TÜV AMERICA

MEASUREMENT AND TECHNICAL REPORT

DATALOGIC
Via Candini, 2
40012 Lippo di Calderara di Reno
Bologna, BG
Italy

DATE: 29 June 2005

This Report Concerns:	Original Grant: X	Class II Change:
Equipment Type:	Viper	
Deferred grant requested per 47 CFR 0.457(d)(1)(ii)?	Yes: **Defer until:**	No: X
Company Name **agrees to notify the Commission by:** **of the intended date of announcement of the product so that the grant can be issued on that date.**	N/A	
Transition Rules Request per 15.37?	Yes:	No: X*

(*) FCC Part 15, Paragraph(s) **15.107(a), 15.109(a), 15.209(a), 15.247(a), 15.247(b), and 15.247(c)**

Report Prepared by:

TÜV AMERICA, INC
10040 Mesa Rim Road
San Diego, CA 92121-2912
Phone: 858 678 1400
Fax: 858 546 0364

TÜV AMERICA

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1.0 GENERAL INFORMATION

1.1 Product Description

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

EUT Description: Viper-NET is a battery operated industrial mobile computer designed to capture, compute and communicate information.
It is based on a PXA255 microprocessor. Operating System is Windows CE .NET.

EUT Name: VIPER-NET 300-102 Laser normal range, Cisco WiFi
VIPER-NET 300-602 Laser extended reading range, Cisco WiFi
VIPER-NET 301-102 Laser normal range, Cisco WIFi, Bluetooth

Model No.: -- Serial No.: --

Product Options: --

Configurations to be tested: --

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

# of Phases: --

Current (Amps/phase(max)): -- Current (Amps/phase(nominal)): --

Other: Battery Operated Equipment

Other Special Requirements

--

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Typical Installation and/or Operating Environment

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

Industrial/Factory

EUT Power Cable

☐ Permanent OR ☒ Removable Length (in meters): 1,5m
☐ Shielded OR ☐ Unshielded
☐ Not Applicable

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*	■	☐
RS232	☐	☒	1	☒	☐	--	--	--	--	2	☒	☐
USB	☐	☒	1	☒	☐	--	--	--	--	2	☒	☐

EUT Software.

Revision Level: --

Description: Operating System is Windows CE .NET.

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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. --

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 #
--			

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 #*
--			

Oscillator Frequencies

Frequency	*Derived Frequency*	*Component # / Location*	*Description of Use*
3,6863MHz	--	Main Board	CPU Clock
32768kHz	--	Main Board	Real Time Clock
4MHz	--	Main Board Laser version	Sincronization and data sampling

Power Supply

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

Power Line Filters

Manufacturer	*Model #*	*Location in EUT*
--		

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Critical EMI Components (Capacitors, ferrites, etc.)				
Description	***Manufacturer***	***Part # or Value***	***Qty***	***Component # / Location***

--

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

--

1.2 Related Submittal Grant

None

1.3 Tested System Details

The FCC ID's for all equipment, plus descriptions of all cables used in the tested system are:

None

1.4 Test Methodology

Purpose of Test: To demonstrate compliance with the following tests.

Test Summary					
		Summary of Results			
Test Description	Paragraph Number	Low Channel	Mid Channel	High Channel	Pass/Fail
Bandwidth	15.247(a)	798 kHz	762 kHz	696 kHz	Pass
Channel Separation	15.247(a)	--	980 kHz	--	Pass
Time of Occupancy	15.247(a)	--	0.308 seconds in 31.6 second period	--	Pass
Number of Hopping Frequencies	15.247(a)	--	79	--	Pass
Peak Output Power	15.247(b)	0.000113 W	0.00017 W	0.00012 W	Pass
Band Edge	15.247(c)	>20 dBc	>20 dBc	>20 dBc	Pass
Radiated Spurious Emissions – Restricted Bands (1GHz to 25GHz)	15.247(c) 15.209(a)	No emissions detected	No emissions detected	No emissions detected	Pass
Receiver Spurious Emissions	15.109(a)	No emissions detected	No emissions detected	No emissions detected	Pass
Conducted Emissions	15.107(a)	--	14.9 dB @ 0.175 MHz	--	Pass
Intermodulation	--		No intermodulation products were detected over the frequency range 13 MHz to 24.95 GHz with all transmitters active.		Pass

Testing was performed according to the procedures in FCC/ANSI C63.4 and CSA 108.8-M1983.

1.5 Test Facility

The open area test site and conducted measurement data were tested by:

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San Diego, CA 92121-2912
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The Test Site Data and performance comply with ANSI C63.4 and are registered with the FCC, 7435 Oakland Mills Road, Columbia Maryland 21046. All Measurement Data is acquired according to the content of FCC Measurement Procedure and ANSI C63.4, unless supplemented with additional requirements as noted in the test report.

