# Application for FCC Certification
On behalf of
L.R Nelson Corp.

Remote Rain

Model No.: 5917
Serial No.: E06071801

FCC ID : NYD5917

Prepared For : L.R Nelson Corp.
One Sprinkler Lane, Peoria, IL, USA

Prepared By : Audix Technology (Shanghai) Co., Ltd.
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Report No. : ACI-F06033
Date of Test : Jul 20-24, 2006
Date of Report : Aug 03, 2006

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# TEST REPORT FOR FCC CERTIFICATION

| | | |
|---|---|---|
| Applicant | : | L.R Nelson Corp. |
| Manufacturer | : | Ningbo Nelson Gardening Equipments Co., Ltd. |
| EUT Description | : | Remote Rain |
| | (A) Model No. | : 5917 |
| | (B) Serial No. | : E06071801 |
| | (C) Power Supply | : DC 12V (Battery) |
| | (D) Crystal Frequency | : 433.92MHz |

Test Procedure Used:

*FCC RULES AND REGULATIONS PART 15 SUBPART C FEBRUARY 2006 AND ANSI C63.4:2003*

The device described above is tested by Audix Technology (Shanghai) Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits radiated emission.

The test results are contained in this test report and Audix Technology (Shanghai) Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. This report shows that the EUT (M/N: 5917; S/N: E06071801), which was tested in 3m anechoic chamber on Jul 20-24, 2006 to be technically compliant with the FCC official limits also.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Audix Technology (Shanghai) Co., Ltd.

This report contains data that are not covered by the NVLAP accreditation.

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government by the client.

Date of Test : Jul 20-24, 2006

Prepared By: Kathy Wang 2006.8.21
KATHY WANG / Assistant

Reviewer: 2006.08.21
SAM CHEN / Deputy Assistant Manager
For and on behalf of Audix Technology (Shanghai) Co., Ltd.

Approved Signatory: 21 Aug/06
BYRON KWO / Manager
Authorized Signature(s)

# 1 SUMMARY OF STANDARDS AND RESULTS

## 1.1 Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

| Description / Test Item | Test Standard | Results | Meets Limit |
|---|---|---|---|
| Radiated Disturbance | FCC RULES AND REGULATIONS PART 15 SUBPART C FEBRUARY 2006 AND ANSI C63.4:2003 | Pass | 15.209 |
| Fundamental and Spurious | FCC RULES AND REGULATIONS PART 15 SUBPART C FEBRUARY 2006 AND ANSI C63.4:2003 | Pass | 15.231 (b) |
| Bandwidth | FCC RULES AND REGULATIONS PART 15 SUBPART C FEBRUARY 2006 AND ANSI C63.4:2003 | Pass | 15.231 (c) |

# 2 GENERAL INFORMATION

## 2.1 Description of Equipment Under Test

| | | |
|---|---|---|
| Description | : | Remote Rain |
| Type of EUT | : | ☑ Production ☐ Pre-product ☐ Pro-type |
| Model No. | : | 5917 |
| Serial No. | : | E06071801 |
| Note | : | The EUT has 2 buttons (On/Off). |
| Applicant | : | L.R Nelson Corp.<br>One Sprinkler Lane, Peoria, IL, USA |
| Manufacturer | : | Ningbo Nelson Gardening Equipments Co., Ltd.<br>No #1, Long Feng Village; Yuyao City, Ningbo,<br>Zhejiang Province, China |

## 2.2 Description of Test Facility

| | | |
|---|---|---|
| Site Description<br>(Semi-Anechoic Chamber) | : | Sept. 17, 1998 file on<br>August 15, 2003 Renewed<br>Federal Communications Commission<br>FCC Engineering Laboratory<br>7435 Oakland Mills Road<br>Columbia, MD 21046, USA |
| Name of Firm | : | Audix Technology (Shanghai) Co., Ltd. |
| Site Location | : | 3F 34Bldg 680 Guiping Rd.,<br>Caohejing Hi-Tech Park,<br>Shanghai, China 200233 |
| FCC registration Number | : | 91789 |
| Accredited by NVLAP, Lab Code | : | 200371-0 |

## 2.3 Measurement Uncertainty

Radiated Emission Expanded Uncertainty : U = 2.96dB

# 3 RADIATED EMISSION TEST

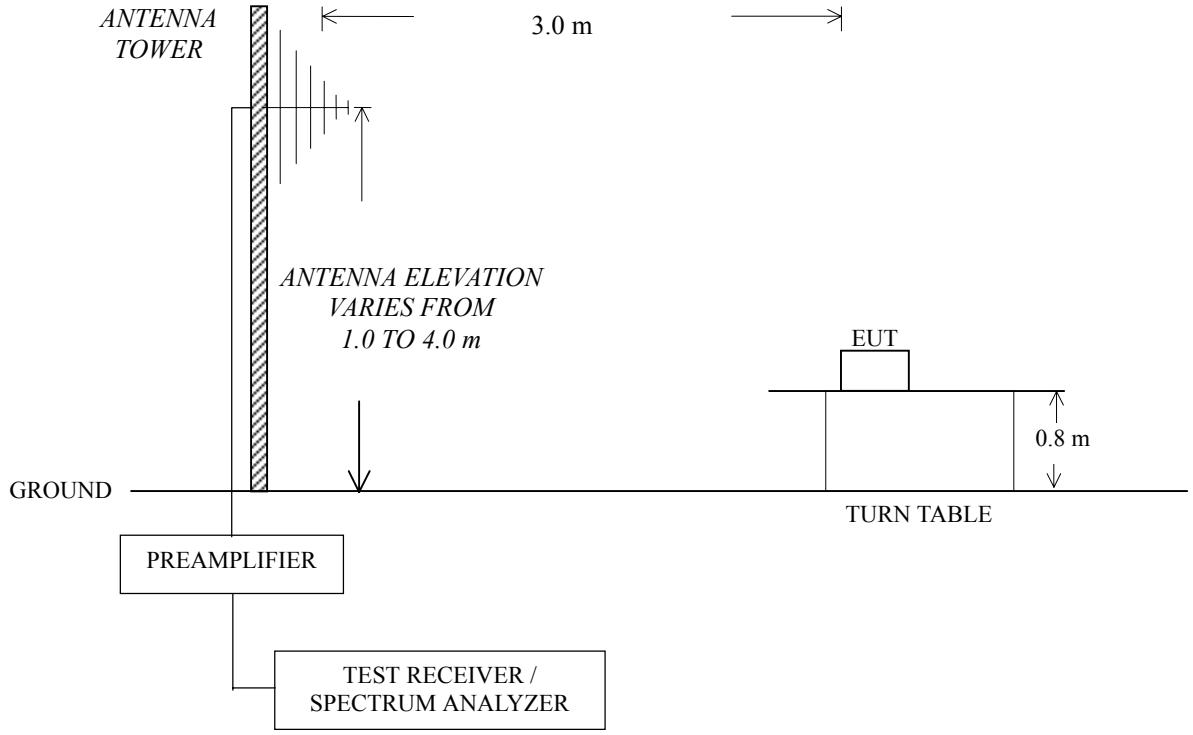
## 3.1 Test Equipment

The following test equipment are used during the radiated emission test in a semi-anechoic chamber:

