



MRT AU9 EPIRB

RTCM STANDARD 11010.1 Radio Performance Assessment

2 July 2010

Product:	AU9 EPIRB (personnel worn) 121.5 MHz Emergency Radio Beacon
Manufacturer:	Marine Rescue technology Units 3,4 - Front Street Court Middleton-u-wolds Driffield YO25 9TZ
Serial Number(s):	Sample designated #3
Dates tested:	30/06/2010 & 01/07/2010
Standards Tested to:	RTCM STANDARD 11010.1 (RTCM Paper 76-2002/SC110-STD, Version 1.1)
Summary:	The sample tested met the requirements of the two clauses tested subject to the variations set out herein.
Tested by:	T. P. Jarvis
Report Author:	T. P. Jarvis

Project: MT163-FCC1

STATUS: issued

1 Introduction

This report details just two radio performance tests selected from RTCM STANDARD 11010.1 (RTCM Paper 76-2002/SC110-STD, Version 1.1):

- (i) Emission Mask for 121.5 MHz Signal (Figure 2-5)
- (ii) Azimuth response (section A12.3)

Other radio performance tests detailed in RTCM Paper 76-2002/SC110-STD differ little from ETSI EN 300 152-1 V1.2.2 (2000-08) and are thereby addressed in RadioCAD Limited test report MT075-ETSI1 31 March 2010 (MT075-ETSI-TestReport1.pdf).

1.1 Manufacturer Information

The AU9 is a personnel worn Emergency Position Indicating Radio Beacon (EPIRB). When armed it is automatically activated after continuous immersion in water for more than five seconds. The unit transmits continuously on the international airband distress channel (121.5 MHz) using the ITU-R distress call (down-swept tone recommendation M.690-1) until recovered and disarmed. In addition the unit transmits a short data message once every 20 seconds containing its unique identifier and its current GPS (if fitted with the optional GPS receiver).



- (i) Operating frequency = 121.5 MHz. Channel bandwidth = 25 KHz. Modulation type = AM, as specified in ITU-R M.690-1.
- (ii) Ports: (1) Antenna cable (550mm). The sample designated #1 has a combined VHF/GPS antenna. The sample designated #2 has only a 50ohm dummy load termination (appendix D). The sample designated #3 has only a VHF antenna.
- (iii) EUT Software version was V1.36 (no debug)

1.2 **Notes relating to the assessment**

Transmission Frequency:	121.5 and 121.65 MHz
ERPEP Nominal:	100 mW & 500mW versions
Transmitter Class:	Narrowband, BW=25 KHz
Power Source:	2 x Varta CRAA Lithium Manganese batteries (3V per cell)
Temperature range:	Cat 1: -20°C to +55°C
Type designation (JETDS):	PRT
Speech Facility:	None
Data Facility:	1200 bps ASK (ID+GPS position)
Normal Modulation Type:	A3X
Data Modulation Type:	* A1D
Data Burst Duty Cycle:	* 100 mS every 20 S

Table 1 – Additional Information

NOTE * - Data containing ID information.

1.3 **Variations**

A12.3 Azimuth Response

- 1 The test method was modified for convenience. The DUT was forced to transmit CW at its Peak Effective Radiated Power (PERP) and the Azimuth response was measured in a semi-anechoic chamber on a turntable with a 1° resolution.

1.4 **Summary of Compliance**

The samples submitted meet the spurious adjacent channel emission requirements of figure 2-5 and the azimuth PERP requirements of appendix A12.3 of RTCM STANDARD 11010.1 (RTCM Paper 76-2002/SC110-STD, Version 1.1).

