

TEST REPORT



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1. Report No : DRTFCC2308-0119

2. Customer

- Name (FCC) : LG Electronics USA, Inc. / Name (IC) : LG ELECTRONICS INC.
- Address (FCC) : 111 Sylvan Avenue North Building Englewood Cliffs New Jersey United States 07632
Address (IC) : 222, LG-ro, Jinwi-myeon Pyeongtaek-si, Gyeonggi-do 451-713 Korea (Republic Of)

3. Use of Report : Class II Permissive Change

4. Product Name / Model Name : NAD module / TM15FNNATY0

FCC ID : BEJTM15FNNATY0

IC : 2703H-TM15FNNATY0

5. FCC Regulation(s): Part 22, 24, 27, 90

IC Standard(s): RSS-Gen Issue 5, 130 Issue 2, 132 Issue 4, 133 Issue 6, 139 Issue 4 , 140 Issue 1

Test Method Used : KDB971168 D01v03, ANSI/TIA-603-E-2016, ANSI C63.26-2015

6. Date of Test : 2023.04.13 ~ 2023.06.26

7. Location of Test : ☒ Permanent Testing Lab ☐ On Site Testing

8. Testing Environment : See appended test report.

9. Test Result : Refer to the attached test result.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

This test report is not related to KOLAS accreditation.

Affirmation	Tested by	Technical Manager
	Name : JaeHyeok Bang 	Name : JaeJin Lee  (Signature)

2023 . 08 . 24 .

Dt&C Co., Ltd.

If this report is required to confirmation of authenticity, please contact to report@dtnc.net

Test Report Version

Test Report No.	Date	Description	Revised by	Reviewed by
DRTFCC2308-0119	Aug. 24, 2023	Initial issue	JaeHyeok Bang	JaeJin Lee

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1. GENERAL INFORMATION

Equipment Class	PCS Licensed Transmitter (PCB)
Product Name	NAD module
Model Name	TM15FNNATY0
Add Model Name	-
PMN(Product Marketing Name)	TM15FNNATY0
FVIN(Firmware Version Identification Number)	5G.NAD.06a
EUT Serial Number	No specified
Supplying power	DC 3.90 V
Antenna Information	Antenna Type: Sharkfin Antenna Gain(Including path loss between conducted test feeding point and antenna terminal): -0.9 dBi (Band 12), -0.3 dBi (Band 14), -0.7 dBi (Band 5), -0.9 dBi (Band2), 0.1 dBi (Band66)

Mode	TX Frequency (MHz)	Modulation	ERP	
			Max power(dBm)	Max power(W)
LTE Band 12	704 ~ 711	QPSK	13.90	0.025
LTE Band 12	704 ~ 711	16QAM	13.13	0.021
LTE Band 12	704 ~ 711	64QAM	12.37	0.017
LTE Band 12	701.5 ~ 713.5	QPSK	14.50	0.028
LTE Band 12	701.5 ~ 713.5	16QAM	13.99	0.025
LTE Band 12	701.5 ~ 713.5	64QAM	13.00	0.020
LTE Band 12	700.5 ~ 714.5	QPSK	14.82	0.030
LTE Band 12	700.5 ~ 714.5	16QAM	13.99	0.025
LTE Band 12	700.5 ~ 714.5	64QAM	12.90	0.019
LTE Band 12	699.7 ~ 715.3	QPSK	14.52	0.028
LTE Band 12	699.7 ~ 715.3	16QAM	13.57	0.023
LTE Band 12	699.7 ~ 715.3	64QAM	12.71	0.019
LTE Band 14	793 ~ 793	QPSK	14.26	0.027
LTE Band 14	793 ~ 793	16QAM	13.65	0.023
LTE Band 14	793 ~ 793	64QAM	12.67	0.018
LTE Band 14	790.5 ~ 795.5	QPSK	14.68	0.029
LTE Band 14	790.5 ~ 795.5	16QAM	14.00	0.025
LTE Band 14	790.5 ~ 795.5	64QAM	13.16	0.021
LTE Band 5	829 ~ 844	QPSK	16.86	0.049
LTE Band 5	829 ~ 844	16QAM	15.98	0.040
LTE Band 5	829 ~ 844	64QAM	15.09	0.032
LTE Band 5	826.5 ~ 846.5	QPSK	17.02	0.050
LTE Band 5	826.5 ~ 846.5	16QAM	16.24	0.042
LTE Band 5	826.5 ~ 846.5	64QAM	15.10	0.032
LTE Band 5	825.5 ~ 847.5	QPSK	16.35	0.043
LTE Band 5	825.5 ~ 847.5	16QAM	15.57	0.036
LTE Band 5	825.5 ~ 847.5	64QAM	14.38	0.027
LTE Band 5	824.7 ~ 848.3	QPSK	16.34	0.043
LTE Band 5	824.7 ~ 848.3	16QAM	15.76	0.038
LTE Band 5	824.7 ~ 848.3	64QAM	14.52	0.028
LTE Band 5(10+10)	829 ~ 844	QPSK	15.91	0.039
LTE Band 5(10+10)	829 ~ 844	16QAM	15.21	0.033
LTE Band 5(10+10)	829 ~ 844	64QAM	13.82	0.024

Mode	TX Frequency (MHz)	Modulation	EIRP	
			Max power (dBm)	Max power(W)
LTE Band 66(4)	1 720 ~ 1 770	QPSK	20.08	0.102
LTE Band 66(4)	1 720 ~ 1 770	16QAM	19.56	0.090
LTE Band 66(4)	1 720 ~ 1 770	64QAM	19.31	0.085
LTE Band 66(4)	1 717.5 ~ 1 772.5	QPSK	20.27	0.106
LTE Band 66(4)	1 717.5 ~ 1 772.5	16QAM	19.82	0.096
LTE Band 66(4)	1 717.5 ~ 1 772.5	64QAM	18.56	0.072
LTE Band 66(4)	1 715 ~ 1 775	QPSK	20.40	0.110
LTE Band 66(4)	1 715 ~ 1 775	16QAM	19.91	0.098
LTE Band 66(4)	1 715 ~ 1 775	64QAM	18.78	0.076
LTE Band 66(4)	1 712.5 ~ 1 777.5	QPSK	19.29	0.085
LTE Band 66(4)	1 712.5 ~ 1 777.5	16QAM	18.65	0.073
LTE Band 66(4)	1 712.5 ~ 1 777.5	64QAM	17.55	0.057
LTE Band 66(4)	1 711.5 ~ 1 778.5	QPSK	19.85	0.097
LTE Band 66(4)	1 711.5 ~ 1 778.5	16QAM	18.81	0.076
LTE Band 66(4)	1 711.5 ~ 1 778.5	64QAM	17.74	0.059
LTE Band 66(4)	1 710.7 ~ 1 779.3	QPSK	19.20	0.083
LTE Band 66(4)	1 710.7 ~ 1 779.3	16QAM	18.64	0.073
LTE Band 66(4)	1 710.7 ~ 1 779.3	64QAM	17.42	0.055
LTE Band 2	1 860 ~ 1 900	QPSK	20.41	0.110
LTE Band 2	1 860 ~ 1 900	16QAM	20.01	0.100
LTE Band 2	1 860 ~ 1 900	64QAM	18.83	0.076
LTE Band 2	1 857.5 ~ 1 902.5	QPSK	20.44	0.111
LTE Band 2	1 857.5 ~ 1 902.5	16QAM	19.92	0.098
LTE Band 2	1 857.5 ~ 1 902.5	64QAM	18.45	0.070
LTE Band 2	1 855 ~ 1 905	QPSK	19.45	0.088
LTE Band 2	1 855 ~ 1 905	16QAM	18.85	0.077
LTE Band 2	1 855 ~ 1 905	64QAM	17.60	0.058
LTE Band 2	1 852.5 ~ 1 907.5	QPSK	19.76	0.095
LTE Band 2	1 852.5 ~ 1 907.5	16QAM	18.98	0.079
LTE Band 2	1 852.5 ~ 1 907.5	64QAM	17.96	0.063
LTE Band 2	1 851.5 ~ 1 908.5	QPSK	20.31	0.107
LTE Band 2	1 851.5 ~ 1 908.5	16QAM	19.57	0.091
LTE Band 2	1 851.5 ~ 1 908.5	64QAM	18.53	0.071
LTE Band 2	1 850.7 ~ 1 909.3	QPSK	19.78	0.095
LTE Band 2	1 850.7 ~ 1 909.3	16QAM	19.10	0.081
LTE Band 2	1 850.7 ~ 1 909.3	64QAM	18.11	0.065

