



TEST REPORT

REGULATION : FCC Part 2, 22, 74, 90, 90.210

| Applicant | Testing Laboratory |
|--|---|
| Kenwood Corporation 1-16-2, Hakusan, Midori-ku, Yokohama-shi Kanagawa, 226-8525 Japan Tel.: +81 45 939 6254 Fax.: +81 45 939 7097 | Intertek Japan K. K. Kashima Laboratory 3-2, Sunayama, Kamisu-shi, Ibaraki-ken 314-0255 Japan Tel.: +81 479 40 1097 Intertek Japan K. K. Tochigi Laboratory 870 Nakaawano, Kanuma-shi, Tochigi-ken 322-0306 Japan Tel.: +81 289 86 7121 Intertek Japan K. K. Matsuda Laboratory 1283 Yadoriki, Matsuda-machi, Ashigarakami-gun, Kanagawa-ken, 258-0001 Tel.: +81 465 89 2316 URL: http://www.japan.intertek-etlsemko.com |

| | |
|--------------------------|--------------------|
| Equipment type | UHF FM TRANSCEIVER |
| Trademark | KENWOOD |
| Model(s) | TK-8360-M |
| Serial No. | None |
| FCC ID | K44415500 |
| Test Result | Complied |
| Report Number | JM10090011 |
| Report issue date | October 26, 2010 |

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to permit copying or distribution of this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

Approved by K. Gokita

Kazuo Gokita

[Site Manager]

Tested by H. Kosemura

Hideaki Kosemura

In Accordance with FCC Rules and Regulations, Volume II, Part 2 and 90

Sub-part 2.1033

| (c)(1) Applicant and Manufacture Information | |
|--|---|
| APPLICANT | |
| Company | : Kenwood Corporation |
| Address | : 1-16-2, Hakusan, Midori-ku, Yokohama-shi, Kanagawa, 226-8525 Japan |
| Contact Person | : Tamaki Shimamura Manager, Communications Equipment Division |
| MANUFACTURER | |
| Company | : Kenwood Corporation |
| Address | : 1-16-2, Hakusan, Midori-ku, Yokohama-shi, Kanagawa, 226-8525 Japan |
| (c)(2) FCC ID | |
| FCC ID | : K44415500 |
| Model number | : TK-8360-M |
| Serial number | : None |
| (c)(3) Instruction Manual(S) | |
| Instruction manual(s) | : Please refer to attached Exhibits F |
| (c)(4) Type of Emission | |
| Emission Designation | : 16K0F3E(Wide) /11K0F3E(Narrow) |
| (c)(5) Frequency range | |
| Frequency Range | : 450 to 520 MHz |
| (c)(6) Power Rating | |
| Output Power | : 5 to 25 W |
| Type | : Continuously Variable |
| (c)(7) Maximum Power Rating | |
| Output Power | : 25 W |
| (c)(8): Voltages & currents in all elements in final RF stage, including final transistor or solid-state device | |
| Collector Current, A | : 8.0 amps (Maximum) |
| Collector Voltage, Vdc | : 13.6 vdc |
| Supply Voltage, Vdc | : 13.6 vdc |
| Other Information | |
| Number of Channel | : 128 channels, 128 zone |
| Maximum Deviation | : 5 kHz / 2.5kHz |
| Frequency Stability | : 2.5 ppm |
| Antenna Impedance | : 50 Ω Norminal |
| Note | |
| | |

TABLE OF CONTENTS

| | Page |
|---|------|
| SECTION 1. GENERAL INFORMATION | 4 |
| SECTION 2. SUMMARY OF TEST RESULT | 6 |
| SECTION 3. TEST AND MEASUREMENT DATA | 7 |
| SECTION 4. INFORMATION ABOUT EUT AND SUPPORT EQUIPMENT(S) | 8 |
| SECTION 5. SUPPORT EQUIPMENT | 9 |
| SECTION 6. USED CABLE(S) | 10 |
| SECTION 7. TEST CONFIGURATION | 11 |
| SECTION 8. OPERATING CONDITION | 12 |
| SECTION 9. MEASUREMENT UNCERTAINTY | 13 |
| SECTION 10. TEST DATA | |
| 10.1 Carrier Output Power (Conducted) | 14 |
| 10.2 Unwanted Emissions (Transmitter Conducted) | 16 |
| 10.3 Field Strength of Spurious Radiation | 19 |
| 10.4 Emission Masks (Occupied Bandwidth) | 23 |
| 10.5 Transient Frequency Behavior | 27 |
| 10.6 Audio Frequency Response / Audio Low Pass Filter (Voice Input) | 31 |
| 10.7 Modulation Limiting | 34 |
| 10.8 Frequency Stability (Temperature Variation) | 38 |
| 10.9 Frequency Stability (Voltage Variation) | 41 |
| 10.10 Necessary Bandwidth and Emission Bandwidth | 43 |
| APPENDIX PHOTOGRAPHS | |

SECTION 1. GENERAL INFORMATION

TEST PERFORMED

| | |
|----------------------------|---|
| Location | Kashima No.1 Test Site, Tochigi No.3 Test Site and Matsuda No.1 Test Site |
| EUT Received | August 31, 2010 |
| Date of Test | September 08, 2010 to October 19, 2010 |
| Standard Applied | FCC Part 2, 22, 74, 90, 90.210 |
| Measurement Method | ANSI/TIA-603-C-2004 |
| Deviation from Standard(s) | Not applicable |

QUALIFICATIONS OF TESTING LABORATORY (Kashima Lab.)

| ACCREDITATION | SCOPE | LAB. CODE | Remarks |
|---------------|-------------|--|---------|
| NVLAP | EMC Testing | 100290-0 | USA |
| VLAC | EMC Testing | VLAC-008-1 | JAPAN |
| BSMI | EMC Testing | SL2-IN-E-6008 | TAIWAN |
| Vietnam MIC | EMC Testing | 62/QD-QLCL | VIETNAM |
| FILING | | | |
| VCCI | EMC Testing | R-788, C-278, C-279, T-1716, T-1717, G-119 R-274, C-280, C-281, T-1718, T-1719, G-120 R-272, C-276, C-277, T-1720, T-1721 R-576, C-590, T-1722, G-121 | JAPAN |
| FCC | EMC Testing | Designation Number:JP0008 | USA |
| IC | EMC Testing | IC-2042K-1, IC-2042K-3 | CANADA |
| CB-Scheme | EMC Testing | TL222 | IECEE |
| SAUDI ARABIA | EMC Testing | N/A | |

QUALIFICATIONS OF TESTING LABORATORY (Tochigi Lab.)

| ACCREDITATION | SCOPE | LAB. CODE | Remarks |
|---------------|-------------|--|---------|
| VLAC | EMC Testing | VLAC-008-5 | JAPAN |
| BSMI | EMC Testing | SL2-IN-E-6017, SL2-A-E-6017 | TAIWAN |
| FILING | | | |
| VCCI | EMC Testing | R-257, C-260, C-284, T-1736, T-1737, G-124 R-258, C-261, C-285, T-1738, T-1739 R-259, C-262, T-1740, G-125 | JAPAN |
| FCC | EMC Testing | Designation Number:JP0011 | USA |
| IC | EMC Testing | IC-2042P-1, IC-2042P-2 | CANADA |
| SAUDI ARABIA | EMC Testing | N/A | |

QUALIFICATIONS OF TESTING LABORATORY (Matsuda Lab.)

| ACCREDITATION | SCOPE | LAB. CODE | Remarks |
|---------------|-------------|--|---------|
| VLAC | EMC Testing | VLAC-008-3 | JAPAN |
| BSMI | EMC Testing | SL2-IN-E-6009 | TAIWAN |
| FILING | | | |
| VCCI | EMC Testing | R-252, C-287, C-255, T-1723 R-253, C-288, C-256, T-1724 R-254, C-289, C-257, T-1725 R-255, C-290, C-258, T-1728 R-256, C-291, C-259, T-1729, G-122 | JAPAN |
| FCC | EMC Testing | Designation Number:JP0009 | USA |
| CB-Scheme | EMC Testing | TL223 | IECEE |
| SAUDI ARABIA | EMC Testing | N/A | |

ABBREVIATIONS

| | | | |
|------|--------------------------------------|------------|-----------------------------------|
| EUT | Equipment Under Test | DoC | Declaration of Conformity |
| AMN | Artificial Mains Network | ISN | Impedance Stabilization Network |
| LISN | Line Impedance Stabilization Network | Q-P | Quasi-peak |
| AMP | Amplifier | AVG | Average |
| ATT | Attenuator | PK | Peak |
| ANT | Antenna | Cal | Calibration |
| BBA | Broadband Antenna | N/A | Not applicable or Not available |
| DIP | Dipole Antenna | LCD | Liquid-Crystal Display |
| AE | Associated Equipment | 4LEVEL FSK | 4LEVEL Frequency Shift Key |
| GMSK | Gaussian Maximum Shift Key | CW ID | Continuously Repeating bit stream |
| FM | Frequency Modulation | C4FM | Constant envelope 4 Level FM |
| PTT | Push to Talk | AFC | Automatic frequency control |

SECTION 2. SUMMARY OF TEST RESULT

| FCC | | | | TEST ITEM | RESULTS |
|-------------------|--------------------|--------|-------------------|--|----------|
| Part2 | Part22 | Part74 | Part90 | | |
| 2.1046 (a) | - | 74.461 | - | Carrier Output Power (Conducted) | PASS |
| 2.1051 | - | - | 90.210 | Unwanted Emissions (Transmitter Conducted) | PASS |
| 2.1053 (a) | - | - | 90.210 | Field Strength of Spurious Radiation | PASS |
| 2.1049 (c) (1) | 22.359, 357 (a) | 74.462 | 90.210 | Emission Masks (Occupied Bandwidth) | PASS |
| - | - | - | 90.214 | Transient Frequency Behavior | PASS |
| 2.1047 (a) | - | - | 90.242 (b) (8) | Audio Low Pass Filter (Voice Input) | PASS |
| 2.1047 (a) | - | - | - | Audio Frequency Response | PASS |
| 2.1047 (b) | - | - | - | Modulation Limiting | PASS |
| 2.1055 (a) (1) | 22.355 | 74.464 | 90.213 (a) | Frequency Stability (Temperature Variation) | PASS |
| 2.1055 (d) (1) | 22.355 | 74.464 | 90.213 (a) | Frequency Stability (Voltage Variation) | PASS |
| - | - | - | 90.203 (j)(3) | Certification required (FCC Part 90.203(j)(3)) | Complied |

Limitation on Results

The test result of this report is effective equipment under test itself and under the test configuration described on the report.

This test report dose not assure that whether the test result taken in other testing laboratory is compatible or reproducible to the test result on this report or not.

Note:

As for the FCC Part 15 Subpart B-Unintentional Radiators, the EUT has been measured and declared as Verification by Kenwood Corporation.

SECTION 3. TEST AND MEASUREMENT DATA

All test and measurements indicated in this document were performed in accordance with the Code of Federal Regulations Title 47 Part 2, Sub-part J and Industry Canada as the following individual parts:

| FCC Rule | Test Item | Tested |
|----------------|---|------------|
| Part 21 | Domestic Public Fixed radio Services | N.A. |
| Part 22 | Non Cellular | YES |
| Part 22 | Public Mobile Services | N.A. |
| Part 22 | Subpart H - Cellular Radiotelephone Service | N.A. |
| Part 22 | Alternative technologies and auxiliary service | N.A. |
| Part 23 | International Fixed Public Radiocommunication service | N.A. |
| Part 24 | Personal Communications Services | N.A. |
| Part 74 | Experimental Radio Auxiliary , Special Broadcast and Other Program Distributional Services | YES |
| Part 80 | Stations in the Maritime Services | N.A. |
| Part 80 | Subpart E - general Technical Standards | N.A. |
| Part 80 | Subpart F - Equipment Authorization for Compulsory Ships | N.A. |
| Part 80 | Subpart K - Private Coast Stations and Marine Utility Stations | N.A. |
| Part 80 | Subpart S - Compulsory radiotelephone Installations for Small Passenger Boats | N.A. |
| Part 80 | Subpart T - Radiotelephone Installation Required for Vessels on the Great Lakes | N.A. |
| Part 80 | Subpart U - Radiotelephone Installations Required by the Bridge-to-Bridge Act | N.A. |
| Part 80 | Subpart V - Emergency Position Indicating Radiobeacons (EPIRB'S) | N.A. |
| Part 80 | Subpart W - Global Maritime Distress and Safety System (GMDSS) | N.A. |
| Part 80 | Subpart X - Voluntary Radio Installations | N.A. |
| Part 87 | Aviation Services | N.A. |
| Part 90 | Private Land Mobile radio Services | YES |
| Part 94 | Private Operational - Fixed Microwave Service | N.A. |
| Part 95 | Subpart A - General Mobile radio Service | N.A. |
| Part 95 | Subpart C - Radio Control (R/C) radio Service | N.A. |
| Part 95 | Subpart D - Citizens Band (CB) Radio Service | N.A. |
| Part 95 | Subpart E -Family radio Service | N.A. |
| Part 95 | Subpart F -Interactive Video and Data Service (IVDS) | N.A. |
| Part 97 | Amateur Radio Service | N.A. |
| Part 101 | Fixed Microwave Service | N.A. |

| IC Rule | Test Item | Tested |
|---------|--|--------|
| RSS-119 | Land Mobile and Fixed Radio Transmitters and Receivers | N.A. |
| RSS-Gen | General Requirements and Information for the Certification of Radiocommunication Equipment | N.A. |

SECTION 4. INFORMATION ABOUT EUT AND SUPPORT EQUIPMENT(S)

4.1 List of System Configuration

| Symbol | Item | Model No. | Serial No. | Manufacture | Remarks |
|-------------------------------|--------------------|--|---------------|-------------|---------|
| A | UHF FM TRANSCEIVER | TK-8360-M | None | KENWOOD | EUT |
| Power Ratings of EUT : | | DC 13.6 V +/- 15 % | 8.0 A Maximum | | |
| Power Supply : | | DC 13.6 V +/- 15 % | | | |
| Condition of Equipment | | Proto type | | | |
| Type | | Mobile type | | | |
| Suppression Devices | | No Modifications by the laboratory were made to the device | | | |

4.2 Port(s)/Connector(s)

| Port Name | Connector Type | Connector Pin | Remarks |
|------------|----------------|---------------|---------|
| ACC | D-sub | 15 pin | |
| Speaker | 3.5φ | 2 pin | |
| Antenna | M | 2 pin | |
| Microphone | RJ-45 | 8 pin | |

4.3 Highest Frequency Oscillator(s)/Crystal(s)

| Base Clock | Operating Frequency | Board Name | Remarks |
|------------|---------------------|------------|---------|
| 520 MHz | 520 MHz | TXRX Unit | |

SECTION 5. SUPPORT EQUIPMENT

The EUT was supported by the following equipment during the test.

| Symbol | Item | Model No. | Serial No. | Manufacture | FCC ID |
|-----------------|-------------------|-----------|------------|---------------------|--------|
| B | DC Power Supply | GP035-20R | 1014199059 | TAKASAGO,LTD. | N/A |
| C | External Speaker | KES-3 | None | KENWOOD | N/A |
| D | Keypad Microphone | KMC-32 | None | KENWOOD | N/A |
| E | Dummy Load | 1430-4 | BW5572 | Aeroflex/Weinschel | N/A |
| F | DC Power Supply | GZV4000 | 90290932 | Daiichi Denpa Kogyo | N/A |
| Supplied Power: | | | | | |
| B, F | AC | 100V,60Hz | | | |

SECTION 6. USED CABLE(S)

The following cable(s) was used for the test.

