



TEST REPORT

REGULATION :

FCC Part 2, 90

RSS-119 Issue 12

| Applicant | Testing Laboratory |
|---|--|
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| | |
|----------------------------|---------------------------|
| Equipment type | VHF DIGITAL BASE-REPEATER |
| Trademark | KENWOOD |
| FCC Model(s) | NXR-5700-K |
| IC Model(s) | NXR-5700-K |
| Serial No. | 20 |
| FCC ID | K44474500 |
| IC CN and UPN | 282F-474500 |
| Test Result | Complied |
| Report Number | 15060280JKA-001 |
| Original Issue Date | July 31, 2015 |
| Revised Issue Date | August 11, 2015 |

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

Sub-part 2.1033

| Applicant and Manufacture Information | |
|--|--|
| APPLICANT | |
| Company | : JVC KENWOOD Corporation |
| Address | : 1-16-2, Hakusan, Midori-ku, Yokohama-shi Kanagawa, 226-8525 Japan |
| Contact Person | : Tamaki Shimamura Manager, Communications Systems Business Operation |
| MANUFACTURER | |
| Company | : JVC KENWOOD Corporation |
| Address | : 1-16-2, Hakusan, Midori-ku, Yokohama-shi Kanagawa, 226-8525 Japan |
| (c)(2) FCC ID | |
| FCC ID | : K44474500 |
| Model number | : NXR-5700-K |
| Serial number | : 20 |
| Instruction Manual(S) | |
| Instruction manual(s) | : Please refer to attached Exhibits F |
| Type of Emission | |
| Emission Designation | : 16K0F3E(Wide) 16K0F3E is IC Only 11K0F3E(Narrow) 8K30F1E(Narrow) / 8K30F1D(Narrow) / 8K30F7W(Narrow) 4K00F1E(Very Narrow) / 4K00F1D(Very Narrow) / 4K00F7W(Very Narrow) 4K00F2D(Very Narrow) |
| Frequency range | |
| Frequency Range | : FCC: 150 to 174 MHz IC: 138 to 144 MHz and 148 to 174 MHz |
| Power Rating | |
| Output Power | : 0.5 to 25 W |
| Type | : Continuously Variable |
| Maximum Power Rating | |
| Output Power | : 25W |
| Voltages & currents in all elements in final RF stage, including final transistor or solid-state device | |
| Collector Current, A | : 9.0 A Maximum |
| Collector Voltage, Vdc | : 13.6 Vdc |
| Supply Voltage, Vdc | : 13.6 Vdc |
| Other Information | |
| Number of Channel | : 30 channels |
| Maximum Deviation | : ± 5 kHz (16K0F3E), ± 2.5 kHz (11K0F3E) |
| Frequency Stability | : 0.5 ppm : 0.1 ppm with OCXO unit |
| Antenna Impedance | : 50 Ω Norminal |
| Note | |
| | |

TABLE OF CONTENTS

| | Page |
|---|------|
| SECTION 1. GENERAL INFORMATION | 4 |
| SECTION 2. SUMMARY OF TEST RESULT | 5 |
| SECTION 3. TEST AND MEASUREMENT DATA | 6 |
| SECTION 4. INFORMATION ABOUT EUT AND SUPPORT EQUIPMENT(S) | 7 |
| SECTION 5. SUPPORT EQUIPMENT | 8 |
| SECTION 6. USED CABLE(S) | 9 |
| SECTION 7. TEST CONFIGURATION | 10 |
| SECTION 8. OPERATING CONDITION | 11 |
| SECTION 9. MEASUREMENT UNCERTAINTY | 12 |
| SECTION 10. TEST DATA | |
| 10.1 Carrier Output Power (Conducted) | 13 |
| 10.2 Unwanted Emissions (Transmitter Conducted) | 16 |
| 10.3 Field Strength of Spurious Radiation | 19 |
| 10.4 Emission Masks (Occupied Bandwidth) | 25 |
| 10.5 Transient Frequency Behavior | 39 |
| 10.6 Audio Frequency Response / Audio Low Pass Filter (Voice Input) | 48 |
| 10.7 Modulation Limiting | 52 |
| 10.8 Frequency Stability (Temperature Variation) | 57 |
| 10.9 Frequency Stability (Voltage Variation) | 63 |
| 10.10 Receiver Spurious Emissions(Radiated) | 65 |
| 10.11 Necessary Bandwidth and Emission Bandwidth | 69 |
| 10.12 99% Occupied Bandwidth | 70 |
| APPENDIX PHOTOGRAPHS | |

SECTION 1. GENERAL INFORMATION

TEST PERFORMED

| | | | |
|----------------------------|---|----|---------------|
| Location | Kashima No.1 Test Site, No.12 Test Site and Tochigi No.1 Test Site | | |
| EUT Received | June 19, 2015 | | |
| Date of Test | June 20, 2015 | to | July 29, 2015 |
| Standard Applied | FCC Part 2, 90 RSS-119 Issue 12 | | |
| Measurement Method | ANSI/TIA-603-D-2010 / RSS-119 Issue 12(2015), RSS-Gen Issue 4(2014) | | |
| Deviation from Standard(s) | Not applicable | | |

QUALIFICATIONS OF TESTING LABORATORY (Kashima Lab.)

| ACCREDITATION | SCOPE | LAB. CODE | Remarks |
|---------------|-------------|-------------------------|---------|
| VLAC | EMC Testing | VLAC-008-1 | JAPAN |
| BSMI | EMC Testing | SL2-IN-E-6008 | TAIWAN |
| FILING | | | |
| VCCI | EMC Testing | A-0126 | JAPAN |
| FCC | EMC Testing | JP0008 | |
| IC | EMC Testing | IC-2042K-3, IC-2042Q-12 | CANADA |
| CB-Scheme | EMC Testing | TL222 | IECEE |

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 | A-0129 | JAPAN |
| FCC | EMC Testing | JP0011 | USA |
| IC | EMC Testing | IC-2042P-1, IC-2042P-2 | CANADA |

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 |

Revision Summary

| Revised Date | Section | Description of Changes |
|--------------|------------------|---|
| Aug 10, 2015 | 10.1 | Added the RF power measured value. |
| Aug 10, 2015 | 10.3 | The Antenna Gain unit(dBi) and the Antenna Gain value were changed. |
| Aug 10, 2015 | 10.2.3 10.3.2 | Added the VBW value. |
| Aug 10, 2015 | 10.4 | Added Mask plots. |
| Aug 10, 2015 | 10.6 | Changed Plots data. |
| Aug 10, 2015 | 10.12 | Changed 99% OBW value |
| Aug 11, 2015 | 10.1 | Corrected the Setting description. |

SECTION 2. SUMMARY OF TEST RESULT

| FCC Part2 | Part90 | IC RSS-119 | TEST ITEM | RESULTS | Comments |
|-------------------|------------------|----------------|--|-----------------|----------|
| 2.1046 (a) | - | 5.4 | Carrier Output Power (Conducted) | PASS | |
| 2.1051 | 90.210 | 5.8 | Unwanted Emissions (Transmitter Conducted) | PASS | |
| 2.1053 (a) | 90.210 | 5.8 | Field Strength of Spurious Radiation | PASS | |
| 2.1049 (c) (1) | 90.210 | 5.5 | Emission Masks (Occupied Bandwidth) | PASS | |
| - | 90.214 | 5.9 | Transient Frequency Behavior | PASS | |
| 2.1047 (a) | - | - | Audio Low Pass Filter (Voice Input) | PASS | |
| 2.1047 (a) | - | - | Audio Frequency Response | PASS | |
| 2.1047 (b) | - | - | Modulation Limiting | PASS | |
| 2.1055 (a) (1) | 90.213 (a) | 5.3 | Frequency Stability (Temperature Variation) | PASS | |
| 2.1055 (d) (1) | 90.213 (a) | 5.3 | Frequency Stability (Voltage Variation) | PASS | |
| - | - | RSS-Gen 7.1 | Receiver Spurious Emissions | PASS | |
| - | 90.203 (j)(3) | - | Certification required (FCC Part 90.203(j)(3)) | Complied | |
| - | 90.203 (j)(4) | - | Certification required (FCC Part 90.203(j)(4)) | Complied | |
| - | 90.203 (j)(5) | - | Certification required (FCC Part 90.203(j)(5)) | Complied | |
| - | 90.203 (e) | - | Certification required (FCC Part 90.203(e)) | Complied | |
| - | - | 5.5 | 99% Occupied Bandwidth | PASS | |

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 does 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 JVC 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 | N.A. |
| 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 | N.A. |
| 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 | Radio Transmitters and Receivers Operating in the Land Mobile and Fixed Services in the Frequency Range 27.4-960 MHz | YES |
| RSS-134 | 900MHz Narrowband Personal Communication Service | N.A. |
| RSS-Gen | General Requirements for Compliance of Radio Apparatus | YES |

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

4.1 List of System Configuration

| Symbol | Item | Model No. | Serial No. | Manufacture | Remarks |
|-------------------------------|---------------------------|--|------------|-------------------------|---------|
| A | VHF DIGITAL BASE-REPEATER | NXR-5700-K | 20 | JVC KENWOOD Corporation | EUT |
| Power Ratings of EUT : | | DC 10.8 to 15.6 V | | 9.0 A Maximum | |
| Power Supply : | | DC 13.6 V | | | |
| Condition of Equipment | | Proto type | | | |
| Type | | Rack Mount 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 |
|-------------|----------------|---------------|---------------------|
| RX | BNC | 2pin | |
| REF OUT | BNC | 2pin | |
| REF IN | BNC | 2pin | |
| DC 13.6 V | JST VLR-02V | 2pin | |
| TX | BNC | 2pin | |
| TEST/SPKR | MOLEX 1625-15p | 15pin | |
| Control I/O | D-sub | 25pin | |
| SYNC 1 | RJ-11 | 4pin | |
| SYNC 2 | RJ-11 | 4pin | |
| LAN | RJ-45 | 8pin | |
| MICROPHONE | RJ-45 | 8pin | |
| USB | Type B | 4pin | use for maintenance |

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

| Operating Frequency | Board Name | Remarks |
|---------------------|------------|---------|
| 232.05 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 | Microphone | KMC-35 | none | JVC KENWOOD Corporation | N/A |
| C | Hub | SD205 | PSJ1341D2C | CISCO | DoC |
| D | Controller | none | none | JVC KENWOOD Corporation | N/A |
| E | External Speaker | KES-5 | none | JVC KENWOOD Corporation | N/A |
| F | Terminator | 3204-BNCM | No1 | JVC KENWOOD Corporation | N/A |
| G | Terminator | 3204-BNCM | No2 | JVC KENWOOD Corporation | N/A |
| H | Terminator | CT-01 | F0100013 | TME | N/A |
| I | Terminator | CT-01 | F0200013 | TME | N/A |
| J | Terminator | CT-01 | F0500017 | TME | N/A |
| K | Terminator | CT-01 | F05050012 | TME | N/A |
| L | Base-Repeater (1) | NXR-JIG1 | none | JVC KENWOOD Corporation | N/A |
| M | Base-Repeater (2) | NXR-JIG2 | none | JVC KENWOOD Corporation | N/A |
| N | DC Power Supply (1) | HWS300-15 | 5JY-139MC2-0005 | TDK-Lambda | N/A |
| O | DC Power Supply (2) | AD-52M | F03999930 | Daiwa | N/A |
| P | AC Adapter | EA0061WAA | 09H114123 | Bestec | Doc |

Supplied Power:

| | | |
|---------|----|-----------|
| N, O, P | AC | 100V,60Hz |
|---------|----|-----------|

SECTION 6. USED CABLE(S)

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

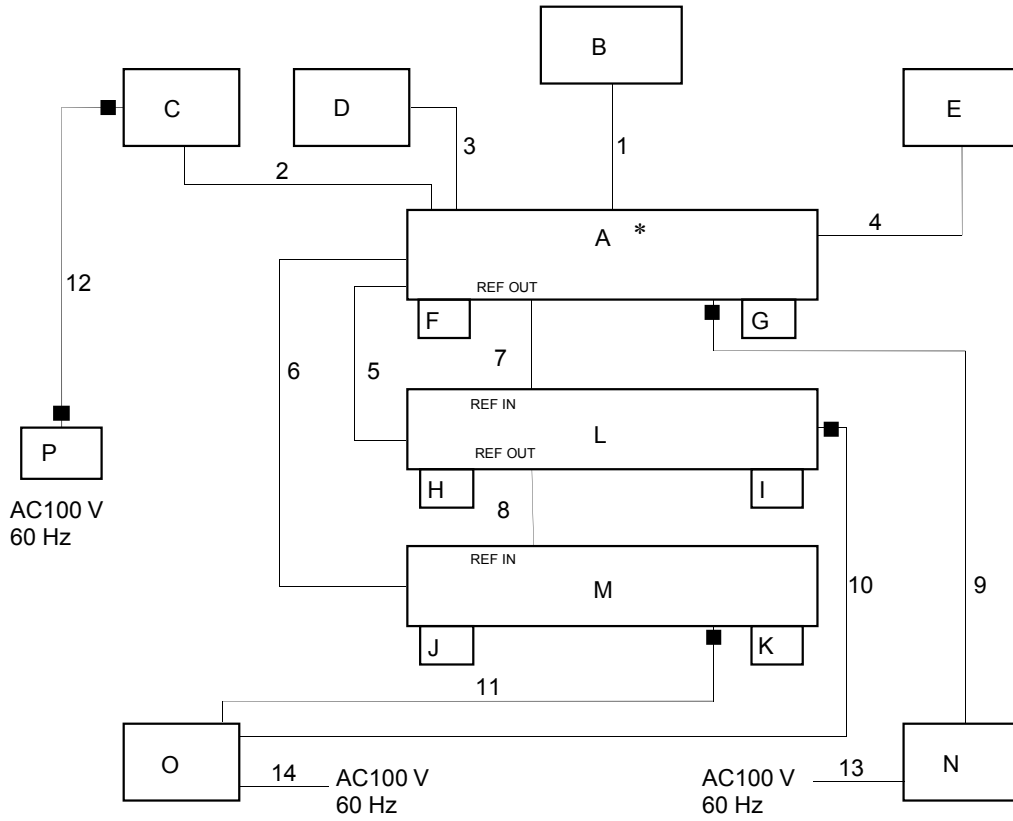
| No. | Name | Length (m) | Shield | Connector | Ferrite core |
|-----|-------------------------------------|------------|--------|-----------|---------------|
| 1 | Mic. cable | 0.60 | No | No | |
| 2 | LAN cable | 1.00 | Yes | Yes | |
| 3 | D-sub | 1.40 | Yes | No | |
| 4 | Speaker cable | 2.80 | No | No | |
| 5 | Modular cable | 0.20 | No | No | |
| 6 | Modular cable | 0.20 | No | No | |
| 7 | Coaxial cable | 1.00 | Yes | Yes | |
| 8 | Coaxial cable | 1.00 | Yes | Yes | |
| 9 | DC cable for EUT | 4.00 | No | No | Removable x 1 |
| 10 | DC cable for Base-Repeater (1) | 4.00 | No | No | Removable x 1 |
| 11 | DC cable for Base-Repeater (2) | 4.00 | No | No | Removable x 1 |
| 12 | DC cable for Hub | 2.00 | No | No | Removable x 2 |
| 13 | Power cable for DC Power Supply (1) | 1.90 | No | No | |
| 14 | Power cable for DC Power Supply (2) | 1.30 | No | No | |

SECTION 7. TEST CONFIGURATION

Details of Configuration and Connection

Example: Case of Section 10.10Test

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



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:150.05MHz, 162.05MHz, 173.95MHz, RSS:138.05MHz, 158.05MHz, 173.95MHz)

(High Power : 25W, Low Power : 0.5 W)

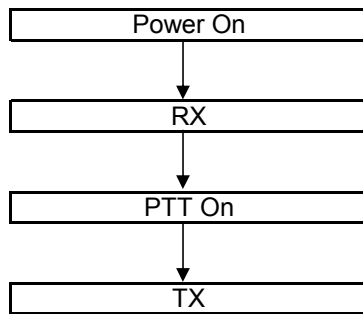
The test was carried out under Receive mode.

(138.05MHz, 158.05MHz, 173.95MHz)

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

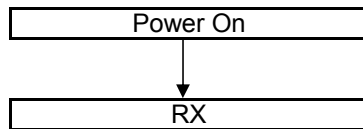
8.2 Operating Flow [Transmit mode]

Following operations were performed continuously.



8.3 Operating Flow [Receive mode]

Following operations were performed continuously.



SECTION 9. MEASUREMENT UNCERTAINTY

| | | |
|---|---------------------|-------------|
| Carrier Output Power (Conducted) | U _{lab} | Utia-603-d |
| | +/- 0.29dB (k = 2) | +/- 0.59 dB |
| Unwanted Emissions (Transmitter Conducted) | | |
| | +/- 2.19 dB (k = 2) | +/- 1.1 dB |
| Field Strength of Spurious Radiation | | |
| | +/- 2.78dB (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) | +/- 1.0 % |
| Frequency Stability (Temperature Variation) | | |
| | +/- 10.1Hz (k=2) | +/-34.2 Hz |
| Frequency Stability (Voltage Variation) | | |
| | +/- 10.1Hz (k=2) | +/-34.2 Hz |
| Receiver Spurious Emissions | U _{lab} | Ucispr |
| 30-1000MHz | +/- 4.05dB (k = 2) | +/- 6.3 dB |
| abobe 1GHz | +/- 4.80dB (k = 2) | |

SECTION 10. TEST DATA

10.1 Carrier Output Power (Conducted)

| | |
|-------------------|--|
| REGULATIONS | : FCC Part 2 Section 1046 (a) / RSS-119 Section 5.4 |
| TEST METHOD/GUIDE | : ANSI/TIA-603-D Section 2.2.1.2 / RSS-119 Section 4.1 |

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.
 $RF\ Power\ (dBm) = Power\ Meter\ reading\ (dBm) + Attenuator\ Loss\ (dB) + Cable\ Loss\ (dB)$
 $RF\ Power\ (W) = 10^{(RF\ Power\ (dBm)/10)}/1000$
- 3 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.(Only as for the test of RSS)

Measuring Equipments

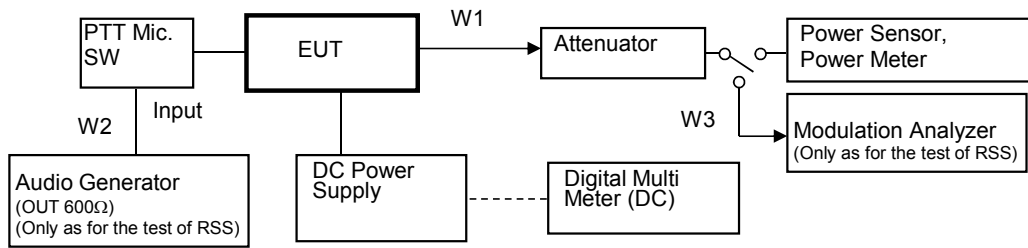
| No. | Equipment | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------------|---------------------|-----------------|------------|-------------|-------------|
| 1 | Power Meter | Hewlett Packard | E4418B | GB38410265 | Jun. 09, 15 | Jun. 30, 16 |
| 2 | Power Sensor | Hewlett Packard | 8482A | US37292237 | Jun. 09, 15 | Jun. 30, 16 |
| 3 | Attenuator (10dB) | Aeroflex/Wenshel | 66-10-34 | BY2887 | Jun. 01, 15 | Jun. 30, 16 |
| 4 | Attenuator (30dB) | Weinschel | WA-29-30-34 | 8923 | Jun. 01, 15 | Jun. 30, 16 |
| 5 | Modulation Analyzer | Hewlett Packard | 8901B | 2806A01669 | Oct. 13, 14 | Oct. 31, 15 |
| 6 | Audio Generator | Anritsu | MG443B | M70150 | Jun. 18, 15 | Jun. 30, 16 |
| 7 | DC Power Supply | Daiichi denpa kogyo | GZV4000 | 90290931 | None | None |
| 8 | Digital Multi Meter | FLUKE | 8846A | 9642018 | Jun. 04, 14 | Jun. 30, 15 |
| 9 | JIG | HP | EliteBook 2561p | CNU2262D0Q | None | None |

Measuring Cables

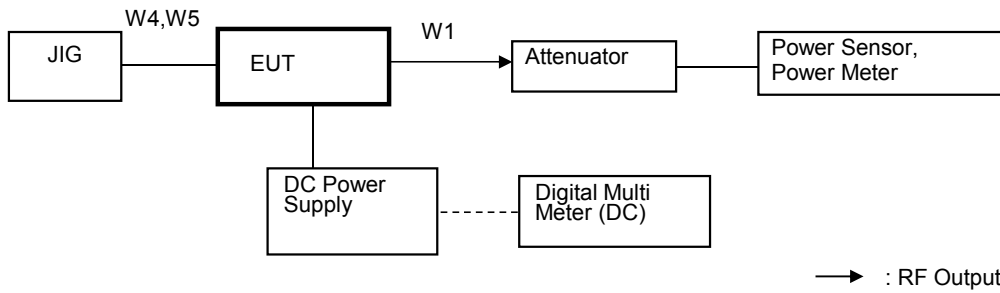
| No. | Cable | Manufacturer | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|-----------------------------|----------------|-------------|------------|-------------|-------------|
| W2 | Balance Cable | Nicoon | 3D-2V | KSR00092 | Jan. 23, 15 | Jan. 31, 16 |
| W3 | Coaxial Cable | Pacific custom | RG-58 C/U | AM90C04 | Jun. 09, 15 | Jun. 30, 16 |
| W1 | Coaxial Cable | Suhner | SUCOFLEX104 | F0000017 | Jan. 23, 15 | Jan. 31, 16 |
| W4 | USB Adapter | SANWA | USB-CVR59 | FXLA00701 | None | None |
| W5 | PROGRAMMING INTERFACE Cable | SANWA | KR-MDI | None | None | None |

Measuring Equipment Configuration

<Analog Modulation Case>



<Digital Modulation Case>



Test Results

| | | |
|----------------------|------------------------|------------|
| Test date | Jun 19, 2015 | |
| Location | Kashima No.1 Test Site | |
| temperature | 23.0 | [degree C] |
| Humidity Variation | 50.0 | [%] |
| Atmospheric Pressure | 100.6 | [kPa] |
| Test Engineer | Koichi Wagatsuma | |

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

| No. | Frequency (MHz) | Band | | Setting | RF Power (W) |
|-----|------------------|--------|-----------------|------------|--------------|
| 1 | 138.05 (RSS) | Low | 16K0F3E | High Power | 24.98 |
| 2 | 138.05 (RSS) | Low | 11K0F3E | High Power | 24.98 |
| 3 | 138.05 (RSS) | Low | 8K30F1E/F1D/F7W | High Power | 24.98 |
| 4 | 138.05 (RSS) | Low | 4K00F1E/F1D/F7W | High Power | 24.98 |
| 5 | 138.05 (RSS) | Low | 4K00F2D | High Power | 24.98 |
| 6 | 150.05 (FCC) | Low | 11K0F3E | High Power | 24.95 |
| 7 | 150.05 (FCC) | Low | 8K30F1E/F1D/F7W | High Power | 24.95 |
| 8 | 150.05 (FCC) | Low | 4K00F1E/F1D/F7W | High Power | 24.95 |
| 9 | 150.05 (FCC) | Low | 4K00F2D | High Power | 24.95 |
| 10 | 158.05 (RSS) | Middle | 16K0F3E | High Power | 24.95 |
| 11 | 158.05 (RSS) | Middle | 11K0F3E | High Power | 24.95 |
| 12 | 158.05 (RSS) | Middle | 8K30F1E/F1D/F7W | High Power | 24.95 |
| 13 | 158.05 (RSS) | Middle | 4K00F1E/F1D/F7W | High Power | 24.95 |
| 14 | 158.05 (RSS) | Middle | 4K00F2D | High Power | 24.95 |
| 15 | 162.05 (FCC) | Middle | 11K0F3E | High Power | 24.98 |
| 16 | 162.05 (FCC) | Middle | 8K30F1E/F1D/F7W | High Power | 24.98 |
| 17 | 162.05 (FCC) | Middle | 4K00F1E/F1D/F7W | High Power | 24.98 |
| 18 | 162.05 (FCC) | Middle | 4K00F2D | High Power | 24.98 |
| 19 | 173.95 (RSS) | High | 16K0F3E | High Power | 24.95 |
| 20 | 173.95 (FCC/RSS) | High | 11K0F3E | High Power | 24.95 |
| 21 | 173.95 (FCC/RSS) | High | 8K30F1E/F1D/F7W | High Power | 24.95 |
| 22 | 173.95 (FCC/RSS) | High | 4K00F1E/F1D/F7W | High Power | 24.95 |
| 23 | 173.95 (FCC/RSS) | High | 4K00F2D | High Power | 24.95 |
| 24 | 138.05 (RSS) | Low | 16K0F3E | Low Power | 0.50 |
| 25 | 138.05 (RSS) | Low | 11K0F3E | Low Power | 0.50 |
| 26 | 138.05 (RSS) | Low | 8K30F1E/F1D/F7W | Low Power | 0.50 |
| 27 | 138.05 (RSS) | Low | 4K00F1E/F1D/F7W | Low Power | 0.50 |
| 28 | 138.05 (RSS) | Low | 4K00F2D | Low Power | 0.50 |
| 29 | 150.05 (FCC) | Low | 11K0F3E | Low Power | 0.50 |
| 30 | 150.05 (FCC) | Low | 8K30F1E/F1D/F7W | Low Power | 0.50 |
| 31 | 150.05 (FCC) | Low | 4K00F1E/F1D/F7W | Low Power | 0.50 |
| 32 | 150.05 (FCC) | Low | 4K00F2D | Low Power | 0.50 |
| 33 | 158.05 (RSS) | Middle | 16K0F3E | Low Power | 0.50 |
| 34 | 158.05 (RSS) | Middle | 11K0F3E | Low Power | 0.50 |
| 35 | 158.05 (RSS) | Middle | 8K30F1E/F1D/F7W | Low Power | 0.50 |
| 36 | 158.05 (RSS) | Middle | 4K00F1E/F1D/F7W | Low Power | 0.50 |
| 37 | 158.05 (RSS) | Middle | 4K00F2D | Low Power | 0.50 |
| 38 | 162.05 (FCC) | Middle | 11K0F3E | Low Power | 0.50 |
| 39 | 162.05 (FCC) | Middle | 8K30F1E/F1D/F7W | Low Power | 0.50 |
| 40 | 162.05 (FCC) | Middle | 4K00F1E/F1D/F7W | Low Power | 0.50 |
| 41 | 162.05 (FCC) | Middle | 4K00F2D | Low Power | 0.50 |
| 42 | 173.95 (RSS) | High | 16K0F3E | Low Power | 0.50 |
| 43 | 173.95 (FCC/RSS) | High | 11K0F3E | Low Power | 0.50 |
| 44 | 173.95 (FCC/RSS) | High | 8K30F1E/F1D/F7W | Low Power | 0.50 |
| 45 | 173.95 (FCC/RSS) | High | 4K00F1E/F1D/F7W | Low Power | 0.50 |
| 46 | 173.95 (FCC/RSS) | High | 4K00F2D | Low Power | 0.50 |

RF Power: Peak reading

10.2 Unwanted Emissions (Transmitter Conducted)

REGULATIONS : FCC Part 2 Section 1051, Part 90 Section 210 / RSS-119 Section 5.8

TEST METHOD/GUIDE : RSS-119 Section 4.2, RSS-Gen Section 4.9

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 than that necessary to produce 50 % of rated system deviation.
- 3 Adjust the spectrum analyzer for the following setting:
 - a) RBW : 100 kHz (< 1 GHz), 1 MHz (> 1 GHz).
 - b) VBW : 300 kHz (< 1 GHz), 3 MHz (> 1 GHz).
 - c) 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.