2. INTRODUCTION

2.1. EUT DESCRIPTION

This device supports the following capabilities:

Multi-Band LTE, LTE up-link carrier aggregation and 5G NR(FR1)

5G NR supports SCS 15 kHz for FDD Band and SCS 30 kHz for TDD Band.

2.2. TESTING ENVIRONMENT

Ambient Condition	
▪ Temperature	+22 °C ~ +25 °C
▪ Relative Humidity	42 % ~ 45 %

2.3. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

2.4. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with requirements of ANSI C 63.4-2014. All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95 % level of confidence.

Parameter	Measurement uncertainty
Radiated Disturbance (Below 1 GHz)	4.8 dB (The confidence level is about 95 %, $k = 2$)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.0 dB (The confidence level is about 95 %, $k = 2$)
Radiated Disturbance (Above 18 GHz)	5.2 dB (The confidence level is about 95 %, $k = 2$)

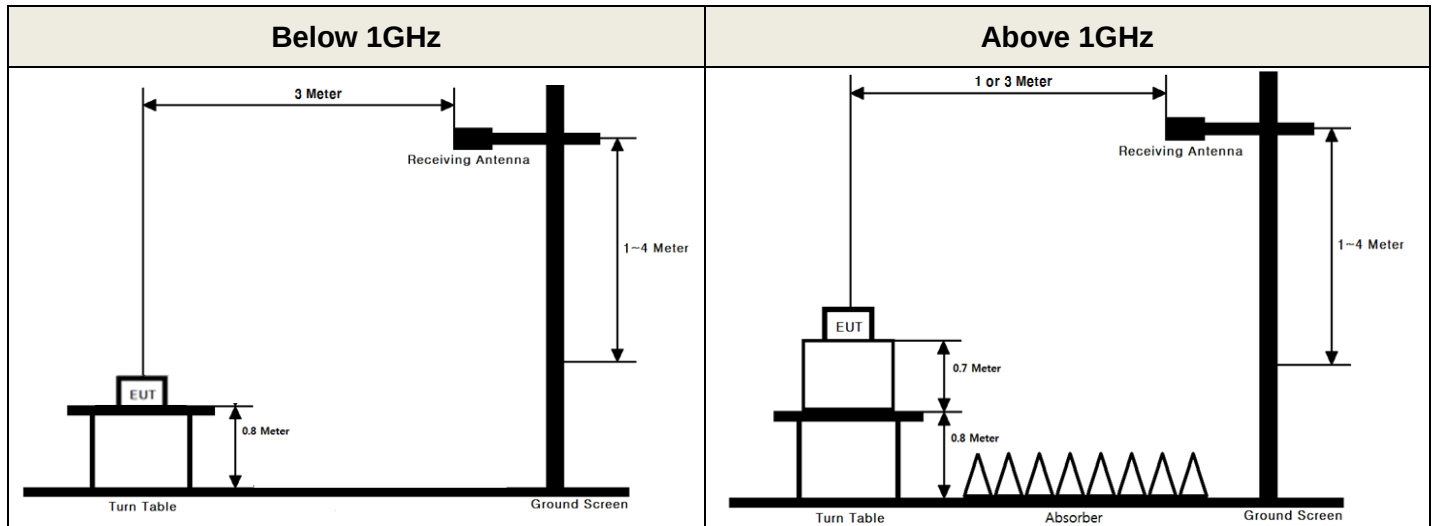
2.5. TEST FACILITY

Dt&C Co., Ltd.		
The 3 m test site and conducted measurement facility used to collect the radiated data are located at the 42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 17042.		
The test site complies with the requirements of Part 2.948 according to ANSI C63.4-2014.		
- FCC & IC MRA Designation No. : KR0034		
- ISED#: 5740A		
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3. DESCRIPTION OF TESTS

3.1. ERP & EIRP (Effective Radiated Power & Equivalent Isotropic Radiated Power)

Test Set-up



These measurements were performed at 3 m test site. The equipment under test is placed on a non-conductive table 0.8 or 1.5-meters above a turntable which is flush with the ground plane and 3 meters from the receive antenna. For measurements above 1GHz absorbers are placed on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1 GHz, the absorbers are removed.

Test Procedure

- ANSI/TIA-603-E-2016 - Section 2.2.17
- KDB971168 D01v03 - Section 5.2.2
- ANSI C63.26-2015 – Section 5.2.4.4.1

Test setting

1. Set span to 2 x to 3 x the OBW.
2. Set RBW = 1 % to 5 % of the OBW.
3. Set VBW $\geq 3 \times$ RBW.
4. Set number of points in sweep $\geq 2 \times$ span / RBW.
5. Sweep time:
 - 1) Set = auto-couple, or
 - 2) Set $\geq [10 \times (\text{number of points in sweep}) \times (\text{transmission period})]$ for single sweep (automation-compatible) measurement. Transmission period is the on and off time of the transmitter.
6. Detector = power averaging (rms).
7. If the EUT can be configured to transmit continuously, then set the trigger to free run.
8. If the EUT cannot be configured to transmit continuously, then use a sweep trigger with the level set to enable triggering only on full power bursts and configure the EUT to transmit at full power for the entire duration of each sweep. Verify that the sweep time is less than or equal to the transmission burst duration. Time gating can also be used under similar constraints (i.e., configured such that measurement data is collected only during active full-power transmissions).
9. 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 multiple symbols, 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.

10. Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band or channel power measurement function, with the band/channel limits set equal to the OBW band edges. If the instrument does not have a band or channel power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

The receiver antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer.

A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminal of the substitute antenna is measured.

