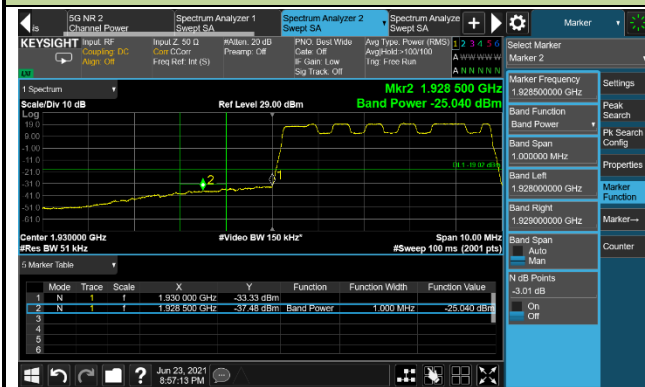
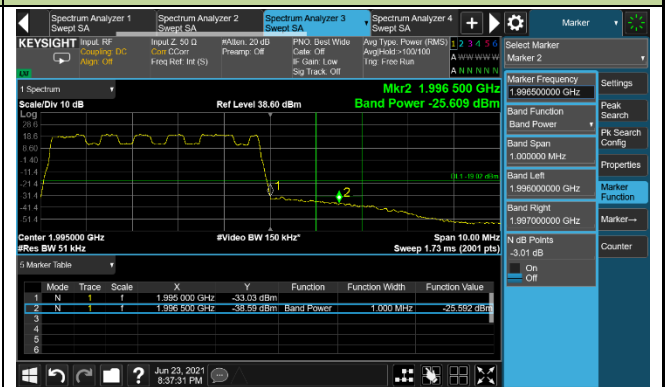


