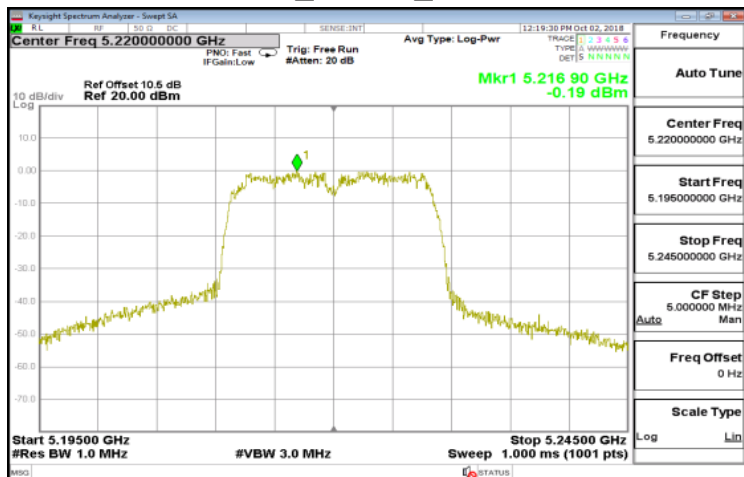
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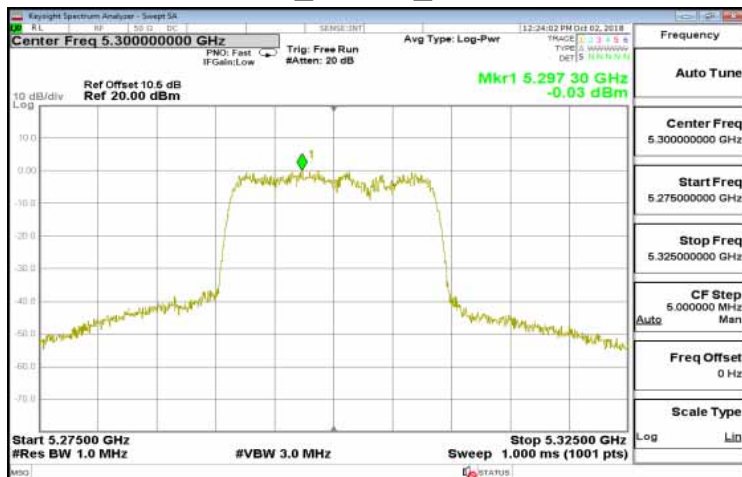
802.11a\_20MHz\_5260MHz



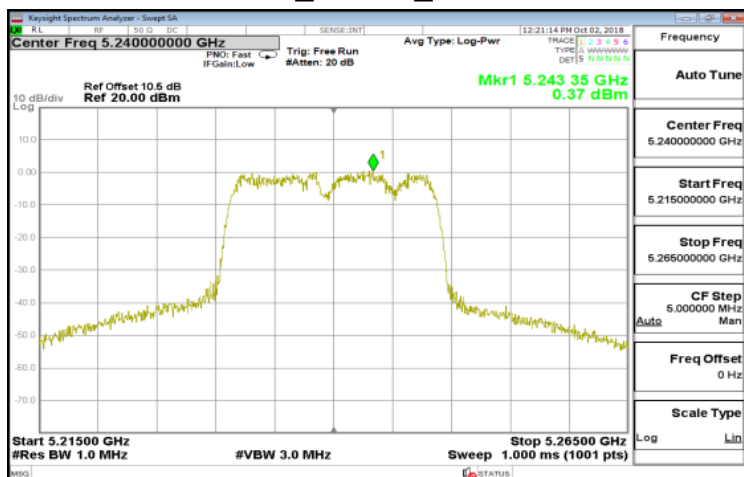
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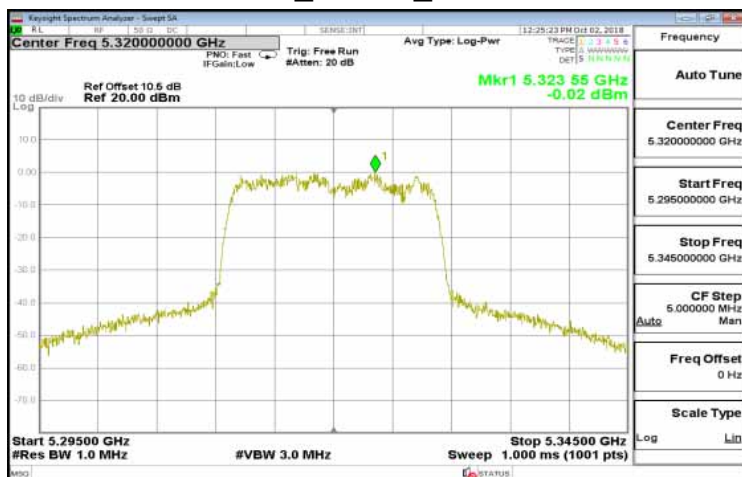
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802.11a\_20MHz\_5240MHz



802.11a\_20MHz\_5320MHz

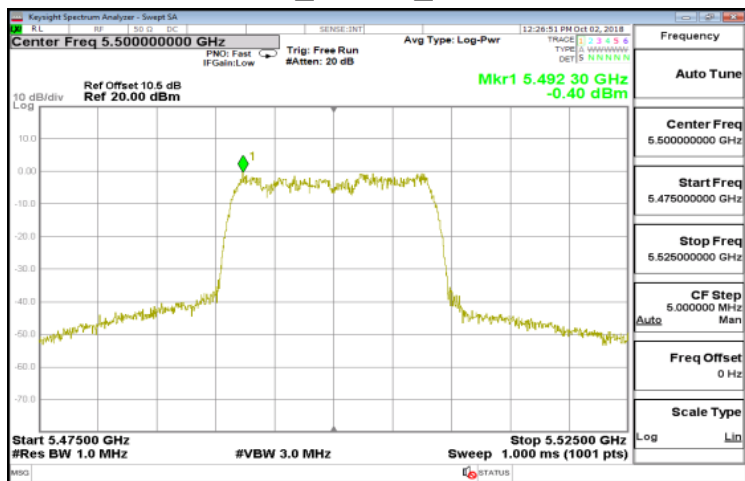


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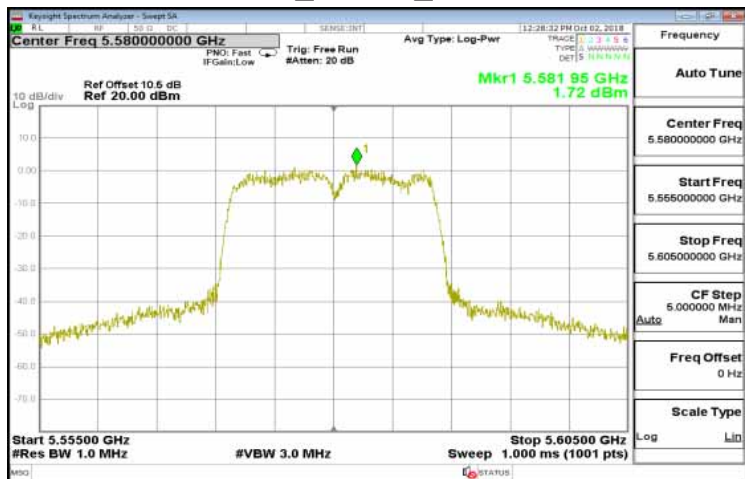
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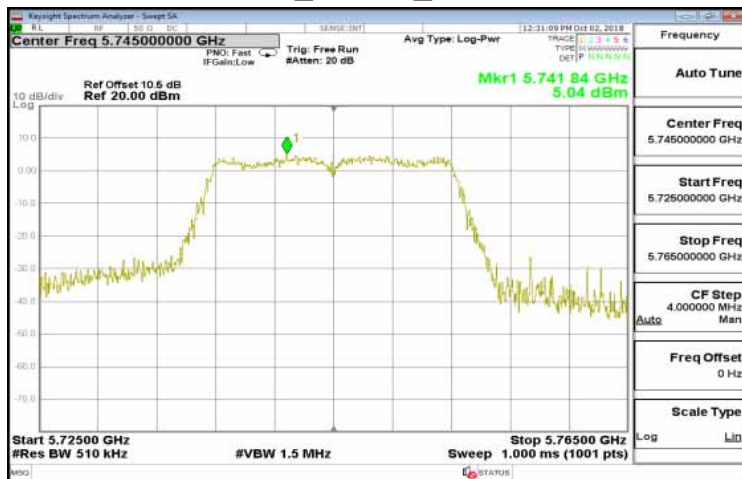
802.11a\_20MHz\_5720MHz



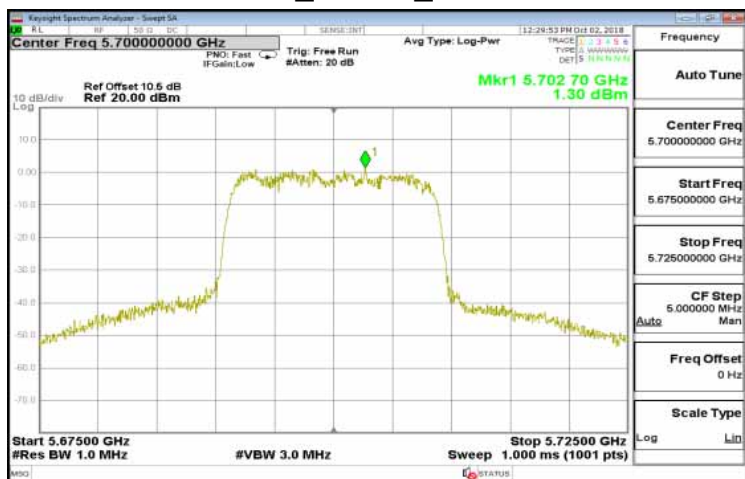
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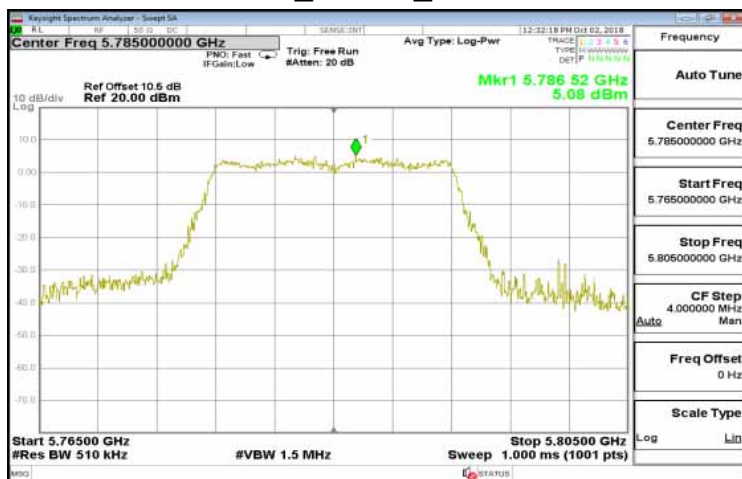
802.11a\_20MHz\_5745MHz



802.11a\_20MHz\_5700MHz



802.11a\_20MHz\_5785MHz

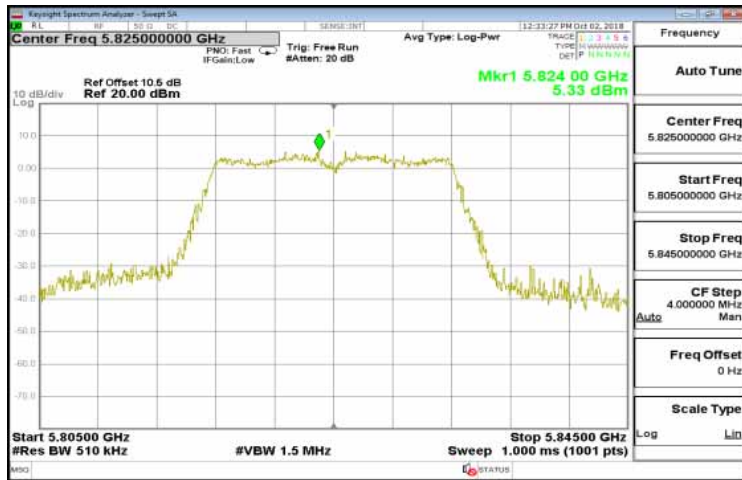


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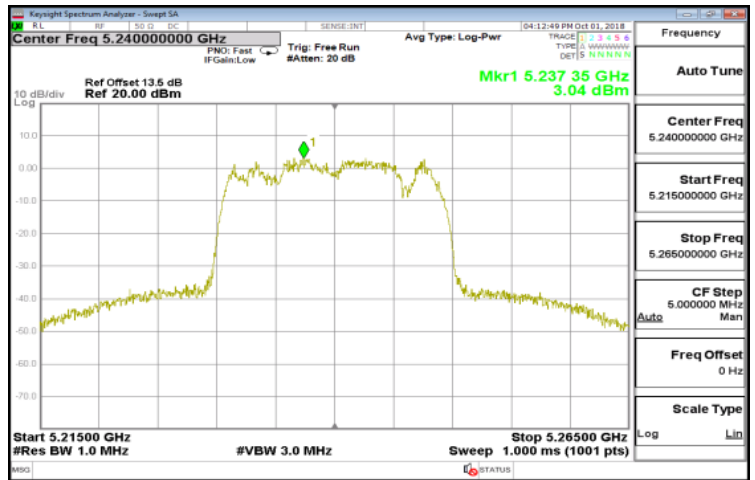
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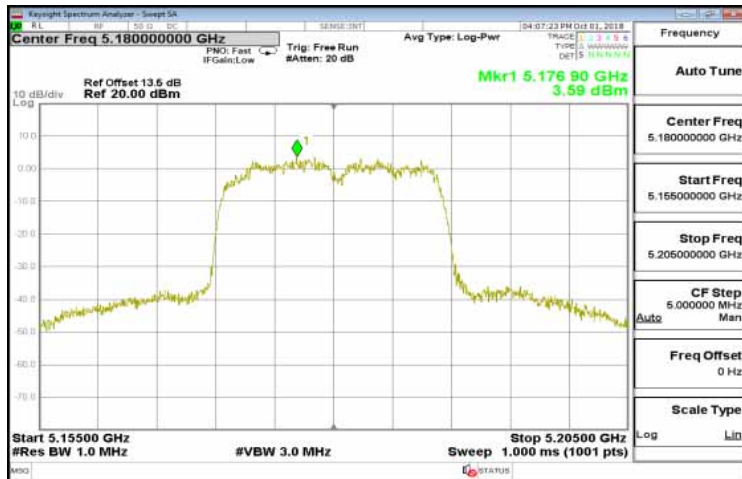
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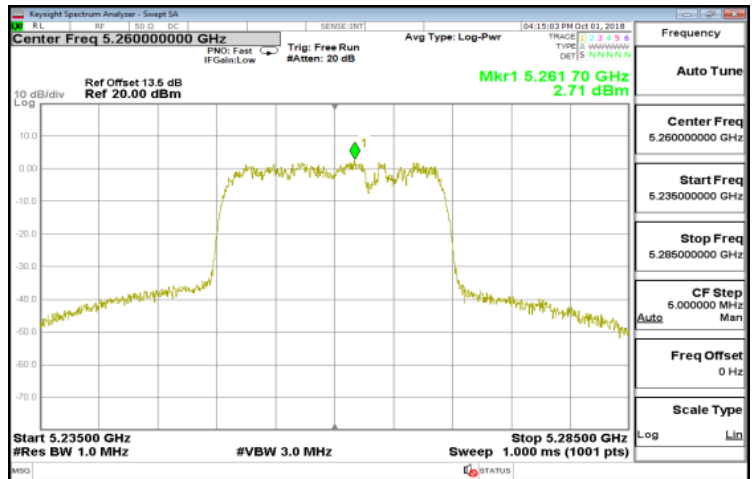
802.11n\_20MHz\_5240MHz



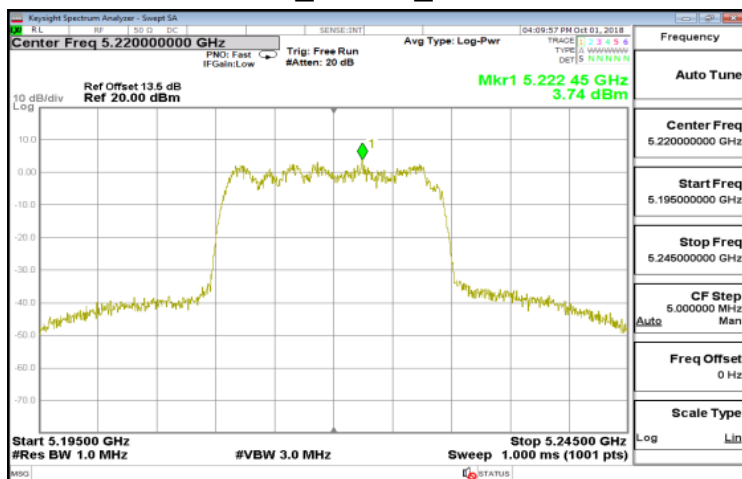
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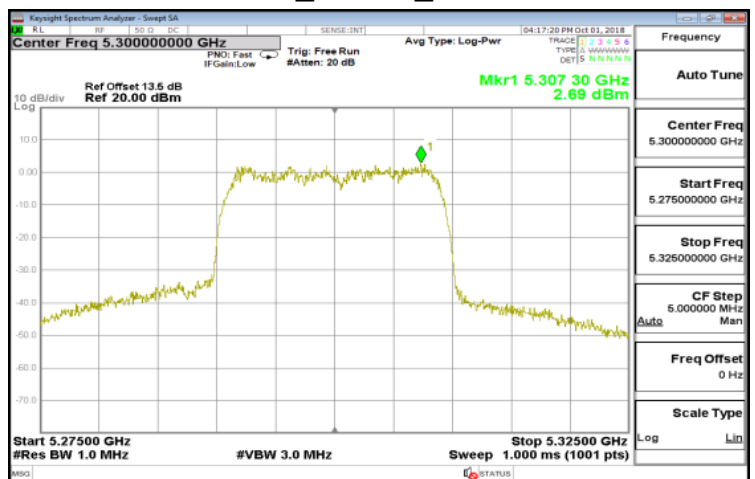
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802.11n\_20MHz\_5220MHz



802.11n\_20MHz\_5300MHz

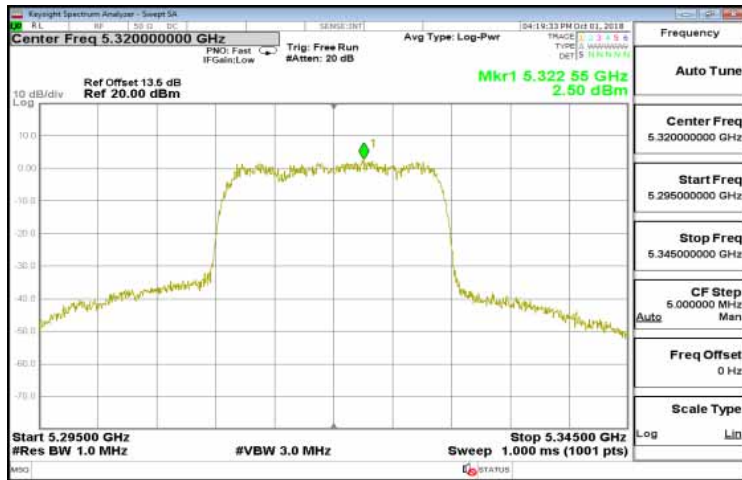


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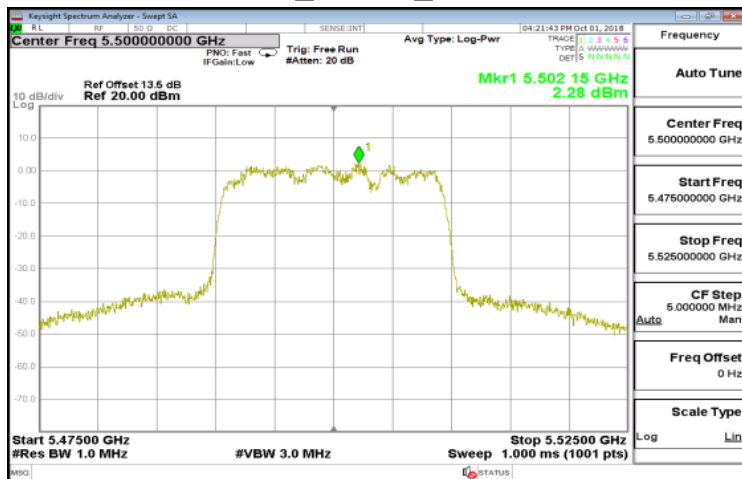
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802.11n\_20MHz\_5700MHz



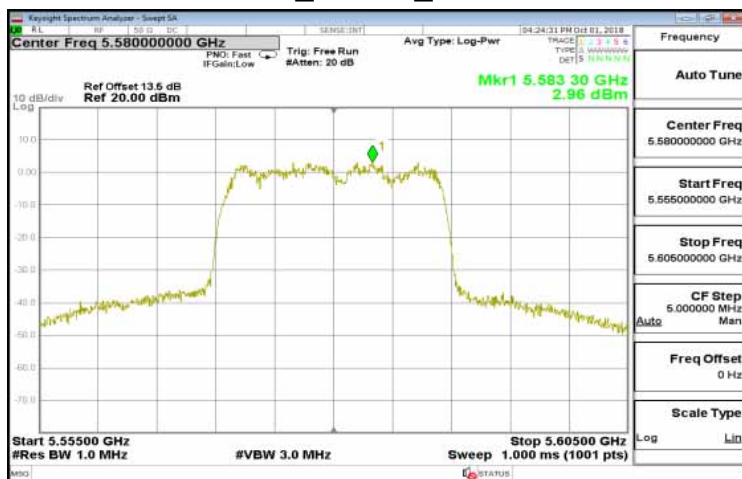
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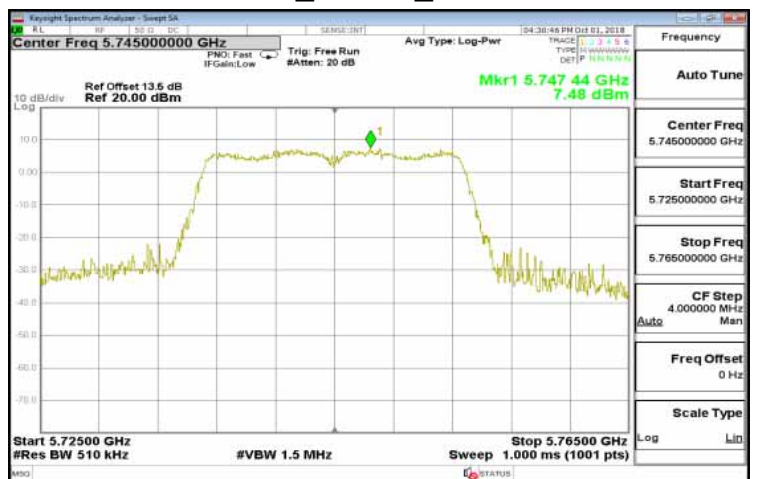
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802.11n\_20MHz\_5580MHz



