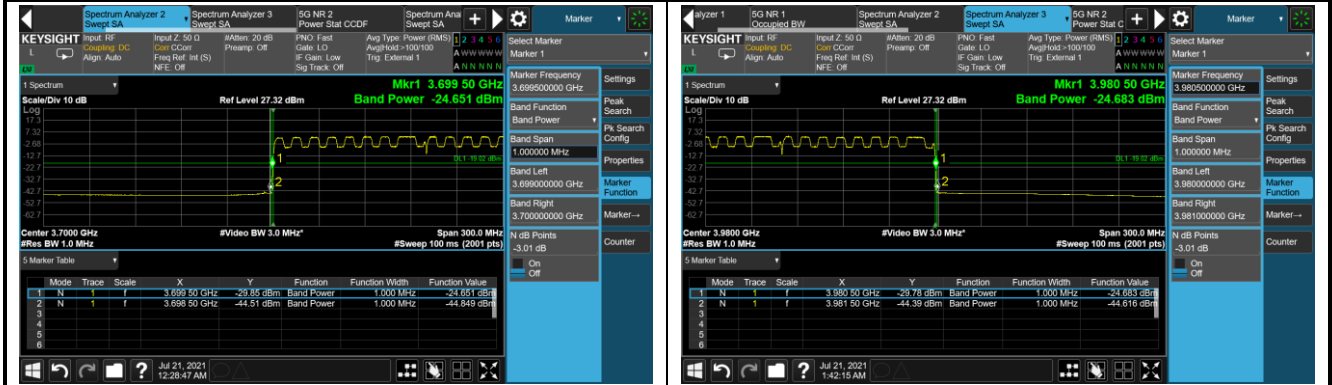


Test Engineer	Peter Xu	Test Site	SR2
Test Date	2021/07/21	Test Configuration	n77 (MultiCarrier)