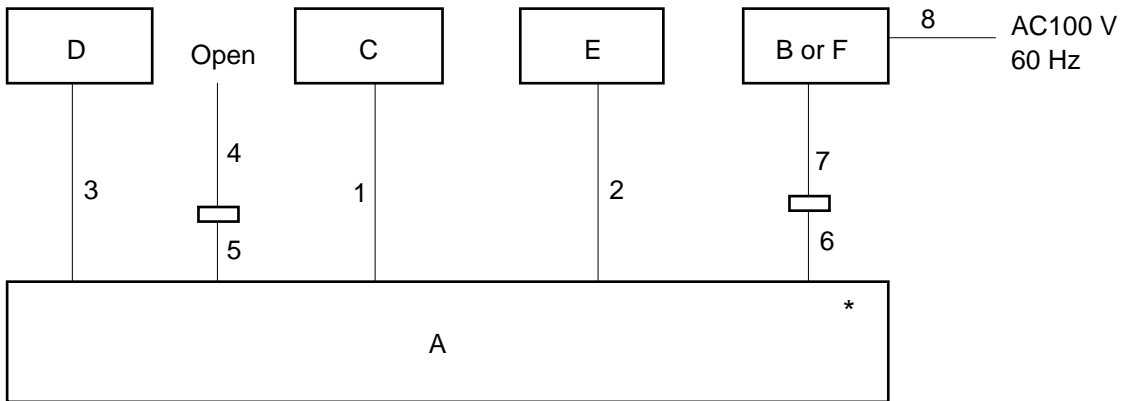
| No. | Name | Length (m) | Shield | Connector | Ferrite core |
|-----|---------------------------------|------------|--------|-----------|--------------|
| 1 | Speaker cable | 2.90 | No | Plastic | |
| 2 | Antenna cable | 1.00 | Yes | Metal | |
| 3 | Mic. cable | 0.55 | No | Plastic | |
| 4 | Ignition sense cable(KCT-18) | 3.15 | No | Plastic | |
| 5 | Connection cable (KCT-60) | 0.30 | No | Plastic | |
| 6 | Power cable (DC) for EUT | 0.25 | No | Plastic | |
| 7 | Power cable (DC) for EUT | 3.00 | No | Plastic | |
| 8 | Power Cable for DC Power Supply | 1.85 | No | - | |

SECTION 7. TEST CONFIGURATION

Details of Configuration and Connection

Example: Case of Section 10.3 Test

- * : EUT
- : Joint Connector
- : Ferrite core



SECTION 8. OPERATING CONDITION

The EUT was operated under the following condition during the test.

8.1 Operating Condition

The test was carried out under Transmit mode.

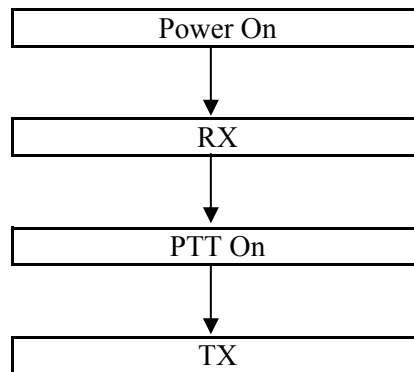
(FCC:450.05MHz, 485.05MHz, 519.95MHz)

(High Power : 25 W, Low Power : 5 W)

EUT was examined in the operating conditions that had maximum emissions.

8.2 Operating Flow [Transmit mode]

Following operations were performed continuously.



SECTION 9. MEASUREMENT UNCERTAINTY

| | U _{lab} | Utia-603-c |
|---|---------------------|-------------|
| Carrier Output Power (Conducted) | +/- 0.29dB (k = 2) | +/- 0.59 dB |
| Unwanted Emissions (Transmitter Conducted) | +/- 2.19 dB (k = 2) | +/- 1.1 dB |
| Field Strength of Spurious Radiation | +/- 4.83dB (k = 2) | +/- 3.3 dB |
| Emission Masks (Occupied Bandwidth) | +/- 0.5dB (k = 2) | +/- 2.1 dB |
| Transient Frequency Behavior | +/- 1.10% (k = 2) | +/- 21.6 % |
| Audio Low Pass Filter (Voice Input) | +/- 0.1dB (k = 2) | +/- 1.2 dB |
| Audio Frequency Response | +/- 0.1dB (k = 2) | +/- 1.2 dB |
| Modulation Limiting | +/- 1% (k = 2) | +/- 1 % |
| Frequency Stability (Temperature Variation) | +/- 10.1Hz (k=2) | +/-34.2 Hz |
| Frequency Stability (Voltage Variation) | +/- 10.1Hz (k=2) | +/-34.2 Hz |

SECTION 10. TEST DATA

10.1 Carrier Output Power (Conducted)

| | |
|-------------------|----------------------------------|
| REGULATIONS | : FCC Part 2 Section 1046 (a) |
| TEST METHOD/GUIDE | : ANSI/TIA-603-C Section 2.2.1.2 |

Test Procedure

- 1 The EUT and test equipment were set up as shown on the following page.
- 2 The EUT was conducted to a resistive coaxial attenuator of normal load impedance.
 $RF\ Power\ (dBm) = Power\ Meter\ reading\ (dBm) + Attenuator\ Loss\ (dB) + Cable\ Loss\ (dB)$
 $RF\ Power\ (W) = 10^{(RF\ Power\ (dBm)/10)}/1000$

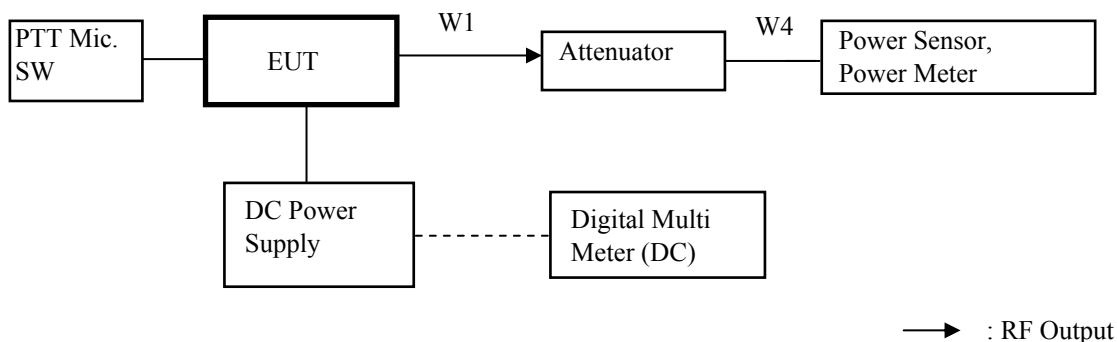
Measuring Equipments

| No. | Equipment | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------------|---------------------|-------------|------------|-------------|-------------|
| 1 | Power Meter | Hewlett Packard | E4418B | GB38410265 | May 20, 10 | May 31, 11 |
| 2 | Power Sensor | Hewlett Packard | 8482A | US37292237 | May 20, 10 | May 31, 11 |
| 3 | Attenuator (20dB) | Aeroflex/Wenshel | 66-20-34 | BY4537 | Mar. 12, 10 | Mar. 31, 11 |
| 4 | Attenuator (30dB) | Weinschel | WA-29-30-34 | 8923 | May 20, 10 | May 31, 11 |
| 5 | Digital Multi Meter | FLUKE | 8846A | 9642018 | Jul. 22, 10 | Jul. 31, 11 |
| 6 | DC Power Supply | Daiichi denpa kogyo | GZV4000 | 90290932 | None | None |

Measuring Cables

| No. | Cable | Manufacturer | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------|----------------|-------------|------------|-------------|-------------|
| W1 | Coaxial Cable | Suhner | SUCOFLEX104 | KSR00091 | May 20, 10 | May 31, 11 |
| W4 | Coaxial Cable | Pacific custom | RG-58 C/U | KSR00096 | Nov. 09, 09 | Nov. 30, 10 |

Measuring Equipment Configuration



Test Results

| | |
|----------------------|-------------------------|
| Test date | Sep. 08, 2010 |
| Location | Tochigi No.3 Test Site |
| temperature | 24.0 to 25.0 [degree C] |
| Humidity Variation | 58 to 62 [%] |
| Atmospheric Pressure | 98.5 to 98.8 [kPa] |
| Test Engineer | Hideaki Kosemura |

Test was carried out for all the Authorized Bandwidth.
 State the worst case (below).

| No. | Frequency (MHz) | Band | Setting | RF Power (W) |
|-----|-----------------|--------|------------|--------------|
| 1 | 450.05 | Low | High Power | 25 |
| 2 | 485.05 | Middle | High Power | 25 |
| 3 | 519.95 | High | High Power | 25 |
| 4 | 450.05 | Low | Low Power | 5 |
| 5 | 485.05 | Middle | Low Power | 5 |
| 6 | 519.95 | High | Low Power | 5 |

RF Power: Peak reading

10.2 Unwanted Emissions (Transmitter Conducted)

REGULATIONS : FCC Part 2 Section 1051, Part 90 Section 210

TEST METHOD/GUIDE : ANSI/TIA-603-C Section 2.2.13.2

Test Procedure

- 1 The EUT and test equipment were set up as shown on the following page.
- 2 Modulate the transmitter with a 2.5 kHz sine wave at an input Level of 16 dB greater than that necessary to produce 50 % of rated system deviation.
- 3 Adjust the spectrum analyzer for the following setting:
 - a) RBW : 10 kHz (< 1 GHz), 1 MHz (> 1 GHz).
 - b) VBW : 30 kHz (< 1 GHz), 3 MHz (> 1 GHz).
 - c) Sweep Speed : 50 msec.
 - d) Detector mode : Average power (FM Modulation) , Positive peak with peak hold (Digital Modulation)
- 4 The emissions were measured for the worst case as follows:
 - a) : within a band of frequencies defined by the carrier frequency plus and minus one channel.
 - b) : from the lowest frequency generated in the EUT and to at least the 10th harmonic of the carrier frequency, or 40 GHz, whichever is lower.

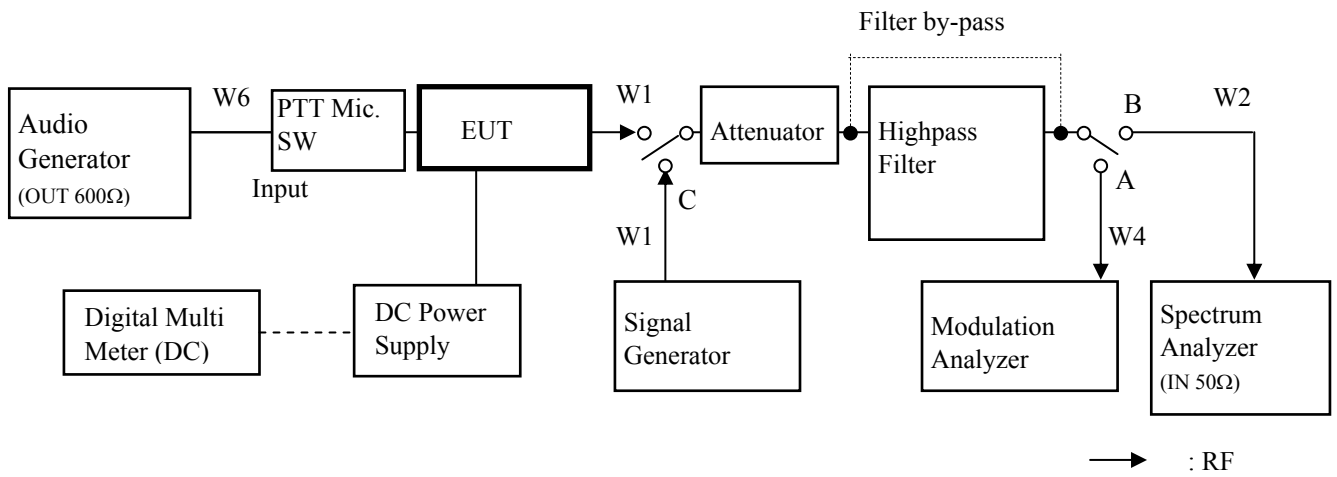
Measuring Equipments

| No. | Equipment | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------------|---------------------|-------------|------------|-------------|-------------|
| 1 | Audio Generator | Anritsu | MG443B | M70150 | Apr. 15, 10 | Apr. 30, 11 |
| 2 | Attenuator (20dB) | Aeroflex/Wenschel | 66-20-34 | BY4537 | Mar. 12, 10 | Mar. 31, 11 |
| 3 | Attenuator (30dB) | Weinschel | WA-29-30-34 | 8923 | May 20, 10 | May 31, 11 |
| 4 | Highpass Filter | Anritsu | MP526D | 6200220657 | Dec. 29, 09 | Dec. 31, 10 |
| 5 | Modulation Analyzer | Hewlett Packard | 8901B | 3403A04852 | Jul. 22, 10 | Jul. 31, 11 |
| 6 | Signal Generator | Rohde&Schwarz | SMT06 | 100684 | Dec. 24, 09 | Dec. 31, 10 |
| 7 | Spectrum Analyzer | Agilent | E4407B | MY45102460 | Feb. 08, 10 | Feb. 28, 11 |
| 8 | Digital Multi Meter | FLUKE | 8846A | 9642018 | Jul. 22, 10 | Jul. 31, 11 |
| 9 | DC Power Supply | Daiichi denpa kogyo | GZV4000 | 90290931 | None | None |

Measuring Cables

| No. | Cable | Manufacturer | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------|----------------|-------------|------------|-------------|-------------|
| W1 | Coaxial Cable | Suhner | SUCOFLEX104 | KSR00091 | May 20, 10 | May 31, 11 |
| W2 | Coaxial Cable | Suhner | SUCOFLEX104 | KSR00042 | Mar. 12, 10 | Mar. 31, 11 |
| W4 | Coaxial Cable | Pacific custom | RG-58 C/U | KSR00096 | Nov. 09, 09 | Nov. 30, 10 |
| W6 | Balance Cable | Nicoon | 3D-2V | KSR00092 | Oct. 26, 09 | Oct. 31, 10 |

Measuring Equipment Configuration



Test Results

| | |
|----------------------|-------------------------|
| Test date | Sep. 13, 2010 |
| Location | Tochigi No.3 Test Site |
| temperature | 25.0 to 26.0 [degree C] |
| Humidity Variation | 45 to 53 [%] |
| Atmospheric Pressure | 98.1 to 98.3 [kPa] |
| Test Engineer | Hideaki Kosemura |

Test was carried out for all the frequency band of section 10.1
 State the worst case (below).

