

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 96
47 CFR FCC Part 2

Report No.: RFBCKS-WTW-P25110023-1

FCC ID: UXX-FE990B40NA

Product: 5G NR Module

Brand: Ericsson

Model No.: FE990B40-NAD

Series Model: 2025/9/23

Received Date: 2025/10/23

Test Date: 2025/11/24 ~ 2025/12/1

Issued Date: 2026/1/14

Applicant: Ericsson Enterprise Wireless Solutions, Inc.

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FCC Registration /
Designation Number: 788550 / TW0003

Approved by: Jeremy Lin, Date: 2026/1/14
Jeremy Lin / Project Engineer

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Prepared by : Pettie Chen / Senior Specialist



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Release Control Record

Issue No.	Description	Date Issued
RFBCKS-WTW-P25110023-1	Original release.	2026/1/14

1 Certificate

Product: 5G NR Module

Brand: Ericsson

Test Model: FE990B40-NAD

Sample Status: Engineering sample

Applicant: Ericsson Enterprise Wireless Solutions, Inc.

Test Date: 2025/11/24 ~ 2025/12/1

Standard: 47 CFR FCC Part 96
47 CFR FCC Part 2

Measurement procedure: ANSI/TIA/EIA-603-E 2016
ANSI C63.26-2015
KDB 971168 D01 Power Meas License Digital Systems v03r01
KDB 940660 D01 Part 96 CBRS Eqpt v03

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

2 Summary of Test Results

Standard / Clause	Test Item	Result	Remark
Part 2.1046 Part 96.41(b)	Maximum EIRP	Pass	Meet the requirement of limit.
Part 2.1047	Modulation Characteristics	N/A	Refer to Note
Part 2.1046 Part 96.41(b)	Maximum Power Spectral Density	N/A	This device is End User Device.
Part 96.41(g)	Peak to Average Ratio	N/A	Refer to Note
Part 2.1049	Bandwidth	N/A	Refer to Note
Part 2.1051 Part 96.41(e)	Conducted Spurious Emissions	N/A	Refer to Note
Part 2.1053 Part 96.41(e)	Radiated Spurious Emissions below 1GHz	Pass	Minimum passing margin is -4.55 dB at 30.00 MHz
Part 2.1053 Part 96.41(e)	Radiated Spurious Emissions above 1GHz	Pass	Minimum passing margin is -0.34 dB at 7250.00 MHz
Part 2.1055	Frequency Stability	N/A	Refer to Note

Note:

- Only test item of Maximum EIRP and radiated spurious emissions was performed for this report. Other testing data please refer to Sporton report no.: FG492402C_R01 for module (Brand: Telit, Model: FE990B40-NAD).
- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Parameter	Specification	Uncertainty (±)
Effective Radiated Power and Equivalent Isotropically Radiated Power	-	1.371 dB
Radiated Spurious Emissions below 1GHz	9 kHz ~ 30 MHz	2.44 dB
	30 MHz ~ 1 GHz	2.95 dB
Radiated Spurious Emissions above 1GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	5G NR Module
Brand	Ericsson
Test Model	FE990B40-NAD
Status of EUT	Engineering sample
Power Supply Rating	3.8Vdc
EUT Category	End User Device
Modulation Type	QPSK, 16QAM, 64QAM, 256QAM
LTE support SISO bands	B48
PC3 for Power Class	LTE: B48
Band Covered Information	LTE Band 48 cover LTE Band 42 and 43 (Part 96)

Note:

- This report is prepared for FCC class II permissive change. The difference compared with original report is listed as below. Therefore, test items for Maximum EIRP and Radiated Spurious Emissions test had been re-tested in this report.
 - There are minor changes to the EUT's antenna connector, but these do not affect the RF characteristics & output power.
 - Additional antennas are added.
 - The output power for all frequency bands will be remeasure.

2. EUT Overview

LTE Band 48

Bandwidth	TX Frequency Range (MHz)	Modulation	Max. EIRP (W)	Max. EIRP (dBm)
5 MHz	3552.5 ~ 3697.5	QPSK	0.172	22.35
		16QAM	0.148	21.70
		64QAM	0.118	20.71
		256QAM	0.062	17.92
10 MHz	3555 ~ 3695	QPSK	0.172	22.36
		16QAM	0.146	21.63
		64QAM	0.119	20.75
		256QAM	0.062	17.92
15 MHz	3557.5 ~ 3692.5	QPSK	0.172	22.36
		16QAM	0.149	21.72
		64QAM	0.118	20.73
		256QAM	0.061	17.88
20 MHz	3560 ~ 3690	QPSK	0.174	22.41
		16QAM	0.149	21.73
		64QAM	0.12	20.78
		256QAM	0.063	17.96

- LTE Band 48 overlaps the entire frequency range of LTE Band 42 (3550 ~ 3600 MHz), support Bandwidth 5M/10M/15M/20M and LTE Band 43 (3600 ~ 3700 MHz), support Bandwidth 5M/10M/15M/20M. Therefore, test data provided in this report covers LTE Band 48 as well as LTE Band 42 and LTE Band 43
- For detailed information about each WWAN bands frequency range, bandwidth mode of the product, please refer to section 3.3 of the report.
- The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Antenna	Antenna Type	Brand	Mdoel
Cellular	Monopole	MaxTena	NETZ 4IN1-5G
Cellular	Dipole	Ericsson	170923-000

