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RADIO TEST REPORT – 484934APFWL

Type of assessment:

SAR Exemption report

Applicant:

MedRx Inc.

Product description:

Qi Wireless Charger

Model (HVIN):

MedRx Charger

PMN:

MedRx Charger

FCC identifier:

2A6UNMEDRXCHARGE

ISED certification number:

28531-MEDRXCHARGE

Specifications:

- FCC 47 CFR Part 2 Subpart J, §2.1093
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- ISED Canada RSS-102 Issue 5 Amendment 1, (February 2021)
- RSS-102, Issue 5, Supplementary Procedure SPR-002, Issue 1

Attestation:

I attest that the testing was performed or supervised by me; that the test measurements were made in accordance with the above-mentioned departmental standard(s), and that the radio equipment identified in this application has been subject to all applicable test conditions specified in the departmental standards and all of the requirements of the standards have been met.

Date of issue: October 14, 2022

Tarek Elkholy, EMC/RF Specialist

Prepared by

Tarek Elkholy

Signature

Lab locations

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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.

Copyright notification

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Section 1 Evaluation summary

1.1 SAR exemption for standalone transmission

1.1.1 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.

FCC KDB 447498 D01

4.3.1 Standalone SAR test exclusion considerations

During normal operation, user extremities can come within 20 cm of the internal antenna and therefore product is considered as “Portable”.

The 1-g head or body and 10-g extremity SAR test exclusion thresholds for 100 MHz to 6 GHz at Test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW) ÷ (min. test separation distance, mm)] ×

[√($F_{(GHz)}$)] ≤ 3.0 for 1-g head or body SAR, and ≤ 7.5 for 10-g extremity SAR, where

$F_{(GHz)}$ 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 ≤ 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 according to section 4.1(f) is applied to determine SAR test exclusion

Table 1.1-1: *SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm*

Separation:	5 mm	10 mm	15 mm	20 mm	25 mm	30 mm	35 mm	40 mm	45 mm	50 mm
150 MHz	39	77	116	155	194	232	271	310	349	387
300 MHz	27	55	82	110	137	164	192	219	246	274
450 MHz	22	45	67	89	112	134	157	179	201	224
835 MHz	16	33	49	66	82	98	115	131	148	164
900 MHz	16	32	47	63	79	95	111	126	142	158
1500 MHz	12	24	37	49	61	73	86	98	110	122
1900 MHz	11	22	33	44	54	65	76	87	98	109
2450 MHz	10	19	29	38	48	57	67	77	86	96
3600 MHz	8	16	24	32	40	47	55	63	71	79
5200 MHz	7	13	20	26	33	39	46	53	59	66
5400 MHz	6	13	19	26	32	39	45	52	58	65
5800 MHz	6	12	19	25	31	37	44	50	56	62

Notes: Values in the table are in mW

10-g Extremity SAR Test Exclusion Power Thresholds are 2.5 times higher than the 1-g SAR Test Exclusion Thresholds indicated above. These thresholds do not apply, by extrapolation or other means, to occupational exposure limits.

References, definitions and limits, continued

Table 1.1-2: *SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and > 50 mm*

Separation:	50 mm	60 mm	70 mm	80 mm	90 mm	100 mm	110 mm	120 mm	130 mm	140 mm	150 mm	160 mm	170 mm	180 mm	190 mm
100 MHz	474	481	487	494	501	507	514	521	527	534	541	547	554	561	567
150 MHz	387	397	407	417	427	437	447	457	467	477	487	497	507	517	527
300 MHz	274	294	314	334	354	374	394	414	434	454	474	494	514	534	554
450 MHz	224	254	284	314	344	374	404	434	464	494	524	554	584	614	644
835 MHz	164	220	275	331	387	442	498	554	609	665	721	776	832	888	943
900 MHz	158	218	278	338	398	458	518	578	638	698	758	818	878	938	998
1500 MHz	122	222	322	422	522	622	722	822	922	1022	1122	1222	1322	1422	1522
1900 MHz	109	209	309	409	509	609	709	809	909	1009	1109	1209	1309	1409	1509
2450 MHz	96	196	296	396	496	596	696	796	896	996	1096	1196	1296	1396	1496
3600 MHz	79	179	279	379	479	579	679	779	879	979	1079	1179	1279	1379	1479
5200 MHz	66	166	266	366	466	566	666	766	866	966	1066	1166	1266	1366	1466
5400 MHz	65	165	265	365	465	565	665	765	865	965	1065	1165	1265	1365	1465
5800 MHz	62	162	262	362	462	562	662	762	862	962	1062	1162	1262	1362	1462