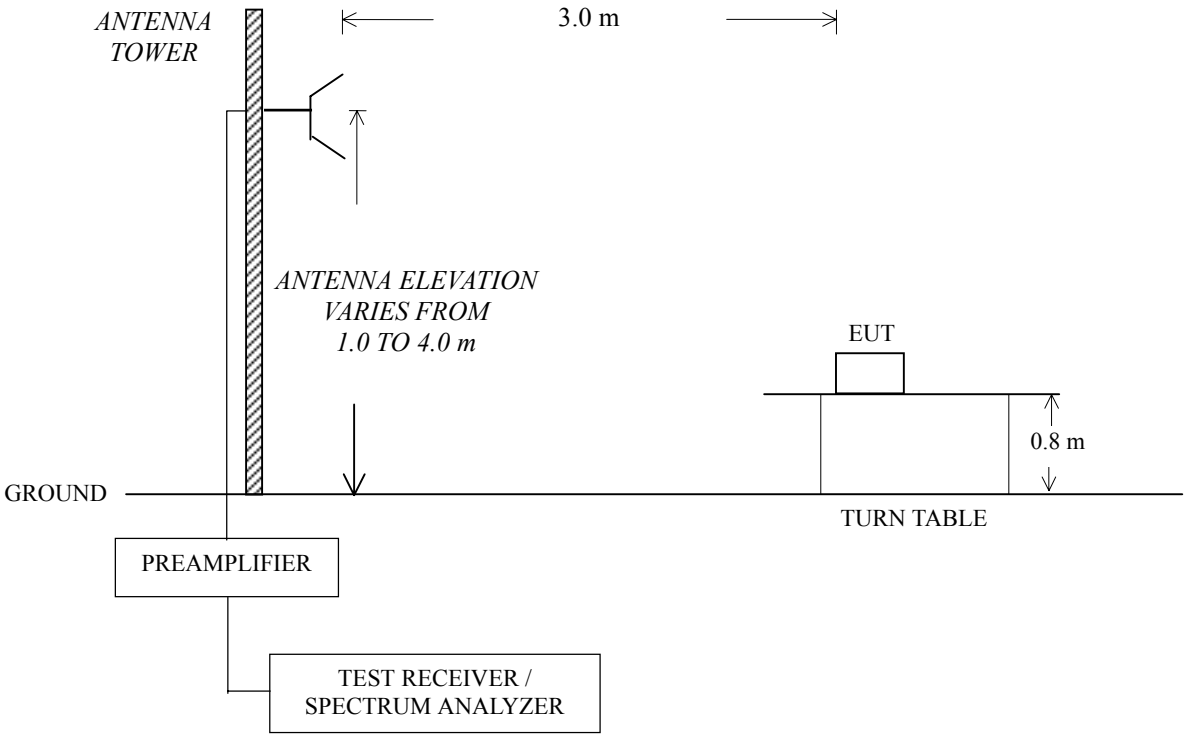
| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1. | Spectrum Analyzer | HP | 8593EM | 3628A00167 | Apr 18, 2006 | Apr 18, 2007 |
| 2. | Bilog Antenna | Chase | CBL6111 | 1145 | Mar 18, 2006 | Sep 18, 2006 |
| 3. | Test Receiver | R&S | ESVS10 | 832699/004 | Apr 18, 2006 | Apr 08, 2007 |
| 4. | Preamplifier | HP | 8447D | 2944A10548 | Mar 19, 2006 | Sep 19, 2006 |
| 5. | Preamplifier | HP | 8449B | 3008A00864 | Jun 02, 2006 | Jun 02, 2007 |
| 6. | Horn Antenna | EMCO | 3115 | 9607-4878 | Apr 13, 2006 | Apr 13, 2007 |
| 7. | 50ΩCoaxial Switch | ANRITSU | MP59B | 6200426390 | Mar 18, 2006 | Sep 18, 2006 |
| 8. | Software | Audix | E3 | SET00200 9912M295-2 | -- | -- |

## 3.2 Block Diagram of Test Setup

For Low Frequency:



For High Frequency:




## 3.3 Radiated Emission Limit

| Frequency (MHz) | Distance (m) | Field strength limits (μV/m) | |
|---|---|---|---|
| | | (μV/m) | dB (μV/m) |
| 30 ~ 88 | 3 | 100 | 40.0 |
| 88 ~ 216 | 3 | 150 | 43.5 |
| 216 ~ 960 | 3 | 200 | 46.0 |
| Above 960 | 3 | 500 | 54.0 |

NOTE 1 - Emission Level dB (μV/m) = 20 lg Emission Level (μV/m)
NOTE 2 - The tighter limit applies at the band edges.
NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

## 3.4 Test Configuration

The EUT was installed as show on Sec. 3.2 in radiated emission test to meet FCC requirement and operating in a manner, which tend to maximize emission level in a normal application.

## 3.5 Operating Condition of EUT

3.5.1 Setup the EUT as shown in Sec. 3.2.

3.5.2 Turn on the power of all equipments and the EUT.

3.5.3 Set the EUT on the test modes, and then test.

## 3.6 Test Procedures

The EUT was placed on a turntable, which is 0.8 meter above the ground. The turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. The antenna moved up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (Calibrated Bilog Antenna or Horn Antenna) was used as a receiving antenna. Both horizontal and vertical polarization of the antenna was set on measurement. In order to find the maximum emission, all of the interference cables were manipulated.

The IF bandwidth setting on Test Receiver ESVS10 was 120 kHz when the frequency range from 30MHz to 1GHz was checked.

The IF bandwidth setting on Spectrum analyzer 8593EM was 1MHz when the frequency range from 1G MHz to 5GHz was checked.

The test modes are as follows:

| | | |
|---|---|---|
| On Lying | On Side | On Stand |
| Off Lying | Off Side | Off Stand |

The test modes were done on radiated disturbance test.

Please refer to Sec.3.7.

## 3.7 Test Results

**<PASS>**

The frequency and amplitude of the highest radiated emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

| Test Mode | Data Page | Test Mode | Data Page |
|---|---|---|---|
| On Lying | P10 – P11 | Off Lying | P16 – P17 |
| On Side | P12 – P13 | Off Side | P18 – P19 |
| On Stand | P14 – P15 | Off Stand | P20 – P21 |

NOTE 1 – Emission Level = Meter Reading + Antenna Factor + Cable Loss – Preamp Factor.

NOTE 2 – The readings that below 1000 MHz are Quasi-Peak values and above 1GHz are Peak values.
Because the level has 20dB margin against peak limit line so the Average value are omitted.

NOTE 4 - 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

NOTE 5 - The worst emission at horizontal polarization was detected at 924.30 MHz (Test Mode: On Side) with corrected signal level of 29.07 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was height 1.00m and the turntable was at 42°.

NOTE 6 - The worst emission at vertical polarization was detected at 929.20 MHz (Test Mode: On Stand) with corrected signal level of 31.62 dB (μV/m) (limit is 46.00 dB (μV/m)), when the antenna was height 1.00m and the turntable was at 124°.

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Remote Rain | Temperature : | 28℃ |
| Model No. | : | 5917 | Humidity : | 53% |
| Serial No. | : | E06071801 | Date of Test : | Jul 22, 2006 |
| Test Mode | : | On Lying | | |

| Polarization | Frequency (MHz) | Read Level dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| Horizontal | 31.00 | 25.60 | 16.30 | 0.98 | 28.14 | 14.74 | 40.00 | 25.26 |
| | 45.50 | 25.31 | 10.30 | 1.12 | 28.12 | 8.61 | 40.00 | 31.39 |
| | 130.90 | 25.71 | 11.38 | 1.99 | 27.85 | 11.23 | 43.50 | 32.27 |
| | 293.80 | 25.28 | 14.68 | 3.14 | 27.27 | 15.83 | 46.00 | 30.17 |
| | 584.80 | 27.74 | 20.03 | 4.54 | 28.77 | 23.54 | 46.00 | 22.46 |
| | **803.10** | **27.33** | **23.20** | **5.44** | **28.37** | **27.60** | **46.00** | **18.40** |
| Vertical | 31.90 | 25.97 | 15.72 | 0.99 | 28.13 | 14.55 | 40.00 | 25.45 |
| | 53.30 | 33.04 | 7.80 | 1.23 | 28.07 | 14.00 | 40.00 | 26.00 |
| | 130.90 | 34.29 | 11.38 | 1.99 | 27.85 | 19.81 | 43.50 | 23.69 |
| | 279.30 | 29.76 | 14.27 | 3.05 | 27.27 | 19.81 | 46.00 | 26.19 |
| | 575.10 | 26.64 | 20.03 | 4.49 | 28.76 | 22.40 | 46.00 | 23.60 |
| | **902.00** | **26.93** | **23.59** | **5.80** | **28.09** | **28.23** | **46.00** | **17.77** |

TEST ENGINEER: Dio Yang
(DIO YANG)

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Remote Rain | Temperature : | 28℃ |
| Model No. | : | 5917 | Humidity : | 53% |
| Serial No. | : | E06071801 | Date of Test : | Jul 22, 2006 |
| Test Mode | : | On Lying | | |

| Polarization | Frequency (MHz) | Read Level dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 1036.60 | 44.60 | 24.27 | 6.28 | 37.60 | 37.55 | 74.00 | 36.45 | PK |
| | 1130.50 | 44.71 | 24.71 | 6.59 | 37.35 | 38.66 | 74.00 | 35.34 | |
| | 1271.40 | 44.08 | 25.31 | 7.05 | 37.01 | 39.43 | 74.00 | 34.57 | |
| | 1457.30 | 43.84 | 26.00 | 7.77 | 36.61 | 41.00 | 74.00 | 33.00 | |
| | 1631.10 | 44.80 | 26.56 | 8.27 | 36.29 | 43.34 | 74.00 | 30.66 | |
| | **1839.60** | **46.04** | **27.18** | **8.91** | **35.94** | **46.19** | **74.00** | **27.81** | |
| Vertical | 1060.10 | 44.24 | 24.39 | 6.35 | 37.54 | 37.44 | 74.00 | 36.56 | PK |
| | 1199.10 | 44.40 | 25.02 | 6.80 | 37.17 | 39.05 | 74.00 | 34.95 | |
| | 1318.40 | 44.97 | 25.50 | 7.26 | 36.90 | 40.83 | 74.00 | 33.17 | |
| | 1457.30 | 44.24 | 26.00 | 7.77 | 36.61 | 41.40 | 74.00 | 32.60 | |
| | 1640.50 | 44.23 | 26.59 | 8.27 | 36.27 | 42.82 | 74.00 | 31.18 | |
| | **1861.20** | **45.43** | **27.24** | **8.98** | **35.91** | **45.74** | **74.00** | **28.26** | |