**Unwanted Emission - Ant 1**  
**20+20 MHz Channel Bandwidth**



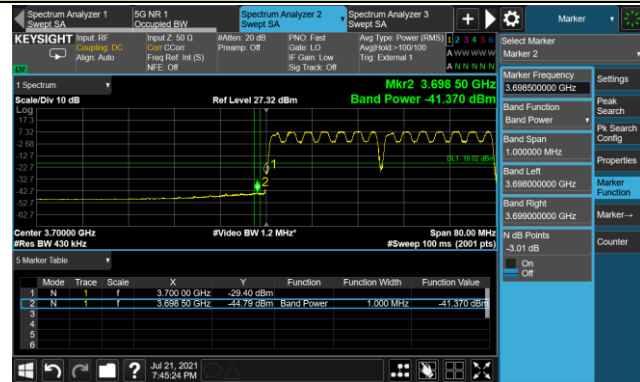
**100+100 MHz Channel Bandwidth**



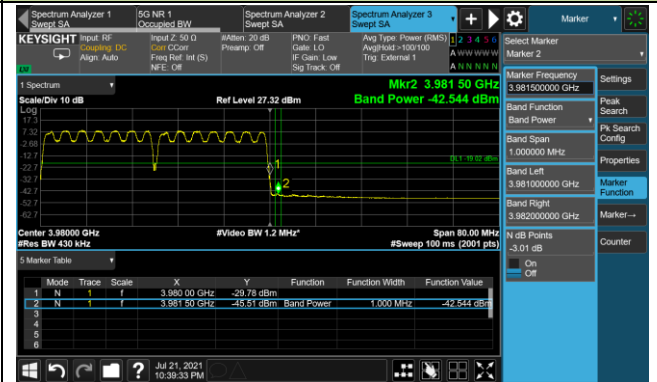
### Unwanted Emission - Ant 2

#### 20+20 MHz Channel Bandwidth

##### 3710+3730 MHz

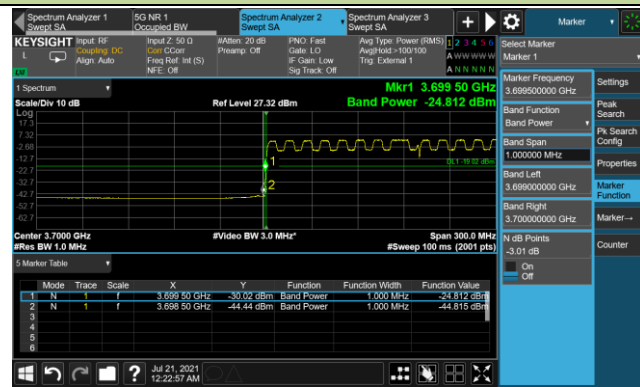


##### 3950+3970 MHz

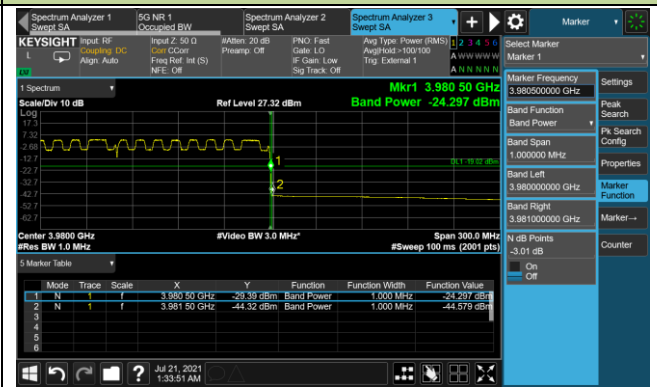


#### 100+100 MHz Channel Bandwidth

##### 3750+3850 MHz



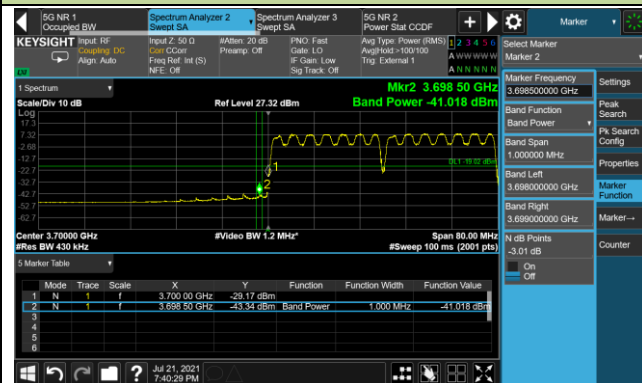
##### 3830+3930 MHz



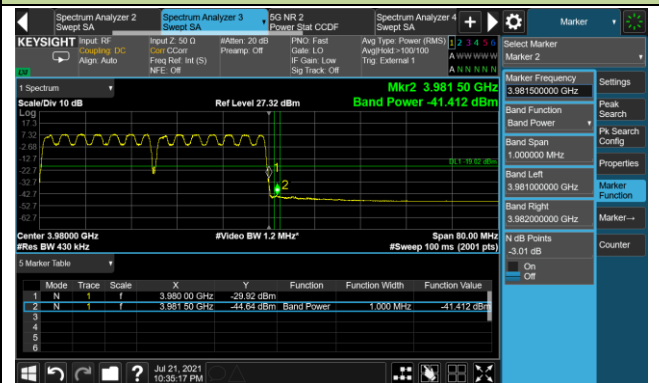
### Unwanted Emission - Ant 3

#### 20+20 MHz Channel Bandwidth

##### 3710+3730 MHz

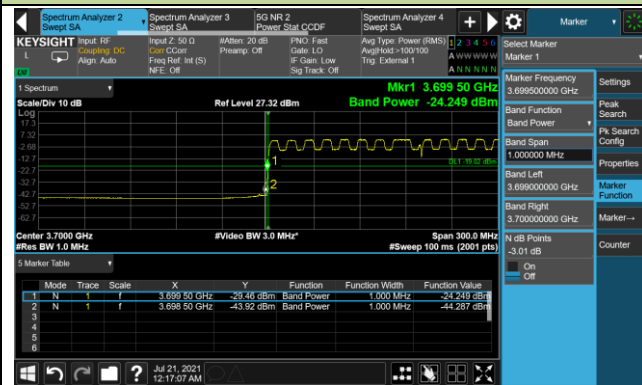


##### 3950+3970 MHz

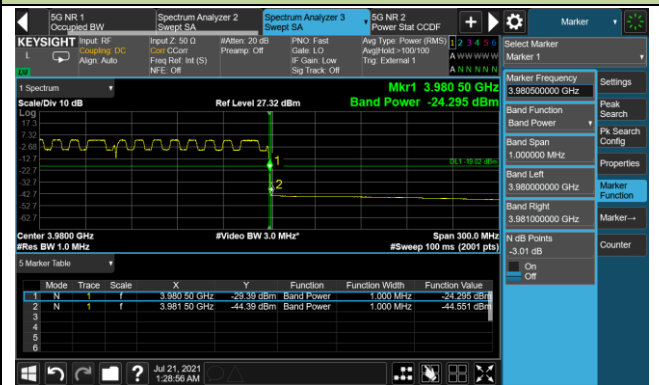


#### 100+100 MHz Channel Bandwidth

##### 3750+3850 MHz



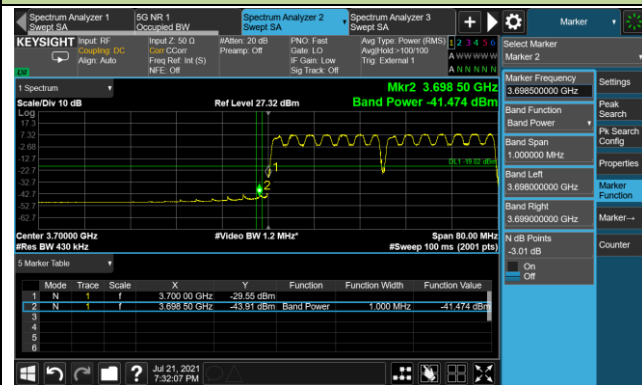
##### 3830+3930 MHz



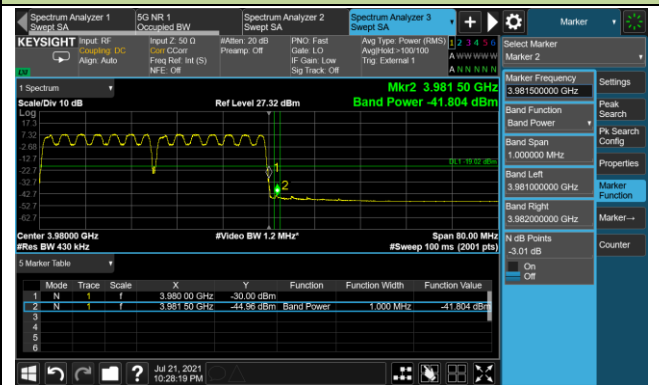
### Unwanted Emission - Ant 4

#### 20+20 MHz Channel Bandwidth

##### 3710+3730 MHz

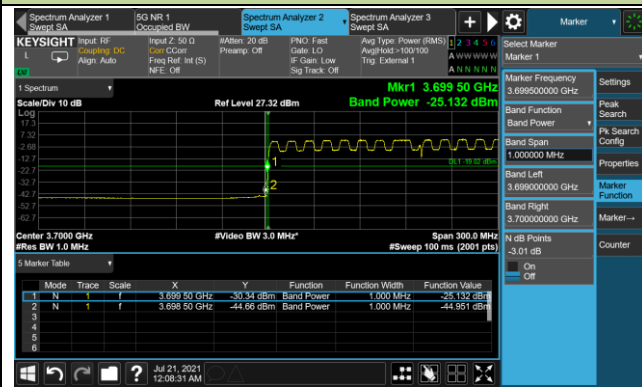


##### 3950+3970 MHz

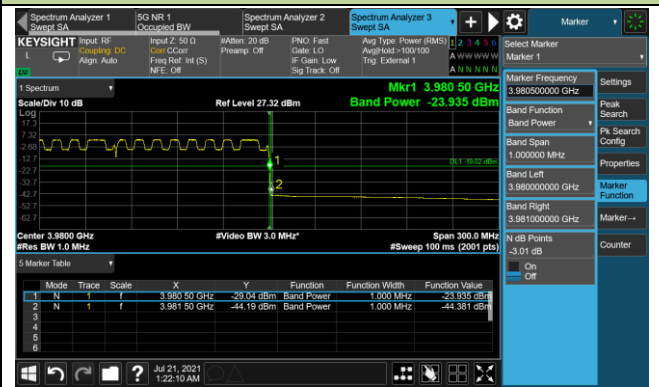


#### 100+100 MHz Channel Bandwidth

##### 3750+3850 MHz



##### 3830+3930 MHz



## 5.7. Out-of-frequency Band unwanted Emissions Measurement

### 5.7.1. Test Limit

After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least  $43 + 10 \log_{10} p$  (watts) dB.

