



**JAPAN QUALITY ASSURANCE ORGANIZATION**

21-25, KINUTA 1-CHOME, SETAGAYA-KU, TOKYO 157-8573 JAPAN  
PHONE +81-3-3416-0111, FAX +81-3-3416-9691

JQA File No. : 400-70694

Issue Date : February 27, 2008

Page 1 of 34

**EMI TEST REPORT**

JQA File No. : 400-70694

Model No. : TA7752

Type of Equipment : Radio Controlled Toy  
(Transmitter)

Regulations Applied : CFR 47 FCC Rules and Regulations Part 15

FCC ID : CVTTA7752

Applicant : NIKKO CO., LTD.

Address : 1-7-14, Mizumoto, Katsushika-ku,  
Tokyo 125-0032, Japan

Manufacturer : NIKKO ELECTRONICS BHD.

Address : PLOT 497 PRAI FREE TRADE ZONE, PARI INDUSTRIAL ESTATE,  
13600 PRAI, PENANG, MALAYSIA

Received date of EUT : February 25, 2008

**Test Result : Passed**

Test results in this report are obtained in use of equipment that is traceable to National Institute of Advanced Industrial Science and Technology (AIST) of Japan and National Institute of Information and Communications Technology (NICT) of Japan.

The test results only respond to the tested sample. This report should not be reproduced except in full, without the written approval of JQA EMC Engineering Dept. Testing Div.

**This report must not be used by the client to claim product endorsement by NVLAP or NIST any agency of the U.S. Government.**



NVLAP LAB CODE : 200189-0

---

**TABLE OF CONTENTS**

|   | Page           |
|---|----------------|
| <b>1 Documentation</b>                          |                |
| 1.1 Test Regulation                             | <u>3</u>       |
| 1.2 General Information                         | <u>3</u>       |
| 1.3 Test Condition                              | <u>4 - 8</u>   |
| 1.4 EUT Modifications / Deviation from Standard | <u>9</u>       |
| 1.5 Test results                                | <u>10</u>      |
| 1.6 Summary                                     | <u>11</u>      |
| 1.7 Test Configuration / Operation of EUT       | <u>12</u>      |
| 1.8 EUT Arrangement(Drawing)                    | <u>13</u>      |
| 1.9 Preliminary Test and Test-setup (Drawings)  | <u>14 - 19</u> |
| 1.10 EUT Arrangement (Photographs)              | <u>20 - 21</u> |
| <b>2 Test Data</b>                              |                |
| 2.1 AC Power Line Conducted Emission            | <u>22(N/A)</u> |
| 2.2 Radiated Emission (Electric Field)          | <u>22 - 23</u> |
| 2.3 Frequency Stability                         | <u>24(N/A)</u> |
| 2.4 Occupied Bandwidth                          | <u>24 - 30</u> |
| <b>3 Appendix</b>                               |                |
| Test instruments List                           | <u>31 - 34</u> |

---

**1 DOCUMENTATION****1.1 TEST REGULATION**

FCC Rules and Regulations Part 15 Subpart A and C Intentional Radiators

**Test procedure :**

AC power line conducted emission, radiated emission, frequency stability and occupied bandwidth tests were performed according to the procedures in ANSI C63.4-2003.

**1.2 GENERAL INFORMATION****1.2.1 Test facility :**

- 1) Test Facility located at EMC Engineering Dept. Testing Div. :
  - No.2 and 3 Anechoic Chambers( 3 meters Site ).
  - Shielded Enclosure.
- 2) EMC Engineering Dept. Testing Div. is accredited under the National Voluntary Laboratory accreditation Program for satisfactory compliance established in title 15, Part 285 Code of Federal Regulations.  
NVLAP Lab Code : 200189-0

**1.2.2 Description of the Equipment Under Test (EUT) :**

- |                                      |   |
|--------------------------------------|---|
| 1) Type of Equipment                 | : Radio Controlled Toy<br>(Transmitter)         |
| 2) Product Type                      | : Production                                    |
| 3) Category                          | : Low Power Communication Device<br>Transmitter |
| 4) EUT Authorization                 | : Certification                                 |
| 5) FCC ID                            | : CVTTA7752                                     |
| 6) Trade Name                        | : NIKKO   |
| 7) Model No.                         | : TA7752  |
| 8) Operating Frequency Range         | : 27.145 MHz                                    |
| 9) Highest Frequency Used in the EUT | : 27.145 MHz                                    |
| 10) Serial No.                       | : None  |
| 11) Date of Manufacture              | : None  |
| 12) Power Rating                     | : DC 9.0V(Size 9V Battery x 1)                  |
| 13) EUT Grounding                    | : None  |

**1.2.3 Definitions for symbols used in this test report :**

- x   - indicates that the listed condition, standard or equipment is applicable for this report.
- indicates that the listed condition, standard or equipment is not applicable for this report.

### 1.3 TEST CONDITION

#### 1.3.1 The measurement of the AC Power Line Conducted Emission

☐ - was performed in the following test site.

☒ - was not applicable.

##### Test location :

Safety & EMC Center EMC Engineering Dept. Testing Div.  
21-25, Kinuta 1-chome, Setagaya-ku, Tokyo 157-8573, Japan

☐ - Shielded Enclosure

☐ - Anechoic Chamber No. A (portable Type)

##### Used test instruments :

| Type                | Number of test instruments<br>(Refer to Appendix) |
|---------------------|---|
| Test Receiver       | N/A   |
| Spectrum Analyzer   | N/A   |
| Cable               | N/A   |
| AMN(for EUT)        | N/A   |
| AMN(for Peripheral) | N/A   |
| Termination         | N/A   |
| Thermo-Hygrometer   | N/A   |

**1.3.2 The measurement of the Radiated Emission(9 kHz - 30 MHz)**

- x   - was performed in the following test site.  
      - was not applicable.

**Test location :**

Safety & EMC Center EMC Engineering Dept. Testing Div.  
21-25, Kinuta 1-chome, Setagaya-ku, Tokyo 157-8573, Japan

- x   - Anechoic Chamber No. A (3 meters)  
      - Anechoic Chamber No. B (3 meters)

**Validation of Site Attenuation :**

- 1) Last Confirmed Date : March, 2007  
2) Interval : 1 year

**Used test instruments :**

| Type              | Number of test instruments<br>(Refer to Appendix) |
|-------------------|---|
| Test Receiver     | 13  |
| Antenna           | 21  |
| Cable             | 43  |
| Thermo-Hygrometer | 204   |

### 1.3.3 The measurement of the Radiated Emission(30 MHz - 1000 MHz)

- x   - was performed in the following test site.  
      - was not applicable.

#### Test location :

Safety & EMC Center EMC Engineering Dept. Testing Div.  
21-25, Kinuta 1-chome, Setagaya-ku, Tokyo 157-8573, Japan

- x   - Anechoic Chamber No. A (3 meters)  
      - Anechoic Chamber No. B (3 meters)

#### Validation of Site Attenuation :

- 1) Last Confirmed Date : March, 2007  
2) Interval : 1 year

#### Used test instruments :

| Type              | Number of test instruments<br>(Refer to Appendix) |
|-------------------|---|
| Test Receiver     | 11  |
| Antenna           | 167, 168  |
| Cable             | 38  |
| RF Amplifier      | N/A   |
| Thermo-Hygrometer | 204   |

**1.3.4 The measurement of the Radiated Emission(Above 1000 MHz)**

- ☐ - was performed in the following test site.  
☒ - was not applicable.

**Test location :**

Safety & EMC Center EMC Engineering Dept. Testing Div.  
21-25, Kinuta 1-chome, Setagaya-ku, Tokyo 157-8573, Japan

- ☐ - Anechoic Chamber No. A (3 meters)  
☐ - Anechoic Chamber No. B (3 meters)

**Validation of Site Attenuation :**

- 1) Last Confirmed Date : March, 2007  
2) Interval : 1 year

**Used test instruments :**

| Type               | Number of test instruments<br>(Refer to Appendix) |
|--------------------|---|
| Test Receiver      | N/A   |
| Spectrum Analyzer  | N/A   |
| Cable              | N/A   |
| Antenna            | N/A   |
| RF Amplifier       | N/A   |
| Band Reject Filter | N/A   |
| High Pass Filter   | N/A   |
| Thermo-Hygrometer  | N/A   |

**1.3.5 The measurement of the Frequency Stability**

☐ - was performed.  
☒ - was not applicable.

**Used test instruments :**

| Type              | Number of test instruments<br>(Refer to Appendix) |
|-------------------|---|
| Frequency Counter | N/A   |
| Oven              | N/A   |
| DC Power Supply   | N/A   |
| Thermo-Hygrometer | N/A   |

**1.3.6 The measurement of the Occupied Bandwidth**

☒ - was performed.  
☐ - was not applicable.

**Used test instruments :**

| Type              | Number of test instruments<br>(Refer to Appendix) |
|-------------------|---|
| Test Receiver     | 13  |
| Spectrum Analyzer | N/A   |
| Cable             | 47  |
| Antenna           | 22  |
| Thermo-Hygrometer | 202   |



**1.4 EUT MODIFICATION / Deviation from Standard****1.4.1 EUT MODIFICATION**

- x   -No modifications were conducted by JQA to achieve compliance to Class B levels.  
      -To achieve compliance to Class B levels, the following changes were made by JQA during the compliance test.

The modifications will be implemented in all production models of this equipment.

Applicant :

Date :

Typed Name :

Position :

Signatory : \_\_\_\_\_

**1.4.2 Deviation from Standard:**

- x   - No deviations from the standard described in clause 1.1.  
      - The following deviations were employed from the standard described in clause 1.1:

\_\_\_\_\_  
\_\_\_\_\_

---

**1.5 TEST RESULTS**

AC Power Line Conducted Emission           - Applicable        x   - NOT Applicable

The requirements are           - PASSED           - NOT PASSED

Remarks :

Radiated Emission [§15.227]        x   - Applicable           - NOT Applicable

The requirements are        x   - PASSED           - NOT PASSED

Remarks:

Frequency Stability           - Applicable        x   - NOT Applicable

The requirements are           - PASSED           - NOT PASSED

Remarks:

Occupied Bandwidth [§15.215(c)]        x   - Applicable           - NOT Applicable

The requirements are        x   - PASSED           - NOT PASSED

Remarks:

## 1.6 SUMMARY

### General Remarks :

The EUT was tested according to the requirements of FCC Rules and Regulations Part 15 Subpart A and C under the test configuration, as shown in clause 1.7 to 1.10. The conclusion for the test items which are required by the applied regulation is indicated under the test result.

