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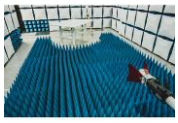

RF EXPOSURE EVALUATION
Maximum Permissible Exposure [MPE]

Applicant Name:
GE MDS, LLC
175 Science Parkway
Rochester, NY 14620

Date of Testing:
12/14/2020- 12/22/2020
Test Site/Location:
PCTEST Lab. Columbia, MD, USA
Test Report Serial No.:
1M2012140196-03.E5M

FCC ID:	**E5MDS-4GY**
APPLICANT:	**GE MDS, LLC**

Application Type:	Class II Permissive Change
Model:	MDS MCR
EUT Type:	LTE Module Integrated Into Multiservice Connect Router
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:	Adding LTE Band 8 Frequencies
Original Grant Date:	12/29/2020

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 and RSS-102 of Industry Canada.

The limit for Maximum Permissible Exposure (MPE), specified in FCC §1.1310, is listed in Table 1-1. According to FCC §1.1310 and RSS-102: 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: E5MDS-4GY) is an LTE modem that is integrated into a host router device for LTE operation. There are no other radios in the host device so 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

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 maximum antenna gain is determined based on maximum operation that shows compliance to the power density limit at 20cm.

Friis Transmission Formula

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

Where,

P_d = Power Density (mW/cm^2) $\pi = 3.1416$
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

Calculated MPE

The power density limit for General Population/Uncontrolled Exposure at each frequency is determined based on the information in Table 1-1.

There is no co-location between the electric fields of any two transmitters therefore following power densities are calculated for each individual transmitter by frequency at 20cm spacing:

Frequency	899	MHz		
Limit	0.599	mW/cm^2		
Distance (cm), R =	20	cm		
Power (dBm), P =	22.58	dBm	181.13	mW
TX Ant Gain (dBi), G =	12.21	dBi		
Power Density (S) =	**0.599**	mW/cm^2	(at 20cm)	
Minimum Distance =	**20.0**	cm		

Table 1-2. Calculated MPE Data for 899MHz

1.4 Summary of Results

Frequency Band [MHz]	Maximum Antenna Gain [dBi]	MPE @ 20cm (mW/cm^2)	Test Result
899	12.21	20.0	PASS

Table 1-3. Maximum Permissible Exposure Summary Table

2.0 CONCLUSION

The device meets the mobile RF exposure limit at a 20cm separation distance as specified in §2.1091 of the FCC Rules and Regulations and Health Canada Safety Code 6. An appropriate RF exposure compliance statement will be placed in the user's manual.