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

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

$E$  (dB $\mu$ V/m) = 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.

### 5.7.2. Test Procedure Used

ANSI C63.26-2015 - Section 5.7 & Section 5.5

### 5.7.3. Test Setting

#### Conducted Measurement

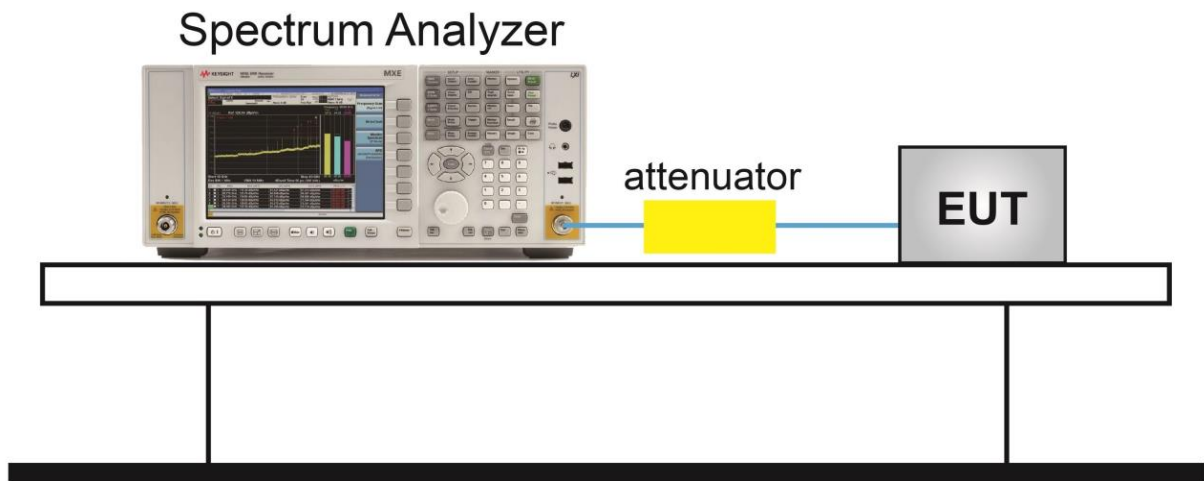
1. Set the analyzer frequency to low or high channel.
2. RBW = 1MHz
3. VBW  $\geq 3 * \text{RBW}$
4. Sweep time = auto
5. Detector = power averaging (rms)
6. Set sweep trigger to "free run."
7. User gate triggered such that the analyzer only sweeps when the device is transmitting at full power.
8. Trace 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.