Band	Frequency Range (MHz)	Gain (dBi)					Worst case Ant. gain	Cable loss		Net Gain @ Ant 0	Net Gain @ Ant 2
		Monopole Antenna				Dipole Antenna		Ant 0	Ant 2		
		5G-1	5G-2	5G-3	5G-4						
B42	3450-3600	5.13	3.9	4.85	3.57	3.48	5.13	0.799	1.174	4.331	3.956
B43	3600-3800	5.13	4.95	5.19	5.07	3.24	5.19	0.813	1.31	4.377	3.88
B48	3550-3700	5.13	4.95	5.19	4.71	3.24	5.19	0.799	1.174	4.391	4.016

*The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

3.3 Test Mode Applicability and Tested Channel Detail

Following channel(s) was (were) selected for the final test as listed below:

3.3.1 LTE Band 48

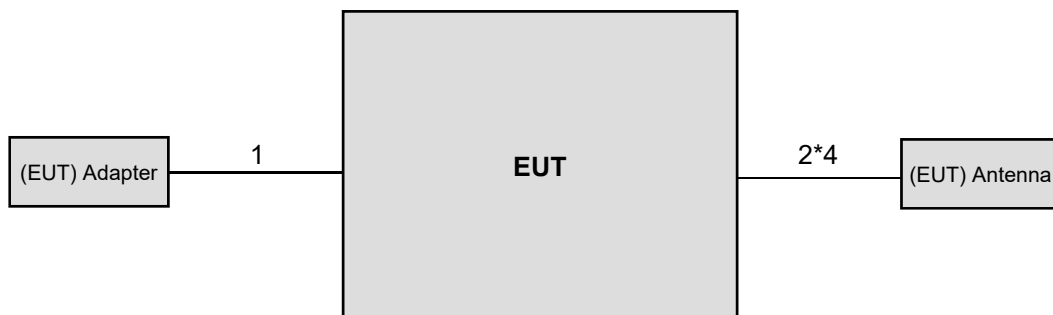
Test Item	Tested Channel	Channel Bandwidth	Modulation	Mode
Maximum EIRP	55265(3552.50 MHz) 55990(3625.00 MHz) 56715(3697.50 MHz)	5 MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB Half RB Full RB
	55290(3555.00 MHz) 55990(3625.00 MHz) 56690(3695.00 MHz)	10 MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB Half RB Full RB
	55315(3557.50 MHz) 55990(3625.00 MHz) 56665(3692.50 MHz)	15 MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB Half RB Full RB
	55340(3560.00 MHz) 55990(3625.00 MHz) 56640(3690.00 MHz)	20 MHz	QPSK / 16QAM / 64QAM / 256QAM	1 RB Half RB Full RB
Radiated Spurious Emissions below 1GHz	55990(3625.00 MHz)	20 MHz	QPSK	1 RB
Radiated Spurious Emissions above 1GHz	55990(3625.00 MHz)	20 MHz	QPSK	1 RB

3.4 Test Program Used and Operation Descriptions

Set the EUT under transmission condition continuously at specific channel frequency.

3.5 Connection Diagram of EUT and Peripheral Devices

For Monopole Antenna



Under Table

Remote Site



(A) Radio
Communication
Analyzer

3.6 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Radio Communication Analyzer	Anritsu	MT8821C	6201462755	NA	-

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	DC Cable	1	1.5	No	0	Supplied by applicant
2	RF Cable	4	3	No	0	Supplied by applicant

4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.1 Maximum EIRP

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Fixed Attenuator Woken	00800A1K01A-10	00800A1K01A-10-01	2025/5/23	2026/5/22
PXA Signal Analyzer Keysight	N9030B	MY57140938	2025/3/24	2026/3/23
Radio Communication Analyzer Anritsu	MT8821C	6201462755	2025/4/8	2026/4/7
Software BV	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2025/12/1

4.2 Radiated Spurious Emissions below 1GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Max-Full	MFA-440H	AT93021705	N/A	N/A
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-472	2025/9/16	2026/9/15
Loop Antenna TESEQ	HLA 6121	45745	2025/9/1	2026/8/31
MXE EMI Receiver Agilent	N9038A	MY51210203	2025/8/27	2026/8/26
Preamplifier EMCI	EMC 330H	980112	2025/9/21	2026/9/20
	EMC001340	980201	2025/9/21	2026/9/20
RF Coaxial Cable Woken	8D-FB	Cable-Ch10-01	2025/9/21	2026/9/20
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table Max-Full	MFT-201SS	N/A	N/A	N/A
Turn Table Controller Max-Full	MG-7802	N/A	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 5.
2. Tested Date: 2025/11/24

