TEST REPORT

Application No.:	FYCR2208000325AT (KSCR2208001378AT)
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
Equipment Under Test (EUT):	
EUT Name:	Remote Unit
Model No.:	E62-N3
Trade mark:	CORNING
FCC ID:	OJFE62-N3-17
Standard(s) :	FCC Part 2
	FCC Part 27
Date of Receipt:	2022-08-19
Date of Test:	2022-08-25 to 2022-08-30
Date of Issue:	2022-09-01
Test Result:	**Pass***

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

Winkey Wang
EMC Laboratory Manager

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2022-09-01		Original

Authorized for issue by:				
		Powell Bao **Powell Bao/Project Engineer**		
		Winkey Wang **Winkey Wang/Reviewer**		

2 Test Summary

Test Item	Reference	Result
Effective (Isotropic) Radiated Power Output Data	2.1046; 27.50(d)	PASS
Peak-Average Radio	27.50(d)	PASS
Bandwidth	2.1049(h)	PASS
Conducted Spurious Emissions	2.1051; 27.53(h)	PASS
Band Edge Compliance	2.1051; 27.53(h)	PASS
Radiated Spurious Emissions	2.1053	PASS
Frequency Stability	2.1055; 27.54	PASS

Remark:

EUT: In this whole report EUT means Equipment Under Test.

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

All modes have been tested and only record the worst test result.

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.

This is a DAS, no need to implement uplink test as it is cable connect to BTS (No air radiation), then the test about Uplink would be ignored.

Test method standard:

ANSI C63.26-2015

KDB 971168 D01 v03

Remark: This EUT supports SISO, 2*2 MIMO and 4*4 MIMO.
For MIMO mode the output signals are considered completely uncorrelated.

3 Contents

4 General Information

4.1 Details of E.U.T.

Power supply:	DC48V
Sample Type:	BS
Support Network:	NR
Operation Frequency Band:	Downlink 2110MHz to 2200MHz
Modulation Type:	QPSK,16QAM,64QAM,256QAM
Rated Input Power Range:	0dBm-15dBm
Normal Output Power (EIRP):	32 ± 2dBm
Antenna Type:	Internal & External antenna
Antenna Gain:	3dBi
Antenna Port:	SISO, up to 6 CCs 2x2 MIMO, up to 6 CCs 4x4 MIMO, up to 4 CCs

4.2 test frequency

	SCS	No. of Carriers	BW (MHz)	Carrier Frequency Configuration (MHz),Contiguous			Carrier Frequency Configuration (MHz), Non-Contiguous
				Bottom	Middle	Top	
5G NR Band66 (2110-2200MHz)	15,30 kHz	1 CC	10	2115	2155	2195	
			15	2117.5	2155	2192.5	
			20	2120	2155	2190	
			25	2122.5	2155	2187.5	
			30	2125	2155	2185	
			40	2130	2155	2180	
		2 CC	10+10	2120	2155	2190	2115+2195
			20+20	2130	2155	2180	2120+2190
		3 CC	20+20+20	2140	2155	2170	2120+2155+2190
		4 CC	20+20+20+20	2150	2155	2160	2120+2143+2167+2190
		5 CC	10+10+10+10+10	2135	2155	2175	2115+2135+2155+2175+2195
		6 CC	10+10+10+10+10+10	2140	2155	2170	2115+2131+2147+2163+2179+2195

4.3 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Notebook	Lenovo	--	--

4.4 Measurement Uncertainty

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

4.5 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.

4.6 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.

4.7 Deviation from Standards

None

4.8 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
MXA Signal Analyzer (10Hz-50GHz)	KEYSIGHT	N9020B	SEM004-24	2022-04-24	2023-04-23
DC Power Supply	Chroma	62024P-80-60	SEM011-09	2022-04-06	2023-04-05
Humidity/ Temperature Indicator	MINGLE	TH607	SEM002-17	2021-09-14	2022-09-13
Coaxial Cable	SGS	N/A	SEM032-01	2022-07-08	2023-07-07
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A
Vector Signal Generator(100kHz-7.5GHz)	Rohde & Schwarz	SMW200A	SEM006-19	2021-10-28	2022-10-27

Radiated Emissions (30MHz-1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
3m Anechoic Chamber	CRT	N/A	SEM001-13	2019-10-12	2022-10-11
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	2021-09-18	2022-09-17
Pre-amplifier (0.1-1.3GHz)	HP	8447D	SEM005-02	2021-09-15	2022-09-14
Coaxial Cable	SGS	N/A	SEM032-01	202207-08	2023-07-07
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A
Substitution Antenna	Schwarzbeck	VULB9168	SEM003-18	2021-10-28	2024-10-27
Vector Signal Generator(100kHz-7.5GHz)	Rohde & Schwarz	SMW200A	SEM006-19	2021-10-28	2022-10-27

Radiated Emissions (Above 1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
3m Anechoic Chamber	CRT	N/A	SEM001-13	2019-10-12	2022-10-11
Broad-Band Horn Antenna (15-40GHz)	Schwarzbeck	BBHA 9170	SEM003-15	2021-07-11	2024-07-10
Broad-Band Horn	Schwarzbeck	BBHA 9120D	SEM003-32	2021-09-26	2024-09-25

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中国・深圳・宝安区福永街道凤塘大道鑫龙科技园福永实验室 邮编: 518103 t (86–755) 88663988 f (86–755) 26710594 sgs.china@sgs.com

Antenna (1-18GHz)					
Spectrum Analyzer(20Hz-43GHz)	Rohde & Schwarz	101288	SEM004-08	2022-03-22	2023-03-21
Low Noise Amplifier(100MHz-18GHz)	CLAVIIO	BDLNA-0118-352810	SEM005-05	2022-04-06	2023-04-05
Pre-amplifier(26GHz-40GHz)	Compliance Directions Systems Inc.	PAP-2640-50	SEM005-08	2022-03-22	2023-03-21
Pre-amplifier(18GHz-26GHz)	Rohde & Schwarz	CH14-H052	SEM005-17	2022-03-22	2023-03-21
Coaxial Cable	SGS	N/A	SEM032-01	202207-08	2023-07-07
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Attenuator	Weinschel Associates	WA41	SEM021-09	N/A	N/A
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
Vector Signal Generator(100kHz-7.5GHz)	Rohde & Schwarz	SMW200A	SEM006-19	2021-10-28	2022-10-27

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 Test Results

6.1 Test conditions

Environment Parameter	Selected Values During Tests	
Relative Humidity	52%	
Atmospheric Pressure:	1010Pa	
Temperature:	TL	-10°C
	TN	+20°C
	TH	+45°C
Voltage:	VL	DC40.8 V
	VN	DC48 V
	VH	DC55.2 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

Remark:

FIBER-OPTIC AND OTHER SIMILAR RF DISTRIBUTION SYSTEMS

Fiber-optic distribution systems are a type of in-building radiation system that receives RF signals from an antenna, distributes the signal over fiber-optic cable, and then retransmits at another location for example within a building or tunnel. Most fiber-optic systems are signal boosters; however, some may be repeaters. These systems generally have two enclosures typically called host (or local or donor unit) and remote. Some systems may also have an optional expander box for fan-out to multiple remotes. The system transmits downlink signals from the remote unit to handsets, portables, or clients, and transmits uplink signals via from the host unit. Usually but not always the uplink goes through an intermediate amplifier to a “donor” antenna. Therefore both uplink and downlink must be tested, unless filing effectively documents how connection of uplink to donor antenna with or without an intermediate amplifier will be prevented, such as for always only a cabled connection to a base station. Fiber-optic systems are not amplifiers (AMP equipment class) – they are equipment class TNB or PCB. The same approval procedures also apply for multiple-enclosure systems connected by coax cable.

