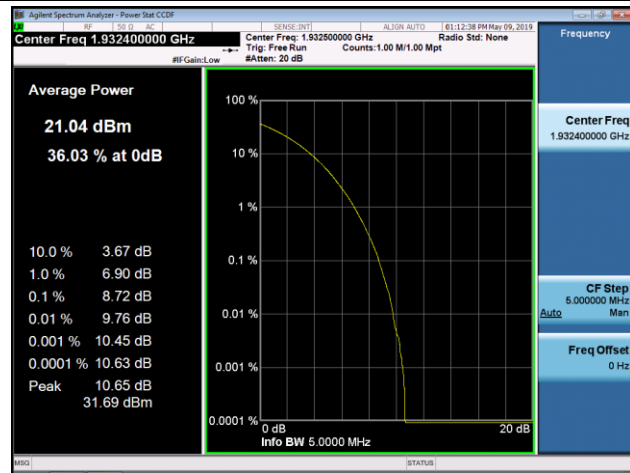


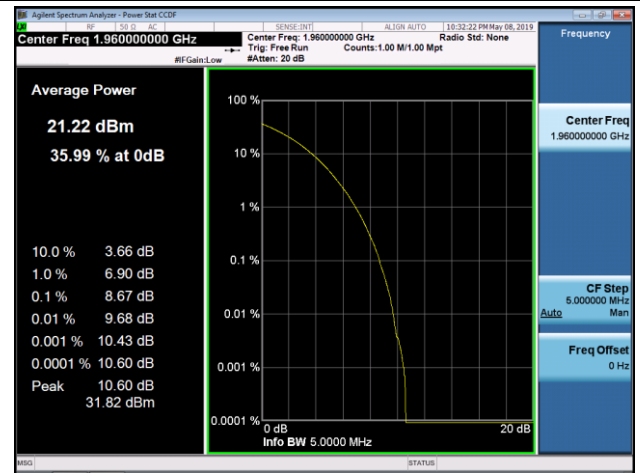
Peak to Average Ratio - Ant 1 (QPSK)

5MHz Channel Bandwidth

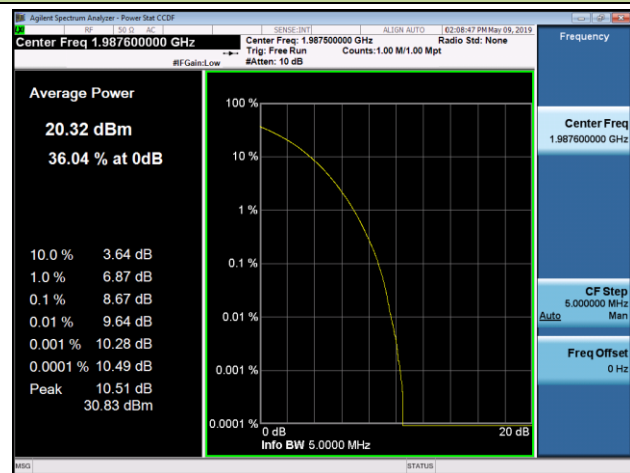
1932.4MHz



1960.0MHz



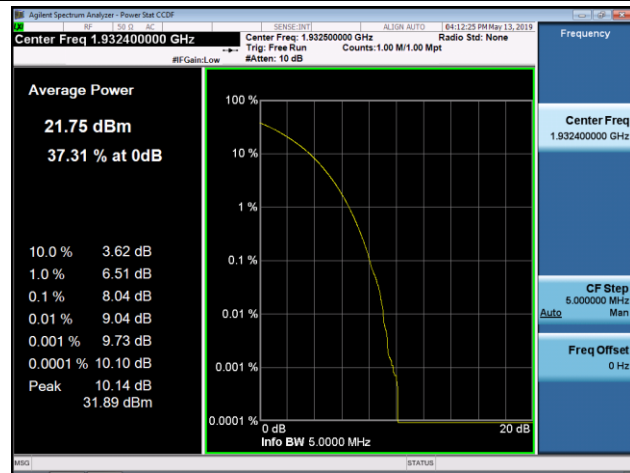
1987.6MHz



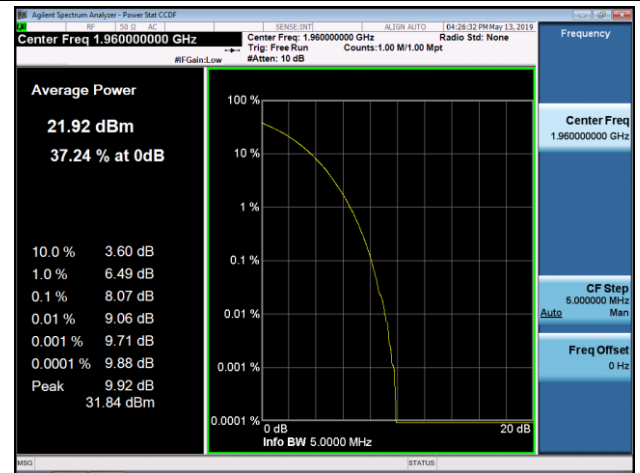
Peak to Average Ratio - Ant 1 (16QAM)

