

Test Report

Test Report Number EOTEL028
Applied Standard(s) FCC Part15 Subpart C, IC RSS-210,ANSI C63.4-2003
Date of Issue 21th, March 2014
Testing Laboratory Address e-OHTAMA, Ltd.
Tokyo Laboratory No.1 EMC test room
2-8-20 Kuriki, Asao-ku Kawasaki-shi, Kanagawa, 215-0033 Japan
Test Date(s) 14th March, 2014 - 21th March, 2014
Product Name Wireless LAN module
Model Number WLVP001
Serial Number -
Applicant (Client) Address 2-1, Sakaecho 3-chome, Hamura-shi, Tokyo 205-8555 Japan
CASIO COMPUTER CO., LTD
Manufacturer Address 2-1, Sakaecho 3-chome, Hamura-shi, Tokyo 205-8555 Japan
CASIO COMPUTER CO., LTD
FCC ID / IC BBQ-WLVP001 / 2388B-WLVP001

Test Result

The test result for the electromagnetic compatibility tests as described in the section 1 to 2 and in this page was:

Pass

Tested by: Katsutoshi Hatanaka
Katsutoshi Hatanaka
Test Engineer

Approved by: Koji Imai
Koji Imai
Testing Group Leader

Checked box () indicates that the listed condition, standard or equipment is applicable for this Report.
Blank box () indicates that the listed condition, standard or equipment is not applicable for this Report.
It is not allowed to copy this report, except in full, without written permission of the test laboratory.
Test results of this report refer only to the EUT tested here.

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1. Summary

1.1 Terms and definitions

AV
Average

DoC
Declaration of Conformity

EUT
Equipment Under Test

PK
Peak

QP
Quasi-peak

1.2 Standard(s) and Result

| Applied Standard(s) | Normative Reference(s) | Classification | Result | Note |
|----------------------|---|---|--------|------|
| FCC Part15 Subpart C | 20dB Bandwidth(FHSS only) | 15.247(a)(1) | N/A | |
| | 6dB Bandwidth(Digital only) | 15.247(a)(2) | Pass | |
| | Carrier Frequency Separation (FHSS only) | 15.247(a)(1) | N/A | |
| | Number of Hopping Frequencies (FHSS only) | 15.247(a)(1) | N/A | |
| | Time of Occupancy(Dwell Time) (FHSS only) | 15.247(a)(1) | N/A | |
| | Maximum Peak Output Power | 15.247(b)(1)(2)FHSS 15.247(b)(3) Digital | Pass | |
| | Band Edge of Compliance of RF Conducted Emissions | 15.247(d) | Pass | |
| | Restricted Bands of Operation | 15.247(d) | Pass | |
| | Peak Power Spectral Density (Digital only) | 15.247(e) | Pass | |
| | Conducted emissions | 15.207 | N/A | |
| | Radiated emissions | 15.209 15.205 | Pass | |
| | Maximum Permissible Exposure | 1.1310 Safety code6, 2.2.1 | N/A | |

Note1 : This test measured according to the following procedure:FCC publication KDB558074 Measurement of Digital Transmission Systems Operating under Section 15.247 April 9, 2013

1.3 Deviations from Standard(s)

There was no deviation from the standard.

2. Equipment Under Test (EUT)

2.1 General Descriptions

This device is a wireless module to be mounted on a label printer that supports Wi-Fi connection.

2.2 Detailed Descriptions

| | |
|----------------------|---------------------------|
| Product Name | Wireless LAN module |
| Model Number | WLVP001 |
| Serial Number | - |
| Power Supply | 3.3Vdc |
| Dimension | 29.0 mm × 33.0 mm |
| Operating Frequency | 2412.000MHz – 2462.000MHz |
| Normal Placement | Indoor |
| Condition of the EUT | Prototype |

2.3 WORST-CASE CONFIGURATION AND MODE

(a) EUT axes

The fundamental was measured in three different orientations X, Y and Z to find worst-case orientation, and it was found that Y orientation is worst-case; therefore final testing for radiated emissions was performed with EUT in X orientation with Cable.

2.4 Operation Mode(s) of the EUT for EMC during the Test(s)

| Operation Mode Name | Description |
|---------------------|--------------------------|
| TX mode | Normal operation TX mode |

2.5 Peripheral Devices

| Mark | Description | Model Number | Serial Number | FCC ID Code or DoC status | Manufacturer |
|------|-------------------|--------------|---------------|---------------------------|--------------|
| 1 | Personal Computer | PP11L | H5923A03 | DoC | Dell |

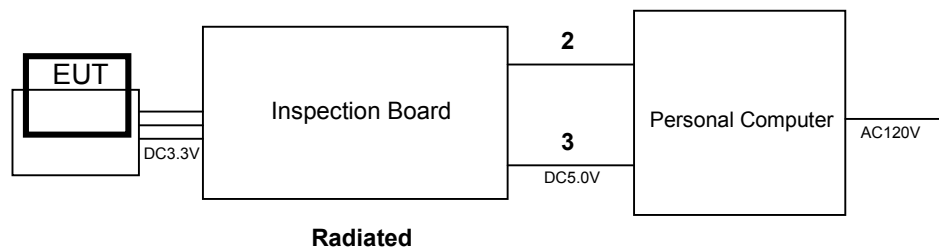
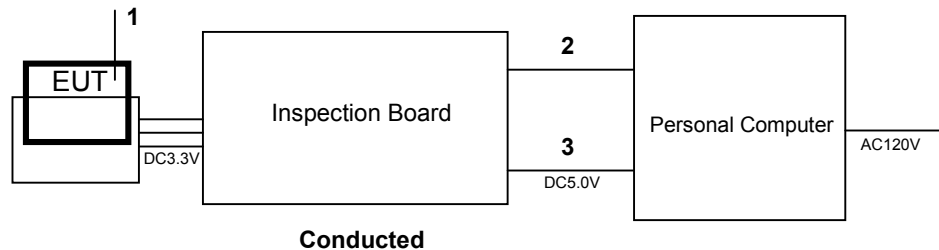
2.6 Interconnecting Cables

| Mark | Description | Length (m) | Shielded | | Tested Port(s) (Note:1) | |
|------|-----------------|------------|----------|-----------|-------------------------|------------|
| | | | Cable | Connector | Applicable | Interface |
| 1 | Antenna cable | 0.05 | Yes | Yes | No | RF cable |
| 2 | RS232C-USBcable | 0.80 | Yes | Yes | No | I/O signal |
| 3 | Power cable | 0.47 | No | Yes | No | DC power |

Remarks:

2.7 System Configuration

Unless otherwise specified in the following sections, the test configuration described here is applied for the tests. The configuration was choice by the applicant.



2.8 Labeling Requirements

Per 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase. However, when the device is so small wherein placement of the label with specified statement is not practical, only the trade name and FCC ID must be displayed on the device per Section 15.19(b)(2). Please see attachment for FCC ID label and label location

2.9 Antenna Requirements

Excerpt from §15.203 of the FCC Rules/Regulations:

“An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient t to comply with the provisions of this section.”

