TEST RESULT SUMMARY

FCC PART 15 SUBPART C
Section 15.209
FCC PART 15 SUBPART C
Section 15.207 Conducted Emission Requirements
Industry Canada RSS-210: Issue 5: 2001
Section 6.2.1

MANUFACTURER'S NAME	Vantro Systems, LLC
NAME OF EQUIPMENT	Portable, Handheld, Battery Powered RFID Reader
MODEL NUMBER	**GR-250**
MANUFACTURER'S ADDRESS	11401 Rupp Drive Burnsville, MN 55337
TEST REPORT NUMBER	WC501235
TEST DATE	18 March 2005

According to testing performed at TÜV Product Service Inc, the above-mentioned unit is in compliance with the electromagnetic compatibility requirements defined in FCC Part 15 Subpart C Sections 15.207 and 15.209 and also RSS-210, section 6.2.1.

It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical characteristics. Any modifications necessary for compliance made during testing on the above mentioned date(s) must be implemented in all production units for compliance to be maintained.

TÜV Product Service Inc, as an independent testing laboratory, declares that the equipment tested as specified above conforms to the requirements of FCC Part 15 Subpart C Sections 15.207 and 15.209 and also RSS-210, section 6.2.1.

Date: 23 March 2005

Location: Taylors Falls MN USA

J. C. Sausen
Tested By

T. K. Swanson
Reviewed By

Not Transferable

EMC EMISSION - T E S T R E P O R T

Test Report File No.	:	**WC501235**	Date of issue:	23 March 2005

Model / Serial No.	:	**GR-250 / 42**
Product Type	:	Portable, Handheld, Battery Powered RFID Reader
Applicant	:	Vantro Systems, LLC
Manufacturer	:	Vantro Systems, LLC
License holder	:	Vantro Systems, LLC
Address	:	11401 Rupp Drive
	:	Burnsville, MN 55337
Test Result	:	■ **Positive** ☐ **Negative**
Test Project Number Reference(s)	:	**WC501235**
Total pages		32

TÜV Product Service Inc is a subcontractor to TÜV Product Service, GmbH according to the principles outlined in ISO/IEC Guide 25 and EN 45001.

TÜV Product Service Inc reports apply only to the specific samples tested under stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. TÜV Product Service Inc shall have no liability for any deductions, inferences or generalizations drawn by the client or others from TÜV Product Service Inc issued reports.

This report is the confidential property of the client. As a mutual protection to our clients, the public and ourselves, extracts from the test report shall not be reproduced except in full without our written approval. This report shall not be used by the client to claim product endorsement by NVLAP or any agency of the US government.

TÜV Product Service Inc and its professional staff hold government and professional organization certifications and are members of AAMI, ACIL, AEA, ANSI, IEEE, NVLAP, and VCCI

TÜV PRODUCT SERVICE INC 19333 Wild Mountain Road Taylors Falls MN 55084-1758 Tel: 651 638 0297 Fax: 651 638 0298 Rev.No 1.0

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EMISSIONS TEST REGULATIONS :

The emissions tests were performed according to following regulations:

☐ - EN 50081-1 / 1991

☐ - EN 55011 / 1998 w/Amendment A1:1999 ☐ - Group 1 ☐ - Group 2 ☐ - Class A ☐ - Class B

☐ - EN 55013 / 1990

☐ - EN 55014 / 1987 ☐ - Household appliances and similar ☐ - Portable tools ☐ - Semiconductor devices

☐ - EN 55014 / A2: 1990

☐ - EN 55014 / 1993 ☐ - Household appliances and similar ☐ - Portable tools ☐ - Semiconductor devices

☐ - EN 55015 / 1987

☐ - EN 55015 / A1:1990

☐ - EN 55015 / 1993

☐ - EN 55022 / 1987 ☐ - Class A ☐ - Class B

■ - FCC Part 15 Subpart C Section 15.209

■ - FCC Part 15 Subpart C Section 15.207 Conducted Emission Requirements

■ - RSS-210, Issue 5, 2001 – Section 6.2.1

Emission Test Results:

Field Strength [FCC 15.209 (a)], [RSS 210 6.2.1] 9 kHz – 30 MHz

The requirements are ■ - MET ☐ - NOT MET

Minimum limit margin for fundamental 8 dB at 128.0 kHz

Minimum limit margin for spurious/harmonics >10 dB at _____ MHz

Remarks: The fundamental was measured to be 110 dBuV/m in Average mode at 3 meters, 71 dBuV/m (3548 microvolts/meter) at 10 meters, 53 dBuV/m (446.6 microvolts/meter) at 30 meters. This extrapolates to a level of 17 dBuV/m (7.07 microvolts/meter) at 300 meters using 18 dB/decade as indicated by testing. The limit is 25.46 dBuV/m (18.75 microvolts/meter) at 300 meters. No spurious emissions or other harmonics were detected from 9 kHz to 30 MHz.

99% Bandwidth [RSS-210 5.9.1]

The requirements are ■ - MET ☐ - NOT MET

Remarks: Bandwidth is shown to be 4.04 kHz.

Radiated Emissions [FCC 15.209 (f)], [RSS 210 6.2.1] 30 MHz – 1000 MHz

The requirements are ■ - MET ☐ - NOT MET

Minimum margin of compliance 7 dB at 88.4 MHz

Maximum margin of non-compliance _____ dB at _____ MHz

Remarks: Class B limit.

Radiated Emissions [FCC 15.209 (f)], [RSS 210 6.2.1] 1 GHz – 18 GHz

The requirements are ☐ - MET ☐ - NOT MET ■ - N/A

Minimum margin of compliance _____ dB at _____ MHz

Maximum margin of non-compliance _____ dB at _____ MHz

Remarks:

AC Line Conducted emissions 150 kHz - 30 MHz [FCC 15.207], [RSS-210 6.6]

The requirements are ■ - MET ☐ - NOT MET ☐ - N/A

Minimum margin of compliance 25 dB at 385.0 kHz

Maximum margin of non-compliance _____ dB at _____ MHz

Remarks: Test on battery charger.

MEASUREMENT PROTOCOL

GENERAL INFORMATION

Environmental conditions in the lab: TUV America Small Test Site

	Actual
Temperature	: 12 °C
Relative Humidity	: 24 %
Atmospheric pressure	: 97.0 kPa
Power supply system	: Battery

Test Methodology

Conducted and radiated emission testing is performed according to the procedures in International Special Committee on Radio Interference (CISPR) Publication 22 (1993), European Standard EN 55022 and Australian Standard AS 3548 (which are based on CISPR 22).

The Japanese standard, "Voluntary Control Council for Interference (VCCI) by Data Processing Equipment and Electronic Office Machines, Technical Requirements" is technically equivalent to CISPR 22 (1993). For official compliance, a conformance report must be sent to and accepted by the VCCI.

In compliance with FCC Docket 92-152, "Harmonization of Rules for Digital Devices Incorporate International Standards", testing for FCC compliance may be done following the ANSI C63.4-2001 procedures and using the CISPR 22 Limits.

Measurement Uncertainty

The test system for conducted emissions is defined as the LISN, tuned receiver or spectrum analyzer, and coaxial cable. The test system for radiated emissions is defined as the antenna, the pre-amplifier, the spectrum analyzer and the coaxial cable. These test systems have a measurement uncertainty of ±4.8 dB. The equipment comprising the test systems are calibrated on an annual basis.

Justification

The Equipment Under Test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral into it's characteristic impedance or left unterminated. When appropriate, the cables are manually manipulated with respect to each other to obtain maximum emissions from the unit.

CONDUCTED EMISSIONS

The final level, expressed in dBμV, is arrived at by taking the reading directly from the EMI receiver. This level is compared directly to the CISPR limit.

