F2 Labs
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CERTIFICATION TEST REPORT

Manufacturing Addresses:	**Protran Technology** **52 Paterson Avenue, Suite 4** **Newton, New Jersey 07680 USA** **Harsco Rail** **2401 Edmund Road** **West Columbia, South Carolina 29171 USA**
Applicant:	**Harsco Rail** **2401 Edmund Road** **West Columbia, South Carolina 29171 USA**
Product Name:	**Ranging Module**
Product Description:	**Module with a ranging radio to be used in distance monitoring and reporting systems.**
Modular Radio Model:	**Swarm Bee**
Radio Module FCC ID:	**2AEO5PT-000320**
Testing Commenced:	**July 20, 2015**
Testing Ended:	**July 22, 2015**
Test Results:	**In Compliance, with Modifications** The EUT complies with the EMC and MPE requirements when manufactured identically as the unit tested in this report, including any required modifications. Any changes to the design or build of this unit subsequent to this testing may deem it non-compliant.

Standards:

- **KDB447498**

Evaluation Conducted by: Ken Littell, EMC Tech. Mgr.

Report Reviewed by: Wendy Fuster, President

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1 ADMINISTRATIVE INFORMATION

1.1 Measurement Location:

F2 Labs in Middlefield, Ohio. Site description and attenuation data are on file with the FCC's Sampling and Measurement Branch at the FCC Laboratory in Columbia, MD**.**

1.2 Measurement Procedure:

All testing measurements were performed; calculations were made according to KDB 447498 and limits used were taken from FCC 1.1310 Table 1.

1.4 Document History

Document Number	Description	Issue Date	Approved By
F2LQ7230B-03E	First Issue	Oct. 14, 2015	W. Fuster

2 SUMMARY OF TEST RESULTS

Test Name	Standard(s)	Results
RF Exposure for Device >20cm from Human	KDB447498	Complies

Note: Product was operated from 120V, 60Hz AC.

Modifications Made to the Equipment
None

3 ENGINEERING STATEMENT

This report has been prepared on behalf of Harsco Rail to provide documentation for the testing described herein. This equipment has been tested and found to comply with KDB447498. The test results found in this test report relate only to the item(s) tested.

4 EUT INFORMATION AND DATA

4.1 Equipment Under Test:

Ranging Module
Modular Radio Model: Swarm Bee
Serial No.: 333447133737313333B0045000
Radio Module FCC ID: 2AEO5PT-000320

4.2 Trade Name:

Harsco Rail

4.3 Power Supply:

AC/DC Adapter – Lenovo 42T5276

4.4 Applicable Rules:

- KDB447498

4.5 Equipment Category:

Radio Transmitter-DTS

4.6 Antenna:

12dBi Whip, 15dBi Whip, 18dBi Whip

4.7 Accessories:

N/A

4.8 Test Item Condition:

The equipment to be tested was received in good condition.

5. RF EXPOSURE FOR DEVICE >20cm FROM HUMAN

5.1 Requirements:

Limit per:
FCC part 1.1310 Table 1

$1mW/cm^2$

Formula used for result:

$$\frac{E.I.R.P.}{4 \pi R^2}$$

Results:

E.I.R.P. = 3784mW

3784mW using the 15dBi Whip antenna, which is the highest.

$$\frac{3784mW}{4 \pi R^2} = \frac{3784mW}{5026.55} = .7528mW/cm2$$