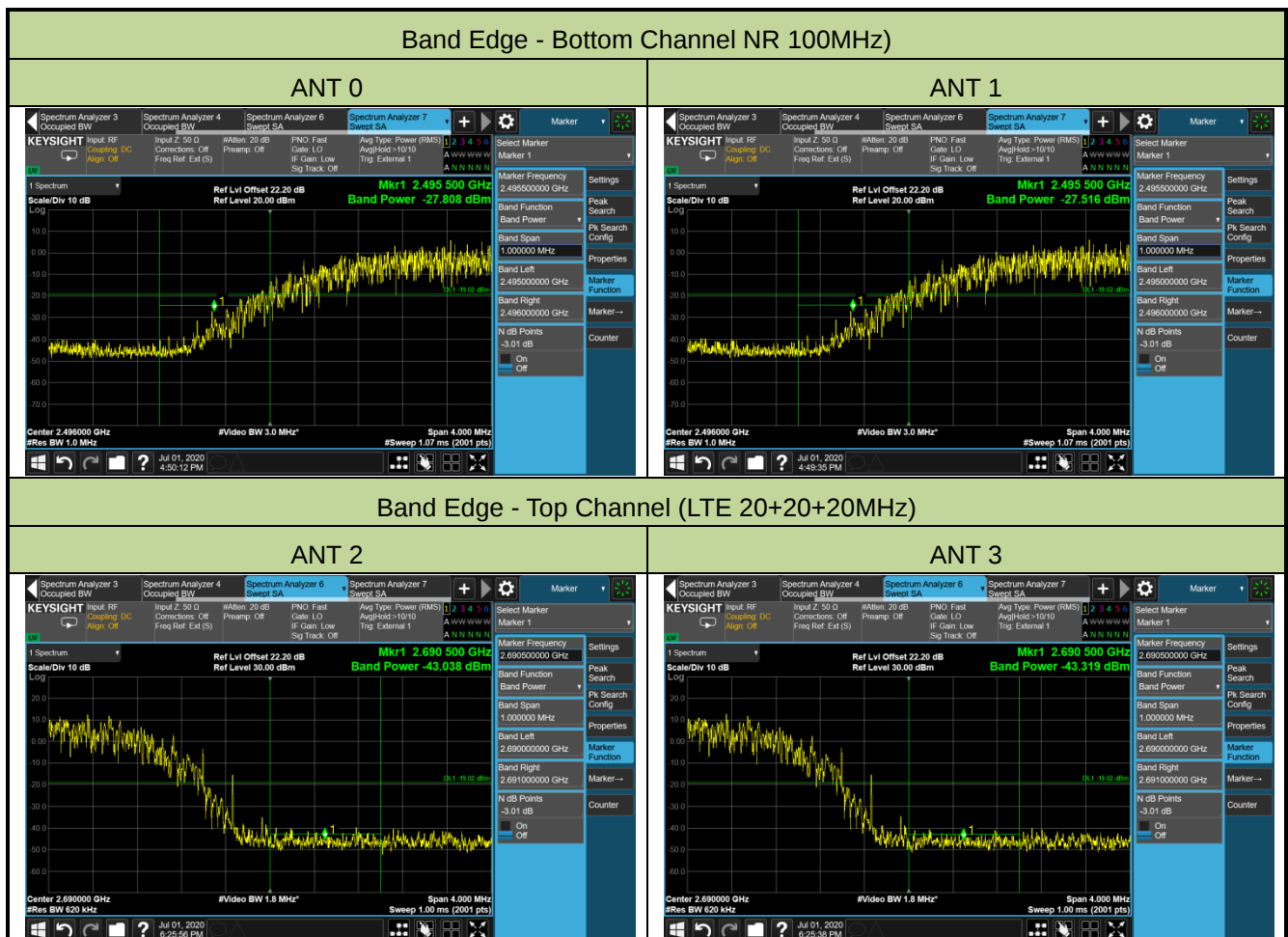


Product	AirScale Indoor Radio ASiR 5G-pRRH	Test Engineer	Kevin Ker
Test Site	SR2	Test Date	2020/07/01
Test Configuration	5G NR 100MHz + LTE 20 + 20 + 20MHz		
Test Channel	Bottom Channel: 5G NR 2546.01MHz, LTE 2606 + 2626 + 2646MHz Middle Channel: 5G NR 2563.02MHz, LTE 2623 + 2643 + 2663MHz Top Channel: 5G NR 2580MHz, LTE 2640 + 2660 + 2680MHz		