To convert between dBμV and μV, the following conversions apply:

dBμV = 20(log μV)

μV = Inverse log(dBμV/20)

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RADIATED EMISSIONS

The final level, expressed in dBμV/m, is arrived at by taking the reading from the spectrum analyzer (Level dBμV), adding the antenna correction factor and cable loss factor (Factor dB) to it, then subtracting the preamp gain. This result then has the FCC limit subtracted from it to provide the Delta which gives the tabular data as shown in the data sheets in Attachment A.

Example:

FREQ (MHz)	LEVEL (dBuV)		CABLE/ANT/PREAMP (dB)	(dB/m)	(dB)		FINAL (dBuV/m)	POL	HGT (m)	AZ (deg)	DELTA1 FCC A
60.80	42.5Qp	+	1.2	+ 10.9	- 25.5	=	29.1	V	1.0	0.0	-10.9

DETAILS OF TEST PROCEDURES

General Standard Information

The test methods used comply with ANSI C63.4-2001 - "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz."

Conducted Emissions

Conducted emissions on the 50 Hz and/or 60 Hz power interface of the EUT are measured in the frequency range of 150 kHz to 30 MHz. The measurements are performed using a receiver, which has CISPR characteristic bandwidth and quasi-peak detection, and a Line Impedance Stabilization Network (LISN), with 50 Ω/50 μH (CISPR 16) characteristics. Table top equipment is placed on a non-conducting table 80 centimeters above the floor and is positioned 40 centimeters from the vertical ground plane (wall) of the screen room. In some cases, a pre-scan using a spectrum analyzer is initially performed on the units comprising the system under test to locate the highest emissions. If the minimum passing margin appears to be less than 20 dB with a peak mode measurement, the emissions are re-measured using a tuned receiver or spectrum analyzer with quasi-peak and average detection and recorded on the data sheets.

Radiated Emissions

Radiated emissions from the EUT are measured in the frequency range of 30 to 1000 MHz using a spectrum analyzer and appropriate broadband linearly polarized antennas. Measurements between 30 MHz and 1000 MHz are made with 120 kHz/6 dB bandwidth and quasi-peak detection and measurements above 1000 MHz are made with a 1 MHz/6 dB bandwidth and peak detection. Table top equipment is placed on a 1.0 X 1.5 meter non-conducting table 80 centimeters above the ground plane. Floor standing equipment is placed directly on the turntable/ground plane. Interface cables that are closer than 40 centimeters to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimeters from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna is positioned 3, 10 or 30 meters horizontally from the EUT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarizations and the EUT are rotated 360 degrees. The transmitter is rotated through 3 orthogonal axes in order to determine the maximum emission levels.

DEVIATIONS FROM STANDARD:

None

GENERAL REMARKS:

AC line conducted emissions testing was performed on the battery charger.

SUMMARY:

The requirements according to the technical regulations are

■ - met

☐ - **not** met.

The device under test does

■ - fulfill the general approval requirements mentioned on page 3.

☐ - **not** fulfill the general approval requirements mentioned on page 3.

Testing Start Date: 18 March 2005

Testing End Date: 18 March 2005

- TÜV PRODUCT SERVICE INC -

Thomas K. Swanson

Reviewed By:
T. K. Swanson

J C Sausen

Tested By:
J. C. Sausen

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Constructional Data Form(s)

and/or

Product Information Form(s)

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Form

EMC Test Plan and Constructional Data Form

PRODUCT SERVICE

PLEASE COMPLETE THIS DOCUMENT IN FULL, ENTERING N/A IF THE FIELD IS NOT APPLICABLE.

Applicant -- ***NOTE: This information will be input into your test report as shown below.***
Press the F1 key at any time to get HELP for the current field selected.

Company:	Vantro Systems, LLC		
Address:	11401 Rupp Drive		
	Burnsville, MN 55337		
	USA		
Contact:	W. Wayne Culberth	Position:	CEO
Phone:	952-882-7617	Fax:	952-890-2054
E-mail Address:	VantroSys@AOL.com		

General Equipment Description -- ***NOTE: This information will be input into your test report as shown below.***

EUT Description	Portable, Handheld, Battery Powered RFID Reader
EUT Name	RFID Reader
Model No.:	GR-250 Serial No.: 42
Product Options:	N/A
Configurations to be tested:	Basic

Test Objective

☐	EMC Directive 89/336/EEC (EMC)	☒	FCC:	Class	☐ A	☒ B	Part	15
	Std:	☐	VCCI:	Class	☐ A	☐ B		
☐	Machinery Directive 89/392/EEC (EMC	☐	BSMI:	Class	☐ A	☐ B		
	Std:	☒	Canada:	Class	☐ A	☒ B		
☐	Medical Device Directive 93/42/EEC (EMC)	☐	Australia:	Class	☐ A	☐ B		
	Std:	☐	Other:					
☐	Vehicle Directive 72/245/EEC (EMC) Std:							
☐	FDA Reviewers Guidance for Premarket Notification Submissions (EMC)							

TÜV Product Service Certification Requested

☐	Attestation of Conformity (AoC)	☐	EMC Certification (used with Octagon Mark)	
☒	Certificate of Conformity (CoC)	☐	Compliance Document	
	Protection Class (N/A for vehicles)	☐	Class I	☐ Class II ☐ Class III

Form

EMC Test Plan and Constructional Data Form

(Press **F1** when field is selected to show additional information on Protection Class.)

Attendance

Test will be: ☒ Attended by the customer ☐ Unattended by the customer

Failure - *Complete this section if testing will not be attended by the customer.*

If a failure occurs, TUV Product Service should:

☐ Call contact listed above, if not available then stop testing. (After hrs phone): _____

☐ Continue testing to complete test series.

☐ Continue testing to define corrective action.

☐ Stop testing.

EUT Specifications and Requirements

Length: 11 3/4" Width: 7 1/8" Height: 4 1/8" Weight: 2.85 lbs

Power Requirements

Regulations require testing to be performed at typical power ratings in the countries of intended use. (i.e., European power is typically 230 VAC 50 Hz or 400 VAC 50 Hz, single and three phase, respectively)

Voltage: Battery Powered (If battery powered, make sure battery life is sufficient to complete testing.)

# of Phases: N/A

Current (Amps/phase(max)): N/A Current (Amps/phase(nominal)): N/A

Other N/A

Other Special Requirements

Typical Installation and/or Operating Environment

(ie. Hospital, Small Business, Industrial/Factory, etc.)

Vet Clinic, Animal Shelter, Farm/Ranch, Small Business, Industrial/Factory, Zoo, Acquarium

EUT Power Cable

☐ Permanent OR ☐ Removable Length (in meters): _____

☐ Shielded OR ☐ Unshielded

☒ Not Applicable

Form

EMC Test Plan and Constructional Data Form

EUT Interface Ports and Cables												
Interface				Shielding								
Type	Analog	Digital	Qty	Yes	No	Type	Termination	Connector Type	Port Termination	Length (in meters)	Removable	Permanent
EXAMPLE: *RS232*	☐	☒	*2*	☒	☐	*Foil over braid*	*Coaxial*	*Metallized 9-pin D-Sub*	*Characteristic Impedance*	*6*	☒	☐
Battery Charger	☒	☐	1	☐	☒	N/A	N/A	Plastic Circular 8-Pin	N/A	2	☒	☐
Communication Cable	☐	☒	1	☐	☒	N/A	N/A	Plastic Circular 8-Pin (Same Port as Battery Charger)	N/A	2	☒	☐
	☐	☐		☐	☐						☐	☐
	☐	☐		☐	☐						☐	☐
	☐	☐		☐	☐						☐	☐
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Form

EMC Test Plan and Constructional Data Form

TÜV PRODUCT SERVICE

EUT Software.

