



Test Report

Prepared for: G-Way Microwave

Model: BDA-UHF-36/36-80-AB

Description: Bi-Directional amplifier (BDA), amplify DL an UL frequencies in the UHF band. The max composite power of this BDA is 36 dbm and has up to 80db gain, comes in AB enclosure

FCC ID: Q8KUHF3680AB

To

FCC Part 1.1310

Date of Issue: June 8, 2015

On the behalf of the applicant:

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Attention of:

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Test Report Revision History

Revision	Date	Revised By	Reason for Revision
1.0	June 3, 2015	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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Testing Certificate Number: **2152.01**



FCC Site Reg. #349717

IC Site Reg. #2044A-2

Non-accredited tests contained in this report:

N/A



EUT Description

Model: BDA-UHF-36/36-80-AB

Description:

Bi-Directional amplifier (BDA), amplify DL an UL frequencies in the UHF band.

The max composite power of this BDA is 36 dBm and has up to 80db gain, come within AB enclosure

Firmware: N/A

Serial Number: 15031002, 15031004

Additional Information:

The EUT is classified as a **Class B** industrial signal booster

The EUT is a UHF Bi-directional Amplifier that operates from 406.1 – 430, and 450 – 512 MHz in both directions.

EUT Operation during Tests

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

MPE calculations were performed at the manufacturer's rated output of +36 dBm using an antenna with 0 dBi gain.

MPE calculations were performed at the manufacturer's rated output of +36 dBm +20% using an antenna with 0 dBi gain.

**MPE Evaluation**

This is a Fixed device used in an **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 (+36 dBm) using an antenna with 0 dBi gain

Test Frequency, MHz	406.1
Power, Mfr rated, mW (P)	3981
Antenna Gain Isotropic	0 dBi
Antenna Gain Numeric (G)	1
Distance (R)	20 cm

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

Power Density (S) mw/cm ²	Power mW (P)	Numeric Gain (G)	Distance (r ²) cm
0.792	3981	1	20

$$\text{Power Density (S)} = 0.792 \text{ mw/cm}^2$$

$$\text{Limit} = (\text{from above table}) = 0.271 \text{ mw/cm}^2$$

With the output power set to **manufacturer rated output power (+36 dBm)** using a 0 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**Test Data**

Uplink Output Power set to manufacturer's (Mfr) rated output power (+36 dBm) using an antenna with 0 dBi gain

Test Frequency, MHz	406.1
Power, Mfr rated, mW (P)	3981
Antenna Gain Isotropic	0 dBi
Antenna Gain Numeric (G)	1
Limit (L)	0.271

R=√(PG/4πL)	Distance (R) cm	Power mW (P)	Numeric Gain (G)	Limit (L)
	34.2	3981	1	0.271

With the output power set to the manufacturer's (Mfr) rated output power (+36 dBm) using an antenna with 0 dBi gain, the minimum safe distance is 34.2 cm.



MPE Evaluation

This is a Fixed device used in an **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 (+36 dBm) + 20 % using an antenna with 0 dBi gain

Test Frequency, MHz	406.1
Power, Mfr rated, mW (P)	3981
Power, Mfr rated + 20%, mW (P)	4777.2 mw (3981 + 20%)
Antenna Gain Isotropic	0 dBi
Antenna Gain Numeric (G)	1
Distance (R)	20 cm

$S = \frac{P * G}{4\pi r^2}$	Power mW (P)	Numeric Gain (G)	Distance (r ²) cm
0.950	4772.2	1	20

Power Density (S) = 0.950 mw/cm ²
Limit = (from above table) = 0.271 mw/cm ²

With the Uplink output power set to **manufacturer rated output power (+36 dBm) + 20 %** using a 0 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

Test Data

Uplink Output Power set to manufacturer's (Mfr) rated output power (+36 dBm) + 20 % using an antenna with 0 dBi gain

Test Frequency, MHz	406.1
Power, Mfr rated, mW (P)	3981
Power, Mfr rated + 20%, mW (P)	4777.2 mw (3981 + 20%)
Antenna Gain Isotropic	0 dBi
Antenna Gain Numeric (G)	1
Limit (L)	0.271

R=√(PG/4πL)	Power mW (P)	Numeric Gain (G)	Limit (L)
37.5	4777.2	1	0.271

With the Uplink Output Power set to the manufacturer's (Mfr) rated output power (+36 dBm) + 20 % using an antenna with 0 dBi gain, the minimum safe distance is 37.5 cm.

END OF TEST REPORT