Notes: Values in the table are in mW

Table 1.1-3: *SAR Test Exclusion Thresholds for <100 MHz and < 50 mm*

Separation:	<50 mm	50 mm	60 mm	70 mm	80 mm	90 mm	100 mm	110 mm	120 mm	130 mm	140 mm	150 mm	160 mm	170 mm	180 mm	190 mm
100 MHz	237	474	481	487	494	501	507	514	521	527	534	541	547	554	561	567
50 MHz	308	617	625	634	643	651	660	669	677	686	695	703	712	721	729	738
10 MHz	474	948	961	975	988	1001	1015	1028	1041	1055	1068	1081	1095	1108	1121	1135
1 MHz	711	1422	1442	1462	1482	1502	1522	1542	1562	1582	1602	1622	1642	1662	1682	1702
0.1 MHz	948	1896	1923	1949	1976	2003	2029	2056	2083	2109	2136	2163	2189	2216	2243	2269
0.05 MHz	1019	2039	2067	2096	2125	2153	2182	2211	2239	2268	2297	2325	2354	2383	2411	2440
0.01 MHz	1185	2370	2403	2437	2470	2503	2537	2570	2603	2637	2670	2703	2737	2770	2803	2837

Notes: Values in the table are in mW

1.1.2 EUT technical information

Type of EUT use	head or body
Minimum separation distance	100 mm
Highest operating frequency	0.0001476 GHz
Antenna type	Coil with ferrite
Maximum system EIRP	−18.8 dBm (0.0132 mW)

1.1.3 Justification for Standalone SAR test exclusion

Calculation = $(0.0132_{(mW)} \div 100\ mm) \times \sqrt{0.0001476_{(GHz)}}$ = (1.6 × 10^{-6}) < 3.0 (for 1-g head or body SAR), and ≤ 7.5 (for 10-g extremity SAR).

1.1.4 Verdict

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

1.2 Nerve Stimulation test

1.2.1 References, definitions, and limits

This evaluation of the instantaneous requirements for Radio Frequency (RF) field strengths (reference levels) based on the effects of internal electric fields was done in accordance with SPR-002, Issue 1. The limits for Uncontrolled Environment are found in RSS 102, Issue 5, Table 4 (Instantaneous).

Table 4: RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m^2)	Reference Period (minutes)
0.003-10[21]	83	90	-	Instantaneous*
0.1-10	-	$0.73/f$	-	6**
1.1-10	$87/f^{0.5}$	-	-	6**
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	$3.142f^{0.3417}$	$0.008335f^{0.3417}$	$0.02619f^{0.6834}$	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	$616000/f^{1.2}$
150000-300000	$0.158f^{0.5}$	$4.21 \times 10^{-4} f^{0.5}$	$6.67 \times 10^{-5} f$	$616000/f^{1.2}$

Note: f is frequency in MHz.
* Based on nerve stimulation (NS).
** Based on specific absorption rate (SAR).

Start date	October 5, 2022

1.2.2 Observations, settings and special notes

The testing was performed as per SPR-002, Issue 1.

a) The measurement probe is set a fixed separation distance of 20 cm
b) The instantaneous E-Field is assessed over the average 180 cm human body height, measuring 5 points in 40 cm intervals, starting 20 cm above the ground. The maximum field was measured at 20 cm height and is used as reference for calculations.
c) The instantaneous H-Field is assessed by measuring 8 points in an evenly spaced rectangular pattern measuring 60 cm tall by 30 cm wide. The maximum field was measured at 20 cm height and is used as reference for calculations.
d) The X, Y, and Z axis are measured simultaneously, and summed by the measurement probe software
e) The maximum emission level is measured using an appropriate resolution bandwidth.
f) Worst case measurement are recorded in the tables in the test data section.