### Test Result :

The "as received" sample;

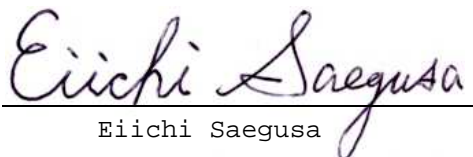
- x   - fulfill the test requirements of the regulation mentioned on clause 1.1.
- fulfill the test requirements of the regulation mentioned on clause 1.1, but with certain qualifications.
- doesn't fulfill the test regulation mentioned on clause 1.1.

Begin of testing : February 25, 2008

End of testing : February 26, 2008

- JAPAN QUALITY ASSURANCE ORGANIZATION -  
Approved by:

Signatories:  
Issued by:



Eiichi Saegusa  
Manager  
Testing Division  
JQA EMC Engineering Dept.



Shigeru Osawa  
Assistant Manager  
Testing Division  
JQA EMC Engineering Dept.

**1.7 TEST CONFIGURATION / OPERATION OF EUT****1.7.1 Test Configuration**

The equipment under test (EUT) consists of :

| Item                                  | Manufacturer           | Model No. | FCC ID    | Serial No. |
|---------------------------------------|------------------------|-----------|-----------|------------|
| Radio Controlled Toy<br>(Transmitter) | NIKKO ELECTRONICS BHD. | TA7752    | CVTTA7752 | None       |

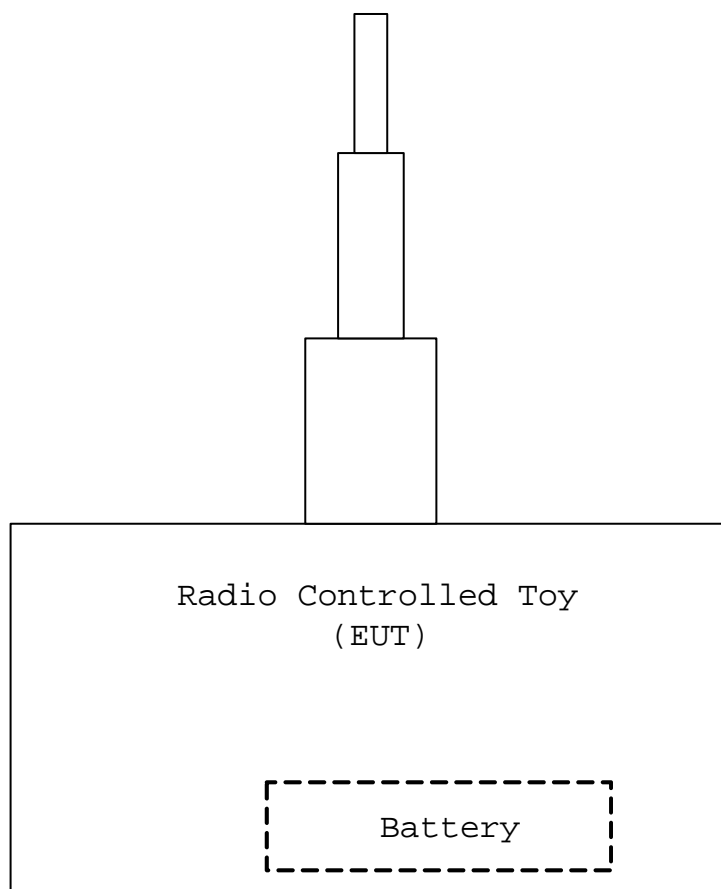
**1.7.2 Operating condition**

Power supply Voltage : 9.0 VDC(Fresh Battery used)  
The tests have been carried out the following mode.  
1) TX mode (27.145 MHz)

**1.7.3 Generating and Operating frequency of EUT**

27.145 MHz

## 1.8 EUT ARRANGEMENT (DRAWINGS)



## 1.9 PRELIMINARY TEST AND TEST-SETUP (DRAWINGS)

### 1.9.1 AC Power Line Conducted Emission ( 150 kHz - 30 MHz ) :

According to description of ANSI C63.4-2003 sec.13.1.3.1, the AC power line preliminary conducted emissions measurements were carried out.

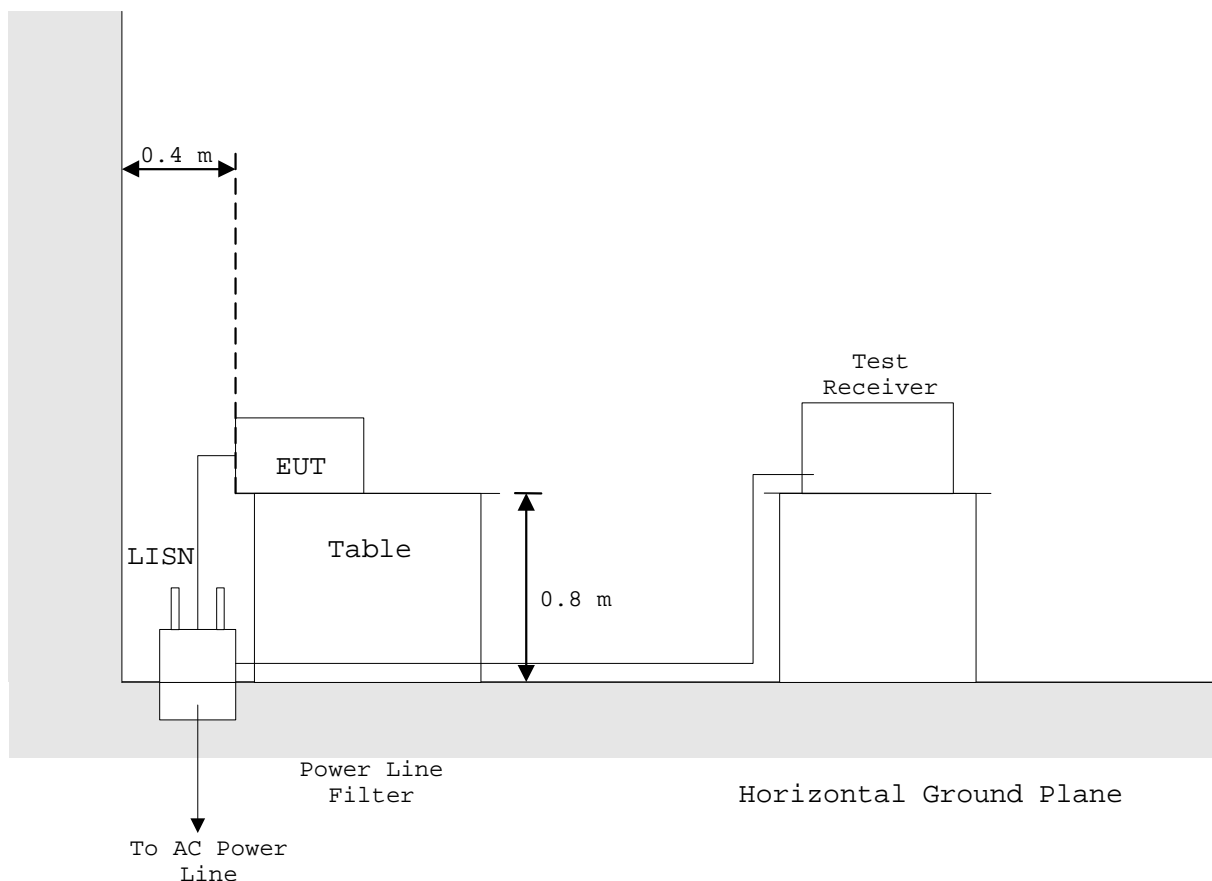
The preliminary conducted measurements were performed using the spectrum analyzer to observe the emission characteristics of the EUT.

The EUT configuration, cable configuration and mode of operation were determined for producing the maximum level of emissions. These configurations were used for final AC power line conducted emissions measurements.

### Shielded Enclosure

#### - Side View -

Vertical  
Ground  
Plane

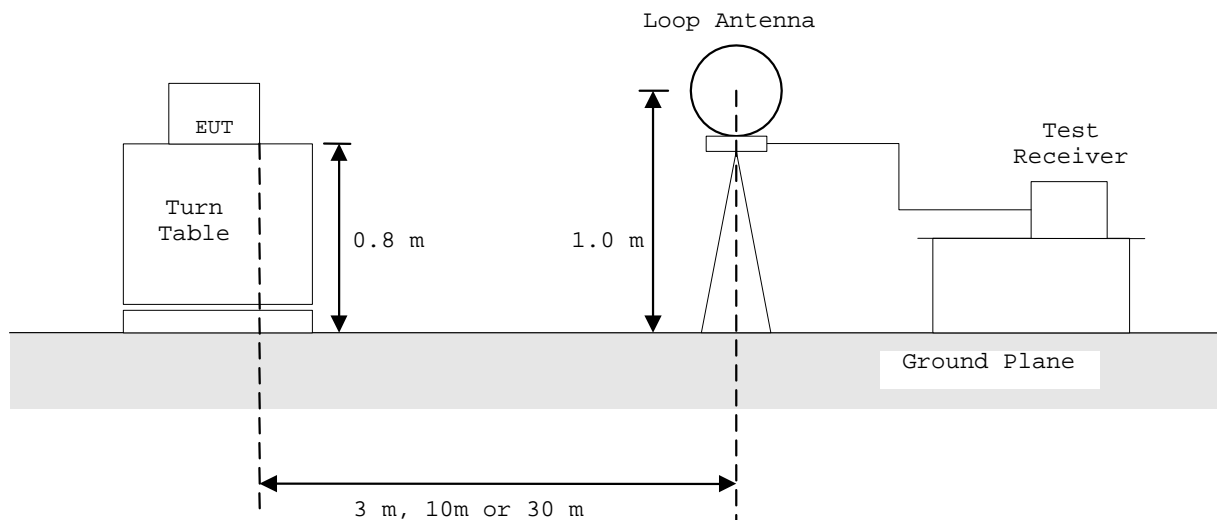


### 1.9.2 Radiated Emission ( 9 kHz - 30 MHz ) :

According to description of ANSI C63.4-2003 sec.13.1.4.1, the preliminary radiated emissions measurement were carried out. The preliminary radiated measurements were performed at the measurement distance that specified for compliance to determine the emission characteristics of the EUT.