5MHz Channel Bandwidth

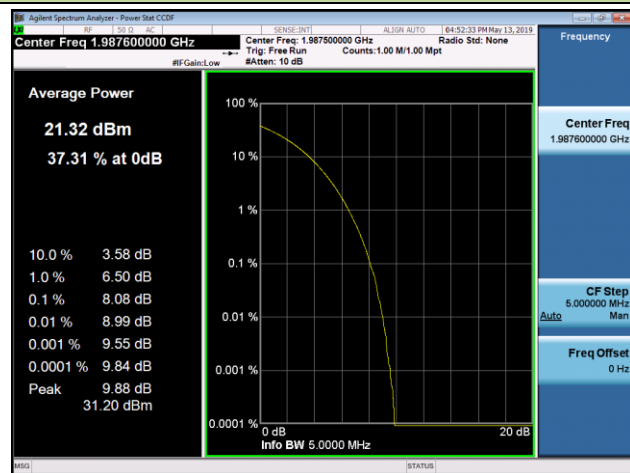
1932.4MHz



1960.0MHz



1987.6MHz



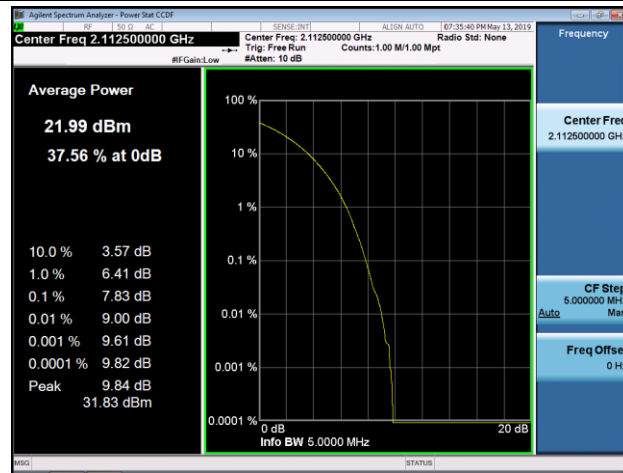
Product	AirScale Indoor Radio ASiR-pRRH	Test Engineer	Peter Xu
Test Site	SR2	Test Date	2019/05/13
Test Item	Peak to Average Ratio - WCDMA Band 66		

Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)		Limit (dBm)	Result
		Ant 0	Ant 1		
QPSK					
2112.5	20	7.83	7.81	≤ 13.00	Pass
2145.0	20	7.80	7.77	≤ 13.00	Pass
2177.5	20	7.83	7.83	≤ 13.00	Pass
16QAM					
2112.5	20	8.09	8.13	≤ 13.00	Pass
2145.0	20	8.10	8.02	≤ 13.00	Pass
2177.5	20	8.06	8.10	≤ 13.00	Pass

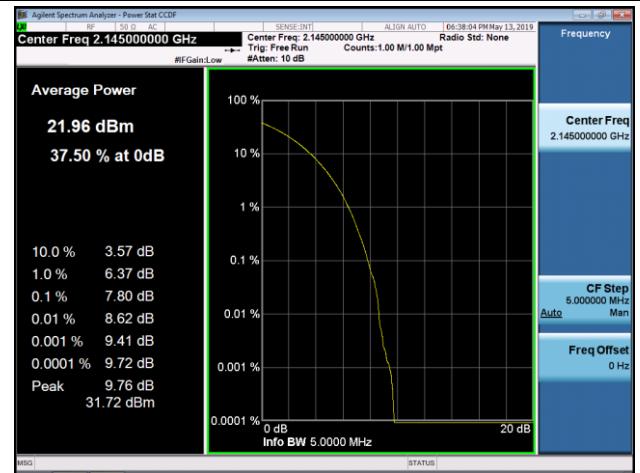
Peak to Average Ratio - Ant 0 (QPSK)