2.0 SYSTEM TEST CONFIGURATION

2.1 Justification

The EUT was initially tested for FCC emissions in the following configuration:

See Test Setup Photos Exhibit

2.2 EUT Exercise Software

None

2.3 Special Accessories

None

2.4 Equipment Modifications

None

2.5 Configuration of Test System

See Test Setup Photos Exhibit

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3.0 BANDWIDTH EQUIPMENT/DATA
CHANNEL SEPARATION EQUIPMENT/DATA
TIME OF OCCUPANCY EQUIPMENT/DATA
NUMBER OF HOPPING FREQUENCIES EQUIPMENT/DATA
PEAK OUTPUT POWER EQUIPMENT/DATA
BAND EDGE EQUIPMENT/DATA
RADIATED SPURIOUS EQUIPMENT/DATA
RECEIVER SPURIOUS EQUIPMENT/DATA
CONDUCTED EMISSIONS EQUIPMENT/DATA

Test Conditions: BANDWIDTH EQUIPMENT/DATA: FCC Part 15.247(a)
CHANNEL SEPARATION EQUIPMENT/DATA: FCC Part 15.247(a)
TIME OF OCCUPANCY EQUIPMENT/DATA: FCC Part 15.247(a)
NUMBER OF HOPPING FREQUENCIES EQUIPMENT/DATA: FCC Part 15.247(a)
PEAK OUTPUT POWER EQUIPMENT/DATA: FCC Part 15.247(b)
BAND EDGE EQUIPMENT/DATA: FCC Part 15.247(c)
RADIATED SPURIOUS EQUIPMENT/DATA: FCC Parts 15.209(a), 15.247(c)
RECEIVER SPURIOUS EQUIPMENT/DATA: FCC Part 15.109(a)
CONDUCTED EMISSIONS EQUIPMENT/DATA: FCC Part 15.107(a)

The following measurements were performed at the San Diego Testing Facility:

☐ **- Test not applicable**

■ - SR 3, Shielded Room, 12' x 20' x 8', Metal Chamber
■ - SR-5, Shielded Room, 16' x 28' x 15', Metal, Semi-Anechoic Chamber
■ - Roof (Small Open Area Test Site)

Test Equipment Used:

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Date Cal'ed
85662A	6495	Spectrum Analyzer	Hewlett Packard	2542A12099	02/05
E4440A	7500	Spectrum Analyzer	Hewlett Packard	MY43362168	12/04
AMF-5D-010180-35-10P	719	Preamplifier	Miteq	549460	VBU*
BRM50702	6815	2.4 to 2.5 GHz Band Reject Filter	Micro-Tronics	008	VBU*
FF6549-2	781	High Pass Filter	Sage	006	VBU*
FF6549-2	782	High Pass Filter	Sage	007	VBU*
3115	251	Double Ridge Guide Antenna	EMCO	2495	VBU*
CBL6111	6521	Bilog Antenna	Chase Electronics	1291	VBU*
9252-50-R-24-BNC	458	LISN, 50 μH /250 μH/50 Ω/ 0.25 μF	Solar Electronics Co.	941719	07/04
ESHS 20	428	EMI Test Receiver	Rhode & Schwarz	837055/001	03/05
CAT-20	613	20 dB Attenuator	Mini-Circuits	--	VBU*

Remarks: One year calibration cycle for all test equipment and sites. (*) Verified Before Use.

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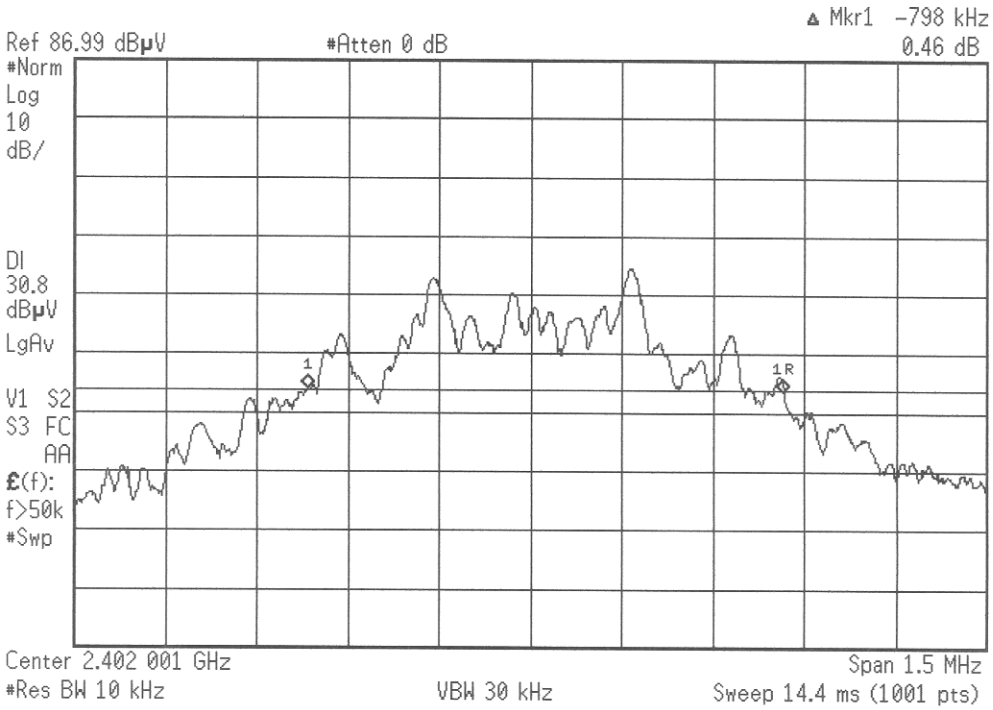
FCC Part 15.247(a) - Bandwidth

