



# Compliance Certification Services (Kunshan) Inc.

Report No.: KSCR220900181305

Page: 1 of 30

## TEST REPORT

**Application No.:** KSCR2209001813AT  
**FCC ID:** OJFE62-N3-7F  
**Applicant:** Corning Optical Communications LLC  
**Address of Applicant:** 6 Concord Road, Shrewsbury, MA 01545 United States  
**Manufacturer:** Corning Optical Communications LLC  
**Address of Manufacturer:** 6 Concord Road, Shrewsbury, MA 01545 United States  
**Factory:** Sunwave Communications Co., Ltd  
**Address of Factory:** 581 Houju Avenue, Binjinag District, Hangzhou, China  
**Equipment Under Test (EUT):**  
**EUT Name:** Remote Unit  
**Model No.:** E62-N3  
**Trade mark:** **CORNING**  
**Standard(s) :** FCC Part 2  
 FCC Part 90 subpart R  
**Date of Receipt:** 2022-09-23  
**Date of Test:** 2022-09-23 to 2022-10-19  
**Date of Issue:** 2022-10-19

<b>Test Result:</b>	<b>Pass</b>
---------------------	-------------

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

Eric Lin  
Laboratory Manager




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Revision Record				
Version	Chapter	Date	Modifier	Remark
00	Original	2022-10-19		/

Authorized for issue by:			
			
		<hr/> Cloud Peng / Project Engineer	
			
		<hr/> Eric Lin / Reviewer	



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## 2 Test Summary

Test Item	FCC Rule No.	Verdict
Effective (Isotropic) Radiated Power Output Data	§2.1046, §90.541	PASS
Peak-Average Ratio	§90.541	PASS
Bandwidth	§2.1049(h)	PASS
Band Edge Compliance	§2.1051, §90.543	PASS
Spurious emissions at antenna terminals	§2.1051, §90.543	PASS
Radiated spurious radiation	§2.1051, §90.543	PASS
Frequency stability	§2.1055 §90.539	PASS
Emission Mask	§2.1055 §90.210	PASS
<p>Remark:</p> <p>EUT: In this whole report EUT means Equipment Under Test.</p> <p>Tx: In this whole report Tx (or tx) means Transmitter.</p> <p>Rx: In this whole report Rx (or rx) means Receiver.</p> <p>All modes have been tested and only record the worst test result.</p> <p>Test results of QPSK/16QAM/64QAM/256QAM have been evaluated, and only the worst results are recorded.</p> <p>The products are equipped with internal antenna and external antenna. The main difference is the appearance and antenna, but there is no difference in the circuit. Therefore, we only evaluated the internal and external antennas in the radiation test part, and the worst test result was the external antenna products with load test.</p> <p>Test method standard: ANSI C63.26-2015 KDB 971168 D01 v03 r01</p>		



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## 4 General Information

### 4.1 Details of E.U.T.

Product Name:	Remote Unit
Device type	Base station
Model No.:	E62-N3
Antenna Type:	External&Internal
Antenna Gain:	2.61 dBi (Provided by manufacturer)
Power Supply:	DC 48V
Frequency Band:	758MHz to 768MHz
Modulation Type:	5G NR: CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM
Antenna Delivery:	SISO
Temperature Range:	-30°C to 50°C

### 4.2 Test Frequency

5G NR (758-768MHz)	SCS	Carrier	Bandwidth (MHz)	Continue		
				Low	Middle	High
	15kHz	1 CC	10MHz	-	763	-
	30kHz	1 CC	10MHz	-	763	-



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### 4.3 Test Support Unit

Description	Manufacture	Model No.	S/N
Notebook	ThinkPad	K27	/

### 4.4 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	8.4 x 10 <sup>-8</sup>
2	Timeout	2s
3	Duty Cycle	0.37%
4	Occupied Bandwidth	3%
5	RF Conducted Power	0.6dB
6	RF Power Density	2.9dB
7	Conducted Spurious Emissions	0.75dB
8	RF Radiated Power	5.2dB (Below 1GHz)
		5.9dB (Above 1GHz)
9	Radiated Spurious Emission Test	4.2dB (Below 30MHz)
		4.5dB (30MHz-1GHz)
		5.1dB (1GHz-18GHz)
		5.4dB (Above 18GHz)
10	Temperature Test	1°C
11	Humidity Test	3%
12	Supply Voltages	1.5%
13	Time	3%

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



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### 4.5 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888 Fax: +86 512 5737 0818

No tests were sub-contracted.

### 4.6 Test Facility

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

#### • CNAS (No. CNAS L4354)

CNAS has accredited Compliance Certification Services (Kunshan) Inc. to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

#### • A2LA (Certificate No. 2541.01)

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 2541.01.

#### • FCC (Designation Number: CN1172)

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

Designation Number: CN1172.

#### • ISED (CAB identifier: CN0072)

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory.

Company Number: 2324E

#### • VCCI (Member No.: 1938)

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-20134, R-11600, C-11707, T-11499, G-10216 respectively.