The EUT configuration, cable configuration and mode of operation were determined for producing the maximum level of emissions. These configurations were used for the final radiated emissions measurements.

#### - Side View -



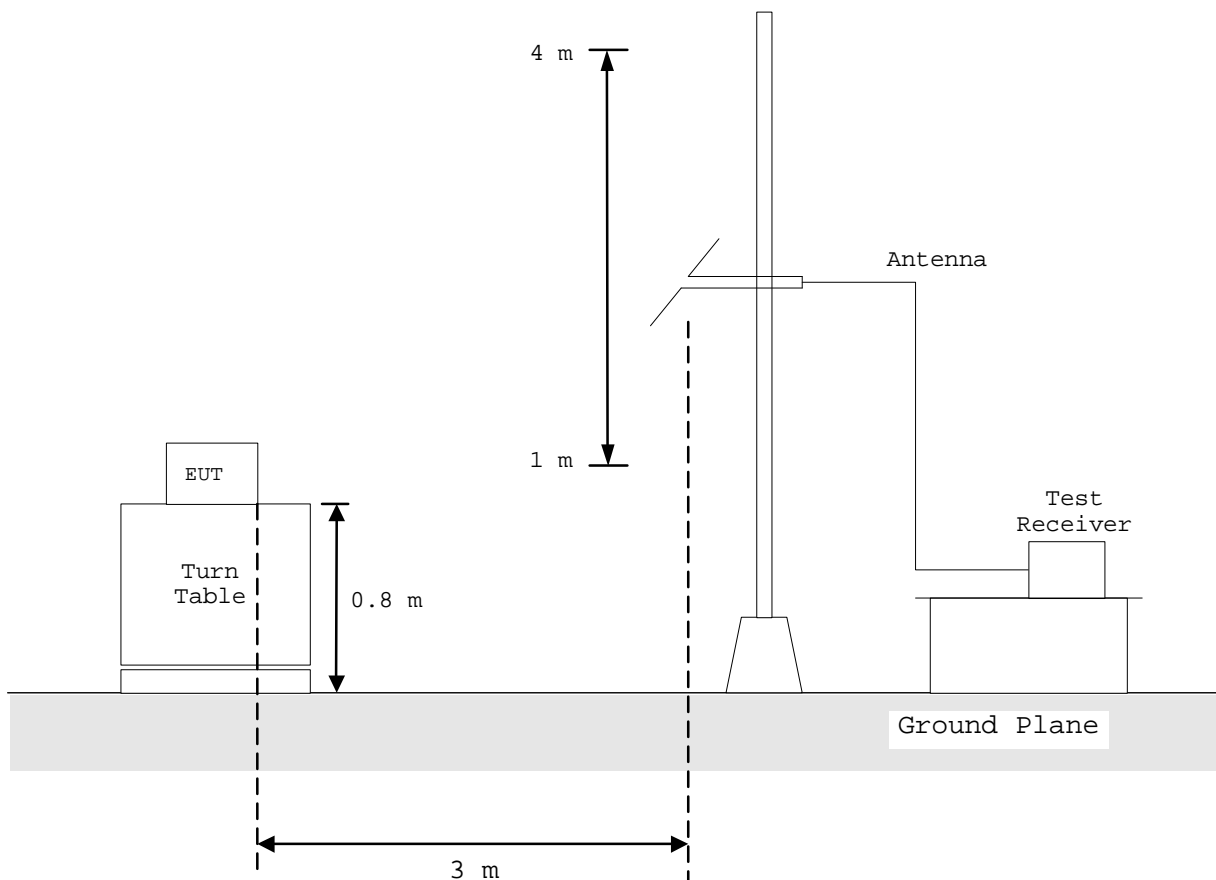
### 1.9.3 Radiated Emission ( 30 MHz - 1000 MHz ) :

According to description of ANSI C63.4-2003 sec.13.1.4.1, the preliminary radiated emissions measurement were carried out. The preliminary radiated measurements were performed at the measurement distance that specified for compliance to determine the emission characteristics of the EUT.

The EUT configuration, cable configuration and mode of operation were determined for producing the maximum level of emissions. These configurations were used for the final radiated emissions measurements.

### Anechoic Chamber

- Side View -





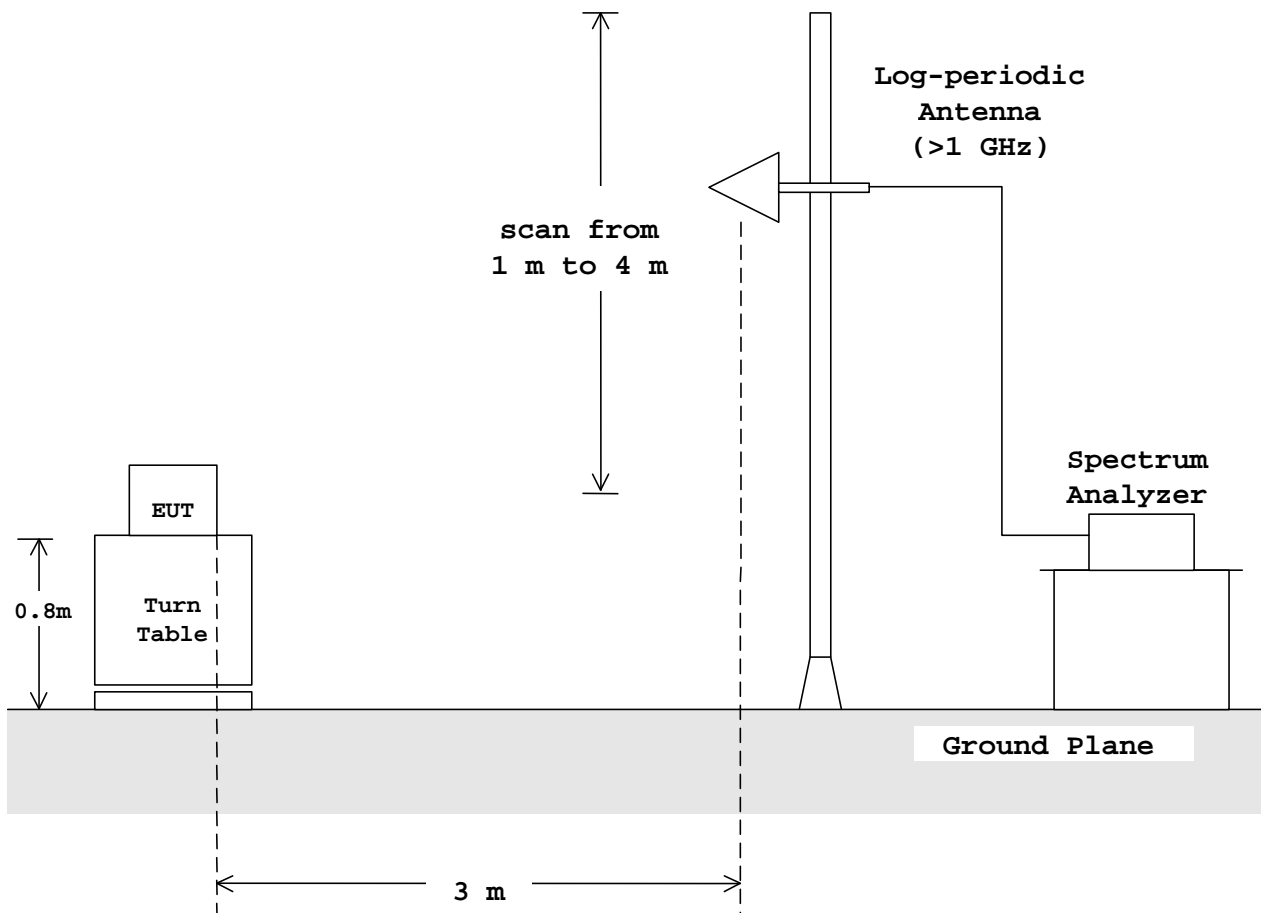
#### 1.9.4 Radiated Emission (Above 1 GHz) :

According to description of ANSI C63.4-2003 sec.13.1.4.1, the preliminary radiated emissions measurements were carried out. The preliminary radiated measurements were performed at the measurement distance that specified for compliance to determine the emission characteristics of the EUT.

The EUT configuration, cable configuration and mode of operation were determined for producing the maximum level of emissions. These configurations were used for the final radiated emissions measurements.