802.11n\_20MHz\_5745MHz

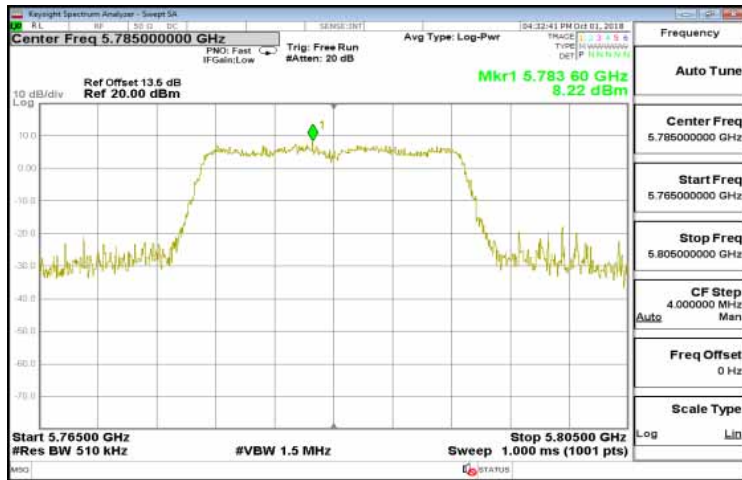


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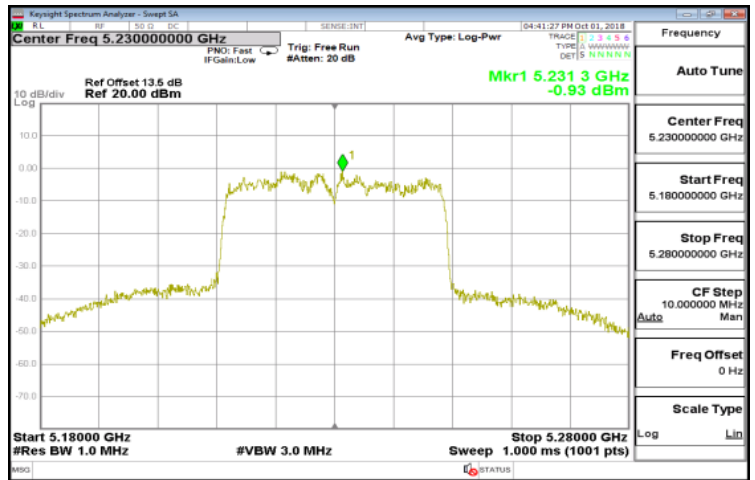
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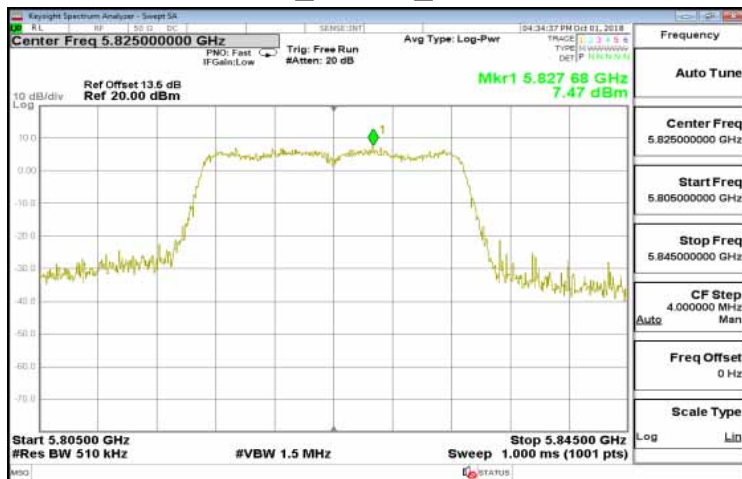
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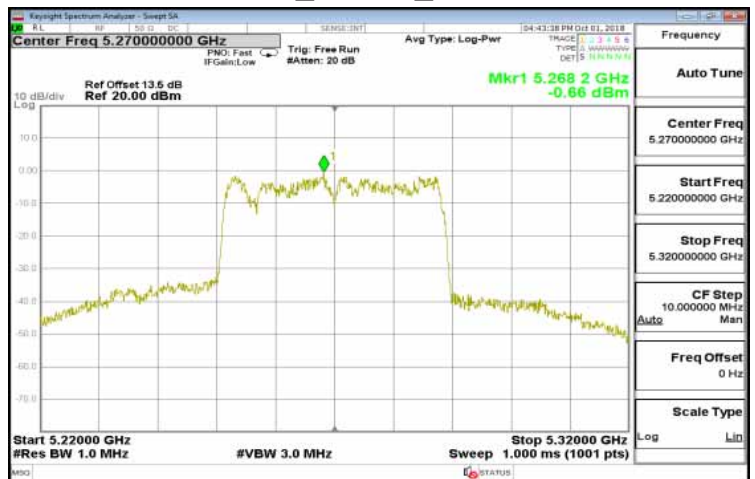
802.11n\_40MHz\_5230MHz



802.11n\_20MHz\_5825MHz



802.11n\_40MHz\_5270MHz



802.11n\_40MHz\_5190MHz



802.11n\_40MHz\_5310MHz

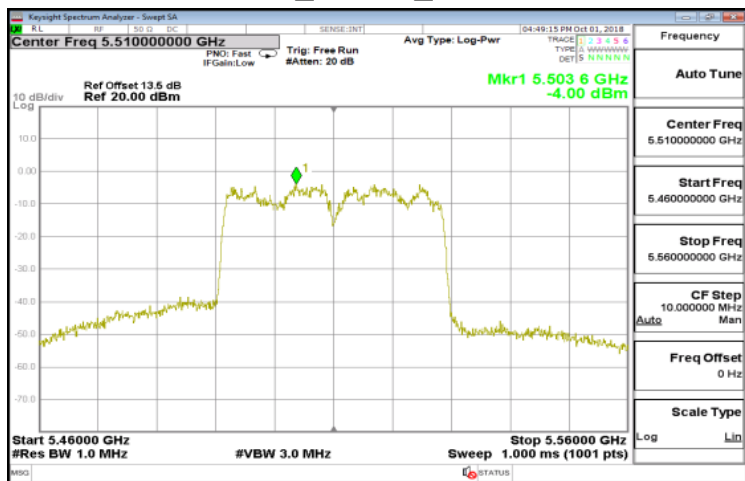


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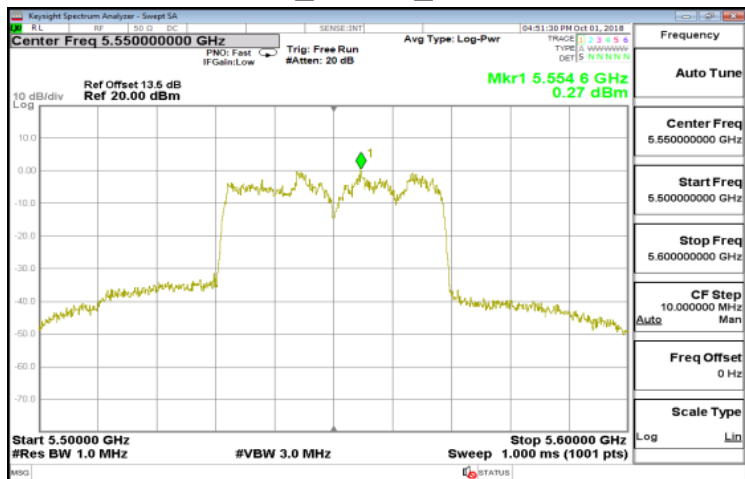
802.11n\_40MHz\_5510MHz



802.11n\_40MHz\_5710MHz



802.11n\_40MHz\_5550MHz



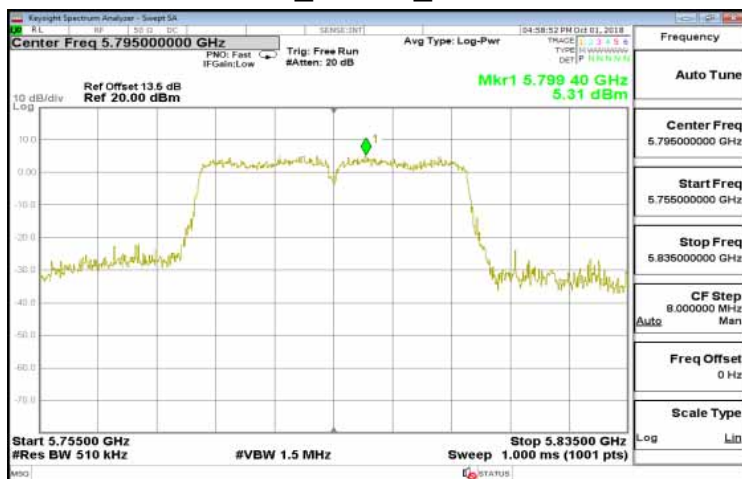
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802.11n\_40MHz\_5670MHz



802.11n\_40MHz\_5795MHz

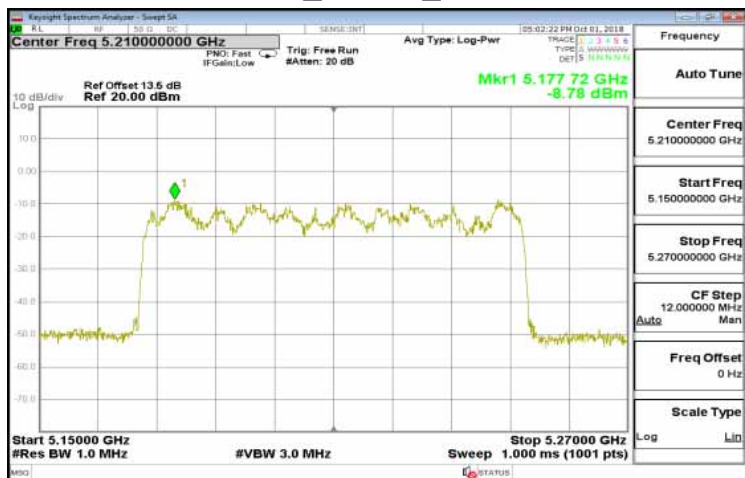


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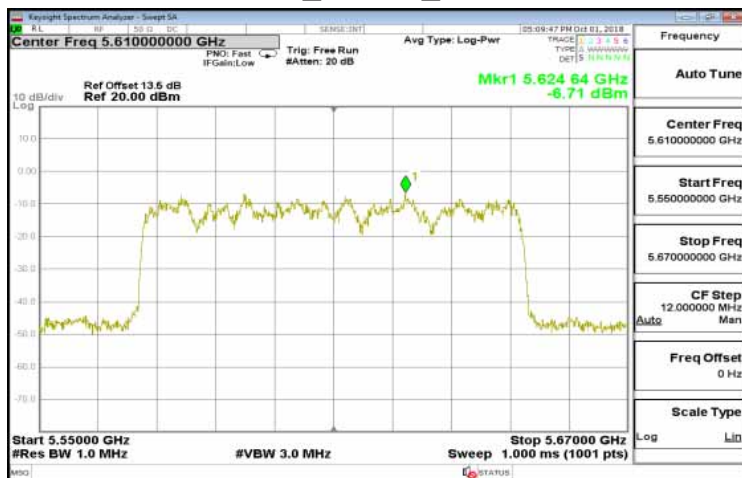
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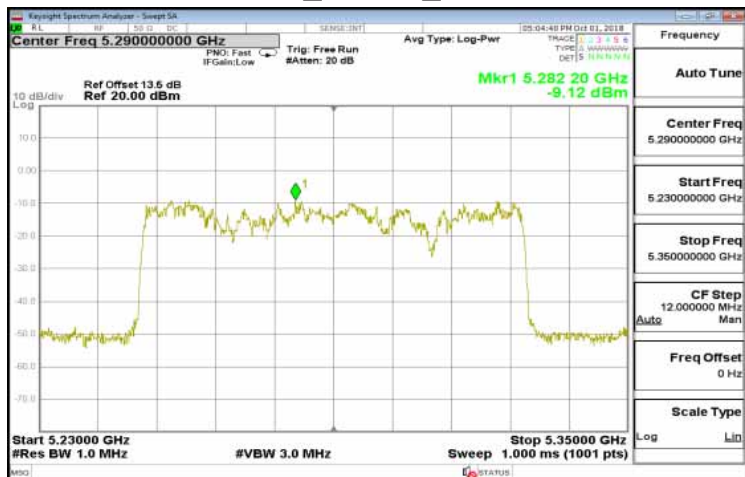
802.11ac\_80MHz\_5210MHz



802.11ac\_80MHz\_5610MHz



802.11ac\_80MHz\_5290MHz



802.11ac\_80MHz\_5690MHz



802.11ac\_80MHz\_5530MHz



802.11ac\_80MHz\_5775MHz



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## 11 UNDESIRABLE RADIATED EMISSION MEASUREMENT

### 11.1 Standard Applicable

The maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

| APPLICABLE TO                                                                                                                                                                                                                                                                                                                      | LIMIT                                                                                   |                                                                                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| FCC KDB 789033 D02 General<br>UNII Test Procedures New Rules                                                                                                                                                                                                                                                                       | FIELD STRENGTH AT 3m                                                                    |                                                                                             |
|                                                                                                                                                                                                                                                                                                                                    | PK: 74 (dBμV/m)                                                                         | AV 54 (dBμV/m)                                                                              |
| APPLICABLE TO                                                                                                                                                                                                                                                                                                                      | EIRP LIMIT                                                                              | FIELD STRENGTH AT 3m                                                                        |
| 15.407(b)(1)<br>RSS-247 6.2.1.2                                                                                                                                                                                                                                                                                                    | PK: -27 (dBm/MHz)                                                                       | PK: 68.3 (dBμV/m)                                                                           |
| 15.407(b)(2)<br>RSS-247 6.2.2.2                                                                                                                                                                                                                                                                                                    |                                                                                         |                                                                                             |
| 15.407(b)(3)<br>RSS-247 6.2.3.2                                                                                                                                                                                                                                                                                                    |                                                                                         |                                                                                             |
| 15.407(b)(4)(i)<br>RSS-247 6.2.4.2                                                                                                                                                                                                                                                                                                 | PK:-27 (dBm/MHz) *1<br>PK:10 (dBm/MHz) *2<br>PK:15.6 (dBm/MHz) *3<br>PK:27 (dBm/MHz) *4 | PK: 68.2(dBμV/m) *1<br>PK:105.2 (dBμV/m) *2<br>PK: 110.8(dBμV/m) *3<br>PK:122.2 (dBμV/m) *4 |
| *1 beyond 75 MHz or more above of the bandedge.<br>*2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.<br>*3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.<br>*4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge. |                                                                                         |                                                                                             |

$EIRP = (E \cdot d)^2 / 30$ , where E is the field in V/m, d is the measurement distance (3m), EIRP is the equivalent isotropically radiated power in Watts.

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Unwanted spurious emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table:

| Frequency (MHz) | Field strength (microvolts/meter) | Distance (meters) |
|-----------------|-----------------------------------|-------------------|
| 0.009-0.490     | 2400/F(KHz)                       | 300               |
| 0.490-1.705     | 24000/F(KHz)                      | 30                |
| 1.705-30        | 30                                | 30                |
| 30-88           | 100                               | 3                 |
| 88-216          | 150                               | 3                 |
| 216-960         | 200                               | 3                 |
| Above 960       | 500                               | 3                 |

**Note:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBμV/m) = 20 log Emission level (dBμV/m)

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## 11.2 Measurement Equipment Used

| SGS SAC-III          |                  |             |               |                  |                 |
|----------------------|------------------|-------------|---------------|------------------|-----------------|
| Name of Equip-ment   | Manufacturer     | Model       | Serial Number | Calibration Date | Calibration Due |
| Bi-log Antenna       | SCHWAZBECK       | VULB9168    | 378           | 2017/12/29       | 2018/12/28      |
| Horn Antenna         | Schwarzbeck      | BBHA9120D   | 1441          | 2018/08/16       | 2019/08/15      |
| Horn Antenna         | Schwarzbeck      | BBHA9170    | 184           | 2017/12/12       | 2018/12/11      |
| Loop Antenna         | ETS.LINDGREN     | 6502        | 148045        | 2018/09/25       | 2019/09/24      |
| 3m Site NSA          | SGS              | 966 chamber | N/A           | 2018/01/02       | 2019/01/01      |
| Spectrum Analyzer    | Agilent          | E4446A      | MY51100003    | 2018/05/15       | 2019/05/14      |
| EMI Test Receiver    | R&S              | ESCI7       | 100335        | 2018/02/02       | 2019/02/01      |
| DC Power Supply      | Anritsu          | E3640A      | MY52410006    | 2017/11/28       | 2018/11/27      |
| Pre-Amplifier        | HP               | 8449B       | 3008A00578    | 2018/01/02       | 2019/01/01      |
| Pre-Amplifier        | HP               | 8447D       | 2944A07676    | 2018/01/02       | 2019/01/01      |
| Pre-Amplifier        | EMC Instru-ments | EMC184045B  | 980135        | 2017/10/27       | 2018/10/26      |
| Attenuator           | Mini-Circuit     | BW-S10W2+   | 2             | 2018/01/02       | 2019/01/01      |
| Filter 5150-5350 MHz | Micro-Tronics    | BRM50703    | 1             | 2018/01/02       | 2019/01/01      |
| Filter 5470-5725 MHz | Micro-Tronics    | BRM50704    | 1             | 2018/01/02       | 2019/01/01      |
| Filter 5725-5875 MHz | Micro-Tronics    | BRM50705    | 1             | 2018/01/02       | 2019/01/01      |
| Low Loss Cable       | Huber Suhner     | 966_RX      | 9             | 2018/01/02       | 2019/01/01      |
| Notebook             | Lenovo           | T440P       | P0000564      | N/A              | N/A             |

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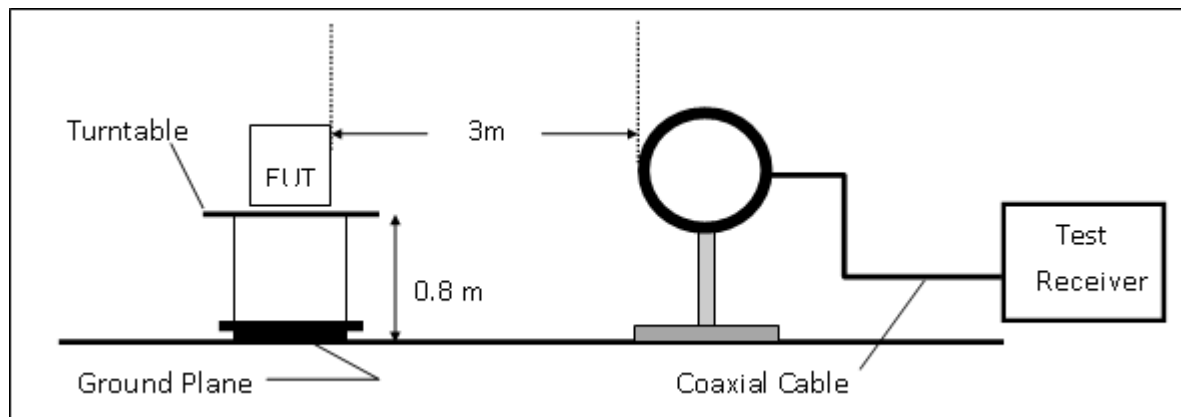
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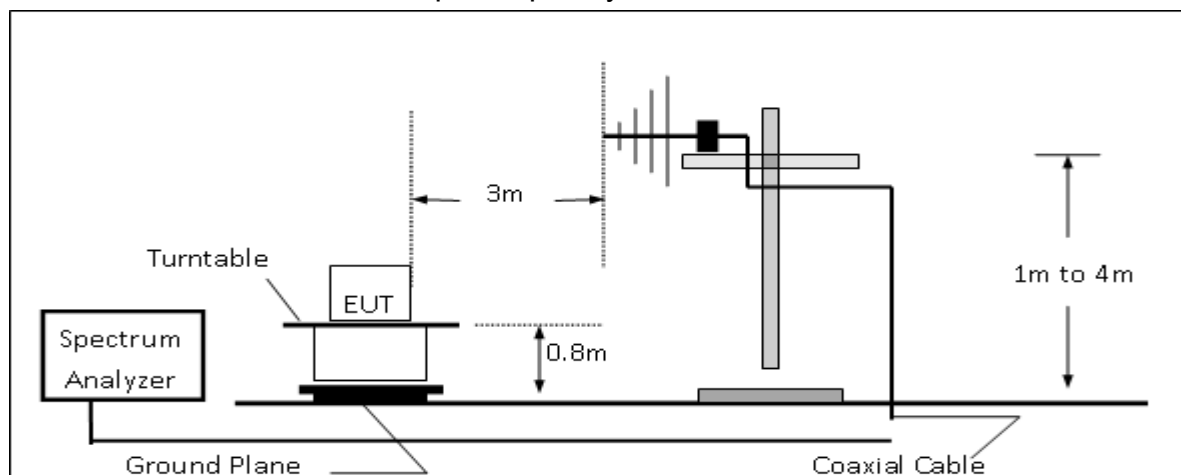
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## 11.3 Test SET-UP

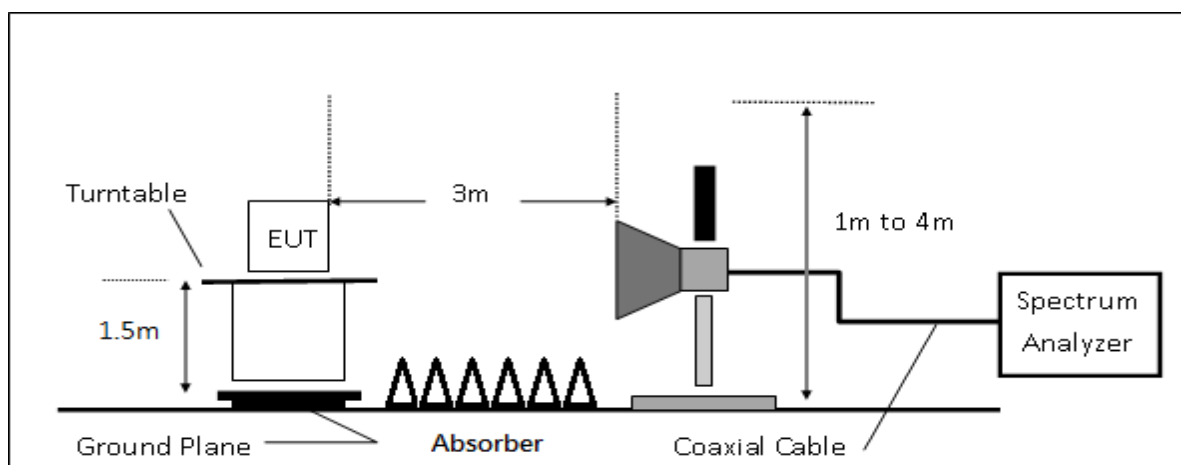
### (A) Radiated Emission Test Set-UP Frequency Below 30MHz.



