

Assessment Report

REP026818-11ARFWL

Type of assessment:

MPE Calculation report

Applicant:

Murphy's Bowl LLC

Product

Murphy's Bowl Access Portal (MBAP)

Model

IDAP v1.0, IDAP nUWB x1.0

Model Variants

N/A

FCC ID:

2BE69-MBAP01

Specification:

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

Date of issue: May 1, 2024

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Prepared by



Signature



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ISED Test Site	2040B-3

Prepared by	James Cunningham, EMC/WL Manager
Date	May 1, 2024
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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.
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Section 1 Evaluation summary

1.1 MPE calculation for simultaneous transmission

1.1.1 References, definitions, 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 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 65, Edition 97-01

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

where: S = power density (mW/cm² or W/m²)
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

	Transmitter 1 (NFC)	Transmitter 2 (Bluetooth Low Energy #1)	Transmitter 3 (Bluetooth Low Energy #2)	Transmitter 4 (Bluetooth Low Energy #3)	Transmitter 5 (UWB, CH5)	Transmitter 6 (UWB, CH9)	Transmitter 7 (LTE)	Transmitter 8 (2.4 GHz Wi-Fi)	Transmitter 9 (5 GHz Wi-Fi)	Transmitter 10 (6 GHz Wi-Fi)
Prediction frequency	13.56 MHz	2480 MHz	2480 MHz	2480 MHz	6.4896 GHz	7.9872 GHz	3700 MHz	2480 MHz	5855 MHz	6985 MHz
Antenna type	Integrated custom trace ring	Integrated trace antenna	Integrated trace antenna	Integrated trace antenna	Integrated trace antenna (1 TX, 2 RX)	Integrated trace antenna (1 TX, 2 RX)	Chip antenna (1 TX/RX, 1 RX)	Chip antenna (2)	Chip antenna (2)	Chip antenna (2)
Antenna gain	Unknown	-2.10 dBi	0.65 dBi	-7.75 dBi	-0.56 dBi	-6.60 dBi	3.60 dBi	2.00 dBi	1.50 dBi	2.70 dBi
Maximum transmitter conducted power	-18.71 dBm (0.013 mW)	-2.66 dBm (0.542 mW)	-2.66 dBm (0.542 mW)	-2.66 dBm (0.542 mW)	-2.44 dBm (0.570 mW)	-10.81 dBm (0.083 mW)	24.32 dBm (271 mW)	28.99 dBm (792 mW)	28.65 dBm (733 mW)	14.15 dBm (26 mW)
Prediction distance	20 cm	20 cm	20 cm	20 cm	20 cm	20 cm	20 cm	20 cm	20 cm	20 cm

Notes:

- NFC transmitter power reported as radiated ERP only. Radiated power data taken from Nemko test report REP026818-2R1TRFWL_FCC 47 CFR Part 15.225 (NFC) where maximum reported field strength is 78.67 dB μ V/m at a 3 m measurement distance. This is converted to a radiated power using ERP = Field Strength at 3m – 97.38 = -18.71 dBm.
- Bluetooth Low Energy antenna gain data taken from Nemko test report REP026818-9TRFEMC_Antenna gain BLE.
- Bluetooth Low Energy transmitter conducted power data taken from Nemko test report REP026818-1R1TRFWL_FCC 15.247 (BLE) where the maximum measured conducted power was -2.66 dBm.
- UWB operation is possible on 2 different channels. Antenna worst-case (highest) gain data taken from Nemko test report REP026818-10TRFEMC_Antenna gain UWB.
- UWB conducted power data taken from Nemko test report REP026818-6TRFWL_FCC 15.517(UWB). Peak EIRP (dBm/50 MHz) data used with the measured antenna gain subtracted to yield worst-case conducted transmitter power.
- LTE antenna gain data taken from antenna data sheet for used antenna: Molex 2084850001.
- LTE conducted transmitter power taken from the worst-case (highest) measurement in the test report associated with the FCC approved module (FCC ID XMR2022EM060KGL).
- Wi-Fi transmitter antenna gain taken from antenna data sheet for used antenna: Johanson 2450AD18A6050001E.
- Wi-Fi transmitter conducted transmitter power taken from FCC grant for used module, FCCID: PD9AX210NG

1.1.3 MPE calculation

Simultaneous operation modes considered:

- Mode 1. NFC + 3 Bluetooth Low Energy + UWB CH5 + LTE + Wi-Fi 2.4 GHz
- Mode 2. NFC + 3 Bluetooth Low Energy + UWB CH9 + LTE + Wi-Fi 2.4 GHz
- Mode 3. NFC + 3 Bluetooth Low Energy + UWB CH5 + LTE + Wi-Fi 5 GHz
- Mode 4. NFC + 3 Bluetooth Low Energy + UWB CH9 + LTE + Wi-Fi 5 GHz
- Mode 5. NFC + 3 Bluetooth Low Energy + UWB CH5 + LTE + Wi-Fi 6 GHz
- Mode 6. NFC + 3 Bluetooth Low Energy + UWB CH9 + LTE + Wi-Fi 6 GHz

Notes:

1. Wi-Fi transmitter only operates on one frequency at any given time (2.4 GHz band, 5 GHz band, 6 GHz band)
2. UWB transmitter only operates on one frequency (CH5, CH9) at any given time

Mode 1: NFC + 3 Bluetooth Low Energy + UWB CH5 + LTE + Wi-Fi 2.4 GHz

	NFC	BLE 1	BLE 2	BLE 3	UWB CH5	LTE	Wi-Fi 2.4 GHz
Fundamental transmit (prediction) frequency:	13.56 MHz	2480 MHz	2480 MHz	2480 MHz	6489.6 MHz	3700 MHz	2480 MHz
Maximum measured conducted peak output power:	-18.71 dBm	-2.66 dBm	-2.66 dBm	-2.66 dBm	-2.44 dBm	24.32 dBm	28.99 dBm
Cable and/or jumper loss:	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB
Maximum peak power at antenna input terminal:	-18.71 dBm	-2.66 dBm	-2.66 dBm	-2.66 dBm	-2.44 dBm	24.32 dBm	28.99 dBm
Tx On time:	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms
Tx period time:	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms
Average factor:	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Maximum calculated average power at antenna input terminal:	0.013 mW	0.542 mW	0.542 mW	0.542 mW	0.570 mW	270.396 mW	792.501 mW
Single Antenna gain (typical):	0 dBi	-2.1 dBi	0.65 dBi	-7.75 dBi	-0.56 dBi	3.6 dBi	2 dBi
Number of antennae:	1	1	1	1	1	1	2
Total system gain:	0.00 dBi	-2.10 dBi	0.65 dBi	-7.75 dBi	-0.56 dBi	3.60 dBi	5.01 dBi
MPE limit for uncontrolled exposure at prediction frequency:	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²
Minimum calculated prediction distance for compliance:	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²
Typical (declared) distance:	20 cm	20 cm	20 cm	20 cm	20 cm	20 cm	20 cm
Average power density at prediction frequency:	0.00 mW/cm ²	0.0001 mW/cm ²	0.0001 mW/cm ²	0.0000 mW/cm ²	0.0001 mW/cm ²	0.1232 mW/cm ²	0.4998 mW/cm ²
Combined MPE compliance:	0.00 W/m ²	0.0007 W/m ²	0.0013 W/m ²	0.0002 W/m ²	0.0010 W/m ²	1.2323 W/m ²	4.9976 W/m ²
Margin of Compliance:	55.72 dB	41.77 dB	39.02 dB	47.42 dB	40.01 dB	9.09 dB	3.01 dB
Maximum allowable antenna gain:	55.72 dBi	39.67 dBi	39.67 dBi	39.67 dBi	39.45 dBi	12.69 dBi	8.02 dBi
Average power density to MPE limit ratio:	0.000	0.000	0.000	0.000	0.000	0.123	0.500
Total sum of ratios:	0.623						
Maximum allowed sum of ratios:	1						