#### Anechoic Chamber

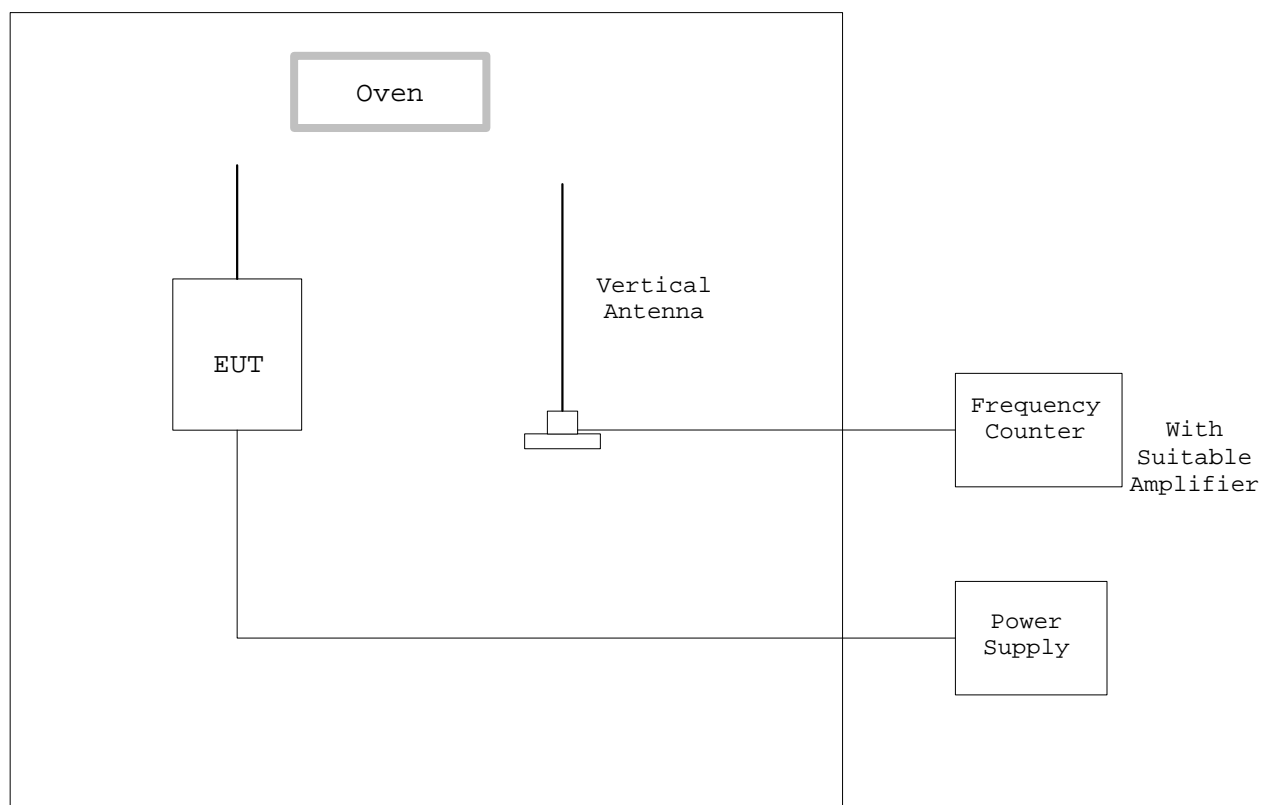
- Side View -



#### 1.9.5 Frequency Stability :

According to description of ANSI C63.4-2003 sec.13.1.5 and sec.13.1.6, the frequency stability measurements were carried out. By using frequency counter with suitable RF amplifier, the carrier frequency of the transmitter under test was measured with a temperature variation of  $-20^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$  at the normal supply voltage, and if required, with a variation in the primary voltage from 85 % to 115 % the rated supply voltage at the temperature of  $+20^{\circ}\text{C}$ .

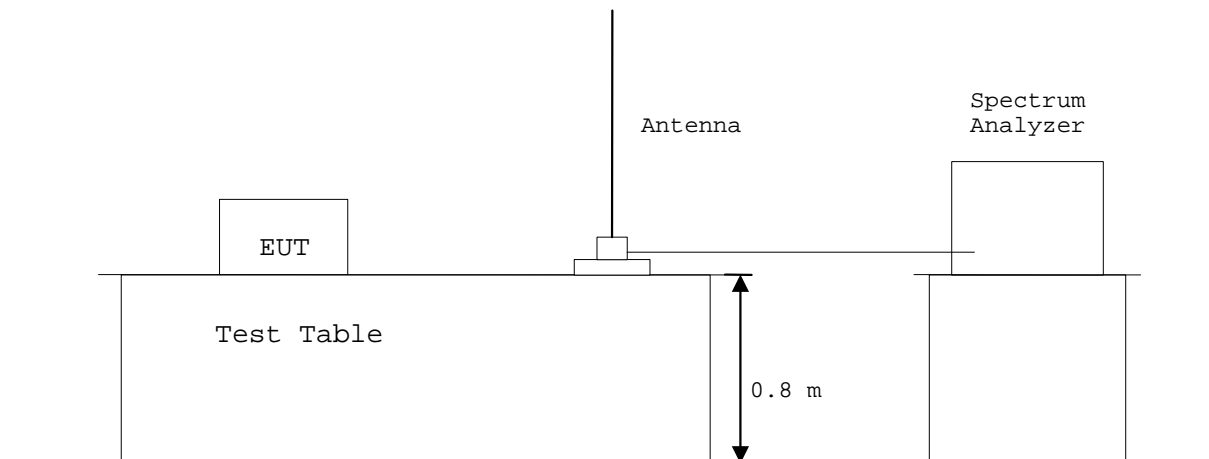
These measurements were carried out after allow sufficient time (approximately 1 hour) for the temperature of the chamber to stabilize.



#### 1.9.6 Occupied Bandwidth :

According to description of ANSI C63.4-2003 sec.13.1.7, the occupied bandwidth measurements were carried out. By using a spectrum analyzer with a vertical antenna for picking up the signal, the measurements of the emission were made under the transmitting modes of the EUT.

The resolution bandwidth of spectrum analyzer was set to the value specified in sec.13.1.7.



## 1.10 TEST ARRANGEMENT (PHOTOGRAPHS)

### PHOTOGRAPHS OF EUT CONFIGURATION FOR RADIATED EMISSIONS MEASUREMENT

Photograph present configuration with maximum emission



**PHOTOGRAPHS OF EUT CONFIGURATION FOR RADIATED EMISSIONS MEASUREMENT**

Photograph present configuration with maximum emission



## 2 TEST DATA

### 2.1 AC Power Line Conducted Emissions

Note : This test was not applicable.

### 2.2 Radiated Emissions Measurement

Date : February 26, 2008  
 Temp.: 25 °C Humi.: 37 %

Operating Frequency : 27.145 MHz  
 Distance of Measurement : 3.0 meters


| Frequency<br>(MHz) | P-A<br>Factor<br>(dB) | Antenna Polari-<br>Factor<br>(dB) | zation | Meter Reading<br>(dBuV) |      |      | Limits<br>(dBuV/m) |       | Emission Levels<br>(dBuV/m) |      | Margins<br>(dB) |      |
|--------------------|-----------------------|-----------------------------------|--------|-------------------------|------|------|--------------------|-------|-----------------------------|------|-----------------|------|
|                    |                       |                                   |        | QP                      | AV   | Peak | QP/AV              | Peak  | QP/AV                       | Peak | QP/AV           | Peak |
| 27.1               | 0.0                   | 1.5                               |        | -                       | 66.4 | 74.0 | 80.0               | 100.0 | 67.9                        | 75.5 | 12.1            | 24.5 |
| 54.3               | 0.0                   | 13.6                              | V      | 16.5                    | -    | -    | 40.0               | -     | 30.1                        | -    | 9.9             | -    |
| 81.5               | 0.0                   | 10.6                              | V      | 2.5                     | -    | -    | 40.0               | -     | 13.1                        | -    | 26.9            | -    |
| 108.6              | 0.0                   | 15.7                              | V      | < 0.0                   | -    | -    | 43.5               | -     | < 15.7                      | -    | > 27.8          | -    |
| 135.7              | 0.0                   | 18.5                              | V      | < 0.0                   | -    | -    | 43.5               | -     | < 18.5                      | -    | > 25.0          | -    |
| 162.9              | 0.0                   | 19.9                              | V      | < 0.0                   | -    | -    | 43.5               | -     | < 19.9                      | -    | > 23.6          | -    |
| 190.0              | 0.0                   | 21.1                              | V      | < 0.0                   | -    | -    | 43.5               | -     | < 21.1                      | -    | > 22.4          | -    |
| 217.2              | 0.0                   | 21.6                              | H      | 0.4                     | -    | -    | 46.0               | -     | 22.0                        | -    | 24.0            | -    |
| 244.3              | 0.0                   | 21.9                              | V      | < 0.0                   | -    | -    | 46.0               | -     | < 21.9                      | -    | > 24.1          | -    |
| 271.5              | 0.0                   | 23.0                              | V      | < 0.0                   | -    | -    | 46.0               | -     | < 23.0                      | -    | > 23.0          | -    |

- Notes :
- 1) The spectrum was checked from 30 MHz to 1000 MHz.
  - 2) The cable loss is included in the antenna factor.
  - 3) The symbol of "<" means "or less".
  - 4) The symbol of ">" means "or greater".
  - 5) A sample calculation(QP/AV) was made at 27.14 (MHz).  
 $PA + Af + Mr = 0 + 1.5 + 66.4 = 67.9 \text{ (dBuV/m)}$   
 PA = Peak to Average Factor(P-A Factor)  
 Af = Antenna Factor  
 Mr = Meter Reading

6) Measuring Instrument Setting :

| Detector function | Resolution Bandwidth | Video Bandwidth |
|-------------------|----------------------|-----------------|
| Quasi-peak(QP)    | 120 kHz              | -               |
| Average(AV)       | 120 kHz              | -               |
| Peak              | 120 kHz              | -               |

