TEST REPORT

Application No.:	FYCR2204000114AT
Applicant:	Mavenir Systems Inc
Address of Applicant:	1700 International Pkwy Ste 200, Richardson Texas 75081 United States
Manufacturer:	Mavenir Systems Inc
Address of Manufacturer:	1700 International Pkwy Ste 200, Richardson Texas 75081 United States
Factory:	Kunshan luxshare RF Techonology Co., Ltd.
Address of Factory:	No.99 Xubang Road, Wuzhong District, Suzhou City 215324 Jiangsu P.R. China
Equipment Under Test (EUT):	
EUT Name:	Remote Radio Unit
Model No.:	MU44UA
Trademark:	Mavenir Systems, Inc.
FCC ID:	2AWAS-MU44UA
Standard(s) :	47 CFR Part 2
	47 CFR Part 96
Date of Receipt:	2022-04-27
Date of Test:	2022-05-04 to 2022-09-14
Date of Issue:	2022-09-15
Test Result:	**Pass**

* In the configuration tested, the EUT complied with the standards specified above.

Winkey Wang
EMC Technical Manager

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2020-09-15		Original

Authorized for issue by:				
		Tree Zhan **Tree Zhan/Project Engineer**		
		Winkey Wang **Winkey Wang/Reviewer**		

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2 Test Summary

Test Item	FCC Rule No.	Requirements	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §96.41	EIRP≤ 47dBm/10MHz PSD≤ 37dBm/MHz (NR Band 48)	PASS
Peak-to-average power ratio	§96.41	≤13dB	PASS
Bandwidth	§96.41	OBW: No limit EBW: No limit	PASS
Band Edge Compliance	§2.1051, §96.41	0-10 MHz: -13 dBm; 10-operating band edge MHz: -25 dBm; other: -40 dBm	PASS
Spurious emissions at antenna terminals	§2.1051, §96.41	≤ -40dBm (NR Band 48)	PASS
Field strength of spurious radiation	§2.1051, §96.41	≤ -40dBm (NR Band 48)	PASS
Frequency stability	§2.1055,	Fundamental emission stays within authorized frequency block	PASS

3 Contents

4 General Information

4.1 Details of E.U.T.

Power supply:	Rated Input Voltage of -48V DC, Power Consumption<=140W
Test voltage:	DC -48V
Sample Type:	Remote Radio Unit
5G NR Operation Frequency Band:	N48
Frequency range:	3550-3700 MHz
Modulation Type:	QPSK/16QAM/64QAM/256QAM
NR Max Radiated Power:	37dBm/MHz
NR Radio Output Power:	Maximum 37dBm (5W) per port
CA Capability MIMO:	DL 6CC 4X4 MIMO DL 5CC 4X4 MIMO DL 4CC 4X4 MIMO DL 3CC 4X4 MIMO DL 2CC 4X4 MIMO DL 1CC 4X4 MIMO UL 2CC 4X4 MIMO UL 1CC 4X4 MIMO Support Intra-band contiguous/non-contiguous CA and support UL MIMO
Antenna Type:	Sector Antenna Ant 4: TX & RX Ant 3: TX & RX Ant 2: TX & RX Ant 1: TX & RX
Antenna Gain:	Range 4dBi ~ 18dBi

4.2 Test Frequency

Configuration	Carrier	Carrier Bandwidth	Modulation	Carrier Frequency Configuration (MHz)		
				Bottom	Middle	Top
NR single	1C	10MHz	QPSK	3555	3625	3695
	1C	20MHz	QPSK	3560	3625	3690
	2C	10MHz	QPSK	3555+3565	3620+3630	3685+3695
	2C	20MHz	QPSK	3560+3580	3615+3635	3670+3690
	2C	10MHz	QPSK	3555+3695		
	2C	20MHz	QPSK	3560+3690		
	3C	10MHz	QPSK	3555+3565+3695		
	3C	20MHz	QPSK	3560+3580+3690		
	3C	10MHz	QPSK	3555+3685+3695		
	3C	20MHz	QPSK	3560+3670+3690		
	3C	10MHz	QPSK	3595+3625+3665		
	3C	20MHz	QPSK	3590+3630+3690		
	4C	10MHz	QPSK	3595+3615+3635+3655		
	4C	20MHz	QPSK	3560+3580+3620+3680		
	5C	10MHz	QPSK	3555+3565+3575+3585+3595	3605+3615+3625+3635+3645	3655+3665+3675+3685+3695
	5C	20MHz	QPSK	3560+3580+3600+3620+3640	3585+3605+3625+3645+3665	3610+3630+3650+3670+3690
	6C	10MHz	QPSK	3555+3565+3575+3585+3595+3695		
	6C	20MHz	QPSK	3560+3580+3600+3620+3640+3690		
Remark:	All modulation had been tested, only show the worst case modulation QPSK in this report.					

4.3 Test Environment

Environment Parameter	Selected Values During Tests	
Relative Humidity	52%	
Atmospheric Pressure:	1015Pa	
Temperature:	TL	-30 °C
	TN	+20 °C
	TH	+50°C
Voltage:	VL	-36.0 V
	VN	-48.0 V
	VH	-58.5 V

NOTE: VL= lower extreme test voltage, VN= nominal voltage
VH= upper extreme test voltage, TL= lower extreme test temperature
TN= normal temperature, TH= upper extreme test temperature

4.4 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Laptop	Lenovo	3420	00330-80000-00000-AA562
Mouse	Lenovo	M-U0025-O	REF. No.:SEA24A00
Optical fiber	Supported by customer	N/A	N/A
DC cable	Supported by customer	N/A	N/A

4.5 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	± 7.25 x 10^{-8}
2	Duty cycle	± 0.37%
3	Occupied Bandwidth	± 3%
4	RF conducted power	± 0.75dB
5	RF power density	± 2.84dB
6	Conducted Spurious emissions	± 0.75dB
7	RF Radiated power	± 4.5dB (below 1GHz)
		± 4.8dB (above 1GHz)
8	Radiated Spurious emission test	± 4.5dB (Below 1GHz)
		± 4.8dB (Above 1GHz)
9	Temperature test	± 1°C
10	Humidity test	± 3%
11	Supply voltages	± 1.5%
12	Time	± 3%

4.6 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc. Shenzhen branch.

Fuyong lab. Xinlong TechnoPark,Fengtang Road, Fuyong Subdistrict, Bao'an, Shenzhen, China

Tel: +86 755 8866 3988 Fax: +86 755 2671 0594

No tests were sub-contracted.

4.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• **A2LA (Certificate No. 6606.01)**

Compliance Certification Services (Kunshan) Inc. Shenzhen branch is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 6606.01.

• **FCC –Designation Number: CN1322**

Compliance Certification Services (Kunshan) Inc. Shenzhen branch has been recognized as an accredited testing laboratory.

Designation Number: CN1322. Test Firm Registration Number: 718073

• **Innovation, Science and Economic Development Canada**

Compliance Certification Services (Kunshan) Inc. Shenzhen branch has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0129.

IC#: 28189.

