


RF Exposure Evaluation Report

Client: Ainstein Inc.

Address: 1421 Research Park Dr. Suite 2A
Lawrence, KS 66049-3858

Model: K-77-G2

Test Report No.: RFE230920-21-M1C

Approved By: 
Fox Lane,
EMC Test Engineer

Date: March 7, 2025

Total Pages: 7

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Revision Page

Rev. No.	Date	Description
Original	31 October 2023	Issued by FLane Prepared by FLane
A	2 July 2024	Added IC/FCC ID's – FL
B	11 February 2025	Updated Power – FL
C	28 February 2025	Updated model numbers and FCC/IC ID – FL

Regulatory Requirements:

FCC Part 1.1310, 2.1091, 2.1093
KDB 447498 D01
RSS-102, Issue 5

Summary:

The purpose of this report is to evaluate the EUT's transmitter for exemption from routine SAR testing.

EUT:

Model:

K-77-G2

FCC ID:

2ATMB-K77G2

IC:

26683-K77G2

MPE Lab

Nebraska Center for Excellence in Electronics

MPE Labs FCC Cab Designation:

US1060

MPE Labs ISED Cab Designation:

US0177

FCC Limits, Part 1.1310

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 Exposure				
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
300-1,500			f/300	6
1,500-100,000			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
300-1,500			f/1500	30
1,500-100,000			1.0	30

Occupational/Controlled	<input type="checkbox"/>
General Population/uncontrolled	<input checked="" type="checkbox"/>

FCC Power Density Calculations								
Freq.	EIRP	Antenna Gain	EIRP	EIRP +10% for Tolerance	Power Density	Limit at specified distance	% of limit	Result
MHz	mW	numerical	mW	mW	mW/cm^2	mW/cm^2	%	
76300	1563.148	1.00	1563.15	1719.46	0.342	1.00	34.208	PASS
76400	1330.454	1.00	1330.45	1463.50	0.291	1.00	29.115	PASS
76482	1563.148	1.00	1563.15	1719.46	0.342	1.00	34.208	PASS

Antenna Gain set to 1.00 because power measurements were performed with radiated method

Distance (d)	20	cm
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$S = (P \times G)/(4 \times \pi \times d^2)$ – used to calculate exposure at "d" cm

$EIRP = P \times G$, measured as field strength

$d = \sqrt{(S/(P \times G) \times 4 \times \pi)}$ – used to calculate minimum distance to meet limits

S = power density (mW/cm^2)

P = transmitter conducted power (in mW)

G = antenna numeric gain (Numerical)

d = distance to radiation center (cm)

Limits:

FCC Limit according to FCC Part 1.1310

10W/m² = 1mW/cm²

Complies

Note:

The user's manual will stipulate that a 20cm distance from the user is to be maintained.
EIRP values in mW were multiplied by 1.1 to account for a 10% tolerance.

April 2021 TCB Workshop Training

Canada's new localized limits > 6 GHz

- February 2021, Health Canada introduced new localized (basic restrictions and reference levels) PD limits
 - < 30 GHz → harmonized w/ ICNIRP-2020 (averaged over 4-cm²)
 - > 30 GHz → spatial peak instead 1 cm² average
- New limits are now in effect

RSS 102, Issue 5, Section 2.5.2

2.5.2 Exemption Limits for Routine Evaluation – RF Exposure Evaluation

RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

- below 20 MHz⁶ and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

Occupational/Controlled			<input type="checkbox"/>			
General Population/uncontrolled			<input checked="" type="checkbox"/>			
ISED Power Density Calculations						
Frequency	Cond. Power	Antenna Gain	Peak Power EIRP	Peak Power EIRP +10% for Tolerance	Exemption Limit	Result
MHz	mW	numerical	mW	mW	mW	
76300.00	1563.148	1.00	1563.15	1719.46	5000.00	PASS
76400.00	1330.454	1.00	1330.45	1463.50	5000.00	PASS
76482.00	1563.148	1.00	1563.15	1719.46	5000.00	PASS

Antenna Gain set to 1.00 because power measurements were performed with radiated method

$EIRP = P \times G$, measured as field strength

P = transmitter conducted power (in mW)

G = antenna numeric gain (Numerical)

Result:

The EUT was found to be exempt from routine SAR testing and **COMPLIANT** with FCC and ISED RF exposure requirements.

REPORT END