The antennas of the CASIO COMPUTER CO., LTD. are permanently attached.
There are no provisions for connection to an external antenna

Conclusion:

The CASIO COMPUTER CO., LTD. FCC ID: BBQ-WLVP001 unit complies with the requirement of §15.203.

2.10 Module Requirements

Per 15.212

| No. | Requirement of FCC Part 15.212 | Reference to WLVP001 |
|------|---|--|
| i | The radio elements of the modular transmitter must have their own shielding. | The module has its own RF shielding. |
| ii | The modular transmitter must have buffered modulation/data | The modular has buffered data inputs. |
| iii | The modular transmitter must have its own power supply regulation. | The module has its own power supply regulation. |
| iv | The modular transmitter must comply with the antenna and transmission system requirements of § 15.203, 15.204(b) and 15.204(c). | The WLVP001 meets the FCC antenna requirements. It has a permanently attached antenna. |
| v | The modular transmitter must be tested in a stand-alone configuration, i.e., the module must not be inside another device during testing for compliance with part 15 requirements. | The WLVP001 was tested in a stand-alone configuration. |
| vi | The modular transmitter must be equipped with either a permanently affixed label or must be capable of electronically displaying its FCC identification number. | The module has its own FCC ID number. In user manual, there is warning statement to inform the customer must display a label "Contains Transmitter customer must display a label "Contains Transmitter Module FCC ID: BBQ-WLVP001" in enclosed module. |
| vii | The modular transmitter must comply with any specific rules or operating requirements that ordinarily apply to a complete transmitter and the manufacturer must provide adequate instructions along with the module to explain any such requirements. A copy of these instructions must be included in the application for equipment authorization. | The WLVP001 is compliant with all applicable FCC rules. |
| viii | The modular transmitter must comply with any applicable RF exposure requirements in its final configuration. | The WLVP001 complies with applicable RF exposure requirements. |

Conclusion:

The CASIO COMPUTER CO., LTD. FCC ID: BBQ-WLVP001 unit complies with the requirement of §15.212.

3. Test Data

3.1 Test specification

| | |
|----------------------|---|
| Standard | FCC Part15 Subpart C 15.205 15.207 15.209 15.247, IC RSS-210 ANSI C63.4-2003 |
| Frequency Range | 2412.000 MHz to 262.000MHz |
| Test Date | 14th March, 2014 - 21th March, 2014 |
| Test Location | Tokyo Laboratory No.1 EMC test room |
| Test Engineer | Katsutoshi Hatanaka |
| Temperature | 17.5 °C - 21.2°C |
| Humidity | 47%RH - 56% RH |
| Pressure | 1005 hPa |
| Power Supply | 3.3V dc |
| Operation Mode Name | TX mode |
| Tested TX modulation | G1D,D1D |
| | |
| Tested channel | Lower ch 2412.000MHz Middle ch 2437.000MHz Higher ch 2460.000MHz |

Remark: *1 : Equivalent isotropic radiated power and Frequency Range only.

3.2 6dB Bandwidth

3.2.1 Test Result

Worst Case---Modulation Type : CCK Data Rate : 11Mbps

| Cannel | Center Frequency (MHz) | 6dB Bandwidth (kHz) | Limit (kHz) | Margin (kHz) |
|--------|------------------------|---------------------|-------------|--------------|
| Lower | 2412.000 | 12900.0 | 500 | 12400.0 |
| Middle | 2437.000 | 12800.0 | 500 | 12300.0 |
| Higher | 2462.000 | 12800.0 | 500 | 12300.0 |

Table1 6dB Bandwidth

Result : Pass

3.2.2 Test Detail

EUT was tested based on FCC 15.247(a)(2) with temporarily antenna port.

The RBW is set to 100kHz and the VBW is set to 100kHz. The sweep time is coupled.

3.2.3 Test data



Figure 1 6dB Bandwidth(Lower ch_2412.000MHz)



Figure 2 6dB Bandwidth(Middle ch_2437.000MHz)



Figure 3 6dB Bandwidth(Higher ch_2462.000MHz)

3.3 Maximum Peak Output Power

3.3.1 Test Result

Worst Case---Modulation Type : CCK Data Rate : 11Mbps

| Channel | Frequency (MHz) | S/A Reading (dBm) | Factor (dB) | Result (dBm) | Limit (dBm) | Margin (dB) |
|---------|-----------------|-------------------|-------------|--------------|-------------|-------------|
| Lower | 2412.000 | -9.22 | 20.30 | 10.86 | 30 | 19.14 |
| Middle | 2436.850 | -10.17 | 20.27 | 10.10 | 30 | 19.90 |
| Higher | 2462.300 | -10.52 | 20.26 | 9.74 | 30 | 20.26 |

Table2 Maximum Peak Output Power

Result : Pass

3.3.2 Test Detail

EUT was tested based on FCC 15.247(b)(1)(2)FHSS 15.247(b)(3)DHSS with temporally antenna port. The bandwidth of the RF frequency is measured with the spectrum analyzer using 1MHz RBW and 1MHz VBW.

3.3.3 Test data

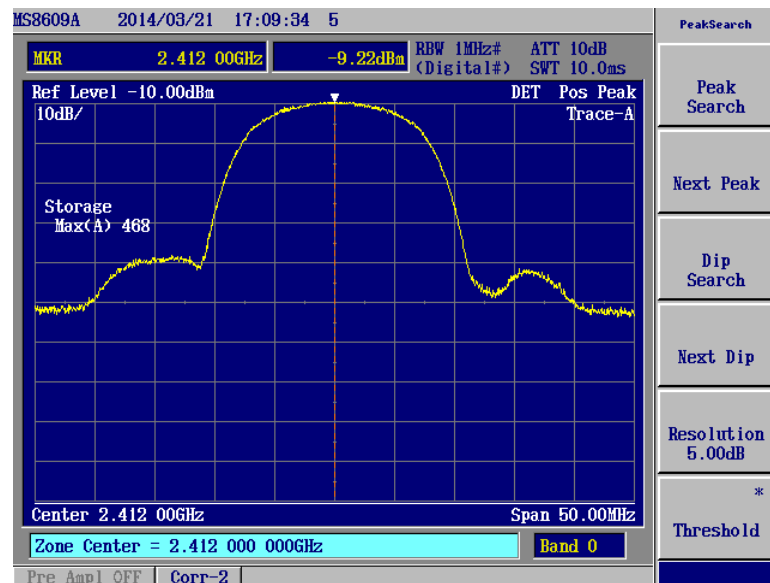


Figure 4 Maximum Peak Output Power(Lower ch_2412.000MHz)



Figure 5 Maximum Peak Output Power(Middle ch_2437.000MHz)



Figure 6 Maximum Peak Output Power(Higher ch_2462.000MHz)

3.4 Band Edge of Compliance of RF Conducted Emissions

3.4.1 Test Result

Worst Case---Modulation Type : CCK Data Rate : 11Mbps

| Edge | Frequency (MHz) | Deference (dB) | Limit (dB) | Margin (dB) |
|--------|-----------------|----------------|------------|-------------|
| Lower | 2397.650 | 40.53 | >20 | 20.53 |
| Higher | 2477.500 | 44.26 | >20 | 24.26 |

Table3 Band Edge of Compliance of RF Conducted Emissions

Result : Pass

3.4.2 Test Detail

EUT was tested based on FCC 15.247(d) with temporally antenna port. The spectrum analyzer is set to RBW=1MHz, VBW=1MHz, Detector function=Peak.

