



CERTIFICATE OF CALIBRATION CONFORMANCE

Cert ID: 130388

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ARP 958 – 1999-03, Aerospace Recommended Practice for Electromagnetic Interference Measurement Antennas; Standard Calibration Method

Environment: Laboratory MTE is maintained in a temperature- controlled environment with ambient conditions from 18 to 28 C, relative humidity less than 90%. The instrument under test has been calibrated on an open air test site with environment temperature conditions ranging from 0 to 40 C which has no known influence on measurement quality.

| | | | |
|---------------------------------|--|-------------------------|---------------|
| Manufacturer: | TDK RF Solutions Inc. | Operating Range: | 900 MHz–18GHz |
| Model Number: | HRN-0118 | Instrument Type: | Horn Antenna |
| Serial Number: | 130388 | Alternate ID: | |
| Date Completed: | 05/11/2011 | Date Received: | |
| Test Type: | Calibration | | |
| Calibration Uncertainty: | ±2.0 dB | | |
| Test Remarks: | Gain Calibration, Horizontal, 1m | | |
| Recall/Interval: | 1 yr, Annual Recalibration Recommended by TDK RF Solutions Inc. from: Ship Date: <u>5-13-2011</u> | | |

Calibration Traceability: All Measuring and Test Equipment (M/TE) identified below are traceable to the National Institute for Standards and Technology (NIST).

Standards and Equipment Used:

Make / Model / Name / S/N / Recall Date

E8362B

PNA Analyzer

MY43021318

03/31/2012

Other Antennae used in Calibration

Antenna 1: 130389

Antenna 2: 130390

Condition Of Instrument

Upon Receipt: Uncalibrated

On Release: Calibrated

Calibration Completed By:
Armando Medina

Attested and Issued on 05/13/2011
Chris Whalen

This document provides traceability of measurements to recognized national standards using controlled processes at the TDK RF Solutions Inc. Calibration Laboratory. Uncertainties listed are derived from the methods described by NIST Tech Note 1297.

Model Number: HRN 0118
 1.0 Meter Calibration
 Horizontal Polarization

Serial Number: 130388
 Free Space

| Frequency [MHz] | Antenna Factor [dB] | Gain Numeric | Gain dBi |
|--------------------|------------------------|-----------------|-------------|
| 900 | 24.0 | 3.4 | 5.3 |
| 1000 | 24.1 | 4.1 | 6.1 |
| 1100 | 24.7 | 4.4 | 6.4 |
| 1200 | 25.3 | 4.5 | 6.5 |
| 1300 | 25.9 | 4.6 | 6.6 |
| 1400 | 26.0 | 5.2 | 7.1 |
| 1500 | 25.8 | 6.2 | 7.9 |
| 1600 | 25.7 | 7.3 | 8.6 |
| 1700 | 26.0 | 7.7 | 8.9 |
| 1800 | 26.4 | 7.8 | 8.9 |
| 1900 | 26.6 | 8.3 | 9.2 |
| 2000 | 26.8 | 8.8 | 9.4 |
| 2100 | 27.5 | 8.3 | 9.2 |
| 2200 | 28.7 | 6.8 | 8.3 |
| 2300 | 29.1 | 6.8 | 8.3 |
| 2400 | 28.2 | 9.1 | 9.6 |
| 2500 | 27.8 | 11.0 | 10.4 |
| 2600 | 27.9 | 11.5 | 10.6 |
| 2700 | 28.4 | 11.0 | 10.4 |
| 2800 | 28.9 | 10.6 | 10.2 |
| 2900 | 29.1 | 11.0 | 10.4 |
| 3000 | 29.1 | 11.7 | 10.7 |
| 3100 | 29.4 | 11.6 | 10.6 |
| 3200 | 29.8 | 11.3 | 10.5 |
| 3300 | 29.7 | 12.2 | 10.9 |
| 3400 | 29.8 | 12.6 | 11.0 |
| 3500 | 30.3 | 12.0 | 10.8 |
| 3600 | 30.8 | 11.2 | 10.5 |
| 3700 | 31.1 | 11.2 | 10.5 |
| 3800 | 31.4 | 11.1 | 10.5 |
| 3900 | 31.4 | 11.5 | 10.6 |
| 4000 | 31.4 | 12.1 | 10.8 |
| 4100 | 31.5 | 12.4 | 10.9 |
| 4200 | 31.6 | 12.8 | 11.1 |
| 4300 | 31.8 | 12.7 | 11.1 |
| 4400 | 32.1 | 12.7 | 11.0 |
| 4500 | 32.3 | 12.6 | 11.0 |
| 4600 | 32.3 | 13.0 | 11.2 |

Compliance testing factor (1.0 meter spacing) to be added to receiver meter reading in dBuV to convert to field intensity in dBuV/meter. Calibrated May 11, 2010
 Calibration as per ARP 958.

