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SAR Exclusion Report

Applicant Name:

Panasonic Corporation of North America.
Two Riverfront Plaza, 9th Floor, Newark,
NJ 07102-5490, USA

Date of Issue: Dec. 31, 2021

Test Report No.: HCT-SR-2112-FI001

Test Site: HCT CO., LTD.

Equipment Type:	RFID Module
Application Type	Certification
FCC ID:	ACJ9TGRI21A
ISED ID:	216H-CFRI21A
FCC Rule Part(s):	47CFR §2.1093
ISED Rule Part(s):	RSS-102:Issue 5 Safety Code 6
Model Name:	RI21A

This device has been excluded SAR testing in accordance with FCC KDB 447498 D01 General RF Exposure Guidance v06 and ISED RSS-102:Issue 5.

Tested By

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Test Engineer
SAR Team
Certification Division

Reviewed By

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REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	Dec. 31, 2021	Initial Release

This test results were applied only to the test methods required by the standard.

The above Test Report is not related to the accredited test result by (KS Q) ISO/IEC 17025 and KOLAS(Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA.

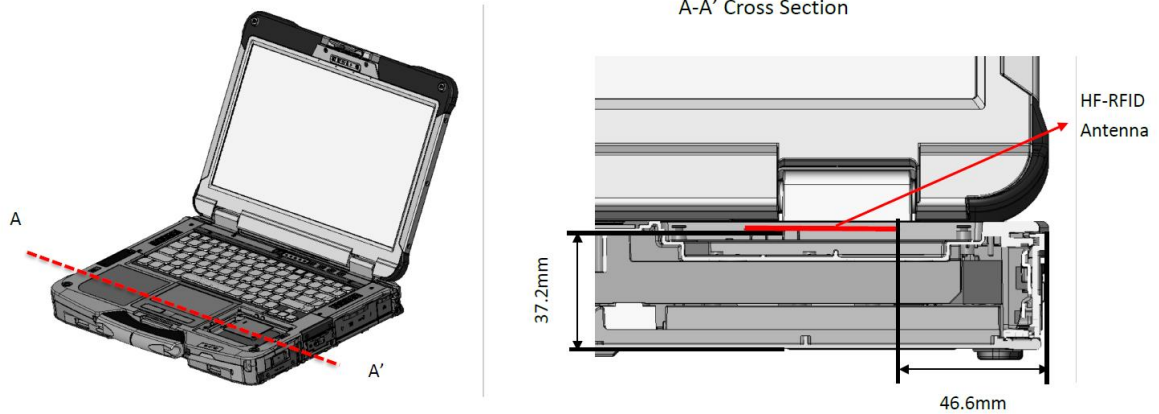
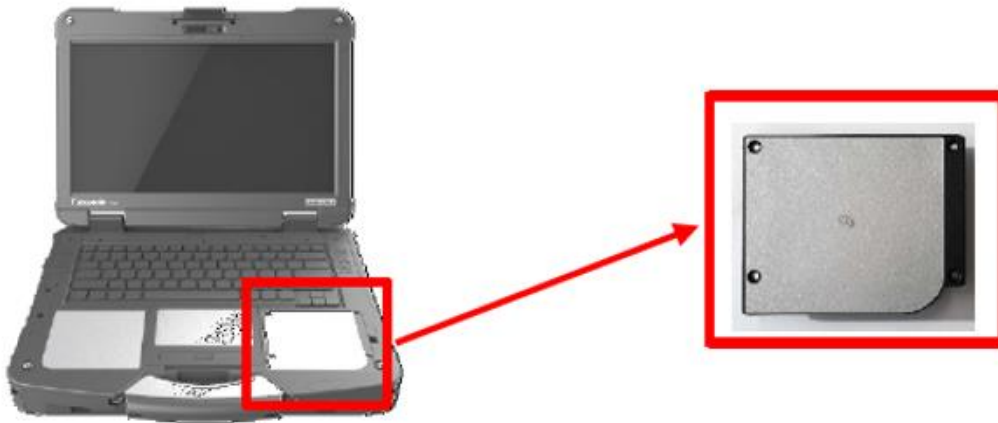
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1. The Description Of DEVICE UNDER TEST

