



RF Exposure Evaluation Report

FOR:
TELIT Corporation

Model Number: LE866SV1

Product Description: LTE Module

FCC ID: RI7LE866SV1
IC ID: 5131A-LE866SV1

FCC CFR 47 Part 1.1310, 2.1091
IC RSS-102, Issue 5

TEST REPORT #: EMC_VERIZ-049-150022_FCCICMPE_v1.0
DATE: 12-15-2015



FCC Recognized
A2LA Accredited
IC recognized # 3462E-1

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1 Assessment

The following equipment, as detailed in section 3 of this test report, meets the RF exposure limits and/or the conditions for exemption from routine evaluation as defined in the following standards.

Standard	Version
FCC CFR 47 Part 1.1310	Current as of 10-13-2015
FCC CFR 47 Part 2.1091	Current as of 10-13-2015
FCC KDB 447498	v05r02
OET Bulletin 65	Edition 97-01, August 1997
RSS 102	Issue 5

Responsible for Testing Laboratory:

12-15-2015	Compliance	Milton Ponce de Leon (Test Lab Manager)	
Date	Section	Name	Signature

Responsible for the Report:

12-15-2015	Compliance	Anthony Planinac (EMC Engineer)	
Date	Section	Name	Signature

The test results of this test report relate exclusively to the test item specified in Section 3.
CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full.
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2 Administrative Data

2.1 Identification of the Testing Laboratory Issuing the Test Report

Company Name	CETECOM Inc.
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Test Lab Manager	Milton Ponce de Leon
Project Manager	
Test Engineer	Anthony Planinac

2.2 Identification of the Client

Applicant's Name:	Telit Wireless Solutions Inc
Street Address:	3131 RDU Center Drive 135
City/Zip Code	Morrisville NC 27560
Country	USA
Contact Person:	James Hayter
Phone No.	919-439-7977
Fax:	
e-mail:	aaaaa@telit.com

2.3 Identification of the Manufacturer

Manufacturer's Name:	Same as client.
Manufacturers Address:	
City/Zip Code	
Country	

3 Equipment under Test (EUT)

3.1 Specification of the Equipment under Test

Marketing Name:	Telit Inc.
Model Number:	LE866SV1
FCC-ID :	RI7LE866SV1
IC-ID:	5131A-LE866SV1
Product Description:	LTE Chipset
Operating Frequency Ranges (MHz) / Channels:	LTE Band 13 (700MHz): 777 MHz – 787 MHz LTE Band 4 (1700 MHz): 1710 -1755 MHz
Rated Max power:	LTE Band 13=24dBm. LTE Band4=24dBm
Type(s) of Modulation:	QPSK and 16 QAM
Antenna info (antenna presented for testing with the development board):	LTE Band 4 (1700): Antenna gain = 2.14 dBi LTE Band 13 (700MHz): Antenna gain = 2.14 dBi
Rated Operating Voltage Range:	Vmin: 3.6V/ Vnom: 3.9V / Vmax: 4.2V
Rated Operating Temperature Range:	-10°C ~ +55°C
Test Sample Status:	Prototype
Device Category	<input type="checkbox"/> Fixed Installation <input checked="" type="checkbox"/> Mobile <input type="checkbox"/> Portable
Exposure Category	<input type="checkbox"/> Occupational/ Controlled <input checked="" type="checkbox"/> General Population/ Uncontrolled

3.2 Identification of the Equipment Under Test (EUT)

EUT #	Serial Number	Sample	HW/SW Version
1	163490000001	Radiated/Conducted	0.0/23.00.001

3.3 Identification of Accessory Equipment

AE #	Type	Model	HW Version	SW Version	
2	External LTE Antenna	T-AT305	NA	NA	700MHz – 2.4GHz

3.4 Miscellaneous Information

4 RF Exposure Evaluation Requirements

4.1 FCC:

Calculations can be made to predict RF field strength and power density levels around typical RF sources using the general equations (3) and (4) on page 19 of the following FCC document: "OET Bulletin 65, Edition 97-01 - Evaluating Compliance with FCC Guidelines for Human Exposure to Radio frequency Electromagnetic Fields".