### (B) Radiated Emission Test Set-UP, Frequency form 30MHz to 1000MHz



### (C) Radiated Emission Test Set-UP Frequency Over 1 GHz



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#### 11.4 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules .
3. The EUT was placed on a turn table with 0.8m for frequency< 1GHz and 1.5m for frequency> 1GHz above ground plane.
4. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
5. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
6. Set the spectrum analyzer as RBW=120 kHz and VBW=300 kHz for Peak Detector (PK) and Quasi-peak (QP) at frequency below 1 GHz.
7. Set the spectrum analyzer as RBW=1 MHz, VBW=3 MHz for Peak Detector at frequency above 1 GHz.
8. Set the spectrum analyzer as RBW=1 MHz, VBW=10 Hz (Duty cycle > 98%) or VBW ≥ 1/T (Duty cycle < 98%) for Average Detector at frequency above 1 GHz.
9. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
10. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
11. Repeat above procedures until all frequency measured were complete.

#### 11.5 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       |                                            |

Actual FS(dBμV/m) = SPA. Reading level(dBμV) + Factor(dB)

Factor(dB) = Antenna Factor(dBμV/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

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## 11.6 Test Results of Radiated Spurious Emissions form 9 KHz to 30 MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit per 15.31(o) was not reported.

## 11.7 Measurement Result

Refer to next page for tabular data sheets.

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## Radiated Spurious Emission Measurement Result

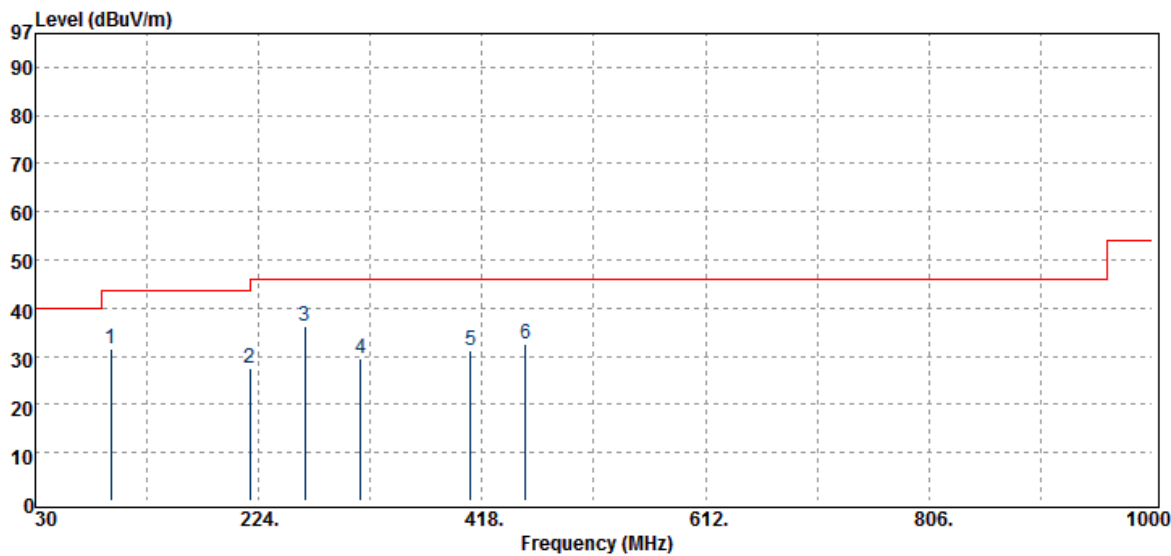
### Below 1GHz Worst-Case Data:

#### MIMO

#### 802.11a 5150~5250 MHz

Operation Band :802.11aB1  
Fundamental Frequency :5220 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E2 Plane

Test Date :2018-10-03  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Wei  
Measurement Antenna Pol. :VERTICAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 95.96        | Peak                         | 44.56                             | -12.91       | 31.65                  | 43.50                  | -11.85       |
| 216.24       | Peak                         | 36.67                             | -9.14        | 27.53                  | 46.00                  | -18.47       |
| 263.77       | Peak                         | 43.05                             | -6.88        | 36.17                  | 46.00                  | -9.83        |
| 312.27       | Peak                         | 34.69                             | -5.24        | 29.45                  | 46.00                  | -16.55       |
| 408.30       | Peak                         | 34.00                             | -2.95        | 31.05                  | 46.00                  | -14.95       |
| 455.83       | Peak                         | 35.01                             | -2.34        | 32.67                  | 46.00                  | -13.33       |

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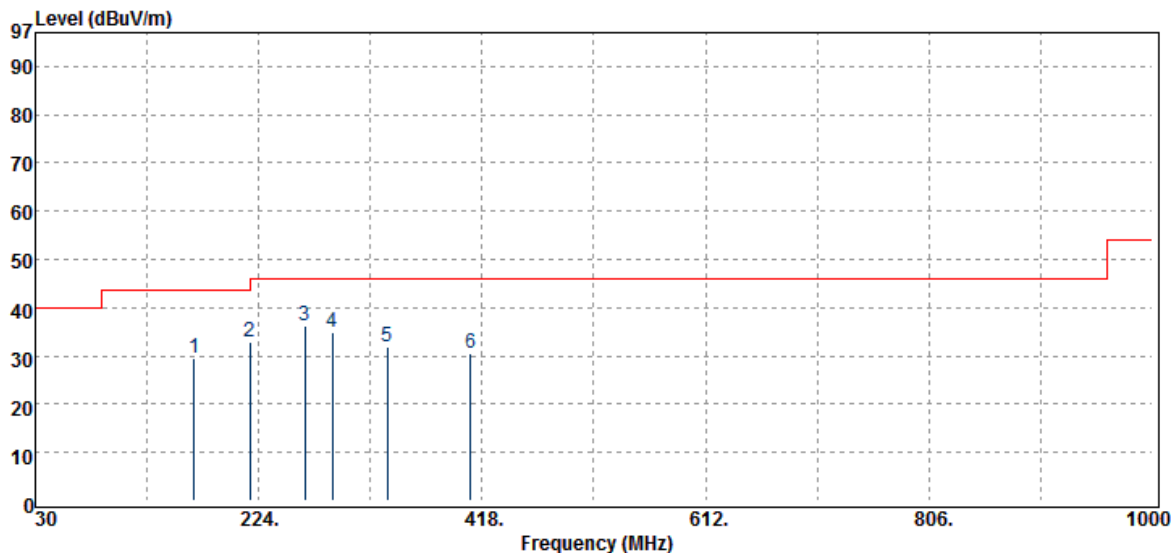
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Operation Band :802.11aB1  
Fundamental Frequency :5220 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E2 Plane

Test Date :2018-10-03  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Wei  
Measurement Antenna Pol. :HORIZONTAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBUV | Factor<br>dB | Actual<br>FS<br>dBUV/m | Limit<br>@3m<br>dBUV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 167.74       | Peak                         | 36.99                             | -7.31        | 29.68                  | 43.50                  | -13.82       |
| 216.24       | Peak                         | 42.19                             | -9.14        | 33.05                  | 46.00                  | -12.95       |
| 263.77       | Peak                         | 43.29                             | -6.88        | 36.41                  | 46.00                  | -9.59        |
| 288.02       | Peak                         | 40.66                             | -5.89        | 34.77                  | 46.00                  | -11.23       |
| 335.55       | Peak                         | 36.89                             | -4.89        | 32.00                  | 46.00                  | -14.00       |
| 408.30       | Peak                         | 33.39                             | -2.95        | 30.44                  | 46.00                  | -15.56       |

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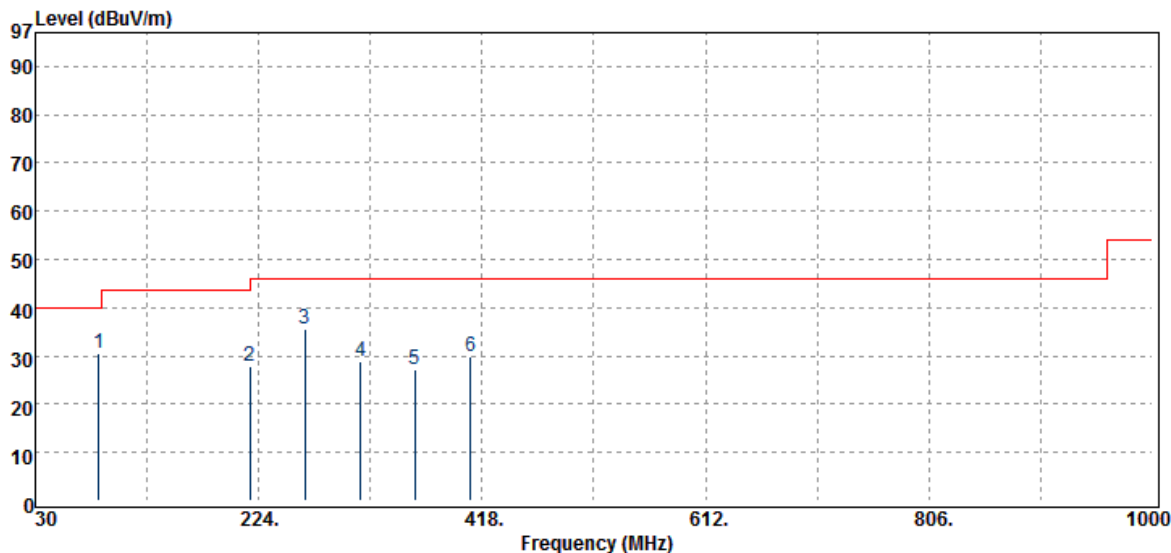
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**802.11a 5250~5350 MHz**

Operation Band :802.11aB2  
 Fundamental Frequency :5300 MHz  
 Operation Mode :Tx CH MID  
 EUT Pol. :E2 Plane

Test Date :2018-10-03  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Wei  
 Measurement Antenna Pol. :VERTICAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 85.29        | Peak                         | 43.29                             | -12.91       | 30.38                  | 40.00                  | -9.62        |
| 216.24       | Peak                         | 36.97                             | -9.14        | 27.83                  | 46.00                  | -18.17       |
| 263.77       | Peak                         | 42.49                             | -6.88        | 35.61                  | 46.00                  | -10.39       |
| 312.27       | Peak                         | 33.99                             | -5.24        | 28.75                  | 46.00                  | -17.25       |
| 359.80       | Peak                         | 31.52                             | -4.26        | 27.26                  | 46.00                  | -18.74       |
| 408.30       | Peak                         | 32.70                             | -2.95        | 29.75                  | 46.00                  | -16.25       |

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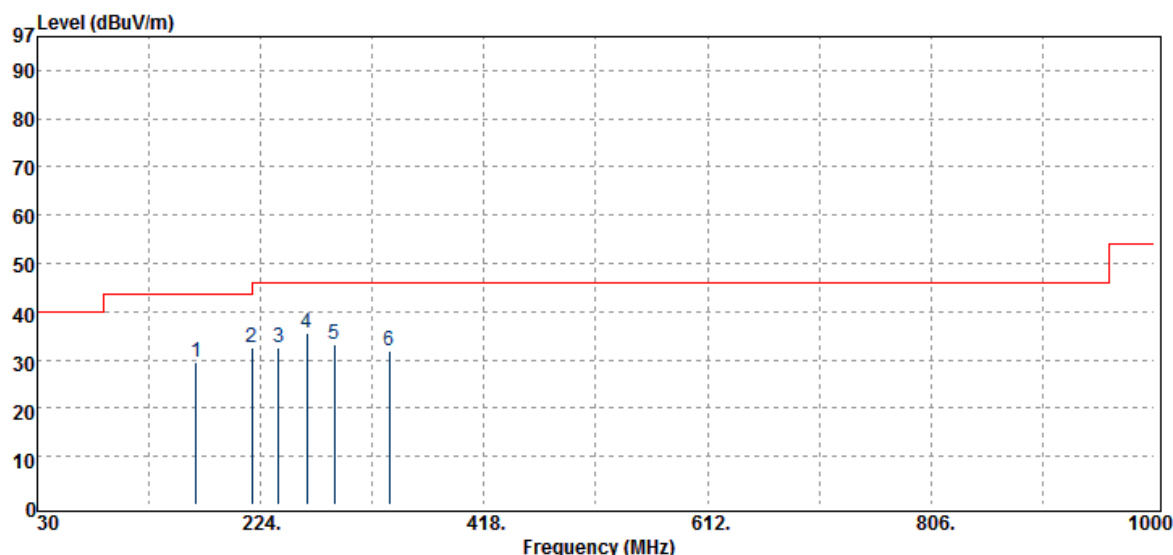
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Operation Band :802.11aB2  
Fundamental Frequency :5300 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E2 Plane

Test Date :2018-10-03  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Wei  
Measurement Antenna Pol. :HORIZONTAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 167.74       | Peak                         | 36.97                             | -7.31        | 29.66                  | 43.50                  | -13.84       |
| 216.24       | Peak                         | 41.77                             | -9.14        | 32.63                  | 46.00                  | -13.37       |
| 239.52       | Peak                         | 40.52                             | -7.83        | 32.69                  | 46.00                  | -13.31       |
| 263.77       | Peak                         | 42.49                             | -6.88        | 35.61                  | 46.00                  | -10.39       |
| 288.02       | Peak                         | 39.04                             | -5.89        | 33.15                  | 46.00                  | -12.85       |
| 335.55       | Peak                         | 36.83                             | -4.89        | 31.94                  | 46.00                  | -14.06       |

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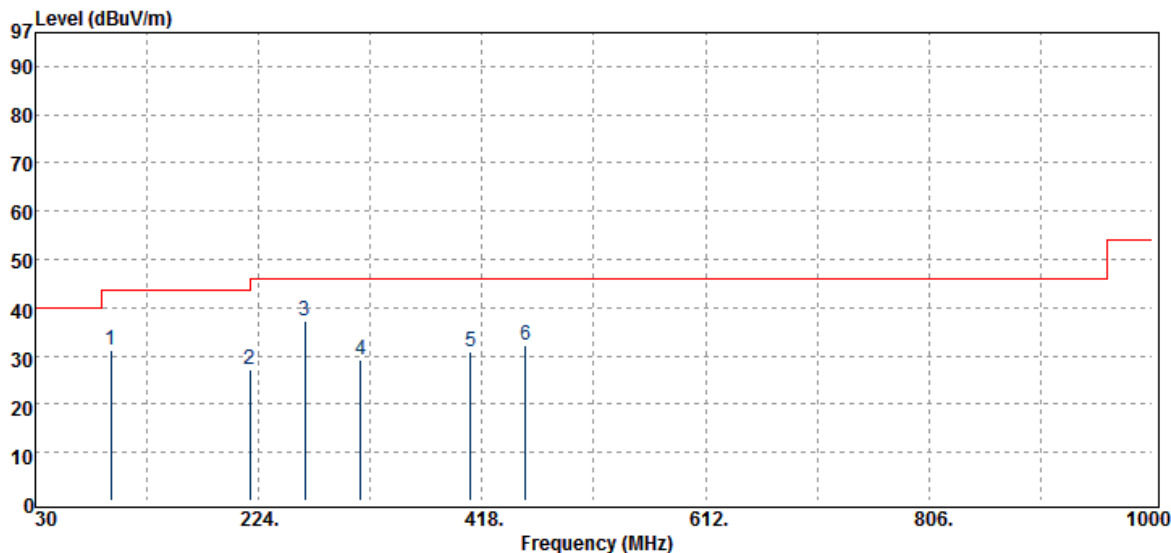
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**802.11a, 5470~5725 MHz**

Operation Band :802.11aB3  
 Fundamental Frequency :5580 MHz  
 Operation Mode :Tx CH MID  
 EUT Pol. :E2 Plane

Test Date :2018-10-03  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Wei  
 Measurement Antenna Pol. :VERTICAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 95.96        | Peak                         | 43.98                             | -12.91       | 31.07                  | 43.50                  | -12.43       |
| 216.24       | Peak                         | 36.23                             | -9.14        | 27.09                  | 46.00                  | -18.91       |
| 263.77       | Peak                         | 44.23                             | -6.88        | 37.35                  | 46.00                  | -8.65        |
| 312.27       | Peak                         | 34.60                             | -5.24        | 29.36                  | 46.00                  | -16.64       |
| 408.30       | Peak                         | 33.95                             | -2.95        | 31.00                  | 46.00                  | -15.00       |
| 455.83       | Peak                         | 34.53                             | -2.34        | 32.19                  | 46.00                  | -13.81       |

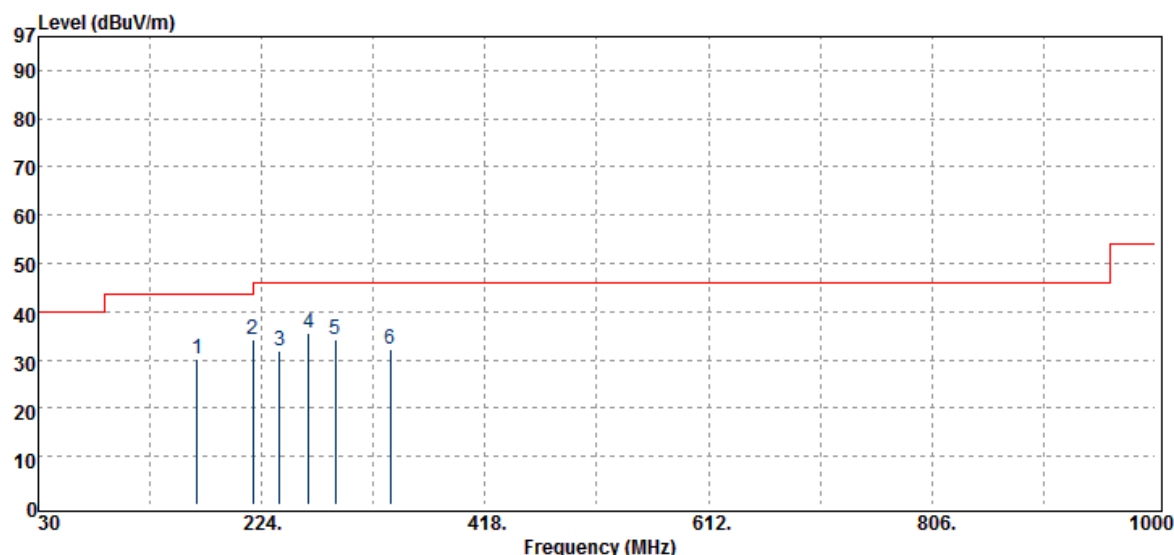
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Operation Band :802.11aB3  
 Fundamental Frequency :5580 MHz  
 Operation Mode :Tx CH MID  
 EUT Pol. :E2 Plane

Test Date :2018-10-03  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Wei  
 Measurement Antenna Pol. :HORIZONTAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 167.74       | Peak                         | 37.52                             | -7.31        | 30.21                  | 43.50                  | -13.29       |
| 216.24       | Peak                         | 43.38                             | -9.14        | 34.24                  | 46.00                  | -11.76       |
| 239.52       | Peak                         | 39.81                             | -7.83        | 31.98                  | 46.00                  | -14.02       |
| 264.74       | Peak                         | 42.39                             | -6.83        | 35.56                  | 46.00                  | -10.44       |
| 288.02       | Peak                         | 40.04                             | -5.89        | 34.15                  | 46.00                  | -11.85       |
| 335.55       | Peak                         | 37.07                             | -4.89        | 32.18                  | 46.00                  | -13.82       |

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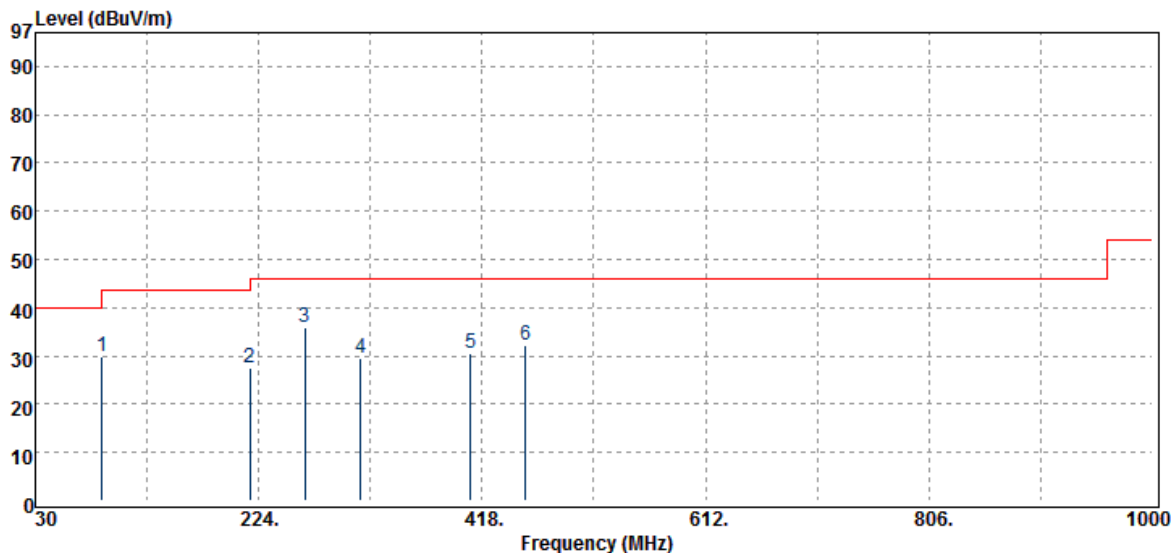
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## 802.11a, 5725~5850 MHz

Operation Band :802.11aB4  
Fundamental Frequency :5785 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E2 Plane

Test Date :2018-10-03  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Wei  
Measurement Antenna Pol. :VERTICAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 88.20        | Peak                         | 43.43                             | -13.39       | 30.04                  | 43.50                  | -13.46       |
| 216.24       | Peak                         | 36.63                             | -9.14        | 27.49                  | 46.00                  | -18.51       |
| 263.77       | Peak                         | 42.67                             | -6.88        | 35.79                  | 46.00                  | -10.21       |
| 312.27       | Peak                         | 34.87                             | -5.24        | 29.63                  | 46.00                  | -16.37       |
| 408.30       | Peak                         | 33.42                             | -2.95        | 30.47                  | 46.00                  | -15.53       |
| 455.83       | Peak                         | 34.49                             | -2.34        | 32.15                  | 46.00                  | -13.85       |