### 4.7 Deviation from Standards

None

### 4.8 Abnormalities from Standard Conditions

None



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## 5 Equipment List

Item	Equipment	Manufacturer	Model	Serial Number	Cal Date	Cal. Due Date
<b>RF Conducted Test</b>						
1	Spectrum Analyzer	Keysight	N9020A	MY55370209	08/22/2022	08/21/2023
2	Signal Generator	Agilent	N5182A	MY50142015	08/22/2022	08/21/2023
3	Spectrum Analyzer	Keysight	N9030B	MY61330164	01/22/2022	01/21/2023
4	Vector Signal Generator	R&S	SMW200A	110074	08/22/2022	08/21/2023
5	Radio Communication Test Station	Anritsu	MT8000A	6262012849	08/22/2022	08/21/2023
6	Radio Communication Analyzer	Anritsu	MT8821C	6201692222	04/01/2022	03/31/2023
7	Universal Radio Communication Tester	R&S	CMW500	159275	08/22/2022	08/21/2023
8	Universal Radio Communication Tester	R&S	CMW500	167239	04/01/2022	03/31/2023
9	Power Meter	Anritsu	ML2495A	1445010	04/15/2022	04/14/2023
10	Switcher	CCSRF	FY562	KUS2001M001-3	08/22/2022	08/21/2023
11	AC Power Source	EXTECH	6605	1570106	N.C.R	N.C.R
12	DC Power Supply	Aglient	E3632A	MY50340053	N.C.R	N.C.R
13	6dB Attenuator	Mini-Circuits	NAT-6-2W	15542-1	N.C.R	N.C.R
14	Power Divider	AISI	IOWOPE2068	PE2068	N.C.R	N.C.R
15	Filter	MICRO-TRONICS	BRM50701	5	N.C.R	N.C.R
16	Conducted Test Cable	/	RF01-RF04	/	04/15/2022	04/14/2023
17	Software	BST	TST-PASS	N/A	N/A	N/A
18	Temp. / Humidity Chamber	TERCHY	MHK-120AK	X30109	04/15/2022	04/14/2023
19	Thermometer	Anymetre	RS-WS-N01-6J	1032844	04/15/2022	04/14/2023
<b>RF Radiated Test</b>						
1	Spectrum Analyzer	R&S	FSV40	101493	08/22/2022	08/21/2023
2	Signal Generator	Agilent	E8257C	MY43321570	08/22/2022	08/21/2023
3	Loop Antenna	Com-Power	AL-130R	10160008	04/13/2021	04/12/2023
4	Bilog Antenna	TESEQ	CBL 6112D	35403	06/21/2021	06/20/2023
5	Bilog Antenna	SCHWARZBECK	VULB9160	9160-3342	04/13/2021	04/12/2023
6	Horn-antenna(1-18GHz)	Schwarzbeck	BBHA9120D	267	04/02/2022	04/01/2024
7	Horn-antenna(1-18GHz)	ETS-LINDGREN	3117	00143290	02/22/2021	02/21/2023
8	Horn Antenna(18-40GHz)	Schwarzbeck	BBHA9170	BBHA9170171	02/20/2022	02/19/2023
9	Horn Antenna(18-40GHz)	Schwarzbeck	BBHA9170	BBHA9170515	02/20/2022	02/19/2023
10	Pre-Amplifier(30MHz~18GHz)	LNA	/	/	04/15/2022	04/14/2023
11	Amplifier(18~40GHz)	COM-POWER	PAM-840A	461332	01/22/2022	01/21/2023
12	Low Pass Filter	MICRO-TRONICS	VLFX-950	RV142900829	N.C.R	N.C.R
13	High Pass Filter	Mini-Circuits	VHF-1200	15542	N.C.R	N.C.R
14	Filter (5450MHz~5770 MHz)	MICRO-TRONICS	BRC50704-01	2	N.C.R	N.C.R
15	Filter (5690 MHz~5930 MHz)	MICRO-TRONICS	BRC50705-01	4	N.C.R	N.C.R
16	Filter (5150 MHz~5350 MHz)	MICRO-TRONICS	BRC50703-01	2	N.C.R	N.C.R
17	Filter (885 MHz~915 MHz)	MICRO-TRONICS	BRM14698	1	N.C.R	N.C.R
18	Filter (815 MHz~860 MHz)	MICRO-TRONICS	BRM14697	1	N.C.R	N.C.R



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19	Filter (1745 MHz~1910 MHz)	MICRO-TRONICS	BRM14700	1	N.C.R	N.C.R
20	Filter (1922 MHz~1977 MHz)	MICRO-TRONICS	BRM50715	1	N.C.R	N.C.R
21	Filter (2550 MHz)	MICRO-TRONICS	HPM13362	5	N.C.R	N.C.R
22	Filter (1532 MHz~1845 MHz)	MICRO-TRONICS	BRM50713	1	N.C.R	N.C.R
23	Filter (2.4GHz)	MICRO-TRONICS	BRM50701	5	N.C.R	N.C.R
24	RE test cable	/	RE01-RE04	/	04/15/2022	04/14/2023
25	Software	Faratronic	EZ EMC	N/A	N/A	N/A



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## 6 Radio Spectrum Matter Test Results

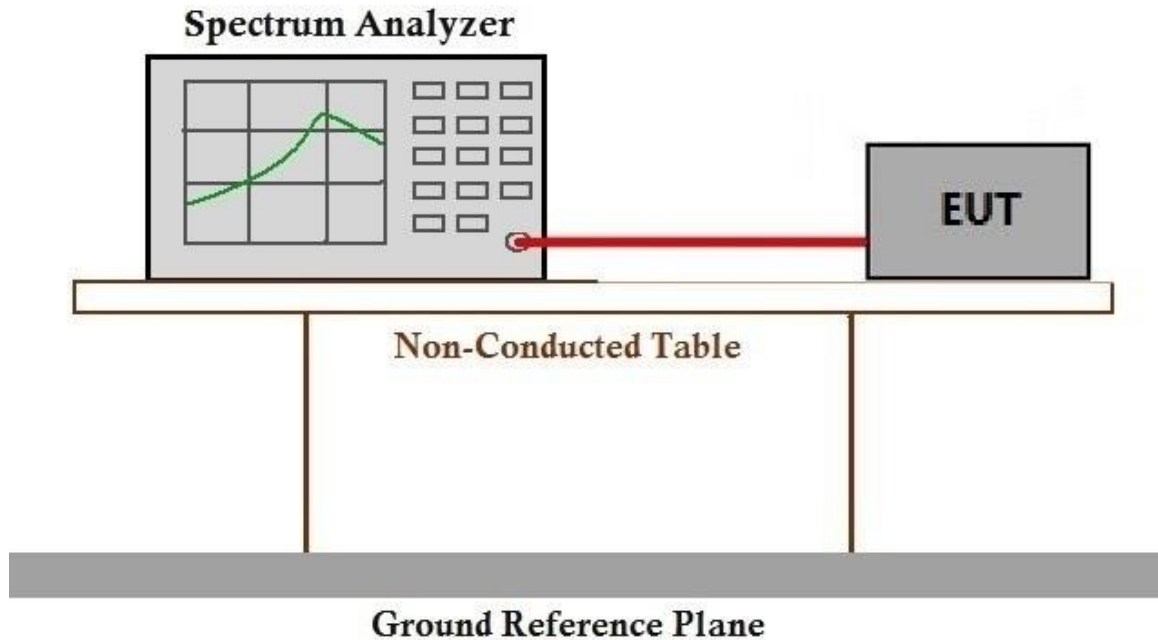
### 6.1 Effective (Isotropic) Radiated Power Output Data

Test Requirement: §2.1046, §90.541  
 Test Method: ANSI C63.26, KDB 971168 D01 v03 r01  
 Limit: EIRP ≤ 60dBm/MHz

#### 6.1.1 E.U.T. Operation

Operating Environment:  
 Temperature: 20.4 °C Humidity: 56.4 % RH Atmospheric Pressure: 1030 mbar  
 Test mode: Tx mode, Keep the EUT in transmitting mode.

#### 6.1.2 Test Setup Diagram



#### 6.1.3 Measurement Data



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1 Carriers _ SCS 15kHz										
BW Arrange	Frequency	Modulation	RB Allocation		SISO Port 1 Conducted Power		Ant	ERP (dBm)	ERP (dBm/MHz)	ERP Limit (dBm/MHz)
			Size	Off set	Total Power (dBm)	Channel Power (dBm/MHz)	Gain (dBi)			
10M	MCH	QPSK	Full	0	17.18	7.19	2.61	17.64	7.65	60
		16QAM	Full	0	17.21	7.25	2.61	17.67	7.71	60
		64QAM	Full	0	17.17	7.22	2.61	17.63	7.68	60
		256QAM	Full	0	17.15	7.23	2.61	17.61	7.69	60

1 Carriers _ SCS 30kHz										
BW Arrange	Frequency	Modulation	RB Allocation		SISO Port 1 Conducted Power		Ant	ERP (dBm)	ERP (dBm/MHz)	ERP Limit (dBm/MHz)
			Size	Off set	Total Power (dBm)	Channel Power (dBm/MHz)	Gain (dBi)			
10M	MCH	QPSK	Full	0	17.31	7.25	2.61	17.77	7.71	60
		16QAM	Full	0	17.29	7.24	2.61	17.75	7.70	60
		64QAM	Full	0	17.23	7.29	2.61	17.69	7.75	60
		256QAM	Full	0	17.27	7.23	2.61	17.73	7.69	60



