

FCC Test Report

for

Endoscope

Model No. : HDV600, HDV-WTX, HDV-WTX1, HDV-WTX2,
HDV-TX1, HDV-TX2, HDV-4CAM, HDV-5CAM
FCC ID : IWK-HDV
Report Number : RF- T400-1102-100
Date of Receipt : May 31, 2011
Date of Report : August 18, 2011

Prepared for

Extech Instruments Corporation

285 Bear Hill Road, Waltham, MA 02451, USA

Prepared by



Central Research Technology Co.

EMC Test Laboratory

No.11, Lane41, Fushuen St., Jungshan Chiu, Taipei, Taiwan, 104, R.O.C.



NVLAP LAB CODE 200575-0

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Verification of Compliance

Equipment under Test : Endoscope
Model No. : HDV600, HDV-WTX, HDV-WTX1, HDV-WTX2, HDV-TX1,
HDV-TX2, HDV-4CAM, HDV-5CAM
FCC ID : IWK-HDV
Applicant : Extech Instruments Corporation
Address : 285 Bear Hill Road, Waltham, MA 02451, USA
Applicable Standards : 47 CFR part 15, Subpart C
Date of Testing : July 15 ~28, 2011
Deviation : N/A
Condition of Test Sample : Engineering Sample

We, **Central Research Technology Co.**, hereby certify that one sample of the designated product was tested in our facility during the period mentioned above. The test records, data evaluation and Equipment Under Test (EUT) configurations shown in the present report are true and accurate representation of the measurements of the sample's RF characteristics under the conditions herein specified.

The test results show that the EUT as described in the present report is in compliance with the requirements set forth in the standards mentioned above and apply to the tested sample identified in the present report only. The test report shall not be reproduced, except in its entirety, without the written approval of Central Research Technology Co.

PREPARED BY : Cathy Chen , DATE : Aug. 18, 2011
(Cathy Chen/Technical Manager)
APPROVED BY : J. Y. Shih , DATE : Aug. 18, 2011
(Tsun-Yu Shih/General Manager)

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Attachment 1 – Photographs of the Test Configurations

Attachment 2 –External Photographs of EUT

Attachment 3 –Internal Photographs of EUT

1 General Description

1.1 General Description of EUT

Equipment under Test : Endoscope

Model No. : HDV600, HDV-WTX, HDV-WTX1, HDV-WTX2, HDV-TX1,
HDV-TX2, HDV-4CAM, HDV-5CAM

Power in : 3.7Vdc by the internal battery

Test Voltage : 3.7Vdc by the internal battery

Channel Numbers : 1

Frequency Range : 2468MHz

Modulation : FM

Function Description :

The EUT is used to transmit both control command and data. Please refer to the user's manual for the details.

Perform the function of EUT continuously by executing the test program supplied by manufacturer.

Since the EUT is considered a portable unit, it was pre-tested on the positioned in each of 3 axis. Therefor only the test data of the worse case - Y axiz was used for Radiated test.

1.2 Applied standards

(1) Conduction Emission Requirement

For intentional device, according to §15.207(a) line conduction emission limit is as below table.

| Frequency of Emission (MHz) | Conducted Limit (dBuV) | |
|-----------------------------|------------------------|-----------|
| | Quasi-peak | Average |
| 0.15 – 0.5 | 66 to 56* | 56 to 46* |
| 0.5 - 5 | 56 | 46 |
| 5 - 30 | 60 | 50 |

* Decreases with the logarithm of the frequency.

(2) Field strength of emissions

According to 15.249(a), the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

| Fundamental Frequency | Field Strength of Fundamental (millivolts/meter) | Field Strength of Harmonics (microvolts/meter) |
|--------------------------|--|--|
| 902 - 928 MHz | 50 | 500 |
| 2400 - 2483.5 MHz | 50 | 500 |
| 5725 - 5875 MHz | 50 | 500 |
| 24.0 - 24.25 GHz | 250 | 2500 |

(3) Radiated Emission Requirement

According to 15.249(d), Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

For intentional device, according to §15.209, the general requirement of field strength of radiated emissions from intentional radiator at a distance of 3 meters shall not exceed the below table.

| Frequency (MHz) | Measurement Distance (m) | Field Strength (uV/m) | Field Strength (dBuV/m) |
|----------------------------|-------------------------------------|----------------------------------|------------------------------------|
| 30 – 88 | 3 | 100 | 40.0 |
| 88 – 216 | 3 | 150 | 43.5 |
| 216 – 960 | 3 | 200 | 46.0 |
| 960 – 1610 | 3 | 500 | 54.0 |
| above 1610 | 3 | 500 | 54.0 |

Note 1- The lower limit shall apply at the transition frequency.

(4) Antenna Requirement

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall 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 to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

(5) Restricted Band

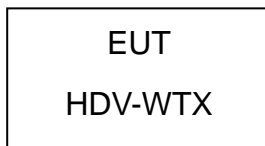
| Frequency (MHz) | Frequency (MHz) | Frequency (MHz) | Frequency (MHz) |
|----------------------------|-----------------------|-----------------|-----------------|
| 0.090 - 0.110 | 16.42 - 16.423 | 399.9 - 410 | 4.5 - 5.15 |
| ¹ 0.495 - 0.505 | 16.69475 - 16.69525 | 608 - 614 | 5.35 - 5.46 |
| ² 1735 - 2.1905 | 16.80425 - 16.80475 | 960 - 1240 | 7.25 - 7.75 |
| 4.125 - 4.128 | 25.5 - 25.67 | 1300 - 1427 | 8.025 - 8.5 |
| 4.17725 - 4.17775 | 37.5 - 38.25 | 1435 - 1626.5 | 9.0 - 9.2 |
| 4.20725 - 4.20775 | 73 - 74.6 | 1645.5 - 1646.5 | 9.3 - 9.5 |
| 6.215 - 6.218 | 74.8 - 75.2 | 1660 - 1710 | 10.6 - 12.7 |
| 6.26775 - 6.26825 | 108 - 121.94 | 1718.8 - 1722.2 | 13.25 - 13.4 |
| 6.31175 - 6.31225 | 123 - 138 | 2200 - 2300 | 14.47 - 14.5 |
| 8.291 - 8.294 | 149.9 - 150.05 | 2310 - 2390 | 15.35 - 16.2 |
| 8.362 - 8.366 | 156.52475 - 156.52525 | 2483.5 - 2500 | 17.7 - 21.4 |
| 8.37625 - 8.38675 | 156.7 - 156.9 | 2690 - 2900 | 22.01 - 23.12 |
| 8.41425 - 8.41475 | 162.0125 - 167.17 | 3260 - 3267 | 23.6 - 24.0 |
| 12.29 - 12.293 | 167.72 - 173.2 | 3332 - 3339 | 31.2 - 31.8 |
| 12.51975 - 12.52025 | 240 - 285 | 3345.8 - 3358 | 36.43 - 36.5 |
| 12.57675 - 12.57725 | 322 - 335.4 | 3600 - 4400 | (2) |
| 13.36 - 13.41 | | | |

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

1.3 The Support Units

| No. | Unit | Model No./ Serial No. | Trade Name | Power Cord | Supported by lab. |
|-----|------|-----------------------|------------|------------|-------------------|
| N/A | * | * | * | * | * |

1.4 Layout of Setup**Connecting Cables :**

| No. | Cable | Length | Shielded | Core | Shielded Backshell | Supported by lab. | Note |
|-----|-------|--------|----------|------|--------------------|-------------------|------|
| N/A | * | * | * | * | * | * | * |

1.5 Test Capability

Test Facility

The test facility used for evaluating the conformance of the EUT with each standard in the present report meets what required in CISPR16-1-4, CISPR16-2-3 and ANSI C63.4:2003.

| Test Room | Type of Test Room | Descriptions |
|-----------|--|--|
| TR1 | 10m semi-anechoic chamber (23m×14m×9m) | Complying with the NSA requirements in documents CISPR 22 and ANSI C63.4:2003 for the radiated emission measurement. |
| TR11 | 3m semi-anechoic chamber (9m × 6m × 6m) | |
| TR13 | Test Site | For the RF conducted emission measurement. |
| TR5 | Shielding Room (8m×5m×4m) | For the conducted emission measurement. |

Test Laboratory Competence Information

Central Research Technology Co. has been accredited / filed / authorized by the agencies listed in the following table.

| Certificate | Nation | Agency | Code | Mark |
|---------------------------|--------------------|---------------|---|----------------------------------|
| Accreditation Certificate | USA | NVLAP | 200575-0 | ISO/IEC 17025 |
| | R.O.C. (Taiwan) | TAF | 0905 | ISO/IEC 17025 |
| | R.O.C. (Taiwan) | BSMI | SL2-IN-E-0033, SL2-IS-E-0033, SL2-R1/R2-E-0033, SL2-A1-E-0033 SL2-L1-E-0033 | ISO/IEC 17025 |
| Site Filing Document | USA | FCC | 474046, TW1053 | Test facility list & NSA Data |
| | Canada | IC | 4699A-1, -3 | Test facility list & NSA Data |
| | Japan | VCCI | R-1527,C-1609,T-131,T-1441, G-10 | Test facility list & NSA Data |
| Authorization Certificate | Germany | TUV | 10021687 | ISO/IEC 17025 |
| | Norway | Nemko | ELA212 | ISO/IEC 17025 |

The copy of each certificate can be downloaded from our web site: www.crc-lab.com