Mode 2: NFC + 3 Bluetooth Low Energy + UWB CH9 + LTE + Wi-Fi 2.4 GHz

	NFC	BLE 1	BLE 2	BLE 3	UWB CH9	LTE	Wi-Fi 2.4 GHz
Fundamental transmit (prediction) frequency:	13.56 MHz	2480 MHz	2480 MHz	2480 MHz	7987.2 MHz	3700 MHz	2480 MHz
Maximum measured conducted peak output power:	-18.71 dBm	-2.66 dBm	-2.66 dBm	-2.66 dBm	-10.81 dBm	24.32 dBm	28.99 dBm
Cable and/or jumper loss:	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB
Maximum peak power at antenna input terminal:	-18.71 dBm	-2.66 dBm	-2.66 dBm	-2.66 dBm	-10.81 dBm	24.32 dBm	28.99 dBm
Tx On time:	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms
Tx period time:	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms
Average factor:	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Maximum calculated average power at antenna input terminal:	0.013 mW	0.542 mW	0.542 mW	0.542 mW	0.083 mW	270.396 mW	792.501 mW
Single Antenna gain (typical):	0 dBi	-2.1 dBi	0.65 dBi	-7.75 dBi	-6.6 dBi	3.6 dBi	2 dBi
Number of antennae:	1	1	1	1	1	1	2
Total system gain:	0.00 dBi	-2.10 dBi	0.65 dBi	-7.75 dBi	-6.60 dBi	3.60 dBi	5.01 dBi
MPE limit for uncontrolled exposure at prediction frequency:	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²
Minimum calculated prediction distance for compliance:	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²
Typical (declared) distance:	20 cm	20 cm	20 cm	20 cm	20 cm	20 cm	20 cm
Average power density at prediction frequency:	0.00 mW/cm ²	0.0001 mW/cm ²	0.0001 mW/cm ²	0.0000 mW/cm ²	0.0000 mW/cm ²	0.1232 mW/cm ²	0.4998 mW/cm ²
Combined MPE compliance:	0.00 W/m ²	0.0007 W/m ²	0.0013 W/m ²	0.0002 W/m ²	0.0000 W/m ²	1.2323 W/m ²	4.9976 W/m ²
Margin of Compliance:	55.72 dB	41.77 dB	39.02 dB	47.42 dB	54.42 dB	9.09 dB	3.01 dB
Maximum allowable antenna gain:	55.72 dBi	39.67 dBi	39.67 dBi	39.67 dBi	47.82 dBi	12.69 dBi	8.02 dBi
Average power density to MPE limit ratio:	0.000	0.000	0.000	0.000	0.000	0.123	0.500
Total sum of ratios:	0.623						
Maximum allowed sum of ratios:	1						



Mode 3: NFC + 3 Bluetooth Low Energy + UWB CH5 + LTE + Wi-Fi 5 GHz

	NFC	BLE 1	BLE 2	BLE 3	UWB CH5	LTE	Wi-Fi 5 GHz
Fundamental transmit (prediction) frequency:	13.56 MHz	2480 MHz	2480 MHz	2480 MHz	6489.6 MHz	3700 MHz	5855 MHz
Maximum measured conducted peak output power:	-18.71 dBm	-2.66 dBm	-2.66 dBm	-2.66 dBm	-2.44 dBm	24.32 dBm	28.65 dBm
Cable and/or jumper loss:	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB
Maximum peak power at antenna input terminal:	-18.71 dBm	-2.66 dBm	-2.66 dBm	-2.66 dBm	-2.44 dBm	24.32 dBm	28.65 dBm
Tx On time:	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms
Tx period time:	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms
Average factor:	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Maximum calculated average power at antenna input terminal:	0.013 mW	0.542 mW	0.542 mW	0.542 mW	0.570 mW	270.396 mW	732.825 mW
Single Antenna gain (typical):	0 dBi	-2.1 dBi	0.65 dBi	-7.75 dBi	-0.56 dBi	3.6 dBi	1.5 dBi
Number of antennae:	1	1	1	1	1	2	2
Total system gain:	0.00 dBi	-2.10 dBi	0.65 dBi	-7.75 dBi	-0.56 dBi	3.60 dBi	4.51 dBi
MPE limit for uncontrolled exposure at prediction frequency:	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²
Minimum calculated prediction distance for compliance:	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²
Typical (declared) distance:	20 cm	20 cm	20 cm	20 cm	20 cm	20 cm	20 cm
Average power density at prediction frequency:	0.00 mW/cm ²	0.0001 mW/cm ²	0.0001 mW/cm ²	0.0000 mW/cm ²	0.0001 mW/cm ²	0.1232 mW/cm ²	0.4119 mW/cm ²
Combined MPE compliance:	0.00 W/m ²	0.0007 W/m ²	0.0013 W/m ²	0.0002 W/m ²	0.0010 W/m ²	1.2323 W/m ²	4.1187 W/m ²
Margin of Compliance:	55.72 dB	41.77 dB	39.02 dB	47.42 dB	40.01 dB	9.09 dB	3.85 dB
Maximum allowable antenna gain:	55.72 dBi	39.67 dBi	39.67 dBi	39.67 dBi	39.45 dBi	12.69 dBi	8.36 dBi
Average power density to MPE limit ratio:	0.000	0.000	0.000	0.000	0.000	0.123	0.412
Total sum of ratios:	0.535						
Maximum allowed sum of ratios:	1						