5MHz Channel Bandwidth

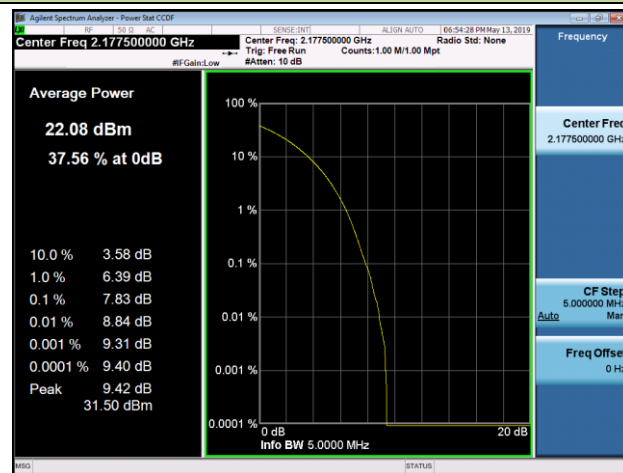
2112.5MHz



2145.0MHz



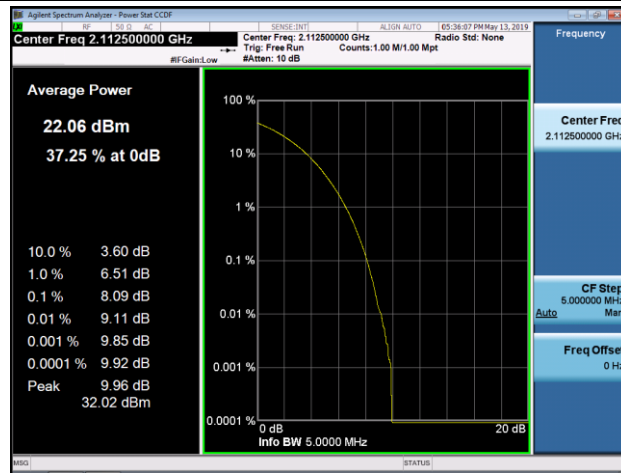
2177.5MHz



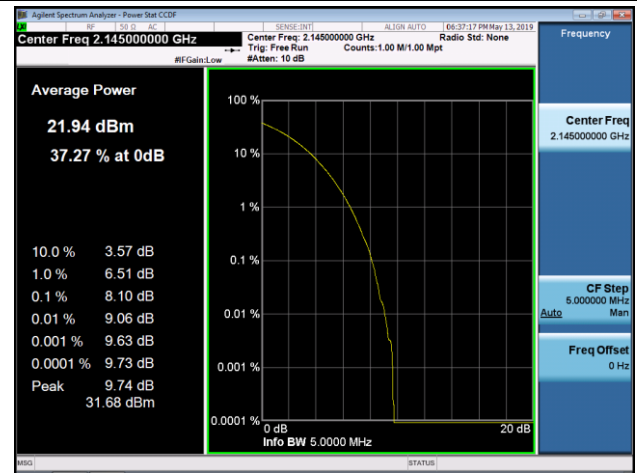
Peak to Average Ratio - Ant 0 (16QAM)

5MHz Channel Bandwidth

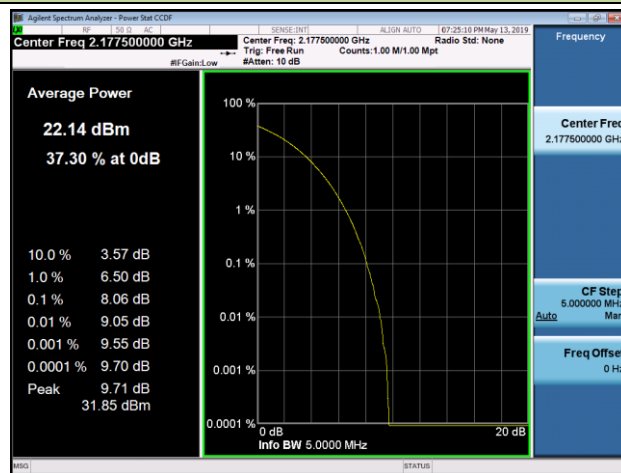
2112.5MHz



2145.0MHz



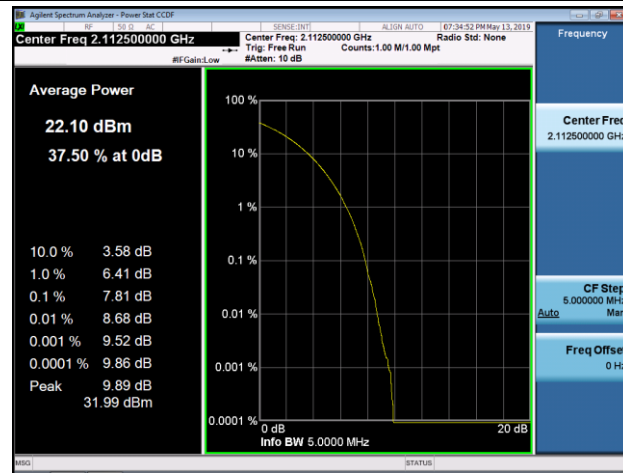
2177.5MHz



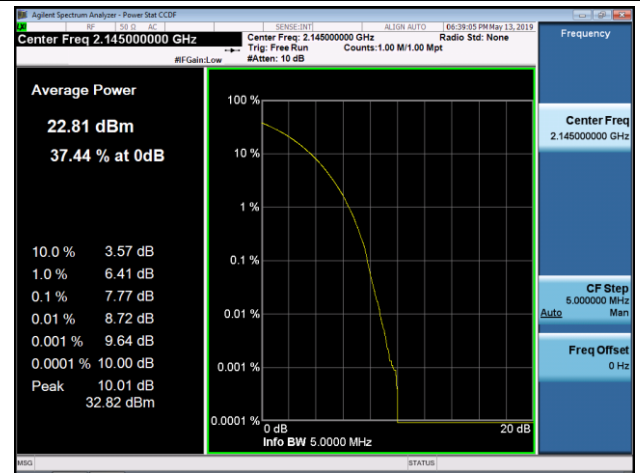
Peak to Average Ratio - Ant 1 (QPSK)