1.6 Measurement Uncertainty

The assessed measurement uncertainty with a suitable coverage factor K to ensure 95% confidence level for the normal distribution are shown as below, the values are less than $U_{cisp\text{r}}$ in table 1 of CISPR 16-4-2.

| Test Item | Measurement Uncertainty | |
|---------------------------------------|-----------------------------------|-------|
| Radiated Emission: (30MHz~200MHz) | Horizontal 3.5dB ; Vertical 3.8dB | |
| Radiated Emission: (200MHz~1GHz) | Horizontal 3.9dB ; Vertical 3.9dB | |
| Radiated Emission: (1GHz~18GHz) | Horizontal 3.5dB ; Vertical 3.6dB | |
| Radiated Emission: (18GHz~26.5GHz) | Horizontal 4.4dB ; Vertical 4.5dB | |
| Line Conducted Emission | ESH2-Z5 | 3.1dB |
| | ENV 4200 | 2.8dB |

2 Field Strength of Fundamental

Result: Pass

2.1 Applied standard

| Fundamental Frequency | Peak | Average |
|---|--------------------------------|-------------------------------|
| <input type="checkbox"/> 902 – 928 MHz | 500mV/m (114dBuV/m) | 50mV/m (94dBuV/m) |
| <input checked="" type="checkbox"/> 2400 – 2483.5 MHz | 500 mV/m (114dBuV/m) | 50 mV/m (94dBuV/m) |
| <input type="checkbox"/> 5725 – 5875 MHz | 500 mV/m (114dBuV/m) | 50 mV/m (94dBuV/m) |
| <input type="checkbox"/> 24.0 – 24.25 GHz | 2500 mV/m (128dBuV/m) | 250 mV/m (108dBuV/m) |

2.2 Test Instruments

| Test Site and Equipment | Manufacturer | Model No./ Serial No. | Last Calibration Date | Calibration Due Date |
|-------------------------|------------------|-------------------------------|-----------------------|----------------------|
| Spectrum Analyzer | Agilent | E4407B/ MY45106795 | 2011/5/2 | 2012/5/2 |
| Antenna | EMCO | 3117/82847 | 2011/3/1 | 2012/3/1 |
| PRE-AMPLIFIER | MITEQ | JS4-00101800-28-5A/ 742229 | 2010/12/15 | 2011/12/15 |
| RF Cable | N/A | N/A/C0081 | 2011/4/19 | 2011/10/19 |
| Semi - anechoic Chamber | ETS. LINDGREN | TR11/ 906-A | 2011/4/17 | 2012/4/17 |

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR:No Calibration Required.

Instrument Setting

| RBW | VBW | Detector | Trace | Comment |
|------------|------------|-----------------|--------------|----------------|
| 1MHz | 1MHz | Peak | Maxhold | Peak |
| 1MHz | 10Hz | Peak | Maxhold | Average |

Climatic Condition

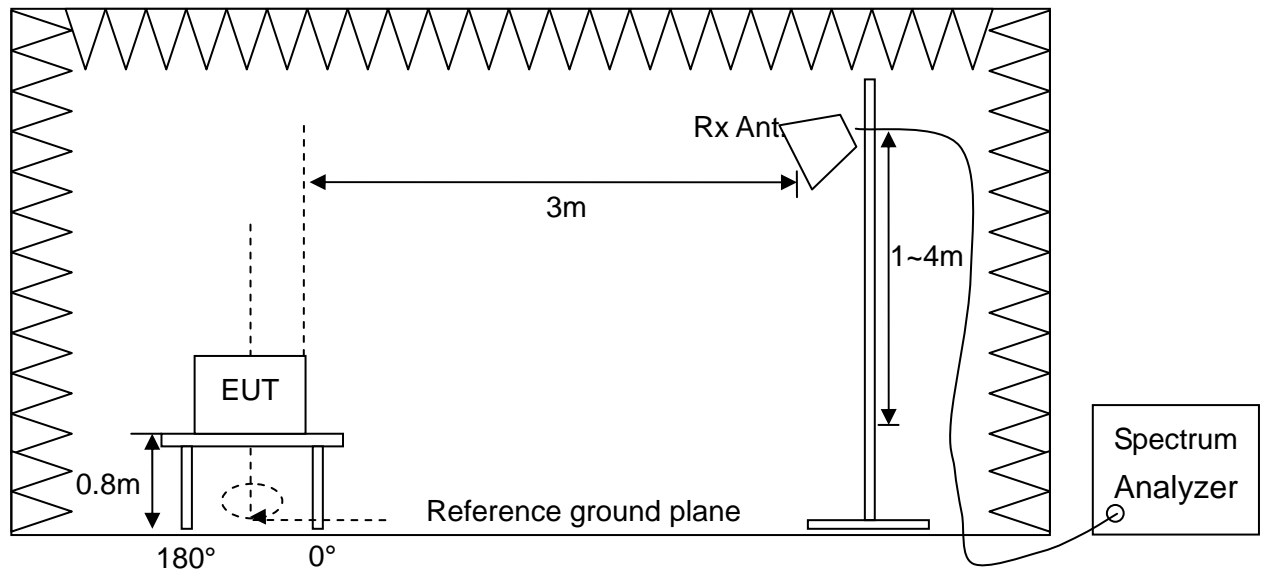
Ambient Temperature : 28°C

Relative Humidity : 54%

2.3 Measurement Procedure

- a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.
- b. A software provided by client enabled the EUT to transmit and receive data at operating frequency.(if necessary)
- c. If the EUT is tabletop equipment, it should be placed on a wooden table with a height of 0.8 meters above the reference ground plane in the semi-anechoic chamber. If the EUT is floor-standing equipment, it should be placed on a non-conducted support with a height of 12 millimeters above the reference ground plane in the semi-anechoic chamber.
- d. The EUT is set 3m away from the receiving antenna.
- e. Rapidly sweep the signal in the test frequency range by using the spectrum through the Maximum-peak detector.
- f. Rotate the EUT from 0° to 360° and position the receiving antenna at heights from 1 to 4 meters above the reference ground plane continuously to determine higher emission level and record it.
- g. Then measure frequency found from step f. by using the spectrum with rotating the EUT and positioning the receiving antenna height to determine the maximum level.
- h. Set the spectrum detector to be Peak or Average to find out the maximum level occurred.
- i. Record frequency, azimuth angle of the turntable, height, and polarization of the receiving antenna and compare the maximum level with the required limit.
- j. Change the receiving antenna to another polarization to measure radiated emission by following step e. to i. again.

2.4 Test configuration



2.5 Test Data

Test Mode : Continuous Transmitting

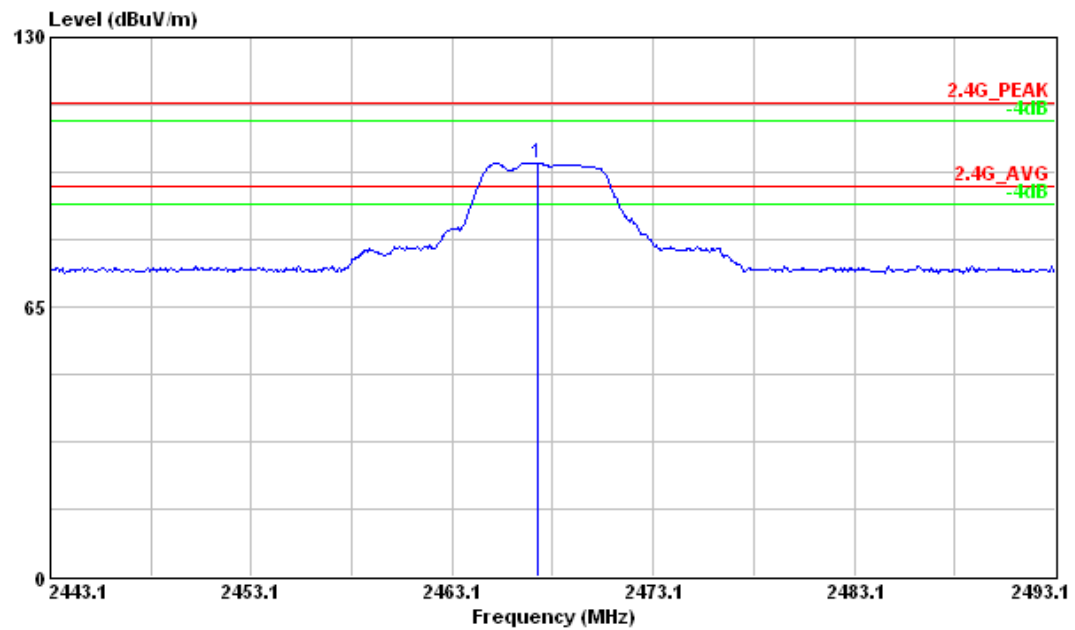
Tester : Liu

| Frequency (MHz) | Polarization | Reading Data (dBuV) | | Correction Factor (dB/m) | Output Field Strength (dBμV/m) | | Limit (dBμV/m) | | Margin (dB) | |
|--------------------|--------------|------------------------|-------|--------------------------------|--------------------------------------|-------|-------------------|----|----------------|------|
| | | PK | AV | | PK | AV | PK | AV | PK | AV |
| 2468.55 | V | 99.69 | 91.41 | 1.08 | 100.77 | 92.49 | 114 | 94 | 13.23 | 1.51 |
| | H | 100.57 | 91.68 | 1.08 | 101.65 | 92.76 | 114 | 94 | 12.35 | 1.24 |