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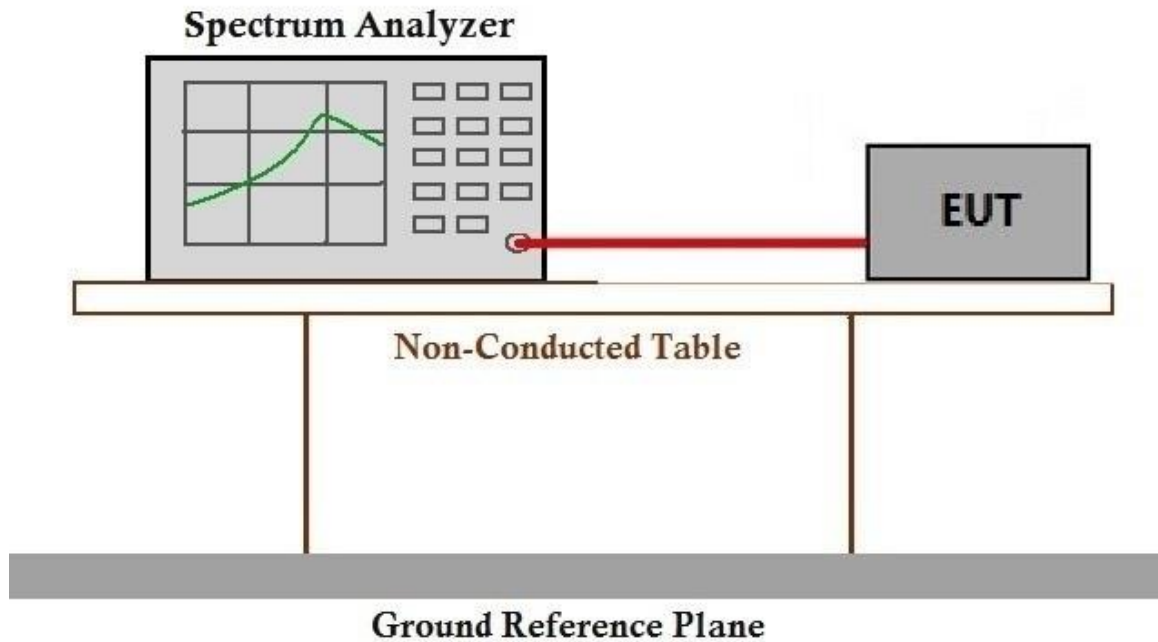
### 6.2 Peak-Average Ratio

Test Requirement: §90.541  
 Test Method: ANSI C63.26, KDB 971168 D01 v03 r01  
 Limit: ≤13dB

#### 6.2.1 E.U.T. Operation

Operating Environment:  
 Temperature: 20.4 °C Humidity: 56.4 % RH Atmospheric Pressure: 1030 mbar  
 Test mode: Tx mode, Keep the EUT in transmitting mode.

#### 6.2.2 Test Setup Diagram



#### 6.2.3 Measurement Data



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## Compliance Certification Services (Kunshan) Inc.

Report No.: KSCR220900181305

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5G NR (758-768MHz) _ SCS SISO, Nominal Bandwidth: 10M						
Modulation	Channel	RB Configuration		Test result (dB)	Limit (dB)	Verdict
		Size	Offset			
QPSK	MCH	Full	0	8.32	13	Pass

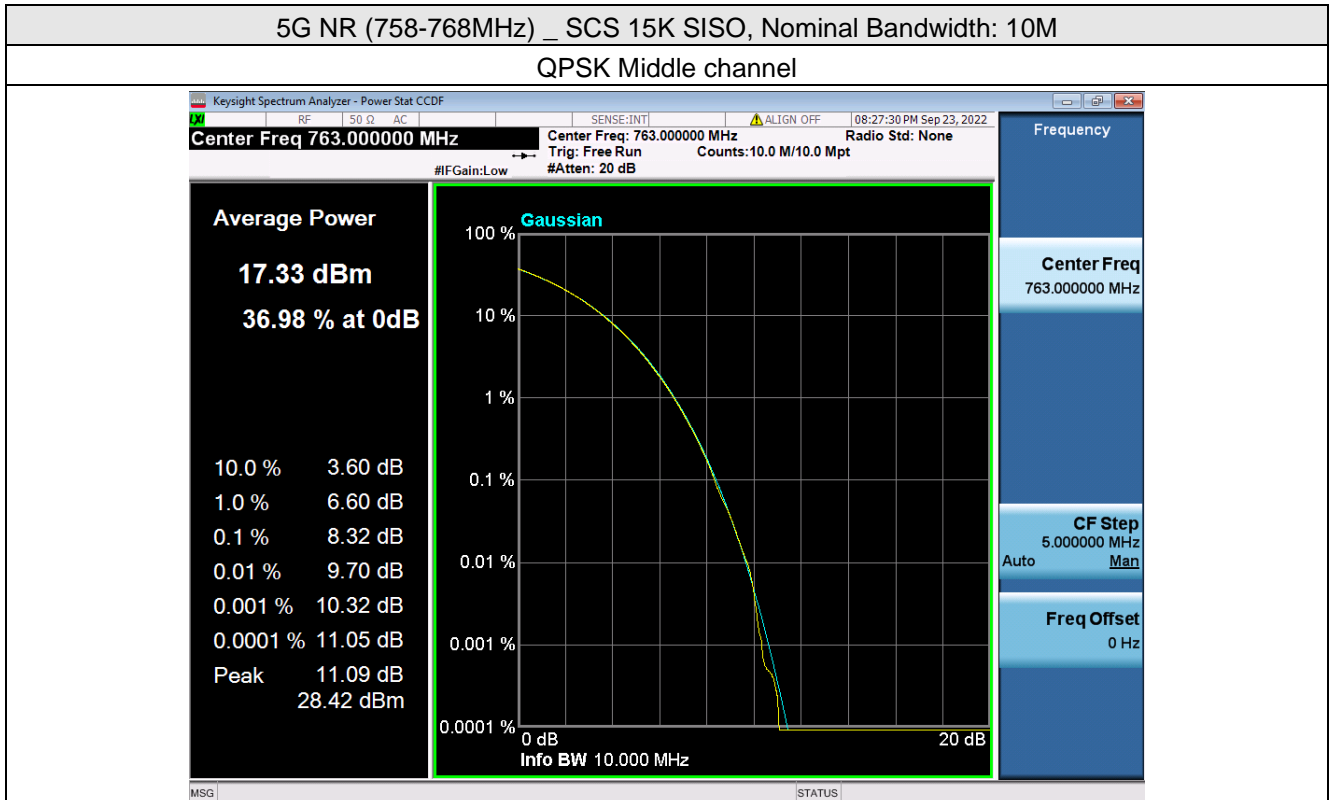
Note:  
 1) Test results of QPSK/16QAM/64QAM/256QAM have been evaluated, and only the worst results are recorded.  
 2) We have evaluated all subcarrier spacing modes, and only show the worst mode in the report



