



ELECTROMAGNETIC EMISSION COMPLIANCE REPORT FOR FCC CLASS B CERTIFICATION

Test Report No. : E052R-059

Applicant : KI RYUNG ELECTRONICS CO., LTD.

Address : 219-6, Gasan-Dong, Kumchun-Gu, Seoul, 153-023, Korea

Manufacturer : KI RYUNG ELECTRONICS CO., LTD.

Address : 219-6, Gasan-Dong, Kumchun-Gu, Seoul, 153-023, Korea

Type of Equipment : Navigation System (Peripheral Device for Class B Computing Device)

FCC ID : P3HNICE

Model Name : N.I.C.E

Serial number : N/A

Total page of Report : 16 pages (including this page)

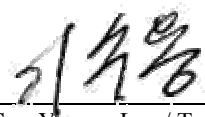
Date of Incoming : January 25, 2005

Date of Issuing : February 23, 2005

SUMMARY

The equipment complies with the requirements of **FCC CFR 47 PART 15 SUBPART B, Class B.**

This test report contains only the results of a single test of the sample supplied for the examination. It is not a general valid assessment of the features of the respective products of the mass-production.

Prepared by: 
Sue-Young, Lee / Test Engineer
EMC Div.
ONETECH Corp.

Reviewed by: 
Gea-Won, Lee / Chief Engineer
EMC Div.
ONETECH Corp.



CONTENTS

	Page
1. VERIFICATION OF COMPLIANCE.....	3
2. GENERAL INFORMATION.....	4
2.1 PRODUCT DESCRIPTION.....	4
2.2 MODEL DIFFERENCES.....	4
2.3 RELATED SUBMITTAL(S) / GRANT(S).....	4
2.4 TEST SYSTEM DETAILS.....	4
2.5 TEST METHODOLOGY.....	5
2.6 TEST FACILITY.....	5
3. SYSTEM TEST CONFIGURATION.....	6
3.1 JUSTIFICATION.....	6
3.2 EUT EXERCISE SOFTWARE.....	6
3.3 CABLE DESCRIPTION.....	6
3.4 NOISE SUPPRESSION PARTS ON CABLE.....	7
3.5 EQUIPMENT MODIFICATIONS.....	7
3.6 CONFIGURATION OF TEST SYSTEM.....	7
4. PRELIMINARY TEST.....	8
4.1 AC POWER LINE CONDUCTED EMISSION TEST.....	8
4.2 RADIATED EMISSION TEST.....	8
5. FINAL RESULT OF MEASUREMENT.....	9
5.1 CONDUCTED EMISSION TEST.....	9
5.2 RADIATED EMISSION TEST.....	13
6. FIELD STRENGTH CALCULATION.....	15
7. LIST OF TEST EQUIPMENT.....	16

**1. VERIFICATION OF COMPLIANCE**

- APPLICANT : KI RYUNG ELECTRONICS CO., LTD.
- ADDRESS : 219-6, Gasan-Dong, Kumchun-Gu, Seoul, 153-023, Korea
- CONTACT PERSON : Mr. In-Kyoung, Kim / Q.C Assistant Manager
- TELEPHONE NO : +82-2-3282-2264
- FCC ID : P3HNICE
- MODEL NAME : N.I.C.E
- SERIAL NUMBER : N/A
- DATE : February 23, 2005

DEVICE TYPE	Peripheral Device for Class B Computing Device - Unintentional Radiator
E.U.T. DESCRIPTION	Navigation System
THIS REPORT CONCERNS	ORIGINAL GRANT
MEASUREMENT PROCEDURES	ANSI C63.4: 2001
TYPE OF EQUIPMENT TESTED	PRE-PRODUCTION
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	CERTIFICATION
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15, SECTION 15.101
MODIFICATIONS ON THE EQUIPMENT TO ACHIEVE COMPLIANCE	No
FINAL TEST WAS CONDUCTED ON	3 METER OPEN AREA TEST SITE

- This device has shown compliance with the conducted emissions limits in 15.107 adopted under FCC 02-107 (ET Docket 98-80). The device may be marketed after July 11, 2005 affected by the 15.37(j) transition provisions.
- The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.