Model Number: HRN 0118
 1.0 Meter Calibration
 Horizontal Polarization

Serial Number: 130388
 Free Space

| Frequency [MHz] | Antenna Factor [dB] | Gain Numeric | Gain dBi |
|--------------------|------------------------|-----------------|-------------|
| 4700 | 32.3 | 13.7 | 11.4 |
| 4800 | 32.5 | 13.6 | 11.3 |
| 4900 | 32.7 | 13.5 | 11.3 |
| 5000 | 32.8 | 13.6 | 11.4 |
| 5100 | 33.0 | 13.8 | 11.4 |
| 5200 | 33.0 | 14.3 | 11.6 |
| 5300 | 32.9 | 15.1 | 11.8 |
| 5400 | 33.2 | 14.6 | 11.6 |
| 5500 | 33.8 | 13.4 | 11.3 |
| 5600 | 33.9 | 13.3 | 11.2 |
| 5700 | 34.1 | 13.4 | 11.3 |
| 5800 | 34.5 | 12.7 | 11.0 |
| 5900 | 34.8 | 12.3 | 10.9 |
| 6000 | 34.8 | 12.5 | 11.0 |
| 6100 | 34.9 | 12.6 | 11.0 |
| 6200 | 35.1 | 12.5 | 11.0 |
| 6300 | 35.5 | 11.7 | 10.7 |
| 6400 | 35.9 | 11.1 | 10.5 |
| 6500 | 36.1 | 11.0 | 10.4 |
| 6600 | 35.9 | 11.7 | 10.7 |
| 6700 | 35.8 | 12.5 | 11.0 |
| 6800 | 36.0 | 12.3 | 10.9 |
| 6900 | 36.4 | 11.4 | 10.6 |
| 7000 | 37.0 | 10.3 | 10.1 |
| 7100 | 37.4 | 9.7 | 9.8 |
| 7200 | 37.2 | 10.4 | 10.2 |
| 7300 | 36.8 | 11.8 | 10.7 |
| 7400 | 36.8 | 12.1 | 10.8 |
| 7500 | 37.0 | 11.8 | 10.7 |
| 7600 | 37.1 | 11.8 | 10.7 |
| 7700 | 37.1 | 12.2 | 10.9 |
| 7800 | 37.1 | 12.5 | 11.0 |
| 7900 | 37.2 | 12.4 | 11.0 |
| 8000 | 37.3 | 12.5 | 11.0 |
| 8100 | 37.4 | 12.5 | 11.0 |
| 8200 | 37.5 | 12.5 | 11.0 |
| 8300 | 37.5 | 12.9 | 11.1 |
| 8400 | 37.4 | 13.5 | 11.3 |
| 8500 | 37.4 | 13.7 | 11.4 |
| 8600 | 37.7 | 13.3 | 11.2 |
| 8700 | 37.9 | 12.8 | 11.1 |

Compliance testing factor (1.0 meter spacing) to be added to receiver meter reading in dBuV to convert to field intensity in dBuV/meter. Calibrated May 11, 2010
 Calibration as per ARP 958.