3.4.3 Test data

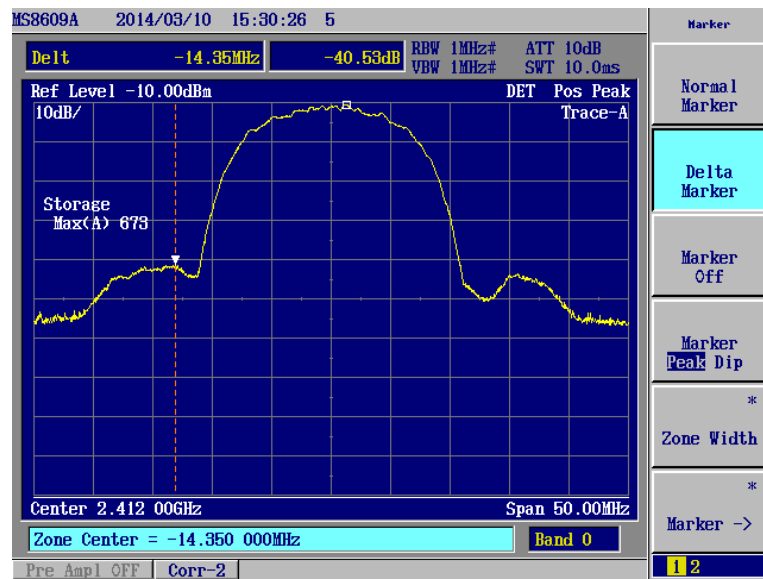


Figure 7 Band Edge of Compliance of RF Conducted Emissions (Lower ch_2412.000MHz)

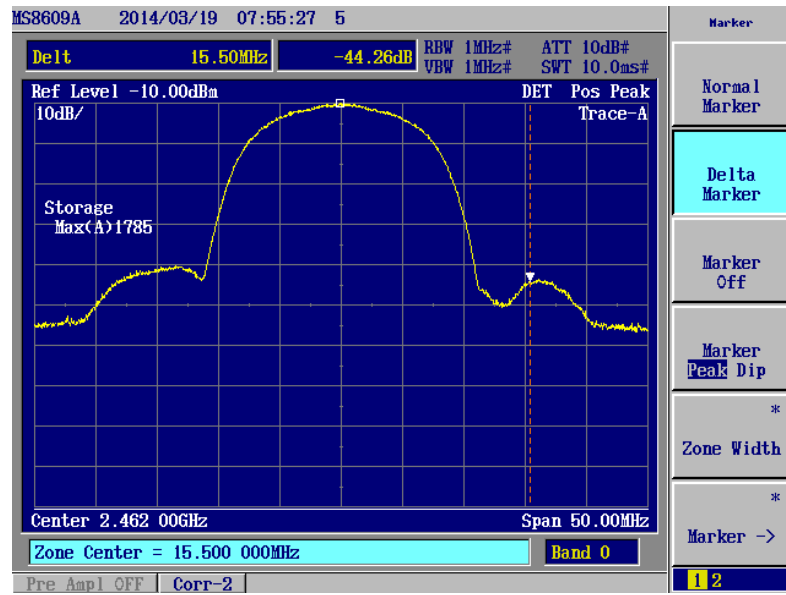


Figure 8 Band Edge of Compliance of RF Conducted Emissions (Higher ch_2462.000MHz)

3.5 Peak Power Spectral Density

3.5.1 Test Result

Worst Case---Modulation Type : CCK Data Rate : 11Mbps

| Channel | Frequency (MHz) | S/A Reading (dBm) | Factor (dB) | Result (dBm) | Limit (dBm) | Margin (dB) |
|---------|-----------------|-------------------|-------------|--------------|-------------|-------------|
| Lower | 2412.080 | -29.63 | 20.30 | -9.33 | 30 | 39.33 |
| Middle | 2437.100 | -29.47 | 20.27 | -9.20 | 30 | 39.20 |
| Higher | 2462.300 | -31.15 | 20.26 | -10.89 | 30 | 40.89 |

Table4 Peak Power Spectral Density

Result : Pass

3.5.2 Test Detail

EUT was tested based on FCC 15.247(b)(1)(2)FHSS 15.247(b)(3)DHSS with temporally antenna port. The bandwidth of the RF frequency is measured with the spectrum analyzer using 3kHz RBW and 10kHz VBW.

3.5.3 Test data

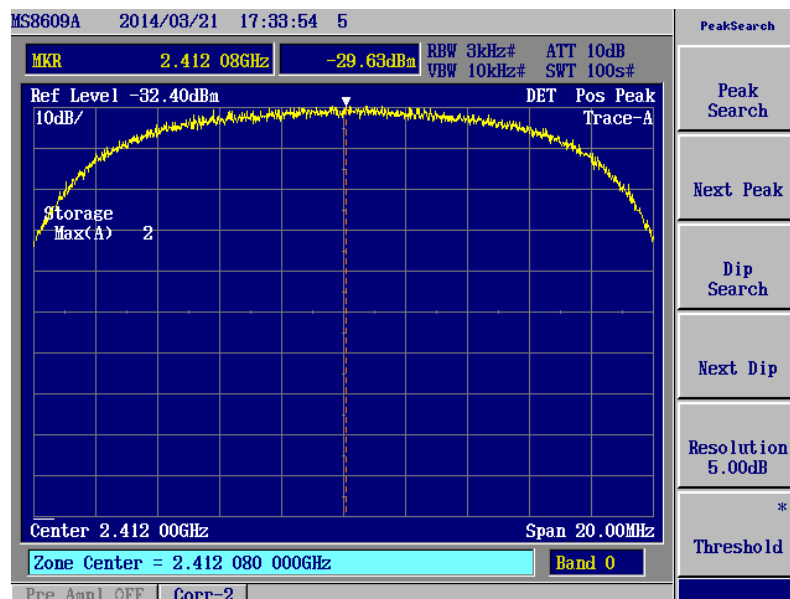


Figure 9 Peak Power Spectral Density (Lower ch_2412.000MHz)