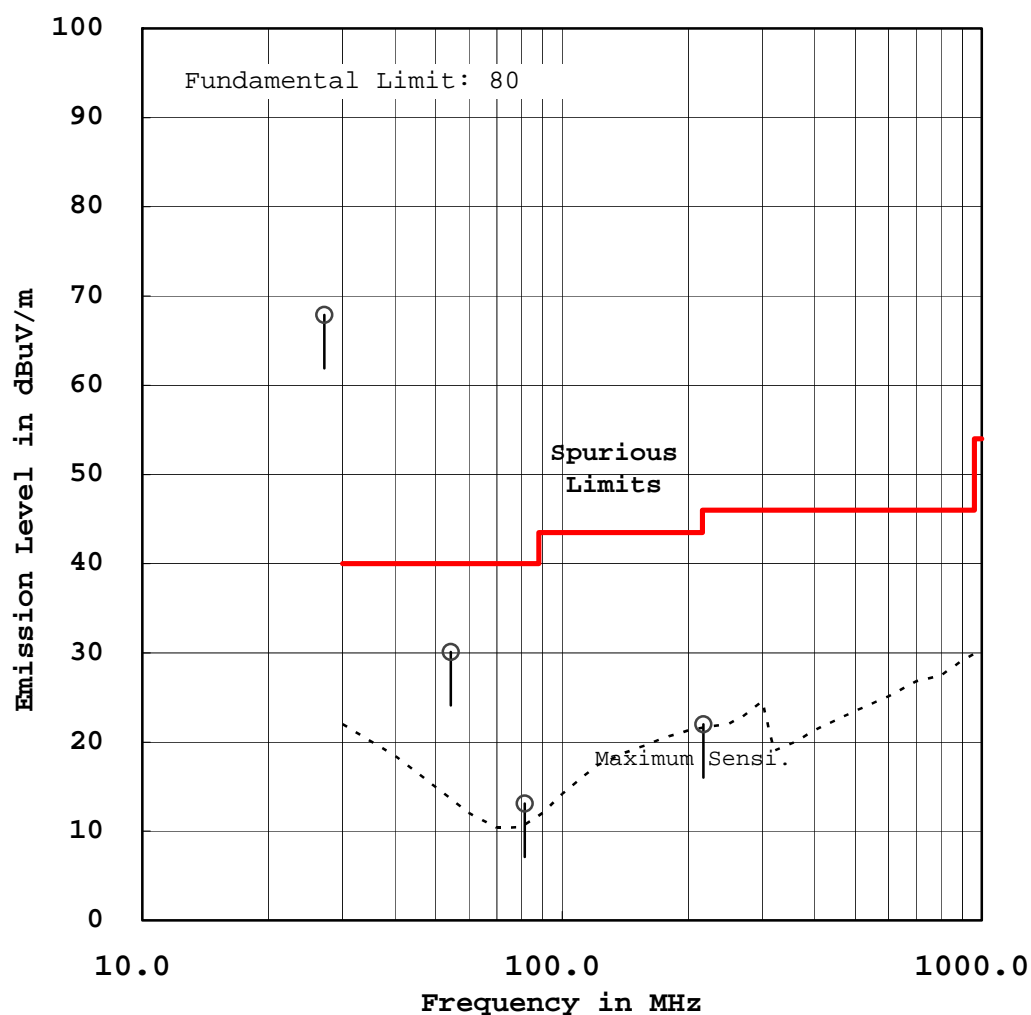
Tested by :

  
 Katsunori Miura  
 Testing Engineer

## RADIATED EMISSION MEASUREMENT

FCC ID : CVTTA7752

Standard : CFR 47 FCC Rules Part 15 QP/AV  
 Operating Frequency(MHz) : 27.15



### 2.3 Frequency Stability

Note : This test was not applicable.

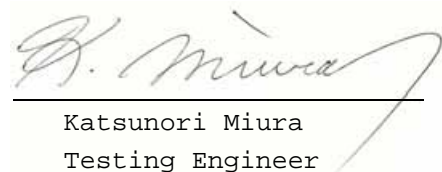
### 2.4 Occupied Bandwidth Measurement

Date : February 25, 2008  
Temp.: 25 °C Humi.: 40 %

#### Measurements Results :

Refer to the attached graphs.

Tested by :