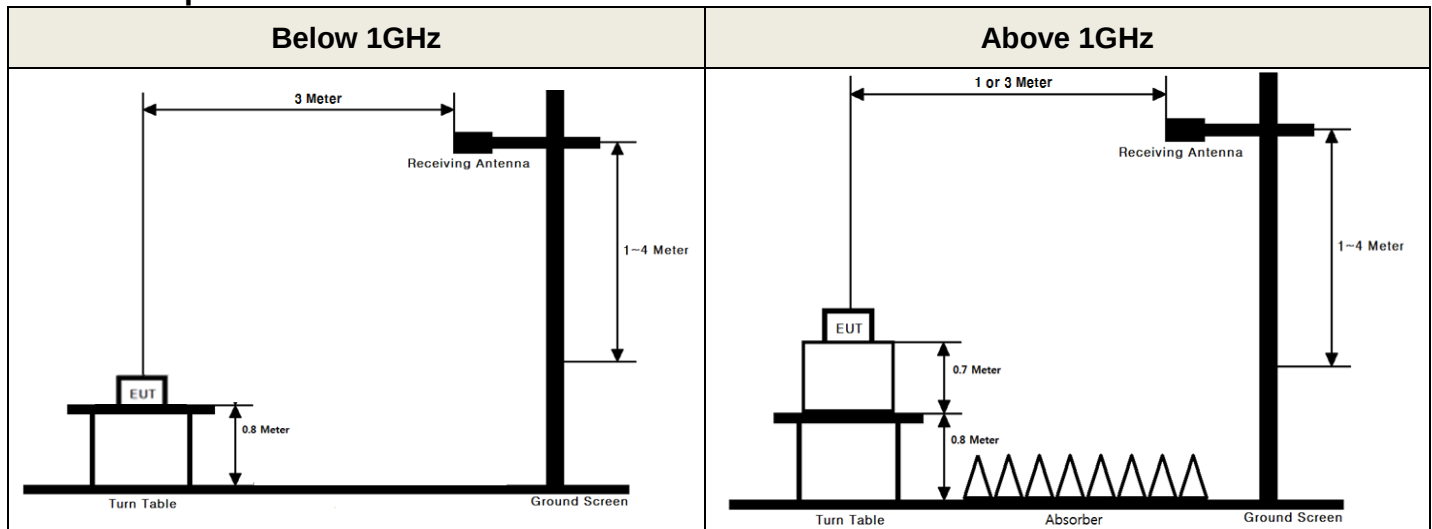
The ERP/EIRP is calculated using the following formula:

ERP/EIRP = The conducted power at the substitute antenna's terminal [dBm] + Substitute Antenna gain [dBd for ERP , dBi for EIRP]

For readings above 1 GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn antenna and an isotropic antenna are taken into consideration.

3.2. UNDESIRABLE EMISSIONS

Test Set-up



These measurements were performed at 3 test site. The equipment under test is placed on a non-conductive table 0.8 or 1.5 meters above a turntable which is flush with the ground plane and 3 meters from the receive antenna. For measurements above 1 GHz absorbers are placed on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1 GHz, the absorbers are removed.

Test Procedure

- ANSI/TIA-603-E-2016 - Section 2.2.12
- KDB971168 D01v03 - Section 6
- ANSI C63.26-2015 – Section 5.5

Test setting

1. RBW = 100 kHz for below 1 GHz and 1 MHz for above 1 GHz / VBW $\geq 3 \times$ RBW
2. Detector = RMS & Trace mode = Max hold
3. Sweep time = Auto couple
4. Number of sweep point $\geq 2 \times$ span / RBW
5. The trace was allowed to stabilize

The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer. For radiated power measurements below 1 GHz, a half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading.

For radiated power measurements above 1 GHz, a Horn antenna was substituted in place of the EUT. This Horn antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. The difference between the gain of the horn and an isotropic antenna are taken into consideration.

This measurement was performed with the EUT oriented in 3 orthogonal axis.

4. LIST OF TEST EQUIPMENT

Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal. Date (yy/mm/dd)	S/N
Spectrum Analyzer	Agilent Technologies	N9020A	23/06/23	24/06/23	US47360812
DC power supply	SM techno	SDP30-5D	23/06/23	24/06/23	305DNF079
Multimeter	FLUKE	17B+	22/12/16	23/12/16	36390701WS
Radio Communication Analyzer	Anritsu	MT8820C	23/06/23	24/06/23	6200951873
Radio Communication Analyzer	KEYSIGHT	E7515B	23/06/23	24/06/23	MY60192461
Thermohygrometer	BODYCOM	BJ5478	22/12/16	23/12/16	120612-2
Signal Generator	Rohde Schwarz	SMBV100A	22/12/16	23/12/16	255571
Signal Generator	ANRITSU	MG3695C	22/12/16	23/12/16	173501
Resistive Divider	Clear Microwave	D240	22/09/27	23/09/27	D240
Loop Antenna	ETS-Lindgren	6502	22/04/22	24/04/22	203480
Bilog Antenna	Schwarzbeck	VULB 9160	22/12/16	23/12/16	3362
Dipole Antenna	Schwarzbeck	UHA 9105	22/12/16	24/12/16	2262
HORN ANT	ETS	3117	22/12/16	23/12/16	00140394
HORN ANT	A.H.Systems	SAS-574	23/06/23	24/06/23	155
PreAmplifier	H.P	8447D	22/12/16	23/12/16	2944A07774
PreAmplifier	Agilent	8449B	22/12/16	23/12/16	3008A02108
PreAmplifier	A.H.Systems Inc.	PAM-1840VH	23/06/23	24/06/23	163
Band Reject Fliter	Wainwright	WTRCTV5-1710-2000-20-60-40SSM	23/06/23	24/06/23	1
High-pass filter	Wainwright	WHKX12-935-1000-15000-40SS	22/12/16	23/12/16	7
High-pass filter	Wainwright	WHKX10-2838-3300-18000-60SS	22/12/16	23/12/16	2
High-pass filter	Wainwright	WHKX6-6320-8000-26500-40CC	22/12/16	23/12/16	2
Cable	HUBER+SUHNER	SUCOFLEX100	23/01/04	24/01/04	M-1
Cable	HUBER+SUHNER	SUCOFLEX100	23/01/04	24/01/04	M-2
Cable	Junkosah	MWX241/B	23/01/04	24/01/04	M-3
Cable	Junkosah	MWX221	23/01/04	24/01/04	M-4
Cable	Junkosah	MWX221	23/01/04	24/01/04	M-5
Cable	DTNC	Cable	23/01/04	24/01/04	M-6
Cable	JUNFLON	J12J101757-00	23/01/04	24/01/04	M-7
Cable	HUBER+SUHNER	SUCOFLEX104	23/01/04	24/01/04	M-8
Cable	HUBER+SUHNER	SUCOFLEX106	23/01/04	24/01/04	M-9
Cable	DTNC	Cable	23/01/04	24/01/04	RFC-102

Note1: The measurement antennas were calibrated in accordance to the requirements of ANSI C63.5-2017.

Note2: The cable is not a regular calibration item, so it has been calibrated by Dt&C itself

5. SUMMARY OF TEST RESULTS

FCC Part Section(s)	RSS Section(s)	Test Description	Test Limit	Test Condition	Status Note 1
27.50(c.9) 90.542(a.6)	RSS-130 [4.6] RSS-140 [4.3]	Radiated Output Power (B12, 14)	For mobile equipment: < 30 Watts max. ERP	Radiated	C
22.913(a.5)	RSS-132 [5.4]	Radiated Output Power (B5)	For mobile equipment: < 7 Watts max. ERP		C
27.50(d.4)	RSS-139 [5.5]	Radiated Output Power (B66, 4)	For mobile equipment: < 1 Watts max. EIRP		C
24.232(c)	RSS-133 [6.4]	Radiated Output Power (B2)	For mobile equipment: < 2 Watts max. EIRP		C
2.1053 22.917(a) 24.238(a) 27.53(g) 27.53(h) 90.543(e)	RSS-130 [4.7] RSS-132 [5.5] RSS-133 [6.5] RSS-139 [5.6] RSS-140 [4.4]	Undesirable Emissions	> 43 + 10log ₁₀ (P) dB for all out-of-band emissions		C
90.543(f)	RSS-140[4.4]	Undesirable Emissions in 1559 ~ 1610 MHz	< -70 dBW/MHz (for wideband signals) < -80 dBW (for discrete emissions of less than 700 Hz bandwidth)		C
Note 1: C=Comply NC=Not Comply NT=Not Tested NA=Not Applicable					

6. SAMPLE CALCULATION

A. Emission Designator

- 1) The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1 GHz respectively above ground.
- 2) The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
- 3) During the test, the turn table is rotated until the maximum signal is found.
- 4) Record the field strength meter's level. (ex. Spectrum reading level is -8.5 dBm)
- 5) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
- 6) Increase the signal generator output till the field strength meter's level is equal to the item (4).
(ex. Signal generator level is -18.04 dBm)
- 7) The gain of the cable and amplifier between the signal generator and terminals of substituted antenna is 46.92 dB at test frequency.
- 8) Record the level at substituted antenna terminal. (ex. 28.88dBm)
- 9) The result is calculated as below;

$$\text{EIRP(dBm)} = \text{LEVLE@ANTENNA TERMINAL} + \text{TX Antenna Gain (dBi)}$$

$$\text{ERP(dBm)} = \text{LEVLE@ANTENNA TERMINAL} + \text{TX Antenna Gain (dBd)}$$

$$\text{Where, TX Antenna Gain (dBd)} = \text{TX Antenna Gain (dBi)} - 2.15 \text{ dB}$$

7. TEST DATA

7.1. ERP & EIRP

- Test Notes

- 1) This is device was tested under all bandwidths, modulations and RB configurations and the worst case data are reported in the below table.

