RF MEASUREMENT REPORT

FCC ID:	2AD8UAWHHC01
Application:	Nokia Solutions and Networks, OY
Product:	AirScale Indoor Radio ASiR 5G-pRRH
Model No.:	AWHHC
Brand Name:	Nokia
FCC Rule Part(s):	Part 2, 27 Subpart M
Result:	Complies
Received Date:	2022-04-03
Test Date:	2023-04-04 ~ 2023-04-13

Reviewed By: Sunny Sun

Approved By: Robin Wu

The test results relate only to the samples tested.

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C63.26-2015. Test results reported herein relate only to the item(s) tested.

Revision History

Report No.	Version	Description	Issue Date	Note
2304RSU004-U1	Rev. 01	Initial Report	2023-04-18	Valid

Note: This report is prepared for FCC Class II permissive supplement to FCC ID: 2AD8UAWHHC01 adding 5G NR 10MHz bandwidth and related data.

CONTENTS

1. General Information

1.1. Applicant

Nokia Solutions and Networks, OY

2000 W. Lucent Lane, Naperville, Illinois, United States, 60563

1.2. Manufacturer

Nokia Solutions and Networks, OY

2000 W. Lucent Lane, Naperville, Illinois, United States, 60563

1.3. Testing Facility

☒	**Test Site - MRT Suzhou Laboratory**				
	Laboratory Location (Suzhou - Wuzhong)				
	D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China				
	Laboratory Location (Suzhou - SIP)				
	4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China				
	Laboratory Accreditations				
	A2LA: 3628.01		CNAS: L10551		
	FCC: CN1166		ISED: CN0001		
	VCCI:	☐R-20025	☐G-20034	☐C-20020	☐T-20020
		☐R-20141	☐G-20134	☐C-20103	☐T-20104
☐	**Test Site - MRT Shenzhen Laboratory**				
	Laboratory Location (Shenzhen)				
	1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China				
	Laboratory Accreditations				
	A2LA: 3628.02		CNAS: L10551		
	FCC: CN1284		ISED: CN0105		
☐	**Test Site - MRT Taiwan Laboratory**				
	Laboratory Location (Taiwan)				
	No. 38, Fuxing 2nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)				
	Laboratory Accreditations				
	TAF: L3261-190725				
	FCC: 291082, TW3261		ISED: TW3261		

1.4. Product Information

Product Name	AirScale Indoor Radio ASiR 5G-pRRH
Model No.	AWHHC
Brand Name	Nokia
Operating Band (s)	5G NR Band n41, LTE Band 41
Power Supply Rating:	PoE (52.0 ~ 57.0Vdc)
Antenna Specification	Refer to Section 1.6
The information of EUT was provided by the manufacturer, and the accuracy of the information shall be the responsibility of the manufacturer.	

1.5. Radio Specification under Test

NR Band Specification	
Single Band	5G NR n41
T_X Frequency Range	2496 ~ 2690 MHz
R_X Frequency Range	2496 ~ 2690 MHz
Modulation	QPSK, 16QAM, 64QAM, 256QAM
Max EIRP Power	10 MHz: 41.63 dBm

1.6. Description of Available Antennas

Band Support	Antenna Type	Model	Antenna Gain (dBi)	Directional Gain (dBi)	
				2*2 MIMO	4*4 MIMO
NR n41 & LTE Band 41	Directional Antenna	G10804-06846	6.4	9.41	12.42

Remark:

1. The transmit signals are correlated, the directional gain = G_{ANT} + 10 log (N_{ANT}/N_{SS}) dBi, where N_{SS} = the number of independent spatial streams of data and G_{ANT} is the antenna gain in dBi.
2. This device supports both 2*2 T_X & 4*4 T_X modes of operation, configured by SW. When operating in 2*2 TX mode, only Ant 0 & 1 transmit ports are actively transmitting.

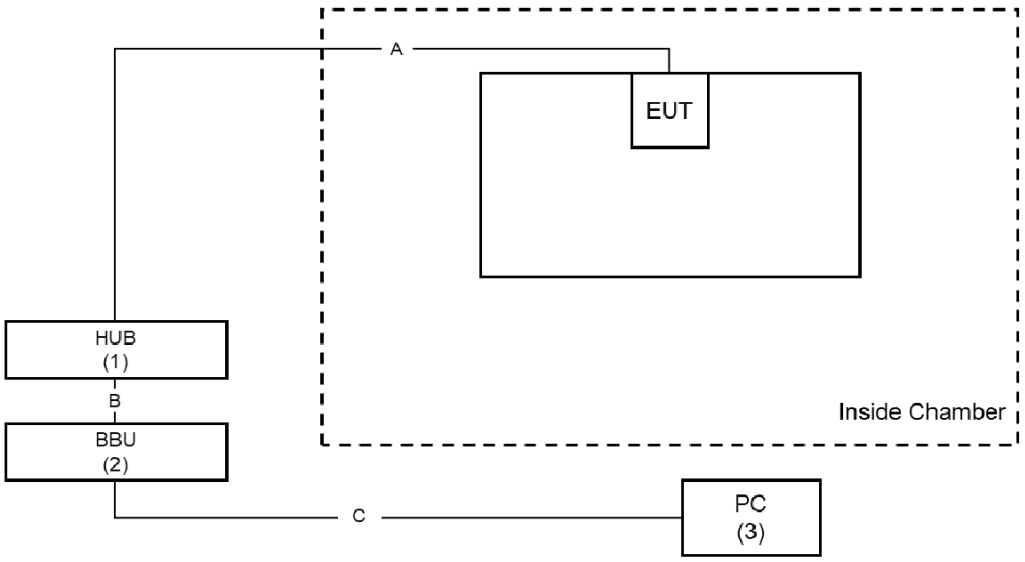
1.7. Test Methodology

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ANSI C63.26:2015
- FCC CFR 47 Part 2, Part 27
- FCC KDB 971168 D01 v03r01: Power Meas License Digital Systems
- FCC KDB 971168 D02 v02r01: Misc Rev Approv License Devices
- FCC KDB 412172 D01 v01r01: Determining ERP and EIRP
- FCC KDB 662911 D01 v02r01: Multiple Transmitter Output

2. Test Configuration

2.1. Test System Connection Diagram



No.	Cable Type	Cable Spec.	Length
A	LAN cable	Non-Shielding	Non-Shielding, >10.0m
B	Optical fiber cable	Non-Shielding	Non-Shielding, >10.0m
C	LAN cable	Non-Shielding	Non-Shielding, 2.0m
No.	Product	Manufacturer	Model No.
1	HUB	Nokia	ASIL+ABIO
2	BBU	Nokia	APHA
3	Personal Computer	HP	TPN-C143