Revision Level: GR250V10

Description: BASIC FUNCTIONAL SOFTWARE

Equipment Under Test (EUT) Operating Modes to be Tested -- list the operating modes to be used during test. It is recommended the equipment be tested while operating in a typical operation mode. FCC testing of personal computers and/or peripherals requires that a simple program generate a complete line of upper case H's. Provide a general description of all software, firmware, and PLD algorithms used in the equipment. List all code modules as described above, with the revision level used during testing. Consult with your TÜV Product Service Representative if additional assistance is required.

1. Basic Reader operation searching for a Transponder

2.

3.

Equipment Under Test (EUT) System Components -- List and describe all components which are part of the EUT. For FCC testing a minimum configuration is required. (ie. Mouse, Printer, Monitor, External Disk Drive, Motherboard, etc.)

Description	Model #	Serial #	FCC ID #
N/A			

Form

EMC Test Plan and Constructional Data Form

TÜV PRODUCT SERVICE

Support Equipment -- List and describe all support equipment which is not part of the EUT. (i.e. peripherals, simulators, etc)

Description	*Model #*	*Serial #*	*FCC ID #*
Battery Charger-Class 2 Transformer	FW 1199	N/A	NONE

Oscillator Frequencies

Frequency	*Derived Frequency*	*Component # / Location*	*Description of Use*
11.0592 MHz	N/A	Y-1 Processor Board	Processor Clock

Power Supply

Manufacturer	*Model #*	*Serial #*	*Type*
N/A	N/A	N/A	☐ Switched-mode: (Frequency) _____ ☐ Linear ☐ Other: _____
			☐ Switched-mode: (Frequency) _____ ☐ Linear ☐ Other: _____

Power Line Filters

Manufacturer	*Model #*	*Location in EUT*
N/A	N/A	N/A

Form

EMC Test Plan and Constructional Data Form

Critical EMI Components (Capacitors, ferrites, etc.)				
Description	***Manufacturer***	***Part # or Value***	***Qty***	***Component # / Location***
Capacitor	SB Electronics	702P862115-113	1	C306/Transmitter Board
Capacitor	SB Electronics	770P22431-177	1	C305/Transmitter Board
Loop Antenna	Precision Inc	019-3829-00	1	L403/Case

EMC Critical Detail -- Describe other EMC Design details used to reduce high frequency noise.

(PLEASE INSERT "**ELECTRONIC SIGNATURE**" BELOW IF POSSIBLE)

Authorization Signatures

W. Wayne Culberth	3-18-05
Customer authorization to perform tests according to this test plan.	Date
W. Wayne Culberth	3-18-05
Test Plan/CDF Prepared By (please print)	Date
Reviewed by TÜV Product Service Associate	Date

Test Data

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General Field Strength

Specifications:
FCC Specification: Paragraph: 15.209(a)
IC Specification: RSS-210, 6.2.1

The *GENERAL FIELD STRENGTH* measurements were performed at the following test location:

☐ **- Test not applicable**

☐ - Wild River Lab Large Test Site (Open Area Test Site)
■ - Wild River Lab Small Test Site (Open Area Test Site)
☐ - Oakwood Lab (Open Area Test Site)
☐ - Wild River Lab Screen Room

Test equipment used :

	TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
■ -	2534	ESHS-20	Rhode & Schwarz	EMI Receiver	837055/003	14-Feb-06
■ -	2517	HFH2-Z2	Polorad	Loop Antenna	879285/036	27-Apr-05

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST) and is calibrated annually.

FCC Part 15.209 Radiated Emissions								
Test Report # WC501235					**Test Date: 18 March 2005**			
Company: Vantro Systems								
EUT: GR-250								
	dBuV/m	dBuV/m	dBuV/m	dBuV/m	dBuV/m	dBuV/m	dBuV/m	margin
MHz	1 m	3 m	10 m	30 m	30 m Limit	300 m	300 m Limit	dB
0.009							48.5193746	48.51937
0.128	**130**	**110**	**71**	**53**	**N/A**	**17**	**25.4600254**	**8.460025**
0.49					53.8003			
0.49					33.8003			
1.705					22.96974			
1.705					29.54243			
30					29.54243			
Levels at 1, 3, 10, and 30 meters are measured - 300 meter level is extrapolated.								
30 meter noise floor level is 17 dBuV/m								
Tested By: J. C. Sausen								

99% Bandwidth

Specifications:
FCC Specification: N/A
IC Specification: RSS-210, 5.9.1

The *99% Bandwidth* measurements were performed at the following test location:

☐ - Test not applicable

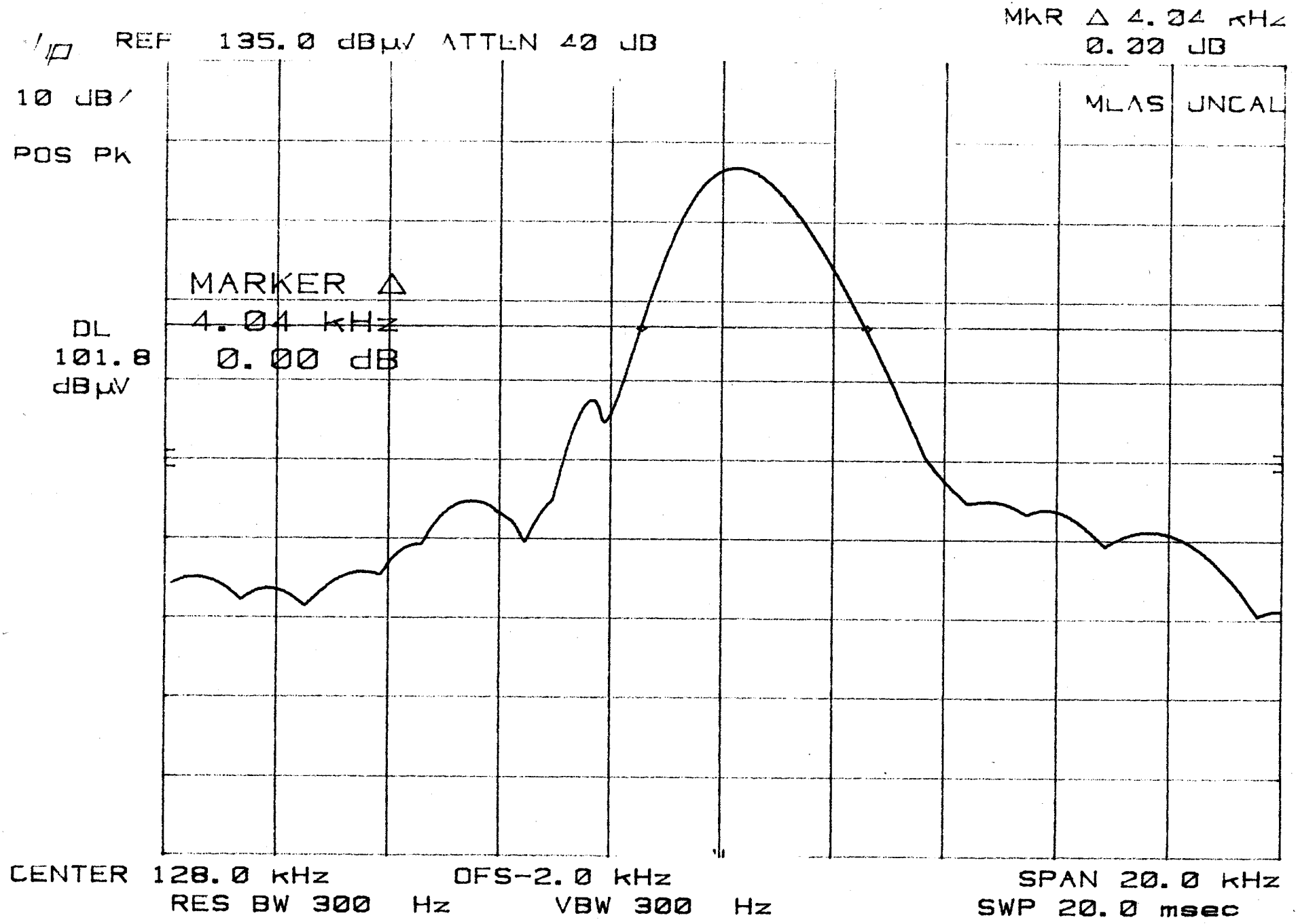
☐ - Wild River Lab Large Test Site (Open Area Test Site)
■ - Wild River Lab Small Test Site (Open Area Test Site)
☐ - Oakwood Lab (Open Area Test Site)
☐ - Wild River Lab Screen Room