SC503406 - V1P



Chan 0

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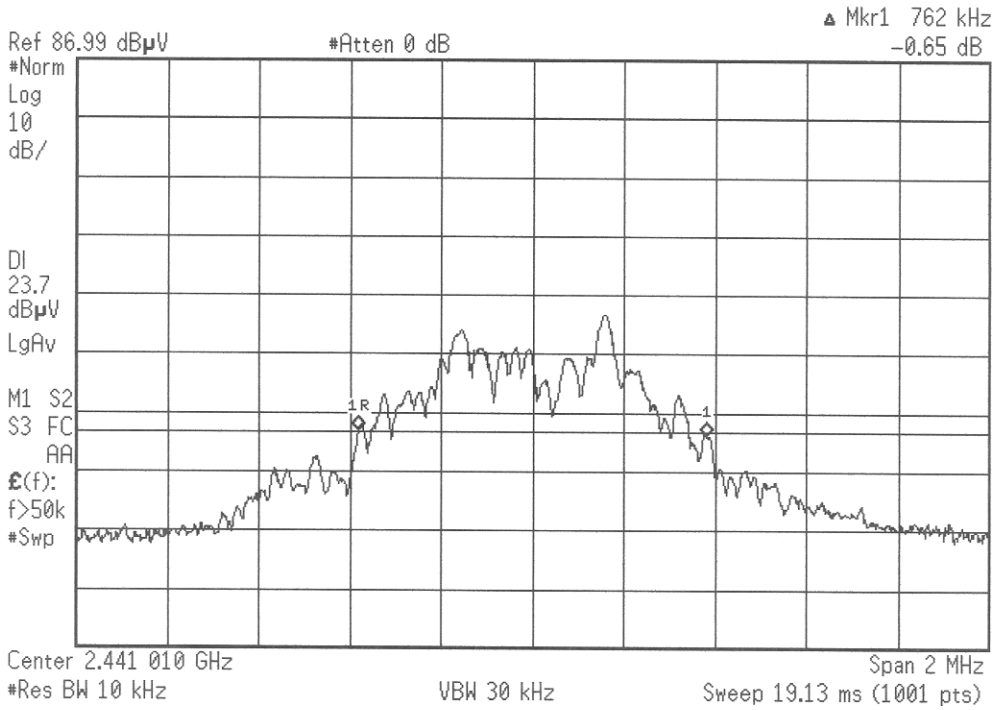
FCC Part 15.247(a) - Bandwidth

SC503406-V1P



Chan 39

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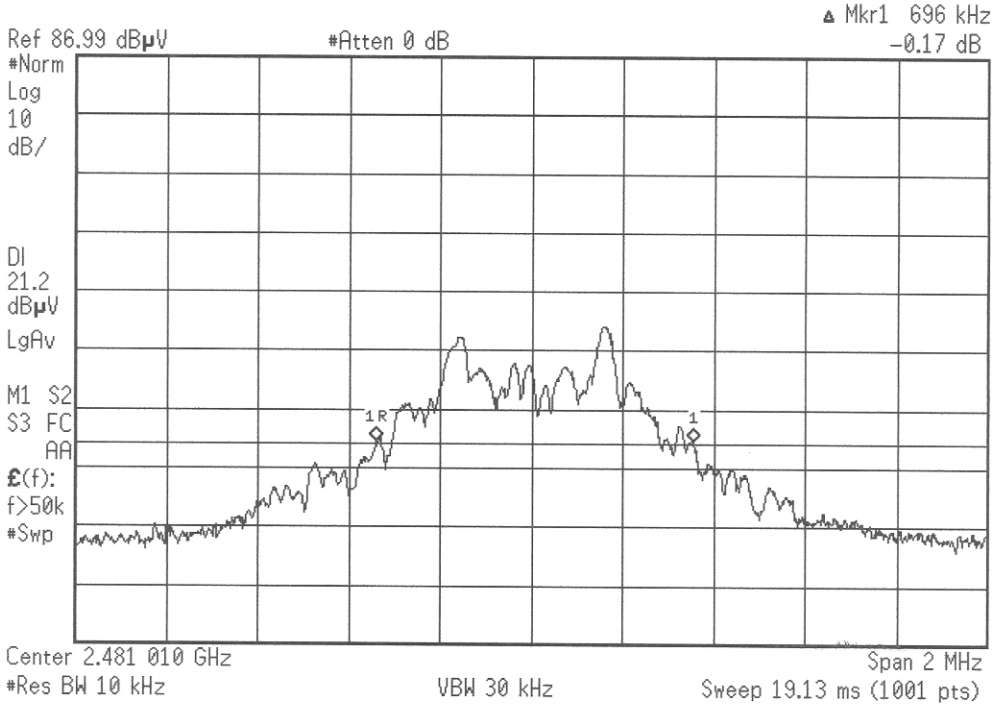
FCC Part 15.247(a) - Bandwidth