  
Katsunori Miura  
Testing Engineer

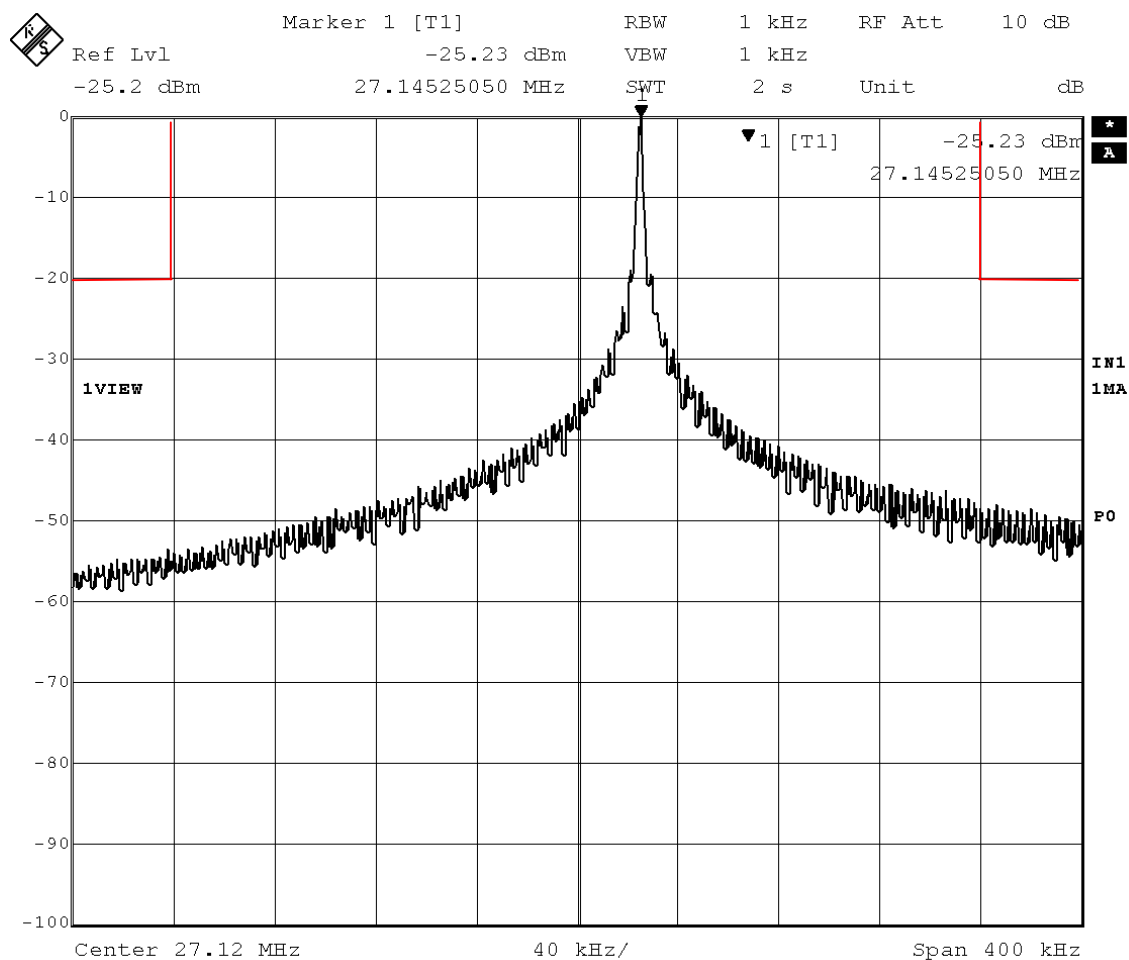


## Emission Limitation

FCC ID : CVTTA7752

Model : TA7752

Mode of EUT : Forward

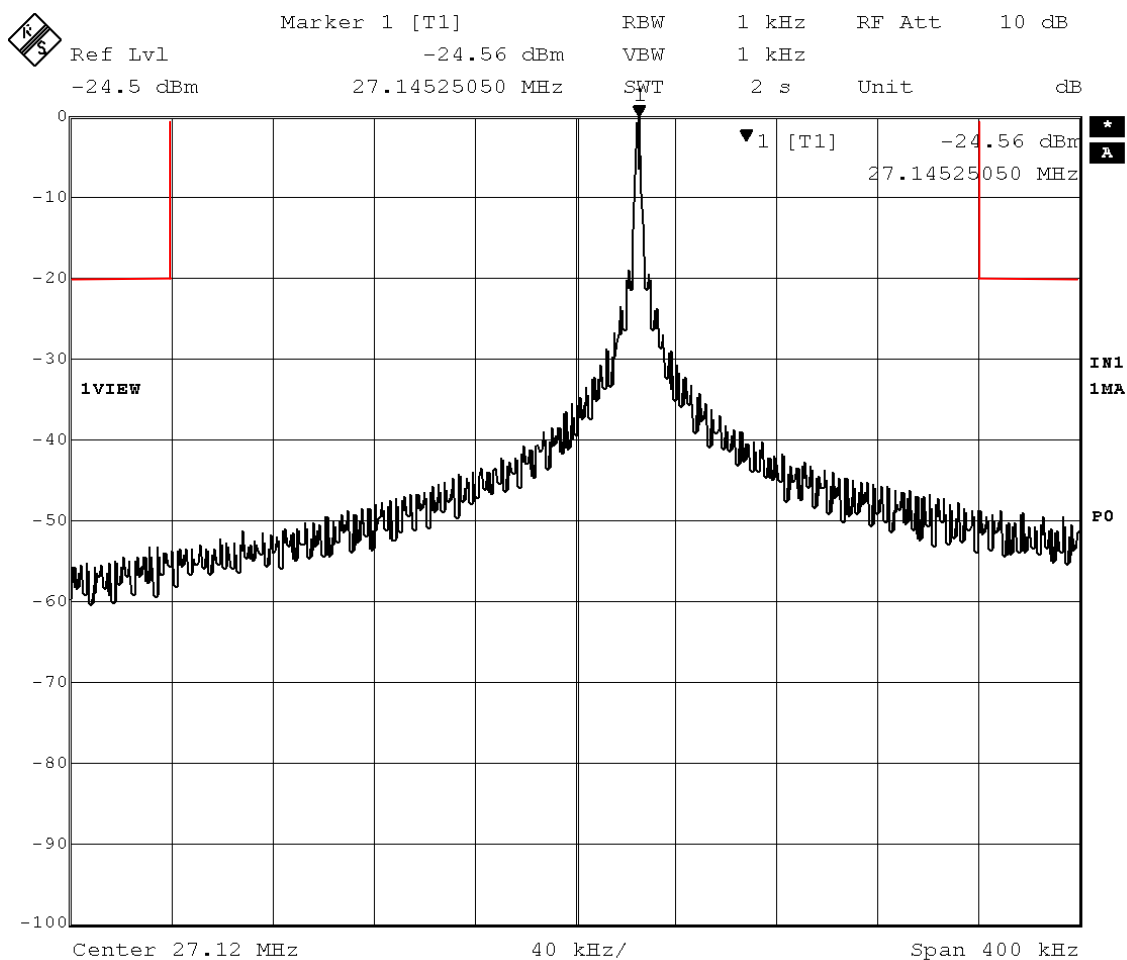


## Emission Limitation

FCC ID : CVTTA7752

Model : TA7752

Mode of EUT : Forward Left

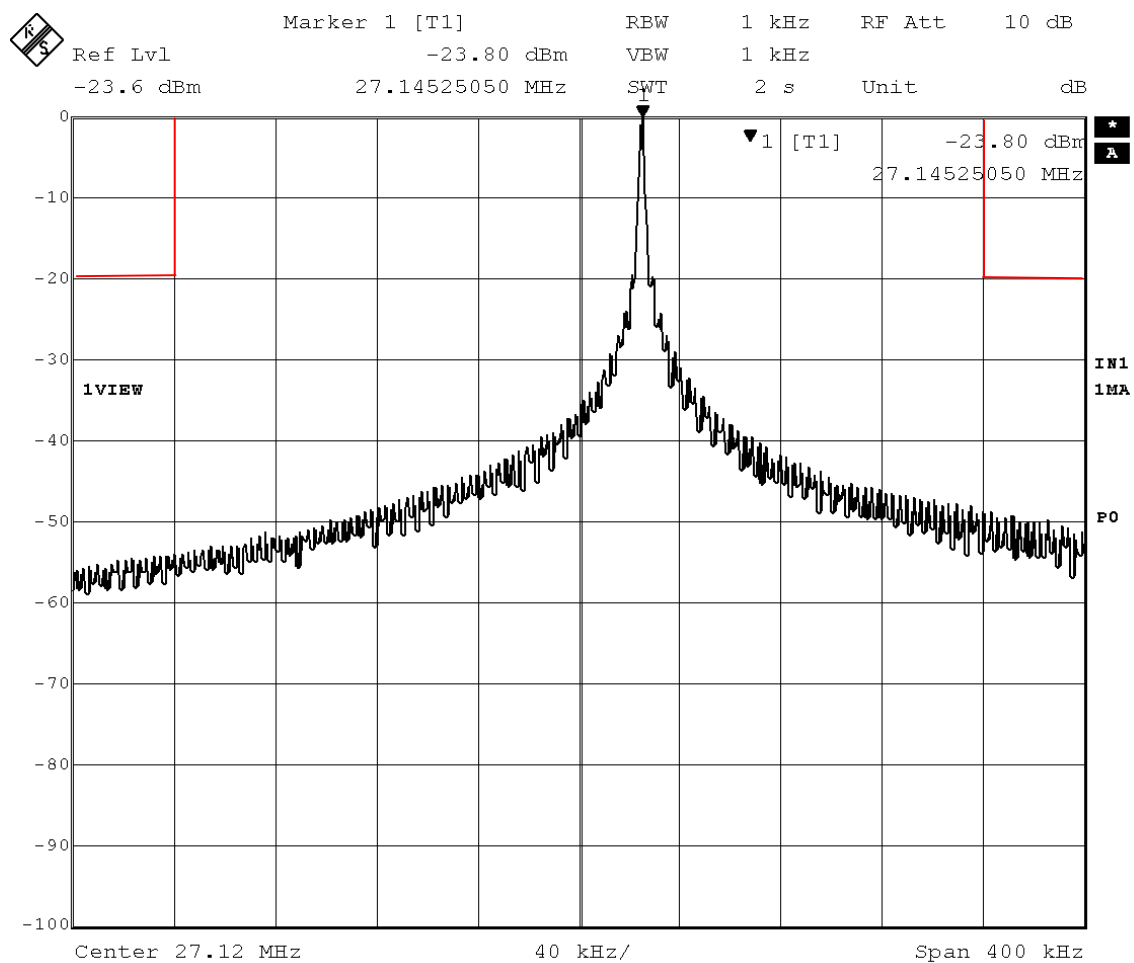


## Emission Limitation

FCC ID : CVTTA7752

Model : TA7752

Mode of EUT : Forward Right

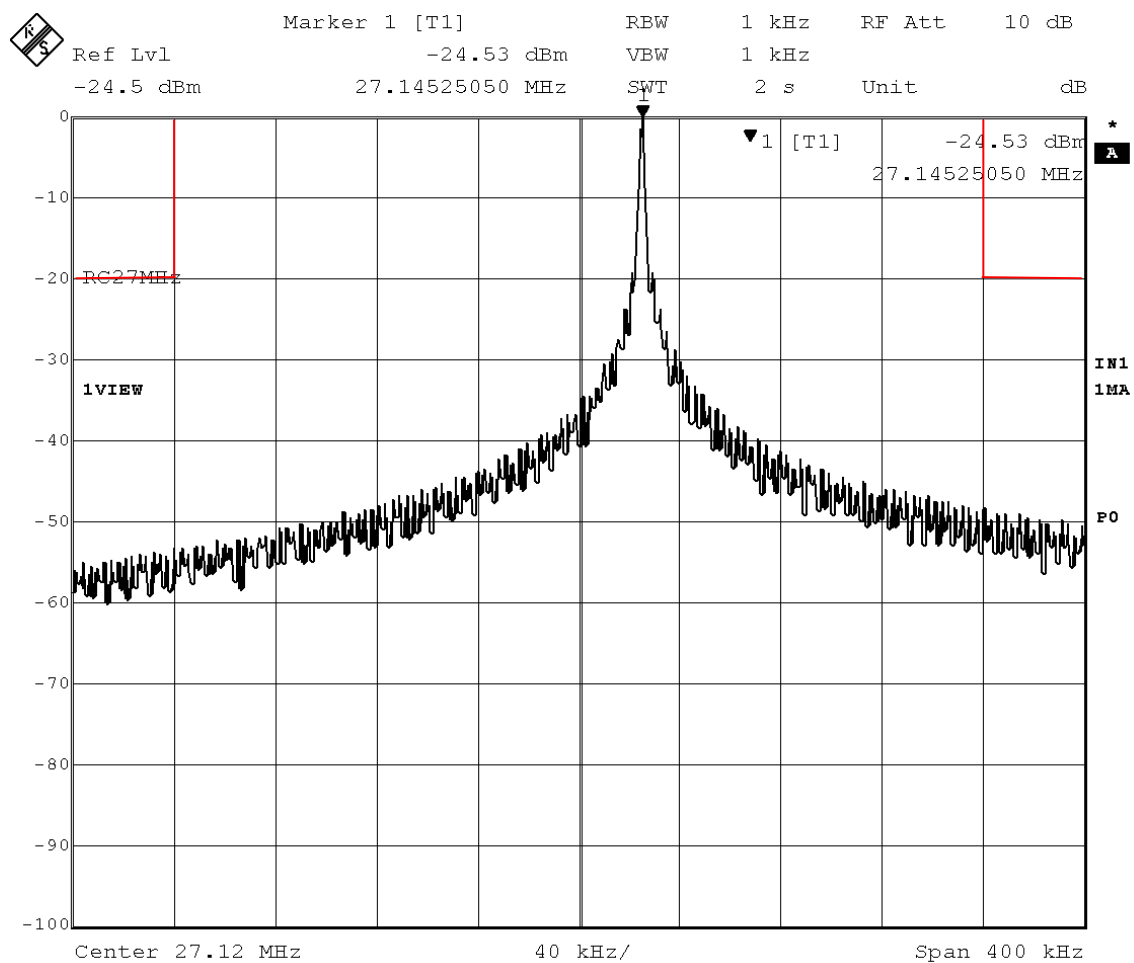


## Emission Limitation

FCC ID : CVTTA7752

Model : TA7752

Mode of EUT : Reverse

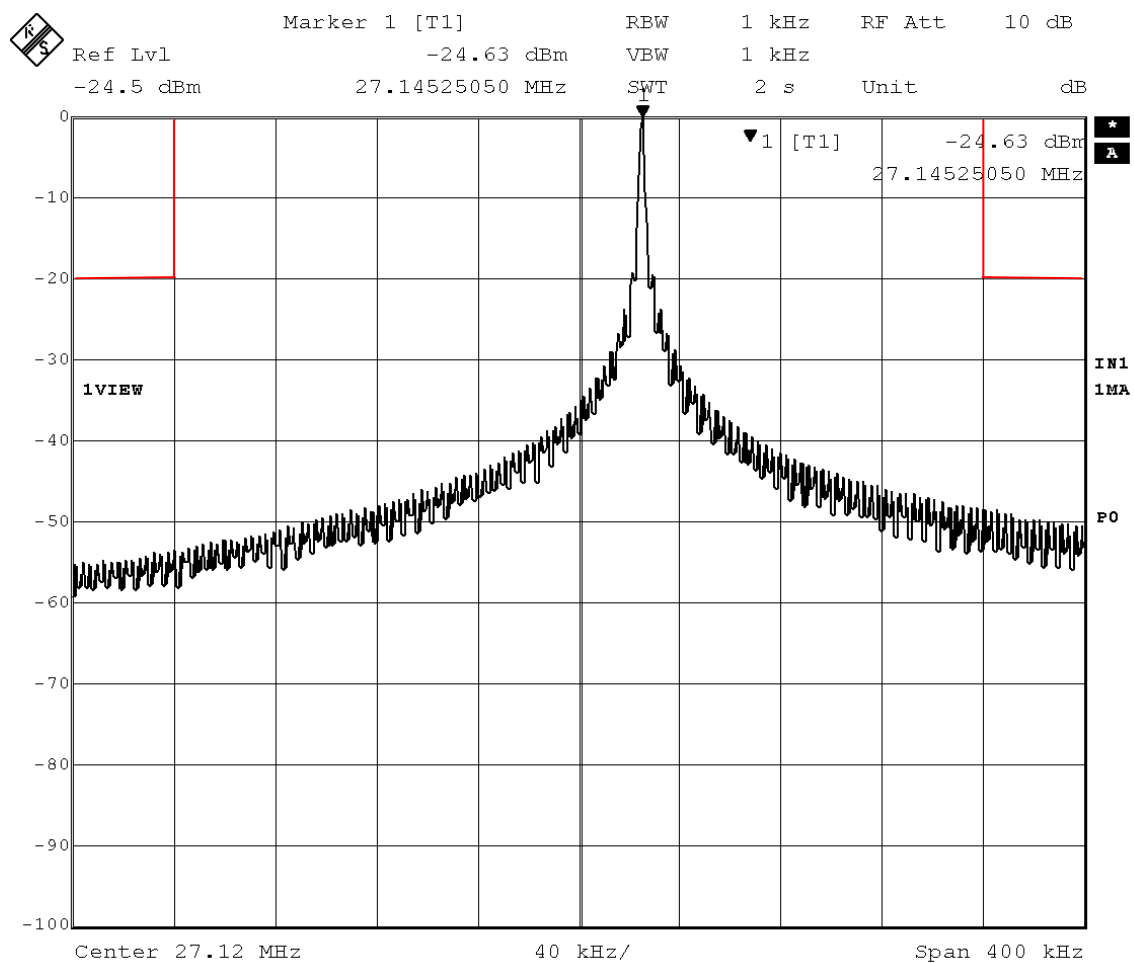


## Emission Limitation

FCC ID : CVTTA7752

Model : TA7752

Mode of EUT : Reverse Left

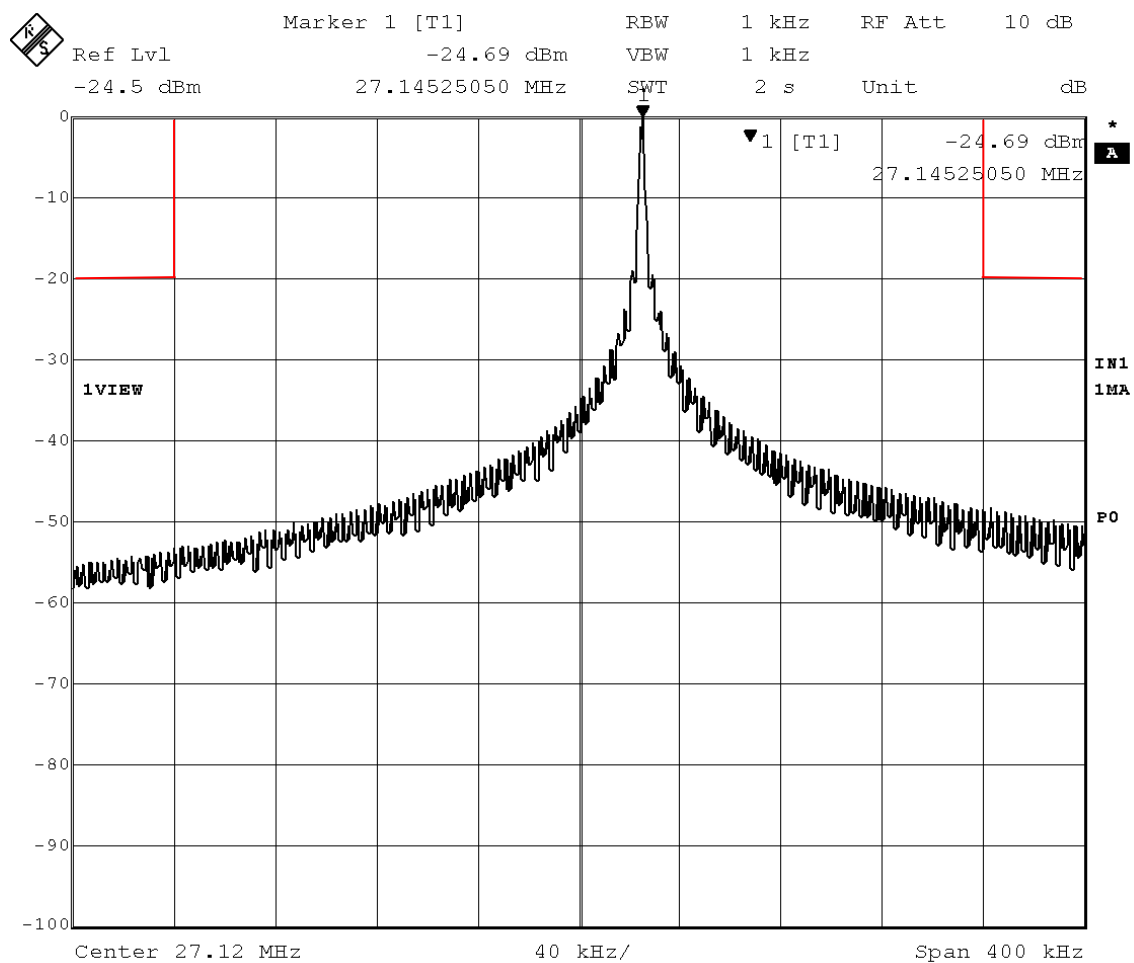


## Emission Limitation

FCC ID : CVTTA7752

Model : TA7752

Mode of EUT : Reverse Right



# Appendix

## Test Instruments List

31-Jan-2008

| No                      | Type               | Model | Manufacturer | Serial | ID           | Last Cal. | Interval |
|-------------------------|--------------------|-------|--------------|--------|--------------|-----------|----------|
| <b>Test Facilities:</b> |                    |       |              |        |              |           |          |
| 1                       | Anechoic Chamber A | -     | TDK          | -      | 800-01-502E0 | Mar 2007  | 1 Year   |
| 2                       | Anechoic Chamber B | -     | TDK          | -      | 800-01-503E0 | Mar 2007  | 1 Year   |
| 3                       | Shield Room A      | -     | TDK          | -      | 800-01-501E0 | -         | -        |
| 4                       | Shield Room B      | -     | Ray Proof    | -      | 800-01-010E0 | -         | -        |
| 5                       | Shield Room C      | -     | TDK          | -      | 800-01-504E0 | -         | -        |
| 6                       | Shield Room D      | -     | Emerson      | -      | 800-01-022E0 | -         | -        |
| 7                       | Shield Room E      | -     | TDK          | -      | 800-01-505E0 | -         | -        |

**Measuring Instruments:**

|     |                      |              |                 |                           |              |          |        |
|-----|----------------------|--------------|-----------------|---------------------------|--------------|----------|--------|
| 10  | Test Receiver        | ESHS10       | Rohde & Schwarz | 835871/004                | 119-01-505E0 | Apr 2007 | 1 Year |
| 11  | Test Receiver        | ESVS10       | Rohde & Schwarz | 826148/002                | 119-03-504E0 | Apr 2007 | 1 Year |
| 12  | Test Receiver        | ESVS10       | Rohde & Schwarz | 832699/001                | 119-03-506E0 | Apr 2007 | 1 Year |
| 13  | Test Receiver        | ESI26        | Rohde & Schwarz | 100043                    | 119-04-511E0 | Sep 2007 | 1 Year |
| 14  | Spectrum Analyzer    | R3182        | Advantest       | 120600581                 | 122-02-521E0 | Mar 2007 | 1 Year |
| 17  | Spectrum Analyzer    | 8566B        | Hewlett Packard | 2747A05855                | 122-02-517E0 | Apr 2007 | 1 Year |
| 18  | RF Pre-selector      | 85685A       | Hewlett Packard | 2901A00933                | 122-02-519E0 | Apr 2007 | 1 Year |
| 19  | Spectrum Analyzer    | R3132        | Advantest       | 120500072                 | 122-02-520E0 | Sep 2007 | 1 Year |
| 20  | Spectrum Analyzer    | R3132        | Advantest       | 150400998                 | 122-02-523E0 | Jul 2007 | 1 Year |