Test equipment used :

	TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
■	2680	85650A	Hewlett-Packard	Quasi-Peak Adapter (Unit B)	2043A00343	10-May-05
■-	3809	8566B	Hewlett-Packard	Spectrum Analyzer	3026A19165	09-Sept-05
■ -	3810	85662A	Hewlett-Packard	Analyzer Display	3014A06698	09-Sept-05
■ -	2517	HFH2-Z2	Polorad	Loop Antenna	879285/036	27-Apr-05

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST) and is calibrated annually.


MkR Δ 4.04 kHz
0.00 dB
REF 135.0 dBµV ATTEN 40 dB
10 dB/
MEAS UNCAL
POS Pk
MARKER Δ
4.04 kHz
0.00 dB
DL
101.8
dBµV
CENTER 128.0 kHz
OFS-2.0 kHz
SPAN 20.0 kHz
RES BW 300 Hz
VBW 300 Hz
SWP 20.0 msec

Radiated Emissions 30 MHz – 1000 MHz

Specifications:
FCC Specification: Paragraph: 15.209 (f)
IC Specification: RSS-210, 6.2.1

The measurements were performed at the following test location:

☐ **- Test not applicable**

☐ - Wild River Lab Large Test Site (Open Area Test Site)
■ - Wild River Lab Small Test Site (Open Area Test Site)
☐ - Oakwood Lab (Open Area Test Site)
☐ - Wild River Lab Screen Room

Test equipment used :

	TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
■ -	3203	EM-6917B	Electro-Metrics	Biconicalog Periodic	106	30-Mar-05
■	2680	85650A	Hewlett-Packard	Quasi-Peak Adapter (Unit B)	2043A00343	10-May-05
■-	3809	8566B	Hewlett-Packard	Spectrum Analyzer	3026A19165	09-Sept-05
■ -	3810	85662A	Hewlett-Packard	Analyzer Display	3014A06698	09-Sept-05
■ -	2668	8447D	Electro-Mechanics (EMCO)	Preamplifier	1937A02209	Code B 15-Mar-06

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST) and is calibrated annually.

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RADIATED EMISSIONS

Test Report #:	WC501235 Run 2	Test Area:	STS		
EUT Model #:	GR-250	Date:	3/18/2005		
EUT Serial #:		EUT Power:	60 Hz & battery	Temperature:	12.0 °C
Test Method:	FCC B			Air Pressure:	97.0 kPa
Customer:	Vantro			Rel. Humidity:	24.0 %
EUT Description:	Handheld RF ID reader				
Notes:	Operating on battery power.				
Data File Name:	1235.dat			Page:	1 of 6

List of measurements for run #: 2

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-B <1GHz 3m	DELTA2
EUT OFF.						
30.246 MHz	30.6 Qp	1.0 / 20.98 / 28.3 / 0.0	24.28	V / 1.00 / 0	-15.72	n/a
EUT ON:						
30.246 MHz	32.05 Qp	1.0 / 20.98 / 28.3 / 0.0	25.73	V / 1.00 / 0	-14.27	n/a
33.148 MHz	31.95 Qp	1.02 / 19.5 / 28.23 / 0.0	24.24	V / 1.00 / 0	-15.76	n/a
110.628 MHz	28.85 Qp	1.54 / 9.6 / 28.23 / 0.0	11.76	V / 1.00 / 0	-31.74	n/a
121 MHz maxed:						
121.651 MHz	35.87 Qp	1.6 / 9.17 / 28.3 / 0.0	18.34	V / 1.00 / 78	-25.16	n/a
132.71 MHz	31.65 Qp	1.79 / 8.2 / 28.2 / 0.0	13.45	V / 1.00 / 78	-30.05	n/a
143.77 MHz	29.8 Qp	1.72 / 9.5 / 28.16 / 0.0	12.86	V / 1.00 / 78	-30.64	n/a
165.888 MHz	30.0 Qp	1.9 / 8.9 / 28.25 / 0.0	12.55	V / 1.00 / 78	-30.95	n/a
188.006 MHz	43.1 Qp	2.01 / 9.96 / 28.3 / 0.0	26.77	V / 1.00 / 78	-16.73	n/a
210.125 MHz	32.7 Qp	2.17 / 10.64 / 28.21 / 0.0	17.31	V / 1.00 / 78	-26.19	n/a
464.486 MHz	29.55 Qp	3.23 / 16.4 / 28.1 / 0.0	21.08	V / 1.00 / 78	-24.92	n/a
486.605 MHz	29.15 Qp	3.36 / 16.6 / 28.1 / 0.0	21.01	V / 1.00 / 78	-24.99	n/a
508.747 MHz	28.9 Qp	3.58 / 17.74 / 28.1 / 0.0	22.13	V / 1.00 / 78	-23.87	n/a
530.866 MHz	28.8 Qp	3.78 / 18.2 / 28.13 / 0.0	22.65	V / 1.00 / 78	-23.35	n/a
552.984 MHz	29.75 Qp	3.67 / 18.13 / 28.19 / 0.0	23.36	V / 1.00 / 78	-22.64	n/a
575.102 MHz	28.25 Qp	3.67 / 18.43 / 28.16 / 0.0	22.19	V / 1.00 / 78	-23.81	n/a
188 MHz maxed:						
188.006 MHz	43.5 Qp	2.01 / 9.96 / 28.3 / 0.0	27.17	V / 1.00 / 71	-16.33	n/a
188 MHz maxed:						
188.006 MHz	46.25 Qp	2.01 / 9.96 / 28.3 / 0.0	29.92	H / 1.00 / 0	-13.58	n/a

Tested by: J. C. Sausen — Printed — J C Sausen — Signature

Reviewed by: T. K. Swanson — Printed — Thomas K. Swanson — Signature

RADIATED EMISSIONS

Test Report #:	WC501235 Run 2	Test Area:	STS		
EUT Model #:	GR-250	Date:	3/18/2005		
EUT Serial #:		EUT Power:	60 Hz & battery	Temperature:	12.0 °C
Test Method:	FCC B			Air Pressure:	97.0 kPa
Customer:	Vantro			Rel. Humidity:	24.0 %
EUT Description:	Handheld RF ID reader				
Notes:	Operating on battery power.				
Data File Name:	1235.dat			Page:	2 of 6