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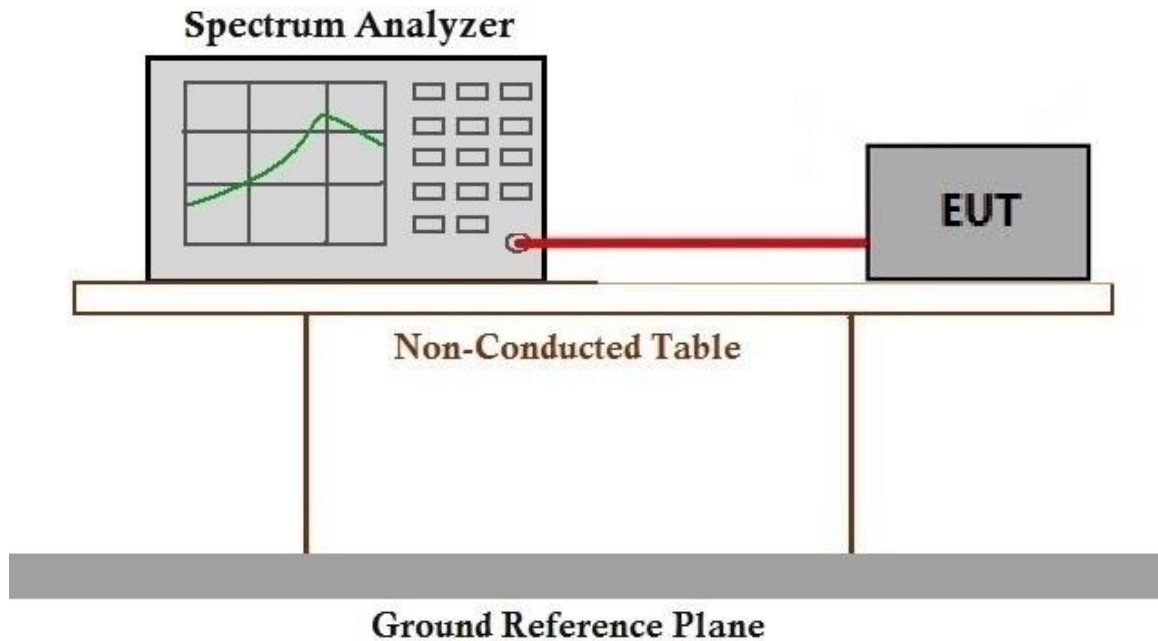
### 6.3 Bandwidth

Test Requirement: §2.1049(h)  
Test Method: ANSI C63.26, KDB 971168 D01 v03 r01  
Limit: OBW: No limit  
EBW: No limit

#### 6.3.1 E.U.T. Operation

Operating Environment:  
Temperature: 20.4 °C Humidity: 56.4 % RH Atmospheric Pressure: 1030 mbar  
Test mode: Tx mode, Keep the EUT in transmitting mode.

#### 6.3.2 Test Setup Diagram



#### 6.3.3 Measurement Data



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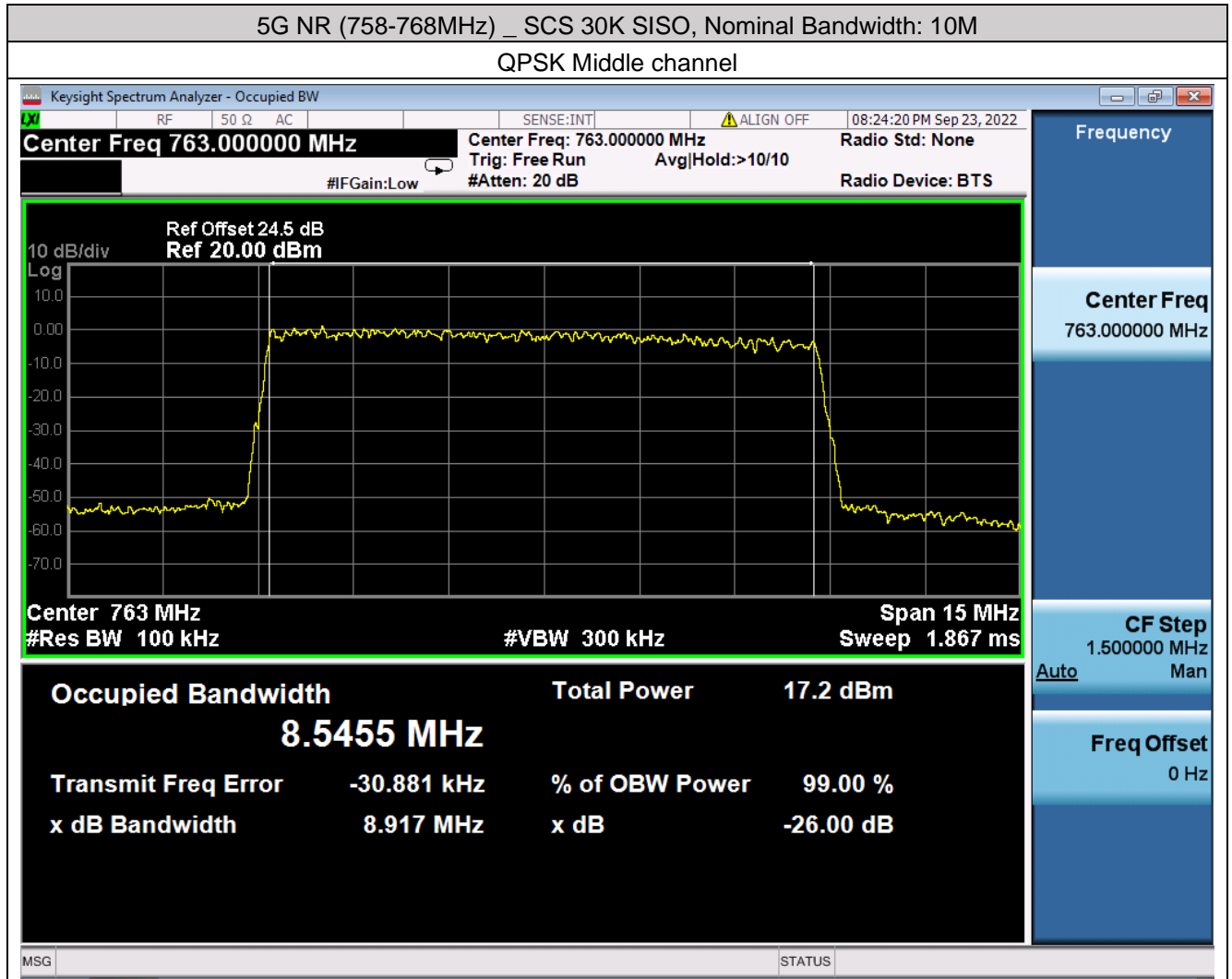


5G NR (758-768MHz) _ SCS 30K SISO, Nominal Bandwidth: 15M							
Nominal Bandwidth	Modulation	Test result (MHz)					
		99% OBW			26dB bandwidth		
		LCH	MCH	HCH	LCH	MCH	HCH
10	QPSK	-	8.5455	-	-	8.917	-

Note:  
 1) We have evaluated all subcarrier spacing modes, and only show the worst mode in the report  
 2) Test results of QPSK/16QAM/64QAM/256QAM have been evaluated, and only the worst results are recorded.