Test Laboratory	
Company Name:	HCT Co., LTD
Address:	74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383, Rep. of Korea
Telephone:	+82 31 645 6300
Fax.:	+82 31 645 6401
Description of DUT	
Applicant Name:	Panasonic Corporation of North America.
FCC ID:	ACJ9TGRI21A
ISED ID:	216H-CFRI21A
Model:	RI21A
Host Model Name:	FZ-40
EUT Type:	RFID Module
Application Type:	Certification
Frequency Range	13.56 MHz
Transmit Power	3.01 dBμV/m @30 m
Modulation Type	ASK
Antenna type	Loop Antenna
Maximum Power	23.38dBm (218mw)

DUT Antenna Locations within host Model



2. Test Methodology and Procedures

For FCC, The tests documented in this report were performed in accordance with FCC CFR § 2.1093 and FCC Published KDB 447498 D01 General SAR Guidance v06

For ISED, The tests documented in this report were performed in accordance with RSS-102:Issue 5 and Safety Code 6 procedures

3 SAR Test Exclusion Considerations within Host

3.1 FCC Consideration

The NFC Module's SAR measurement was exempted by the KDB 447498 D01 General RF Exposure Guidance v06's sec.4.3,c) document. Details are as follows.

KDB 447498 D01 General RF Exposure Guidance v06's sec.4.3,c)

c) This SAR estimation formula has been considered in conjunction with the *SAR Test Exclusion Thresholds* to result in substantially conservative SAR values of ≤ 0.4 W/kg. c) For frequencies below 100 MHz, the following may be considered for SAR test exclusion (also illustrated in Appendix C):³³

- 1) For *test separation distances* > 50 mm and < 200 mm, the power threshold at the corresponding test separation distance at 100 MHz in step b) is multiplied by $[1 + \log(100/f_{\text{(MHz)}})]$
- 2) For *test separation distances* ≤ 50 mm, the power threshold determined by the equation in c) 1) for 50 mm and 100 MHz is multiplied by $\frac{1}{2}$

NFC Module specification:

Frequency : 13.56 MHz

Maximum output Power : 218 mW

Seperation distance : 37.2 mm

$$1 + \log(100/13.56(\text{MHz})) = 1.86774$$

Threshold output power for SAR test is 442.65 mW

Hence, the SAR test exclusion threshold for 13.56 MHz at 37.2 mm and continuous exposure = 442.65 mW .

Therefore, the SAR test for the NFC Module was excluded.

3.2 ISED Consideration

The NFC Module's SAR measurement was exempted by RSS-102 :Issue 5 Sec.2.5.1 document. Details are as follows.

2.5.1 Exemption Limits for Routine Evaluation — SAR Evaluation

SAR evaluation is required if the separation distance between the user and/or bystander and the antenna and/or radiating element of the device is less than or equal to 20 cm, except when the device operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance defined in Table 1.

Table 1: SAR evaluation — Exemption limits for routine evaluation based on frequency and separation distance^{4,5}

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of 30 mm	At separation distance of 35 mm	At separation distance of 40 mm	At separation distance of 45 mm	At separation distance of ≥50 mm
≤300	223 mW	254 mW	284 mW	315 mW	345 mW
450	141 mW	159 mW	177 mW	195 mW	213 mW
835	80 mW	92 mW	105 mW	117 mW	130 mW
1900	99 mW	153 mW	225 mW	316 mW	431 mW
2450	83 mW	123 mW	173 mW	235 mW	309 mW
3500	86 mW	124 mW	170 mW	225 mW	290 mW
5800	56 mW	71 mW	85 mW	97 mW	106 mW

NFC Module specification:

Frequency : 13.56MHz

Maximum output Power : 218 mW

Seperation distance :37.2 mm

According to the above criteria, the SAR test for ISED was exempted.