4.8 Deviation from Standards

None

4.9 Abnormalities from Standard Conditions

None

5 Equipment List

RF test system					
Test Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal. Date**	**Cal. Due date**
Shielding Room	CRT	N/A	SEM001-14	2021-07-13	2024-07-12
Spectrum Analyzer(10Hz-26.5GHz)	Agilent	N9020A	SEM004-17	2022-04-07	2023-04-06
MXA Signal Analyzer (10Hz-50GHz)	KEYSIGHT	N9020B	SEM004-24	2022-04-24	2023-04-23
Spectrum Analyzer(10Hz-44GHz)	Agilent	N9010A	SEM004-12	2022-04-07	2023-04-06
DC Power Supply	Chroma	62012P-80-60	SEM011-11	2021-10-21	2022-10-20
Humidity/ Temperature Indicator	Anymetre	TH101B	SEM002-09	2021-09-14	2022-09-13
Coaxial Cable	SGS	N/A	SEM033-02	2022-05-16	2023-05-15

Radiated Emissions (30MHz-1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
3m Anechoic Chamber	CRT	N/A	SEM001-13	2021-07-13	2024-07-12
Trilog-Broadband Antenna(25MHz-2GHz)	Schwarzbeck	VULB9168	SEM003-33	2021-09-25	2024-09-24
MXE EMI receiver(20Hz-8.4GHz)	Agilent	N9038A	SEM004-05	2021-07-13	2022-07-12
MXE EMI receiver(20Hz-8.4GHz)	Agilent	N9038A	SEM004-05	2022-07-12	2023-07-11
Pre-amplifier (0.1-1.3GHz)	HP	8447D	SEM005-02	2021-07-13	2022-07-12
Pre-amplifier (0.1-1.3GHz)	HP	8447D	SEM005-02	2022-07-12	2023-07-11
Spectrum Analyzer(20Hz-43GHz)	Rohde & Schwarz	101288	SEM004-08	2021-07-13	2022-07-12
Spectrum Analyzer(20Hz-43GHz)	Rohde & Schwarz	101288	SEM004-08	2022-07-12	2023-07-11
Low Noise Amplifier(100MHz-18GHz)	CLAVIIO	BDLNA-0118-352810	SEM005-05	2021-07-13	2022-07-12
Low Noise Amplifier(100MHz-18GHz)	CLAVIIO	BDLNA-0118-352810	SEM005-05	2022-07-12	2023-07-11
Coaxial Cable	SGS	N/A	SEM033-02	2022-05-16	2023-05-15

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Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
MXG Analog Signal Generator(100kHz-6GHz)	Agilent	N5181A	SEM006-16	2021-09-15	2022-09-14
Substitution Antenna	Schwarzbeck	VULB9168	SEM003-18	2021-10-28	2024-10-27

Radiated Emissions (Above 1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
3m Anechoic Chamber	CRT	N/A	SEM001-13	2021-07-13	2024-07-12
MXE EMI receiver(20Hz-8.4GHz)	Agilent	N9038A	SEM004-05	2021-7-13	2022-7-12
MXE EMI receiver(20Hz-8.4GHz)	Agilent	N9038A	SEM004-05	2022-07-12	2023-07-11
Broad-Band Horn Antenna (15-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2021-7-11	2024-7-10
Broad-Band Horn Antenna (1-18GHz)	Schwarzbeck	BBHA 9120D	SEM003-32	2021-9-26	2024-9-25
Spectrum Analyzer(20Hz-43GHz)	Rohde & Schwarz	101288	SEM004-08	2021-7-13	2022-7-12
Spectrum Analyzer(20Hz-43GHz)	Rohde & Schwarz	101288	SEM004-08	2022-07-12	2023-07-11
Low Noise Amplifier(100MHz-18GHz)	CLAVIIO	BDLNA-0118-352810	SEM005-05	2021-7-13	2022-7-12
Low Noise Amplifier(100MHz-18GHz)	CLAVIIO	BDLNA-0118-352810	SEM005-05	2022-07-12	2023-07-11
Pre-amplifier(26GHz-40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2021-7-13	2022-7-12
Pre-amplifier(26GHz-40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2022-07-12	2023-07-11
Pre-amplifier(18GHz-26GHz)	Rohde & Schwarz	CH14-H052	SEM005-17	2021-7-13	2022-7-12
Pre-amplifier(18GHz-26GHz)	Rohde & Schwarz	CH14-H052	SEM005-17	2022-07-12	2023-07-11
Coaxial Cable	SGS	N/A	SEM033-02	2022-05-16	2023-05-15
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
MXG Analog Signal Generator(100kHz-6GHz)	Agilent	N5181A	SEM006-16	2021-09-15	2022-09-14

Substitution Antenna	ETS-Lindgren	3142C	SEM003-01	2021-09-17	2024-09-16
Substitution Antenna	Rohde&Schwarz	HF907	SEM003-06	2022-08-07	2025-08-06

General used equipment					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Humidity/ Temperature Indicator	Mingle	TH607	SEM002-22	2021-09-14	2022-09-13
Humidity/ Temperature Indicator	Mingle	TH607	SEM002-23	2021-09-14	2022-09-13
Barometer	DUMAI	DYM3	SEM002-24	2021-09-14	2022-09-13

6 Radio Spectrum Matter Test Results

6.1 Effective (Isotropic) Radiated Power Output Data

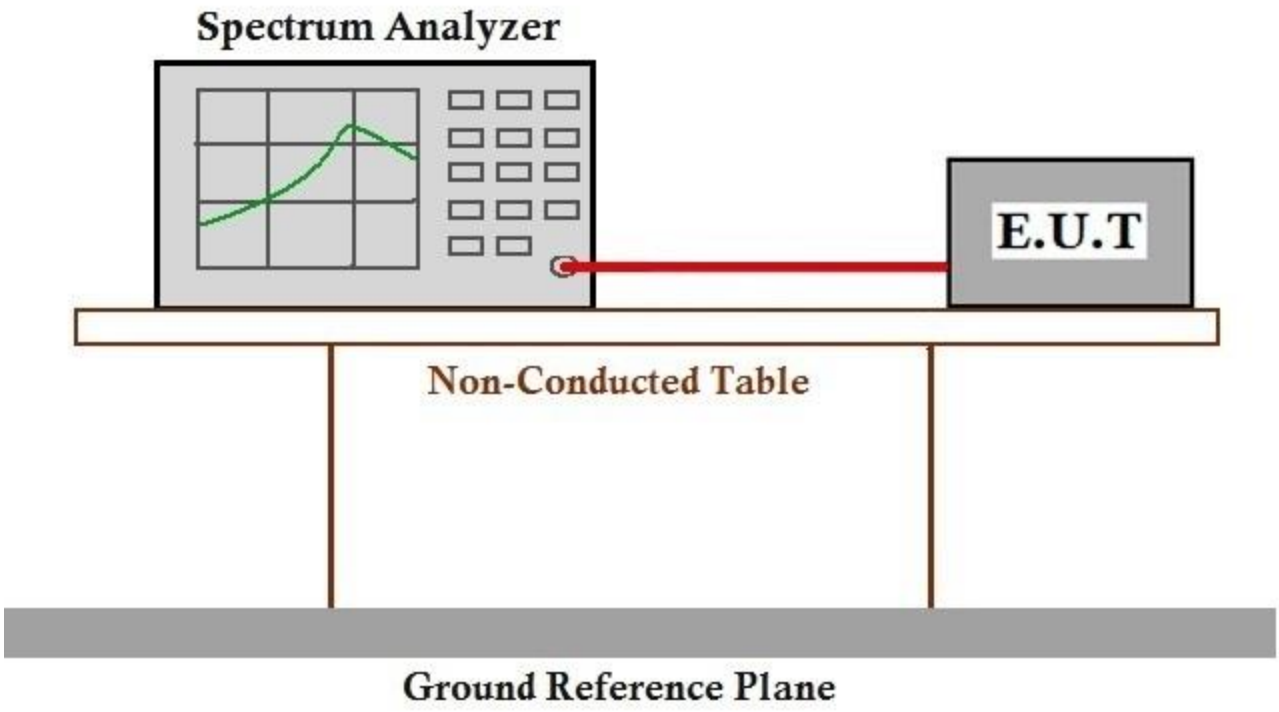
Test Requirement: §2.1046, §96.41
Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01
Limit: EIRP≤ 47dBm/10MHz, PSD≤ 37dBm/MHz (NR Band 48)

6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 °C Humidity: 68.1 % RH Atmospheric Pressure: 1020 mbar

6.1.2 Test Setup Diagram



6.1.3 Measurement Data

Please refer to Appendix A- Output power & PSD_NR.