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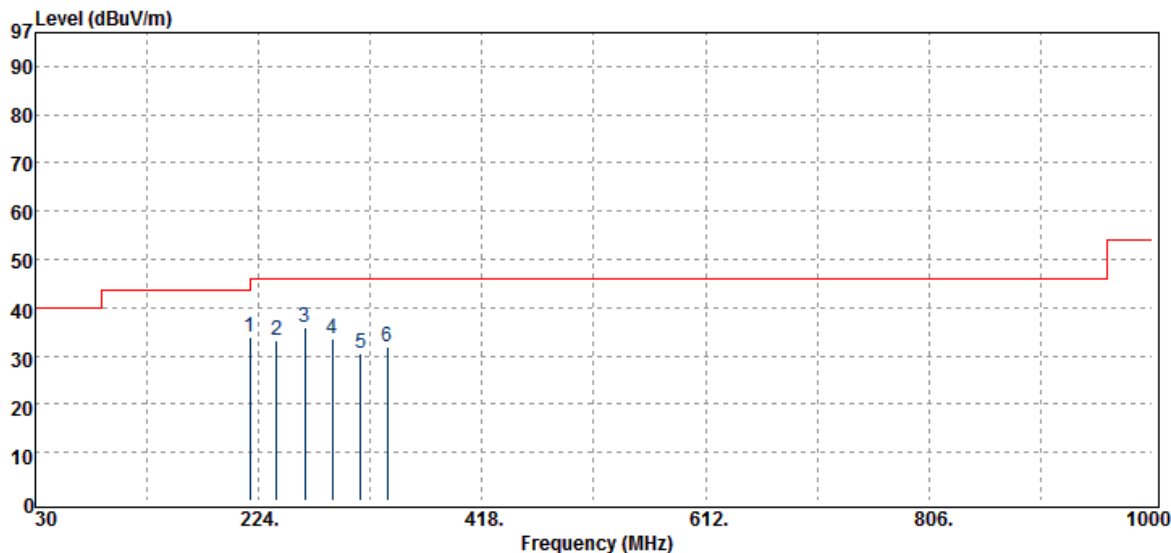
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Operation Band :802.11aB4  
Fundamental Frequency :5785 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E2 Plane

Test Date :2018-10-03  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Wei  
Measurement Antenna Pol. :HORIZONTAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBUV | Factor<br>dB | Actual<br>FS<br>dBUV/m | Limit<br>@3m<br>dBUV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 216.24       | Peak                         | 42.97                             | -9.14        | 33.83                  | 46.00                  | -12.17       |
| 239.52       | Peak                         | 41.02                             | -7.83        | 33.19                  | 46.00                  | -12.81       |
| 263.77       | Peak                         | 42.75                             | -6.88        | 35.87                  | 46.00                  | -10.13       |
| 288.02       | Peak                         | 39.58                             | -5.89        | 33.69                  | 46.00                  | -12.31       |
| 312.27       | Peak                         | 35.62                             | -5.24        | 30.38                  | 46.00                  | -15.62       |
| 335.55       | Peak                         | 36.80                             | -4.89        | 31.91                  | 46.00                  | -14.09       |

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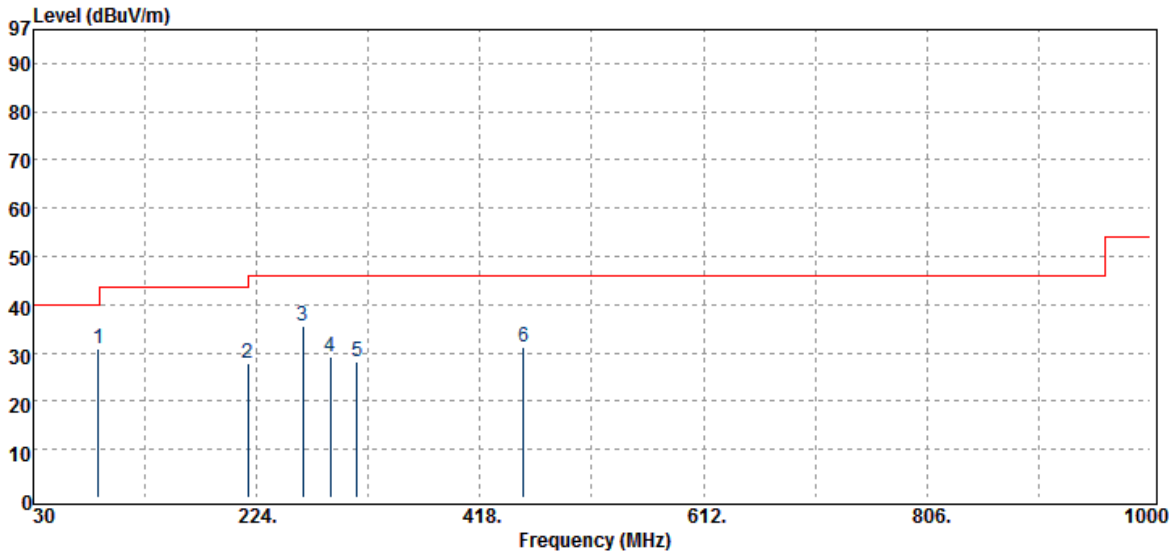
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### 802.11ac VHT80, 5150~5250 MHz

Operation Band :802.11ac80B1  
Fundamental Frequency :5210 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E2 Plane

Test Date :2018-10-03  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Wei  
Measurement Antenna Pol. :VERTICAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 86.26        | Peak                         | 43.93                             | -13.06       | 30.87                  | 40.00                  | -9.13        |
| 216.24       | Peak                         | 37.10                             | -9.14        | 27.96                  | 46.00                  | -18.04       |
| 263.77       | Peak                         | 42.57                             | -6.88        | 35.69                  | 46.00                  | -10.31       |
| 288.02       | Peak                         | 35.21                             | -5.89        | 29.32                  | 46.00                  | -16.68       |
| 311.30       | Peak                         | 33.43                             | -5.25        | 28.18                  | 46.00                  | -17.82       |
| 455.83       | Peak                         | 33.64                             | -2.34        | 31.30                  | 46.00                  | -14.70       |

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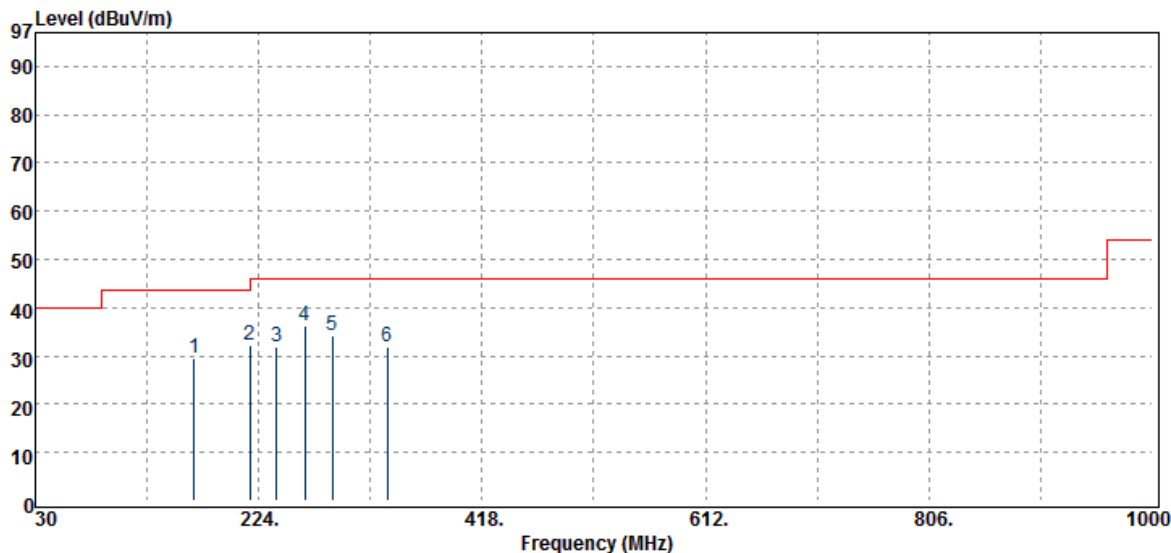
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Member of SGS Group

Operation Band :802.11ac80B1  
Fundamental Frequency :5210 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E2 Plane

Test Date :2018-10-03  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Wei  
Measurement Antenna Pol. :HORIZONTAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBUV | Factor<br>dB | Actual<br>FS<br>dBUV/m | Limit<br>@3m<br>dBUV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 167.74       | Peak                         | 37.01                             | -7.31        | 29.70                  | 43.50                  | -13.80       |
| 216.24       | Peak                         | 41.51                             | -9.14        | 32.37                  | 46.00                  | -13.63       |
| 239.52       | Peak                         | 39.83                             | -7.83        | 32.00                  | 46.00                  | -14.00       |
| 263.77       | Peak                         | 43.15                             | -6.88        | 36.27                  | 46.00                  | -9.73        |
| 288.02       | Peak                         | 40.19                             | -5.89        | 34.30                  | 46.00                  | -11.70       |
| 335.55       | Peak                         | 36.84                             | -4.89        | 31.95                  | 46.00                  | -14.05       |

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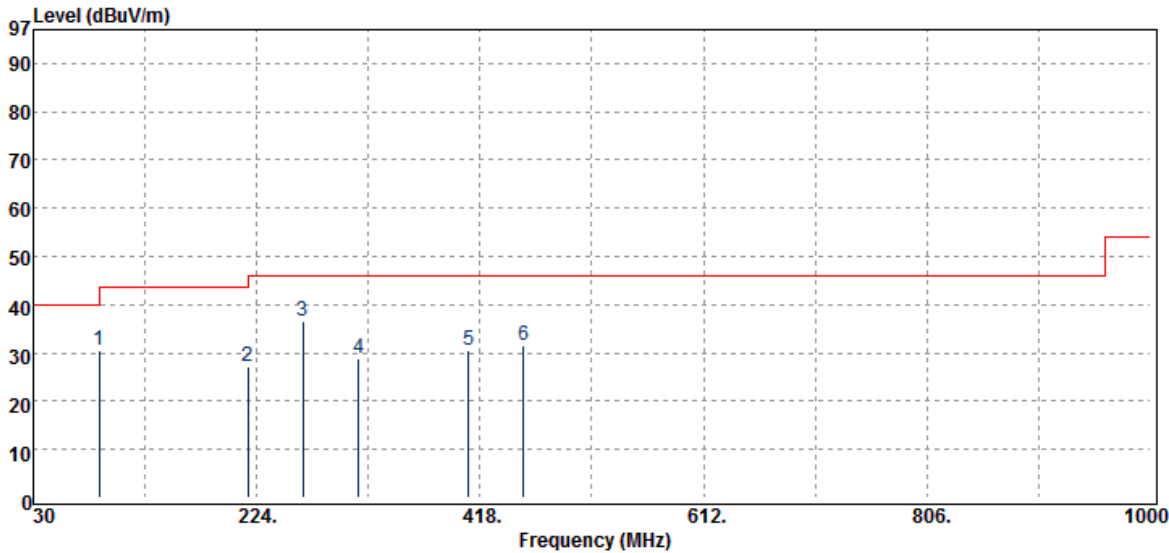
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## 802.11ac VHT80, 5250~5350 MHz

Operation Band :802.11ac80B2  
Fundamental Frequency :5290 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E2 Plane

Test Date :2018-10-03  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Wei  
Measurement Antenna Pol. :VERTICAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 87.23        | Peak                         | 43.70                             | -13.23       | 30.47                  | 40.00                  | -9.53        |
| 216.24       | Peak                         | 36.23                             | -9.14        | 27.09                  | 46.00                  | -18.91       |
| 263.77       | Peak                         | 43.54                             | -6.88        | 36.66                  | 46.00                  | -9.34        |
| 312.27       | Peak                         | 34.07                             | -5.24        | 28.83                  | 46.00                  | -17.17       |
| 408.30       | Peak                         | 33.39                             | -2.95        | 30.44                  | 46.00                  | -15.56       |
| 455.83       | Peak                         | 33.92                             | -2.34        | 31.58                  | 46.00                  | -14.42       |

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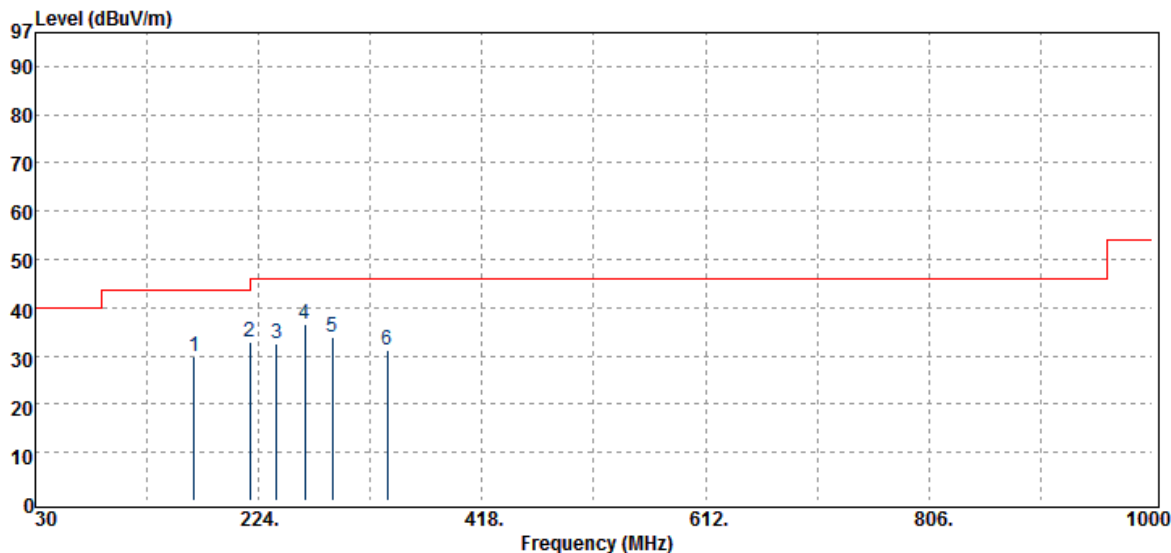
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Operation Band :802.11ac80B2  
 Fundamental Frequency :5290 MHz  
 Operation Mode :Tx CH HIGH  
 EUT Pol. :E2 Plane

Test Date :2018-10-03  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Wei  
 Measurement Antenna Pol. :HORIZONTAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 167.74       | Peak                         | 37.34                             | -7.31        | 30.03                  | 43.50                  | -13.47       |
| 216.24       | Peak                         | 41.94                             | -9.14        | 32.80                  | 46.00                  | -13.20       |
| 239.52       | Peak                         | 40.37                             | -7.83        | 32.54                  | 46.00                  | -13.46       |
| 263.77       | Peak                         | 43.40                             | -6.88        | 36.52                  | 46.00                  | -9.48        |
| 288.02       | Peak                         | 39.89                             | -5.89        | 34.00                  | 46.00                  | -12.00       |
| 335.55       | Peak                         | 36.00                             | -4.89        | 31.11                  | 46.00                  | -14.89       |

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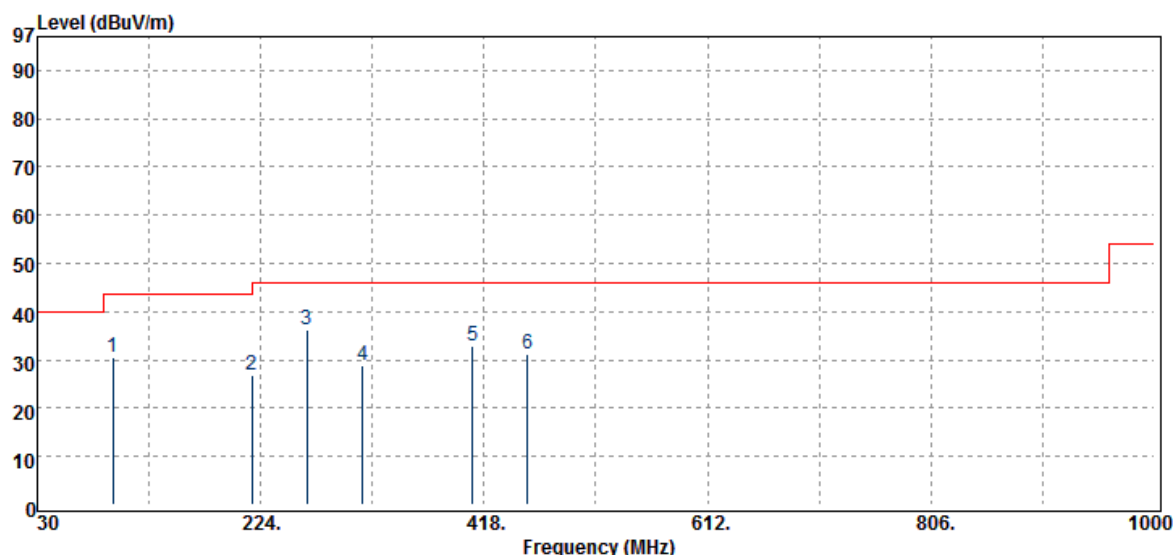
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**802.11ac VHT80, 5470~5725 MHz**

Operation Band :802.11ac80B3  
 Fundamental Frequency :5530 MHz  
 Operation Mode :Tx CH LOW  
 EUT Pol. :E2 Plane

Test Date :2018-10-03  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Wei  
 Measurement Antenna Pol. :VERTICAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 95.96        | Peak                         | 43.53                             | -12.91       | 30.62                  | 43.50                  | -12.88       |
| 216.24       | Peak                         | 35.98                             | -9.14        | 26.84                  | 46.00                  | -19.16       |
| 263.77       | Peak                         | 43.06                             | -6.88        | 36.18                  | 46.00                  | -9.82        |
| 312.27       | Peak                         | 34.16                             | -5.24        | 28.92                  | 46.00                  | -17.08       |
| 408.30       | Peak                         | 35.68                             | -2.95        | 32.73                  | 46.00                  | -13.27       |
| 455.83       | Peak                         | 33.48                             | -2.34        | 31.14                  | 46.00                  | -14.86       |

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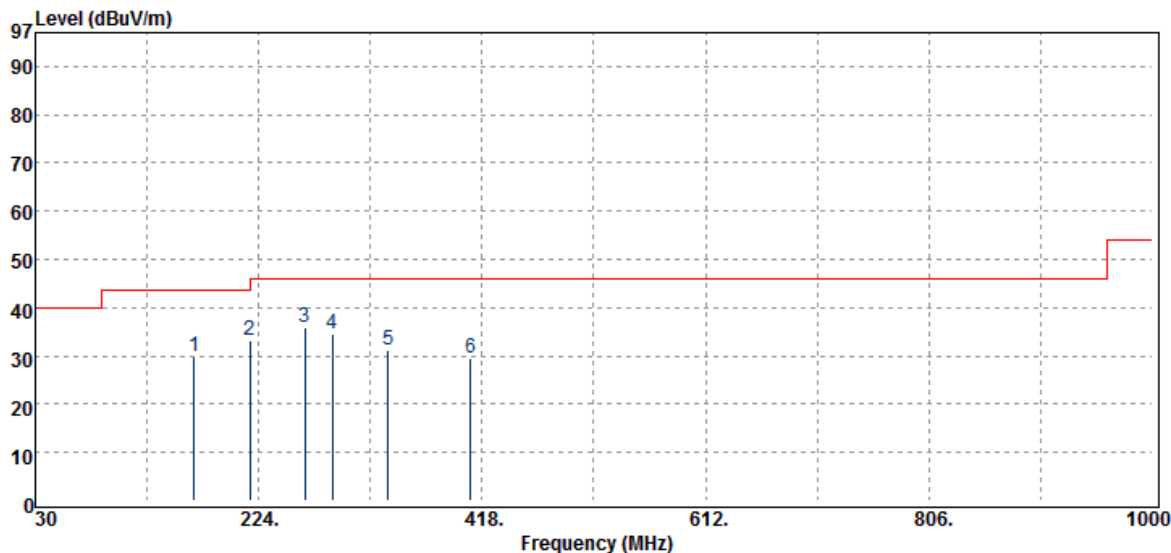
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Operation Band :802.11ac80B3  
 Fundamental Frequency :5530 MHz  
 Operation Mode :Tx CH LOW  
 EUT Pol. :E2 Plane

Test Date :2018-10-03  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Wei  
 Measurement Antenna Pol. :HORIZONTAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBUV | Factor<br>dB | Actual<br>FS<br>dBUV/m | Limit<br>@3m<br>dBUV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 167.74       | Peak                         | 37.11                             | -7.31        | 29.80                  | 43.50                  | -13.70       |
| 216.24       | Peak                         | 42.31                             | -9.14        | 33.17                  | 46.00                  | -12.83       |
| 263.77       | Peak                         | 42.66                             | -6.88        | 35.78                  | 46.00                  | -10.22       |
| 288.02       | Peak                         | 40.50                             | -5.89        | 34.61                  | 46.00                  | -11.39       |
| 336.52       | Peak                         | 35.93                             | -4.87        | 31.06                  | 46.00                  | -14.94       |
| 408.30       | Peak                         | 32.47                             | -2.95        | 29.52                  | 46.00                  | -16.48       |

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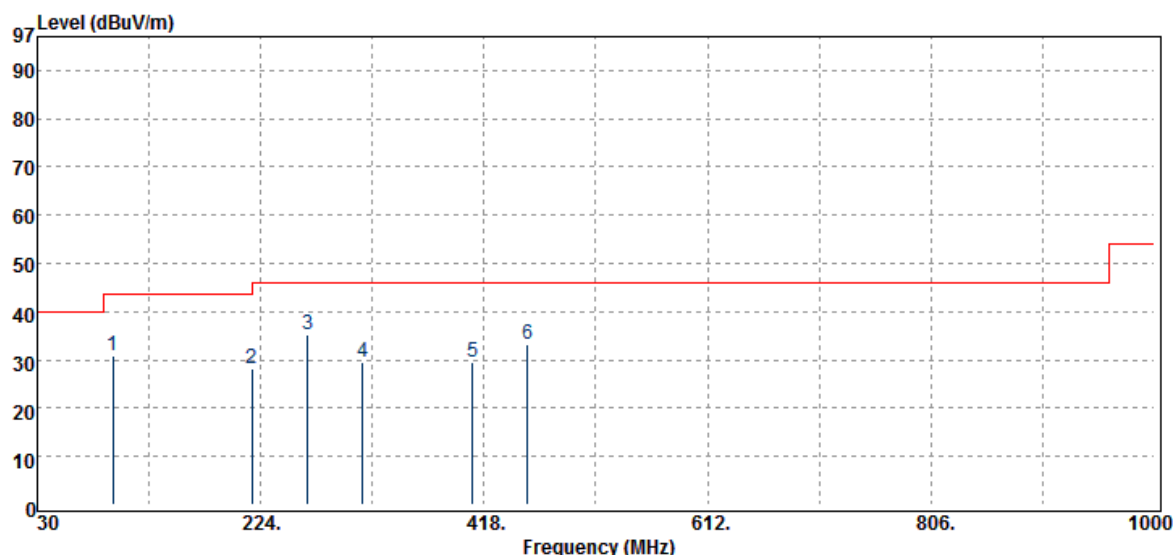
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## 802.11ac VHT80, 5725~5850 MHz

Operation Band :802.11ac80B4  
Fundamental Frequency :5775 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E2 Plane

Test Date :2018-10-03  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Wei  
Measurement Antenna Pol. :VERTICAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 95.96        | Peak                         | 43.65                             | -12.91       | 30.74                  | 43.50                  | -12.76       |
| 216.24       | Peak                         | 37.26                             | -9.14        | 28.12                  | 46.00                  | -17.88       |
| 264.74       | Peak                         | 42.03                             | -6.83        | 35.20                  | 46.00                  | -10.80       |
| 312.27       | Peak                         | 34.61                             | -5.24        | 29.37                  | 46.00                  | -16.63       |
| 408.30       | Peak                         | 32.56                             | -2.95        | 29.61                  | 46.00                  | -16.39       |
| 455.83       | Peak                         | 35.64                             | -2.34        | 33.30                  | 46.00                  | -12.70       |