5MHz Channel Bandwidth

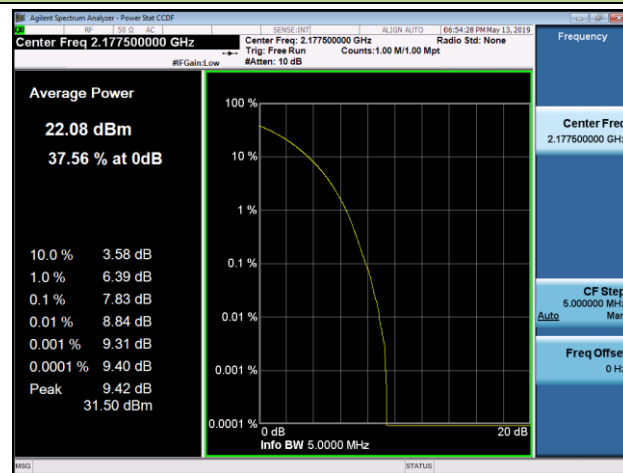
2112.5MHz



2145.0MHz



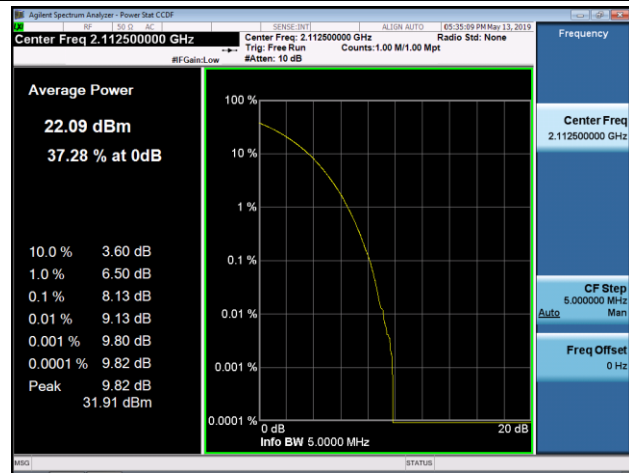
2177.5MHz



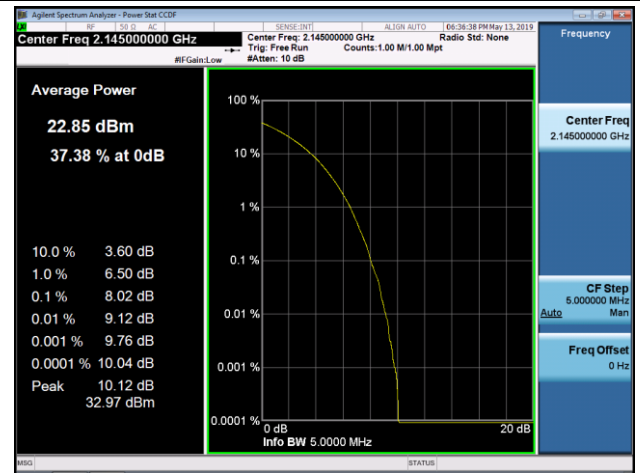
Peak to Average Ratio - Ant 1 (16QAM)

5MHz Channel Bandwidth

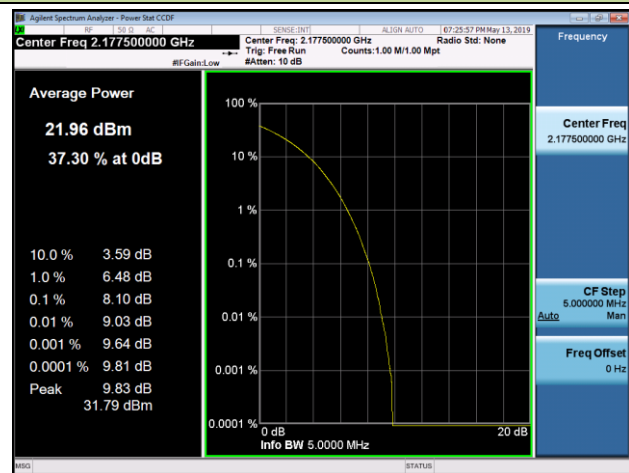
2112.5MHz



2145.0MHz



2177.5MHz



6.7. Conducted Spurious Emissions

6.7.1. Test Limit

In the FCC 24.238 and FCC 27.53(h), 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 $-13\text{dBm} - 10 \cdot \log(2) = -16.01\text{dBm}$