TEST ENGINEER: Dio Yang
(DIO YANG)

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Remote Rain | Temperature : | 28℃ |
| Model No. | : | 5917 | Humidity : | 53% |
| Serial No. | : | E06071801 | Date of Test : | Jul 22, 2006 |
| Test Mode | : | On Side | | |

| Polarization | Frequency (MHz) | Read Level dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| Horizontal | 31.90 | 26.06 | 15.72 | 0.99 | 28.13 | 14.64 | 40.00 | 25.36 |
| | 51.30 | 31.59 | 8.08 | 1.18 | 28.08 | 12.77 | 40.00 | 27.23 |
| | 138.60 | 26.78 | 11.09 | 2.05 | 27.82 | 12.10 | 43.50 | 31.40 |
| | 298.70 | 24.96 | 14.79 | 3.18 | 27.27 | 15.66 | 46.00 | 30.34 |
| | 698.30 | 27.54 | 21.70 | 4.98 | 28.63 | 25.59 | 46.00 | 20.41 |
| | **924.30** | **27.52** | **23.72** | **5.87** | **28.04** | **29.07** | **46.00** | **16.93** |
| Vertical | 31.00 | 25.58 | 16.30 | 0.98 | 28.14 | 14.72 | 40.00 | 25.28 |
| | 56.20 | 32.12 | 7.43 | 1.28 | 28.07 | 12.76 | 40.00 | 27.24 |
| | 124.10 | 34.25 | 11.54 | 1.94 | 27.88 | 19.85 | 43.50 | 23.65 |
| | 276.40 | 30.02 | 14.19 | 3.03 | 27.27 | 19.97 | 46.00 | 26.03 |
| | 521.80 | 29.50 | 20.03 | 4.23 | 28.71 | 25.05 | 46.00 | 20.95 |
| | **868.10** | **30.11** | **23.46** | **5.68** | **28.18** | **31.07** | **46.00** | **14.93** |

TEST ENGINEER: Dio Yang
(DIO YANG)

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Remote Rain | Temperature : | 28℃ |
| Model No. | : | 5917 | Humidity : | 53% |
| Serial No. | : | E06071801 | Date of Test : | Jul 22, 2006 |
| Test Mode | : | On Side | | |

| Polarization | Frequency (MHz) | Read Level dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 1011.30 | 44.23 | 24.16 | 6.17 | 37.67 | 36.89 | 74.00 | 37.11 | PK |
| | 1133.40 | 44.44 | 24.73 | 6.59 | 37.34 | 38.42 | 74.00 | 35.58 | |
| | 1355.90 | 44.14 | 25.63 | 7.41 | 36.82 | 40.36 | 74.00 | 33.64 | |
| | 1529.70 | 43.73 | 26.24 | 8.00 | 36.47 | 41.50 | 74.00 | 32.50 | |
| | 1712.80 | 43.62 | 26.81 | 8.49 | 36.14 | 42.78 | 74.00 | 31.22 | |
| | **1898.70** | **44.73** | **27.34** | **9.10** | **35.85** | **45.32** | **74.00** | **28.68** | |
| Vertical | 1053.50 | 43.64 | 24.36 | 6.31 | 37.55 | 36.76 | 74.00 | 37.24 | PK |
| | 1185.00 | 43.41 | 24.96 | 6.73 | 37.21 | 37.89 | 74.00 | 36.11 | |
| | 1307.10 | 43.69 | 25.46 | 7.21 | 36.93 | 39.43 | 74.00 | 34.57 | |
| | 1457.30 | 43.84 | 26.00 | 7.77 | 36.61 | 41.00 | 74.00 | 33.00 | |
| | 1670.50 | 43.76 | 26.70 | 8.35 | 36.22 | 42.59 | 74.00 | 31.41 | |
| | **1900.60** | **44.43** | **27.34** | **9.10** | **35.85** | **45.02** | **74.00** | **28.98** | |

TEST ENGINEER: Dio Yang
(DIO YANG)

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Remote Rain | Temperature : | 28℃ |
| Model No. | : | 5917 | Humidity : | 53% |
| Serial No. | : | E06071801 | Date of Test : | Jul 22, 2006 |
| Test Mode | : | On Stand | | |

| Polarization | Frequency (MHz) | Read Level dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| Horizontal | 31.90 | 26.11 | 15.72 | 0.99 | 28.13 | 14.69 | 40.00 | 25.31 |
| | 51.30 | 30.56 | 8.08 | 1.18 | 28.08 | 11.74 | 40.00 | 28.26 |
| | 125.10 | 26.35 | 11.59 | 1.94 | 27.88 | 12.00 | 43.50 | 31.50 |
| | 305.50 | 26.49 | 15.01 | 3.22 | 27.32 | 17.40 | 46.00 | 28.60 |
| | 557.70 | 27.22 | 20.03 | 4.41 | 28.74 | 22.92 | 46.00 | 23.08 |
| | **919.50** | **26.64** | **23.69** | **5.87** | **28.05** | **28.15** | **46.00** | **17.85** |
| Vertical | 31.00 | 25.93 | 16.30 | 0.98 | 28.14 | 15.07 | 40.00 | 24.93 |
| | 53.30 | 33.94 | 7.80 | 1.23 | 28.07 | 14.90 | 40.00 | 25.10 |
| | 121.20 | 32.85 | 11.37 | 1.91 | 27.89 | 18.24 | 43.50 | 25.26 |
| | 276.40 | 29.60 | 14.19 | 3.03 | 27.27 | 19.55 | 46.00 | 26.45 |
| | 688.60 | 26.14 | 21.55 | 4.93 | 28.64 | 23.98 | 46.00 | 22.02 |
| | **929.20** | **30.01** | **23.74** | **5.90** | **28.03** | **31.62** | **46.00** | **14.38** |

TEST ENGINEER: Dio Yang
(DIO YANG)

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Remote Rain | Temperature : | 28℃ |
| Model No. | : | 5917 | Humidity : | 53% |
| Serial No. | : | E06071801 | Date of Test : | Jul 22, 2006 |
| Test Mode | : | On Stand | | |

| Polarization | Frequency (MHz) | Read Level dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 1031.90 | 44.50 | 24.26 | 6.24 | 37.61 | 37.39 | 74.00 | 36.61 | PK |
| | 1124.00 | 43.94 | 24.68 | 6.56 | 37.36 | 37.82 | 74.00 | 36.18 | |
| | 1213.20 | 44.62 | 25.08 | 6.85 | 37.14 | 39.41 | 74.00 | 34.59 | |
| | 1355.90 | 42.35 | 25.63 | 7.41 | 36.82 | 38.57 | 74.00 | 35.43 | |
| | 1487.40 | 43.51 | 26.10 | 7.87 | 36.55 | 40.93 | 74.00 | 33.07 | |
| | **1816.10** | **43.22** | **27.10** | **8.85** | **35.98** | **43.19** | **74.00** | **30.81** | |
| Vertical | 1064.80 | 43.80 | 24.42 | 6.35 | 37.52 | 37.05 | 74.00 | 36.95 | PK |
| | 1232.00 | 45.00 | 25.15 | 6.90 | 37.09 | 39.96 | 74.00 | 34.04 | |
| | 1448.00 | 43.96 | 25.97 | 7.77 | 36.63 | 41.07 | 74.00 | 32.93 | |
| | 1642.30 | 43.52 | 26.61 | 8.27 | 36.26 | 42.14 | 74.00 | 31.86 | |
| | 1818.90 | 44.40 | 27.12 | 8.85 | 35.97 | 44.40 | 74.00 | 29.60 | |
| | **1924.10** | **43.68** | **27.40** | **9.16** | **35.81** | **44.43** | **74.00** | **29.57** | |

TEST ENGINEER: Dio Yang
(DIO YANG)

