

**RADIOCOMMUNICATIONS EQUIPMENT
COMPLIANCE ASSESSMENT TO**

**FCC 47 CFR 2.1091/1.1310
RADIOFREQUENCY RADIATION EXPOSURE LIMITS
MAXIMUM PERMISSIBLE EXPOSURE (MPE)**

Client:	Micro-X Limited
Address:	A14 6 MAB Eastern Promenade, Tonsley, South Australia 5042, Australia
Assessment Report Number:	0802MIC_AR0900_MPE(FCC)a
Assessment Date:	18 Jun, 02 Aug, 09 Oct 2024
File Number:	MIC231016-B
Equipment Name:	Argus X-Ray Camera
Equipment Model No(s):	AR0900
Equipment Trade/Brand Name:	Argus
Equipment FCC ID:	1. 2BGYBAR0900-REC (Tablet Fixture) 2. 2BGYBAR0900-CAM (Camera)
Equipment Description:	X-Ray Camera
Result:	COMPLIES (General Population / Uncontrolled Exposure)
Assessed by:	Colin Gan
Approved by:	Daniel Blunck
Date of Issue:	09 Oct 2024
Results appearing herein relate only to the sample(s) assessed.	
This report is issued errors and omissions exempt and is subject to withdrawal at Austest Laboratories discretion.	

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EQUIPMENT DETAILS	
Manufacturer:	Micro-X Limited
Model No(s):	AR0900
Operating Frequency(s): ^{Note 1}	922 MHz
Transmitter Power into Antenna(s): ^{Notes 1,2}	<u>Tablet Fixture:</u> 367.3 mW (OP1), 372.4 mW (OP2) <u>Camera:</u> 441.5 mW (OP1), 460.5 mW (OP2) <i>500 mW (27 dBm) power into each antenna will be used in the following MPE calculations since the combined output power is 1 W mentioned in the user manual.</i>
Type of Antenna(s): ^{Note 1}	<u>Tablet Fixture:</u> 2 x Integrated RF Gooseneck <u>Camera:</u> 2 x Integrated RF Gooseneck
Antenna Gain(s): ^{Notes 1,3}	2.15 dBi maximum
Transmission Capability: ^{Notes 1,4}	Simultaneous transmissions possible.

Notes:

1. Information extracted from Austest test report 0619MIC_AR0900_FCC15C.
2. OP1 = Antenna output 1; OP2 = Antenna output 2.
3. The antenna gain is higher than the antenna gain used for the TCB Grant of Equipment Authorization.
4. Simultaneous transmission in this context are the transmissions of the two antennas of each device, and not simultaneous transmissions of Tablet Fixture and Camera in co-located proximity.

FCC § 15.247(b) RF Exposure Criteria for Intentional Radiators

RF Exposure Requirements: FCC §1.1307(b)(1), §1.1307(b)(2) and §1.1307(b)(3):

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines.

RF Radiation Exposure Limit: FCC §1.1310:

As specified in this section, the Maximum Permissible Exposure (MPE) Limit shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in Sec. 1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of Sec. 2.1093 of this chapter.

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Maximum Permissible Exposure (MPE)

As specified in Table 1B of 47 CFR 1.1310 – Limits for MPE, Limits for General Population / Uncontrolled Exposure:

<i>Frequency Range (MHz)</i>	<i>Power Density (mW/cm²)</i>
300 – 1500	$f/1500$
1,500 – 100000	1.0

f is frequency in MHz.

MPE Calculations

The Equipment Under Test (EUT) was supplied with transmitter antennas having maximum antenna gains as indicated in the Equipment Details above. The antennas of each item are considered co-located as they are less than 20 cm apart for the purpose of the MPE calculations.

Results of MPE calculations for the EUT in both standalone and co-located configurations are included in the following pages.

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MPE Calculation for Tablet Fixture

Product Details

Tx Number	Description	FCC ID	Frequency (MHz)	RF Power (Max) (dBm)	Antenna Gain (Max) (dBi)
1	Tablet OP1	Not indicated	922.00	27.00	2.15
2	Tablet OP2	Not indicated	922.00	27.00	2.15

Limits for Maximum Permissible Exposure (MPE) (FCC 1.1310 Table 1)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (Minutes)
(B) Limits for General Population/Uncontrolled Exposure				
0.3 to 1.34	614	1.63	*(100)	30
1.34 to 30	824/f	2.19/f	*(180/f ²)	30
30 to 300	27.5	0.073	0.2	30
300 to 1500	NA	NA	f/1500	30
1500 to 100,000	NA	NA	1	30

f = frequency in MHz.