2. GENERAL INFORMATION

2.1 Product Description

The KI RYUNG ELECTRONICS CO., LTD., Model N.I.C.E (referred to as the EUT in this report) is a Navigation System.

Product specification described herein was obtained from product data sheet or user's manual.

CHASSIS TYPE	Metal
LIST OF EACH OSC. or CRY. FREQ.(FREQ.>=1MHz)	200 MHz, 7.3728MHz, 24.576MHz, 30MHz, 7.6MHz and 24.5535 MHz
NUMBER OF LAYERS	Main Board: 8 Layers, GPS Board: 6 Layers Sub A (Power Board), Sub B (USB & FM Transmitter Board) and HDD Board: 4 Layers
EXTERNAL CONNECTOR	Power (DC 9V-16V), EXT. I/O, A/V In, Video In, Audio Output, USB 1.1, USB 2.0, External GPS Antenna Input

2.2 Model Differences

-. The difference(s) compared to the EUT is as follows: None

2.3 Related Submittal(s) / Grant(s)

-. Original submittal only

2.4 Test System Details

The model numbers for all the equipments which were used in the tested system is:

Model	Manufacturer	FCC ID	Description	Connected to
N.I.C.E	KI RYUNG ELECTRONICS CO., LTD.	P3HNICE	Navigation System (EUT)	-
NL20-120200-11	I.T.E	N/A	AC/DC Adaptor	EUT
SMS-015N	Sungil Precision Co., Ltd.	N/A	SPEAKER	Notebook PC
N/A	N/A	N/A	Satellite Radio ANT	EUT
PP05LC	DELL Computer Corp	DoC	Notebook PC	-
MO56UO	N/A	DoC	MOUSE	Notebook PC
2225C	HP	DSI6XU2225	PRINTER	Notebook PC
020-0470	Cardinal	GDE0196	MODEM	Notebook PC
GHV-S9990	GoldStar	N/A	VCR	EUT



2.5 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.4: 2001. Radiated testing was performed at a distance of 3 meters from EUT to the antenna.

2.6 Test Facility

The open area test site and conducted measurement facilities are located on at 307-51 Daessangryung-Ri, Chowol-Myun, Kwangju-City, Kyunggi-Do 464-080 Korea. Description details of test facilities were submitted to the Commission on April 04, 2003. (Registration Number: 340658)



3. SYSTEM TEST CONFIGURATION

3.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
MAIN BOARD	N/A	TMX200	N/A
SUB A BOARD	N/A	TMX200 SUBA	N/A
SUB B BOARD	N/A	TMX200 SUBB	N/A
F01 BOARD	N/A	LTC 700W V_F01_EX128	N/A
HDD BOARD	N/A	TMX200HDD	N/A
HDD	HITACHI	HEJ423020F9AT00	N/A
LCD	N/A	LTC700WV-F01	N/A

3.2 EUT exercise Software

After connecting the EUT to a notebook computer using USB cable, the EUT was operated with the navigation and data read/write modes during the test.

3.3 Cable Description

	Power Cord Shielded (Y/N)	I/O cable Shielded (Y/N)	Length (M)
Navigation System (EUT)	N	Y	1.2(P), 1.2(D)
AC/DC Adaptor	N/A	N	1.2(P)
Speaker	N/A	N	1.2(D)
Satellite Radio ANT	N/A	N	1.2(D)
Notebook PC	N	-	1.5 (P)
Mouse	N/A	N	1.2(D)
Printer	N	Y	1.8(P), 1.2(D)
Modem	N	Y	1.8(P), 1.2(D)
VCR	N	Y	1.2(P), 1.2(D)

* The marked "(P)" means the Power Cable and "D" means the I/O Cable.