Model Number: HRN 0118
 1.0 Meter Calibration
 Horizontal Polarization

Serial Number: 130388
 Free Space

| Frequency [MHz] | Antenna Factor [dB] | Gain Numeric | Gain dBi |
|--------------------|------------------------|-----------------|-------------|
| 8800 | 37.9 | 13.2 | 11.2 |
| 8900 | 37.8 | 13.9 | 11.4 |
| 9000 | 37.6 | 14.7 | 11.7 |
| 9100 | 37.6 | 15.0 | 11.8 |
| 9200 | 37.8 | 14.7 | 11.7 |
| 9300 | 38.1 | 14.2 | 11.5 |
| 9400 | 38.4 | 13.5 | 11.3 |
| 9500 | 38.6 | 13.1 | 11.2 |
| 9600 | 38.8 | 12.8 | 11.1 |
| 9700 | 39.0 | 12.3 | 10.9 |
| 9800 | 39.3 | 11.8 | 10.7 |
| 9900 | 39.5 | 11.4 | 10.6 |
| 10000 | 39.4 | 12.0 | 10.8 |
| 10100 | 39.4 | 12.4 | 10.9 |
| 10200 | 39.4 | 12.7 | 11.0 |
| 10300 | 39.4 | 12.8 | 11.1 |
| 10400 | 39.6 | 12.6 | 11.0 |
| 10500 | 39.8 | 12.1 | 10.8 |
| 10600 | 40.0 | 11.9 | 10.7 |
| 10700 | 40.0 | 12.1 | 10.8 |
| 10800 | 39.9 | 12.4 | 10.9 |
| 10900 | 40.1 | 12.3 | 10.9 |
| 11000 | 40.3 | 11.8 | 10.7 |
| 11100 | 40.6 | 11.3 | 10.5 |
| 11200 | 40.8 | 11.0 | 10.4 |
| 11300 | 40.8 | 11.2 | 10.5 |
| 11400 | 40.6 | 11.8 | 10.7 |
| 11500 | 40.6 | 12.2 | 10.9 |
| 11600 | 40.5 | 12.6 | 11.0 |
| 11700 | 40.5 | 12.9 | 11.1 |
| 11800 | 40.4 | 13.4 | 11.3 |
| 11900 | 40.3 | 13.8 | 11.4 |
| 12000 | 40.4 | 13.9 | 11.4 |
| 12100 | 40.4 | 14.1 | 11.5 |
| 12200 | 40.4 | 14.2 | 11.5 |
| 12300 | 40.4 | 14.5 | 11.6 |
| 12400 | 40.6 | 13.9 | 11.4 |
| 12500 | 40.9 | 13.5 | 11.3 |
| 12600 | 41.2 | 12.7 | 11.0 |
| 12700 | 41.6 | 11.8 | 10.7 |
| 12800 | 41.9 | 11.0 | 10.4 |

Compliance testing factor (1.0 meter spacing) to be added to receiver meter reading in
 dBuV to convert to field intensity in dBuV/meter. Calibrated May 11, 2010
 Calibration as per ARP 958.

Model Number: HRN 0118
 1.0 Meter Calibration
 Horizontal Polarization

Serial Number: 130388
 Free Space

| Frequency [MHz] | Antenna Factor [dB] | Gain Numeric | Gain dBi |
|--------------------|------------------------|-----------------|-------------|
| 12900 | 42.2 | 10.6 | 10.2 |
| 13000 | 42.2 | 10.7 | 10.3 |
| 13100 | 42.4 | 10.5 | 10.2 |
| 13200 | 42.4 | 10.6 | 10.2 |
| 13300 | 42.5 | 10.4 | 10.2 |
| 13400 | 42.7 | 10.3 | 10.1 |
| 13500 | 42.6 | 10.6 | 10.2 |
| 13600 | 42.3 | 11.4 | 10.6 |
| 13700 | 42.1 | 12.2 | 10.9 |
| 13800 | 42.0 | 12.7 | 11.0 |
| 13900 | 41.9 | 13.3 | 11.2 |
| 14000 | 41.6 | 14.3 | 11.5 |
| 14100 | 41.2 | 15.7 | 12.0 |
| 14200 | 40.9 | 17.3 | 12.4 |
| 14300 | 40.5 | 19.0 | 12.8 |
| 14400 | 40.2 | 20.8 | 13.2 |
| 14500 | 39.7 | 23.4 | 13.7 |
| 14600 | 39.3 | 26.6 | 14.2 |
| 14700 | 38.9 | 29.1 | 14.6 |
| 14800 | 38.7 | 31.0 | 14.9 |
| 14900 | 38.7 | 31.6 | 15.0 |
| 15000 | 38.7 | 32.2 | 15.1 |
| 15100 | 38.6 | 33.1 | 15.2 |
| 15200 | 38.5 | 34.6 | 15.4 |
| 15300 | 38.3 | 36.2 | 15.6 |
| 15400 | 38.2 | 37.4 | 15.7 |
| 15500 | 38.2 | 38.1 | 15.8 |
| 15600 | 38.2 | 38.4 | 15.8 |
| 15700 | 38.3 | 38.4 | 15.8 |
| 15800 | 38.3 | 39.0 | 15.9 |
| 15900 | 38.3 | 39.0 | 15.9 |
| 16000 | 38.4 | 38.8 | 15.9 |
| 16100 | 38.6 | 37.5 | 15.7 |
| 16200 | 39.0 | 34.9 | 15.4 |
| 16300 | 39.4 | 32.0 | 15.1 |
| 16400 | 40.0 | 28.1 | 14.5 |
| 16500 | 40.7 | 24.3 | 13.9 |
| 16600 | 41.2 | 22.1 | 13.4 |
| 16700 | 41.6 | 20.1 | 13.0 |
| 16800 | 42.0 | 18.9 | 12.8 |
| 16900 | 42.5 | 16.8 | 12.3 |

