

RADIO TEST REPORT

Project ID

PRJ0026037

Type of assessment:

SAR Exemption report

Manufacturer:

**Thales DIS (Tianjin) CO LTD
Benchmark Electronics Huntsville Inc.**

Product description

Passport Reader

Product Marketing Name (PMN):

Thales Gemalto ID Card Reader

Hardware Version Identification Number (HVIN):

CR21-03-00-00-01**CR21-03-00-00-03**

FCC identifier:

FCC ID: 2AQL3PR01767

ISED certification number:

IC: 22832-PR01767

Specifications:

- ◆ FCC 47 CFR Part 2 Subpart J, §2.1093
- ◆ KDB 447498 D01 General RF Exposure Guidance v06
- ◆ RSS-102 Issue 5 Amendment 1, (February 2021) – Annex C

Attestation:

I attest that the radiocommunication apparatus meets the exemption from the routine evaluation limits in these standards; that the Technical Brief was prepared and the information contained therein is correct; that the device evaluation was performed or supervised by me; that applicable measurement methods and evaluation methodologies have been followed; and that the device meets the SAR and/or RF field strength limits of the above standards.

Date of issue: **June 14, 2023****Alvin Liu, EMC/RF Specialist**

Prepared by



Signature

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The tests included in this report are within the scope of this accreditation.
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SCC File Number: 15064 (Ottawa/Almonte); 151100 (Montreal); 151097 (Cambridge)

FCC and RSS-102 Annex C – SAR Exemption; Date: May 2021



Lab locations

Company name	Nemko Canada Inc.			
Facilities	<i>Ottawa site:</i>	<i>Montréal site:</i>	<i>Cambridge site:</i>	<i>Almonte site:</i>
	303 River Road Ottawa, Ontario Canada K1V 1H2	292 Labrosse Avenue Pointe-Claire, Québec Canada H9R 5L8	1-130 Saltsman Drive Cambridge, Ontario Canada N3E 0B2	1500 Peter Robinson Road West Carleton, Ontario Canada K0A 1L0
	Tel: +1 613 737 9680 Fax: +1 613 737 9691	Tel: +1 514 694 2684 Fax: +1 514 694 3528	Tel: +1 519 650 4811	Tel: +1 613 256-9117
Test site identifier	Organization	Ottawa/Almonte	Montreal	Cambridge
	FCC:	CA2040	CA2041	CA0101
	ISED:	2040A-4	2040G-5	24676
Website	www.nemko.com			

Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contained in this report are within Nemko Canada's ISO/IEC 17025 accreditation.

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Section 1

Evaluation summary

1.1 SAR exemption for simultaneous transmission

Section 1.1 References, definitions and limits

FCC §2.1093

- (2) The SAR limits for general population/uncontrolled exposure are 0.08 W/kg, as averaged over the whole body, and a peak spatial-average SAR of 1.6 W/kg, averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the parts of the human body treated as extremities, such as hands, wrists, feet, ankles, and pinnae, where the peak spatial-average SAR limit is 4 W/kg, averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). Exposure may be averaged over a time period not to exceed 30 minutes to determine compliance with general population/uncontrolled SAR limits.

KDB 447498 D01

4.3.2 Simultaneous transmission SAR test exclusion considerations

Simultaneous transmission SAR test exclusion is determined for each operating configuration and exposure condition according to the reported standalone SAR of each applicable simultaneously transmitting antenna. When the sum of 1-g or 10-g SAR of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit, SAR test exclusion applies to that simultaneous transmission configuration.

When an antenna qualifies for the standalone SAR test exclusion of 4.3.1 and also transmits simultaneously with other antennas, the standalone SAR value must be estimated according to the following to determine the simultaneous transmission SAR test exclusion criteria:

- 1) The 1-g head or body and 10-g extremity SAR test exclusion thresholds at Test separation distances ≤ 50 mm are determined by:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) \div (\text{min. test separation distance, mm})] \times \sqrt{F_{(\text{GHz})}/x} \leq 3.0$$
 for 1-g head or body SAR, and ≤ 7.5 for 10-g extremity SAR, where
 - $F_{(\text{GHz})}$ is the RF channel transmit frequency in GHz
 - $X = 7.5$ for 1-g head or body SAR and $x = 18.75$ for 10-g extremity SAR
 - Power and distance are rounded to the nearest mW and mm before calculation
 - The result is rounded to one decimal place for comparison
- 2) The 1-g head or body and 10-g extremity SAR test exclusion thresholds at Test separation distances > 50 mm are determined by: 0.4 W/kg for 1-g head or body SAR and 1.0 W/kg for 10-g extremity SAR.