State : High Power / Authorized Bandwidth 11.25 kHz

| No. | Band | Frequency (MHz) | Correct Level (dBm) | Emission Level (dBc) | Mask D Limit (dBc) | Margin (dB) |
|-----|--------|-----------------|---------------------|----------------------|--------------------|-------------|
| 1 | Low | 1350.15 | -29.40 | -73.38 | -64.0 | 9.4 |
| 2 | Middle | 1455.15 | -28.60 | -72.58 | -64.0 | 8.6 |
| 3 | High | 1559.85 | -27.70 | -71.68 | -64.0 | 7.7 |

There is the margin of 20dB over except for the above points.

State : Low Power / Authorized Bandwidth 11.25 kHz

| No. | Band | Frequency (MHz) | Correct Level (dBm) | Emission Level (dBc) | Mask D Limit (dBc) | Margin (dB) |
|-----|--------|-----------------|---------------------|----------------------|--------------------|-------------|
| 1 | Low | 1350.15 | -30.80 | -67.79 | -57.0 | 10.8 |
| 2 | Middle | 1455.15 | -29.70 | -66.69 | -57.0 | 9.7 |
| 3 | High | 1559.85 | -31.30 | -68.29 | -57.0 | 11.3 |

There is the margin of 20dB over except for the above points.

Mask D Limit (dBc) = $-(50+10\log(P))$
 Correct Level (dBm) = Substitute SG Level (dBm)
 Emission Level (dBc) = Correct Level (dBm) - $10\log(P*1000)$
 P = Carrier Level (W)
 " - " = Measurement Limit

10.3 Field Strength of Spurious Radiation

| | |
|-------------------|--|
| REGULATIONS | : FCC Part 2 Section 1053 (a), Part 90 Section 210 |
| TEST METHOD/GUIDE | : ANSI/TIA-603-C Section 2.2.12.2 |

Test Procedure

- 1 The EUT and test equipment were set up as shown on the following page.
- 2 Adjust the spectrum analyzer for the following setting:
 - a) RBW : 10 kHz (< 1 GHz), 1 MHz (> 1 GHz).
 - b) VBW : 300 kHz (< 1 GHz), 3 MHz (> 1 GHz).
 - c) Sweep Speed : 50ms.
 - d) Detector mode : Positive Peak
- 3 The transmitter was placed on a wooden turntable, and it was transmitting into non-radiating load which was also placed on the turntable.
- 4 The measurement antenna was placed at a distance of 3 meters from the EUT.
During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT.
The test was performed by placing the EUT on 3-orthogonal axis.
- 5 The frequency range up to tenth harmonic of the fundamental frequency was investigated.
- 6 Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable.
The absolute levels of the spurious emissions were measured by the substitution.
- 7 Spurious emissions in dB = 10 Log (TX power in Watts/0.001) – the absolute level

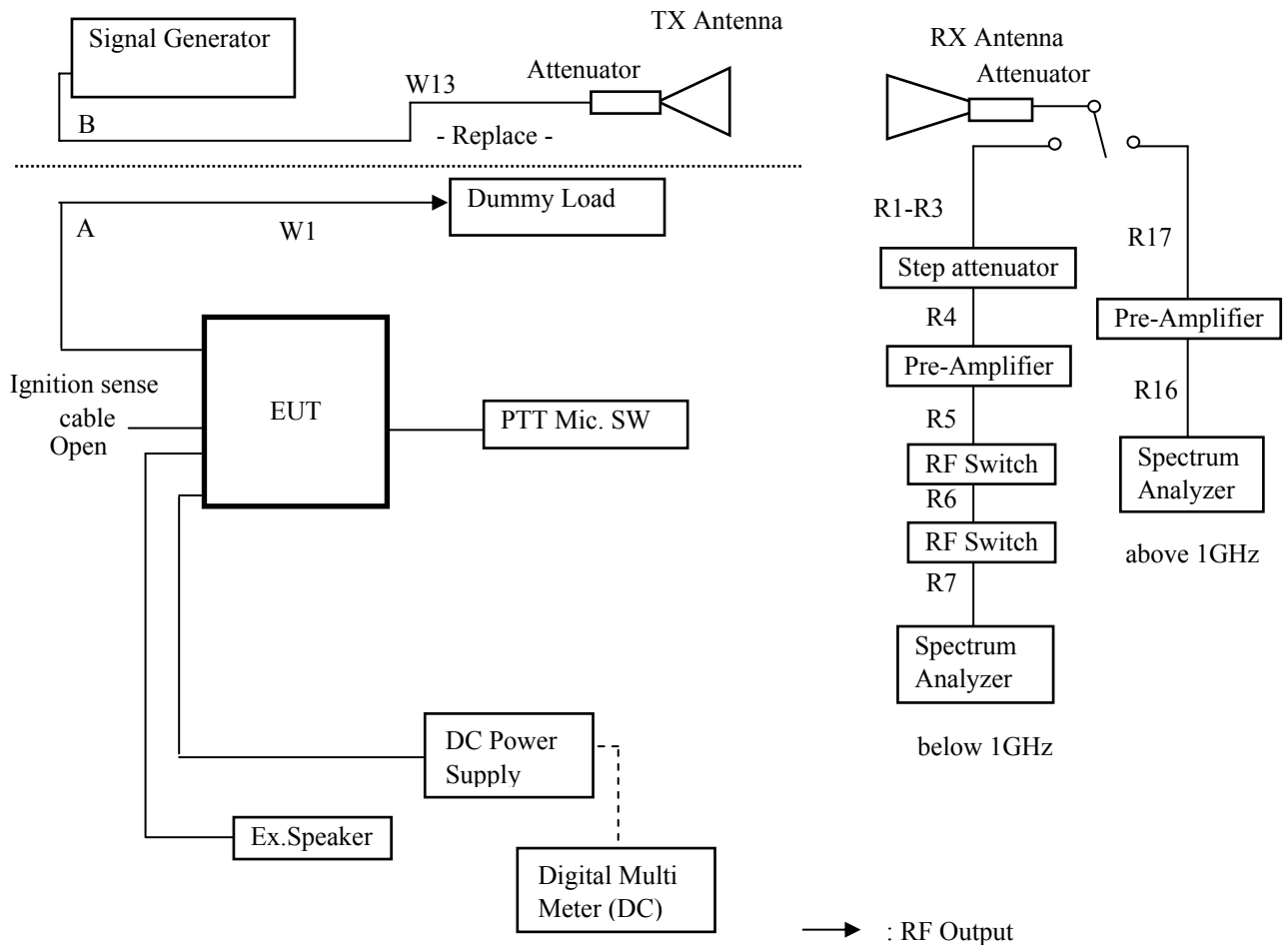
Measuring Equipments

| No. | Equipment | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------------|--------------------|-----------|------------|-------------|-------------|
| 1 | Dipole Antenna(TX) | Schwarzbeck | UHA9105 | CEC009 | Dec. 07, 09 | Dec. 31, 10 |
| 2 | D.R.G Antenna(TX) | ETS LINDGREN | 3117 | 55157 | Aug. 17, 10 | Aug. 31, 11 |
| 3 | B.B Antenna(RX) | Schwarzbeck | VULB9168 | 329 | Jan. 05, 10 | Jan. 31, 11 |
| 4 | D.R.G Antenna(RX) | EMCO | 3115 | 3024 | Nov. 19, 09 | Nov. 30, 10 |
| 5 | Pre-Amplifier | Hewlett Packard | 8447D | 2727A05849 | Jan. 05, 10 | Jan. 31, 11 |
| 6 | Pre-Amplifier | Hewlett Packard | 8449B | 3008A00615 | Jun. 25, 10 | Jun. 30, 11 |
| 7 | Attenuator(6dB) | ANRITSU | MP721B | M54588 | Jan. 05, 10 | Jan. 31, 11 |
| 8 | Attenuator(6dB) | SUNNER | 6806.17.B | None | Jun. 25, 10 | Jun. 30, 11 |
| 9 | Attenuator(10dB) | HUBER+SUHNER | 6810.17B | DML255 | Apr. 07, 10 | Apr. 30, 11 |
| 10 | Spectrum Analyzer | Hewlett Packard | 8563E | 3337A01513 | Jun. 22, 10 | Jun. 30, 11 |
| 11 | Signal Generator | Rohde&Schwarz | SMT06 | 100684 | Dec. 24, 09 | Dec. 31, 10 |
| 12 | Dummy Load | Aeroflex/Weinschel | 1430-4 | BW5572 | Jul. 27, 10 | Jul. 31, 11 |
| 13 | Digital Multi Meter | Hewlett Packard | 8478A | 2911A57726 | Jan. 08, 10 | Jan. 31, 11 |
| 14 | DC Power Supply | TAKASAGO,LTD. | GP035-20R | 1014199059 | None | None |

Measuring Cables

| No. | Cable | Manufacturer | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------|----------------|--------------|------------|-------------|-------------|
| W1 | Coaxial Cable | Suhner | SUCOFLEX106 | 12719/6 | Oct. 06, 10 | Oct 31, 11 |
| W13 | Coaxial Cable | Suhner | SUCOFLEX104A | 47047/4A | Jan. 08, 10 | Jan. 31, 11 |
| R1 | Coaxial Cable | Intertek Japan | 5D-2W | MTS01R3-8 | Jan. 05, 10 | Jan. 31, 11 |
| R2 | Coaxial Cable | Suhner | RG214HF | MTS01R3-1 | Jan. 05, 10 | Jan. 31, 11 |
| R3 | Coaxial Cable | Intertek Japan | 12D-SFA | MTS01R3-2 | Jan. 05, 10 | Jan. 31, 11 |
| R4 | Coaxial Cable | Suhner | RG214HF | MTS01R3-3 | Jan. 05, 10 | Jan. 31, 11 |
| R5 | Coaxial Cable | Suhner | RG214HF | MTS01R3-4 | Jan. 05, 10 | Jan. 31, 11 |
| R6 | Coaxial Cable | Suhner | RG214HF | MTS01R3-5 | Jan. 05, 10 | Jan. 31, 11 |
| R7 | Coaxial Cable | Suhner | RG214HF | MTS01R3-6 | Jan. 05, 10 | Jan. 31, 11 |
| R16 | Coaxial Cable | Suhner | SUCOFLEX104 | 58441/4PE | Jun. 25, 10 | Jun. 30, 11 |
| R17 | Coaxial Cable | Suhner | SUCOFLEX104 | 58440/4PE | Jun. 25, 10 | Jun. 30, 11 |

Measuring Equipment Configuration



Test Results

| | |
|----------------------|--------------------------------|
| Test date | Oct. 16, 2010 to Oct. 17, 2010 |
| Location | Matsuda No.1 Test Site |
| temperature | 23.0 to 24.0 [degree C] |
| Humidity Variation | 64 to 71 [%] |
| Atmospheric Pressure | 98.1 to 99.2 [kPa] |
| Test Engineer | Hideaki Kosemura |

Test was carried out for all the frequency band of section 10.1
State the worst case (below).

State : High Power / Authorized Bandwidth 11.25 kHz / 485.05 MHz

| No | Frequency (MHz) | Pol | Reading Level (dBm) | SG Out Level (dBm) | Antenna Gain (dBi) | Loss (dB) | Correct Level (dBm) | Emission Level (dBc) | Limit Level (dBc) | Margin (dB) |
|----|-----------------|------|---------------------|--------------------|--------------------|-----------|---------------------|----------------------|-------------------|-------------|
| 1 | 970.10 | Hor. | -49.67 | -18.80 | 2.15 | 13.46 | -30.1 | -74.1 | -64.0 | 10.1 |
| | | Ver. | -49.50 | -15.90 | 2.15 | 13.46 | -27.2 | -71.2 | -64.0 | 7.2 |
| 2 | 1455.15 | Hor. | -26.67 | -13.80 | 6.17 | 14.12 | -21.7 | -65.7 | -64.0 | 1.7 |
| | | Ver. | -28.58 | -14.20 | 6.17 | 14.12 | -22.1 | -66.1 | -64.0 | 2.1 |
| 3 | 1940.20 | Hor. | -49.08 | -31.40 | 5.64 | 14.75 | -40.5 | -84.5 | -64.0 | 20.5 |
| | | Ver. | -47.75 | -29.10 | 5.64 | 14.75 | -38.2 | -82.2 | -64.0 | 18.2 |
| 4 | 2425.25 | Hor. | -47.45 | -27.70 | 6.04 | 15.39 | -37.1 | -81.0 | -64.0 | 17.1 |
| | | Ver. | -47.33 | -27.80 | 6.04 | 15.39 | -37.2 | -81.1 | -64.0 | 17.2 |
| 5 | 2910.30 | Hor. | -60.17 | -45.00 | 7.14 | 16.03 | -53.9 | -97.9 | -64.0 | 33.9 |
| | | Ver. | -55.92 | -38.20 | 7.14 | 16.03 | -47.1 | -91.1 | -64.0 | 27.1 |
| 6 | 3395.35 | Hor. | -47.67 | -26.40 | 7.97 | 16.50 | -34.9 | -78.9 | -64.0 | 14.9 |
| | | Ver. | -44.83 | -20.10 | 7.97 | 16.50 | -28.6 | -72.6 | -64.0 | 8.6 |
| 7 | 3880.40 | Hor. | -56.67 | -34.60 | 8.65 | 16.94 | -42.9 | -86.9 | -64.0 | 22.9 |
| | | Ver. | -49.17 | -24.20 | 8.65 | 16.94 | -32.5 | -76.5 | -64.0 | 12.5 |
| 8 | 4365.45 | Hor. | -51.75 | -27.10 | 9.50 | 17.37 | -35.0 | -79.0 | -64.0 | 15.0 |
| | | Ver. | -46.42 | -20.60 | 9.50 | 17.37 | -28.5 | -72.5 | -64.0 | 8.5 |
| 9 | 4850.50 | Hor. | -58.67 | -34.00 | 9.62 | 17.81 | -42.2 | -86.2 | -64.0 | 22.2 |
| | | Ver. | -56.92 | -31.30 | 9.62 | 17.81 | -39.5 | -83.5 | -64.0 | 19.5 |

There is the margin of 20dB over except for the above points.