| 65  | Power Meter          | 436A         | Hewlett Packard | 1725A01930                | 100-02-501E0 | Apr 2007 | 1 Year |
| 66  | Power Sensor         | 8482A        | Hewlett Packard | 1551A01013                | 100-02-501E0 | Apr 2007 | 1 Year |
| 67  | Power Sensor         | 8485A        | Hewlett Packard | 2942A08969                | 100-04-021E0 | Apr 2007 | 1 Year |
| 68  | FM Linear Detector   | MS61A        | Anritsu         | M77486                    | 123-02-008E0 | Oct 2007 | 1 Year |
| 69  | Level Meter          | ML422C       | Anritsu         | M87571                    | 114-02-501E0 | Jun 2007 | 1 Year |
| 70  | Measuring Amplifier  | 2636         | B & K           | 1614851                   | 082-01-502E0 | May 2007 | 1 Year |
| 75  | Frequency Counter    | 53131A       | Hewlett Packard | 3546A11807                | 102-02-075E0 | May 2007 | 1 Year |
| 83  | FFT Analyzer         | R9211C       | Advantest       | 02020253                  | 122-02-506E0 | Jun 2007 | 1 Year |
| 84  | Noise Meter          | MN-446       | Meguro          | 53030478                  | 082-01-144E0 | Apr 2007 | 1 Year |
| 86  | Peak Power Analyzer  | 8990A/84815A | Hewlett Packard | 3220A00486/<br>3227A00118 | 100-02-016E0 | Apr 2007 | 1 Year |
| 163 | Digital Oscilloscope | 54502A       | Hewlett Packard | 2934A05573                | 121-02-502E0 | May 2007 | 1 Year |
| 165 | Multimeter           | VOAC7413     | Iwatsu Electric | 0267973                   | 114-02-502E0 | Apr 2007 | 1 Year |
| 172 | Test Receiver        | ESCI         | Rohde & Schwarz | 100408                    | 119-04-512E0 | Sep 2007 | 1 Year |

**Antennas:**

|     |                      |            |                  |             |              |          |        |
|-----|----------------------|------------|------------------|-------------|--------------|----------|--------|
| 21  | Loop Antenna         | HFH2-Z2    | Rohde & Schwarz  | 881058/62   | 119-05-033E0 | Jun 2007 | 1 Year |
| 22  | Dipole Antenna       | KBA-511    | Kyoritsu         | 0-170-1     | 119-05-506E0 | Oct 2007 | 1 Year |
| 23  | Dipole Antenna       | KBA-511A   | Kyoritsu         | 0-201-13    | 119-05-504E0 | Oct 2007 | 1 Year |
| 24  | Dipole Antenna       | KBA-611    | Kyoritsu         | 0-147-14    | 119-05-507E0 | Oct 2007 | 1 Year |
| 25  | Dipole Antenna       | KBA-611    | Kyoritsu         | 0-210-5     | 119-05-505E0 | Oct 2007 | 1 Year |
| 27  | Biconical Antenna    | BBA9106    | Schwarzbeck      | -           | 119-05-078E0 | Nov 2007 | 1 Year |
| 28  | Log-periodic Antenna | UHALP9107  | Schwarzbeck      | -           | 119-05-079E0 | Nov 2007 | 1 Year |
| 31  | Horn Antenna         | 3115       | EMC Test Systems | 6442        | 119-05-514E0 | Jan 2008 | 2 Year |
| 32  | Horn Antenna         | 3116       | EMC Test Systems | 2547        | 119-05-515E0 | May 2007 | 2 Year |
| 167 | Biconical Antenna    | BBA9106    | Schwarzbeck      | VHA91032325 | 119-05-520E0 | May 2007 | 1 Year |
| 168 | Log-periodic Antenna | UHALP9108A | Schwarzbeck      | 0666        | 119-05-521E0 | May 2007 | 1 Year |
| 169 | Biconical Antenna    | BBA9106    | Schwarzbeck      | VHA91032399 | 119-05-522E0 | May 2007 | 1 Year |
| 170 | Log-periodic Antenna | UHALP9108A | Schwarzbeck      | 0724        | 119-05-523E0 | May 2007 | 1 Year |
| 198 | Log-periodic Antenna | HL050      | Rohde & Schwarz  | 100251      | 119-05-524E0 | Jul 2007 | 1 Year |