The table below is excerpted from Table 1B of CFR 47 1.1310 titled Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure:

Frequency Range (MHz)	Power density (mW/cm ²)	Averaging time (minutes)
300 – 1500	f (MHz) /1500	30
1500 – 100.000	1.0	30

Using the equation from page 19 of OET Bulletin 65, Edition 97-01:

$$S = \frac{PG}{4\pi R^2}$$

where: S = power density (in appropriate units, e.g. mW/cm²)
P = power input to the antenna (in appropriate units, e.g., mW)
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

Additionally, according to § 2.1091:

The limit for <1.5 GHz mobile operations where no routine evaluation is required is: 1.5W ERP

The limit for >1.5 GHz mobile operations where no routine evaluation is required is: 3W ERP

Note:

1. This device is to be used only for fixed and mobile applications.
2. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all the persons

4.2 IC:

RSS-102 Section 2.5.2

RF exposure evaluation is required if the separation distance between the user and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- At or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p of the device is equal to or less than $0.0131 \times f(\text{MHz})^{0.6834} \text{ W}$.

RSS-102 4: RF Field strength limits for devices used by the General Public (Uncontrolled Environment):

Power density

$$300\text{MHz}- 6000 \text{ MHz} = 0.02619 \times f(\text{MHz})^{0.6834} \text{ W/m}^2$$

For modular approvals only:
Maximum Antenna Gain Analysis to Comply With Limits

Band XIII Frequency Band

Maximum output power considerations:

Mode	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Duty cycle	Equivalent conducted output power (Maximum conducted output power x duty cycle) (mW)	Distance (cm)
LTE	24	0.25	100%	0.25	20

IC Analysis

S	MPE limit for uncontrolled exposure	2.496	W/m ²
G ₁	Antenna gain to comply with MPE limits:	6.98	dBi
G ₂	Antenna gain to exclude routine RF Exposure Analysis According to RSS-102 §2.5.2	6.96	dBi
G ₃	Antenna gain to comply with EIRP limits according to RSS-130 §4.4	12.99	dBi

FCC Analysis

S	MPE limit for uncontrolled exposure:	0.525	mW/cm ²
G ₁	Antenna gain to comply with MPE limits:	10.21	dBi
G ₂	Antenna gain to exclude routine RF Exposure Analysis According to §2.1091	9.91	dBi
G ₃	Antenna gain to comply with ERP limits according to §22.913	12.92	dBi

The maximum antenna gain for mobile operation to comply with MPE and ERP limits shall not exceed **6.96dBi**.

For modular approvals only:

LTE Band IV frequency band

Maximum output power considerations:

Mode	Maximum conducted output power (dBm)	Maximum conducted output power (mW)	Duty cycle	Equivalent conducted output power (Maximum conducted output power x duty cycle) (mW)	Distance (cm)
LTE	24	0.25	100%	0.25	20

IC Analysis

S	MPE limit for uncontrolled exposure	4.318	W/m ²
G ₁	Antenna gain to comply with MPE limits:	9.36	dBi
G ₂	Antenna gain to exclude routine RF Exposure Analysis According to RSS-102 §2.5.2	9.34	dBi
G ₃	Antenna gain to comply with EIRP limits according to RSS-139 §6.5	6.00	dBi

FCC Analysis

S	MPE limit for uncontrolled exposure:	1	mW/cm ²
G ₁	Antenna gain to comply with MPE limits:	13.1	dBi
G ₂	Antenna gain to exclude routine RF Exposure Analysis According to §2.1091	12.92	dBi
G ₃	Antenna gain to comply with EIRP limits according to §27.50	6.00	dBi

The maximum antenna gain for mobile operation to comply with MPE and EIRP limits shall not exceed **6.00 dBi**.

Test Report #: **EMC_ VERIZ-049-15001_FCCICMPE_v1.0**
Date of Report : **12-15-2015**

FCC ID: R17LE866SV1
ICID: 5131A-LE866SV1

5 Revision History

Date	Report Number – Changes to Report	Report prepared by
12-15-2015	EMC_ VERIZ-049-15002_FCCICMPE_v1.0	MPDL