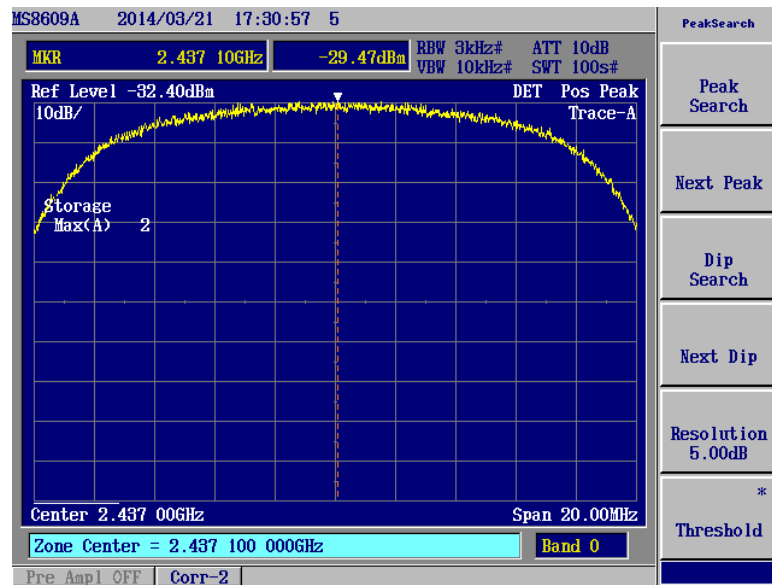


Figure 10 Peak Power Spectral Density (Middle ch_2437.000MHz)

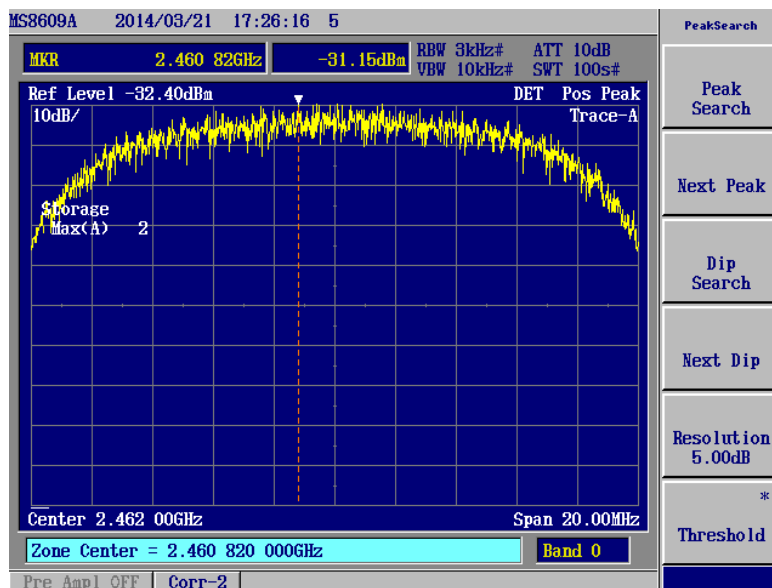


Figure 11 Peak Power Spectral Density (Higher ch_2462.000MHz)

3.6 Radiated emission

3.6.1 Test Result

3.6.1.1 9kHz to 1000MHz

Worst Case---Modulation Type : CCK Data Rate : 11Mbps

| Transmit frequency (MHz) | Measurement Frequency (MHz) | Reading (dB μ V) | Correction factor (dB/m) | Noise level (dB μ V/m) | Ant height (m) | Ant Pol (H/V) | Turn table angle (digree) | Limit (dB μ V/m) | Margin (dB) |
|--------------------------|-----------------------------|----------------------|--------------------------|----------------------------|----------------|---------------|---------------------------|----------------------|-------------|
| 2412.000 | 25.48 | 8.8 | 17.4 | 26.2 | 110 | V | 153 | 29.5 | 3.3 |
| | 74.579 | 47.4 | -14.6 | 32.8 | 298 | H | 239 | 40 | 7.2 |
| | 798.803 | 36.4 | 1.1 | 37.5 | 123 | V | 7 | 46 | 8.5 |
| 2437.000 | 23.096 | 8.3 | 17.2 | 25.5 | 110 | H | 185 | 29.5 | 4.0 |
| | 74.549 | 51.3 | -14.6 | 36.7 | 313 | H | 270 | 40 | 3.3 |
| | 797.285 | 34.3 | 1.0 | 35.3 | 120 | V | 11 | 46 | 10.7 |
| 2462.000 | 26.811 | 8.9 | 17.2 | 26.1 | 120 | V | 113 | 29.5 | 3.4 |
| | 52.339 | 49.3 | -12.1 | 37.2 | 120 | V | 62 | 40 | 2.8 |
| | 797.513 | 35.2 | 1.0 | 36.2 | 119 | V | 5 | 46 | 9.8 |

Table5 Radiated Emission (9kHz-1000MHz)

Result : Pass

3.6.1.2 1GHz to 25GHz

Worst Case---Modulation Type : CCK Data Rate : 11Mbps

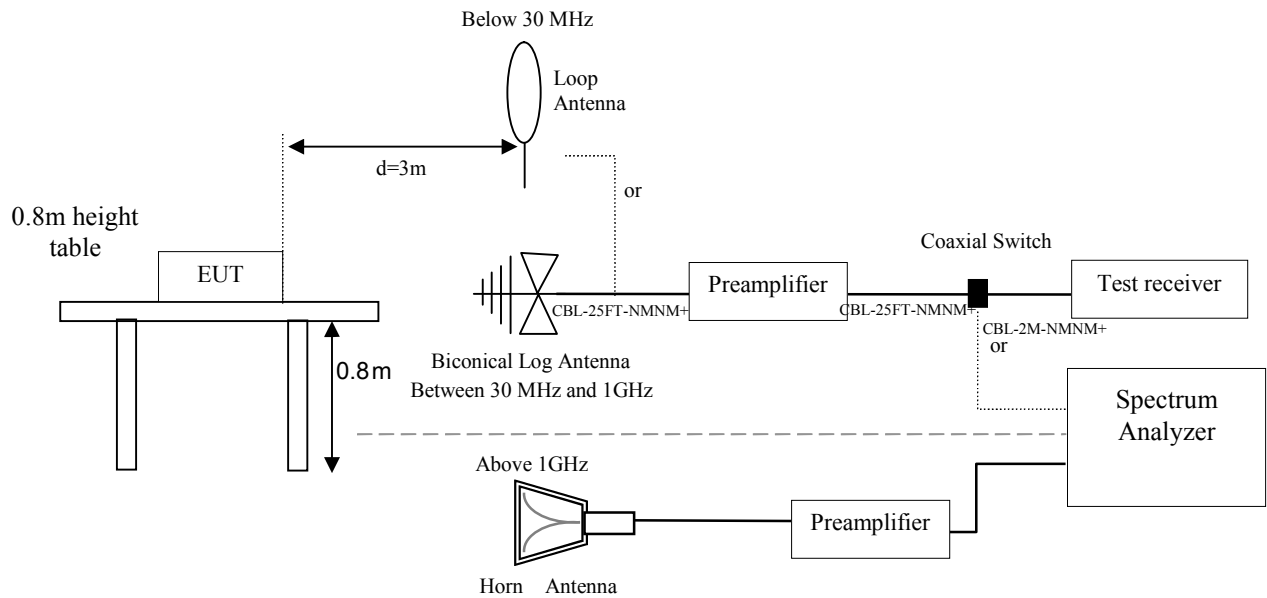
| Transmit frequency (MHz) | Measurement Frequency (MHz) | Reading (dB μ V) | Correction factor (dB/m) | Noise level (dB μ V/m) | Ant height (m) | Ant Pol (H/V) | Turn table angle (digree) | Limit (dB μ V/m) | Margin (dB) |
|--------------------------|-----------------------------|----------------------|--------------------------|----------------------------|----------------|---------------|---------------------------|----------------------|-------------|
| 2412.000 | 1130.277 | 35.9 | -2.9 | 33.0 | 176 | V | 210 | 54 | 21.0 |
| | 4824.052 | 28.6 | 16.5 | 45.1 | 192 | H | 1 | 54 | 8.9 |
| | 23691.552 | 23.6 | 25.3 | 48.9 | 170 | H | 288 | 54 | 5.1 |
| 2437.000 | 1130.334 | 36.1 | -2.9 | 33.2 | 130 | V | 358 | 54 | 20.8 |
| | 4874.032 | 28.0 | 17.6 | 45.6 | 121 | V | 354 | 54 | 8.4 |
| | 21023.162 | 23.0 | 25.7 | 48.7 | 171 | H | 268 | 54 | 5.3 |
| 2462.000 | 1130.415 | 35.8 | -2.1 | 33.7 | 121 | V | 161 | 54 | 20.3 |
| | 4923.984 | 23.6 | 16.9 | 40.5 | 125 | V | 359 | 54 | 13.5 |
| | 21355.816 | 23.2 | 25.9 | 49.1 | 180 | H | 50 | 54 | 4.9 |

