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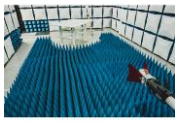

RF EXPOSURE EVALUATION
Maximum Permissible Exposure [MPE]

Applicant Name:
Council Rock Enterprises LLC
11 Centre Park
Rochester, NY 14614
United States

Date of Testing:
04/02 - 08/10/2021
Test Site/Location:
PCTEST Lab. Columbia, MD, USA
Test Report Serial No.:
1M210811092-02.2AL52

FCC ID:	**2AL52E15008B**
Applicant:	**Council Rock Enterprises LLC**

Application Type:	Class II Permissive Change
Model:	TELiG E1500-L8N
Additional Model:	TELiG E1500-L8
EUT Type:	Cellular Module Integrated Into TELiG Device
FCC Classification:	PCS Licensed Transmitter (PCB)
FCC Rule Part:	FCC Part 1 (§1.1310) and Part 2 (§2.1091)
Test Procedure(s):	KDB 447498 D01
Class II Permissive Change:	Integrating and co-locating module into host TELiG E1500 product
Original Grant Date:	04/27/2021

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in FCC KDB 447498 D01. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Randy Ortanez
President

ACCREDITED
CERT #2041.01

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1.0 RF EXPOSURE EVALUATION – MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1 Introduction

This document is prepared to show compliance with the RF Exposure requirements as required in §1.1310 of the FCC Rules and Regulations.

The limit for Maximum Permissible Exposure (MPE), specified in FCC §1.1310, is listed in Table 1-1. According to FCC §1.1310: the criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b).

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Average Time (Minutes)
(A) Limits For Occupational / Control Exposures (f = frequency)				
30-300	61.4	0.163	1.0	6
300-1500	…	…	f/300	6
1500-100,000	…	…	5.0	6
(B) Limits For General Population / Uncontrolled Exposure (f = frequency)				
30-300	27.5	0.073	0.2	30
300-1500	…	…	f/1500	30
1500-100,000	…	…	1.0	30

Table 1-1. Limits for Maximum Permissible Exposure (MPE)

1.2 EUT Description

The EUT (FCC ID: 2AL52E15008B) is an LTE modem. This MPE evaluation will only cover RF exposure for LTE Band 8 operation. RF Exposure is evaluated to the Mobile Device requirements for General Population/Uncontrolled Exposure.

This module is being integrated and co-located into a host device. The Table 1-1 lists the modules being collocated.

Model	mPCIe1	mPCIe2	M.2
TELiG E1500-L8N	2AL52E1500N	2AL52E15008B	N7NEM75S
TELiG E1500-L8		2AL52E15008B	N7NEM75S

Table 1-2. Collocated Modules

1.3 Procedure

The procedure used to determine the RF power density was based upon a calculation for determining compliance with the MPE requirements. The power generated by each transmitter used in this product was initially measured by a spectrum analyzer and the powers were recorded.

Through use of the Friis transmission formula, the following MPE evaluations are calculations based on maximum power and maximum antenna gain allowed to achieve power density compliance for the General Population Exposure case while remaining under the 1.5W categorical exclusion limit in 2.1091(c)(1)(i).

Friis Transmission Formula

Friis transmission formula: $P_d = (P_{out}*G) / (4\pi r^2)$

Where,

P_d = Power Density (mW/cm^2) π = 3.1416
P_{out} = output power to antenna (mW) r = distance between observation point and center of the radiator (cm)
G = gain of antenna in linear scale

Frequency	700.5	MHz		
Limit	0.467	mW/cm^2		
Distance (cm), R =	22	cm		
Power (dBm), P =	25	dBm	316.23	mW
TX Ant Gain (dBi), G =	5	dBi		
Power Density (S) =	**0.164**	mW/cm^2	(at 22cm)	
Minimum Distance =	**13.1**	cm		

Table 1-3. Maximum Calculated MPE Data for 700.5MHz - 2AL52E1500N (General Population/Uncontrolled Exposure)

Frequency:	700.5	MHz		
Limit:	0.467	mW/cm^2		
Distance (cm), R =	22	cm		
Power (dBm), P =	24	dBm	251.19	mW
TX Ant Gain (dBi), G =	5	dBi		
Power Density (S) =	**0.131**	mW/cm^2	(at 22cm)	
Minimum Distance =	**11.6**	cm		

Table 1-4. Maximum Calculated MPE Data for 700.5MHz - 2AL52E15008B (General Population/Uncontrolled Exposure)

Frequency	707.5	MHz		
Limit	0.472	mW/cm^2		
Distance (cm), R =	22	cm		
Power (dBm), P =	24	dBm	251.19	mW
TX Ant Gain (dB), G =	5	dBi		
Power Density (S) =	**0.131**	mW/cm^2	(at 22cm)	
Minimum Distance =	**11.6**	cm		

Table 1-5. Maximum Calculated MPE Data for 899MHz - N7NEM75S (General Population/Uncontrolled Exposure)

	Power Density (mW/cm^2)	Limit (mW/cm^2)	Percent MPE Used (%)
Transmitter #1 - 700.5 - CAT-M1	0.164	0.467	35.21
Transmitter #2 - 700.5 - LTE	0.131	0.467	27.97
Transmitter #3 - 899 - LTE	0.131	0.472	27.69
Total			90.86

Table 1-6. Cumulative Results for Multiple Transmitters (General Population/Uncontrolled Exposure)

1.4 Summary of Results

Frequency Band [MHz]	Maximum Antenna Gain [dBi]	MPE @ 20cm (mW/cm^2)	Test Result
699.0 – 716.0	5.00	0.164	PASS
699.0 – 716.0	5.00	0.131	PASS
897.5 – 900.5	5.00	0.131	PASS

Table 1-7. Maximum Permissible Exposure Summary Table

2.0 CONCLUSION

This device meets the mobile General Population limits with the antenna gains and at the distances specified in this report per §2.1091 of the FCC Rules and Regulations. An appropriate RF exposure compliance statement will be placed in the user's manual.