### Radiated Measurement

1. RBW = 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

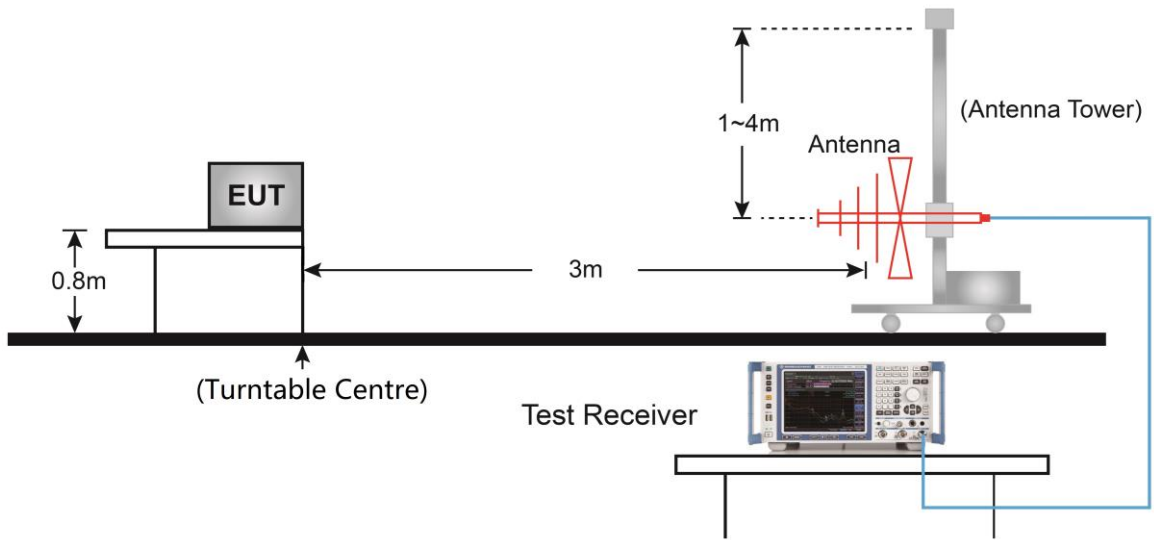
### 5.7.4. Test Setup

#### Conducted Measurement

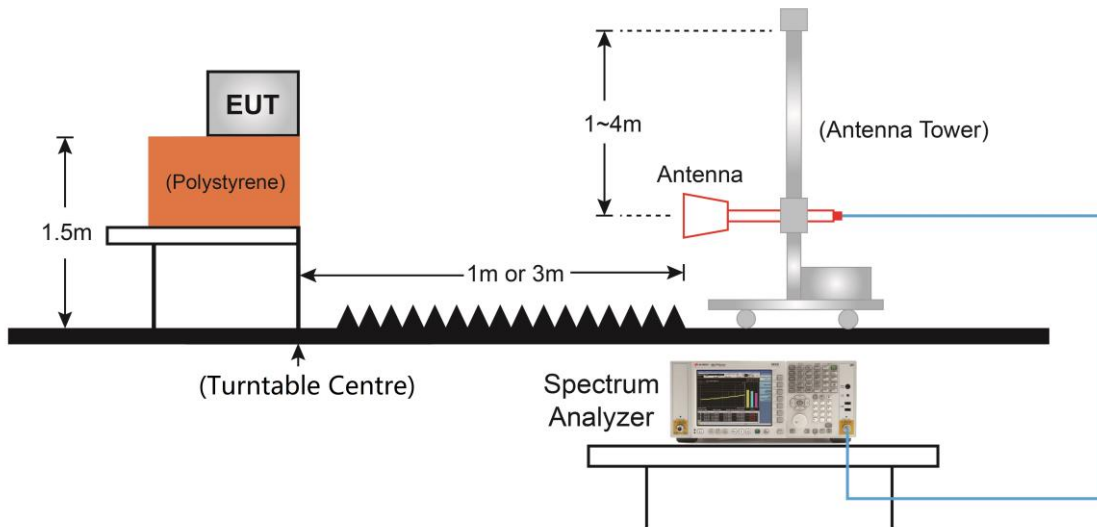


### Radiated Measurement

#### Below 1GHz Test Setup:



#### Above 1GHz Test Setup:



### 5.7.5. Test Result

#### Conducted Spurious Test Result

Test Engineer	Peter Xu	Test Site	SR2
Test Date	2021/07/14 ~ 2021/07/21	Test Configuration	n77

Frequency (MHz)	Channel BW(MHz)	Frequency Range (MHz)	Max Spurious Emissions (dBm)	Limit (dBm)	Result
3710.01	20	0.009 ~ 30	-65.34	≤ -19.02	Pass
		30 ~ 40000	-29.60	≤ -19.02	Pass
3840.00	20	0.009 ~ 30	-65.63	≤ -19.02	Pass
		30 ~ 40000	-29.58	≤ -19.02	Pass
3969.99	20	0.009 ~ 30	-66.07	≤ -19.02	Pass
		30 ~ 40000	-29.67	≤ -19.02	Pass
3720.00	40	0.009 ~ 30	-65.94	≤ -19.02	Pass
		30 ~ 40000	-29.48	≤ -19.02	Pass
3840.00	40	0.009 ~ 30	-65.38	≤ -19.02	Pass
		30 ~ 40000	-29.89	≤ -19.02	Pass
3960.00	40	0.009 ~ 30	-65.79	≤ -19.02	Pass
		30 ~ 40000	-29.44	≤ -19.02	Pass
3730.02	60	0.009 ~ 30	-65.35	≤ -19.02	Pass
		30 ~ 40000	-29.67	≤ -19.02	Pass
3840.00	60	0.009 ~ 30	-65.86	≤ -19.02	Pass
		30 ~ 40000	-29.77	≤ -19.02	Pass
3949.98	60	0.009 ~ 30	-65.63	≤ -19.02	Pass
		30 ~ 40000	-29.80	≤ -19.02	Pass
3740.01	80	0.009 ~ 30	-65.60	≤ -19.02	Pass
		30 ~ 40000	-29.70	≤ -19.02	Pass
3840.00	80	0.009 ~ 30	-63.70	≤ -19.02	Pass
		30 ~ 40000	-29.64	≤ -19.02	Pass
3939.99	80	0.009 ~ 30	-62.99	≤ -19.02	Pass
		30 ~ 40000	-29.63	≤ -19.02	Pass
3750.00	100	0.009 ~ 30	-61.71	≤ -19.02	Pass
		30 ~ 40000	-29.70	≤ -19.02	Pass
3840.00	100	0.009 ~ 30	-62.08	≤ -19.02	Pass
		30 ~ 40000	-30.20	≤ -19.02	Pass
3930.00	100	0.009 ~ 30	-59.25	≤ -19.02	Pass
		30 ~ 40000	-29.64	≤ -19.02	Pass

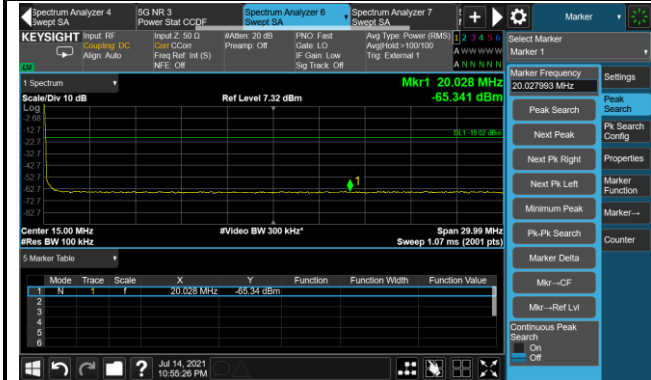


Frequency (MHz)	ChannelBW (MHz)	Frequency Range (MHz)	Max Spurious Emissions (dBm)	Limit (dBm)	Result
3710+3730	20+20	0.009 ~ 30	-65.55	$\leq -19.02$	Pass
		30 ~ 40000	-29.41	$\leq -19.02$	Pass
3830+3850	20+20	0.009 ~ 30	-65.39	$\leq -19.02$	Pass
		30 ~ 40000	-29.70	$\leq -19.02$	Pass
3950+3970	20+20	0.009 ~ 30	-65.01	$\leq -19.02$	Pass
		30 ~ 40000	-29.64	$\leq -19.02$	Pass
3750+3850	100+100	0.009 ~ 30	-65.12	$\leq -19.02$	Pass
		30 ~ 40000	-30.14	$\leq -19.02$	Pass
3790+3890	100+100	0.009 ~ 30	-64.96	$\leq -19.02$	Pass
		30 ~ 40000	-29.51	$\leq -19.02$	Pass
3830+3930	100+100	0.009 ~ 30	-64.47	$\leq -19.02$	Pass
		30 ~ 40000	-29.89	$\leq -19.02$	Pass