List of measurements for run #: 2

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-B <1GHz 3m	DELTA2
210.125 MHz	36.5 Qp	2.17 / 10.64 / 28.21 / 0.0	21.11	H / 1.00 / 0	-22.39	n/a
530.866 MHz	29.2 Qp	3.78 / 18.2 / 28.13 / 0.0	23.05	H / 1.00 / 0	-22.95	n/a
552.984 MHz	31.35 Qp	3.67 / 18.13 / 28.19 / 0.0	24.96	H / 1.00 / 0	-21.04	n/a
575.102 MHz	29.55 Qp	3.67 / 18.43 / 28.16 / 0.0	23.49	H / 1.00 / 0	-22.51	n/a
619.339 MHz	28.55 Qp	3.9 / 19.88 / 28.1 / 0.0	24.23	H / 1.00 / 0	-21.77	n/a
110.602 MHz	31.9 Qp	1.54 / 9.6 / 28.23 / 0.0	14.81	H / 1.00 / 0	-28.69	n/a
121.651 MHz	36.1 Qp	1.6 / 9.17 / 28.3 / 0.0	18.57	H / 1.00 / 0	-24.93	n/a
132.71 MHz	34.0 Qp	1.79 / 8.2 / 28.2 / 0.0	15.8	H / 1.00 / 0	-27.7	n/a
143.77 MHz	32.25 Qp	1.72 / 9.5 / 28.16 / 0.0	15.31	H / 1.00 / 0	-28.19	n/a
165.888 MHz	33.25 Qp	1.9 / 8.9 / 28.25 / 0.0	15.8	H / 1.00 / 0	-27.7	n/a
210.125 MHz	36.5 Qp	2.17 / 10.64 / 28.21 / 0.0	21.11	H / 1.00 / 0	-22.39	n/a
387.096 MHz	30.1 Qp	3.0 / 15.4 / 28.2 / 0.0	20.3	H / 1.00 / 0	-25.7	n/a
353.918 MHz	31.05 Qp	2.77 / 14.76 / 28.14 / 0.0	20.44	H / 1.00 / 0	-25.56	n/a
287.563 MHz	33.7 Qp	2.52 / 12.59 / 28.26 / 0.0	20.56	H / 1.00 / 0	-25.44	n/a
265.445 MHz	31.95 Qp	2.41 / 12.46 / 28.23 / 0.0	18.59	H / 1.00 / 0	-27.41	n/a
254.386 MHz	33.3 Qp	2.35 / 11.81 / 28.2 / 0.0	19.26	H / 1.00 / 0	-26.74	n/a
232.267 MHz	33.9 Qp	2.22 / 11.1 / 28.14 / 0.0	19.08	H / 1.00 / 0	-26.92	n/a
176.971 MHz	30.9 Qp	1.92 / 9.02 / 28.24 / 0.0	13.6	H / 1.00 / 0	-29.9	n/a
132.734 MHz	34.65 Qp	1.79 / 8.2 / 28.2 / 0.0	16.45	H / 1.00 / 0	-27.05	n/a
88.498 MHz	36.1 Qp	1.42 / 7.67 / 28.1 / 0.0	17.09	H / 1.00 / 0	-26.41	n/a
121.651 MHz	37.05 Qp	1.6 / 9.17 / 28.3 / 0.0	19.52	H / 1.00 / 270	-23.98	n/a
143.77 MHz	36.2 Qp	1.72 / 9.5 / 28.16 / 0.0	19.26	H / 1.00 / 270	-24.24	n/a
165.888 MHz	36.35 Qp	1.9 / 8.9 / 28.25 / 0.0	18.9	H / 1.00 / 270	-24.6	n/a
619.339 MHz	29.3 Qp	3.9 / 19.88 / 28.1 / 0.0	24.98	H / 1.00 / 270	-21.02	n/a
210.125 MHz	36.6 Qp	2.17 / 10.64 / 28.21 / 0.0	21.21	H / 1.00 / 180	-22.29	n/a
254.386 MHz	34.2 Qp	2.35 / 11.81 / 28.2 / 0.0	20.16	H / 1.00 / 180	-25.84	n/a

Tested by: J. C. Sausen — Printed

J C Sausen — Signature

Reviewed by: T. K. Swanson — Printed

Thomas K. Swanson — Signature

RADIATED EMISSIONS

Test Report #:	WC501235 Run 2	Test Area:	STS		
EUT Model #:	GR-250	Date:	3/18/2005		
EUT Serial #:		EUT Power:	60 Hz & battery	Temperature:	12.0 °C
Test Method:	FCC B			Air Pressure:	97.0 kPa
Customer:	Vantro			Rel. Humidity:	24.0 %
EUT Description:	Handheld RF ID reader				
Notes:	Operating on battery power.				
Data File Name:	1235.dat			Page:	3 of 6

List of measurements for run #: 2

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-B <1GHz 3m	DELTA2
530.866 MHz	29.2 Qp	3.78 / 18.2 / 28.13 / 0.0	23.05	H / 1.00 / 180	-22.95	n/a
552.984 MHz	31.65 Qp	3.67 / 18.13 / 28.19 / 0.0	25.26	H / 1.00 / 180	-20.74	n/a
575.102 MHz	31.2 Qp	3.67 / 18.43 / 28.16 / 0.0	25.14	H / 1.00 / 180	-20.86	n/a
619.339 MHz	30.7 Qp	3.9 / 19.88 / 28.1 / 0.0	26.38	H / 1.00 / 180	-19.62	n/a
619 MHz maxed:						
619.339 MHz	33.41 Qp	3.9 / 19.88 / 28.1 / 0.0	29.09	H / 1.10 / 315	-16.91	n/a
641.458 MHz	30.6 Qp	3.9 / 19.3 / 28.1 / 0.0	25.7	H / 1.10 / 315	-20.3	n/a
121.651 MHz	37.35 Qp	1.6 / 9.17 / 28.3 / 0.0	19.82	H / 1.10 / 315	-23.68	n/a
165.888 MHz	36.65 Qp	1.9 / 8.9 / 28.25 / 0.0	19.2	H / 1.10 / 315	-24.3	n/a
176.971 MHz	31.85 Qp	1.92 / 9.02 / 28.24 / 0.0	14.55	H / 1.10 / 315	-28.95	n/a
641.458 MHz	30.8 Qp	3.9 / 19.3 / 28.1 / 0.0	25.9	H / 1.10 / 315	-20.1	n/a
Recheck of 188 MHz:						
187.996 MHz	46.05 Qp	2.01 / 9.96 / 28.3 / 0.0	29.72	H / 1.00 / 0	-13.78	n/a
Attached charger cable:						
187.996 MHz	47.48 Qp	2.01 / 9.96 / 28.3 / 0.0	31.15	H / 1.00 / 0	-12.35	n/a
88.486 MHz	44.4 Qp	1.42 / 7.67 / 28.1 / 0.0	25.39	H / 1.00 / 0	-18.11	n/a
176.971 MHz	36.95 Qp	1.92 / 9.02 / 28.24 / 0.0	19.65	H / 1.00 / 0	-23.85	n/a
353.918 MHz	32.1 Qp	2.77 / 14.76 / 28.14 / 0.0	21.49	H / 1.00 / 0	-24.51	n/a
530.866 MHz	31.05 Qp	3.78 / 18.2 / 28.13 / 0.0	24.9	H / 1.00 / 0	-21.1	n/a
88 MHz maxed:						
88.486 MHz	55.21 Qp	1.42 / 7.67 / 28.1 / 0.0	36.2	H / 3.50 / 282	-7.3	n/a
110.602 MHz	38.35 Qp	1.54 / 9.6 / 28.23 / 0.0	21.26	H / 3.50 / 282	-22.24	n/a
121.662 MHz	39.9 Qp	1.6 / 9.16 / 28.3 / 0.0	22.37	H / 3.50 / 282	-21.13	n/a

Tested by: J. C. Sausen — Printed

J C Sausen — Signature

Reviewed by: T. K. Swanson — Printed

Thomas K. Swanson — Signature

RADIATED EMISSIONS

Test Report #:	WC501235 Run 2	Test Area:	STS		
EUT Model #:	GR-250	Date:	3/18/2005		
EUT Serial #:		EUT Power:	60 Hz & battery	Temperature:	12.0 °C
Test Method:	FCC B			Air Pressure:	97.0 kPa
Customer:	Vantro			Rel. Humidity:	24.0 %
EUT Description:	Handheld RF ID reader				
Notes:	Operating on battery power.				
Data File Name:	1235.dat			Page:	4 of 6