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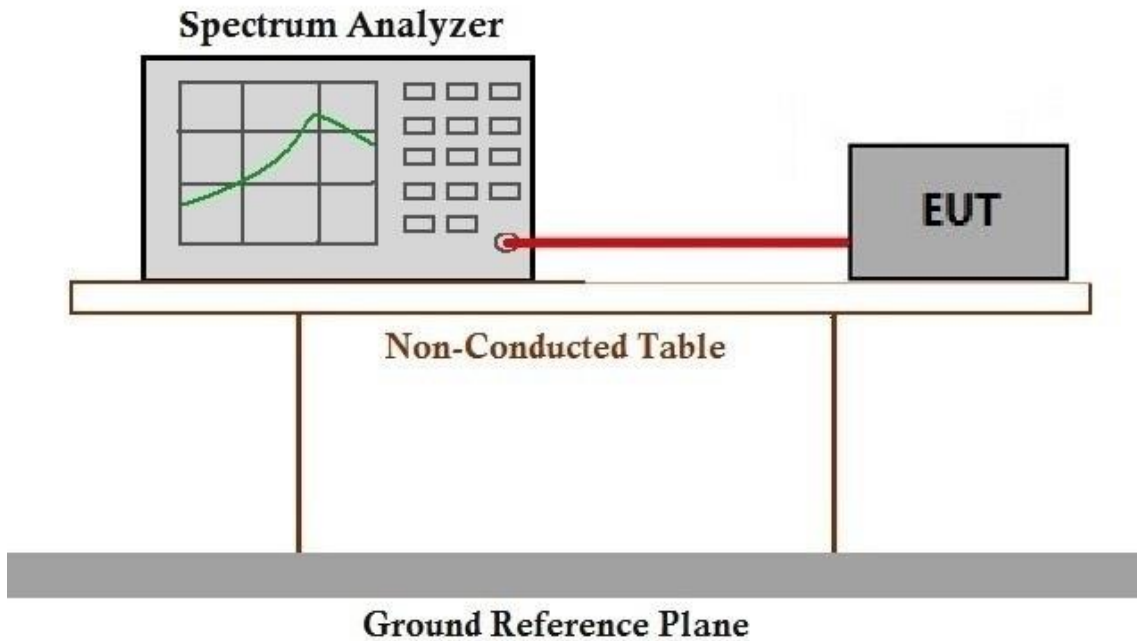
### 6.4 Band Edge Compliance

Test Requirement: §2.1051, §90.543  
 Test Method: ANSI C63.26, KDB 971168 D01 v03 r01  
 Limit:  $\leq -13\text{dBm/MHz}$

#### 6.4.1 E.U.T. Operation

Operating Environment:  
 Temperature: 20.4 °C Humidity: 56.4 % RH Atmospheric Pressure: 1030 mbar  
 Test mode: Tx mode, Keep the EUT in transmitting mode.

#### 6.4.2 Test Setup Diagram



#### 6.4.3 Measurement Data



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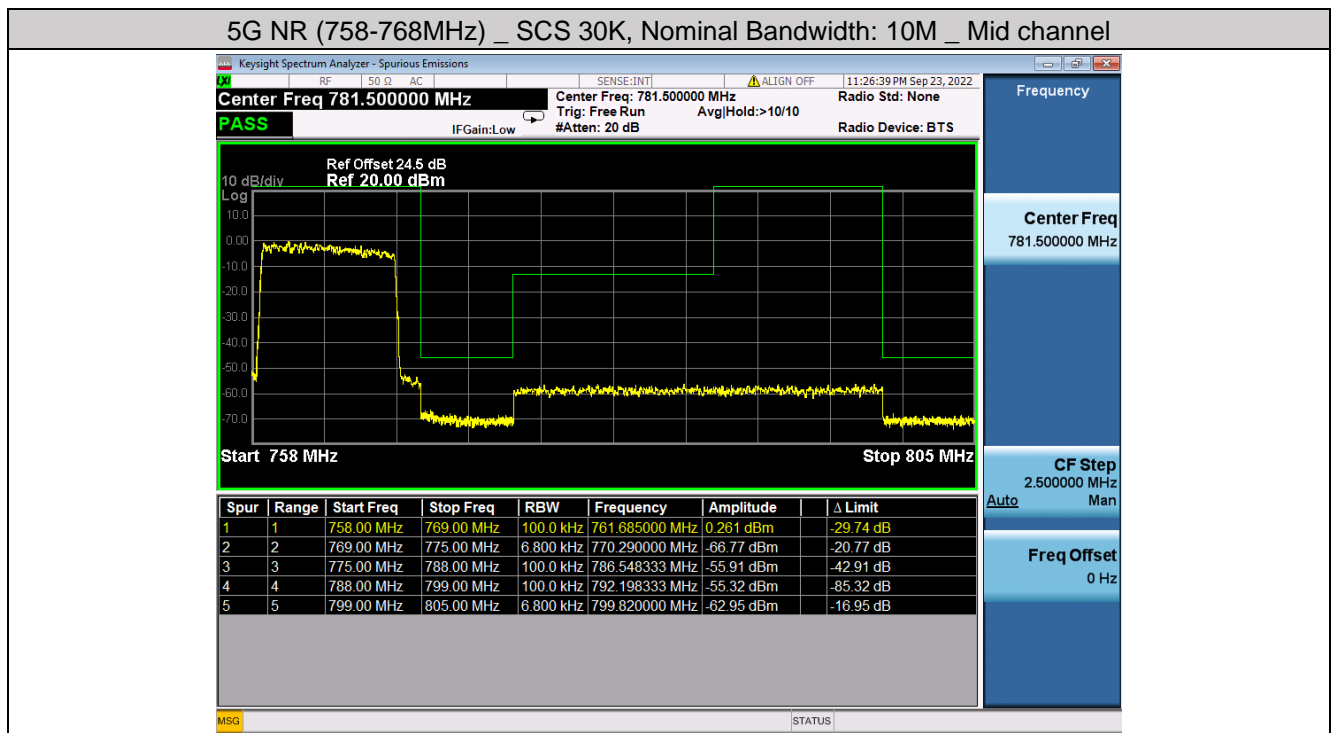
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BW Arrange	SCS (kHz)	Frequency	Modulation	RB Allocation		Test Result
				Size	Offset	
<b>Single Carrier</b>						
10	30	LCH / MCH / HCH	QPSK	Full	0	Pass

Note:

- 1) Test results of QPSK/16QAM/64QAM/256QAM and subcarrier spacing and different RB configuration have been evaluated, and only the worst results mode are recorded.
- 2) The result of 758MHz - 768MHz is far less than -13dBm from the picture



