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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.

Address : 683-3, Yubang-Dong, Yongin-Si, Kyunggi-Do, Korea. 449-080

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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 |

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

Note 2: Conducted emission test isn't applicable because the power of the EUT is DC voltage from battery or cigar jack.

Note 3: The sample was tested according to the following specification:

FCC Parts 15.239; ANSI C-63.4-2003

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)

$$\mathbf{VBW} \geq \mathbf{RBW}$$

= 1 MHz (1 GHz \sim 10th harmonic)

Trace = max hold

Detector function = Peak/Average (>1GHz)

Sweep = auto

Receiver Detector = Quasi-Peak($\leq 1\text{GHz}$)

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

Level = Read Level + ANT Factor + Cable Loss - Preamp Gain

Margin = Limit - 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**

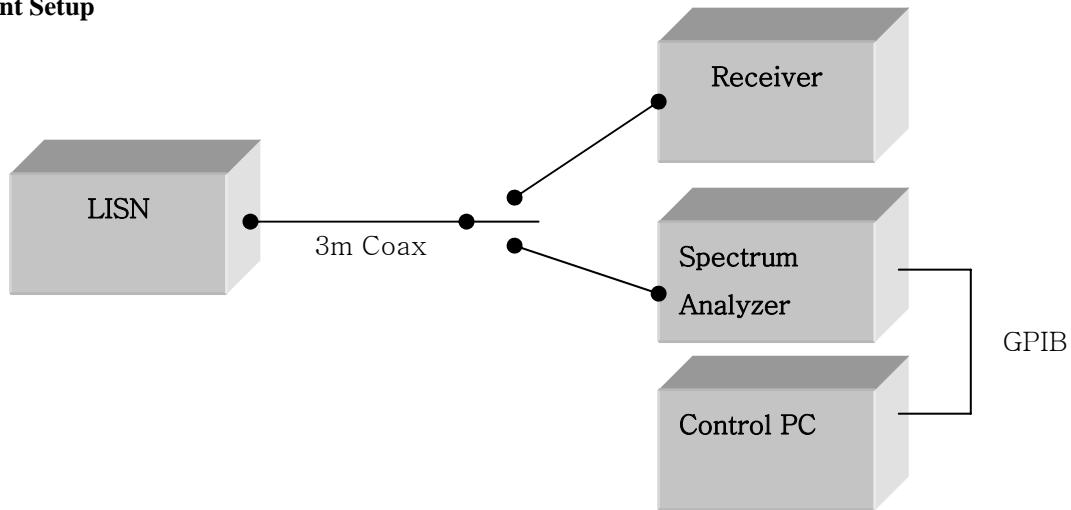
Conducted emission test is not applicable because the power of the EUT is supplied from the iPod player.

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

VBW \geq RBW

Trace = max hold

Detector function = Peak

Sweep = auto

Span = 300 kHz

Operating Condition: Transmit the rock song.

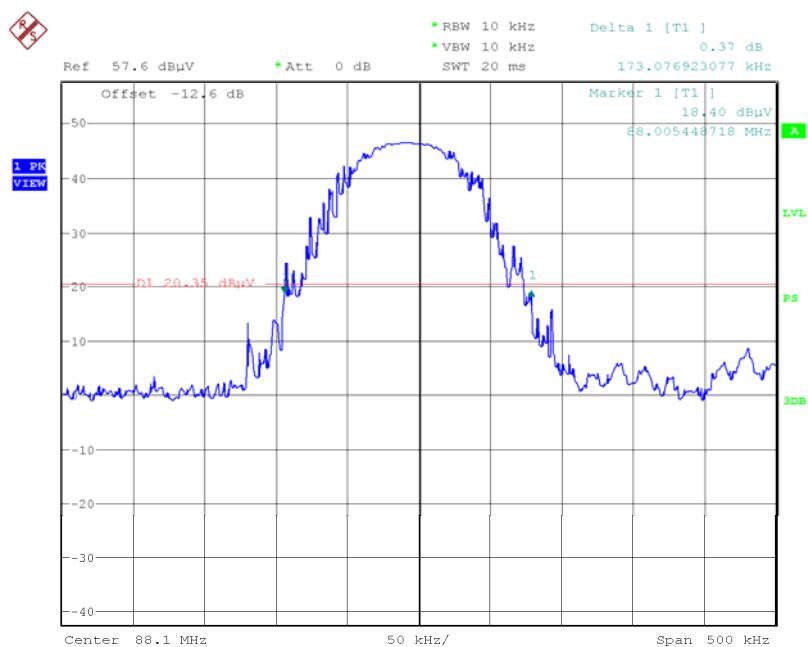
Measurement Data: Complies

Refer to the next page.