Frequency (MHz)	Channel Bandwidth (MHz)	Max Band Edge (dBm)				Limit (dBm)	Result
		Ant 0	Ant 1	Ant 2	Ant 3		
QPSK							
Bottom	100	-27.81	-27.52	-	-	≤ -16.01	Pass
Top	20+20+20	-	-	-43.04	-43.32	≤ -16.01	Pass



5.6. Peak to Average Ratio

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

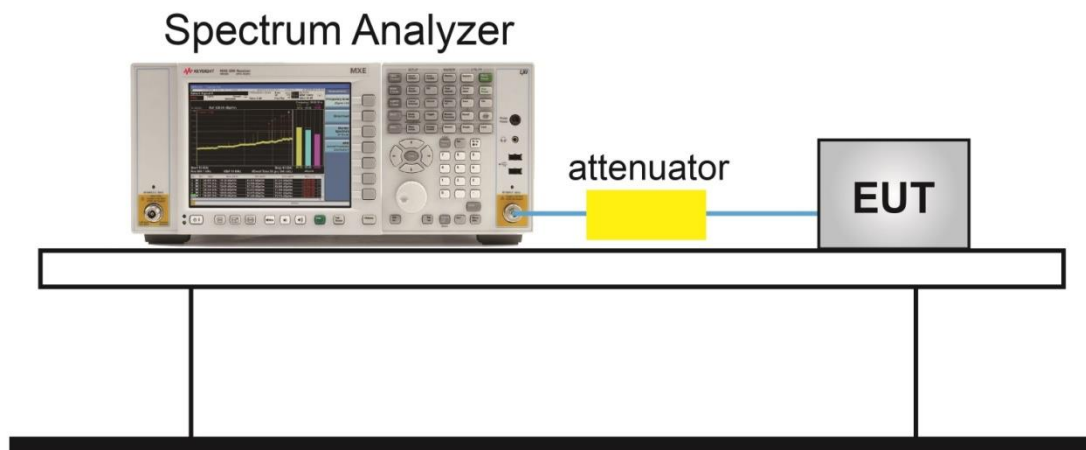
KDB 971168 D01v03r01 - Section 5.7

ANSI C63.26-2015 - Section 5.2.6

5.6.3. Test Setting

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

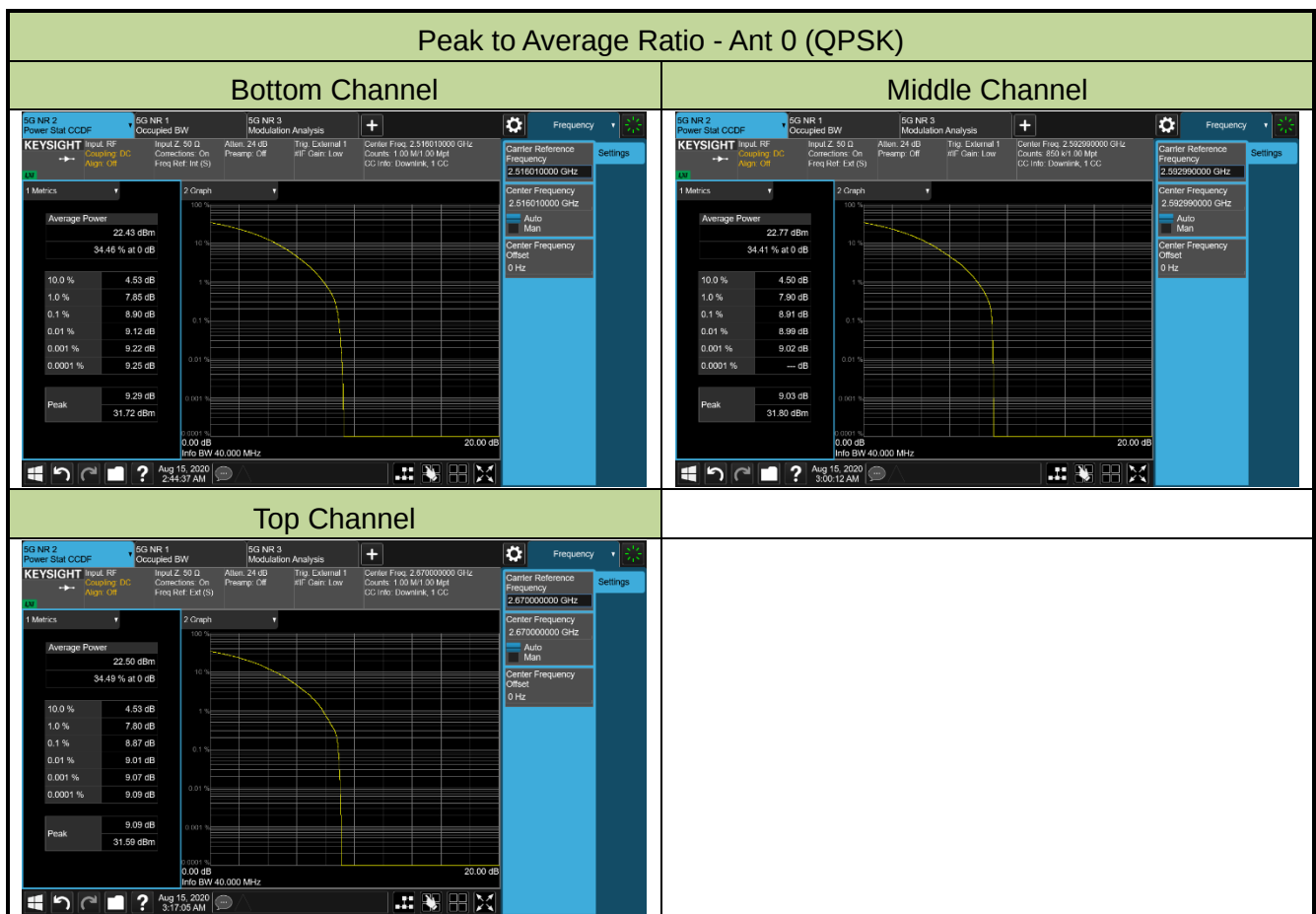
5.6.4. Test Setup



5.6.5. Test Result

Product	AirScale Indoor Radio ASiR 5G-pRRH	Test Engineer	Kevin Ker