Mask D Limit (dBc) = $-(50+10\log(P))$

Correct Level (dBm) = Substitute SG Level (dBm) + ANT Gain (dBi) - Loss (Cable, Attenuator) (dB)

Emission Level (dBc) = Correct Level (dBm) - $10\log(P*1000)$

P = Carrier Level (W)

" - " = Measurement Limit

State : Low Power / Authorized Bandwidth 11.25 kHz / 485.05 MHz

| No | Frequency (MHz) | Pol | Reading Level (dBm) | SG Out Level (dBm) | Antenna Gain (dBi) | Loss (dB) | Correct Level (dBm) | Emission Level (dBc) | Limit Level (dBc) | Margin (dB) |
|----|-----------------|------|---------------------|--------------------|--------------------|-----------|---------------------|----------------------|-------------------|-------------|
| 1 | 970.10 | Hor. | -49.25 | -18.40 | 2.15 | 13.46 | -29.7 | -66.7 | -57.0 | 9.7 |
| | | Ver. | -49.33 | -15.70 | 2.15 | 13.46 | -27.0 | -64.0 | -57.0 | 7.0 |
| 2 | 1455.15 | Hor. | -26.58 | -13.70 | 6.17 | 14.12 | -21.6 | -58.6 | -57.0 | 1.6 |
| | | Ver. | -28.00 | -13.80 | 6.17 | 14.12 | -21.7 | -58.7 | -57.0 | 1.7 |
| 3 | 1940.20 | Hor. | -46.25 | -28.90 | 5.64 | 14.75 | -38.0 | -75.0 | -57.0 | 18.0 |
| | | Ver. | -46.17 | -26.40 | 5.64 | 14.75 | -35.5 | -72.5 | -57.0 | 15.5 |
| 4 | 2425.25 | Hor. | -49.67 | -30.10 | 6.04 | 15.39 | -39.5 | -76.4 | -57.0 | 19.4 |
| | | Ver. | -50.08 | -31.10 | 6.04 | 15.39 | -40.5 | -77.4 | -57.0 | 20.4 |
| 5 | 2910.30 | Hor. | -60.33 | -47.30 | 7.14 | 16.03 | -56.2 | -93.2 | -57.0 | 36.2 |
| | | Ver. | -58.33 | -41.20 | 7.14 | 16.03 | -50.1 | -87.1 | -57.0 | 30.1 |
| 6 | 3395.35 | Hor. | -59.17 | -41.00 | 7.97 | 16.50 | -49.5 | -86.5 | -57.0 | 29.5 |
| | | Ver. | -58.25 | -36.80 | 7.97 | 16.50 | -45.3 | -82.3 | -57.0 | 25.3 |
| 7 | 3880.40 | Hor. | -57.67 | -35.90 | 8.65 | 16.94 | -44.2 | -81.2 | -57.0 | 24.2 |
| | | Ver. | -55.08 | -31.20 | 8.65 | 16.94 | -39.5 | -76.5 | -57.0 | 19.5 |
| 8 | 4365.45 | Hor. | -60.58 | -39.30 | 9.50 | 17.37 | -47.2 | -84.2 | -57.0 | 27.2 |
| | | Ver. | -56.17 | -32.50 | 9.50 | 17.37 | -40.4 | -77.4 | -57.0 | 20.4 |
| 9 | 4850.50 | Hor. | -61.83 | -39.20 | 9.62 | 17.81 | -47.4 | -84.4 | -57.0 | 27.4 |
| | | Ver. | -61.75 | -40.50 | 9.62 | 17.81 | -48.7 | -85.7 | -57.0 | 28.7 |

There is the margin of 20dB over except for the above points.

Mask D Limit (dBc) = $-(50+10\log(P))$

Correct Level (dBm) = Substitute SG Level (dBm) + ANT Gain (dBi) - Loss (Cable, Attenuator) (dB)

Emission Level (dBc) = Correct Level (dBm) - $10\log(P*1000)$

P = Carrier Level (W)

" - " = Measurement Limit

10.4 Emission Masks (Occupied Bandwidth)

| | |
|-------------------|--|
| REGULATIONS | : FCC Part 2 Section 1049 (c) (1), Part 90 Section 210 |
| TEST METHOD/GUIDE | : ANSI/TIA-603-C Section 2.2.11.2 |

Test Procedure

- 1 The EUT and test equipment were set up as shown on the following page.
- 2 For EUT supporting audio modulation, the audio signal generator was adjusted to the frequency of maximum response and with output level set for +/- 2.5 kHz deviation (or 50 % modulation). (FM modulation).
- 3 With level constant, the signal level was increased 16 dB.
- 4 Adjust the spectrum analyzer for the following setting:
 - a) RBW : 100Hz (Non modulation and Authorized Band 6 kHz),
 100Hz (Non modulation and Authorized Band 11.25 kHz),
 300Hz (Non modulation and Authorized Band 20 kHz).
 - b) VBW : 10times the RBW (Non modulation , Authorized Band 11.25 kHz and Authorized Band 20 kHz).
 - c) Sweep Speed : 8 sec.
 - d) Sampling Time : 10 times
- 5 The occupied Bandwidth was measured with the Spectrum Analyzer controls set as shown on the test results.

Measuring Equipments

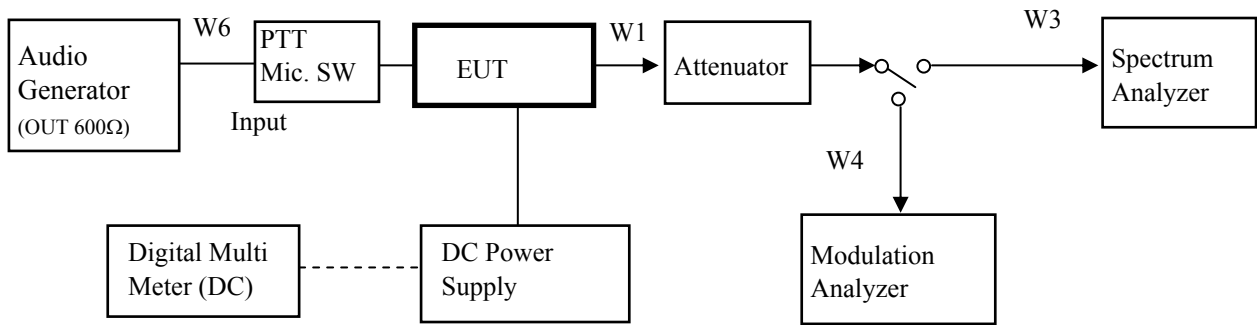
| No. | Equipment | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------------|---------------------|-------------|------------|-------------|-------------|
| 1 | Audio Generator | Anritsu | MG443B | M70150 | Apr. 15, 10 | Apr. 30, 11 |
| 2 | Attenuator (20dB) | Aeroflex/Wenshel | 66-20-34 | BY4537 | Mar. 12, 10 | Mar. 31, 11 |
| 3 | Attenuator (30dB) | Weinschel | WA-29-30-34 | 8923 | May 20, 10 | May 31, 11 |
| 4 | Modulation Analyzer | Hewlett Packard | 8901B | 3403A04852 | Jul. 22, 10 | Jul. 31, 11 |
| 5 | Spectrum Analyzer | Agilent | E4407B | MY45102460 | Feb 08, 10 | Feb 28, 11 |
| 6 | Digital Multi Meter | FLUKE | 8846A | 9642018 | Jul. 22, 10 | Jul. 31, 11 |
| 7 | DC Power Supply | Daiichi denpa kogyo | GZV4000 | 90290931 | None | None |

Measuring Cables

| No. | Cable | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------|----------------|-------------|------------|-------------|-------------|
| W1 | Coaxial Cable | Suhner | SUCOFLEX104 | KSR00091 | May 20, 10 | May 31, 11 |
| W3 | Coaxial Cable | Suhner | SUCOFLEX104 | KSR00042 | Mar. 12, 10 | Mar. 31, 11 |
| W4 | Coaxial Cable | Pacific custom | RG-58 C/U | KSR00096 | Nov. 09, 09 | Nov. 30, 10 |
| W6 | Balance Cable | Nicoon | 3D-2V | KSR00092 | Oct. 26, 09 | Oct. 31, 10 |

Measuring Equipment Configuration

<FM Modulation Case>



Note: Configuration of other Modulation(4Level FSK) test is composed without the Audio Generator.

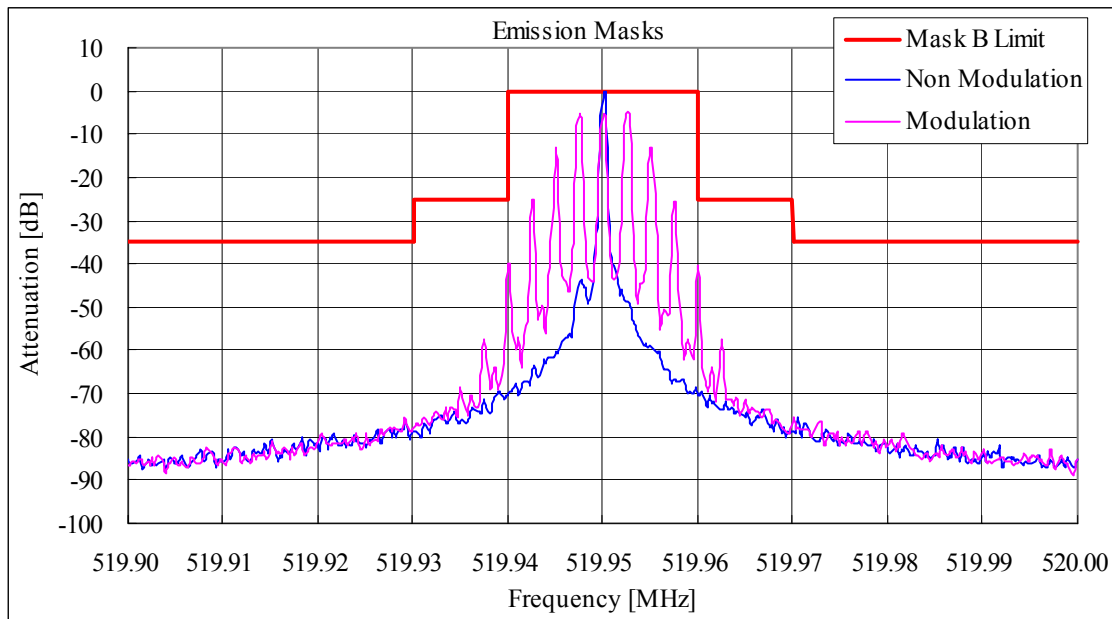
→ : RF Output

Test Results

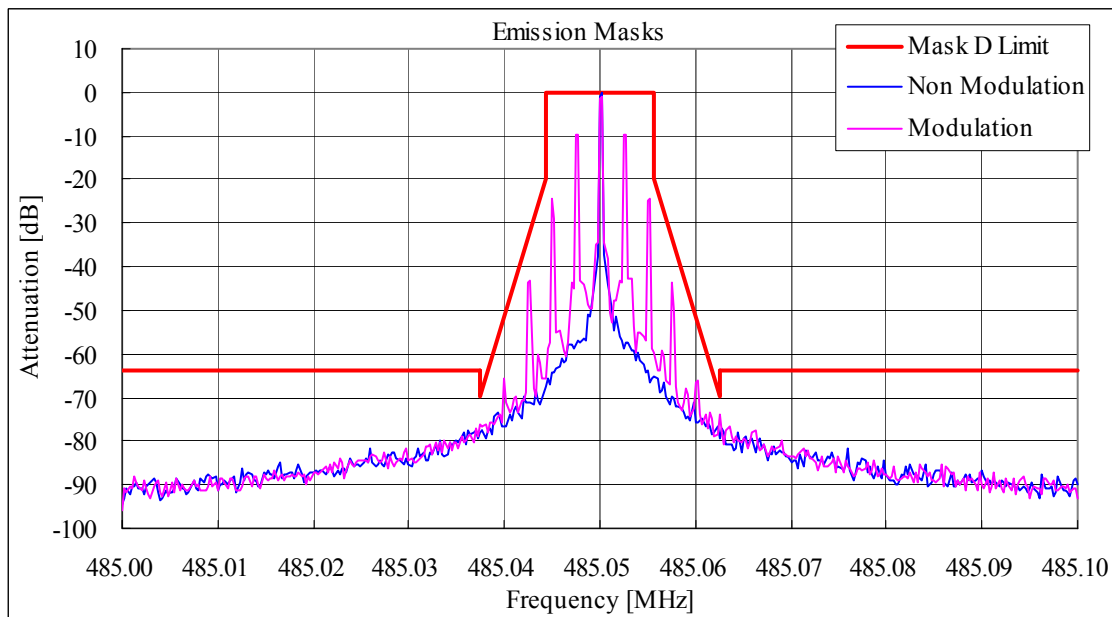
| | | |
|----------------------|------------------------|------------|
| Test date | Sep. 10, 2010 | |
| Location | Tochigi No.3 Test Site | |
| temperature | 24.0 to 26.0 | [degree C] |
| Humidity Variation | 47 to 52 | [%] |
| Atmospheric Pressure | 98.9 to 99.2 | [kPa] |
| Test Engineer | Hideaki Kosemura | |

Test was carried out for all the frequency band of section 10.1
 State the worst case (below).

