

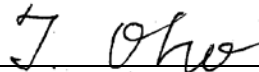
RADIO TEST REPORT

(for NFC)

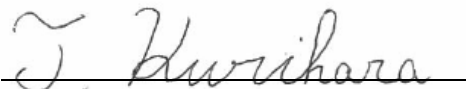
Project No. : JB-Z0542-A
 Client : Sony Corporation
 Client's Address : 1-7-1 Konan Minato-ku Tokyo, 108-0075 Japan
 Product Name : Digital Media Player
 Model No. : NW-A105
 FCC ID : AK8NWA100
 Test Standard : 47 CFR Part 15 Subpart C
 Sample Receipt Date : May 31, 2019
 Test Date : June 3, 2019 to June 18, 2019
 Original Report Date : July 5, 2019
 Amend Report Date : July 26, 2019
 Test Result : Complied

Notice:

- * These test results relate only to the items (combination equipment, test configuration, operation condition etc.) tested.
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- * All test results are traceable to the national and / or international standards.
- * The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in Sony Global Manufacturing & Operations Corporation EMC/RF Test Laboratory.
- * This report replaces and supersedes all previous versions. Refer to Revision History on the following page.

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Format No.: NV1-1-01 Version 5.0

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Note

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

Revision History

| Revision | Date | Overview | Page |
|---------------------|---------------|---|------|
| JB-Z0542 (Original) | July 5, 2019 | - | - |
| JB-Z0542-A | July 26, 2019 | Add measurement facility drawings for spurious. | P.12 |
| | | | |
| | | | |

1. General Information

1.1. Description of Equipment Under Test (EUT)

General Specification

Test Sample Condition : Prototype Pre-production Mass-production
 Product Name : Digital Media Player
 Trade Name : SONY
 Model No. : NW-A105
 Serial No. : 4, 6
 Power Rating of the EUT : DC 3.7 V (Internal Battery) or DC 5 V (USB)

Similar model(s) to be covered by this report

Model No. : None

Radio Specification

Function of the Equipment : Transceiver
 Operating Frequency : 13.56 MHz
 Modulation Type : ASK
 Antenna Type : Loop Antenna
 Operating Temperature : +5 to +35 deg.C

1.2. Summary of Test Result

| Test Item | Test Method | Worst Margin | Results | Note |
|--|-------------|---|----------|------|
| AC Power-line Conducted Emissions | Conducted | 13.6 dB (QP) 0.175 MHz L1 | Complied | - |
| 20dB Bandwidth | Radiated | Refer to the test data | Complied | - |
| Frequency Tolerance | Radiated | Refer to the test data | Complied | - |
| Electric Field Strength of Fundamental Emissions | Radiated | 66.70 dB (QP) 13.56 MHz Vertical | Complied | - |
| Electric Field Strength of Spurious Emissions within 13.110 MHz to 14.010 MHz | Radiated | 48.71 dB (QP) 13.772MHz Vertical | Complied | - |
| Electric Field Strength of Spurious Emissions outside 13.110 MHz to 14.010 MHz | Radiated | 23.1 dB (QP) 910.560 MHz Horizontal | Complied | - |

Other requirements

Part 15.31(e) Supply voltage requirement

: Complied (The voltage supplied from USB or battery are converted to regulated DC voltage by the built-in power circuit of the EUT.)

Part 15.203 / 212 Antenna requirement

: Complied (The EUT has an internal antenna which cannot be replaced by users.)

1.3. Tested Methodology

Test Standard : 47 CFR Part 15 Subpart C
 Test Method : ANSI C63.10 - 2013

Test Condition

AC Power-line Conducted Emissions

Dimensions of the EUT table : 0.8 m height, 1.5 m width and 1 m depth.

Electric Field Strength (Fundamental Emissions and Spurious Emissions)

Test Distance : 3 m 10m (9 kHz to 30 MHz)
 3 m 10m (30 MHz to 1000 MHz)
 Dimensions of the EUT table : 0.8 m height, 2 m width and 1 m depth.

1.4. Measurement Procedures

We performed the measurements in accordance with NV3-14, available upon the request.

- No deviation
 Deviation from the above procedure

The summary of the above procedure is mentioned below

AC Power-line Conducted Emissions

- The non-conductive table (EUT table) made of (FRP, wood, other non-conductive material) was placed 0.4 m from its rear to the vertical reference ground plane.
- The EUT was placed on the center of tabletop and its rear was flush with the rear of the table, connected through a LISN to the input power mains.
- The LISN was placed in 80 cm from the nearest part of the EUT chassis.
- The excess length of the AC cable between the EUT and the LISN receptacle, or an adaptor or extension cable connected to and measured with LISN, was folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
- The connection of the all other equipment to the second LISN was performed. The second LISN was terminated with a 50-ohm terminator.
- Interconnecting cables that hang closer than 40 cm to the horizontal reference ground plane was folded back and forth forming a bundle 30 to 40 cm long, hanging approximately in the middle between the horizontal reference ground plane and the tabletop.
- Find the worst mode and arrangement of the EUT according to the follows:
 - Connecting all peripherals and change the position of peripherals and cables.
 - Changing the all test operation modes of the EUT.
 - On every condition, exploring the highest emissions with the spectrum analyzer. (150 kHz to 30 MHz, peak detector, RBW: 10 kHz)
- On the worst condition of the EUT found in above, choose the six highest emissions on the spectrum data. The final measurements carried out on these emissions with EMI test receiver. (quasi-peak and average detector, RBW: 9 kHz)

20dB Bandwidth

1. The magnetic field probe was located near the EUT and connected to the spectrum analyzer.
2. For each EUT operation mode, the 20dB Bandwidth was measured with the spectrum analyzer.
 Detector type : Peak
 RBW : 30 kHz

Frequency Tolerance

1. The EUT was placed in the temperature chamber.
2. The magnetic field probe was located near the EUT and connected to the spectrum analyzer.
3. For each EUT operation mode, the Frequency Tolerance was measured with the spectrum analyzer at the start-up and 2, 5, and 10 minutes, after the start-up.
 Detector type : Peak
 RBW : 100 Hz
4. Frequency Tolerance was repeated in extreme conditions.