Test Site	SR2	Test Date	2020/07/02
Test Configuration	5G NR 40MHz		
Test Channel	Bottom Channel: 2616.01MHz; Middle Channel: 2592.99MHz Top Channel: 2670.00MHz		

Channel No.	Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)	Limit (dB)	Result
QPSK					
503202	2616.01	40	8.90	≤ 13.00	Pass
518598	2592.99	40	8.91	≤ 13.00	Pass
534000	2670.00	40	8.87	≤ 13.00	Pass



5.7. Conducted Spurious Emissions

5.7.1. Test Limit

In the FCC 24.238, 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

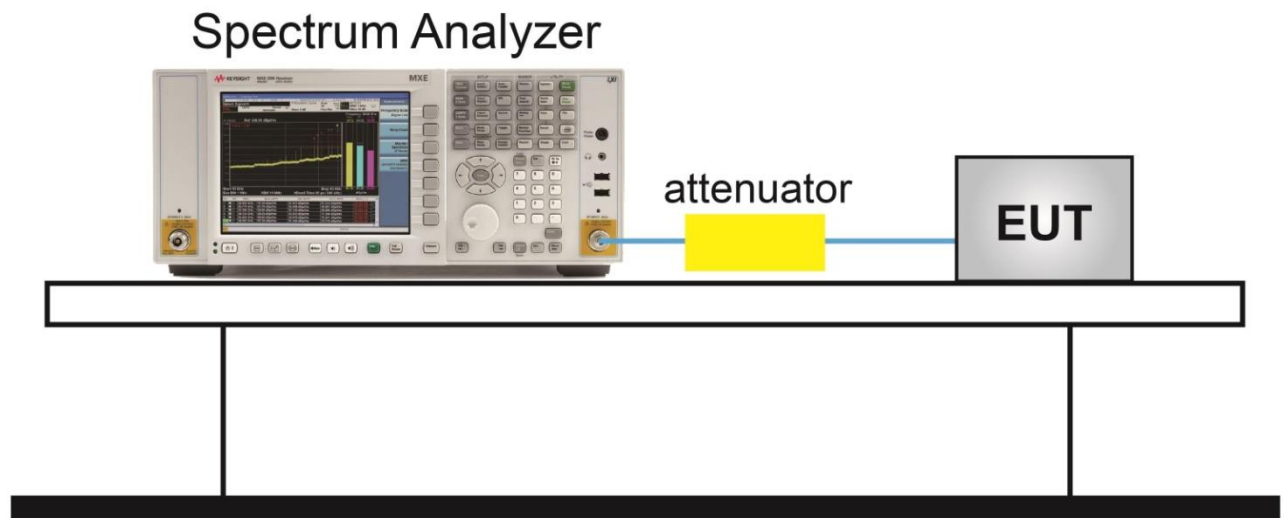
KDB 971168 D01v03r01 - Section 6

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.