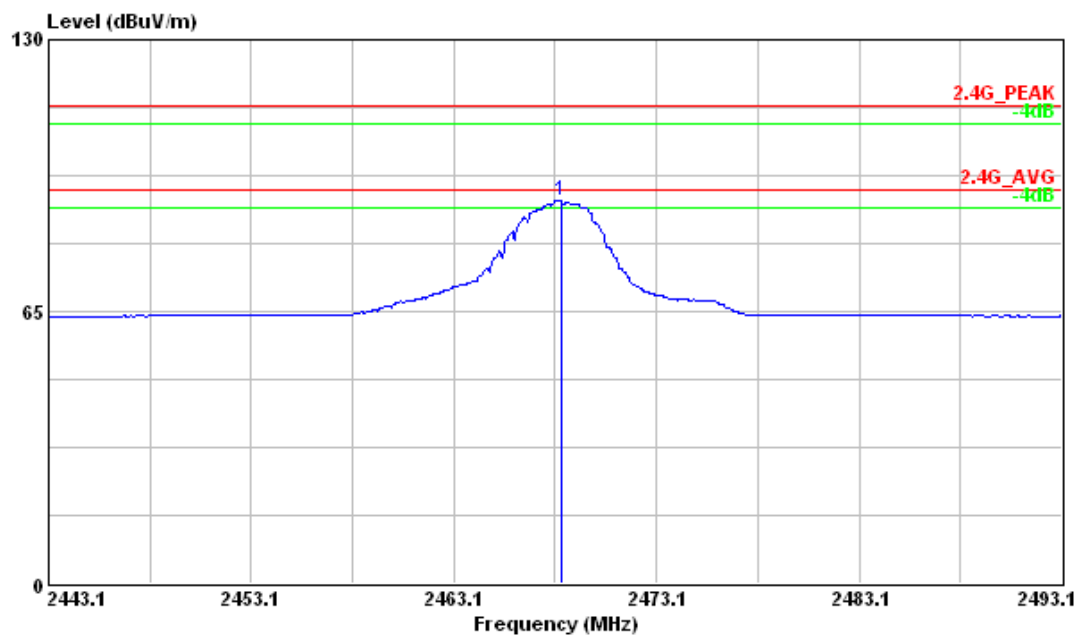
Note :

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Output Field Strength (dBuV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Output Field Strength

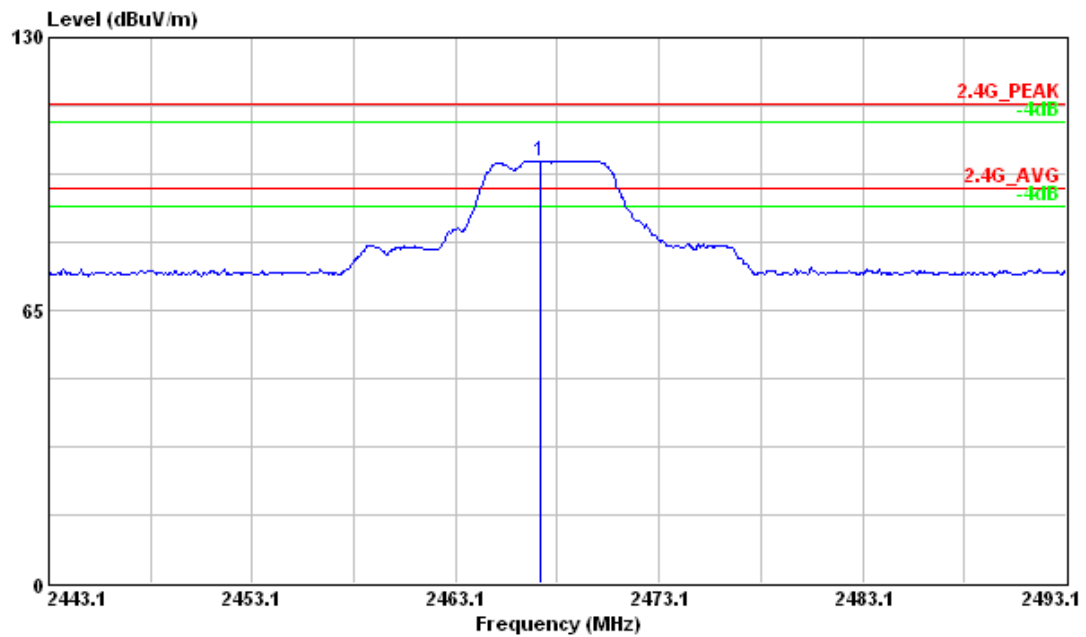
Vertical Polarization - Peak



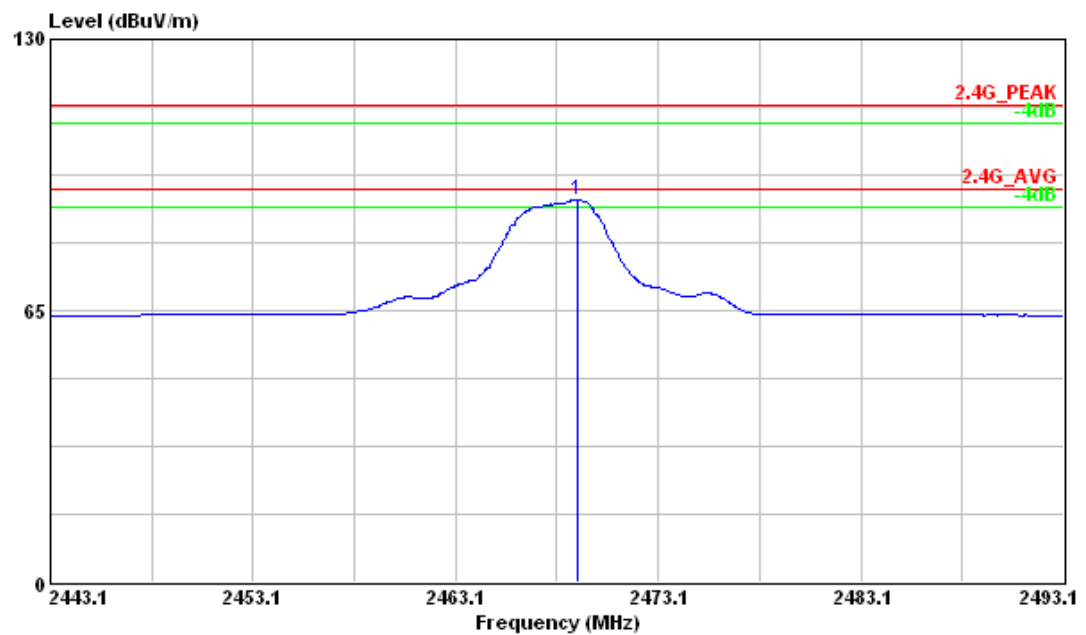
Vertical Polarization - Average



Horizontal Polarization - Peak



Horizontal Polarization - Average



3 Radiated Emission Measurement

Result: PASS

3.1 Limit for Radiated Emission Measurement

Limit for Harmonics Radiation Emission Measurement

| Fundamental Frequency | Field Strength of Harmonics |
|---|-----------------------------|
| <input type="checkbox"/> 902 – 928 MHz | 500 uV/m (54dBuV/m) |
| <input checked="" type="checkbox"/> 2400 – 2483.5 MHz | 500 uV/m (54dBuV/m) |
| <input type="checkbox"/> 5725 – 5875 MHz | 500 uV/m (54dBuV/m) |
| <input type="checkbox"/> 24.0 – 24.25 GHz | 2500 uV/m(68dBuV/m) |

Limit for Other Emissions except Harmonics

| Frequency (MHz) | Quasi-peak (dBμV/m) | |
|--|---------------------|------------------|
| 30 to 88 | 40 | |
| 88 to 216 | 43.5 | |
| 216 to 960 | 46 | |
| 960 to 1000 | 54 | |
| Frequency (MHz) | Peak (dBμV/m) | Average (dBμV/m) |
| Above 1000 | 74 | 54 |
| Note 1- The lower limit shall apply at the transition frequency. | | |
| Note 2- Additional provisions may be required for cases where interference occurs. | | |

3.2 Test Instruments

| Test Site and Equipment | Manufacturer | Model No./ Serial No. | Last Calibration Date | Calibration Due Date |
|-------------------------|------------------|---------------------------------|-----------------------|----------------------|
| Spectrum Analyzer | Agilent | E4407B/ MY45106795 | 2011/5/2 | 2012/5/2 |
| EMI Test Receiver | R&S | ESCI/100019 | 2011/5/25 | 2012/5/25 |
| Broadband Antenna | EMCO | 3142C/52088 | 2011/5/19 | 2012/5/19 |
| Antenna | EMCO | 3117/82847 | 2011/3/1 | 2012/3/1 |
| Pre-Amplifier | MITEQ | JS4-00101800-28-5A/ 742229 | 2010/12/15 | 2011/12/15 |
| Pre-Amplifier | MITEQ | JS4-00101800-28-1 0P/1498979 | 2010/12/10 | 2011/12/10 |
| Pre-Amplifier | Mini Circuit | ZKL-2/004 | 2011/2/7 | 2012/2/7 |
| RF Cable | N/A | N/A/C0080 | 2011/2/7 | 2011/8/7 |
| RF Cable | N/A | N/A/C0081 | 2011/4/19 | 2011/10/19 |
| Semi - anechoic Chamber | ETS. LINDGREN | TR11/ 906-A | 2011/4/17 | 2012/4/17 |