6.7.2. Test Procedure Used

KDB 971168 D01v03r01 - Section 6

ANSI C63.26-2015 - Section 6.4.4.2

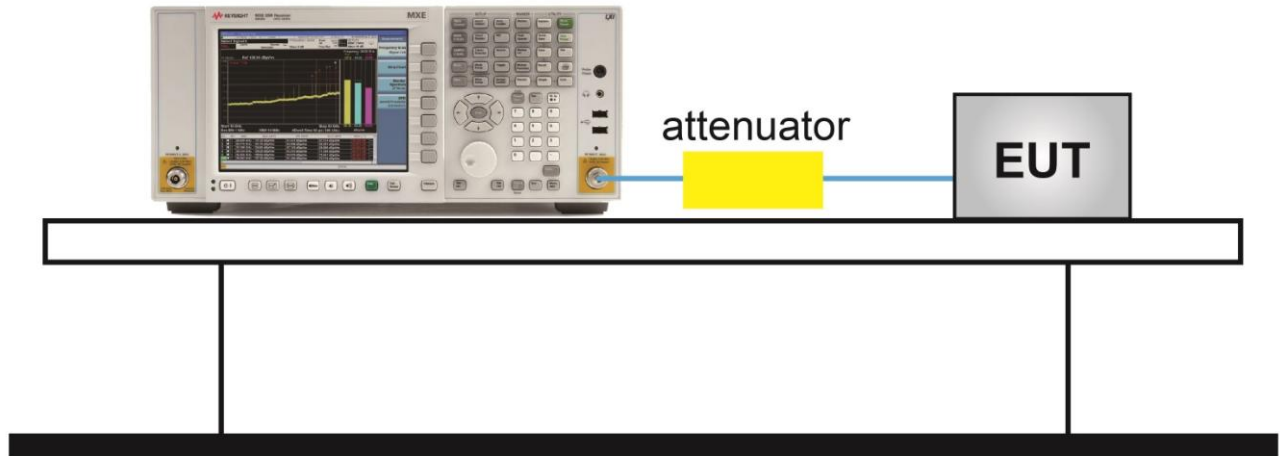
6.7.3. Test Setting

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.

6.7.4. Test Setup

Spectrum Analyzer



6.7.5. Test Result

Product	AirScale Indoor Radio ASiR-pRRH	Test Engineer	Peter Xu
Test Site	SR2	Test Date	2019/05/09
Test Item	Conducted Spurious Emissions - WCDMA Band 2_QPSK		

Frequency (MHz)	Bandwidth (MHz)	Max Spurious Emissions (dBm)		Limit (dBm)	Result
		Ant 0	Ant 1		
Single Carrier					
1932.4	5	-33.28	-33.98	≤ -16.01	Pass
1960.0	5	-34.01	-33.60	≤ -16.01	Pass
1987.6	5	-33.77	-33.52	≤ -16.01	Pass
Multi Carrier					
1932.4 + 1937.4 + 1942.4	5 + 5 + 5	-33.36	-33.57	≤ -16.01	Pass
1955.0 + 1960.0 + 1965.0	5 + 5 + 5	-33.51	-33.17	≤ -16.01	Pass
1977.6 + 1982.6 + 1987.6	5 + 5 + 5	-33.14	-33.02	≤ -16.01	Pass

Conducted Spurious Emissions - Ant 0 (QPSK)

5MHz Channel Bandwidth

1932.4MHz



1960.0MHz



1987.6MHz



5 + 5 + 5MHz Channel Bandwidth

1932.4MHz + 1937.4MHz + 1942.4MHz



1955.0MHz + 1960.0MHz + 1965.0MHz



1977.6MHz + 1982.6MHz + 1987.6MHz



Conducted Spurious Emissions - Ant 1 (QPSK)

5MHz Channel Bandwidth

1932.4MHz



1960.0MHz



1987.6MHz



5 + 5 + 5MHz Channel Bandwidth

1932.4MHz + 1937.4MHz + 1942.4MHz



1955.0MHz + 1960.0MHz + 1965.0MHz



1977.6MHz + 1982.6MHz + 1987.6MHz



Product	AirScale Indoor Radio ASiR-pRRH	Test Engineer	Peter Xu
Test Site	SR2	Test Date	2019/05/13
Test Item	Conducted Spurious Emissions - WCDMA Band 66_QPSK		

Frequency (MHz)	Bandwidth (MHz)	Max Spurious Emissions (dBm)		Limit (dBm)	Result
		Ant 0	Ant 1		
Single Carrier					
2112.5	5	-33.33	-34.15	≤ -16.01	Pass
2145.0	5	-33.50	-33.19	≤ -16.01	Pass
2177.5	5	-33.40	-33.23	≤ -16.01	Pass
Multi Carrier					
2112.5 + 2117.5 + 2122.5	5 + 5 + 5	-33.56	-33.59	≤ -16.01	Pass
2140.0 + 2145.0 + 2150.0	5 + 5 + 5	-33.09	-33.63	≤ -16.01	Pass
2167.5 + 2172.5 + 2177.5	5 + 5 + 5	-33.01	-33.84	≤ -16.01	Pass

Conducted Spurious Emissions - Ant 0 (QPSK)

5MHz Channel Bandwidth

2112.5MHz



2145.0MHz



2177.5MHz



5 + 5 + 5MHz Channel Bandwidth

2112.5MHz + 2117.5MHz + 2122.5MHz



2140.0MHz + 2145.0MHz + 2150.0MHz



2167.5MHz + 2172.5MHz + 2177.5MHz



Conducted Spurious Emissions - Ant 1 (QPSK)

5MHz Channel Bandwidth

2112.5MHz



2145.0MHz



2177.5MHz



5 + 5 + 5MHz Channel Bandwidth

2112.5MHz + 2117.5MHz + 2122.5MHz



2140.0MHz + 2145.0MHz + 2150.0MHz



2167.5MHz + 2172.5MHz + 2177.5MHz



6.8. Radiated Spurious Emissions Measurements

6.8.1. 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.