Synonyms and related terms: in-building radiation system, coverage enhancer, distributed antenna system, fiber-optic distribution system, converter, donor antenna

Typical in-building or distributed antenna systems can consist of five different components (enclosures), not counting antennas:

1) host unit

a) transmits uplink to base station via antenna thru coax, ***passive interface unit***, or ***active interface unit*** (amplifier)

b) sends base-station downlink via fiber-optic or coax to ***remote***

c) receives handset uplink via fiber-optic or coax from ***remote***

d) optional connection to ***expansion unit*** via fiber-optic

e) separate FCC ID from ***remote***, unless electrically identical

f) ***non-transmitting host unit***

i) connects directly to a base station via coax cable but does not connect to antenna or amplifier

ii) Part 15 digital device subject to SDoC procedure, no FCC ID

2) remote unit

a) receives base-station downlink via fiber-optic or coax from ***host***, transmits via antenna to handsets

b) returns handset uplink via fiber-optic or coax to ***host***

c) separate FCC ID from ***remote***, unless electrically identical

3) fiber-optic expansion unit

a) fiber-optic or coax from ***host***

b) fiber-optic or coax fan-out to ***remote(s)***

c) Part 15 digital device subject to SDoC procedure, no FCC ID

4) RF expansion unit

a) internal or external device used to add band(s) and/or transmit mode(s) to a ***remote***
b) operates only when connected to a ***remote unit*** as part of a booster system
c) contains signal-processing functions to convert baseband signal into modulated RF signal
d) use equipment class PCB or TNB for an ***RF expansion unit*** (the associated ***remote*** uses an equipment class Bxx per **Table C.1** of this document, e.g., B2I)

5) ***passive interface unit***

a) contains attenuators, splitters, combiners

b) coax cable connection between ***host*** and base-station

c) passive device, no FCC ID

6) ***active interface unit***

a) amplifies uplink signal from ***host unit*** for transmit by donor antenna

b) attenuates downlink from donor antenna

c) coax cable connection between ***host*** and ***active interface unit***

d) usually has separate FCC ID; in some cases could be combined/included with ***host*** as one enclosure

GENERAL DEFINITIONS FOR CERTIFICATION PURPOSES:

The following three general definitions follow from those stated in the Part 22, 24, 27 and 90 rule sections as listed above. Two of the definitions replace previous EAB internal definitions given for booster, repeater and extender. The general term “extender” is the same as booster, but booster should be used rather than extender. The general term “translator” is the same as repeater, but repeater should be used rather than translator.

External radio frequency power amplifier (ERFPA) - any device which, (1) when used in conjunction with a radio transmitter signal source, is capable of amplification of that signal, and (2) is not an integral part of a radio transmitter as manufactured. The EAS equipment class AMP is used only for an ERFPA device inserted between a transmitter (TNB/PCB) and an antenna (has only one antenna port) ***Booster*** is a device that automatically reradiates signals from base transmitters without channel translation, for the purpose of improving the reliability of existing service by increasing the signal strength in dead spots. An “in-building radiation system” is a signal booster. These devices are not intended to extend the size of

coverage from the originating base station. A booster can be either single or multiple channels.

Repeater is a device that retransmits the signals of other stations. Repeaters are different from boosters in that they can include frequency translation and can extend coverage beyond the design of the original base station. A repeater is typically single channel but can also be multiple channels.

ERFPA (AMP) and boosters/repeaters (TNB/PCB) can generally be authorized for all rule parts except 15 and 18.

Tests should be done with each typical signal. e.g., for F3E emissions use 2500 Hz with 2.5 or 5 kHz deviation. Use of CW signal for some tests is acceptable in lieu of actual emission, in some cases when CW signal gives worst case.

The E62-M2 system working principle: the RF signal coupled from BTS is transferred into optical signal, and then transmitted via a fiber to remote unit. The remote re-transfers the optical signal back to RF signal, through the frequency translation and after power amplifiers, can extend the BTS coverage to another desired area; the E62-M2 system is compliant with the description about distributed antenna system in FCC rules, So **the Equipment belongs to the remote unit.**

6.2 Test Procedure & Measurement Data

6.2.1 Effective (Isotropic) Radiated Power Output Data

Test Requirement: FCC Part 2.1046; FCC Part 27.50(d)

Test Method: ANSI C63.26-2015, KDB 971168 D01 v03

EUT Operation:

Status: Drive the EUT to maximum output power.

Conditions: Normal conditions

Application: Cellular Band RF output ports

Test Configuration:

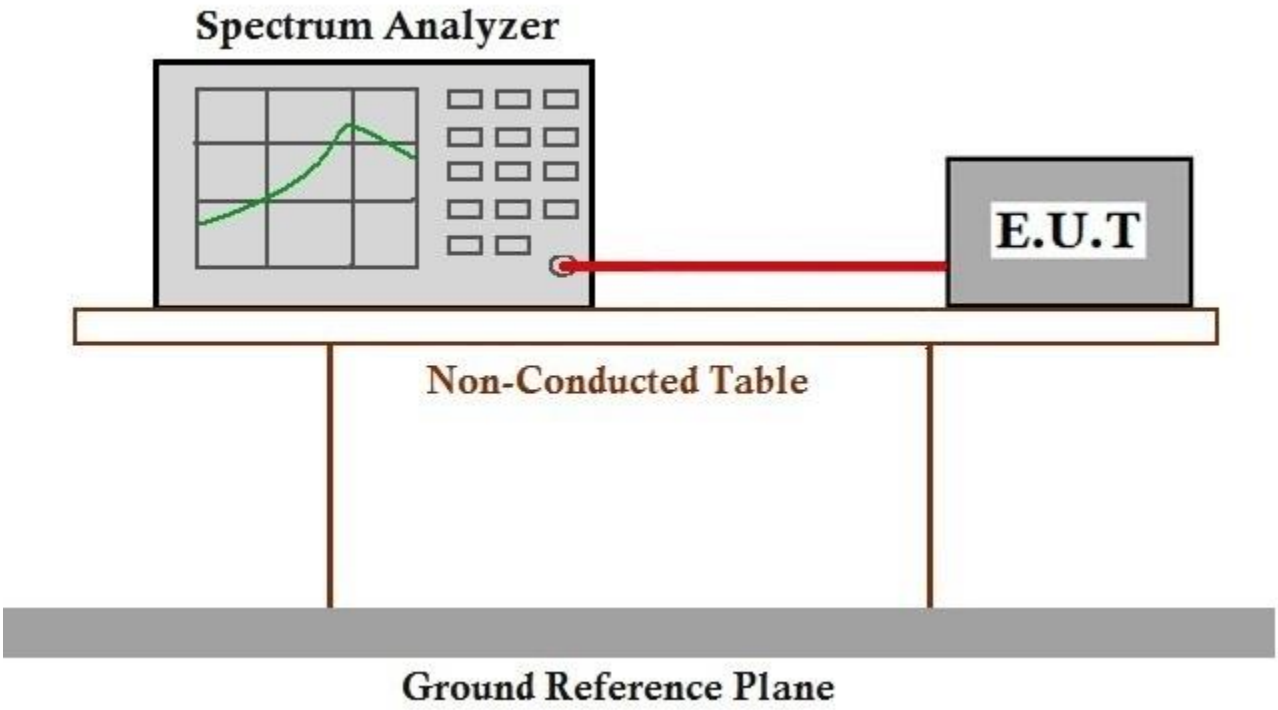

Fig.1 Test Setup Diagram

6.2.1.1 Measurement Record:

1 Carriers _ SCS 15KHz					
Bandwidth (MHz)	Frequency	Modulation	SISO EIRP		EIRP Limit (dBm/MHz)
			Total Power (dBm)	Channel Power (dBm/1MHz)	
10	LCH	QPSK	21.79	11.97	62.15
	MCH		21.73	12.42	62.15
	HCH		21.17	11.45	62.15
15	LCH		21.94	10.19	62.15
	MCH		21.72	10.59	62.15
	HCH		21.13	9.79	62.15
20	LCH		21.74	8.85	62.15
	MCH		21.46	9.34	62.15
	HCH		21.44	8.21	62.15
25	LCH		21.58	7.97	62.15
	MCH		21.65	7.29	62.15
	HCH		21.57	6.82	62.15
30	LCH		21.85	7.63	62.15
	MCH		21.43	8.04	62.15
	HCH		21.15	6.92	62.15
40	LCH		21.01	6.65	62.15
	MCH		20.91	6.73	62.15
	HCH		20.93	6.11	62.15

2 Carriers _ SCS 15KHz					
Bandwidth (MHz)	Frequency (MHz)	Modulation	SISO EIRP		EIRP Limit (dBm/MHz)
			Total Power (dBm)	Channel Power (dBm/1MHz)	
10+10	LCH	QPSK	22.43	9.02	62.15
	MCH		22.22	9.59	62.15
	HCH		21.85	8.73	62.15
20+20	LCH		22.17	5.56	62.15
	MCH		21.87	6.71	62.15
	HCH		21.47	6.16	62.15
10+10 (Non-Contiguous)	2115+2195		21.99	8.69	62.15
20+20 (Non-Contiguous)	2120+2190		22.24	8.68	62.15

3 Carriers _ SCS 15KHz					
Bandwidth (MHz)	Frequency (MHz)	Modulation	SISO EIRP		EIRP Limit (dBm/MHz)
			Total Power (dBm)	Channel Power (dBm/1MHz)	
20+20+20	LCH	QPSK	21.96	5.63	62.15
	MCH		22.42	5.16	62.15
	HCH		22.12	4.52	62.15
20+20+20 (Non-Contiguous)	2120+2155+2190		22.42	5.15	62.15

4 Carriers _ SCS 15KHz					
Bandwidth (MHz)	Frequency (MHz)	Modulation	SISO EIRP		EIRP Limit (dBm/MHz)
			Total Power (dBm)	Channel Power (dBm/1MHz)	
20+20+20+20	LCH	QPSK	22.29	4.32	62.15
	MCH		22.28	4.13	62.15
	HCH		22.27	3.98	62.15
20+20+20+20 (Non-Contiguous)	2120+2143+2167+2190		22.49	4.26	62.15

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5 Carriers _ SCS 15KHz					
Bandwidth (MHz)	Frequency (MHz)	Modulation	SISO EIRP		EIRP Limit (dBm/MHz)
			Total Power (dBm)	Channel Power (dBm/1MHz)	
10+10+10+10+10	LCH	QPSK	22.51	4.41	62.15
	MCH		22.34	5.91	62.15
	HCH		22.14	5.73	62.15
10+10+10+10+10 (Non-Contiguous)	2115+2135+2155+2175+2195		22.40	4.36	62.15

6 Carriers _ SCS 15KHz					
Bandwidth (MHz)	Frequency (MHz)	Modulation	SISO EIRP		EIRP Limit (dBm/MHz)
			Total Power (dBm)	Channel Power (dBm/1MHz)	
10+10+10+10+10+10	LCH	QPSK	22.51	5.47	62.15
	MCH		22.42	5.16	62.15
	HCH		22.26	4.88	62.15
10+10+10+10+10+10 (Non-Contiguous)	2115+2131+2147+2163+2179+2195		22.35	5.49	62.15

Remark: only the worst cases have been recorded.

1 Carriers _ SCS 15KHz					
Bandwidth (MHz)	Frequency	Modulation	2*2 MIMO EIRP		EIRP Limit (dBm/MHz)
			Total Power (dBm)	Channel Power (dBm/1MHz)	
10	LCH	QPSK	24.8	14.98	62.15
	MCH		24.74	15.43	62.15
	HCH		24.18	14.46	62.15
15	LCH		24.95	13.2	62.15
	MCH		24.73	13.6	62.15
	HCH		24.14	12.8	62.15
20	LCH		24.75	11.86	62.15
	MCH		24.47	12.35	62.15
	HCH		24.45	11.22	62.15
25	LCH		24.59	10.98	62.15
	MCH		24.66	10.3	62.15
	HCH		24.58	9.83	62.15
30	LCH		24.86	10.64	62.15
	MCH		24.44	11.05	62.15
	HCH		24.16	9.93	62.15
40	LCH		24.02	9.66	62.15
	MCH		23.92	9.74	62.15
	HCH		23.94	9.12	62.15

2 Carriers _ SCS 15KHz					
Bandwidth (MHz)	Frequency (MHz)	Modulation	2*2 MIMO EIRP		EIRP Limit (dBm/MHz)
			Total Power (dBm)	Channel Power (dBm/1MHz)	
10+10	LCH	QPSK	25.44	12.03	62.15
	MCH		25.23	12.6	62.15
	HCH		24.86	11.74	62.15
20+20	LCH		25.18	8.57	62.15
	MCH		24.88	9.72	62.15
	HCH		24.48	9.17	62.15
10+10 (Non-Contiguous)	2115+2195		25	11.7	62.15
20+20 (Non-Contiguous)	2120+2190		25.25	11.69	62.15

3 Carriers _ SCS 15KHz					
Bandwidth (MHz)	Frequency (MHz)	Modulation	2*2 MIMO EIRP		EIRP Limit (dBm/MHz)
			Total Power (dBm)	Channel Power (dBm/1MHz)	
20+20+20	LCH	QPSK	24.97	8.64	62.15
	MCH		25.43	8.17	62.15
	HCH		25.13	7.53	62.15
20+20+20 (Non-Contiguous)	2120+2155+2190		25.43	8.16	62.15

4 Carriers _ SCS 15KHz					
Bandwidth (MHz)	Frequency (MHz)	Modulation	2*2 MIMO EIRP		EIRP Limit (dBm/MHz)
			Total Power (dBm)	Channel Power (dBm/1MHz)	
20+20+20+20	LCH	QPSK	25.3	7.33	62.15
	MCH		25.29	7.14	62.15
	HCH		25.28	6.99	62.15
20+20+20+20 (Non-Contiguous)	2120+2143+2167+2190		25.5	7.27	62.15