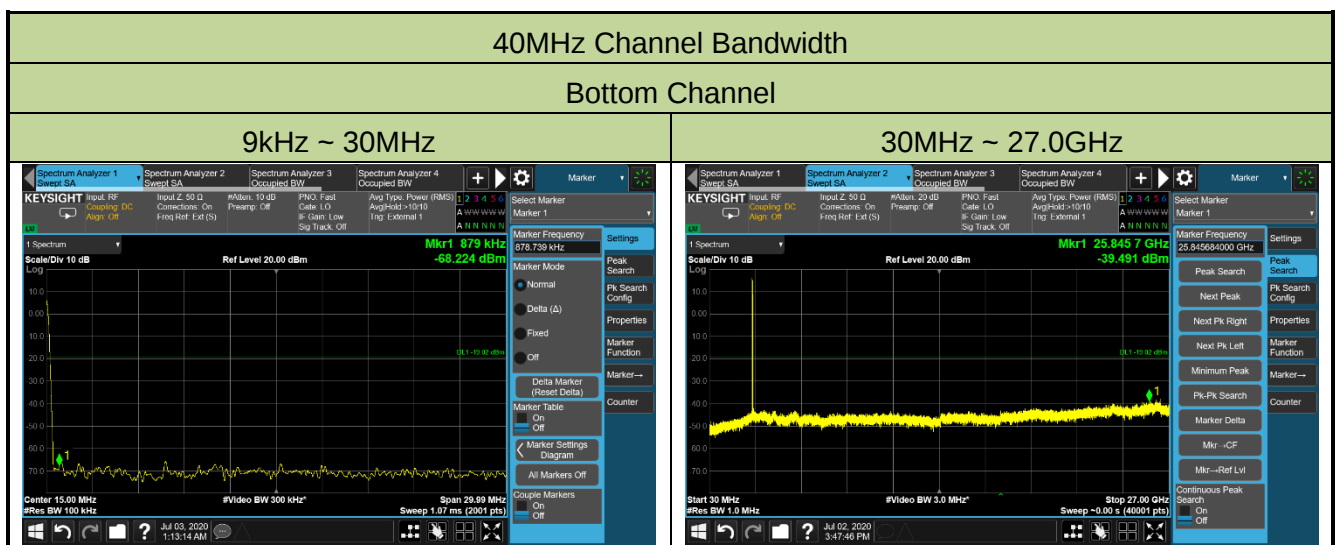
5.7.4. Test Setup



5.7.5. Test Result

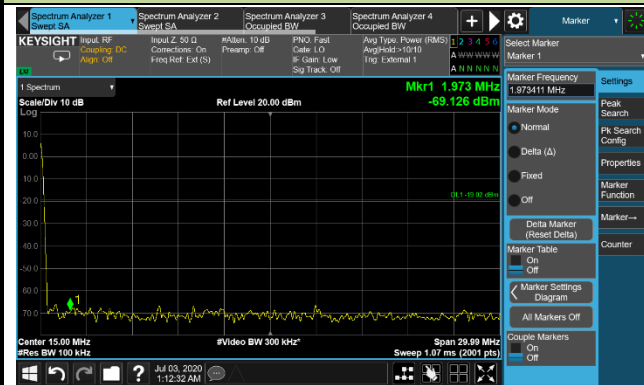
Product	AirScale Indoor Radio ASiR 5G-pRRH	Test Engineer	Kevin Ker
Test Site	SR2	Test Date	2020/07/02
Test Configuration	5G NR 40MHz		
Test Channel	Bottom Channel: 2616.01MHz; Middle Channel: 2592.99MHz Top Channel: 2670.00MHz		

Frequency (MHz)	Channel Bandwidth (MHz)	Frequency Range (MHz)	Max Spurious Emissions (dBm)	Limit (dBm)	Result
2516.01	40	0.009 ~ 30	-68.22	≤ -19.02	Pass
		30 ~ 27000	-39.49	≤ -19.02	Pass
2592.99	40	0.009 ~ 30	-69.13	≤ -19.02	Pass
		30 ~ 27000	-39.56	≤ -19.02	Pass
2670.00	40	0.009 ~ 30	-71.99	≤ -19.02	Pass
		30 ~ 27000	-39.47	≤ -19.02	Pass