**20MHz Channel Bandwidth**

**3710.01 MHz**

**9kHz ~ 30MHz**

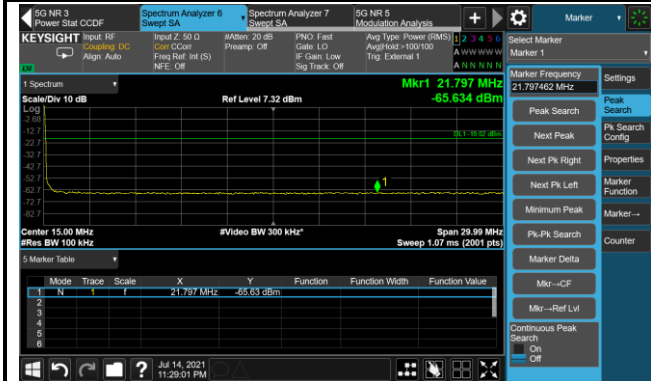


**30MHz ~ 40000MHz**

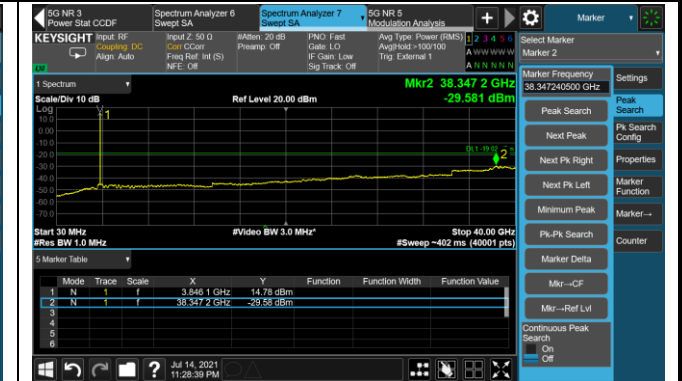


**3840.00 MHz**

**9kHz ~ 30MHz**

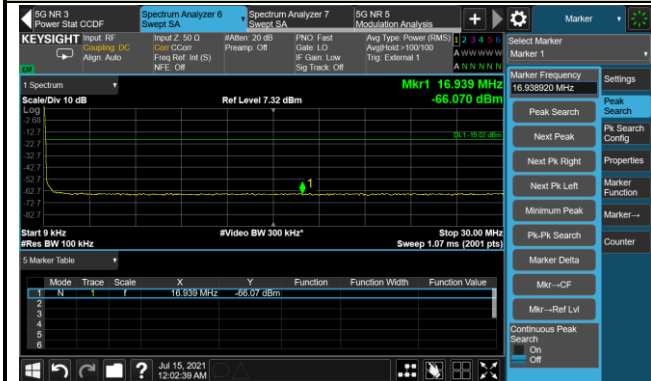


**30MHz ~ 40000MHz**

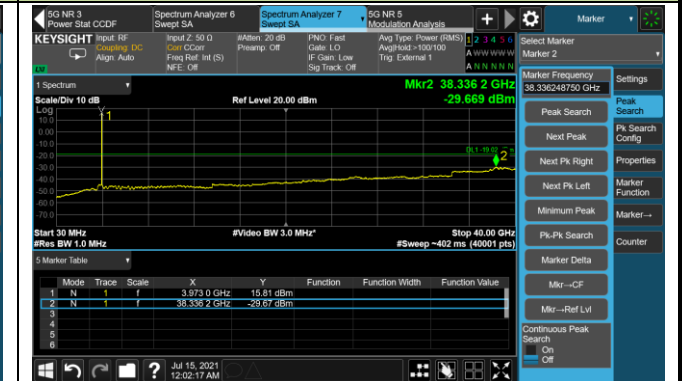


**3969.99 MHz**

**9kHz ~ 30MHz**



**30MHz ~ 40000MHz**

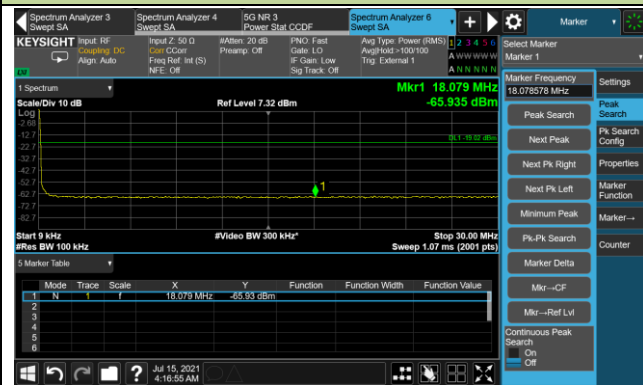


### 40MHz Channel Bandwidth

3720.00 MHz

9kHz ~ 30MHz

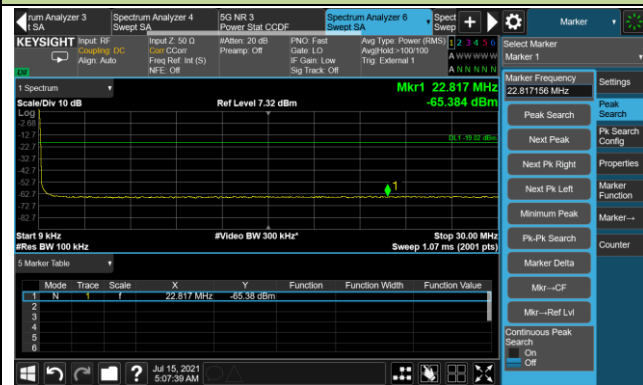
30MHz ~ 40000MHz



3840.00 MHz

9kHz ~ 30MHz

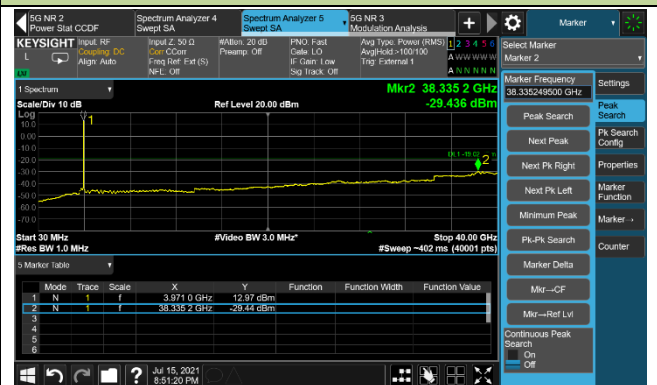
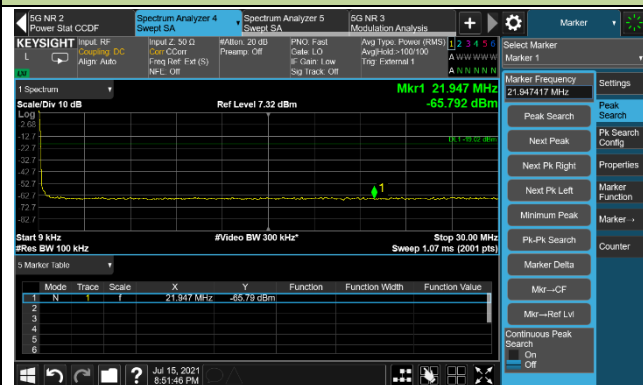
30MHz ~ 40000MHz