2.2. Test Environment Condition

Ambient Temperature	15 ~ 35°C
Relative Humidity	20 ~ 75%RH

3. Measuring Instrument

Instrument Name	Manufacturer	Model No.	Asset No.	Cali. Interval	Cal. Due Date	Test Site
EMI Test Receiver	R&S	ESR7	MRTSUE06001	1 year	2023-12-28	WZ-AC1
TRILOG Antenna	Schwarzbeck	VULB 9162	MRTSUE06022	1 year	2023-05-20	WZ-AC2
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06023	1 year	2023-08-22	WZ-AC1
Preamplifier	Agilent	83017A	MRTSUE06076	1 year	2023-05-08	WZ-AC1
EMI Test Receiver	Agilent	N9038A	MRTSUE06125	1 year	2023-06-04	WZ-AC2
Thermohygrometer	Mingle	ETH529	MRTSUE06170	1 year	2023-11-27	WZ-AC2
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06171	1 year	2023-10-13	WZ-AC2
Thermohygrometer	testo	608-H1	MRTSUE11038	1 year	2023-11-01	WZ-AC2
Anechoic Chamber	RIKEN	WZ-AC2	MRTSUE06213	1 year	2023-04-21	WZ-AC2
Preamplifier	Schwarzbeck	BBV 9718	MRTSUE06176	1 year	2023-05-08	WZ-AC2
Anechoic Chamber	TDK	WZ-AC1	MRTSUE06212	1 year	2023-04-21	WZ-AC1
Thermohygrometer	testo	608-H1	MRTSUE06403	1 year	2023-06-06	WZ-AC1
Horn Antenna	Schwarzbeck	BBHA 9170	MRTSUE06597	1 year	2023-11-05	WZ-AC1
Signal Analyzer	Keysight	N9010B	MRTSUE06607	1 year	2023-12-28	WZ-AC1
Preamplifier	EMCI	EMC184045SE	MRTSUE06640	1 year	2024-01-12	WZ-AC1
Preamplifier	EMCI	EMC051845SE	MRTSUE06987	1 year	2023-09-08	WZ-AC1
TRILOG Antenna	Schwarzbeck	VULB 9168	MRTSUE06172	1 year	2023-06-21	WZ-AC1
Thermohygrometer	testo	608-H1	MRTSUE11039	1 year	2023-11-01	WZ-AC1
Temperature Chamber	BAOYT	BYH-150CL	MRTSUE06051	1 year	2023-10-08	WZ-TR3
Thermohygrometer	testo	608-H1	MRTSUE06401	1 year	2023-06-06	WZ-TR3
Signal Analyzer	Keysight	N9020B	MRTSUE06583	1 year	2023-10-08	WZ-SR6
Thermohygrometer	testo	608-H1	MRTSUE06362	1 year	2024-02-14	WZ-SR6
Shielding Room	HUAMING	WZ-SR6	MRTSUE06443	N/A	N/A	WZ-SR6
Attenuator	SHX	SMA10-20dB-18G	MRTSUE06697	1 year	2024-03-01	WZ
Attenuator	MVE	MVE2213	MRTSUE11083	1 year	2023-06-09	WZ
Attenuator	MVE	MVE2213	MRTSUE11084	1 year	2023-06-09	WZ

Software	Version	Function
EMI Software	V3.0.0	EMI Test Software
Controller_MF 7802	2.03C	RE Antenna & Turntable
Controller_MF 7802	1.02	RE Antenna & Turntable

4. Decision Rules and Measurement Uncertainty

4.1. Decision Rules

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4: 2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

4.2. Measurement Uncertainty

Where relevant, the following test uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k = 2.

Radiated Spurious Emissions
Measurement Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): Horizontal: 9kHz ~ 300MHz: 5.04dB 300MHz ~ 1GHz: 4.95dB 1GHz ~ 40GHz: 6.40dB Vertical: 9kHz ~ 300MHz: 5.24dB 300MHz ~ 1GHz: 6.03dB 1GHz ~ 40GHz: 6.40dB
Conducted Spurious Emissions
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 0.78dB
Output Power
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 1.13dB
Occupied Bandwidth
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 0.28%
Frequency Stability
Measuring Uncertainty for a Level of Confidence of 95% (U=2Uc(y)): 76.2Hz

5. Test Result

5.1. Summary

FCC Section(s)	Test Description	Test Condition	Verdict
2.1049.	Occupied bandwidth	Conducted	Pass
2.1055; 27.54.	Frequency Stability		Pass
2.1046	Peak to Average Ratio		Pass
2.1046; 27.50(h)(1)(i).	Equivalent Isotropically Radiated Power		Pass
2.1051; 27.53(m)(2)(v).	Transmitter unwanted emissions (Band Edge)		Pass
2.1051; 27.53(m)(2)(v).	Out-of-frequency Band unwanted Emissions	Conducted, Radiated	Pass

Notes:

1) The analyzer plots shown in this section were all taken with a correction table loaded into the analyzer. The correction table was used to account for the losses of the cables and attenuators used as part of the system to connect the EUT to the analyzer at all frequencies of interest.
2) Power spectral density of all modulations were evaluated, the worst-case emission of modulation was selected. The Occupied Bandwidth, Frequency Stability, Peak to Average Ratio and Conducted Spurious Emission were presented the worst test data of modultation & antenna port in the test report.
3) Here is only the different antenna between FCC ID “2AD8UAWHHA01” & “2AD8UAWHHC01”, and the other circuits are the same. This report reused the conducted measurements resluts of FCC ID “2AD8UAWHHA01”.

5.2. Occupied Bandwidth Measurement

5.2.1. Test Limit

The occupied bandwidth shall not exceed the equipment's channel bandwidth, which is declared by the manufacturer.

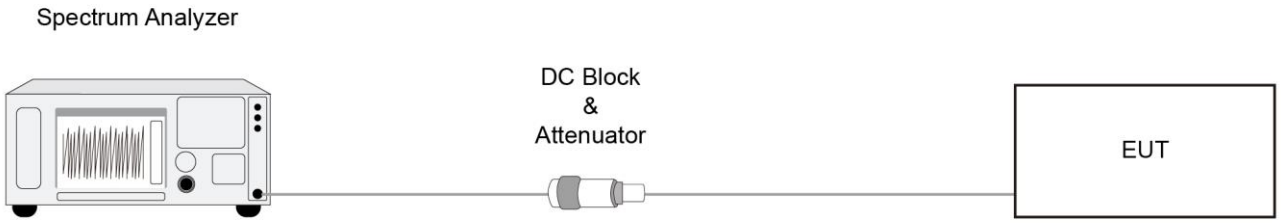
5.2.2. Test Procedure

ANSI C63.26-2015 - Section 5.4.4

5.2.3. Test Setting

1. Set center frequency to the nominal EUT channel center frequency
2. RBW = The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW
3. VBW ≥ 3 × RBW
4. Detector = Peak
5. Trace mode = max hold
6. Sweep = auto couple
7. Allow the trace to stabilize
8. Use the 99% power bandwidth function of the instrument and report the measured bandwidth.

5.2.4. Test Setup



5.2.5. Test Result

Refer to Appendix A.1.