Electric Field Strength (Fundamental Emissions and Spurious Emissions)

1. The non-conductive table (EUT table) made of (FRP, Styrene Foam, other non-conductive material) was placed in the center of the turntable.
2. The EUT was placed on the center of the table top.
3. The test antenna was placed away from the EUT at test distance.
4. Find the worst arrangement of the EUT according to follows;
 - Rotating the turntable and/or scanning the antenna.
 - On every condition, exploring the highest emissions with the spectrum analyzer.
(9 kHz to 1000 MHz, peak detector)
5. On the worst arrangement of the EUT found in above, choose the fundamental emissions and three highest harmonics or spurious emissions on the spectrum data.
 The final measurements of all test operating modes carried out on these emissions as follows;

The test antenna and the turntable were performed with follows;

| | | |
|--------------------------|-------------------------------|---|
| | 9 kHz to 30 MHz | 30 MHz to 1000 MHz |
| Antenna | Loop Antenna | Bi-conical Antenna, Log-periodic Antenna |
| Antenna scanning range | 1 m, Vertical, 360 degrees | 1 m to 4 m, Horizontal and Vertical |
| Turntable rotating range | 360 degrees | 360 degrees |

Instruments settings were carried out with follows;

| | | | |
|------------|---------------------------------------|--|--------------------|
| | 9 kHz to 90 kHz 110 kHz to 490 kHz | 90 kHz to 110 kHz 490 kHz to 30 MHz | 30 MHz to 1000 MHz |
| Detector | Peak / Average | Quasi-peak | Quasi-peak |
| RBW | 200 Hz (6 dB) or 9 kHz (6 dB) *1 | 200 Hz (6 dB) or 9 kHz (6 dB) *1 | 120 kHz (6 dB) |
| Instrument | EMI test receiver | EMI test receiver | EMI test receiver |

*1: When the measurement frequencies below 150 kHz, RBW: 200 Hz was used.

6. The measurement values were compensated the distance factor with follows;

$$9 \text{ kHz to } 490 \text{ kHz [value at } 300 \text{ m]} = [\text{value at } 3 \text{ m}] + 40\log(3[\text{m}] / 300[\text{m}])$$

$$490 \text{ kHz to } 30 \text{ MHz [value at } 30 \text{ m]} = [\text{value at } 3\text{m}] + 40\log(3[\text{m}] / 30[\text{m}])$$
7. Although these tests were performed other than open field area test site, adequate comparison measurements were confirmed against 30 m open field area test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788 D01.

1.5. Test Location

Test Facility Name : Sony Global Manufacturing & Operations Corporation
EMC/RF Test Laboratory, Main Lab.
Address : 8-4 Shiomi Kisarazu-shi Chiba-ken, 292-0834, Japan
Phone : +81 438 37 2750

A2LA Certificate No. : 3203.01
Cert. Validated Date : Oct. 31, 2019

AC Power-line Conducted Emissions

Shielded Room

 4th Site EMC Site
20 dB Bandwidth

Shielded Room

 4th Site SR1
Frequency Tolerance

Shielded Room

 4th Site SR1
Electric Field Strength (Fundamental Emissions and Spurious Emissions)

Semi-Anechoic chamber

 4th Site EMC Site
1.6. Uncertainty

| Test Item | 4th Site SR1 |
|---------------------|----------------------|
| Frequency Tolerance | $\pm 1.77 * 10^{-6}$ |

| Test Item | Frequency | Distance | 4th Site | EMC Site |
|---|--------------------|----------|---------------|---------------|
| AC Power-line Conducted Emissions | 150 kHz to 30 MHz | - | ± 3.34 dB | ± 3.35 dB |
| Electric Field Strength (Fundamental Emissions and Spurious Emissions) | 9 kHz to 30 MHz | 3m | ± 2.60 dB | ± 3.13 dB |
| | 30 MHz to 1000 MHz | 3m | ± 4.96 dB | ± 5.26 dB |

2. Test Specification

2.1. Validation

The system was configured for testing in a typical (as a customer would normally use it).
The tests were conducted with the worst-case modes as follows.

2.2. Operating Condition

The tests have been carried out the following conditions.

[Transmitting mode]

| Test Items | Test Channel | Worst Data Rate |
|--|--------------|---------------------------------------|
| AC Power-line Conducted Emissions *3 | 13.56 MHz | Type F (without Tag) : 212 kbps *1 *2 |
| 20dB Bandwidth, Electric Field Strength (Fundamental Emissions and Spurious Emissions) | 13.56 MHz | Type F (without Tag) : 212 kbps *1 *2 |
| Frequency Tolerance | 13.56 MHz | Unmodulated |

Note

*1: Data Rate has been decided based on the result of Electric Field Strength of Fundamental Emissions.

*2: The operating with Tag mode was performed while exploratory testing.

*3: The test was performed with the representative mode that had been found as the worst emissions while exploratory testing.