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Remote Rain | Temperature : | 28℃ |
| Model No. | : | 5917 | Humidity : | 53% |
| Serial No. | : | E06071801 | Date of Test : | Jul 22, 2006 |
| Test Mode | : | Off Lying | | |

| Polarization | Frequency (MHz) | Read Level dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| Horizontal | 31.90 | 26.04 | 15.72 | 0.99 | 28.13 | 14.62 | 40.00 | 25.38 |
| | 53.30 | 29.53 | 7.80 | 1.23 | 28.07 | 10.49 | 40.00 | 29.51 |
| | 109.50 | 25.57 | 10.66 | 1.81 | 27.95 | 10.09 | 43.50 | 33.41 |
| | 153.20 | 27.50 | 10.84 | 2.15 | 27.76 | 12.73 | 46.00 | 33.27 |
| | 269.60 | 25.35 | 14.00 | 2.98 | 27.27 | 15.06 | 46.00 | 30.94 |
| | **647.90** | **27.07** | **20.87** | **4.78** | **28.70** | **24.02** | **46.00** | **21.98** |
| Vertical | 31.90 | 26.01 | 15.72 | 0.99 | 28.13 | 14.59 | 40.00 | 25.41 |
| | 56.20 | 39.29 | 7.43 | 1.28 | 28.07 | 19.93 | 40.00 | 20.07 |
| | 101.80 | 35.08 | 10.15 | 1.74 | 27.99 | 18.98 | 43.50 | 24.52 |
| | 349.10 | 29.68 | 16.32 | 3.47 | 27.68 | 21.79 | 46.00 | 24.21 |
| | 601.30 | 26.83 | 20.07 | 4.61 | 28.78 | 22.73 | 46.00 | 23.27 |
| | **916.60** | **25.87** | **23.67** | **5.84** | **28.06** | **27.32** | **46.00** | **18.68** |

TEST ENGINEER: Dio Yang
(DIO YANG)

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Remote Rain | Temperature : | 28℃ |
| Model No. | : | 5917 | Humidity : | 53% |
| Serial No. | : | E06071801 | Date of Test : | Jul 22, 2006 |
| Test Mode | : | Off Lying | | |

| Polarization | Frequency (MHz) | Read Level dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 1058.20 | 43.65 | 24.39 | 6.35 | 37.54 | 36.85 | 74.00 | 37.15 | PK |
| | 1168.10 | 42.60 | 24.89 | 6.70 | 37.25 | 36.94 | 74.00 | 37.06 | |
| | 1316.50 | 44.44 | 25.49 | 7.26 | 36.90 | 40.29 | 74.00 | 33.71 | |
| | 1457.30 | 42.93 | 26.00 | 7.77 | 36.61 | 40.09 | 74.00 | 33.91 | |
| | 1670.50 | 43.39 | 26.70 | 8.35 | 36.22 | 42.22 | 74.00 | 31.78 | |
| | **1844.30** | **46.25** | **27.19** | **8.91** | **35.93** | **46.42** | **74.00** | **27.58** | |
| Vertical | 1050.70 | 44.15 | 24.35 | 6.31 | 37.55 | 37.26 | 74.00 | 36.74 | PK |
| | 1170.90 | 43.38 | 24.90 | 6.70 | 37.24 | 37.74 | 74.00 | 36.26 | |
| | 1396.30 | 43.93 | 25.78 | 7.56 | 36.74 | 40.53 | 74.00 | 33.47 | |
| | 1523.10 | 42.51 | 26.23 | 8.00 | 36.49 | 40.25 | 74.00 | 33.75 | |
| | 1668.60 | 42.71 | 26.68 | 8.35 | 36.22 | 41.52 | 74.00 | 32.48 | |
| | **1844.30** | **45.85** | **27.19** | **8.91** | **35.93** | **46.02** | **74.00** | **27.98** | |

TEST ENGINEER: Dio Yang
(DIO YANG)

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Remote Rain | Temperature : | 28℃ |
| Model No. | : | 5917 | Humidity : | 53% |
| Serial No. | : | E06071801 | Date of Test : | Jul 22, 2006 |
| Test Mode | : | Off Side | | |

| Polarization | Frequency (MHz) | Read Level dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| Horizontal | 31.00 | 26.31 | 16.30 | 0.98 | 28.14 | 15.45 | 40.00 | 24.55 |
| | 101.80 | 26.26 | 10.15 | 1.74 | 27.99 | 10.16 | 43.50 | 33.34 |
| | 172.60 | 25.90 | 11.46 | 2.30 | 27.66 | 12.00 | 43.50 | 31.50 |
| | 271.50 | 25.68 | 14.05 | 3.00 | 27.27 | 15.46 | 46.00 | 30.54 |
| | 514.00 | 26.89 | 20.03 | 4.21 | 28.70 | 22.43 | 46.00 | 23.57 |
| | **814.70** | **26.53** | **23.26** | **5.47** | **28.33** | **26.93** | **46.00** | **19.07** |
| Vertical | 31.90 | 26.20 | 15.72 | 0.99 | 28.13 | 14.78 | 40.00 | 25.22 |
| | 53.30 | 38.51 | 7.80 | 1.23 | 28.07 | 19.47 | 40.00 | 20.53 |
| | 119.20 | 32.53 | 11.27 | 1.90 | 27.90 | 17.80 | 43.50 | 25.70 |
| | 276.40 | 30.09 | 14.19 | 3.03 | 27.27 | 20.04 | 46.00 | 25.96 |
| | 523.70 | 26.46 | 20.03 | 4.26 | 28.71 | 22.04 | 46.00 | 23.96 |
| | **778.80** | **26.54** | **22.92** | **5.34** | **28.43** | **26.37** | **46.00** | **19.63** |

TEST ENGINEER: Dio Yang
(DIO YANG)

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Remote Rain | Temperature : | 28℃ |
| Model No. | : | 5917 | Humidity : | 53% |
| Serial No. | : | E06071801 | Date of Test : | Jul 22, 2006 |
| Test Mode | : | Off Side | | |

| Polarization | Frequency (MHz) | Read Level dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 1053.50 | 44.67 | 24.36 | 6.31 | 37.55 | 37.79 | 74.00 | 36.21 | PK |
| | 1121.10 | 45.27 | 24.68 | 6.56 | 37.37 | 39.14 | 74.00 | 34.86 | |
| | 1276.10 | 43.86 | 25.33 | 7.11 | 37.00 | 39.30 | 74.00 | 34.70 | |
| | 1459.20 | 43.96 | 26.01 | 7.77 | 36.61 | 41.13 | 74.00 | 32.87 | |
| | 1631.10 | 43.61 | 26.56 | 8.27 | 36.29 | 42.15 | 74.00 | 31.85 | |
| | **1816.10** | **45.22** | **27.10** | **8.85** | **35.98** | **45.19** | **74.00** | **28.81** | |
| Vertical | 1018.80 | 44.29 | 24.19 | 6.21 | 37.65 | 37.04 | 74.00 | 36.96 | PK |
| | 1121.10 | 45.27 | 24.68 | 6.56 | 37.37 | 39.14 | 74.00 | 34.86 | |
| | 1355.90 | 43.75 | 25.63 | 7.41 | 36.82 | 39.97 | 74.00 | 34.03 | |
| | 1527.80 | 43.69 | 26.24 | 8.00 | 36.48 | 41.45 | 74.00 | 32.55 | |
| | 1708.10 | 47.26 | 26.80 | 8.43 | 36.15 | 46.34 | 74.00 | 27.66 | |
| | **1939.10** | **48.08** | **27.44** | **9.22** | **35.79** | **48.95** | **74.00** | **25.05** | |

TEST ENGINEER: Dio Yang
(DIO YANG)

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Remote Rain | Temperature : | 28℃ |
| Model No. | : | 5917 | Humidity : | 53% |
| Serial No. | : | E06071801 | Date of Test : | Jul 22, 2006 |
| Test Mode | : | Off Stand | | |

| Polarization | Frequency (MHz) | Read Level dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| Horizontal | 31.90 | 26.13 | 15.72 | 0.99 | 28.13 | 14.71 | 40.00 | 25.29 |
| | 53.30 | 33.64 | 7.80 | 1.23 | 28.07 | 14.60 | 40.00 | 25.40 |
| | 158.00 | 26.94 | 11.00 | 2.19 | 27.74 | 12.39 | 43.50 | 31.11 |
| | 386.00 | 25.85 | 17.32 | 3.65 | 27.95 | 18.87 | 46.00 | 27.13 |
| | 698.30 | 27.08 | 21.70 | 4.98 | 28.63 | 25.13 | 46.00 | 20.87 |
| | **900.10** | **26.74** | **23.57** | **5.77** | **28.10** | **27.98** | **46.00** | **18.02** |
| Vertical | 31.90 | 24.70 | 15.72 | 0.99 | 28.13 | 13.28 | 40.00 | 26.72 |
| | 48.40 | 30.73 | 8.93 | 1.15 | 28.09 | 12.72 | 40.00 | 27.28 |
| | 124.10 | 35.16 | 11.54 | 1.94 | 27.88 | 20.76 | 43.50 | 22.74 |
| | 277.40 | 29.60 | 14.22 | 3.03 | 27.27 | 19.58 | 46.00 | 26.42 |
| | 489.80 | 26.62 | 19.81 | 4.09 | 28.63 | 21.89 | 46.00 | 24.11 |
| | **790.50** | **25.54** | **23.07** | **5.37** | **28.40** | **25.58** | **46.00** | **20.42** |