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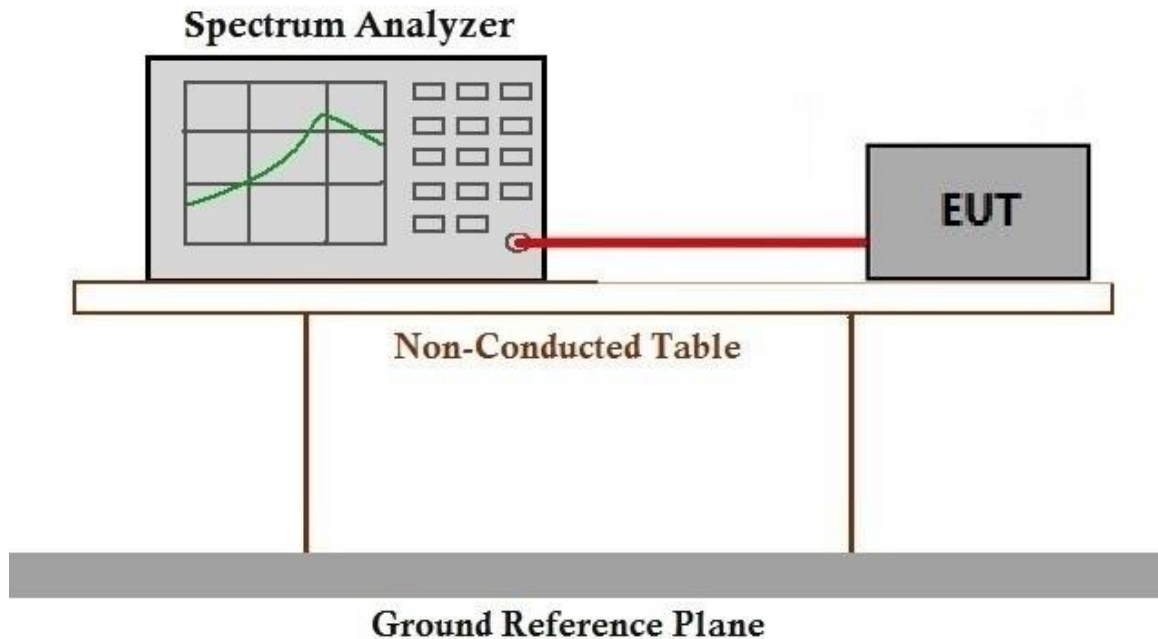
### 6.5 Spurious emissions at antenna terminals

Test Requirement: §2.1051, §90.543  
 Test Method: ANSI C63.26, KDB 971168 D01 v03 r01  
 Limit:  $\leq -13\text{dBm/MHz}$

#### 6.5.1 E.U.T. Operation

Operating Environment:  
 Temperature: 20.4 °C Humidity: 56.4 % RH Atmospheric Pressure: 1030 mbar  
 Test mode: Tx mode, Keep the EUT in transmitting mode.

#### 6.5.2 Test Setup Diagram



#### 6.5.3 Measurement Data

Note:

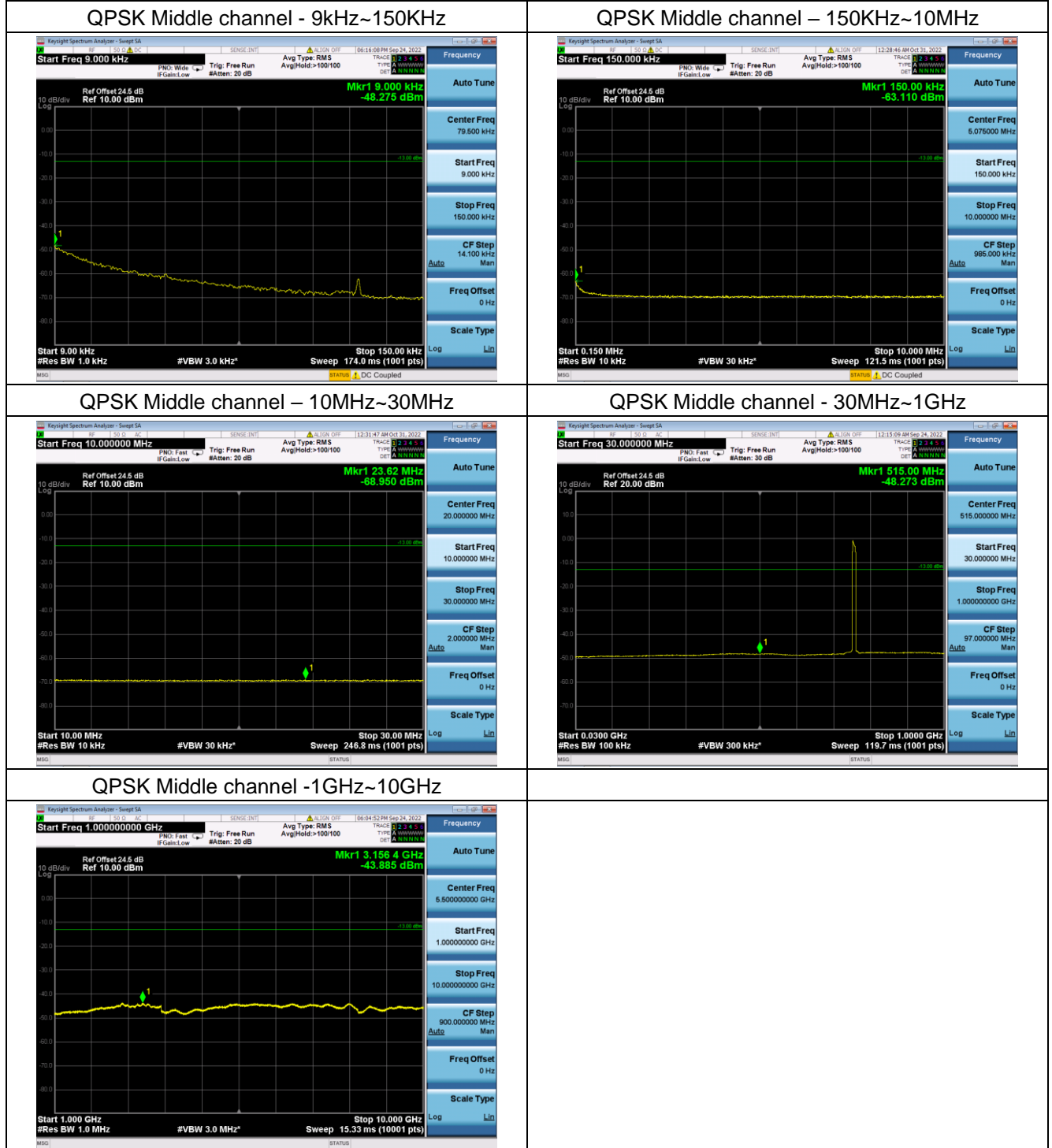
- 1) We have evaluated all subcarrier spacing modes and bandwidth modes, and only show the worst mode in the report
- 2) Test results of QPSK/16QAM/64QAM/256QAM have been evaluated, and only the worst results are recorded.