7.1.1. LTE Band 12

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBd)	ERP (dBm)	ERP (W)
10	704	QPSK	1/25	V	15.18	-1.28	13.90	0.025
		16QAM	1/25	V	14.41	-1.28	13.13	0.021
		64QAM	1/25	V	13.65	-1.28	12.37	0.017
	711	QPSK	1/49	V	15.11	-1.36	13.75	0.024
		16QAM	1/49	V	14.45	-1.36	13.09	0.020
		64QAM	1/49	V	13.30	-1.36	11.94	0.016
5	701.5	QPSK	1/24	V	15.76	-1.26	14.50	0.028
		16QAM	1/24	V	15.25	-1.26	13.99	0.025
		64QAM	1/24	V	14.26	-1.26	13.00	0.020
	707.5	QPSK	1/0	V	15.43	-1.32	14.11	0.026
		16QAM	1/0	V	14.84	-1.32	13.52	0.022
		64QAM	1/0	V	13.69	-1.32	12.37	0.017
	713.5	QPSK	1/24	V	15.02	-1.39	13.63	0.023
		16QAM	1/24	V	14.16	-1.39	12.77	0.019
		64QAM	1/24	V	13.13	-1.39	11.74	0.015
3	700.5	QPSK	1/14	V	16.07	-1.25	14.82	0.030
		16QAM	1/14	V	15.24	-1.25	13.99	0.025
		64QAM	1/14	V	14.15	-1.25	12.90	0.019
	707.5	QPSK	1/0	V	15.13	-1.32	13.81	0.024
		16QAM	1/0	V	14.63	-1.32	13.31	0.021
		64QAM	1/0	V	13.55	-1.32	12.23	0.017
	714.5	QPSK	1/14	V	14.51	-1.40	13.11	0.020
		16QAM	1/14	V	13.91	-1.40	12.51	0.018
		64QAM	1/14	V	12.78	-1.40	11.38	0.014
1.4	699.7	QPSK	1/2	V	15.76	-1.24	14.52	0.028
		16QAM	1/2	V	14.81	-1.24	13.57	0.023
		64QAM	1/2	V	13.95	-1.24	12.71	0.019
	707.5	QPSK	1/0	V	14.76	-1.32	13.44	0.022
		16QAM	1/0	V	14.25	-1.32	12.93	0.020
		64QAM	1/0	V	13.18	-1.32	11.86	0.015
	715.3	QPSK	1/5	V	14.50	-1.41	13.09	0.020
		16QAM	1/5	V	13.67	-1.41	12.26	0.017
		64QAM	1/5	V	12.82	-1.41	11.41	0.014

7.1.2 LTE Band 14

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBd)	ERP (dBm)	ERP (W)
10	793	QPSK	1/25	V	15.66	-1.40	14.26	0.027
		16QAM	1/25	V	15.05	-1.40	13.65	0.023
		64QAM	1/25	V	14.07	-1.40	12.67	0.018
5	790.5	QPSK	1/24	V	15.83	-1.40	14.43	0.028
		16QAM	1/24	V	15.02	-1.40	13.62	0.023
		64QAM	1/24	V	13.89	-1.40	12.49	0.018
	795.5	QPSK	1/0	V	16.08	-1.40	14.68	0.029
		16QAM	1/0	V	15.40	-1.40	14.00	0.025
		64QAM	1/0	V	14.56	-1.40	13.16	0.021

7.1.3. LTE Band 5

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBd)	ERP (dBm)	ERP (W)
10	829	QPSK	1/0	V	18.29	-1.43	16.86	0.049
		16QAM	1/0	V	17.25	-1.43	15.82	0.038
		64QAM	1/0	V	16.44	-1.43	15.01	0.032
	836.5	QPSK	1/0	V	17.62	-1.44	16.18	0.041
		16QAM	1/0	V	16.99	-1.44	15.55	0.036
		64QAM	1/0	V	15.80	-1.44	14.36	0.027
	844	QPSK	1/49	V	18.14	-1.45	16.69	0.047
		16QAM	1/49	V	17.43	-1.45	15.98	0.040
		64QAM	1/49	V	16.54	-1.45	15.09	0.032
5	826.5	QPSK	1/12	V	18.45	-1.43	17.02	0.050
		16QAM	1/12	V	17.67	-1.43	16.24	0.042
		64QAM	1/12	V	16.53	-1.43	15.10	0.032
	836.5	QPSK	1/0	V	17.00	-1.44	15.56	0.036
		16QAM	1/0	V	16.28	-1.44	14.84	0.030
		64QAM	1/0	V	15.33	-1.44	13.89	0.024
	846.5	QPSK	1/24	V	18.20	-1.46	16.74	0.047
		16QAM	1/24	V	17.64	-1.46	16.18	0.041
		64QAM	1/24	V	16.55	-1.46	15.09	0.032
3	825.5	QPSK	1/14	V	16.20	-1.43	14.77	0.030
		16QAM	1/14	V	15.49	-1.43	14.06	0.025
		64QAM	1/14	V	14.48	-1.43	13.05	0.020
	836.5	QPSK	1/0	V	16.27	-1.44	14.83	0.030
		16QAM	1/0	V	15.72	-1.44	14.28	0.027
		64QAM	1/0	V	14.64	-1.44	13.20	0.021
	847.5	QPSK	1/14	V	17.81	-1.46	16.35	0.043
		16QAM	1/14	V	17.03	-1.46	15.57	0.036
		64QAM	1/14	V	15.84	-1.46	14.38	0.027
1.4	824.7	QPSK	1/2	V	16.44	-1.43	15.01	0.032
		16QAM	1/2	V	15.70	-1.43	14.27	0.027
		64QAM	1/2	V	14.74	-1.43	13.31	0.021
	836.5	QPSK	1/0	V	16.28	-1.44	14.84	0.030
		16QAM	1/0	V	15.65	-1.44	14.21	0.026
		64QAM	1/0	V	14.66	-1.44	13.22	0.021
	848.3	QPSK	1/2	V	17.80	-1.46	16.34	0.043
		16QAM	1/2	V	17.22	-1.46	15.76	0.038
		64QAM	1/2	V	15.98	-1.46	14.52	0.028

▪ Intra Band ULCA(5B)