3960.00 MHz

9kHz ~ 30MHz

30MHz ~ 40000MHz

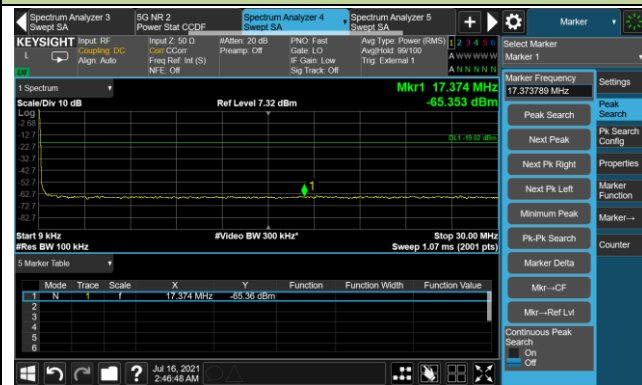


### 60MHz Channel Bandwidth

3730.02 MHz

9kHz ~ 30MHz

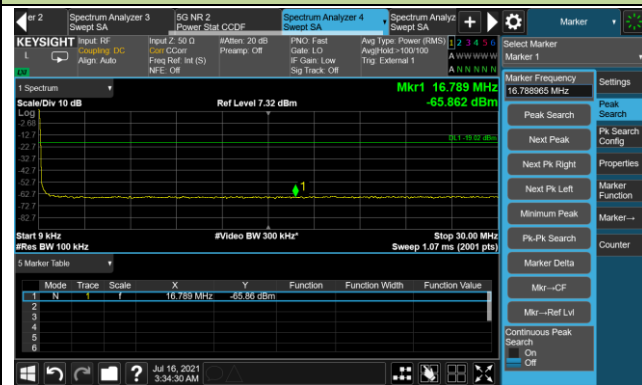
30MHz ~ 40000MHz



3840.00 MHz

9kHz ~ 30MHz

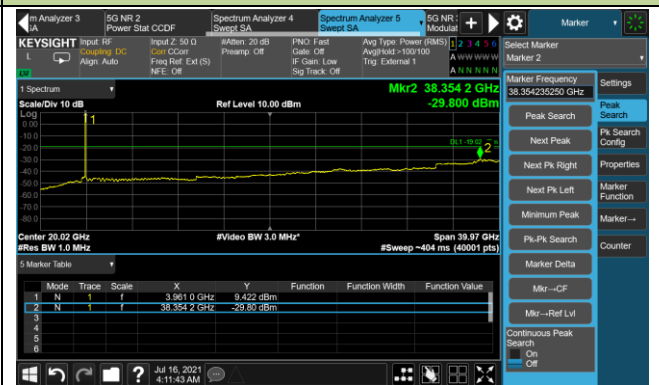
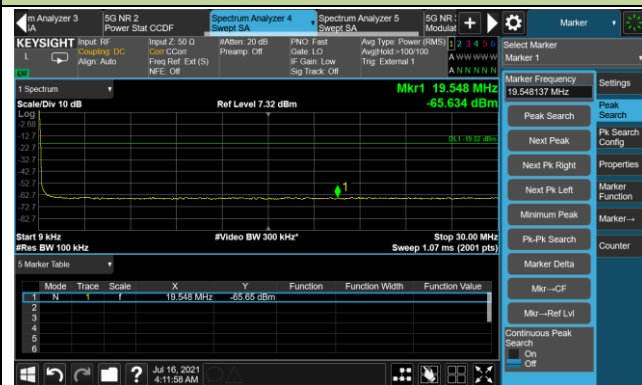
30MHz ~ 40000MHz