# 5MHz Channel Bandwidth - Ant 3

## Bottom Channel

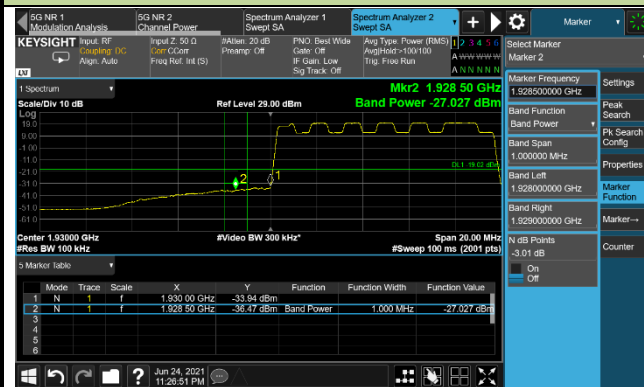


## Top Channel

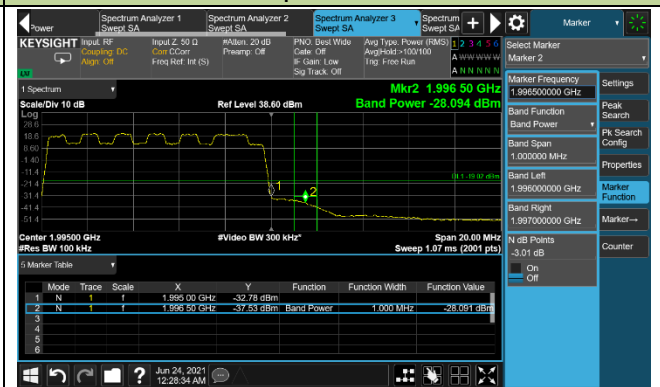


## 10MHz Channel Bandwidth - Ant 0

## Bottom Channel

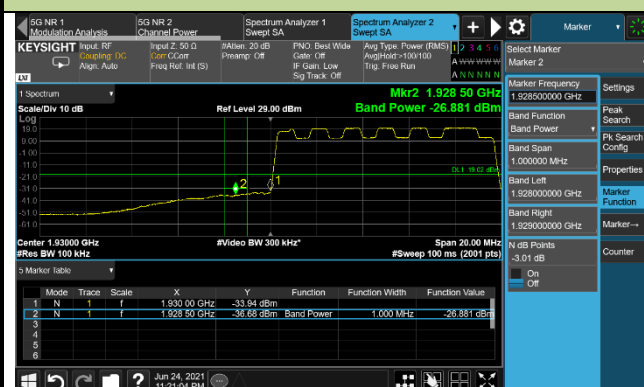


## Top Channel

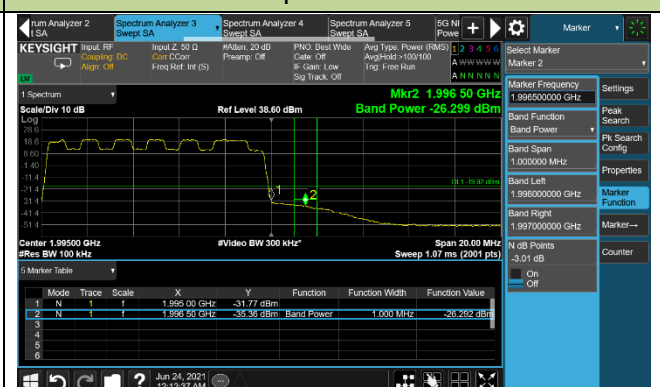


## 10MHz Channel Bandwidth - Ant 1

## Bottom Channel

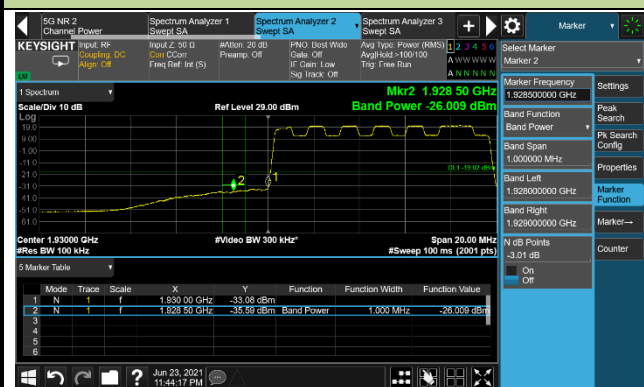


## Top Channel

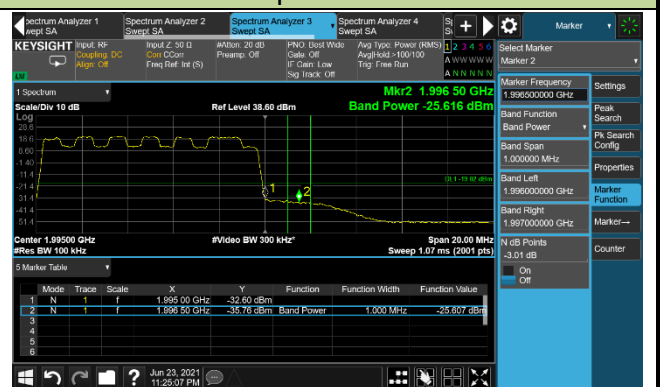


## 10MHz Channel Bandwidth - Ant 2

## Bottom Channel

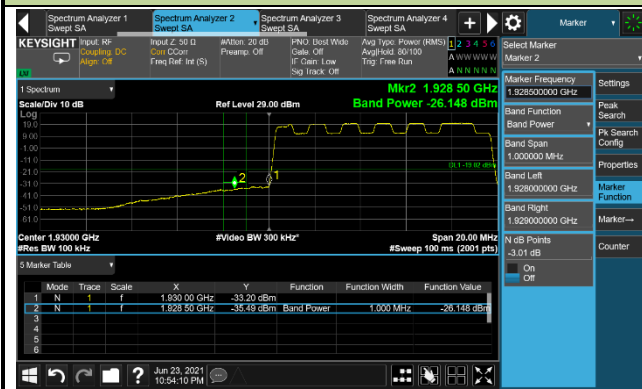


## Top Channel



## 10MHz Channel Bandwidth - Ant 3

### Bottom Channel

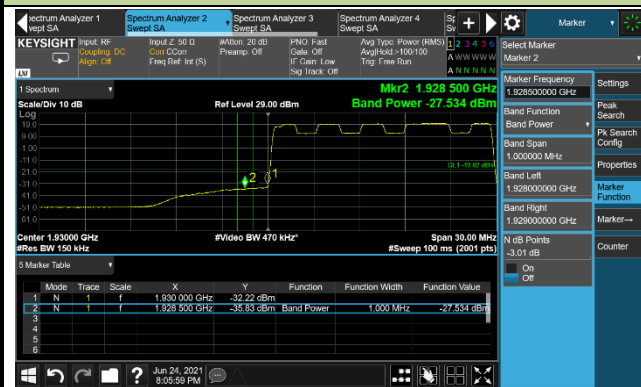


### Top Channel



## 15MHz Channel Bandwidth - Ant 0

## Bottom Channel

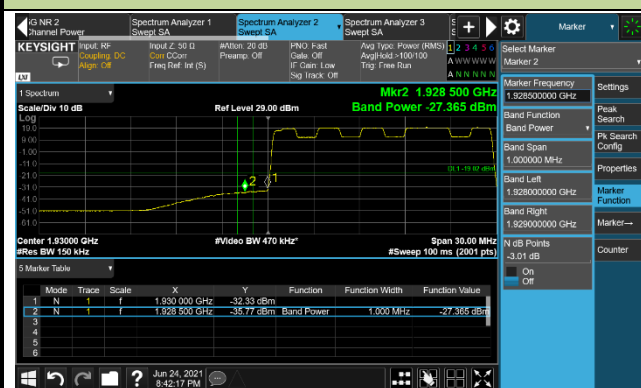


## Top Channel

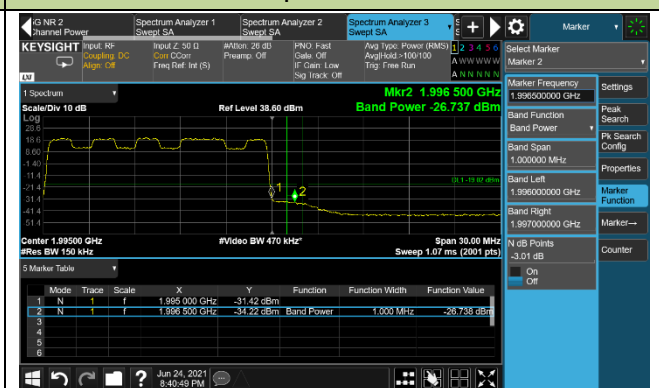


## 15MHz Channel Bandwidth - Ant 1

## Bottom Channel

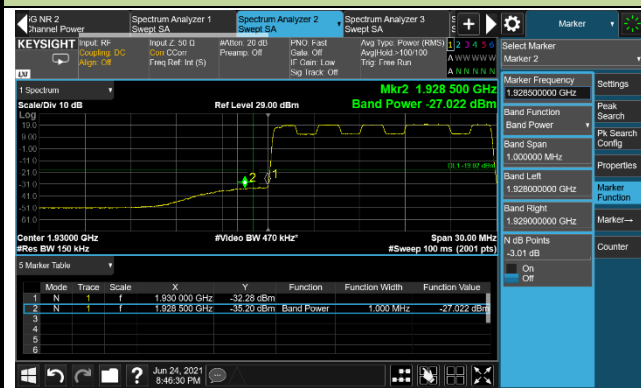


## Top Channel

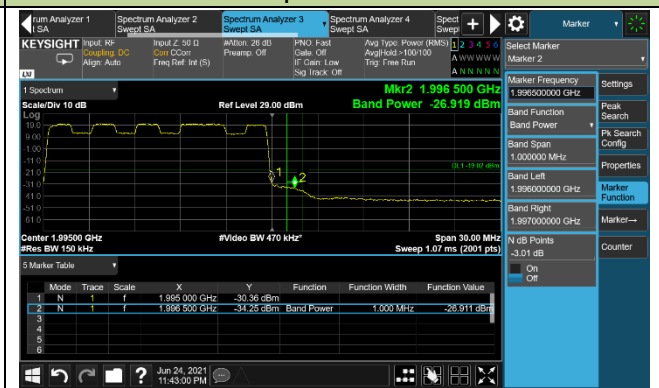


## 15MHz Channel Bandwidth - Ant 2

## Bottom Channel



## Top Channel



## 15MHz Channel Bandwidth - Ant 3

## Bottom Channel



## Top Channel



## 5.6. Peak to Average Ratio Measurement

### 5.6.1. Test Limit

In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

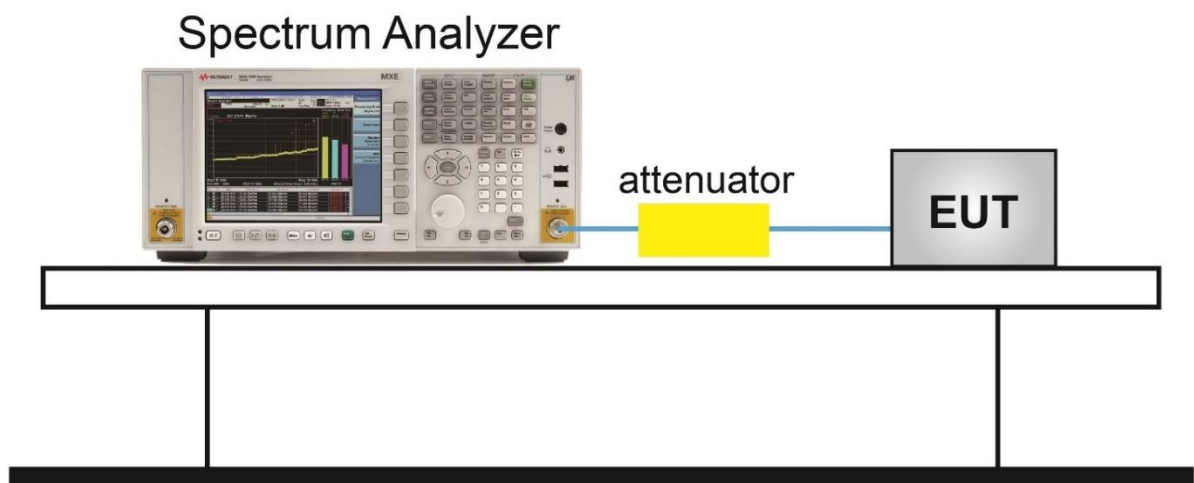
### 5.6.2. Test Procedure Used

ANSI C63.26-2015 - Section 5.2.6

### 5.6.3. Test Setting

1. Set the resolution / measurement bandwidth  $\geq$  signal's occupied bandwidth.
2. Set the number of counts to a value that stabilizes the measured CCDF curve.
