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Assessment report

REP0023530-1R1ARFWL

Date of issue: March 3, 2023

Applicant:

Fujitsu Network Communications, Inc.

Product:

FujiCell

Model

SC-B48-4X4-5W

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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Signature	
Reviewed by	Juan M Gonzalez, CoE Director
Review date	March 3, 2023
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.

Copyright notification

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Section 1 Evaluation summary

1.1 MPE exemption for stand-alone transmission

1.1.1 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 1.1-1: *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)

1.1.2 EUT technical information

Operational frequency	3550 – 3700 MHz (Band TDD48)
Antenna type	External (The EUT is professionally installed)
Antenna gain	6 dBi (declared by manufacturer as maximum antenna gain)
Number of antennas	4
Maximum transmitter conducted power	39.74 dBm (9.42 Watts) (Taken from maximum total channel power conducted measurement data in report REP0023530-2TRFWL)
Max power across four ports	45.76 dBm (37.64 Watts) (4 transmitters ports declared as non-correlated therefore maximum power across four ports calculated by 4 x maximum transmitter conducted power above)

1.1.3 MPE exemption calculations

Band TDD48:

Fundamental transmit (prediction) frequency:	3700	MHz
Maximum measured conducted peak output power:	39.74	dBm
Cable and/or jumper loss:	0	dB
Maximum peak power at antenna input terminal:	39.74	dBm
Tx On time:	1.000	ms
Tx period time:	1.000	ms
Average factor:	100	%
Maximum calculated average power at antenna input terminal:	9419	mW
Single Antenna gain (typical):	6	dBi
Number of antennas:	4	
Total system gain:	6.00	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:	120	cm
Typical (declared) distance:	120	cm
Average power density at prediction frequency:	**0.207218**	**mW/cm^2**
	2.072181	W/m^2
Margin of Compliance:	**6.84**	**dB**
Maximum allowable antenna gain:	12.84	dBi

Note: Four antenna ports are uncorrelated therefore total system gain = single antenna gain.

1.1.4 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