Table6 Radiated Emission (1GHz-25GHz)

Result : Pass

3.6.2 Test Detail

EUT was tested based on FCC 15.209 with antenna. See Annex B.



3.6.3 Test data

3.6.3.1 9kHz to 1000MHz

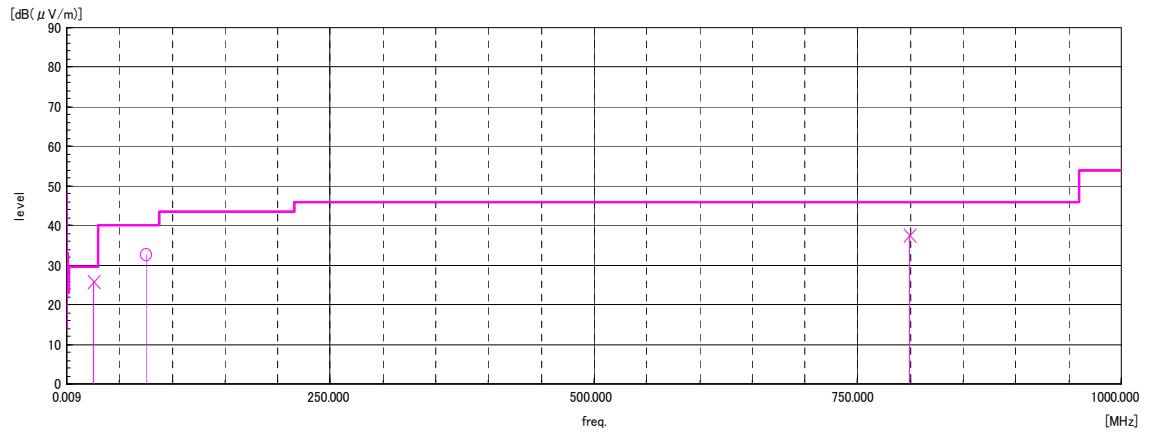


Figure 9 Radiated Emission (Lower ch_2412.000MHz)

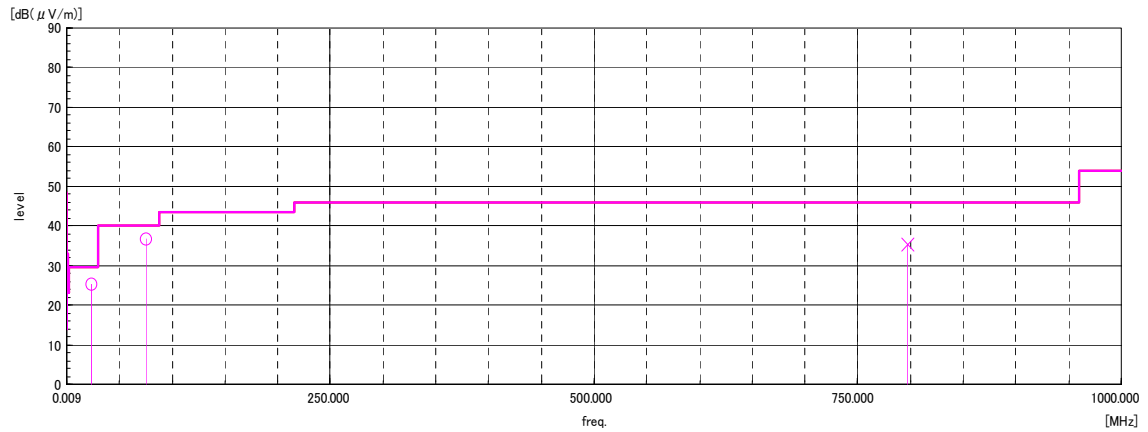


Figure 10 Radiated Emission (Middle ch_2437.000MHz)

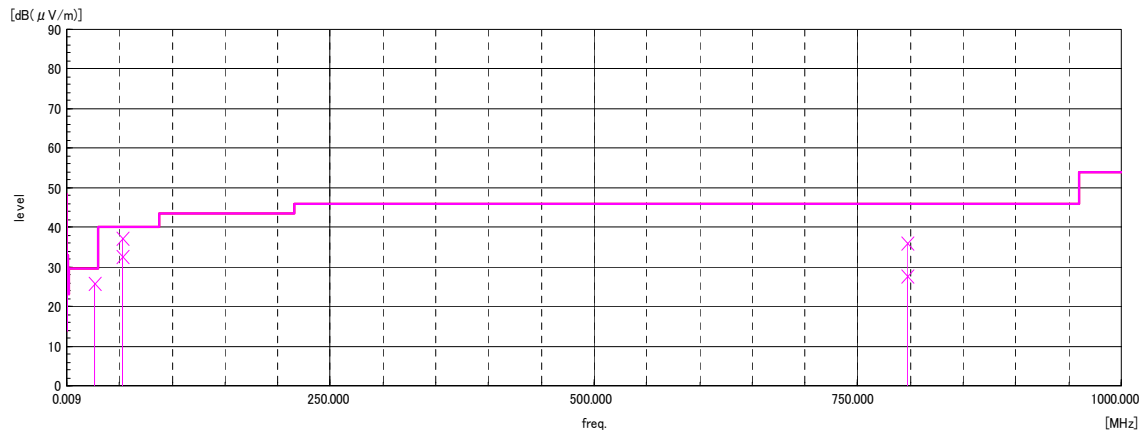


Figure 11 Radiated Emission (Higher ch_2462.000MHz)