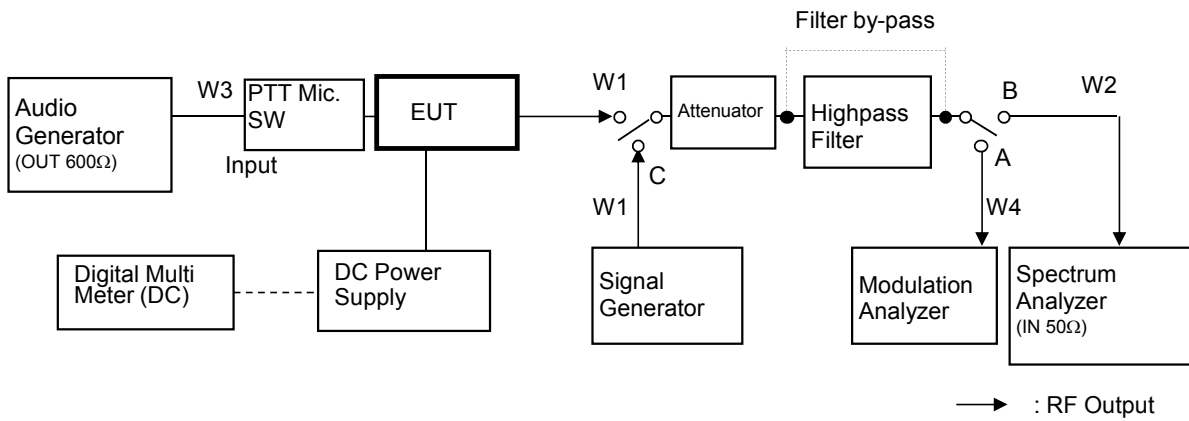
Measuring Equipments

| No. | Equipment | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------------|---------------------|-------------|------------|-------------|-------------|
| 1 | Attenuator (10dB) | Aeroflex/Wenschel | 66-10-34 | BY2887 | Jun. 01, 15 | Jun. 30, 16 |
| 2 | Attenuator (30dB) | Weinschel | WA-29-30-34 | 8923 | Jun. 01, 15 | Jun. 30, 16 |
| 3 | Highpass Filter | Anritsu | MP526B | 6200220636 | Jan. 20, 15 | Jan. 31, 16 |
| 4 | Modulation Analyzer | Hewlett Packard | 8901B | 2806A01669 | Oct. 13, 14 | Oct. 31, 15 |
| 5 | Signal Generator | Rohde&Schwarz | SMB 100A | 105709 | Mar. 18, 15 | Mar. 31, 16 |
| 6 | Audio Generator | Anritsu | MG443B | M70150 | Jun. 18, 15 | Jun. 30, 16 |
| 7 | Spectrum Analyzer | Agilent | N9030A | US51350220 | Jul. 03, 14 | Jul. 31, 15 |
| 8 | DC Power Supply | Daiichi denpa kogyo | GZV4000 | 90290931 | None | None |
| 9 | Digital Multi Meter | FLUKE | 8846A | 9642018 | Jun. 04, 14 | Jun. 30, 15 |

Measuring Cables

| No. | Cable | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------|----------------|-------------|------------|-------------|-------------|
| W3 | Balance Cable | Nicoon | 3D-2V | KSR00092 | Jan. 23, 15 | Jan. 31, 16 |
| W4 | Coaxial Cable | Pacific custom | RG-58 C/U | AM90C04 | Jun. 09, 15 | Jun. 30, 16 |
| W1 | Coaxial Cable | Suhner | SUCOFLEX104 | F0000017 | Jan. 23, 15 | Jan. 31, 16 |
| W2 | Coaxial Cable | Suhner | SUCOFLEX104 | F0000018 | Jan. 23, 15 | Jan. 31, 16 |

Measuring Equipment Configuration



Test Results

| | |
|----------------------|------------------------|
| Test date | Jun 20, 2015 |
| Location | Kashima No.1 Test Site |
| temperature | 25 [degree C] |
| Humidity Variation | 57 [%] |
| Atmospheric Pressure | 100.7 [kPa] |
| Test Engineer | Koichi Wagatsuma |

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

State : High Power / Authorized Bandwidth 6 kHz

| No. | Tuned Frequency (MHz) | Band | Spurious Frequency (MHz) | Correct Level (dBm) | Emission Level (dBc) | Mask E Limit (dBc) | Margin (dB) |
|-----|-----------------------|--------|--------------------------|---------------------|----------------------|--------------------|-------------|
| 1 | 138.05(RSS) | Low | 276.10 | -56.50 | -100.48 | -65.0 | 35.5 |
| 2 | 150.05(FCC) | Low | 450.15 | -55.04 | -99.02 | -65.0 | 34.0 |
| 3 | 158.05(RSS) | Middle | 474.15 | -55.40 | -99.38 | -65.0 | 34.4 |
| 4 | 162.05(FCC) | Middle | 486.15 | -53.10 | -97.08 | -65.0 | 32.1 |
| 5 | 173.95(FCC/RSS) | High | 521.85 | -53.20 | -97.18 | -65.0 | 32.2 |

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

Mask E Limit (dBc) = whichever is the lesser attenuation ; $-(55+10\log(P))$ or -65
 Correct Level (dBm) = Substitute SG Level (dBm)
 Emission Level (dBc) = Correct Level (dBm) - $10\log(P*1000)$
 P = Carrier Level (W)
 " - " = Measurement Limit

State : Low Power / Authorized Bandwidth 6 kHz

| No. | Tuned Frequency (MHz) | Band | Spurious Frequency (MHz) | Correct Level (dBm) | Emission Level (dBc) | Mask E Limit (dBc) | Margin (dB) |
|-----|-----------------------|--------|--------------------------|---------------------|----------------------|--------------------|-------------|
| 1 | 138.05(RSS) | Low | No Point detected | - | - | -52.0 | - |
| 2 | 150.05(FCC) | Low | No Point detected | - | - | -52.0 | - |
| 3 | 158.05(RSS) | Middle | No Point detected | - | - | -52.0 | - |
| 4 | 162.05(FCC) | Middle | No Point detected | - | - | -62.0 | - |
| 5 | 173.95(FCC/RSS) | High | No Point detected | - | - | -62.0 | - |

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

Mask E Limit (dBc) = whichever is the lesser attenuation ; $-(55+10\log(P))$ or -65
 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 / RSS-119 Section 5.8

TEST METHOD/GUIDE : ANSI/TIA-603-D Section 2.2.12.2 / RSS-119 Section 4.2

Test Procedure

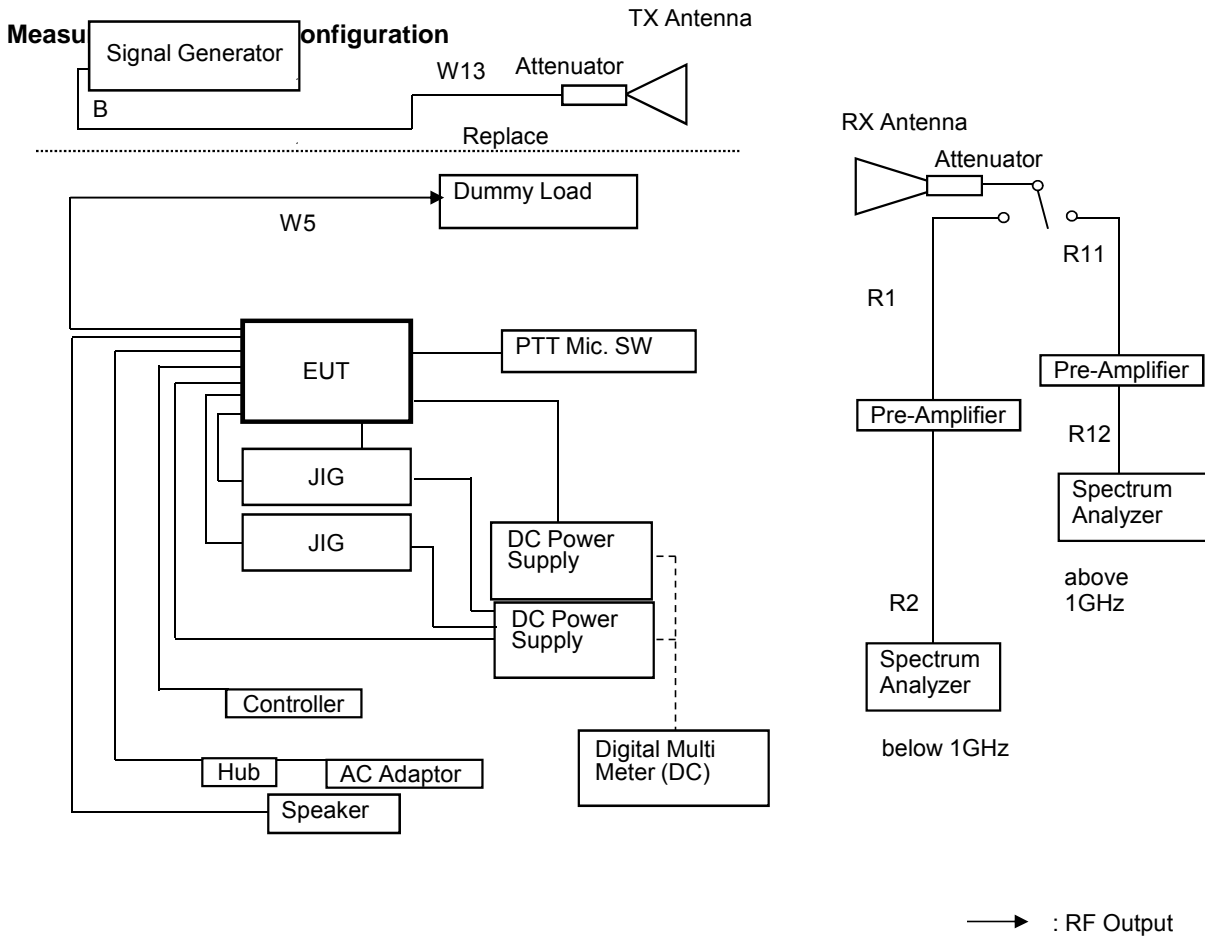
- 1 The EUT and test equipment were set up as shown on the following page.
- 2 Adjust the spectrum analyzer for the following setting:
 - a) RBW : 100 kHz (< 1 GHz), 1 MHz (> 1 GHz).
 - b) VBW : 300 kHz (< 1 GHz), 3 MHz (> 1 GHz).
 - c) Detector mode : Positive Peak
- 3 The transmitter was placed on 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 | Attenuator(6dB) | HUBER+SUHNER | 6806.17B | 4962 | Jan. 23, 15 | Jan. 31, 16 |
| 2 | Attenuator(10dB) | HUBER+SUHNER | 6810.17B | 5061 | Jun. 01, 15 | Jun. 30, 16 |
| 3 | Dummy Load | TME | CT-150NP | 1138693 | Jan. 20, 15 | Jan. 31, 16 |
| 4 | Signal Generator | Rohde&Schwarz | SMB 100A | 1E+05 | Mar. 18, 15 | Mar. 31, 16 |
| 5 | Signal Generator | Rohde&Schwarz | SMP02 | 845275/007 | Feb. 17, 15 | Feb. 29, 16 |
| 6 | Spectrum Analyzer | Agilent | N9030A | US51350170 | Mar. 12, 15 | Mar. 31, 16 |
| 7 | D.R.G Antenna(RX) | Schwarzbeck | 3115 | 5044 | Jul. 16, 14 | Jul. 31, 15 |
| 8 | D.R.G Antenna(TX) | Schwarzbeck | 3115 | 5045 | Apr. 15, 15 | Apr. 30, 16 |
| 9 | Dipole Antenna(TX) | Schwarzbeck | UHA9105 | AM0082002 | Jul. 31, 14 | Jul. 31, 15 |
| 10 | Dipole Antenna(TX) | Schwarzbeck | VHA9103 | C01082007 | Jul. 31, 14 | Jul. 31, 15 |
| 11 | Tri-log Antenna(RX) | Schwarzbeck | VULB9168WP | 288 | Jul. 14, 14 | Jul. 31, 15 |
| 12 | DC Power Supply | Daiichi denpa kogyo | GZV4000 | 90290931 | None | None |
| 13 | DC Power Supply | Daiichi denpa kogyo | GZV4000 | 90290932 | None | None |
| 14 | Digital Multi Meter | Agilent | 34401A | US36043517 | Jul. 01, 14 | Jul. 31, 15 |
| 15 | Amplifier | Intertek Japan | ZFL-1200GH+L | 2013075-2 | Jul. 11, 14 | Jul. 31, 15 |
| 16 | Amplifier | TOYO | TPA0118-30 | 0402 | Feb. 23, 15 | Feb. 29, 16 |
| 17 | Attenuator | HUBER + SUHNER | 6803.17.B | 5111 | Feb. 23, 15 | Feb. 29, 16 |

Measuring Cables

| No. | Cable | Manufacturer | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------|--------------|-------------------|------------|-------------|-------------|
| R2 | Coaxial Cable | Suhner | SUCOFLEX104 | F0000017 | Jan. 23, 15 | Jan. 31, 16 |
| W5 | Coaxial Cable | Suhner | SUCOFLEX104 | KSR00091 | Jun. 09, 15 | Jun. 30, 16 |
| R12 | Coaxial Cable | SUHNER | SUCOFLEX 104 | 229603 | Feb. 23, 15 | Feb. 29, 16 |
| R11 | Coaxial Cable | Candox | 5B-048-98-98-5000 | 111130 | Feb. 23, 15 | Feb. 29, 16 |
| R1 | Coaxial Cable | FUJIKURA | 5D-2W | KSR00312 | Jun. 09, 15 | Jun. 30, 16 |
| W13 | Coaxial Cable | Suhner | SUCOFLEX106 | KSR00207 | Jun. 09, 15 | Jun. 30, 16 |



Test Results

| | |
|----------------------|------------------------------|
| Test date | Jul 07, 2015 to Jul 08, 2015 |
| Location | Kashima No.12 Test Site |
| temperature | 21 to 25 [degree C] |
| Humidity Variation | 50 to 60 [%] |
| Atmospheric Pressure | 101.0 to 102.3 [kPa] |
| Test Engineer | Koichi Wagatsuma |

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

State : High Power / Authorized Bandwidth 6 kHz / 162.05MHz(FCC)

| No | Frequency (MHz) | Pol | Reading Level (dBm) | SG Out Level (dBm) | Antenna Gain (dBd) | Loss (dB) | Correct Level (dBm) | Emission Level (dBc) | MASK E Limit Level (dBc) | Margin (dB) |
|----|-----------------|------|---------------------|--------------------|--------------------|-----------|---------------------|----------------------|--------------------------|-------------|
| 1 | 324.10 | Hor. | -72.70 | -64.82 | 0.00 | 11.41 | -76.2 | -120.2 | -65.0 | 55.2 |
| | | Ver. | -71.90 | -59.33 | 0.00 | 11.41 | -70.7 | -114.7 | -65.0 | 49.7 |
| 2 | 486.15 | Hor. | -68.50 | -54.37 | 0.00 | 11.73 | -66.1 | -110.1 | -65.0 | 45.1 |
| | | Ver. | -70.86 | -56.86 | 0.00 | 11.73 | -68.6 | -112.6 | -65.0 | 47.6 |
| 3 | 648.20 | Hor. | - | - | 0.00 | 12.01 | - | - | -65.0 | - |
| | | Ver. | - | - | 0.00 | 12.01 | - | - | -65.0 | - |
| 4 | 810.25 | Hor. | -72.30 | -53.50 | 0.00 | 12.24 | -65.7 | -109.7 | -65.0 | 44.7 |
| | | Ver. | -74.30 | -52.70 | 0.00 | 12.24 | -64.9 | -108.9 | -65.0 | 43.9 |
| 5 | 972.30 | Hor. | - | - | 0.00 | 12.45 | - | - | -65.0 | - |
| | | Ver. | - | - | 0.00 | 12.45 | - | - | -65.0 | - |
| 6 | 1134.35 | Hor. | -57.20 | -45.40 | 4.48 | 12.63 | -53.6 | -97.5 | -65.0 | 32.5 |
| | | Ver. | -59.40 | -48.25 | 4.48 | 12.63 | -56.4 | -100.4 | -65.0 | 35.4 |
| 7 | 1296.40 | Hor. | -63.00 | -52.10 | 5.31 | 12.81 | -59.6 | -103.6 | -65.0 | 38.6 |
| | | Ver. | -62.00 | -51.57 | 5.31 | 12.81 | -59.1 | -103.0 | -65.0 | 38.0 |
| 8 | 1458.45 | Hor. | - | - | 6.01 | 12.98 | - | - | -65.0 | - |
| | | Ver. | - | - | 6.01 | 12.98 | - | - | -65.0 | - |
| 9 | 1620.50 | Hor. | - | - | 6.27 | 13.15 | - | - | -65.0 | - |
| | | Ver. | -62.30 | -52.13 | 6.27 | 13.15 | -59.0 | -103.0 | -65.0 | 38.0 |

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

Mask E Limit (dBc) = whichever is the lesser attenuation ; $-(55+10\log(P))$ or -65
 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 6 kHz / 173.95MHz(FCC)

| No | Frequency (MHz) | Pol | Reading Level (dBm) | SG Out Level (dBm) | Antenna Gain (dBd) | Loss (dB) | Correct Level (dBm) | Emission Level (dBc) | MASK E Limit (dBc) | Margin (dB) |
|----|-----------------|------|---------------------|--------------------|--------------------|-----------|---------------------|----------------------|--------------------|-------------|
| 1 | 347.90 | Hor. | - | - | 0.00 | 11.45 | - | - | -52.0 | - |
| | | Ver. | - | - | 0.00 | 11.45 | - | - | -52.0 | - |
| 2 | 521.85 | Hor. | -76.10 | -62.10 | 0.00 | 11.80 | -73.9 | -100.9 | -52.0 | 48.9 |
| | | Ver. | -76.50 | -61.22 | 0.00 | 11.80 | -73.0 | -100.0 | -52.0 | 48.0 |
| 3 | 695.80 | Hor. | - | - | 0.00 | 12.09 | - | - | -52.0 | - |
| | | Ver. | - | - | 0.00 | 12.09 | - | - | -52.0 | - |
| 4 | 869.75 | Hor. | - | - | 0.00 | 12.32 | - | - | -52.0 | - |
| | | Ver. | - | - | 0.00 | 12.32 | - | - | -52.0 | - |
| 5 | 1043.70 | Hor. | - | - | 3.94 | 12.54 | - | - | -52.0 | - |
| | | Ver. | - | - | 3.94 | 12.54 | - | - | -52.0 | - |
| 6 | 1217.65 | Hor. | -62.00 | -50.89 | 4.93 | 12.72 | -58.7 | -85.7 | -52.0 | 33.7 |
| | | Ver. | -61.20 | -50.84 | 4.93 | 12.72 | -58.6 | -85.6 | -52.0 | 33.6 |
| 7 | 1391.60 | Hor. | - | - | 5.74 | 12.91 | - | - | -52.0 | - |
| | | Ver. | - | - | 5.74 | 12.91 | - | - | -52.0 | - |
| 8 | 1565.55 | Hor. | - | - | 6.23 | 13.09 | - | - | -52.0 | - |
| | | Ver. | - | - | 6.23 | 13.09 | - | - | -52.0 | - |
| 9 | 1739.50 | Hor. | - | - | 6.33 | 13.28 | - | - | -52.0 | - |
| | | Ver. | - | - | 6.33 | 13.28 | - | - | -52.0 | - |

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

Mask E Limit (dBc) = whichever is the lesser attenuation ; $-(55+10\log(P))$ or -65
 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 : High Power / Authorized Bandwidth 6 kHz / 173.95MHz(RSS)

| No | Frequency (MHz) | Pol | Reading Level (dBm) | SG Out Level (dBm) | Antenna Gain (dBi) | Loss (dB) | Correct Level (dBm) | Emission Level (dBc) | MASK E Limit (dBc) | Margin (dB) |
|----|-----------------|------|---------------------|--------------------|--------------------|-----------|---------------------|----------------------|--------------------|-------------|
| 1 | 347.90 | Hor. | -58.60 | -50.10 | 0.00 | 11.45 | -61.6 | -105.5 | -65.0 | 40.5 |
| | | Ver. | -60.56 | -48.35 | 0.00 | 11.45 | -59.8 | -103.8 | -65.0 | 38.8 |
| 2 | 521.85 | Hor. | -67.66 | -53.66 | 0.00 | 11.80 | -65.5 | -109.4 | -65.0 | 44.4 |
| | | Ver. | -69.25 | -53.97 | 0.00 | 11.80 | -65.8 | -109.7 | -65.0 | 44.7 |
| 3 | 695.80 | Hor. | -72.85 | -55.70 | 0.00 | 12.09 | -67.8 | -111.8 | -65.0 | 46.8 |
| | | Ver. | -73.35 | -54.47 | 0.00 | 12.09 | -66.6 | -110.5 | -65.0 | 45.5 |
| 4 | 869.75 | Hor. | - | - | 0.00 | 12.32 | - | - | -65.0 | - |
| | | Ver. | - | - | 0.00 | 12.32 | - | - | -65.0 | - |
| 5 | 1043.70 | Hor. | -56.90 | -48.05 | 3.94 | 12.54 | -56.6 | -100.6 | -65.0 | 35.6 |
| | | Ver. | -56.80 | -47.35 | 3.94 | 12.54 | -55.9 | -99.9 | -65.0 | 34.9 |
| 6 | 1217.65 | Hor. | -60.80 | -49.69 | 4.93 | 12.72 | -57.5 | -101.5 | -65.0 | 36.5 |
| | | Ver. | -60.40 | -50.04 | 4.93 | 12.72 | -57.8 | -101.8 | -65.0 | 36.8 |
| 7 | 1391.60 | Hor. | - | - | 5.74 | 12.91 | - | - | -65.0 | - |
| | | Ver. | - | - | 5.74 | 12.91 | - | - | -65.0 | - |
| 8 | 1565.55 | Hor. | - | - | 6.23 | 13.09 | - | - | -65.0 | - |
| | | Ver. | - | - | 6.23 | 13.09 | - | - | -65.0 | - |
| 9 | 1739.50 | Hor. | -62.20 | -51.27 | 6.33 | 13.28 | -58.2 | -102.2 | -65.0 | 37.2 |
| | | Ver. | -61.20 | -50.08 | 6.33 | 13.28 | -57.0 | -101.0 | -65.0 | 36.0 |