SC503406-V1P



chcm 79

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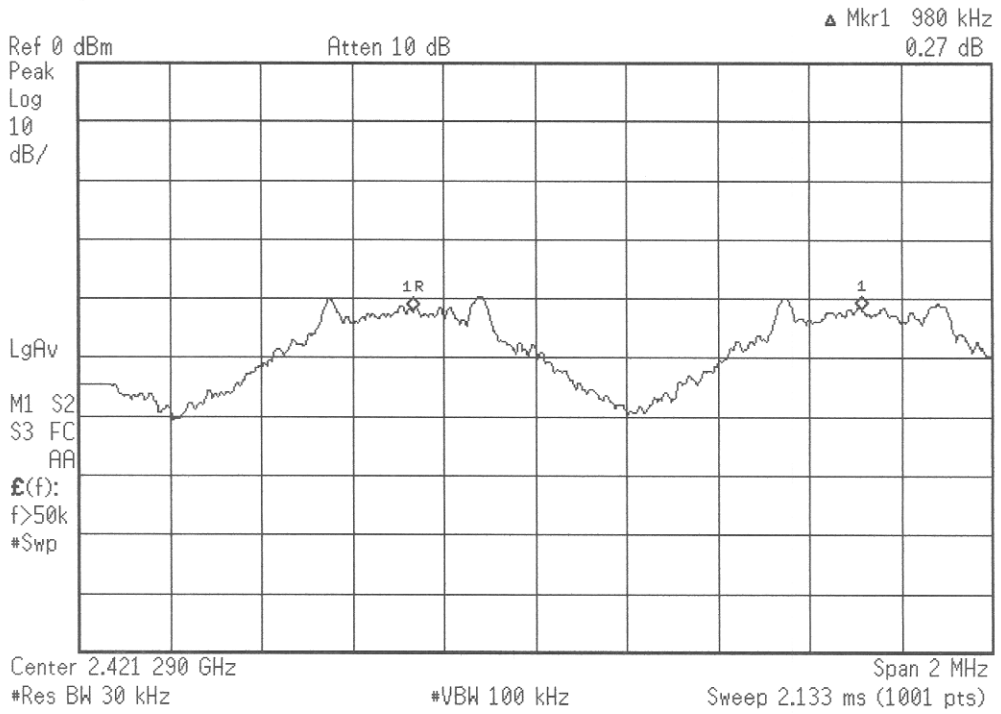
FCC Part 15.247(a) - Channel Separation