6.2 Peak-to-average power ratio

Test Requirement: §96.41

Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01

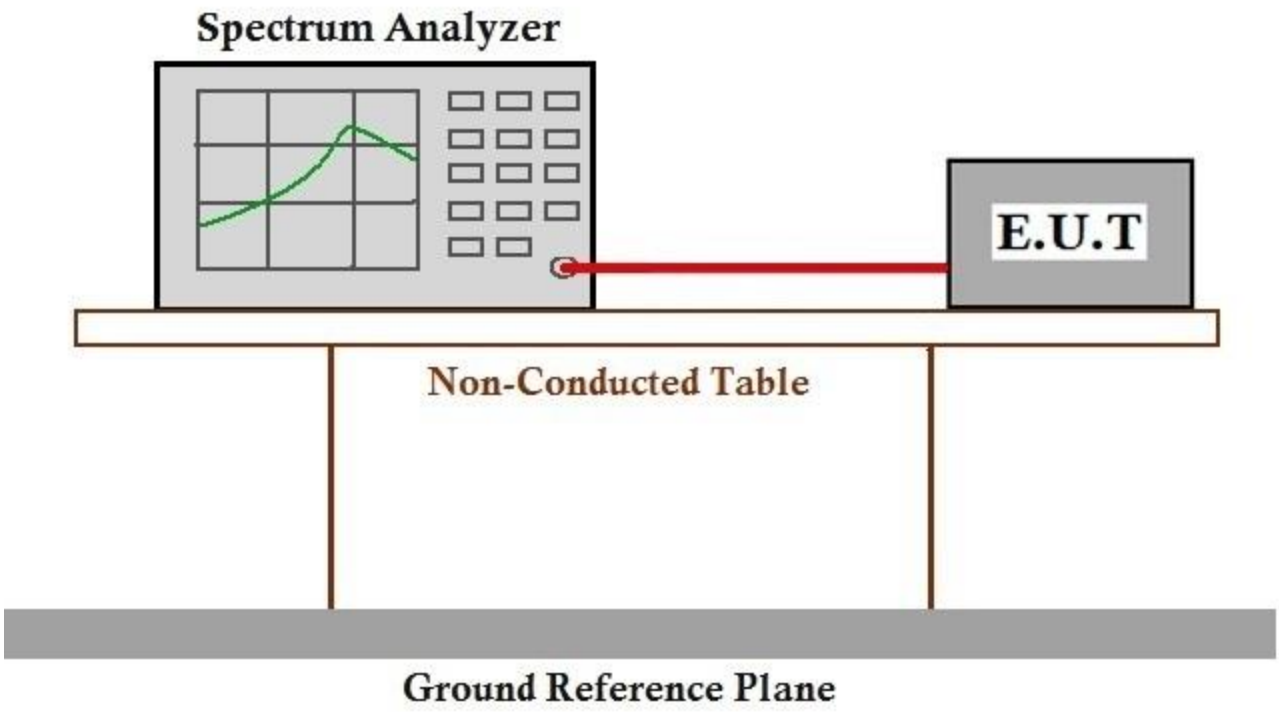
Limit: ≤13dB

6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 C Humidity: 68.1 % RH Atmospheric Pressure: 1020 mbar

6.2.2 Test Setup Diagram



6.2.3 Measurement Data

Please refer to Appendix B- Peak-Average Ratio_NR.

6.3 Bandwidth

Test Requirement: §2.1049(h)

Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01

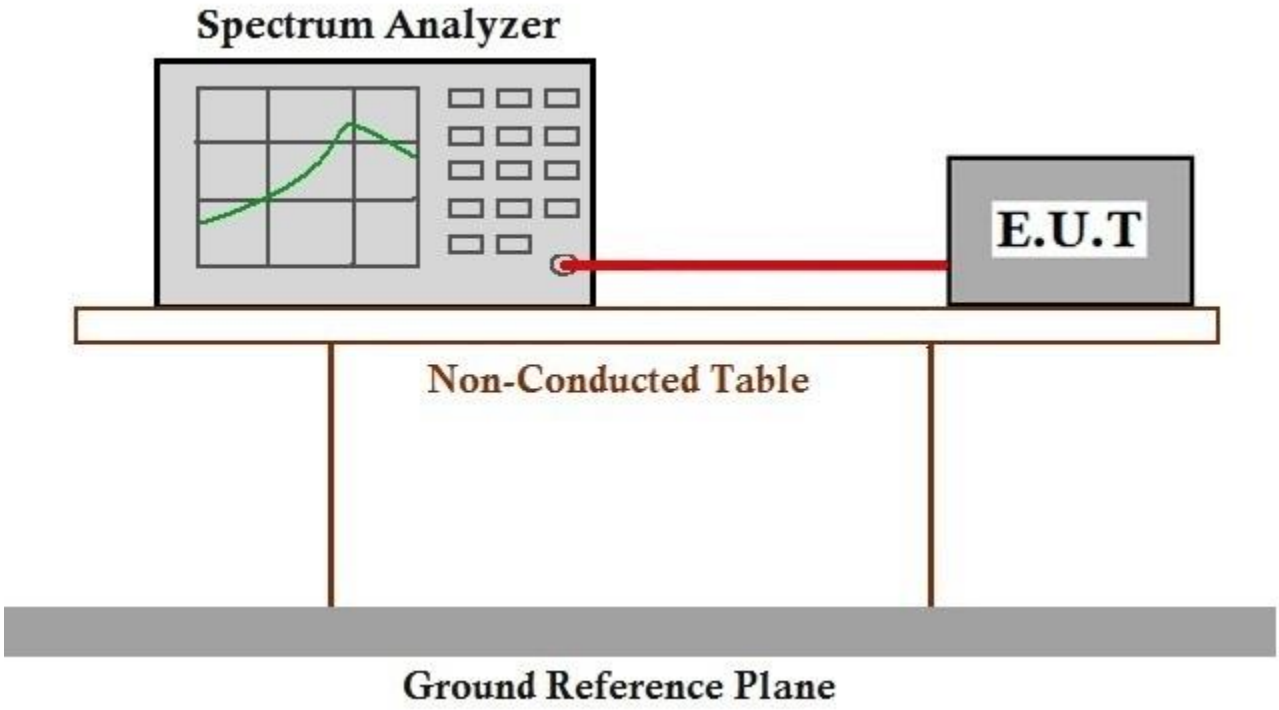
Limit: OBW: No limit
EBW: No limit

6.3.1 E.U.T. Operation

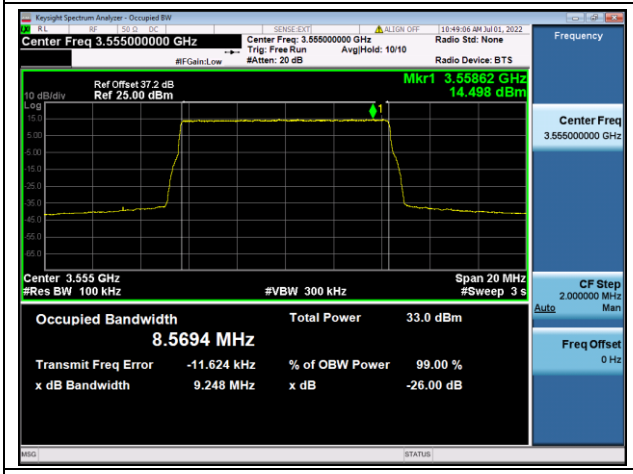
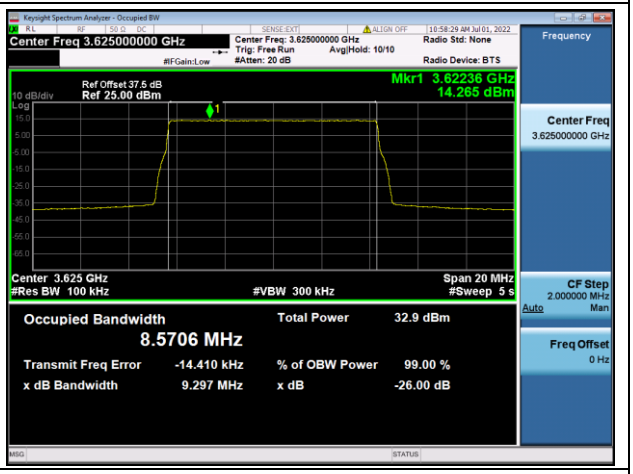
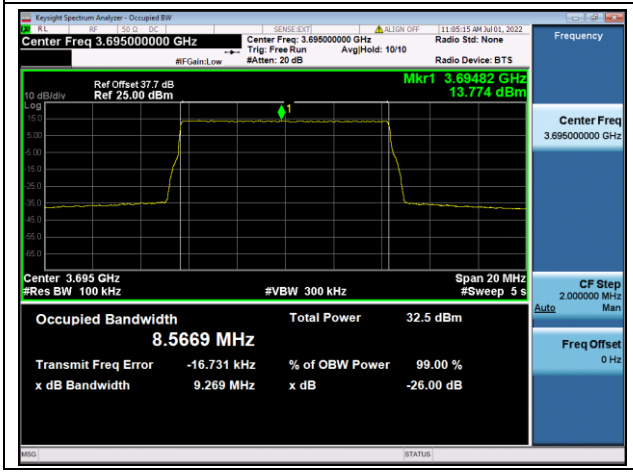
Operating Environment:

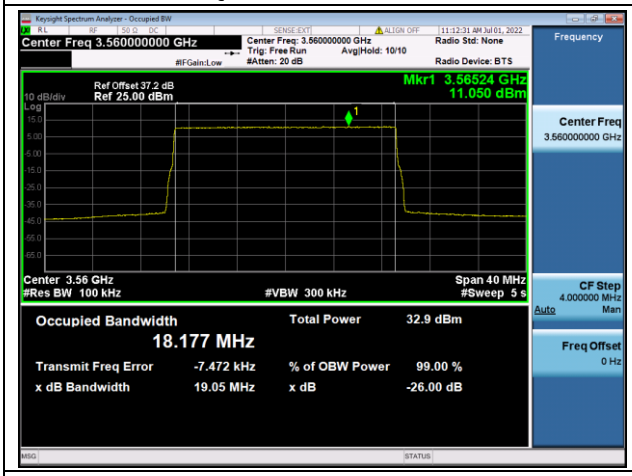
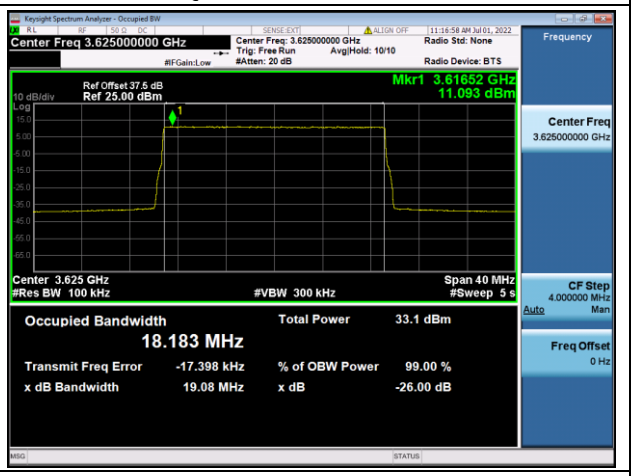
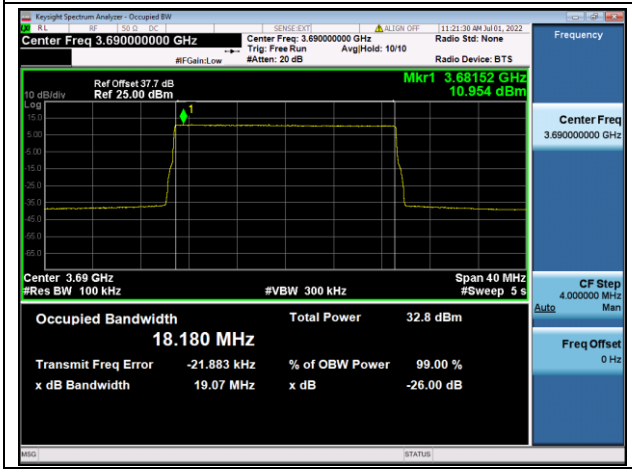
Temperature: 22.5 C Humidity: 68.1 % RH Atmospheric Pressure: 1020 mbar

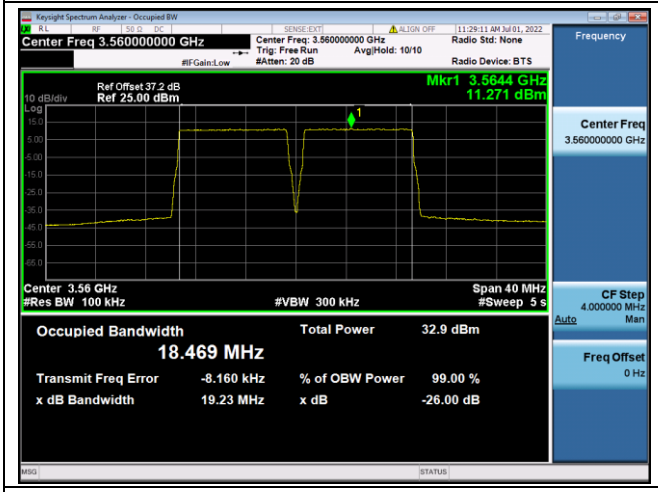
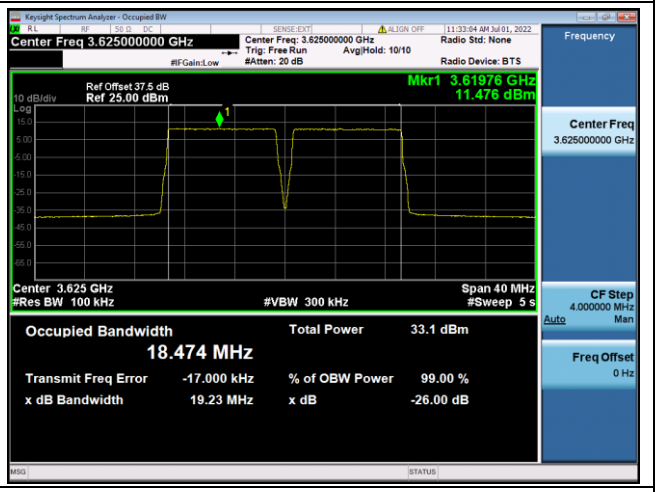
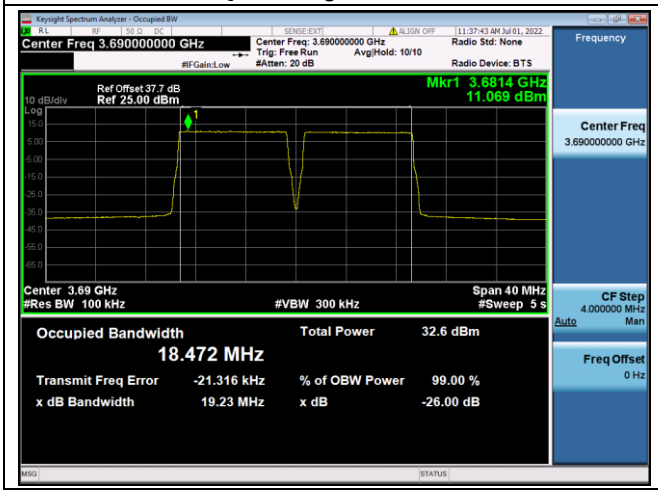
6.3.2 Test Setup Diagram



6.3.3 Measurement Data

5G NR TDD Band 48, Nominal Bandwidth: 10MHz, OBW	
QPSK Low channel	QPSK Middle channel
	
QPSK High channel	
	

5G NR TDD Band 48, Nominal Bandwidth: 20MHz, OBW	
QPSK Low channel	QPSK Middle channel
	
QPSK High channel	
	

5G NR TDD Band 48 Intra-band CA continuous, Nominal Bandwidth: 2C, 10MHz, OBW	
QPSK Low channel	QPSK Middle channel
	