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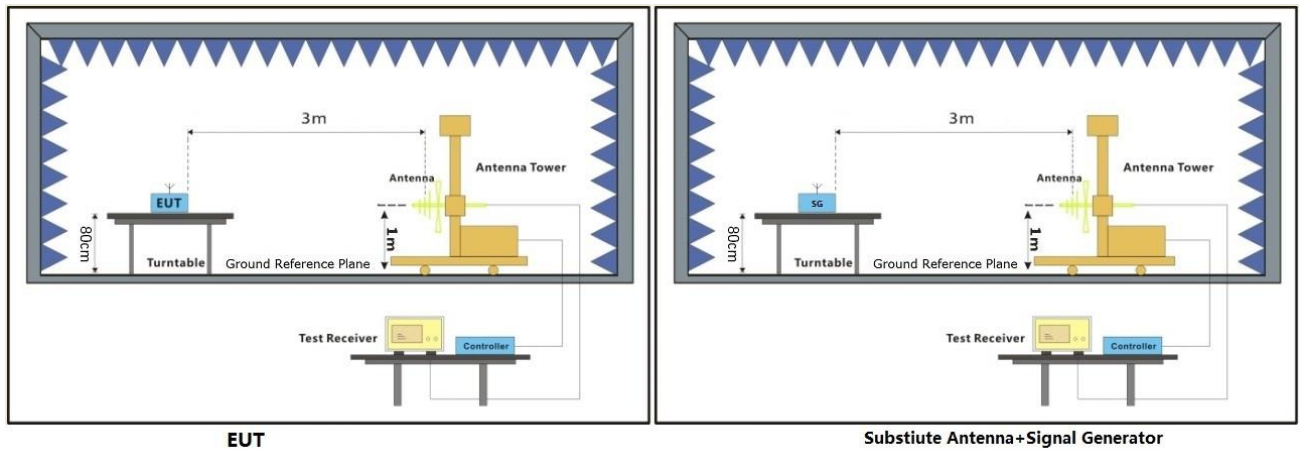
### 6.6 Radiated spurious radiation

Test Requirement: §2.1051, §90.543  
 Test Method: ANSI C63.26, KDB 971168 D01 v03 r01  
 Limit:  $\leq -13\text{dBm/MHz}$

#### 6.6.1 E.U.T. Operation

Operating Environment:  
 Temperature: 20.4 °C Humidity: 56.4 % RH Atmospheric Pressure: 1030 mbar  
 Test mode: Tx mode, Keep the EUT in transmitting mode.

#### 6.6.2 Test Setup Diagram



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### 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 then 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.



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QPSK 10M_Middle channel					
Frequency	Spurious Emission		Limit	Over limit	Result
	Polarization and Level				
MHz	polarization	dBm	dBm	dB	
362.5	Horizontal	-67.15	-13	-54.15	pass
565.5	Horizontal	-67.34	-13	-54.34	pass
891.6	Horizontal	-63.26	-13	-50.26	pass
1526.0	Horizontal	-41.04	-13	-28.04	pass
2904.3	Horizontal	-53.38	-13	-40.38	pass
4599.3	Horizontal	-49.40	-13	-36.40	pass
397.0	Vertical	-69.44	-13	-56.44	pass
604.1	Vertical	-64.60	-13	-51.60	pass
899.9	Vertical	-63.36	-13	-50.36	pass
1526.0	Vertical	-43.43	-13	-30.43	pass
2944.6	Vertical	-49.75	-13	-36.75	pass
4585.6	Vertical	-52.21	-13	-39.21	pass

Note:

- 1) We have evaluated all subcarrier spacing modes, and only show the worst mode in the report
- 2) Test results of QPSK/16QAM/64QAM/256QAM have been evaluated, and only the worst results are recorded.



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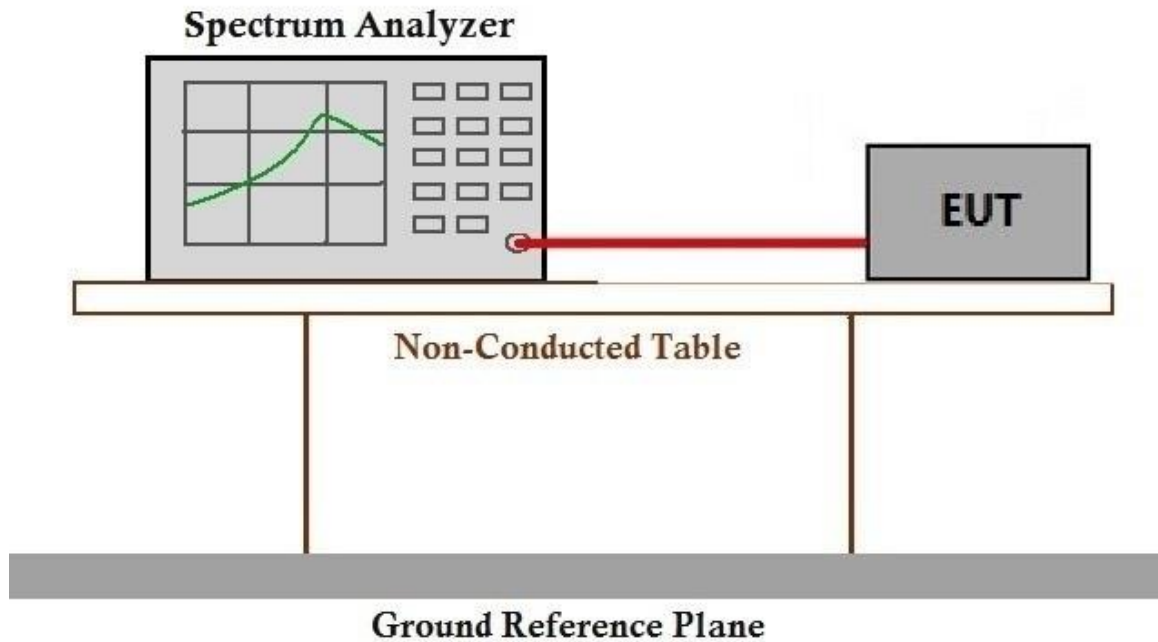
### 6.7 Frequency stability

Test Requirement: §2.1055  
Test Method: ANSI C63.26, KDB 971168 D01 v03 r01  
Limit: Fundamental emission stays within authorized frequency block

#### 6.7.1 E.U.T. Operation

Operating Environment:  
Temperature: 20.4 °C Humidity: 56.4 % RH Atmospheric Pressure: 1030 mbar  
Test mode: Tx mode, Keep the EUT in transmitting mode.

#### 6.7.2 Test Setup Diagram



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**6.7.3 Measurement Data**

Frequency Stability vs temperature:

1. Test for 5G NR Band n14 Downlink (Middle Channel 763MHz)

Temperature(°C)	Voltage (V dc)	Frequency Error (Hz)	Tolerance(ppm)
45	48.00	0	0
40	48.00	0	0
30	48.00	0	0
20	48.00	0	0
10	48.00	0	0
0	48.00	0	0
-10	48.00	0	0
-20	48.00	0	0
-30	48.00	0	0

Frequency Stability vs voltage:

1. Test for 5G NR Band n14 Downlink (Middle Channel 763MHz)

Voltage (V dc)	Temperature(°C)	Frequency Error (Hz)	Tolerance(ppm)
43.20	25	0	0
48.00	25	0	0
52.80	25	0	0

Remark:

- 1) Pretest with normal and extreme conditions, only the worst case data was showed in the test report.
- 2) We have tested all modulation and all Channel, but only the worst case data displayed in this report.