SC503406-VIP



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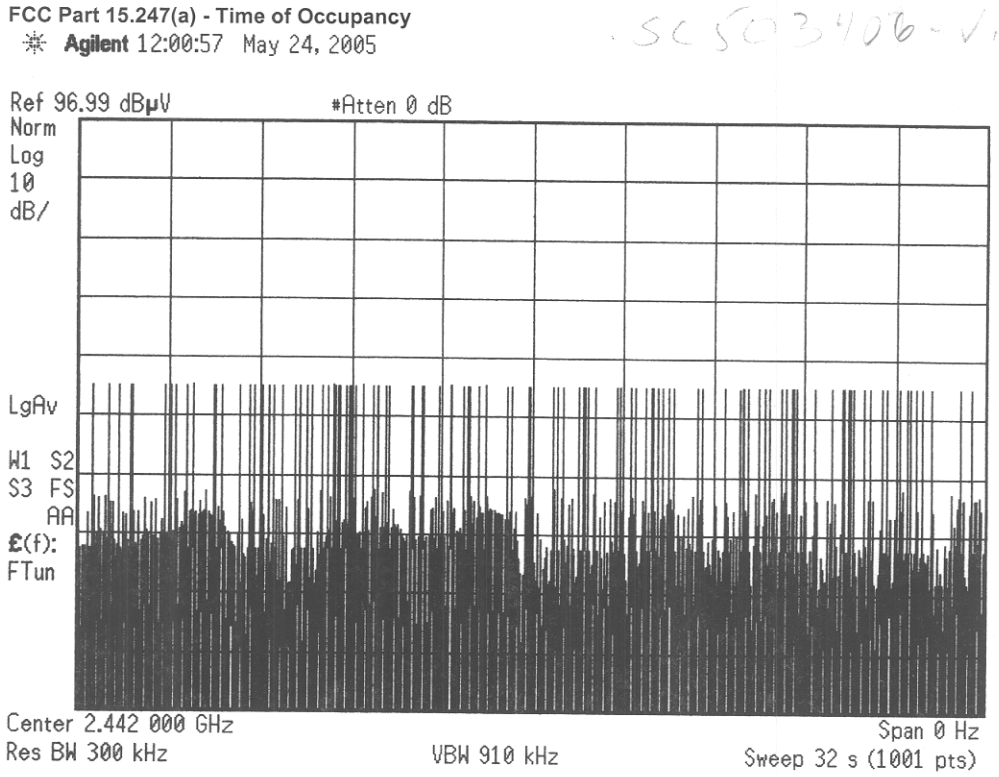

107

15.247(a)(1)(ii) Sweep Time = Number of hopping channels x Occupancy Time limit
= 79 x 0.4 second = 31.6 second

Therefore $\frac{31.6 \text{ second}}{32 \text{ second}} = 0.988$

Occupancy in a 32 second Sweep = Number of hops x dwell time
= 107 x 2.913 seconds
= 0.312 second

Occupancy in 31.6 second sweep = 0.312 x .988 = 0.308 second

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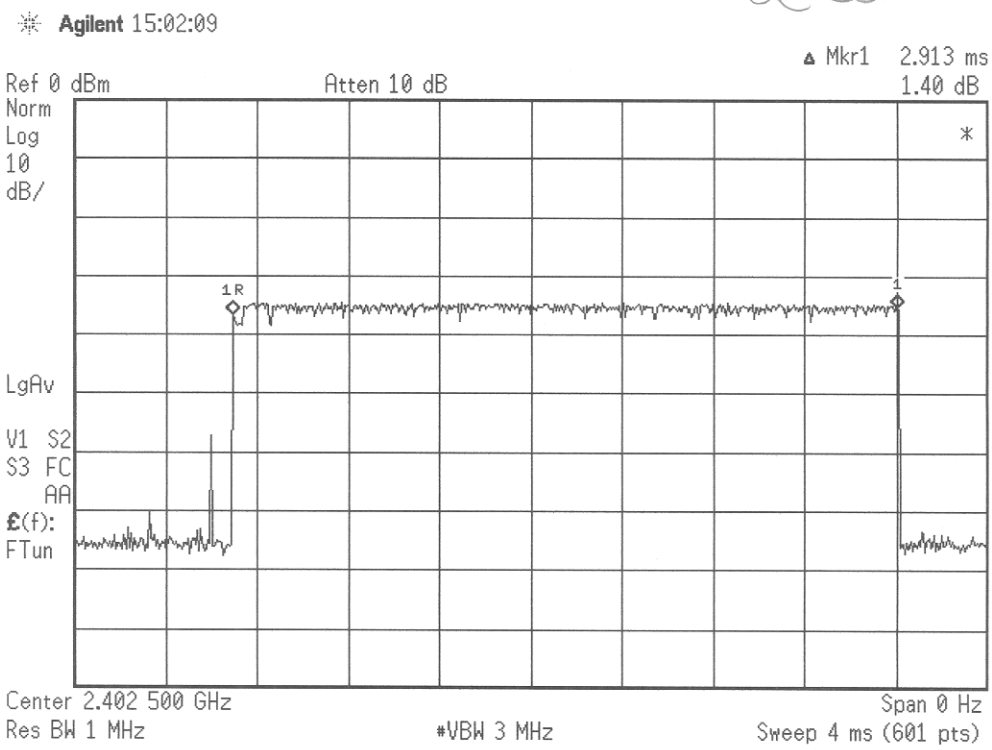
FCC Part 15.247(a) - Dwell Time