4.3 Radiated Spurious Emissions above 1GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Max-Full	MFA-440H	AT93021705	N/A	N/A
Boresight antenna tower fixture BV	BAF-02	7	N/A	N/A
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-969	2025/11/9	2026/11/8
	BBHA 9170	148	2025/11/9	2026/11/8
MXE EMI Receiver Agilent	N9038A	MY51210203	2025/8/27	2026/8/26
Preamplifier EMCI	EMC 184045	980116	2025/9/21	2026/9/20
	EMC118A45SE	980809	2025/4/24	2026/4/23
RF Coaxial Cable EMCI	EMC102-KM-KM-600	150928	2025/6/30	2026/6/29
	EMC102-KM-KM-3000	150929	2025/6/30	2026/6/29
	EMC104-SM-SM- 8000+3000	171005	2025/9/21	2026/9/20
RF Coaxial Cable HUBER+SUHNER	SUCOFLEX 104	EMC104-SM-SM- 1000(140807)	2025/9/21	2026/9/20
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table Max-Full	MFT-201SS	N/A	N/A	N/A
Turn Table Controller Max-Full	MG-7802	N/A	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 5.
2. Tested Date: 2025/11/24

5 Limits of Test Items

5.1 Maximum EIRP

For LTE Band 48:

Device Category	Maximum EIRP (dBm/10 MHz)
End User Device	23
Category A CBSD	30
Category B CBSD	47

5.2 Radiated Spurious Emissions below 1GHz

For LTE Band 48:

The power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40 dBm/MHz.

5.3 Radiated Spurious Emissions above 1GHz

For LTE Band 48:

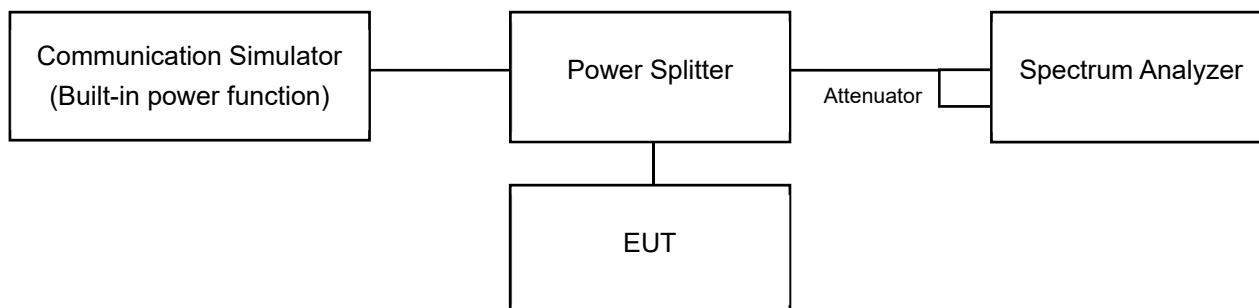
The power of any emissions below 3530 MHz or above 3720 MHz shall not exceed -40dBm/MHz.

6 Test Arrangements

6.1 Maximum EIRP

6.1.1 Test Setup

Conducted Power Measurement:



6.1.2 Test Procedure

Conducted Power Measurement:

The EUT is configured by emulator to set data modulation and maximum power using WWAN technology and link to spectrum analyzer measurements. Set the EUT to transmit under low, middle and high channel and record the power level shown on spectrum analyzer. Power measurements use detector average (rms).

Measurement method refers to ANSI C63.26 section 5.2.4.4.

- Set span to 2 × to 3 × the OBW.
- Set RBW = 1% to 5% of the OBW.
- Set VBW ≥ 3 × RBW.
- Set number of measurement points in sweep ≥ 2 × span / RBW.
- Set Sweep time = auto-couple.
- Detector = power averaging (rms).
- Set sweep trigger to “free run.”
- Trace average at least 100 traces in power averaging (rms) mode.
- Use the Band/Channel Power function to determine the integrated power per 10 MHz bandwidth and full bandwidth, according to the 47 CFR FCC Part 96 standard.
- If Duty cycle < 98%, Add 10 log (1/duty cycle) to the measured power level to compute the average power during continuous transmission.

Maximum EIRP / ERP

The relevant equation for determining the maximum ERP or EIRP from the measured RF output power is given in Equation as follows:

$$\text{EIRP} = P_{\text{Meas}} + G_T$$

$$\text{ERP} = P_{\text{Meas}} + G_T - 2.15$$

where

ERP or EIRP effective radiated power or equivalent isotropically radiated power, respectively

(expressed in the same units as P_{Meas} , e.g., dBm or dBW)