Compliance testing factor (1.0 meter spacing) to be added to receiver meter reading in dBuV to convert to field intensity in dBuV/meter. Calibrated May 11, 2010
 Calibration as per ARP 958.

Model Number: HRN 0118
 1.0 Meter Calibration
 Horizontal Polarization

Serial Number: 130388
 Free Space

| Frequency [MHz] | Antenna Factor [dB] | Gain Numeric | Gain dBi |
|--------------------|------------------------|-----------------|-------------|
| 17000 | 43.2 | 14.5 | 11.6 |
| 17100 | 43.6 | 13.4 | 11.3 |
| 17200 | 43.5 | 13.9 | 11.4 |
| 17300 | 43.2 | 15.1 | 11.8 |
| 17400 | 43.2 | 15.4 | 11.9 |
| 17500 | 43.6 | 14.1 | 11.5 |
| 17600 | 44.3 | 12.2 | 10.9 |
| 17700 | 45.1 | 10.2 | 10.1 |
| 17800 | 45.5 | 9.4 | 9.7 |
| 17900 | 45.7 | 9.1 | 9.6 |
| 18000 | 46.3 | 8.1 | 9.1 |

Compliance testing factor (1.0 meter spacing) to be added to receiver meter reading in dBuV to convert to field intensity in dBuV/meter. Calibrated May 11, 2010
 Calibration as per ARP 958.



CERTIFICATE OF CALIBRATION CONFORMANCE

Cert ID: 130389

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ARP 958 – 1999-03, Aerospace Recommended Practice for Electromagnetic Interference Measurement Antennas; Standard Calibration Method

Environment: Laboratory MTE is maintained in a temperature- controlled environment with ambient conditions from 18 to 28 C, relative humidity less than 90%. The instrument under test has been calibrated on an open air test site with environment temperature conditions ranging from 0 to 40 C which has no known influence on measurement quality.

| | | | |
|---------------------------------|--|-------------------------|---------------|
| Manufacturer: | TDK RF Solutions Inc. | Operating Range: | 900 MHz–18GHz |
| Model Number: | HRN-0118 | Instrument Type: | Horn Antenna |
| Serial Number: | 130389 | Alternate ID: | |
| Date Completed: | 05/11/2011 | Date Received: | |
| Test Type: | Calibration | | |
| Calibration Uncertainty: | ±2.0 dB | | |
| Test Remarks: | Gain Calibration, Horizontal, 1m | | |
| Recall/Interval: | 1 yr, Annual Recalibration Recommended by TDK RF Solutions Inc. from: Ship Date: <u>5-13-11</u> | | |

Calibration Traceability: All Measuring and Test Equipment (M/TE) identified below are traceable to the National Institute for Standards and Technology (NIST).

Standards and Equipment Used:

Make / Model / Name / S/N / Recall Date

| | | | |
|--------|--------------|------------|------------|
| E8362B | PNA Analyzer | MY43021318 | 03/31/2012 |
|--------|--------------|------------|------------|

Other Antennae used in Calibration

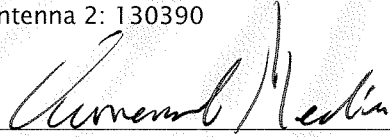
Antenna 1: 130389

Antenna 2: 130390

Condition Of Instrument

Upon Receipt: Uncalibrated

On Release: Calibrated


Calibration Completed By:
Armando Medina


Attested and Issued on 05/13/2011
Chris Whalen

This document provides traceability of measurements to recognized national standards using controlled processes at the TDK RF Solutions Inc. Calibration Laboratory. Uncertainties listed are derived from the methods described by NIST Tech Note 1297.