Extreme test conditions:

[Transmitting mode]

| Test Items | Test Temperature | Test Voltage for Battery |
|---------------------|------------------------|--------------------------|
| Frequency Tolerance | -30 deg.C to +50 deg.C | 3.7 V |
| | +20 deg.C | 3.145 V and 4.255 V |

The Software for Operating Mode

Software Name : Diagnosis APP

Software Version : ver 5.08.01

2.3. Special Accessories

Special accessories needed for connecting the EUT to achieve compliance:

| Item | Manufacturer | Model No. | Serial No. | Remark |
|------|--------------|-----------|------------|--------|
| - | - | - | - | - |

2.4. EUT Modifications

- No equipment modification to achieve compliance to the standard levels was done during the tests.
- Equipment was modified to achieve compliance to the standard level as below.

Responsible Party Signature

Typed/ Print Name :
Responsible Party :
Position :
Date :

2.5. Configuration of EUT System

AC Power-line Conducted Emissions

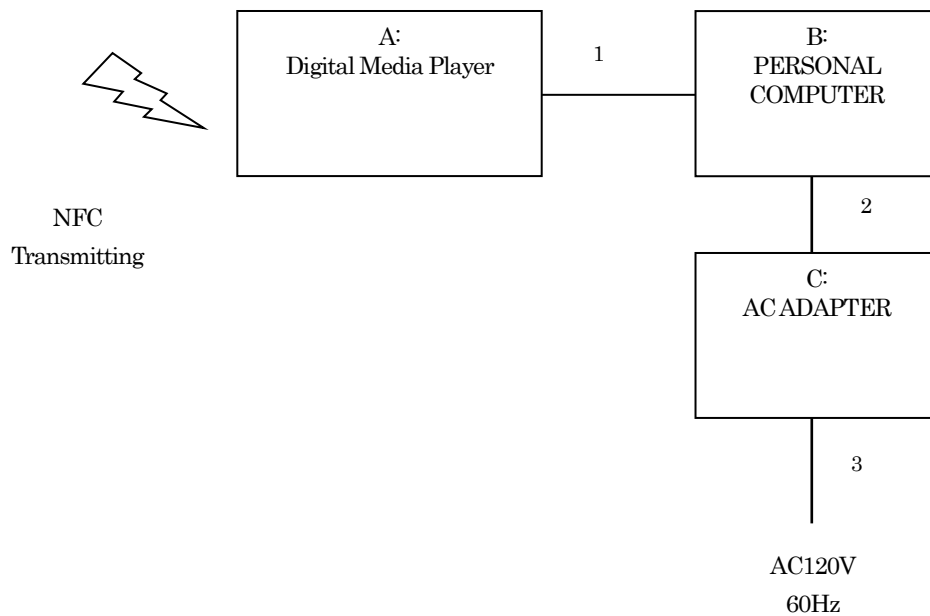
[EUT and Associated Equipment (AE)]

| Symbol | EUT/ AE | Item | Manufacturer | Model No. | Serial No. |
|--------|------------|----------------------|--------------|------------|------------|
| A | EUT | Digital Media Player | SONY | NW-A105 | 4 |
| B | AE | PERSONAL COMPUTER | SONY | VJS131C11N | 4120398 |
| C | AE | AC ADAPTER | SONY | VJ8AC10V9 | 274969 |

[Type of Cable]

| Symbol | Description | Identification (Manufacturer etc.) | Shielded Yes / No | Ferrite Core | Length (m) | Bundled |
|--------|-------------|---------------------------------------|----------------------|-----------------|---------------|---------|
| 1 | USB Cable | Kailai | Yes | No | 0.5 | No |
| 2 | DC Cable | - | No | No | 1.8 | Yes |
| 3 | AC Cable | - | No | No | 1.5 | Yes |

[Connecting Diagram]



20dB Bandwidth / Frequency Tolerance

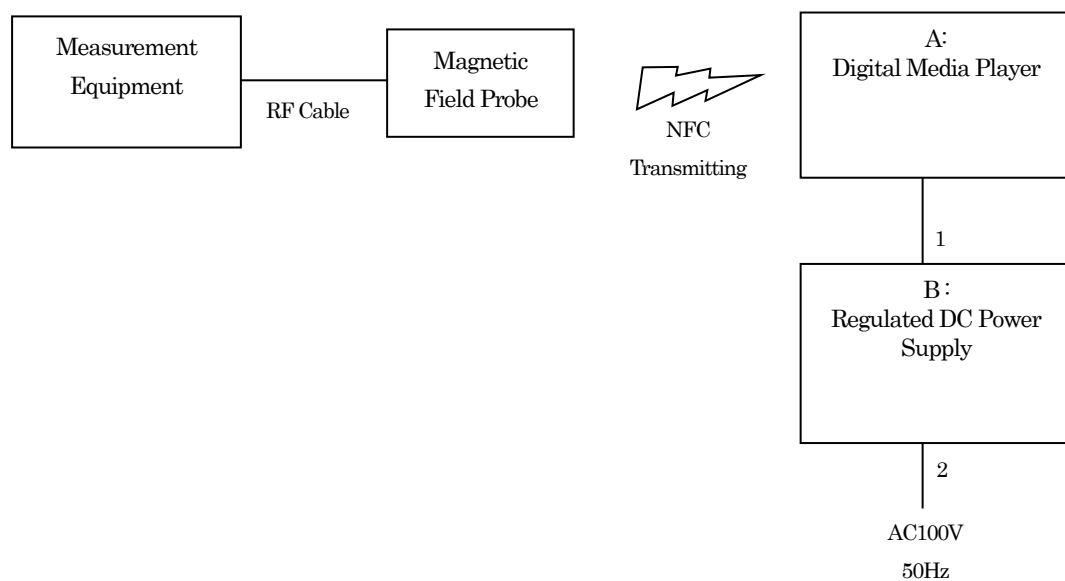
[EUT and Associated Equipment (AE)]

| Symbol | EUT/AE | Item | Manufacturer | Model No. | Serial No. |
|--------|--------|---------------------------|--------------|------------|------------|
| A | EUT | Digital Media Player | SONY | NW-A105 | 6 |
| B | AE | Regulated DC Power Supply | KENWOOD | PW18-1.3AT | 08046429 |