5.3. Frequency Stability Measurement

5.3.1. Test Limit

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

5.3.2. Test Procedure

ANSI C63.26-2015 - Section 5.4 & 5.6

5.3.3. Test Setting

1. Use the occupied bandwidth function of the instrument and record the low edge for low channel occupancy bandwidth and the high edge for high channel occupancy bandwidth.
2. Change the temperature of equipment and repeat Steps 1.
3. Change the Voltage of equipment and repeat Steps 1.
4. Use the frequency error function of the instrument and record the frequency error.
5. Change the temperature of equipment and repeat Steps 4.
6. Change the Voltage of equipment and repeat Steps 4.

Frequency Stability Under Temperature Variations:

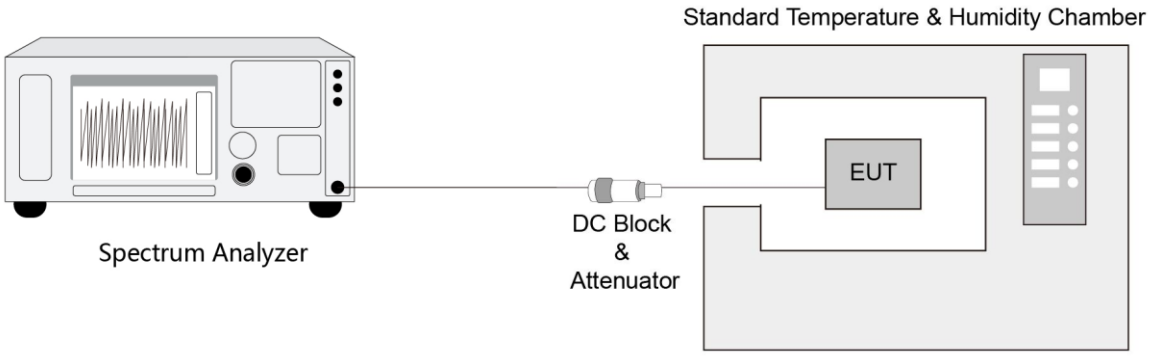
The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 20°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to highest. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C decreased per stage until the lowest temperature reached.

Frequency Stability Under Voltage Variations:

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation (±15%) and endpoint, recordthe maximum frequency change.

5.3.4. Test Setup



5.3.5. Test Result

Refer to Appendix A.2.

5.4. Peak to Average Ratio Measurement

5.4.1. Test Limit

A peak to average ratio measurement is performed at the conducted port of the EUT. The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The percent of time the signal spends at or above the level defines the probability for that particular power level.

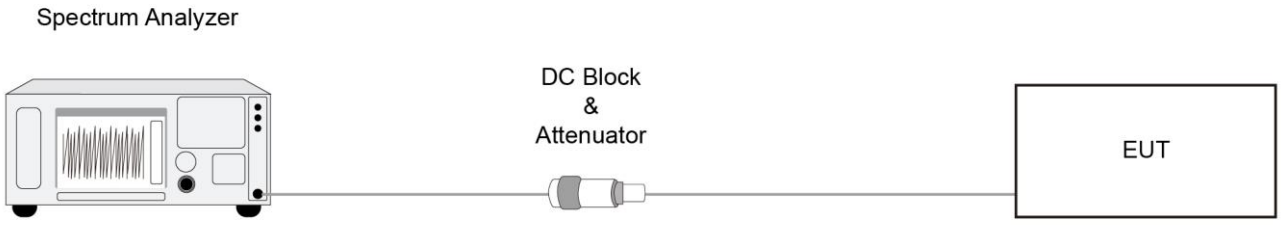
5.4.2. Test Procedure Used

ANSI C63.26-2015 - Section 5.2.3.4 (CCDF).

5.4.3. Test Setting

1. Set the resolution / measurement bandwidth ≥ 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%

5.4.4. Test Setup



5.4.5.Test Result

Refer to Appendix A.3.

5.5. Equivalent Isotropically Radiated Power Measurement

5.5.1. Test Limit

According to the specific rule 27.50(h)(1), the following power limits shall apply in the BRS and EBS: Main, booster and base stations.(i) The maximum EIRP of a main, booster or base station shall not exceed 33 dBW +10log(X/Y) dBW, where X is the actual channel width in MHz and Y is either 6 MHz if prior to transition or the station is in the MBS following transition or 5.5 MHz if the station is in the LBS and UBS following transition, except as provided in paragraph (h)(1)(ii) of this section.

For 10MHz Bandwidth: The EIRP limit = 33 + 30 + 10*log (10/6) = 62.22dBm

5.5.2. Test Procedure

ANSI C63.26-2015 - Section 5.2.4.2 & 5.2.5.5

5.5.3. Test Setting

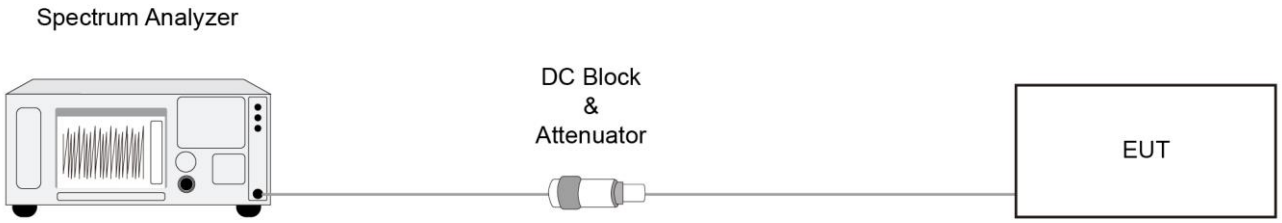
Average Power Measurement

Average power measurements were performed only when the EUT was transmitting at its maximum power control level using a broadband power meter with a pulse sensor. The power meter implemented triggering and gating capabilities which were set up such that power measurements were recorded only during the ON time of the transmitter.

Average Power Spectral Density Measurement

1. Span to 2 × to 3 × the OBW
2. RBW ≥ 1% to 5% of the OBW
3. VBW ≥ 3*RBW
4. Sweep time ≥ 10 × (number of points in sweep) × (transmission symbol period)
5. Detector = power averaging (rms)
6. Set sweep trigger to “free run”
7. If the EUT can be configured to transmit continuously, then set the trigger to free run
8. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple.
9. The trace was allowed to stabilize
10. Compute the power by integrating the spectrum across the OBW of the signal using the Instrument’s band power measurement function, with the band/channel limits set equal to the OBW band edges.
11. EIRP = Output Power Level of S.G - T_X Cable Loss + Antenna Gain of Substitution Antenna.

5.5.4. Test Setup



5.5.5. Test Result

Refer to Appendix A.4.

5.6. Band Edge Measurement

5.6.1. Test Limit

For all fixed digital user stations, the attenuation factor shall be not less than 43 + 10 log (P) dB at the channel edge.

Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

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

The limit is adjusted to -13dBm - 10*log(4) = -19.02dBm

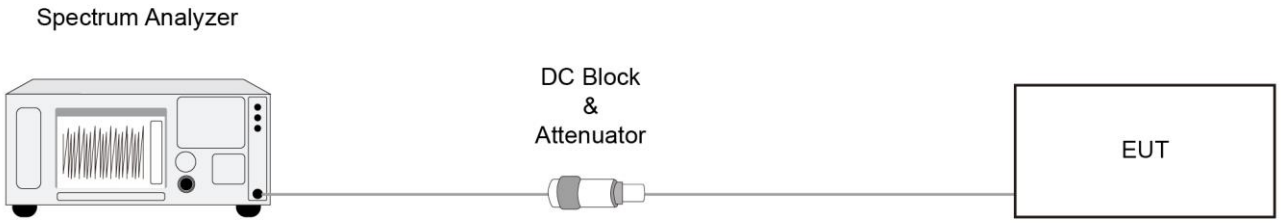
5.6.2. Test Procedure

ANSI C63.26-2015 - Section 5.7.1

5.6.3. Test Setting

1. Set the analyzer frequency to Bottom or Top channel.
2. RBW = The nominal RBW shall be in the range of 1% of the anticipated OBW;
3. VBW ≥ 3*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.
9. Used power integration when using a measurement bandwidth smaller than the specified bandwidth.

5.6.4. Test Setup



5.6.5. Test Result

Refer to Appendix A.5.

5.7. Conducted Spurious Emissions Measurement

5.7.1. Test Limit

For all fixed digital user stations, the attenuation factor shall be not less than 43 + 10 log (P) dB at the channel edge.

Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

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

The limit is adjusted to -13dBm - 10*log(4) = -19.02dBm

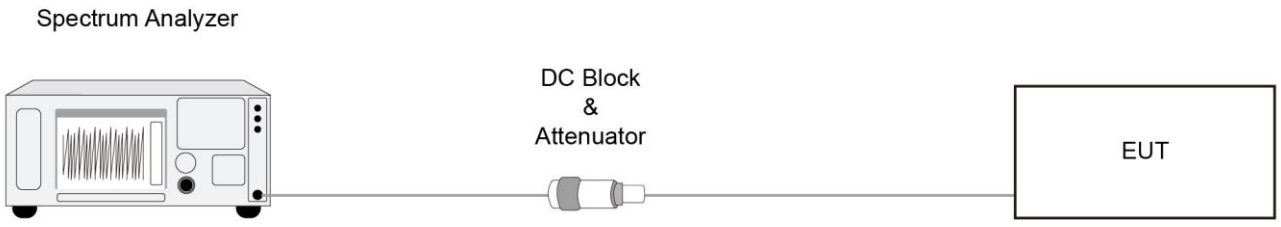
5.7.2. Test Procedure

ANSI C63.26-2015 - Section 5.7

5.7.3. Test Setting

1. Set the analyzer frequency to low or high channel.
2. RBW = 1MHz
3. VBW ≥ 3*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.

5.7.4. Test Setup



5.7.5. Test Result

Refer to Appendix A.6.

5.8. Radiated Spurious Emissions Measurement

5.8.1. Test Limit

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

E (dBμV/m) = EIRP (dBm) – 20 log D + 104.8; where D is the measurement distance in meters. The emission limit equal to 82.3dBμV/m.