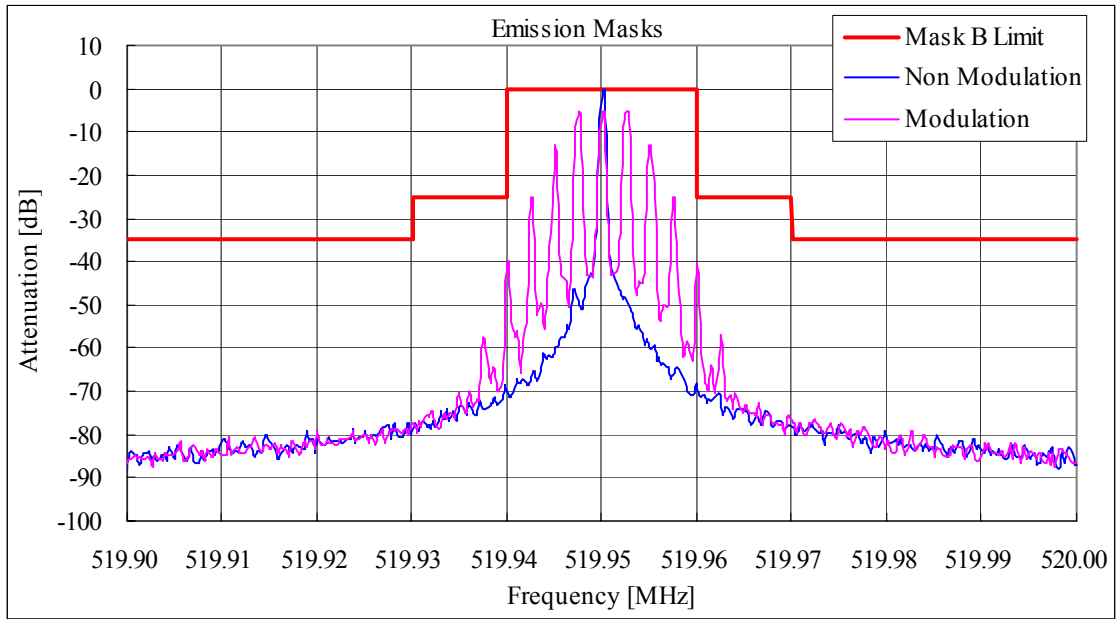
State : High Power / Authorized Bandwidth 20 kHz:FM / 519.95 MHz



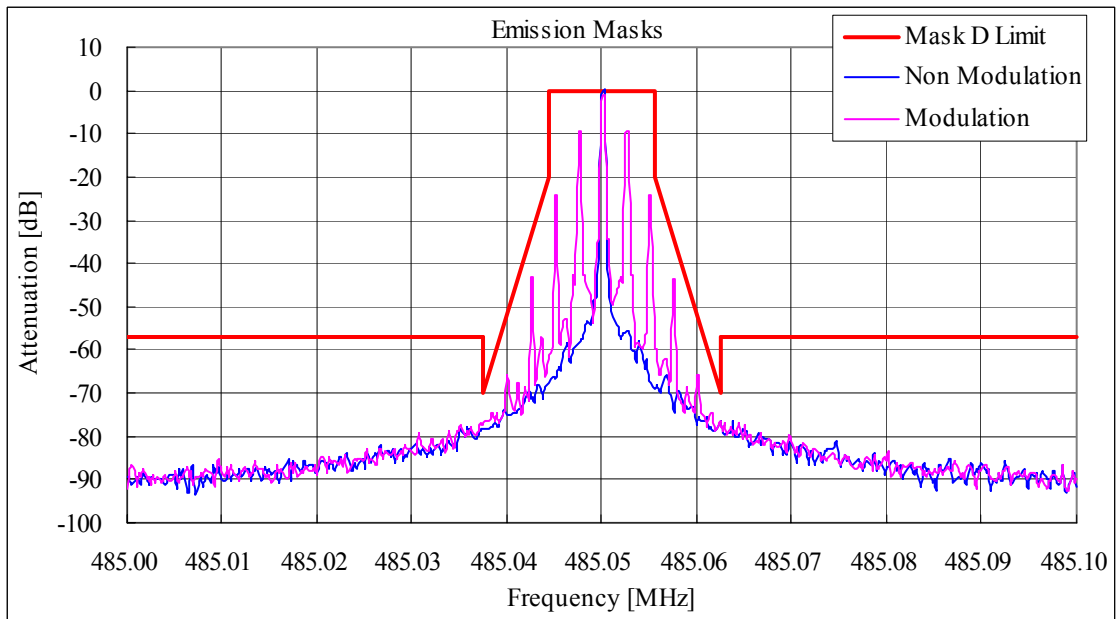
State : High Power / Authorized Bandwidth 11.25 kHz:FM / 485.05 MHz



State : Low Power / Authorized Bandwidth 20 kHz:FM / 519.95 MHz



State : Low Power / Authorized Bandwidth 11.25 kHz:FM / 485.05 MHz



10.5 Transient Frequency Behavior

| | |
|-------------------|-----------------------------------|
| REGULATIONS | : FCC Part 90 Section 214 |
| TEST METHOD/GUIDE | : ANSI/TIA-603-C Section 2.2.19.3 |

Test Procedure

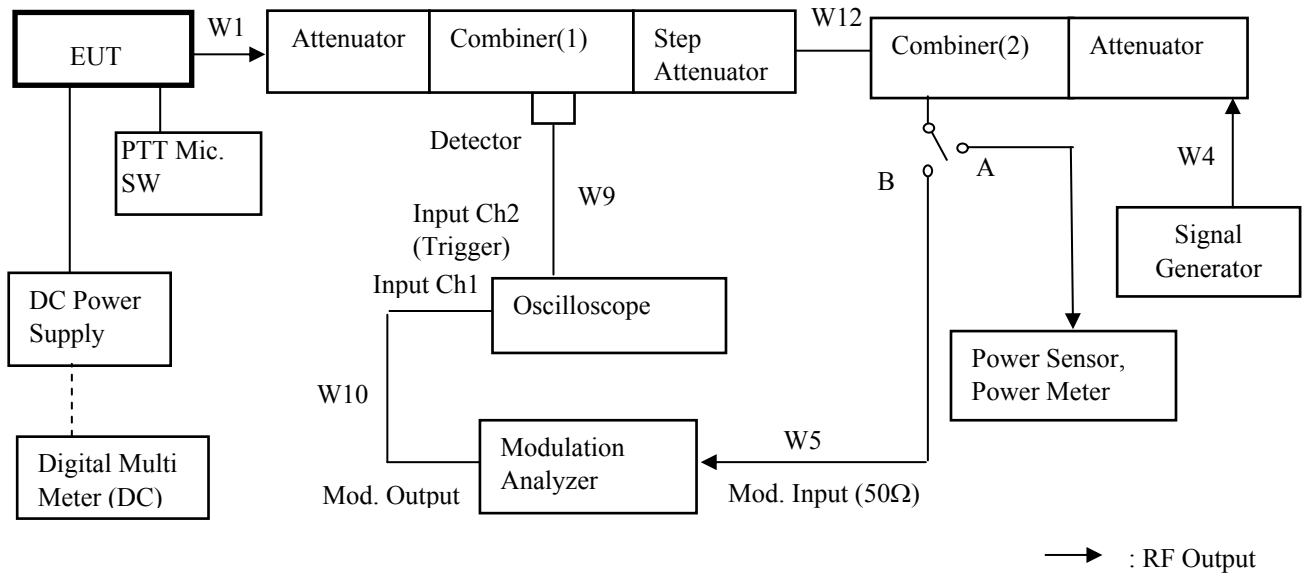
- 1 The EUT and test equipment were set up as shown on the following page.
- 2 The transmitter was turned on.
- 3 The transmitter carrier level was measured at the output of the combiner .
- 4 The transmitter was turned off.
- 5 An RF signal generator (1) modulated with a 1 kHz tone at either 25 kHz or 12.5 kHz or 6.25 kHz deviation, and set to the same frequency as the assigned transmitter frequency, (2) was adjusted to a level -30 dB below the level recorded in Procedure 3, as measured at the output of the combiner.
 This level was then fixed for the remainder of the test and is recorded at step h.
- 6 The oscilloscope was setup using TIA-603C steps j and k as a guide, however 1000 Hz tone was adjusted at +- 2.5 /div vertically centered on the display.
- 7 The transmitter was turned on, and the level of the carrier at the output of the combiner was recorded as step l.
- 8 The carrier on-time as referenced in TIA-603-C steps m, n, and o was captured and plotted.
- 9 The carrier off-time as referenced in TIA-603-C steps p, q, r, and s was captured and plotted.

| No. | Equipment | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------------|---------------------|-------------|------------|-------------|-------------|
| 1 | Signal Generator | Rohde&Schwarz | SMT06 | 100684 | Dec. 24, 09 | Dec. 31, 10 |
| 2 | Oscilloscope | Lecroy | 9360 | 1408 | Apr. 15, 10 | Apr. 30, 11 |
| 3 | Power Meter | Hewlett Packard | E4418B | GB38410265 | May 20, 10 | May 31, 11 |
| 4 | Power Sensor | Hewlett Packard | 8482A | US37292237 | May 20, 10 | May 31, 11 |
| 5 | Attenuator (20dB) | Aeroflex/Wenshel | 66-20-34 | BY4537 | Mar. 12, 10 | Mar. 31, 11 |
| 6 | Attenuator (30dB) | Weinschel | WA-29-30-34 | 8923 | May. 20, 10 | May. 31, 11 |
| 7 | Step Attenuator | Hewlett Packard | 8494B | 2726A14515 | Dec. 29, 09 | Dec. 31, 10 |
| 8 | Modulation Analyzer | Hewlett Packard | 8901B | 3403A04852 | Jul. 22, 10 | Jul. 31, 11 |
| 9 | Combiner(1) | Anritsu | Z-164A | M89249 | Nov. 06, 09 | Nov. 30, 10 |
| 10 | Combiner(2) | Anritsu | Z-164A | M89549 | Nov. 06, 09 | Nov. 30, 10 |
| 11 | Attenuator (3dB) | TME | CFA-20NPJ-3 | 679701 | May 20, 10 | May 31, 11 |
| 12 | Digital Multi Meter | FLUKE | 8846A | 9642018 | Jul. 22, 10 | Jul. 31, 11 |
| 13 | DC Power Supply | Daiichi denpa kogyo | GZV4000 | 90290931 | None | None |

Measuring Cables

| No. | Cable | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------|----------------|-------------|------------|-------------|-------------|
| W1 | Coaxial Cable | Suhner | SUCOFLEX104 | KSR00091 | May 20, 10 | May 31, 11 |
| W4 | Coaxial Cable | Pacific custom | RG-58 C/U | KSR00096 | Nov. 09, 09 | Nov. 30, 10 |
| W5 | Coaxial Cable | Suhner | SUCOFLEX104 | KSR00211 | Aug. 19, 10 | Aug. 31, 11 |
| W9 | Coaxial Cable | Pacific custom | RG-58 C/U | KSR00094 | Nov. 09, 09 | Nov. 30, 10 |
| W10 | Coaxial Cable | Pacific custom | RG-58 C/U | KSR00097 | Nov. 09, 09 | Nov. 30, 10 |
| W12 | Coaxial Cable | Suhner | SUCOFLEX104 | KSR00042 | Mar. 12, 10 | Mar. 31, 11 |

Measuring Equipment Configuration

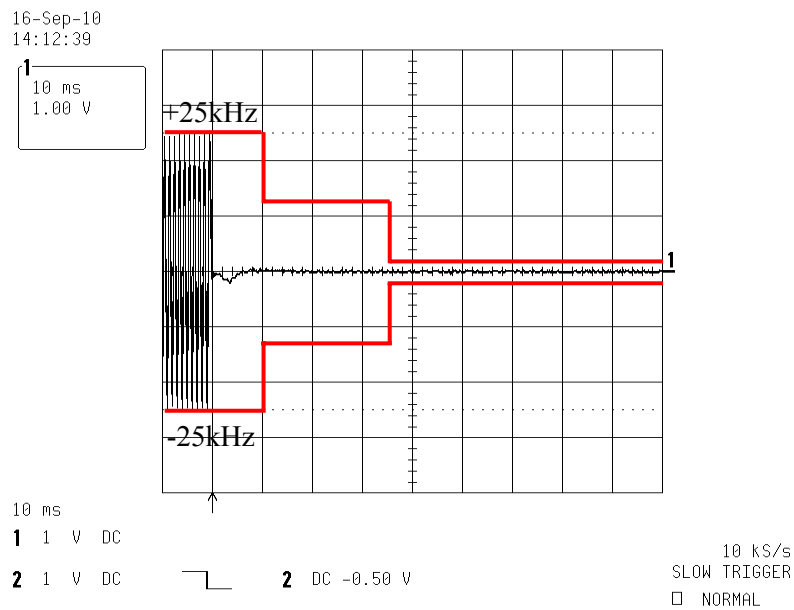


Test Results

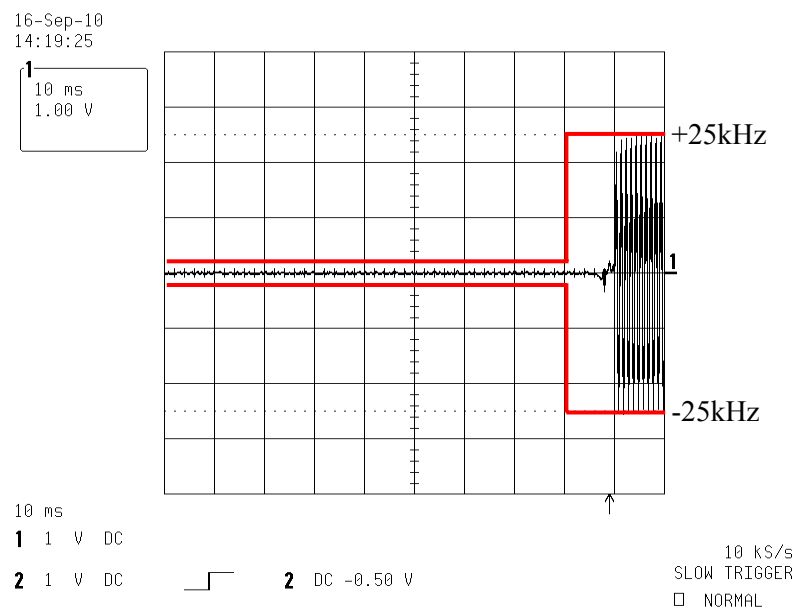
| | | |
|----------------------|------------------------|------------|
| Test date | Sep. 16, 2010 | |
| Location | Tochigi No.3 Test Site | |
| temperature | 24.0 to 26.0 | [degree C] |
| Humidity Variation | 62 to 68 | [%] |
| Atmospheric Pressure | 98.7 to 98.9 | [kPa] |
| Test Engineer | Hideaki Kosemura | |

Test was carried out for all the frequency band of section 10.1
 State the worst case (below).