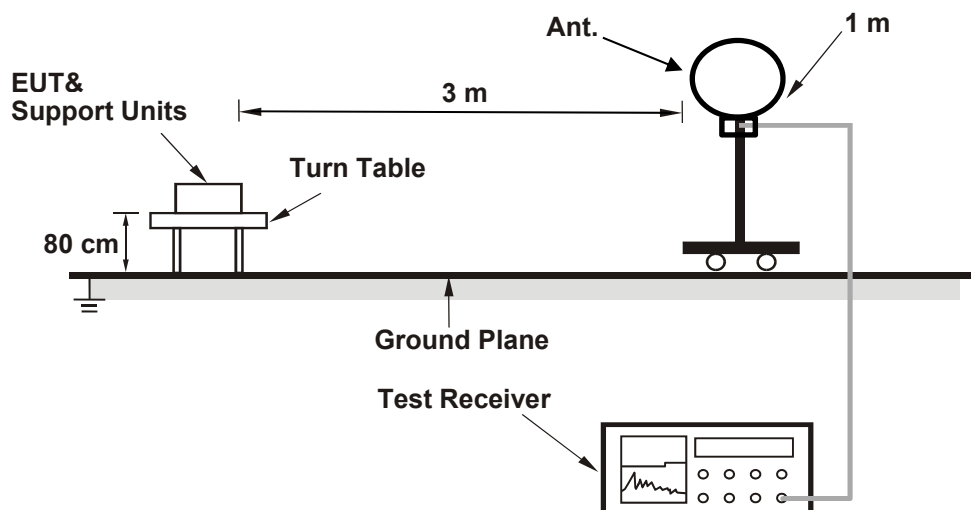
P_{Meas} measured transmitter output power or PSD, in dBm or dBW

G_T gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP)

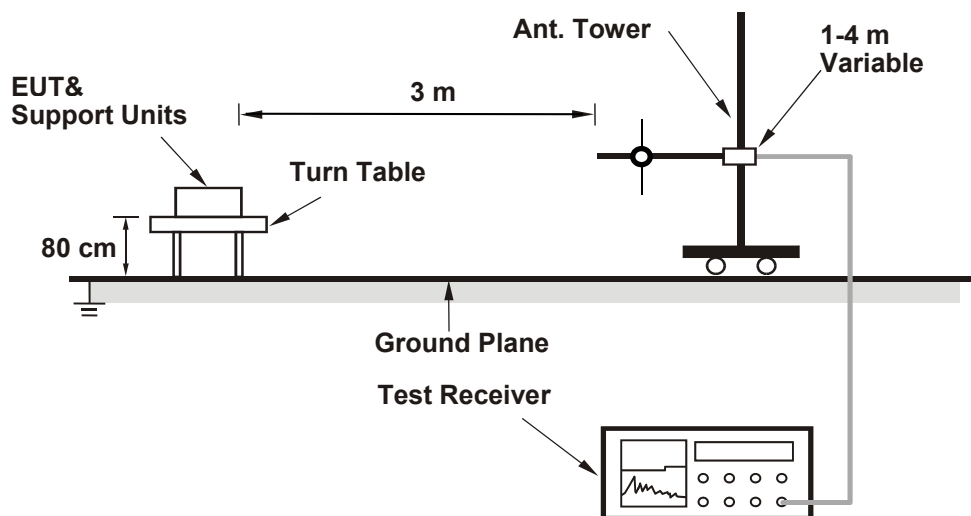
6.2 Radiated Spurious Emissions below 1GHz

6.2.1 Test Setup

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.2.2 Test Procedure

The EUT is configured to set data modulation and maximum power using WWAN technology.

- a. In the semi-anechoic chamber, EUT placed on the 0.8 m (below or equal 1 GHz) height of turn table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- c. Perform a field strength measurement and record the worse read value, is the field strength value via a spectrum reading obtained corrected for antenna factor, cable loss and pre-amplifier factor and then mathematically convert the measured field strength level to EIRP/ERP level.
- d. Following ANSI C63.26 section 5.5 and 5.2.7
- e. $EIRP\ (dBm) = E\ (dB\mu V/m) + 20\log(D) - 104.8$; where D is the measurement distance (in the far field region) in m.
- f. $ERP\ (dBm) = E\ (dB\mu V/m) + 20\log(D) - 104.8 - 2.15$; where D is the measurement distance (in the far field region) in m.

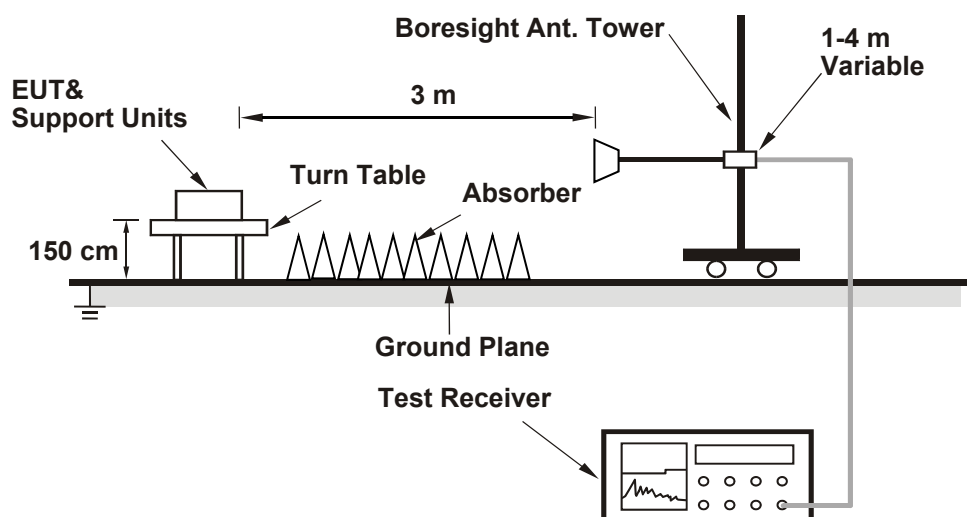
Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz. Set detector = average.
2. The amplitude of spurious emissions in the range 9 kHz to 30 MHz which are attenuated more than 20 dB below the permissible value need not be reported.