Band	B.W(MHz) (PCC + SCC)	PCC		SCC		Test Mode	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBd)	ERP (dBm)	ERP (W)
		Freq. (MHz)	RB Size/Offset	Freq. (MHz)	RB Size/Offset						
5	10+10	831.6	50/0	841.5	50/0	QPSK	V	17.35	-1.44	15.91	0.039
						16QAM	V	16.65	-1.44	15.21	0.033
						64QAM	V	15.26	-1.44	13.82	0.024
		831.6	1/49	841.5	1/0	QPSK	V	15.60	-1.44	14.16	0.026
						16QAM	V	14.16	-1.44	12.72	0.019
						64QAM	V	14.11	-1.44	12.67	0.018

7.1.4. LTE Band 66(4)

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBi)	EIRP (dBm)	EIRP (W)
20	1 720	QPSK	1/0	V	13.82	5.86	19.68	0.093
		16QAM	1/0	V	13.26	5.86	19.12	0.082
		64QAM	1/0	V	13.28	5.86	19.14	0.082
	1 745	QPSK	1/0	V	14.48	5.60	20.08	0.102
		16QAM	1/0	V	13.96	5.60	19.56	0.090
		64QAM	1/0	V	13.71	5.60	19.31	0.085
	1 770	QPSK	1/50	V	14.75	5.29	20.04	0.101
		16QAM	1/50	V	14.21	5.29	19.50	0.089
		64QAM	1/50	V	13.12	5.29	18.41	0.069
15	1 717.5	QPSK	1/36	V	14.31	5.89	20.20	0.105
		16QAM	1/36	V	13.88	5.89	19.77	0.095
		64QAM	1/36	V	12.67	5.89	18.56	0.072
	1 745	QPSK	1/0	V	14.22	5.60	19.82	0.096
		16QAM	1/0	V	13.54	5.60	19.14	0.082
		64QAM	1/0	V	12.21	5.60	17.81	0.060
	1 772.5	QPSK	1/0	V	15.01	5.26	20.27	0.106
		16QAM	1/0	V	14.56	5.26	19.82	0.096
		64QAM	1/0	V	13.27	5.26	18.53	0.071
10	1 715	QPSK	1/49	V	14.49	5.91	20.40	0.110
		16QAM	1/49	V	14.00	5.91	19.91	0.098
		64QAM	1/49	V	12.87	5.91	18.78	0.076
	1 745	QPSK	1/0	V	13.48	5.60	19.08	0.081
		16QAM	1/0	V	13.00	5.60	18.60	0.072
		64QAM	1/0	V	11.79	5.60	17.39	0.055
	1 775	QPSK	1/0	V	15.09	5.23	20.32	0.108
		16QAM	1/0	V	14.55	5.23	19.78	0.095
		64QAM	1/0	V	13.37	5.23	18.60	0.072
5	1 712.5	QPSK	1/0	V	13.06	5.94	19.00	0.079
		16QAM	1/0	V	12.34	5.94	18.28	0.067
		64QAM	1/0	V	11.40	5.94	17.34	0.054
	1 745	QPSK	1/0	V	13.17	5.60	18.77	0.075
		16QAM	1/0	V	12.94	5.60	18.54	0.071
		64QAM	1/0	V	11.71	5.60	17.31	0.054
	1 777.5	QPSK	1/12	V	14.09	5.20	19.29	0.085
		16QAM	1/12	V	13.45	5.20	18.65	0.073
		64QAM	1/12	V	12.35	5.20	17.55	0.057

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBi)	EIRP (dBm)	EIRP (W)
3	1 711.5	QPSK	1/0	V	13.52	5.95	19.47	0.089
		16QAM	1/0	V	12.75	5.95	18.70	0.074
		64QAM	1/0	V	11.78	5.95	17.73	0.059
	1 745	QPSK	1/7	V	13.55	5.60	19.15	0.082
		16QAM	1/7	V	12.88	5.60	18.48	0.070
		64QAM	1/7	V	11.89	5.60	17.49	0.056
	1 778.5	QPSK	1/0	V	14.66	5.19	19.85	0.097
		16QAM	1/0	V	13.62	5.19	18.81	0.076
		64QAM	1/0	V	12.55	5.19	17.74	0.059
1.4	1 710.7	QPSK	1/0	V	13.22	5.95	19.17	0.083
		16QAM	1/0	V	11.38	5.95	17.33	0.054
		64QAM	1/0	V	10.48	5.95	16.43	0.044
	1 745	QPSK	1/5	V	13.22	5.60	18.82	0.076
		16QAM	1/5	V	11.23	5.60	16.83	0.048
		64QAM	1/5	V	10.36	5.60	15.96	0.039
	1 779.3	QPSK	1/2	V	14.02	5.18	19.20	0.083
		16QAM	1/2	V	13.46	5.18	18.64	0.073
		64QAM	1/2	V	12.24	5.18	17.42	0.055

7.1.5. LTE Band 2

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBi)	EIRP (dBm)	EIRP (W)
20	1 860	QPSK	1/50	V	16.02	4.31	20.33	0.108
		16QAM	1/50	V	15.38	4.31	19.69	0.093
		64QAM	1/50	V	14.18	4.31	18.49	0.071
	1 880	QPSK	1/0	V	16.15	4.26	20.41	0.110
		16QAM	1/0	V	15.75	4.26	20.01	0.100
		64QAM	1/0	V	14.57	4.26	18.83	0.076
	1 900	QPSK	1/99	V	12.84	4.20	17.04	0.051
		16QAM	1/99	V	12.28	4.20	16.48	0.044
		64QAM	1/99	V	11.21	4.20	15.41	0.035
15	1 857.5	QPSK	1/0	V	13.72	4.32	18.04	0.064
		16QAM	1/0	V	13.13	4.32	17.45	0.056
		64QAM	1/0	V	12.17	4.32	16.49	0.045
	1 880	QPSK	1/0	V	16.18	4.26	20.44	0.111
		16QAM	1/0	V	15.66	4.26	19.92	0.098
		64QAM	1/0	V	14.19	4.26	18.45	0.070
	1 902.5	QPSK	1/74	V	13.20	4.21	17.41	0.055
		16QAM	1/74	V	12.49	4.21	16.70	0.047
		64QAM	1/74	V	11.23	4.21	15.44	0.035
10	1 855	QPSK	1/0	V	15.12	4.33	19.45	0.088
		16QAM	1/0	V	14.52	4.33	18.85	0.077
		64QAM	1/0	V	13.27	4.33	17.60	0.058
	1 880	QPSK	1/0	V	13.78	4.26	18.04	0.064
		16QAM	1/0	V	12.86	4.26	17.12	0.052
		64QAM	1/0	V	11.84	4.26	16.10	0.041
	1 905	QPSK	1/49	V	14.74	4.22	18.96	0.079
		16QAM	1/49	V	14.17	4.22	18.39	0.069
		64QAM	1/49	V	13.04	4.22	17.26	0.053
5	1 852.5	QPSK	1/12	V	15.43	4.33	19.76	0.095
		16QAM	1/12	V	14.65	4.33	18.98	0.079
		64QAM	1/12	V	13.63	4.33	17.96	0.063
	1 880	QPSK	1/24	V	13.99	4.26	18.25	0.067
		16QAM	1/24	V	13.36	4.26	17.62	0.058
		64QAM	1/24	V	12.34	4.26	16.60	0.046
	1 907.5	QPSK	1/12	V	15.18	4.23	19.41	0.087
		16QAM	1/12	V	14.43	4.23	18.66	0.073
		64QAM	1/12	V	13.44	4.23	17.67	0.058