3.6.3.2 1GHz to 25GHz

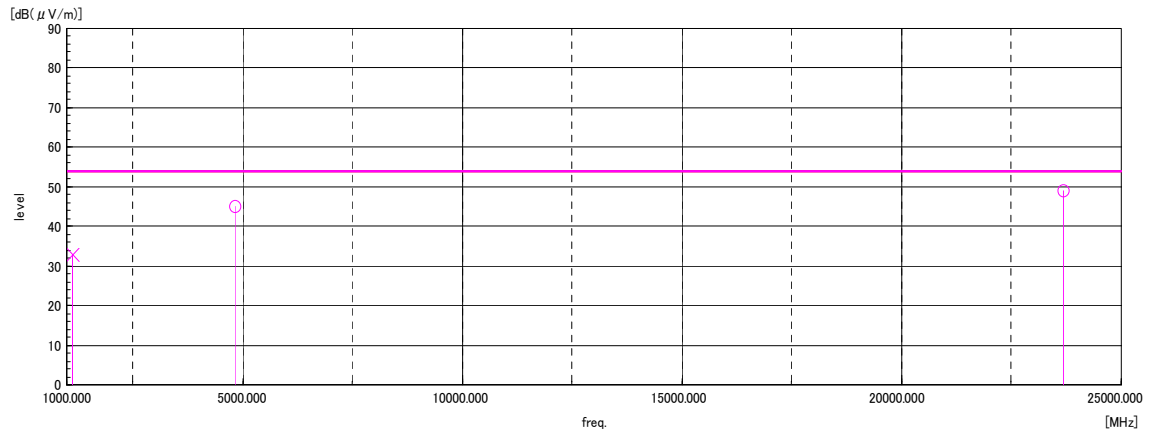


Figure 12 Radiated Emission (Lower ch_2412.000MHz)

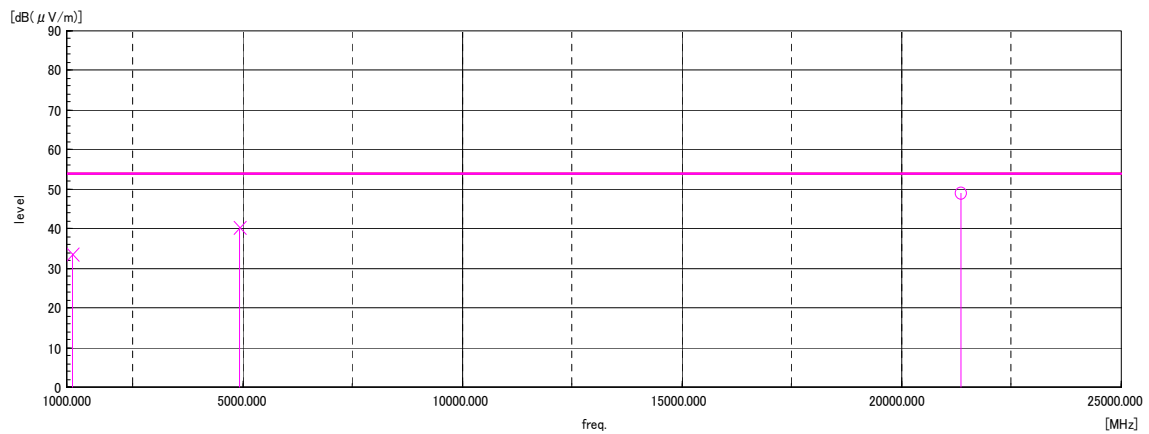


Figure 13 Radiated Emission (Middle ch_2437.000MHz)

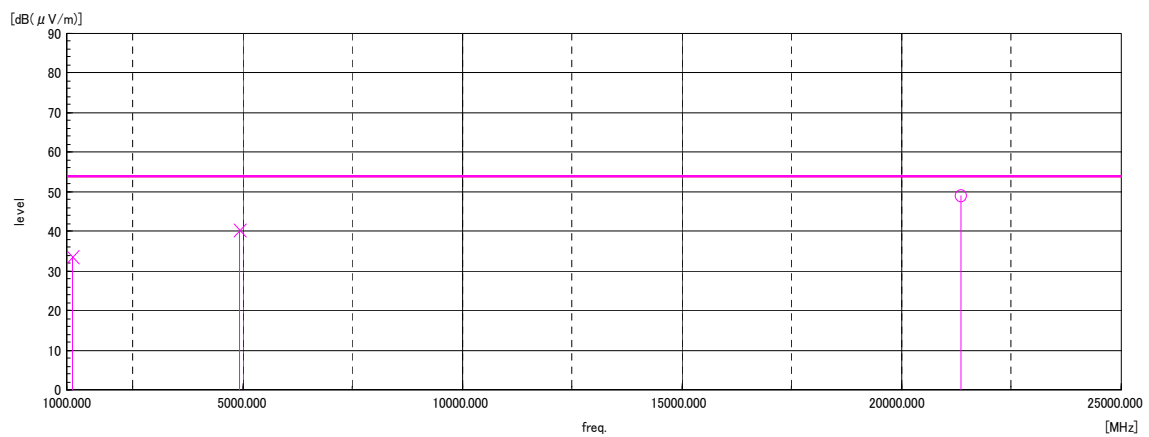


Figure 14 Radiated Emission (Higher ch_2462.000MHz)

3.7 Line Conducted Measurement Data

3.7.1 Test Result

Worst Case---Modulation Type : CCK Data Rate : 11Mbps

| LINE | Frequency [MHz] | Factor [dB] | Level[dB μ V] | | Result[dB μ V] | | Limit[dB μ V] | | Margin[dB] | |
|------|-----------------|-------------|-------------------|------|--------------------|------|-------------------|------|------------|------|
| | | | QP | AV | QP | AV | QP | AV | QP | AV |
| A | 0.1500 | 9.9 | 38.0 | 10.6 | 47.9 | 20.5 | 66.0 | 56.0 | 18.1 | 35.5 |
| | 0.3264 | 9.9 | 24.2 | 22.8 | 34.1 | 32.7 | 59.5 | 49.5 | 25.4 | 16.8 |
| | 0.8967 | 9.9 | 19.2 | 16.2 | 29.1 | 26.1 | 56.0 | 46.0 | 26.9 | 19.9 |
| | 3.1017 | 9.8 | 26.9 | 23.3 | 36.7 | 33.1 | 56.0 | 46.0 | 19.3 | 12.9 |
| | 19.6694 | 10.2 | 28.7 | 21.8 | 38.9 | 32.0 | 60.0 | 50.0 | 21.1 | 18.0 |
| | 22.0475 | 10.4 | 28.3 | 20.9 | 38.7 | 31.3 | 60.0 | 50.0 | 21.3 | 18.7 |
| B | 0.1500 | 9.9 | 37.9 | 10.7 | 47.8 | 20.6 | 66.0 | 56.0 | 18.2 | 35.4 |
| | 0.2446 | 9.7 | 29.9 | 26.0 | 39.6 | 35.7 | 61.9 | 51.9 | 22.3 | 16.2 |
| | 0.3255 | 10.0 | 29.6 | 27.9 | 39.6 | 37.9 | 59.6 | 49.6 | 20.0 | 11.7 |
| | 0.8956 | 9.9 | 23.4 | 22.3 | 33.3 | 32.2 | 56.0 | 46.0 | 22.7 | 13.8 |
| | 3.0142 | 9.8 | 29.5 | 27.3 | 39.3 | 37.1 | 56.0 | 46.0 | 16.7 | 8.9 |
| | 22.5756 | 10.4 | 28.3 | 21.8 | 38.7 | 32.2 | 60.0 | 50.0 | 21.3 | 17.8 |