3949.98 MHz

9kHz ~ 30MHz

30MHz ~ 40000MHz

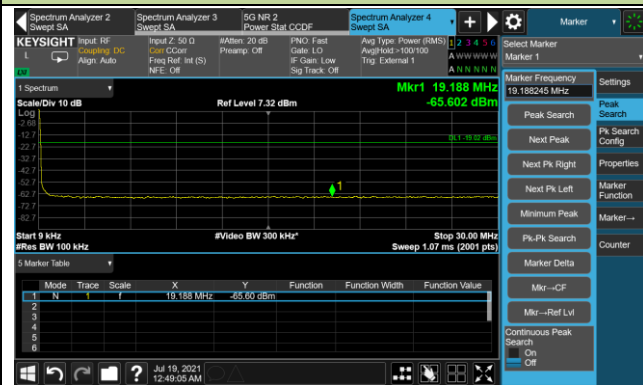


### 80MHz Channel Bandwidth

3740.01 MHz

9kHz ~ 30MHz

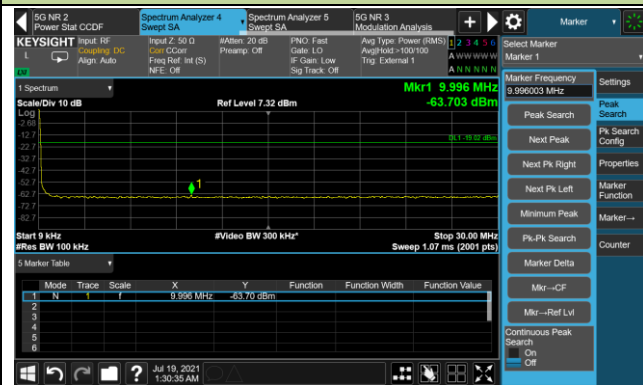
30MHz ~ 40000MHz



3840.00 MHz

9kHz ~ 30MHz

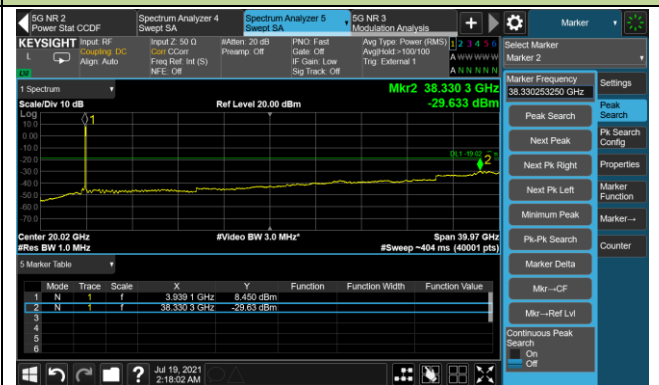
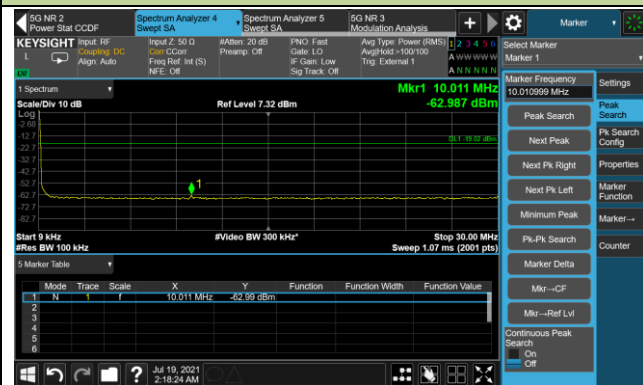
30MHz ~ 40000MHz