6.3 Radiated Spurious Emissions above 1GHz

6.3.1 Test Setup

For radiated emission above 1 GHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.3.2 Test Procedure

The EUT is configured to set data modulation and maximum power using WWAN technology.

- In the semi-anechoic chamber, EUT placed on the 1.5 m height of turn table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1 m to 4 m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- Perform a field strength measurement and record the worse read value, is the field strength value via a spectrum reading obtained corrected for antenna factor, cable loss and pre-amplifier factor and then mathematically convert the measured field strength level to EIRP/ERP level.
- Following ANSI C63.26 section 5.5 and 5.2.7
- $EIRP (dBm) = E (dB\mu V/m) + 20\log(D) - 104.8$; where D is the measurement distance (in the far field region) in m.
- $ERP (dBm) = E (dB\mu V/m) + 20\log(D) - 104.8 - 2.15$; where D is the measurement distance (in the far field region) in m.

Note: The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz/3 MHz. Set detector = average.

7 Test Results of Test Item

7.1 Maximum EIRP

Environmental Conditions:	23°C, 74% RH	Tested By:	Willy Cheng
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7.1.1 LTE Band 48

LTE Band 48, Channel Bandwidth: 5 MHz

Modulation	RB Size	RB Offset	Measurement Conducted Power (dBm)		
			CH 55265	CH 55990	CH 56715
			3552.5 MHz	3625 MHz	3697.5 MHz
QPSK	1	0	17.71	17.96	17.74
	1	12	17.62	17.89	17.51
	1	24	17.43	17.83	17.33
	12	0	16.63	16.96	16.6
	12	6	16.72	17.14	16.65
	12	13	16.51	16.89	16.49
	25	0	16.74	17.17	16.61
16QAM	1	0	16.48	16.98	16.47
	1	12	16.69	17.31	16.69
	1	24	16.47	17.12	16.52
	12	0	15.71	16.19	15.6
	12	6	15.55	16.12	15.53
	12	13	15.53	16.11	15.49
	25	0	15.6	16.14	15.53
64QAM	1	0	15.79	16.26	15.65
	1	12	15.8	16.32	15.81
	1	24	15.59	16.26	15.54
	12	0	14.67	15.33	14.66
	12	6	14.82	15.16	14.75
	12	13	14.73	15.18	14.64
	25	0	14.65	15.26	14.71
256QAM	1	0	12.92	13.53	12.83
	1	12	12.48	13.09	12.49
	1	24	12.26	12.84	12.11
	12	0	12.71	13.29	12.62
	12	6	12.82	13.21	12.75
	12	13	12.71	13.33	12.54
	25	0	12.72	13.19	12.61

Output Power

Modulation	Minimum Cond. Power (dBm)	Maximum Cond. Power (dBm)	Minimum EIRP (dBm)	Maximum EIRP (dBm)	EIRP Limit (dBm)
QPSK	16.49	17.96	20.88	22.35	23.00
16QAM	15.49	17.31	19.88	21.70	23.00
64QAM	14.64	16.32	19.03	20.71	23.00
256QAM	12.11	13.53	16.50	17.92	23.00

Note: EIRP (dBm) = Cond. Power (dBm) + Antenna Gain (dBi) + Array Gain (if applicable)

LTE Band 48, Channel Bandwidth: 10 MHz

Modulation	RB Size	RB Offset	Measurement Conducted Power (dBm)		
			CH 55290	CH 55990	CH 56690
			3555 MHz	3625 MHz	3695 MHz
QPSK	1	0	17.67	17.97	17.73
	1	24	17.55	17.86	17.44
	1	49	17.34	17.82	17.28
	25	0	16.56	16.93	16.58
	25	12	16.73	17.12	16.57
	25	25	16.5	16.92	16.52
	50	0	16.66	17.17	16.56
16QAM	1	0	16.45	17	16.46
	1	24	16.65	17.24	16.63
	1	49	16.55	17.07	16.5
	25	0	15.69	16.29	15.69
	25	12	15.58	16.05	15.59
	25	25	15.52	16.15	15.43
	50	0	15.61	16.14	15.6
64QAM	1	0	15.84	16.22	15.73
	1	24	15.8	16.36	15.77
	1	49	15.6	16.22	15.53
	25	0	14.7	15.33	14.68
	25	12	14.8	15.2	14.8
	25	25	14.75	15.11	14.63
	50	0	14.62	15.28	14.64
256QAM	1	0	12.89	13.53	12.83
	1	24	12.51	13.13	12.5
	1	49	12.26	12.8	12.16
	25	0	12.69	13.29	12.62
	25	12	12.84	13.21	12.79
	25	25	12.67	13.29	12.58
	50	0	12.65	13.24	12.62

