

October 17, 2000

Federal Communications Commission  
Equipment Approval Services  
PO Box 358315  
Pittsburgh, PA 15251-5315

Dear Sir/Madam:

Enclosed you will find an application for Certification of a 125KHz Portable RF ID Read/Write Terminal, Model NOVAS-110, Serial No. 450147, FCC ID: L7BNOVAS-110. This application is being filed by Retlif Testing Laboratories at the request, and with the approval of Global Data, Inc. The applicable Certification Filing Fee and 731 Form have been submitted.

I trust that you will find the enclosed application to be complete; however, should you have any questions or require any additional information, please feel free to contact us.

Very truly yours,

RETLIF TESTING LABORATORIES

Scott Wentworth  
Manager

Enc. (as stated)

APPLICANT  Global Data, Inc. Granite Communications 13 Columbia Drive, Suite 6 Amherst, NH 03031	MANUFACTURER  SAME
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TEST SPECIFICATION: FCC Rules and Regulations Part 15, Subpart C, Para. 15.207, 15.209

TEST PROCEDURE: ANSI C63.4:1992

#### TEST SAMPLE DESCRIPTION

BRANDNAME: Global Data, Inc. MODEL: NOVAS-110

TRADE NAME WITH ID BOARD: NOVAS-RFID

EQUIPMENT UNDER TEST: ID Board and Host DEV

POWER REQUIREMENTS: 12VDC

POWER SOURCE: Internal Rechargeable High Capacity NIMH Battery Pack - User Replaceable

ID BOARD VOLTAGE: 5 Volts from NOVAS

FREQUENCY OF OPERATION: 125KHz

EMISSIONS DESIGNATOR: W2D

FCC ID: L7BNOVAS-110

APPLICABLE RULE SECTION: Part 15, Subpart C, Section 15.201 General Requirements and 15.207 and 15.209

#### TESTS PERFORMED

Radiated Emissions, 125KHz to 1GHz

Conducted Emissions 450KHz to 30MHz

Duty Cycle Determination 100% Duty Cycle,

non-pulsed operation no pulse desensitization factor

#### TEST SAMPLE OPERATION

The EUT is used in identification, and any type of application requiring portable remote gathering or delivering of information. The ID Systems Circuit Description exhibit for the OEM-110 Reader Writer Module lists 134.2KHz as an alternative carrier frequency. The NOVAS-110 terminal will not use this

alternative frequency. It will only transmit at 125KHz.

### TEST SAMPLE / TEST PROGRAM

#### 15.203 ANTENNA REQUIREMENT

The device uses a permanently attached loop antenna. The antenna is totally enclosed inside the case. No access to internal components by user.

#### 15.205 RESTRICTED BANDS OF OPERATION

No emissions from the EUT were observed in any of the restricted bands.

#### 15.207 CONDUCTED EMISSIONS

Limit of 250 microvolts

No emissions were observed in the excess of the limit.

#### 15.209 RADIATED EMISSIONS

Spurious and Harmonic Ranges

120KHz to 1.25MHZ Intentional Radiator

120KHz to 30.0MHz

30MHz to 1000MHz Digital Device

No emissions were observed in excess to the limit with the EUT in configuration which during preliminary evaluation produced the worst case emission levels.

The EUT was evaluated:

1. Power from internal battery pack.
2. Internal battery pack charging with AC adaptor connected.
3. Orientation to each of the three axis during both power configurations.
4. The final test configuration was with the EUT on the test stand with the screen facing up and the flat end of the device facing the test antenna.

## REPORT OF MEASUREMENTS

### CALCULATIONS NEEDED DURING TEST PROGRAM:

1. Field Strength Limit:  
2400/f (KHz) for .009 - .490MHz
2. Extrapolation of 3 meter reading to 300 meter  
15.31 (F2) factor of 40dB/ Decade for frequencies below 30MHz
3. Conversion of dBuV/ m to uV/ m and uV/ m to dBuV/ m  
 $20 \log uV = dBuV$                        $uV = dBuV/ 20 \times 1/\log$
4. Combining Readings and Factors  
Basic math with special attention to designations

### SAMPLE CALCULATION:

Finding the limit for radiated emissions at the frequency of 125KHz per 15.209(a)

Limit @ 300m =  $2400/f\text{-KHz} = 19.2$  microvolts/meter

$$= 20 \log 19.2 = 25.67\text{dBuV/m}$$

Extrapolate: 3meter reading to 300 meter limit

3 - 30 one decade = factor 40dB

30 - 300 one decade = factor 40dB

Total = 80db factor

3m reading + distance & site factors = corrected reading @ 300m

### SPECTRUM ANALYZER

Due to the nature of the emissions being measured, care was taken to ensure that the resolution bandwidth of the spectrum analyzer was adequate to provide accurate measurements.

### STATEMENT OF COMPLIANCE

The 125KHz Portable RF ID Read/Write Terminal was tested at Retlif Testing Laboratories, NH. The test results shown on the enclosed data, and the body of information in this application indicate the full

compliance of the EUT to the specified requirements.

## EQUIPMENT LIST

### Conducted Emissions

EN	Type	Manufacturer	Description.	Model No.	Cal Date	Due Date
3107	Spectrum Analyzer	Advantest	10 KHz - 3 GHz	4131B	2/8/00	2/8/01
3233	Graphics Plotter	Hewlett Packard	N/A	7470A	4/11/00	4/11/01
3497	Transient Limiter	Hewlett Packard	9 KHz - 200 MHz	1947A	10/8/99	10/8/00
4027	LISN	Solar Electronics	10 KHz - 30 MHz	9252-50-R-24BNC	6/19/00	6/19/01
4028	Isolation Transformer	Acme	N/A	120x240	1/25/00	1/25/01

### Spurious Emissions

EN	Type	Manufacturer	Description.	Model No.	Cal Date	Due Date
3118	Broadband Pre-Amplifier	Electro-Metrics	10 KHz - 1 GHz	BPA-1000	07/16/1999	07/16/2000
3207	Loop Antenna, Active	EMCO	10 KHz - 30 MHz	6502	03/21/2000	03/21/2001
4202	Biconilog	EMCO	26 MHz - 2 GHz	3142	06/19/2000	07/19/2000
4895	Spectrum Analyzer	Hewlett Packard	9kHz - 22GHz	8593EM	02/17/2000	02/17/2001