5 Carriers _ SCS 15KHz					
Bandwidth (MHz)	Frequency (MHz)	Modulation	2*2 MIMO EIRP		EIRP Limit (dBm/MHz)
			Total Power (dBm)	Channel Power (dBm/1MHz)	
10+10+10+10+10	LCH	QPSK	25.52	7.42	62.15
	MCH		25.35	8.92	62.15
	HCH		25.15	8.74	62.15
10+10+10+10+10 (Non-Contiguous)	2115+2135+2155+2175 +2195		25.41	7.37	62.15

6 Carriers _ SCS 15KHz					
Bandwidth (MHz)	Frequency (MHz)	Modulation	2*2 MIMO EIRP		EIRP Limit (dBm/MHz)
			Total Power (dBm)	Channel Power (dBm/1MHz)	
10+10+10+10+10+10	LCH	QPSK	25.52	8.48	62.15
	MCH		25.43	8.17	62.15
	HCH		25.27	7.89	62.15
10+10+10+10+10+10 (Non-Contiguous)	2115+2131+2147+2163+2179+2195		25.36	8.5	62.15

Remark: only the worst cases have been recorded.

1 Carriers _ SCS 15KHz					
Bandwidth (MHz)	Frequency	Modulation	4*4 MIMO EIRP		EIRP Limit (dBm/MHz)
			Total Power (dBm)	Channel Power (dBm/1MHz)	
10	LCH	QPSK	27.81	17.99	62.15
	MCH		27.75	18.44	62.15
	HCH		27.19	17.47	62.15
15	LCH		27.96	16.21	62.15
	MCH		27.74	16.61	62.15
	HCH		27.15	15.81	62.15
20	LCH		27.76	14.87	62.15
	MCH		27.48	15.36	62.15
	HCH		27.46	14.23	62.15
25	LCH		27.60	13.99	62.15
	MCH		27.67	13.31	62.15
	HCH		27.59	12.84	62.15
30	LCH		27.87	13.65	62.15
	MCH		27.45	14.06	62.15
	HCH		27.17	12.94	62.15
40	LCH		27.03	12.67	62.15
	MCH		26.93	12.75	62.15
	HCH		26.95	12.13	62.15

2 Carriers _ SCS 15KHz					
Bandwidth (MHz)	Frequency (MHz)	Modulation	4*4 MIMO EIRP		EIRP Limit (dBm/MHz)
			Total Power (dBm)	Channel Power (dBm/1MHz)	
10+10	LCH	QPSK	28.45	15.04	62.15
	MCH		28.24	15.61	62.15
	HCH		27.87	14.75	62.15
20+20	LCH		28.19	11.58	62.15
	MCH		27.89	12.73	62.15
	HCH		27.49	12.18	62.15
10+10 (Non-Contiguous)	2115+2195		28.01	14.71	62.15
20+20 (Non-Contiguous)	2120+2190		28.26	14.70	62.15

3 Carriers _ SCS 15KHz					
Bandwidth (MHz)	Frequency (MHz)	Modulation	4*4 MIMO EIRP		EIRP Limit (dBm/MHz)
			Total Power (dBm)	Channel Power (dBm/1MHz)	
20+20+20	LCH	QPSK	27.98	11.65	62.15
	MCH		28.44	11.18	62.15
	HCH		28.14	10.54	62.15
20+20+20 (Non-Contiguous)	2120+2155+2190		28.44	11.17	62.15

4 Carriers _ SCS 15KHz					
Bandwidth (MHz)	Frequency (MHz)	Modulation	4*4 MIMO EIRP		EIRP Limit (dBm/MHz)
			Total Power (dBm)	Channel Power (dBm/1MHz)	
20+20+20+20	LCH	QPSK	28.31	10.34	62.15
	MCH		28.30	10.15	62.15
	HCH		28.29	10.00	62.15
20+20+20+20 (Non-Contiguous)	2120+2143+2167+2190		28.51	10.28	62.15

5 Carriers _ SCS 15KHz					
Bandwidth (MHz)	Frequency (MHz)	Modulation	4*4 MIMO EIRP		EIRP Limit (dBm/MHz)
			Total Power (dBm)	Channel Power (dBm/1MHz)	
10+10+10+10+10	LCH	QPSK	28.53	10.43	62.15
	MCH		28.36	11.93	62.15
	HCH		28.16	11.75	62.15
10+10+10+10+10 (Non-Contiguous)	2115+2135+2155+2175 +2195		28.42	10.38	62.15

6 Carriers _ SCS 15KHz					
Bandwidth (MHz)	Frequency (MHz)	Modulation	4*4 MIMO EIRP		EIRP Limit (dBm/MHz)
			Total Power (dBm)	Channel Power (dBm/1MHz)	
10+10+10+10+10 +10	LCH	QPSK	28.53	11.49	62.15
	MCH		28.44	11.18	62.15
	HCH		28.28	10.90	62.15
10+10+10+10+10 +10 (Non-Contiguous)	2115+2131+2147+2163+21 79+2195		28.37	11.51	62.15

Remark: only the worst cases have been recorded.

6.2.2 Peak-Average Radio

Test Requirement: FCC Part 27.53(d)

Test Method: ANSI C63.26-2015, KDB 971168 D01 v03

EUT Operation:

Status: Drive the EUT to maximum output power.

Conditions: Normal conditions

Application: Cellular Band RF output ports

Test Configuration:

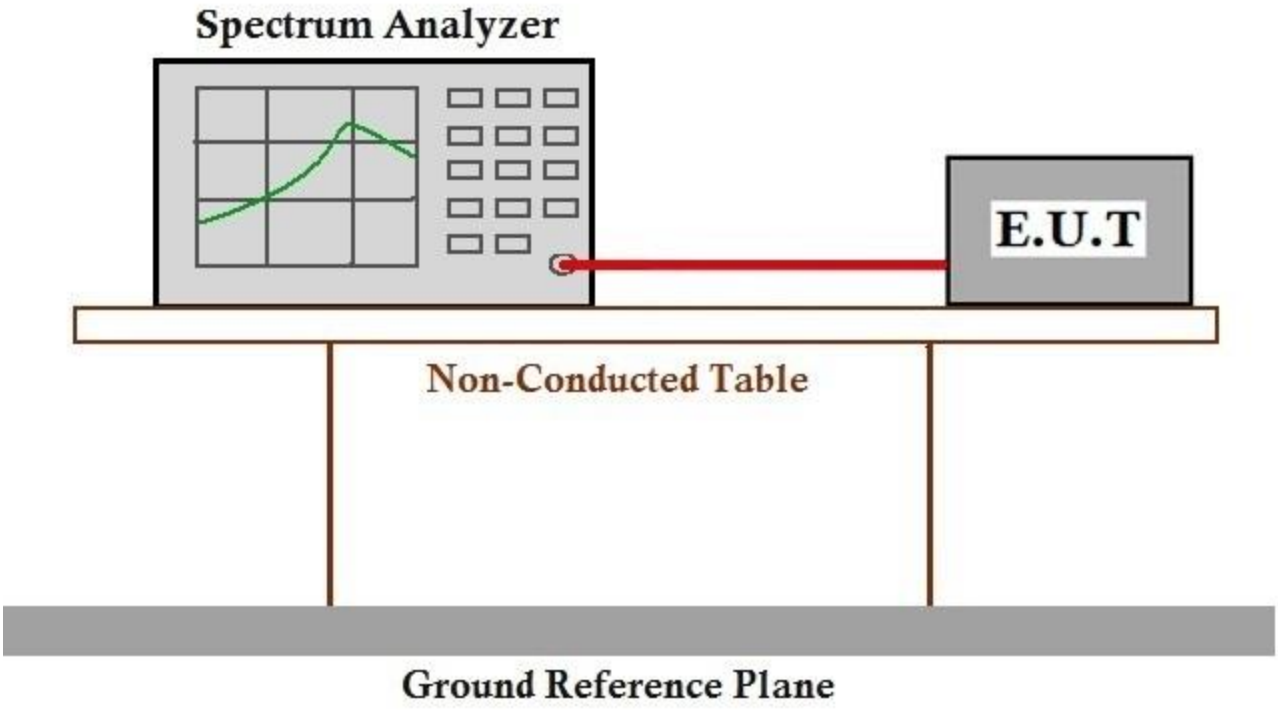


Fig.2. Test Setup Diagram

6.2.2.1 Measurement Record:

Please refer to Appendix A- Peak-Average Ratio.

6.2.3 Bandwidth

Test Requirement: FCC Part 2.1049(h)

Test Method: ANSI C63.26-2015, KDB 971168 D01 v03

EUT Operation:

Status: Drive the EUT to maximum output power.

Conditions: Normal conditions

Application: Cellular Band RF output ports

Test Configuration:

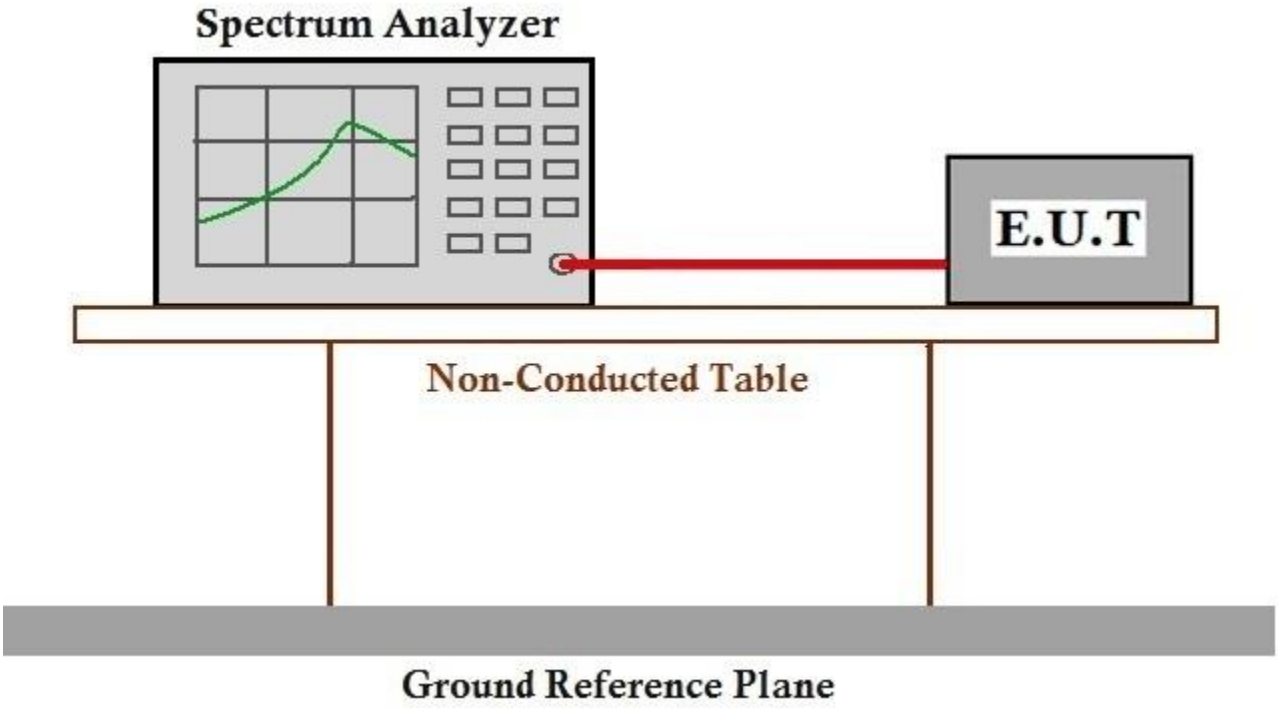


Fig.3. Test Setup Diagram

6.2.3.1 Measurement Record:

Please refer to Appendix B- Bandwidth.

6.2.4 Conducted Spurious Emissions

Test Requirement: FCC Part 2.1051, FCC Part 27.53(h)

Test Method: ANSI C63.26-2015, KDB 971168 D01 v03

EUT Operation:

Status: Drive the EUT to maximum output power.

Conditions: Normal conditions

Application: Cellular Band RF output ports

Test Configuration:

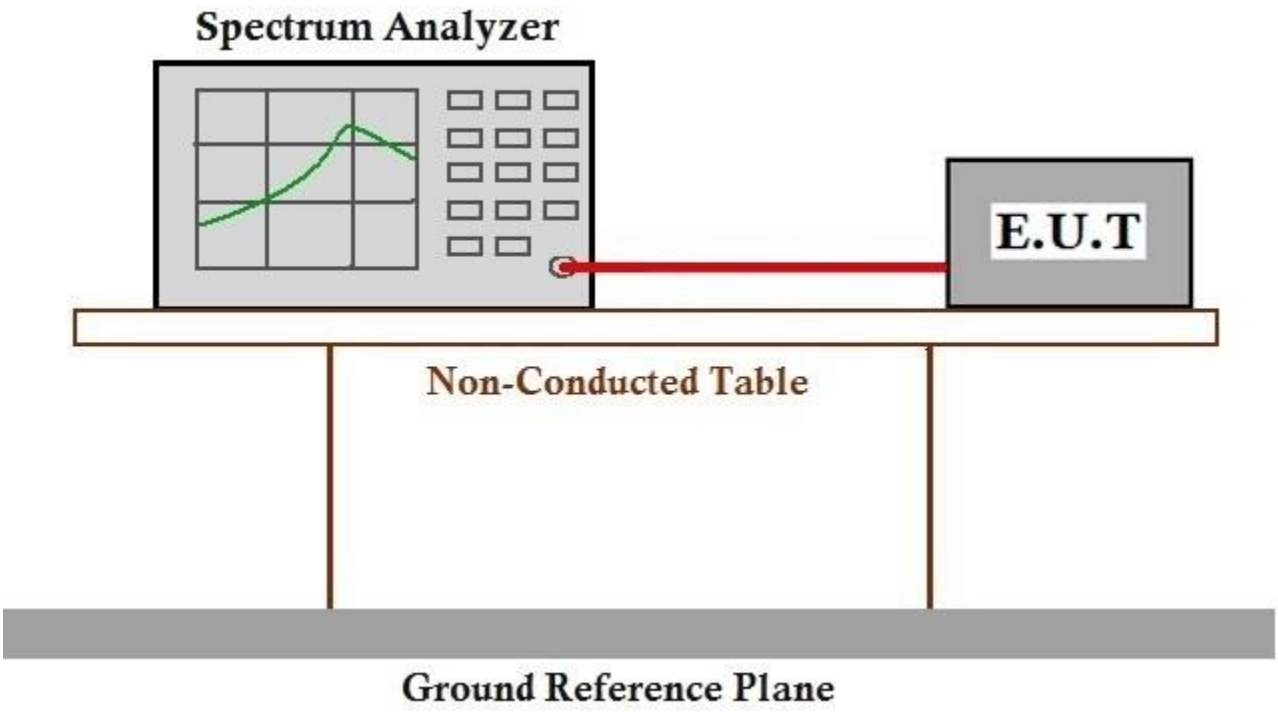


Fig.4. Test Setup Diagram

6.2.4.1 Measurement Record:

Please refer to Appendix C- Conducted Spurious Emissions.