31-Jan-2008

| No                        | Type                 | Model              | Manufacturer             | Serial     | ID           | Last Cal. | Interval |
|---------------------------|----------------------|--------------------|--------------------------|------------|--------------|-----------|----------|
| <b><u>Cables:</u></b>     |                      |                    |                          |            |              |           |          |
| 38                        | RF Cable             | 5D-2W              | Fujikura                 | -          | 155-21-001E0 | Feb 2007  | 1 Year   |
| 39                        | RF Cable             | 5D-2W              | Fujikura                 | -          | 155-21-002E0 | Feb 2007  | 1 Year   |
| 40                        | RF Cable             | 3D-2W              | Fujikura                 | -          | 155-21-005E0 | Apr 2007  | 1 Year   |
| 41                        | RF Cable             | 3D-2W              | Fujikura                 | -          | 155-21-006E0 | Apr 2007  | 1 Year   |
| 42                        | RF Cable             | 3D-2W              | Fujikura                 | -          | 155-21-007E0 | Apr 2007  | 1 Year   |
| 43                        | RF Cable             | RG213/U            | Rohde & Schwarz          | -          | 155-21-010E0 | Apr 2007  | 1 Year   |
| 44                        | RF Cable(10m)        | S 04272B           | Suhner                   | -          | 155-21-011E0 | May 2007  | 1 Year   |
| 45                        | RF Cable(1.5m 18GHz) | S 04272B           | Suhner                   | -          | 155-21-012E0 | May 2007  | 1 Year   |
| 46                        | RF Cable(1m 18GHz)   | SUCOFLEX           | Suhner                   | -          | 155-21-013E0 | May 2007  | 1 Year   |
| 47                        | RF Cable(1m N)       | S 04272B           | Suhner                   | -          | 155-21-015E0 | Jun 2007  | 1 Year   |
| 48                        | RF Cable(1m 26GHz)   | SUCOFLEX 104E      | Suhner                   | 14543/4E   | 155-21-016E0 | Dec 2007  | 1 Year   |
| 49                        | RF Cable(4m 26GHz)   | SUCOFLEX           | Suhner                   | 190630     | 155-21-017E0 | Dec 2007  | 1 Year   |
| 50                        | RF Cable(10m)        | F130-S1S1-394      | MEGA PHASE               | 10510      | 155-21-018E0 | Dec 2007  | 1 Year   |
| 51                        | RF Cable(5m)         | 3D-2W              | Fujikura                 | -          | 155-21-009E0 | Apr 2007  | 1 Year   |
| 52                        | RF Cable(7m)         | RG223/U            | Suhner                   | -          | 155-21-021E0 | May 2007  | 1 Year   |
| 195                       | RF Cable(10m)        | F130-S1S1-394      | MEGA PHASE               | 20051      | 155-21-020E0 | Apr 2007  | 1 Year   |
| <b><u>Networks:</u></b>   |                      |                    |                          |            |              |           |          |
| 33                        | LISN                 | KNW-407            | Kyoritsu                 | 8-833-6    | 149-04-052E0 | Apr 2007  | 1 Year   |
| 34                        | LISN                 | KNW-407            | Kyoritsu                 | 8-855-2    | 149-04-055E0 | Apr 2007  | 1 Year   |
| 35                        | LISN                 | KNW-407            | Kyoritsu                 | 8-1130-6   | 149-04-062E0 | Apr 2007  | 1 Year   |
| 36                        | LISN                 | KNW-242C           | Kyoritsu                 | 8-837-13   | 149-04-054E0 | Apr 2007  | 1 Year   |
| 37                        | Absorbing Clamp      | MDS21              | Luthi                    | 03293      | 119-06-506E0 | Aug 2007  | 1 Year   |
| 164                       | LISN                 | KNW-403D           | Kyoritsu                 | 8-1474-3   | 149-04-059E0 | Apr 2007  | 1 Year   |
| 173                       | Pulse Limiter        | ESH3-Z2            | Rohde & Schwarz          | -          | 156-01-501E0 | Apr 2007  | 1 Year   |
| 174                       | Pulse Limiter        | ESH3-Z2            | Rohde & Schwarz          | -          | 156-01-502E0 | Apr 2007  | 1 Year   |
| 175                       | Pulse Limiter        | ESH3-Z2            | Rohde & Schwarz          | -          | 156-01-503E0 | Apr 2007  | 1 Year   |
| 194                       | High Impedance Probe | HP-2               | JQA                      | 001        | 149-06-503E0 | Oct 2007  | 1 Year   |
| <b><u>Amplifiers:</u></b> |                      |                    |                          |            |              |           |          |
| 53                        | AF Amplifier         | P-500L             | Accuphase                | BOY806     | 127-01-501E0 | Feb 2007  | 1 Year   |
| 54                        | RF Amplifier         | WJ-6882-814        | Watkins-Johnson          | 0414       | 127-04-017E0 | Jun 2007  | 1 Year   |
| 55                        | RF Amplifier         | WJ-5315-556        | Watkins-Johnson          | 106        | 127-04-006E0 | Jun 2007  | 1 Year   |
| 56                        | RF Amplifier         | WJ-5320-307        | Watkins-Johnson          | 645        | 127-04-005E0 | Jun 2007  | 1 Year   |
| 57                        | RF Amplifier         | JS4-00102600-28-5A | MITEQ                    | 669167     | 127-04-502E0 | Apr 2007  | 1 Year   |
| <b><u>Generators:</u></b> |                      |                    |                          |            |              |           |          |
| 58                        | Function Generator   | 3325B              | Hewlett Packard          | 2847A03284 | 118-08-124E0 | Jul 2007  | 1 Year   |
| 59                        | Function Generator   | VP-7422A           | Matsushita Communication | 050351E122 | 118-08-503E0 | Jul 2007  | 1 Year   |
| 60                        | Signal Generator     | 8664A              | Hewlett Packard          | 3035A00140 | 118-03-014E0 | May 2007  | 1 Year   |
| 61                        | Signal Generator     | 8664A              | Hewlett Packard          | 3438A00756 | 118-04-502E0 | May 2007  | 1 Year   |
| 62                        | Signal Generator     | 6061A              | Gigatronics              | 5130593    | 118-04-024E0 | Mar 2007  | 1 Year   |

|                |                   |                |                 |            |              | 31-Jan-2008 |          |
|----------------|-------------------|----------------|-----------------|------------|--------------|-------------|----------|
| No             | Type              | Model          | Manufacturer    | Serial     | ID           | Last Cal.   | Interval |
| <u>Others:</u> |                   |                |                 |            |              |             |          |
| 63             | Termination(50)   | -              | Suhner          | -          | 154-06-501E0 | Jan 2008    | 1 Year   |
| 64             | Termination(50)   | -              | Suhner          | -          | 154-06-502E0 | Jan 2008    | 1 Year   |
| 71             | Microphone        | 4134           | B & K           | 1253497    | 147-01-502E0 | May 2007    | 1 Year   |
| 72             | Preamplifier      | 2639           | B & K           | 1268763    | 127-01-504E0 | -           | -        |
| 73             | Pistonphone       | 4220           | B & K           | 1165008    | 147-02-501E0 | Mar 2007    | 1 Year   |
| 74             | Artificial Mouth  | 4227           | B & K           | 1274869    | -            | -           | -        |
| 76             | Oven              | -              | Ohnishi         | -          | 023-02-018E0 | -           | -        |
| 77             | DC Power Supply   | 6628A          | Hewlett Packard | 3224A00284 | 072-05-503E0 | Jun 2007    | 1 Year   |
| 78             | Band RejectFilter | BRM12294       | Micro-tronics   | 003        | 149-01-501E0 | Jan 2008    | 1 Year   |
| 79             | High Pass Filter  | F-100-4000-5-R | RLC Electronics | 0149       | 149-01-502E0 | Feb 2007    | 1 Year   |
| 80             | Attenuator        | 43KC-10        | Anritsu         | -          | 148-03-506E0 | Feb 2007    | 1 Year   |
| 81             | Attenuator        | 43KC-20        | Anritsu         | -          | 148-03-507E0 | Feb 2007    | 1 Year   |
| 82             | Attenuator        | 355D           | Hewlett Packard | 219-10782  | 148-03-065E0 | Apr 2007    | 1 Year   |
| 85             | RF Detector       | 75KC-50        | Anritsu         | 305002     | 100-02-506E0 | Jul 2007    | 1 Year   |
| 200            | Artificial Hand   | AH-1           | ES Factory      | 001        | 155-07-561E0 | Jul 2007    | 1 Year   |
| 201            | Barometer         | TYPE6          | Yanagi          | 16076      | 209-02-014E0 | Mar 2006    | 2 Year   |
| 202            | Thermo-Hygrometer | -              | Empex           | -          | 141-01-504E0 | Mar 2007    | 2 Year   |
| 203            | Thermo-Hygrometer | EX-2727        | Empex           | -          | 141-01-505E0 | May 2007    | 2 Year   |
| 204            | Thermo-Hygrometer | EX-2727        | Empex           | -          | 141-01-506E0 | May 2007    | 2 Year   |
| 205            | Thermo-Hygrometer | EX-2727        | Empex           | -          | 141-01-507E0 | May 2007    | 2 Year   |