TIMCO ENGINEERING, Inc.

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REPORT

Compliance to RF exposure requirements of OET 65

APPLICANT	NAVICO AUCKLAND LTD
ADDRESS	3-5 OMEGA STREET, BUILDING A ALBANY 0632 AUCKLAND NEW ZEALAND
TEL	011-64-9-925-4500
FCC ID	RAYBR24
MODEL NUMBER	AA010186
PRODUCT DESCRIPTION	BR-24 BROADBAND RADAR SCANNER
DATE SAMPLE RECEIVED	11/4/2008
DATE TESTED	11/5/2008
TESTED BY	Mario de Aranzeta
APPROVED BY	Mario de Aranzeta
TIMCO REPORT NO.	RX EXPOSURE REPORT
TEST RESULTS	☒ PASS ☐ FAIL

ACCREDITED

Testing Certificate 0955-01

Description of Test Article

DUT Description	BR-24 Broadband Radar Scanner
Model Number	AA010186
Operating Frequencies	9300 to 9400 MHz
DUT Power Source	☐ 120 Vac/50/60 Hz
	☐ 240 Vac 50/60 Hz
Power Output	0.026 Watts average
	☒ DC Power
	☐ Battery Operated Exclusively
Test Item	☐ Prototype
	☒ Pre-Production
	☐ Production
Type of Equipment	☐ Fixed
	☒ Mobile
	☐ Portable

General Remarks

Summary

The device under test does:

☒ fulfill the requirements as identified in this test report
☐ not fulfill the requirements as identified in this test report

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

I attest that the necessary measurements were made by me or under my supervision, at TIMCO ENGINEERING, INC. located at 849 N.W. State Road 45, Newberry, Florida 32669 USA.

All Timco instrumentation and accessories used to test products for compliance to the indicated standards are calibrated regularly in accordance with ISO 17025:2005 requirements.

Timco Engineering Inc.
849 NW State Road 45
Newberry, Fl 32669

Authorized Signatory Name and Title: Mario de Aranzeta, Compliance Engineer

Authorized Signature:

ACCREDITED

Testing Certificate #0955-1

Discussion

Characteristics of the BR24 FMCW Radar unit:

Peak Power Output	100mW
Average Power Output	26mW
Antenna Gain	22dBi
Total Tx time	1.3ms
Warm up time	0.3ms
Sweep time	1ms
Pulse repetition rate	5ms

Range	**Sweep width (MHz)**	**Used Spectrum (MHz)**	**Possible number of channels**
0	65	9320 - 9385	1
1	32.5	9320 - 9385	2
2	16	9320 - 9385	4
3	8	9320 - 9385	8
4	4	9320 - 9385	16
5	2	9320 - 9385	32
6	1	9320 - 9385	64
7	0.5	9320 - 9385	128

Calculations

Using the average power of 26 mW
Antenna gain of 22 dBi
The general population exposure limit is 1 mW/cm² for frequencies equal to and above 1500 MHz

$Po := 26$ mWatts

$dBd := 20$ antenna gain in dBd

$G1 := dBd + 2.15$

$G1 = 22.15$ dBi gain in dBi

$CL := 0$ dB coax loss

$G := G1 - CL$

$Gn := 10^{\frac{G}{10}}$ gain numeric

$Gn = 164.059$ dB

$R := \sqrt{\frac{(Po \cdot Gn)}{(4 \cdot \pi \cdot S)}}$

$R = 18.424$ distance in centimeters required for compliance

$f := 9300$ Frequency in MHz

$S := \frac{f}{9300}$ power density limit for uncontrolled exposure

$S = 1$ $\frac{mW}{cm^2}$

$inches := \frac{R}{2.54}$

$inches = 7.254$

Conclusions

The general population exposure limit is 1 mW/cm^2 for frequencies equal to and above 1500 MHz

We get 18.4 cm separation distance from the equation above.

The radome is 48.8 cm in diameter the antenna is located in the center of the radome so dividing the diameter in half gives 22.4 cm separation distance.

Based on the information provided Timco makes the following statement: The Human Exposure Level to RF Radiation of the Radar Transmitter BR24 outside the Radome is well below the general public safety emission level of 1 mW/cm^2 . This calculation has also included the possible case of mechanical failure of the motor or drive belt with the antenna pointing into a fixed direction.