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

Mask E Limit (dBc) = whichever is the lesser attenuation ; $-(55+10\log(P))$ or -65

Correct Level (dBm) = Substitute SG Level (dBm) + ANT Gain (dB) - 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 6 kHz / 158.05MHz(RSS)

| No | Frequency (MHz) | Pol | Reading Level (dBm) | SG Out Level (dBm) | Antenna Gain (dBi) | Loss (dB) | Correct Level (dBm) | Emission Level (dBc) | MASK E Limit Level (dBc) | Margin (dB) |
|----|-----------------|------|---------------------|--------------------|--------------------|-----------|---------------------|----------------------|--------------------------|-------------|
| 1 | 316.10 | Hor. | -73.87 | -66.33 | 0.00 | 11.39 | -77.7 | -104.7 | -52.0 | 52.7 |
| | | Ver. | -75.45 | -63.56 | 0.00 | 11.39 | -74.9 | -101.9 | -52.0 | 49.9 |
| 2 | 474.15 | Hor. | - | - | 0.00 | 11.71 | - | - | -52.0 | - |
| | | Ver. | - | - | 0.00 | 11.71 | - | - | -52.0 | - |
| 3 | 632.20 | Hor. | - | - | 0.00 | 11.98 | - | - | -52.0 | - |
| | | Ver. | - | - | 0.00 | 11.98 | - | - | -52.0 | - |
| 4 | 790.25 | Hor. | - | - | 0.00 | 12.21 | - | - | -52.0 | - |
| | | Ver. | - | - | 0.00 | 12.21 | - | - | -52.0 | - |
| 5 | 948.30 | Hor. | - | - | 0.00 | 12.42 | - | - | -52.0 | - |
| | | Ver. | - | - | 0.00 | 12.42 | - | - | -52.0 | - |
| 6 | 1106.35 | Hor. | - | - | 4.32 | 12.60 | - | - | -52.0 | - |
| | | Ver. | - | - | 4.32 | 12.60 | - | - | -52.0 | - |
| 7 | 1264.40 | Hor. | -61.20 | -50.27 | 5.16 | 12.77 | -57.9 | -84.9 | -52.0 | 32.9 |
| | | Ver. | -58.70 | -48.98 | 5.16 | 12.77 | -56.6 | -83.6 | -52.0 | 31.6 |
| 8 | 1422.45 | Hor. | - | - | 5.86 | 12.94 | - | - | -52.0 | - |
| | | Ver. | - | - | 5.86 | 12.94 | - | - | -52.0 | - |
| 9 | 1580.50 | Hor. | - | - | 6.24 | 13.11 | - | - | -52.0 | - |
| | | Ver. | - | - | 6.24 | 13.11 | - | - | -52.0 | - |

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

Mask E Limit (dBc) = whichever is the lesser attenuation ; $-(55+10\log(P))$ or -65
 Correct Level (dBm) = Substitute SG Level (dBm) + ANT Gain (dB) - 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 / RSS-119 Section 5.5 |
| TEST METHOD/GUIDE | : ANSI/TIA-603-D Section 2.2.11.2 / RSS-119 Section 5.5 |

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 For EUT supporting digital modulation, the digital modulation mode was operated to its maximum extent.
- 5 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) RBW and VBW : 30 kHz (Non Modulation / Digital Modulation).
- 6 The occupied Bandwidth was measured with the Spectrum Analyzer controls set as shown on the test results.

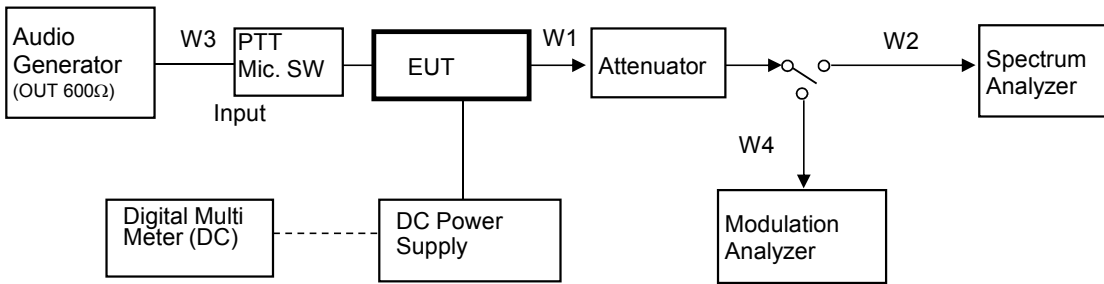
Measuring Equipments

| No. | Equipment | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------------|------------------------|-------------|------------|-------------|-------------|
| 1 | Attenuator (10dB) | Aeroflex/Wenshel | 66-10-34 | BY2887 | Jun. 01, 15 | Jun. 30, 16 |
| 2 | Attenuator (30dB) | Weinschel | WA-29-30-34 | 8923 | Jun. 01, 15 | Jun. 30, 16 |
| 3 | Modulation Analyzer | Hewlett Packard | 8901B | 2806A01669 | Oct. 13, 14 | Oct. 31, 15 |
| 4 | Audio Generator | Anritsu | MG443B | M70150 | Jun. 18, 15 | Jun. 30, 16 |
| 5 | Spectrum Analyzer | Agilent | N9030A | US51350220 | Jul. 03, 14 | Jul. 31, 15 |
| 6 | DC Power Supply | Daiichi denpa kogyo | GZV4000 | 90290931 | None | None |
| 7 | Digital Multi Meter | FLUKE | 8846A | 9642018 | Jun. 04, 14 | Jun. 30, 15 |

Measuring Cables

| No. | Cable | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|--------------------------------|----------------|-------------|------------|-------------|-------------|
| W3 | Balance Cable | Nicoon | 3D-2V | KSR00092 | Jan. 23, 15 | Jan. 31, 16 |
| W4 | Coaxial Cable | Pacific custom | RG-58 C/U | AM90C04 | Jun. 09, 15 | Jun. 30, 16 |
| W1 | Coaxial Cable | Suhner | SUCOFLEX104 | F0000017 | Jan. 23, 15 | Jan. 31, 16 |
| W2 | Coaxial Cable | Suhner | SUCOFLEX104 | F0000018 | Jan. 23, 15 | Jan. 31, 16 |
| W20 | USB Adapter | SANWA | USB-CVR59 | FXLA00701 | None | None |
| W21 | PROGRAMMING INTERFACE Cable | SANWA | KR-MDI | None | None | None |

Measuring Equipment Configuration

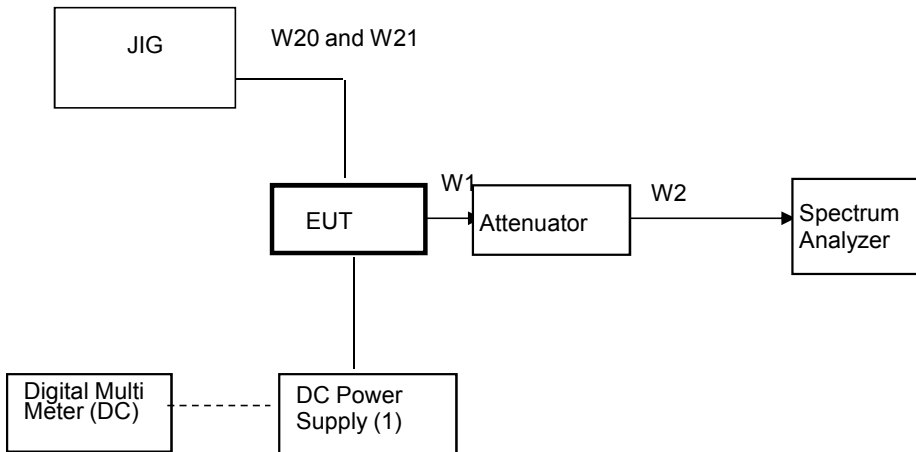


Note: Configuration of other Modulation test is composed without the Audio Generator.



: RF Output

<CW ID Modulation Case>



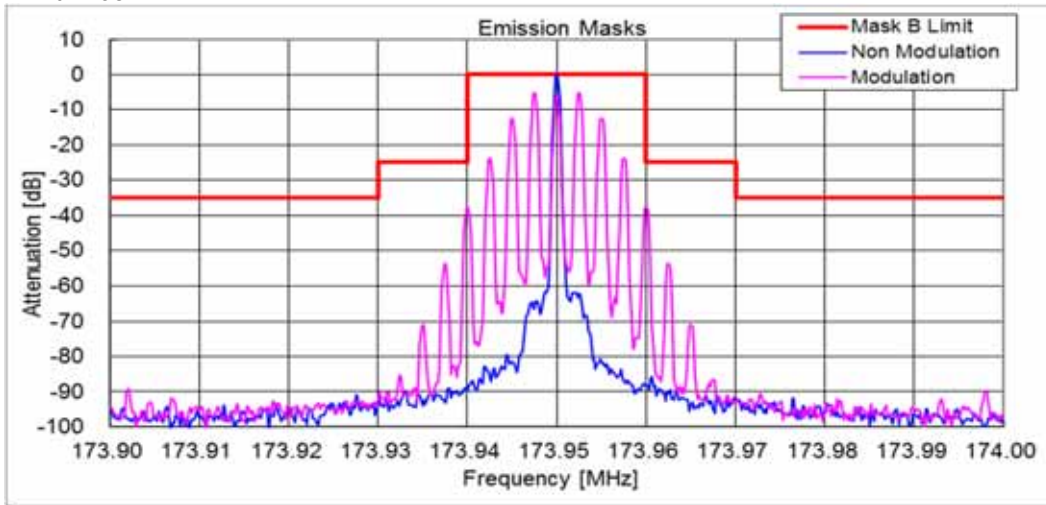
Test Results

→ : RF Output

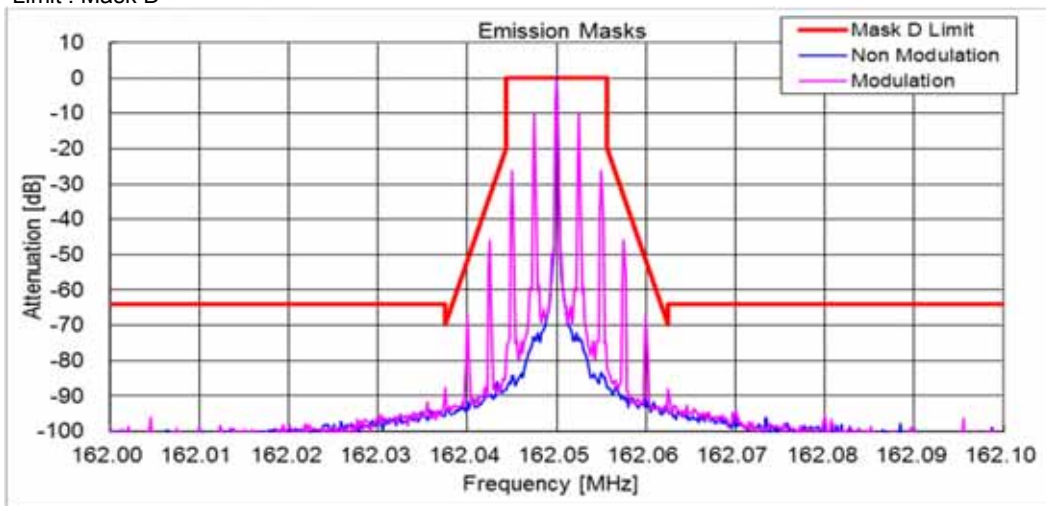
| | | |
|----------------------|------------------------|------------|
| Test date | Jun 22, 2015 | |
| Location | Kashima No.1 Test Site | |
| temperature | 23 | [degree C] |
| Humidity Variation | 60 | [%] |
| Atmospheric Pressure | 101.1 | [kPa] |
| Test Engineer | Koichi Wagatsuma | |

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

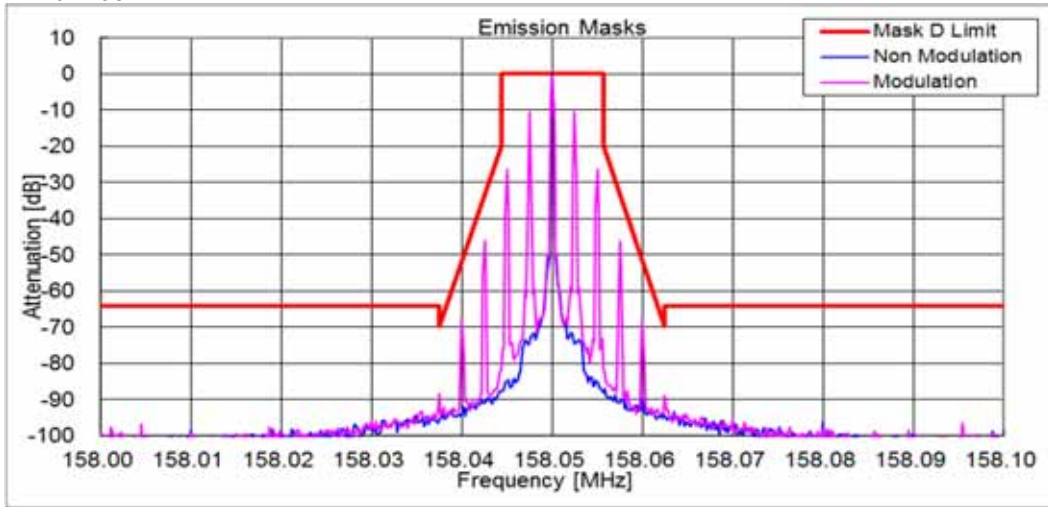
State : High Power / Authorized Bandwidth 20 kHz/ 16K0F3E / 173.95 MHz(RSS)
 Limit : Mask B



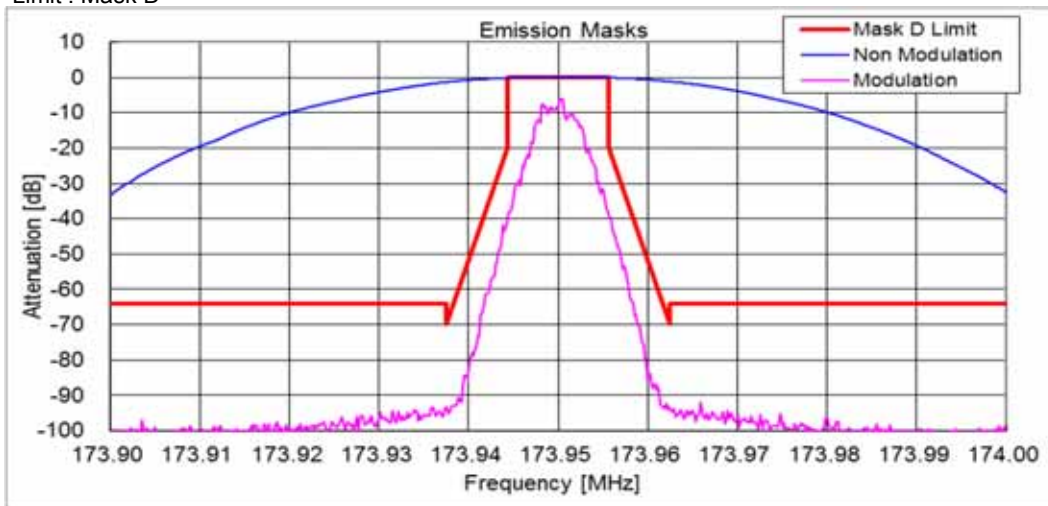
State : High Power / Authorized Bandwidth 11.25 kHz/ 11K0F3E / 162.05 MHz(FCC)
 Limit : Mask D



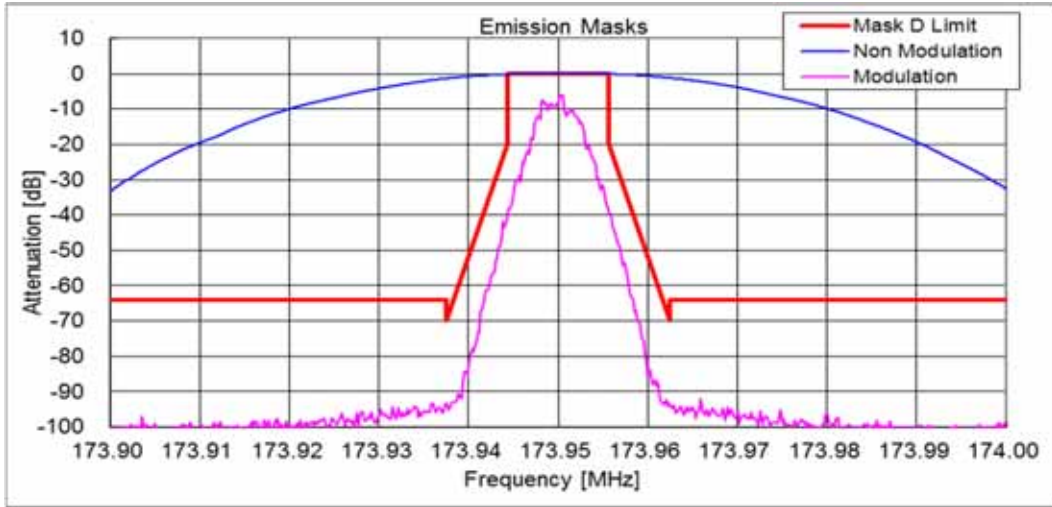
State : High Power / Authorized Bandwidth 11.25 kHz/ 11K0F3E / 158.05 MHz(RSS)
Limit : Mask D



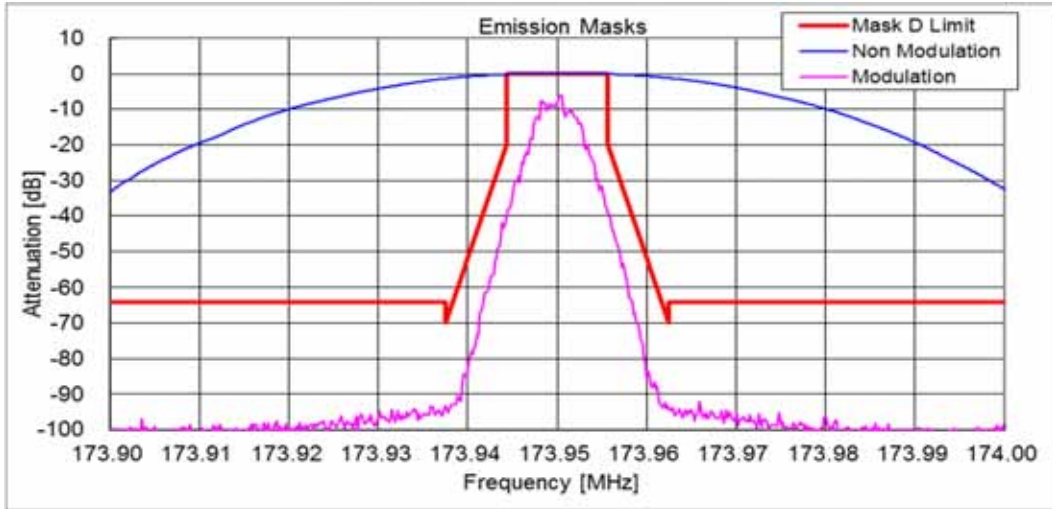
State : High Power / Authorized Bandwidth 11.25 kHz/ 8K30F1E / 173.95 MHz(FCC/RSS)
Limit : Mask D



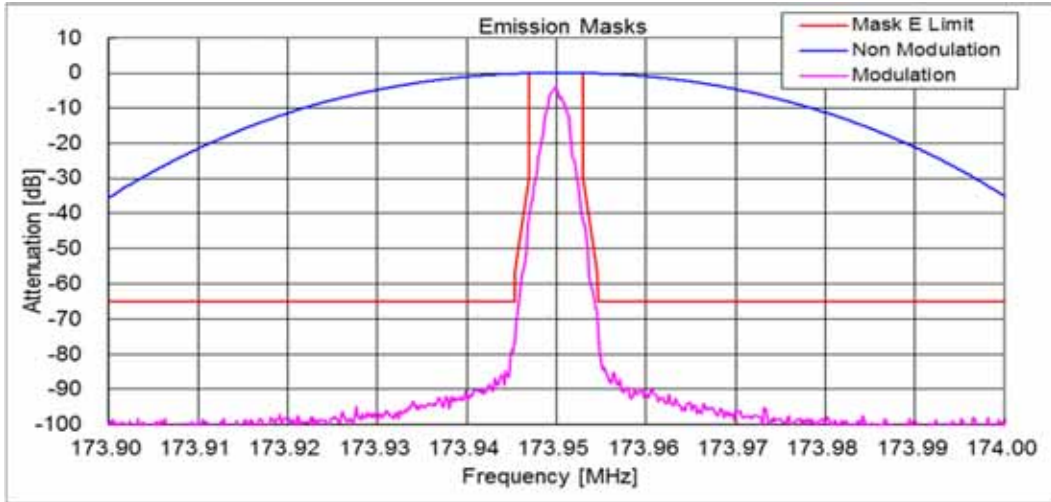
State : High Power / Authorized Bandwidth 11.25 kHz/ 8K30F1D / 173.95 MHz(FCC/RSS)
Limit : Mask D



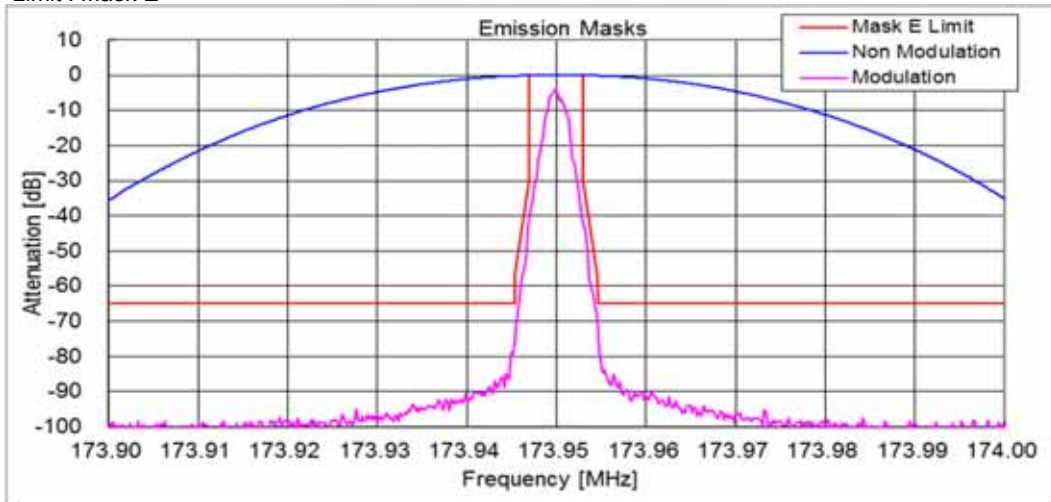
State : High Power / Authorized Bandwidth 11.25 kHz/ 8K30F7W / 173.95 MHz(FCC/RSS)
Limit : Mask D



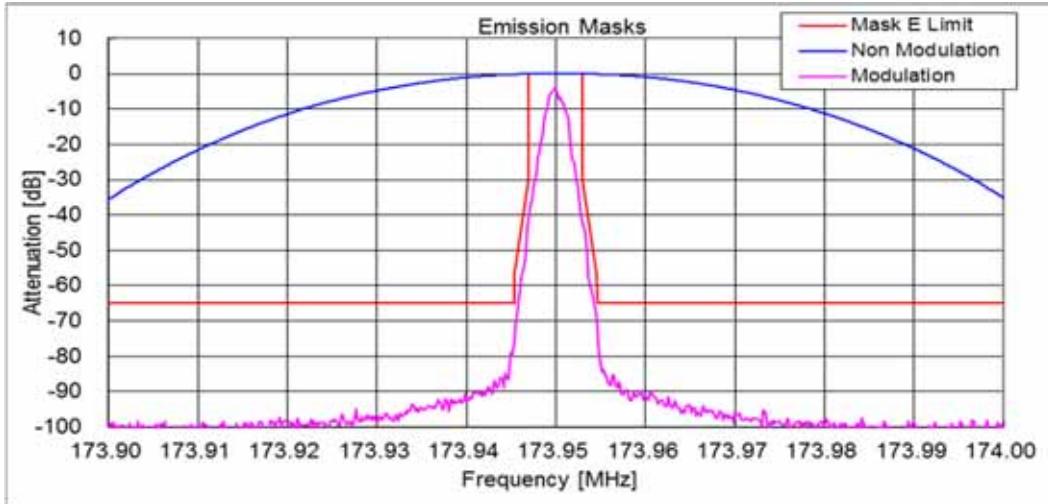
State : High Power / Authorized Bandwidth 6 kHz/ 4K00F1E / 173.95 MHz(FCC/RSS)
Limit : Mask E