**3.4 Noise Suppression Parts on Cable**

	Ferrite Bead (Y/N)	Location	Metal Hood (Y/N)	Location
Navigation System (EUT)	N	N/A	N	N/A
AC/DC Adaptor	N	N/A	N	N/A
Speaker	N	N/A	Y	BOTH END
Satellite Radio ANT	N	N/A	N	N/A
Notebook PC	N	N/A	N	N/A
Mouse	N	N/A	Y	EUT END
Printer	N	N/A	N	N/A
Modem	N	N/A	N	N/A
VCR	N	N/A	N	N/A

3.5 Equipment Modifications

To achieve compliance to FCC part 15 rules, the following change(s) was made by ONETECH Corp. during compliance testing:

“There were no Modified items during EMI test”

3.6 Configuration of Test System

Line Conducted Test : The AC/DC Adapter of the EUT was connected to LISN. All supporting equipments were connected to another LISN. Preliminary Power line Conducted Emission test was performed by using the procedure in ANSI C63.4: 2001 7.2.3 to determine the worse operating conditions.

Radiated Emission Test : Preliminary radiated emission test was conducted using the procedure in ANSI C63.4: 2001 8.3.1.1 to determine the worse operating conditions. Final radiated emission test was conducted at 3 meters open area test site.



4. PRELIMINARY TEST

4.1 AC Power line Conducted Emission Test

During Preliminary Test, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
Data Read/Write Mode	X
Navigation Mode	

4.2 Radiated Emission Test

During Preliminary Test, the following operating mode was investigated

Operation Mode	The Worse operating condition (Please check one only)
Data Read/Write Mode	
Navigation Mode	X

**5. FINAL RESULT OF MEASUREMENT**

Preliminary test was done in normal operation mode. And the final measurement was selected for the maximized emission level

5.1 Conducted Emission Test

Humidity Level : 43 %

Temperature: 21 °C

Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.107 (a)

Type of Test : CLASS B

Result : PASSED BY -7.40 dB at 2.60 MHz under Data Read/Write mode

EUT : Navigation System

Date: January 25, 2005

Operating Condition : The EUT was operated with the Navigation Mode.

Detector : CISPR Quasi-Peak (6 dB Bandwidth: 9 kHz)

Frequency (MHz)	Line	Peak (dBuV)		Margin (dB)
		Emission level	Q.P Limits	
3.12	H	39.88	56.00	-16.12
3.18	N	40.33	56.00	-15.67
7.53	N	46.42	60.00	-13.58
7.66	H	46.95	60.00	-13.05
9.34	H	49.61	60.00	-10.39
9.48	N	48.80	60.00	-11.20
Frequency (MHz)	Line	Average (dBuV)		Margin (dB)
		Emission level	Limits	
7.53	N	40.13	50.00	-9.87
7.66	H	40.78	50.00	-9.22
9.34	H	42.10	50.00	-7.90
9.48	N	40.15	50.00	-9.85

Line Conducted Emission Tabulated Data

Remark : "H": Hot Line, "N": Neutral line, "P": Peak detect

See next page for an overview sweep performed with peak and average detector.



Operating Condition : The EUT was operated with Data Read/Write Mode.

Frequency (MHz)	Line	Peak (dBuV)		Margin (dB)
		Emission level	Q.P Limits	
2.60	H	44.67	56.00	-11.33
3.12	N	41.12	56.00	-14.88
7.74	H	50.12	60.00	-9.88
9.29	H	51.63	60.00	-8.37
9.35	N	51.04	60.00	-8.96
13.52	N	43.74	60.00	-16.26
Frequency (MHz)	Line	Average (dBuV)		Margin (dB)
		Emission level	Limits	
2.60	H	38.60	46.00	-7.40
7.74	H	41.35	50.00	-8.65
9.29	H	40.61	50.00	-9.39
9.35	N	37.03	50.00	-12.97