Output Power

Modulation	Minimum Cond. Power (dBm)	Maximum Cond. Power (dBm)	Minimum EIRP (dBm)	Maximum EIRP (dBm)	EIRP Limit (dBm)
QPSK	16.50	17.97	20.89	22.36	23.00
16QAM	15.43	17.24	19.82	21.63	23.00
64QAM	14.62	16.36	19.01	20.75	23.00
256QAM	12.16	13.53	16.55	17.92	23.00

Note: EIRP (dBm) = Cond. Power (dBm) + Antenna Gain (dBi) + Array Gain (if applicable)

LTE Band 48, Channel Bandwidth: 15 MHz, Output Power: Full Power

Modulation	RB Size	RB Offset	Measurement Conducted Power (dBm)		
			CH 55315	CH 55990	CH 56665
			3557.5 MHz	3625 MHz	3692.5 MHz
QPSK	1	0	17.71	17.97	17.71
	1	37	17.54	17.79	17.51
	1	74	17.42	17.79	17.28
	36	0	16.64	16.92	16.6
	36	19	16.67	17.08	16.62
	36	39	16.47	16.84	16.47
	75	0	16.74	17.11	16.6
16QAM	1	0	16.53	16.95	16.4
	1	37	16.7	17.33	16.69
	1	74	16.5	17.11	16.45
	36	0	15.66	16.2	15.65
	36	19	15.63	16.09	15.52
	36	39	15.5	16.09	15.42
	75	0	15.6	16.2	15.54
64QAM	1	0	15.85	16.25	15.68
	1	37	15.82	16.34	15.8
	1	74	15.63	16.3	15.61
	36	0	14.69	15.31	14.69
	36	19	14.84	15.23	14.71
	36	39	14.67	15.17	14.64
	75	0	14.67	15.23	14.64
256QAM	1	0	12.93	13.49	12.81
	1	37	12.52	13.08	12.49
	1	74	12.3	12.81	12.11
	36	0	12.65	13.25	12.71
	36	19	12.78	13.24	12.75
	36	39	12.7	13.25	12.55
	75	0	12.73	13.28	12.66

Output Power

Modulation	Minimum Cond. Power (dBm)	Maximum Cond. Power (dBm)	Minimum EIRP (dBm)	Maximum EIRP (dBm)	EIRP Limit (dBm)
QPSK	16.47	17.97	20.86	22.36	23.00
16QAM	15.42	17.33	19.81	21.72	23.00
64QAM	14.64	16.34	19.03	20.73	23.00
256QAM	12.11	13.49	16.50	17.88	23.00

Note: EIRP (dBm) = Cond. Power (dBm) + Antenna Gain (dBi) + Array Gain (if applicable)

LTE Band 48, Channel Bandwidth: 20 MHz, Output Power: Full Power

Modulation	RB Size	RB Offset	Measurement Conducted Power (dBm)		
			CH 55340	CH 55990	CH 56640
			3560 MHz	3625 MHz	3690 MHz
QPSK	1	0	17.72	18.02	17.8
	1	50	17.62	17.89	17.52
	1	99	17.43	17.84	17.37
	50	0	16.64	17.02	16.61
	50	25	16.77	17.15	16.67
	50	50	16.57	16.93	16.53
	100	0	16.74	17.18	16.64
16QAM	1	0	16.55	17	16.47
	1	50	16.75	17.34	16.71
	1	99	16.56	17.14	16.53
	50	0	15.75	16.29	15.7
	50	25	15.63	16.14	15.62
	50	50	15.54	16.15	15.5
	100	0	15.65	16.2	15.62
64QAM	1	0	15.85	16.28	15.75
	1	50	15.88	16.39	15.85
	1	99	15.68	16.32	15.61
	50	0	14.77	15.35	14.76
	50	25	14.84	15.24	14.8
	50	50	14.76	15.18	14.68
	100	0	14.72	15.31	14.72
256QAM	1	0	12.94	13.57	12.91
	1	50	12.58	13.16	12.54
	1	99	12.31	12.88	12.21
	50	0	12.75	13.33	12.71
	50	25	12.84	13.24	12.81
	50	50	12.73	13.34	12.63
	100	0	12.75	13.28	12.67

Output Power

Modulation	Minimum Cond. Power (dBm)	Maximum Cond. Power (dBm)	Minimum EIRP (dBm)	Maximum EIRP (dBm)	EIRP Limit (dBm)
QPSK	16.53	18.02	20.92	22.41	23.00
16QAM	15.50	17.34	19.89	21.73	23.00
64QAM	14.68	16.39	19.07	20.78	23.00
256QAM	12.21	13.57	16.60	17.96	23.00

Note: EIRP (dBm) = Cond. Power (dBm) + Antenna Gain (dBi) + Array Gain (if applicable)