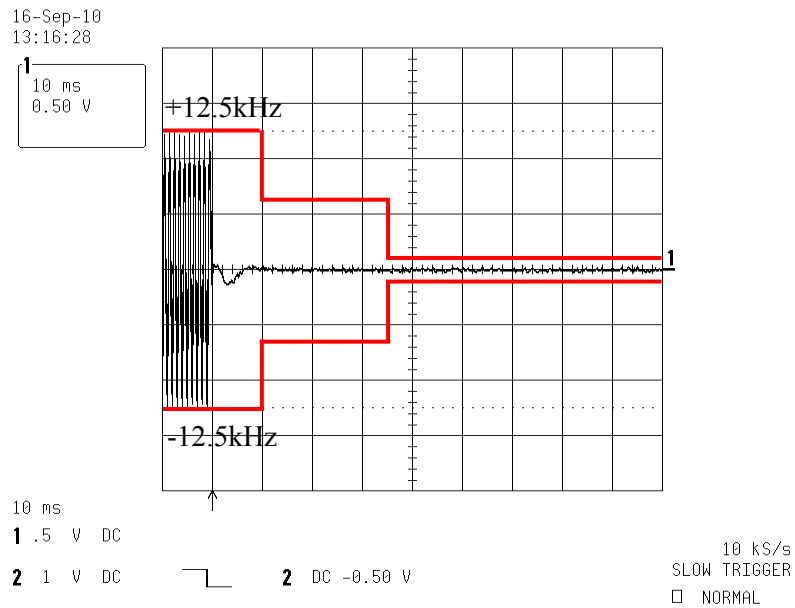
State : High Power / Authorized Bandwidth 20 kHz / FM / 450.05 MHz/ PTT:OFF -ON



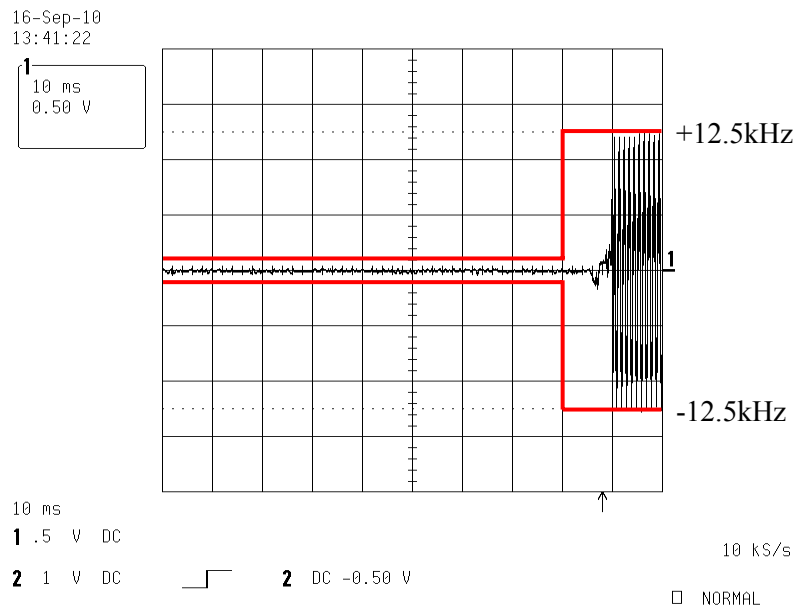
State : High Power / Authorized Bandwidth 20 kHz / FM / 450.05 MHz/ PTT:ON -OFF



State : High Power / Authorized Bandwidth 11.25 kHz / FM / 450.05 MHz/ PTT:OFF -ON



State : High Power / Authorized Bandwidth 11.25 kHz / FM / 450.05 MHz/ PTT:ON -OFF



10.6 Audio Frequency Response / Audio Low Pass Filter (Voice Input)

| | |
|-------------------|---|
| REGULATIONS | : FCC Part 2 Section 1047 (a) |
| TEST METHOD/GUIDE | : ANSI/TIA-603-C Section 2.2.6.2.2, 3.2.6.2 |

Test Procedure

- 1 The EUT and test equipment were set up as shown on the following page.
- 2 Adjust the Modulation Analyzer for the following setting:
 - a) High-pass filter : 50 Hz
 - b) Low-pass filter : 15 kHz
 - c) Detector : positive peak
 - d) Function : FM
- 3 The audio signal input was adjusted to obtain 20 % modulation at 1 kHz, and this point was taken as the 0 dB reference level.
- 4 With input levels held constant and below limiting at all frequencies, the audio signal generator was varied from 300 Hz to 5 kHz.
- 5 The response in dB relative to 1 kHz was then measured, using the Modulation Analyzer.

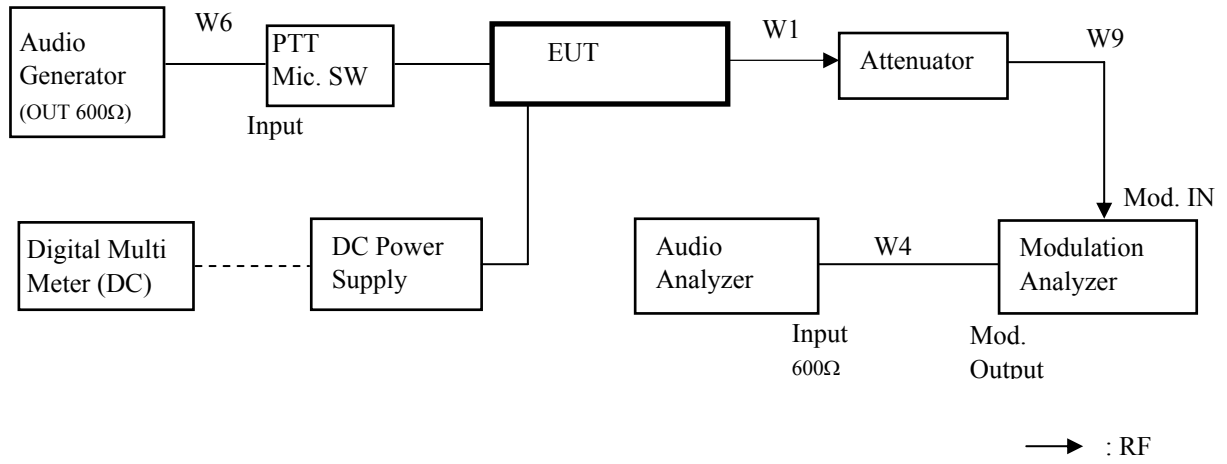
Measuring Equipments

| No. | Equipment | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------------|---------------------|-------------|------------|-------------|-------------|
| 1 | Audio Generator | Anritsu | MG443B | M70150 | Apr. 15, 10 | Apr. 30, 11 |
| 2 | Audio Analyzer | Hewlett Packard | 8903B | 2818A04372 | Apr. 09, 10 | Apr. 30, 11 |
| 3 | Attenuator (20dB) | Aeroflex/Wenshel | 66-20-34 | BY4537 | Mar. 12, 10 | Mar. 31, 11 |
| 4 | Attenuator (30dB) | Weinschel | WA-29-30-34 | 8923 | May 20, 10 | May 31, 11 |
| 5 | Modulation Analyzer | Hewlett Packard | 8901B | 3403A04852 | Jul. 22, 10 | Jul. 31, 11 |
| 6 | Digital Multi Meter | FLUKE | 8846A | 9642018 | Jul. 22, 10 | Jul. 31, 11 |
| 7 | DC Power Supply | Daiichi denpa kogyo | GZV4000 | 90290931 | None | None |

Measuring Cables

| No. | Cable | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------|----------------|-------------|------------|-------------|-------------|
| W1 | Coaxial Cable | Suhner | SUCOFLEX104 | KSR00091 | May 20, 10 | May 31, 11 |
| W4 | Coaxial Cable | Pacific custom | RG-58 C/U | KSR00096 | Nov. 09, 09 | Nov. 30, 10 |
| W6 | Balance Cable | Nicoon | 3D-2V | KSR00092 | Oct. 26, 09 | Oct. 31, 10 |
| W9 | Coaxial Cable | Pacific custom | RG-58 C/U | KSR00097 | Nov. 09, 09 | Nov. 30, 10 |

Measuring Equipment Configuration

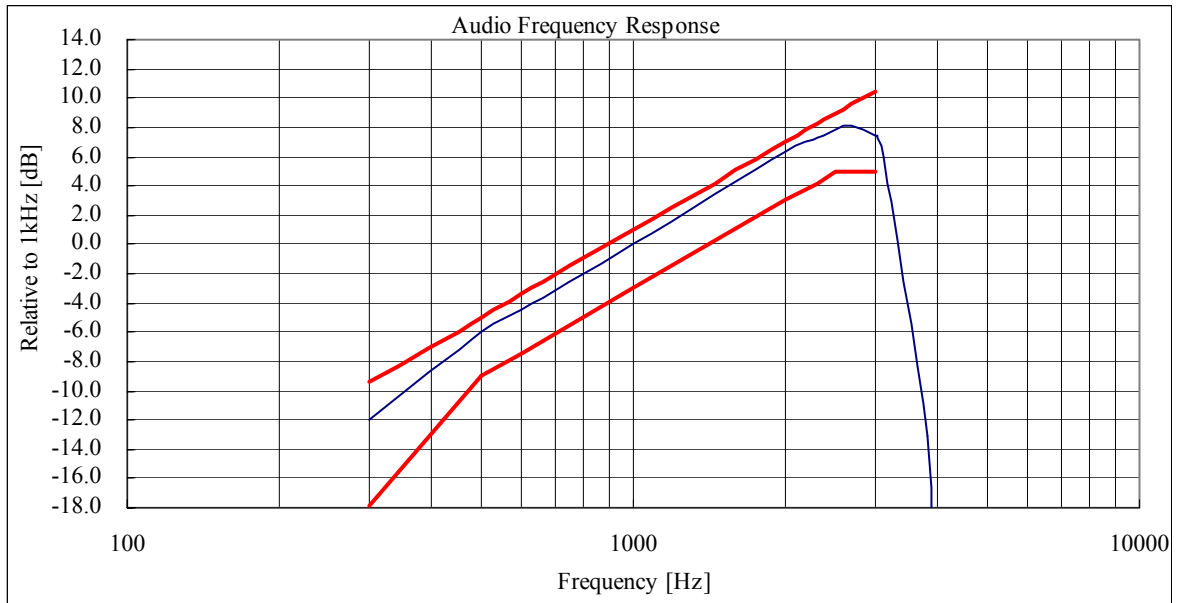


Test Results

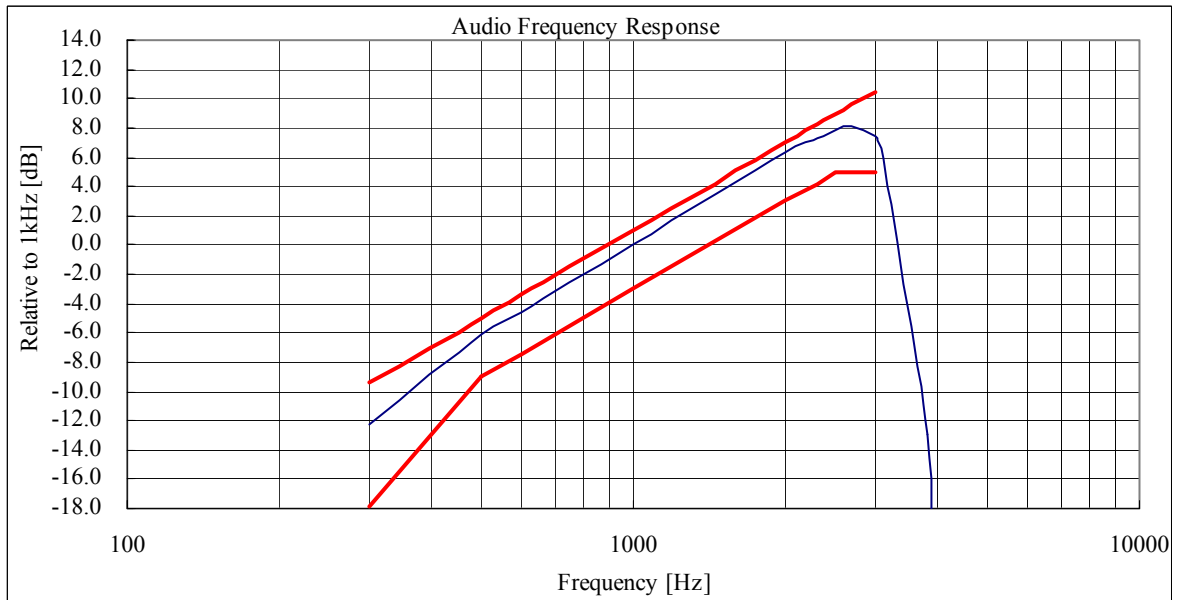
| | | |
|----------------------|------------------------|------------|
| Test date | Sep. 09, 2010 | |
| Location | Tochigi No.3 Test Site | |
| temperature | 24.0 to 25.0 | [degree C] |
| Humidity Variation | 49 to 54 | [%] |
| Atmospheric Pressure | 99.1 to 99.3 | [kPa] |
| Test Engineer | Hideaki Kosemura | |

Test was carried out for all the frequency band of section 10.1
 State the worst case (below).

State : High Power / Authorized Bandwidth 20 kHz / 450.05 MHz



State : High Power / Authorized Bandwidth 11.25 kHz / 485.05 MHz



Note:

Audio Filter of the above result is substituted with the same structure as Audio Frequency Response.
 On the transmission condition below 3kHz, Transceiver shows pre-emphasis condition of transmission function.
 On the transmission condition above 3kHz, Transceiver shows Audio Low Pass Filter.