Note:

1. The calibrations are traceable to NML/ROC.
2. NCR:No Calibration Required.

Instrument Setting

| RBW | VBW | Detector | Trace | Comment |
|--------|------|------------|---------|--------------------|
| 120kHz | N/A | Quasi-Peak | Maxhold | Below 1GHz |
| 1MHz | 1MHz | Peak | Maxhold | Above 1GHz Peak |
| 1MHz | 10Hz | Peak | Maxhold | Above 1GHz Average |

Climatic Condition

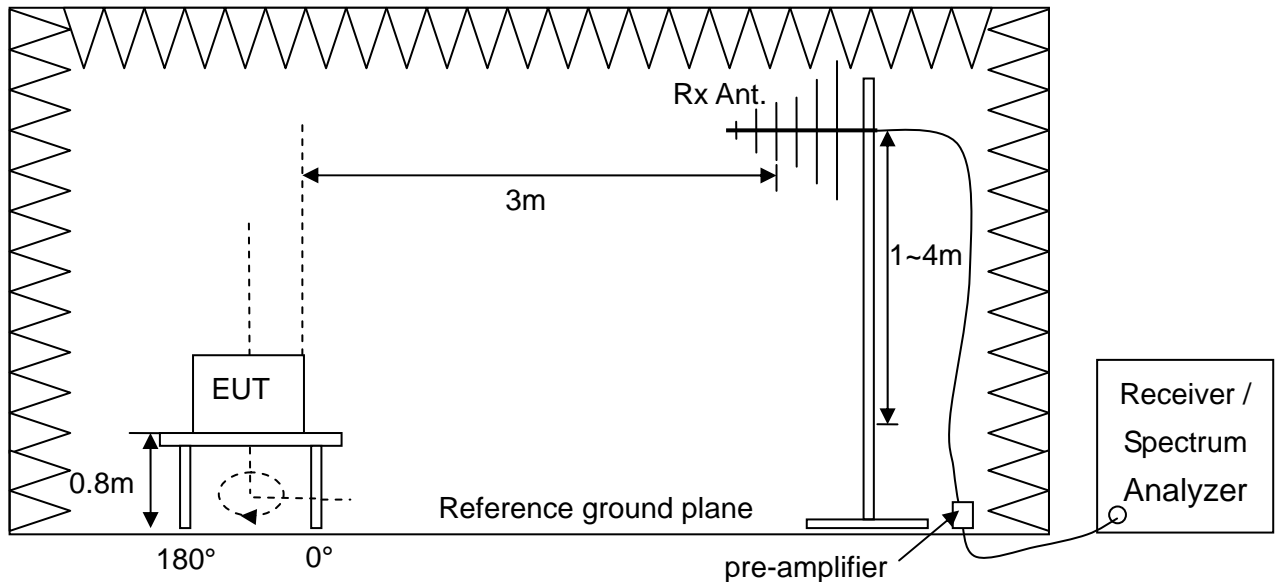
Ambient Temperature : 28°C; Relative Humidity : 52%

3.3 Test Procedures

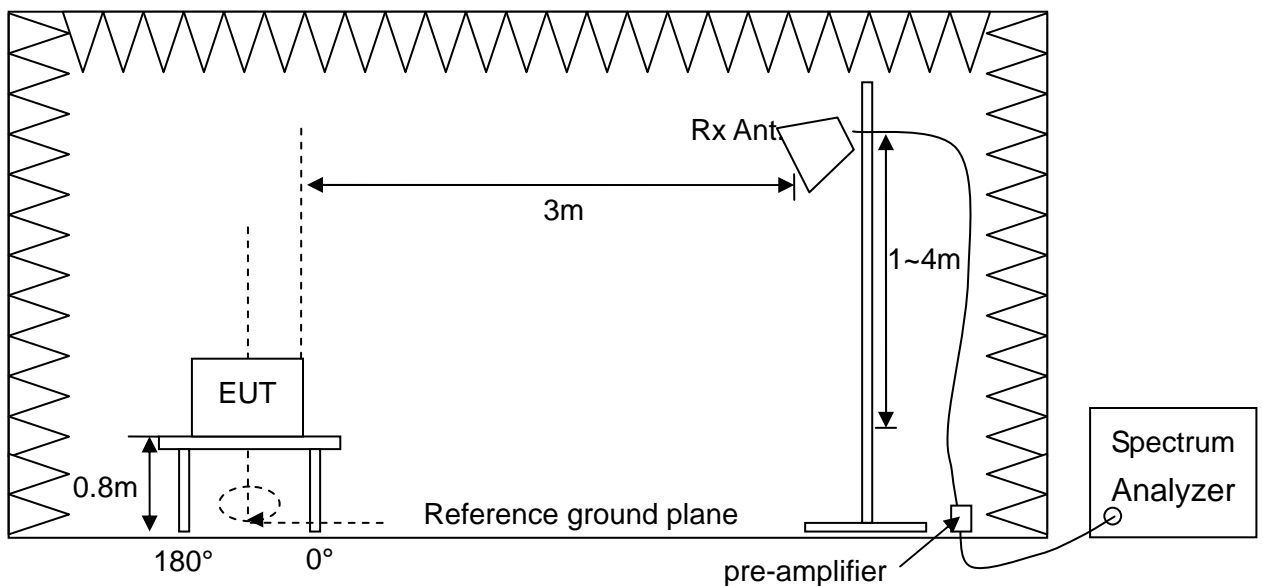
- a. The EUT was set up per the test configuration figured in the next section of this chapter to simulate the typical usage per the user's manual.
- b. A software provided by client enabled the EUT to transmit and receive data at operating frequency.(if necessary)
- c. If the EUT is tabletop equipment, it should be placed on a wooden table with a height of 0.8 meters above the reference ground plane in the semi-anechoic chamber. If the EUT is floor-standing equipment, it should be placed on a non-conducted support with a height of 12 millimeters above the reference ground plane in the semi-anechoic chamber.
- d. The EUT is set 3m away from the interference receiving antenna.
- e. Rapidly sweep the signal in the test frequency range by using the spectrum through the Maximum-peak detector.
- f. Rotate the EUT from 0° to 360° and position the receiving antenna at heights from 1 to 4 meters above the reference ground plane continuously to determine at least six frequencies associated with higher emission levels and record them.
- g. Then measure each frequency found from step f. by using the spectrum with rotating the EUT and positioning the receiving antenna height to determine the maximum level.
- h. For measurement of frequency below 1000MHz, set the receiver detector to be Quasi-Peak per CISPR 16-1 to find out the maximum level occurred.
- i. For measurement of frequency above 1000MHz, set the spectrum detector to be Peak or Average to find out the maximum level occurred, if any.
- j. Record frequency, azimuth angle of the turntable, height, and polarization of the receiving antenna and compare the maximum level with the required limit.
- k. Change the receiving antenna to another polarization to measure radiated emission by following step e. to j. again.
- l. If the peak emission level below 1000MHz measured from step f. is 4dB lower than the limit specified, then the emission values presented will be the peak value only. Otherwise, accurate Q.P. value will be measured and presented.
- m. If the peak emission level above 1000MHz measured from step f. is 20dB lower than the limit specified, then the emission values presented will be the peak value only. Otherwise, accurate A.V. value will be measured and presented.