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBi)	EIRP (dBm)	EIRP (W)
3	1 851.5	QPSK	1/7	V	15.97	4.34	20.31	0.107
		16QAM	1/7	V	15.19	4.34	19.53	0.090
		64QAM	1/7	V	14.19	4.34	18.53	0.071
	1 880	QPSK	1/0	V	14.94	4.26	19.20	0.083
		16QAM	1/0	V	13.88	4.26	18.14	0.065
		64QAM	1/0	V	13.39	4.26	17.65	0.058
	1 908.5	QPSK	1/7	V	15.97	4.23	20.20	0.105
		16QAM	1/7	V	15.34	4.23	19.57	0.091
		64QAM	1/7	V	14.25	4.23	18.48	0.070
1.4	1 850.7	QPSK	1/2	V	15.42	4.34	19.76	0.095
		16QAM	1/2	V	14.76	4.34	19.10	0.081
		64QAM	1/2	V	13.77	4.34	18.11	0.065
	1 880	QPSK	1/2	V	15.52	4.26	19.78	0.095
		16QAM	1/2	V	14.34	4.26	18.60	0.072
		64QAM	1/2	V	13.34	4.26	17.60	0.058
	1 909.3	QPSK	1/5	V	15.03	4.24	19.27	0.085
		16QAM	1/5	V	14.27	4.24	18.51	0.071
		64QAM	1/5	V	13.40	4.24	17.64	0.058

7.2. UNDESIRABLE EMISSIONS (Radiated)

- Test Notes

- 1) This device was tested under all bandwidths, modulations and RB configurations and the worst case data are reported.
- 2) The frequency spectrum is examined from 9 kHz to the 10th harmonic of the fundamental frequency of the transmitter.
No other spurious and harmonic emissions were reported greater than listed emissions.
- 3) Limit for Band 2/66/12/14/5 = -13dBm
Limit for 1 559 MHz ~ 1 610 MHz in Band 14 = -40 dBm/MHz
(equivalent isotropically radiated power for wideband signals)

7.2.1. LTE Band 12

Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBd)	Result (dBm)	Limit (dBm)	Margin (dB)
10	704	1/25	QPSK	1 408.15	V	-44.31	3.12	-41.19	-13.00	28.19
				2 112.28	V	-61.47	3.22	-58.25	-13.00	45.25
				2 816.49	V	-63.17	4.59	-58.58	-13.00	45.58
				4 224.75	V	-60.34	7.21	-53.13	-13.00	40.13
			16QAM	1 408.03	V	-46.19	3.12	-43.07	-13.00	30.07
				2 112.30	V	-61.07	3.22	-57.85	-13.00	44.85
				2 816.12	V	-63.63	4.59	-59.04	-13.00	46.04
				4 224.46	V	-61.35	7.21	-54.14	-13.00	41.14
			64QAM	1 408.17	V	-46.74	3.12	-43.62	-13.00	30.62
				2 112.21	V	-62.95	3.22	-59.73	-13.00	46.73
				2 816.33	V	-63.80	4.59	-59.21	-13.00	46.21
				4 224.58	V	-62.64	7.21	-55.43	-13.00	42.43
	711	1/49	QPSK	1 430.93	V	-49.27	3.29	-45.98	-13.00	32.98
				2 146.21	V	-60.41	3.15	-57.26	-13.00	44.26
				2 861.60	V	-63.22	4.77	-58.45	-13.00	45.45
				4 292.48	V	-60.61	7.14	-53.47	-13.00	40.47
			16QAM	1 430.91	V	-49.93	3.29	-46.64	-13.00	33.64
				2 146.16	V	-60.98	3.15	-57.83	-13.00	44.83
				2 861.62	V	-63.64	4.77	-58.87	-13.00	45.87
				4292.44	V	-61.46	7.14	-54.32	-13.00	41.32
			64QAM	1 430.82	V	-50.55	3.29	-47.26	-13.00	34.26
				2 146.48	V	-62.12	3.15	-58.97	-13.00	45.97
				2 861.47	V	-64.28	4.77	-59.51	-13.00	46.51
				4 292.52	V	-63.46	7.14	-56.32	-13.00	43.32
3	700.5	1/14	QPSK	1 403.42	V	-42.58	3.09	-39.49	-13.00	26.49
				2 105.20	V	-60.08	3.24	-56.84	-13.00	43.84
				2 807.08	V	-61.52	4.56	-56.96	-13.00	43.96
				4 210.65	V	-62.82	7.21	-55.61	-13.00	42.61
			16QAM	1 403.52	V	-43.31	3.09	-40.22	-13.00	27.22
				2 105.19	V	-61.10	3.24	-57.86	-13.00	44.86
				2 807.08	V	-62.44	4.56	-57.88	-13.00	44.88
				4 210.64	V	-63.07	7.21	-55.86	-13.00	42.86
			64QAM	1 403.48	V	-43.87	3.09	-40.78	-13.00	27.78
				2 105.35	V	-62.03	3.24	-58.79	-13.00	45.79
				2 806.99	V	-63.18	4.56	-58.62	-13.00	45.62
				4 210.35	V	-64.65	7.21	-57.44	-13.00	44.44

7.2.2 LTE Band 14

Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBd)	Result (dBm)	Limit (dBm)	Margin (dB)
10	793	1/25	QPSK	2 379.28	H	-52.99	3.81	-49.18	-13.00	36.18
				3 965.43	V	-49.83	6.91	-42.92	-13.00	29.92
				4 758.40	H	-55.05	7.72	-47.33	-13.00	34.33
			16QAM	2 379.24	H	-56.82	3.81	-53.01	-13.00	40.01
				3 965.27	V	-51.90	6.91	-44.99	-13.00	31.99
				4 758.62	H	-59.21	7.72	-51.49	-13.00	38.49
			64QAM	2 379.49	H	-57.89	3.81	-54.08	-13.00	41.08
				3 965.50	V	-53.77	6.91	-46.86	-13.00	33.86
				4 758.49	H	-60.18	7.72	-52.46	-13.00	39.46
5	795.5	1/0	QPSK	2 380.10	H	-55.02	3.81	-51.21	-13.00	38.21
				3 966.71	V	-53.37	6.91	-46.46	-13.00	33.46
				4 759.96	H	-61.35	7.72	-53.63	-13.00	40.63
			16QAM	2 380.04	H	-55.59	3.81	-51.78	-13.00	38.78
				3 966.70	V	-53.17	6.91	-46.26	-13.00	33.26
				4 759.99	H	-60.05	7.72	-52.33	-13.00	39.33
			64QAM	2 380.12	H	-56.76	3.81	-52.95	-13.00	39.95
				3 966.70	V	-55.65	6.91	-48.74	-13.00	35.74
				4 760.15	H	-61.94	7.72	-54.22	-13.00	41.22

UNDESIRABLE EMISSIONS IN 1559~1610MHz (LTE Band 14)

Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
10	793	1/25	QPSK	1 586.21	H	-46.76	6.11	-40.65	-40.00	0.65
			16QAM	1 586.08	H	-47.90	6.11	-41.79	-40.00	1.79
			64QAM	1 586.20	H	-49.08	6.11	-42.97	-40.00	2.97
5	795.5	1/0	QPSK	1 586.61	H	-46.99	6.11	-40.88	-40.00	0.88
			16QAM	1 586.68	H	-47.71	6.11	-41.60	-40.00	1.60
			64QAM	1 586.68	H	-48.72	6.11	-42.61	-40.00	2.61