6.2.5 Band Edge Compliance

Test Requirement: FCC Part 2.1051, FCC Part 27.53(h)

Test Method: ANSI C63.26-2015, KDB 971168 D01 v03

EUT Operation:

Status: Drive the EUT to maximum output power.

Conditions: Normal conditions

Application: Cellular Band RF output ports

Test Configuration:

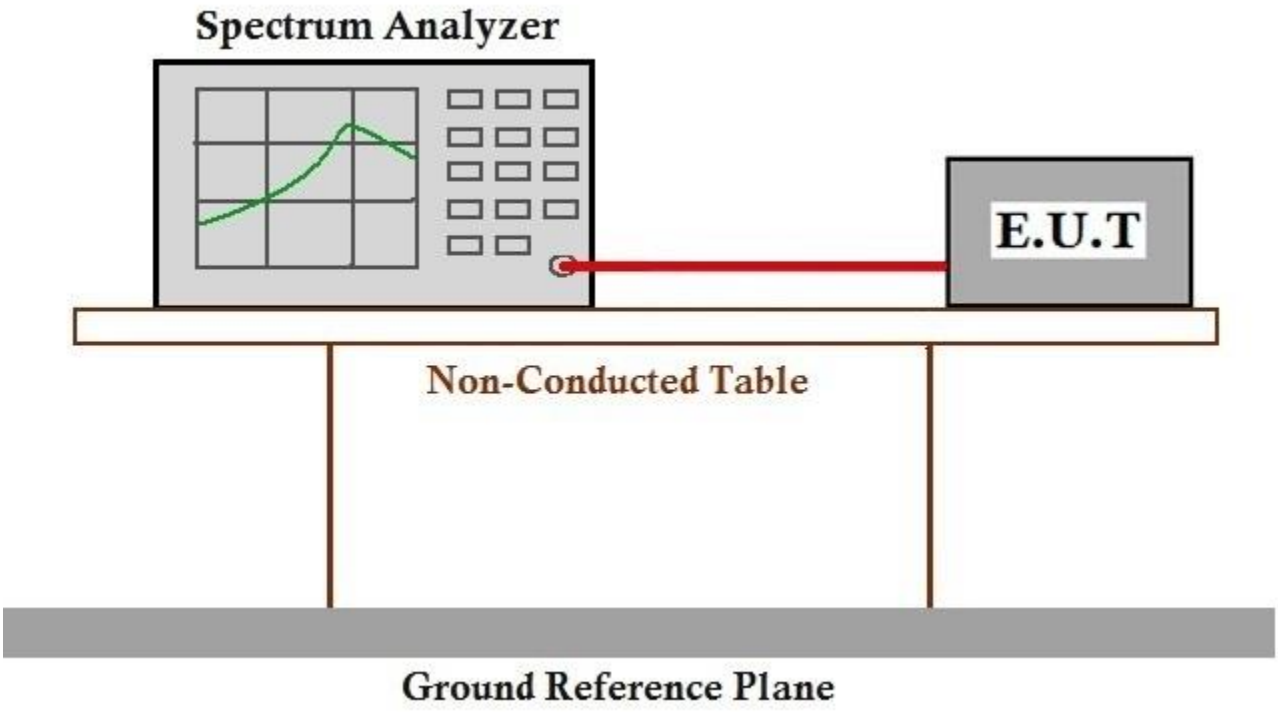


Fig.4. Test Setup Diagram

6.2.5.1 Measurement Record:

Please refer to Appendix C- Conducted Spurious Emissions.

6.2.6 Radiated Spurious Emissions

Test Requirement: FCC Part 2.1053

Test Method: ANSI C63.26-2015, KDB 971168 D01 v03

EUT Operation:

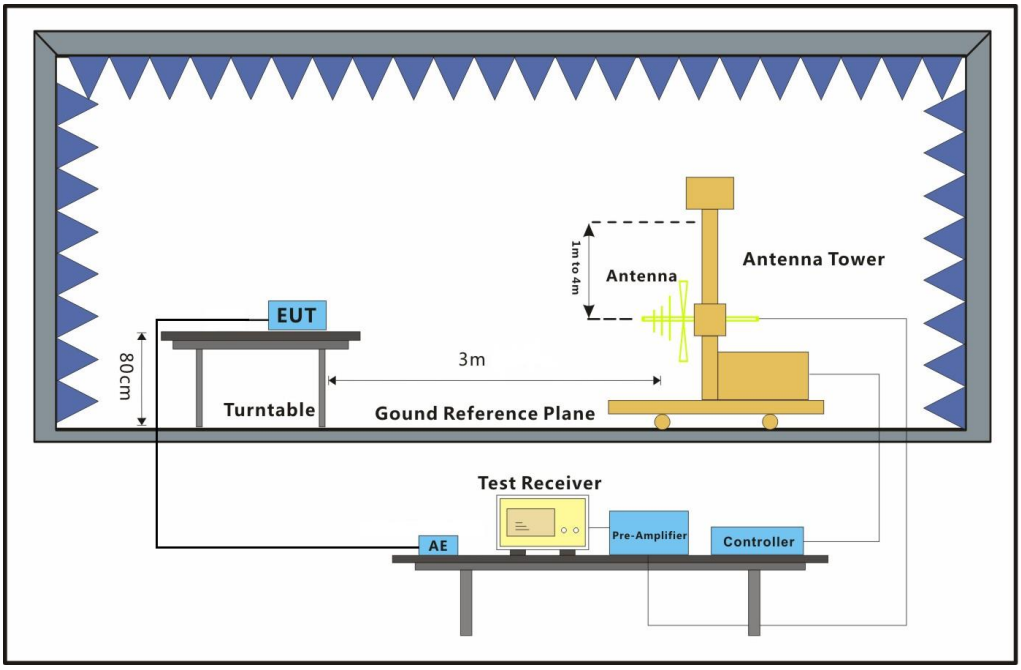
Status: Drive the EUT to maximum output power.