6.8.2. Test Procedure Used

KDB 971168 D01v03r01 - Section 5.8 & 7

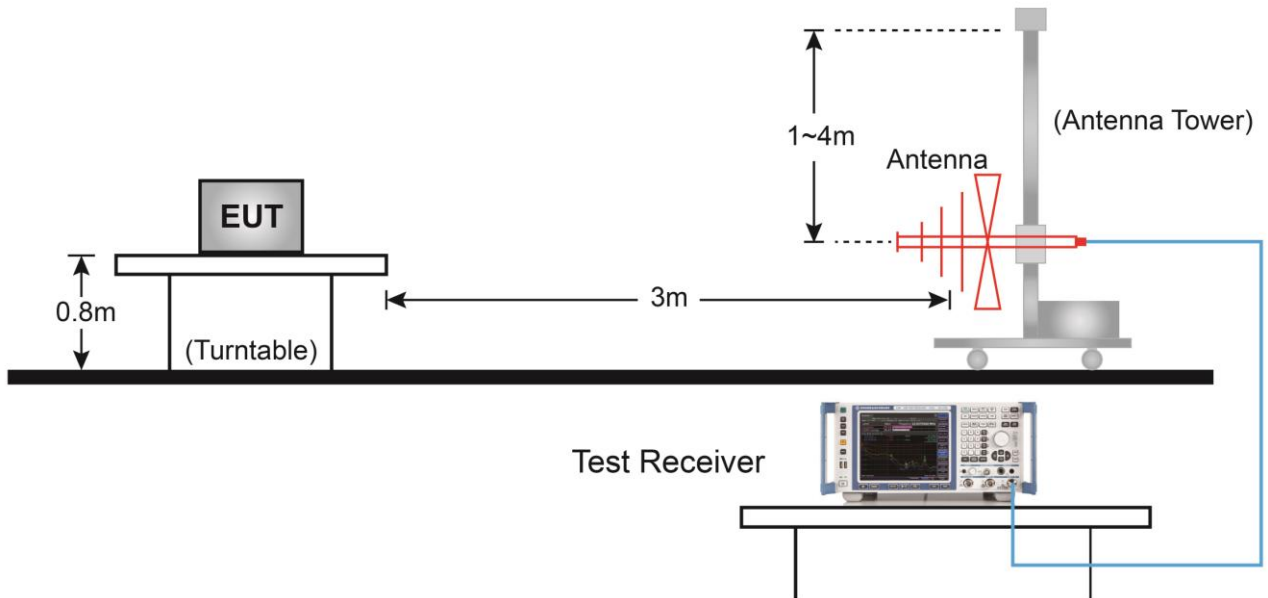
ANSI C63.26-2015 - Section 5.2.7 & 5.5

6.8.3. Test Setting

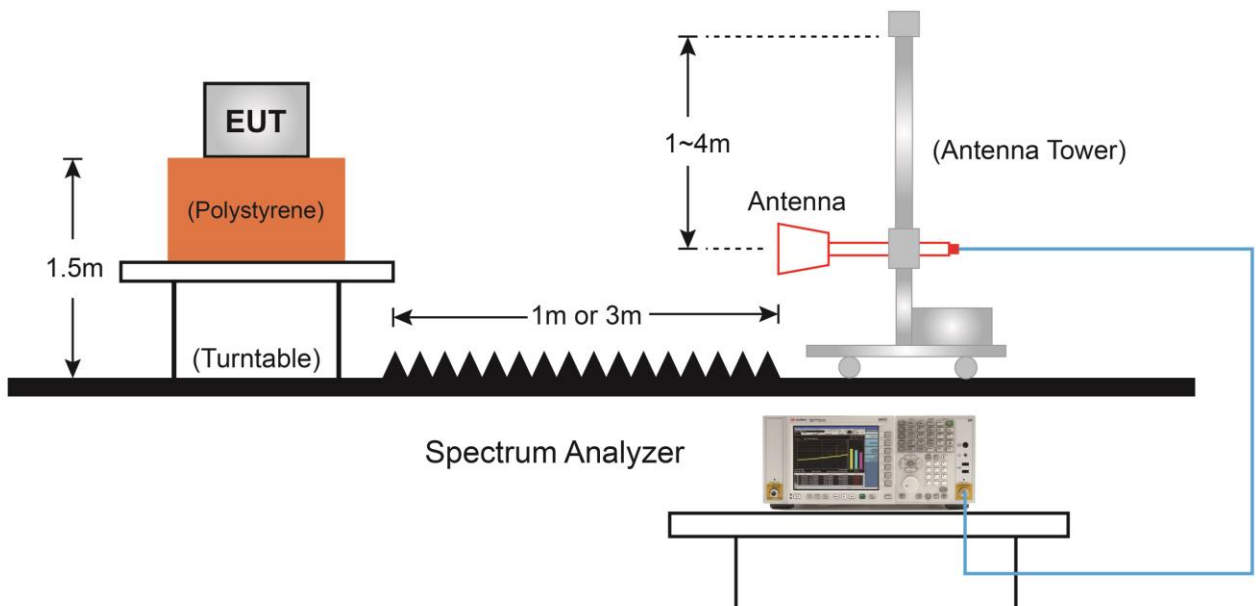
1. RBW = 100kHz or 1MHz
2. VBW $\geq 3 \times$ RBW
3. Sweep time $\geq 10 \times$ (number of points in sweep) \times (transmission symbol period)
4. Detector = Peak
5. Trace mode = max hold
6. The trace was allowed to stabilize