[Type of Cable]

| Symbol | Description | Identification (Manufacturer etc.) | Shielded Yes / No | Ferrite Core | Length (m) | Bundled |
|--------|-------------|------------------------------------|-------------------|--------------|------------|---------|
| 1 | DC cable | - | No | No | 1.8 | No |
| 2 | AC cable | - | No | No | 0.9 | No |

[Connecting Diagram]



Electric Field Strength (Fundamental Emissions and Spurious Emissions)

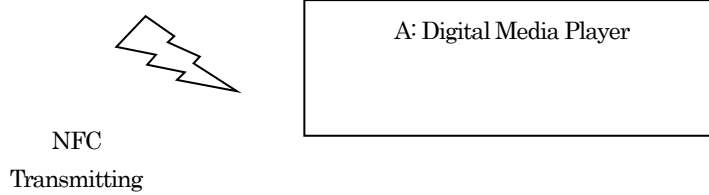
[EUT and Associated Equipment (AE)]

| Symbol | EUT/ AE | Item | Manufacturer | Model No. | Serial No. |
|--------|------------|----------------------|--------------|-----------|------------|
| A | EUT | Digital Media Player | SONY | NW-A105 | 4 |

[Type of Cable]

| Symbol | Description | Identification (Manufacturer etc.) | Shielded Yes / No | Ferrite Core | Length (m) | Bundled |
|--------|-------------|---------------------------------------|----------------------|-----------------|---------------|---------|
| - | - | - | - | - | - | - |

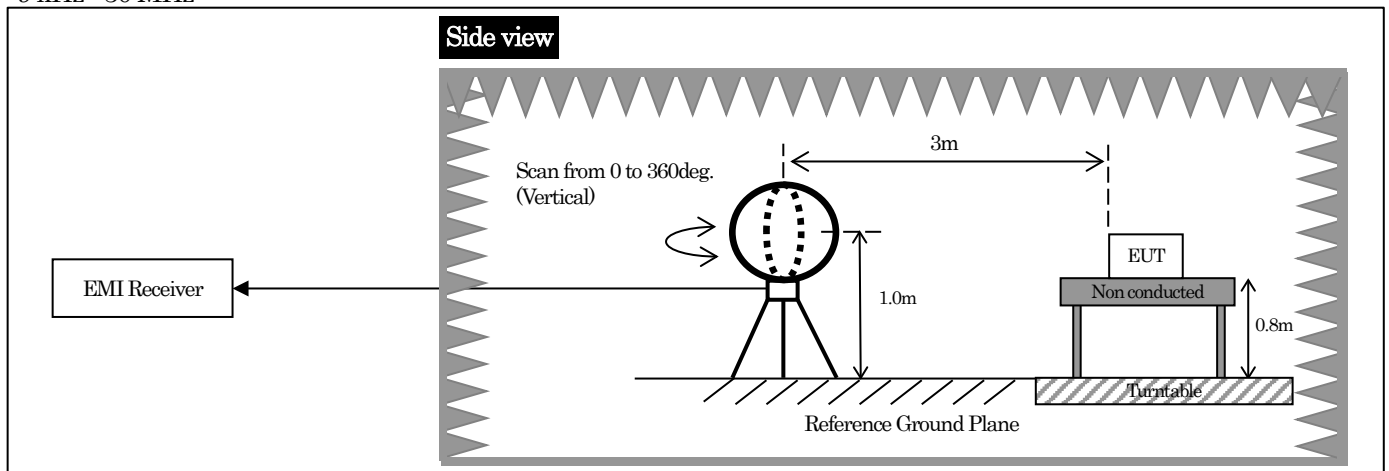
[Connecting Diagram]



