Test report No:

2747ERM.003A1

Assessment report
RF EXPOSURE REPORT ACCORDING TO
FCC 47 CFR Part 2.1091

(*) Identification of item under evaluation	LTE Module
(*) Trademark	TELIT
(*) Model and /or type reference	LM960A9-P
Other identification of the product	FCC ID: RI7LM960A9P IMEI TAC: 35558311
(*) Features	PCI Express Mini Card, LTE CAT.9
Manufacturer	TELIT WIRELESS SOLUTIONS CO., LTD. 8th Fl.,V Bld, 6, Gukjegeumyung-ro 8-gil, Yeongdeungpo-gu, Seoul, 07330, South Korea.
Test method requested, standard	FCC 47 CFR Part 2.1091. Radiofrequency radiation exposure evaluation: Mobile devices.
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Domingo Galvez EMC&RF Lab Manager
Date of issue	08/21/2020
Report template No	FDT08_22 (*) Declared by the manufacturer

Index

Competences and guarantees

In order to assure the traceability to other national and international laboratories, DEKRA Certification Inc. has a calibration and maintenance program for its measurement equipment.

DEKRA Certification Inc. guarantees the reliability of the data presented in this report, which is the result of the measurements and the tests performed to the item under test on the date and under the conditions stated on the report and, it is based on the knowledge and technical facilities available at DEKRA Certification Inc. at the time of performance of the test.

DEKRA Certification Inc. is liable to the client for the maintenance of the confidentiality of all information related to the item under test and the results of the test.

The results presented in this Assessment Report apply only to the particular item under test established in this document.

IMPORTANT: No parts of this report may be reproduced or quoted out of context, in any form or by any means, except in full, without the previous written permission of DEKRA Certification Inc.

General conditions

1. This report is only referred to the item that has undergone the assessment.

2. This report does not constitute or imply on its own an approval of the product by the Certification Bodies or competent Authorities.

3. This document is only valid if complete; no partial reproduction can be made without previous written permission of DEKRA Certification Inc.

4. This test report cannot be used partially or in full for publicity and/or promotional purposes without previous written permission of DEKRA Certification Inc. and the Accreditation Bodies

Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested", "General description of the device"

2. Maximum output power and maximum antenna gain information

DEKRA Certification Inc. declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Identification of the client

TELIT WIRELESS SOLUTIONS CO., LTD.

8th Fl.,V Bld, 6, Gukjegeumyung-ro 8-gil, Yeongdeungpo-gu, Seoul, 07330, South Korea

Document history

Report number	Date	Description
2747ERM.003	08/20/2020	First release
2747ERM.003A1	08/21/2020	Second release

Modifications to the reference test report

It was introduced the following modification in respect to the test report number 2747ERM.003 related with the same samples:

Clauses/ Sub-Clauses	Modification	Justification
Page 1: Assessment report Title Page	Test method standard has been modified	Editorial Typo

This modification test report cancels and replaces the test report 2747ERM.003.

General description of the device under evaluation

The device under evaluation consists of a Mini-PCIe type LTE module.

According to the manufacturer, during its normal use, the separation distance between the device and the body of nearby users will be greater than distance >=20cm. In order to perform the assessment a conservative evaluation distance of 20 cm has been used.

The selected power is the max allowed power level as per FCC for an end user device. The EIRP calculation will include the total antenna gain. Please refer to "§96.41 General radio requirements" corresponds to

the equivalent isotopically radiated power (EIRP) for an end user device

Technology / Mode	Band	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Maximum E.I.R.P. (dBm)	Maximum E.I.R.P. (mW)
LTE	48	3550 - 3700	23.00	23.00	199.53

Table 1: Equipment specifications

RF Exposure Assessment result and verdict

FCC assessment:

The criteria listed in table 1 shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in § 1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of § 2.1093 of this chapter. Measurements and calculations to demonstrate compliance power density limits for devices operating above 6 GHz should be made at a minimum distance of 5 cm from the radiating source.

Limits for Maximum Permissible Exposure (MPE) to comply with FCC 47 CFR § 2.1091 are defined in "FCC 47 CFR Part 1.1310 Radiation Exposure limits, paragraph (e)":

Technology / Mode	Band	Frequency (MHz)	Distance (cm)	Power density (mW/cm2)	FCC General Population Limit (mW/cm2)	Verdict
LTE	48.00	3550 - 3700	20.00	0.04	1.00	**Pass**

Table 2: Assessment result and verdict

Appendix A: FCC RF Exposure information

FCC RF Exposure evaluation

When a device qualifies for the categorical exclusion provision of § 2.1091(c), the minimum test separation distance may be estimated, when applicable, by simple calculations according to plane-wave equivalent conditions, to ensure the transmitter and its antenna(s) can operate in manners that meet or exceed the estimated distance. The source-based time-averaged maximum radiated power, according to the maximum antenna gain, must be applied to calculate the field strength and power density required to establish the minimum test separation distance. When the estimated test separation distance becomes overly conservative and does not support compliance, MPE measurement or computational modeling may be used to determine the required minimum separation distance.

According to §1.1310 Radiofrequency radiation exposure limits, paragraph (e), the limits for Maximum Permissible Exposure (MPE) to radiofrequency electromagnetic fields are:

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3–3.0	614	1.63	* 100	6
3.0–30	1842/f	4.89/f	* 900/f²	6
30–300	61.4	0.163	1.0	6
300–1,500	....	....	f/300	6
1,500–100,000	....	....	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	* 100	30
1.34–30	824/f	2.19/f	* 180/f²	30
30–300	27.5	0.073	0.2	30
300–1,500	....	....	f/1500	30
1,500–100,000	....	....	1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

FCC MPE Evaluation

Each supported transmission technology will be evaluated to determine if it is in compliance with limits for Maximum Permissible Exposure (MPE) to radiofrequency electromagnetic fields.

In order to perform the assessment, the following equations have been used for the calculations; these equations are accurate in the far-field of an antenna and will over-predict power density in the near field, where they could be used for making a "worst case" or conservative prediction:

Power density: $S[mW/cm^2] = \dfrac{P_{E.I.R.P.}[mW]}{4\Pi R[cm]^2}$

Where:

S = power density

$P_{E.I.R.P.}$ = Equivalent isotopically radiated power

R = distance to the center of radiation of the antenna (evaluation distance)