List of measurements for run #: 2

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-B <1GHz 3m	DELTA2
132.734 MHz	36.2 Qp	1.79 / 8.2 / 28.2 / 0.0	18.0	H / 3.50 / 282	-25.5	n/a
110.602 MHz	40.05 Qp	1.54 / 9.6 / 28.23 / 0.0	22.96	H / 3.50 / 282	-20.54	n/a
143.77 MHz	38.15 Qp	1.72 / 9.5 / 28.16 / 0.0	21.21	V / 1.00 / 282	-22.29	n/a
165.888 MHz	38.7 Qp	1.9 / 8.9 / 28.25 / 0.0	21.25	V / 1.00 / 282	-22.25	n/a
530.866 MHz	32.7 Qp	3.78 / 18.2 / 28.13 / 0.0	26.55	V / 1.00 / 282	-19.45	n/a
575.102 MHz	31.95 Qp	3.67 / 18.43 / 28.16 / 0.0	25.89	V / 1.00 / 282	-20.11	n/a
88 MHz maxed:						
88.486 MHz	52.37 Qp	1.42 / 7.67 / 28.1 / 0.0	33.36	V / 1.00 / 297	-10.14	n/a
143.77 MHz	39.7 Qp	1.72 / 9.5 / 28.16 / 0.0	22.76	V / 1.00 / 297	-20.74	n/a
Moved cable and EUT to maximize emission level at 88 MHz. No higher levels noted.						
No further significant EUT emissions detected 30 MHz to 1000 MHz, vert and hor ant.						

Tested by: J. C. Sausen — Printed

J C Sausen — Signature

Reviewed by: T. K. Swanson — Printed

Thomas K. Swanson — Signature

RADIATED EMISSIONS

Test Report #:	WC501235 Run 2	Test Area:	STS		
EUT Model #:	GR-250	Date:	3/18/2005		
EUT Serial #:		EUT Power:	60 Hz & battery	Temperature:	12.0 °C
Test Method:	FCC B			Air Pressure:	97.0 kPa
Customer:	Vantro			Rel. Humidity:	24.0 %
EUT Description:	Handheld RF ID reader				
Notes:	Operating on battery power.				
Data File Name:	1235.dat			Page:	5 of 6

Measurement summary for limit1: FCC-B <1GHz 3m (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	POL / HGT / AZ (m)(DEG)	DELTA1 FCC-B <1GHz 3m
88.486 MHz	55.21 Qp	1.42 / 7.67 / 28.1 / 0.0	36.2	H / 3.50 / 282	-7.3
187.996 MHz	47.48 Qp	2.01 / 9.96 / 28.3 / 0.0	31.15	H / 1.00 / 0	-12.35
30.246 MHz	32.05 Qp	1.0 / 20.98 / 28.3 / 0.0	25.73	V / 1.00 / 0	-14.27
33.148 MHz	31.95 Qp	1.02 / 19.5 / 28.23 / 0.0	24.24	V / 1.00 / 0	-15.76
619.339 MHz	33.41 Qp	3.9 / 19.88 / 28.1 / 0.0	29.09	H / 1.10 / 315	-16.91
530.866 MHz	32.7 Qp	3.78 / 18.2 / 28.13 / 0.0	26.55	V / 1.00 / 282	-19.45
641.458 MHz	30.8 Qp	3.9 / 19.3 / 28.1 / 0.0	25.9	H / 1.10 / 315	-20.1
575.102 MHz	31.95 Qp	3.67 / 18.43 / 28.16 / 0.0	25.89	V / 1.00 / 282	-20.11
110.602 MHz	40.05 Qp	1.54 / 9.6 / 28.23 / 0.0	22.96	H / 3.50 / 282	-20.54
143.77 MHz	39.7 Qp	1.72 / 9.5 / 28.16 / 0.0	22.76	V / 1.00 / 297	-20.74
552.984 MHz	31.65 Qp	3.67 / 18.13 / 28.19 / 0.0	25.26	H / 1.00 / 180	-20.74
121.662 MHz	39.9 Qp	1.6 / 9.16 / 28.3 / 0.0	22.37	H / 3.50 / 282	-21.13
165.888 MHz	38.7 Qp	1.9 / 8.9 / 28.25 / 0.0	21.25	V / 1.00 / 282	-22.25
210.125 MHz	36.6 Qp	2.17 / 10.64 / 28.21 / 0.0	21.21	H / 1.00 / 180	-22.29
176.971 MHz	36.95 Qp	1.92 / 9.02 / 28.24 / 0.0	19.65	H / 1.00 / 0	-23.85
508.747 MHz	28.9 Qp	3.58 / 17.74 / 28.1 / 0.0	22.13	V / 1.00 / 78	-23.87
353.918 MHz	32.1 Qp	2.77 / 14.76 / 28.14 / 0.0	21.49	H / 1.00 / 0	-24.51
464.486 MHz	29.55 Qp	3.23 / 16.4 / 28.1 / 0.0	21.08	V / 1.00 / 78	-24.92
486.605 MHz	29.15 Qp	3.36 / 16.6 / 28.1 / 0.0	21.01	V / 1.00 / 78	-24.99
287.563 MHz	33.7 Qp	2.52 / 12.59 / 28.26 / 0.0	20.56	H / 1.00 / 0	-25.44
132.734 MHz	36.2 Qp	1.79 / 8.2 / 28.2 / 0.0	18.0	H / 3.50 / 282	-25.5
387.096 MHz	30.1 Qp	3.0 / 15.4 / 28.2 / 0.0	20.3	H / 1.00 / 0	-25.7
254.386 MHz	34.2 Qp	2.35 / 11.81 / 28.2 / 0.0	20.16	H / 1.00 / 180	-25.84
232.267 MHz	33.9 Qp	2.22 / 11.1 / 28.14 / 0.0	19.08	H / 1.00 / 0	-26.92
265.445 MHz	31.95 Qp	2.41 / 12.46 / 28.23 / 0.0	18.59	H / 1.00 / 0	-27.41

