



RF Exposure Evaluation Report

APPLICANT	RADIO SOLUTIONS, INC.
ADDRESS	55 ACCORD PARK DRIVE NORWELL, MA. 02061 USA
FCC ID	2AHVPSB700M2A
MODEL NUMBER	SB700M2A
PRODUCT DESCRIPTION	SIGNAL BOOSTER
DATE SAMPLE RECEIVED	05/09/2018
FINAL TEST DATE	05/16/2018
PREPARED BY	Franklin Rose
TEST RESULTS	<input checked="" type="checkbox"/> PASS <input type="checkbox"/> FAIL

Report Number	Report Version	Description	Issue Date
652AUT18 MPE_TestReport_	Rev1	Initial Issue	05/29/2018
652AUT18 MPE_TestReport_	Rev2	Updated RF Exposure to match user manual	06/04/2018

THE ATTACHED REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN APPROVAL OF TIMCO ENGINEERING, INC.



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GENERAL REMARKS

Summary

The device under test does:

- ☒ Fulfill the general approval requirements as identified in this test report and was selected by the customer.
- ☐ Not fulfill the general approval requirements as identified in this test report

Attestations

This equipment has been tested in accordance with the standards identified in this test report. To the best of my knowledge and belief, these tests were performed using the measurement procedures described in this report.

All instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025 requirements.

I attest that the necessary measurements were made at:

Timco Engineering Inc.
849 NW State Road 45
Newberry, FL 32669
Designation #: US1070

Prepared by:



Name and Title	Franklin Rose, Project Manager / EMC Testing Technician
Date	05/29/2018

GENERAL INFORMATION

EUT Description	SIGNAL BOOSTER
Model Number	SB700M2A
EUT Power Source	<input checked="" type="checkbox"/> 110–120Vac/50– 60Hz
	<input type="checkbox"/> DC Power (12.0 V)
	<input type="checkbox"/> Battery Operated Exclusively
Test Item	<input type="checkbox"/> Prototype
	<input checked="" type="checkbox"/> Pre-Production
	<input type="checkbox"/> Production
Type of Equipment	<input checked="" type="checkbox"/> Fixed
	<input type="checkbox"/> Mobile
	<input type="checkbox"/> Portable
Antenna Connector	N Type
Test Conditions	The temperature was 26°C Relative humidity of 50%.
Modification to the EUT	No Modification to EUT.
Applicable Standards	FCC CFR 47 Part 2.1091
Test Facility	Timco Engineering Inc. at 849 NW State Road 45 Newberry, FL 32669 USA. Designation #: US1070

ANTENNA INFORMATION

The following excerpt was taken from the User Manual:

ERP POWER LIMIT: FCC regulations limit signal booster ERP (Effective Radiated Power) to 5W. Effective radiated power is calculated as follows: $1W - (\text{CABLE LOSSES}) - (\text{CONNECTOR AND SPLITTER LOSSES}) - (\text{ANY OTHER SYSTEM LOSSES}) + (\text{ANTENNA GAIN})$, where the 1W figure is the maximum output power of the signal booster @ 30dBm. **If a high gain antennas are used, such as a directional Yagi antenna, please reduce the maximum output power of the signal booster so that the ERP (Effective Radiated Power) does not exceed the 5W limit.**

Manufacturer Provides Antenna	Type	Max Gain (dBi)
No	Yagi, or Unspecified	7 dBi

MANUFACTURER'S STATEMENT

The following excerpt was taken from the User Manual:

Unauthorized Changes to Equipment – Changes or Modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

FCC RF Exposure Limits – This unit complies with FCC RF exposure limits for an uncontrolled environment. To comply with FCC RF exposure limit requirements antennas must be operated at a **minimum distance of 28cm or 11.03" between the radiator and any person's body.**

§ 90.219 (d) Class B broadband signal boosters are permitted to be used only in **confined or indoor areas** such as buildings, tunnels, underground areas, etc., or in the remote areas, i.e. areas where there is little or no risk of interference to other users.

§ 90.291 (e) The licensee is given authority to operate signal boosters without separate authorization from the Commission. Certificated equipment must be employed and the licensee must ensure that all applicable rule requirements are met. (f) Licensees employing either Class A narrowband or Class B broadband signal boosters as defined in §90.7 **are responsible for correcting any harmful interference that the equipment may cause to other systems.** Normal co-channel transmissions will not be considered as harmful interference. Licensees will be required to resolve interference problems pursuant to §90.173(b).

MPE CALCULATION

The minimum separation distance is calculated as follows:

$$E(V/m) = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power density: } P_d(mW/cm^2) = \frac{E^2}{3770}$$

1. **General Uncontrolled Exposure Environment:** The limit for General Uncontrolled Exposure Environment is calculated as shown in FCC Pt. 1.1310. Variables have been input to match those stated in the manufacturer's literature:

Variable	Value
Max Power	1.00 W
Duty Cycle (at full power)	100%
Max Antenna Gain	7 dBi
Coax Loss	0 (unspecified)
Power Density	0.99708 W/m ²
Minimum Separation Distance	28 cm