10.7 Modulation Limiting

| | |
|-------------------|---|
| REGULATIONS | : FCC Part 2 Section 1047 (b) |
| TEST METHOD/GUIDE | : ANSI/TIA-603-C Section 2.2.3.2, 1.3.4.4 |

Test Procedure

- 1 The EUT and test equipment were set up as shown on the following page.
- 2 Adjust the Modulation Analyzer for the following setting:
 - a) High-pass filter : off
 - b) Low-pass filter : 15 kHz
 - c) Detector : positive peak
 - d) Function : FM
- 3 Apply a 1kHz modulation signal to the transmitter from the audio generator, and adjust the level to obtain 60% of full rated system deviation.
- 4 Measure the modulation frequency that was showed on the Modulation Analyzer when the output levels of the Audio Generator were changed from -20 dB to +50 dB by 10 dB.
- 5 Set the output frequencies of the Audio Generator 300 Hz and 3 kHz, and repeat test procedure 4.
- 6 Set the Detector of the Modulation Analyzer Negative Peak.
- 7 Repeat test procedure 4 and 5.

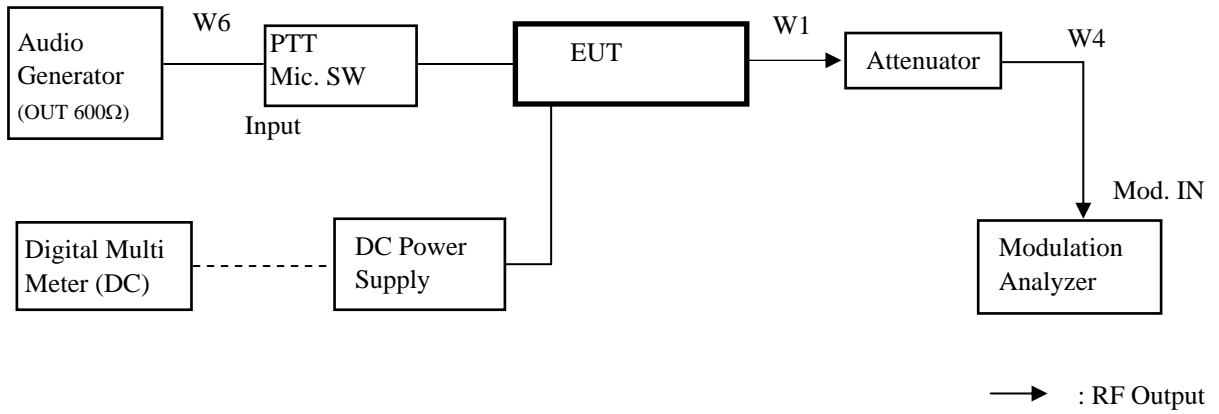
Measuring Equipments

| No. | Equipment | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------------|---------------------|-------------|------------|-------------|-------------|
| 1 | Audio Generator | Anritsu | MG443B | M70150 | Apr. 15, 10 | Apr. 30, 11 |
| 2 | Attenuator (20dB) | Aeroflex/Wenshel | 66-20-34 | BY4537 | Mar. 12, 10 | Mar. 31, 11 |
| 3 | Attenuator (30dB) | Weinschel | WA-29-30-34 | 8923 | May 20, 10 | May 31, 11 |
| 4 | Modulation Analyzer | Hewlett Packard | 8901B | 3403A04852 | Jul. 22, 10 | Jul. 31, 11 |
| 5 | Digital Multi Meter | FLUKE | 8846A | 9642018 | Jul. 22, 10 | Jul. 31, 11 |
| 6 | DC Power Supply | Daiichi denpa kogyo | GZV4000 | 90290931 | None | None |

Measuring Cables

| No. | Cable | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------|----------------|-------------|------------|-------------|-------------|
| W1 | Coaxial Cable | Suhner | SUCOFLEX104 | KSR00091 | May 20, 10 | May 31, 11 |
| W4 | Coaxial Cable | Pacific custom | RG-58 C/U | KSR00096 | Nov. 09, 09 | Nov. 30, 10 |
| W6 | Balance Cable | Nicoon | 3D-2V | KSR00092 | Oct. 26, 09 | Oct. 31, 10 |

Measuring Equipment Configuration

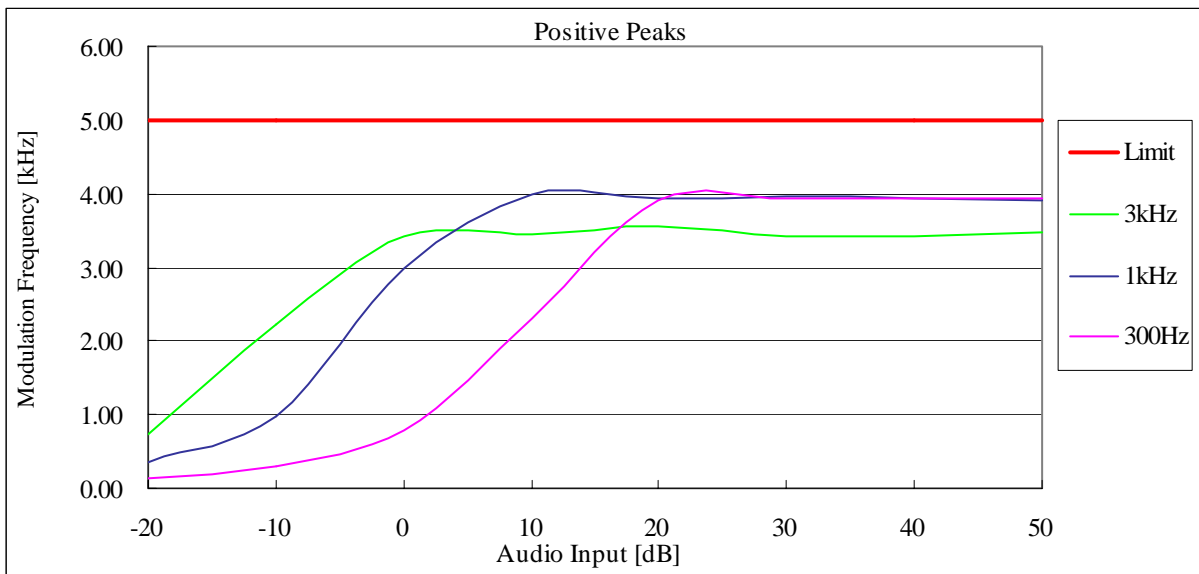


Test Results

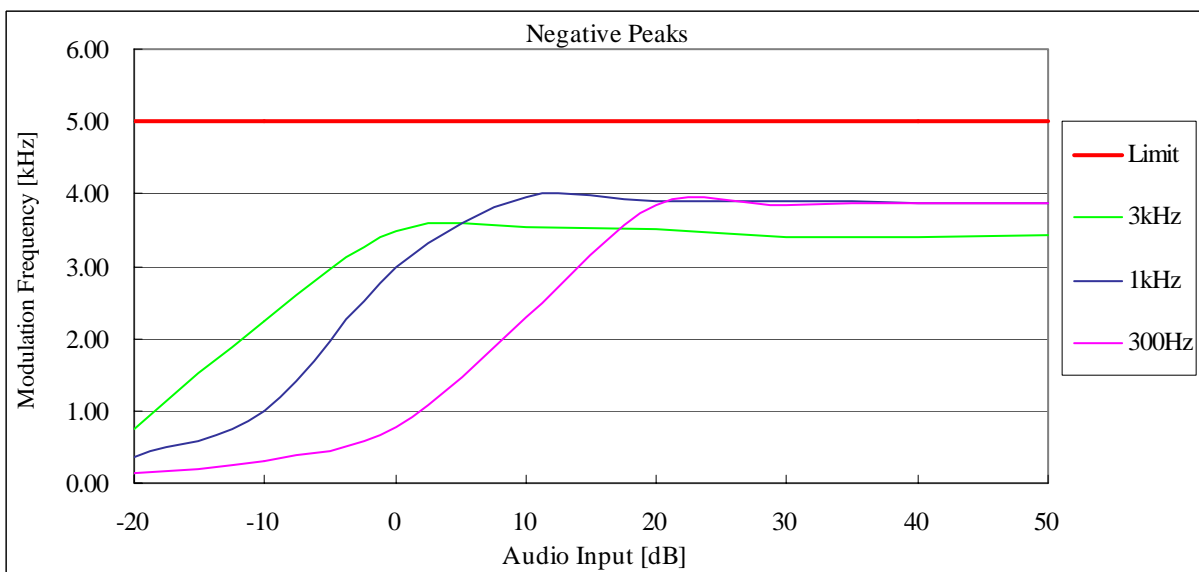
| | |
|----------------------|-------------------------|
| Test date | Sep. 08, 2010 |
| Location | Tochigi No.3 Test Site |
| temperature | 25.0 to 26.0 [degree C] |
| Humidity Variation | 61 to 63 [%] |
| Atmospheric Pressure | 98.5 to 98.7 [kPa] |
| Test Engineer | Hideaki Kosemura |

Test was carried out for all the frequency band of section 10.1
 State the worst case (below).

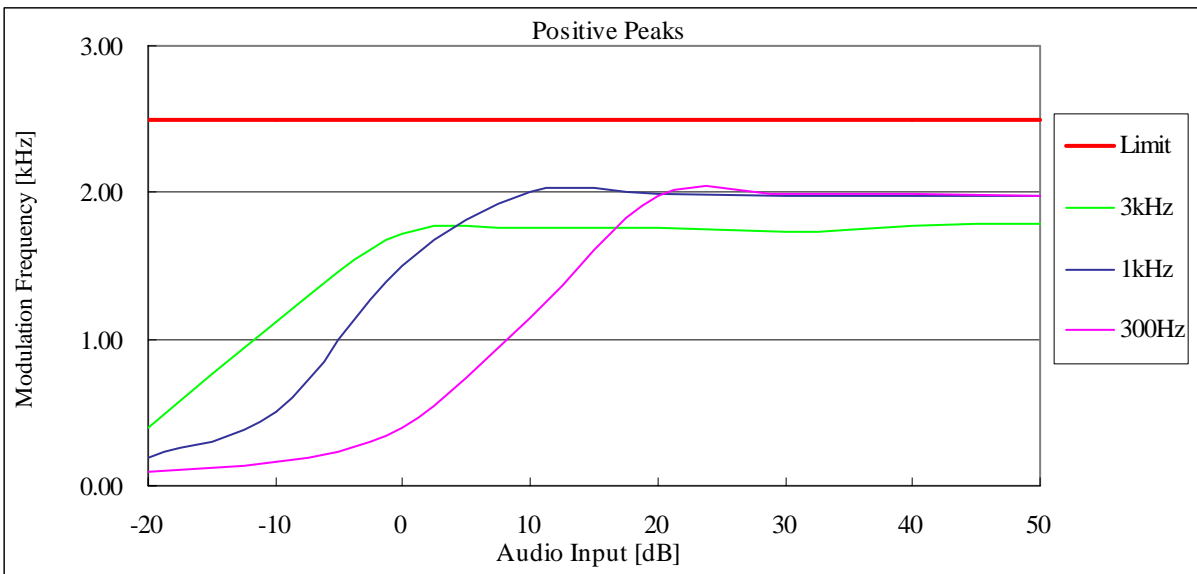
State : High Power / Authorized Bandwidth 20 kHz / 450.05 MHz



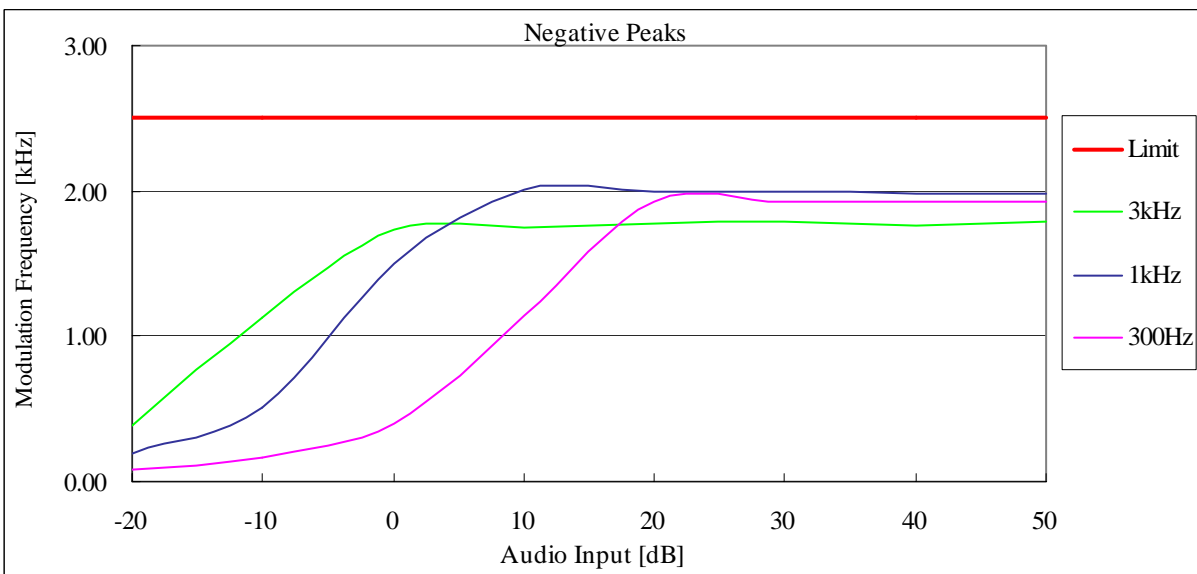
State : High Power / Authorized Bandwidth 20 kHz / 450.05 MHz



State : High Power / Authorized Bandwidth 11.25 kHz / 519.95 MHz



State : High Power / Authorized Bandwidth 11.25 kHz / 519.95 MHz



10.8 Frequency Stability (Temperature Variation)

| | |
|-------------------|---|
| REGULATIONS | : FCC Part 2 Section 1055 (a) (1), Part 90 Section 213(a) |
| TEST METHOD/GUIDE | : ANSI/TIA-603-C Section 2.2.2.2 |

Test Procedure

- 1 The EUT and test equipment were set up as shown on the following page.
- 2 Set the temperature -30 degrees C.
- 3 Leave the EUT for 1 hour after it became the temperature that was set up.
- 4 Make the EUT the transmitting state.
Two minutes later, measure the output frequency.
- 5 Make the EUT the receiving state.
- 6 Set the temperature 50 degrees C by 10 degrees C.
And repeat test procedure 3 to 5.