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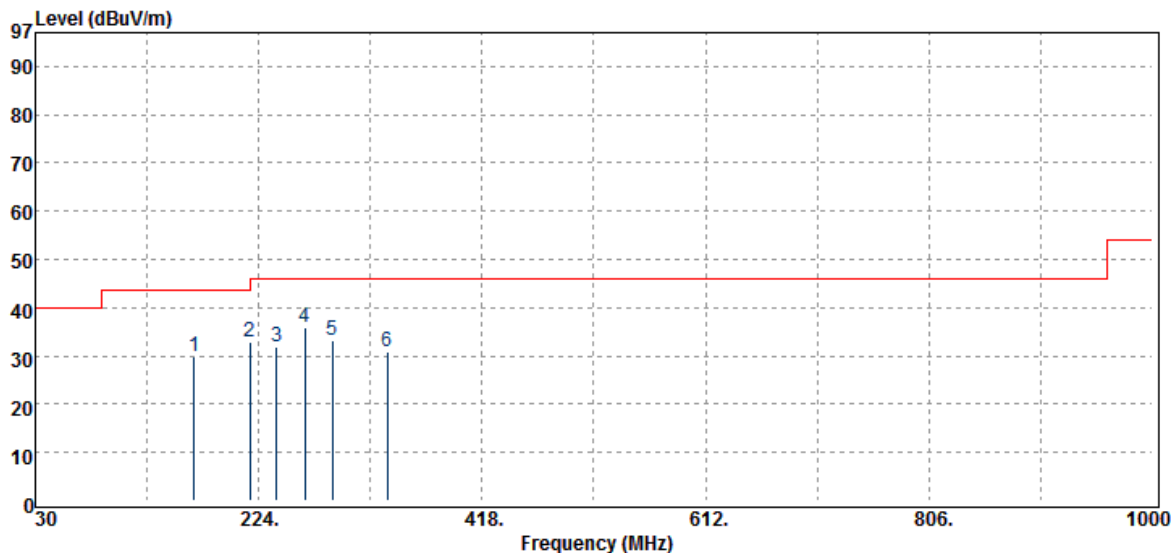
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Operation Band :802.11ac80B4  
 Fundamental Frequency :5775 MHz  
 Operation Mode :Tx CH LOW  
 EUT Pol. :E2 Plane

Test Date :2018-10-03  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Wei  
 Measurement Antenna Pol. :HORIZONTAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 167.74       | Peak                         | 37.16                             | -7.31        | 29.85                  | 43.50                  | -13.65       |
| 216.24       | Peak                         | 41.98                             | -9.14        | 32.84                  | 46.00                  | -13.16       |
| 239.52       | Peak                         | 39.67                             | -7.83        | 31.84                  | 46.00                  | -14.16       |
| 263.77       | Peak                         | 42.73                             | -6.88        | 35.85                  | 46.00                  | -10.15       |
| 288.02       | Peak                         | 39.17                             | -5.89        | 33.28                  | 46.00                  | -12.72       |
| 335.55       | Peak                         | 35.91                             | -4.89        | 31.02                  | 46.00                  | -14.98       |

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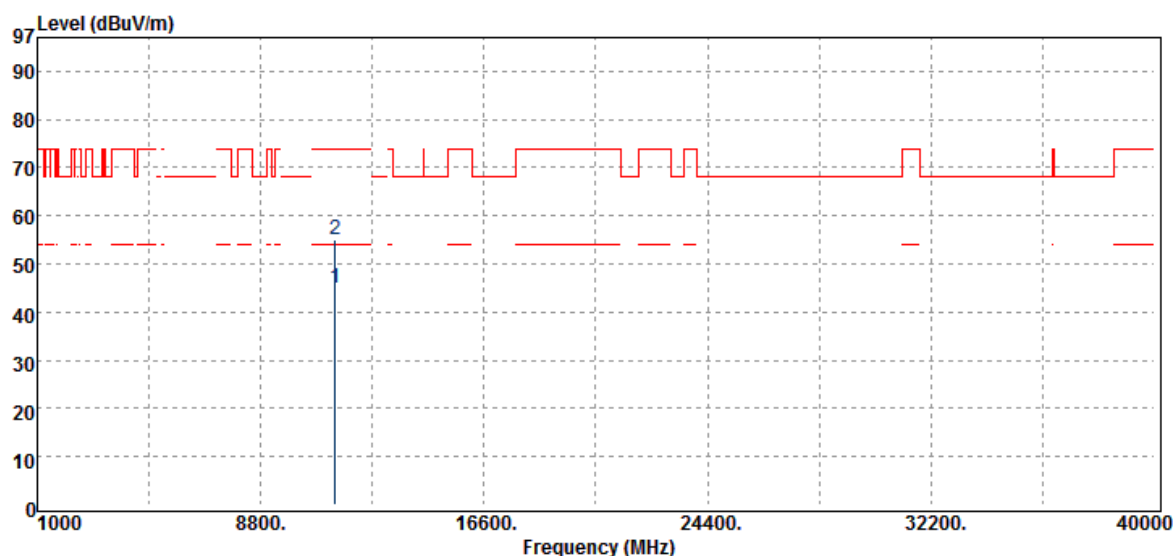
## Above 1GHz Worst-Case Data:

## SISO

## Radiated Spurious Emission Measurement Result 802.11n HT20, 5470~5725 MHz

Operation Band :802.11n20B3  
 Fundamental Frequency :5700 MHz  
 Operation Mode :Tx CH HIGH  
 EUT Pol. :E2 Plane

Test Date :2018-10-03  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Wei  
 Measurement Antenna Pol. :VERTICAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dB $\mu$ V | Factor<br>dB | Actual<br>FS<br>dB $\mu$ V/m | Limit<br>@3m<br>dB $\mu$ V/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------------|--------------|------------------------------|------------------------------|--------------|
| 11400.00     | Average                      | 23.27                                   | 21.62        | 44.89                        | 54.00                        | -9.11        |
| 11400.00     | Peak                         | 33.33                                   | 21.62        | 54.95                        | 74.00                        | -19.05       |

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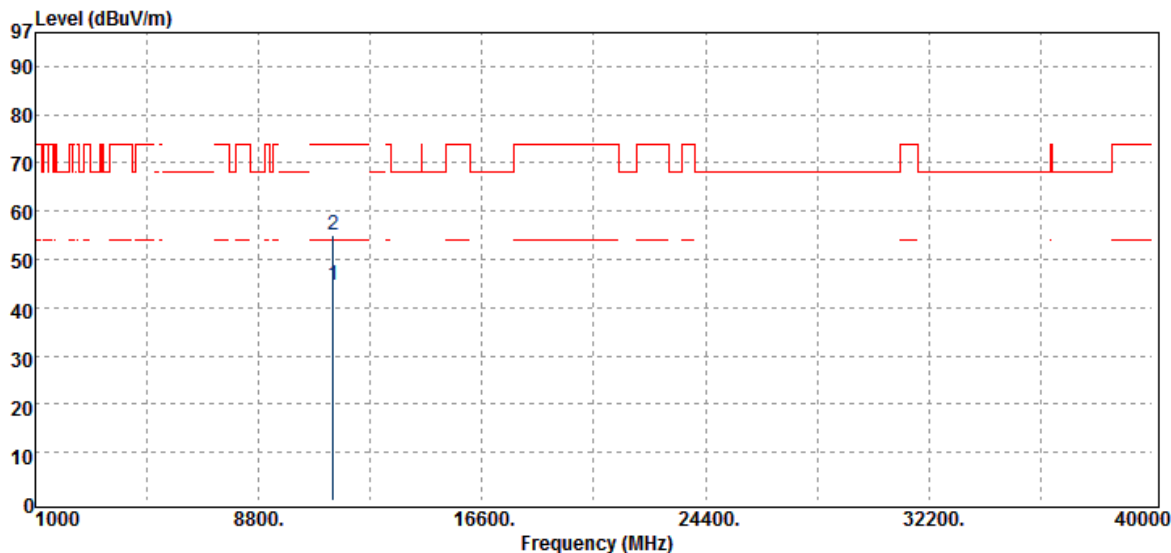
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Operation Band :802.11n20B3  
Fundamental Frequency :5700 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E2 Plane

Test Date :2018-10-03  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Wei  
Measurement Antenna Pol. :HORIZONTAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11400.00     | Average                      | 23.17                             | 21.62        | 44.79                  | 54.00                  | -9.21        |
| 11400.00     | Peak                         | 33.26                             | 21.62        | 54.88                  | 74.00                  | -19.12       |

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**Radiated Spurious Emission Measurement Result 802.11n HT40, 5150~5250 MHz**

Operation Band :802.11n40B1

Fundamental Frequency :5190 MHz

Operation Mode :Tx CH LOW

EUT Pol. :E2 Plane

Test Date

Temp./Humi.

Engineer

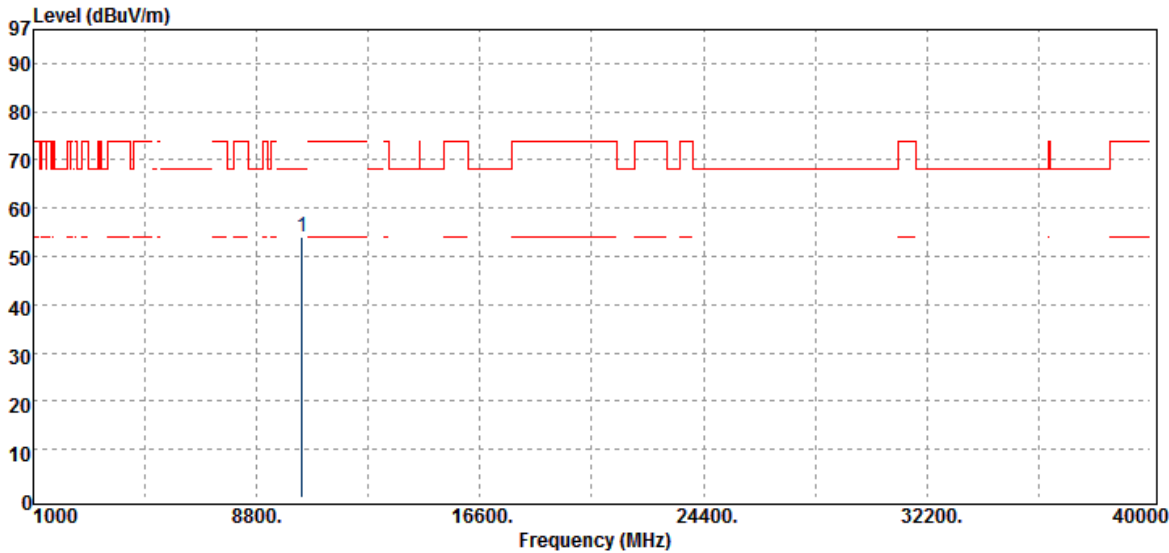
Measurement Antenna Pol.

:2018-10-03

:23 deg\_C / 62 RH

:Wei

:VERTICAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10380.00     | Peak                         | 34.26                             | 19.78        | 54.04                  | 68.20                  | -14.16       |

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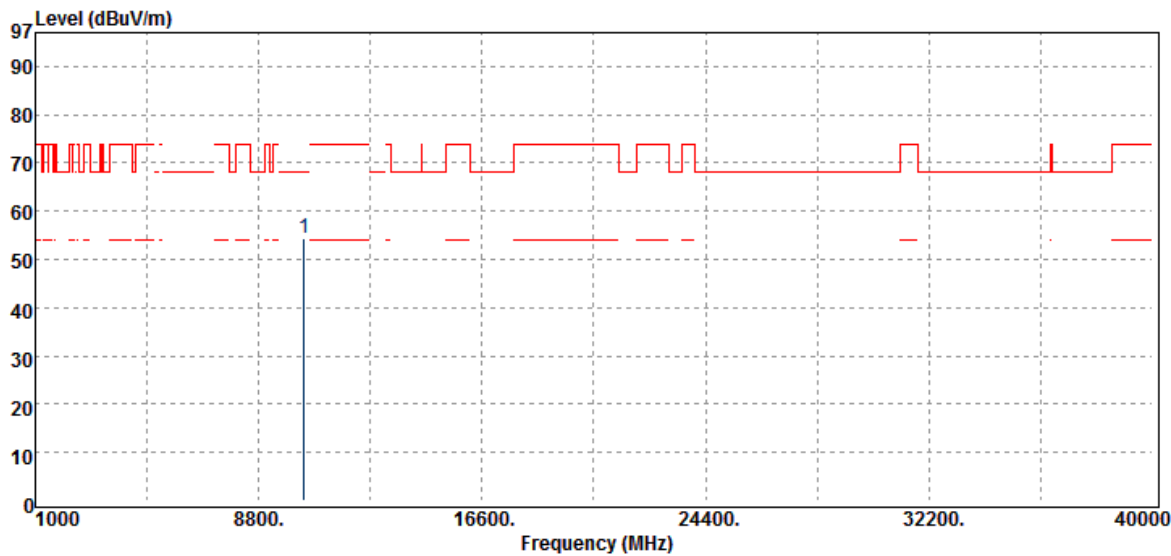
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Operation Band :802.11n40B1  
Fundamental Frequency :5190 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E2 Plane

Test Date :2018-10-03  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Wei  
Measurement Antenna Pol. :HORIZONTAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10380.00     | Peak                         | 34.46                             | 19.78        | 54.24                  | 68.20                  | -13.96       |

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**Radiated Spurious Emission Measurement Result 802.11n HT40, 5250~5350 MHz**

Operation Band :802.11n40B2

Fundamental Frequency :5310 MHz

Operation Mode :Tx CH HIGH

EUT Pol. :E2 Plane

Test Date

Temp./Humi.

Engineer

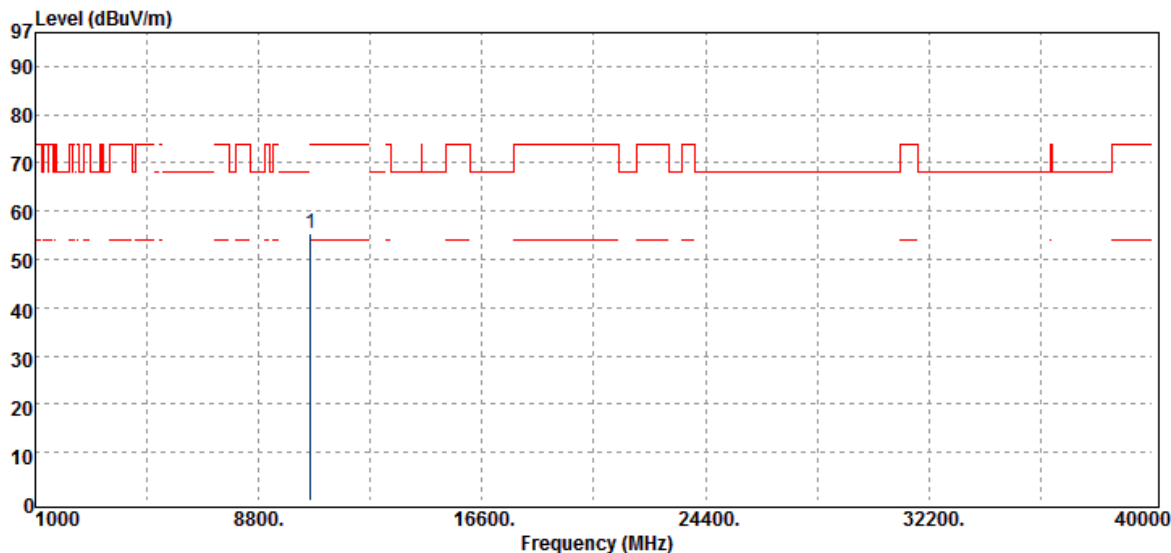
Measurement Antenna Pol.

:2018-10-03

:23 deg\_C / 62 RH

:Wei

:VERTICAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBUV | Factor<br>dB | Actual<br>FS<br>dBUV/m | Limit<br>@3m<br>dBUV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10620.00     | Peak                         | 34.90                             | 20.41        | 55.31                  | 74.00                  | -18.69       |

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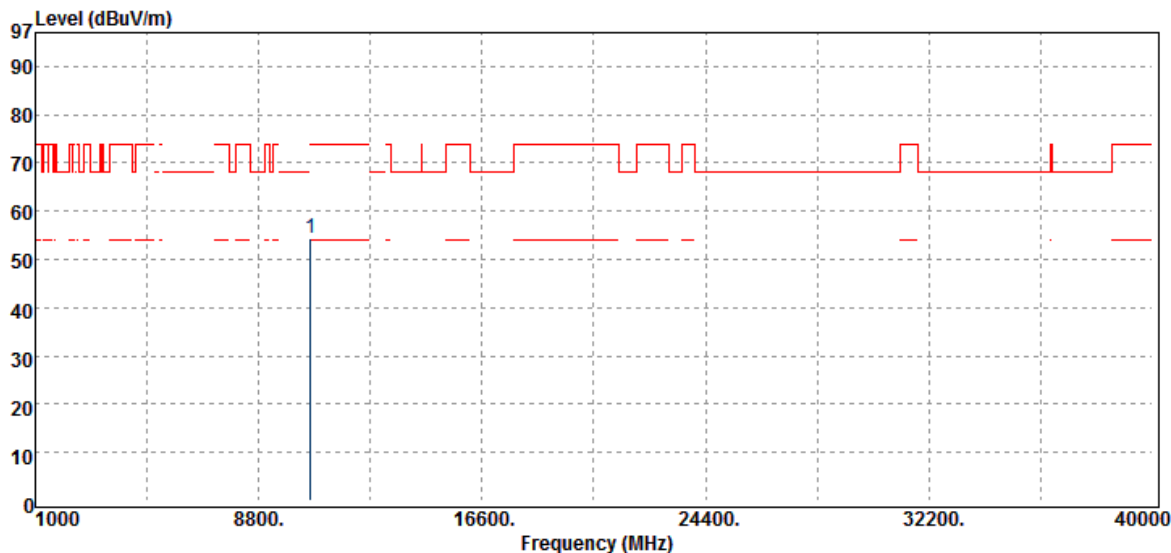
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|                       |              |                          |                   |
|-----------------------|--------------|--------------------------|-------------------|
| Operation Band        | :802.11n40B2 | Test Date                | :2018-10-03       |
| Fundamental Frequency | :5310 MHz    | Temp./Humi.              | :23 deg_C / 62 RH |
| Operation Mode        | :Tx CH HIGH  | Engineer                 | :Wei              |
| EUT Pol.              | :E2 Plane    | Measurement Antenna Pol. | :HORIZONTAL       |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10620.00     | Peak                         | 33.91                             | 20.41        | 54.32                  | 74.00                  | -19.68       |

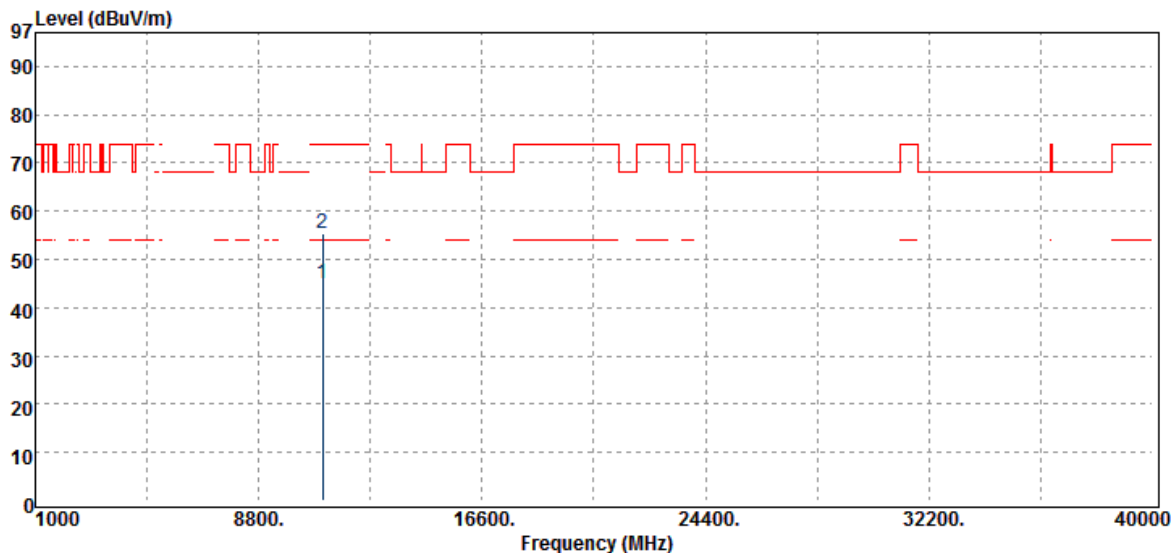
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## Radiated Spurious Emission Measurement Result 802.11n HT40, 5470~5725 MHz

|                       |              |                          |                   |
|-----------------------|--------------|--------------------------|-------------------|
| Operation Band        | :802.11n40B3 | Test Date                | :2018-10-03       |
| Fundamental Frequency | :5510 MHz    | Temp./Humi.              | :23 deg_C / 62 RH |
| Operation Mode        | :Tx CH LOW   | Engineer                 | :Wei              |
| EUT Pol.              | :E2 Plane    | Measurement Antenna Pol. | :VERTICAL         |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11020.00     | Average                      | 23.43                             | 21.46        | 44.89                  | 54.00                  | -9.11        |
| 11020.00     | Peak                         | 33.77                             | 21.46        | 55.23                  | 74.00                  | -18.77       |

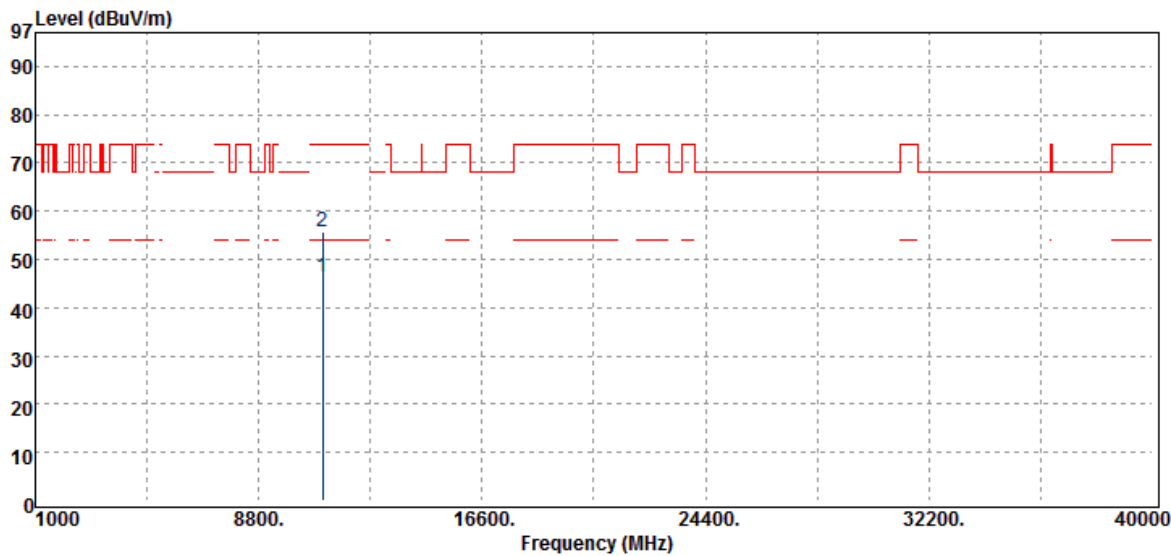
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Operation Band :802.11n40B3  
Fundamental Frequency :5510 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E2 Plane

Test Date :2018-10-03  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Wei  
Measurement Antenna Pol. :HORIZONTAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11020.00     | Average                      | 24.97                             | 21.46        | 46.43                  | 54.00                  | -7.57        |
| 11020.00     | Peak                         | 34.16                             | 21.46        | 55.62                  | 74.00                  | -18.38       |

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**Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5150~5250 MHz**

Operation Band :802.11ac80B1

Fundamental Frequency :5210 MHz

Operation Mode :Tx CH LOW

EUT Pol. :E2 Plane

Test Date

:2018-10-03

Temp./Humi.