Model Number: HRN 0118
 1.0 Meter Calibration
 Horizontal Polarization

Serial Number: 130389
 Free Space

| Frequency [MHz] | Antenna Factor [dB] | Gain Numeric | Gain dBi |
|--------------------|------------------------|-----------------|-------------|
| 900 | 23.9 | 3.5 | 5.4 |
| 1000 | 24.0 | 4.1 | 6.2 |
| 1100 | 24.7 | 4.4 | 6.4 |
| 1200 | 25.3 | 4.5 | 6.5 |
| 1300 | 25.9 | 4.6 | 6.6 |
| 1400 | 26.0 | 5.2 | 7.2 |
| 1500 | 25.8 | 6.3 | 8.0 |
| 1600 | 25.7 | 7.2 | 8.6 |
| 1700 | 26.0 | 7.6 | 8.8 |
| 1800 | 26.5 | 7.7 | 8.9 |
| 1900 | 26.7 | 8.1 | 9.1 |
| 2000 | 26.9 | 8.6 | 9.4 |
| 2100 | 27.6 | 8.0 | 9.0 |
| 2200 | 28.9 | 6.6 | 8.2 |
| 2300 | 29.1 | 6.8 | 8.3 |
| 2400 | 28.2 | 9.1 | 9.6 |
| 2500 | 27.8 | 10.9 | 10.4 |
| 2600 | 27.9 | 11.4 | 10.6 |
| 2700 | 28.4 | 11.1 | 10.5 |
| 2800 | 28.9 | 10.6 | 10.3 |
| 2900 | 29.0 | 11.0 | 10.4 |
| 3000 | 29.1 | 11.7 | 10.7 |
| 3100 | 29.4 | 11.6 | 10.6 |
| 3200 | 29.8 | 11.2 | 10.5 |
| 3300 | 29.7 | 12.1 | 10.8 |
| 3400 | 29.8 | 12.7 | 11.0 |
| 3500 | 30.3 | 12.0 | 10.8 |
| 3600 | 30.9 | 11.0 | 10.4 |
| 3700 | 31.2 | 10.9 | 10.4 |
| 3800 | 31.5 | 10.8 | 10.3 |
| 3900 | 31.5 | 11.3 | 10.5 |
| 4000 | 31.5 | 11.9 | 10.8 |
| 4100 | 31.6 | 12.3 | 10.9 |
| 4200 | 31.6 | 12.7 | 11.0 |
| 4300 | 31.9 | 12.6 | 11.0 |
| 4400 | 32.2 | 12.4 | 10.9 |
| 4500 | 32.4 | 12.2 | 10.9 |
| 4600 | 32.4 | 12.8 | 11.1 |

Compliance testing factor (1.0 meter spacing) to be added to receiver meter reading in dBuV to convert to field intensity in dBuV/meter. Calibrated May 11, 2010
 Calibration as per ARP 958.

Model Number: HRN 0118
 1.0 Meter Calibration
 Horizontal Polarization

Serial Number: 130389
 Free Space

| Frequency [MHz] | Antenna Factor [dB] | Gain Numeric | Gain dBi |
|--------------------|------------------------|-----------------|-------------|
| 4700 | 32.3 | 13.6 | 11.3 |
| 4800 | 32.5 | 13.6 | 11.3 |
| 4900 | 32.7 | 13.5 | 11.3 |
| 5000 | 32.8 | 13.6 | 11.3 |
| 5100 | 33.0 | 13.7 | 11.4 |
| 5200 | 33.0 | 14.3 | 11.6 |
| 5300 | 32.9 | 15.2 | 11.8 |
| 5400 | 33.2 | 14.6 | 11.6 |
| 5500 | 33.7 | 13.5 | 11.3 |
| 5600 | 33.9 | 13.4 | 11.3 |
| 5700 | 34.1 | 13.4 | 11.3 |
| 5800 | 34.5 | 12.7 | 11.0 |
| 5900 | 34.8 | 12.1 | 10.8 |
| 6000 | 34.9 | 12.3 | 10.9 |
| 6100 | 35.0 | 12.3 | 10.9 |
| 6200 | 35.3 | 11.9 | 10.7 |
| 6300 | 35.8 | 10.9 | 10.4 |
| 6400 | 36.3 | 10.2 | 10.1 |
| 6500 | 36.4 | 10.1 | 10.0 |
| 6600 | 36.1 | 11.2 | 10.5 |
| 6700 | 35.8 | 12.3 | 10.9 |
| 6800 | 36.0 | 12.1 | 10.8 |
| 6900 | 36.5 | 11.3 | 10.5 |
| 7000 | 37.0 | 10.4 | 10.2 |
| 7100 | 37.4 | 9.7 | 9.9 |
| 7200 | 37.2 | 10.3 | 10.1 |
| 7300 | 36.8 | 11.7 | 10.7 |
| 7400 | 36.8 | 12.1 | 10.8 |
| 7500 | 37.0 | 11.8 | 10.7 |
| 7600 | 37.1 | 11.8 | 10.7 |
| 7700 | 37.1 | 12.3 | 10.9 |
| 7800 | 37.0 | 12.7 | 11.0 |
| 7900 | 37.2 | 12.6 | 11.0 |
| 8000 | 37.2 | 12.8 | 11.1 |
| 8100 | 37.2 | 13.1 | 11.2 |
| 8200 | 37.2 | 13.6 | 11.3 |
| 8300 | 37.0 | 14.3 | 11.6 |
| 8400 | 37.0 | 14.8 | 11.7 |
| 8500 | 37.1 | 14.9 | 11.7 |
| 8600 | 37.2 | 14.7 | 11.7 |
| 8700 | 37.4 | 14.4 | 11.6 |