7.2.3 LTE Band 5

Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBd)	Result (dBm)	Limit (dBm)	Margin (dB)
10	829	1/0	QPSK	1 649.21	V	-44.83	4.09	-40.74	-13.00	27.74
				2 473.87	V	-53.73	3.73	-50.00	-13.00	37.00
				3 298.42	H	-65.81	5.61	-60.20	-13.00	47.20
				4 123.11	H	-54.58	7.12	-47.46	-13.00	34.46
			16QAM	1 649.05	V	-45.65	4.09	-41.56	-13.00	28.56
				2 473.64	V	-54.08	3.73	-50.35	-13.00	37.35
				3 298.53	H	-65.99	5.61	-60.38	-13.00	47.38
				4 122.87	H	-54.92	7.12	-47.80	-13.00	34.80
			64QAM	1 649.10	V	-47.36	4.09	-43.27	-13.00	30.27
				2 473.65	V	-56.61	3.73	-52.88	-13.00	39.88
				3 298.41	H	-66.38	5.61	-60.77	-13.00	47.77
				4 122.86	H	-59.26	7.12	-52.14	-13.00	39.14
	836.5	1/0	QPSK	1 664.18	V	-45.37	4.04	-41.33	-13.00	28.33
				2 496.31	V	-54.44	3.58	-50.86	-13.00	37.86
				3 328.36	H	-66.71	5.74	-60.97	-13.00	47.97
				4 160.39	H	-59.47	7.16	-52.31	-13.00	39.31
			16QAM	1 664.22	V	-45.95	4.04	-41.91	-13.00	28.91
				2 496.23	V	-56.06	3.58	-52.48	-13.00	39.48
				3 328.48	H	-66.89	5.74	-61.15	-13.00	48.15
				4 160.42	H	-59.44	7.16	-52.28	-13.00	39.28
			64QAM	1 664.22	V	-46.98	4.04	-42.94	-13.00	29.94
				2 496.10	V	-57.73	3.59	-54.14	-13.00	41.14
				3 328.15	H	-67.30	5.74	-61.56	-13.00	48.56
				4 160.29	H	-61.56	7.16	-54.40	-13.00	41.40
	844	1/49	QPSK	1 696.73	V	-50.48	3.92	-46.56	-13.00	33.56
				2 545.11	V	-53.78	3.92	-49.86	-13.00	36.86
				3 393.51	H	-65.79	5.93	-59.86	-13.00	46.86
				4 241.94	H	-61.47	7.20	-54.27	-13.00	41.27
			16QAM	1 696.93	V	-50.77	3.92	-46.85	-13.00	33.85
				2 545.27	V	-53.58	3.92	-49.66	-13.00	36.66
				3 393.63	H	-66.06	5.93	-60.13	-13.00	47.13
				4 242.16	H	-60.90	7.20	-53.70	-13.00	40.70
			64QAM	1 696.88	V	-51.98	3.92	-48.06	-13.00	35.06
				2 545.23	V	-55.95	3.92	-52.03	-13.00	39.03
				3 393.42	H	-66.49	5.93	-60.56	-13.00	47.56
				4 241.95	H	-63.31	7.20	-56.11	-13.00	43.11

Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBd)	Result (dBm)	Limit (dBm)	Margin (dB)
5	826.5	1/12	QPSK	1 653.08	V	-47.70	4.08	-43.62	-13.00	30.62
				2 479.58	V	-53.13	3.69	-49.44	-13.00	36.44
				3 306.11	H	-66.20	5.65	-60.55	-13.00	47.55
				4 132.56	H	-56.07	7.13	-48.94	-13.00	35.94
			16QAM	1 653.05	V	-48.31	4.08	-44.23	-13.00	31.23
				2 479.63	V	-53.31	3.69	-49.62	-13.00	36.62
				3 305.90	H	-66.33	5.64	-60.69	-13.00	47.69
				4 132.62	H	-55.68	7.13	-48.55	-13.00	35.55
			64QAM	1 653.11	V	-49.63	4.08	-45.55	-13.00	32.55
				2 479.58	V	-54.58	3.69	-50.89	-13.00	37.89
				3 305.92	H	-66.51	5.64	-60.87	-13.00	47.87
				4 132.58	H	-58.30	7.13	-51.17	-13.00	38.17

7.2.4. LTE Band 66(4)

Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
20	1 720.0	1/0	QPSK	3 422.12	H	-62.88	8.17	-54.71	-13.00	41.71
				5 133.38	H	-64.17	10.11	-54.06	-13.00	41.06
				6 844.35	V	-66.18	11.33	-54.85	-13.00	41.85
			16QAM	3 422.24	H	-62.99	8.17	-54.82	-13.00	41.82
				5 110.04	H	-68.04	10.08	-57.96	-13.00	44.96
				6 844.65	V	-66.69	11.33	-55.36	-13.00	42.36
			64QAM	3 422.22	H	-63.39	8.17	-55.22	-13.00	42.22
				5 133.31	H	-65.58	10.11	-55.47	-13.00	42.47
				6 844.40	V	-67.25	11.33	-55.92	-13.00	42.92
	1 745	1/0	QPSK	3 471.99	H	-61.61	8.36	-53.25	-13.00	40.25
				5 208.41	H	-66.25	10.21	-56.04	-13.00	43.04
				6 944.41	V	-65.58	11.54	-54.04	-13.00	41.04
			16QAM	3 472.25	H	-62.02	8.36	-53.66	-13.00	40.66
				5 208.16	H	-66.31	10.21	-56.10	-13.00	43.10
				6 944.18	V	-65.85	11.54	-54.31	-13.00	41.31
			64QAM	3 472.08	H	-62.52	8.36	-54.16	-13.00	41.16
				5 208.33	H	-66.72	10.21	-56.51	-13.00	43.51
				6 944.13	V	-66.12	11.54	-54.58	-13.00	41.58
	1 770	1/50	QPSK	3 540.09	H	-58.79	8.46	-50.33	-13.00	37.33
				5 309.99	H	-66.26	10.22	-56.04	-13.00	43.04
				7 080.18	V	-65.97	11.69	-54.28	-13.00	41.28
			16QAM	3 540.07	H	-62.46	8.46	-54.00	-13.00	41.00
				5 309.88	H	-66.39	10.22	-56.17	-13.00	43.17
				7 079.91	V	-65.89	11.69	-54.20	-13.00	41.20
			64QAM	3 540.12	H	-62.84	8.46	-54.38	-13.00	41.38
				5 309.89	H	-66.81	10.22	-56.59	-13.00	43.59
				7 080.02	V	-66.41	11.69	-54.72	-13.00	41.72
10	1 715	1/49	QPSK	3 438.78	H	-56.88	8.23	-48.65	-13.00	35.65
				5 158.16	H	-64.41	10.14	-54.27	-13.00	41.27
				6 877.66	V	-65.10	11.41	-53.69	-13.00	40.69
			16QAM	3 438.81	H	-58.04	8.23	-49.81	-13.00	36.81
				5 158.42	H	-64.95	10.14	-54.81	-13.00	41.81
				6 877.73	V	-65.59	11.41	-54.18	-13.00	41.18
			64QAM	3 438.84	H	-58.72	8.23	-50.49	-13.00	37.49
				5 158.12	H	-65.39	10.14	-55.25	-13.00	42.25
				6 877.76	V	-66.29	11.41	-54.88	-13.00	41.88