5.8.2. Test Procedure

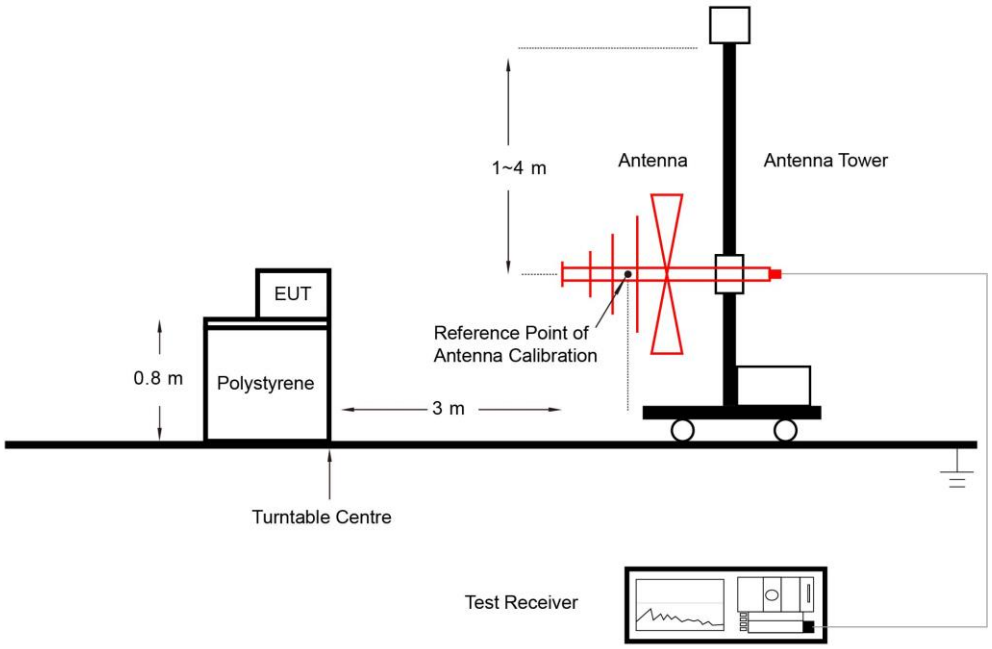
ANSI C63.26-2015 - Section 5.2.7 & 5.5

5.8.3. Test Setting

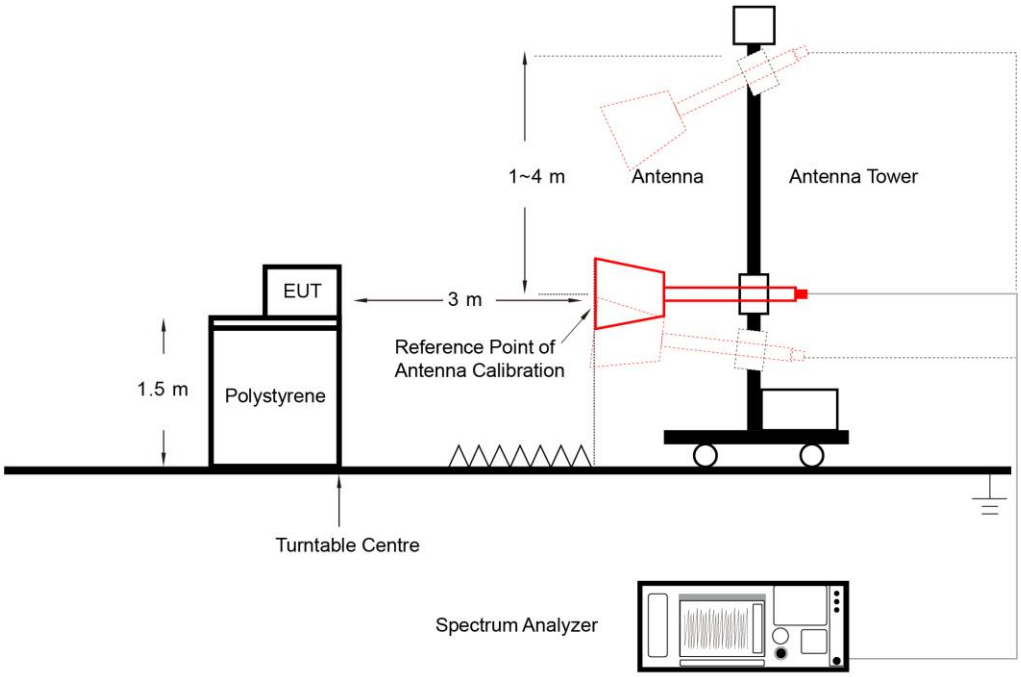
1. RBW = 100kHz or 1MHz
2. VBW≥ 3*RBW
3. Sweep time ≥ 10 × (number of points in sweep) × (transmission symbol period)
4. Detector = Peak
5. Trace mode = max hold
6. The trace was allowed to stabilize

5.8.4. Test Setup

Below 1GHz Test Setup:



Above 1GHz Test Setup:



5.8.5. Test Result

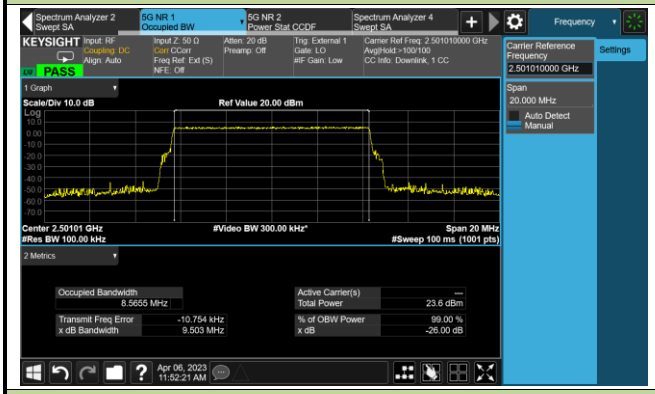
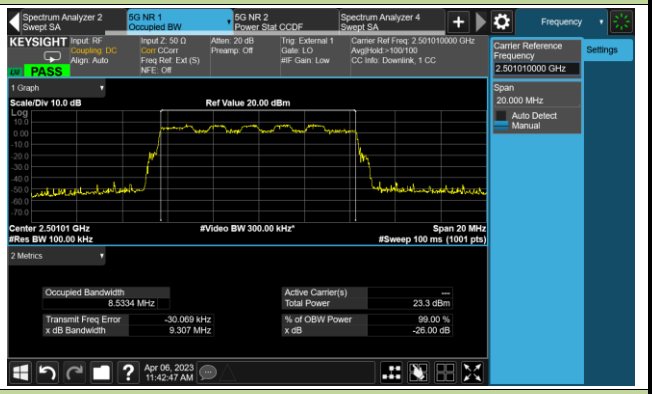
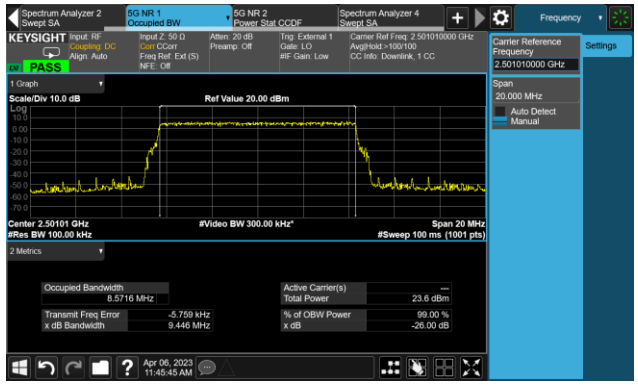
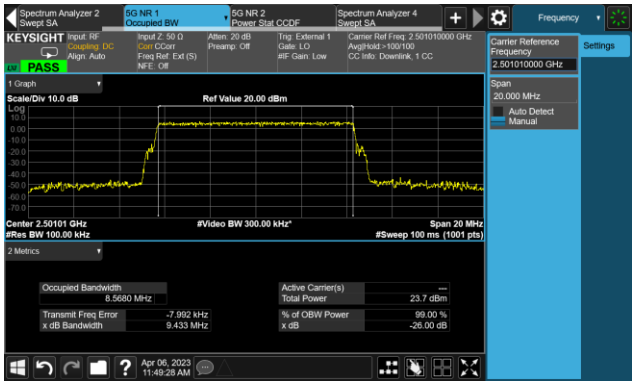
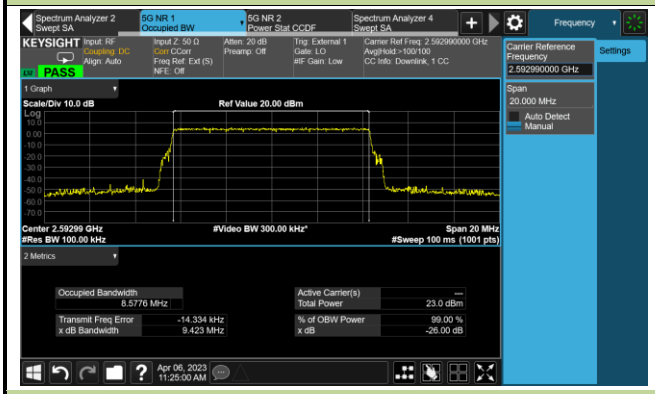
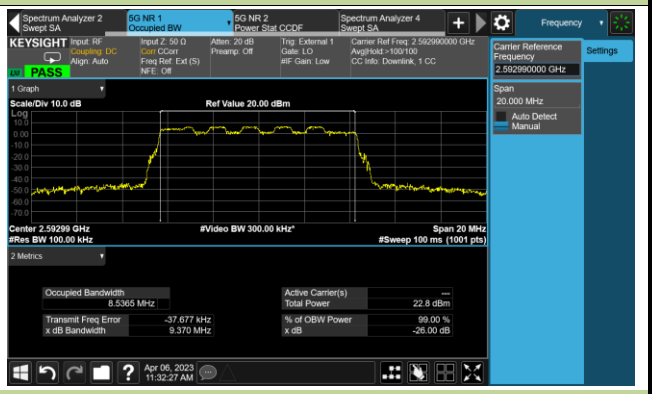
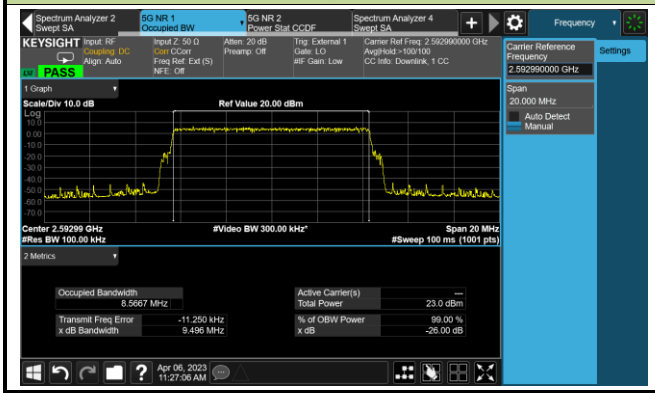
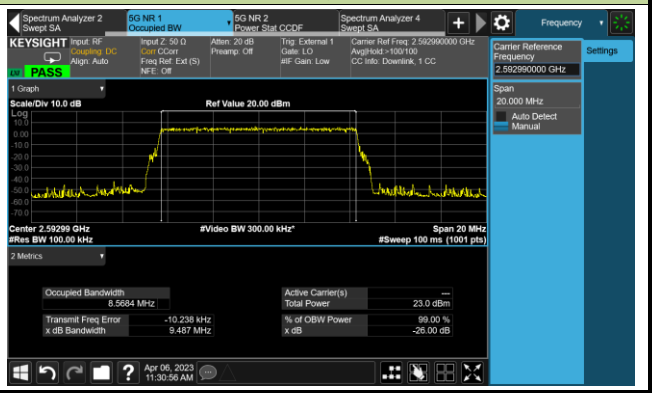
Refer to Appendix A.7.