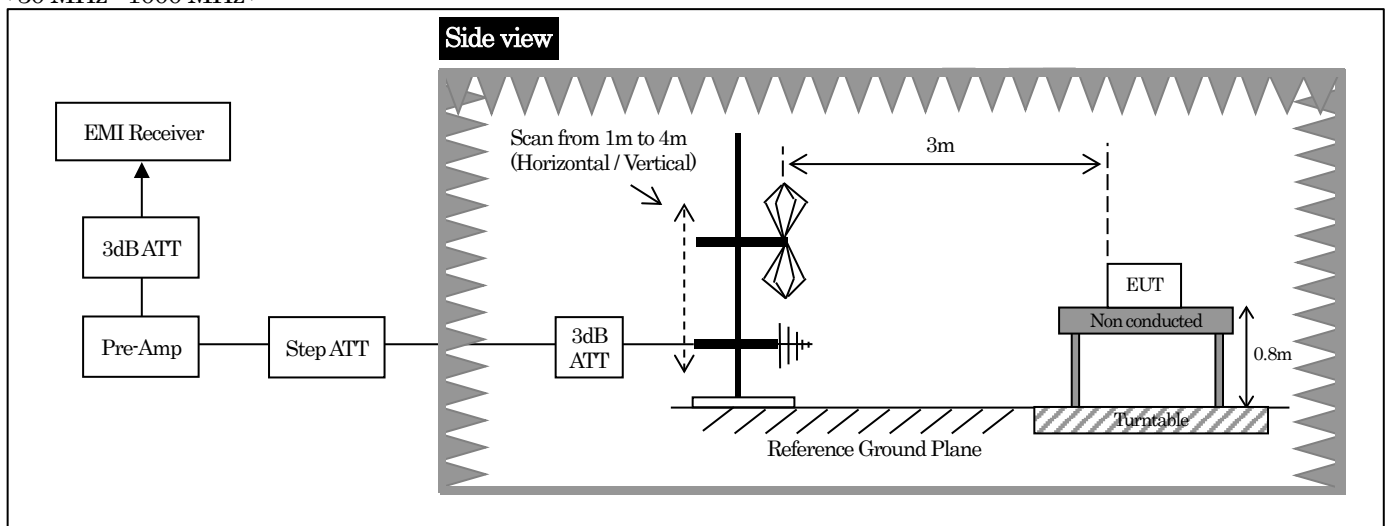
2.6. View of Measurement Facility

Radiated spurious emissions

< 9 kHz - 30 MHz >



< 30 MHz - 1000 MHz >



3. Test Data

3.1. AC Power-line Conducted Emissions

1) Date of measurement : June 11, 2019

The test data is mentioned as follows.

3.2. 20dB Bandwidth

- 1) Ambient temperature : 20.1 deg.C
- 2) Relative humidity : 59.9 %
- 3) Date of measurement : June 18, 2019
- 4) Measured by : M.KOUGA
- 5) Operating mode : Transmitting mode

| Mode | Channel [MHz] | Result [kHz] | Limit [kHz] |
|-------------------|---------------|--------------|-------------|
| Type F 212 kbps | 13.56 | 76.800 | - |

[Type F / 212 kbps]



3.3. Frequency Tolerance

- 1) Ambient temperature : 20.1 deg.C
- 2) Relative humidity : 59.9 %
- 3) Date of measurement : June 18, 2019
- 4) Measured by : M.KOUGA
- 5) Operating mode : Transmitting mode (Unmodulated)

| Test Temperature | Test Voltage | Test Conditions | Frequency [MHz] | Reading [MHz] | Tolerance [MHz] | Tolerance [%] | Limit [%] |
|------------------|--------------|-----------------|-----------------|---------------|-----------------|---------------|-----------|
| 50deg.C | 3.700 V | Start up | 13.56 | 13.559981 | -0.000019 | -0.000140 | ± 0.01 |
| | | After 2min | 13.56 | 13.559982 | -0.000018 | -0.000133 | ± 0.01 |
| | | After 5min | 13.56 | 13.559983 | -0.000017 | -0.000125 | ± 0.01 |
| | | After 10min | 13.56 | 13.559985 | -0.000015 | -0.000111 | ± 0.01 |
| 40deg.C | 3.700 V | Start up | 13.56 | 13.559995 | -0.000005 | -0.000037 | ± 0.01 |
| | | After 2min | 13.56 | 13.559991 | -0.000009 | -0.000066 | ± 0.01 |
| | | After 5min | 13.56 | 13.559992 | -0.000008 | -0.000059 | ± 0.01 |
| | | After 10min | 13.56 | 13.559991 | -0.000009 | -0.000066 | ± 0.01 |
| 30deg.C | 3.700 V | Start up | 13.56 | 13.560023 | 0.000023 | 0.000170 | ± 0.01 |
| | | After 2min | 13.56 | 13.560015 | 0.000015 | 0.000111 | ± 0.01 |
| | | After 5min | 13.56 | 13.560014 | 0.000014 | 0.000103 | ± 0.01 |
| | | After 10min | 13.56 | 13.560013 | 0.000013 | 0.000096 | ± 0.01 |
| 20deg.C | 3.700 V | Start up | 13.56 | 13.558664 | -0.001336 | -0.009853 | ± 0.01 |
| | | After 2min | 13.56 | 13.560026 | 0.000026 | 0.000192 | ± 0.01 |
| | | After 5min | 13.56 | 13.560026 | 0.000026 | 0.000192 | ± 0.01 |
| | | After 10min | 13.56 | 13.560024 | 0.000024 | 0.000177 | ± 0.01 |
| 10deg.C | 3.700 V | Start up | 13.56 | 13.560070 | 0.000070 | 0.000516 | ± 0.01 |
| | | After 2min | 13.56 | 13.560070 | 0.000070 | 0.000516 | ± 0.01 |
| | | After 5min | 13.56 | 13.560074 | 0.000074 | 0.000546 | ± 0.01 |
| | | After 10min | 13.56 | 13.560078 | 0.000078 | 0.000575 | ± 0.01 |
| 0deg.C | 3.700 V | Start up | 13.56 | 13.560101 | 0.000101 | 0.000745 | ± 0.01 |
| | | After 2min | 13.56 | 13.560101 | 0.000101 | 0.000745 | ± 0.01 |
| | | After 5min | 13.56 | 13.560105 | 0.000105 | 0.000774 | ± 0.01 |
| | | After 10min | 13.56 | 13.560107 | 0.000107 | 0.000789 | ± 0.01 |
| -10deg.C | 3.700 V | Start up | 13.56 | 13.560121 | 0.000121 | 0.000892 | ± 0.01 |
| | | After 2min | 13.56 | 13.560121 | 0.000121 | 0.000892 | ± 0.01 |
| | | After 5min | 13.56 | 13.560121 | 0.000121 | 0.000892 | ± 0.01 |
| | | After 10min | 13.56 | 13.560122 | 0.000122 | 0.000900 | ± 0.01 |
| -20deg.C | 3.700 V | Start up | 13.56 | 13.560116 | 0.000116 | 0.000855 | ± 0.01 |
| | | After 2min | 13.56 | 13.560117 | 0.000117 | 0.000863 | ± 0.01 |
| | | After 5min | 13.56 | 13.560116 | 0.000116 | 0.000855 | ± 0.01 |
| | | After 10min | 13.56 | 13.560114 | 0.000114 | 0.000841 | ± 0.01 |
| -30deg.C | 3.700 V | Start up | 13.56 | 13.560067 | 0.000067 | 0.000494 | ± 0.01 |
| | | After 2min | 13.56 | 13.560080 | 0.000080 | 0.000590 | ± 0.01 |
| | | After 5min | 13.56 | 13.560078 | 0.000078 | 0.000575 | ± 0.01 |
| | | After 10min | 13.56 | 13.560075 | 0.000075 | 0.000553 | ± 0.01 |
| 20deg.C | 3.145 V | Start up | 13.56 | 13.560034 | 0.000034 | 0.000251 | ± 0.01 |
| | | After 2min | 13.56 | 13.560030 | 0.000030 | 0.000221 | ± 0.01 |
| | | After 5min | 13.56 | 13.560031 | 0.000031 | 0.000229 | ± 0.01 |
| | | After 10min | 13.56 | 13.560031 | 0.000031 | 0.000229 | ± 0.01 |
| 20deg.C | 4.255 V | Start up | 13.56 | 13.560029 | 0.000029 | 0.000214 | ± 0.01 |
| | | After 2min | 13.56 | 13.560020 | 0.000020 | 0.000147 | ± 0.01 |
| | | After 5min | 13.56 | 13.560020 | 0.000020 | 0.000147 | ± 0.01 |
| | | After 10min | 13.56 | 13.560021 | 0.000021 | 0.000155 | ± 0.01 |