* = Plane-wave equivalent power density.

Power Density Limits (mW/cm²): Tx1 = 0.62 Tx2 = 0.62

MPE Calculations (based on Power Density)

Minimum Separation Distance for Co-located Tx (cm) = 20

Tx Number	Frequency (MHz)	RF Power (dBm)	Antenna Gain (dBi)	Duty Cycle (%)	Power Density (at 20 cm) (mW/cm ²)	Cumulative Exposure (%)
1	922.00	27.00	2.15	100%	0.0016	0.27%
2	922.00	27.00	2.15	100%	0.0016	0.27%
Total Cumulative Exposure						0.53%

Calculations are based on the following formulae:

$$\text{Power Density} = \frac{(\text{Gain} \times \text{Power} \times \text{Duty Cycle})}{(4 \times \pi \times \text{Distance}^2)}$$

$$\text{Cumulative Exposure} = \frac{\text{Power Density at Tx Frequency}}{\text{Power Density Limit at Tx Frequency}} \quad (\text{per OET 65})$$

Note 1: Co-located transmitters are transmitters with antennas within 20cm of each other, which could be transmitting simultaneously.

Note 2: Where there is only one transmitting antenna, any reference to co-location is invalid.

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MPE Calculation for Camera

Product Details

Tx Number	Description	FCC ID	Frequency (MHz)	RF Power (Max) (dBm)	Antenna Gain (Max) (dBi)
1	Camera OP1	Not indicated	922.00	27.00	2.15
2	Camera OP2	Not indicated	922.00	27.00	2.15

Limits for Maximum Permissible Exposure (MPE) (FCC 1.1310 Table 1)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (Minutes)
(B) Limits for General Population/Uncontrolled Exposure				
0.3 to 1.34	614	1.63	*(100)	30
1.34 to 30	824/f	2.19/f	*(180/f ²)	30
30 to 300	27.5	0.073	0.2	30
300 to 1500	NA	NA	f/1500	30
1500 to 100,000	NA	NA	1	30

f = frequency in MHz.

* = Plane-wave equivalent power density.

Power Density Limits (mW/cm²): Tx1 = 0.62 Tx2 = 0.62

MPE Calculations (based on Power Density)

Minimum Separation Distance for Co-located Tx (cm) = 20

Tx Number	Frequency (MHz)	RF Power (dBm)	Antenna Gain (dBi)	Duty Cycle (%)	Power Density (at 20 cm) (mW/cm ²)	Cumulative Exposure (%)
1	922.00	27.00	2.15	100%	0.0016	0.27%
2	922.00	27.00	2.15	100%	0.0016	0.27%
Total Cumulative Exposure						0.53%

Calculations are based on the following formulae:

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$$\text{Cumulative Exposure} = \frac{\text{Power Density at Tx Frequency}}{\text{Power Density Limit at Tx Frequency}} \quad (\text{per OET 65})$$

Note 1: Co-located transmitters are transmitters with antennas within 20cm of each other, which could be transmitting simultaneously.

Note 2: Where there is only one transmitting antenna, any reference to co-location is invalid.

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Based on worst-case MPE calculations, the minimum separation distance for the EUT with co-located radios is 20 cm between the transmission point (generally referring to the transmit antennas or structure) and the human body, which is to be clearly and prominently stated in the product manuals for the above listed combination of radios and maximum antenna gains.

The above minimum safety distances are not valid for transmit antennas with higher antenna gains.

Austest Summary and Recommendations

The equipment complies with FCC 47 CFR 2.1091 requirements referencing 1.1310, Table 1, Limits for Maximum Permissible Exposure (MPE), Limits for General Population / Uncontrolled Exposure, when the indicated minimum separation distance is adhered to.

If compliance is sought for model numbers other than those listed in the test report, then the compliance folder must hold additional documentation, demonstrating the equivalence of the products between the different model numbers.

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