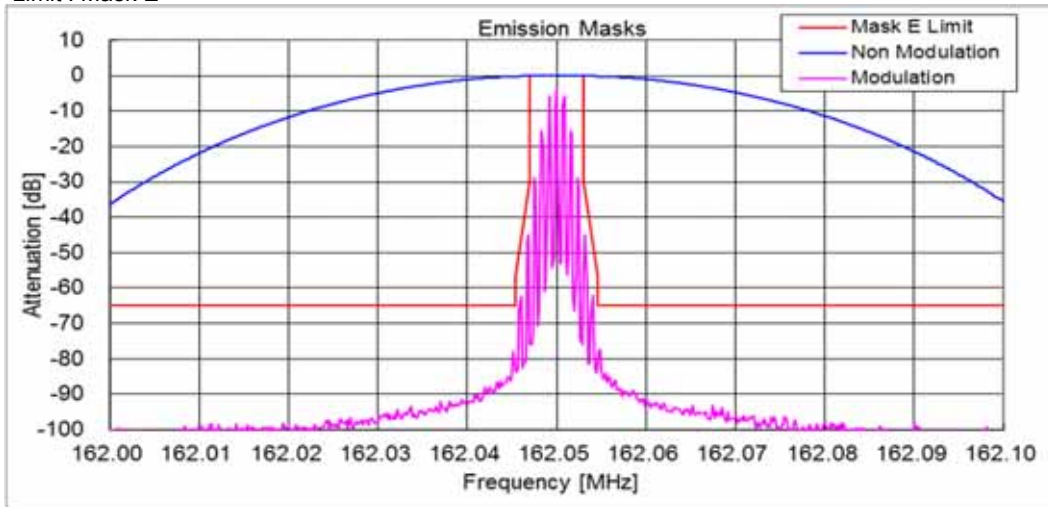
State : High Power / Authorized Bandwidth 6 kHz/ 4K00F1D / 173.95 MHz(FCC/RSS)
Limit : Mask E



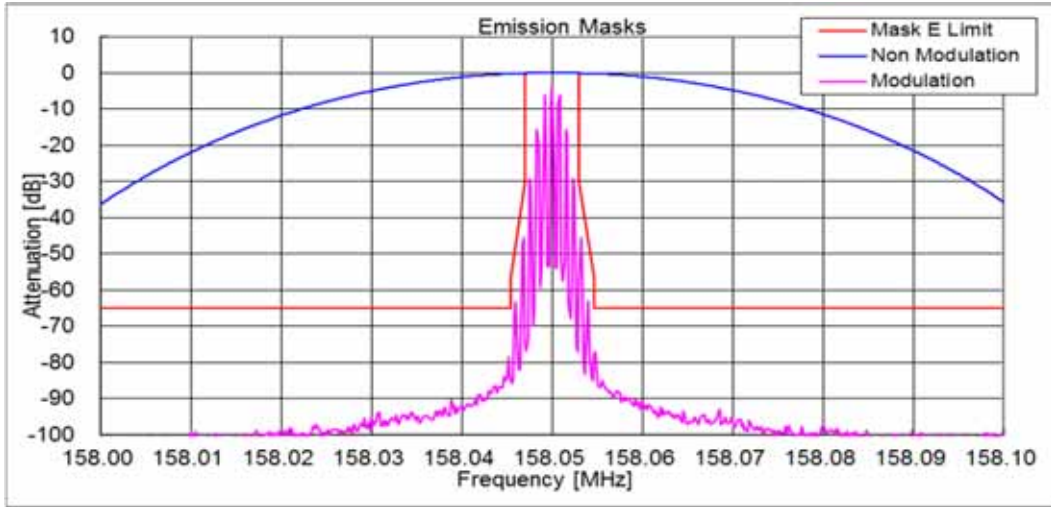
State : High Power / Authorized Bandwidth 6 kHz/ 4K00F7W / 173.95 MHz(FCC/RSS)
Limit : Mask E



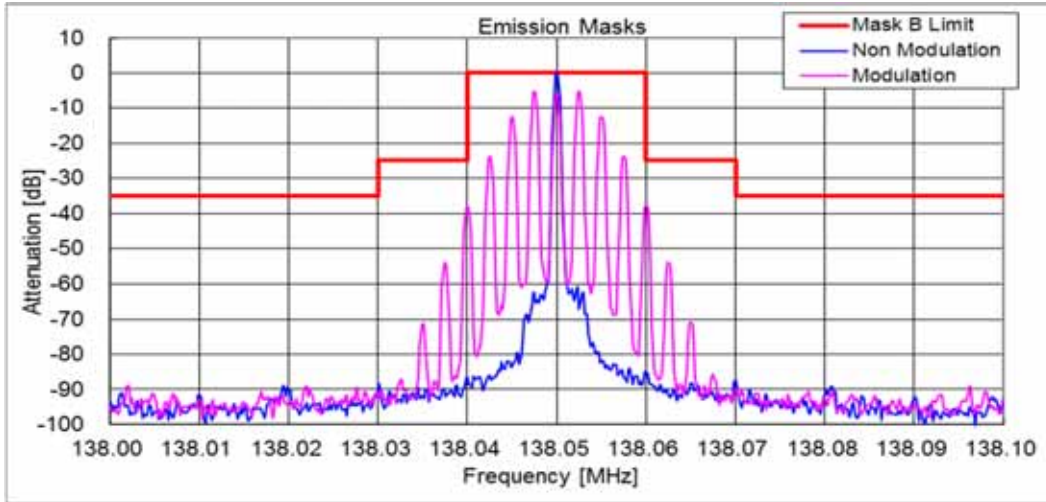
State : High Power / Authorized Bandwidth 6 kHz/ 4K00F2D / 162.05 MHz(FCC)
Limit : Mask E



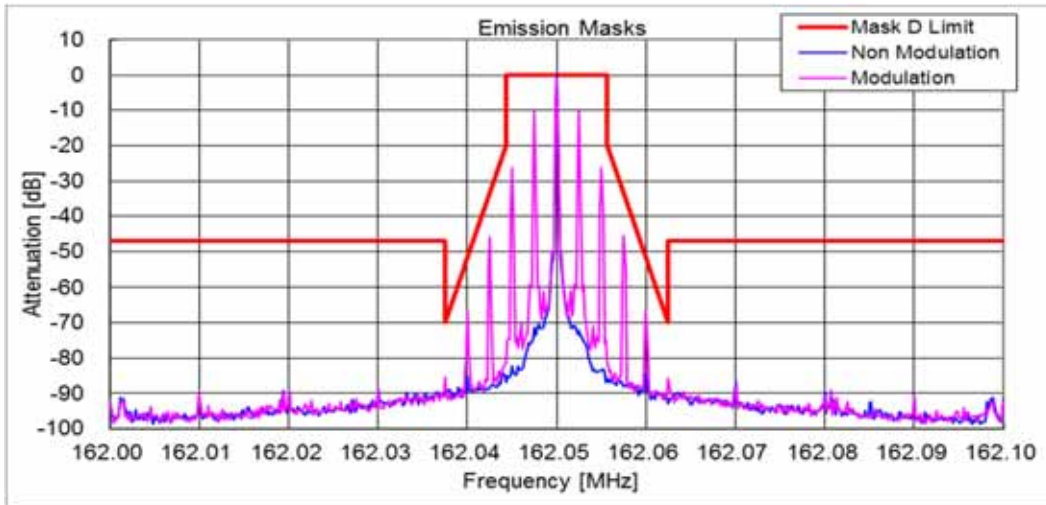
State : High Power / Authorized Bandwidth 6 kHz/ 4K00F2D / 158.05 MHz(RSS)
Limit : Mask E



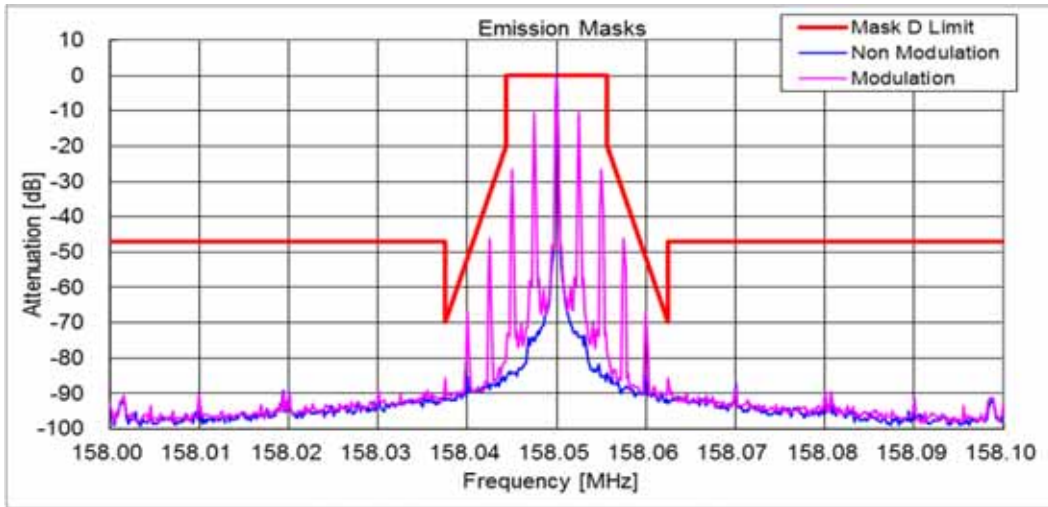
State : Low Power / Authorized Bandwidth 20 kHz/ 16K0F3E / 138.05 MHz(RSS)
Limit : Mask B



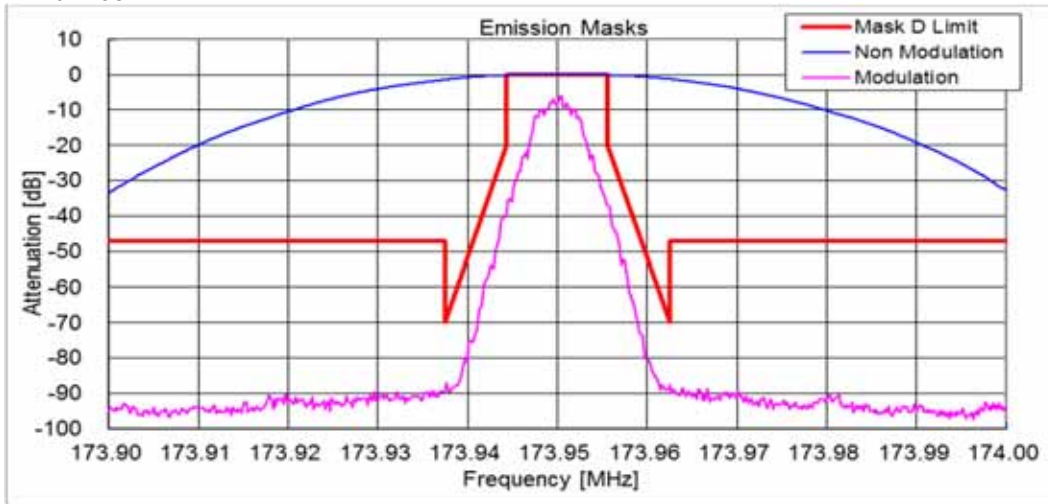
State : Low Power / Authorized Bandwidth 11.25 kHz/ 11K0F3E / 162.05 MHz(FCC)
Limit : Mask D



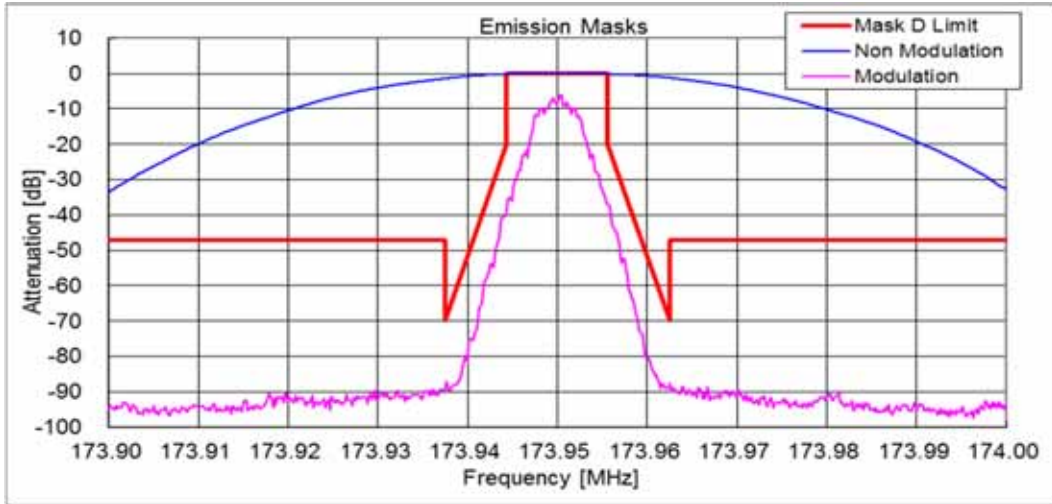
State : Low Power / Authorized Bandwidth 11.25 kHz/ 11K0F3E / 158.05 MHz(RSS)
Limit : Mask D



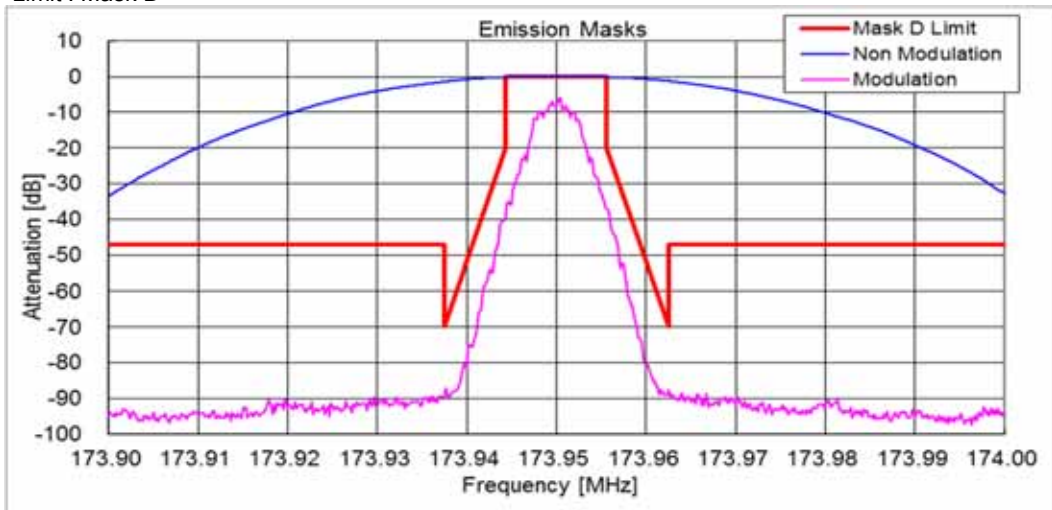
State : Low Power / Authorized Bandwidth 11.25 kHz/ 8K30F1E / 173.95 MHz(FCC/RSS)
Limit : Mask D



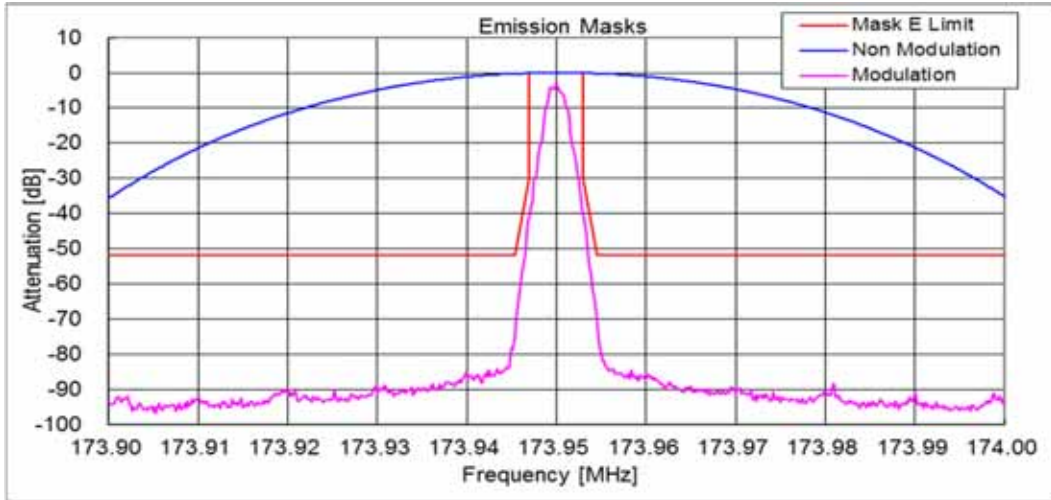
State : Low Power / Authorized Bandwidth 11.25 kHz/ 8K30F1D / 173.95 MHz(FCC/RSS)
Limit : Mask D



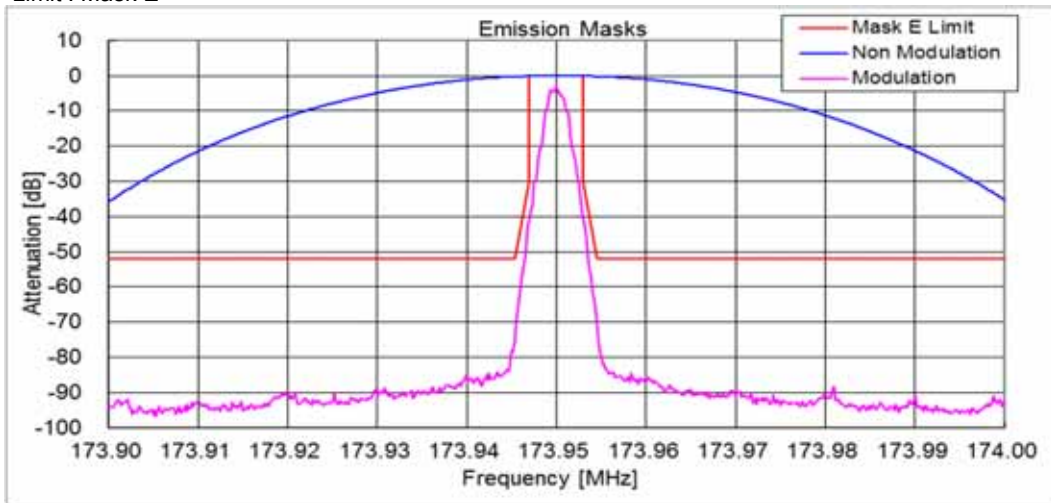
State : Low Power / Authorized Bandwidth 11.25 kHz/ 8K30F7W / 173.95 MHz(FCC/RSS)
Limit : Mask D



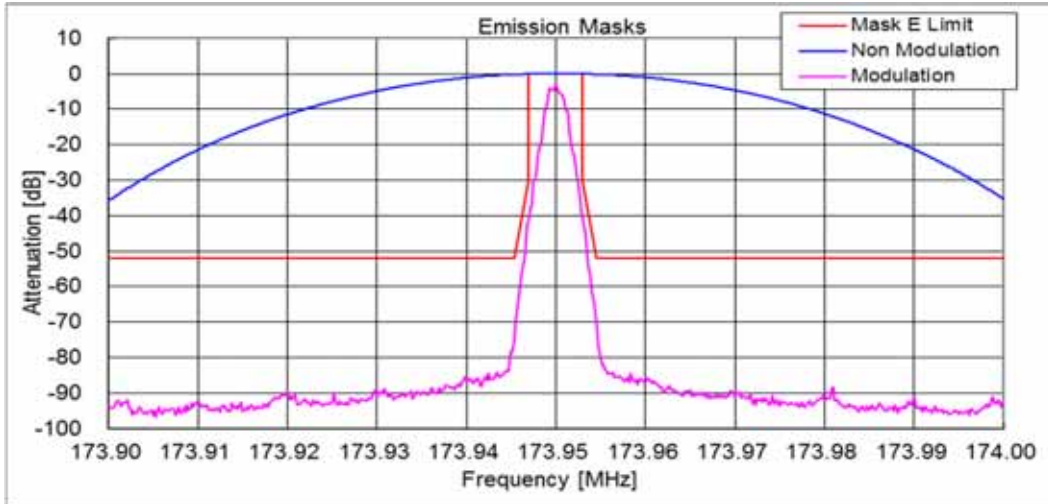
State : Low Power / Authorized Bandwidth 6 kHz/ 4K00F1E / 173.95 MHz(FCC/RSS)
Limit : Mask E



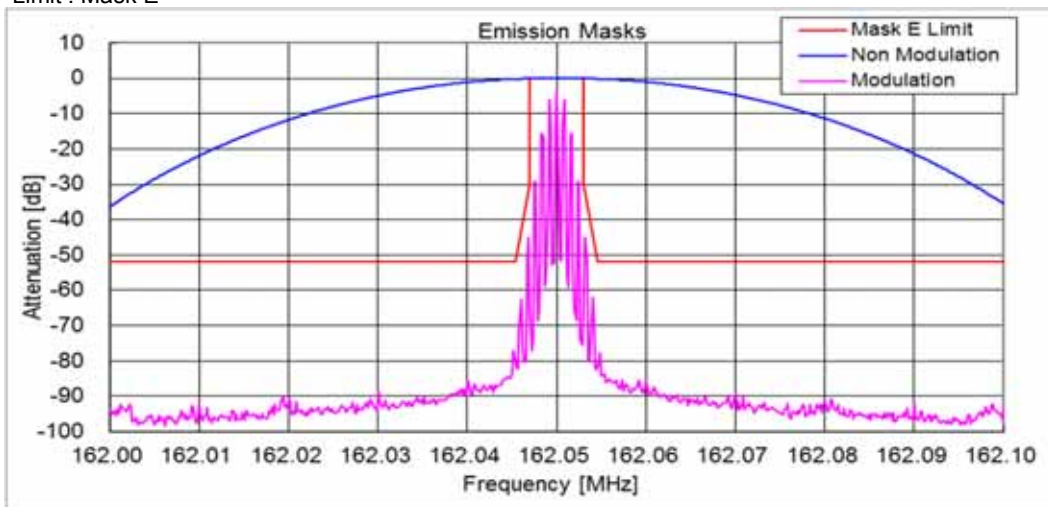
State : Low Power / Authorized Bandwidth 6 kHz/ 4K00F1D / 173.95 MHz(FCC/RSS)
Limit : Mask E



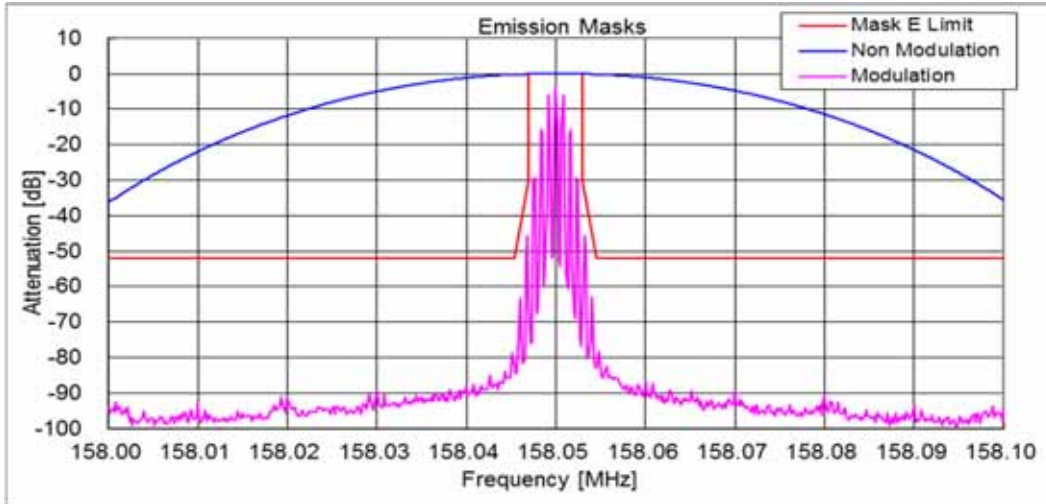
State : Low Power / Authorized Bandwidth 6 kHz/ 4K00F7W / 173.95 MHz(FCC/RSS)
Limit : Mask E