3.4 Test Configuration

Radiated Emission Measurement below 1000MHz



Radiated Emission Measurement above 1000MHz



3.5 Test Results

Band Edge

Test Mode : Continuous Transmitting

Test Distance : 3m

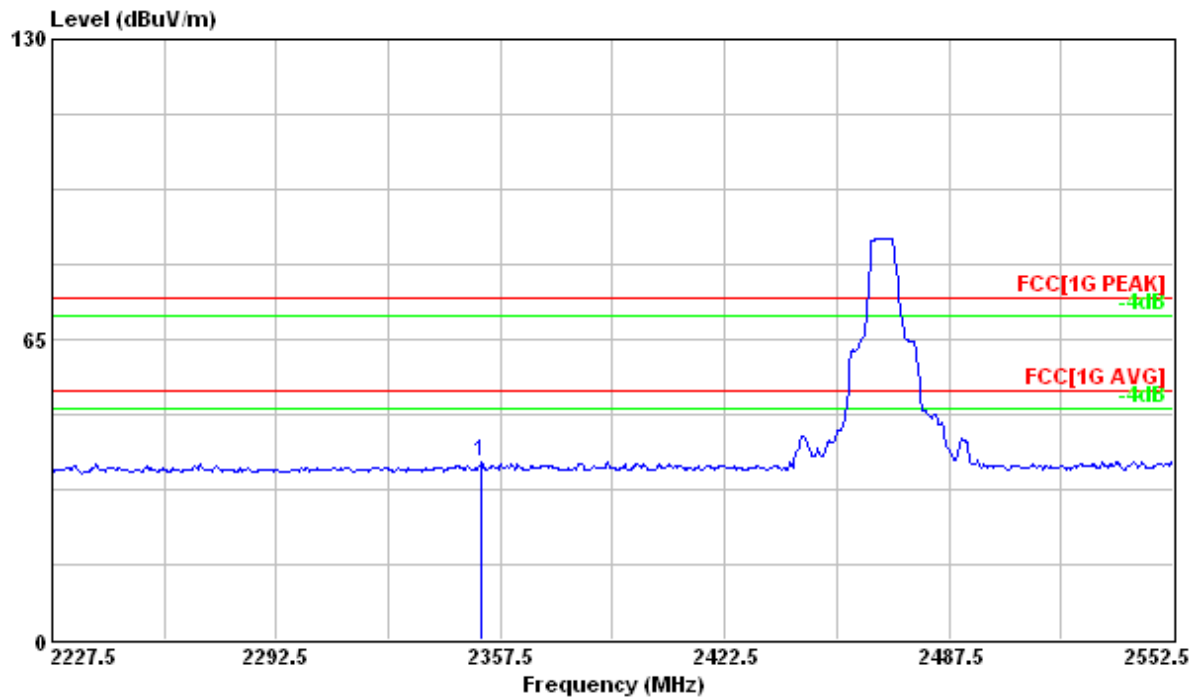
Tester : Liu

| Test Range | Polarization | Frequency (MHz) | Reading Data (dBUV) | | Correction Factor (dB/m) | Emission (dBUV/m) | | Limit (dBUV/m) | | Margin (dB) | |
|------------|--------------|-----------------|---------------------|-------|--------------------------|-------------------|-------|----------------|-----|-------------|-------|
| | | | PK. | AV. | | PK. | AV. | PK. | AV. | PK. | AV. |
| Lowest | V | 2351.98 | 74.97 | 63.61 | -36.35 | 38.62 | 27.26 | 74 | 54 | 35.38 | 26.74 |
| | H | 2386.75 | 76.97 | 64.6 | -36.22 | 40.75 | 28.38 | 74 | 54 | 33.25 | 25.62 |
| Highest | V | 2491.30 | 79.57 | 64.54 | -35.97 | 43.6 | 28.57 | 74 | 54 | 30.4 | 25.43 |
| | H | 2491.60 | 81.15 | 65.85 | -35.97 | 45.18 | 29.88 | 74 | 54 | 28.82 | 24.12 |

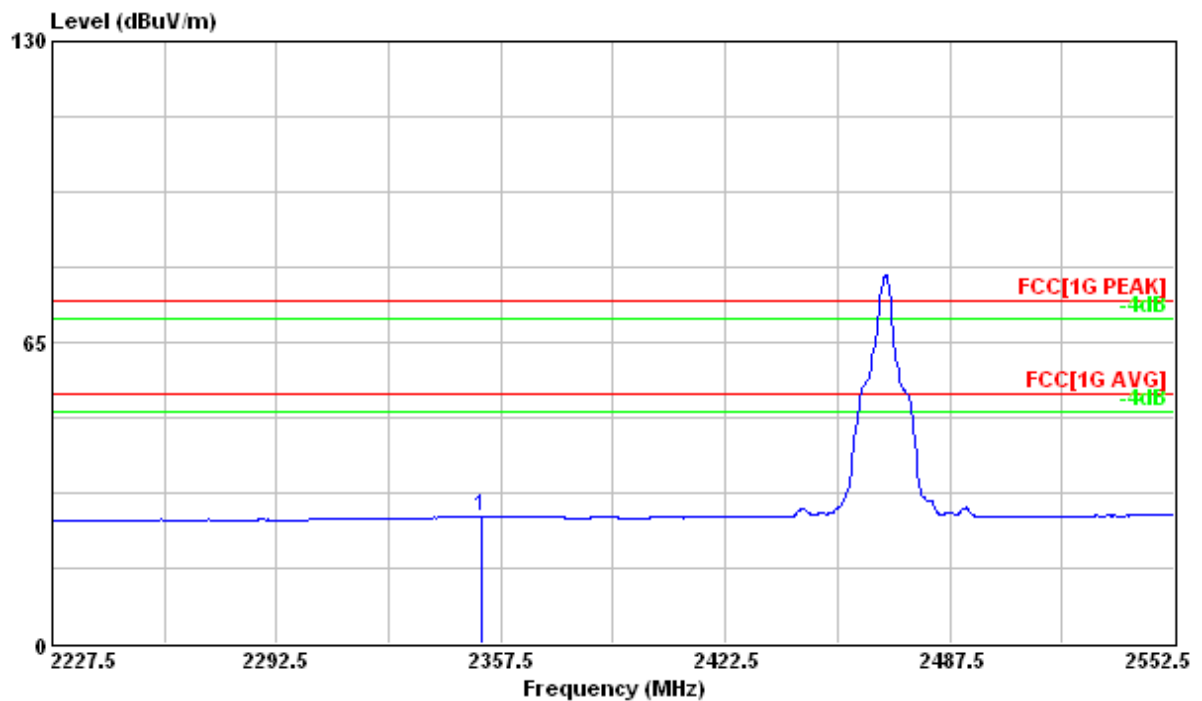
Note:

1. Correction Factor (dB/m) = Cable Loss + Antenna Factor – Gain of Preamplifier
2. Emission Level (dBUV/m) = Reading Data + Correction Factor
3. Margin (dB) = Limit – Emission Level