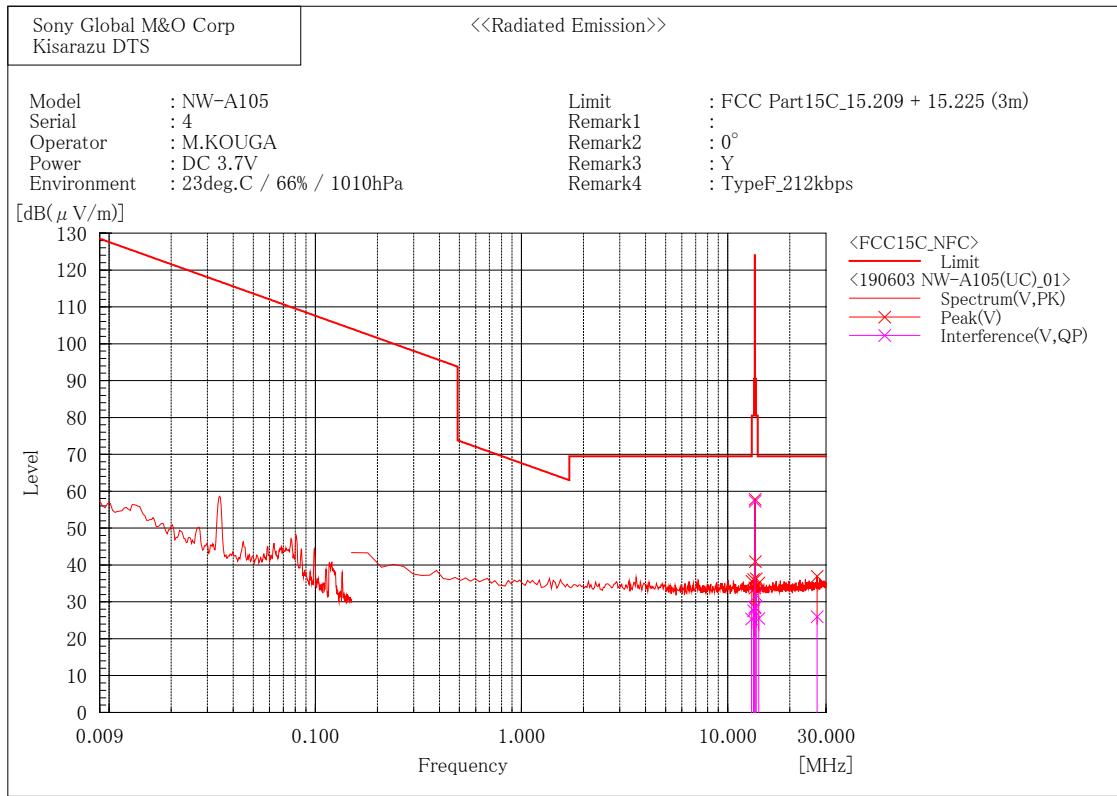
3.4. Electric Field Strength (Fundamental Emissions and Spurious Emissions)

- 1) Date of measurement
- | | |
|--------------------|----------------|
| 9 kHz to 30 MHz | : June 3, 2019 |
| 30 MHz to 1000 MHz | : June 3, 2019 |

The test data is mentioned as follows.

9 kHz to 30 MHz

[Type F / 212 kbps]