TEST ENGINEER: Dio Yang
(DIO YANG)

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Remote Rain | Temperature : | 28℃ |
| Model No. | : | 5917 | Humidity : | 53% |
| Serial No. | : | E06071801 | Date of Test : | Jul 22, 2006 |
| Test Mode | : | Off Stand | | |

| Polarization | Frequency (MHz) | Read Level dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Emission Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) | Remark |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 1060.10 | 43.70 | 24.39 | 6.35 | 37.54 | 36.90 | 74.00 | 37.10 | PK |
| | 1210.40 | 43.61 | 25.06 | 6.80 | 37.15 | 38.32 | 74.00 | 35.68 | |
| | 1354.00 | 43.03 | 25.63 | 7.41 | 36.83 | 39.24 | 74.00 | 34.76 | |
| | 1527.80 | 43.97 | 26.24 | 8.00 | 36.48 | 41.73 | 74.00 | 32.27 | |
| | 1816.10 | 44.82 | 27.10 | 8.85 | 35.98 | 44.79 | 74.00 | 29.21 | |
| | **1987.00** | **46.75** | **27.57** | **9.40** | **35.72** | **48.00** | **74.00** | **26.00** | |
| Vertical | 1051.70 | 43.51 | 24.35 | 6.31 | 37.55 | 36.62 | 74.00 | 37.38 | PK |
| | 1172.80 | 45.39 | 24.90 | 6.70 | 37.24 | 39.75 | 74.00 | 34.25 | |
| | 1313.70 | 43.96 | 25.47 | 7.26 | 36.91 | 39.78 | 74.00 | 34.22 | |
| | 1457.30 | 44.22 | 26.00 | 7.77 | 36.61 | 41.38 | 74.00 | 32.62 | |
| | 1722.20 | 45.86 | 26.84 | 8.49 | 36.13 | 45.06 | 74.00 | 28.94 | |
| | **1939.10** | **46.24** | **27.44** | **9.22** | **35.79** | **47.11** | **74.00** | **26.89** | |

TEST ENGINEER: Dio Yang
(DIO YANG)

# 4 FUNDAMENTAL AND SPURIOUS EMISSIONS TEST

## 4.1 Test Equipment

The following test equipment are used during the fundamental and spurious emission test in a semi-anechoic chamber:

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1. | Preamplifier | HP | 8447D | 2944A06849 | Mar 20, 2006 | Sep 20, 2006 |
| 2. | Bilog Antenna | Chase | CBL6111 | 1146 | Mar 18, 2006 | Sep 18, 2006 |
| 3. | Test Receiver | R&S | ESVS10 | 844077/020 | Feb 10, 2006 | Feb 10, 2007 |
| 4. | Amplifier | HP | 8449B | 3008A00864 | Jun 02, 2006 | Jun 02, 2007 |
| 5. | Spectrum Analyzer | HP | 8593EM | 3628A00167 | Apr 18, 2006 | Apr 18, 2007 |
| 6. | Horn Antenna | EMCO | 3115 | 9607-4878 | Apr 13, 2006 | Apr 13, 2007 |
| 7. | Oscilloscope | HP | 54602B | US36181094 | Mar 19, 2006 | Sep 19, 2006 |

## 4.2 Block Diagram of Test Setup

Same as Sec 3.2

## 4.3 Fundamental and Spurious Emission Limit

| Frequency (MHz) | Distance (m) | Field strength limits of fundamental | Field strength limits of spurious emissions |
|---|---|---|---|
| | | (μV/m) | (μV/m) |
| 260 ~ 470 | 3 | 3750-12500* | 375-1250* |

NOTE 1 - Emission Level dB (μV/m) = 20 lg Emission Level (μV/m)
NOTE 2 - The tighter limit applies at the band edges.
NOTE 3 - Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.
NOTE 4 - "*"means linear interpolation.
NOTE 5 - The fundamental frequency of the EUT is 433.92MHz, Emission Level dB (μV/m)=20lg(41.6667*433.92-7083.3333)= 80.55 dB (μV/m) and the limit of the Harmonic is 60.55μV/m).

## 4.4 Test Configuration

The EUT was installed as show on Sec. 3.2 in fundamental and spurious emission test to meet ANSI C63.4:2003 requirements and operating in a manner that tend to maximize emission level in a normal application.

## 4.5 Operating Condition of EUT

4.5.1 Setup the EUT as shown in Sec. 3.2.

4.5.2 Turn on the power of all equipments and the EUT.

4.5.3 Set the EUT on the test modes, and then test.

4.5.4 The test modes are as follows:

| | | |
|---|---|---|
| On Lying | On Side | On Stand |
| Off Lying | Off Side | Off Stand |

## 4.6 Test Procedures

The EUT was placed on a table that is 0.8 meter above ground. The turntable rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna, which was mounted on an antenna tower. Broadband antenna (Calibrated antenna or Horn Antenna) was used as receiving antenna below 1000MHz. Horn antenna were used as receiving antenna above 1000MHz. Both horizontal and vertical polarization of the antenna was set on measurement. In order to find the maximum emission, all of the interference cables were manipulated according to FCC PART 15 Subpart C and ANSI C63.4:2003 requirements during fundamental and spurious emission test.

The bandwidth setting on Test Receiver ESVS10 is 120 kHz below 1000 MHz.

The bandwidth setting on Spectrum analyzer 8593EM is 1 MHz above 1000 MHz.

The frequency range from 30 MHz to 4339.2 MHz (the tenth harmonic) was checked. The EUT rotated through three orthogonal axes to determine which attitude and configuration produces the highest emission.

## 4.7 Test Results

**<PASS>**

The frequency and amplitude of the highest radiated emission relative the limit is reported. All the emissions not reported below are too low against the FCC limit.

| Test Mode | Data Page | Test Mode | Data Page |
|---|---|---|---|
| On Lying | P25 | Off Lying | P28 |
| On Side | P26 | Off Side | P29 |
| On Stand | P27 | Off Stand | P30 |

NOTE 1 - All readings are Peak Values.
NOTE 2 - Emission Level = Meter Reading + Antenna Factor + Cable Loss
– Preamp Factor – Correction Factor
NOTE 3 - Correction factor is calculated by averaging the sum of the pulse train.
Correction factor is measured as follows:
Turn on the EUT and set the spectrum to the fundamental frequency and set the scan width to 0 Hz. Then connect a storage oscilloscope to the video output of the spectrum that is used to detect the pulse train. Adjust the oscilloscope settings to observe the pulse train and determine the number and width of the pulses, as well as the period of the train.

Correction Factor = |20lg[(0.118*21+0.366*4)/15.56]|
= |-11.926| dB = 11.926 dB

NOTE 4 – Figure 1: The period of the pulse train
$\Delta$t=15.56ms
Figure 2: The first pulse
$\Delta$t=0.118ms total: 21
Figure 3: The second pulse
$\Delta$t=0.366ms total: 4
(See Appendix I)

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Remote Rain | Temperature : | 28℃ |
| Model No. | : | 5917 | Humidity : | 53% |
| Serial No. | : | E06071801 | Date of Test : | Jul 23, 2006 |
| Test Mode | : | On Lying | | |

| Polarization | Frequency (MHz) | Read Level dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Correction factor (dB) | Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 433.92 | 81.90 | 18.53 | 3.87 | 28.28 | 11.926 | 64.094 | 80.55 | 16.456 |
| | 867.84 | 39.20 | 23.46 | 5.68 | 28.18 | 11.926 | 28.234 | 60.55 | 32.316 |
| | 1301.76 | 59.68 | 25.43 | 7.21 | 36.94 | 11.926 | 43.454 | 60.55 | 17.096 |
| | 1735.68 | 46.62 | 26.89 | 8.55 | 36.11 | 11.926 | 34.024 | 60.55 | 26.526 |
| Vertical | 433.92 | 75.10 | 18.53 | 3.87 | 28.28 | 11.926 | 57.294 | 80.55 | 23.256 |
| | 867.84 | 34.10 | 23.46 | 5.68 | 28.18 | 11.926 | 23.134 | 60.55 | 37.416 |
| | 1301.76 | 54.79 | 25.43 | 7.21 | 36.94 | 11.926 | 38.564 | 60.55 | 21.986 |
| | 1735.68 | 45.74 | 26.89 | 8.55 | 36.11 | 11.926 | 33.144 | 60.55 | 27.406 |