Mode 4: NFC + 3 Bluetooth Low Energy + UWB CH9 + LTE + Wi-Fi 5 GHz

	NFC	BLE 1	BLE 2	BLE 3	UWB CH9	LTE	Wi-Fi 5 GHz
Fundamental transmit (prediction) frequency:	13.56 MHz	2480 MHz	2480 MHz	2480 MHz	7987.2 MHz	3700 MHz	5855 MHz
Maximum measured conducted peak output power:	-18.71 dBm	-2.66 dBm	-2.66 dBm	-2.66 dBm	-10.81 dBm	24.32 dBm	28.65 dBm
Cable and/or jumper loss:	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB
Maximum peak power at antenna input terminal:	-18.71 dBm	-2.66 dBm	-2.66 dBm	-2.66 dBm	-10.81 dBm	24.32 dBm	28.65 dBm
Tx On time:	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms
Tx period time:	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms
Average factor:	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Maximum calculated average power at antenna input terminal:	0.013 mW	0.542 mW	0.542 mW	0.542 mW	0.083 mW	270.396 mW	732.825 mW
Single Antenna gain (typical):	0 dBi	-2.1 dBi	0.65 dBi	-7.75 dBi	-6.6 dBi	3.6 dBi	1.5 dBi
Number of antennae:	1	1	1	1	1	2	2
Total system gain:	0.00 dBi	-2.10 dBi	0.65 dBi	-7.75 dBi	-6.60 dBi	3.60 dBi	4.51 dBi
MPE limit for uncontrolled exposure at prediction frequency:	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²
Minimum calculated prediction distance for compliance:	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²
Typical (declared) distance:	20 cm	20 cm	20 cm	20 cm	20 cm	20 cm	20 cm
Average power density at prediction frequency:	0.00 mW/cm ²	0.0001 mW/cm ²	0.0001 mW/cm ²	0.0000 mW/cm ²	0.0000 mW/cm ²	0.1232 mW/cm ²	0.4119 mW/cm ²
Combined MPE compliance:	0.00 W/m ²	0.0007 W/m ²	0.0013 W/m ²	0.0002 W/m ²	0.0000 W/m ²	1.2323 W/m ²	4.1187 W/m ²
Margin of Compliance:	55.72 dB	41.77 dB	39.02 dB	47.42 dB	54.42 dB	9.09 dB	3.85 dB
Maximum allowable antenna gain:	55.72 dBi	39.67 dBi	39.67 dBi	39.67 dBi	47.82 dBi	12.69 dBi	8.36 dBi
Average power density to MPE limit ratio:	0.000	0.000	0.000	0.000	0.000	0.123	0.412
Total sum of ratios:	0.535						
Maximum allowed sum of ratios:	1						



