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Test Report

Prepared for: G-Way Incorporated

Model: BDA-PS7W/PS8NEPS-37/37-90-C

Description: Public Safety 700/800 MHz Band Bi-Directional Amplifier

Serial Number: 16061001

FCC ID: Q8KPS7W83790

To

FCC Part 1.1310

Date of Issue: July 7, 2016

On the behalf of the applicant:

G-Way Incorporated
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Attention of:

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Greg Corbin
Project Test Engineer

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Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	July 1, 2016	Greg Corbin	Original Document



ILAC / A2LA

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The tests results contained within this test report all fall within our scope of accreditation, unless below

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Non-accredited tests contained in this report:

N/A



EUT Description

Model: BDA-PS7W/PS8NEPS-37/37-90-C

Description: The industrial booster is a Bi-Directional amplifier (BDA), used to amplify DL and UL frequencies in the PS 700/800 MHz band.

Firmware: N/A

Serial Number: 16061001

Additional Information:

The EUT is classified as a Part 90 PS **Class B** industrial signal booster.

The EUT is a Bi-directional Amplifier that operates in the Frequency ranges listed in Table 1.

System Power is 120 VAC @ 60 Hz.

Frequency - MHz	
Base to Mobile	Mobile to Base
758 - 775	788 - 805
851 - 862	806 - 817

Antennas specified for the EUT:

Antenna type	Model	Gain - dBi
Wideband High Gain Ceiling Antenna	TQI-4FC-5	2
Full Band Directional Antenna	TDJ-700/2500YG	8.5

EUT Operation during Tests

The EUT was tested under normal operating conditions with the front panel attenuators set to 0 dB for all measurements.

30 dB, 50 watt attenuators were installed on both RF ports for all tests.

MPE calculations were performed at the manufacturer's rated output of +37 dBm using an antenna with 8.5 dBi gain.

MPE calculations were performed at the manufacturer's rated output of +37 dBm +20% using an antenna with 8.5 dBi gain.



MPE Evaluation

This is a Fixed device used in Uncontrolled Exposure environment.

Limits Uncontrolled Exposure
47 CFR 1.1310
Table 1, (B)

0.3-1.234 MHz:	Limit [mW/cm ²] = 100
1.34-30 MHz:	Limit [mW/cm ²] = (180/f ²)
30-300 MHz:	Limit [mW/cm ²] = 0.2
300-1500 MHz:	Limit [mW/cm ²] = f/1500
1500-100,000 MHz	Limit [mW/cm ²] = 1.0

Test Data

Uplink Output Power set to manufacturer's (Mfr) rated output power (+37 dBm) using an antenna with 8.5 dBi gain

Test Frequency, MHz	758
Power, Conducted, mW (P)	5011
Antenna Gain Isotropic	8.5 dBi
Antenna Gain Numeric (G)	7.08
Distance (R)	20 cm

$$S = \frac{P * G}{4\pi r^2}$$

Power Density (S) mw/cm ²	
	7.058

Power Density (S) = 7.058 mw/cm ²
Limit =(from above table) = 0.505 mw/cm ²

With the output power set to **manufacturer rated output power (+37 dBm)** using a 8.5 dBi antenna, the EUT does not meet the power density requirements at 20 cm, so the minimum safe distance was calculated below.

Minimum Safe Distance Evaluation

This is a Fixed device used in Uncontrolled Exposure environment.

Test Data

Uplink Output Power set to manufacturer's (Mfr) rated output power (+37 dBm) using an antenna with 8.5 dBi gain

Test Frequency, MHz	758
Power, Conducted, mW (P)	5011
Antenna Gain Isotropic	8.5 dBi
Antenna Gain Numeric (G)	7.08
Limit (L)	0.505

R=√(PG/4πL)			
Distance (R) cm	Power mW (P)	Numeric Gain (G)	Limit (L)
74.8 cm	5011	7.08	0.505

With the output power set to the manufacturer's (Mfr) rated output power (+37 dBm) using an antenna with 8.5 dBi gain, the minimum safe distance is 74.8 cm.



MPE Evaluation

This is a Fixed device used in Uncontrolled Exposure environment.

Limits Uncontrolled Exposure
47 CFR 1.1310
Table 1, (B)

0.3-1.234 MHz:	Limit [mW/cm ²] = 100
1.34-30 MHz:	Limit [mW/cm ²] = (180/f ²)
30-300 MHz:	Limit [mW/cm ²] = 0.2
300-1500 MHz:	Limit [mW/cm ²] = f/1500
1500-100,000 MHz	Limit [mW/cm ²] = 1.0

Test Data

Uplink Output Power set to manufacturer's (Mfr) rated output power (+37 dBm) + 20% using an antenna with 8.5 dBi gain

Test Frequency, MHz	758
Power, Conducted, mW (P)	6013.2 (37 dBm + 20%)
Antenna Gain Isotropic	8.5 dBi
Antenna Gain Numeric (G)	7.08
Distance (R)	20 cm

$S = \frac{P * G}{4\pi r^2}$
Power Density (S) mw/cm ²

8.469

Power Density (S) = 8.469 mw/cm ²
Limit =(from above table) = 0.505 mw/cm ²

With the output power set to **manufacturer rated output power (+37 dBm)** using a 8.5 dBi antenna, the EUT does not meet the power density requirements at 20 cm, so the minimum safe distance was calculated below.

Minimum Safe Distance Evaluation

This is a Fixed device used in Uncontrolled Exposure environment.

Test Data

Uplink Output Power set to manufacturer's (Mfr) rated output power (+37 dBm) + 20% using an antenna with 8.5 dBi gain

Test Frequency, MHz	758
Power, Conducted, mW (P)	6013.2 (37 dBm + 20%)
Antenna Gain Isotropic	8.5 dBi
Antenna Gain Numeric (G)	7.08
Limit (L)	0.505

R=√(PG/4πL)			
Distance (R) cm	Power mW (P)	Numeric Gain (G)	Limit (L)
81.9 cm	6013.2	7.08	0.505

With the output power set to the manufacturer's (Mfr) rated output power (+37 dBm) using an antenna with 8.5 dBi gain, the minimum safe distance is 81.9 cm.

END OF TEST REPORT