RSS-102, Section 2.5.1

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 below

Table 1.1-1: Exemption limits for routine evaluation based on frequency and separation distance

Separation:	≤ 5 mm	10 mm	15 mm	20 mm	25 mm	30 mm	35 mm	40 mm	45 mm	≥ 50 mm
≤ 300 MHz	71	101	132	162	193	223	254	284	315	345
450 MHz	52	70	88	106	123	141	159	177	195	213
835 MHz	17	30	42	55	67	80	92	105	117	130
900 MHz	7	10	18	34	60	99	153	225	316	431
2450 MHz	4	7	15	30	52	83	123	173	235	309
3500 MHz	2	6	16	32	55	86	124	170	225	290
5800 MHz	1	6	15	27	41	56	71	85	97	106

Notes: Values in the table are in mW

References, definitions and limits, continued

Output power level shall be the higher of the maximum conducted or equivalent isotropically radiated power (e.i.r.p.) source-based, time-averaged output power. For controlled use devices where the 8 W/kg for 1 gram of tissue applies, the exemption limits for routine evaluation in the table above are multiplied by a factor of 5. For limb-worn devices where the 10 gram value applies, the exemption limits for routine evaluation in the table above are multiplied by a factor of 2.5. If the operating frequency of the device is between two frequencies located in Table 1, linear interpolation shall be applied for the applicable separation distance. For test separation distance less than 5 mm, the exemption limits for a separation distance of 5 mm can be applied to determine if a routine evaluation is required.

1.1.2 EUT technical information

	Transmitter 1 (RFID)	Transmitter 2 (BLE)
Type of EUT use	extremity	extremity
Minimum separation distance	5 mm	5 mm
Highest operating frequency	0.01356 GHz	2.480 GHz
Antenna type	PCB antenna	PCB antenna
Antenna gain	1.0 dBi	1.28 dBi
Maximum transmitter conducted power	-31.45 dBm (0.0007 mW)	7.98 dBm (6.31 mW)
Maximum system EIRP	-30.45 dBm (0.0009 mW)	9.26 dBm (8.43 mW)

1.1.3 Justification for SAR test exclusion

$$FCC \text{ Calculation} = (EIRP_{(mW)} \div 5 \text{ mm}) \times \sqrt{\text{Frequency}_{(GHz)}} / x = \text{result} < 7.5$$

Table 1.1-2: SAR exemption verification for individual transmitter for FCC

Transmitter type	Transmit frequency, GHz	Maximum EIRP, mW	Separation distance, mm	Calculation result	Exemption limit	Margin, dB
RFID	0.01356	0.0009	5	0.00000484	7.5	61.9
BLE	2.480	8.43	5	0.6	7.5	11.0

Note: Margin was calculated as follows: $10 \times \text{Log}_{10}(\text{Limit} / \text{Calculation result})$

Table 1.1-3: SAR exemption verification for simultaneous transmission for FCC

Transmitter type	Transmit frequency, MHz	Calculation result	Exemption limit	Calculation to Exemption limit ratio	Sum of ratios ¹	Sum of ratios limit
RFID	13.56	0.00000484	7.5	0	0.08	1
BLE	2480	0.6	7.5	0.08		

Note: ¹Sum of each transmitter type's Calculation result divided by its proper Exemption limit (Calculation to Exemption limit ratio).

Justification for SAR test exclusion, continued

Table 1.1-4: SAR exemption verification for individual transmitter for ISED

Transmitter type	Transmit frequency, MHz	Maximum EIRP, mW	Separation distance, mm	Limit, mW	Margin, dB
RFID	13.56	0.0009	5	71	49.0
BLE	2480	8.43	15	15	2.5

Note: Margin was calculated as follows: $10 \times \log_{10}(\text{Limit} / \text{Maximum EIRP})$

Table 1.1-5: SAR exemption verification for simultaneous transmission for ISED

Transmitter type	Transmit frequency, MHz	Maximum EIRP, mW	Exemption Limit, mW	EIRP to Exemption Limit ratio	Sum of ratios ¹	Sum of ratios limit
RFID	13.56	0.0009	71	0	0.562	1
BLE	2480	8.43	15	0.562		

Note: ¹Sum of each transmitter type's Maximum EIRP divided by its proper Exemption Limit (EIRP to Exemption Limit ratio).

1.1.4 Verdict

The calculation is below the threshold, therefore the product is exempt from the SAR test requirements.

End of the test report