State : Low Power / Authorized Bandwidth 6 kHz/ 4K00F2D / 162.05 MHz(FCC)
Limit : Mask E



State : Low Power / Authorized Bandwidth 20 kHz/ 16K0F3E / 158.05 MHz(RSS)
Limit : Mask E



10.5 Transient Frequency Behavior

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

Test Procedure

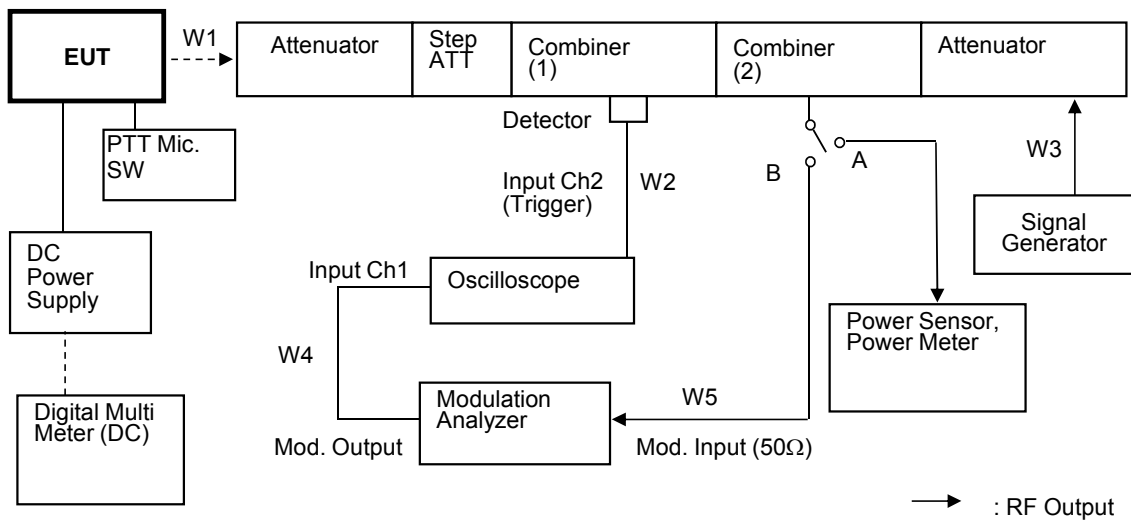
- 1 The EUT and test equipment were set up as shown on the following page.
- 2 The transmitter was turned on.
- 3 The transmitter carrier level was measured at the output of the combiner .
- 4 The transmitter was turned off.
- 5 An RF signal generator (1) modulated with a 1 kHz tone at either 25 kHz 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-603 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 steps m, n, and o was captured and plotted.
- 9 The carrier off-time as referenced in TIA-603 steps p, q, r, and s was captured and plotted.

| No. | Equipment | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------------|---------------------|-------------|------------|-------------|-------------|
| 1 | Power Meter | Hewlett Packard | E4418B | GB38410265 | Jun. 09, 15 | Jun. 30, 16 |
| 2 | Power Sensor | Hewlett Packard | 8482A | US37292237 | Jun. 09, 15 | Jun. 30, 16 |
| 3 | Attenuator (20dB) | Aeroflex/Wenshel | 66-20-34 | BY4357 | Jun. 01, 15 | Jun. 30, 16 |
| 4 | Attenuator (3dB) | TME | CFA-20NPJ-3 | 679701 | Jun. 01, 15 | Jun. 30, 16 |
| 5 | Attenuator (30dB) | Weinschel | WA-29-30-34 | 8923 | Jun. 01, 15 | Jun. 30, 16 |
| 6 | Step Attenuator | Hewlett Packard | 8494B | 272614515 | Jan. 23, 15 | Jan. 31, 16 |
| 7 | Combiner(1) | Anritsu | Z-164A | M89249 | Jan. 20, 15 | Jan. 31, 16 |
| 8 | Combiner(2) | Anritsu | Z-164A | M89549 | Jan. 20, 15 | Jan. 31, 16 |
| 9 | Modulation Analyzer | Hewlett Packard | 8901B | 2806A01669 | Oct. 13, 14 | Oct. 31, 15 |
| 10 | Signal Generator | Rohde&Schwarz | SMB 100A | 105709 | Mar. 18, 15 | Mar. 31, 16 |
| 11 | Oscilloscope | Tektronix | TDS 680B | B010292 | Jan. 30, 15 | Jan. 31, 16 |
| 12 | DC Power Supply | Daiichi denpa kogyo | GZV4000 | 90290931 | None | None |
| 13 | Digital Multi Meter | FLUKE | 8846A | 9642018 | Jun. 04, 14 | Jun. 30, 15 |

Measuring Cables

| No. | Cable | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------|----------------|-------------|------------|-------------|-------------|
| W2 | Coaxial Cable | Pacific custom | RG-58 C/U | KSR00094 | Jan. 23, 15 | Jan. 31, 16 |
| W4 | Coaxial Cable | Pacific custom | RG-58 C/U | KSR00096 | Jan. 23, 15 | Jan. 31, 16 |
| W5 | Coaxial Cable | Pacific custom | RG-58 C/U | AM90C04 | Jun. 09, 15 | Jun. 30, 16 |
| W3 | Coaxial Cable | Pacific custom | RG-58 C/U | KSR00041 | Jun. 09, 15 | Jun. 30, 16 |
| W1 | Coaxial Cable | Suhner | SUCOFLEX104 | F0000017 | Jan. 23, 15 | Jan. 31, 16 |

Measuring Equipment Configuration

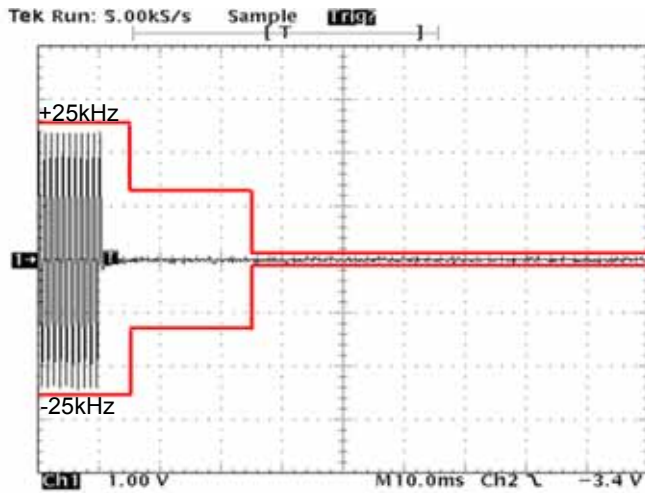


Test Results

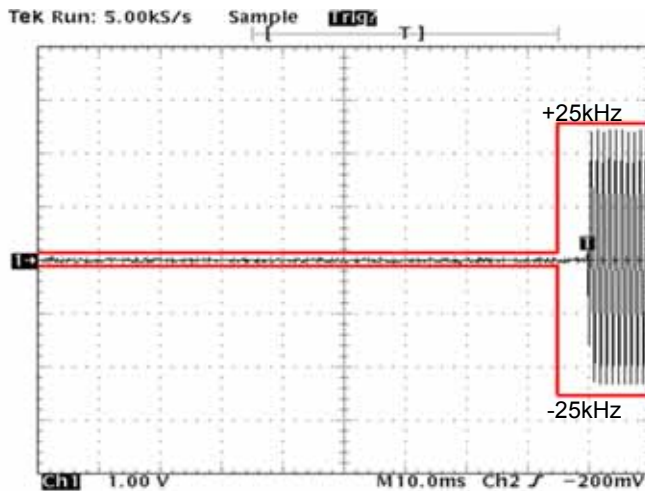
| | | |
|----------------------|------------------------|------------|
| Test date | Jun 24, 2015 | |
| Location | Kashima No.1 Test Site | |
| temperature | 25 | [degree C] |
| Humidity Variation | 55 | [%] |
| Atmospheric Pressure | 101 | [kPa] |
| Test Engineer | Koichi Wagatsuma | |

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

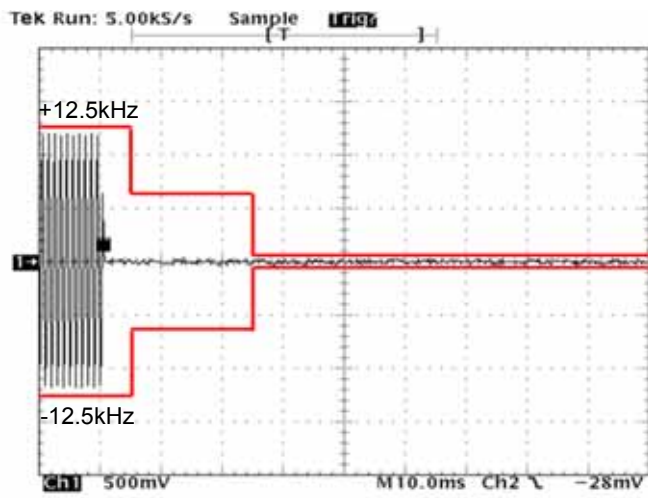
State : High Power / Authorized Bandwidth 20 kHz / 16K0F3E / 173.95 MHz (RSS)/ PTT:OFF -ON



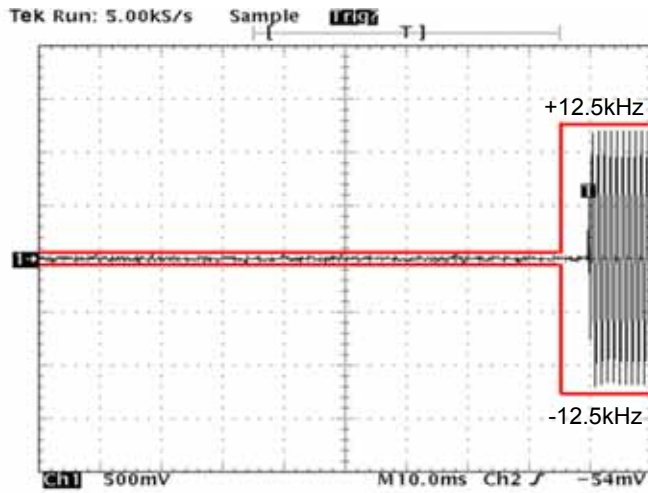
State : High Power / Authorized Bandwidth 20 kHz / 16K0F3E / 173.95 MHz (RSS)/ PTT:ON -OFF



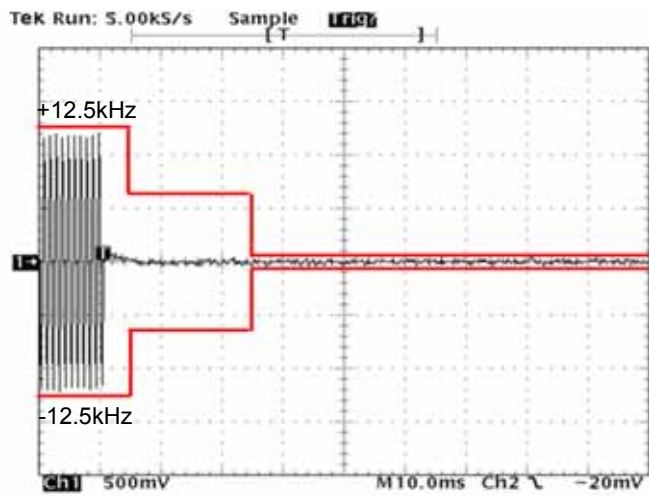
State : High Power / Authorized Bandwidth 11.25 kHz / 11K0F3E / 150.05 MHz (FCC)/ PTT:OFF -ON



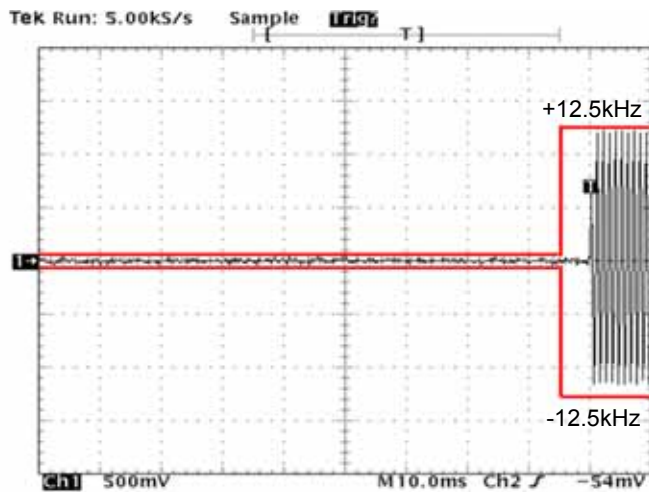
State : High Power / Authorized Bandwidth 11.25 kHz / 11K0F3E / 150.05 MHz (FCC)/ PTT:ON-OFF



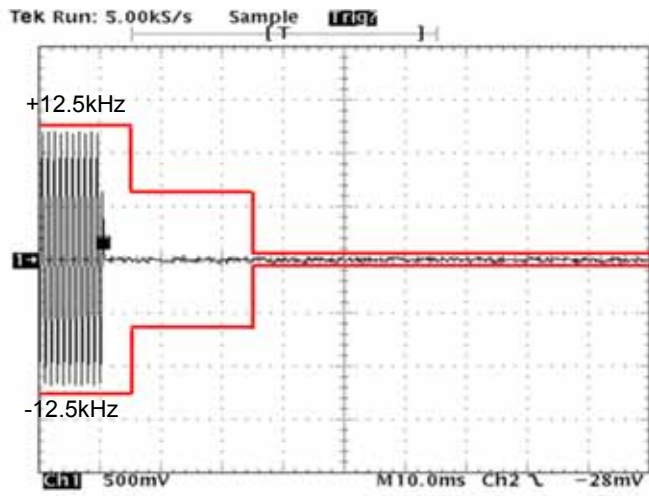
State : High Power / Authorized Bandwidth 11.25 kHz / 11K0F3E / 158.05 MHz (RSS)/ PTT:OFF -ON



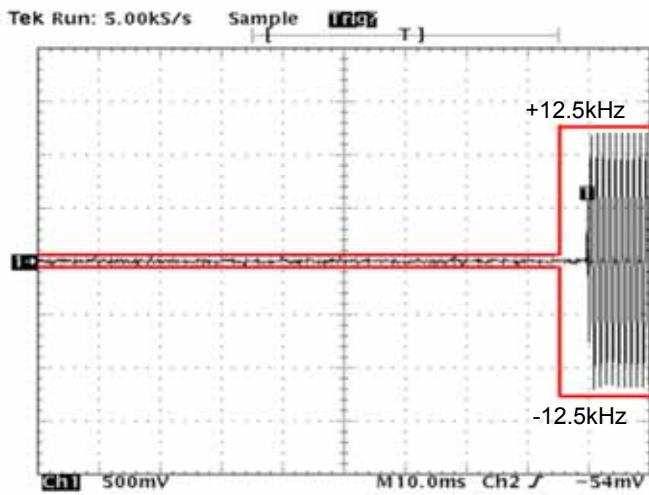
State : High Power / Authorized Bandwidth 11.25 kHz / 11K0F3E / 158.05 MHz (RSS)/ PTT:ON-OFF



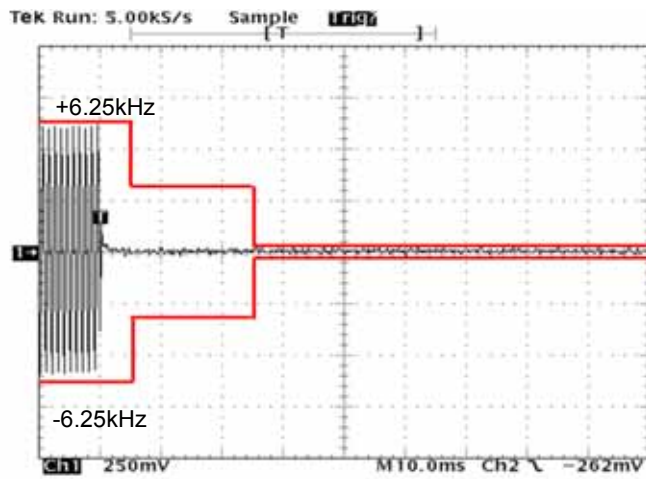
State : High Power / Authorized Bandwidth 11.25 kHz / 8K30F1E/F1D/F7W / 173.95 MHz (FCC/RSS)/ PTT:OFF -ON



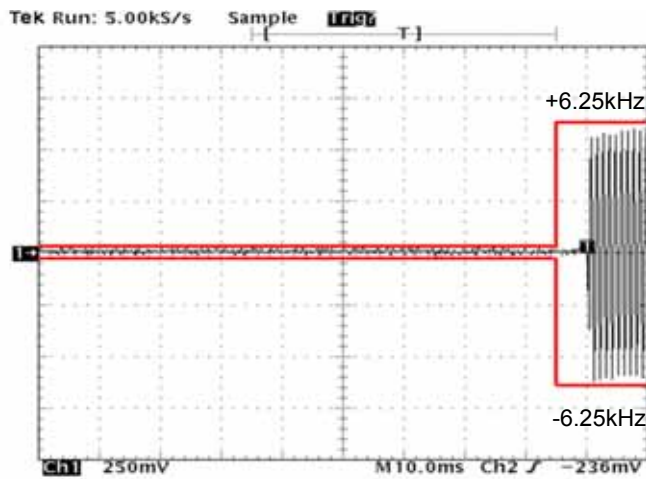
State : High Power / Authorized Bandwidth 11.25 kHz / 8K30F1E/F1D/F7W / 173.95 MHz (FCC/RSS)/ PTT:ON-OFF



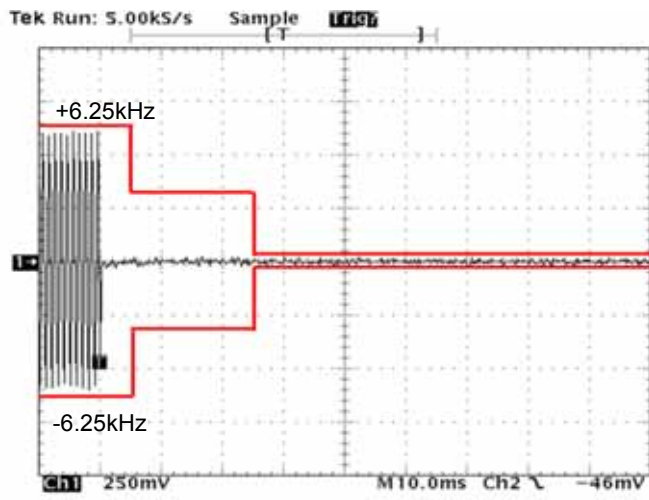
State : High Power / Authorized Bandwidth 6 kHz / 4K00F1E / F1D / F7W / 162.05 MHz (FCC)/ PTT:OFF -ON



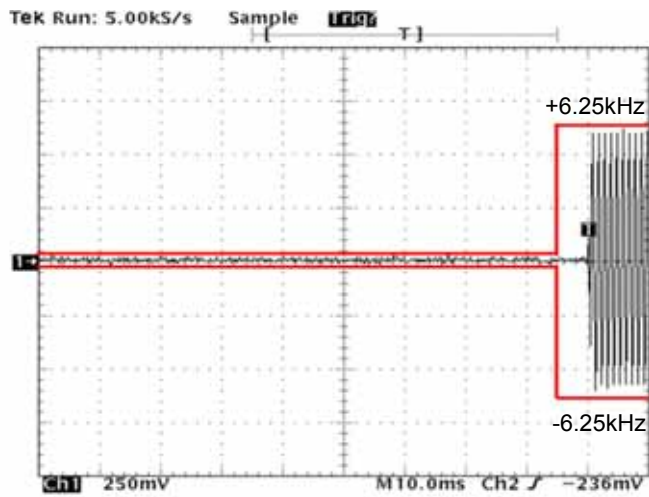
State : High Power / Authorized Bandwidth 6 kHz / 4K00F1E / F1D / F7W / 162.05 MHz (FCC)/ PTT:ON-OFF



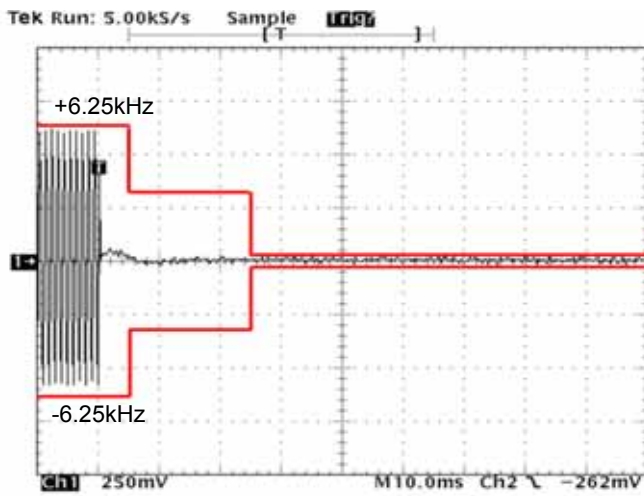
State : High Power / Authorized Bandwidth 6 kHz / 4K00F1E / F1D / F7W / 138.05 MHz (RSS)/ PTT:OFF -ON



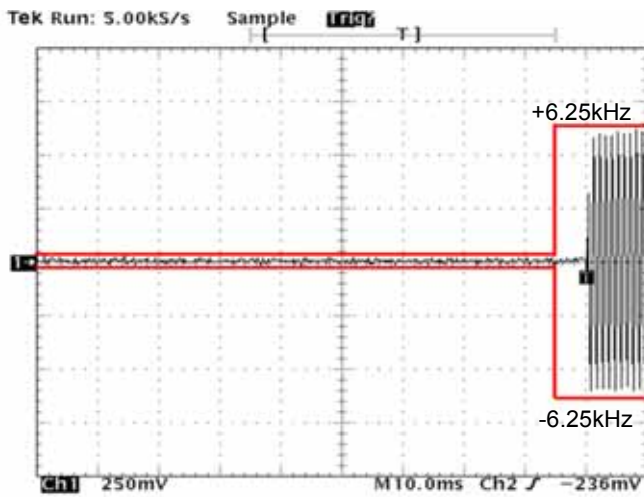
State : High Power / Authorized Bandwidth 6 kHz / 4K00F1E / F1D / F7W / 138.05 MHz (RSS)/ PTT:ON-OFF



State : High Power / Authorized Bandwidth 6 kHz / 4K00F2D / 173.95 MHz (FCC/RSS)/ PTT:OFF -ON



State : High Power / Authorized Bandwidth 6 kHz / 4K00F2D / 173.95 MHz (FCC/RSS)/ 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-D 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 100 Hz to 5 kHz.
- 5 The response in dB relative to 1 kHz was then measured, using the Modulation Analyzer.