QPSK High channel	
	

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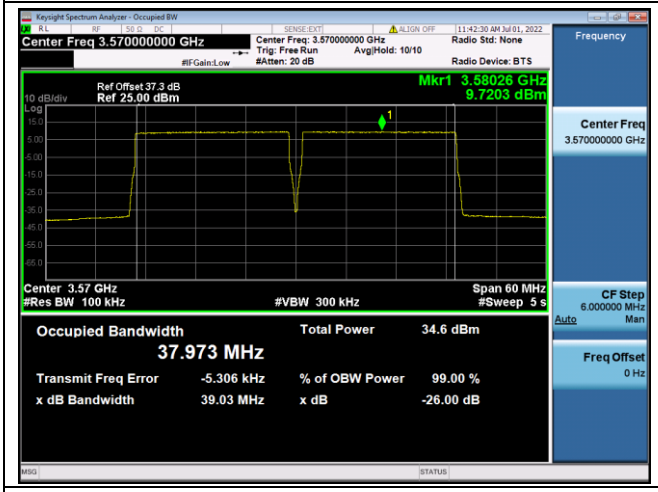
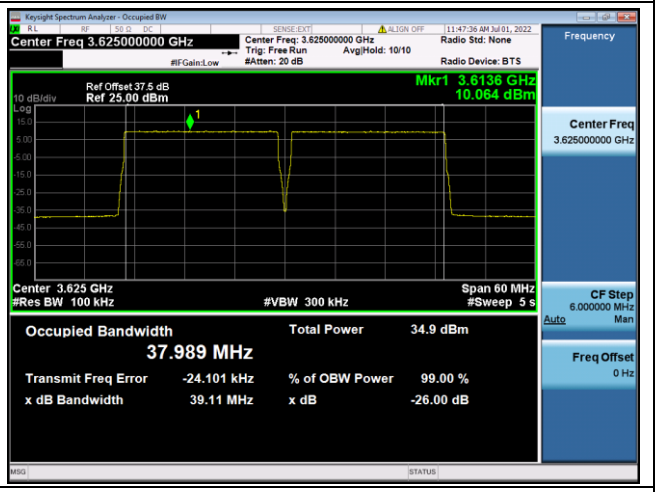
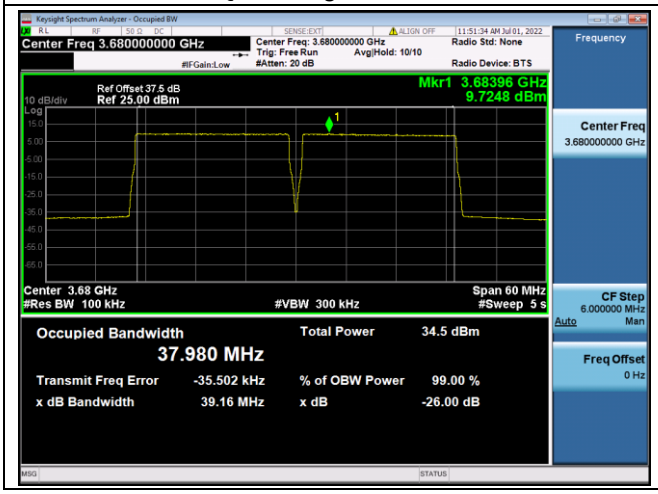
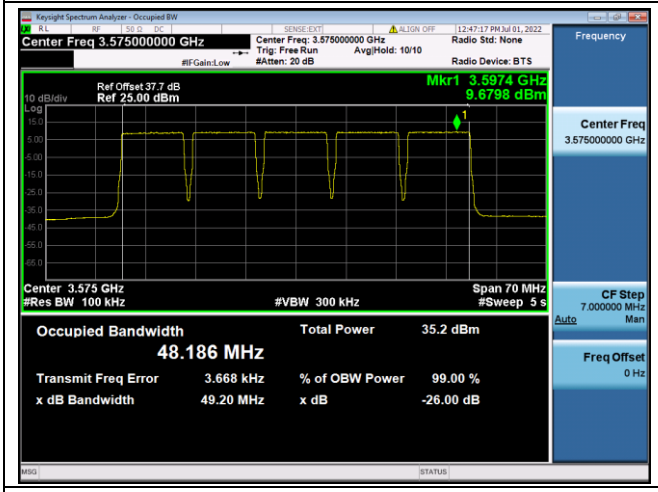
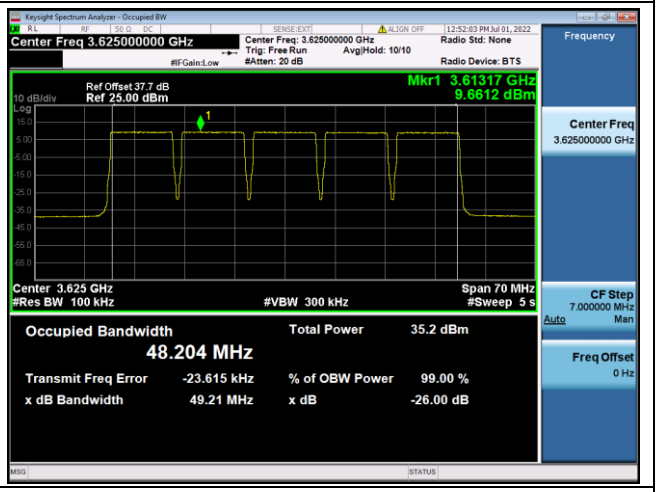
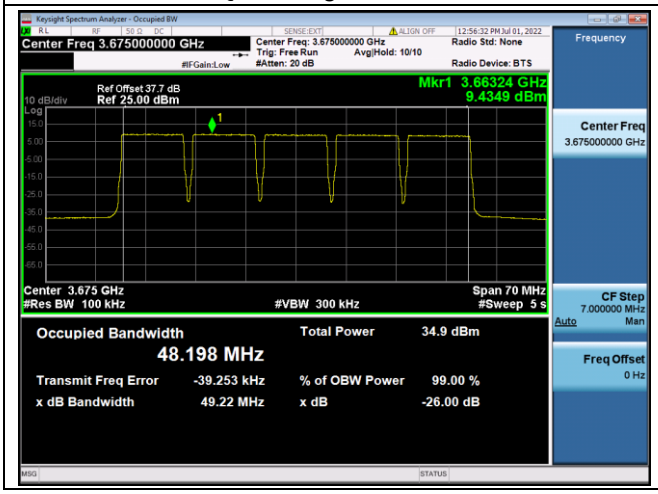
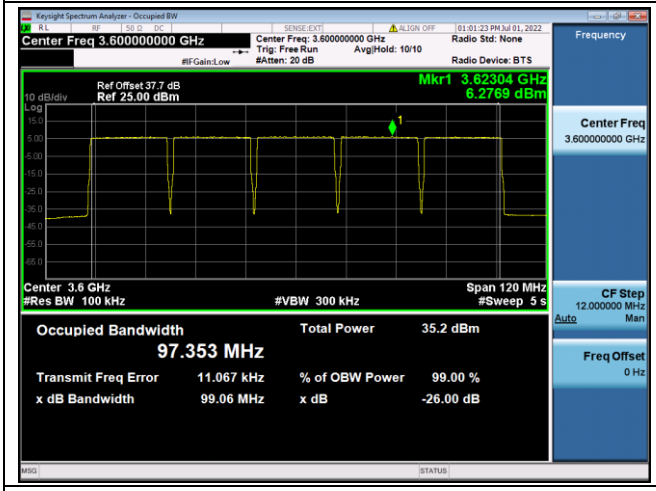
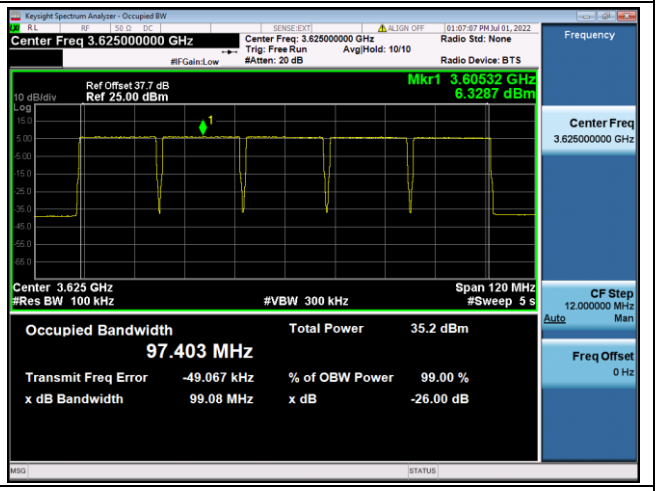
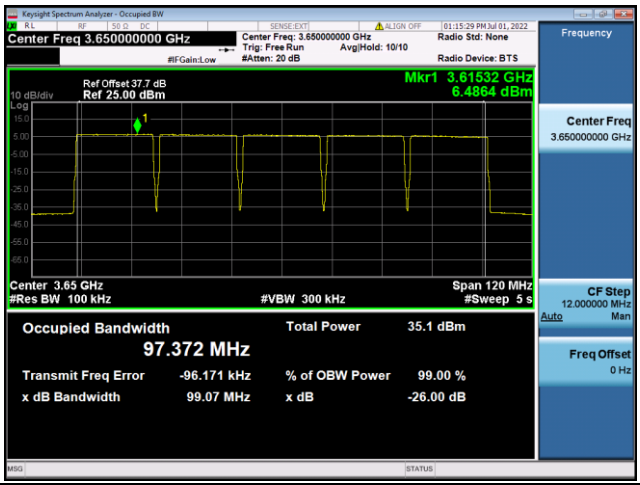
5G NR TDD Band 48 Intra-band CA continuous, Nominal Bandwidth: 2C, 20MHz, OBW	
QPSK Low channel	QPSK Middle channel
	