1.5 **Modifications**

none

1.6 Result Table

1.6.1 ETSI EN 300 152-2 V1.1.1 (2000-08)

Test	Applied to	Clause	Mod State	Result	Appendix
Spurious Emissions	Sample #3	Figure 2-5	Unmodified	PASS	A
Azimuth PERP	Sample #3	Appendix A12.3	Unmodified	PASS	B

Signed 2 July 2010:



T.P.Jarvis BSc CEng MIEE MIEEE

A Appendix: Spurious Emissions

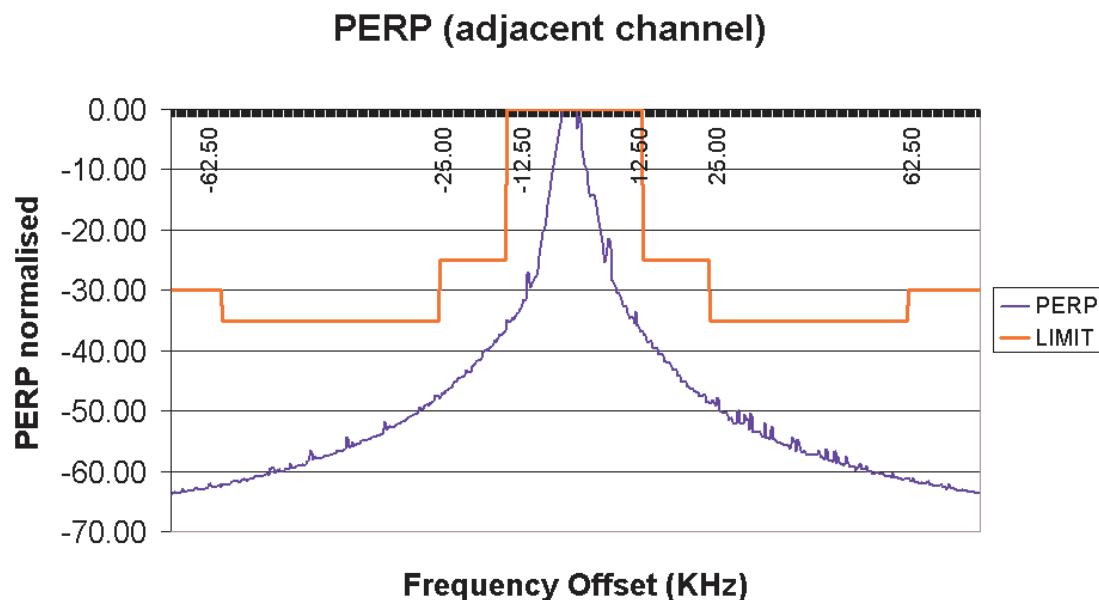


Fig A.1 – Spurious Emissions (Adjacent Channels)