1.2.3 Test data

Table 1.2-2: *Equipment list*

Equipment	Manufacturer	Model no.	Asset no.	Cal cycle	Next cal.
Isotropic probe	Narda	EHP200-TS	FA003103	2 years	July 14, 2023

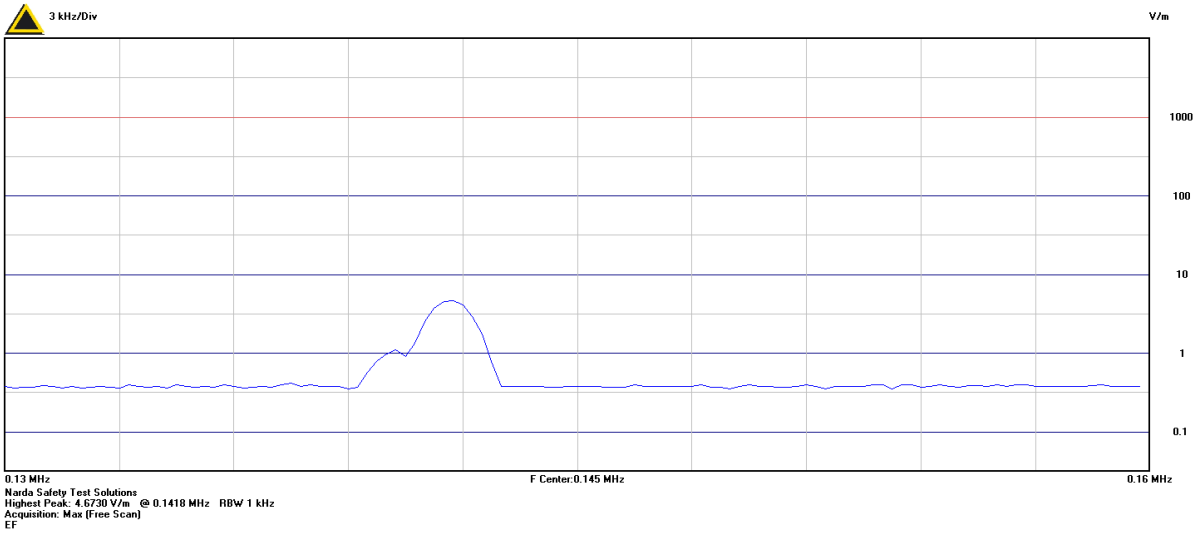


Table 1.2-3 - *Instantaneous E-Field measurements over 180 cm height*

Frequency, MHz	Measurement distance cm	Measured Electric Field Strength V/m (r.m.s) instantaneous	RSS-102 Limit Electric Field Strength V/m (r.m.s) instantaneous	Margin, dB
0.1418	10	4.67	83.00	78.33

Notes: Limit taken from RSS 210, Issue 5, Table 4 for Uncontrolled Exposure, Maximum E-Field emission measured at 20 cm

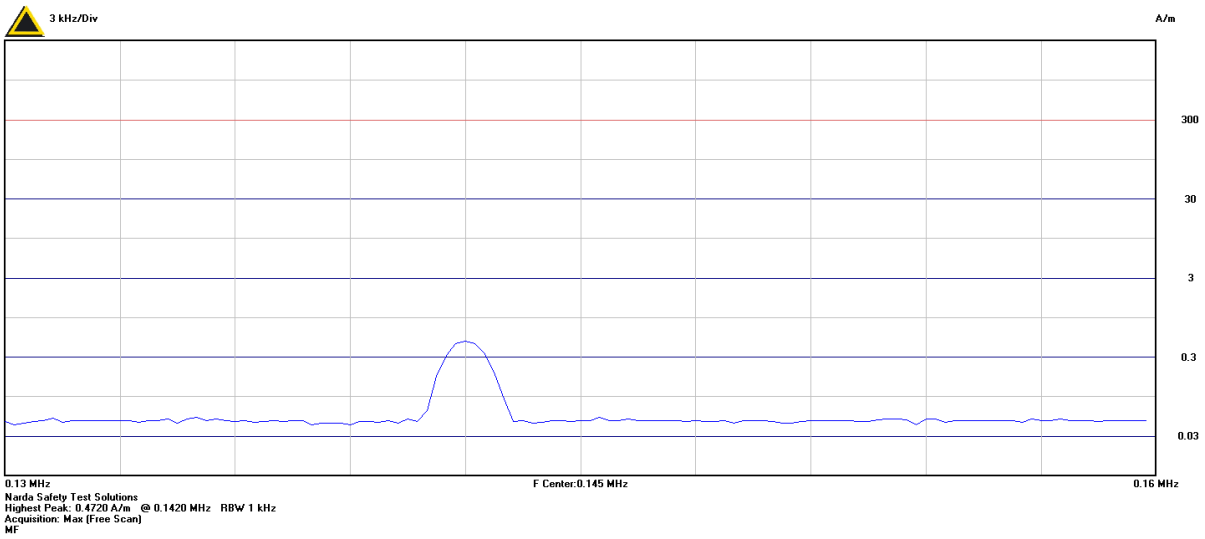
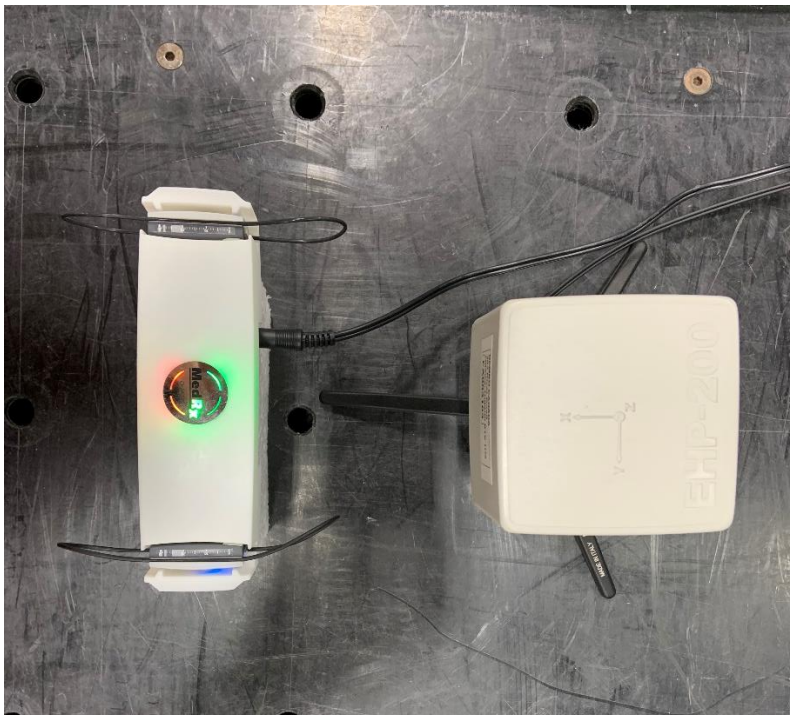