3. Record the maximum PARR level associated with a probability of 0.1%.

### 5.6.4. Test Setup



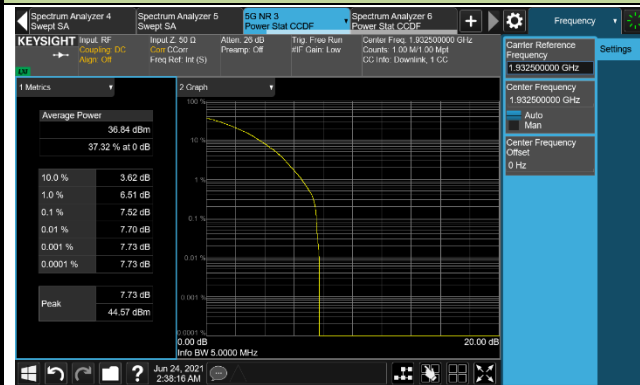
### 5.6.5. Test Result

|               |            |           |     |
|---------------|------------|-----------|-----|
| Test Engineer | Peter Xu   | Test Site | SR2 |
| Test Date     | 2021/06/24 |           |     |

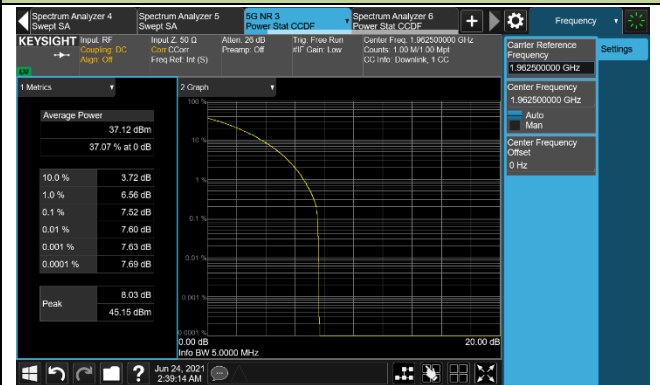
| Frequency<br>(MHz) | Bandwidth<br>(MHz) | Peak to Average<br>Ratio (dB) | Limit<br>(dB) | Result |
|--------------------|--------------------|-------------------------------|---------------|--------|
| 1932.5             | 5                  | 7.52                          | $\leq 13.00$  | Pass   |
| 1962.5             | 5                  | 7.52                          | $\leq 13.00$  | Pass   |
| 1992.5             | 5                  | 7.52                          | $\leq 13.00$  | Pass   |
| 1935.0             | 10                 | 7.45                          | $\leq 13.00$  | Pass   |
| 1962.5             | 10                 | 7.44                          | $\leq 13.00$  | Pass   |
| 1990.0             | 10                 | 7.41                          | $\leq 13.00$  | Pass   |
| 1937.5             | 15                 | 7.46                          | $\leq 13.00$  | Pass   |
| 1962.5             | 15                 | 7.36                          | $\leq 13.00$  | Pass   |
| 1987.5             | 15                 | 7.46                          | $\leq 13.00$  | Pass   |