Compliance testing factor (1.0 meter spacing) to be added to receiver meter reading in
 dBuV to convert to field intensity in dBuV/meter. Calibrated May 11, 2010
 Calibration as per ARP 958.

Model Number: HRN 0118
 1.0 Meter Calibration
 Horizontal Polarization

Serial Number: 130389
 Free Space

| Frequency [MHz] | Antenna Factor [dB] | Gain Numeric | Gain dBi |
|--------------------|------------------------|-----------------|-------------|
| 8800 | 37.5 | 14.3 | 11.6 |
| 8900 | 37.6 | 14.6 | 11.6 |
| 9000 | 37.6 | 14.9 | 11.7 |
| 9100 | 37.6 | 15.0 | 11.8 |
| 9200 | 38.0 | 14.2 | 11.5 |
| 9300 | 38.3 | 13.5 | 11.3 |
| 9400 | 38.6 | 12.9 | 11.1 |
| 9500 | 38.7 | 12.9 | 11.1 |
| 9600 | 38.7 | 13.1 | 11.2 |
| 9700 | 38.8 | 13.0 | 11.2 |
| 9800 | 39.0 | 12.7 | 11.0 |
| 9900 | 39.2 | 12.4 | 10.9 |
| 10000 | 39.0 | 13.4 | 11.3 |
| 10100 | 38.8 | 14.1 | 11.5 |
| 10200 | 38.8 | 14.3 | 11.6 |
| 10300 | 39.0 | 14.2 | 11.5 |
| 10400 | 39.2 | 13.7 | 11.4 |
| 10500 | 39.4 | 13.2 | 11.2 |
| 10600 | 39.5 | 13.2 | 11.2 |
| 10700 | 39.4 | 13.7 | 11.4 |
| 10800 | 39.4 | 14.2 | 11.5 |
| 10900 | 39.5 | 13.9 | 11.4 |
| 11000 | 39.8 | 13.3 | 11.2 |
| 11100 | 40.1 | 12.7 | 11.1 |
| 11200 | 40.3 | 12.4 | 10.9 |
| 11300 | 40.4 | 12.4 | 10.9 |
| 11400 | 40.3 | 12.8 | 11.1 |
| 11500 | 40.3 | 13.0 | 11.1 |
| 11600 | 40.2 | 13.4 | 11.3 |
| 11700 | 40.3 | 13.5 | 11.3 |
| 11800 | 40.2 | 13.9 | 11.4 |
| 11900 | 40.2 | 14.1 | 11.5 |
| 12000 | 40.3 | 14.2 | 11.5 |
| 12100 | 40.3 | 14.5 | 11.6 |
| 12200 | 40.3 | 14.6 | 11.6 |
| 12300 | 40.2 | 15.2 | 11.8 |
| 12400 | 40.3 | 15.0 | 11.8 |
| 12500 | 40.4 | 15.0 | 11.8 |
| 12600 | 40.6 | 14.6 | 11.6 |
| 12700 | 40.9 | 13.9 | 11.4 |
| 12800 | 41.3 | 12.9 | 11.1 |

Compliance testing factor (1.0 meter spacing) to be added to receiver meter reading in dBuV to convert to field intensity in dBuV/meter. Calibrated May 11, 2010
 Calibration as per ARP 958.

