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Assessment report

451748-3ARFWL

Date of issue: February 10, 2022

Applicant:

Fujitsu Network Communications

Product:

Dual Band RU for North America

Model

DB 5G RU

FCC ID:

CFD5GRUDB

Type of assessment:

MPE Calculation Report

Specifications:

- FCC 47 CFR Part 1 Subpart I, §§1.1307, 1.1310
- FCC 47 CFR Part 2 Subpart J, §2.1091
- KDB 447498 D01 General RF Exposure Guidance v06

Lab and test locations

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Reviewed by	James Cunningham, EMC/MIL/WL Supervisor
Review date	February 10, 2022
Reviewer signature	

Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.
This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contain in this report are within Nemko USA's ISO/IEC 17025 accreditation.
This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government

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Section 1 Declaration

RSS-102 Annex B - Declaration of RF exposure compliance:

Attestation:

I attest that the information provided in Annex A is correct; that the Technical Brief was prepared, and the information contained therein is correct; that the device evaluation was performed and/or supervised by me; that the applicable measurement methods and evaluation methodologies have been followed; and that the device meets the SAR and/or RF field strength limits of RSS-102.

Date of issue: February 3, 2022

Martha Espinoza, Wireless Test Engineer	
Prepared by	Signature

Section 2 Evaluation summary

2.1 MPE exemption for stand-alone transmission

2.1.1 References, definition, and limits

FCC §2.1091(d)

(2) For operations within the frequency range of 300 kHz and 6 GHz (inclusive), the limits for maximum permissible exposure (MPE), derived from the whole-body SAR limits and listed in Table 1 in paragraph (e)(1) of this section, may be used instead of whole-body SAR limits as set forth in paragraphs (a) through (c) of this section to evaluate the environmental impact of human exposure to RF radiation as specified in §1.1307(b) of this part, except for portable devices as defined in §2.1093 of this chapter as these evaluations shall be performed according to the SAR provisions in §2.1093.

Table 2.1-1: *Table 1 to §1.1310(e)(1)—Limits for Maximum Permissible Exposure (MPE)*

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(i) Limits for Occupational/Controlled Exposure				
0.3–3.0	614	1.63	*(100)	≤6
3.0–30	1842 / f	4.89 / f	*(900 / f^2)	<6
30–300	61.4	0.163	1.0	<6
300–1500			f / 300	<6
1500–100000			5	<6
(ii) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	<30
1.34–30	824 / f	2.19 / f	*(180 / f^2)	<30
30–300	27.5	0.073	0.2	<30
300–1500			f / 1500	<30
1500–100000			1.0	<30

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

Equation from Page 18 of OET Bulletin 64, Edition 97-01:

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

where: S = power density (mW/cm^2 or W/m^2)
P = power input to the antenna (mW or W)
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 (cm or m)

2.1.2 EUT technical information

Operational frequency (Band n66)	2110 – 2200 MHz
Antenna type	External (The EUT is professionally installed)
Antenna gain	N/A
Number of antennas	Maximum: 4
Maximum transmitter conducted power	48.11 dBm (64714 mW)
Max power across four ports	54.13 dBm (258821 mW)

2.1.3 MPE exemption calculations

Fundamental transmit (prediction) frequency:	2155	MHz
Maximum measured conducted peak output power:	48.11	dBm
Cable and/or jumper loss:	0	dB
Maximum peak power at antenna input terminal:	48.11	dBm
Tx On time:	1.000	ms
Tx period time:	1.000	ms
Average factor:	100	%
Maximum calculated average power at antenna input terminal:	6500	mW
Single Antenna gain (typical):	0	dBi
Number of antennas:	4	
Total system gain:	6.02	dBi
	FCC limit:	
MPE limit for uncontrolled exposure at prediction frequency:	**1.000000**	**mW/cm^2**
	10.000000	W/m^2
Minimum calculated prediction distance for compliance:	1200	cm
Typical (declared) distance:	1200	cm
Average power density at prediction frequency:	**0.001437**	**mW/cm^2**
	0.014368	W/m^2
Margin of Compliance:	**28.43**	**dB**
Maximum allowable antenna gain:	34.45	dBi

2.1.4 Verdict

The calculation is below the limit; therefore, the product is compliant with the RF exposure requirements for the declared distance.

2.1.5 EUT technical information

Operational frequency (Band n70)	1995 – 2020 MHz
Antenna type	External (The EUT is professionally installed)
Antenna gain	N/A
Number of antennas	Maximum: 4
Maximum transmitter conducted power	46.46 dBm (44258 mW)
Max power across four ports	52.48 dBm (177010 mW)

2.1.6 MPE exemption calculations

Fundamental transmit (prediction) frequency:	2002.5	MHz
Maximum measured conducted peak output power:	46.46	dBm
Cable and/or jumper loss:	0	dB
Maximum peak power at antenna input terminal:	46.46	dBm
Tx On time:	1.000	ms
Tx period time:	1.000	ms
Average factor:	100	%
Maximum calculated average power at antenna input terminal:	6500	mW
Single Antenna gain (typical):	0	dBi
Number of antennas:	4	
Total system gain:	6.02	dBi
	FCC limit:	
MPE limit for uncontrolled exposure at prediction frequency:	**1.000000**	**mW/cm^2**
	10.000000	W/m^2
Minimum calculated prediction distance for compliance:	1200	cm
Typical (declared) distance:	1200	cm
Average power density at prediction frequency:	**0.001437**	**mW/cm^2**
	0.014368	W/m^2
Margin of Compliance:	**28.43**	**dB**
Maximum allowable antenna gain:	34.45	dBi

2.1.7 Verdict

The calculation is below the limit; therefore, the product is compliant with the RF exposure requirements for the declared distance.

End of test report