## 5MHz Channel Bandwidth

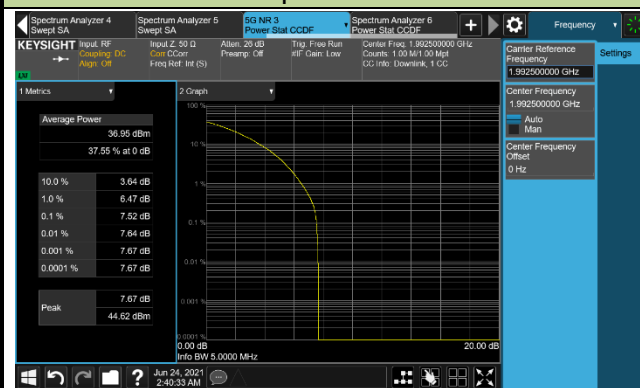
### Bottom Channel



### Middle Channel

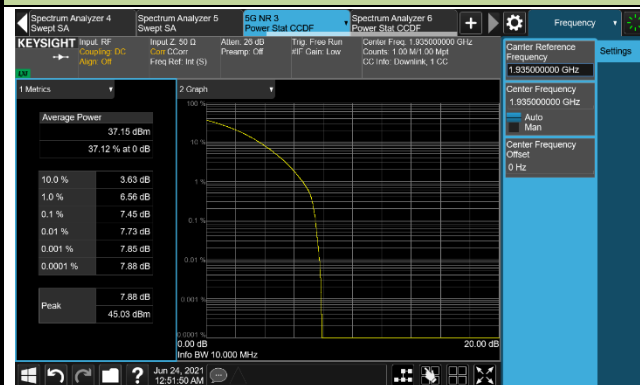


### Top Channel

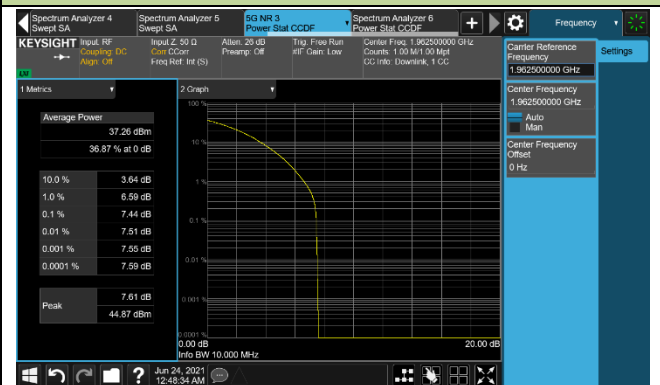


## 10MHz Channel Bandwidth

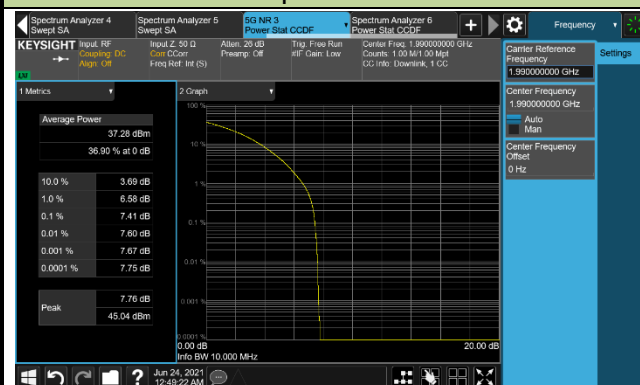
### Bottom Channel



### Middle Channel

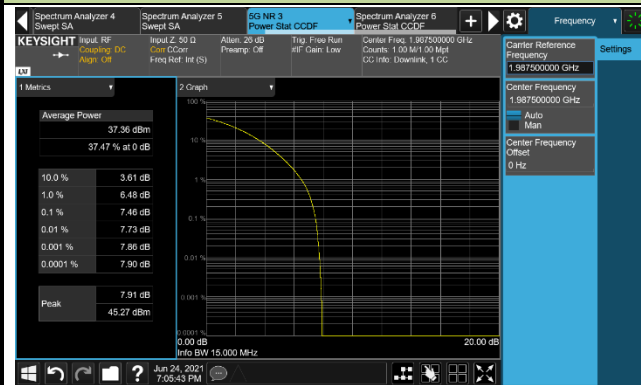


### Top Channel

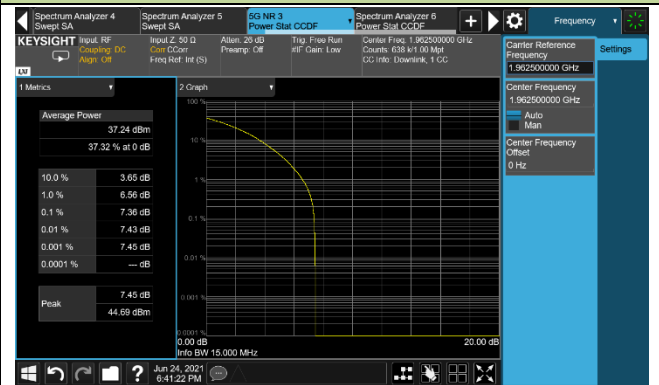


## 15MHz Channel Bandwidth

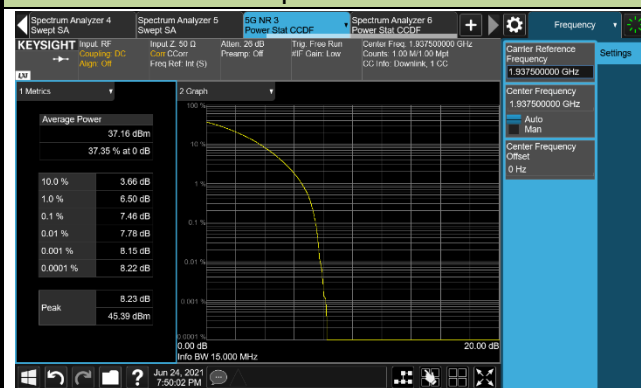
### Bottom Channel



### Middle Channel



### Top Channel



## 5.7. Conducted Spurious Emission Measurement

### 5.7.1. Test Limit

On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power (P) at least  $43 + 10 \cdot \log(P)$  dB, the emission limit equal to -13dBm.

Note: This device can be implement MIMO function, so the limit os spurious emissions needs to be reduced  $10 \cdot \log(\text{Numbers}_{\text{Ant}})$  according to FCC KDB 662911 D01 guidance.

The limit is adjusted to  $-13\text{dBm} - 10 \cdot \log(4) = -19.02\text{dBm}$

### 5.7.2. Test Procedure Used

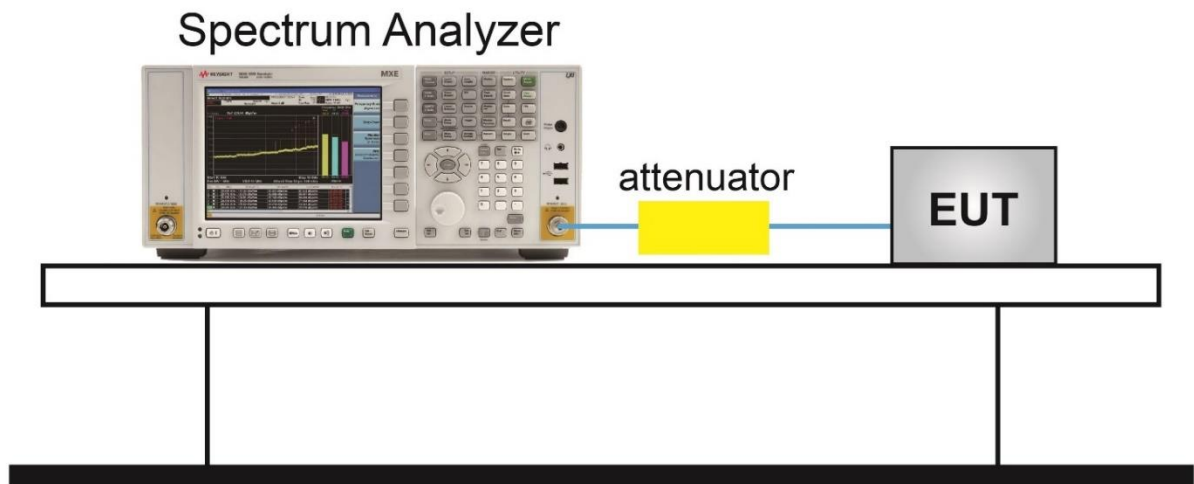
ANSI C63.26-2015 - Section 6.4.4.2

### 5.7.3. Test Setting

1. Set the analyzer frequency to low or high channel.
2. RBW = 100kHz or 1MHz
3. VBW  $\geq 3 \cdot \text{RBW}$
4. Sweep time = auto
5. Detector = power averaging (rms)
6. Set sweep trigger to "free run."
7. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple.

To accurately determine the average power over the on and off time of the transmitter, it can be necessary to increase the number of traces to be averaged above 100, or if using a manually configured sweep time, increase the sweep time.