Line Conducted Emission Tabulated Data

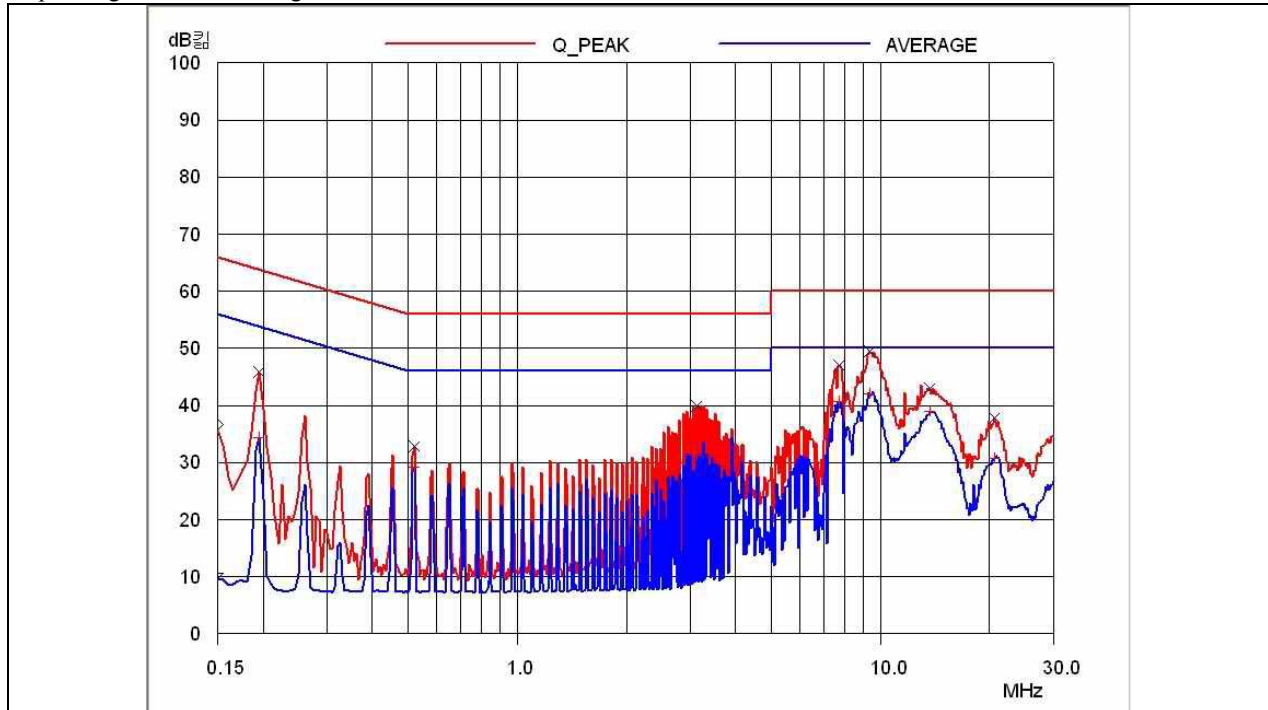
Remark : "H": Hot Line, "N": Neutral line, "P": Peak detect

See next page for an overview sweep performed with peak and average detector.

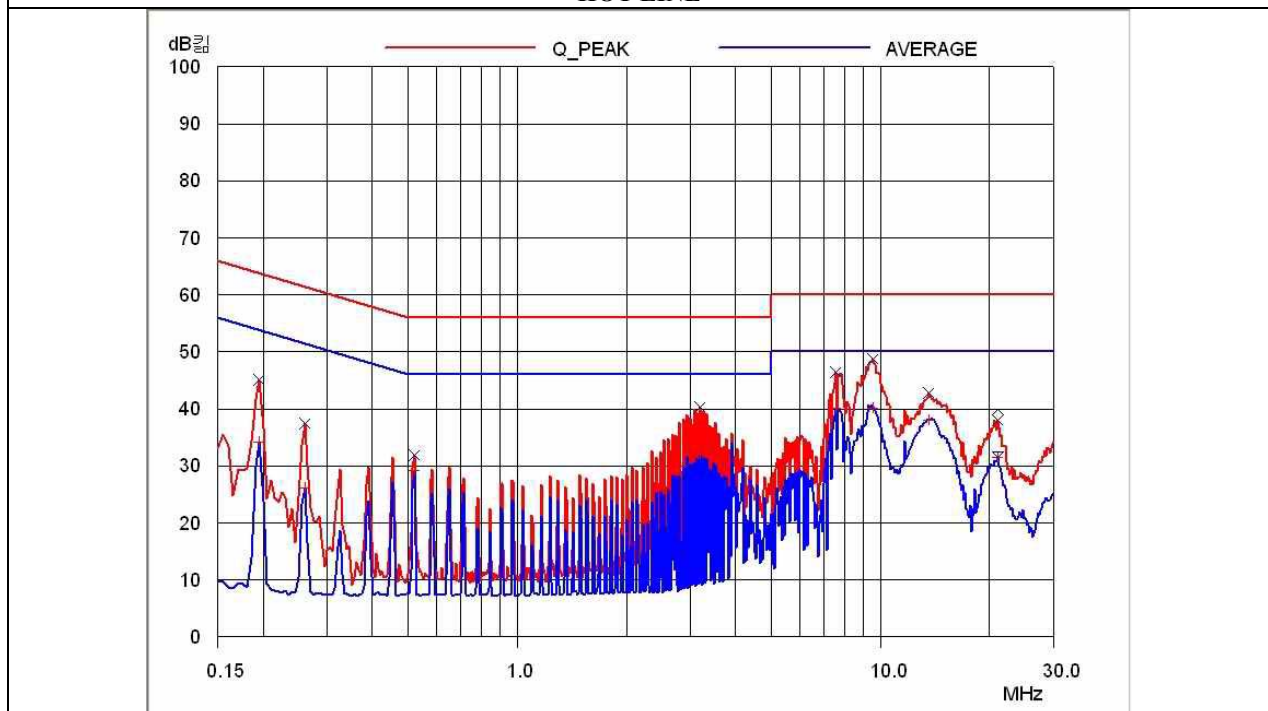
Tested by: Sue-Young, Lee/ Test Engineer