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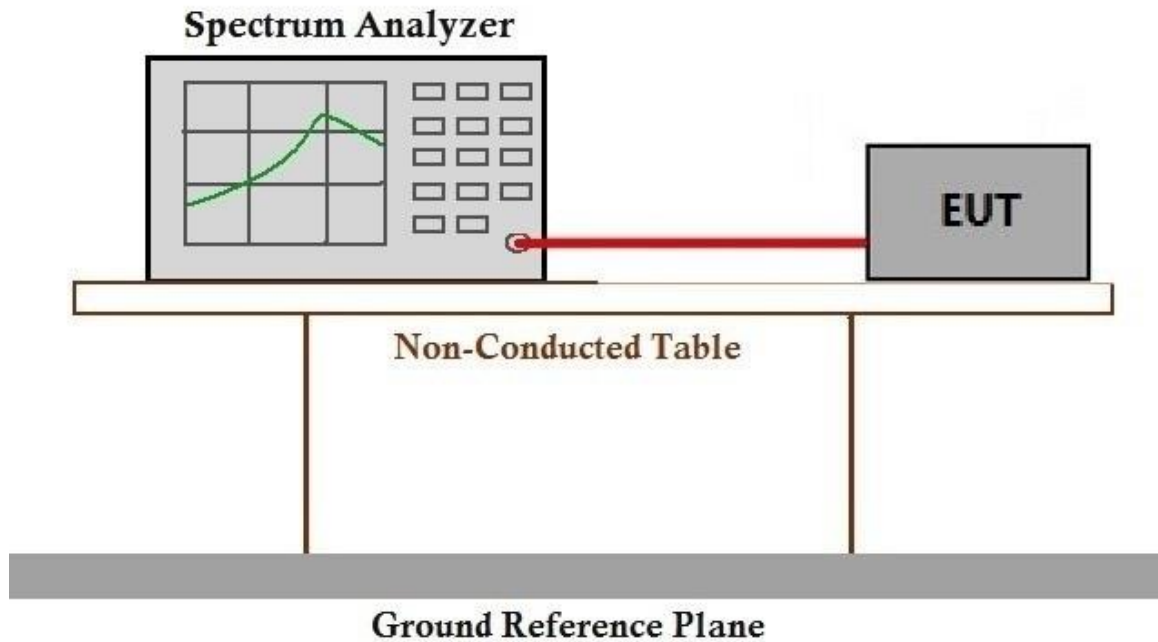
### 6.8 Emission Mask

Test Requirement: §2.1055 §90.210  
 Test Method: ANSI C63.26, KDB 971168 D01 v03 r01  
 Limit: Fundamental emission stays within authorized frequency block

#### 6.8.1 E.U.T. Operation

Operating Environment:  
 Temperature: 20.4 °C Humidity: 56.4 % RH Atmospheric Pressure: 1030 mbar  
 Test mode: Tx mode, Keep the EUT in transmitting mode.

#### 6.8.2 Test Setup Diagram



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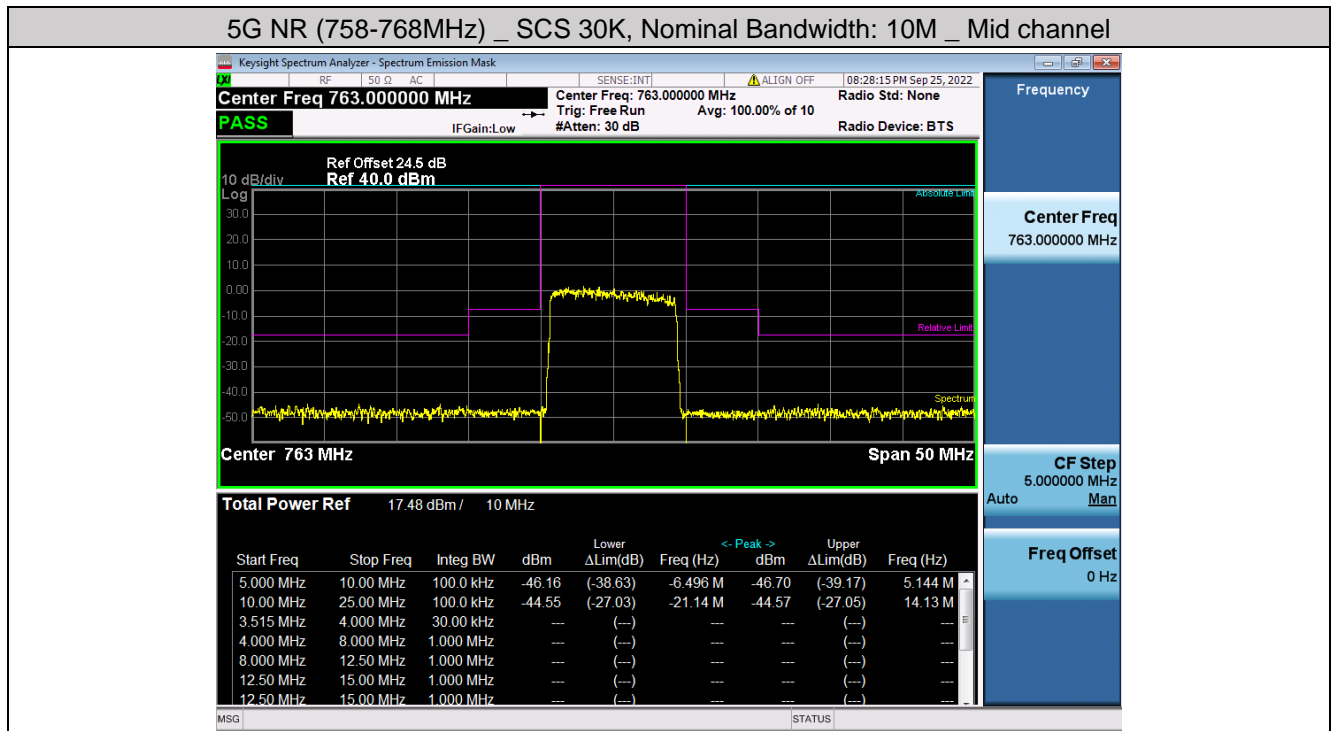
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### 6.8.3 Measurement Data

BW Arrange	SCS (kHz)	Frequency	Modulation	RB Allocation		Test Result
				Size	Offset	
<b>Single Carrier</b>						
10	30	LCH / MCH / HCH	QPSK	Full	0	Pass

Note:

1) Test results of QPSK/16QAM/64QAM/256QAM and subcarrier spacing and different RB configuration have been evaluated, and only the worst results mode are recorded.



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### 7 Photographs - Test Setup

Please refer to test setup photo

### 8 Photographs - EUT Constructional Details

Please refer to external and internal photo

- End of the Report -



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