Conditions: Normal conditions

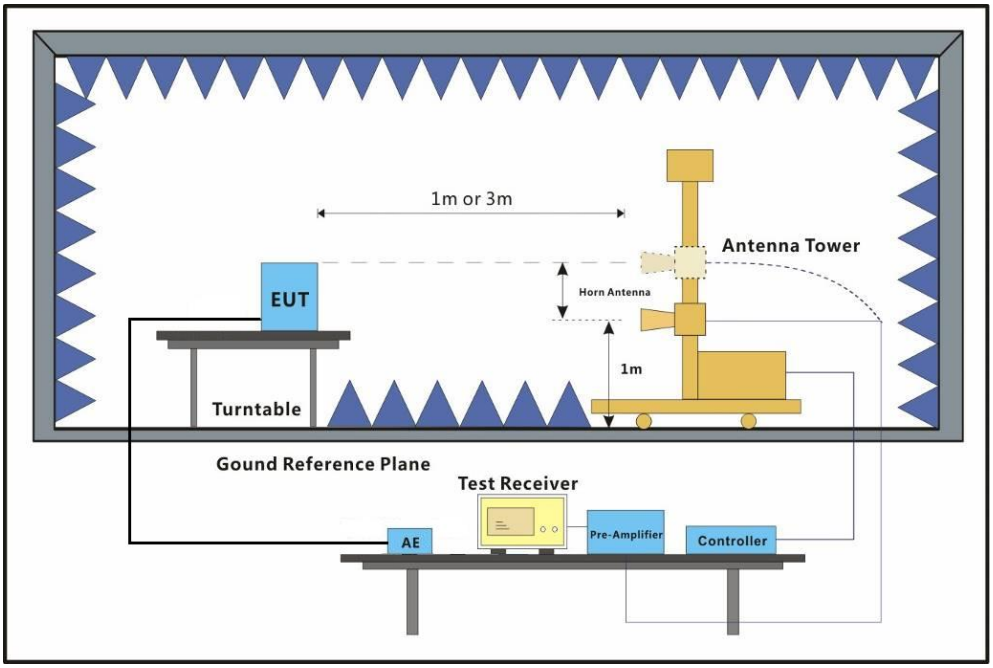
Application: Enclosure

Test Configuration:

30MHz to 1GHz emissions:



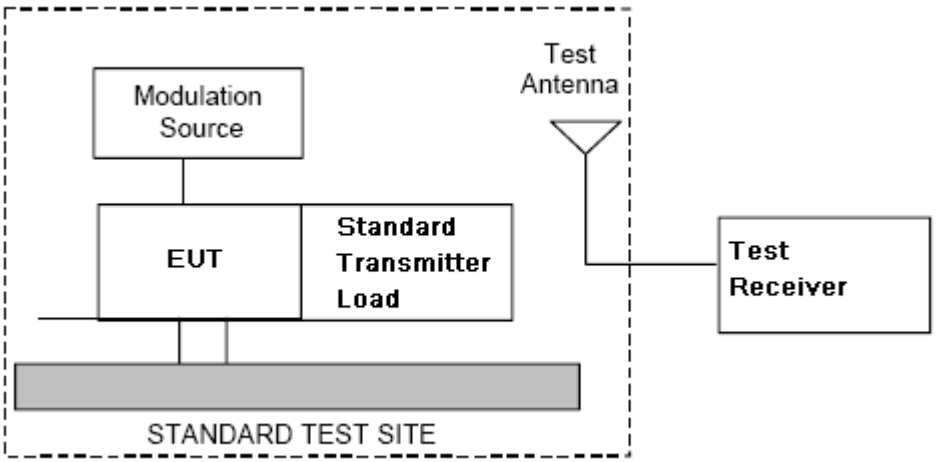
1GHz to 40GHz emissions:



Test Procedure:

1. Test the background noise level with all the test facilities;
2. Keep one transmitting path, all other connectors shall be connected by normal power or RF leads;
3. Select the suitable RF notch filter to avoid the test receiver or spectrum analyzer produce unwanted spurious emissions;
4. Keep the EUT continuously transmitting in max power;
5. Read the radiated emissions of the EUT enclosure.

Radiated Emissions Test Procedure:



a) Connect the equipment as illustrated.

b) Adjust the spectrum analyzer for the following settings:

1) Resolution Bandwidth = 100 kHz for spurious emissions below 1 GHz, and 1 MHz for spurious emissions above 1GHz.

2) Video Bandwidth = 300 kHz for spurious emissions below 1 GHz, and 3 MHz for spurious emissions above 1 GHz.

3) Sweep Speed slow enough to maintain measurement calibration.

4) Detector Mode = Positive Peak.

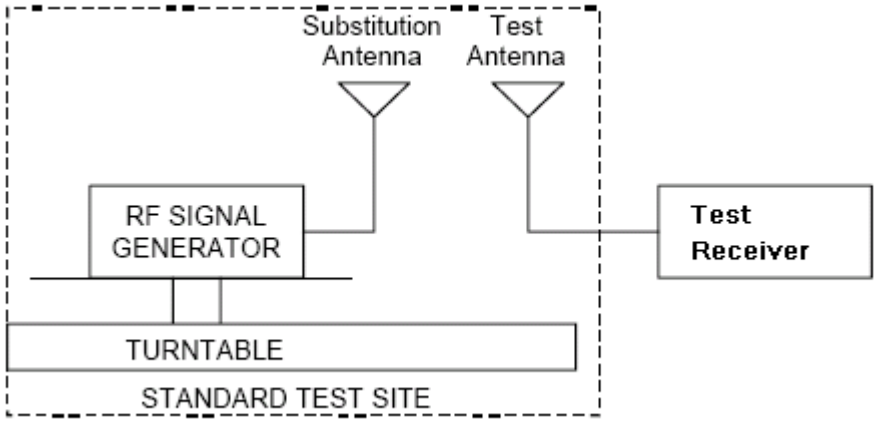
c) Place the transmitter to be tested on the turntable in the standard test site, The transmitter is transmitting into a no radiating load that is placed on the turntable. The RF cable to this load should be of minimum length.

d) Measurements shall be made from30MHz to 10 times of fundamental carrier, except for the region close to the carrier equal to ± the carrier bandwidth.

e) Key the transmitter without modulation or normal modulation base the standard.

f) For each spurious frequency, raise and lower the test antenna from 1 m to 4 m to obtain a maximum reading on the spectrum analyzer with the test antenna at horizontal polarity. Then the turntable should be rotated 360° to determine the maximum reading. Repeat this procedure to obtain the highest possible reading. Record this maximum reading.

g) Repeat step f) for each spurious frequency with the test antenna polarized vertically.



h) Reconnect the equipment as illustrated.

i) Keep the spectrum analyzer adjusted as in step b).

j) Remove the transmitter and replace it with a substitution antenna (the antenna should be half-wavelength for each frequency involved). The center of the substitution antenna should be approximately at the same location as the center of the transmitter. At the lower frequencies, where the substitution antenna is very long, this will be impossible to achieve when the antenna is polarized vertically. In such case the lower end of the antenna should be 0.3 m above the ground.

k) Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a no radiating cable. With the antennas at both ends horizontally polarized, and with the signal generator tuned to a particular spurious frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output.

l) Repeat step k) with both antennas vertically polarized for each spurious frequency.

m) Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps k) and l) by the power loss in the cable between the generator and the antenna, and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna by the following formula:

Pd(dBm) = *Pg*(dBm) – *cable loss* (dB) + *antenna gain* (dB)

where:

Pd is the dipole equivalent power and

Pg is the generator output power into the substitution antenna.