Model Number: HRN 0118
 1.0 Meter Calibration
 Horizontal Polarization

Serial Number: 130389
 Free Space

| Frequency [MHz] | Antenna Factor [dB] | Gain Numeric | Gain dBi |
|--------------------|------------------------|-----------------|-------------|
| 12900 | 41.6 | 12.1 | 10.8 |
| 13000 | 41.8 | 11.8 | 10.7 |
| 13100 | 42.0 | 11.5 | 10.6 |
| 13200 | 42.0 | 11.5 | 10.6 |
| 13300 | 42.1 | 11.4 | 10.6 |
| 13400 | 42.3 | 11.2 | 10.5 |
| 13500 | 42.3 | 11.3 | 10.5 |
| 13600 | 42.2 | 11.7 | 10.7 |
| 13700 | 42.1 | 12.1 | 10.8 |
| 13800 | 42.0 | 12.5 | 11.0 |
| 13900 | 41.9 | 13.1 | 11.2 |
| 14000 | 41.5 | 14.5 | 11.6 |
| 14100 | 41.1 | 16.4 | 12.1 |
| 14200 | 40.7 | 18.2 | 12.6 |
| 14300 | 40.3 | 19.9 | 13.0 |
| 14400 | 40.1 | 21.5 | 13.3 |
| 14500 | 39.8 | 23.4 | 13.7 |
| 14600 | 39.4 | 25.8 | 14.1 |
| 14700 | 39.1 | 28.1 | 14.5 |
| 14800 | 38.7 | 30.9 | 14.9 |
| 14900 | 38.6 | 32.5 | 15.1 |
| 15000 | 38.4 | 34.2 | 15.3 |
| 15100 | 38.3 | 35.6 | 15.5 |
| 15200 | 38.1 | 37.7 | 15.8 |
| 15300 | 37.9 | 39.7 | 16.0 |
| 15400 | 37.8 | 41.4 | 16.2 |
| 15500 | 37.8 | 41.6 | 16.2 |
| 15600 | 38.1 | 40.1 | 16.0 |
| 15700 | 38.3 | 38.2 | 15.8 |
| 15800 | 38.4 | 37.6 | 15.8 |
| 15900 | 38.5 | 37.7 | 15.8 |
| 16000 | 38.6 | 37.5 | 15.7 |
| 16100 | 38.8 | 36.0 | 15.6 |
| 16200 | 39.3 | 32.7 | 15.1 |
| 16300 | 39.7 | 29.8 | 14.7 |
| 16400 | 40.2 | 26.9 | 14.3 |
| 16500 | 40.7 | 24.5 | 13.9 |
| 16600 | 41.0 | 23.2 | 13.7 |
| 16700 | 41.3 | 21.7 | 13.4 |
| 16800 | 41.6 | 20.6 | 13.1 |
| 16900 | 42.2 | 18.1 | 12.6 |

Compliance testing factor (1.0 meter spacing) to be added to receiver meter reading in dBuV to convert to field intensity in dBuV/meter. Calibrated May 11, 2010
 Calibration as per ARP 958.

Model Number: HRN 0118
 1.0 Meter Calibration
 Horizontal Polarization

Serial Number: 130389
 Free Space

| Frequency [MHz] | Antenna Factor [dB] | Gain Numeric | Gain dBi |
|--------------------|------------------------|-----------------|-------------|
| 17000 | 42.9 | 15.6 | 11.9 |
| 17100 | 43.2 | 14.8 | 11.7 |
| 17200 | 43.0 | 15.7 | 12.0 |
| 17300 | 42.6 | 17.4 | 12.4 |
| 17400 | 42.3 | 18.6 | 12.7 |
| 17500 | 42.7 | 17.4 | 12.4 |
| 17600 | 43.1 | 16.1 | 12.1 |
| 17700 | 43.6 | 14.5 | 11.6 |
| 17800 | 43.7 | 14.2 | 11.5 |
| 17900 | 43.9 | 13.8 | 11.4 |
| 18000 | 44.4 | 12.3 | 10.9 |

Compliance testing factor (1.0 meter spacing) to be added to receiver meter reading in
 dBuV to convert to field intensity in dBuV/meter. Calibrated May 11, 2010
 Calibration as per ARP 958.