QPSK High channel	
	

5G NR TDD Band 48 Intra-band CA continuous, Nominal Bandwidth: 5C, 10MHz, OBW	
QPSK Low channel	QPSK Middle channel
	
QPSK High channel	
	

5G NR TDD Band 48 Intra-band CA continuous, Nominal Bandwidth: 5C, 20MHz, OBW	
QPSK Low channel	QPSK Middle channel
	
QPSK High channel	
	

6.4 Band Edge Compliance

Test Requirement: §2.1051, §96.41

Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01

Limit: Except as otherwise specified in paragraph (e)(2) of this section, for channel and frequency assignments made by the SAS to CBSDs, the conducted power of any CBSD emission outside the fundamental emission bandwidth as specified in paragraph (e)(3) of this section (whether the emission is inside or outside of the authorized band) shall not exceed −13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any CBSD emission shall not exceed −25 dBm/MHz. The upper and lower SAS assigned channel edges are the upper and lower limits of any channel assigned to a CBSD by an SAS, or in the case of multiple contiguous channels, the upper and lower limits of the combined contiguous channels.

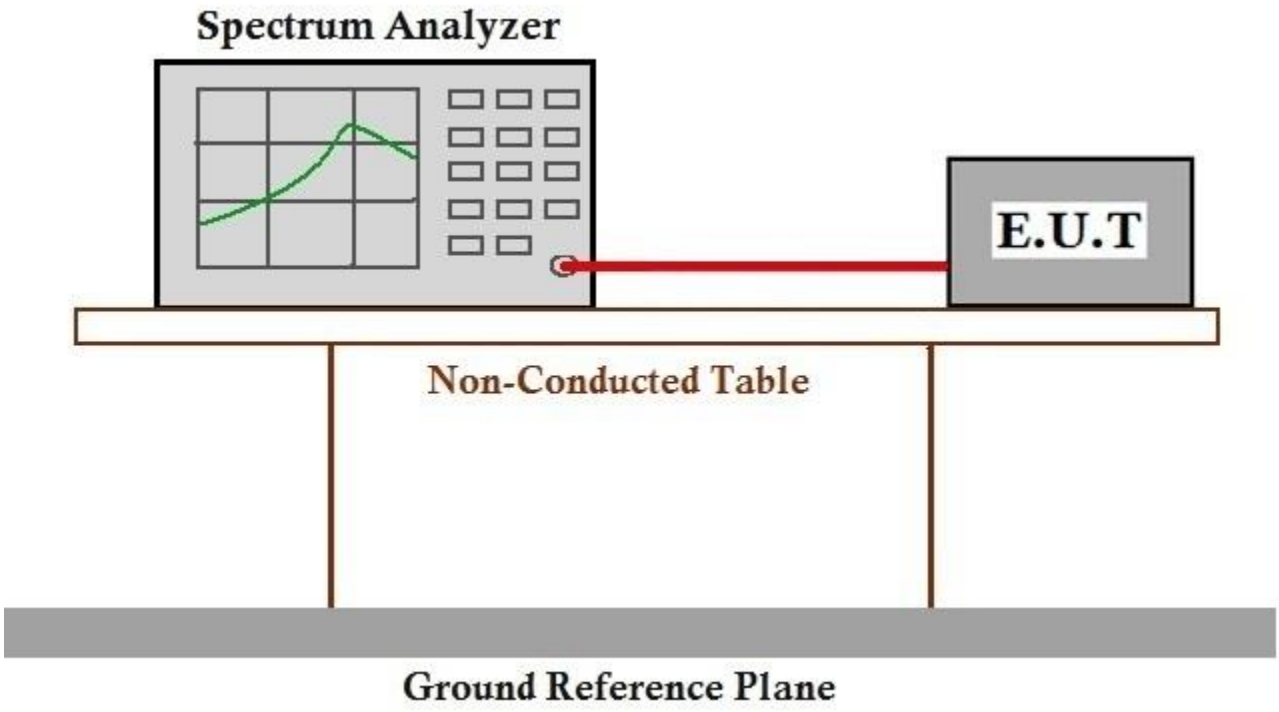
Additional protection levels. Notwithstanding paragraph (e)(1) of this section, for CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed −25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.

6.4.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 C Humidity: 68.1 % RH Atmospheric Pressure: 1020 mbar

6.4.2 Test Setup Diagram



6.4.3 Measurement Data

Please refer to Appendix C- Spurious emissions at antenna terminals & Band Edge_NR.

6.5 Spurious emissions at antenna terminals

Test Requirement: §2.1051, §96.41

Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01

Limit: Except as otherwise specified in paragraph (e)(2) of this section, for channel and frequency assignments made by the SAS to CBSDs, the conducted power of any CBSD emission outside the fundamental emission bandwidth as specified in paragraph (e)(3) of this section (whether the emission is inside or outside of the authorized band) shall not exceed −13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any CBSD emission shall not exceed −25 dBm/MHz. The upper and lower SAS assigned channel edges are the upper and lower limits of any channel assigned to a CBSD by an SAS, or in the case of multiple contiguous channels, the upper and lower limits of the combined contiguous channels.

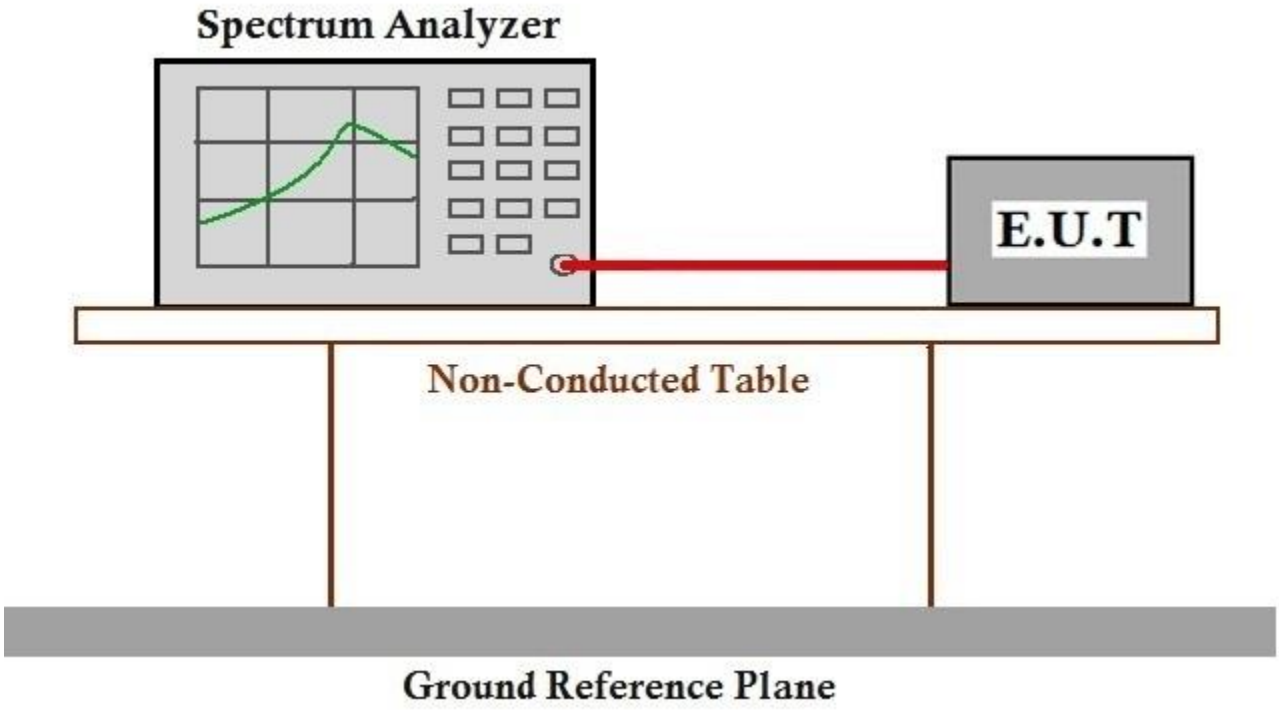
Additional protection levels. Notwithstanding paragraph (e)(1) of this section, for CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed −25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.