#### 5.7.4. Test Setup



### 5.7.5. Test Result

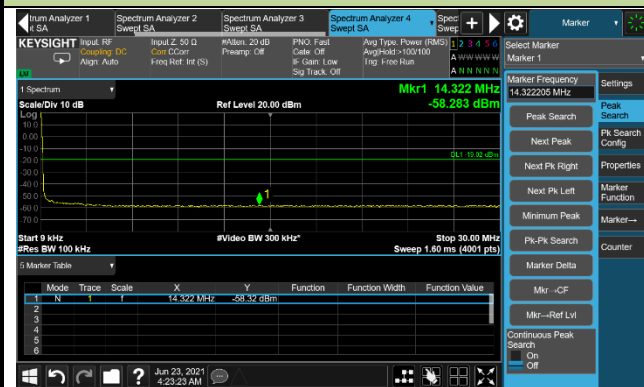
|               |                         |           |     |
|---------------|-------------------------|-----------|-----|
| Test Engineer | Peter Xu                | Test Site | SR2 |
| Test Date     | 2021/06/23 ~ 2021/06/24 |           |     |

| Frequency (MHz) | Channel Bandwidth (MHz) | Frequency Range (MHz) | Max Spurious Emissions (dBm) | Limit (dBm)   | Result |
|-----------------|-------------------------|-----------------------|------------------------------|---------------|--------|
| 1932.5          | 5                       | 0.009 ~ 30            | -58.28                       | $\leq -19.02$ | Pass   |
|                 |                         | 30 ~ 20000            | -32.18                       | $\leq -19.02$ | Pass   |
| 1962.5          | 5                       | 0.009 ~ 30            | -58.09                       | $\leq -19.02$ | Pass   |
|                 |                         | 30 ~ 20000            | -31.55                       | $\leq -19.02$ | Pass   |
| 1992.5          | 5                       | 0.009 ~ 30            | -58.48                       | $\leq -19.02$ | Pass   |
|                 |                         | 30 ~ 20000            | -31.84                       | $\leq -19.02$ | Pass   |
| 1935.0          | 10                      | 0.009 ~ 30            | -57.66                       | $\leq -19.02$ | Pass   |
|                 |                         | 30 ~ 20000            | -34.18                       | $\leq -19.02$ | Pass   |
| 1962.5          | 10                      | 0.009 ~ 30            | -57.89                       | $\leq -19.02$ | Pass   |
|                 |                         | 30 ~ 20000            | -33.82                       | $\leq -19.02$ | Pass   |
| 1990.0          | 10                      | 0.009 ~ 30            | -57.49                       | $\leq -19.02$ | Pass   |
|                 |                         | 30 ~ 20000            | -34.14                       | $\leq -19.02$ | Pass   |
| 1937.5          | 15                      | 0.009 ~ 30            | -52.48                       | $\leq -19.02$ | Pass   |
|                 |                         | 30 ~ 20000            | -29.78                       | $\leq -19.02$ | Pass   |
| 1962.5          | 15                      | 0.009 ~ 30            | -53.58                       | $\leq -19.02$ | Pass   |
|                 |                         | 30 ~ 20000            | -29.37                       | $\leq -19.02$ | Pass   |
| 1987.5          | 15                      | 0.009 ~ 30            | -52.39                       | $\leq -19.02$ | Pass   |
|                 |                         | 30 ~ 20000            | -29.31                       | $\leq -19.02$ | Pass   |