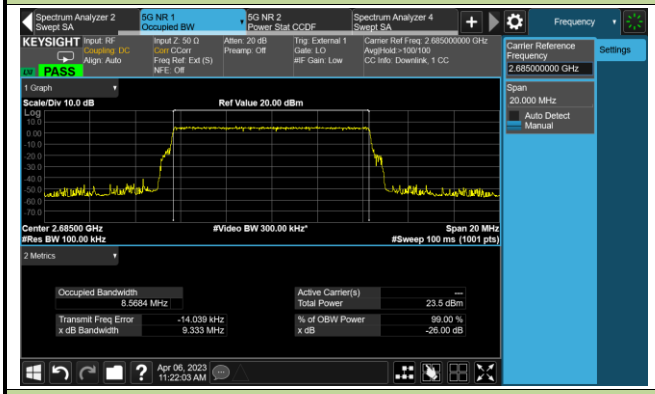
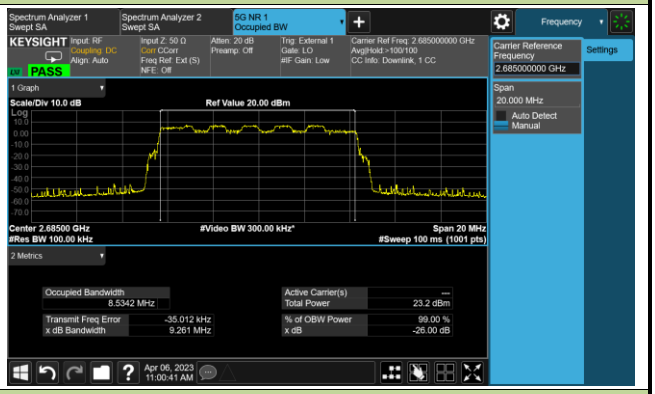
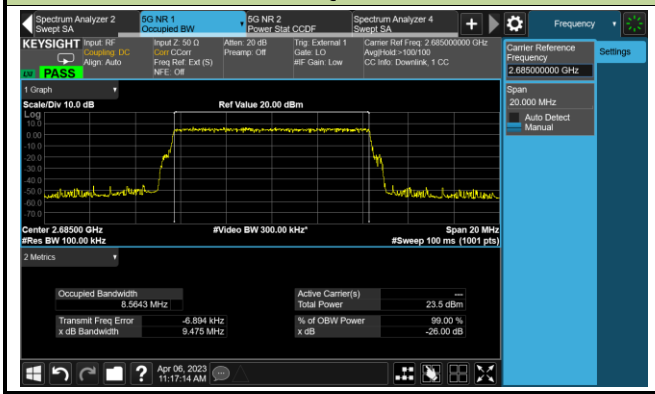
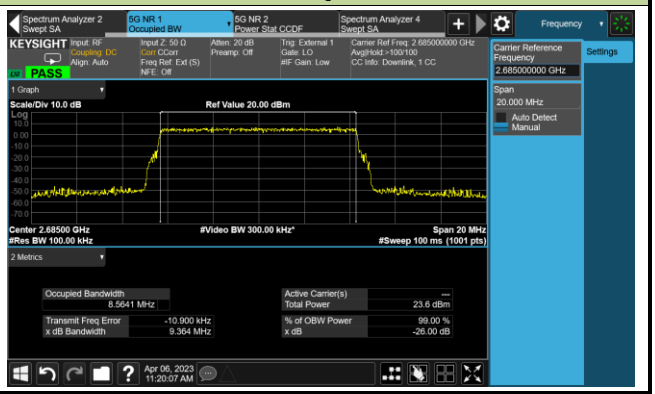
Appendix A - Test Result

A.1 Occupied Bandwidth Test Result

Test Site	WZ-SR6	Test Engineer	Larry Yan
Test Date	2023-04-06	Test Configuration	NR n41

Frequency (MHz)	Bandwidth (MHz)	99% Bandwidth (MHz)
QPSK		
2501.01	10	8.5655
2592.99	10	8.5776
2685.00	10	8.5684
16QAM		
2501.01	10	8.5334
2592.99	10	8.5365
2685.00	10	8.5342
64QAM		
2501.01	10	8.5716
2592.99	10	8.5667
2685.00	10	8.5643
256QAM		
2501.01	10	8.5680
2592.99	10	8.5684
2685.00	10	8.5641

10MHz Channel Bandwidth – 2501.01MHz	
QPSK	16QAM
	
64QAM	256QAM
	
10MHz Channel Bandwidth – 2592.99MHz	
QPSK	16QAM
	
64QAM	256QAM
	

10MHz Channel Bandwidth – 2685.00MHz	
QPSK	16QAM
	
64QAM	256QAM
	

A.2 Frequency Stability Measurement Test Result

Test Site	WZ-SR6	Test Engineer	Larry Yan
Test Date	2023-04-06 ~ 2023-04-12	Test Configuration	NR n41

