RF Exposure Report

Report No.	SST240705013EF04
Applicant:	CRONOS-TECH (CHENGDU) CO.,LTD
Address of Applicant:	4/F, Bldg. 6,No.200, Tianfu 5th Street, High-tech Zone Chengdu, China (Sichuan) Pilot Free Trade Zone, China
Product Name:	RFID Reader
Trade Mark:	Cronos-Tech
FCC ID:	2A3PV-CT006
Test Report Form No:	SST-RD-7.5-02-E01(A/0)

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in FCC KDB 447498 D04. Test results reported herein relate only to the item(s) tested.

2 Contents

3 RF EXPOSURE EVALUATION MAXIMUM PERMISSIBLE EXPOSURE (MPE)

3.1 Introduction

This document is prepared to show compliance with the RF Exposure requirements as required in §1.1307 of the FCC Rules and Regulations and RSS-102 of Industry Canada.

The limit for maximum permissible exposure(MPE), specific in §1.1307of the FCC Rules and KDB 447498 D04 were list in below

a) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance.

b) the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW) described in the following formula.

$$P_{\text{th}}\,(\text{mW}) = ERP_{20\,\text{cm}}\,(\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases} \quad \text{(B.1)}$$

$$P_{\text{th}}\,(\text{mW}) = \begin{cases} ERP_{20\,\text{cm}}(d/20\ \text{cm})^{x} & d \le 20\ \text{cm} \\ ERP_{20\,\text{cm}} & 20\ \text{cm} < d \le 40\ \text{cm} \end{cases} \quad \text{(B.2)}$$

where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\,\text{cm}}\sqrt{f}}\right)$$

and f is in GHz, d is the separation distance (cm), and $ERP_{20\text{cm}}$ is per Formula (B.1).
The example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

Frequency (MHz)	Distance (mm)									
	5	10	15	20	25	30	35	40	45	50
300	39	65	88	110	129	148	166	184	201	217
450	22	44	67	89	112	135	158	180	203	226
835	9	25	44	66	90	116	145	175	207	240
1900	3	12	26	44	66	92	122	157	195	236
2450	3	10	22	38	59	83	111	143	179	219
3600	2	8	18	32	49	71	96	125	158	195
5800	1	6	14	25	40	58	80	106	136	169

c) For multiple RF sources

$$\sum_{i=1}^{a}\frac{P_i}{P_{th,i}} + \sum_{j=1}^{b}\frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^{c}\frac{Evaluated_k}{Exposure\ Limit_k} \le 1$$

The limit for maximum permissible exposure(MPE), specific in §1.1310of the FCC Rules list in below

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f^2)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6

(B) Limits for General Population/Uncontrolled Exposure				
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
300–1500			f/1500	30
1500–100,000			1.0	30

f = frequency in MHz
Friis transmission formula: **Pd = (Pout*G)/(4*pi*r^2)**

Where
Pd = power density in mW/cm^2, **Pout** = output power to antenna in mW;
G = gain of antenna in linear scale, **Pi** = 3.1416;
R = distance between observation point and center of the radiator in cm

3.2 MPE Calculation

Type	Frequency (MHz)	Antenna Gain (dBi)	Output power (dBm)	Output power (mW)	Limit (mW, d=5mm)	Ratio (%)	Result
BT-LE	2480	0.5	-1.02	0.79	2.7	29.1	PASS

Output power is greater than ERP, so conducted power is applied

Type	Frequency (MHz)	Field Strength (dBuV/m)	Field Strength (dBm)	Field Strength (mW)	Limit (mW)	Result
RFID	0.1343	91.91	-3.29	0.47	1	PASS

RFID and BT cannot Simultaneous transmission

4 Conclusion

The device meets the mobile RF exposure limit at a minimum separation distance as specified in §2.1093 of the FCC Rules and Regulations and Health Canada Safety Code 6. An appropriate RF exposure compliance statement will be placed in the user's manual.

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