

ELITE ELECTRONIC ENGINEERING INCORPORATED
1516 CENTRE CIRCLE
DOWNERS GROVE, ILLINOIS 60515-1082

ELITE PROJECT: 29865 DATES TESTED: May 30 through June 5, 2001

TEST PERSONNEL: Daniel E. Crowder

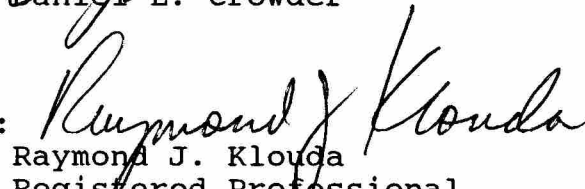
TEST SPECIFICATION: FCC "Code of Federal Regulations" Title 47
Part 2 and FCC Document DA 97-1451, Appendix B

ENGINEERING TEST REPORT NO. 23782
ELECTROMAGNETIC INTERFERENCE TESTS ON
AN INTELLIGENT TRANSCEIVER UNIT TRANSMITTER
MODEL NO. DHFM-1

FOR: Terion, Inc.
Melbourne, Florida

PURCHASE ORDER NO: 212511

Report By: 
Daniel E. Crowder

Approved By: 
Raymond J. Klouda
Registered Professional
Engineer of Illinois - 44894

ENGINEERING TEST REPORT NO. 23782

ADMINISTRATIVE DATA AND SUMMARY OF TESTS

DESCRIPTION OF TEST ITEM: Intelligent Transceiver Unit Transmitter

MODEL NO: DHFM-1

SERIAL NO: DHF-012675

MANUFACTURER: Terion, Inc.

APPLICABLE SPECIFICATIONS: FCC "Code of Federal Regulations"
Title 47, Part 2 and FCC Document
DA 97-1451, Appendix B

QUANTITY OF ITEMS TESTED: One (1)

TEST PERFORMED BY: ELITE ELECTRONIC ENGINEERING INCORPORATED
1516 Centre Circle
Downers Grove, Illinois 60515

DATE RECEIVED: May 30, 2001

DATES TESTED: May 30 through June 5, 2001

PERSONNEL (OPERATORS, OBSERVERS, AND CO-ORDINATORS):

CUSTOMER: No Terion, Inc. personnel were present for the testing.

ELITE ELECTRONIC: Daniel E. Crowder

ELITE JOB NO.: 29865

ABSTRACT: The Intelligent Transceiver Unit (ITU) transmitter model DHFM-1, does meet the RF power output, the occupied bandwidth, the antenna conducted emissions and the frequency stability requirements of the FCC "Code of Federal Regulations", Title 47, Part 2 and FCC Document DA 97-1451, Appendix B. See test results and data pages for more details.

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TOTAL NUMBER OF PAGES IN THIS DOCUMENT,
(INCLUDING DATA SHEETS): 16

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ENGINEERING TEST REPORT NO. 23782
ELECTROMAGNETIC INTERFERENCE TESTS ON
AN INTELLIGENT TRANSCEIVER UNIT TRANSMITTER
MODEL NO. DHFM-1

1.0 INTRODUCTION:

1.1 DESCRIPTION OF TEST ITEM: This report presents the results of a series of radio interference measurements which were performed on an Intelligent Transceiver Unit Transmitter, Model No. DHFM-1, serial number DHF-012675, (hereinafter referred to as the test item). The tests were performed for Terion, Inc. of Melbourne, Florida.

The test item is a transceiver that has been designed for use by the trucking industry. The HF (High Frequency) Transmitter is designed to transmit on discrete frequencies from 3MHz to 25MHz. The test item interprets an incoming message that is contained in the RDS subcarrier of a local FM radio station. Once it receives and decodes the message, it transmits the message to Terion, Inc. via its HF Transmitter.

The test item has an external TNC type antenna port. In addition to the TNC port, the test item had three additional ports: a DC power input port, an I/O (input/output) computer/data terminal data port and a GPS (Global Positioning Satellite) port for the GPS antenna.

1.2 PURPOSE: The test series was performed to determine if the test item meets the type acceptance test requirements of the FCC "Code of Federal Regulations" Title 47, Part 2 and FCC Document DA 97-1451, Appendix B.

1.3 DEVIATIONS, ADDITIONS AND EXCLUSIONS: There were no deviations, additions to, or exclusions from the test specification

during this test series.

1.4 APPLICABLE DOCUMENTS: The following documents of the exact issue designated form part of this document to the extent specified herein:

- Federal Communications Commission "Code of Federal Regulations", Title 47, Part 2, dated 1 October 1997
- Federal Communications Commission "Equipment Type Acceptance Requirements", Document DA 97-1451, Appendix B

1.5 SUBCONTRACTOR IDENTIFICATION: This series of tests was performed by Elite Electronic Engineering Incorporated, of Downers Grove, Illinois. The laboratory is accredited by the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP). NVLAP Lab Code: 100278-0.

1.6 LABORATORY CONDITIONS: The temperature at the time of the test was 23°C and the relative humidity was 52%.

2.0 TEST ITEM SETUP AND OPERATION:

For all tests, the test item was placed on a 0.8 meter high non-conductive table.

2.1 POWER INPUT: The test item was connected to a DC power supply via its 15ft. long unshielded power leads. The power supply provided the test item with 13.8VDC power.

2.2 GROUNDING: The test item was not grounded at any point during the tests.

2.3 PERIPHERAL EQUIPMENT: The following peripheral equipment was submitted with the test item:

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COMPUTER: Hewlett Packard model N3410 Laptop Computer

DATA TERMINAL: Terion model JDT-200, serial number JDT-012074

ANTENNA MATCHING NETWORK: Terion antenna match/attenuator (AM/A)

2.4 INTERCONNECT CABLES: The following interconnect cables were submitted with the test item:

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ANTENNA CONNECTION CABLE:

A 7 foot long TNC to SO-239 type cable, used to connect the test item to the Shakespeare HF/FM Dual Band Magnetic Mount Antenna.

GPS CABLE:

A 15 foot long SMA type cable. One end was internally wired to the GPS antenna module. Used to connect the GPS antenna to the test item.

INPUT/OUTPUT DATA CABLE:

A 15 foot long DIN type cable. Used to connect the Laptop PC to the test item for programming and initializing the test item. Also used to provide data to the data terminal, which was left connected during the tests.

2.5 OPERATIONAL MODE: The test item was setup to transmit on an HF frequency of 15.0MHz. The test item was internally modulated at the maximum rate.

3.0 TEST EQUIPMENT:

3.1 TEST EQUIPMENT LIST: A list of the test equipment used can be found on Table I. All equipment was calibrated per the instruction manuals supplied by the manufacturer.

3.2 CALIBRATION TRACEABILITY: The test equipment is maintained and calibrated on a regular basis. All calibrations are traceable to the National Institute of Standards and Technology (NIST).

4.0 REQUIREMENTS, PROCEDURES AND RESULTS:

4.1 RF POWER OUTPUT:

4.1.1 REQUIREMENTS: In accordance to FCC Document DA 97-1451, Appendix B, the maximum output power that will be authorized for