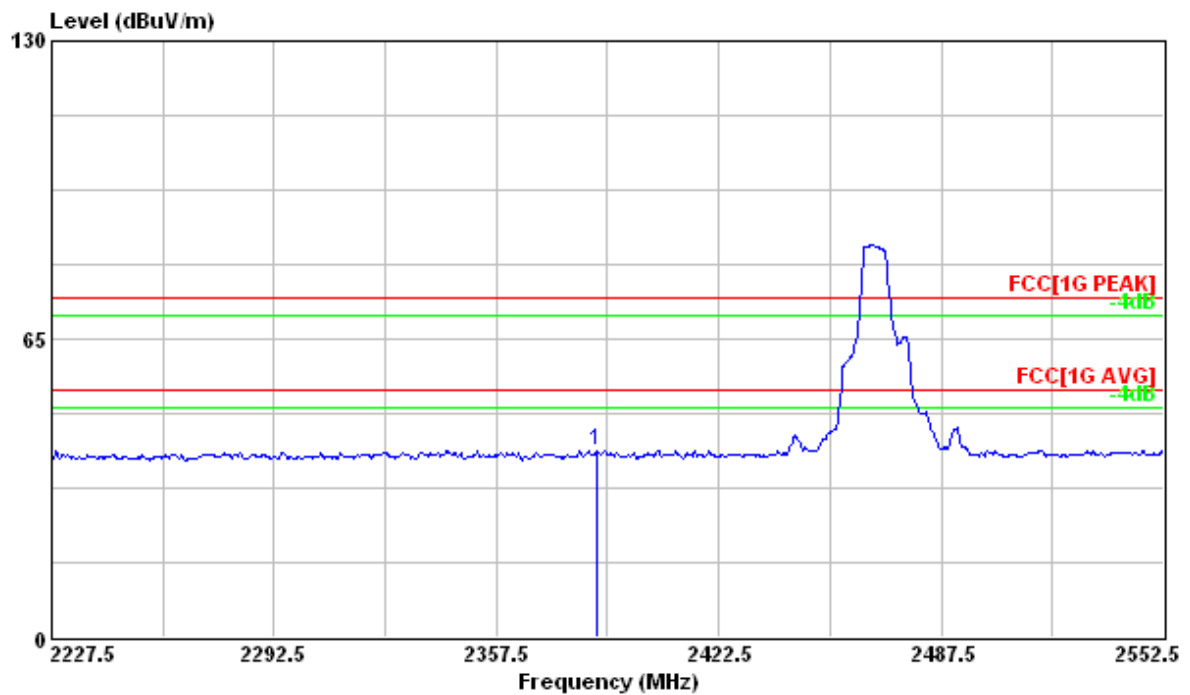
Lowest Channel, Vertical - Peak



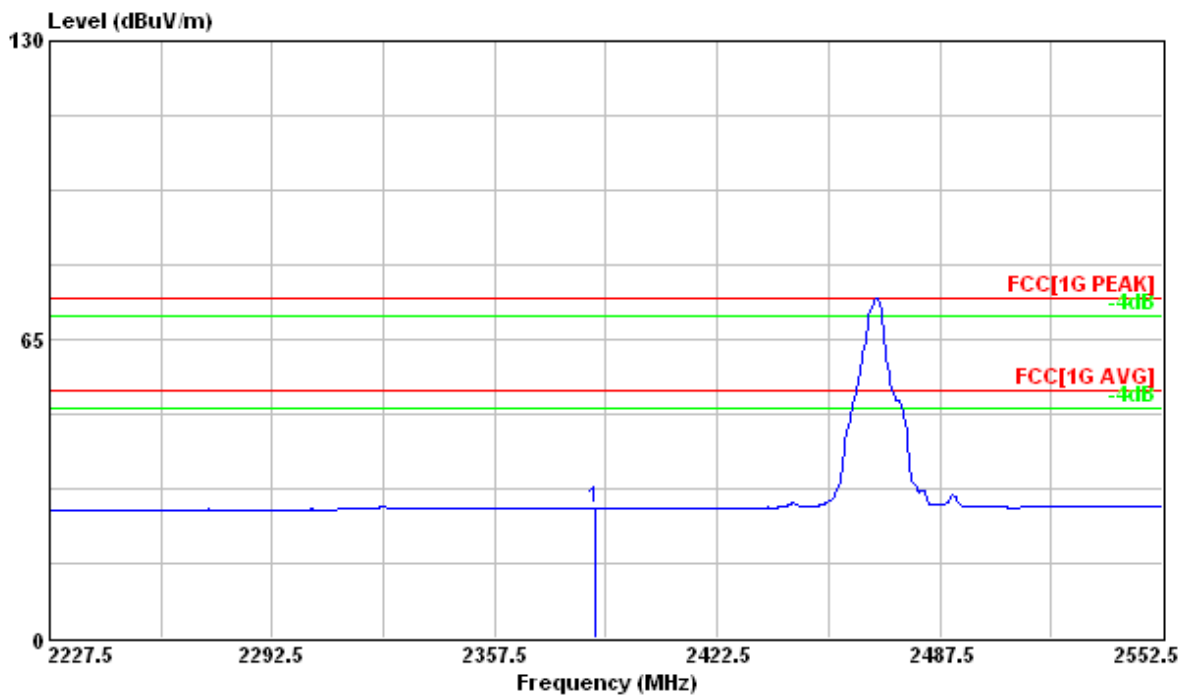
Lowest Channel, Vertical - Average



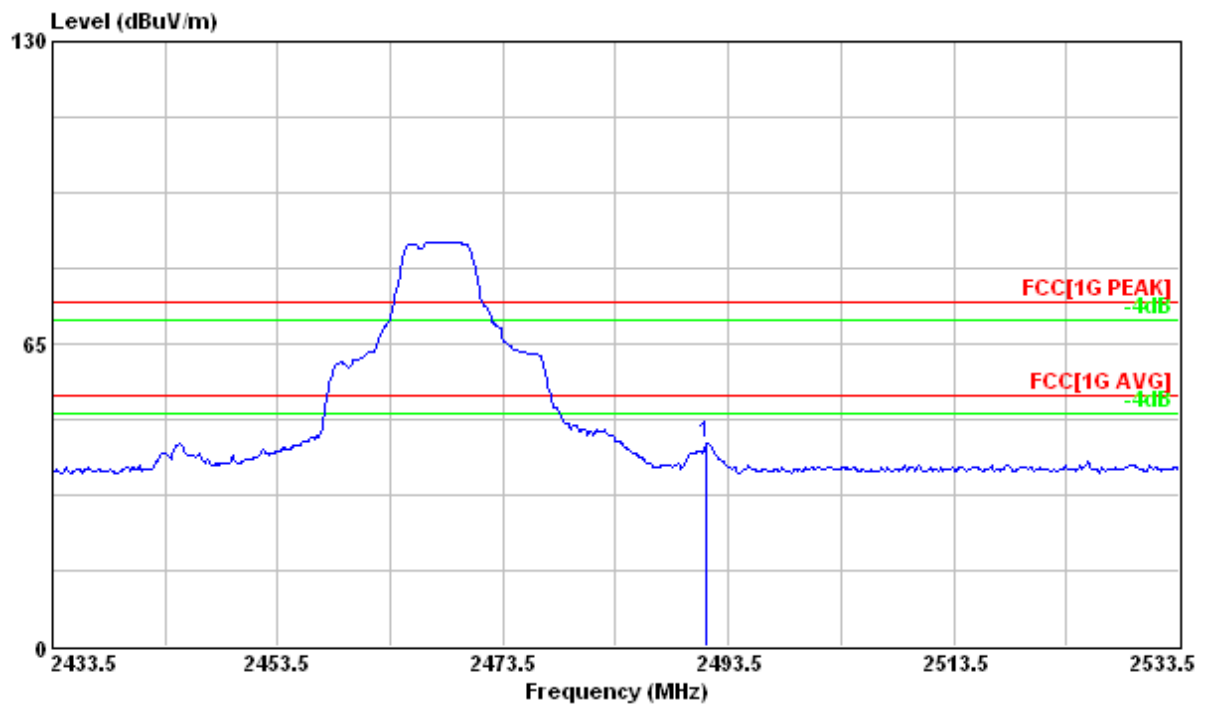
Lowest Channel, Horizontal - Peak



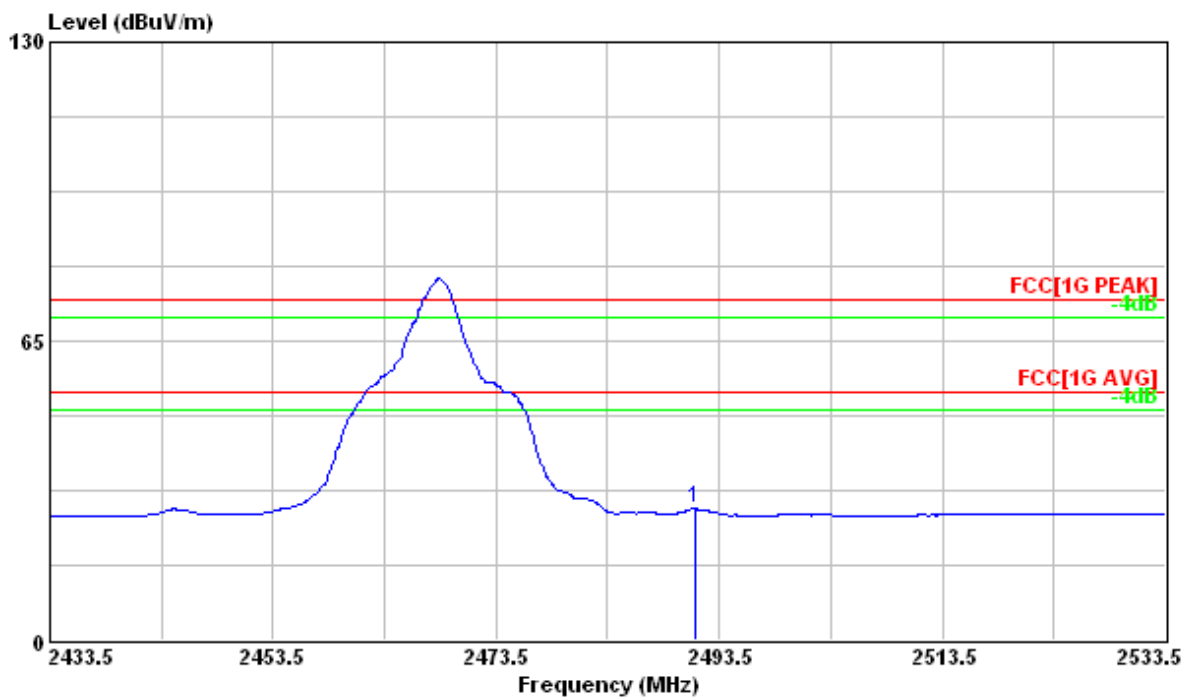
Lowest Channel, Horizontal - Average



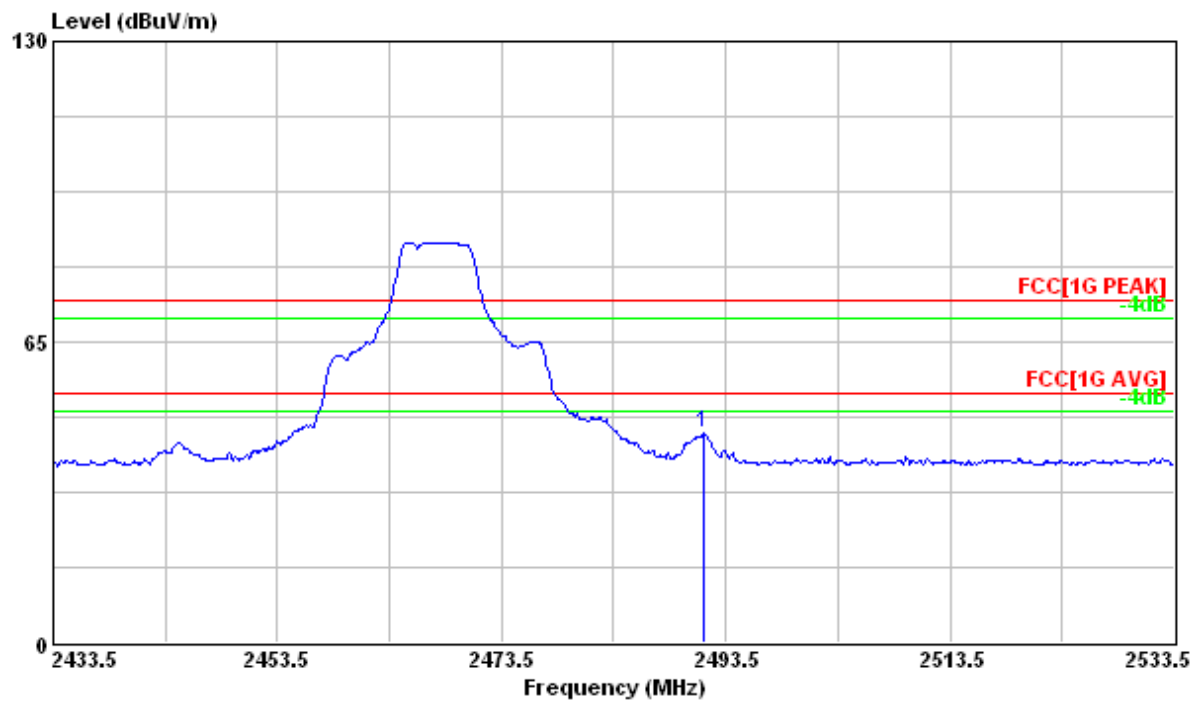
Highest Channel, Vertical - Peak



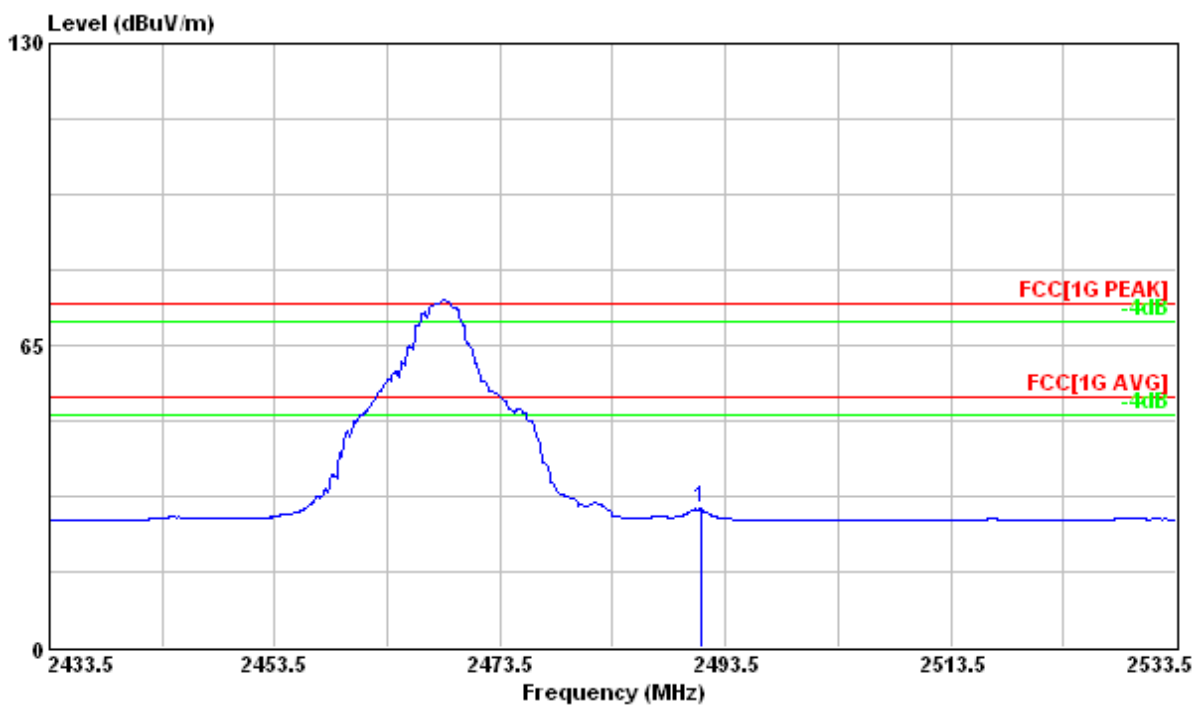
Highest Channel, Vertical - Average



Highest Channel, Horizontal - Peak



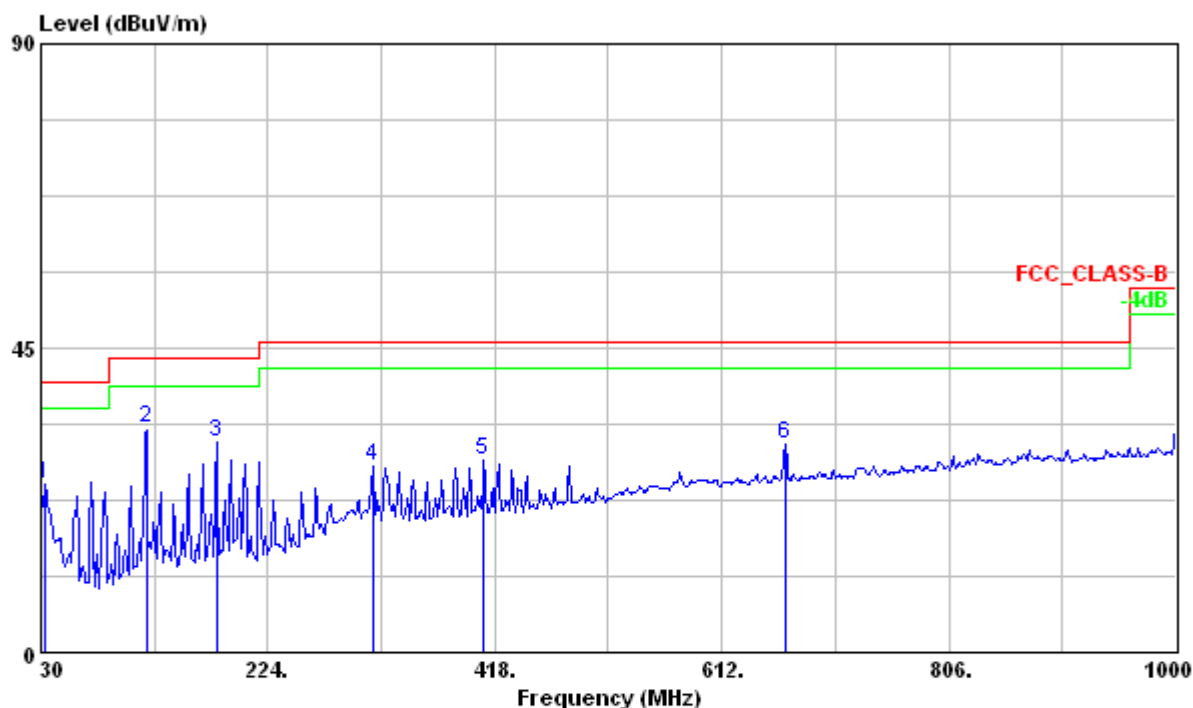
Highest Channel, Horizontal - Average



Transmitter Radiated Emission Measurement

Below 1000MHz

Test Mode : Continuous Transmitting
Test Distance : 3m **Tester** : Liu
Polarization : Vertical **Frequency Range** : 30MHz~1000MHz

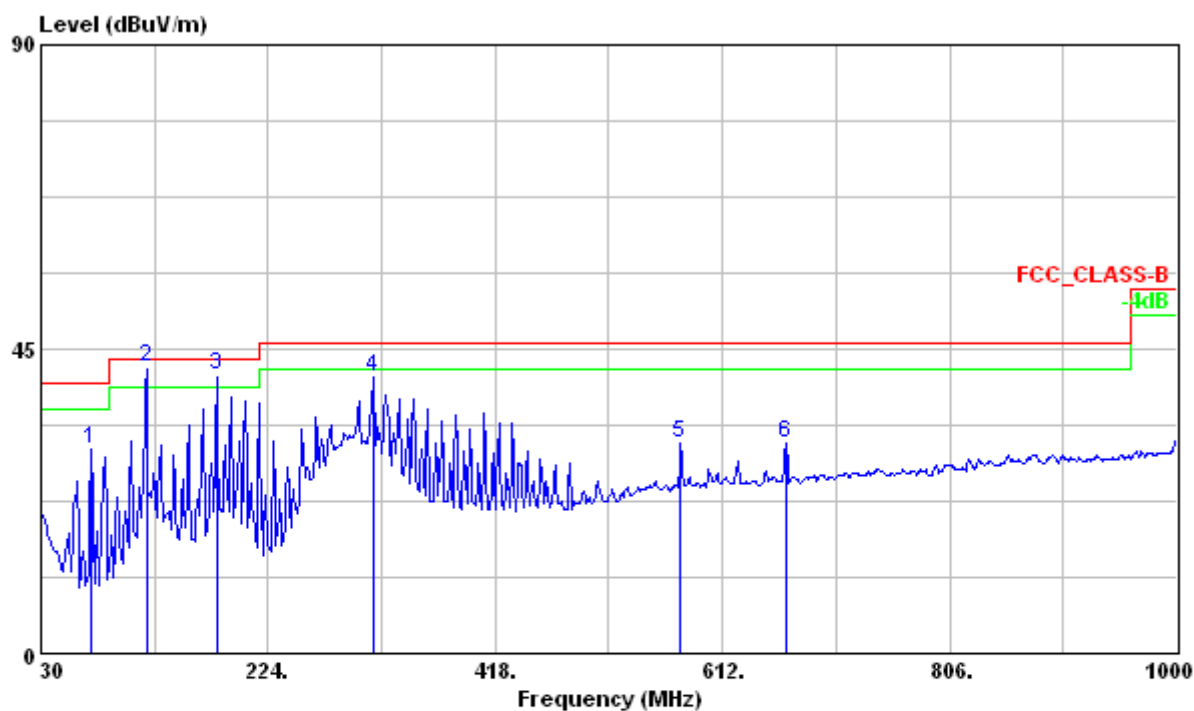


| | Freq | Level | Factor | Read Level | Limit Line | Over Limit | Ant Pos | Table Pos | Pol/Phase | Remark |
|---|---------|--------|--------|------------|------------|------------|---------|-----------|-----------|--------|
| | MHz | dBUV/m | dB/m | dBuV | dBUV/m | dB | cm | deg | | |
| 1 | 33.880 | 24.82 | -11.09 | 35.91 | 40.00 | -15.18 | --- | --- | VERTICAL | Peak |
| 2 | 119.987 | 33.01 | -19.81 | 52.82 | 43.50 | -10.49 | 400 | 228 | VERTICAL | QP |
| 3 | 180.350 | 30.97 | -16.36 | 47.33 | 43.50 | -12.53 | --- | --- | VERTICAL | Peak |
| 4 | 313.240 | 27.64 | -12.20 | 39.84 | 46.00 | -18.36 | --- | --- | VERTICAL | Peak |
| 5 | 408.300 | 28.53 | -9.48 | 38.01 | 46.00 | -17.47 | --- | --- | VERTICAL | Peak |
| 6 | 666.320 | 30.76 | -4.41 | 35.17 | 46.00 | -15.24 | --- | --- | VERTICAL | Peak |

Note:

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + antenna factor – gain of pre-amplifier.
3. Q.P is abbreviation of quasi-peak.