Tested by: J. C. Sausen — Printed

J C Sausen — Signature

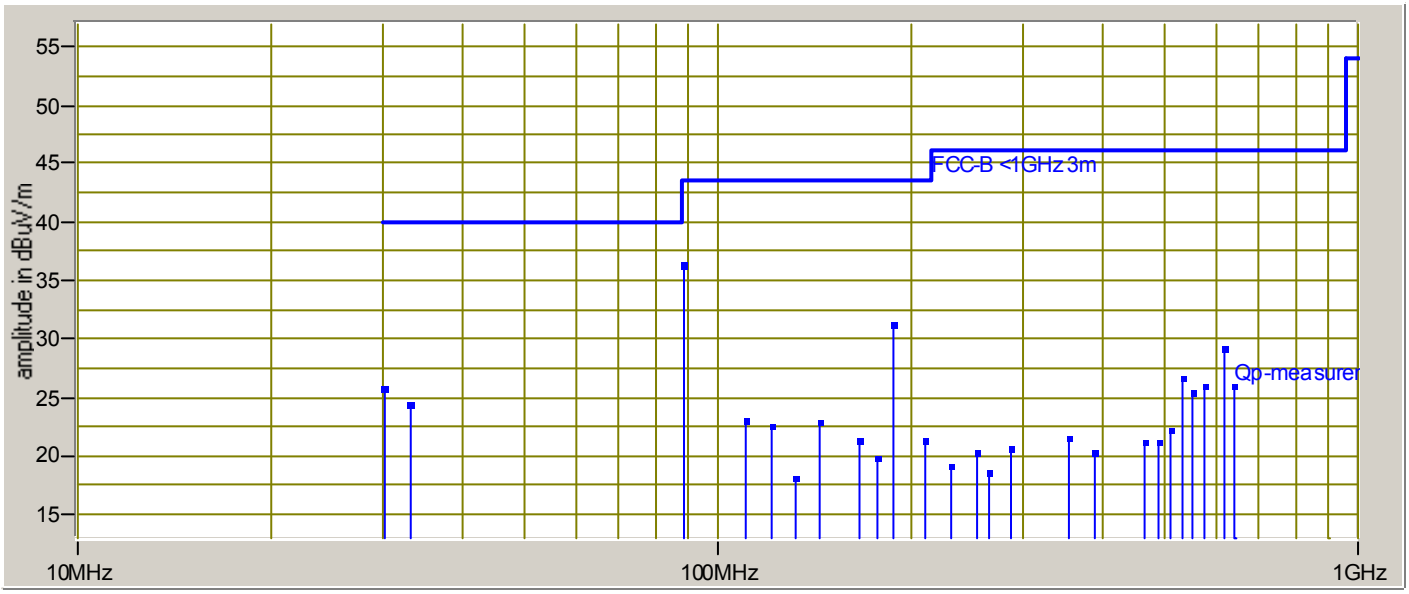
Reviewed by: T. K. Swanson — Printed

Thomas K. Swanson — Signature

RADIATED EMISSIONS

Test Report #:	WC501235 Run 2	Test Area:	STS		
EUT Model #:	GR-250	Date:	3/18/2005		
EUT Serial #:		EUT Power:	60 Hz & battery	Temperature:	12.0 °C
Test Method:	FCC B			Air Pressure:	97.0 kPa
Customer:	Vantro			Rel. Humidity:	24.0 %
EUT Description:	Handheld RF ID reader				
Notes:	Operating on battery power.				
Data File Name:	1235.dat			Page:	6 of 6

Graph:



Tested by: J. C. Sausen

Printed

Signature

Reviewed by: T. K. Swanson

Printed

Signature

Radiated Emissions 1 GHz – 18 GHz

Specifications:
FCC Specification: Paragraph: 15.209 (f)
IC Specification: RSS-210, 6.2.1

The measurements were performed at the following test location:

■ - Test not applicable

☐ - Wild River Lab Large Test Site (Open Area Test Site)
☐ - Wild River Lab Small Test Site (Open Area Test Site)
☐ - Oakwood Lab (Open Area Test Site)
☐ - Wild River Lab Screen Room

TÜV PRODUCT SERVICE INC 19333 Wild Mountain Road Taylors Falls MN 55084-1758 Tel: 651 638 0297 Fax: 651 638 0298 Rev.No 1.0

AC Line Conducted Emissions

Specifications:
CISPR 22

The *AC Line Conducted Emission* measurements were performed at the following test location:

☐ **- Test not applicable**

☐ - Wild River Lab Large Test Site (Open Area Test Site)
■ - Wild River Lab Small Test Site (Open Area Test Site)
☐ - Oakwood Lab (Open Area Test Site)
☐ - Wild River Lab Screen Room

Test equipment used :

	TUV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
■ -	2416	3825/2	Electro-Mechanics (EMCO)	50 Ω LISN	8812-1437	Code B 05-Jan-06
■ -	3800	ESCS 30	Rhode & Schwarz	EMI Receiver	100312	18-Jan-06

Cal Code B = Calibration verification performed internally. Cal Code Y = Calibration not required when used with other calibrated equipment.

All measurement instrumentation is traceable to the National Institute of Standards and Technology (NIST) and is calibrated annually.

TÜV PRODUCT SERVICE INC 19333 Wild Mountain Road Taylors Falls MN 55084-1758 Tel: 651 638 0297 Fax: 651 638 0298 Rev.No 1.0

CONDUCTED EMISSIONS

Test Report #:	WC501235 Run 1	Test Area:	STS		
EUT Model #:	GR-250	Date:	3/18/2005		
EUT Serial #:		EUT Power:	60 Hz & battery	Temperature:	12.0 °C
Test Method:	FCC B			Air Pressure:	97.0 kPa
Customer:	Vantro			Rel. Humidity:	24.0 %
EUT Description:	Handheld RF ID reader				
Notes:	EUT in full operating mode with charger attached.				
Data File Name:	1235.dat			Page:	1 of 4

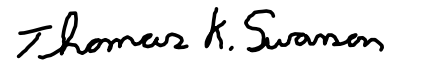
List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55022 B Qp	DELTA2 EN55022 B Avg
385.0 kHz	31.83 Qp	0.0 / 1.08 / 0.0 / 0.0	32.91	L1	-25.27	n/a
385.0 kHz	21.43 Av	0.0 / 1.08 / 0.0 / 0.0	22.51	L1	n/a	-25.67
29.8 MHz	27.93 Qp	0.5 / 0.1 / 0.0 / 0.0	28.53	L1	-31.47	n/a
29.8 MHz	18.43 Av	0.5 / 0.1 / 0.0 / 0.0	19.03	L1	n/a	-30.97
193.19 kHz	10.96 Qp	0.0 / 2.14 / 0.0 / 0.0	13.1	L1	-50.8	n/a
193.19 kHz	9.91 Av	0.0 / 2.14 / 0.0 / 0.0	12.05	L1	n/a	-41.85
255.0 kHz	0.0 Qp	0.0 / 1.73 / 0.0 / 0.0	1.73	L1	-59.87	n/a
255.0 kHz	15.04 Av	0.0 / 1.73 / 0.0 / 0.0	16.77	L1	n/a	-34.83
640.0 kHz	21.26 Qp	0.0 / 0.08 / 0.0 / 0.0	21.34	L1	-34.66	n/a
640.0 kHz	10.57 Av	0.0 / 0.08 / 0.0 / 0.0	10.65	L1	n/a	-35.35
767.59 kHz	26.15 Qp	0.0 / 0.05 / 0.0 / 0.0	26.2	L1	-29.8	n/a
767.59 kHz	15.04 Av	0.0 / 0.05 / 0.0 / 0.0	15.09	L1	n/a	-30.91
1.023 MHz	0.0 Qp	0.0 / 0.05 / 0.0 / 0.0	0.05	L1	-55.95	n/a
1.023 MHz	-9.56 Av	0.0 / 0.05 / 0.0 / 0.0	-9.51	L1	n/a	-55.51
193.19 kHz	9.27 Av	0.0 / 2.14 / 0.0 / 0.0	11.41	N	n/a	-42.49
193.19 kHz	0.0 Qp	0.0 / 2.14 / 0.0 / 0.0	2.14	N	-61.76	n/a
255.0 kHz	26.04 Qp	0.0 / 1.73 / 0.0 / 0.0	27.77	N	-33.83	n/a
255.0 kHz	15.04 Av	0.0 / 1.73 / 0.0 / 0.0	16.77	N	n/a	-34.83
385.0 kHz	30.36 Qp	0.0 / 1.08 / 0.0 / 0.0	31.44	N	-26.74	n/a
385.0 kHz	19.62 Av	0.0 / 1.08 / 0.0 / 0.0	20.7	N	n/a	-27.48
640.0 kHz	19.5 Qp	0.0 / 0.08 / 0.0 / 0.0	19.58	N	-36.42	n/a
640.0 kHz	9.85 Av	0.0 / 0.08 / 0.0 / 0.0	9.93	N	n/a	-36.07
767.59 kHz	24.64 Qp	0.0 / 0.05 / 0.0 / 0.0	24.69	N	-31.31	n/a
767.59 kHz	14.65 Av	0.0 / 0.05 / 0.0 / 0.0	14.7	N	n/a	-31.3
1.023 MHz	19.66 Qp	0.0 / 0.05 / 0.0 / 0.0	19.71	N	-36.29	n/a
1.023 MHz	9.2 Av	0.0 / 0.05 / 0.0 / 0.0	9.25	N	n/a	-36.75