7.2.5. LTE Band 2

Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
20	1 860	1/50	QPSK	3 720.27	V	-57.20	8.32	-48.88	-13.00	35.88
				5 580.09	V	-66.77	10.35	-56.42	-13.00	43.42
				7 440.45	V	-63.68	12.08	-51.60	-13.00	38.60
			16QAM	3 720.15	V	-57.85	8.32	-49.53	-13.00	36.53
				5 580.30	V	-66.98	10.35	-56.63	-13.00	43.63
				7 440.33	V	-64.38	12.08	-52.30	-13.00	39.30
			64QAM	3 720.12	V	-58.85	8.32	-50.53	-13.00	37.53
				5 580.30	V	-67.14	10.35	-56.79	-13.00	43.79
				7 440.35	V	-64.70	12.08	-52.62	-13.00	39.62
	1 880	1/0	QPSK	3 742.23	V	-56.60	8.29	-48.31	-13.00	35.31
				5 613.50	V	-64.48	10.41	-54.07	-13.00	41.07
				7 484.39	V	-62.92	12.14	-50.78	-13.00	37.78
			16QAM	3 742.14	V	-57.09	8.29	-48.80	-13.00	35.80
				5 613.21	V	-62.22	10.41	-51.81	-13.00	38.81
				7 484.28	V	-63.26	12.14	-51.12	-13.00	38.12
			64QAM	3 742.15	V	-58.30	8.29	-50.01	-13.00	37.01
				5 613.30	V	-63.00	10.41	-52.59	-13.00	39.59
				7 484.34	V	-64.36	12.14	-52.22	-13.00	39.22
	1 900	1/99	QPSK	3 817.75	V	-48.76	8.55	-40.21	-13.00	27.21
				5 726.79	V	-61.28	10.56	-50.72	-13.00	37.72
				7 635.83	V	-63.76	12.21	-51.55	-13.00	38.55
			16QAM	3 817.80	V	-49.26	8.55	-40.71	-13.00	27.71
				5 726.82	V	-61.46	10.56	-50.90	-13.00	37.90
				7 635.62	V	-64.32	12.21	-52.11	-13.00	39.11
			64QAM	3 817.80	V	-50.77	8.55	-42.22	-13.00	29.22
				5 726.57	V	-62.21	10.56	-51.65	-13.00	38.65
				7 635.58	V	-64.61	12.21	-52.40	-13.00	39.40
15	1 880	1/0	QPSK	3 746.59	V	-54.92	8.28	-46.64	-13.00	33.64
				5 619.88	V	-65.02	10.41	-54.61	-13.00	41.61
				7 493.53	V	-63.18	12.15	-51.03	-13.00	38.03
			16QAM	3 746.61	V	-55.45	8.28	-47.17	-13.00	34.17
				5 620.11	V	-65.11	10.41	-54.70	-13.00	41.70
				7 493.32	V	-63.49	12.15	-51.34	-13.00	38.34
			64QAM	3 746.78	V	-56.20	8.28	-47.92	-13.00	34.92
				5 620.16	V	-65.93	10.41	-55.52	-13.00	42.52
				7 493.14	V	-64.18	12.15	-52.03	-13.00	39.03

Intra Band ULCA(5B)

Band	Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBd)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
5	10+10	831.6 ,841.5	1/49, 1/0	QPSK	1 666.66	H	-62.42	4.03	-	-58.39	-13.00	45.39
					2 493.66	H	-64.46	3.60	-	-60.86	-13.00	47.86

Inter Band CA(PCC: 2A, SCC: 5A)

Band	Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBd)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
2	15	1 880	1/0	QPSK	3 746.66	V	-51.09	-	8.28	-42.81	-13.00	29.81
					5 620.06	V	-63.61	-	10.41	-53.20	-13.00	40.20
					7 493.38	V	-62.27	-	12.15	-50.12	-13.00	37.12
5	5	826.5	1/12	QPSK	1 653.03	V	-53.20	3.55	-	-49.65	-13.00	36.65
					2 479.46	V	-53.09	4.03	-	-49.06	-13.00	36.06
					3 306.14	H	-66.92	5.77	-	-61.15	-13.00	48.15
					4 132.51	H	-58.32	6.79	-	-51.53	-13.00	38.53

Inter Band CA(PCC: 2A, SCC: 12A)

Band	Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBd)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
2	15	1 880	1/36	QPSK	3 746.63	V	-51.39	-	8.28	-43.11	-13.00	30.11
					5 619.96	V	-62.74	-	10.41	-52.33	-13.00	39.33
					7 493.46	V	-62.30	-	12.15	-50.15	-13.00	37.15
12	5	700.5	1/14	QPSK	1 403.56	V	-40.02	3.21	-	-36.81	-13.00	23.81
					2 105.12	V	-61.10	3.12	-	-57.98	-13.00	44.98
					2 806.94	V	-62.97	4.82	-	-58.15	-13.00	45.15
					4 210.68	V	-66.35	6.82	-	-59.53	-13.00	46.53

Inter Band CA(PCC: 2A, SCC: 14A)

Band	Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBd)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
2	15	1 880	1/0	QPSK	3 746.66	V	-50.71	-	8.28	-42.43	-13.00	29.43
					5 620.02	V	-63.19	-	10.41	-52.78	-13.00	39.78
					7 493.50	V	-61.94	-	12.15	-49.79	-13.00	36.79
14	10	795.5	1/0	QPSK	2 379.88	H	-52.88	3.78	-	-49.10	-13.00	36.10
					3 966.65	V	-58.31	6.70	-	-51.61	-13.00	38.61
					4 760.00	H	-66.66	7.35	-	-59.31	-13.00	46.31

UNDESIRABLE EMISSIONS IN 1559~1610MHz (SCC: 14A)

Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
5	795.5	1/0	QPSK	1 586.76	H	-47.41	5.83	-41.58	-40.00	1.58

Inter Band CA(PCC: 5A, SCC: 66A)

Band	Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBd)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
5	5	826.5	1/12	QPSK	1 652.98	V	-51.89	3.55	-	-48.34	-13.00	35.34
					2 479.51	V	-54.16	4.03	-	-50.13	-13.00	37.13
					3 306.37	H	-66.54	5.77	-	-60.77	-13.00	47.77
					4 132.38	H	-56.60	6.79	-	-49.81	-13.00	36.81
66	20	1 715	1/49	QPSK	3 438.78	H	-61.80	-	8.23	-53.57	-13.00	40.57
					5 158.32	H	-67.83	-	10.14	-57.69	-13.00	44.69
					6 879.28	V	-69.11	-	11.41	-57.70	-13.00	44.70

Inter Band CA(PCC: 12A, SCC: 66A)

Band	Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBd)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
12	5	700.5	1/14	QPSK	1 403.54	V	-39.83	3.21	-	-36.62	-13.00	23.62
					2 105.26	V	-59.50	3.12	-	-56.38	-13.00	43.38
					2 806.94	V	-63.07	4.82	-	-58.25	-13.00	45.25
					4 210.69	V	-66.60	6.82	-	-59.78	-13.00	46.78
66	20	1 715	1/49	QPSK	3 438.81	H	-61.72	-	8.23	-53.49	-13.00	40.49
					5 158.20	H	-67.50	-	10.14	-57.36	-13.00	44.36
					6 877.55	V	-68.86	-	11.41	-57.45	-13.00	44.45

Inter Band CA(PCC: 14A, SCC: 66A)

Band	Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBd)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
14	5	795.5	1/0	QPSK	2 379.98	H	-55.60	3.78	-	-51.82	-13.00	38.82
					3 966.72	V	-56.89	6.70	-	-50.19	-13.00	37.19
					4 759.94	H	-65.36	7.35	-	-58.01	-13.00	45.01
66	20	1 715	1/49	QPSK	3 438.91	H	-62.01	-	8.23	-53.78	-13.00	40.78
					5 158.36	H	-67.57	-	10.14	-57.43	-13.00	44.43
					6 877.65	V	-69.00	-	11.41	-57.59	-13.00	44.59

UNDESIRABLE EMISSIONS IN 1559~1610MHz (PCC: 14A)

Channel Bandwidth (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	Ant Pol (H/V)	Level at Antenna Terminal(dBm)	Substitute Antenna Gain(dBi)	Result (dBm)	Limit (dBm)	Margin (dB)
5	795.5	1/0	QPSK	1 586.76	H	-46.62	5.83	-40.79	-40.00	0.79