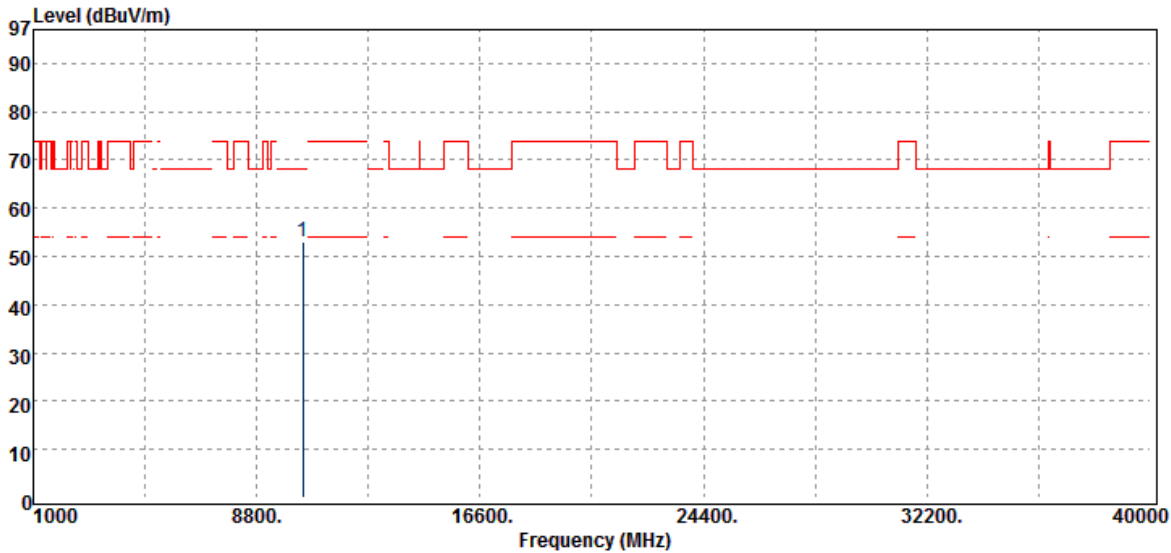
:23 deg\_C / 62 RH

Engineer

:Wei

Measurement Antenna Pol.

:VERTICAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10420.00     | Peak                         | 33.02                             | 19.99        | 53.01                  | 68.20                  | -15.19       |

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t (886-2) 2299-3279

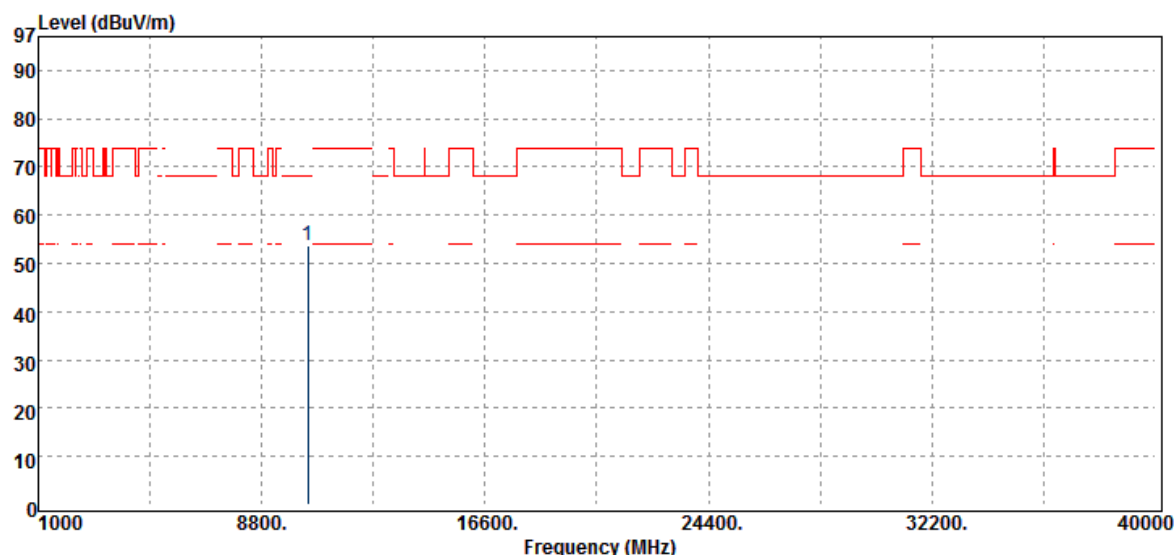
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Operation Band :802.11ac80B1  
Fundamental Frequency :5210 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E2 Plane

Test Date :2018-10-03  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Wei  
Measurement Antenna Pol. :HORIZONTAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10420.00     | Peak                         | 33.68                             | 19.99        | 53.67                  | 68.20                  | -14.53       |

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**Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5250~5350 MHz**

Operation Band :802.11ac80B2

Fundamental Frequency :5290 MHz

Operation Mode :Tx CH HIGH

EUT Pol. :E2 Plane

Test Date

:2018-10-03

Temp./Humi.

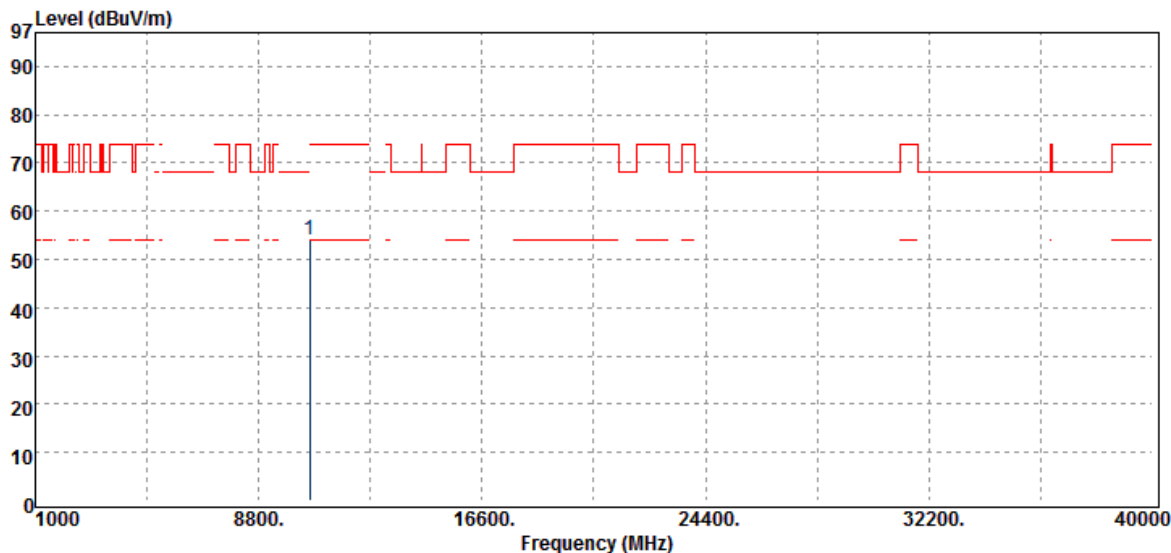
:23 deg\_C / 62 RH

Engineer

:Wei

Measurement Antenna Pol.

:VERTICAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10580.00     | Peak                         | 33.95                             | 20.23        | 54.18                  | 68.20                  | -14.02       |

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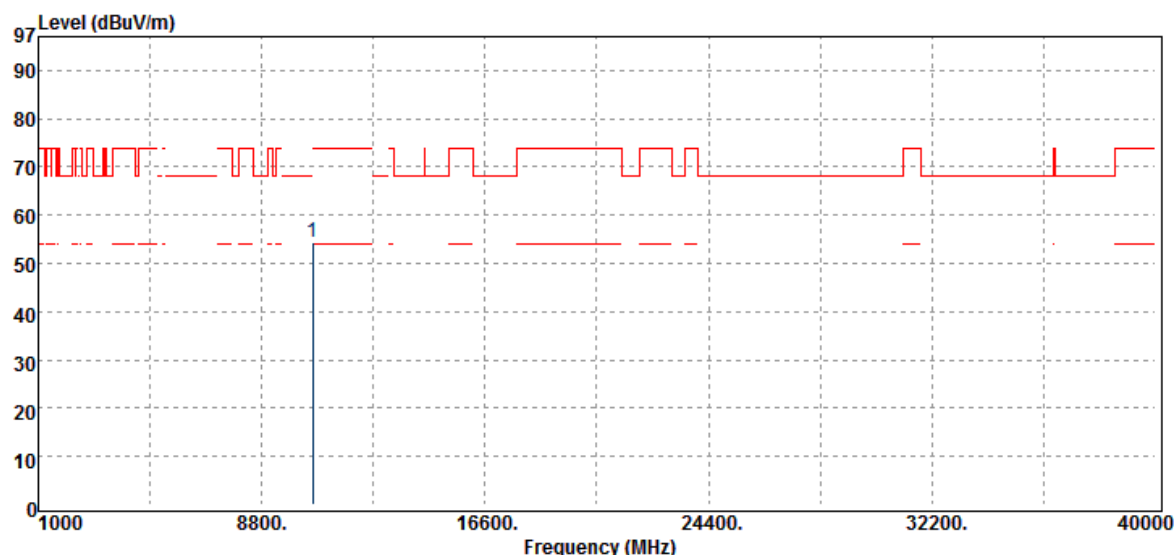
f (886-2) 2298-0488

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Operation Band :802.11ac80B2  
Fundamental Frequency :5290 MHz  
Operation Mode :Tx CH HIGH  
EUT Pol. :E2 Plane

Test Date :2018-10-03  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Wei  
Measurement Antenna Pol. :HORIZONTAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10580.00     | Peak                         | 34.25                             | 20.23        | 54.48                  | 68.20                  | -13.72       |

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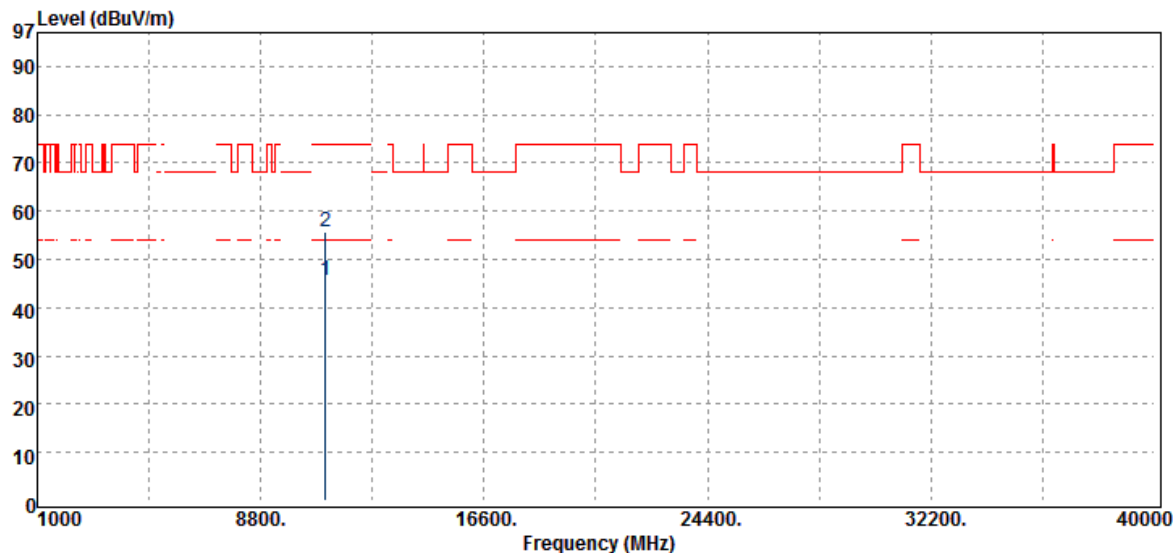
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## Radiated Spurious Emission Measurement Result 802.11ac VHT80, 5470~5725 MHz

|                       |               |                          |                   |
|-----------------------|---------------|--------------------------|-------------------|
| Operation Band        | :802.11ac80B3 | Test Date                | :2018-10-03       |
| Fundamental Frequency | :5530 MHz     | Temp./Humi.              | :23 deg_C / 62 RH |
| Operation Mode        | :Tx CH LOW    | Engineer                 | :Wei              |
| EUT Pol.              | :E2 Plane     | Measurement Antenna Pol. | :VERTICAL         |



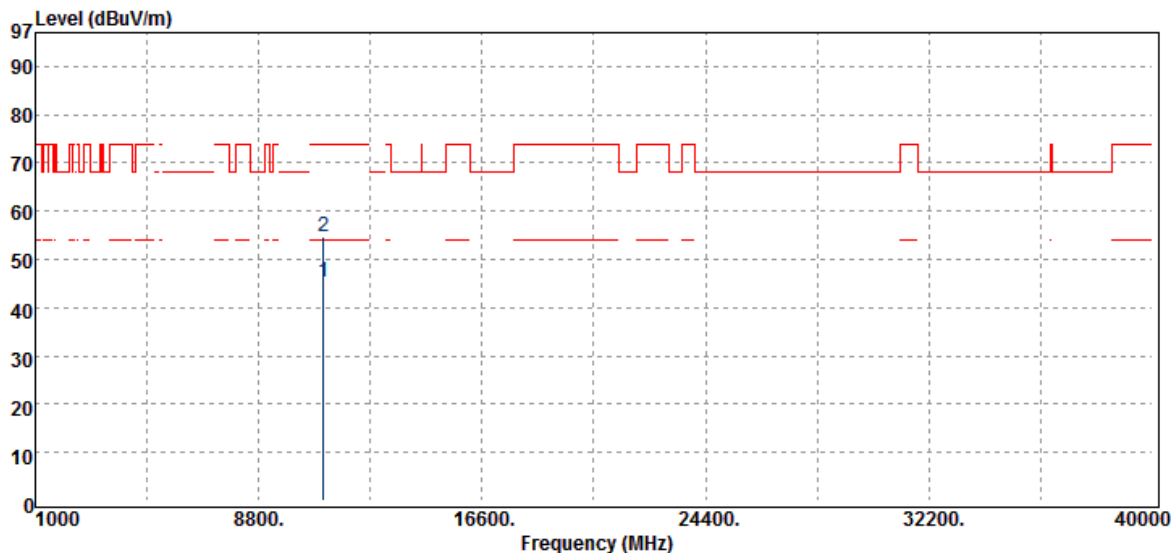
| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11060.00     | Average                      | 24.07                             | 21.53        | 45.60                  | 54.00                  | -8.40        |
| 11060.00     | Peak                         | 34.33                             | 21.53        | 55.86                  | 74.00                  | -18.14       |

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|                       |               |                          |                   |
|-----------------------|---------------|--------------------------|-------------------|
| Operation Band        | :802.11ac80B3 | Test Date                | :2018-10-03       |
| Fundamental Frequency | :5530 MHz     | Temp./Humi.              | :23 deg_C / 62 RH |
| Operation Mode        | :Tx CH LOW    | Engineer                 | :Wei              |
| EUT Pol.              | :E2 Plane     | Measurement Antenna Pol. | :HORIZONTAL       |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11060.00     | Average                      | 23.62                             | 21.53        | 45.15                  | 54.00                  | -8.85        |
| 11060.00     | Peak                         | 33.09                             | 21.53        | 54.62                  | 74.00                  | -19.38       |

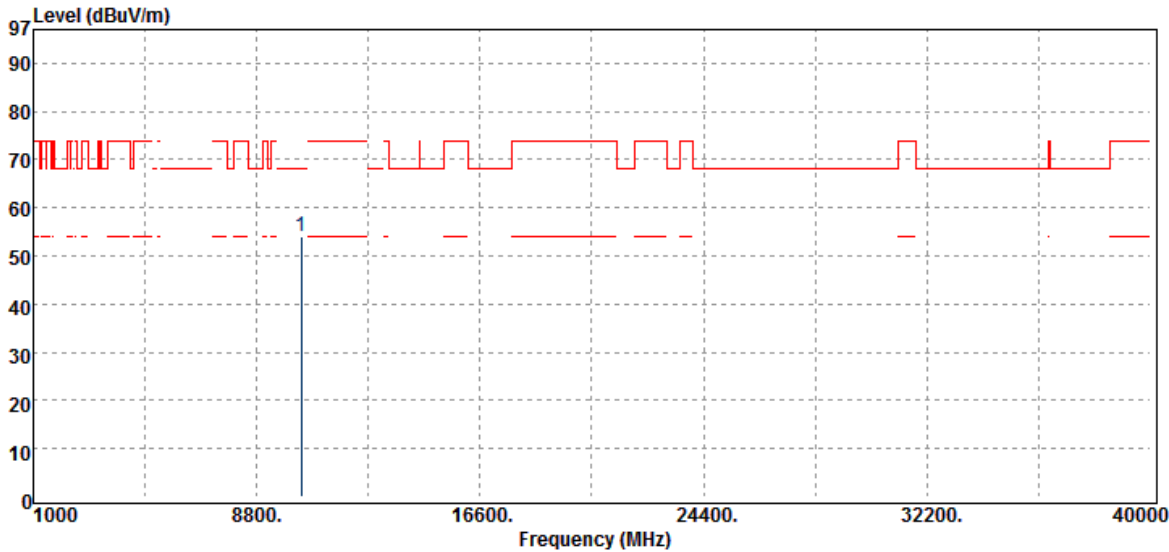
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**MIMO****Radiated Spurious Emission Measurement Result 802.11a, 5150~5250 MHz**

|                       |            |                          |                   |
|-----------------------|------------|--------------------------|-------------------|
| Operation Band        | :802.11aB1 | Test Date                | :2018-10-02       |
| Fundamental Frequency | :5180 MHz  | Temp./Humi.              | :23 deg_C / 62 RH |
| Operation Mode        | :Tx CH LOW | Engineer                 | :Wei              |
| EUT Pol.              | :E2 Plane  | Measurement Antenna Pol. | :VERTICAL         |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBμV | Factor<br>dB | Actual<br>FS<br>dBμV/m | Limit<br>@3m<br>dBμV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10360.00     | Peak                         | 34.32                             | 19.71        | 54.03                  | 68.20                  | -14.17       |

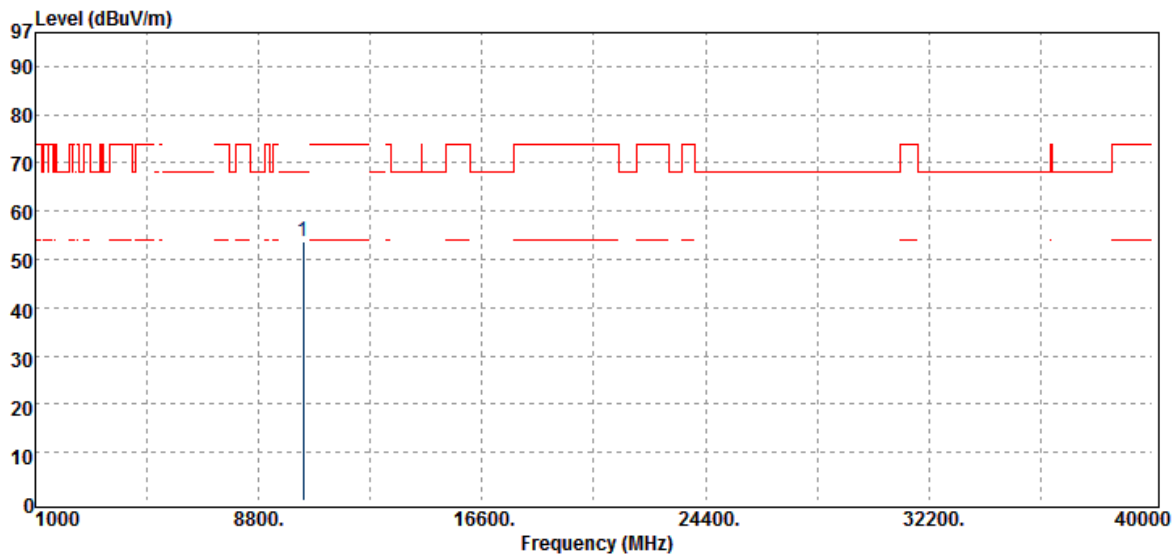
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Operation Band :802.11aB1  
 Fundamental Frequency :5180 MHz  
 Operation Mode :Tx CH LOW  
 EUT Pol. :E2 Plane

Test Date :2018-10-02  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Wei  
 Measurement Antenna Pol. :HORIZONTAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10360.00     | Peak                         | 34.02                             | 19.71        | 53.73                  | 68.20                  | -14.47       |

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|                       |            |                          |                   |
|-----------------------|------------|--------------------------|-------------------|
| Operation Band        | :802.11aB1 | Test Date                | :2018-10-02       |
| Fundamental Frequency | :5220 MHz  | Temp./Humi.              | :23 deg_C / 62 RH |
| Operation Mode        | :Tx CH MID | Engineer                 | :Wei              |
| EUT Pol.              | :E2 Plane  | Measurement Antenna Pol. | :VERTICAL         |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10440.00     | Peak                         | 34.19                             | 20.05        | 54.24                  | 68.20                  | -13.96       |

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|                       |            |                          |                   |
|-----------------------|------------|--------------------------|-------------------|
| Operation Band        | :802.11aB1 | Test Date                | :2018-10-02       |
| Fundamental Frequency | :5220 MHz  | Temp./Humi.              | :23 deg_C / 62 RH |
| Operation Mode        | :Tx CH MID | Engineer                 | :Wei              |
| EUT Pol.              | :E2 Plane  | Measurement Antenna Pol. | :HORIZONTAL       |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10440.00     | Peak                         | 33.76                             | 20.05        | 53.81                  | 68.20                  | -14.39       |