Minimum Standard:

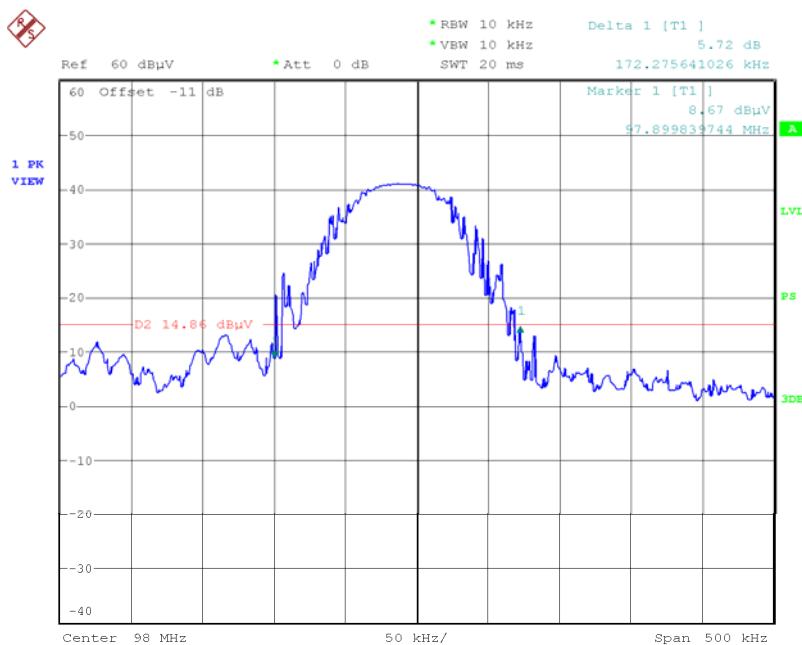
| |
|------------------------------|
| Occupied Bandwidth < 200kHz. |
|------------------------------|

Occupied Channel Bandwidth plot (88.1 MHz)



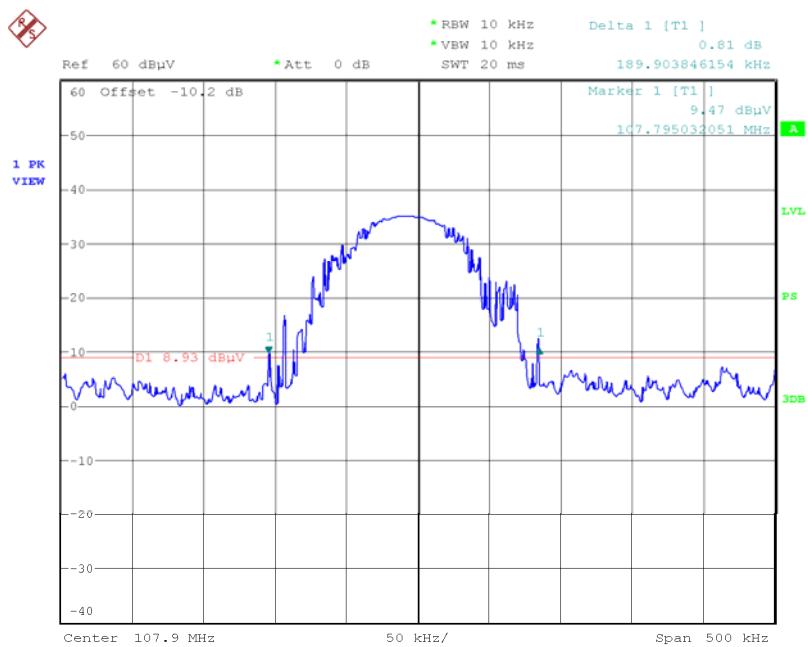
Date: 24.DEC.2007 17:06:06

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 | WEINSCHEL | 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) | WEINSCHEL | 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 | CVCF | 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 |