Final Result

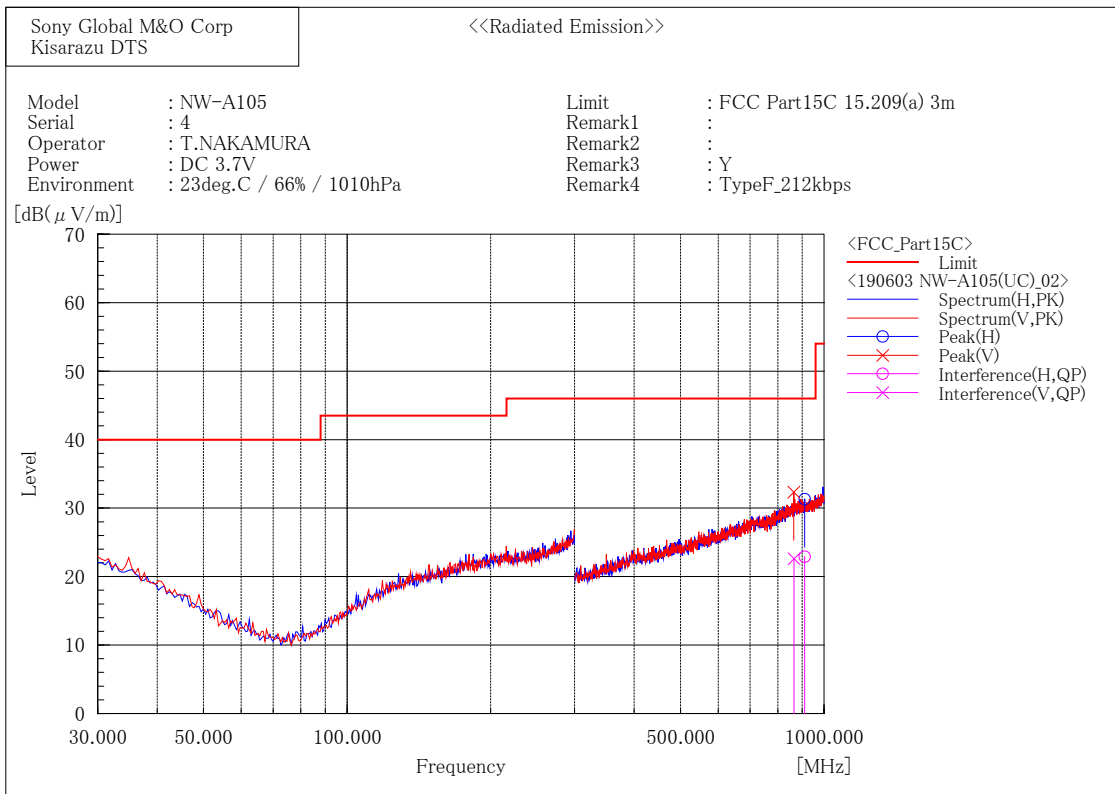
--- Vertical Polarization (QP)---

| No. | Frequency [MHz] | Reading [dB(μV)] | c. f [dB(1/m)] | Result [dB(μV/m)] | Limit [dB(μV/m)] | Margin [dB] | Height [cm] | Angle [°] |
|-----|-----------------|------------------|----------------|-------------------|------------------|-------------|-------------|-----------|
| 1 | 13.057 | 5.5 | 19.9 | 25.4 | 69.5 | 44.1 | 100.0 | 345.2 |
| 2 | 13.360 | 7.8 | 19.8 | 27.6 | 80.5 | 52.9 | 100.0 | 136.2 |
| 3 | 13.550 | 8.7 | 19.8 | 28.5 | 90.5 | 62.0 | 100.0 | 153.2 |
| 4 | 13.560 | 37.5 | 19.8 | 57.3 | 124.0 | 66.7 | 100.0 | 145.2 |
| 5 | 13.570 | 8.8 | 19.8 | 28.6 | 90.5 | 61.9 | 100.0 | 149.2 |
| 6 | 13.772 | 12.0 | 19.8 | 31.8 | 80.5 | 48.7 | 100.0 | 149.2 |
| 7 | 14.164 | 5.7 | 19.8 | 25.5 | 69.5 | 44.0 | 100.0 | 335.2 |
| 8 | 27.120 | 5.4 | 20.6 | 26.0 | 69.5 | 43.5 | 100.0 | 206.2 |

| Mode | Frequency [MHz] | Polar. | Result (3m) [dBuV/m] | Distance Factor [dB] | Result(30m) [dBuV/m] | Limit (30m) [dBuV/m] | Margin [dB] |
|--------|-----------------|--------|----------------------|----------------------|----------------------|----------------------|-------------|
| Type F | 212 kbps | V | 25.40 | -40.00 | -14.60 | 29.54 | 44.14 |
| | | V | 27.60 | -40.00 | -12.40 | 40.51 | 52.91 |
| | | V | 28.50 | -40.00 | -11.50 | 50.47 | 61.97 |
| | | V | 57.30 | -40.00 | 17.30 | 84.00 | 66.70 |
| | | V | 28.60 | -40.00 | -11.40 | 50.47 | 61.87 |
| | | V | 31.80 | -40.00 | -8.20 | 40.51 | 48.71 |
| | | V | 25.50 | -40.00 | -14.50 | 29.54 | 44.04 |
| | | V | 26.00 | -40.00 | -14.00 | 29.54 | 43.54 |

30 MHz to 1000 MHz

[Type F / 212 kbps]



Final Result

--- Horizontal Polarization (QP)---

| No. | Frequency [MHz] | Reading [dB(μV)] | c. f [dB(1/m)] | Result [dB(μV/m)] | Limit [dB(μV/m)] | Margin [dB] | Height [cm] | Angle [°] |
|-----|-----------------|------------------|----------------|-------------------|------------------|-------------|-------------|-----------|
| 1 | 910.560 | 24.4 | -1.5 | 22.9 | 46.0 | 23.1 | 298.7 | 338.4 |

--- Vertical Polarization (QP)---

| No. | Frequency [MHz] | Reading [dB(μV)] | c. f [dB(1/m)] | Result [dB(μV/m)] | Limit [dB(μV/m)] | Margin [dB] | Height [cm] | Angle [°] |
|-----|-----------------|------------------|----------------|-------------------|------------------|-------------|-------------|-----------|
| 1 | 865.100 | 24.5 | -1.9 | 22.6 | 46.0 | 23.4 | 261.5 | 135.2 |