Voltage	Temp (°C)	Frequency Range (MHz)		Frequency stability (ppm)	Within Authorized Frequency Block
		2496	2690		
		f_L	f_H		
Normal	+ 20 (Ref)	2496.7108	2689.2312	0	Pass
	+ 50	2496.7110	2689.2311	0.00005	Pass
	+ 40	2496.7109	2689.2312	0.00001	Pass
	+ 30	2496.7109	2689.2312	0.00002	Pass
	+ 10	2496.7107	2689.2312	-0.00005	Pass
	0	2496.7106	2689.2312	0.00004	Pass
	- 10	2496.7105	2689.2311	0.00001	Pass
	- 20	2496.7103	2689.2310	-0.00003	Pass
	- 30	2496.7101	2689.2308	-0.00003	Pass
15%	+ 20	2496.7108	2689.2313	-0.00002	Pass
-15%	+ 20	2496.7107	2689.2312	0.00002	Pass

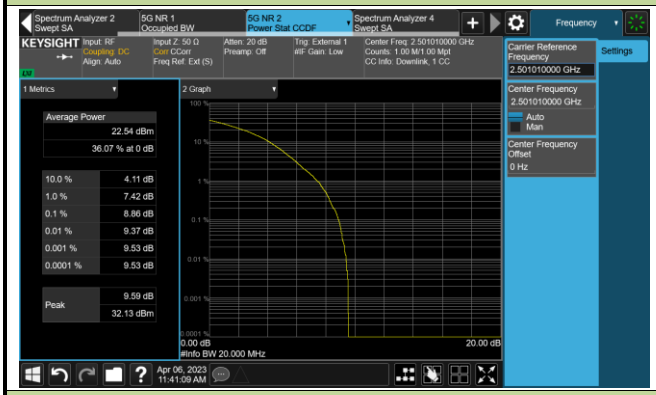
A.3 Peak to Average Ratio Measurement Test Result

Test Site	WZ-SR6	Test Engineer	Larry Yan
Test Date	2023-04-06	Test Configuration	NR n41

Frequency (MHz)	Channel Bandwidth (MHz)	Peak to Average Ratio (dB)	Limit (dB)	Result
2501.01	10	8.86	≤ 13.00	Pass
2592.99	10	8.92	≤ 13.00	Pass
2685.00	10	8.97	≤ 13.00	Pass

10MHz Channel Bandwidth

2501.01 MHz



2592.99 MHz

2685.00 MHz

A.4 Equivalent Isotropically Radiated Power Test Result

Test Site	WZ-SR6	Test Engineer	Larry Yan
Test Date	2023-04-04 ~ 2023-04-05	Test Configuration	NR n41_2*2 MIMO

Frequency (MHz)	Channel BW (MHz)	Output Power Density (dBm)		Total Power (dBm)	EIRP (dBm)	Limit (dBm)
		Ant 0	Ant 1			
QPSK						
2501.01	10	22.77	23.17	25.98	35.39	< 62.22
2592.99	10	23.14	23.35	26.26	35.67	< 62.22
2685.00	10	22.69	23.07	25.89	35.30	< 62.22
16QAM						
2501.01	10	22.53	22.98	25.77	35.18	< 62.22
2592.99	10	22.83	23.02	25.94	35.35	< 62.22
2685.00	10	22.63	22.84	25.75	35.16	< 62.22
64QAM						
2501.01	10	22.83	23.23	26.04	35.45	< 62.22
2592.99	10	23.13	23.34	26.25	35.66	< 62.22
2685.00	10	22.83	23.05	25.95	35.36	< 62.22
256QAM						
2501.01	10	22.92	23.23	26.09	35.50	< 62.22
2592.99	10	23.12	23.22	26.18	35.59	< 62.22
2685.00	10	22.90	23.13	26.03	35.44	< 62.22

Note 1: Total Power Density(dBm/MHz) = 10*log*{$10^{[\text{ANT 1 Power (dBm/MHz) / 10}]}$ + $10^{[\text{ANT 2 Power (dBm/MHz) / 10}]}$ + $10^{[\text{ANT 3 Power (dBm/MHz) / 10}]}$ + $10^{[\text{ANT 4 Power (dBm/MHz) / 10}]}$} (dBm/MHz).

Note 2: EIRP (dBm) = Total Power (dBm) + Directional Gain (dBi).

Test Site	WZ-SR6, WZ-TR3	Test Engineer	Larry Yan
Test Date	2023-04-04 ~ 2023-04-05	Test Configuration	NR n41

Frequency (MHz)	Channel BW (MHz)	Output Power Density (dBm)				Total Power (dBm)	EIRP (dBm)	Limit (dBm)
		Ant 0	Ant 1	Ant 2	Ant 3			
QPSK								
2501.01	10	22.77	23.17	23.48	23.09	29.16	41.58	< 62.22
2592.99	10	23.14	23.35	22.93	23.20	29.18	41.60	< 62.22
2685.00	10	22.69	23.07	23.38	23.10	29.09	41.51	< 62.22
16QAM								
2501.01	10	22.53	22.98	23.25	22.80	28.92	41.34	< 62.22
2592.99	10	22.83	23.02	22.65	22.96	28.89	41.31	< 62.22
2685.00	10	22.63	22.84	23.25	22.92	28.94	41.36	< 62.22
64QAM								
2501.01	10	22.83	23.23	23.48	23.09	29.18	41.60	< 62.22
2592.99	10	23.13	23.34	22.93	23.22	29.18	41.60	< 62.22
2685.00	10	22.83	23.05	23.48	23.21	29.17	41.59	< 62.22
256QAM								
2501.01	10	22.92	23.23	23.48	23.10	29.21	41.63	< 62.22
2592.99	10	23.12	23.22	22.87	23.24	29.14	41.56	< 62.22
2685.00	10	22.90	23.13	23.52	23.17	29.21	41.63	< 62.22

Note 1: Total Power Density(dBm/MHz) = 10*log*{$10^{[\text{ANT 1 Power (dBm/MHz) / 10}]}$ + $10^{[\text{ANT 2 Power (dBm/MHz) / 10}]}$ + $10^{[\text{ANT 3 Power (dBm/MHz) / 10}]}$ + $10^{[\text{ANT 4 Power (dBm/MHz) / 10}]}$} (dBm/MHz).

Note 2: EIRP (dBm) = Total Power (dBm) + Directional Gain (dBi).