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|                       |             |                          |                   |
|-----------------------|-------------|--------------------------|-------------------|
| Operation Band        | :802.11aB1  | Test Date                | :2018-10-02       |
| Fundamental Frequency | :5240 MHz   | Temp./Humi.              | :23 deg_C / 62 RH |
| Operation Mode        | :Tx CH HIGH | Engineer                 | :Wei              |
| EUT Pol.              | :E2 Plane   | Measurement Antenna Pol. | :VERTICAL         |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10480.00     | Peak                         | 33.71                             | 20.07        | 53.78                  | 68.20                  | -14.42       |

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|                       |             |                          |                   |
|-----------------------|-------------|--------------------------|-------------------|
| Operation Band        | :802.11aB1  | Test Date                | :2018-10-02       |
| Fundamental Frequency | :5240 MHz   | Temp./Humi.              | :23 deg_C / 62 RH |
| Operation Mode        | :Tx CH HIGH | Engineer                 | :Wei              |
| EUT Pol.              | :E2 Plane   | Measurement Antenna Pol. | :HORIZONTAL       |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10480.00     | Peak                         | 33.06                             | 20.07        | 53.13                  | 68.20                  | -15.07       |

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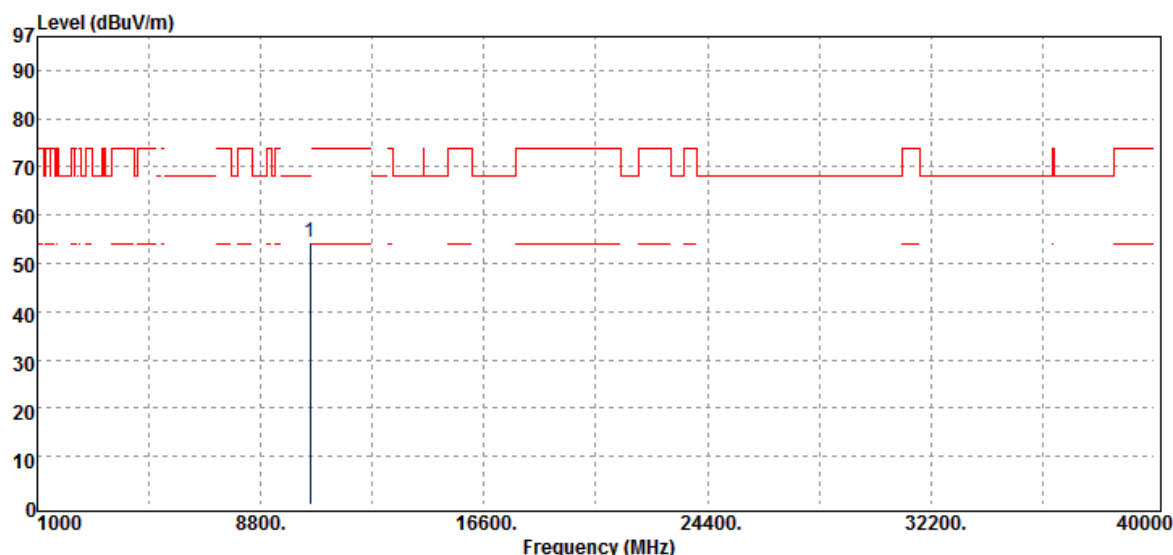
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**Radiated Spurious Emission Measurement Result 802.11a, 5250MHz-5350MHz**

Operation Band :802.11aB2  
Fundamental Frequency :5260 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E2 Plane

Test Date :2018-10-02  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Wei  
Measurement Antenna Pol. :VERTICAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10520.00     | Peak                         | 34.21                             | 20.00        | 54.21                  | 68.20                  | -13.99       |

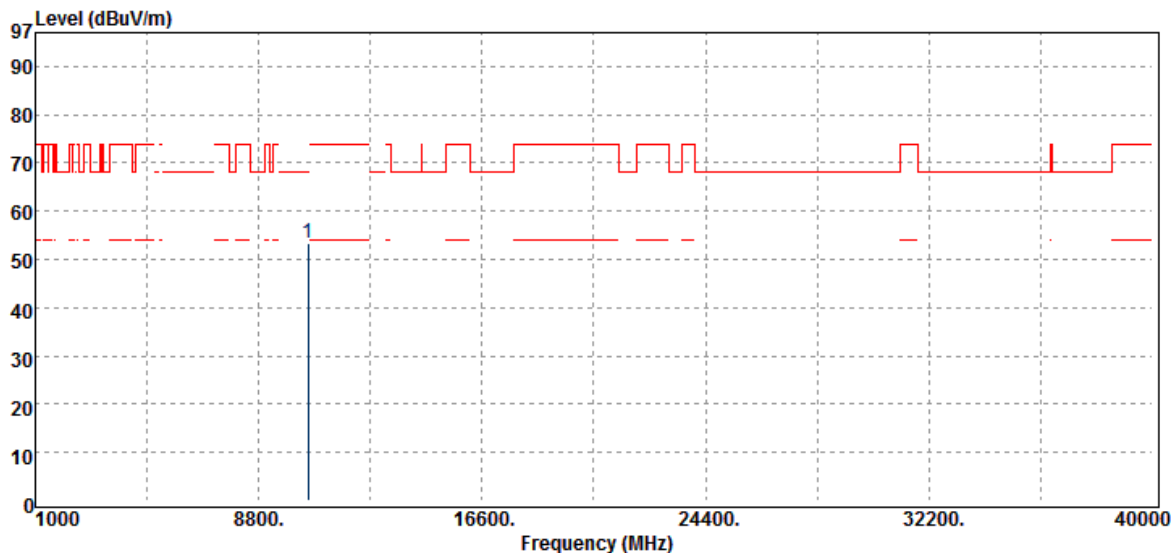
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Operation Band :802.11aB2  
 Fundamental Frequency :5260 MHz  
 Operation Mode :Tx CH LOW  
 EUT Pol. :E2 Plane

Test Date :2018-10-02  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Wei  
 Measurement Antenna Pol. :HORIZONTAL



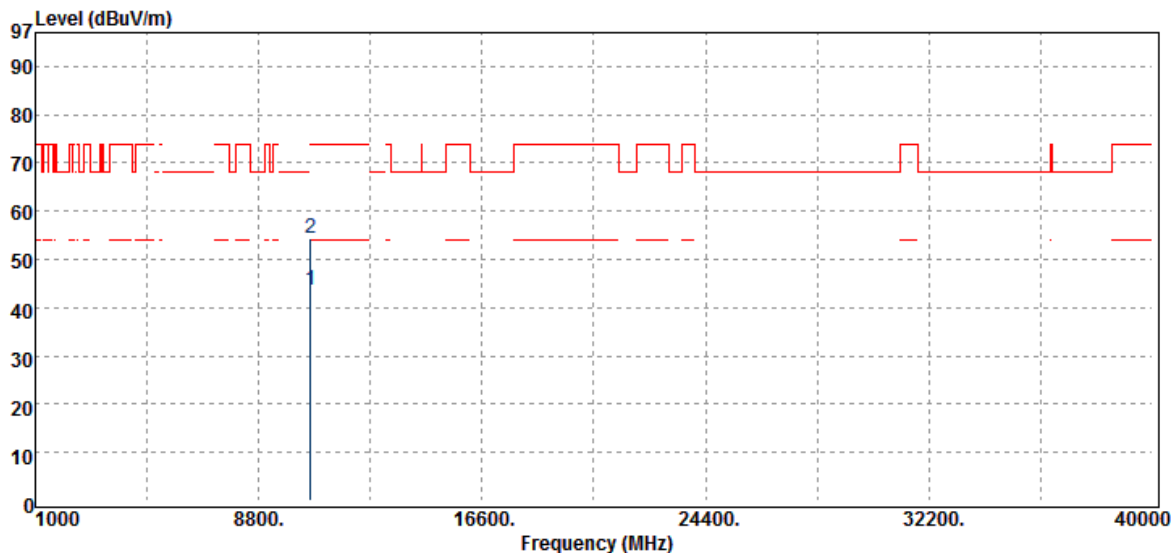
| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10520.00     | Peak                         | 33.39                             | 20.00        | 53.39                  | 68.20                  | -14.81       |

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|                       |            |                          |                   |
|-----------------------|------------|--------------------------|-------------------|
| Operation Band        | :802.11aB2 | Test Date                | :2018-10-02       |
| Fundamental Frequency | :5300 MHz  | Temp./Humi.              | :23 deg_C / 62 RH |
| Operation Mode        | :Tx CH MID | Engineer                 | :Kane             |
| EUT Pol.              | :E2 Plane  | Measurement Antenna Pol. | :VERTICAL         |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10600.00     | Average                      | 23.27                             | 20.38        | 43.65                  | 54.00                  | -10.35       |
| 10600.00     | Peak                         | 33.92                             | 20.38        | 54.30                  | 74.00                  | -19.70       |

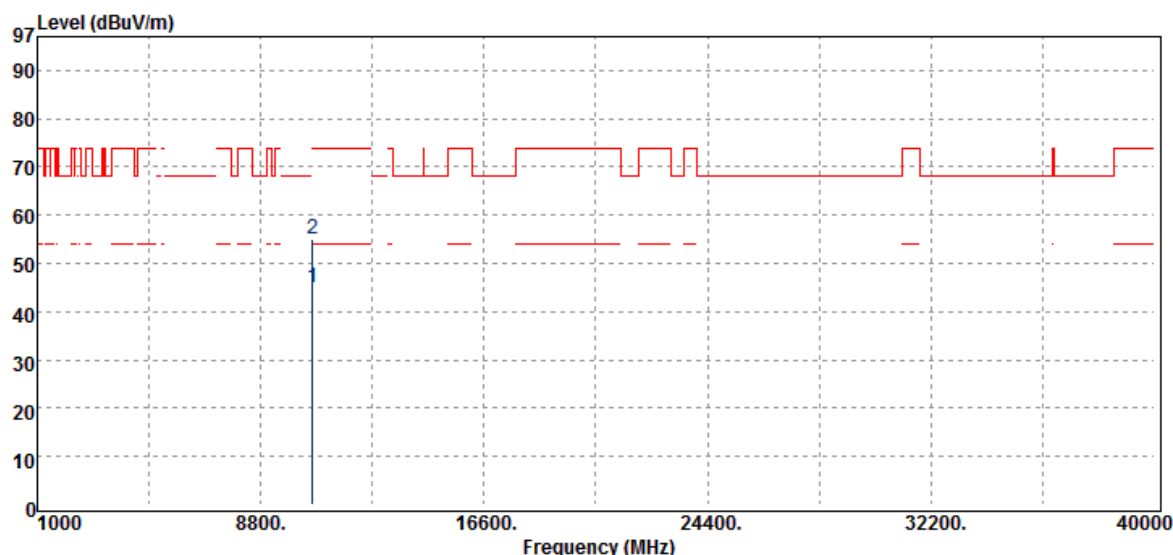
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Operation Band :802.11aB2  
Fundamental Frequency :5300 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E2 Plane

Test Date :2018-10-02  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Kane  
Measurement Antenna Pol. :HORIZONTAL



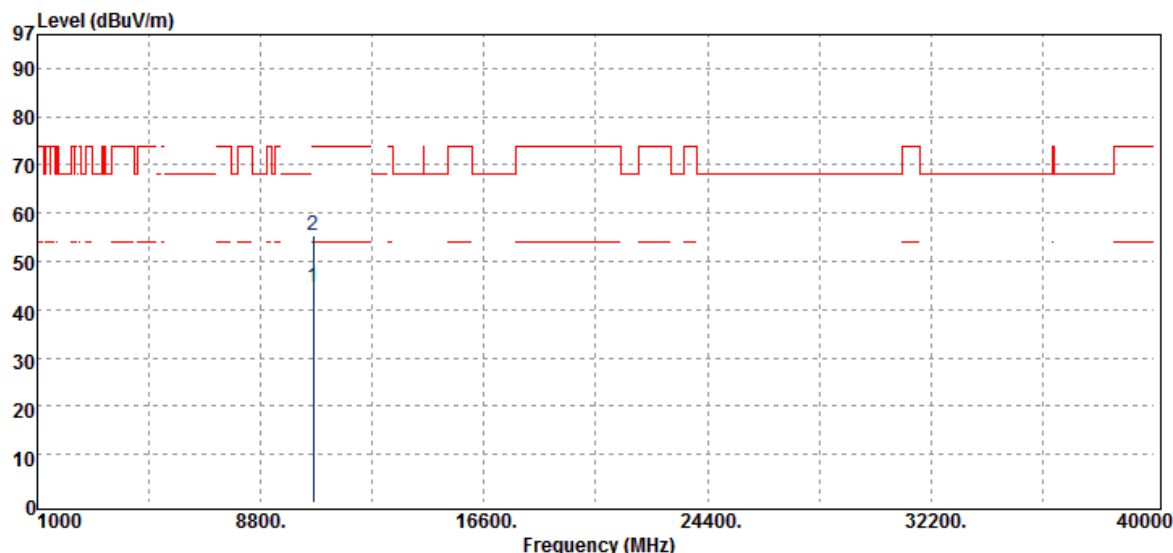
| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10600.00     | Average                      | 24.67                             | 20.38        | 45.05                  | 54.00                  | -8.95        |
| 10600.00     | Peak                         | 34.79                             | 20.38        | 55.17                  | 74.00                  | -18.83       |

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|                       |             |                          |                   |
|-----------------------|-------------|--------------------------|-------------------|
| Operation Band        | :802.11aB2  | Test Date                | :2018-10-02       |
| Fundamental Frequency | :5320 MHz   | Temp./Humi.              | :23 deg_C / 62 RH |
| Operation Mode        | :Tx CH HIGH | Engineer                 | :Wei              |
| EUT Pol.              | :E2 Plane   | Measurement Antenna Pol. | :VERTICAL         |



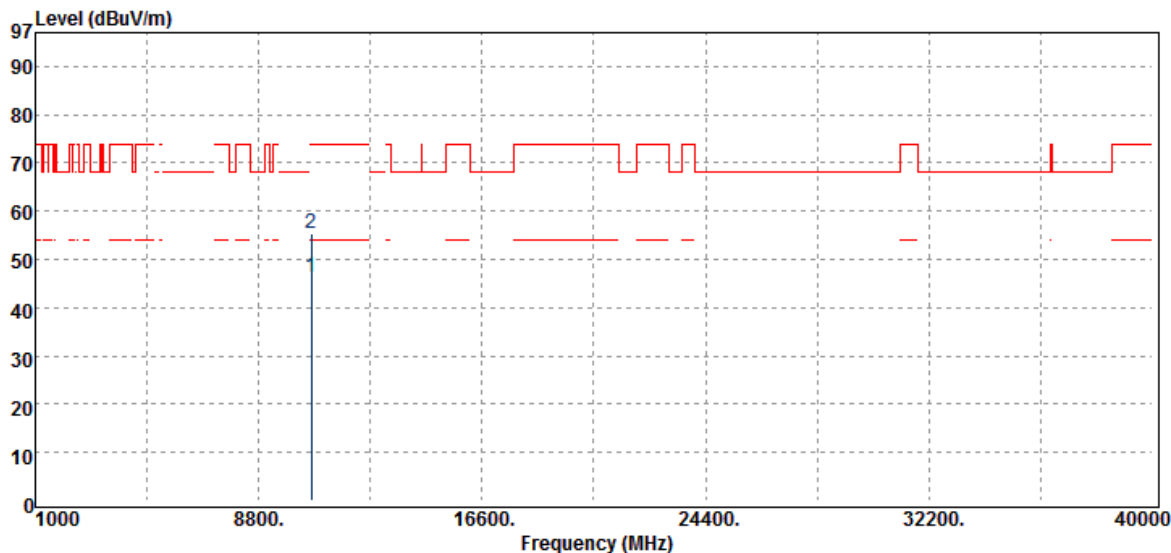
| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBUV | Factor<br>dB | Actual<br>FS<br>dBUV/m | Limit<br>@3m<br>dBUV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10640.00     | Average                      | 24.33                             | 20.44        | 44.77                  | 54.00                  | -9.23        |
| 10640.00     | Peak                         | 34.92                             | 20.44        | 55.36                  | 74.00                  | -18.64       |

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|                       |             |                          |                   |
|-----------------------|-------------|--------------------------|-------------------|
| Operation Band        | :802.11aB2  | Test Date                | :2018-10-02       |
| Fundamental Frequency | :5320 MHz   | Temp./Humi.              | :23 deg_C / 62 RH |
| Operation Mode        | :Tx CH HIGH | Engineer                 | :Wei              |
| EUT Pol.              | :E2 Plane   | Measurement Antenna Pol. | :HORIZONTAL       |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 10640.00     | Average                      | 25.83                             | 20.44        | 46.27                  | 54.00                  | -7.73        |
| 10640.00     | Peak                         | 35.08                             | 20.44        | 55.52                  | 74.00                  | -18.48       |

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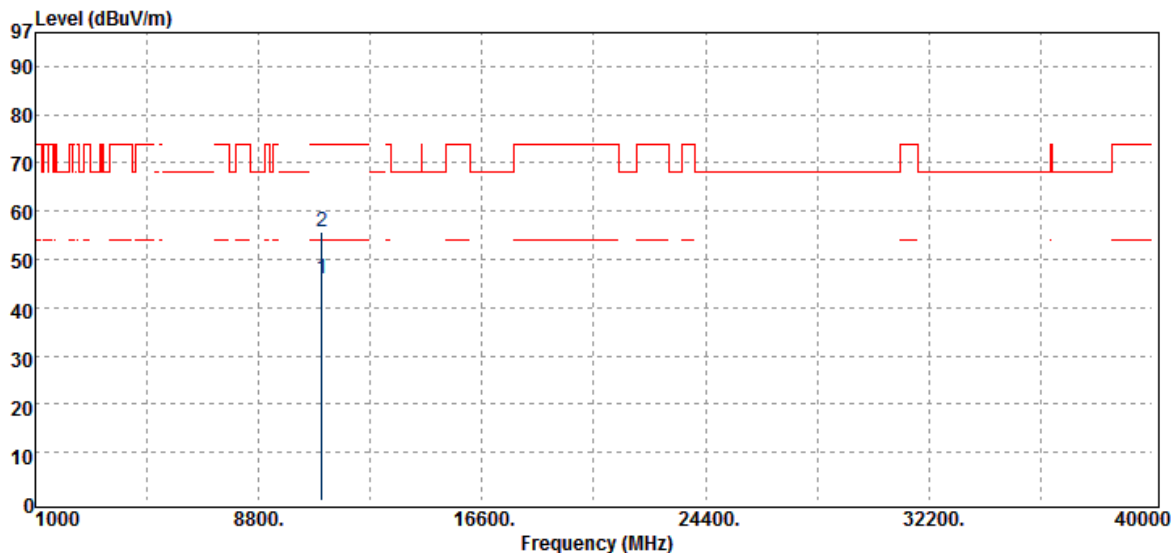
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**Radiated Spurious Emission Measurement Result 802.11a, 5470~5725 MHz**

Operation Band :802.11aB3  
 Fundamental Frequency :5500 MHz  
 Operation Mode :Tx CH LOW  
 EUT Pol. :E2 Plane

Test Date :2018-10-02  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Wei  
 Measurement Antenna Pol. :VERTICAL



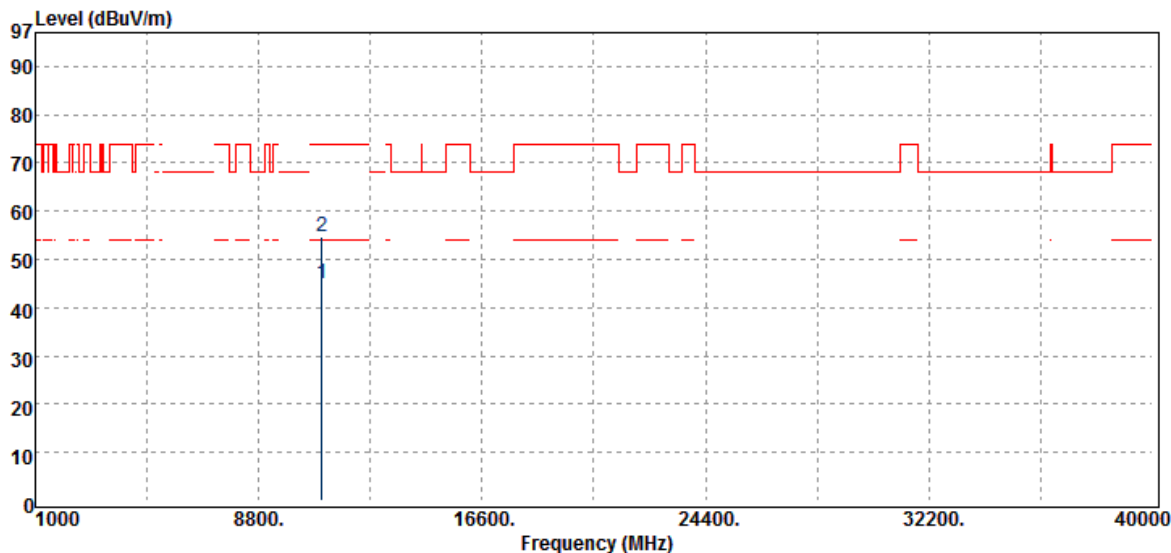
| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11000.00     | Average                      | 24.71                             | 21.37        | 46.08                  | 54.00                  | -7.92        |
| 11000.00     | Peak                         | 34.34                             | 21.37        | 55.71                  | 74.00                  | -18.29       |

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|                       |            |                          |                   |
|-----------------------|------------|--------------------------|-------------------|
| Operation Band        | :802.11aB3 | Test Date                | :2018-10-02       |
| Fundamental Frequency | :5500 MHz  | Temp./Humi.              | :23 deg_C / 62 RH |
| Operation Mode        | :Tx CH LOW | Engineer                 | :Wei              |
| EUT Pol.              | :E2 Plane  | Measurement Antenna Pol. | :HORIZONTAL       |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11000.00     | Average                      | 23.77                             | 21.37        | 45.14                  | 54.00                  | -8.86        |
| 11000.00     | Peak                         | 33.38                             | 21.37        | 54.75                  | 74.00                  | -19.25       |