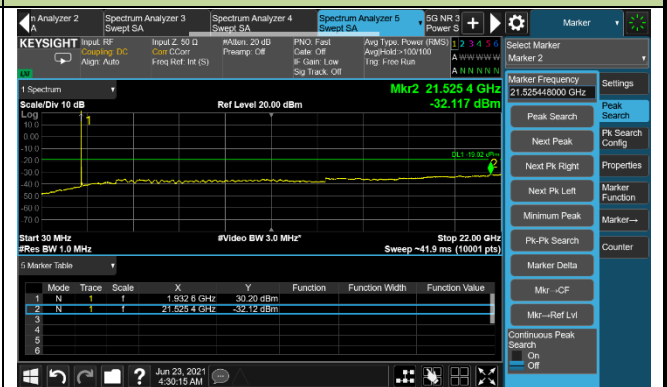
## 5MHz Channel Bandwidth

## Bottom Channel

## 9kHz ~ 1GHz

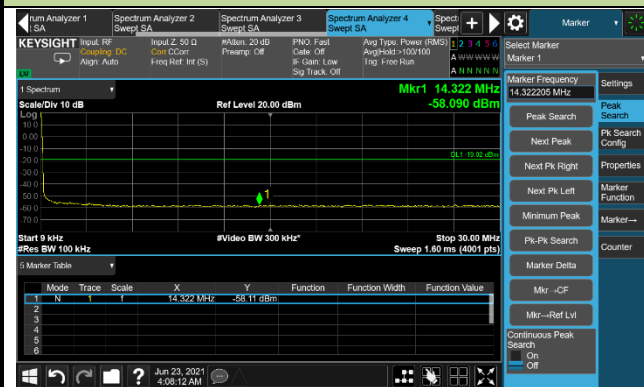


## 1GHz ~ 20GHz

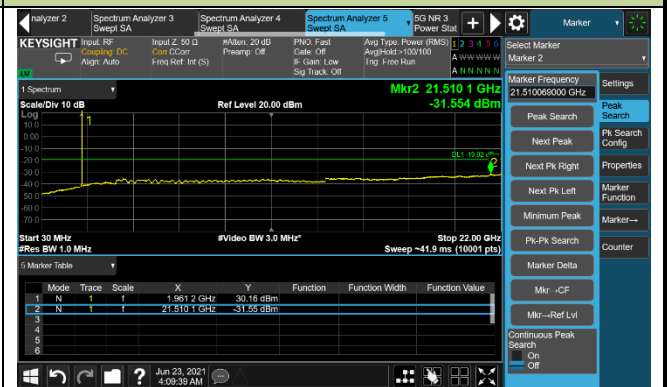


## Middle Channel

## 9kHz ~ 1GHz

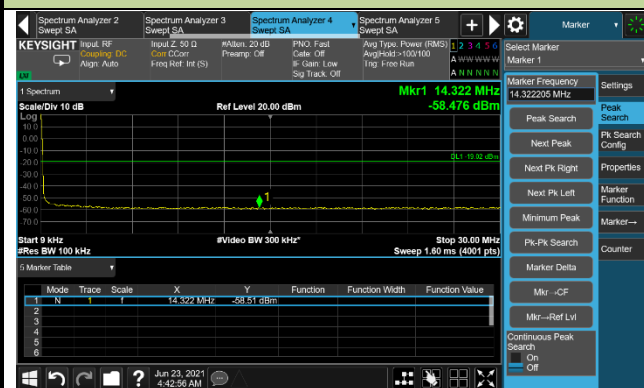


## 1GHz ~ 20GHz

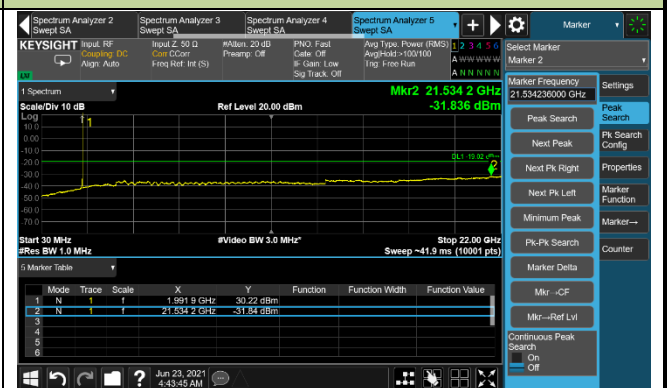


## Top Channel

## 9kHz ~ 1GHz



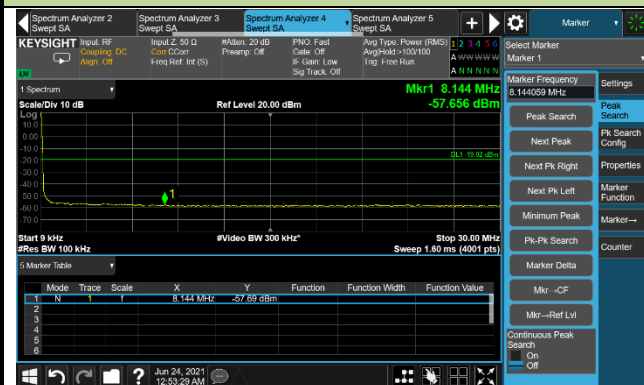
## 1GHz ~ 20GHz



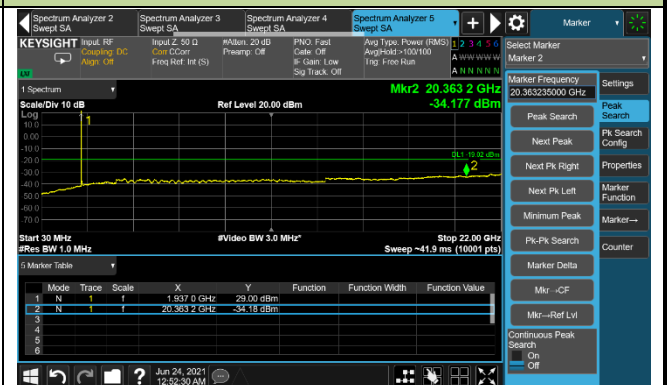
## 10MHz Channel Bandwidth

### Bottom Channel

#### 9kHz ~ 1GHz

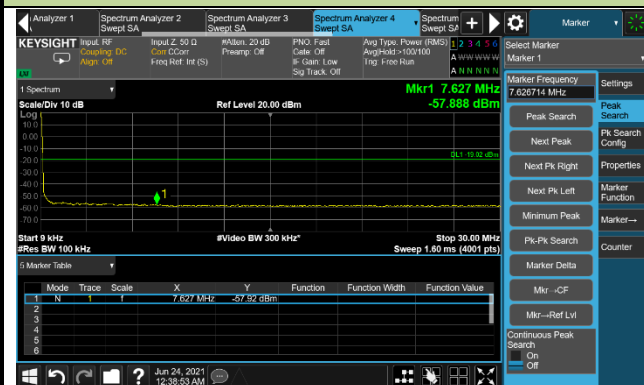


#### 1GHz ~ 20GHz

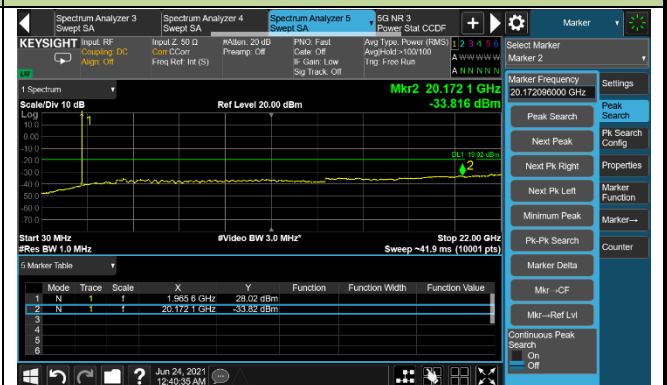


### Middle Channel

#### 9kHz ~ 1GHz

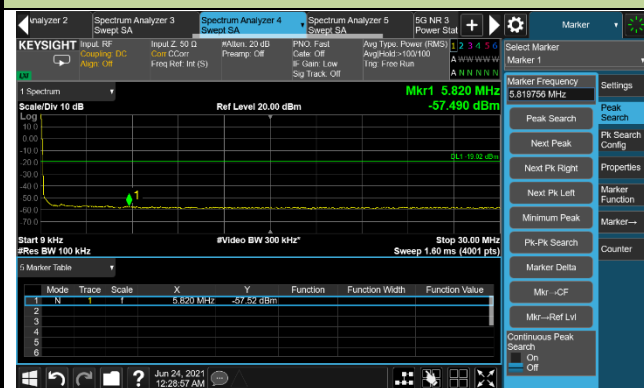


#### 1GHz ~ 20GHz

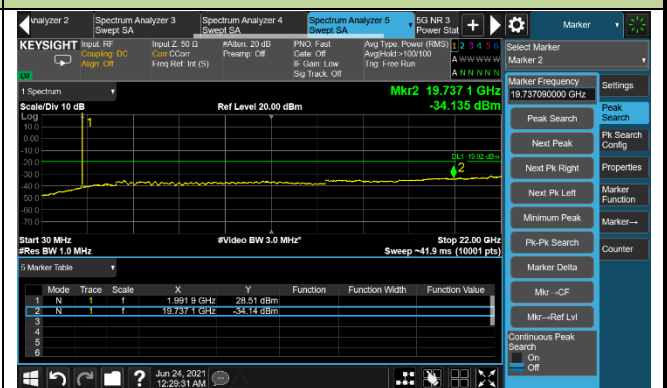


### Top Channel

#### 9kHz ~ 1GHz



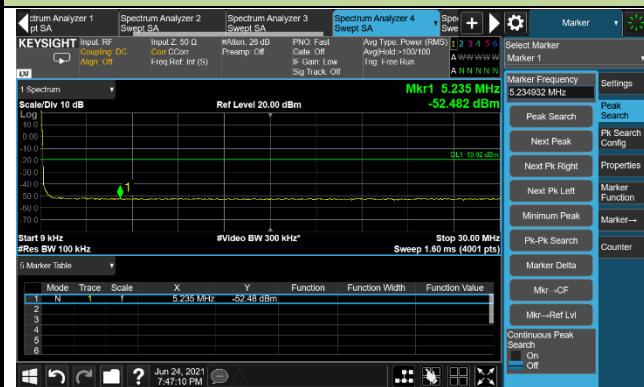