Test Mode : Continuous Transmitting
Test Distance : 3m **Tester** : Liu
Polarization : Horizontal **Frequency Range** : 30MHz~1000MHz



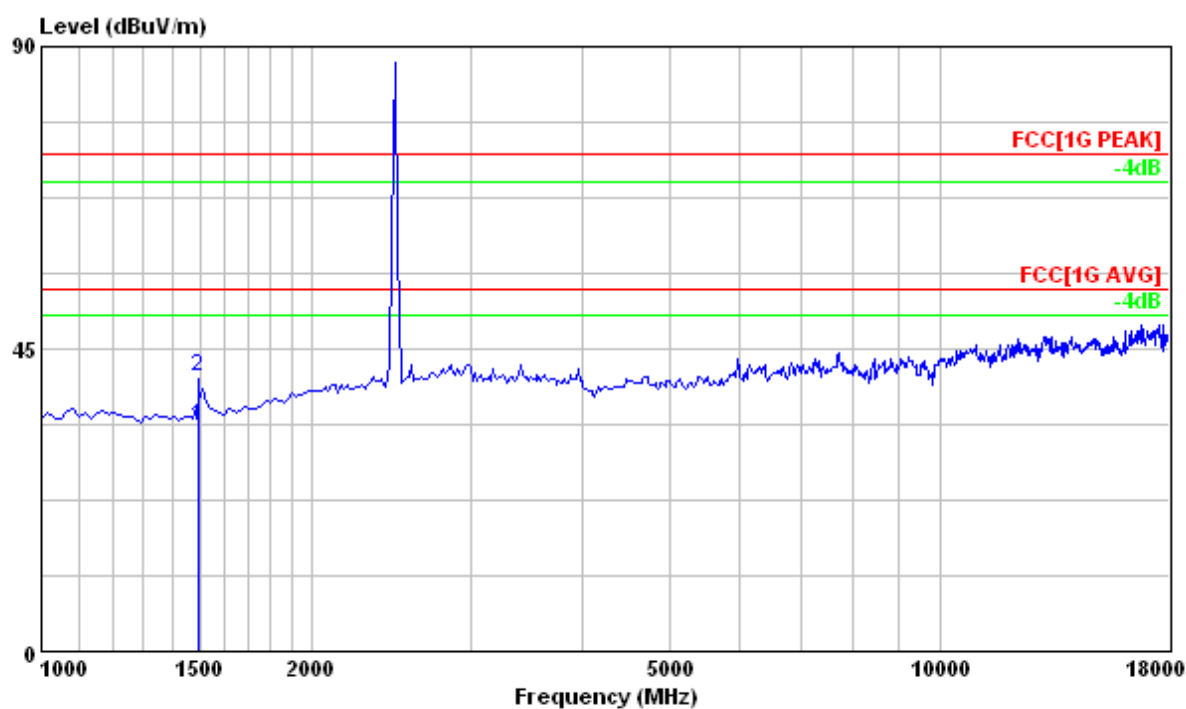
| | Freq | Level | Factor | Read Level | Limit Line | Over Limit | Ant Pos | Table Pos | Pol/Phase | Remark |
|---|---------|--------|--------|------------|------------|------------|---------|-----------|------------|--------|
| | MHz | dBuV/m | dB/m | dBuV | dBuV/m | dB | cm | deg | | |
| 1 | 72.680 | 30.25 | -20.08 | 50.33 | 40.00 | -9.75 | --- | --- | HORIZONTAL | Peak |
| 2 | 119.989 | 42.24 | -19.81 | 62.05 | 43.50 | -1.26 | 302 | 332 | HORIZONTAL | QP |
| 3 | 179.981 | 41.15 | -16.37 | 57.52 | 43.50 | -2.35 | 200 | 147 | HORIZONTAL | QP |
| 4 | 313.240 | 40.79 | -12.20 | 52.99 | 46.00 | -5.21 | --- | --- | HORIZONTAL | Peak |
| 5 | 576.110 | 30.97 | -5.49 | 36.46 | 46.00 | -15.03 | --- | --- | HORIZONTAL | Peak |
| 6 | 666.320 | 31.20 | -4.41 | 35.61 | 46.00 | -14.80 | --- | --- | HORIZONTAL | Peak |

Note:

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + antenna factor – gain of pre-amplifier.
3. Q.P is abbreviation of quasi-peak.

Above 1000MHz

Test Mode : Continuous transmitting
 Test Distance : 3m Tester : Liu
 Polarization : Vertical Frequency Range : 1GHz ~ 25GHz



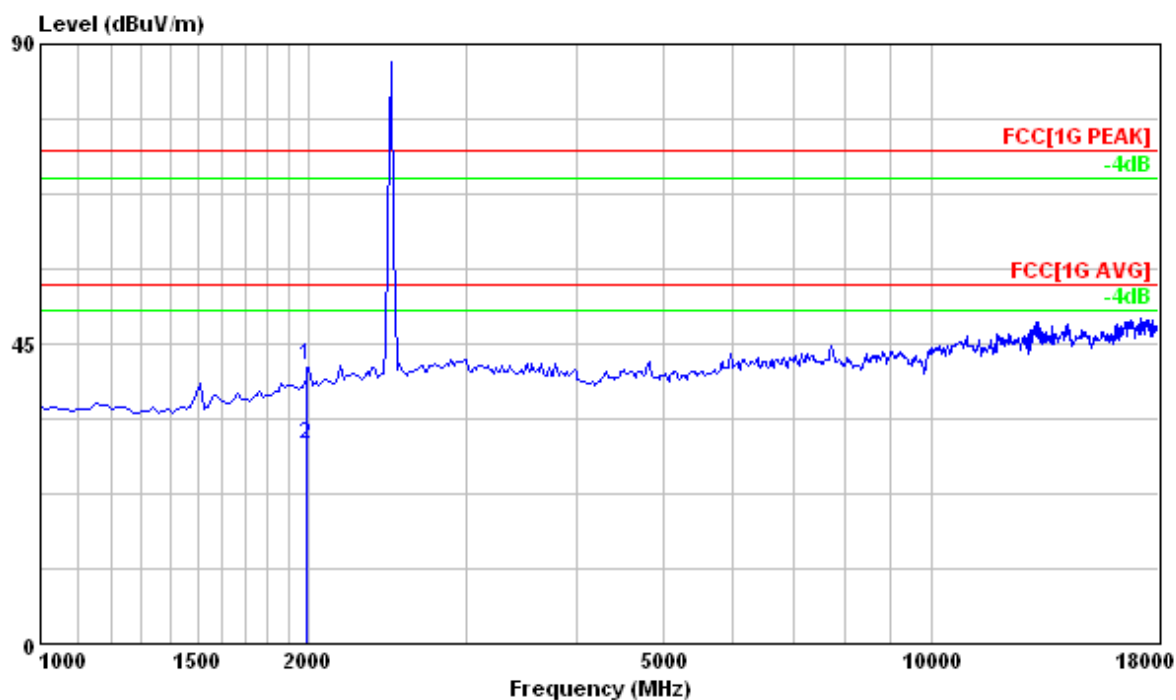
| | Freq | Level | Factor | Read Level | Limit Line | Over Limit | Ant Pos | Table Pos | Pol/Phase | Remark |
|---|----------|--------|--------|------------|------------|------------|---------|-----------|-----------|---------|
| | MHz | dBuV/m | dB/m | dBuV | dBuV/m | dB | cm | deg | | |
| 1 | 1494.470 | 33.41 | -40.99 | 74.40 | 54.00 | -20.59 | 100 | 255 | VERTICAL | Average |
| 2 | 1494.625 | 40.97 | -40.99 | 81.96 | 74.00 | -33.03 | 100 | 255 | VERTICAL | Peak |

Note:

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + antenna factor – gain of pre-amplifier.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

Test Mode : Continuous transmitting
Test Distance : 3m **Tester** : Liu
Polarization : Horizontal **Frequency Range** : 1GHz ~ 25GHz



| | Freq | Level | Factor | Read Level | Limit Line | Over Limit | Ant Pos | Table Pos | Pol/Phase | Remark |
|---|----------|--------|--------|------------|------------|------------|---------|-----------|------------|---------|
| | MHz | dBuV/m | dB/m | dBuV | dBuV/m | dB | cm | deg | | |
| 1 | 1992.725 | 41.61 | -37.43 | 79.04 | 74.00 | -32.39 | 100 | 120 | HORIZONTAL | Peak |
| 2 | 1992.760 | 29.90 | -37.42 | 67.32 | 54.00 | -24.10 | 100 | 120 | HORIZONTAL | Average |

Note:

1. Emission Level = reading value + correction factor.
2. Correction factor = cable loss + antenna factor – gain of pre-amplifier.

No signal can be detected from 18GHz to 25GHz, so the graphs are omitted above 18GHz.

4 Antenna Requirement

Result: Pass

4.1 Applied standard

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall 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 to comply with the provisions of this Section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of Sections 15.211, 15.213, 15.217, 15.219, or 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with Section 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this Part are not exceeded.

4.2 Antenna Information

The antenna uses unique connector

4.3 Result

Pass