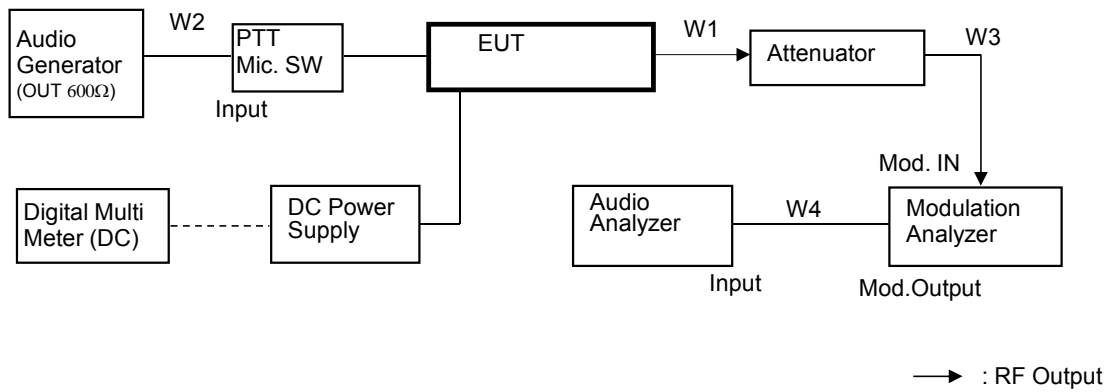
Measuring Equipments

| No. | Equipment | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------------|---------------------|-------------|------------|-------------|-------------|
| 1 | Attenuator (20dB) | Aeroflex/Wenshel | 66-20-34 | BY4357 | Jun. 01, 15 | Jun. 30, 16 |
| 2 | Attenuator (30dB) | Weinschel | WA-29-30-34 | 8923 | Jun. 01, 15 | Jun. 30, 16 |
| 3 | Modulation Analyzer | Hewlett Packard | 8901B | 2806A01669 | Oct. 13, 14 | Oct. 31, 15 |
| 4 | Audio Generator | Anritsu | MG443B | M70150 | Jun. 18, 15 | Jun. 30, 16 |
| 5 | Audio Analyzer | Hewlett Packard | 8903B | 2818A04372 | Jul. 19, 14 | Jul. 31, 15 |
| 6 | DC Power Supply | Daiichi denpa kogyo | GZV4000 | 90290931 | None | None |
| 7 | Digital Multi Meter | FLUKE | 8846A | 9642018 | Jun. 04, 14 | Jun. 30, 15 |

Measuring Cables

| No. | Cable | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------|----------------|-------------|------------|-------------|-------------|
| W2 | Balance Cable | Nicoon | 3D-2V | KSR00092 | Jan. 23, 15 | Jan. 31, 16 |
| W4 | Coaxial Cable | Pacific custom | RG-58 C/U | KSR00096 | Jan. 23, 15 | Jan. 31, 16 |
| W3 | Coaxial Cable | Pacific custom | RG-58 C/U | AM90C04 | Jun. 09, 15 | Jun. 30, 16 |
| W1 | Coaxial Cable | Suhner | SUCOFLEX104 | F0000017 | Jan. 23, 15 | Jan. 31, 16 |

Measuring Equipment Configuration

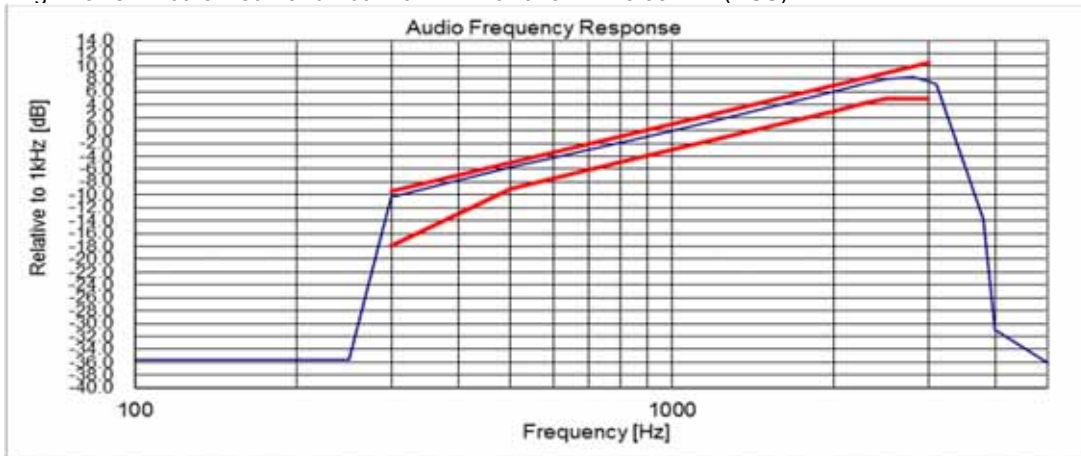


Test Results

| | | |
|----------------------|------------------------|------------|
| Test date | Jun 24, 2015 | |
| Location | Kashima No.1 Test Site | |
| temperature | 25 | [degree C] |
| Humidity Variation | 50 | [%] |
| Atmospheric Pressure | 101 | [kPa] |
| Test Engineer | Koichi Wagatsuma | |

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

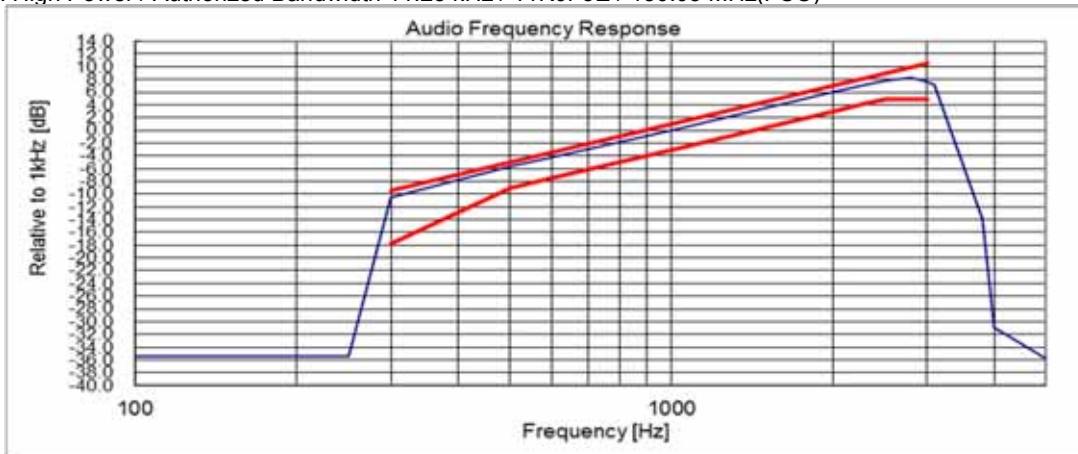
State : High Power / Authorized Bandwidth 20 kHz / 16K0F3E / 173.95 MHz(RSS)



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.

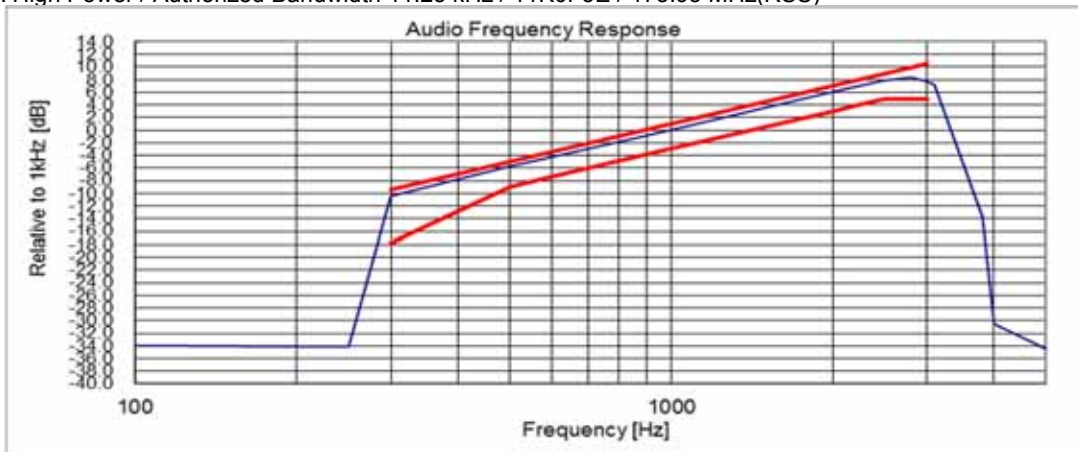
State : High Power / Authorized Bandwidth 11.25 kHz / 11K0F3E / 150.05 MHz(FCC)



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.

State : High Power / Authorized Bandwidth 11.25 kHz / 11K0F3E / 173.95 MHz(RSS)



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-D 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.

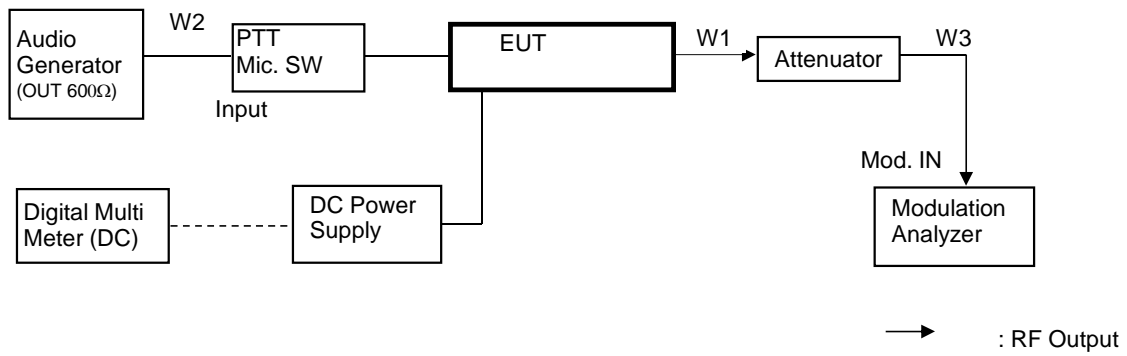
Measuring Equipments

| No. | Equipment | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------------|---------------------|-------------|------------|-------------|-------------|
| 1 | Attenuator (20dB) | Aeroflex/Wenshel | 66-20-34 | BY4357 | Jun. 01, 15 | Jun. 30, 16 |
| 2 | Attenuator (30dB) | Weinschel | WA-29-30-34 | 8923 | Jun. 01, 15 | Jun. 30, 16 |
| 3 | Modulation Analyzer | Hewlett Packard | 8901B | 2806A01669 | Oct. 13, 14 | Oct. 31, 15 |
| 4 | Audio Generator | Anritsu | MG443B | M70150 | Jun. 18, 15 | Jun. 30, 16 |
| 5 | DC Power Supply | Daiichi denpa kogyo | GZV4000 | 90290931 | None | None |
| 4 | Digital Multi Meter | FLUKE | 8846A | 9642018 | Jun. 04, 14 | Jun. 30, 15 |

Measuring Cables

| No. | Cable | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------|----------------|-------------|------------|-------------|-------------|
| W2 | Balance Cable | Nicoon | 3D-2V | KSR00092 | Jan. 23, 15 | Jan. 31, 16 |
| W3 | Coaxial Cable | Pacific custom | RG-58 C/U | AM90C04 | Jun. 09, 15 | Jun. 30, 16 |
| W1 | Coaxial Cable | Suhner | SUCOFLEX104 | F0000017 | Jan. 23, 15 | Jan. 31, 16 |

Measuring Equipment Configuration

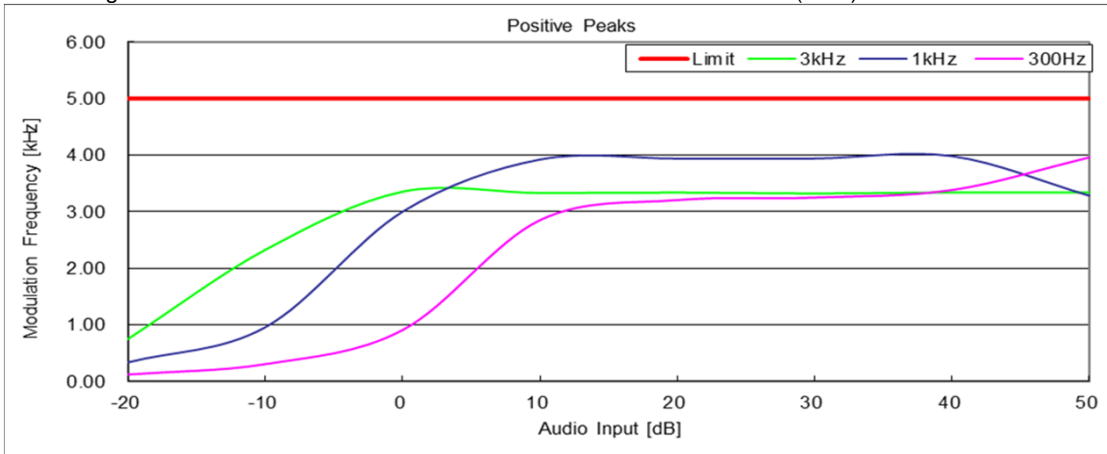


Test Results

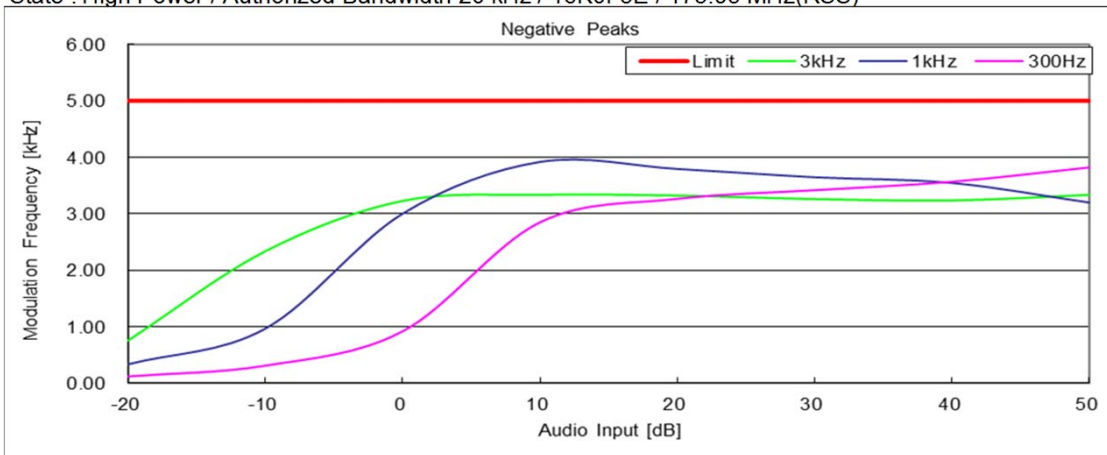
| | | | |
|----------------------|------------------------|------------|--|
| Test date | Jun 24, 2015 | | |
| Location | Kashima No.1 Test Site | | |
| temperature | 26 | [degree C] | |
| Humidity Variation | 50 | [%] | |
| Atmospheric Pressure | 101 | [kPa] | |
| Test Engineer | Koichi Wagatsuma | | |

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

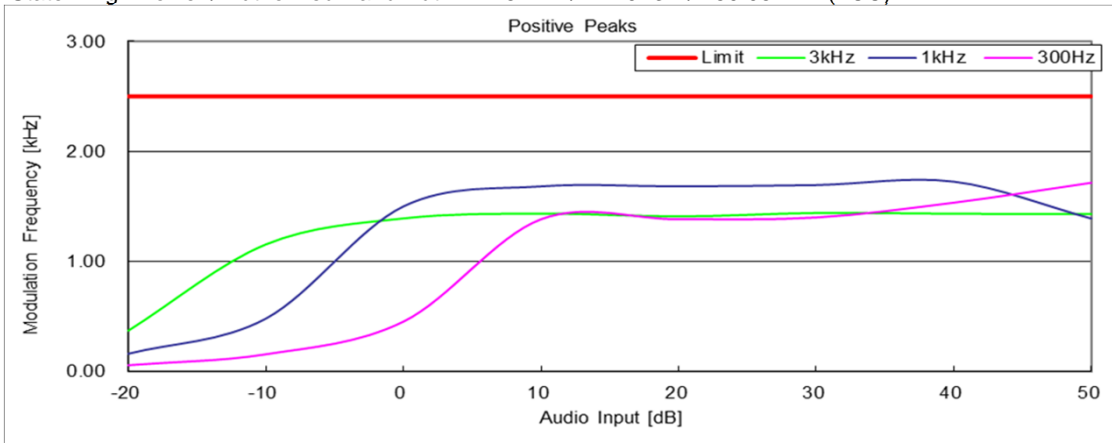
State : High Power / Authorized Bandwidth 20 kHz / 16K0F3E / 173.95 MHz(RSS)



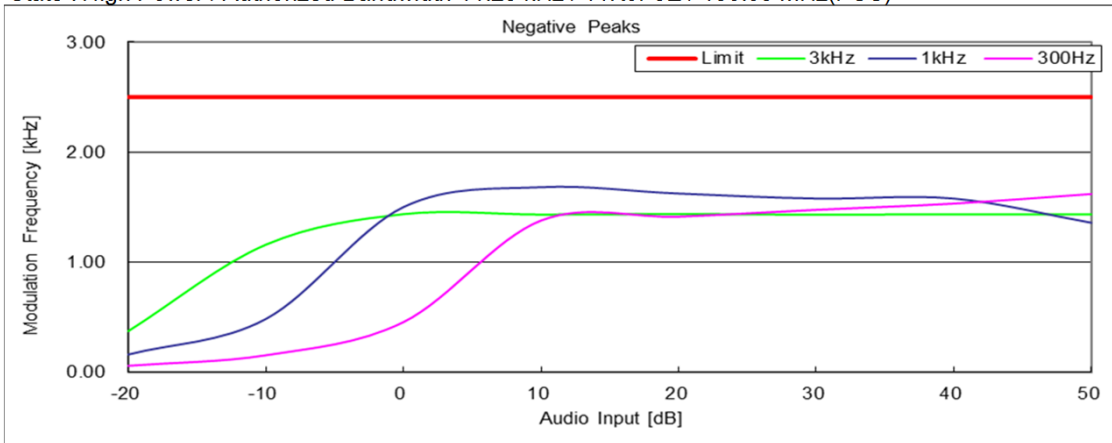
State : High Power / Authorized Bandwidth 20 kHz / 16K0F3E / 173.95 MHz(RSS)



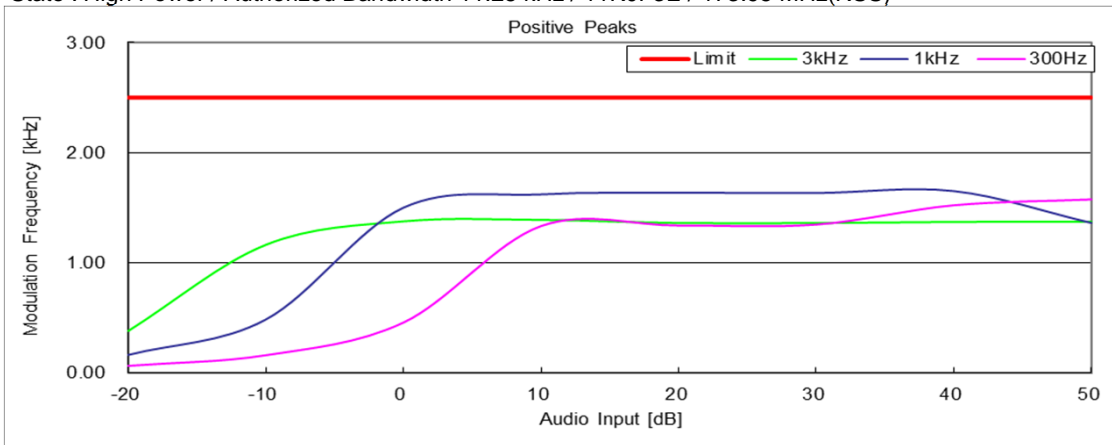
State : High Power / Authorized Bandwidth 11.25 kHz / 11K0F3E / 150.05 MHz(FCC)



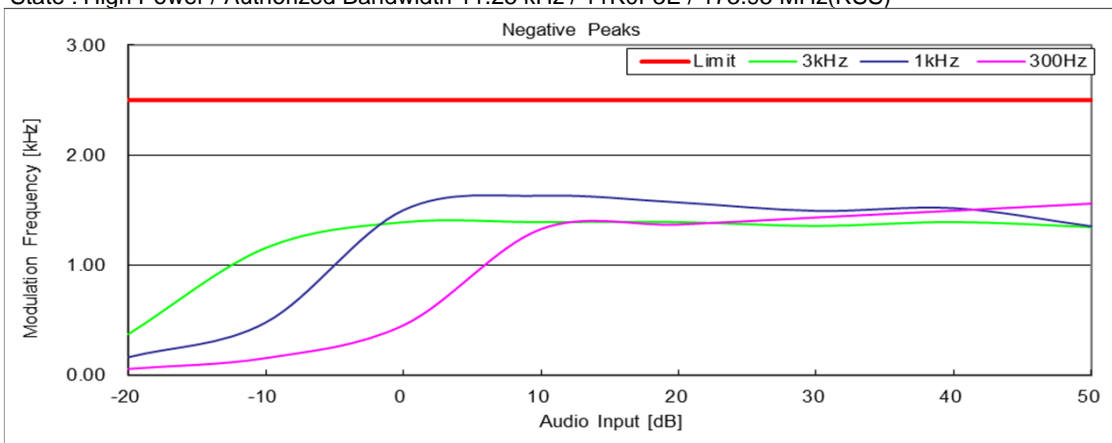
State : High Power / Authorized Bandwidth 11.25 kHz / 11K0F3E / 150.05 MHz(FCC)



State : High Power / Authorized Bandwidth 11.25 kHz / 11K0F3E / 173.95 MHz(RSS)



State : High Power / Authorized Bandwidth 11.25 kHz / 11K0F3E / 173.95 MHz(RSS)



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-D 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.
One 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.

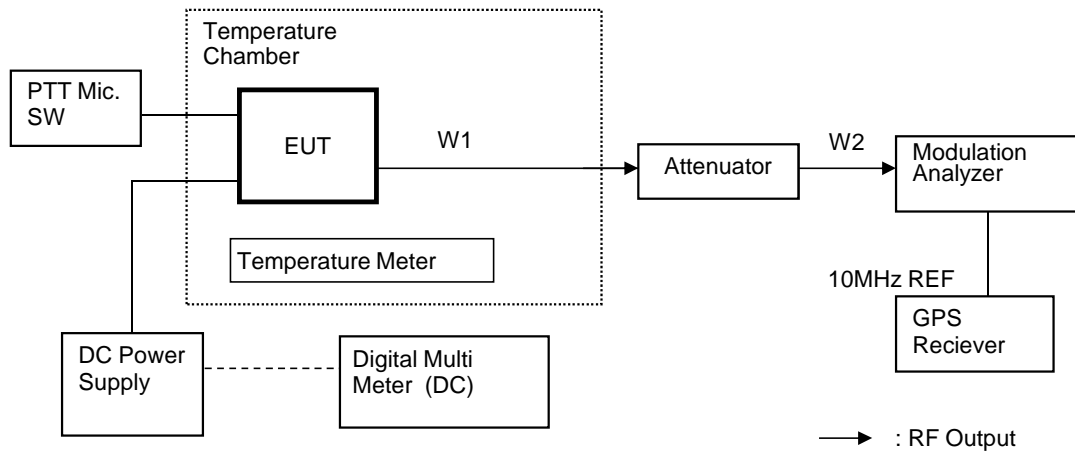
Measuring Equipments

| No. | Equipment | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------------|------------------|---------------|------------|-------------|-------------|
| 1 | Attenuator (10dB) | Aeroflex/Wenshel | 66-10-34 | BY2887 | Jun. 01, 15 | Jun. 30, 16 |
| 2 | Attenuator (30dB) | Weinschel | WA-29-30-34 | 8924 | Jun. 01, 15 | Jun. 30, 16 |
| 3 | Modulation Analyzer | Hewlett Packard | 8901B | 3403A04852 | Nov. 14, 14 | Nov. 30, 15 |
| 4 | DC Power Supply | Takasago | GP035-20R | 1014199060 | None | None |
| 5 | Digital Multi Meter | FLUKE | 8846A | 9642018 | Jul. 10, 15 | Jul. 31, 16 |
| 6 | Temperature Chamber | Tabai | PL-3F | 5103661 | None | None |
| 7 | Temperature Meter | Sato | PC-5000TRH-II | A11999972 | Jun. 23, 15 | Jun. 30, 16 |
| 8 | 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 | KSR00042 | Jun. 09, 15 | Jun. 30, 16 |
| W2 | Coaxial Cable | Suhner | SUCOFLEX104 | KSR00091 | Jun. 09, 15 | Jun. 30, 16 |

Measuring Equipment Configuration



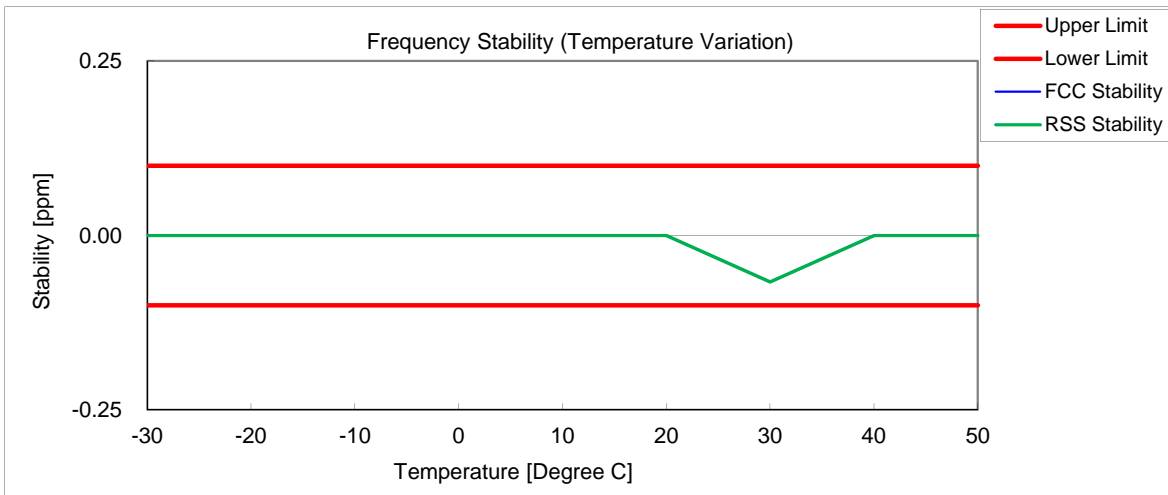
Test Results

| | | | |
|---------------|------------------------|----|--------------|
| Test date | Jul 28, 2015 | to | Jul 29, 2015 |
| Location | Kashima No.1 Test Site | | |
| Test Engineer | Koichi Wagatsuma | | |

