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CERTIFICATION OF COMPLIANCE

Elentec Co., Ltd.

#337-17 Wonchun-Dong, Yoengtong-gu Suwon-city kyunggi-do
Korea

Dates of Tests: December 21 2007 ~ January 03, 2008

Test Report S/N: DR50110801M

Test Site : DIGITAL EMC CO., LTD.

FCC ID

UF8N4600

APPLICANT

Elentec Co., Ltd.

FCC Classification	: Low Power Communication Device Transmitter
Device name	: Portable Navigation Bluetooth System with FM Transmitter
Manufacturer	: Elentec Co., Ltd.
Model (Brand name)	: N4600 (BlueNavi)
Add Model (Brand name)	: COOLNAVI430 Premium (COOLNAVI) TG-430E (NAVIBANK), AUF N4600 (DAUF)
Test Device Serial number	: Identical prototype
FCC Rule Part(s)	: FCC Part 15 Subpart C ANSI C-63.4-2003
Frequency Range	: 88.1 ~ 107.9 MHz
Data of issue	: January 14, 2008

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.



NVLAP LAB CODE 200559-0

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1. General Information

This report contains the result of tests performed by:

DIGITAL EMC CO., LTD.

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Quality control in the testing laboratory is implemented as per ISO/IEC 17025 which is the "General requirements for the competents of calibration and testing laboratory".

This laboratory is accredited by NVLAP and NVLAP Lab. Code is 200559-0.

Test operator: engineer

January 14, 2008

Dong -Chul CHA



Data

Name

Signature

Report Reviewed By: manager

January 14, 2008

Harvey Sung



Data

Name

Signature

Ordering party:

Company name : Elentec Co.,Ltd

Address : #337-17 Wonchun-Dong, Yoengtong-gu

City/town : Suwon-city

Country : Korea

Date of order : November 26, 2007

2. Information about test item

UF8N4600

2.1 Equipment information

Equipment model name	N4600
Type of equipment	Portable Navigation Bluetooth System with FM Transmitter
Frequency band	88.1 ~107.9 MHz
Type of antenna	Wire Antenna
Power	DC 3.7 V

2.2 Tested environment

Temperature	: 15 ~ 35 (°C)
Relative humidity content	: 20 ~ 75 %
Air pressure	: 86 ~ 103 kPa
Details of power supply	: DC 3.7 V

2.3 Tested frequency

Frequency	TX	RX
Low frequency	88.1 MHz	-
Middle frequency	98.0 MHz	-
High frequency	107.9 MHz	-

Note 1. The operating frequency range was verified manually using frequency selection switch.

2.4 EMI Suppression Device(s)/Modifications

EMI suppression device(s) added and/or modifications made during testing

-> None

3. Test Report

3.1 Summary of tests

FCC Part Section(s)	Parameter	Limit	Test Condition	Status (note 1)
15.239	Field Strength of Fundamental and Emissions within permitted band.	< 250 uV/m @ 3m	Radiated	C
15.209	Radiated Emission	< FCC 15.209 limits	Radiated	C
15.207	AC Conducted Emissions	< FCC 15.207 limits	Line Conducted	NA ^{note 2}
15.239	Occupied channel bandwidth	< 200kHz	Radiated	C
15.203	Antenna Requirement	FCC 15.203	-	C
<p>Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable</p> <p>Note 2: Conducted emission test isn't applicable because the power of the EUT is DC voltage from battery or cigar jack.</p> <p>Note 3: The sample was tested according to the following specification:</p> <p style="padding-left: 40px;">FCC Parts 15.239; ANSI C-63.4-2003</p>				

3.2 TEST requirements

3.2.1 Field Strength of Fundamental and Emissions within permitted band.

Procedure:

The field strength of emissions from intentional radiators operated within the bands 88.1 ~107.9MHz was measured in accordance with FCC Part §15.239. The test set-up was made according to ANSI C 63.4:2003.

The EUT was placed on a 0.8m high wooden table inside a shielded semi-anechoic chamber.

An antenna was placed at 3m distance from EUT and measurements of frequencies and amplitudes of field strengths were recorded.

Type of Test : Low Power Communication Device Transmitter
 FCC ID : UF8N4600
 Operating Condition : Transmit the rock song.

Measurement Data:

Frequency (MHz)	Detector Mode	Pol	Read Level (dBuV)	Ant. Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
88.1	PK	V	59.3	8.6	1.1	223	46.7	48	1.3
98.0	PK	V	53.0	10.2	1.1	22.3	42.0	48	6.0
107.9	PK	V	46.2	11.0	1.1	22.3	36.0	48	12.0

Note 1: Field Strength Calculation

Level = Read Level + ANT Factor + Cable Loss – Preamp gain

Margin = Limit – Level

Note 2: PK results were meet AV limit. So AV measurements were omitted.