Operating Condition: Navigation Mode



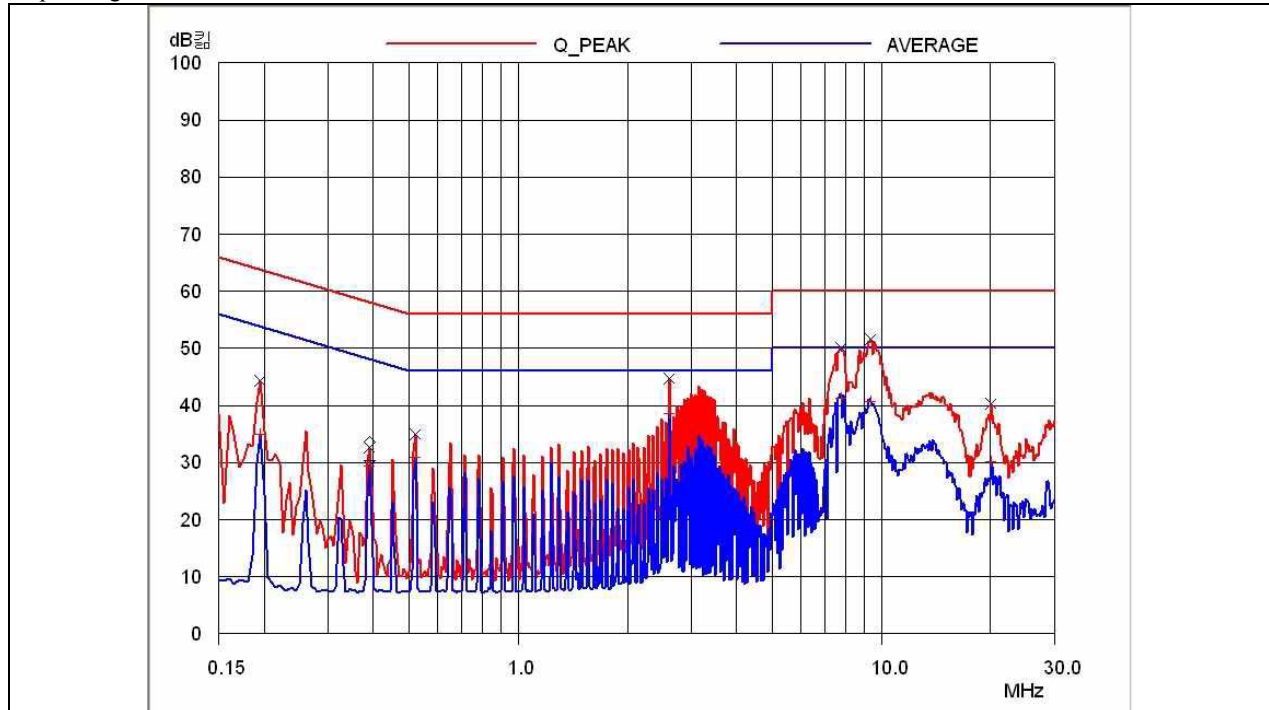
HOT LINE



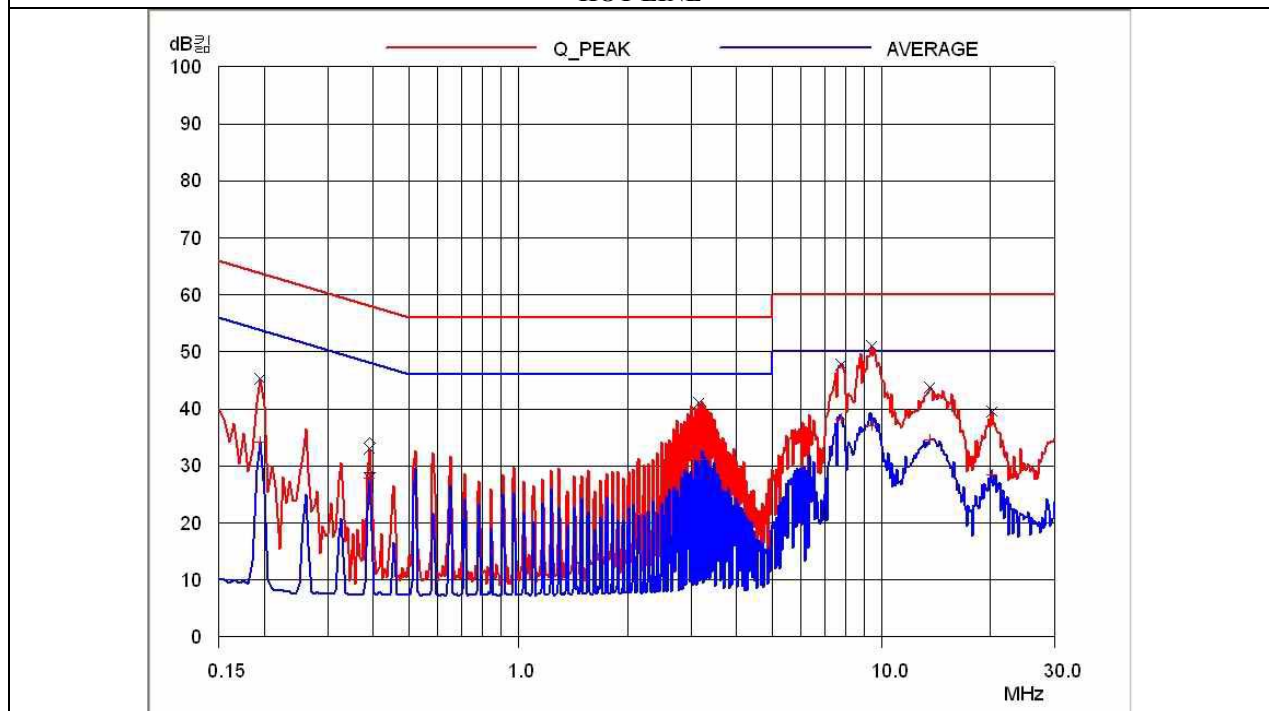
NEUTRAL LINE



Operating Condition: Data Read/Write Mode



HOT LINE



NEUTRAL LINE

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FCC-003 (Rev.0)

HEAD OFFICE : #505 SK APT. Factory 223-28, Sangdaewon 1 Dong, Jungwon-Gu, Seongnam-City, Kyunggi-Do, 462-121, Korea
(TEL: +82-31-746-8500, FAX: +82-31-746-8700)

EMC Testing Dept : 426-1 Daessangryung-Ri, Chowol-Myun, Kwangju-City, Kyunggi-Do, 464-860, Korea. (TEL: +82-31-765-8289, FAX: +82-31-766-2904)



5.2 Radiated Emission Test

The following table shows the highest levels of radiated emission on both polarizations of horizontal and vertical.