LTE Band 48, Channel Bandwidth: 15 MHz, Output Power: dBm/10 MHz

Modulation	RB Size	RB Offset	Measurement Conducted Power (dBm)		
			CH 55315	CH 55990	CH 56665
			3557.5 MHz	3625 MHz	3692.5 MHz
QPSK	1	0	17.67	17.88	17.7
	1	37	17.46	17.76	17.46
	1	74	17.37	17.69	17.23
	36	0	16.56	16.88	16.51
	36	19	16.66	17.07	16.59
	36	39	16.38	16.75	16.39
	75	0	15.32	15.67	15.13
16QAM	1	0	16.51	16.94	16.37
	1	37	16.61	17.29	16.64
	1	74	16.42	17.1	16.39
	36	0	15.56	16.15	15.57
	36	19	15.62	16.01	15.42
	36	39	15.43	16.08	15.39
	75	0	14.18	14.71	14.14
64QAM	1	0	15.82	16.17	15.66
	1	37	15.75	16.24	15.72
	1	74	15.61	16.26	15.54
	36	0	14.68	15.22	14.61
	36	19	14.81	15.16	14.61
	36	39	14.66	15.08	14.54
	75	0	13.22	13.79	13.17
256QAM	1	0	12.86	13.47	12.71
	1	37	12.46	12.98	12.43
	1	74	12.26	12.78	12.02
	36	0	12.56	13.15	12.67
	36	19	12.7	13.15	12.69
	36	39	12.6	13.24	12.45
	75	0	11.26	11.85	11.25

Output Power

Modulation	Minimum Cond. Power (dBm)	Maximum Cond. Power (dBm)	Minimum EIRP (dBm)	Maximum EIRP (dBm)	EIRP Limit (dBm)
QPSK	15.13	17.88	19.52	22.27	23.00
16QAM	14.14	17.29	18.53	21.68	23.00
64QAM	13.17	16.26	17.56	20.65	23.00
256QAM	11.25	13.47	15.64	17.86	23.00

Note: EIRP (dBm) = Cond. Power (dBm) + Antenna Gain (dBi) + Array Gain (if applicable)

LTE Band 48, Channel Bandwidth: 20 MHz, Output Power: dBm/10 MHz

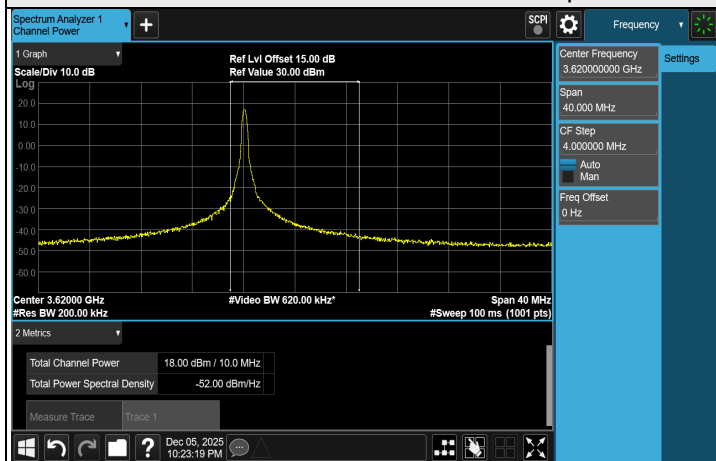
Modulation	RB Size	RB Offset	Measurement Conducted Power (dBm)		
			CH 55340	CH 55990	CH 56640
			3560 MHz	3625 MHz	3690 MHz
QPSK	1	0	17.67	18	17.79
	1	50	17.56	17.82	17.45
	1	99	17.4	17.74	17.36
	50	0	16.63	17.01	16.56
	50	25	16.72	17.1	16.59
	50	50	16.55	16.9	16.43
	100	0	14.25	14.73	14.12
16QAM	1	0	16.53	16.99	16.41
	1	50	16.65	17.32	16.61
	1	99	16.46	17.13	16.46
	50	0	15.68	16.22	15.69
	50	25	15.53	16.13	15.53
	50	50	15.49	16.05	15.48
	100	0	13.11	13.67	13.17
64QAM	1	0	15.82	16.27	15.65
	1	50	15.87	16.38	15.77
	1	99	15.58	16.27	15.57
	50	0	14.68	15.28	14.66
	50	25	14.79	15.16	14.78
	50	50	14.67	15.17	14.63
	100	0	12.18	12.78	12.19
256QAM	1	0	12.91	13.56	12.88
	1	50	12.52	13.09	12.53
	1	99	12.25	12.87	12.15
	50	0	12.68	13.29	12.67
	50	25	12.83	13.15	12.73
	50	50	12.72	13.32	12.55
	100	0	10.22	10.79	10.2

Output Power

Modulation	Minimum Cond. Power (dBm)	Maximum Cond. Power (dBm)	Minimum EIRP (dBm)	Maximum EIRP (dBm)	EIRP Limit (dBm)
QPSK	14.12	18	18.51	22.39	23.00
16QAM	13.11	17.32	17.5	21.71	23.00
64QAM	12.18	16.38	16.57	20.77	23.00
256QAM	10.2	13.56	14.59	17.95	23.00

Note: EIRP (dBm) = Cond. Power (dBm) + Antenna Gain (dBi) + Array Gain (if applicable)

Spectrum Plot of Worst Value



QPSK CH 55990 (3625 MHz)

Note: For the channel bandwidth is less than or equal to 10 MHz, the full power test data please refer to the power per 10 MHz corresponding to the channel bandwidth.