Minimum Standard:

The maximum Field Strength authorized within 200kHz is 250 uV/m@3m

3.2.2 Radiated Emission

Procedure:

The field strength of emissions from intentional radiators operated within the bands 88.1 ~107.9MHz was measured in accordance with FCC Part §15.239. The test set-up was made according to ANSI C 63.4:2003.

The EUT was placed on a 0.8m high wooden table inside a shielded semi-anechoic chamber.

An antenna was placed at 3m distance from EUT and measurements of frequencies and amplitudes of field strengths were recorded.

The spectrum analyzer is set to:

Frequency Range = 30 MHz ~ 10th harmonic.

RBW = 120 kHz (30MHz ~ 1 GHz)

= 1 MHz (1 GHz ~ 10th harmonic)

Trace = max hold

Sweep = auto

VBW \geq RBW

Detector function = Peak/Average (>1GHz)

Receiver Detector = Quasi-Peak(\leq 1GHz)

Operating Condition: : Transmit the rock song.

Measurement Data: **Complies**

- Refer to the next page.

Minimum Standard: FCC Part 15.209(a)

Frequency (MHz)	Limit (uV/m) @ 3m
30 ~ 88	100 **
88 ~ 216	150 **
216 ~ 960	200 **
Above 960	500

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88MHz, 174-216MHz or 470-806MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

Measurement Data 1: Harmonics and other emissions of the 88.1 MHz

Frequency (MHz)	Pol	Read Level (dBuV)	Ant. Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
43.990	V	35.90	11.8	0.8	22.3	26.20	40.00	13.80
62.644	V	39.65	5.9	0.9	22.3	24.10	40.00	15.90
120.160	H	36.60	11.6	1.2	22.4	27.00	43.50	16.50
288.045	H	37.30	13.6	1.9	23.2	29.60	46.00	16.40
302.035	H	37.10	13.8	1.9	23.3	29.50	46.00	16.50

Measurement Data 2: Harmonics and other emissions of the 98.0 MHz

Frequency (MHz)	Pol	Read Level (dBuV)	Ant. Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
30.000	H	27.80	18.3	0.7	22.3	24.50	40.00	15.50
36.218	V	30.30	15.4	0.7	22.3	24.10	40.00	15.90
39.327	H	30.10	15.1	0.8	22.3	23.70	40.00	16.30
110.833	H	39.80	11.1	1.2	22.3	29.80	43.50	13.70

Measurement Data 3: Harmonics and other emissions of the 107.9 MHz

Frequency (MHz)	Pol	Read Level (dBuV)	Ant. Factor (dB/m)	Cable Loss (dB)	Preamp Gain (dB)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
45.545	V	39.70	10.6	0.8	22.3	28.80	40.00	11.20
47.099	H	35.00	9.6	0.8	22.3	23.10	40.00	16.90

Note 1: Field Strength Calculation

$$\text{Level} = \text{Read Level} + \text{ANT Factor} + \text{Cable Loss} - \text{Preamp Gain}$$

$$\text{Margin} = \text{Limit} - \text{Level}$$

Note 2 : Up to the 10th harmonics of fundamental were investigated according to 15.239 and the worst-case emissions are reported.

3.2.3 AC Conducted Emissions

Procedure:

The conducted emissions are measured in the shielded room with a spectrum analyzer in peak hold. While the measurement, EUT had its normal operating function. Emissions closest to the limit are measured in the quasi-peak mode (QP) with the tuned receiver using a bandwidth of 9 kHz. The emissions are maximized further by cable manipulation and Exerciser operation. The highest emissions relative to the limit are listed.