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

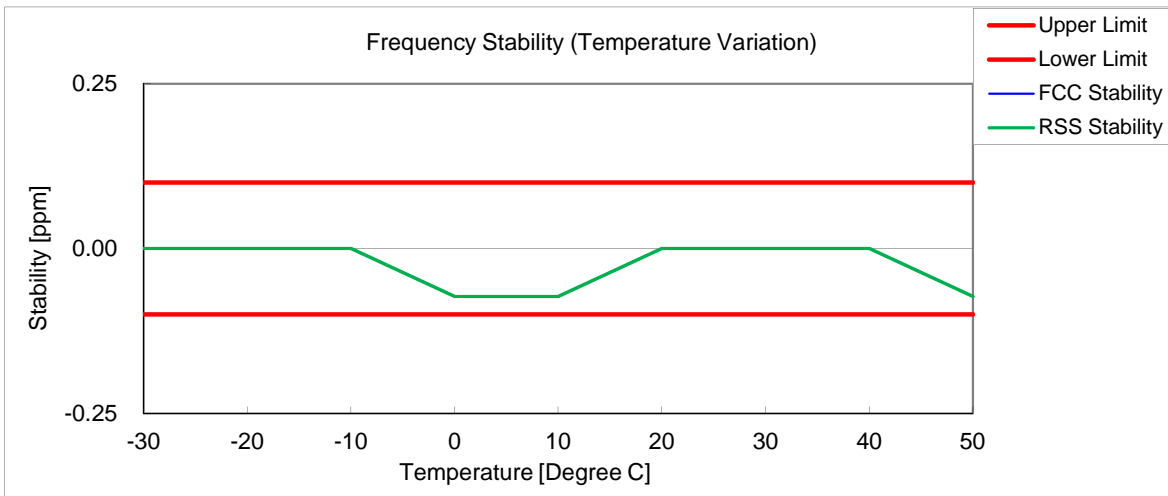
State : High Power / Authorized Bandwidth 11.25 kHz / 150.05 MHz (FCC)(with OCXO)
 Reference Frequency: 150.050000 MHz(FCC Stability)
 150.050000 MHz(RSS Stability)

| No. | Temperature (Degree C) | Frequency (MHz) | FCC Stability (ppm) | RSS Stability (ppm) | Limit (+/- ppm) | Min. Margin (ppm) |
|-----|------------------------|-----------------|---------------------|---------------------|-----------------|-------------------|
| 1 | -30 | 150.050000 | 0.00 | 0.00 | 0.1 | 0.10 |
| 2 | -20 | 150.050000 | 0.00 | 0.00 | 0.1 | 0.10 |
| 3 | -10 | 150.050000 | 0.00 | 0.00 | 0.1 | 0.10 |
| 4 | 0 | 150.050000 | 0.00 | 0.00 | 0.1 | 0.10 |
| 5 | 10 | 150.050000 | 0.00 | 0.00 | 0.1 | 0.10 |
| 6 | 20 | 150.050000 | 0.00 | 0.00 | 0.1 | 0.10 |
| 7 | 30 | 150.049990 | -0.07 | -0.07 | 0.1 | 0.03 |
| 8 | 40 | 150.050000 | 0.00 | 0.00 | 0.1 | 0.10 |
| 9 | 50 | 150.050000 | 0.00 | 0.00 | 0.1 | 0.10 |



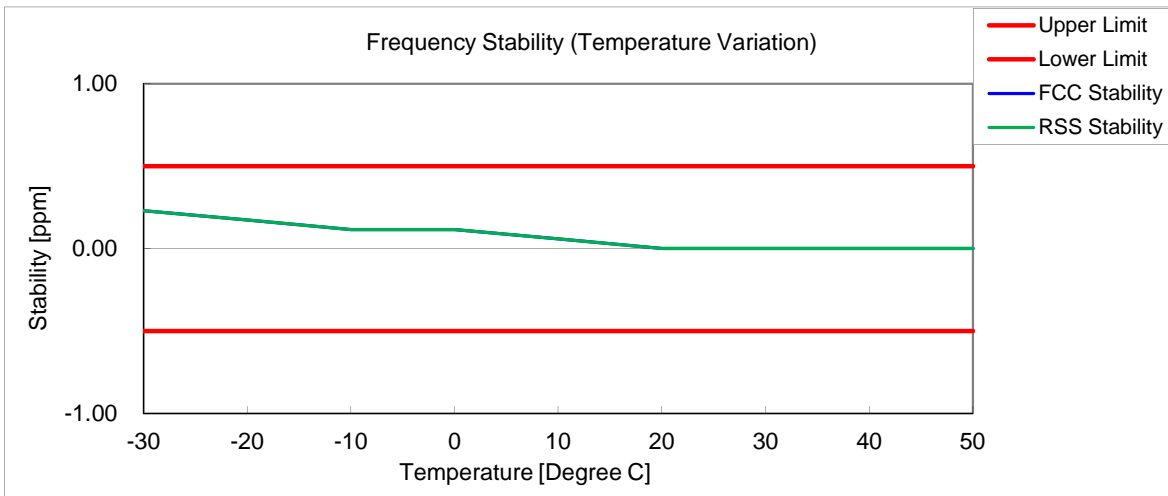
State : High Power / Authorized Bandwidth 20 kHz / 138.05 MHz (RSS)(with OCXO)
 Reference Frequency: 138.050000 MHz(FCC Stability)
 138.050000 MHz(RSS Stability)

| No. | Temperature (Degree C) | Frequency (MHz) | FCC Stability (ppm) | RSS Stability (ppm) | Limit (+/- ppm) | Min. Margin (ppm) |
|-----|------------------------|-----------------|---------------------|---------------------|-----------------|-------------------|
| 1 | -30 | 138.050000 | 0.00 | 0.00 | 0.1 | 0.10 |
| 2 | -20 | 138.050000 | 0.00 | 0.00 | 0.1 | 0.10 |
| 3 | -10 | 138.050000 | 0.00 | 0.00 | 0.1 | 0.10 |
| 4 | 0 | 138.049990 | -0.07 | -0.07 | 0.1 | 0.03 |
| 5 | 10 | 138.049990 | -0.07 | -0.07 | 0.1 | 0.03 |
| 6 | 20 | 138.050000 | 0.00 | 0.00 | 0.1 | 0.10 |
| 7 | 30 | 138.050000 | 0.00 | 0.00 | 0.1 | 0.10 |
| 8 | 40 | 138.050000 | 0.00 | 0.00 | 0.1 | 0.10 |
| 9 | 50 | 138.049990 | -0.07 | -0.07 | 0.1 | 0.03 |



State : High Power / Authorized Bandwidth 11.25 kHz / 173.95 MHz (FCC)(Without OCXO)
 Reference Frequency: 173.950000 MHz(FCC Stability)
 173.950000 MHz(RSS Stability)

| No. | Temperature (Degree C) | Frequency (MHz) | FCC Stability (ppm) | RSS Stability (ppm) | Limit (+/- ppm) | Min. Margin (ppm) |
|-----|------------------------|-----------------|---------------------|---------------------|-----------------|-------------------|
| 1 | -30 | 173.950040 | 0.23 | 0.23 | 0.5 | 0.27 |
| 2 | -20 | 173.950030 | 0.17 | 0.17 | 0.5 | 0.33 |
| 3 | -10 | 173.950020 | 0.11 | 0.11 | 0.5 | 0.39 |
| 4 | 0 | 173.950020 | 0.11 | 0.11 | 0.5 | 0.39 |
| 5 | 10 | 173.950010 | 0.06 | 0.06 | 0.5 | 0.44 |
| 6 | 20 | 173.950000 | 0.00 | 0.00 | 0.5 | 0.50 |
| 7 | 30 | 173.950000 | 0.00 | 0.00 | 0.5 | 0.50 |
| 8 | 40 | 173.950000 | 0.00 | 0.00 | 0.5 | 0.50 |
| 9 | 50 | 173.950000 | 0.00 | 0.00 | 0.5 | 0.50 |

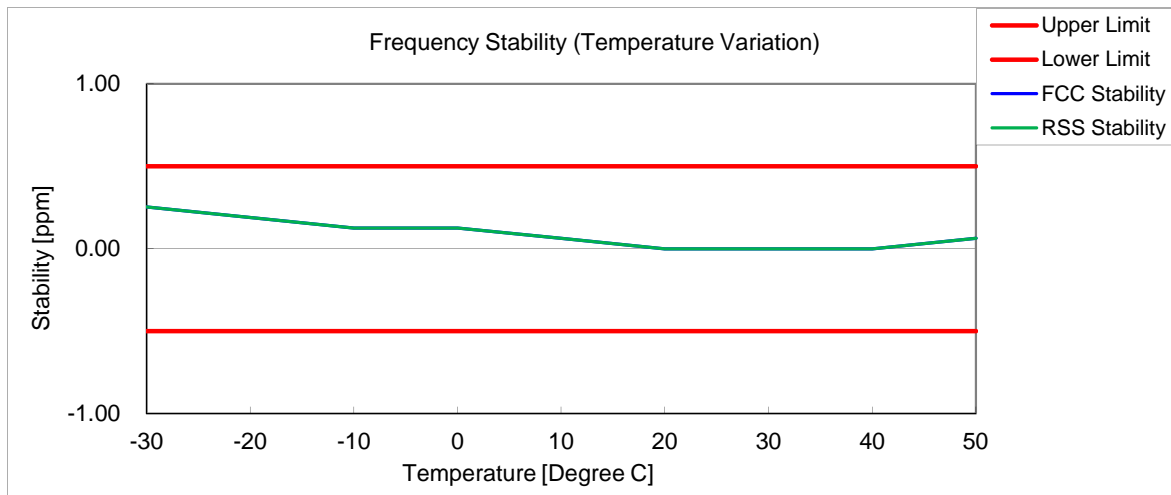


State : High Power / Authorized Bandwidth 20 kHz / 158.05 MHz (RSS)(Without OCXO)

Reference Frequency: 158.050000 MHz(FCC Stability)

158.050000 MHz(RSS Stability)

| No. | Temperature (Degree C) | Frequency (MHz) | FCC Stability (ppm) | RSS Stability (ppm) | Limit (+/- ppm) | Min. Margin (ppm) |
|-----|------------------------|-----------------|---------------------|---------------------|-----------------|-------------------|
| 1 | -30 | 158.050040 | 0.25 | 0.25 | 0.5 | 0.25 |
| 2 | -20 | 158.050030 | 0.19 | 0.19 | 0.5 | 0.31 |
| 3 | -10 | 158.050020 | 0.13 | 0.13 | 0.5 | 0.37 |
| 4 | 0 | 158.050020 | 0.13 | 0.13 | 0.5 | 0.37 |
| 5 | 10 | 158.050010 | 0.06 | 0.06 | 0.5 | 0.44 |
| 6 | 20 | 158.050000 | 0.00 | 0.00 | 0.5 | 0.50 |
| 7 | 30 | 158.050000 | 0.00 | 0.00 | 0.5 | 0.50 |
| 8 | 40 | 158.050000 | 0.00 | 0.00 | 0.5 | 0.50 |
| 9 | 50 | 158.050010 | 0.06 | 0.06 | 0.5 | 0.44 |



10.9 Frequency Stability (Voltage Variation)

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

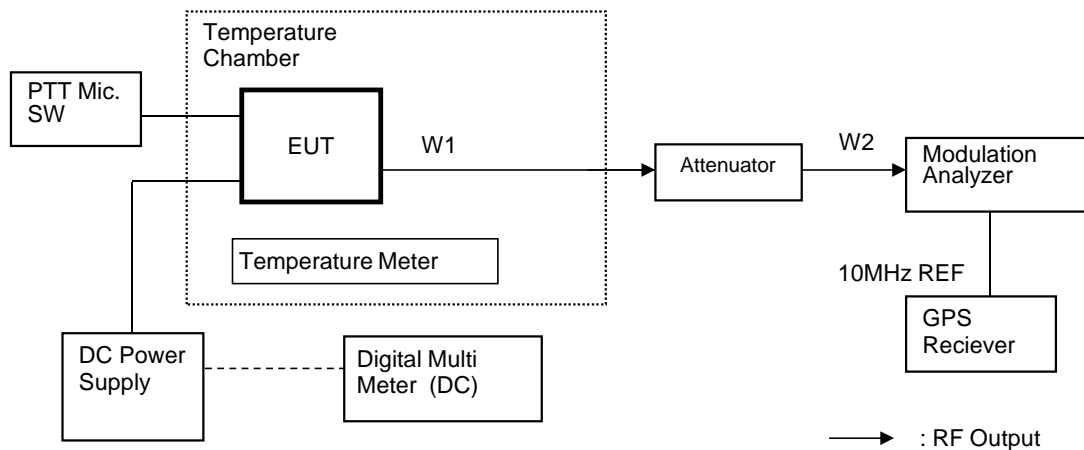
Measuring Equipments

| No. | Equipment | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------------|------------------|---------------|------------|-------------|-------------|
| 1 | Attenuator (10dB) | Aeroflex/Wenshel | 66-10-34 | BY2887 | Jun. 01, 15 | Jun. 30, 16 |
| 2 | Attenuator (30dB) | Weinschel | WA-29-30-34 | 8924 | Jun. 01, 15 | Jun. 30, 16 |
| 3 | Modulation Analyzer | Hewlett Packard | 8901B | 3403A04852 | Nov. 14, 14 | Nov. 30, 15 |
| 4 | DC Power Supply | Takasago | GP035-20R | 1014199060 | None | None |
| 5 | Digital Multi Meter | FLUKE | 8846A | 9642018 | Jul. 10, 15 | Jul. 31, 16 |
| 6 | Temperature Chamber | Tabai | PL-3F | 5103661 | None | None |
| 7 | Temperature Meter | Sato | PC-5000TRH-II | A11999972 | Jun. 23, 15 | Jun. 30, 16 |
| 8 | 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 | KSR00042 | Jun. 09, 15 | Jun. 30, 16 |
| W2 | Coaxial Cable | Suhner | SUCOFLEX104 | KSR00091 | Jun. 09, 15 | Jun. 30, 16 |

Measuring Equipment Configuration



Test Results

| | | | |
|---------------|------------------------|----|--------------|
| Test date | Jul 28, 2015 | to | Jul 29, 2015 |
| Location | Kashima No.1 Test Site | | |
| Test Engineer | Koichi Wagatsuma | | |

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 / 150.05 MHz (With OCXO)(FCC)

Reference Frequency: 150.050000 MHz

| No. | Temperature (Degree C) | Diviation (%) | Voltage (V) | Frequency (MHz) | Stability (ppm) | Limit +/- (ppm) | Margin (ppm) |
|-----|---------------------------|------------------|----------------|--------------------|--------------------|--------------------|-----------------|
| 1 | 20+/-5 | 85 | 11.56 | 150.049990 | -0.07 | 0.1 | 0.03 |
| 2 | 20+/-5 | 100 | 13.60 | 150.050000 | 0.00 | 0.1 | 0.10 |
| 3 | 20+/-5 | 115 | 15.64 | 150.050000 | 0.00 | 0.1 | 0.10 |

State : High Power / Authorized Bandwidth 20 kHz / 138.05 MHz (With OCXO)(RSS)

Reference Frequency: 138.050000 MHz

| No. | Temperature (Degree C) | Diviation (%) | Voltage (V) | Frequency (MHz) | Stability (ppm) | Limit +/- (ppm) | Margin (ppm) |
|-----|---------------------------|------------------|----------------|--------------------|--------------------|--------------------|-----------------|
| 1 | 20+/-5 | 85 | 11.56 | 138.050000 | 0.00 | 0.1 | 0.10 |
| 2 | 20+/-5 | 100 | 13.60 | 138.050000 | 0.00 | 0.1 | 0.10 |
| 3 | 20+/-5 | 115 | 15.64 | 138.049990 | -0.07 | 0.1 | 0.03 |

State : High Power / Authorized Bandwidth 11.25 kHz / 173.95 MHz (Without OCXO)(FCC)

Reference Frequency: 173.950000 MHz

| No. | Temperature (Degree C) | Diviation (%) | Voltage (V) | Frequency (MHz) | Stability (ppm) | Limit +/- (ppm) | Margin (ppm) |
|-----|---------------------------|------------------|----------------|--------------------|--------------------|--------------------|-----------------|
| 1 | 20+/-5 | 85 | 11.22 | 173.949990 | -0.06 | 0.5 | 0.44 |
| 2 | 20+/-5 | 100 | 13.20 | 173.950000 | 0.00 | 0.5 | 0.50 |
| 3 | 20+/-5 | 115 | 15.18 | 173.950000 | 0.00 | 0.5 | 0.50 |

State : High Power / Authorized Bandwidth 20 kHz / 138.05 MHz (Without OCXO)(RSS)

Reference Frequency: 138.050000 MHz

| No. | Temperature (Degree C) | Diviation (%) | Voltage (V) | Frequency (MHz) | Stability (ppm) | Limit +/- (ppm) | Margin (ppm) |
|-----|---------------------------|------------------|----------------|--------------------|--------------------|--------------------|-----------------|
| 1 | 20+/-5 | 85 | 11.22 | 138.050000 | 0.00 | 0.5 | 0.50 |
| 2 | 20+/-5 | 100 | 13.20 | 138.049990 | -0.07 | 0.5 | 0.43 |
| 3 | 20+/-5 | 115 | 15.18 | 138.049990 | -0.07 | 0.5 | 0.43 |

10.10 Receiver Spurious Emissions(Radiated)

| | | |
|-------------------|---|---|
| REGULATIONS | : | RSS-119 Section 5.11, RSS-Gen Section 7 |
| TEST METHOD/GUIDE | : | RSS-Gen Section 7 |

TEST PROCEDURE

- 1 The EUT and test equipment were set up as shown on the following page.
- 2 Tabletop Equipment
EUT is placed on the wooden table, the top of which is 0.8meter above the metal ground plane(turntable).
- 3 Interconnecting Cables
Excess part of the interconnecting cables longer than 1 meter are bundled in the center. Cables that hang closer than 40 cm to the ground plane is folded back and forth forming bundle to 40 cm long, hanging approx, in the middle between ground plane and table.
- 4 Measuring Instruments
Measuring instruments list and their calibration schedule are shown on Measurement Equipment Configuration.
The brief description are as follows;
- 5 Antennas
The broadband Bi-cog antenna is used for measurement on the frequency range 30 – 1000 MHz.
The Double ridged guide antenna is used for frequency higher than 1000 MHz.
- 6 Pre-amplifier
The broadband pre-amplifier is used for radiated emission measurement.
The signal to noise ratio is improved by using pre-amplifier.
- 7 Spectrum Analyzer
The spectrum analyzer is used for preliminary measurement of frequency range 30 – 1000 MHz, and also used for final measurement of higher than 1000 MHz (RBW : 1 MHz).
- 8 EMI Test Receiver
The Quasi-peak detector (IF bandwidth : 120 kHz) built in test receiver is used for final measurement of the frequency 30 – 1000 MHz.
The test receiver is complied with the specification of the CISPR publication 16.
- 9 Turntable
The turntable is capable for EUT weight and rotatable 0 to 360 degree horizontally by remote control in the test room.
- 10 Antenna Mast
The antenna mast is attachable to all antennas described on antenna height is adjustable 1 to 4 meters continuously by remote control at the test room, and antenna polarization is also changed by the remote control.
- 11 Preliminary Measurement
EUT is tested on all operating conditions.
The spectrum analyzer is set max-hold mode and swept during turntable was rotated 0 to 360 degree. Then spectrum chart are plotted out to find the worst emission conditions in configuration, operating mode, or ambient noise notation.

12 Final Measurement

The EUT operated in the condition where maximum emission is found in the preliminary test.

The turntable azimuth(EUT direction) and antenna height are adjusted the position

so that maximum field strength is obtained for each frequency spectrum to be measured.

The equipment and cables are arranged or manipulated within the range of the test standard in the above condition.

When the uncertain result was obtained, the measurement is retried by using the half wave dipole antenna instead of the broadband antenna.

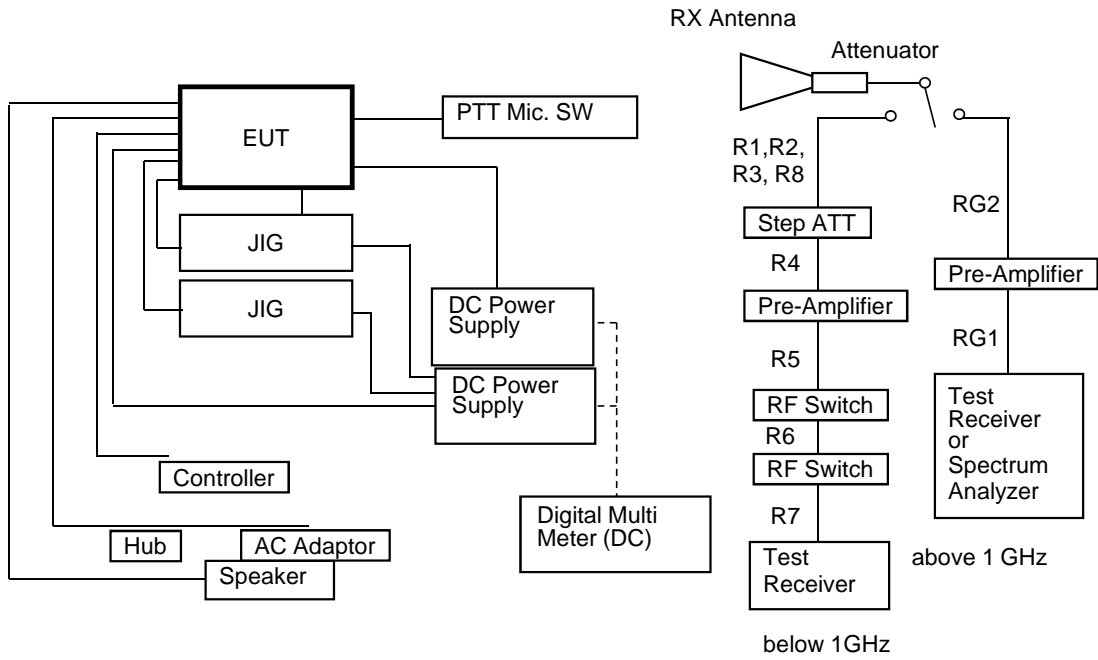
TEST EQUIPMENTS

| No. | Equipment | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|-----------------------|-----------------|---------------|------------|-------------|-------------|
| 1 | Biconical Antenna | Schwarzbeck | BBA9106 | A12082007 | Jun. 26, 15 | Jun. 30, 16 |
| 2 | Log periodic Antenna | Schwarzbeck | USLP9143B | 9143B040 | May. 20, 15 | May. 31, 16 |
| 3 | 6dB Attenuator | TAMAGAWA | CFA-01(NPJ-6) | F0100002 | Apr. 23, 15 | Apr. 30, 16 |
| 4 | Step Attenuator | Hewlett Packard | 8494B | 2805A14560 | Apr. 23, 15 | Apr. 30, 16 |
| 5 | Amplifier | Hewlett Packard | 8447D | 2443A04415 | Apr. 23, 15 | Apr. 30, 16 |
| 6 | Double ridged antenna | EMCO | 3115 | 9903-5699 | Jul. 04, 14 | Jul. 31, 15 |
| 7 | 6dB Attenuator | Agilent | 8493C | 75550 | Jul. 01, 14 | Jul. 31, 15 |
| 8 | Amplifier | Hewlett Packard | 8449B | 3008A01182 | Jul. 01, 14 | Jul. 31, 15 |
| 9 | Spectrum analyzer | Hewlett Packard | 8563E | 3821A09565 | May. 22, 15 | May. 31, 16 |
| 10 | Site Attenuation | Intertek | | | Aug. 12, 14 | Aug. 31, 15 |
| 11 | SVSWR | Intertek | | | Aug. 11, 14 | Aug. 31, 15 |