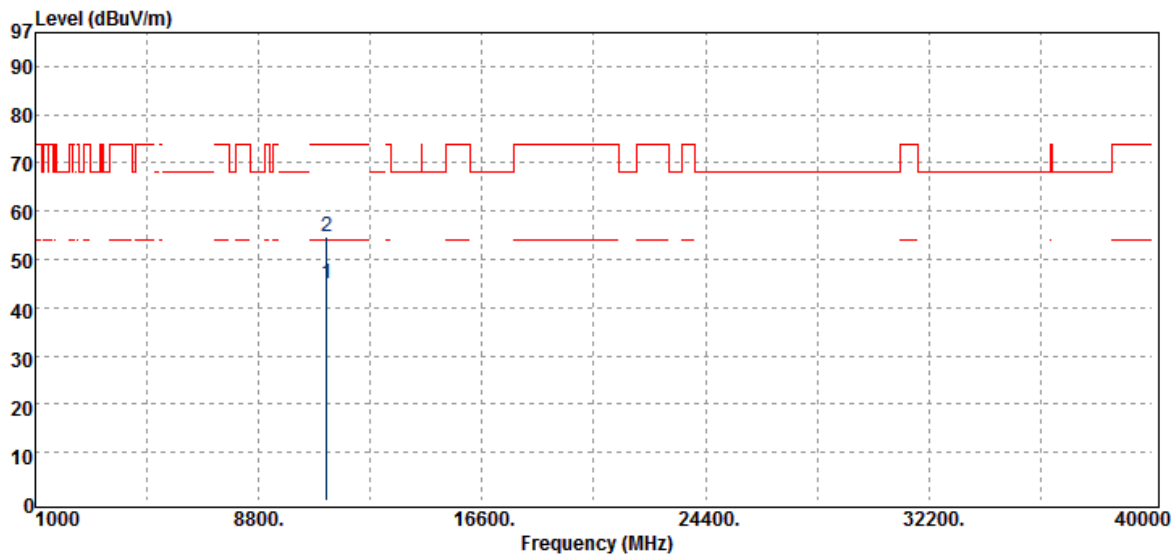
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Operation Band :802.11aB3  
Fundamental Frequency :5580 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E2 Plane

Test Date :2018-10-02  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Wei  
Measurement Antenna Pol. :VERTICAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBUV | Factor<br>dB | Actual<br>FS<br>dBUV/m | Limit<br>@3m<br>dBUV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11160.00     | Average                      | 23.61                             | 21.51        | 45.12                  | 54.00                  | -8.88        |
| 11160.00     | Peak                         | 33.30                             | 21.51        | 54.81                  | 74.00                  | -19.19       |

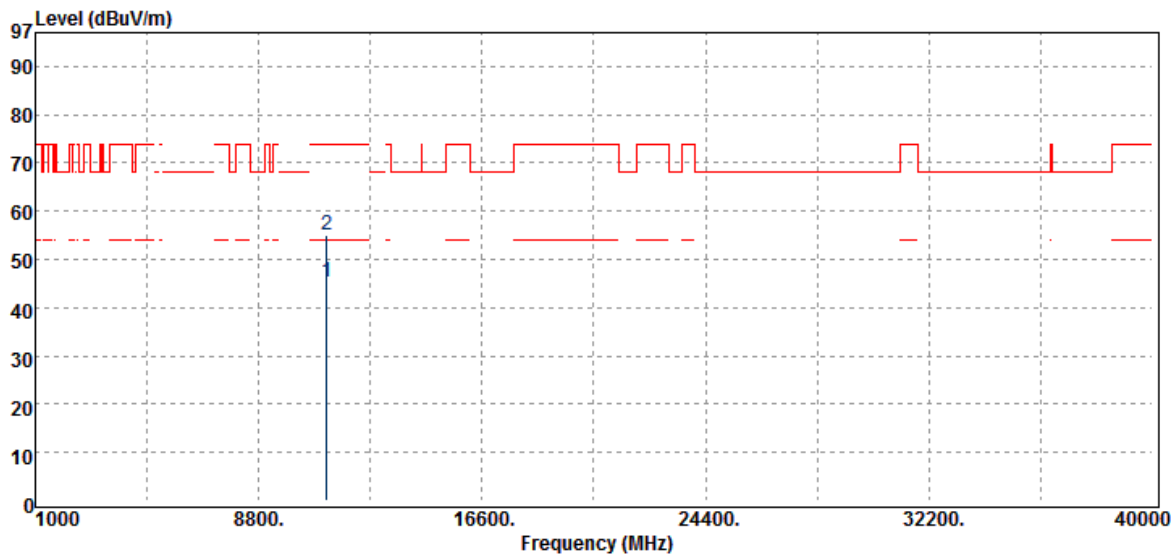
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Operation Band :802.11aB3  
Fundamental Frequency :5580 MHz  
Operation Mode :Tx CH MID  
EUT Pol. :E2 Plane

Test Date :2018-10-02  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Wei  
Measurement Antenna Pol. :HORIZONTAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11160.00     | Average                      | 23.91                             | 21.51        | 45.42                  | 54.00                  | -8.58        |
| 11160.00     | Peak                         | 33.44                             | 21.51        | 54.95                  | 74.00                  | -19.05       |

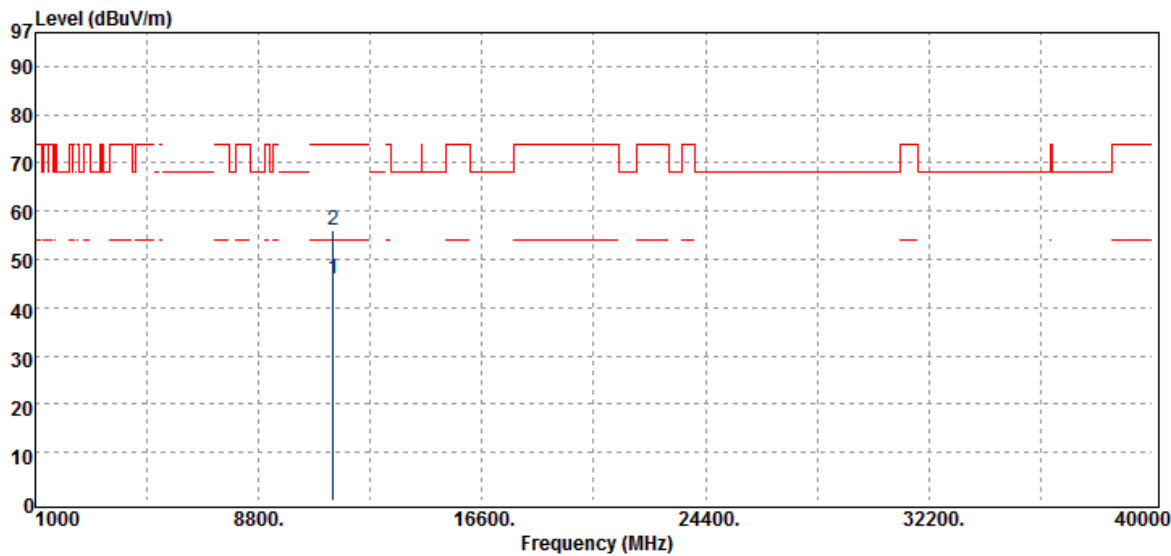
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Operation Band :802.11aB3  
 Fundamental Frequency :5700 MHz  
 Operation Mode :Tx CH HIGH  
 EUT Pol. :E2 Plane

Test Date :2018-10-02  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Wei  
 Measurement Antenna Pol. :VERTICAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11400.00     | Average                      | 24.37                             | 21.62        | 45.99                  | 54.00                  | -8.01        |
| 11400.00     | Peak                         | 34.51                             | 21.62        | 56.13                  | 74.00                  | -17.87       |

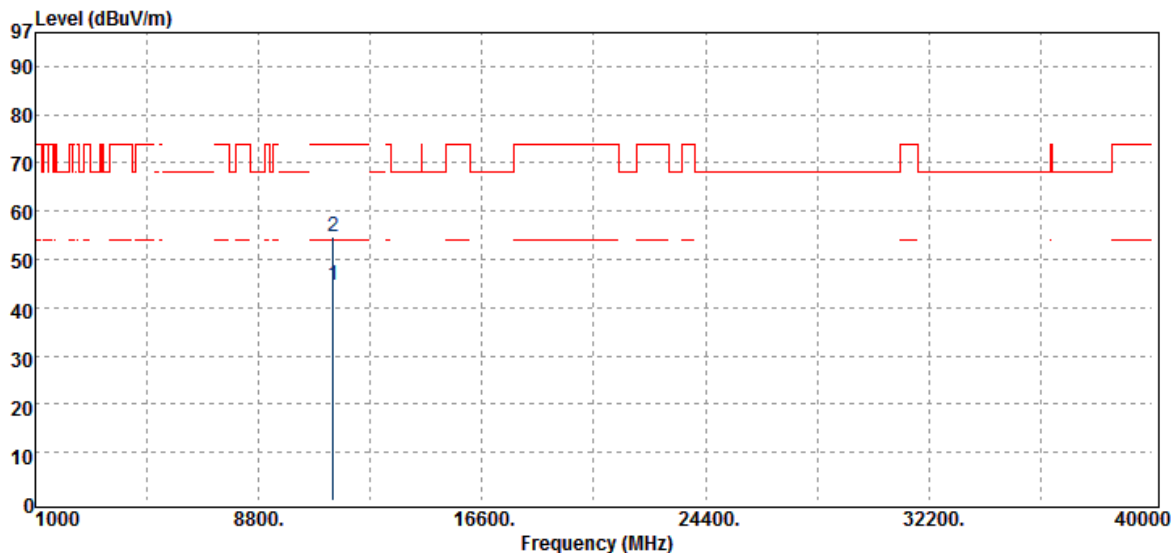
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Operation Band :802.11aB3  
 Fundamental Frequency :5700 MHz  
 Operation Mode :Tx CH HIGH  
 EUT Pol. :E2 Plane

Test Date :2018-10-02  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Wei  
 Measurement Antenna Pol. :HORIZONTAL



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11400.00     | Average                      | 22.87                             | 21.62        | 44.49                  | 54.00                  | -9.51        |
| 11400.00     | Peak                         | 32.96                             | 21.62        | 54.58                  | 74.00                  | -19.42       |

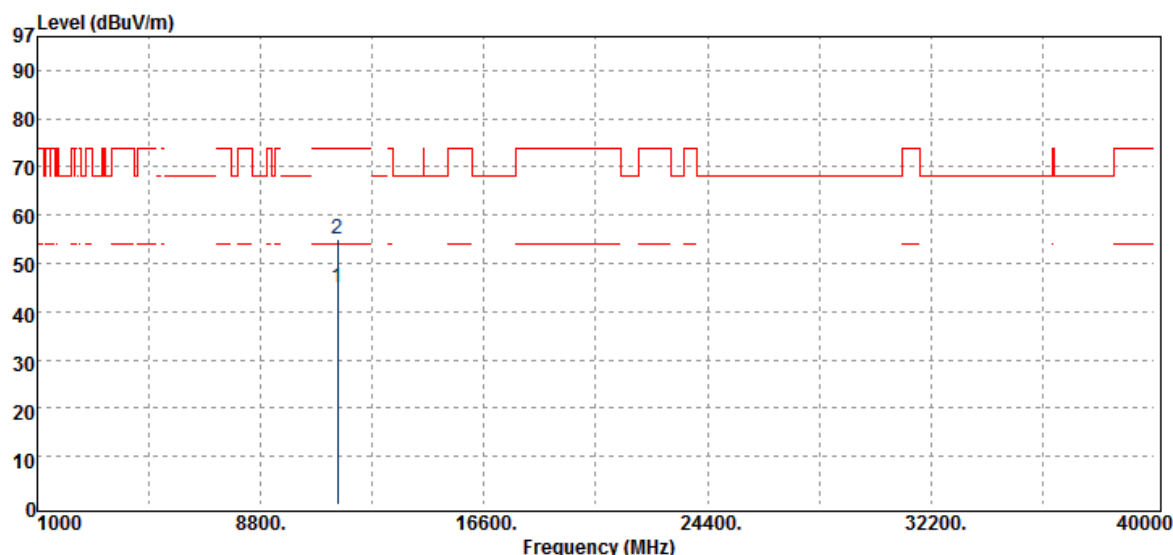
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## Radiated Spurious Emission Measurement Result 802.11a, 5725~5850 MHz

|                       |            |                          |                   |
|-----------------------|------------|--------------------------|-------------------|
| Operation Band        | :802.11aB4 | Test Date                | :2018-10-02       |
| Fundamental Frequency | :5745 MHz  | Temp./Humi.              | :23 deg_C / 62 RH |
| Operation Mode        | :Tx CH LOW | Engineer                 | :Wei              |
| EUT Pol.              | :E2 Plane  | Measurement Antenna Pol. | :VERTICAL         |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11490.00     | Average                      | 23.27                             | 21.61        | 44.88                  | 54.00                  | -9.12        |
| 11490.00     | Peak                         | 33.51                             | 21.61        | 55.12                  | 74.00                  | -18.88       |

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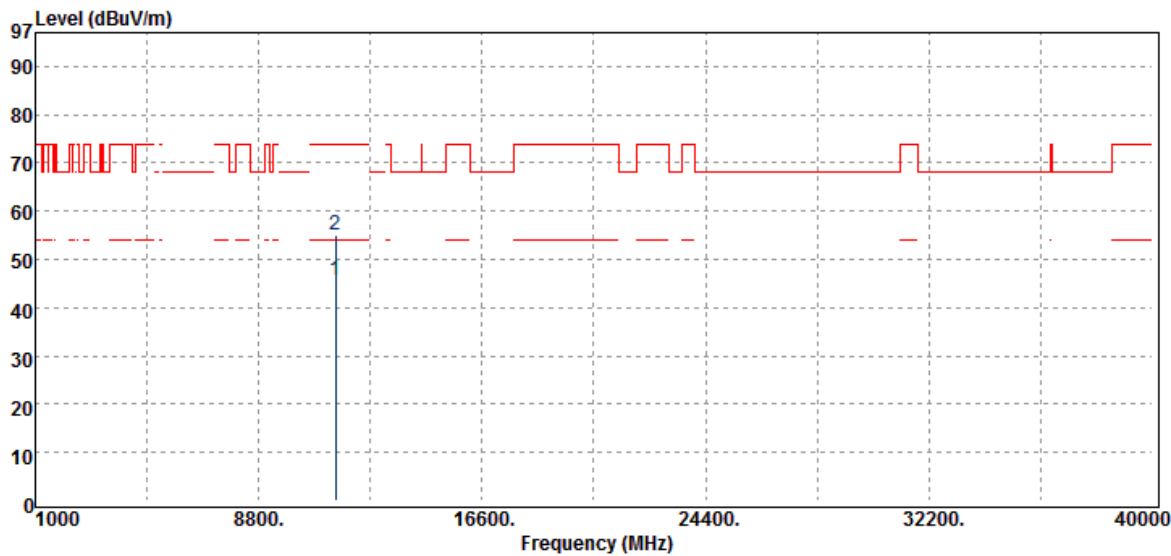
f (886-2) 2298-0488

[www.tw.sgs.com](http://www.tw.sgs.com)

Member of SGS Group

Operation Band :802.11aB4  
Fundamental Frequency :5745 MHz  
Operation Mode :Tx CH LOW  
EUT Pol. :E2 Plane

Test Date :2018-10-02  
Temp./Humi. :23 deg\_C / 62 RH  
Engineer :Wei  
Measurement Antenna Pol. :HORIZONTAL



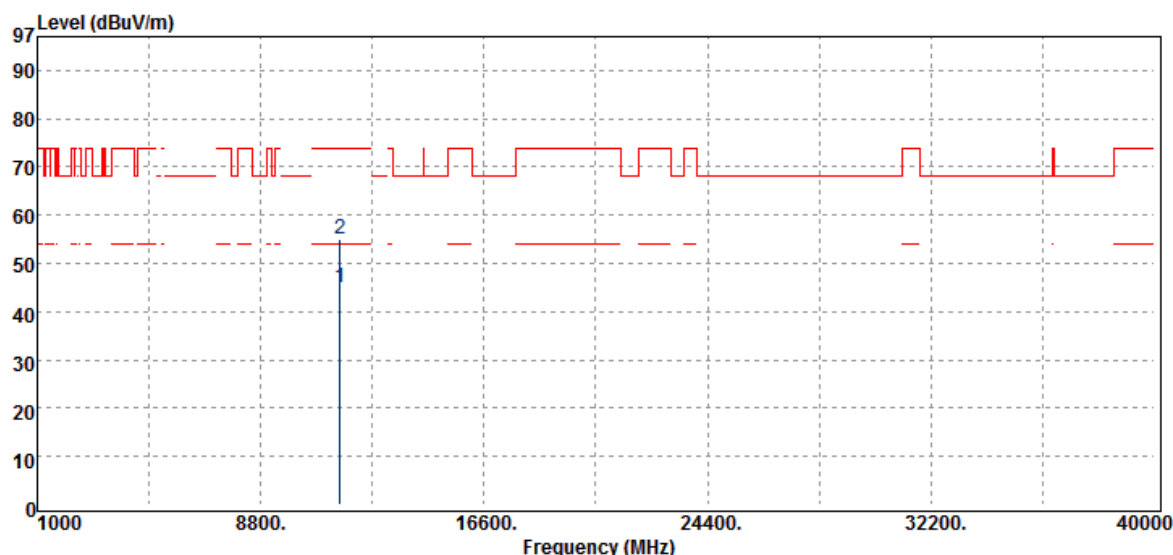
| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBUV | Factor<br>dB | Actual<br>FS<br>dBUV/m | Limit<br>@3m<br>dBUV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11490.00     | Average                      | 23.92                             | 21.61        | 45.53                  | 54.00                  | -8.47        |
| 11490.00     | Peak                         | 33.39                             | 21.61        | 55.00                  | 74.00                  | -19.00       |

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|                       |            |                          |                   |
|-----------------------|------------|--------------------------|-------------------|
| Operation Band        | :802.11aB4 | Test Date                | :2018-10-02       |
| Fundamental Frequency | :5785 MHz  | Temp./Humi.              | :23 deg_C / 62 RH |
| Operation Mode        | :Tx CH MID | Engineer                 | :Wei              |
| EUT Pol.              | :E2 Plane  | Measurement Antenna Pol. | :VERTICAL         |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11570.00     | Average                      | 23.28                             | 21.66        | 44.94                  | 54.00                  | -9.06        |
| 11570.00     | Peak                         | 33.53                             | 21.66        | 55.19                  | 74.00                  | -18.81       |

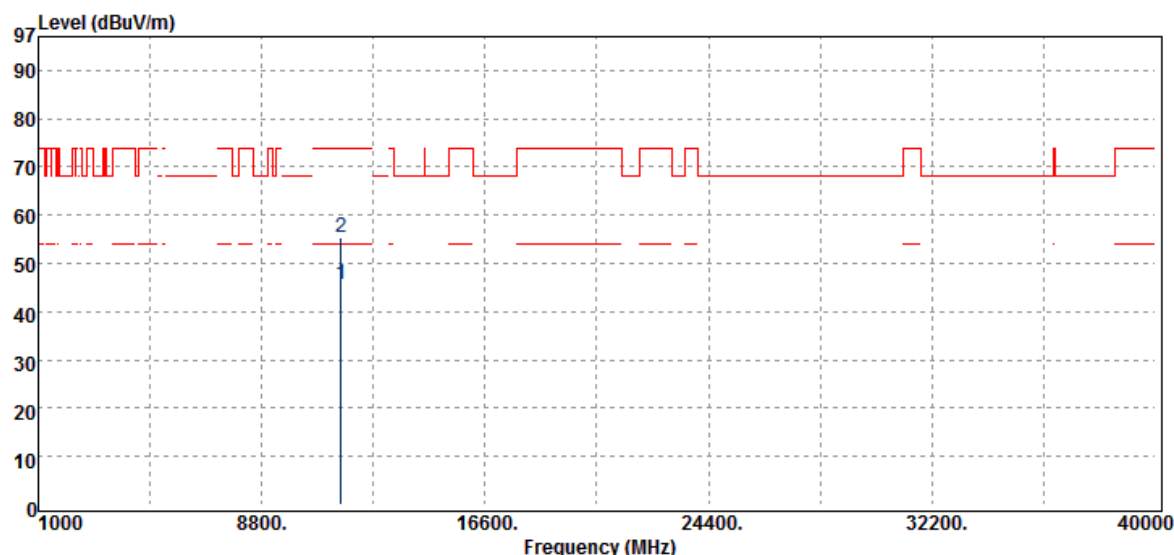
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Operation Band :802.11aB4  
 Fundamental Frequency :5785 MHz  
 Operation Mode :Tx CH MID  
 EUT Pol. :E2 Plane

Test Date :2018-10-02  
 Temp./Humi. :23 deg\_C / 62 RH  
 Engineer :Wei  
 Measurement Antenna Pol. :HORIZONTAL



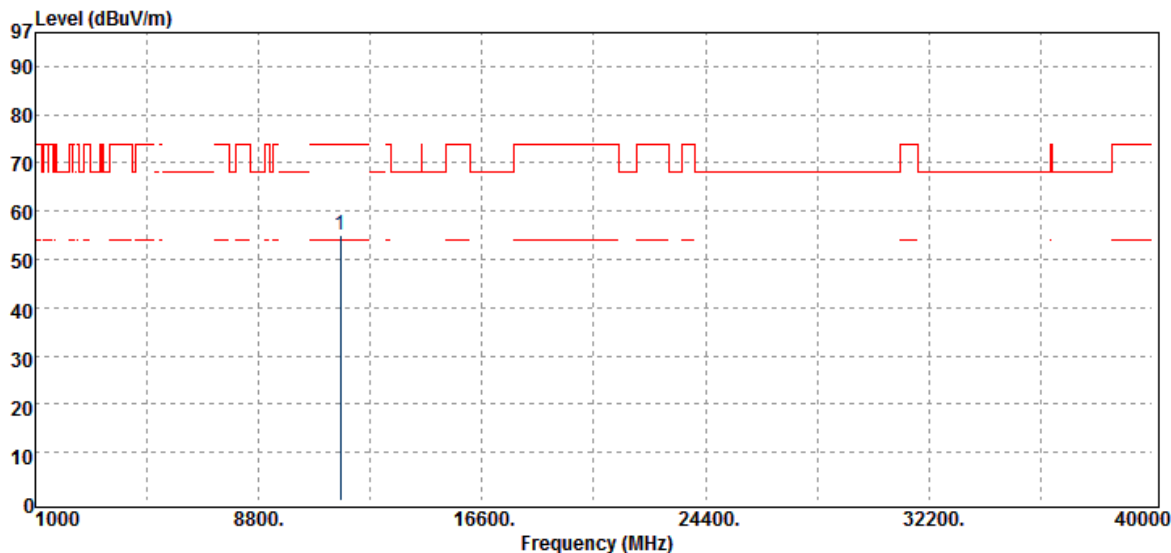
| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11570.00     | Average                      | 23.92                             | 21.66        | 45.58                  | 54.00                  | -8.42        |
| 11570.00     | Peak                         | 33.80                             | 21.66        | 55.46                  | 74.00                  | -18.54       |

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|                       |             |                          |                   |
|-----------------------|-------------|--------------------------|-------------------|
| Operation Band        | :802.11aB4  | Test Date                | :2018-10-02       |
| Fundamental Frequency | :5825 MHz   | Temp./Humi.              | :23 deg_C / 62 RH |
| Operation Mode        | :Tx CH HIGH | Engineer                 | :Wei              |
| EUT Pol.              | :E2 Plane   | Measurement Antenna Pol. | :VERTICAL         |



| Freq.<br>MHz | Detector<br>Mode<br>PK/QP/AV | Spectrum<br>Reading Level<br>dBuV | Factor<br>dB | Actual<br>FS<br>dBuV/m | Limit<br>@3m<br>dBuV/m | Margin<br>dB |
|--------------|------------------------------|-----------------------------------|--------------|------------------------|------------------------|--------------|
| 11650.00     | Peak                         | 33.40                             | 21.60        | 55.00                  | 74.00                  | -19.00       |

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