Measurement Data: **Not Applicable**

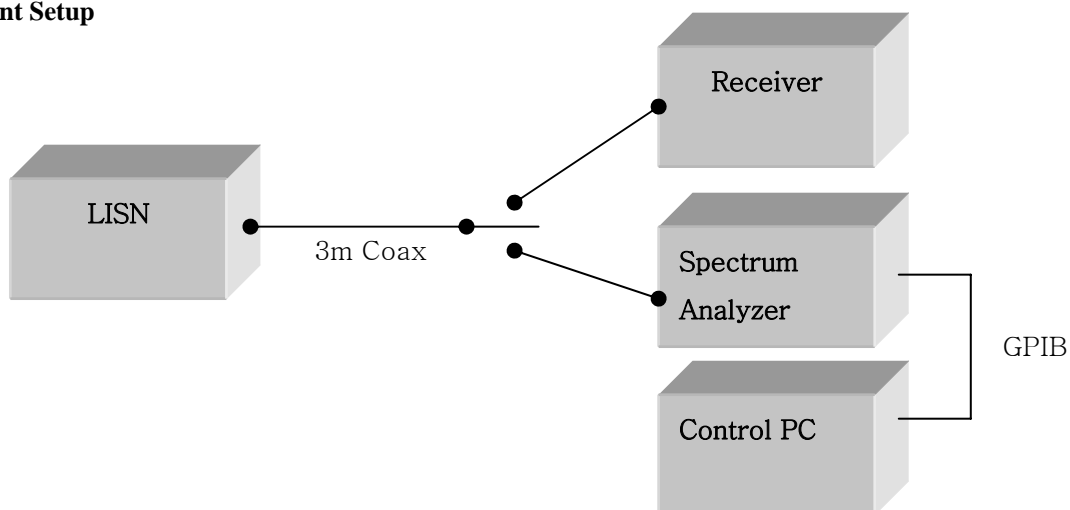
Conducted emission test is not applicable because the power of the EUT is supplied from the iPod player.

Minimum Standard: FCC Part 15.207(a)/EN 55022

Frequency Range (MHz)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 ~ 0.5	66 to 56 *	56 to 46 *
0.5 ~ 5	56	46
5 ~ 30	60	50

* Decreases with the logarithm of the frequency

Measurement Setup



Measurement setup for AC Conducted Emission

3.2.4 Occupied Bandwidth

Procedure:

The occupied channel Bandwidth is defined as the minimum declared bandwidth within which the transmitter's necessary bandwidth can be contained. The transmitter was adjusted to work at the selected channels. The occupied channel BW was measured at an amplitude level reduced from the reference level by the 26dB.

The plot is taken at 30kHz/division frequency span, 10kHz resolution bandwidth and 5dB/division amplitude logarithmic display from a spectrum analyzer.

The spectrum analyzer is set to:

Frequency Range =

RBW = 10 kHz

Trace = max hold

Sweep = auto

VBW \geq RBW

Detector function = Peak

Span = 300 kHz

Operating Condition: Transmit the rock song.

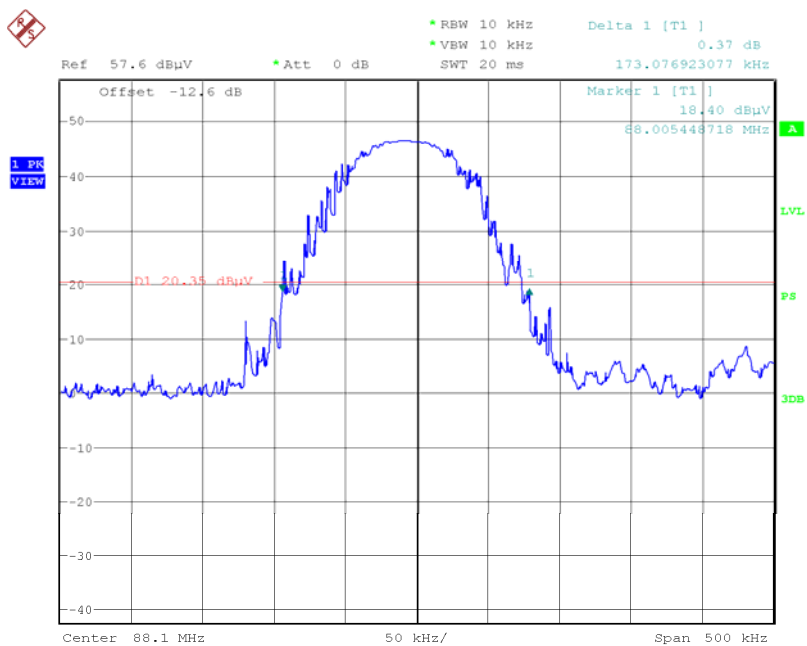
Measurement Data: **Complies**

Refer to the next page.