Middle Channel

9kHz ~ 30MHz

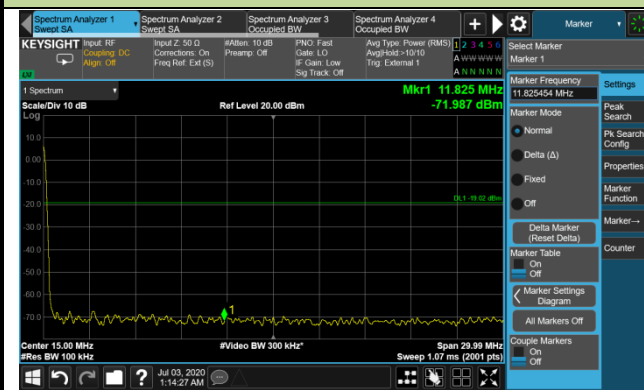


30MHz ~ 27.0GHz

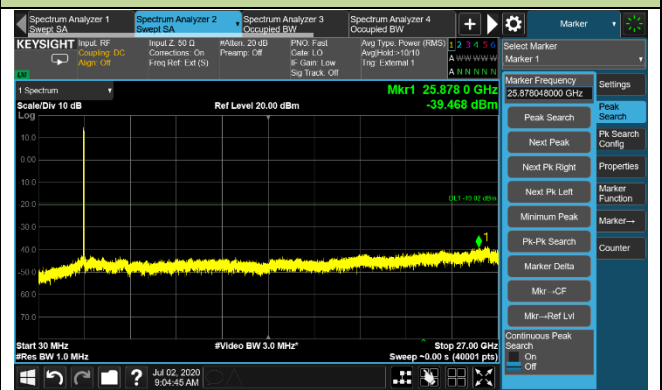


Top Channel

9kHz ~ 30MHz



30MHz ~ 27.0GHz



5.8. Radiated Spurious Emissions Measurements

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 μ V/m.