A.5 Band Edge Test Result

Test Site	WZ-SR6	Test Engineer	Larry Yan
Test Date	2023-04-06	Test Configuration	NR n41

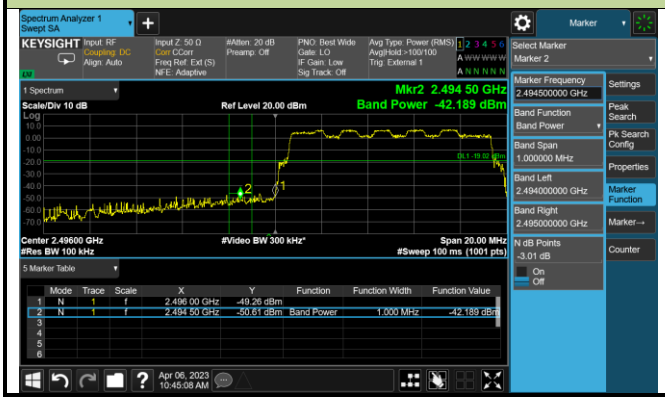
Frequency (MHz)	Max Band Edge (dBm)				Limit (dBm)	Result
	Ant 0	Ant 1	Ant 2	Ant 3		
2501.01	-43.196	-41.954	-42.189	-43.059	≤ -19.02	Pass
2685.00	-44.776	-44.020	-44.346	-44.576	≤ -19.02	Pass

10MHz Channel Bandwidth – 2501.01MHz

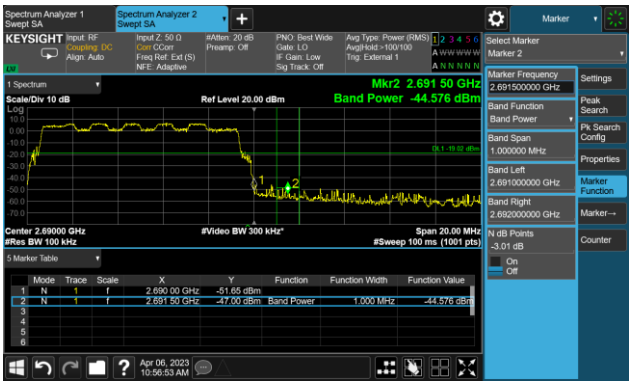
Ant 0

Ant 1

Ant 0



Ant 3

10MHz Channel Bandwidth – 2685.00MHz	
Ant 0	Ant 1
	
Ant 2	Ant 3
	

A.6 Conducted Spurious Emissions Test Result

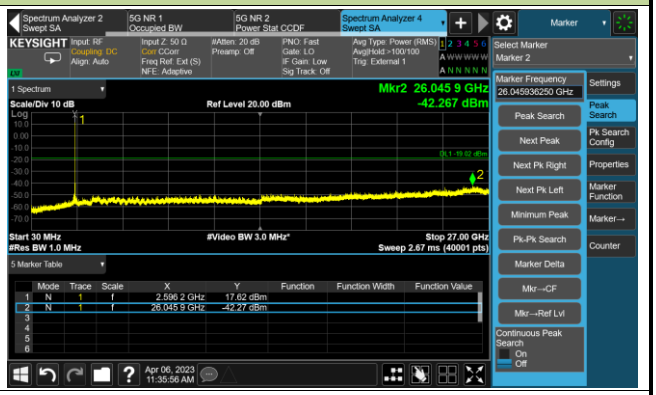
Test Site	WZ-SR6	Test Engineer	Larry Yan
Test Date	2023-04-06	Test Configuration	NR n41

Frequency (MHz)	Channel BW(MHz)	Frequency Range (MHz)	Max Spurious Emissions (dBm)	Limit (dBm)	Result
2501.01	10	30 ~ 27000	-43.735	≤ -19.02	Pass
2592.99	10	30 ~ 27000	-42.267	≤ -19.02	Pass
2680.00	10	30 ~ 27000	-43.001	≤ -19.02	Pass

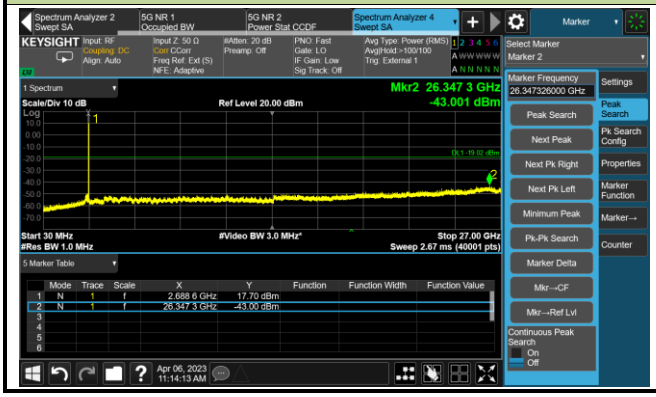
10MHz Channel Bandwidth

2501.01 MHz

2592.99 MHz



2685.00 MHz



Note: The amplitude of Conducted Spurious emissions (frequency range from 9kHz to 30MHz) is that proximity to ambient noise, which also are attenuated more than 20 dB below the permissible value. Therefore, the data is not presented in the report.

A.7 Radiated Spurious Emissions Test Result

Test Site	WZ-AC2	Test Engineer	Bob Zhang
Test Date	2023-04-07 ~ 2023-04-12	Test Configuration	NR n41_10MHz

Frequency (MHz)	Reading Level (dBμV)	Factor (dB/m)	Measure Level (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Detector	Polarization
Low Channel							
382.60	9.36	22.89	32.25	82.30	-50.05	Peak	Horizontal
671.66	2.43	27.99	30.42	82.30	-51.88	Peak	Horizontal
293.84	8.04	20.81	28.85	82.30	-53.45	Peak	Vertical
769.63	2.83	29.36	32.19	82.30	-50.11	Peak	Vertical
7009.50	31.89	10.26	42.15	82.30	-40.15	Peak	Horizontal
14200.50	31.05	20.06	51.11	82.30	-31.19	Peak	Horizontal
8828.50	32.88	13.33	46.21	82.30	-36.09	Peak	Vertical
14744.50	31.70	19.96	51.66	82.30	-30.64	Peak	Vertical
Middle Channel							
142.04	8.81	15.15	23.96	82.30	-58.34	Peak	Horizontal
383.08	9.47	22.90	32.37	82.30	-49.93	Peak	Horizontal
64.92	13.02	18.40	31.42	82.30	-50.88	Peak	Vertical
291.90	9.30	20.79	30.09	82.30	-52.21	Peak	Vertical
10528.50	31.91	15.72	47.63	82.30	-34.67	Peak	Horizontal
14804.00	31.02	20.69	51.71	82.30	-30.59	Peak	Horizontal
9891.00	33.77	14.00	47.77	82.30	-34.53	Peak	Vertical
14404.50	31.48	20.00	51.48	82.30	-30.82	Peak	Vertical
High Channel							
141.55	7.36	15.15	22.51	82.30	-59.79	Peak	Horizontal
391.81	8.88	22.99	31.87	82.30	-50.43	Peak	Horizontal
142.52	9.20	15.16	24.36	82.30	-57.94	Peak	Vertical
898.64	1.89	31.15	33.04	82.30	-49.26	Peak	Vertical
10401.00	32.72	15.70	48.42	82.30	-33.88	Peak	Horizontal
14583.00	31.56	19.99	51.55	82.30	-30.75	Peak	Horizontal
8854.00	32.51	13.54	46.05	82.30	-36.25	Peak	Vertical
14336.50	31.77	19.88	51.65	82.30	-30.65	Peak	Vertical

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

Factor (dB/m) = Cable Loss (dB) + Antenna Factor (dB/m).

Appendix B - Test Setup Photograph

Refer to “2304RSU004-UT” file.

Appendix C - EUT Photograph

Refer to “2304RSU004-UE” file.

The End