3939.99 MHz

9kHz ~ 30MHz

30MHz ~ 40000MHz

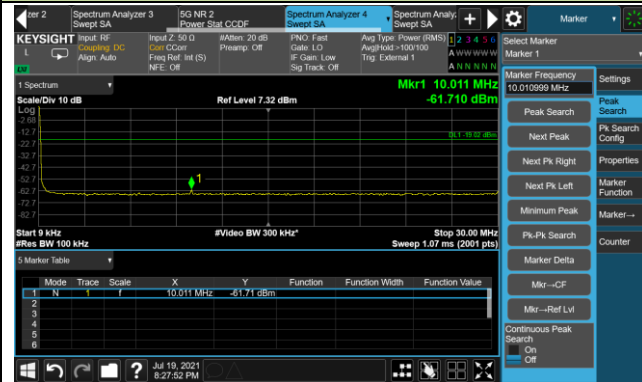


100MHz Channel Bandwidth

3750.00 MHz

9kHz ~ 30MHz

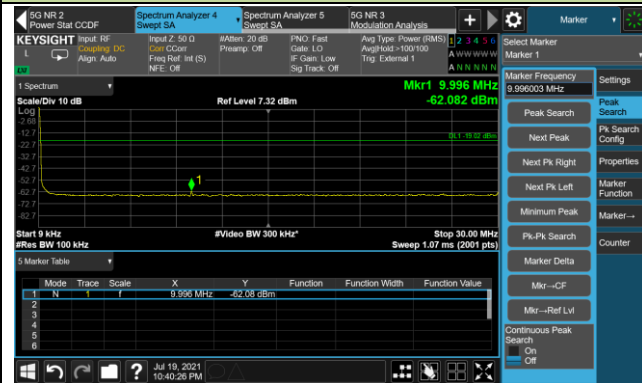
30MHz ~ 40000MHz



3840.00 MHz

9kHz ~ 30MHz

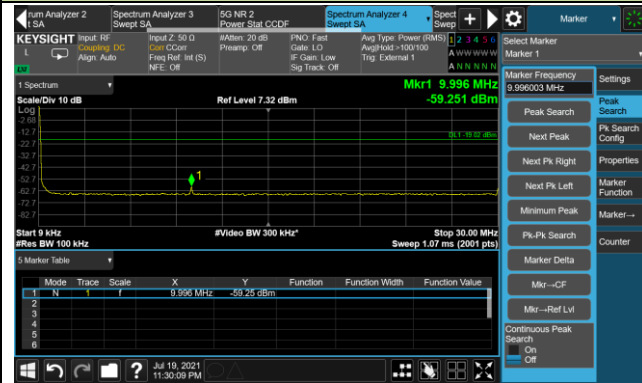
30MHz ~ 40000MHz



3930.00 MHz

9kHz ~ 30MHz

30MHz ~ 40000MHz

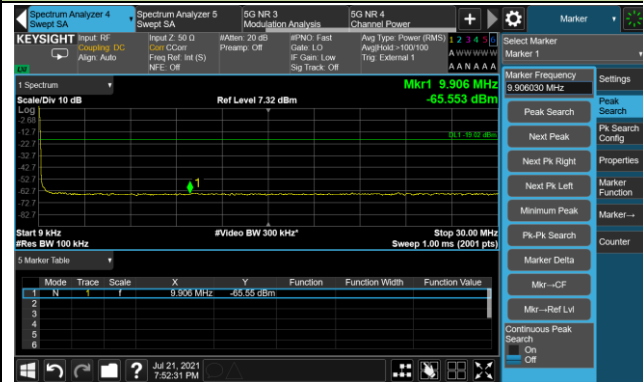




20+20 MHz Channel Bandwidth

3710+3730 MHz

9kHz ~ 30MHz

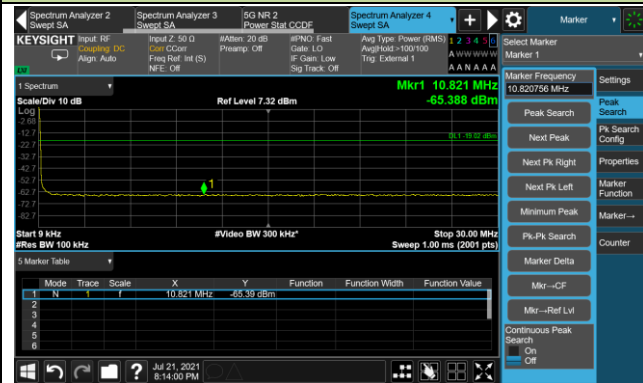


30MHz ~ 40000MHz



3830+3850 MHz

9kHz ~ 30MHz

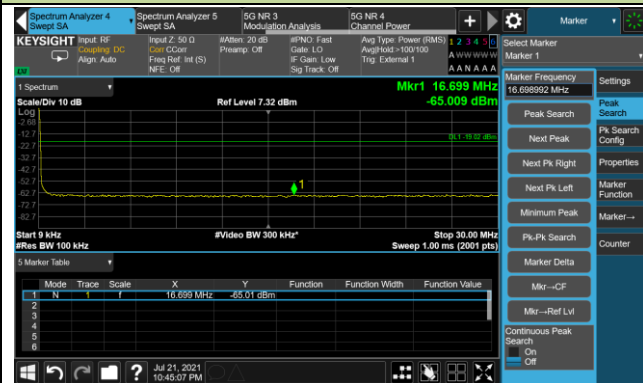


30MHz ~ 40000MHz

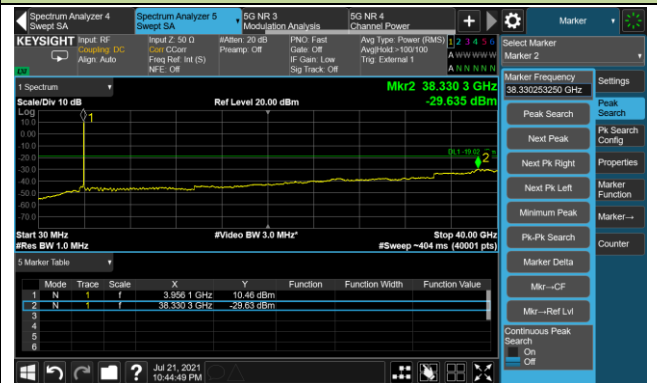


3950+3970 MHz

9kHz ~ 30MHz



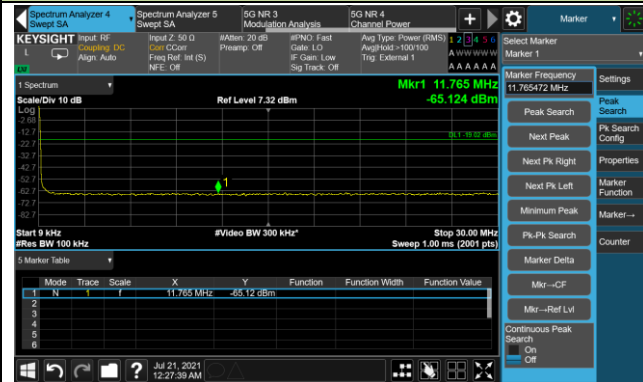
30MHz ~ 40000MHz



100+100MHz Channel Bandwidth

3750+3850 MHz

9kHz ~ 30MHz



30MHz ~ 40000MHz



3790+3890 MHz

9kHz ~ 30MHz

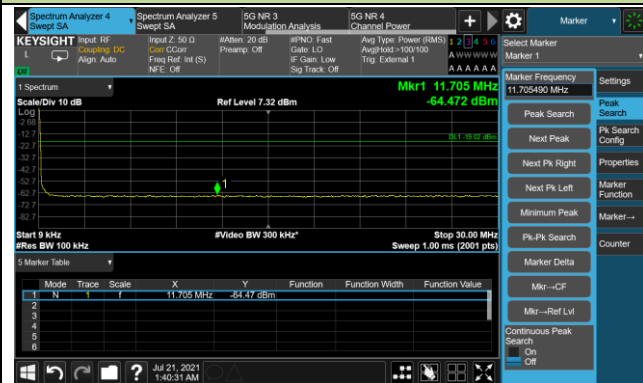


30MHz ~ 40000MHz



3830+3930 MHz

9kHz ~ 30MHz



30MHz ~ 40000MHz





**Radiated Spurious Test Result**

Test Engineer	Kevin Ker	Test Site	AC1
Test Date	2021/07/18	Test Configuration	n77, BW=20MHz

Frequency (MHz)	Reading Level (dB $\mu$ V)	Factor (dB)	Measure Level(dB $\mu$ V/m)	Limit (dB $\mu$ V/m)	Margin (dB)	Detector	Polarization
<b>Bottom Channel</b>							
172.11	11.71	16.80	28.51	82.30	-53.79	Peak	Horizontal
867.60	3.98	31.59	35.57	82.30	-46.73	Peak	Horizontal
37.76	13.94	18.70	32.64	82.30	-49.66	Peak	Vertical
828.80	4.59	30.52	35.11	82.30	-47.19	Peak	Vertical
7417.50	51.82	12.65	64.47	82.30	-17.83	Peak	Horizontal
10962.00	32.21	19.23	51.44	82.30	-30.86	Peak	Horizontal
7417.50	57.06	12.65	69.71	82.30	-12.59	Peak	Vertical
10299.00	32.41	17.76	50.17	82.30	-32.13	Peak	Vertical
<b>Middle Channel</b>							
172.11	11.82	16.21	28.03	82.30	-54.27	Peak	Horizontal
843.35	4.39	30.80	35.19	82.30	-47.11	Peak	Horizontal
38.25	13.23	18.83	32.06	82.30	-50.24	Peak	Vertical
143.49	16.01	15.05	31.06	82.30	-51.24	Peak	Vertical
7681.00	62.47	13.17	75.64	82.30	-6.66	Peak	Horizontal
10868.50	32.13	19.09	51.22	82.30	-31.08	Peak	Horizontal
7683.13	55.89	13.17	69.06	82.30	-13.24	Average	Vertical
10911.00	31.91	19.15	51.06	82.30	-31.24	Peak	Vertical
<b>Top Channel</b>							
171.14	11.89	16.17	28.06	82.30	-54.24	Peak	Horizontal
784.66	4.62	29.64	34.26	82.30	-48.04	Peak	Horizontal
38.25	12.13	18.83	30.96	82.30	-51.34	Peak	Vertical
141.55	14.73	15.04	29.77	82.30	-52.53	Peak	Vertical
7944.50	53.84	13.38	67.22	82.30	-15.08	Peak	Horizontal
11319.00	32.52	19.77	52.29	82.30	-30.01	Peak	Horizontal
7944.50	59.78	13.38	73.16	82.30	-9.14	Peak	Vertical
11072.50	32.08	19.39	51.47	82.30	-30.83	Peak	Vertical

Note: Measure Level (dB $\mu$ V/m) = Reading Level (dB $\mu$ V) + 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