7.2 Radiated Spurious Emissions below 1GHz

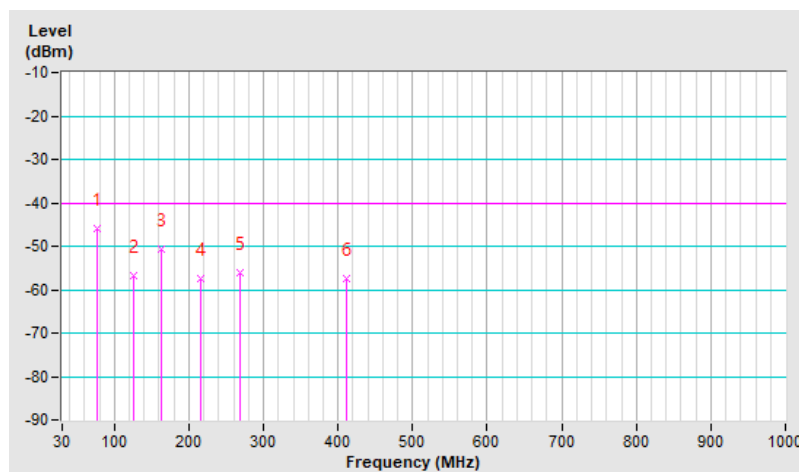
7.2.1 LTE Band 48

RF Mode	LTE Band 48 Channel Bandwidth: 20MHz	Channel	CH 55990 : 3625 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 72% RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	77.53	-46.02	-40.00	-6.02	2.00 H	8	65.80	-111.82
2	125.06	-56.64	-40.00	-16.64	1.50 H	116	52.43	-109.07
3	163.86	-50.69	-40.00	-10.69	1.00 H	147	57.04	-107.73
4	215.27	-57.34	-40.00	-17.34	2.00 H	118	53.32	-110.66
5	268.62	-56.14	-40.00	-16.14	1.00 H	80	51.76	-107.90
6	412.18	-57.56	-40.00	-17.56	2.00 H	110	46.53	-104.09

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

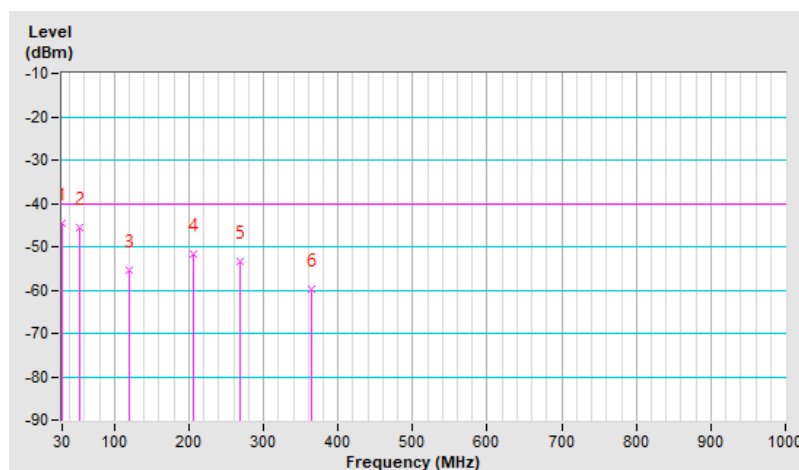


RF Mode	LTE Band 48 Channel Bandwidth: 20MHz	Channel	CH 55990 : 3625 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 72% RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	30.00	-44.55	-40.00	-4.55	1.00 V	93	63.64	-108.19
2	53.28	-45.43	-40.00	-5.43	1.00 V	16	62.00	-107.43
3	119.24	-55.58	-40.00	-15.58	1.00 V	172	54.12	-109.70
4	205.57	-51.83	-40.00	-11.83	1.00 V	175	58.95	-110.78
5	267.65	-53.39	-40.00	-13.39	2.00 V	188	54.56	-107.95
6	364.65	-59.79	-40.00	-19.79	1.00 V	154	45.66	-105.45

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



7.3 Radiated Spurious Emissions above 1GHz

7.3.1 LTE Band 48

RF Mode	LTE Band 48 Channel Bandwidth: 20MHz	Channel	CH 55990 : 3625 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	1 MHz/3 MHz (RMS)
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 65% RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7250.00	-45.21	-40.00	-5.21	1.11 H	253	39.66	-84.87
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	7250.00	-40.34	-40.00	-0.34	1.11 V	253	44.53	-84.87

Remarks:

1. $EIRP(dBm) = Raw\ Value(dBuV) + Correction\ Factor(dB/m)$
2. $Correction\ Factor(dB/m) = Antenna\ Factor(dB/m) + Cable\ Factor(dB) - Pre-Amplifier\ Factor(dB) + 20\log(D) - 104.8$
3. $Margin\ value = EIRP - Limit\ value$
4. The other EIRP levels were very low against the limit.

8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

9 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

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The address and road map of all our labs can be found in our web site also.

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