6.5.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 C Humidity: 68.1 % RH Atmospheric Pressure: 1020 mbar

6.5.2 Test Setup Diagram



6.5.3 Measurement Data

Please refer to Appendix C- Spurious emissions at antenna terminals & Band Edge_NR.

6.6 Field strength of spurious radiation

Test Requirement: §2.1051, §96.41

Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01

Limit: Except as otherwise specified in paragraph (e)(2) of this section, for channel and frequency assignments made by the SAS to CBSDs, the conducted power of any CBSD emission outside the fundamental emission bandwidth as specified in paragraph (e)(3) of this section (whether the emission is inside or outside of the authorized band) shall not exceed −13 dBm/MHz within 0-10 megahertz above the upper SAS-assigned channel edge and within 0-10 megahertz below the lower SAS-assigned channel edge. At all frequencies greater than 10 megahertz above the upper SAS assigned channel edge and less than 10 MHz below the lower SAS assigned channel edge, the conducted power of any CBSD emission shall not exceed −25 dBm/MHz. The upper and lower SAS assigned channel edges are the upper and lower limits of any channel assigned to a CBSD by an SAS, or in the case of multiple contiguous channels, the upper and lower limits of the combined contiguous channels.

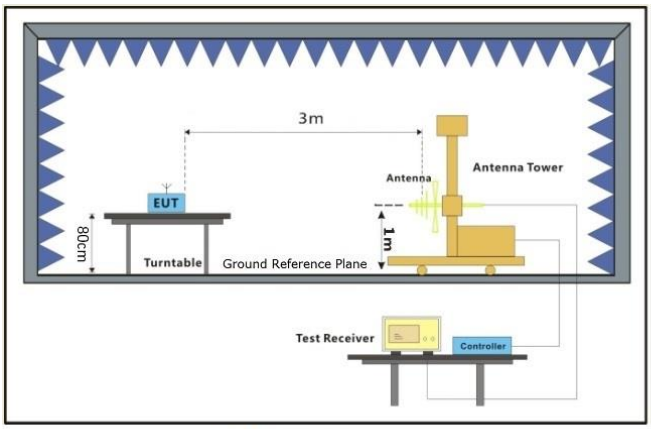
Additional protection levels. Notwithstanding paragraph (e)(1) of this section, for CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed −25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.

6.6.1 E.U.T. Operation

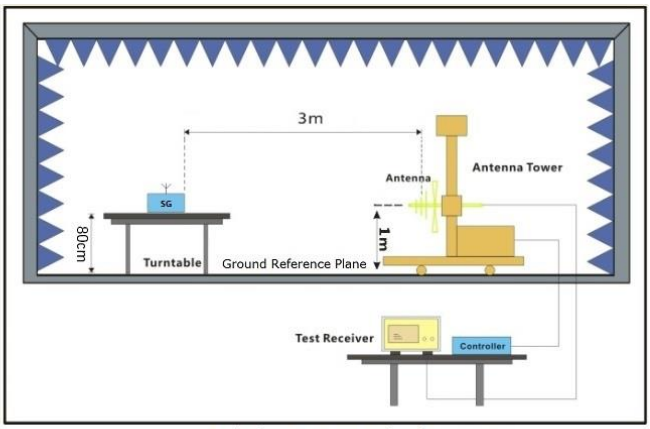
Operating Environment:

Temperature: 23.5 C Humidity: 68.5 % RH Atmospheric Pressure: 1020 mbar

6.6.2 Test Setup Diagram



EUT



Substiute Antenna+Signal Generator

6.6.3 Measurement Procedure and Data

Test Procedure:

(1)On a test site, the EUT shall be placed on a turntable and in the position closest to the normal use as declared by the user.
(2)The test antenna shall be oriented initially for vertical polarization located 3m from the EUT to correspond to the transmitter.
(3)The output of the antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for the measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.
(4)The transmitter shall be switched on; if possible, without the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
(5)The test antenna shall be raised and lowered through the specified range of height until the measuring receiver detects a maximum signal level.
(6)The transmitter shall than be rotated through 360°in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
(7)The test antenna shall be raised and lowered again through the specified range of height until the measuring receiver detects a maximum signal level.
(8)The maximum signal level detected by the measuring receiver shall be noted.
(9)The measurement shall be repeated with the test antenna set to horizontal polarization.
(10) Replace the antenna with a proper Antenna (substitution antenna).
(11)The substitution antenna shall be oriented for vertical polarization and, if necessary, the length of the substitution antenna shall be adjusted to correspond to the frequency of transmitting.
(12)The substitution antenna shall be connected to a calibrated signal generator.
(13)If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
(14)The test antenna shall be raised and lowered through the specified range of the height to ensure that the maximum signal is received.
(15)The input signal to substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuation setting of the measuring receiver.
(16)The input level to the substitution antenna shall be recorded as power level in dBm, corrected for any change of input attenuator setting of the measuring receiver.
(17)The measurement shall be repeated with the test antenna and the substitution antenna oriented for horizontal polarization.

MIMO:

EIRP Test data: N48_10MHz_Low Channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss(dB)	Antenna Gain(dBi)	Polarization (H/V)	Result
2047.895	-49.69	-40	-9.69	-54.96	0.53	5.8	Horizontal	Pass
7476.006	-52.32	-40	-12.32	-64.22	1	12.9	Horizontal	Pass
17896.25	-57.77	-40	-17.77	-68.65	1.52	12.4	Horizontal	Pass
2318.912	-47.97	-40	-7.97	-51.09	0.53	5.8	Vertical	Pass
11769.21	-52.91	-40	-12.91	-64.2	1.81	13.1	Vertical	Pass
17948.05	-57.78	-40	-17.78	-68.66	1.52	12.4	Vertical	Pass

EIRP Test data: N48_10MHz_Middle Channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss(dB)	Antenna Gain(dBi)	Polarization (H/V)	Result
2201.352	-49.25	-40	-9.25	-54.52	0.53	5.8	Horizontal	Pass
7606.788	-52.41	-40	-12.41	-64.62	0.99	13.2	Horizontal	Pass
17948.05	-57.33	-40	-17.33	-68.21	1.52	12.4	Horizontal	Pass
2047.895	-49.68	-40	-9.68	-52.8	0.53	5.8	Vertical	Pass
10039.39	-53.73	-40	-13.73	-65.17	1.26	12.7	Vertical	Pass
17948.05	-57.86	-40	-17.86	-68.74	1.52	12.4	Vertical	Pass

EIRP Test data: N48_10MHz_High Channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss(dB)	Antenna Gain(dBi)	Polarization (H/V)	Result
1978.082	-50.26	-40	-10.26	-55.74	0.52	6	Horizontal	Pass
9952.717	-53.91	-40	-13.91	-65.64	1.27	13	Horizontal	Pass
17948.05	-57.86	-40	-17.86	-68.74	1.52	12.4	Horizontal	Pass
1978.082	-49.04	-40	-9.04	-52.37	0.52	6	Vertical	Pass
6545.263	-51.49	-40	-11.49	-62.34	0.95	11.8	Vertical	Pass
17793.09	-57.51	-40	-17.51	-68.39	1.52	12.4	Vertical	Pass

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EIRP Test data: N48_20MHz_Low Channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss(dB)	Antenna Gain(dBi)	Polarization (H/V)	Result
2036.09	-50.55	-40	-10.55	-55.82	0.53	5.8	Horizontal	Pass
7966.832	-52.62	-40	-12.62	-64.83	0.99	13.2	Horizontal	Pass
17948.05	-57.17	-40	-17.17	-68.05	1.52	12.4	Horizontal	Pass
2056.09	-48.03	-40	-8.03	-51.15	0.53	5.8	Vertical	Pass
7977.832	-55.68	-40	-15.68	-67.89	0.99	13.2	Vertical	Pass
17953.05	-54.37	-40	-14.37	-65.25	1.52	12.4	Vertical	Pass