TEST ENGINEER: Dio Yang
(DIO YANG)

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Remote Rain | Temperature : | 28℃ |
| Model No. | : | 5917 | Humidity : | 53% |
| Serial No. | : | E06071801 | Date of Test : | Jul 23, 2006 |
| Test Mode | : | On Side | | |

| Polarization | Frequency (MHz) | Read Level dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Correction factor (dB) | Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 433.92 | 83.80 | 18.53 | 3.87 | 28.28 | 11.926 | 65.994 | 80.55 | 14.556 |
| | 867.84 | 39.70 | 23.46 | 5.68 | 28.18 | 11.926 | 28.734 | 60.55 | 31.816 |
| | 1301.76 | 57.32 | 25.43 | 7.21 | 36.94 | 11.926 | 41.094 | 60.55 | 19.456 |
| | 1735.68 | 47.10 | 26.89 | 8.55 | 36.11 | 11.926 | 34.504 | 60.55 | 26.046 |
| Vertical | 433.92 | 73.50 | 18.53 | 3.87 | 28.28 | 11.926 | 55.694 | 80.55 | 24.856 |
| | 867.84 | 38.70 | 23.46 | 5.68 | 28.18 | 11.926 | 27.734 | 60.55 | 32.816 |
| | 1301.76 | 61.37 | 25.43 | 7.21 | 36.94 | 11.926 | 45.144 | 60.55 | 15.406 |
| | 1735.68 | 46.80 | 26.89 | 8.55 | 36.11 | 11.926 | 34.204 | 60.55 | 26.346 |

TEST ENGINEER: Dio Yang
(DIO YANG)

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Remote Rain | Temperature : | 28℃ |
| Model No. | : | 5917 | Humidity : | 53% |
| Serial No. | : | E06071801 | Date of Test : | Jul 23, 2006 |
| Test Mode | : | On Stand | | |

| Polarization | Frequency (MHz) | Read Level dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Correction factor (dB) | Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 433.92 | 79.30 | 18.53 | 3.87 | 28.28 | 11.926 | 61.494 | 80.55 | 19.056 |
| | 867.84 | 32.50 | 23.46 | 5.68 | 28.18 | 11.926 | 21.534 | 60.55 | 39.016 |
| | 1301.76 | 52.62 | 25.43 | 7.21 | 36.94 | 11.926 | 36.394 | 60.55 | 24.156 |
| | 1735.68 | 44.50 | 26.89 | 8.55 | 36.11 | 11.926 | 31.904 | 60.55 | 28.646 |
| Vertical | 433.92 | 83.20 | 18.53 | 3.87 | 28.28 | 11.926 | 65.394 | 80.55 | 15.156 |
| | 867.84 | 41.70 | 23.46 | 5.68 | 28.18 | 11.926 | 30.734 | 60.55 | 29.816 |
| | 1301.76 | 57.60 | 25.43 | 7.21 | 36.94 | 11.926 | 41.374 | 60.55 | 19.176 |
| | 1735.68 | 43.20 | 26.89 | 8.55 | 36.11 | 11.926 | 30.604 | 60.55 | 29.946 |

TEST ENGINEER: Dio Yang
(DIO YANG)

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Remote Rain | Temperature : | 28℃ |
| Model No. | : | 5917 | Humidity : | 53% |
| Serial No. | : | E06071801 | Date of Test : | Jul 23, 2006 |
| Test Mode | : | Off Lying | | |

| Polarization | Frequency (MHz) | Read Level dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Correction factor (dB) | Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 433.92 | 82.90 | 18.53 | 3.87 | 28.28 | 11.926 | 65.094 | 80.55 | 15.456 |
| | 867.84 | 35.20 | 23.46 | 5.68 | 28.18 | 11.926 | 24.234 | 60.55 | 36.316 |
| | 1301.76 | 43.90 | 25.43 | 7.21 | 36.94 | 11.926 | 27.674 | 60.55 | 32.876 |
| | 1735.68 | 42.30 | 26.89 | 8.55 | 36.11 | 11.926 | 29.704 | 60.55 | 30.846 |
| Vertical | 433.92 | 75.90 | 18.53 | 3.87 | 28.28 | 11.926 | 58.094 | 80.55 | 22.456 |
| | 867.84 | 32.70 | 23.46 | 5.68 | 28.18 | 11.926 | 21.734 | 60.55 | 38.816 |
| | 1301.76 | 43.70 | 25.43 | 7.21 | 36.94 | 11.926 | 27.474 | 60.55 | 33.076 |
| | 1735.68 | 43.30 | 26.89 | 8.55 | 36.11 | 11.926 | 30.704 | 60.55 | 29.846 |

TEST ENGINEER: Dio Yang
(DIO YANG)

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Remote Rain | Temperature : | 28℃ |
| Model No. | : | 5917 | Humidity : | 53% |
| Serial No. | : | E06071801 | Date of Test : | Jul 23, 2006 |
| Test Mode | : | Off Side | | |

| Polarization | Frequency (MHz) | Read Level dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Correction factor (dB) | Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 433.92 | 83.30 | 18.53 | 3.87 | 28.28 | 11.926 | 65.494 | 80.55 | 15.056 |
| | 867.84 | 36.10 | 23.46 | 5.68 | 28.18 | 11.926 | 25.134 | 60.55 | 35.416 |
| | 1301.76 | 44.50 | 25.43 | 7.21 | 36.94 | 11.926 | 28.274 | 60.55 | 32.276 |
| | 1735.68 | 41.10 | 26.89 | 8.55 | 36.11 | 11.926 | 28.504 | 60.55 | 32.046 |
| Vertical | 433.92 | 74.40 | 18.53 | 3.87 | 28.28 | 11.926 | 56.594 | 80.55 | 23.956 |
| | 867.84 | 33.50 | 23.46 | 5.68 | 28.18 | 11.926 | 22.534 | 60.55 | 38.016 |
| | 1301.76 | 46.90 | 25.43 | 7.21 | 36.94 | 11.926 | 30.674 | 60.55 | 29.876 |
| | 1735.68 | 42.60 | 26.89 | 8.55 | 36.11 | 11.926 | 30.004 | 60.55 | 30.546 |

TEST ENGINEER: Dio Yang
(DIO YANG)

| | | | | | |
|---|---|---|---|---|---|
| EUT | : | Remote Rain | Temperature : | 28℃ |
| Model No. | : | 5917 | Humidity : | 53% |
| Serial No. | : | E06071801 | Date of Test : | Jul 23, 2006 |
| Test Mode | : | Off Stand | | |

| Polarization | Frequency (MHz) | Read Level dB (μV) | Antenna Factor (dB/m) | Cable Loss (dB) | Preamp Factor (dB) | Correction factor (dB) | Level dB (μV/m) | Limits dB (μV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|---|
| Horizontal | 433.92 | 76.40 | 18.53 | 3.87 | 28.28 | 11.926 | 58.594 | 80.55 | 21.956 |
| | 867.84 | 32.40 | 23.46 | 5.68 | 28.18 | 11.926 | 21.434 | 60.55 | 39.116 |
| | 1301.76 | 44.80 | 25.43 | 7.21 | 36.94 | 11.926 | 28.574 | 60.55 | 31.976 |
| | 1735.68 | 41.70 | 26.89 | 8.55 | 36.11 | 11.926 | 29.104 | 60.55 | 31.446 |
| Vertical | 433.92 | 83.10 | 18.53 | 3.87 | 28.28 | 11.926 | 65.294 | 80.55 | 15.256 |
| | 867.84 | 34.80 | 23.46 | 5.68 | 28.18 | 11.926 | 23.834 | 60.55 | 36.716 |
| | 1301.76 | 45.10 | 25.43 | 7.21 | 36.94 | 11.926 | 28.874 | 60.55 | 31.676 |
| | 1735.68 | 42.25 | 26.89 | 8.55 | 36.11 | 11.926 | 29.654 | 60.55 | 30.896 |

TEST ENGINEER: Dio Yang
(DIO YANG)

# 5 BANDWIDTH MEASUREMENT

## 5.1 Test Equipment

| Item | Type | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|---|
| 1. | Spectrum Analyzer | HP | 8593EM | 3628A00167 | Apr 18, 2006 | Apr 18, 2007 |
| 2. | Test Receiver | R&S | ESHS10 | 844077/020 | Feb 10, 2006 | Feb 10, 2007 |
| 3. | Bilog Antenna | Chase | CBL6111 | 1146 | Mar 18, 2006 | Sep 18, 2006 |
| 4. | Preamplifier | HP | 8447D | 2944A06849 | Mar 20, 2006 | Sep 20, 2006 |
| 5. | Software | Audix | E3 | SET00200 9912M295-2 | -- | -- |

## 5.2 Bandwidth Limit

The bandwidth of the emission shall be no wider than 0.25% of the center frequency. Bandwidth is determined at the point 20dB down from the modulated carrier. Bandwidth Limit is:

Limit= 0.25% × 433.92(MHz) = 1.0848(MHz)

The bandwidth of Spectrum Analyzer (M/N: 8593EM) is 120kHz in the test.