Minimum Standard:

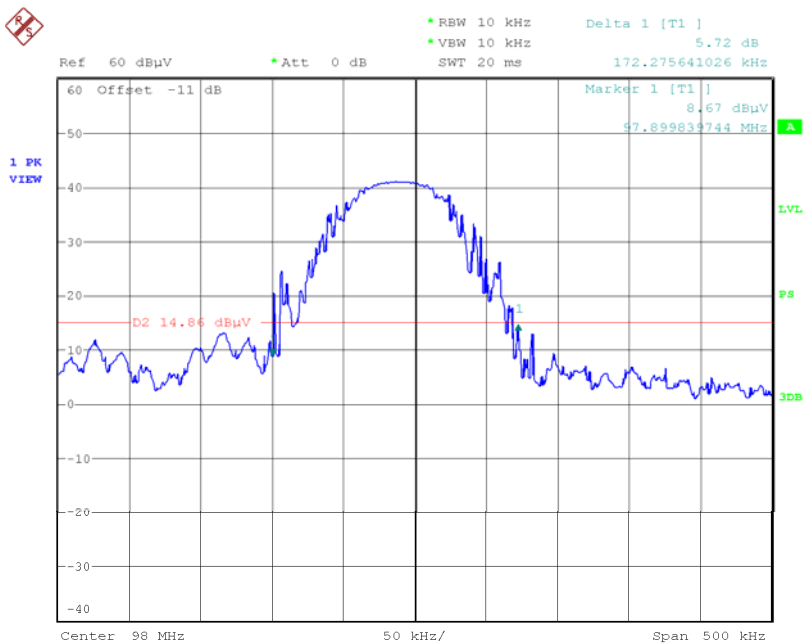
Occupied Bandwidth < 200kHz.

Occupied Channel Bandwidth plot (88.1 MHz)



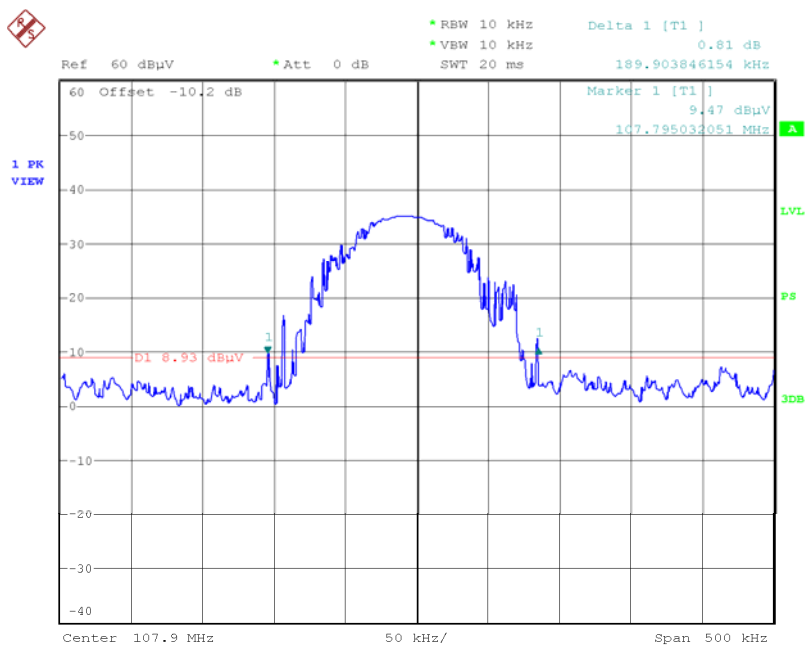
Date: 24.DEC.2007 17:06:06

Occupied Channel Bandwidth plot (98.0 MHz)



Date: 24.DEC.2007 17:23:56

Occupied Channel Bandwidth plot (107.9 MHz)



Date: 24.DEC.2007 16:56:12

3.2.5 Antenna Requirement

Define:

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the applicant can be used with the device. The use of permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with this requirement.

--- **The antenna Type:** The wire antenna inside cigar jack cable is soldered permanently to the cigar jack connector. .
Any other antenna can not be attached to this device.

APPENDIX I

TEST EQUIPMENT USED FOR TESTS

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment.