Table 1-2.4 *- Maximum instantaneous H-Field*

Frequency, MHz	Antenna Position referencing EUT	Measurement distance cm	Measured Magnetic Field Strength A/m (r.m.s) instantaneous	RSS-102 Limit Magnetic Field Strength A/m (r.m.s) instantaneous	Margin, dB
0.1420	All sides	10	0.47	90.00	89.53

1.2.4 Test setup photos



1.2.1 RSS-102, Annex A - RF technical brief cover sheet

ISED certification number	IC: 28531-MEDRXCHARGE		
Product marketing name (PMN)	MedRx Charger		
Hardware version identification number (HVIN)	MedRx Charger		
Firmware version identification number (FVIN)	N/A		
Host marketing name (HMN)	N/A		
Applicant name	MedRx Inc.		
SAR/RF exposure test laboratory	24676 (3 m semi anechoic chamber - Cambridge)		
Type of evaluation	☐ SAR Evaluation: Device Used in the Vicinity of the Human Head ☐ SAR Evaluation: Body-Worn Device and Body-Supported Device ☐ SAR Evaluation: Limb-Worn Device ☐ RF Exposure Evaluation ☒ Nerve Stimulation Exposure Evaluation (SPR-002)		
SAR evaluation	Multiple transmitters: ☐ Yes ☐ No		
	Evaluated against exposure limits: ☐ General Public Use ☐ Controlled Use		
	Duty cycle used in evaluation: N/A %		
	Separation distance: N/A mm		
	Standard used for evaluation: N/A		
	SAR value: N/A W/kg		
	☐ Measured ☐ Computed ☐ Calculated		
Nerve Stimulation Evaluation (SPR-002)	Evaluated against exposure limits: ☒ General Public Use ☐ Controlled Use		
	Measurement distance:	**0.1**	m
	Field Strength:	**4.7**	☒ V/m (electric) ☐ A/m (magnetic) ☒ Measured ☐ Computed ☐ Calculated
		0.5	☐ V/m (electric) ☒ A/m (magnetic) ☒ Measured ☐ Computed ☐ Calculated
	Exposure condition:	☒ Whole body/Torso/Head	☐ Leg
		☒ Arm	☐ Hand/Foot
RF exposure evaluation	Evaluated against exposure limits: ☐ General Public Use ☐ Controlled Use		
	Duty cycle used in evaluation: N/A %		
	Operational frequency: N/A MHz		
	Standard used for evaluation: N/A		
	Measurement distance: N/A m		
	RF value: N/A	☐ W/m² ☐ V/m ☐ A/m ☐ Measured ☐ Computed ☐ Calculated	

End of the test report