5.8.2. Test Procedure Used

KDB 971168 D01v03r01 - Section 5.8 & 7

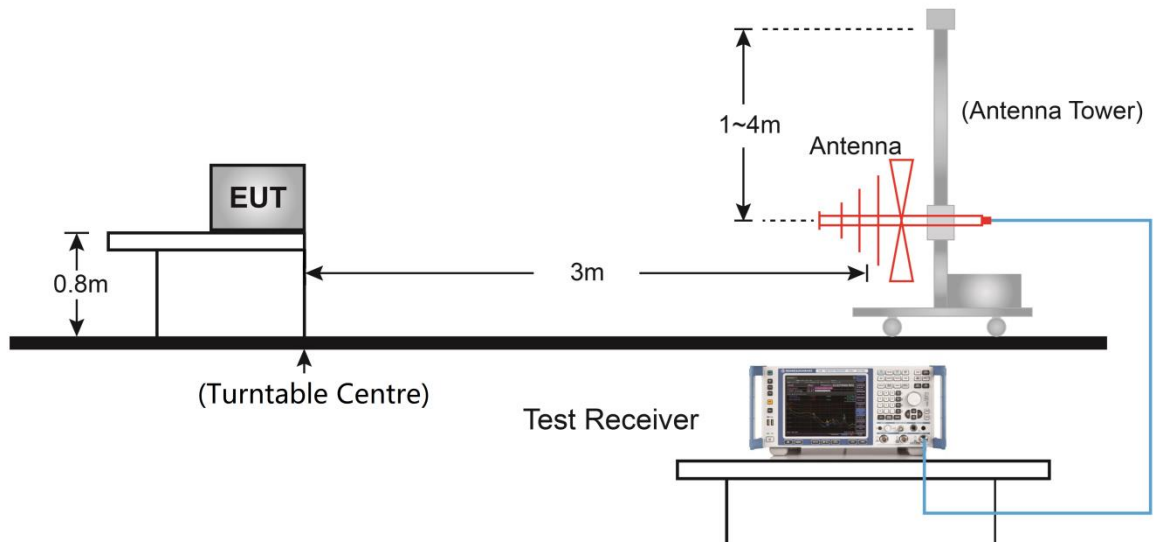
ANSI C63.26-2015 - Section 5.2.7 & 5.5

5.8.3. Test Setting

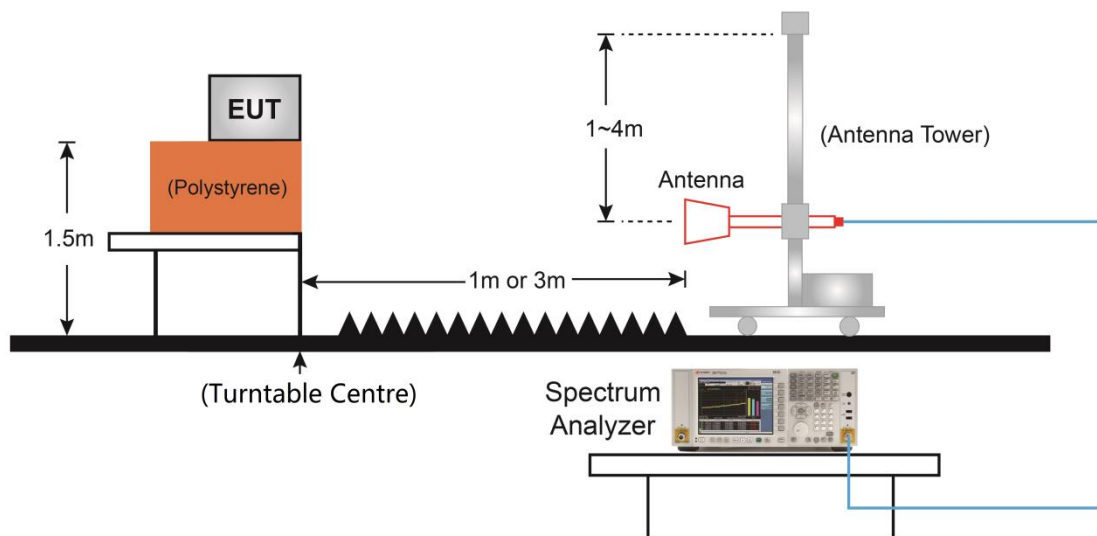
1. RBW = 100kHz or 1MHz
2. VBW $\geq 3 \times$ RBW
3. Sweep time $\geq 10 \times$ (number of points in sweep) $\times$ (transmission symbol period)
4. Detector = Peak
5. Trace mode = max hold
6. The trace was allowed to stabilize

5.8.4. Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



5.8.5. Test Result

Product	AirScale Indoor Radio ASiR 5G-pRRH	Test Engineer	Kevin Ker
Test Site	SR2	Test Date	2020/08/14
Test Configuration	5G NR 40MHz		

Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
Bottom Channel							
124.58	19.89	16.50	36.39	82.20	-45.81	Peak	Horizontal
151.74	18.23	15.83	34.06	82.20	-48.14	Peak	Horizontal
125.06	14.86	16.46	31.32	82.20	-50.88	Peak	Vertical
229.34	10.82	19.81	30.63	82.20	-51.57	Peak	Vertical
4570.00	40.20	2.72	42.92	82.20	-39.28	Peak	Horizontal
6695.00	36.33	8.96	45.29	82.20	-36.91	Peak	Horizontal
4026.00	39.88	0.97	40.85	82.20	-41.35	Peak	Vertical
7596.00	36.29	11.87	48.16	82.20	-34.04	Peak	Vertical
Middle Channel							
127.00	18.99	16.27	35.26	82.20	-46.94	Peak	Horizontal
157.56	17.12	16.03	33.15	82.20	-49.05	Peak	Horizontal
145.43	14.87	15.62	30.49	82.20	-51.71	Peak	Vertical
308.88	7.89	21.76	29.65	82.20	-52.55	Peak	Vertical
4944.00	39.52	3.62	43.14	82.20	-39.06	Peak	Horizontal
8140.00	36.55	12.51	49.06	82.20	-33.14	Peak	Horizontal
4893.00	39.27	3.49	42.76	82.20	-39.44	Peak	Vertical
7621.50	35.90	11.91	47.81	82.20	-34.39	Peak	Vertical
Top Channel							
127.00	17.33	16.27	33.60	82.20	-48.60	Peak	Horizontal
158.04	16.40	16.05	32.45	82.20	-49.75	Peak	Horizontal
129.91	15.26	15.99	31.25	82.20	-50.95	Peak	Vertical
303.54	6.93	21.54	28.47	82.20	-53.73	Peak	Vertical
4646.50	39.70	2.90	42.60	82.20	-39.60	Peak	Horizontal
6856.50	36.63	9.67	46.30	82.20	-35.90	Peak	Horizontal
5003.50	39.15	3.75	42.90	82.20	-39.30	Peak	Vertical
8769.00	36.71	13.11	49.82	82.20	-32.38	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.