

# Ampt, LLC

## RF Exposure Exhibit

### SCOPE OF WORK

EMC TESTING – String Optimizer, Model: I36 – 31570050-XXXX

### REPORT NUMBER

106144856MPK-020

### ISSUE DATE

May 27, 2025

### REVISED DATE

July 15, 2025

### PAGES

12

### DOCUMENT CONTROL NUMBER

Non-Specific Radio Report Shell Rev. December 2017 MPK  
© 2017 INTERTEK



## **RF Exposure Exhibit (Mobile Devices)**

**Report Number: 106144856MPK-020**

**Project Number: G106144856**

**Report Issue Date: May 27, 2025**

**Report Revision Date: July 15, 2025**

**Testing performed on the  
String Optimizer  
Model Tested: I36 – 31570050-XXXX  
FCC ID: X3R-I36**

**to**

**47CFR 2.1091  
RSS-102 Issue 6**

**for**

**Ampt, LLC**

**Tested by:**

Intertek  
1365 Adams Court  
Menlo Park, CA 94025 USA

**Client:**

Ampt, LLC  
4850 Innovation Drive  
Fort Collins, CO 80525 USA

**Report prepared by:**



**Arjun Mukherjee / EMC Engineer**

**Report reviewed by:**



**Aaron Chang / EMC Team Leader**

*This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program. This report must not be used to claim product endorsement by A2LA, NIST nor any other agency of the U.S. Government.*

Report No. 106144856MPK-020	
<b>Equipment Under Test:</b>	String Optimizer
<b>Model Number:</b>	I36 – 31570050-XXXX
<b>Applicant:</b>	Ampt, LLC
<b>Contact:</b>	Robin Richardson
<b>Address:</b>	Ampt, LLC 4850 Innovation Drive Fort Collins, CO 80525
<b>Country:</b>	USA
<b>Tel. Number:</b>	1 (970) 372-6960
<b>Email:</b>	robin.richardson@ampt.com
<b>Applicable Regulation:</b>	47CFR 2.1091 RSS-102 Issue 6

***We attest to the accuracy of this report:***



Arjun Mukherjea  
EMC Engineer



Aaron Chang  
EMC Team Leader

## TABLE OF CONTENTS

<b><i>Ampt, LLC</i></b> .....	<b><i>1</i></b>
<b><i>1.0 RF Exposure Summary</i></b> .....	<b><i>5</i></b>
<b><i>2.0 RF Exposure Limits</i></b> .....	<b><i>5</i></b>
<b><i>3.0 Test Results</i></b> .....	<b><i>7</i></b>
<b><i>4.0 Variant Models</i></b> .....	<b><i>9</i></b>
<b><i>5.0 Document History</i></b> .....	<b><i>10</i></b>
<b><i>Appendix A: Power Density Calculation</i></b> .....	<b><i>11</i></b>

## 1.0 RF Exposure Summary

Test	Reference FCC	Reference Industry Canada	Result
Radio frequency Radiation Exposure Evaluation	47 CFR§2.1091	RSS-102 Issue 6	Complies

## 2.0 RF Exposure Limits

In this document, we evaluate the RF Exposure to human body due the intentional transmission from the transmitter (EUT). The limits for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 and RSS-102 are followed.

### 2.1 FCC Limits

According to FCC 1.1310 table 1: The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in 1.1307(b)

#### LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Average Time (minutes)
<b>(A)Limits For Occupational / Control Exposures</b>				
0.3 – 3.0	614	1.63	*100	6
3.0 – 30	1842/f	4.89/f	*900/f <sup>2</sup>	6
30-300	61.4	0.163	1.0	6
300 - 1500	...	...	F/300	6
1500 - 100,000	...	...	5	6
<b>(B)Limits For General Population / Uncontrolled Exposure</b>				
0.3 – 1.34	614	1.63	*100	30
1.34 – 30	824/f	2.19/f	*180/f <sup>2</sup>	30
30 – 300	27.5	0.073	0.2	30
300 - 1500	...	...	F/1500	30
1500 - 100,000	...	...	1.0	30

F = Frequency in MHz

\* = plane wave equivalent density

## 2.2 Industry Canada Limits

According to RSS-102, Industry Canada has adopted the SAR and RF field strength limits established in Health Canada's RF exposure guideline, Safety Code 6.

Table 7: RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)				
Frequency Range	Electric Field	Magnetic Field	Power Density	Reference Period
(MHz)	(V/m rms)	(A/m rms)	(W/m <sup>2</sup> )	(minutes)
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	$0.158 f^{0.5}$	$4.21 \times 10^{-4} f^{0.5}$	$6.67 \times 10^{-5} f$	$616000/f^{1.2}$
Note: f is frequency in MHz. * Based on nerve stimulation (NS). ** Based on specific absorption rate (SAR).				

### 3.0 Test Results

#### 3.1 Classification

Radio is installed inside a mobile host device. The antenna of the product, under normal use condition, is at least 20 cm away from the body of the user and accessible to the end user. Warning statement to the user for keeping at least 20 cm or more separation distance with the antenna should be included in user's manual.

#### 3.2 EIRP calculations

The table in the String Optimizer, Model: I36 – 31570050-XXXX consists of one radio: 2.4GHz FHSS.

#### 3.3 Maximum RF Power

Specification of Radios on the I36 – 31570050-XXXX	
Location	Table
Type	FHSS
Frequency Range	2410 – 2474.5 MHz
Rated RF Output Power	3.57 dBm
Internal Antenna Gain <sup>1</sup>	7.4 dBi

<sup>1</sup>As provided by the client. Intertek takes no responsibility for the accuracy of this information.

### 3.4 RF Exposure Calculation

#### 3.4.1 RF Exposure calculation for 2.4GHz range

##### FCC

Radio	Frequency Range (MHz)	EIRP <sup>1</sup> (dBm)	EIRP <sup>1</sup> (mW)	Power Density (mW/cm <sup>2</sup> ) @20 cm	FCC Limit (mW/cm <sup>2</sup> )
FHSS	2410 – 2474.5	10.97	12.503	0.00249	1

##### RSS

Radio	Frequency Range (MHz)	EIRP <sup>1</sup> (dBm)	EIRP <sup>1</sup> (mW)	Power Density (W/m <sup>2</sup> ) @20 cm	RSS Limit (W/m <sup>2</sup> )
FHSS	2410 – 2474.5	10.97	12.503	0.02487	5.469



#### 4.0 Variant Models

The following variant models were not tested as part of this evaluation but 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.

31570050-xxxx, 31570051-xxxx, 31570052-xxxx, 31570053-xxxx, 31570054-xxxx, 31570055-xxxx, 31570056-xxxx, 31570057-xxxx, 31570058-xxxx, 31570059-xxxx

## 5.0 Document History

Revision/ Job Number	Writer Initials	Reviewers Initials	Date	Change
0 / G106144856	AM	AC	May 27, 2025	Original Document
1 / G106144856	AM <i>AM</i>	AC <i>AC</i>	July 15, 2025	Updated antenna gain and RSS-102 Issue

### **Appendix A: Power Density Calculation**

The Power Density can be calculated using the formula

$$S = \text{EIRP} / 4\pi D^2$$

Where: S is Power Density in mW/cm<sup>2</sup>

D is the distance from the antenna in cm.

END OF TEST REPORT