SC 503406-U1P



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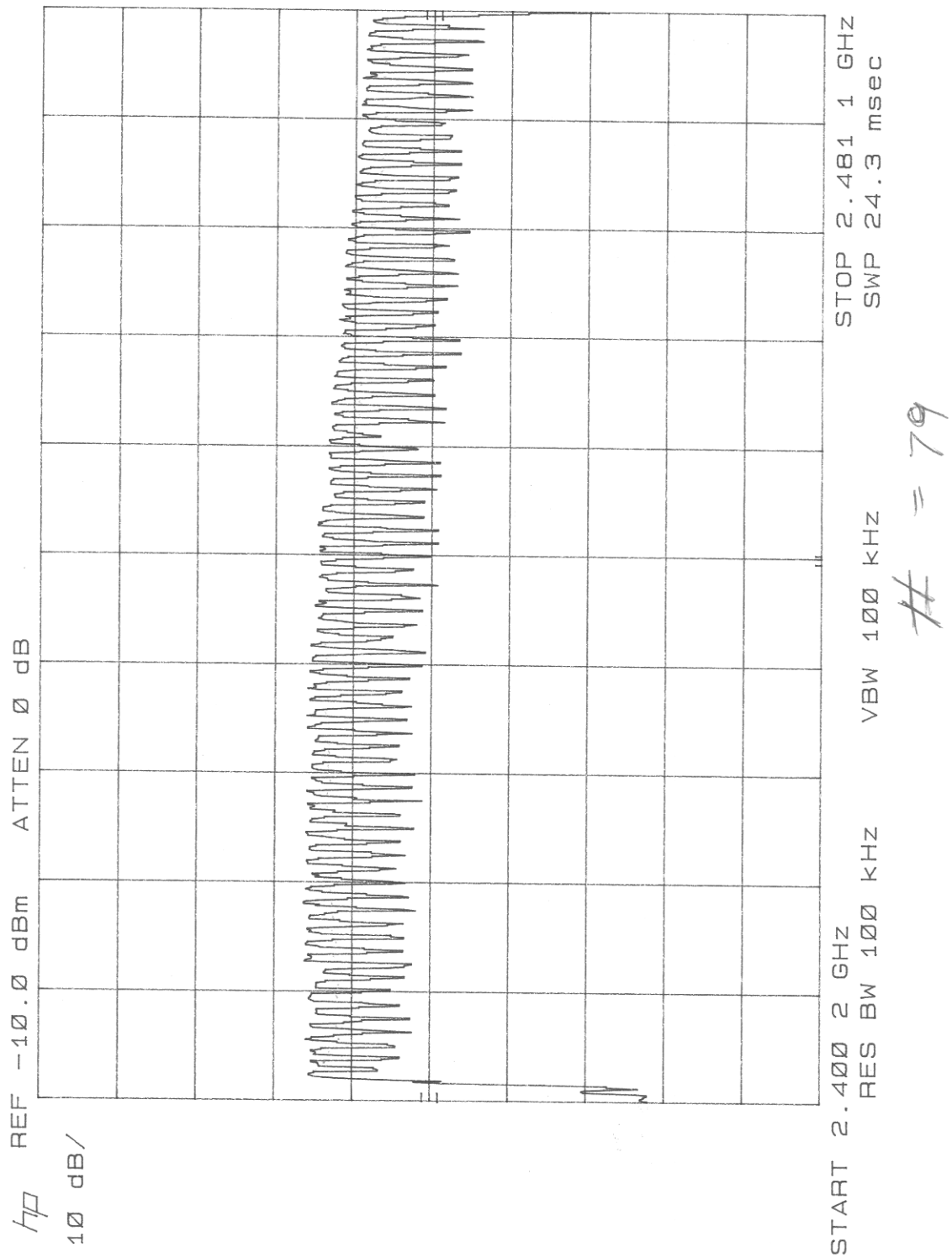
FCC Part 15.247(a) - Number of Hopping Frequencies



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REPORT No: SC50 3406 Viper TESTER: Jim Owen SPEC: FCC Part 15.247

CUSTOMER: Ilalia Data Logic TEST DIST: 3 Meters

E U T: Viper-Net TEST SITE: Roof

EUT MODE: TX channel 1,39,79. BICONICAL: N/A

DATE: April 20th 2005 LOG: N/A

NOTES: Power output levels OTHER: 251
above 1GHz: RBW & VBW 1 MHz for Pk; RBW 1MHz and VBW 10Hz for AVG
below 1GHz: RBW & VBW 100 kHz for Pk; RBW 100kHz and VBW 10Hz for AVG
CF = Antenna Factor + Cable Loss - Preamplifier Gain + Preselector Loss

v.beta1a

FREQ (MHz)	VERTICAL (dBuv) pk	VERTICAL (dBuv) av	HORIZONTAL (dBuv) pk	HORIZONTAL (dBuv) av	CF (dB/m)	MAX LEVEL (dBuV/m) pk	MAX LEVEL (dBuV/m) av	SPEC LIMIT (dBuV/m) pk	SPEC LIMIT (dBuV/m) av	MARGIN (dB) pk	MARGIN (dB) av	EUT Rotation	Antenna Height	Notes
2402	51.2	23.7	50.6	23.7	34.5884	**85.79**	**58.3**			85.79	58.3	180	1.5	fundamental low chan
2441.04	46.2	22.8	52.7	23.8	34.7524	**87.45**	**58.6**			87.45	58.6	180	1.5	fundamental mid chan
2481.02	51.2	23.7	50.6	23.7	34.9203	**86.12**	**58.6**			86.12	58.6			fundamental high chan