#### 1GHz ~ 20GHz



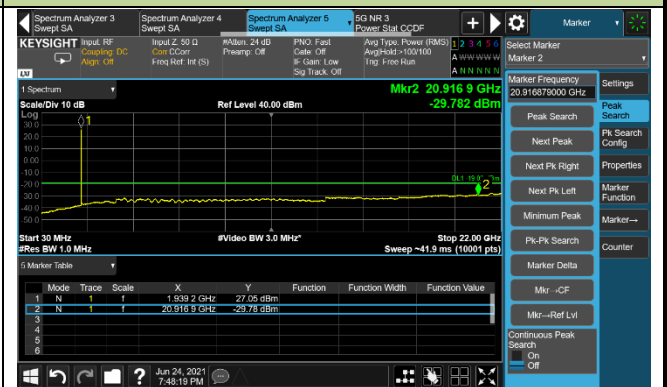
## 15MHz Channel Bandwidth

### Bottom Channel

#### 9kHz ~ 1GHz

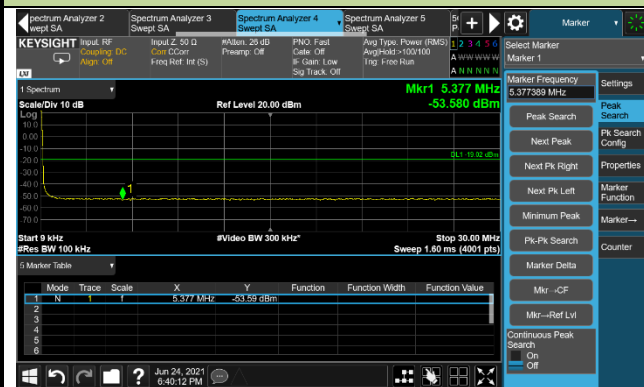


#### 1GHz ~ 20GHz

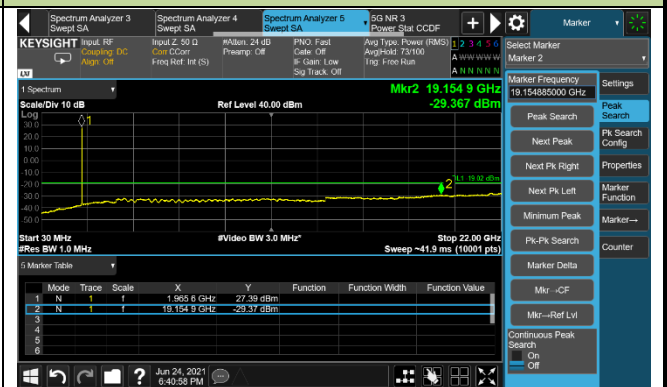


### Middle Channel

#### 9kHz ~ 1GHz

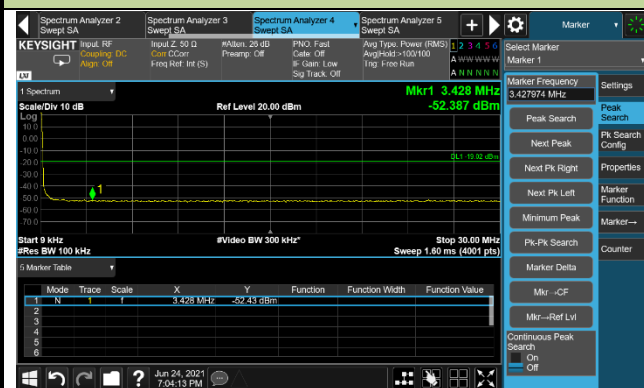


#### 1GHz ~ 20GHz

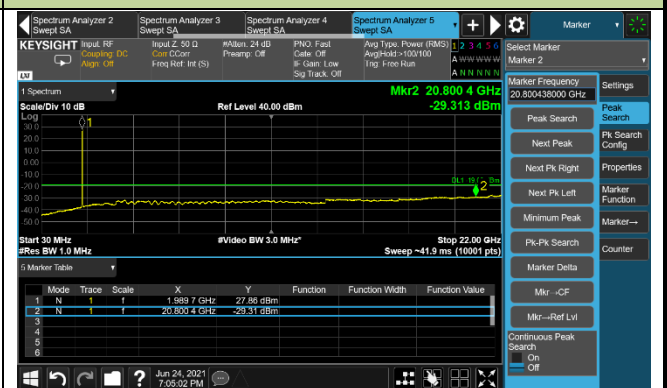


### Top Channel

#### 9kHz ~ 1GHz



#### 1GHz ~ 20GHz



## **5.8. Radiated Spurious Emission Measurement**

### **5.8.1. Test Limit**

Out of band emissions: The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB. The emission limit equal to -13dBm.

$E \text{ (dB}\mu\text{V/m)} = \text{EIRP (dBm)} - 20 \log D + 104.8$ ; where D is the measurement distance in meters. The emission limit equal to 82.3dB $\mu$ V/m.