Humidity Level : 39 % Temperature: 17 °C
Limits apply to : FCC CFR 47, PART 15, SUBPART B, SECTION 15.109 (a)
Type of Test : CLASS B
Result : PASSED BY -3.98 dB at 64.89 MHz under Navigation Mode

EUT : Navigation System Date: February 17, 2005
Operating Condition : The EUT was operated with the Navigation Mode.
Detector : CISPR Quasi-Peak (6 dB Bandwidth: 120 kHz)
Frequency Range : 30 MHz – 2000 MHz
Distance : 3 Meter

Radiated Emissions		Ant	Correction Factors		Total	FCC CLASS B	
Freq. (MHz)	Amp. (dBuV)	Pol.	Ant. (dBuV/m)	Cable (dB)	Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
64.89	25.70	V	8.92	1.40	36.02	40.00	-3.98
142.41	20.77	V	12.72	2.10	35.59	43.50	-7.91
255.78	25.54	H	12.33	2.80	40.67	46.00	-5.33
311.02	24.15	V	14.88	2.89	41.92	46.00	-4.08
604.63	16.44	V	18.84	4.42	39.70	46.00	-6.30

Radiated Emissions Tabulated Data



Operating Condition : The EUT was operated with Data Read/Write Mode

Radiated Emissions		Ant	Correction Factors		Total	FCC CLASS B	
Freq. (MHz)	Amp. (dBuV)	Pol.	Ant. (dBuV/m)	Cable (dB)	Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
64.89	24.50	V	8.92	1.40	34.82	40.00	-5.18
67.79	17.14	H	8.23	1.46	26.83	40.00	-13.17
107.52	21.44	V	12.85	1.75	36.04	43.50	-7.46
256.75	21.05	H	12.37	2.80	36.22	46.00	-9.78
312.96	23.22	V	14.81	2.90	40.93	46.00	-5.07
604.63	16.54	V	18.84	4.42	39.80	46.00	-6.20

Radiated Emissions Tabulated Data

Tested by: Sue-Young, Lee/ Test Engineer



6. FIELD STRENGTH CALCULATION

Meter readings are compared to the specification limit correcting for antenna and cable losses

+ Meter reading (dBuV)

+ Cable Loss (dB)

+ Antenna Factor (Loss) (dB/meter)

= Corrected Reading (dBuV/meter)

- Specification Limit (dBuV/meter)

= dB Relative to Spec (+/- dB)

**7. LIST OF TEST EQUIPMENT**

No.	EQUIPMENTS	MFR.	MODEL	SER. NO.	LAST CAL	DUE CAL	USE
1.	Test receiver	R/S	ESVS10	827864/005	DEC/04	12MONTH	■
2.	Test receiver	R/S	ESHS10	834467/007	MAY/04	12MONTH	■
3.	Spectrum analyzer	HP	8566B	3407A08547	JUL/04	12MONTH	■
4.	Spectrum analyzer	HP	8568B	3109A05456	JUL/04	12MONTH	■
5.	RF preselector	HP	85685A	3107A01264	APR/04	12MONTH	■
6.	Quasi-Peak Adapter	HP	85650A	3107A01542	JUL/04	12MONTH	■
7.	TRILOG Broadband Antenna	Schwarzbeck	VULB9163	VULB9163 166	FEB/04	12MONTH	
8	Biconical antenna	EMCO	3104C	9109-4443	MAY/04	12MONTH	
		Schwarzbeck	VHA9103	91031852	JAN/05		■
9.	Log Periodic antenna	EMCO	3146	9109-3213	FEB/04	12MONTH	
				9109-3217	MAY/04		
		Schwarzbeck	9108-A(494)	62281001	FEB/05		■
10.	LISN	EMCO	3825/2	9109-1867	JUL/04	12MONTH	■
				9109-1869	OCT/04		■
11.	Position Controller	HD GmbH	HD100	N/A	N/A	N/A	■
12.	Turn Table	HD GmbH	DS420S	N/A	N/A	N/A	■
13.	Antenna Master	HD GmbH	MA240	N/A	N/A	N/A	■