4. Method of Calculation

4.1. AC Power-line Conducted Emissions

Method of calculation : Software
 Software Name : EP5/ CE
 Software Version : Ver5.0.0

Test Result [dBuV] = Meter Reading [dBuV] + C.F. [dB]

Note (a) Meter Reading : Reading of the EMI test receiver.
 (b) C.F. : System Loss + Correction Factor of LISN

4.2. Frequency Tolerance

Method of calculation : Software
 Software Name : SW-0310
 Software Version : Ver.4

Test Result [%] = (Meter Reading [MHz] – 13.56 [MHz]) / 13.56 [MHz] * 100

Note (a) Meter Reading : Reading Frequency of the spectrum analyzer

4.3. Electric Field Strength (Fundamental Emissions and Spurious Emissions)

Method of calculation : Software
 Software Name : V-Scan
 Software Version : Ver.4.0.30

Test Result [dBuV/ m] = Meter Reading [dBuV] + C.F. [dB/ m]

Note (a) Meter Reading : Reading of the EMI test receiver or the spectrum analyzer.
 (b) C.F. : Antenna Factor (including Balun Loss) + System GainLoss
 : Antenna Factor (including Balun Loss) + System GainLoss + 20 log (3 m/ 10 m)

5. List of Test Equipment

All test results are traceable to the national and/or international standards.

5.1. AC Power-line Conducted Emissions

| | Ctrl# | Equipment | Model No. | Serial No. | Manufacturer | Cal.Interval | Last Cal. |
|---|--------|----------------------------|-----------|--------------|------------------|--------------|-----------|
| x | CS0015 | EMC-CE Cable System 1 | - | - | - | 12 months | 18.11.04 |
| x | M0663 | 6dB Attenuator | 6806.01A | - | HUBER+SUHNER | 12 months | 18.11.04 |
| x | M0569 | HIGH FREQUENCY FUSE | MP612A | - | Anritsu | 12 months | 18.11.04 |
| x | M0130 | RF Selector | NS4902SR | 109001 | Toyo Corporation | 12 months | 18.11.04 |
| x | M0605 | LISN/AMN | ENV216 | 101305 | Rohde & Schwarz | 12 months | 18.10.01 |
| x | M5062 | Scientific Ambient Monitor | 0560 6220 | 39515563/802 | testo | 12 months | 18.07.17 |
| x | M0515 | EMI Receiver | ESCI | 100606 | Rohde & Schwarz | 12 months | 18.10.01 |
| x | M5080 | Temperature Meter | 608-H2 | 41476135 | testo | 12 months | 18.10.18 |

5.2. 20dB Bandwidth / Frequency Tolerance

| | Ctrl# | Equipment | Model No. | Serial No. | Manufacturer | Cal.Interval | Last Cal. |
|---|-------|----------------------|-----------|------------|----------------------|--------------|-----------|
| x | W0054 | TEMP & HUMID CHAMBER | SH-240 | 91006788 | ESPEC CORP. | - | - |
| x | W0100 | Signal Analyzer | MS2692A | 6201338954 | Anritsu | 12 months | 19.05.09 |
| x | W0057 | EMI Probe | MA2601C | No.1 | Anritsu | 12 months | 18.10.15 |
| - | W0029 | 10dB Attenuator | 8493C | 76549 | Agilent Technologies | 12 months | 18.09.01 |
| x | W0106 | Digital Multimeter | R6452A | 120600443 | ADVANTEST | 12 months | 18.07.21 |
| x | M0722 | Thermo Meter | TM-305 | 140005 | AS ONE | 12 months | 18.08.15 |
| | | Thermo Sensor | LP-200 | 002 | AS ONE | 12 months | 18.08.15 |

5.3. Electric Field Strength (Fundamental Emissions and Spurious Emissions)

| | Ctrl# | Equipment | Model No. | Serial No. | Manufacturer | Cal.Interval | Last Cal. |
|---|--------|----------------------------|-------------|--------------|------------------|--------------|-----------|
| x | M0506 | EMC Chamber | None | - | TDK | 12 months | 18.07.20 |
| x | M0970 | EMI Receiver | ESCI | 100511 | Rohde & Schwarz | 12 months | 19.03.19 |
| x | A0073 | Loop Antenna | HFH2-Z2 | 100171 | Rohde & Schwarz | 12 months | 18.12.10 |
| x | A0043 | Biconical Antenna | BBA9106 | V5(91032598) | Schwarzbeck | 12 months | 18.12.03 |
| x | A0046 | Log periodic Antenna | UHALP9108A1 | 0830 | Schwarzbeck | 12 months | 18.12.03 |
| - | CS0037 | Fourth Site RE Cable SYS1 | - | - | - | 12 months | 19.06.01 |
| x | CS0039 | Fourth Site RE Cable SYS3 | - | - | - | 12 months | 19.06.01 |
| x | CS0054 | Fourth Site EMF Cable SYS | - | - | - | 12 months | 19.06.01 |
| x | M0510 | RF Selector | NS4900 | 0802-226 | Toyo Corporation | 12 months | 19.06.01 |
| x | M0620 | RF Pre-Amp | 8447D | 2944A10720 | Agilent | 12 months | 19.06.01 |
| x | M0706 | 3dB Attenuator | 8491A | MY39267782 | Agilent | 12 months | 19.06.01 |
| x | M5151 | Temperature Meter | 608-H2 | 41475968 | testo | 12 months | 18.11.08 |
| x | M5061 | Scientific Ambient Monitor | 0560 6220 | 39515471/801 | testo | 12 months | 18.07.17 |

About calibration interval

Valid until the end of the month listed in "Cal. Int." column.