## 5.3 Test Results

<PASS>
The bandwidth of the Fundament emission is:
For On Test Mode:
B.W. = 433.1 – 433.7 = 0.4MHz

For Off Test Mode:
B.W. = 434.0 – 433.8 = 0.2MHz
(See Appendix II)

# 6 OPERATION DESCRIPTION

Motion sensor with RF remote (M/N: 5917) employs a switch that will automatically deactivate the Controller within not more than 5 seconds of being released.

# APPENDIX I

PLOT OF THE PULSE TRAIN

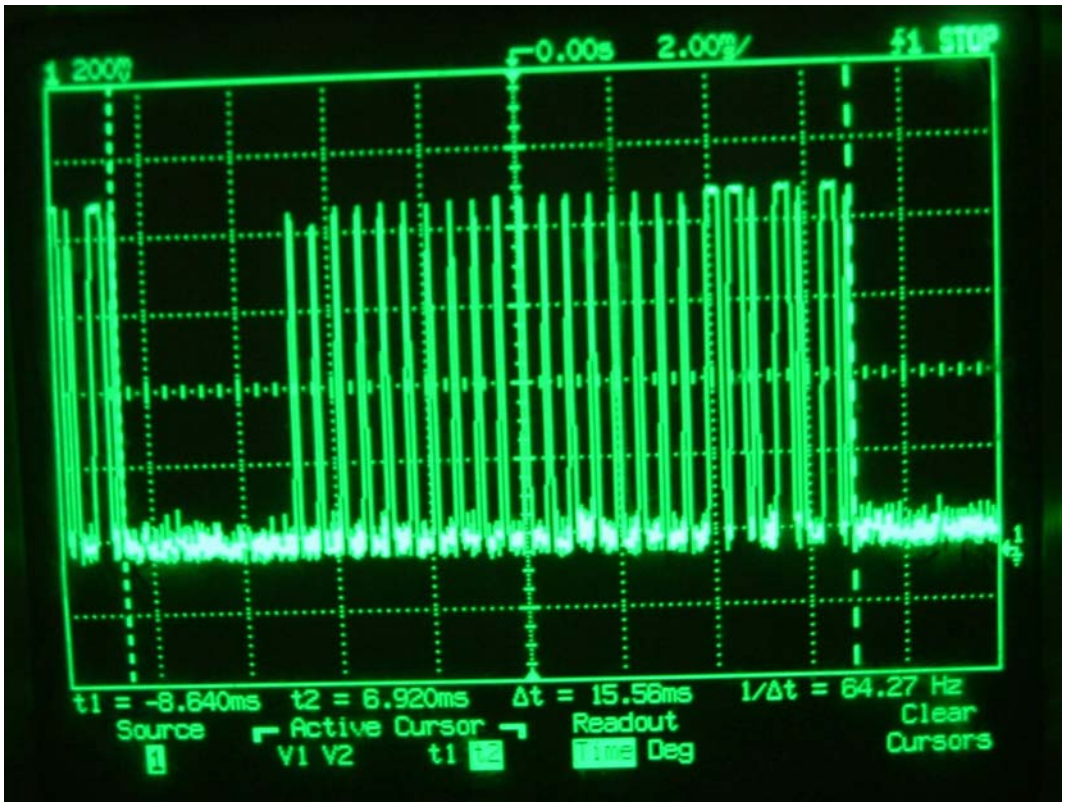



*FIGURE 1*

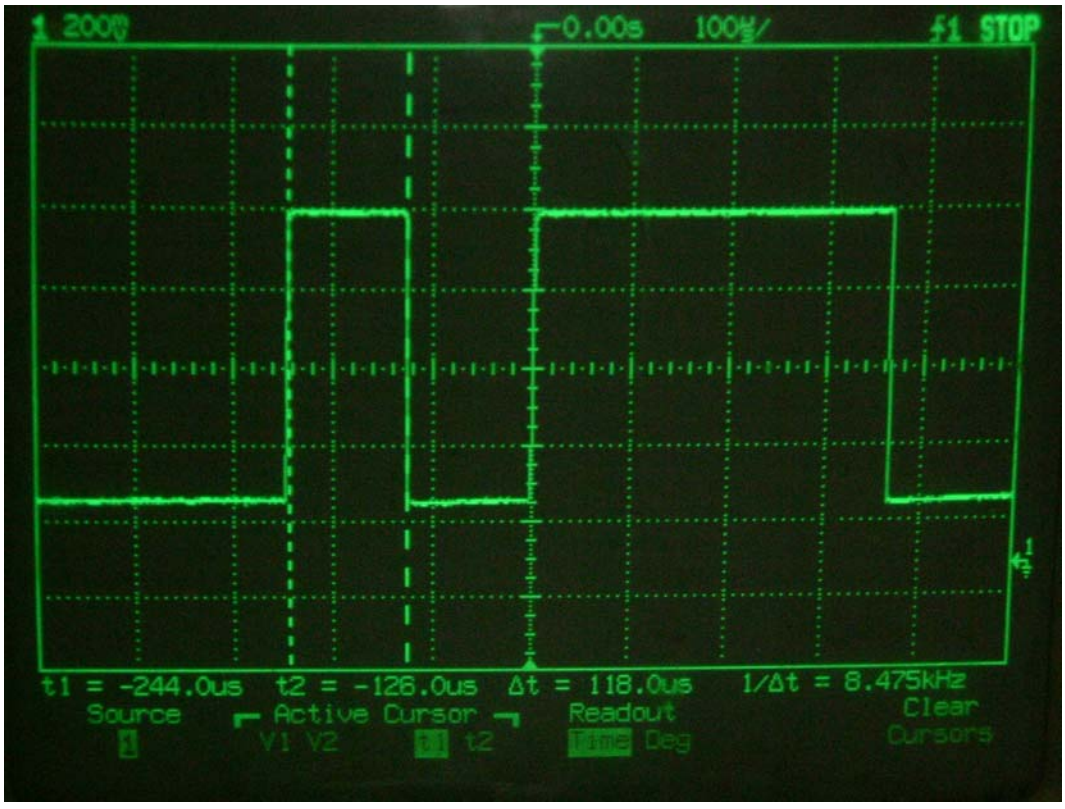



*FIGURE 2*

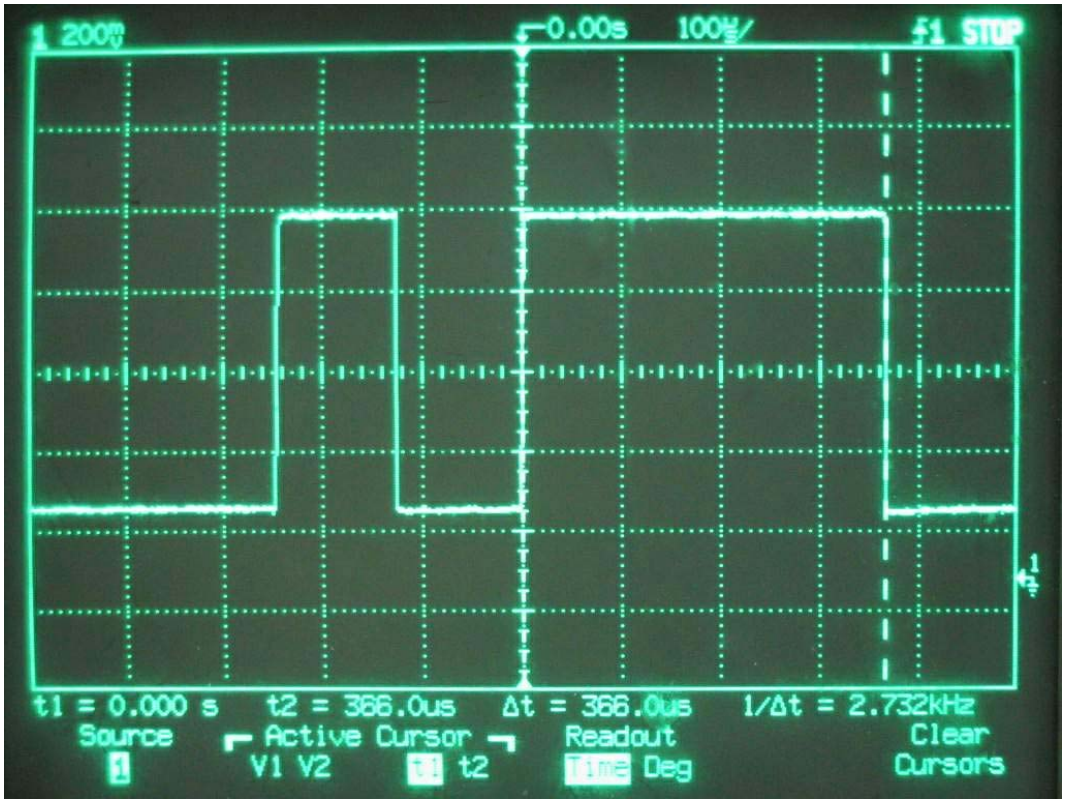

1 200mV
0.00s
100ks/
STOP
t1 = 0.000 s
t2 = 366.0us
Δt = 366.0us
1/Δt = 2.732kHz
Source
Active Cursor
Readout
Clear
1
V1 V2
t1 t2
Time Deg
Cursors

*FIGURE 3*

# APPENDIX II

PLOT OF THE OCCUPIED BANDWIDTH

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Shanghai, China, 200233
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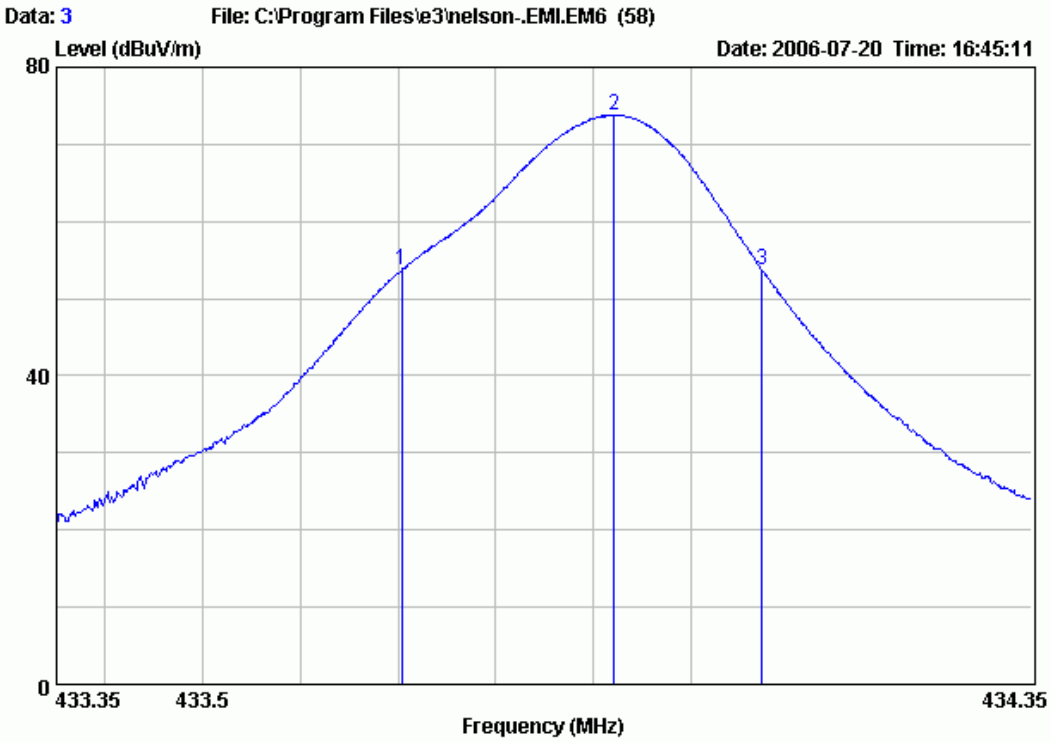
audixaci@audix.com




Site : Chamber 3
Condition : 3m 1145-2006.03.19 HORIZONTAL
Project No. : AOE-001121-F1
Applicant : L.R Nelson Corp.
EUT : Remote Faucet Control
M/N : 5917
S/N : E06071801
Power Supply : DC 12V
Ambient : 28'C,56%RH
Test Mode : On Lying