NOTE:

1) It is permissible to use other antennas provided they can be referenced to a dipole.

2) For below 1GHz signal, the *antenna gain* (dB) is dBd, and for above 1GHz signal, the *antenna gain* (dB) is dBi

3) Effective radiated power (e.r.p) refers to the radiation of a half wave tuned dipole instead of an isotropic antenna. There is a constant difference of 2.15 dB between e.i.r.p. and e.r.p.

e.r.p (dBm) = e.i.r.p. (dBm) - 2.15

4) For this test, the AU and EU are put outside of the chamber; connect to the RU through the optical fiber

6.2.6.1 Measurement Record:

NR BAND 66-1 Carriers _ SCS 15KHz 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
2896.945	-59.75	-13	-46.75	-64.46	0.59	5.3	Horizontal	Pass
4888.151	-54.51	-13	-41.51	-63.45	0.76	9.7	Horizontal	Pass
15134.08	-51.16	-13	-38.16	-63.02	1.44	13.3	Horizontal	Pass
4230.396	-59.68	-13	-46.68	-67.48	0.7	8.5	Vertical	Pass
7875.254	-54.31	-13	-41.31	-66.52	0.99	13.2	Vertical	Pass
10545.01	-50.39	-13	-37.39	-62.4	1.49	13.5	Vertical	Pass

BAND 66-1 Carriers _ SCS 15KHz 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
5898.442	-59.75	-13	-46.75	-69.2	0.85	10.3	Horizontal	Pass
7875.254	-54.51	-13	-41.51	-66.72	0.99	13.2	Horizontal	Pass
10791.69	-51.16	-13	-38.16	-63.17	1.49	13.5	Horizontal	Pass
4304.4	-59.68	-13	-46.68	-67.48	0.7	8.5	Vertical	Pass
6470.026	-54.31	-13	-41.31	-64.79	0.92	11.4	Vertical	Pass
11803.28	-50.39	-13	-37.39	-61.68	1.81	13.1	Vertical	Pass

BAND 66-1 Carriers _ SCS 15KHz 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
2947.623	-59.75	-13	-46.75	-64.46	0.59	5.3	Horizontal	Pass
4930.721	-54.51	-13	-41.51	-63.45	0.76	9.7	Horizontal	Pass
14660.48	-51.16	-13	-38.16	-62.19	1.37	12.4	Horizontal	Pass
2947.623	-59.68	-13	-46.68	-62.24	0.59	5.3	Vertical	Pass
4379.699	-54.31	-13	-41.31	-62.11	0.7	8.5	Vertical	Pass
15354.39	-50.39	-13	-37.39	-62.25	1.44	13.3	Vertical	Pass

Remark:

Only the worst case of 1 Carriers _ SCS 15KHz 10MHz signal test data have been recorded in the report.

6.2.7 Frequency Stability

Test Requirement: FCC Part 2.1055, FCC Part 27.53(h)

Test Method: ANSI C63.26-2015, KDB 971168 D01 v03

EUT Operation:

Status: Drive the EUT to maximum output power.

Conditions: Normal conditions

Application: Cellular Band RF output ports

Test Configuration:

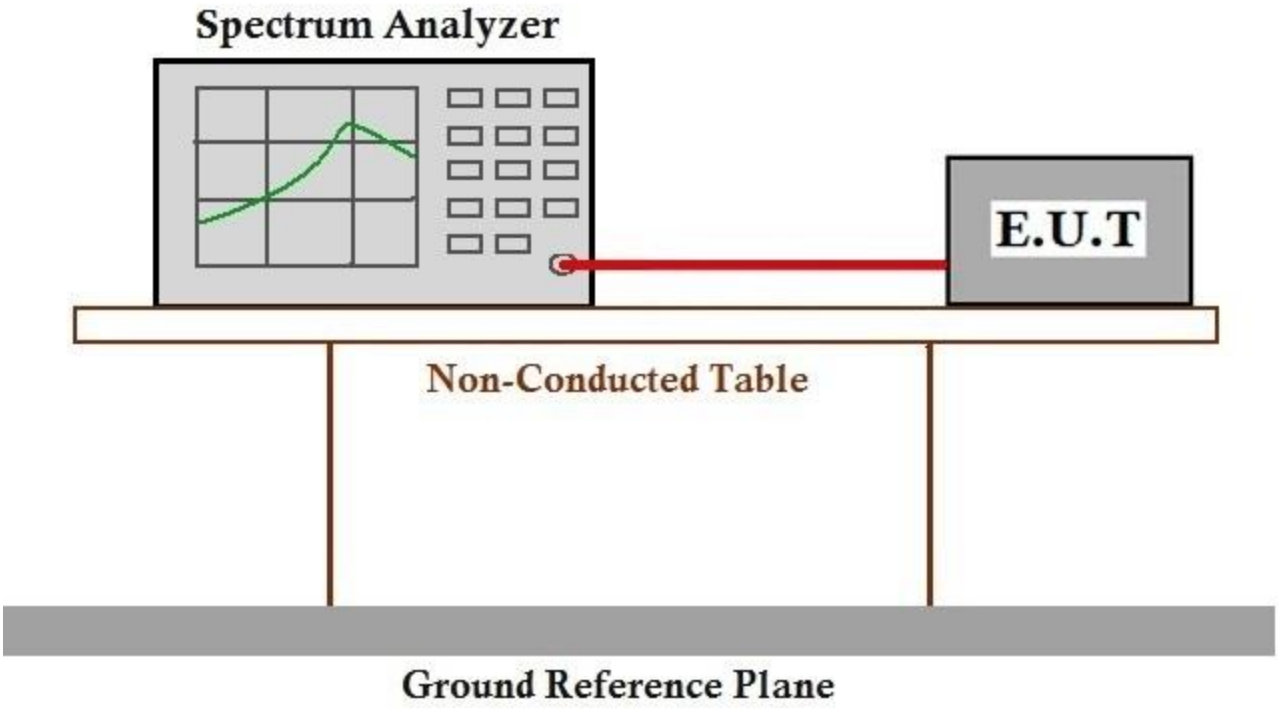


Fig.5. Test Setup Diagram

6.2.7.1 Measurement Record:

Frequency Stability vs temperature:

1.Test for NR Band 66 Downlink (Middle Channel: 2155MHz)

Temperature(°C)	Voltage (V dc)	Frequency Error (Hz)	Tolerance(ppm)
45	48	-12.51	-0.0058
40	48	24.78	0.0115
30	48	13.56	0.0063
20	48	-21.02	-0.0098
10	48	-23.99	-0.0111
0	48	-18.76	-0.0087
-10	48	25.77	0.0120

Frequency Stability vs voltage:

1. Test for NR Band 66 Downlink (Middle Channel: 2155MHz)

Voltage (V dc)	Temperature(°C)	Frequency Error (Hz)	Tolerance(ppm)
40.8	20	24.56	0.0114
48	20	-23.45	-0.0109
55.2	20	-26.13	-0.0121

Remark: only the worst case data have been recorded in the report.

7 Photographs - Test Setup

Please refer to test setup photo

8 Photographs - EUT Constructional Details

Please refer to external and internal photo

--The End of Report--

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