Mode 5: NFC + 3 Bluetooth Low Energy + UWB CH5 + LTE + Wi-Fi 6 GHz

	NFC	BLE 1	BLE 2	BLE 3	UWB CH5	LTE	Wi-Fi 6 GHz
Fundamental transmit (prediction) frequency:	13.56 MHz	2480 MHz	2480 MHz	2480 MHz	6489.6 MHz	3700 MHz	6985 MHz
Maximum measured conducted peak output power:	-18.71 dBm	-2.66 dBm	-2.66 dBm	-2.66 dBm	-2.44 dBm	24.32 dBm	14.15 dBm
Cable and/or jumper loss:	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB
Maximum peak power at antenna input terminal:	-18.71 dBm	-2.66 dBm	-2.66 dBm	-2.66 dBm	-2.44 dBm	24.32 dBm	14.15 dBm
Tx On time:	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms
Tx period time:	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms
Average factor:	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Maximum calculated average power at antenna input terminal:	0.013 mW	0.542 mW	0.542 mW	0.542 mW	0.570 mW	270.396 mW	26.002 mW
Single Antenna gain (typical):	0 dBi	-2.1 dBi	0.65 dBi	-7.75 dBi	-0.56 dBi	3.6 dBi	2.7 dBi
Number of antennae:	1	1	1	1	1	1	2
Total system gain:	0.00 dBi	-2.10 dBi	0.65 dBi	-7.75 dBi	-0.56 dBi	3.60 dBi	5.71 dBi
MPE limit for uncontrolled exposure at prediction frequency:	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²
Minimum calculated prediction distance for compliance:	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²
Typical (declared) distance:	20 cm	20 cm	20 cm	20 cm	20 cm	20 cm	20 cm
Average power density at prediction frequency:	0.00 mW/cm ²	0.0001 mW/cm ²	0.0001 mW/cm ²	0.0000 mW/cm ²	0.0001 mW/cm ²	0.1232 mW/cm ²	0.0193 mW/cm ²
Combined MPE compliance:	0.00 W/m ²	0.0007 W/m ²	0.0013 W/m ²	0.0002 W/m ²	0.0000 W/m ²	1.2323 W/m ²	0.1926 W/m ²
Margin of Compliance:	55.72 dB	41.77 dB	39.02 dB	47.42 dB	40.01 dB	9.09 dB	17.15 dB
Maximum allowable antenna gain:	55.72 dBi	39.67 dBi	39.67 dBi	39.67 dBi	39.45 dBi	12.69 dBi	22.86 dBi
Average power density to MPE limit ratio:	0.000	0.000	0.000	0.000	0.000	0.123	0.019
Total sum of ratios:	0.143						
Maximum allowed sum of ratios:	1						

Mode 6: NFC + 3 Bluetooth Low Energy + UWB CH9 + LTE + Wi-Fi 6 GHz

	NFC	BLE 1	BLE 2	BLE 3	UWB CH9	LTE	Wi-Fi 6 GHz
Fundamental transmit (prediction) frequency:	13.56 MHz	2480 MHz	2480 MHz	2480 MHz	7987.2 MHz	3700 MHz	6985 MHz
Maximum measured conducted peak output power:	-18.71 dBm	-2.66 dBm	-2.66 dBm	-2.66 dBm	-10.81 dBm	24.32 dBm	14.15 dBm
Cable and/or jumper loss:	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB	0 dB
Maximum peak power at antenna input terminal:	-18.71 dBm	-2.66 dBm	-2.66 dBm	-2.66 dBm	-10.81 dBm	24.32 dBm	14.15 dBm
Tx On time:	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms
Tx period time:	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms	1.000 ms
Average factor:	100 %	100 %	100 %	100 %	100 %	100 %	100 %
Maximum calculated average power at antenna input terminal:	0.013 mW	0.542 mW	0.542 mW	0.542 mW	0.083 mW	270.396 mW	26.002 mW
Single Antenna gain (typical):	0 dBi	-2.1 dBi	0.65 dBi	-7.75 dBi	-6.6 dBi	3.6 dBi	2.7 dBi
Number of antennae:	1	1	1	1	1	1	2
Total system gain:	0.00 dBi	-2.10 dBi	0.65 dBi	-7.75 dBi	-6.60 dBi	3.60 dBi	5.71 dBi
MPE limit for uncontrolled exposure at prediction frequency:	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²	1.0 mW/cm ²
Minimum calculated prediction distance for compliance:	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²	10.0 W/m ²
Typical (declared) distance:	20 cm	20 cm	20 cm	20 cm	20 cm	20 cm	20 cm
Average power density at prediction frequency:	0.00 mW/cm ²	0.0001 mW/cm ²	0.0001 mW/cm ²	0.0000 mW/cm ²	0.0000 mW/cm ²	0.1232 mW/cm ²	0.0193 mW/cm ²
Combined MPE compliance:	0.00 W/m ²	0.0007 W/m ²	0.0013 W/m ²	0.0002 W/m ²	0.0000 W/m ²	1.2323 W/m ²	0.1926 W/m ²
Margin of Compliance:	55.72 dB	41.77 dB	39.02 dB	47.42 dB	54.42 dB	9.09 dB	17.15 dB
Maximum allowable antenna gain:	55.72 dBi	39.67 dBi	39.67 dBi	39.67 dBi	47.82 dBi	12.69 dBi	22.86 dBi
Average power density to MPE limit ratio:	0.000	0.000	0.000	0.000	0.000	0.123	0.019
Total sum of ratios:	0.143						
Maximum allowed sum of ratios:	1						

1.1.4 Verdict

The calculation (total sum of ratios) is below the limit (maximum allowed sum of ratios); therefore, the product is passing the RF Exposure requirements for the declared distance in all assessed simultaneous operating modes.

End of the test report