Test Engineer : Dio
Memo :

| | Freq | Level | Over Limit | Limit Line | Read Level | Factor | Preamp Factor | Antenna Factor | Cable Loss |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB/m | dB |
| 1 | 433.7 | 53.76 | ------- | ------- | 59.65 | -5.89 | 28.28 | 18.53 | 3.86 |
| 2 | 433.9 | 73.77 | ------- | ------- | 79.65 | -5.88 | 28.28 | 18.53 | 3.87 |
| 3 | 434.1 | 53.79 | ------- | ------- | 59.67 | -5.88 | 28.28 | 18.53 | 3.87 |

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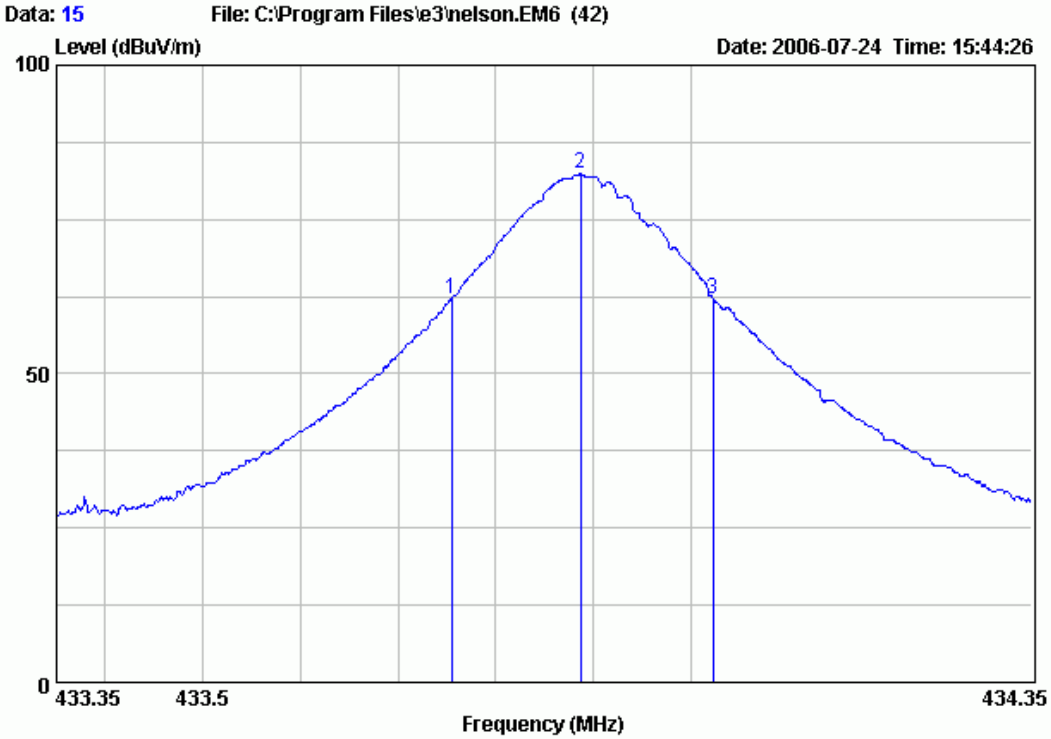


Site : Chamber 1
Condition : 3m 1145-2006.03.19 HORIZONTAL
Project No. : AOE-001121-F1
Applicant : L.R Nelson Corp.
EUT : Remote Faucet Control
M/N : 5917
S/N : E06071801
Power Supply : DC 12V
Ambient : 28'C,56%RH
Test Mode : Off Lying
Test Engineer : Dio
Memo :

| | Freq | Level | Over Limit | Limit Line | Read Level | Factor | Preamp Factor | Antenna Factor | Cable Loss |
|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB/m | dB |
| 1 | 433.8 | 62.18 | ------ | ------ | 68.07 | -5.89 | 28.28 | 18.53 | 3.86 |
| 2 | 433.9 | 82.33 | ------ | ------ | 88.21 | -5.88 | 28.28 | 18.53 | 3.87 |
| 3 | 434.0 | 62.22 | ------ | ------ | 68.10 | -5.88 | 28.28 | 18.53 | 3.87 |