### **5.8.2. Test Procedure Used**

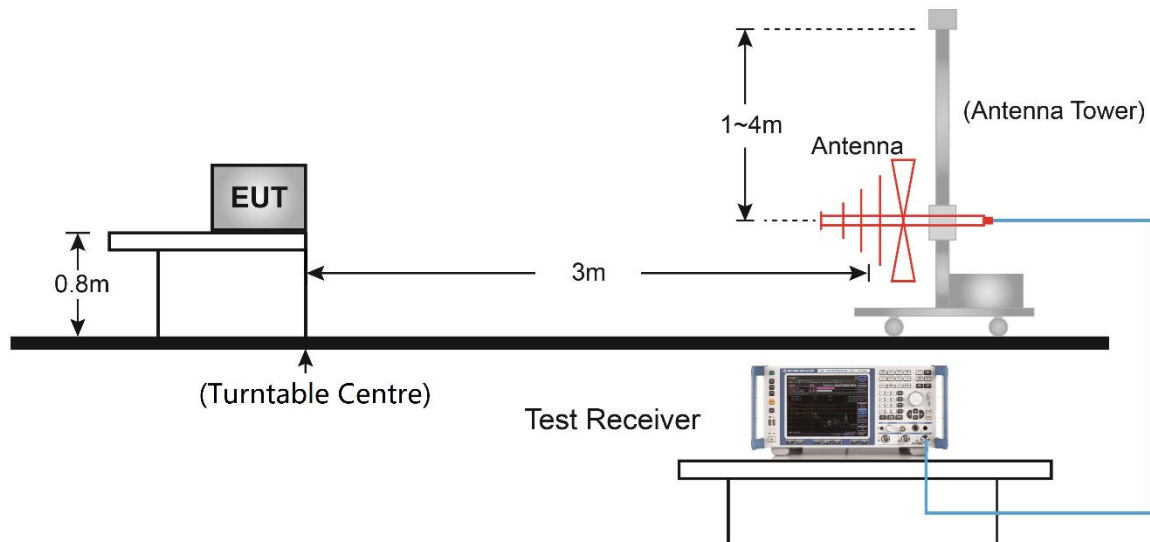
ANSI C63.26-2015 - Section 5.2.7 & 5.5

### **5.8.3. Test Setting**

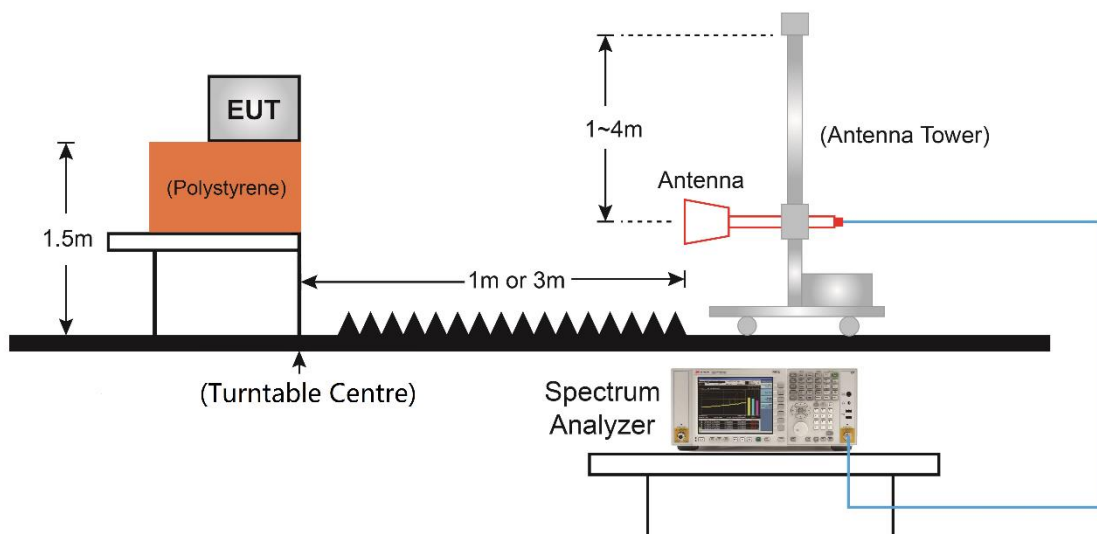
1. RBW = 100kHz or 1MHz
2. VBW  $\geq 3 \times$  RBW
3. Sweep time  $\geq 10 \times$  (number of points in sweep)  $\times$  (transmission symbol period)
4. Detector = Peak
5. Trace mode = max hold
6. The trace was allowed to stabilize

#### 5.8.4. Test Setup

##### Below 1GHz Test Setup:



##### Above 1GHz Test Setup:



### 5.8.5. Test Result

|               |            |                    |         |
|---------------|------------|--------------------|---------|
| Test Engineer | Kevin Ker  | Test Site          | AC1     |
| Test Date     | 2021/06/28 | Test Configuration | BW=5MHz |

| Frequency<br>(MHz) | Reading Level<br>(dBμV) | Factor<br>(dB) | Measure Level<br>(dBμV/m) | Limit<br>(dBμV/m) | Margin<br>(dB) | Detector | Polarization |
|--------------------|-------------------------|----------------|---------------------------|-------------------|----------------|----------|--------------|
| Bottom Channel     |                         |                |                           |                   |                |          |              |
| 50.9               | 2.1                     | 21.9           | 24.0                      | 82.3              | -58.3          | Peak     | Horizontal   |
| 716.3              | 3.7                     | 29.6           | 33.3                      | 82.3              | -49.0          | Peak     | Horizontal   |
| 35.3               | 13.7                    | 19.4           | 33.1                      | 82.3              | -49.2          | Peak     | Vertical     |
| 767.2              | 3.7                     | 30.2           | 33.9                      | 82.3              | -48.4          | Peak     | Vertical     |
| 5241.5             | 37.6                    | 4.0            | 41.6                      | 82.3              | -40.7          | Peak     | Horizontal   |
| 9831.5             | 41.3                    | 15.0           | 56.3                      | 82.3              | -26.0          | Peak     | Horizontal   |
| 3864.5             | 44.9                    | 0.4            | 45.3                      | 82.3              | -37.0          | Peak     | Vertical     |
| 9831.5             | 42.0                    | 15.0           | 57.0                      | 82.3              | -25.3          | Peak     | Vertical     |
| Middle Channel     |                         |                |                           |                   |                |          |              |
| 51.8               | 1.7                     | 21.7           | 23.4                      | 82.3              | -58.9          | Peak     | Horizontal   |
| 601.8              | 3.5                     | 27.8           | 31.3                      | 82.3              | -51.0          | Peak     | Horizontal   |
| 34.4               | 11.8                    | 19.2           | 31.0                      | 82.3              | -51.3          | Peak     | Vertical     |
| 748.3              | 3.9                     | 30.1           | 34.0                      | 82.3              | -48.3          | Peak     | Vertical     |
| 4961.0             | 37.1                    | 3.7            | 40.8                      | 82.3              | -41.5          | Peak     | Horizontal   |
| 9831.5             | 40.0                    | 15.0           | 55.0                      | 82.3              | -27.3          | Peak     | Horizontal   |
| 3924.0             | 51.2                    | 0.9            | 52.1                      | 82.3              | -30.2          | Peak     | Vertical     |
| 9831.5             | 39.2                    | 15.0           | 54.2                      | 82.3              | -28.1          | Peak     | Vertical     |
| Top Channel        |                         |                |                           |                   |                |          |              |
| 52.8               | 2.2                     | 21.5           | 23.7                      | 82.3              | -58.6          | Peak     | Horizontal   |
| 916.6              | 5.2                     | 31.9           | 37.1                      | 82.3              | -45.2          | Peak     | Horizontal   |
| 34.9               | 11.4                    | 19.3           | 30.7                      | 82.3              | -51.6          | Peak     | Vertical     |
| 578.1              | 4.6                     | 27.4           | 32.0                      | 82.3              | -50.3          | Peak     | Vertical     |
| 3966.5             | 47.9                    | 0.8            | 48.7                      | 82.3              | -33.6          | Peak     | Horizontal   |
| 9831.5             | 41.0                    | 15.0           | 56.0                      | 82.3              | -26.3          | Peak     | Horizontal   |
| 3966.5             | 60.9                    | 0.8            | 61.7                      | 82.3              | -20.6          | Peak     | Vertical     |
| 9831.5             | 43.3                    | 15.0           | 58.3                      | 82.3              | -24.0          | Peak     | Vertical     |

Note: Measure Level (dBμV/m) = Reading Level (dBμV) + Factor (dB)

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

## 6. CONCLUSION

The data collected relate only the item(s) tested and show that the unit is compliance with FCC Rules.

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The End