



## SAR EVALUATION REPORT

FCC 47 CFR § 2.1093  
IEEE Std 1528-2013

*For*  
**Airway Clearance System with BT/BLE feature**

**FCC ID: 2AJKO-PMACS1NA**  
**Product Name: PMACS1NA**

**Report Number: 4787592605-S2V1**  
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*Prepared for*  
**Hill-Rom Services Private Limited**  
**1 Yishun Avenue 7, 768923, Singapore**

*Prepared by*  
**UL Korea, Ltd. Suwon Laboratory**  
**218 Maeyeong-ro, Yeongtong-gu,**  
**Suwon-si, Gyeonggi-do, 443-823, Korea**  
**TEL: (031) 337-9902**  
**FAX: (031) 213-5433**



**Revision History**

Rev.	Date	Revisions	Revised By
V1	1/3/2017	Initial Issue	Sunghoon Kim

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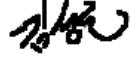
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## 1. Attestation of Test Results

Applicant Name	Hill-Rom Services Private Limited
FCC ID	2AJKO-PMACS1NA
Product Name	PMACS1NA
Applicable Standards	FCC 47 CFR § 2.1093 Published RF exposure KDB procedures IEEE Std 1528-2013
Exposure Category	SAR Limits (W/Kg) Peak spatial-average(1g of tissue)
General population / Uncontrolled exposure	1.6

UL Korea, Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Korea, Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released By:  	Prepared By:  
Justin Park Senior Engineer UL Korea, Ltd. Suwon Laboratory	Sunghoon Kim Laboratory Engineer UL Korea, Ltd. Suwon Laboratory

## 2. Test Specification, Methods and Procedures

The tests documented in this report were performed in accordance with FCC 47 CFR § 2.1093, IEEE STD 1528-2013, the following FCC Published RF exposure [KDB](#) procedures:

- 447498 D01 General RF Exposure Guidance v06
- 690783 D01 SAR Listings on Grants v01r03
- 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
- 865664 D02 RF Exposure Reporting v01r02

## 3. Facilities and Accreditation

The test sites and measurement facilities used to collect data are located at

Suwon
SAR 1 Room
SAR 2 Room
SAR 3 Room

UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637.

The full scope of accreditation can be viewed at <http://www.iasonline.org/PDF/TL/TL-637.pdf>.

## 4. Device Under Test (DUT) Information

### 4.1. DUT Description

Device Dimension	Refer of 4787592605-S2V1 FCC Report SAR_App A_Photos & Ant. Locations		
Back Cover	<input checked="" type="checkbox"/> The rechargeable battery is not user accessible.		
Battery Options	<input checked="" type="checkbox"/> The rechargeable battery is not user accessible.		
Wireless Router (Hotspot)	Wi-Fi Hotspot mode is not support.		
Wi-Fi Direct	Wi-Fi Direct mode is not support.		
Test sample information	No.	S/N	Notes
	1	PREDVM0036	Conduction & SAR

### 4.2. Wireless Technologies

Wireless technologies	Frequency bands	Operating mode	Duty Cycle used for SAR testing
Bluetooth	2.4 GHz	Version 4.0 LE	N/A

### 4.3. Nominal and Maximum Output Power from Tune-up Procedure

KDB 447498 sec.4.1.(3) at the maximum rated output power and within the tune-up tolerance range specified for the product, but not more than 2 dB lower than the maximum tune-up tolerance limit

Upper limit (dB): ~ 0.5		Max. RF Output Power (dBm)	
RF Air interface	Mode	Target	Max. tune-up tolerance limit
	Bluetooth	8.0	<b>8.5</b>
	Bluetooth LE	4.0	<b>4.5</b>

## 5. RF Exposure Conditions (Test Configurations)

Refer to “SAR Photos and Ant locations” Appendix for the specific details of the antenna-to-antenna and antenna-to-edge(s) distances.

### 5.1. Standalone SAR Test Exclusion Considerations

Dedicated Host Approach is applied, the standalone SAR test exclusion procedure in KDB 447498 § 4.3.1 is applied to determine the minimum test separation distance:

- When the separation distance from the antenna to an adjacent edge is  $\leq 5$  mm, a distance of 5 mm is applied to determine SAR test exclusion.
- When the separation distance from the antenna to an adjacent edge is  $> 5$  mm, the actual antenna-to-edge separation distance is applied to determine SAR test exclusion.

#### SAR Test Exclusion Calculations for WLAN and Bluetooth

##### Bluetooth Antennas $\leq 50$ mm to adjacent edges

Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)						Calculated Threshold Value					
		dBm	mW	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front
Bluetooth Antenna Max Power															
Bluetooth	2480	8.50	7	43	198	163	125	38	26	0.3 -EXEMPT-	> 50 mm	> 50 mm	> 50 mm	0.3 -EXEMPT-	0.4 -EXEMPT-

##### Note(s):

According to KDB 447498, if the calculated threshold value is  $> 3$  then SAR testing is required.

##### Bluetooth Antennas $> 50$ mm to adjacent edges

Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)						Calculated Threshold Value					
		dBm	mW	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front
Bluetooth	2480	8.50	7	43	198	163	125	38	26	< 50 mm	1575.3 mW -EXEMPT-	1225.3 mW -EXEMPT-	845.3 mW -EXEMPT-	< 50 mm	< 50 mm

## 5.2. Required Test Configurations

The table below identifies the standalone test configurations required for this device according to the findings in Section 7.1:

Test Configurations	Rear	Edge 1		Edge 2		Edge 3		Edge 4		Front
		(Top Edge)	(Right Edge)	(Bottom Edge)	(Left Edge)	(Top Edge)	(Right Edge)	(Bottom Edge)	(Left Edge)	
Bluetooth	No	No	No	No	No	No	No	No	No	No

##### Note(s):

Yes = Testing is required. No = Testing is not required.

## 6. Conducted Output Power Measurements

### 6.1. Bluetooth

Maximum tune-up tolerance limit is 8.5 dBm from the rated nominal maximum output power. This power level qualifies for exclusion of SAR testing.

## 7. Standalone SAR Test Exclusion Considerations

### 7.1. Bluetooth

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq 50$  mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ , for 1-g SAR and  $\leq 7.5$  for 10-g extremity SAR, where

- $f_{(\text{GHz})}$  is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is  $< 5$  mm, a distance of 5 mm is applied to determine SAR test exclusion.

#### Standalone Exposure Conditions

RF Air interface	Max. tune-up tolerance limit		Min. test separation distance (mm)	Frequency (GHz)	SAR test exclusion Result*
	(dBm)	(mW)			
Bluetooth	8.5	7	26	2.480	0.4

#### Conclusion:

\*: The computed value is  $< 3$ ; therefore, Bluetooth qualifies for Standalone SAR test exclusion.

## Appendices

Refer to separated files for the following appendixes.

**4787592605-S2V1 FCC Report SAR\_App A\_Photos & Ant. Locations**

**END OF REPORT**