

AURIS HEALTH, INC.

MPE CALCULATION

REPORT

SCOPE OF WORK

MPE Calculation of Aperio RF Module, Model IN100

REPORT NUMBER

105559103MPK-004

ISSUE DATE

June 3, 2024

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NA

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MPE CALCULATION REPORT

Report Number: 105559103MPK-004

Project Number: G105559103

Report Issue Date: June 3, 2024

**Testing performed on the
Robotic Surgical System**

Model Number: Ottawa Apollo

Standards: FCC Part 1 Subpart I, April 2021

Procedures Implementing the National Environmental Policy Act of 1969
§1.1307 Actions that may have a significant environmental effect, for which
Environmental Assessments (EAs) must be prepared.

ISED RSS-102 Issue 5, March 19, 2015

Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus
(All Frequency Bands)

Tested by:
Intertek
1365 Adams Court
Menlo Park, CA 94025 USA

Client:
Auris Health, Inc..
150 Shoreline Drive
Redwood City, CA 94065 USA

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1 Introduction and Conclusion

This evaluation report covers for a mobile device subject to routine environmental evaluation for RF exposure. A mobile device is defined as a transmitting device designed to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons.

The evaluation indicated in section 2.0 were performed on the product constructed as described in section 4.0. The remaining sections are the verbatim text from the actual evaluation during the investigation. These sections include the evaluation name, the specified Method, and Results. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product evaluated **complies** with the requirements of the standard(s) indicated. The results obtained in this report pertain only to the item(s) evaluated. Intertek does not make any claims of compliance for samples or variants which were not evaluated.

2 Evaluation Summary

Section	Test full name	Result
3	Client Information	-
4	Description of Equipment Under Evaluation and Variant Models	-
5	System Setup and Method	-
6	Power Density Calculation (FCC §1.1310; ISED RSS-102 Issue 5)	Compliant
7	Revision History	-

3 Client Information

This EUT was tested at the request of:

Client: Auris Health, Inc.
150 Shoreline Drive
Redwood City, CA 94065 USA

Contact: Lawrence Bruno
Telephone: 510-219-7232
Email: lbruno@its.jnj.com

4 Description of Equipment Under Test and Variant Models

Manufacturer: Auris Health, Inc.
150 Shoreline Drive
Redwood City, CA 94065 USA

Description of Equipment Under Test (provided by client)
Robotic Surgical System Model Number: Ottava Apollo. NFC Transmitter Operating Frequency: 125 kHz Number of Channels: 1 Type of Modulation: FSK Antenna Type: Internal Coil Antenna

Variant Models:

The following variant models have been identified by the manufacturer as being electrically identical models, depopulated models, or with reasonable similarity to the model(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

None

5 Power Density Calculation

5.1 Requirement(s)

FCC §1.1310 Radiofrequency radiation exposure limits

Table 1 below sets forth limits for Maximum Permissible Exposure (MPE) to radiofrequency electromagnetic field.

Table 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)
(A) 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
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	842/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

F = frequency in MHz

* = Plane-wave equivalent power density

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Table 2 below sets forth limits for the RF field strength.

Table 2 – RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)

Frequency range (MHz)	Electric field strength (V/m rms)	Magnetic field strength (A/m rms)	Power Density (W/m ²)	Reference Period (minutes)
0.003-10	83	90	-	Instantaneous*
0.1-10	-	0.73/ f	-	6**
1.1-10	87/ f ^{0.5}	-	-	6**
10-20	27.46	0.0728	2	6
20-48	58.07/ f ^{0.25}	0.1540/ f ^{0.25}	8.944/ f ^{0.5}	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 f ^{0.3417}	0.008335 f ^{0.3417}	0.02619 f ^{0.6834}	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ f ^{1.2}
150000-300000	0.158 f ^{0.5}	4.21 x 10 ⁻⁴ f ^{0.5}	6.67 x 10 ⁻⁵ f	616000/f ^{1.2}

Note: f is frequency in MHz. *Based on nerve stimulation (NS)

**Based on specific absorption rate (SAR)

5.2 Method

An MPE evaluation was performed in order to show that the device was compliant with FCC §2.1091 and ISED RSS-102. The maximum power density was calculated for each transmitter at a separation distance of 20 cm. The calculation was performed using the maximum gain from the internal and external antennas declared by the manufacturer.

The maximum permissible exposure (MPE) is predicted by using the following equation:

$$S = PG/4\pi R^2$$

where: S = power density (in appropriate units, e.g. mW/cm²)
P = power input to the antenna (in appropriate units, e.g., mW)
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 (appropriate units, e.g., cm)

5.3 Calculation:

125 kHz RFID
40.9 dBuV/m at 10 meters

Frequency	Peak FS @ 10 m (dBuV/m)	Peak FS @ 20cm (dBuV/m)	Peak FS @ 20cm (V/m)	FCC Limit (V/m)
125 kHz	40.9	108.86	0.2773	614

Notes: Data for power calculation was taken from Intertek test report number: 105559103MPK-004.

5.4 Results:

The sample tested was found to Comply. The maximum calculated electric field strength at 20 cm distance is less than 614 V/m for 125 kHz RFID.

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6.1 Calculation

125 kHz RFID

40.9 dBuV/m at 10 meters

Frequency	Peak FS @ 10 m (dBuV/m)	Peak FS @ 20cm (dBuV/m)	Peak FS @ 20cm (V/m)	RSS Limit (V/m)
125 kHz	40.9	108.86	0.2773	83

Notes: Data for power calculation was taken from Intertek test report number: 105559103MPK-004

6.2 Results:

The sample tested was found to Comply. The maximum calculated electric field strength at 20 cm distance is less than 83 V/m for 125 kHz RFID.

7 Revision History

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	June 3, 2024	105559103MPK-005	KRS	AS	Original Issue