B Appendix: Frequency Error V Supply Voltage

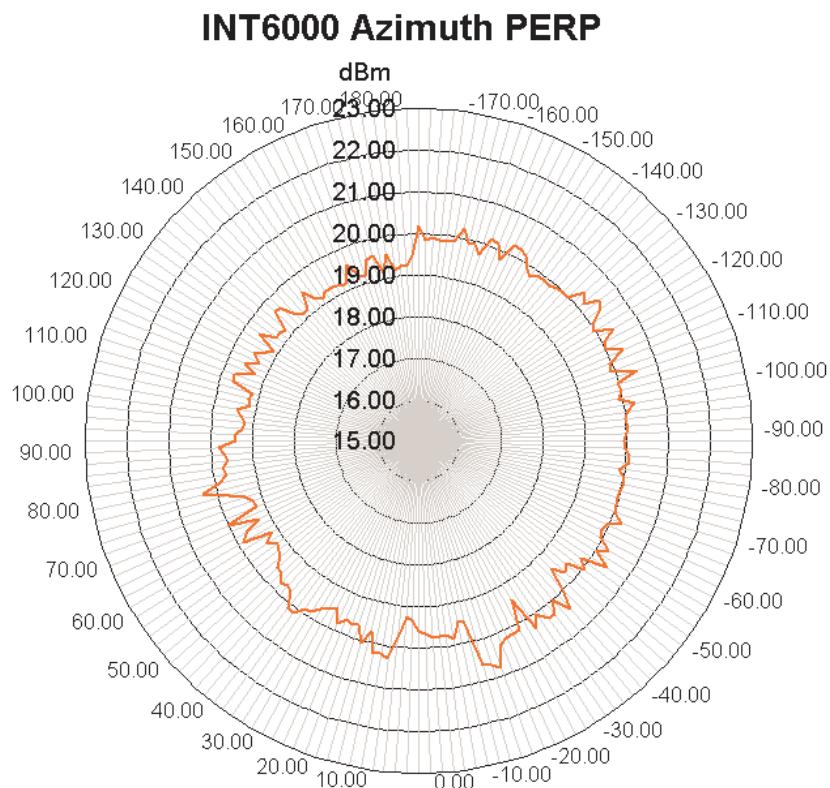


Fig B.1 – Azimuth Response ^[1]

	PERP (dB)	PERP (mW)	Relative
Average PERP ^[2]	19.88 dBm	97.2 mW	0.00 dB
Minimum PERP	19.10 dBm	81.3 mW	-0.78 dB
Maximum PERP	20.79 dBm	119.9 mW	+0.91 dB

Table B.1 – Peak Effective Radiated Power and Directivity

NOTE [1] - Unlike ETSI EN 301 152-1, the azimuth response is taken free standing (figure B.2) in the absence of an artificial human being (salty man), because the latter significantly distorts the omni-directional response pattern.

NOTE [2] – The mean rather than the median value is given.