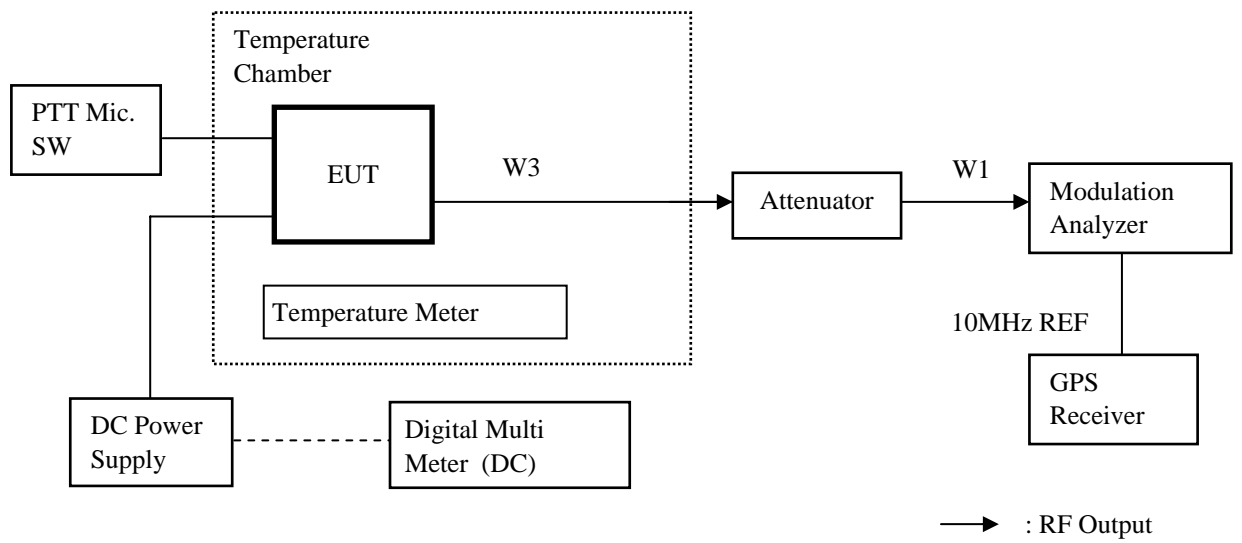
Measuring Equipments

| No. | Equipment | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------------|--------------------|---------------|------------|-------------|-------------|
| 1 | Attenuator (30dB) | Weinschel | WA-29-30-34 | 8923 | May 20, 10 | May 31, 11 |
| 2 | Attenuator (20dB) | Aeroflex/Wenshel | 66-20-34 | BY4537 | Mar. 12, 10 | Mar. 31, 11 |
| 3 | Modulation Analyzer | Hewlett Packard | 8901B | 3403A04852 | Jul. 22, 10 | Jul. 31, 11 |
| 4 | Digital Multi Meter | FLUKE | 8846A | 9642018 | Jul. 22, 10 | Jul. 31, 11 |
| 5 | DC Power Supply | Daichi denpa kogyo | GZV4000 | 90290931 | None | None |
| 6 | DC Power Supply | Micky | 10A | None | None | None |
| 7 | Temperature Chamber | Tabai | PL-3F | 5103661 | None | None |
| 8 | Temperature Meter | Sato | PC-5000TRH-II | A11999972 | Apr. 15, 10 | Apr. 30, 11 |
| 9 | GPS Receiver | Hewlett Packard | HP Z3801A | 3542A02414 | None | None |

Measuring Cables

| No. | Cable | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------|-------------|-------------|------------|-------------|-------------|
| W1 | Coaxial Cable | Suhner | SUCOFLEX104 | KSR00091 | May 20, 10 | May 31, 11 |
| W3 | Coaxial Cable | Suhner | SUCOFLEX104 | KSR00042 | Mar. 12, 10 | Mar. 31, 11 |

Measuring Equipment Configuration



Test Results

| | |
|---------------|--------------------------------|
| Test date | Oct. 18, 2010 to Oct. 19, 2010 |
| Location | Kashima No.1 Test Site |
| Test Engineer | Hideaki Kosemura |

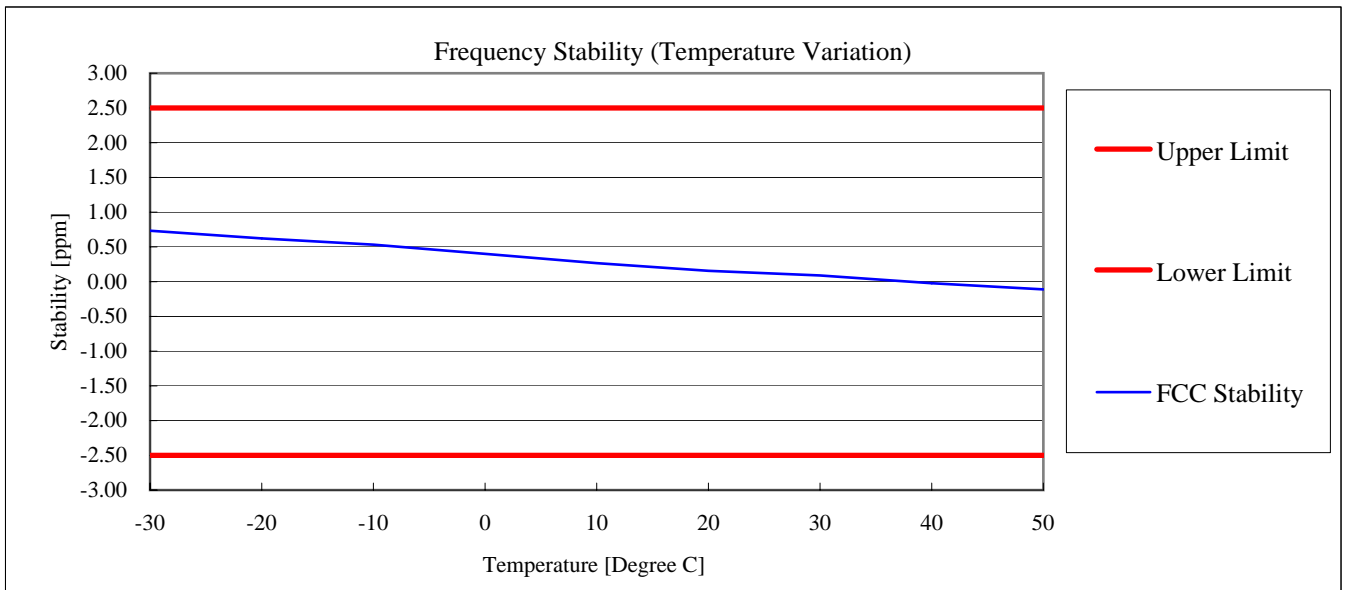
Test was carried out for all the frequency band of section 10.1

State the worst case (below).

State : High Power / Authorized Bandwidth 20 kHz / 450.05 MHz

Reference Frequency: 450.050000 MHz(FCC Stability)

| No. | Temperature (Degree C) | Frequency (MHz) | FCC Stability (ppm) | Limit (+/- ppm) | Min. Margin (ppm) |
|-----|------------------------|-----------------|---------------------|-----------------|-------------------|
| 1 | -30 | 450.050330 | 0.73 | 2.5 | 1.77 |
| 2 | -20 | 450.050280 | 0.62 | 2.5 | 1.88 |
| 3 | -10 | 450.050240 | 0.53 | 2.5 | 1.97 |
| 4 | 0 | 450.050180 | 0.40 | 2.5 | 2.10 |
| 5 | 10 | 450.050120 | 0.27 | 2.5 | 2.23 |
| 6 | 20 | 450.050070 | 0.16 | 2.5 | 2.34 |
| 7 | 30 | 450.050040 | 0.09 | 2.5 | 2.41 |
| 8 | 40 | 450.049990 | -0.02 | 2.5 | 2.48 |
| 9 | 50 | 450.049950 | -0.11 | 2.5 | 2.39 |



10.9 Frequency Stability (Voltage Variation)

| | |
|-------------------|---|
| REGULATIONS | : FCC Part 2 Section 1055 (d) (1), Part 90.213(a) |
| TEST METHOD/GUIDE | : ANSI/TIA-603-C Section 2.2.2.2 |

Test Procedure

- 1 The EUT and test equipment were set up as shown on the following page.
- 2 The power supply voltage to the EUT was varied from 85 % to 115 % of the nominal value measured at the input to the EUT.

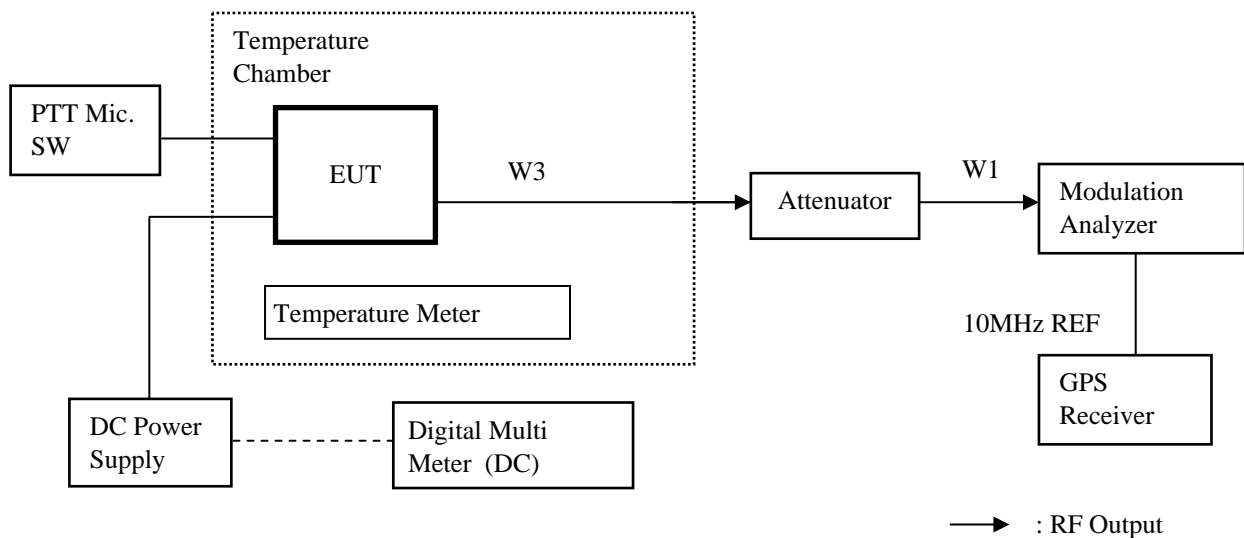
Measuring Equipments

| No. | Equipment | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------------|---------------------|---------------|------------|-------------|-------------|
| 1 | Attenuator (30dB) | Weinschel | WA-29-30-34 | 8923 | May 20, 10 | May 31, 11 |
| 2 | Attenuator (20dB) | Aeroflex/Wenshel | 66-20-34 | BY4537 | Mar. 12, 10 | Mar. 31, 11 |
| 3 | Modulation Analyzer | Hewlett Packard | 8901B | 3403A04852 | Jul. 22, 10 | Jul. 31, 11 |
| 4 | Digital Multi Meter | FLUKE | 8846A | 9642018 | Jul. 22, 10 | Jul. 31, 11 |
| 5 | DC Power Supply | Daiichi denpa kogyo | GZV4000 | 90290931 | None | None |
| 6 | DC Power Supply | Micky | 10A | None | None | None |
| 7 | Temperature Chamber | Tabai | PL-3F | 5103661 | None | None |
| 8 | Temperature Meter | Sato | PC-5000TRH-II | A11999972 | Apr. 15, 10 | Apr. 30, 11 |
| 9 | GPS Receiver | Hewlett Packard | HP Z3801A | 3542A02414 | None | None |

Measuring Cables

| No. | Cable | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------|-------------|-------------|------------|-------------|-------------|
| W1 | Coaxial Cable | Suhner | SUCOFLEX104 | KSR00091 | May 20, 10 | May 31, 11 |
| W3 | Coaxial Cable | Suhner | SUCOFLEX104 | KSR00042 | Mar. 12, 10 | Mar. 31, 11 |

Measuring Equipment Configuration



Test Results

| | |
|---------------|--------------------------------|
| Test date | Oct. 18, 2010 to Oct. 19, 2010 |
| Location | Kashima No.1 Test Site |
| Test Engineer | Hideaki Kosemura |

Test was carried out for all the frequency band of section 10.1
State the worst case (below).

State : High Power / Authorized Bandwidth 20 kHz / 450.05 MHz

| No. | Temperature (Degree C) | Deviation (%) | Voltage (V) | Frequency (MHz) | Stability (ppm) | Limit +/- (ppm) | Margin (ppm) |
|-----|---------------------------|------------------|----------------|--------------------|--------------------|--------------------|-----------------|
| 1 | 25 +/- 5 | 85 | 11.56 | 450.050070 | 0.16 | 2.5 | 2.34 |
| 2 | 25 +/- 5 | 100 | 13.60 | 450.050070 | 0.16 | 2.5 | 2.34 |
| 3 | 25 +/- 5 | 115 | 15.64 | 450.050050 | 0.11 | 2.5 | 2.39 |

10.10 Necessary Bandwidth and Emission Bandwidth

REGULATIONS : FCC Part 2 Section 202 (g) & Federal Register/ Vol.68, No236

Calculation Results

State : 16K0F3E (Authorized Bandwidth 20 kHz)

| Item | Mark | | |
|---------------------|------|----|-----|
| Maximum Modulation | (M) | 3 | kHz |
| Maximum Deviation | (D) | 5 | kHz |
| Constant Factor | (K) | 1 | |
| Necessary Bandwidth | (Bn) | 16 | kHz |

$$B_n = (2 \times M) + (2 \times D \times K)$$

State : 11K0F3E (Authorized Bandwidth 11.25 kHz)

| Item | Mark | | |
|---------------------|------|-----|-----|
| Maximum Modulation | (M) | 3 | kHz |
| Maximum Deviation | (D) | 2.5 | kHz |
| Constant Factor | (K) | 1 | |
| Necessary Bandwidth | (Bn) | 11 | kHz |

$$B_n = (2 \times M) + (2 \times D \times K)$$