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RF Exposure Report
FCC Part 2.1091

EUT Name: PMT (HDT)

EUT Model: PMT (HDT)

Prepared for:

Actall Corporation
2017 Curtis St.
Denver, CO 80205
USA

Prepared by:

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Statement of Compliance

Manufacturer:	Actall Corporation 2017 Curtis St Denver, CO 80205 USA
Name of Equipment:	PMT (HDT)
Model Name	PMT (HDT)
Application of Regulations:	FCC Part 2.1091

Guidance Documents:

FCC Part 2.1091

Test Methods:

FCC Part 1.1310, KDB 447498 D01

The electromagnetic compatibility test and documented data described in this report has been performed and recorded by TUV Rheinland, in accordance with the standards and procedures listed herein. As the responsible authorized agent of the EMC laboratory, I hereby declare that the equipment described above has been shown to be compliant with the EMC requirements of the stated regulations and standards based on these results. If any special accessories and/or modifications were required for compliance, they are listed in this report.

This report must not be used to claim product endorsement by A2LA or any agency of the U.S. Government. This report shall not be reproduced except in full, without the written authorization of TUV Rheinland of North America.

Rachana Khanduri	July 13, 2020	Osvaldo Casorla	July 13, 2020
Prepared By	Date	Laboratory Signatory	Date

Test Cert. # 3331.02

1 Product Specifications

1.1 *Product Description*

The Model PMT (HDT) has wireless capability, LoRA, operating in the 902-928 MHz Band and 2.4GHz, operating in the 2400 – 2483.5MHz band. The EUT will be in compliance with regulatory standards of regions it will be operating in.

1.2 *Product Specifications*

EUT Specifications	
Exposure Type	☒ General Population / Uncontrolled ☐ Occupational / Controlled
Multiple Antenna Feeds:	☐ Yes, and how many ☒ No
Hardware Version	60001
Firmware Version	4.52
Note:	

1.3 *Air Interfaces*

Air Interface	Supported Capabilities	Modulation	Maximum Duty Cycle	Band	Frequency Range (MHz)	Maximum Output Power (dBm)
Proprietary Radio	N/A	GFSK	100%	N/A	2400 – 2483.5	-2.78
					902 - 928	18.87

Note: Refer to test report MLTI0045 issued on June 29, 2015 for 902-928MHz output power test result.

2 RF Exposure Evaluation

2.1 *Purpose*

This report will demonstrate the compliance of RF exposure to the human body of the 1012000217 according to FCC rule part 2.1091. All transmitters, regardless if it is categorically excluded, are assessed to ensure the product can operate in manners that meet or exceed the minimum test separation distance as required by KDB 447498.

2.2 *Categorical Exclusion Assessment*

Air Interface	Band	Frequency Range (MHz)	FCC Rule Part	Categorically Excluded according to FCC 1.1307 (b)(1)
Proprietary Radio	N/A	2400 – 2483.5	15.247	Yes
		902 - 928		

2.3 *Maximum Permissible Exposure Limit*

The Maximum Permissible Exposure (MPE) limits according to FCC rule part 1.1310 for general population/uncontrolled exposure is as follows:

Frequency Range (MHz)	E-field strength (V/m)	H-field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
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
300-1,500	-	-	f/1500	30
1,500-100,000	-	-	1.0	30

* = Plane-wave equivalent power density

2.4 *Assessment Methods*

The power density is calculated according to the following equation

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

Where

S = Power Density (mW/cm^2)
EIRP = Effective Isotropic Radiated Power (mW)

R = Minimum distance between the human body and antenna (cm)

When the calculated power density exceeds the MPE limits, the power density is measured.

Assessment Calculation

The maximum output power and antenna gain is declared by the manufacturer and used in this assessment. The minimum RF exposure distance during normal operation is 20 cm.

Stand Alone Analysis

Frequency Band (MHz)	Transmit Frequency (MHz)	Max. Conducted Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Power Density @ 20cm (mW/cm^2)	Power Density Limit (mW/cm^2)	Percentage of Limit
2400-2483.5	2405.8	-2.78	-1.2	-3.78	0.000083	1	0.0083%
902- 928	902.3	18.87	2.1	20.97	0.024887	0.602	4.1341%

Simultaneous Transmission Analysis

For each simultaneous transmission configuration, the sum of the percentages to the limit of each radio should not exceed 100%.

Simultaneous Transmission Configuration	Percentage of limit	Sum of Percentages
2400 -2483.5 MHz	0.0083%	4.1424 %
902 – 928 MHz	4.1341%	

2.5 *Conclusion*

The EUT was found to be compliant to the requirements of FCC part 1.1310 and part 2.1091 with a minimum distance of 20 cm.