Tested by: J. C. Sausen — Printed

Signature

Reviewed by: T. K. Swanson — Printed



Signature

CONDUCTED EMISSIONS

Test Report #:	WC501235 Run 1	Test Area:	STS		
EUT Model #:	GR-250	Date:	3/18/2005		
EUT Serial #:		EUT Power:	60 Hz & battery	Temperature:	12.0 °C
Test Method:	FCC B			Air Pressure:	97.0 kPa
Customer:	Vantro			Rel. Humidity:	24.0 %
EUT Description:	Handheld RF ID reader				
Notes:	EUT in full operating mode with charger attached.				
Data File Name:	1235.dat			Page:	2 of 4

List of measurements for run #: 1

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55022 B Qp	DELTA2 EN55022 B Avg
29.8 MHz	0.0 Qp	0.5 / 0.1 / 0.0 / 0.0	0.6	N	-59.4	n/a
29.8 MHz	21.47 Av	0.5 / 0.1 / 0.0 / 0.0	22.07	N	n/a	-27.93
End of conducted emission measurements.						

Tested by: J. C. Sausen

Printed

Signature

Reviewed by: T. K. Swanson

Printed

Signature

CONDUCTED EMISSIONS

Test Report #:	WC501235 Run 1	Test Area:	STS		
EUT Model #:	GR-250	Date:	3/18/2005		
EUT Serial #:		EUT Power:	60 Hz & battery	Temperature:	12.0 °C
Test Method:	FCC B			Air Pressure:	97.0 kPa
Customer:	Vantro			Rel. Humidity:	24.0 %
EUT Description:	Handheld RF ID reader				
Notes:	EUT in full operating mode with charger attached.				
Data File Name:	1235.dat			Page:	3 of 4

Measurement summary for limit1: EN55022 B Qp (Qp)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA1 EN55022 B Qp
385.0 kHz	31.83 Qp	0.0 / 1.08 / 0.0 / 0.0	32.91	L1	-25.27
767.59 kHz	26.15 Qp	0.0 / 0.05 / 0.0 / 0.0	26.2	L1	-29.8
29.8 MHz	27.93 Qp	0.5 / 0.1 / 0.0 / 0.0	28.53	L1	-31.47
255.0 kHz	26.04 Qp	0.0 / 1.73 / 0.0 / 0.0	27.77	N	-33.83
640.0 kHz	21.26 Qp	0.0 / 0.08 / 0.0 / 0.0	21.34	L1	-34.66
1.023 MHz	19.66 Qp	0.0 / 0.05 / 0.0 / 0.0	19.71	N	-36.29
193.19 kHz	10.96 Qp	0.0 / 2.14 / 0.0 / 0.0	13.1	L1	-50.8

Measurement summary for limit2: EN55022 B Avg (Av)

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	EUT Lead	DELTA2 EN55022 B Avg
385.0 kHz	21.43 Av	0.0 / 1.08 / 0.0 / 0.0	22.51	L1	-25.67
29.8 MHz	21.47 Av	0.5 / 0.1 / 0.0 / 0.0	22.07	N	-27.93
767.59 kHz	15.04 Av	0.0 / 0.05 / 0.0 / 0.0	15.09	L1	-30.91
255.0 kHz	15.04 Av	0.0 / 1.73 / 0.0 / 0.0	16.77	L1	-34.83
640.0 kHz	10.57 Av	0.0 / 0.08 / 0.0 / 0.0	10.65	L1	-35.35
1.023 MHz	9.2 Av	0.0 / 0.05 / 0.0 / 0.0	9.25	N	-36.75
193.19 kHz	9.91 Av	0.0 / 2.14 / 0.0 / 0.0	12.05	L1	-41.85

Tested by: J. C. Sausen — Printed

J C Sausen — Signature

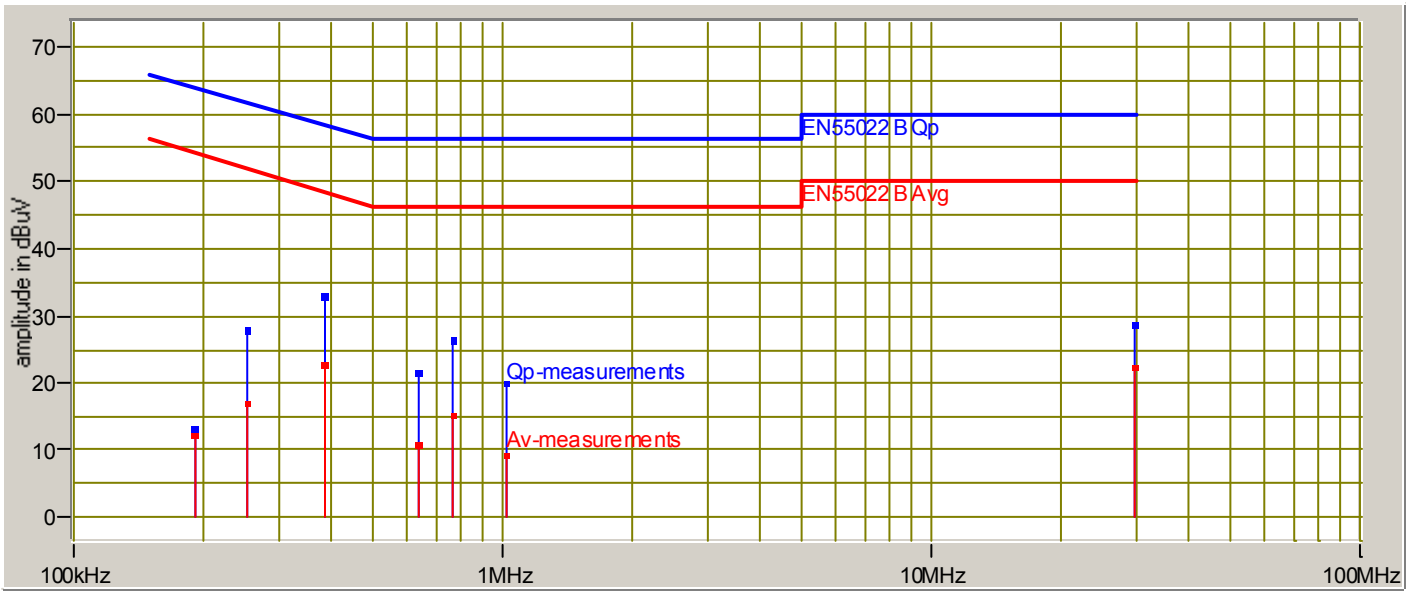
Reviewed by: T. K. Swanson — Printed

Thomas K. Swanson — Signature

CONDUCTED EMISSIONS

Test Report #:	WC501235 Run 1	Test Area:	STS		
EUT Model #:	GR-250	Date:	3/18/2005		
EUT Serial #:		EUT Power:	60 Hz & battery	Temperature:	12.0 °C
Test Method:	FCC B			Air Pressure:	97.0 kPa
Customer:	Vantro			Rel. Humidity:	24.0 %
EUT Description:	Handheld RF ID reader				
Notes:	EUT in full operating mode with charger attached.				
Data File Name:	1235.dat			Page:	4 of 4

Graph:



Tested by: J. C. Sausen

Printed

Signature

Reviewed by: T. K. Swanson

Printed

Signature