EIRP Test data: N48_20MHz_Middle Channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss(dB)	Antenna Gain(dBi)	Polarization (H/V)	Result
2041.984	-50.3	-40	-10.3	-55.57	0.53	5.8	Horizontal	Pass
7606.788	-51.13	-40	-11.13	-63.34	0.99	13.2	Horizontal	Pass
17948.05	-57.65	-40	-17.65	-68.53	1.52	12.4	Horizontal	Pass
2041.984	-50.44	-40	-10.44	-53.56	0.53	5.8	Vertical	Pass
9981.525	-53.57	-40	-13.57	-65.3	1.27	13	Vertical	Pass
17896.25	-57.51	-40	-17.51	-68.39	1.52	12.4	Vertical	Pass

EIRP Test data: N48_20MHz_High Channel								
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	S.G. Power (dBm)	Cable loss(dB)	Antenna Gain(dBi)	Polarization (H/V)	Result
2012.686	-49.77	-40	-9.77	-55.04	0.53	5.8	Horizontal	Pass
6874.906	-51.3	-40	-11.3	-62.15	0.95	11.8	Horizontal	Pass
17948.05	-57.8	-40	-17.8	-68.68	1.52	12.4	Horizontal	Pass
2036.09	-50.27	-40	-10.27	-53.39	0.53	5.8	Vertical	Pass
7454.429	-51.93	-40	-11.93	-63.83	1	12.9	Vertical	Pass
15177.89	-53.46	-40	-13.46	-65.32	1.44	13.3	Vertical	Pass

Remark:

1) Pretest with normal and extreme conditions, only the worst case data was showed in the test report.

6.7 Frequency stability

Test Requirement: §2.1055

Test Method: ANSI C63.26-2015, KDB 971168 D01 v03r01

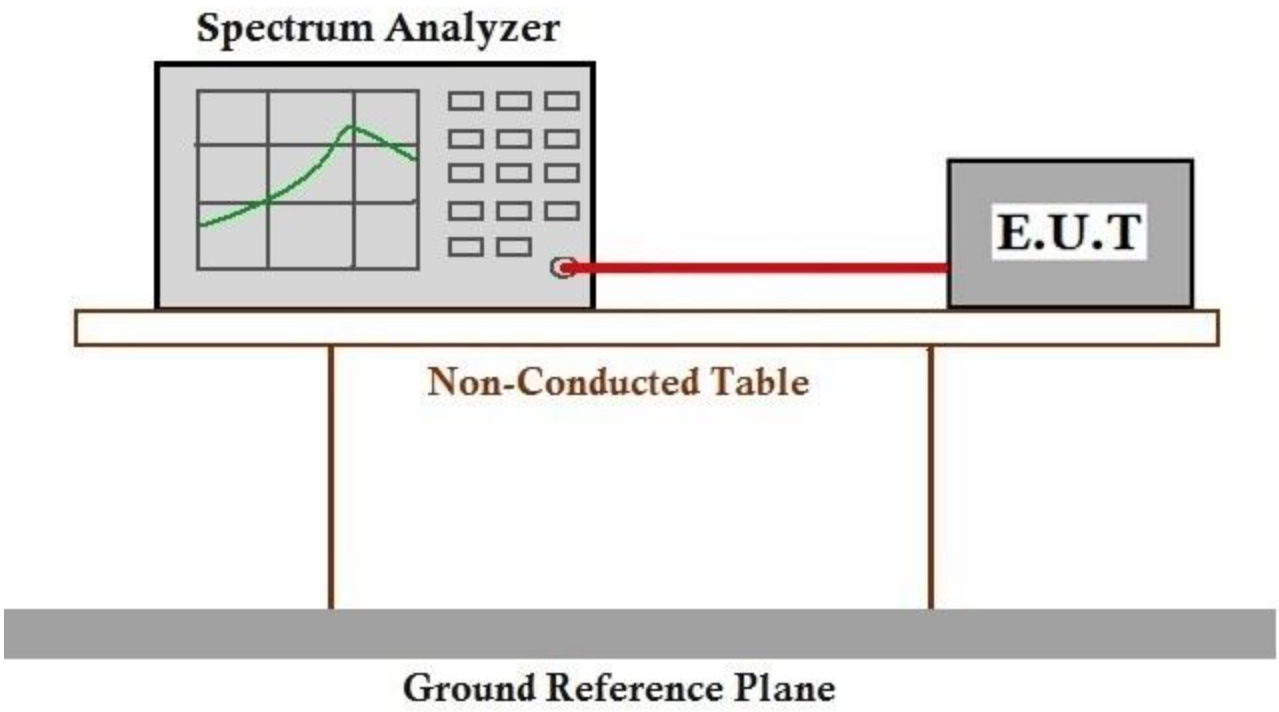
Limit: Fundamental emission stays within authorized frequency block

6.7.1 E.U.T. Operation

Operating Environment:

Temperature: 22.5 C Humidity: 68.1 % RH Atmospheric Pressure: 1020 mbar

6.7.2 Test Setup Diagram



6.7.3 Measurement Data

Please refer to Appendix D in the end of this report.

7 Photographs

7.1 Setup photo

Please refer to setup photos.

7.2 EUT Constructional Details (EUT Photos)

Please Refer to external and internal photos for details.

8 Appendix D

8.1 Frequency stability

Remark: only recorded worst case

Test N48 _ 10MHz Bandwidth (Frequency Error VS. Voltage)						
Test Mode	Test Temp.	Test Volt.	Freq. Error (Hz)	Freq. vs. rated (ppm)	Limit (ppm)	Verdict
			MCH	MCH		
QPSK	NT	LV	-1.09	-0.0003	2.50	PASS
		NV	-1.42	-0.0004	2.50	PASS
		HV	-1.24	-0.0003	2.50	PASS

Test N48 _ 10MHz Bandwidth (Frequency Error VS. Temperature)						
Test Mode	Test Volt.	Test Temp.	Freq. Error (Hz)	Freq. vs. rated (ppm)	Limit (ppm)	Verdict
			MCH	MCH		
QPSK	NV	-30.00	-1.04	-0.0003	2.50	PASS
		-20.00	-1.45	-0.0004	2.50	PASS
		-10.00	-1.04	-0.0003	2.50	PASS
		0.00	-1.47	-0.0004	2.50	PASS
		10.00	-1.13	-0.0003	2.50	PASS
		20.00	-1.06	-0.0003	2.50	PASS
		30.00	-1.09	-0.0003	2.50	PASS
		40.00	1.19	0.0003	2.50	PASS
		50.00	-1.04	-0.0003	2.50	PASS

Test N48 _ 20MHz Bandwidth (Frequency Error VS. Voltage)						
Test Mode	Test Temp.	Test Volt.	Freq. Error (Hz)	Freq. vs. rated (ppm)	Limit (ppm)	Verdict
			MCH	MCH		
QPSK	NT	LV	-1.64	-0.0005	2.50	PASS
		NV	-1.02	-0.0003	2.50	PASS
		HV	1.39	0.0004	2.50	PASS

Test N48 _ 20MHz Bandwidth (Frequency Error VS. Temperature)						
Test Mode	Test Volt.	Test Temp.	Freq. Error (Hz)	Freq. vs. rated (ppm)	Limit (ppm)	Verdict
			MCH	MCH		
QPSK	NV	-30.00	-1.57	-0.0004	2.50	PASS
		-20.00	-1.04	-0.0003	2.50	PASS
		-10.00	-1.13	-0.0003	2.50	PASS

		0.00	-1.15	-0.0003	2.50	PASS
		10.00	-1.47	-0.0004	2.50	PASS
		20.00	-1.87	-0.0005	2.50	PASS
		30.00	-1.42	-0.0004	2.50	PASS
		40.00	-1.04	-0.0003	2.50	PASS
		50.00	-1.45	-0.0004	2.50	PASS

- End of the Report -