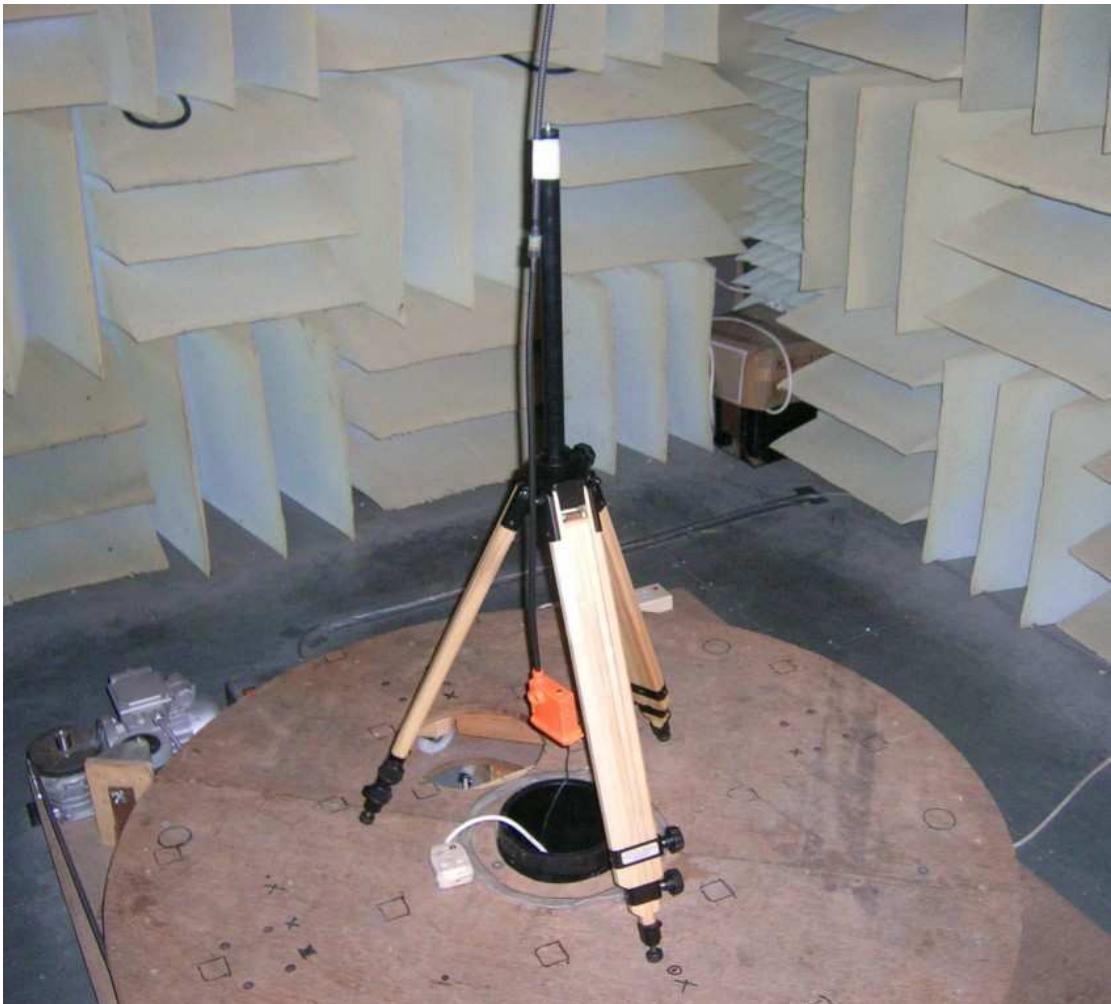


Fig B.2 – DUT azimuth test position on turntable

C Appendix: Samples



Fig C.1 – Sample #3

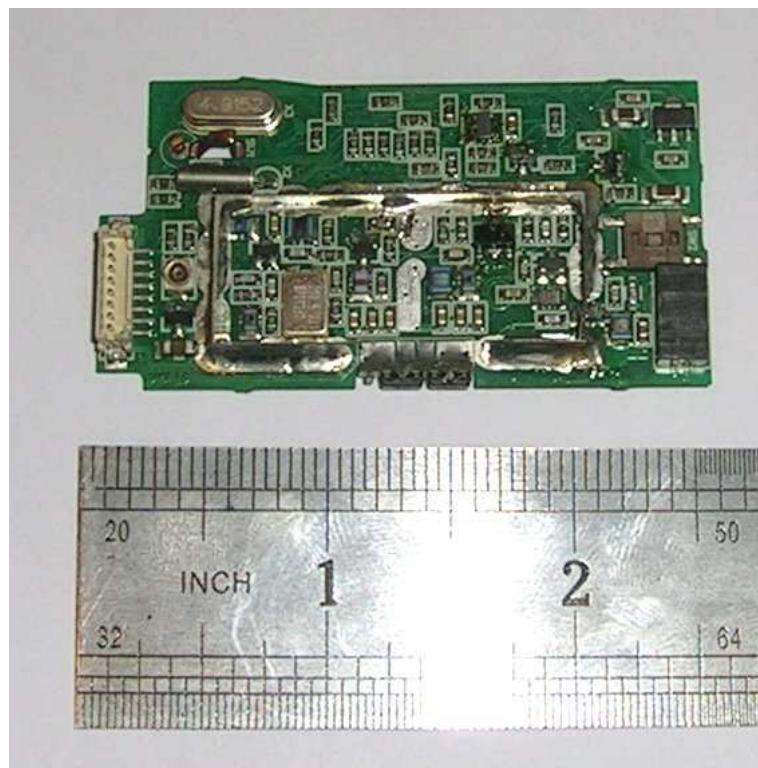


Fig C.2 – Sample #3 TX card

D Appendix: test equipment used

	Item	Serial
1	Advantest R3265 Spectrum Analyser	35060047
2	Marconi 2965 Radio Test Set	132702/040
3	Wiltron 6409 RF Analyser	K935021
4	Wiltron 6400-6NF50 Autotester	90138
5	RadioCAD RC015-2 Pre-amplifier	#0002
6	ETS Biconical Antenna #3109	#3261
7	Wier Micro-reg DC bench supply	14878

<ENDS>