USED CABLES

| No. | Cable | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------|-------------|-----------|------------|------------|-------------|
| R1 | Coaxial cable | Intertek | 5D-2W | 1R1001a | Apr 23, 15 | Apr. 30, 16 |
| R2 | Coaxial cable | Intertek | RG-177/U | 1R1002 | Apr 23, 15 | Apr. 30, 16 |
| R3 | Coaxial cable | Intertek | RG-5A/U | 1R1003 | Apr 23, 15 | Apr. 30, 16 |
| R4 | Coaxial cable | Intertek | RG-5A/U | 1R1004 | Apr 23, 15 | Apr. 30, 16 |
| R5 | Coaxial cable | Intertek | 5D-2W | 1R1005 | Apr 23, 15 | Apr. 30, 16 |
| R6 | Coaxial cable | Intertek | 5D-2W | 1R1006 | Apr 23, 15 | Apr. 30, 16 |
| R7 | Coaxial cable | Intertek | 5D-2W | 1R1007a | Apr 23, 15 | Apr. 30, 16 |
| R8 | Coaxial cable | Intertek | 5D-2W | 1R1008a | Apr 23, 15 | Apr. 30, 16 |
| RG1 | Coaxial cable | SUHNER | S 04272 B | 25799 | Jul 23, 14 | Jul. 31, 15 |
| RG2 | Coaxial cable | SUHNER | SUCOFLEX | 290800/4 | Jul 01, 14 | Jul. 31, 15 |

MEASUREMENT EQUIPMENT CONFIGURATION



TEST RESULTS

| | |
|----------------------|---------------------------------|
| Test date | Jul. 15, 2015 and Jul. 17, 2015 |
| Location | Tochigi No.1 Test Site |
| temperature | 22 to 27 [degree C] |
| Humidity Variation | 50 to 61 [%] |
| Atmospheric Pressure | 100.4 to 101 [kPa] |
| Test Engineer | Toru Fukuda |

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

State : 158.05 MHz Receiver Condition (OCXO External)

| No. | Frequency (MHz) | Pol | Mode | Reading Level (dBuv) | Factor* (dB) | Emission Level (dBuV/m) | Limit Level (dBuV/m) | Margin (dB) |
|-----|-----------------|------|------|----------------------|--------------|-------------------------|----------------------|-------------|
| 1 | 37.17 | Hor. | | - | -6.5 | - | 40.0 | - |
| | | Ver. | | 41.6 | -6.5 | 35.1 | 40.0 | 4.9 |
| 2 | 107.22 | Hor. | | 32.8 | -9.5 | 23.3 | 43.5 | 20.2 |
| | | Ver. | | 37.0 | -9.5 | 27.5 | 43.5 | 16.0 |
| 3 | 216.10 | Hor. | | - | -2.4 | - | 46.0 | - |
| | | Ver. | | 38.1 | -2.4 | 35.7 | 46.0 | 10.3 |
| 4 | 648.30 | Hor. | | 24.2 | 3.9 | 28.1 | 46.0 | 17.9 |
| | | Ver. | | 24.2 | 3.9 | 28.1 | 46.0 | 17.9 |
| 5 | 740.00 | Hor. | | - | 6.0 | - | 46.0 | - |
| | | Ver. | | 35.8 | 6.0 | 41.8 | 46.0 | 4.2 |
| 6 | 780.00 | Hor. | | - | 7.3 | - | 46.0 | - |
| | | Ver. | | 35.4 | 7.3 | 42.7 | 46.0 | 3.3 |
| 7 | 830.00 | Hor. | | 23.5 | 8.2 | 31.7 | 46.0 | 14.3 |
| | | Ver. | | 24.9 | 8.2 | 33.1 | 46.0 | 12.9 |
| 8 | 1375.00 | Hor. | AVG | - | 0.9 | - | 54.0 | - |
| | | Ver. | AVG | 33.8 | 0.9 | 34.7 | 54.0 | 19.3 |
| 9 | 1944.90 | Hor. | AVG | 32.3 | 4.3 | 36.6 | 54.0 | 17.4 |
| | | Ver. | AVG | 32.3 | 4.3 | 36.6 | 54.0 | 17.4 |

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

* Factor = Antenna, Antenna Pad, Cable, Preamp

Emission Level = Reading Level + Factor

Note:

- 1 Measurement distance is 3 metres. (Above 1GHz is 3.79 meteres)
- 2 Scanned frequency are 30 to 2000 MHz.
- 3 Highest oscillator frequency is 232.05 MHz.

10.11 Necessary Bandwidth and Emission Bandwidth

| | |
|-------------|--|
| REGULATIONS | : FCC Part 2 Section 202 (g) & Federal Register/ Vol.68, No236 TRC 43 |
|-------------|--|

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 |

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

State : 8K30F1E / 8K30F1D / 8K30F7W (4Level FSK / 9600bps, Authorized Bandwidth 11.25 kHz)

| Item | Mark | | |
|--------------------------|------|-------|-----|
| Digital information rate | (R) | 9600 | bps |
| Peak frequency deviation | (D) | 3.391 | kHz |
| Signaling states | (S) | 4 | |
| Numerical factor | (K) | 0.516 | |
| Necessary Bandwidth | (Bn) | 8.3 | kHz |

$B_n = (R / \log_2 S) + 2 \times D \times K$

State : 4K00F1E / 4K00F1D / 4K00F7W (4Level FSK / 4800bps, Authorized Bandwidth 6 kHz)

| Item | Mark | | |
|--------------------------|------|-------|-----|
| Digital information rate | (R) | 4800 | bps |
| Peak frequency deviation | (D) | 1.55 | kHz |
| Signaling states | (S) | 4 | |
| Numerical factor | (K) | 0.516 | |
| Necessary Bandwidth | (Bn) | 4 | kHz |

$B_n = (R / \log_2 S) + 2 \times D \times K$

State : 4K00F2D (CWID, Authorized Bandwidth 6 kHz)

| Item | Mark | | |
|---------------------|------|-----|-----|
| Maximum Modulation | (M) | 0.8 | kHz |
| Maximum Deviation | (D) | 1.2 | kHz |
| Numerical factor | (K) | 1 | |
| Necessary Bandwidth | (Bn) | 4 | kHz |

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

10.12 99% Occupied Bandwidth

| | |
|-------------------|-----------------------|
| REGULATIONS | : RSS-119 Section 5.5 |
| TEST METHOD/GUIDE | : RSS-Gen Section 6.6 |

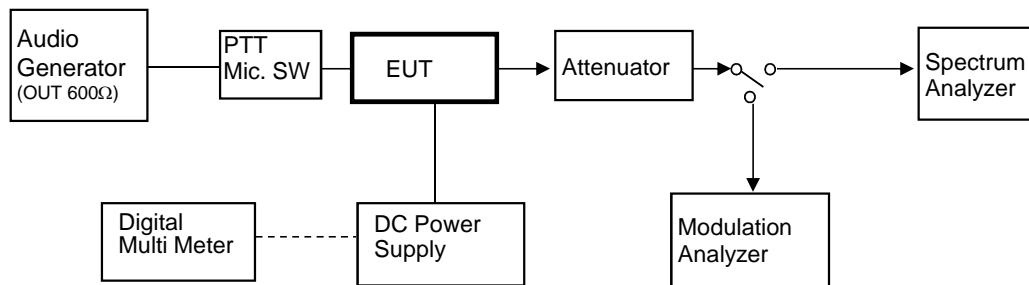
Test Procedure

- 1 The EUT and test equipment were set up as shown on the following page.
- 2 Adjust the test instrument for the following setting:
 - RBW : 1 % to 5 % of the Necessary bandwidth
 - VBW : at least 3 times the RBW
 - Detector : Peak
 - Sweep Time : Auto
 - Trace mode : Max Hold
- 3 Allow trace to fully stabilize.
- 4 Use "Occupied Bandwidth Measurement" function to measure the 99% Occupied Bandwidth.
- 5 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.(Only 16K0F3E, 11K0F3E)

Measuring Equipments

| No. | Equipment | Manufacture | Model No. | Serial No. | Cal Date | Cal Exp. |
|-----|---------------------|---------------------|-------------|------------|---------------|---------------|
| 1 | Attenuator (10dB) | Aeroflex/Wenshel | 66-10-34 | BY2887 | Jun. 01, 2015 | Jun. 30, 2016 |
| 2 | Attenuator (30dB) | Weinschel | WA-29-30-34 | 8923 | Jun. 01, 2015 | Jun. 30, 2016 |
| 3 | Modulation Analyzer | Hewlett Packard | 8901B | 2806A01669 | Oct. 13, 2014 | Oct. 31, 2015 |
| 4 | Audio Generator | Anritsu | MG443B | M70150 | Jun. 18, 2015 | Jun. 30, 2016 |
| 5 | Spectrum Analyzer | Agilent | N9030A | US51350220 | Jul. 03, 2014 | Jul. 31, 2015 |
| 6 | DC Power Supply | Daiichi denpa kogyo | GZV4000 | 90290931 | None | None |
| 7 | Digital Multi Meter | FLUKE | 8846A | 9642018 | Jun. 04, 2014 | Jun. 30, 2015 |
| 8 | Balance Cable | Nicoon | 3D-2V | KSR00092 | Jan. 23, 2015 | Jan. 31, 2016 |
| 9 | Coaxial Cable | Pacific custom | RG-58 C/U | AM90C04 | Jun. 09, 2015 | Jun. 30, 2016 |
| 10 | Coaxial Cable | Suhner | SUCOFLEX104 | F0000017 | Jan. 23, 2015 | Jan. 31, 2016 |
| 11 | Coaxial Cable | Suhner | SUCOFLEX104 | F0000018 | Jan. 23, 2015 | Jan. 31, 2016 |

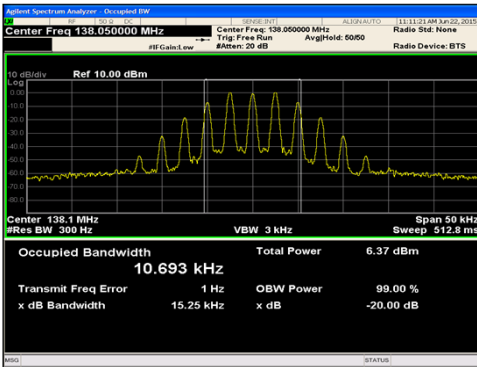
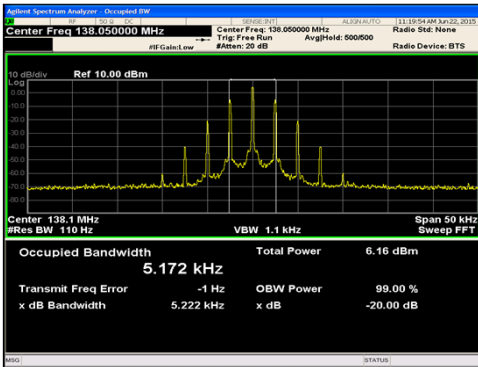
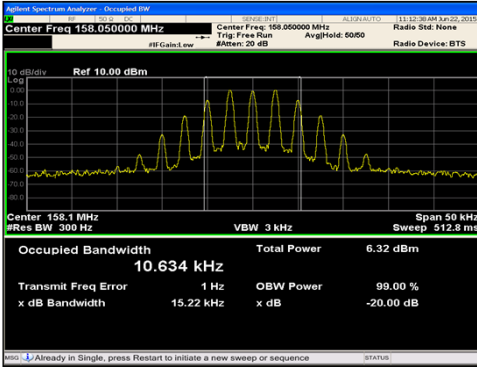
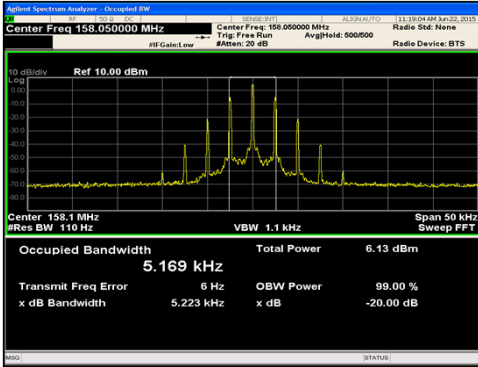
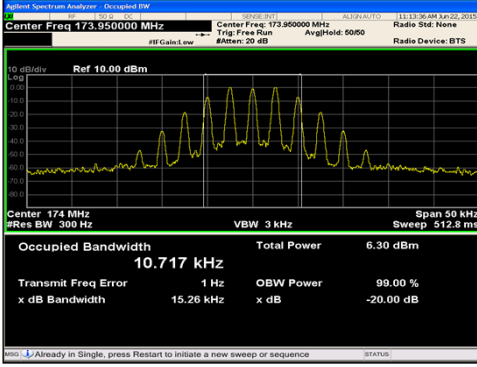
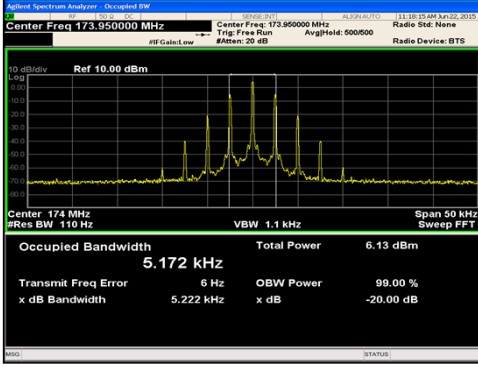
Measuring Equipment Configuration



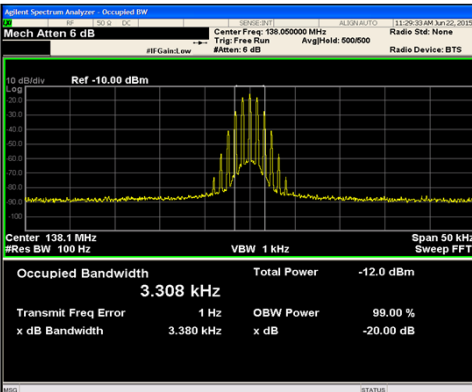
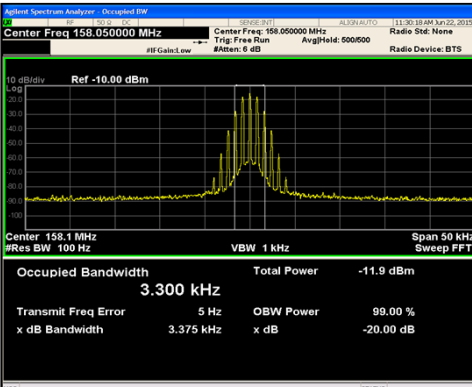
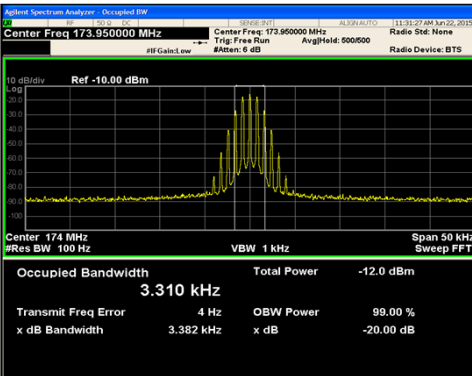
Test Results

| | | |
|----------------------|------------------------|------------|
| Test date | Jun 23, 2015 | |
| Location | Kashima No.1 Test Site | |
| temperature | 20 | [degree C] |
| Humidity Variation | 60 | [%] |
| Atmospheric Pressure | 101 | [kPa] |
| Test Engineer | Koichi Wagatsuma | |

| Emission Designation | Frequency (MHz) | 99% Occupied Bandwidth (kHz) | Authorized bandwidth (kHz) |
|----------------------|--------------------|------------------------------------|----------------------------------|
| 16K0F3E | 138.05 | 10.693 | 20 |
| | 158.05 | 10.634 | |
| | 173.95 | 10.717 | |
| 11K0F3E | 138.05 | 5.172 | 11.25 |
| | 158.05 | 5.169 | |
| | 173.95 | 5.172 | |
| 8K30F1E/F1D/F7W | 138.05 | 7.169 | 11.25 |
| | 158.05 | 7.052 | |
| | 173.95 | 7.182 | |
| 4K00F1E/F1D/F7W | 138.05 | 3.247 | 6 |
| | 158.05 | 3.180 | |
| | 173.95 | 3.251 | |
| 4K00F2D | 138.05 | 3.308 | 6 |
| | 158.05 | 3.300 | |
| | 173.95 | 3.310 | |

| Frequency (MHz) | Emission Designation | |
|-----------------|---|--|
| | 16K0F3E | 11K0F3E |
| 138.05 |  <p>Agilent Spectrum Analyzer - Occupied BW Center Freq 138.050000 MHz #Res BW 300 Hz #VBW 3 kHz Span 50 kHz Sweep 512.8 ms Occupied Bandwidth 10.693 kHz Total Power 6.37 dBm Transmit Freq Error 1 Hz x dB Bandwidth 15.25 kHz x dB -20.00 dB</p> |  <p>Agilent Spectrum Analyzer - Occupied BW Center Freq 138.050000 MHz #Res BW 110 Hz #VBW 1.1 kHz Span 50 kHz Sweep FFT Occupied Bandwidth 5.172 kHz Total Power 6.16 dBm Transmit Freq Error -1 Hz x dB Bandwidth 5.222 kHz x dB -20.00 dB</p> |
| 158.05 |  <p>Agilent Spectrum Analyzer - Occupied BW Center Freq 158.050000 MHz #Res BW 300 Hz #VBW 3 kHz Span 50 kHz Sweep 512.8 ms Occupied Bandwidth 10.634 kHz Total Power 6.32 dBm Transmit Freq Error 1 Hz x dB Bandwidth 15.22 kHz x dB -20.00 dB</p> |  <p>Agilent Spectrum Analyzer - Occupied BW Center Freq 158.050000 MHz #Res BW 110 Hz #VBW 1.1 kHz Span 50 kHz Sweep FFT Occupied Bandwidth 5.169 kHz Total Power 6.13 dBm Transmit Freq Error 6 Hz x dB Bandwidth 5.223 kHz x dB -20.00 dB</p> |
| 173.95 |  <p>Agilent Spectrum Analyzer - Occupied BW Center Freq 173.950000 MHz #Res BW 300 Hz #VBW 3 kHz Span 50 kHz Sweep 512.8 ms Occupied Bandwidth 10.717 kHz Total Power 6.30 dBm Transmit Freq Error 1 Hz x dB Bandwidth 15.26 kHz x dB -20.00 dB</p> |  <p>Agilent Spectrum Analyzer - Occupied BW Center Freq 173.950000 MHz #Res BW 110 Hz #VBW 1.1 kHz Span 50 kHz Sweep FFT Occupied Bandwidth 5.172 kHz Total Power 6.13 dBm Transmit Freq Error 6 Hz x dB Bandwidth 5.222 kHz x dB -20.00 dB</p> |

| Frequency (MHz) | Emission Designation | |
|-----------------|--|--|
| | 8K30F1E/F1D/F7W | 4K00F1E/F1D/F7W |
| 138.05 | <p>Agilent Spectrum Analyzer - Occupied BW Center Freq: 138.050000 MHz RBW: 100.0 Hz Ref: 10.00 dBm Occupied Bandwidth: 7.169 kHz Total Power: 11.2 dBm Transmit Freq Error: 1 Hz x dB Bandwidth: 7.692 kHz</p> | <p>Agilent Spectrum Analyzer - Occupied BW Center Freq: 138.050000 MHz RBW: 100.0 Hz Ref: 10.00 dBm Occupied Bandwidth: 3.247 kHz Total Power: 11.2 dBm Transmit Freq Error: 1 Hz x dB Bandwidth: 3.897 kHz</p> |
| 158.05 | <p>Agilent Spectrum Analyzer - Occupied BW Center Freq: 158.050000 MHz RBW: 100.0 Hz Ref: 10.00 dBm Occupied Bandwidth: 7.052 kHz Total Power: 11.2 dBm Transmit Freq Error: 5 Hz x dB Bandwidth: 7.655 kHz</p> | <p>Agilent Spectrum Analyzer - Occupied BW Center Freq: 158.050000 MHz RBW: 100.0 Hz Ref: 10.00 dBm Occupied Bandwidth: 3.180 kHz Total Power: 11.2 dBm Transmit Freq Error: 2 Hz x dB Bandwidth: 3.869 kHz</p> |
| 173.95 | <p>Agilent Spectrum Analyzer - Occupied BW Center Freq: 173.950000 MHz RBW: 100.0 Hz Ref: 10.00 dBm Occupied Bandwidth: 7.182 kHz Total Power: 11.1 dBm Transmit Freq Error: 6 Hz x dB Bandwidth: 7.689 kHz</p> | <p>Agilent Spectrum Analyzer - Occupied BW Center Freq: 173.950000 MHz RBW: 100.0 Hz Ref: 10.00 dBm Occupied Bandwidth: 3.251 kHz Total Power: 11.2 dBm Transmit Freq Error: 5 Hz x dB Bandwidth: 3.895 kHz</p> |

| Frequency (MHz) | Emission Designation | | | | | | | | | | | | | | | | | | | |
|---------------------|--|-----------|--------------------|-------------|-----------|-----------|--|--|---------------------|-----------|---------|------|--|--|----------------|--|-----------|-----------|------|--|
| 138.05 | <p style="text-align: center;">4K00F2D</p>  <p>Center 138.1 MHz VBW 1 kHz Span 50 kHz #Res BW 100 Hz Sweep FFT</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>-12.0 dBm</td> </tr> <tr> <td>3.308 kHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>1 Hz</td> <td></td> <td></td> </tr> <tr> <td>x dB Bandwidth</td> <td></td> <td>-20.00 dB</td> </tr> <tr> <td>3.380 kHz</td> <td>x dB</td> <td></td> </tr> </table> | | Occupied Bandwidth | Total Power | -12.0 dBm | 3.308 kHz | | | Transmit Freq Error | OBW Power | 99.00 % | 1 Hz | | | x dB Bandwidth | | -20.00 dB | 3.380 kHz | x dB | |
| Occupied Bandwidth | Total Power | -12.0 dBm | | | | | | | | | | | | | | | | | | |
| 3.308 kHz | | | | | | | | | | | | | | | | | | | | |
| Transmit Freq Error | OBW Power | 99.00 % | | | | | | | | | | | | | | | | | | |
| 1 Hz | | | | | | | | | | | | | | | | | | | | |
| x dB Bandwidth | | -20.00 dB | | | | | | | | | | | | | | | | | | |
| 3.380 kHz | x dB | | | | | | | | | | | | | | | | | | | |
| 158.05 |  <p>Center 158.1 MHz VBW 1 kHz Span 50 kHz #Res BW 100 Hz Sweep FFT</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>-11.9 dBm</td> </tr> <tr> <td>3.300 kHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>5 Hz</td> <td></td> <td></td> </tr> <tr> <td>x dB Bandwidth</td> <td></td> <td>-20.00 dB</td> </tr> <tr> <td>3.375 kHz</td> <td>x dB</td> <td></td> </tr> </table> | | Occupied Bandwidth | Total Power | -11.9 dBm | 3.300 kHz | | | Transmit Freq Error | OBW Power | 99.00 % | 5 Hz | | | x dB Bandwidth | | -20.00 dB | 3.375 kHz | x dB | |
| Occupied Bandwidth | Total Power | -11.9 dBm | | | | | | | | | | | | | | | | | | |
| 3.300 kHz | | | | | | | | | | | | | | | | | | | | |
| Transmit Freq Error | OBW Power | 99.00 % | | | | | | | | | | | | | | | | | | |
| 5 Hz | | | | | | | | | | | | | | | | | | | | |
| x dB Bandwidth | | -20.00 dB | | | | | | | | | | | | | | | | | | |
| 3.375 kHz | x dB | | | | | | | | | | | | | | | | | | | |
| 173.95 |  <p>Center 174 MHz VBW 1 kHz Span 50 kHz #Res BW 100 Hz Sweep FFT</p> <table border="1"> <tr> <td>Occupied Bandwidth</td> <td>Total Power</td> <td>-12.0 dBm</td> </tr> <tr> <td>3.310 kHz</td> <td></td> <td></td> </tr> <tr> <td>Transmit Freq Error</td> <td>OBW Power</td> <td>99.00 %</td> </tr> <tr> <td>4 Hz</td> <td></td> <td></td> </tr> <tr> <td>x dB Bandwidth</td> <td></td> <td>-20.00 dB</td> </tr> <tr> <td>3.382 kHz</td> <td>x dB</td> <td></td> </tr> </table> | | Occupied Bandwidth | Total Power | -12.0 dBm | 3.310 kHz | | | Transmit Freq Error | OBW Power | 99.00 % | 4 Hz | | | x dB Bandwidth | | -20.00 dB | 3.382 kHz | x dB | |
| Occupied Bandwidth | Total Power | -12.0 dBm | | | | | | | | | | | | | | | | | | |
| 3.310 kHz | | | | | | | | | | | | | | | | | | | | |
| Transmit Freq Error | OBW Power | 99.00 % | | | | | | | | | | | | | | | | | | |
| 4 Hz | | | | | | | | | | | | | | | | | | | | |
| x dB Bandwidth | | -20.00 dB | | | | | | | | | | | | | | | | | | |
| 3.382 kHz | x dB | | | | | | | | | | | | | | | | | | | |