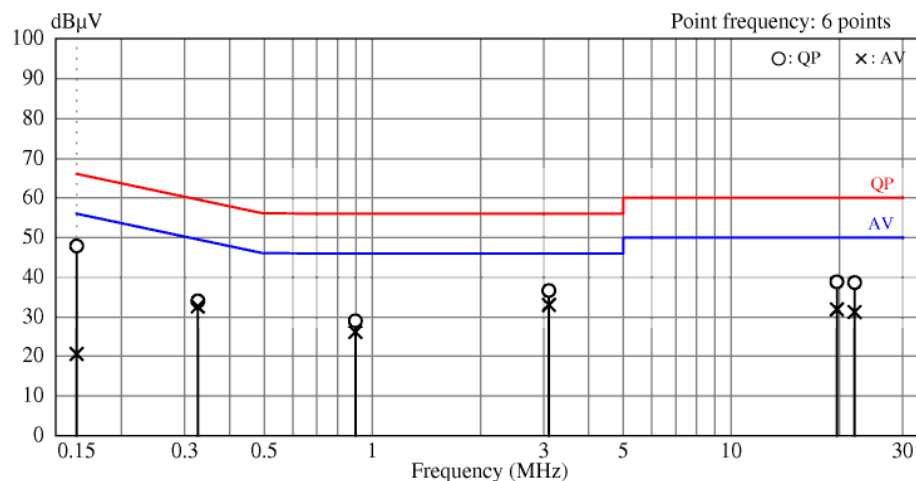
Result : Pass

3.7.2 Test Detail

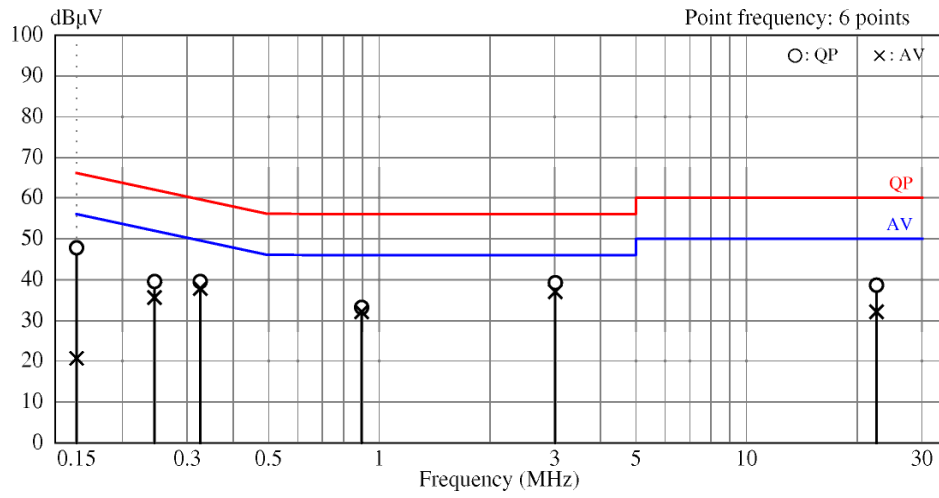
Onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN).

3.7.3 Test data

< LINE A >



< LINE B >



4. Test facility

4.1 Test Instruments

4.1.1 Conducted Emissions

| Product Name | Manufacturer | Model Number | Serial Number | Calibration Date | Due Date |
|-------------------|--------------|--------------|---------------|------------------|------------|
| Spectrum Analyzer | Anritsu | MS8609A | 6200684960 | 2013/09/13 | 2014/09/30 |
| Cable | Pasternack | PE315-24 | - | 2013/06/25 | 2014/06/30 |
| Attenuator(20dB) | Anritsu | 41KC20 | - | 2013/06/19 | 2014/06/30 |

4.1.2 Radiated Electric-Field Emissions

| Product Name | Manufacturer | Model Number | Serial Number | Calibration Date | Due Date |
|-----------------------|-----------------|----------------|---------------|------------------|------------|
| EMI Test Receiver | Rohde & Schwarz | ESIB40 | 100263 | 2013/09/17 | 2014/09/30 |
| Pre amplifier | Hewlett Packard | 8447F | 2805A03194 | 2013/07/29 | 2014/07/31 |
| Pre amplifier | Hewlett Packard | 8449B | 3008A0079 | 2013/07/1 | 2014/07/31 |
| Cable | Mini-Circuits | CBL-25FT-NMNM+ | 83148 | 2013/12/20 | 2014/12/31 |
| Cable | Mini-Circuits | CBL-25FT-NMNM+ | 83145 | 2013/12/20 | 2014/12/31 |
| Cable | Mini-Circuits | CBL-2M-NMNM+ | 71548 | 2013/12/20 | 2014/12/31 |
| Cable | Mini-Circuits | CBL-1M-NMNM+ | 104547/4 | 2013/12/20 | 2014/12/31 |
| Loop Antenna | EMCO | 6507 | 9108-1268 | 2013/04/03 | 2014/04/30 |
| Biconical Log Antenna | Schwarzbeck | VULB9160 | 9160-3189 | 2013/06/10 | 2014/06/30 |
| Horn Antenna | ETS-LINDGREN | 3117 | 00146463 | 2013/05/01 | 2014/05/31 |
| Horn Antenna | ETS-LINDGREN | 3116C | 00146359 | 2014/01/28 | 2015/01/31 |

5.1.3 Line Conducted Emissions

| Product Name | Manufacturer | Model Number | Serial Number | Calibration Date | Due Date |
|--------------|---------------|--------------|---------------|------------------|-----------|
| Receiver | Rohde&Schwarz | ESIB7 | 100211 | 2013/6/26 | 2014/6/30 |
| LISN | Rohde&Schwarz | ENV216/02 | 100168 | 2013/7/25 | 2014/7/31 |
| LISN | Rohde&Schwarz | ENV216/02 | 100169 | 2013/7/25 | 2014/7/31 |

4.2 Test equipment

| Dimension | Material | Measurement |
|-----------------------------|-------------|---------------------|
| 1.5m(W) X 0.8m(H) X 1.0m(D) | Polystyrene | Radiated Emissions |
| 0.4m(W) X 0.7m(H) X 0.4m(D) | Polystyrene | Conducted Emissions |

4.3 Normalized Site Attenuation

| Site Name | Laboratory | Calibration Date | Due Date |
|--------------------|------------------|------------------|------------|
| No.1 EMC test room | Tokyo Laboratory | 2013/10/23 | 2014/10/31 |

Annex A (Miscellaneous Information)

A.1 Test Locations

Unless otherwise described in this report, the tests were carried out at the following locations:

e-OHTAMA, Ltd., Tokyo Laboratory
2-8-10 Kurigi, Aso-ku, Kawasaki-shi, Kanagawa, Japan
TEL: +81-44-980-2090
FAX: +81-44-980-2052

VLAC Attestation No.: VLAC-018-1

Annex B (Description of Test Method)

Unless otherwise described in this report, tests are carried out using the methods which are described in the applied standards and summarized in this section.