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Radiated RF Power Output

Report No: - SC503406

Company:- Data Logic

Equipment:- Viper-Net

CFR 47 Part 15.247 (b)

Tester:- Frank Harkins

Date :- April 25th

Limit = 30dBm = 1watt

Note: - Conversion from Field Strength to EIRP is equal to X dBuV/m minus 95.267dB

Channel	3m Field Strength dBuV/m	3m Derived Path Loss dB	Limit dBm	Calculated Power Watts	Complies
Low	85.79	-95.267	30	0.000113	Yes
Mid	87.45	-95.267	30	0.00017	Yes
High	86.12	-95.267	30	0.00012	Yes

Remarks:- Due to the EUT having an integral antenna fitted all these transmitted channels were plotted at 3m.

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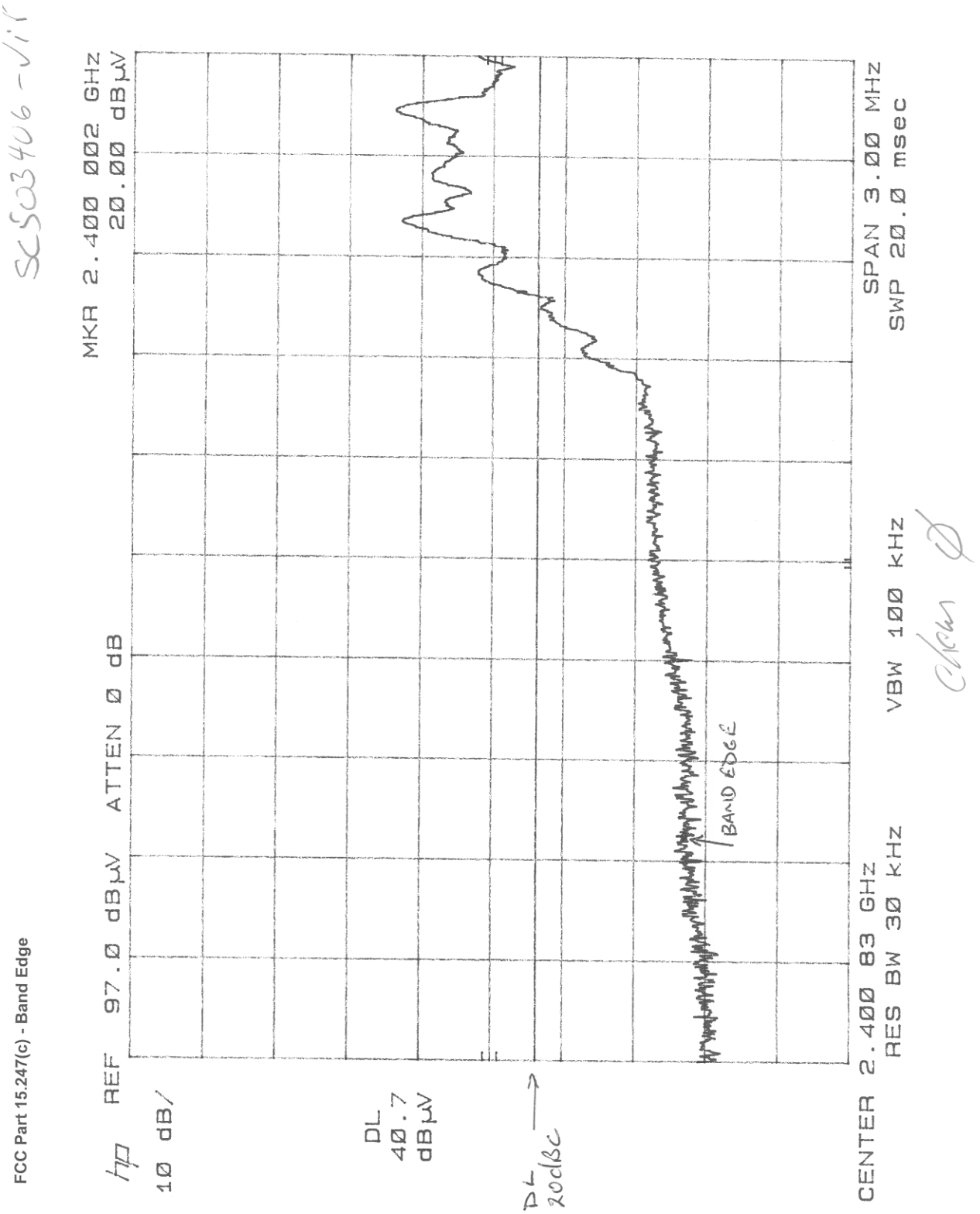
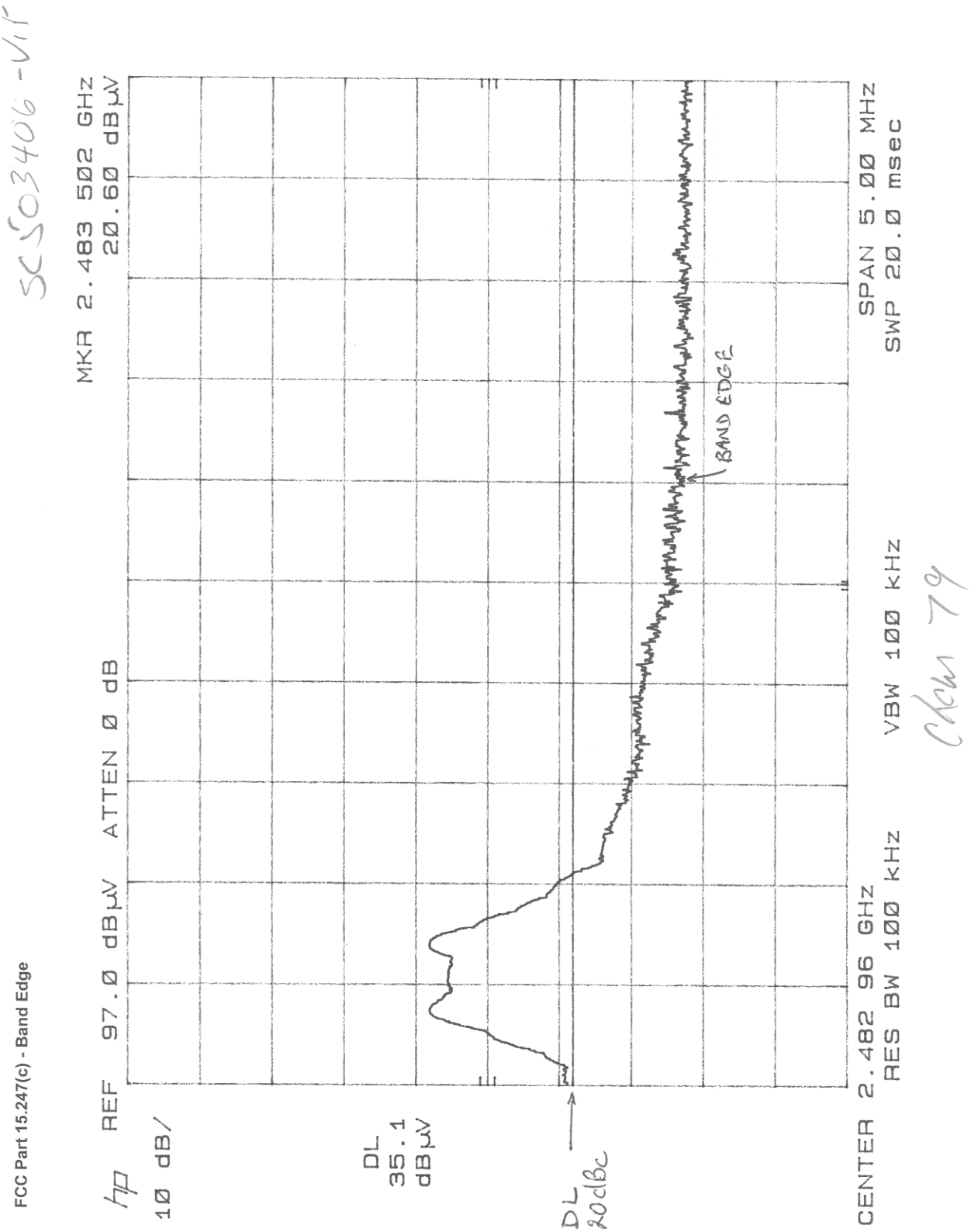

SC503406-V1F
MKR 2.400 002 GHz
20.00 dBµV
SPAN 3.00 MHz
SWP 20.0 msec
hp REF 97.0 dBµV ATTEN 0 dB
10 dB/
DL
40.7
dBµV
Δ L
20dBc
BAND EDGE
VBW 100 kHz
CENTER 2.400 83 GHz
RES BW 30 kHz
FCC Part 15.247(c) - Band Edge


SC503406-V1F
MKR 2.483 502 GHz
20.60 dBµV
REF 97.0 dBµV
ATTEN 0 dB
10 dB/
DL
35.1
dBµV
DL
20 dBc
BAND EDGE
CENTER 2.482 96 GHz
RES BW 100 kHz
VBW 100 kHz
SPAN 5.00 MHz
SWP 20.0 msec
Ckm 79
FCC Part 15.247(c) - Band Edge