	Type	Manufacturer	Model	Cal.Due.Date (dd/mm/yy)	Next.Due.Date (dd/mm/yy)	S/N
01	Spectrum Analyzer	Agilent	E4404B	17/04/07	17/04/08	US41061134
02	Spectrum Analyzer	Agilent	E4440A	15/11/07	15/11/08	MY45304199
03	Spectrum Analyzer	H.P	8563E	09/10/07	09/10/08	3551A04634
04	EMI test receiver	R&S	ESU	25/01/07	25/01/08	100014
05	EMI Test Receiver	R&S	ESCI	28/04/07	28/04/08	100364
06	Power Meter	H.P	EPM-442A	23/03/07	10/07/08	GB37170413
07	Power Sensor	H.P	8481A	23/03/07	11/07/08	3318A96332
08	Frequency Counter	H.P	5342A	06/09/07	06/09/08	2119A04450
09	Multifunction Synthesizer	H.P	8904A	23/11/07	23/11/08	3633A08404
10	Signal Generator	Rohde Schwarz	SMR20	21/03/07	21/03/08	101251
11	Signal Generator	H.P	E4421A	10/07/07	10/07/08	US37230529
12	Audio Analyzer	H.P	8903B	10/07/07	10/07/08	3011A0944B
13	Modulation Analyzer	H.P	8901B	14/07/07	14/07/08	3028A03029
14	8960 Series 10 Wireless Comms Test Set	Agilent	Z5515C	13/06/07	13/06/08	GB43461134
15	Universal Radio Communication Test	Rohde Schwarz	CMU200	24/04/07	24/04/08	107631
16	Multi system UE Tester	Japan Radid Co., Ltd	NJZ-2000	N/A	N/A	ET00095
17	Power Splitter	WEINSCHL	1593	05/10/07	05/10/08	332
18	BAND Reject Filter	Microwave Circuits	N0308372	18/10/07	18/10/08	3125-01DC0312
19	BAND Reject Filter	Wainwright	WRCG1750	18/10/07	18/10/08	SN2
20	AC Power supply	DAEKWANG	5KVA	20/03/07	20/03/08	N/A
21	DC Power Supply	H.P	6622A	20/03/07	20/03/08	465487
22	HORN ANT	EMCO	3115	10/08/07	10/08/08	6419
23	HORN ANT	EMCO	3115	10/08/07	10/08/08	21097
24	HORN ANT	A.H.Systems	SAS-574	09/10/07	20/08/08	154
25	HORN ANT	A.H.Systems	SAS-574	20/08/07	20/08/08	155
26	Dipole Antenna	Schwarzbeck	VHA9103	19/12/07	27/11/08	2116
27	Dipole Antenna	Schwarzbeck	VHA9103	19/12/07	27/11/08	2117
28	Dipole Antenna	Schwarzbeck	UHA9105	20/12/07	27/11/08	2261
29	Dipole Antenna	Schwarzbeck	UHA9105	20/12/07	27/11/08	2262

	Type	Manufacturer	Model	Cal.Due.Date (dd/mm/yy)	Next.Due.Date (dd/mm/yy)	S/N
30	TEMP & HUMIDITY Chamber	JISCO	J-RHC2	02/10/07	02/10/08	021031
31	RFI/FIELD Intensity Meter	Kyorits	KNM-504D	06/09/07	06/09/08	4N-161-4
32	Frequency Converter	Kyorits	KCV-604C	21/07/07	21/07/08	4-230-3
33	Log Periodic Antenna	Schwarzbeck	UHALP9108A1	08/06/07	08/06/08	1098
34	Biconical Antenna	Schwarzbeck	VHA9103	08/06/07	08/06/08	2233
35	Digital Multimeter	H.P	34401A	20/03/07	20/03/08	3146A13475
36	Attenuator (10dB)	WEINSCHL	23-10-34	05/10/07	05/10/08	BP4386
37	High-Pass Filter	ANRITSU	MP526	08/10/07	08/10/08	M27756
38	Attenuator (3dB)	Agilent	8491B	12/07/07	12/07/08	58177
39	Amplifier (25dB)	Agilent	8447D	08/08/07	08/08/08	2944A10144
40	Amplifier (30dB)	Agilent	8449B	25/10/07	25/10/08	3008A01590
41	Amplifier (22dB)	HP	8447E	20/07/07	20/07/08	2945A02865
42	Position Controller	TOKIN	5901T	N/A	N/A	14173
43	Driver	TOKIN	5902T2	N/A	N/A	14174
44	Spectrum Analyzer	H.P	8591E	16/04/07	16/04/08	3649A05889
45	RFI/FIELD Intensity Meter	Kyorits	KNW-2402	06/10/07	06/10/08	4N-170-3
46	LISN	Kyorits	KNW-407	30/08/07	30/08/08	8-317-8
47	LISN	Kyorits	KNW-242	06/10/07	06/10/08	8-654-15
48	CVCFC	NF Electronic	4400	N/A	N/A	344536 4420064
49	Software	ToYo EMI	EP5/RE	N/A	N/A	Ver 2.0.800
50	Software	ToYo EMI	EP5/CE	N/A	N/A	Ver 2.0.801
51	Software	AUDIX	e3	N/A	N/A	Ver 3.0
52	Software	Agilent	Benchlink	N/A	N/A	A.01.09 021211