Specifically for 47 CFR 15 Subpart B, section 6 of ANSI C63.4-2003 is to be used for EUT arrangements and operations, and section 8 of the standard is to be used for radiated emissions measurement procedures.

B.1 Conducted Emissions (AC Main and Other Terminals)

Table-top EUT is placed on a wooden table so that one side (rear or bottom) of the EUT is separated 0.4 m from the reference plane (metallic wall or ground plane), and floor-standing EUT is placed on the ground plane. Mains to the EUT is supplied through a LISN, and mains to non-EUT components, if any, are supplied through yet another LISN(s).

If LISN is not applicable, mains would be supplied directly and a voltage probe would be used instead for the measurement.

For each current-carrying conductors or terminals to be measured, a spectrum analyzer is used to pre-scan the emissions.

For each of the significant emissions detected, the maximum signal level is read using a measuring receiver having CISPR 16 quasi-peak (QP) and average (AV) detector function and 9 kHz nominal bandwidth.

Then, appropriate correction factor —consists of transducer (LISN or voltage probe) factor and transmission loss (due to the attenuator, filter and/or transient suppressor, if any, and the cable) in the system— is applied to the receiver reading to calculate the corresponding emission level.

*For example, if reading on the receiver is 33.0 dB μ V, the transducer factor is 0.5 dB, and transmission loss (attenuation) in the coaxial cable and the attenuator is 10.5 dB, the emission level is calculated as:
33.0 dB μ V + 0.5 dB + 10.5 dB = 44.0 dB μ V.*

Finally, the calculated emission level is compared with the upper limit specified in the standard.

Actual measurement will be carried out according to the appropriate edition of CISPR 16-2-1, CISPR 22, and ANSI C63.4 and/or other standards whichever applicable.

Specifically for 47 CFR 15 Subpart B, section 6 of ANSI C63.4-2003 is to be used for EUT arrangements and operations, and section 8 of the standard is to be used for radiated emissions measurement procedures.

B.2 Radiated Electric-Field Emissions (30 MHz to 1000MHz)

EUT is placed on a turn-table in a test site, on a table (styrene form) 0.8 m height or on the floor unless otherwise specified in the standard.

Receiving antenna ---usually biconical, log-periodic or biconical/log-periodic hybrid---is positioned at the specified distance from the EUT.

For each polarization (horizontal and vertical), a spectrum analyzer is used to pre-scan the emissions while rotating the turn-table.

For each of the significant electromagnetic field detected, the test personnel discriminates EUT's emissions from the ambient noises.

For each of the significant emissions, maximum level of the emission is searched while rotating the turn-table and varying the antenna height between 1 m and 4 m, and the maximum signal level is read using a measuring receiver having CISPR 16 quasi-peak (QP) detector function and 120 kHz nominal bandwidth.

Then, appropriate correction factor ---consists of antenna factor, amplifier gain and transmission loss (due to the attenuator and the cable loss) in the system--- is applied to the receiver reading to calculate the corresponding field strength.

For example, if reading on the receiver is 33.0 dB μ V, the antenna factor is 9.4 dB (1/m), the amplifier gain is 25.6 dB, and transmission loss (attenuation) in the coaxial cable and the attenuator is 6.5 dB, the field strength is calculated as: 33.0 dB μ V + 9.4 dB (1/m) - 25.6 dB + 6.5 dB = 23.3 dB μ V/m.

Finally, the calculated field strength is compared with the upper limit specified in the standard.

Actual measurement will be carried out according to the appropriate edition of CISPR 16-2-3, CISPR 22, and ANSI C63.4 and/or other standards whichever applicable.

Specifically for 47 CFR 15 Subpart B, section 6 of ANSI C63.4-2003 is to be used for EUT arrangements and operations, and section 8 of the standard is to be used for radiated emissions measurement procedures.

B.3 Radiated Electric-Field Emissions above 1000MHz

EUT is placed on a turn-table in a test site, on a table (styrene foam) 0.8 m height or on the floor unless otherwise specified in the standard.

Receiving antenna ---usually double ridge waveguide horn or standard horn--- is positioned at the specified distance from the EUT.

For each polarization (horizontal and vertical), a spectrum analyzer is used to pre-scan the emissions while rotating the turn-table.

For each of the significant electromagnetic field detected, the test personnel discriminates EUT's emissions from the ambient noises.

For each of the significant emissions, maximum level of the emission is searched while rotating the turn-table and varying the antenna height if it is required, and the maximum signal level is read using a spectrum analyzer or a measuring receiver having peak detector function and 1 MHz nominal bandwidth, unless otherwise specified in the standard. To obtain average readings with spectrum analyzers, video averaging (usually with VBW = 10 Hz) may be used.

As specified in the applicable standard, the antenna height would be (1) varied between 1 m and 4 m, or (2) varied so that the whole height of the EUT is covered by the main lobe of the receiving antenna, or (3) fixed to the approximate radiation center of the EUT.

Then, appropriate correction factor ---consists of antenna factor, amplifier gain and transmission loss (due to the attenuator and the cable loss) in the system--- is applied to the spectrum analyzer/receiver reading to calculate the corresponding field strength, and the result is compared with the upper limit specified in the standard.

Actual measurement will be carried out according to the appropriate edition of CISPR 16-2-3, CISPR 22, ANSI C63.4 and/or other standards whichever applicable.

Specifically for 47 CFR 15 Subpart B, section 6 of ANSI C63.4-2003 is to be used for EUT arrangements and operations, and section 8 of the standard is to be used for radiated emissions measurement procedures.

B.4 Radiated Magnetic-Field Emissions

EUT is placed on a turn-table in a test site, on a (styrene foam) table 0.8 m height or on the floor unless otherwise specified in the standard.

Receiving antenna ---loop antenna (active or passive) --- is positioned at the specified distance from the EUT.

A spectrum analyzer is used to pre-scan the emissions while rotating the turn-table.

For each of the significant electromagnetic field detected, the test personnel discriminates EUT's emissions from the ambient noises.

For each of the significant emissions, maximum level of the emission is searched while rotating the turn-table and rotating the receiving antenna about its center, and the maximum signal level is read using a measuring receiver having CISPR 16 quasi-peak (QP) detector function and 120 kHz nominal bandwidth.

Then, appropriate correction factor ---consists of antenna factor, and transmission loss (cable loss) in the system--- is applied to the receiver reading to calculate the corresponding field strength, and the result is compared with the upper limit specified in the standard.

In general, it is assumed that magnetic field strength can be converted to electric field strength by applying the free space impedance of approximately 377 ohms, and vice versa.

Actual measurement will be carried out according to the appropriate edition of CISPR 16-2-3, ANSI C63.4 and/or other standards whichever applicable.