6.8.4. Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



6.8.5. Test Result

Product	AirScale Indoor Radio ASiR-pRRH	Test Engineer	Peter Xu
Test Site	AC1	Test Date	2019/05/10 ~ 2019/05/16
Test Item	WCDMA Band 2 _QPSK_Single Carrier		

Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
B2 Bottom CH_1932.4MHz							
141.1	14.1	15.6	29.7	82.3	-52.6	Peak	Horizontal
377.3	10.2	23.7	33.9	82.3	-48.4	Peak	Horizontal
179.9	12.1	17.0	29.1	82.3	-53.2	Peak	Vertical
375.3	7.4	23.6	31.0	82.3	-51.3	Peak	Vertical
4230.0	43.7	1.5	45.2	82.3	-37.1	Peak	Horizontal
7885.0	38.0	12.9	50.9	82.3	-31.4	Peak	Horizontal
4238.5	44.6	1.6	46.2	82.3	-36.1	Peak	Vertical
7893.5	37.6	12.9	50.5	82.3	-31.8	Peak	Vertical
B2 Middle CH_1960.0MHz							
142.5	14.6	15.6	30.2	82.3	-52.1	Peak	Horizontal
379.7	4.2	23.7	27.9	82.3	-54.4	Peak	Horizontal
137.7	17.3	15.8	33.1	82.3	-49.2	Peak	Vertical
385.5	6.4	23.8	30.2	82.3	-52.1	Peak	Vertical
4255.5	49.8	1.6	51.4	82.3	-30.9	Peak	Horizontal
7885.0	38.5	12.9	51.4	82.3	-30.9	Peak	Horizontal
4264.0	51.3	1.7	53.0	82.3	-29.3	Peak	Vertical
10647.5	35.7	18.3	54.0	82.3	-28.3	Peak	Vertical
B2 Top CH_1987.6MHz							
341.9	9.8	23.0	32.8	82.3	-49.5	Peak	Horizontal
376.8	10.5	23.7	34.2	82.3	-48.1	Peak	Horizontal
178.4	12.6	16.9	29.5	82.3	-52.8	Peak	Vertical
379.7	7.0	23.7	30.7	82.3	-51.6	Peak	Vertical
4238.5	42.3	1.6	43.9	82.3	-38.4	Peak	Horizontal
7910.5	40.5	12.9	53.4	82.3	-28.9	Peak	Horizontal
4230.0	42.7	1.5	44.2	82.3	-38.1	Peak	Vertical
7902.0	39.1	12.9	52.0	82.3	-30.3	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)							

Product	AirScale Indoor Radio ASiR-pRRH	Test Engineer	Peter Xu
Test Site	AC1	Test Date	2019/05/10 ~ 2019/05/16
Test Item	WCDMA Band 2 _QPSK_Multi Carrier		

Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
B2 Bottom CH_1932.4MHz + 1937.4MHz + 1942.4MHz							
341.9	10.4	23.0	33.4	82.3	-48.9	Peak	Horizontal
380.7	10.4	23.7	34.1	82.3	-48.2	Peak	Horizontal
142.5	15.8	15.6	31.4	82.3	-50.9	Peak	Vertical
379.7	7.3	23.7	31.0	82.3	-51.3	Peak	Vertical
7171.0	35.5	11.8	47.3	82.3	-35.0	Peak	Horizontal
10554.0	35.2	18.1	53.3	82.3	-29.0	Peak	Horizontal
6593.0	37.2	9.0	46.2	82.3	-36.1	Peak	Vertical
9797.5	33.9	15.3	49.2	82.3	-33.1	Peak	Vertical
B2 Middle CH_1955.0MHz + 1960.0MHz + 1965.0MHz							
142.0	14.3	15.6	29.9	82.3	-52.4	Peak	Horizontal
349.1	8.9	23.3	32.2	82.3	-50.1	Peak	Horizontal
138.2	17.1	15.8	32.9	82.3	-49.4	Peak	Vertical
377.7	7.7	23.7	31.4	82.3	-50.9	Peak	Vertical
7120.0	35.8	11.6	47.4	82.3	-34.9	Peak	Horizontal
11361.5	33.4	19.2	52.6	82.3	-29.7	Peak	Horizontal
7443.0	34.6	12.6	47.2	82.3	-35.1	Peak	Vertical
11140.5	33.5	19.1	52.6	82.3	-29.7	Peak	Vertical
B2 Top CH_1977.6MHz + 1982.6MHz + 1987.6MHz							
143.0	13.3	15.6	28.9	82.3	-53.4	Peak	Horizontal
341.4	9.5	23.0	32.5	82.3	-49.8	Peak	Horizontal
173.6	16.3	16.6	32.9	82.3	-49.4	Peak	Vertical
378.2	7.3	23.7	31.0	82.3	-51.3	Peak	Vertical
7145.5	35.6	11.7	47.3	82.3	-35.0	Peak	Horizontal
10860.0	33.6	18.8	52.4	82.3	-29.9	Peak	Horizontal
7927.5	35.1	12.9	48.0	82.3	-34.3	Peak	Vertical
11455.0	33.9	19.2	53.1	82.3	-29.2	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)

Product	AirScale Indoor Radio ASiR-pRRH	Test Engineer	Peter Xu
Test Site	AC1	Test Date	2019/05/10 ~ 2019/05/16
Test Item	WCDMA Band 66 _QPSK_Single Carrier		

Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
B66 Bottom CH_2112.5MHz							
142.0	14.2	15.6	29.8	82.3	-52.5	Peak	Horizontal
378.2	10.5	23.7	34.2	82.3	-48.1	Peak	Horizontal
138.2	16.5	15.8	32.3	82.3	-50.0	Peak	Vertical
380.2	6.2	23.7	29.9	82.3	-52.4	Peak	Vertical
8046.5	37.3	13.0	50.3	82.3	-32.0	Peak	Horizontal
10826.0	34.1	18.7	52.8	82.3	-29.5	Peak	Horizontal
7995.5	36.0	12.9	48.9	82.3	-33.4	Peak	Vertical
11276.5	34.3	19.2	53.5	82.3	-28.8	Peak	Vertical
B66 Middle CH_2145.0MHz							
144.0	10.7	15.6	26.3	82.3	-56.0	Peak	Horizontal
341.4	5.0	23.0	28.0	82.3	-54.3	Peak	Horizontal
183.7	11.4	17.6	29.0	82.3	-53.3	Peak	Vertical
376.3	7.9	23.7	31.6	82.3	-50.7	Peak	Vertical
7519.5	35.6	12.7	48.3	82.3	-34.0	Peak	Horizontal
10860.0	33.9	18.8	52.7	82.3	-29.6	Peak	Horizontal
6618.5	36.6	9.2	45.8	82.3	-36.5	Peak	Vertical
9415.0	36.6	14.6	51.2	82.3	-31.1	Peak	Vertical
B66 Top CH_2177.5MHz							
341.9	9.8	23.0	32.8	82.3	-49.5	Peak	Horizontal
380.2	10.2	23.7	33.9	82.3	-48.4	Peak	Horizontal
142.0	18.1	15.6	33.7	82.3	-48.6	Peak	Vertical
378.2	7.8	23.7	31.5	82.3	-50.8	Peak	Vertical
8709.5	35.7	13.7	49.4	82.3	-32.9	Peak	Horizontal
10851.5	34.4	18.7	53.1	82.3	-29.2	Peak	Horizontal
7171.0	36.4	11.8	48.2	82.3	-34.1	Peak	Vertical
10554.0	34.2	18.1	52.3	82.3	-30.0	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)

Product	AirScale Indoor Radio ASiR-pRRH	Test Engineer	Peter Xu
Test Site	AC1	Test Date	2019/05/10 ~ 2019/05/16
Test Item	WCDMA Band 66 _QPSK_Multi Carrier		

Frequency (MHz)	Reading Level (dBμV)	Factor (dB)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
B66 Bottom CH_2112.5MHz + 2117.5MHz + 2122.5MHz							
143.5	14.2	15.6	29.8	82.3	-52.5	Peak	Horizontal
377.3	10.4	23.7	34.1	82.3	-48.2	Peak	Horizontal
186.2	14.0	18.0	32.0	82.3	-50.3	Peak	Vertical
378.7	7.9	23.7	31.6	82.3	-50.7	Peak	Vertical
7171.0	35.5	11.8	47.3	82.3	-35.0	Peak	Horizontal
11115.0	34.1	19.1	53.2	82.3	-29.1	Peak	Horizontal
7315.5	33.7	12.2	45.9	82.3	-36.4	Peak	Vertical
10384.0	34.4	17.5	51.9	82.3	-30.4	Peak	Vertical
B66 Middle CH_2140.0MHz + 2145.0MHz + 2150.0MHz							
143.5	15.0	15.6	30.6	82.3	-51.7	Peak	Horizontal
378.7	10.4	23.7	34.1	82.3	-48.2	Peak	Horizontal
147.9	16.8	15.7	32.5	82.3	-49.8	Peak	Vertical
379.2	8.2	23.7	31.9	82.3	-50.4	Peak	Vertical
7987.0	36.1	12.9	49.0	82.3	-33.3	Peak	Horizontal
10809.0	33.9	18.7	52.6	82.3	-29.7	Peak	Horizontal
7171.0	35.5	11.8	47.3	82.3	-35.0	Peak	Vertical
10486.0	33.7	17.9	51.6	82.3	-30.7	Peak	Vertical
B66 Top CH_2167.5MHz + 2172.5MHz + 2177.5MHz							
147.9	16.8	15.7	32.5	82.3	-49.8	Peak	Horizontal
379.2	8.2	23.7	31.9	82.3	-50.4	Peak	Horizontal
142.5	17.5	15.6	33.1	82.3	-49.2	Peak	Vertical
380.2	7.5	23.7	31.2	82.3	-51.1	Peak	Vertical
7434.5	35.5	12.5	48.0	82.3	-34.3	Peak	Horizontal
9882.5	35.7	15.5	51.2	82.3	-31.1	Peak	Horizontal
6525.0	38.1	8.6	46.7	82.3	-35.6	Peak	Vertical
8131.5	36.6	13.0	49.6	82.3	-32.7	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)

7. CONCLUSION

The data collected relate only the item(s) tested and show that the **AirScale Indoor Radio**

ASiR-pRRH, FCC ID: 2AD8UAHFID01 is in compliance with FCC Rules.

The End