| | |
|---|---|
| **Test Report:** | 5W36823.8 Issue 3 |
| **Applicant:** | Instantel Inc.<br>309 Legget Drive<br>Kanata, Ontario<br>K2K 3A3 |
| **Equipment Under Test: (EUT)** | International Local Area Receiver |
| **FCC ID:** | ISEILR |
| **In Accordance With:** | **FCC Part 15, Subpart B, 15.107 and 15.109** |
| **Tested By:** | Nemko Canada Inc.<br>303 River Road, R.R. 5<br>Ottawa, Ontario K1V 1H2 |
| **Authorized By:** |  <br>Sim Jagpal, Resource Manager |
| **Date:** | March 29, 2005 |
| **Total Number of Pages:** | 12 |

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# Section 1. Summary Of Test Results

## General

**All measurements are traceable to national standards.**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 15, Subpart B for digital emissions. All tests were conducted using measurement procedure ANSI C63.4-2003. Radiated Emissions were made on an open area test site. A description of the test facility in on file with the FCC.

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE.
See " Summary of Test Data".

March 29, 2005

TESTED BY: _____ DATE: _____
Jason Nixon, Telecom Specialist

## Summary Of Test Data

| Name Of Test | Para. No. | Result |
|---|---|---|
| Powerline Conducted Emissions | 15.107 | Complies |
| Radiated Emissions | 15.109 | Complies |

**Footnotes For N/A's:**

None

**Test Conditions:**

**Indoor** Temperature: 23°C
Humidity: 16%

**Outdoor** Temperature: 10°C
Humidity: 43%

## Section 2. General Equipment Specification

| | |
|---|---|
| **Manufacturer:** | Instantel Inc. |
| **Model No.:** | 806A5301 |
| **Serial No.:** | None |
| **Date Received In Laboratory:** | January 21, 2005 |
| **Nemko Identification No.:** | 7 |
| **Receive Frequency Range:** | 433.42-434.42MHz (Direct Conversion) |
| **Power Source:** | 10 to 30 VDC |

## Section 3. Powerline Conducted Emissions

**Para. No.: 15.107**

| **Test Performed By: Jason Nixon** | **Date of Test: January 24, 2005** |
|---|---|

**Minimum Standard:**

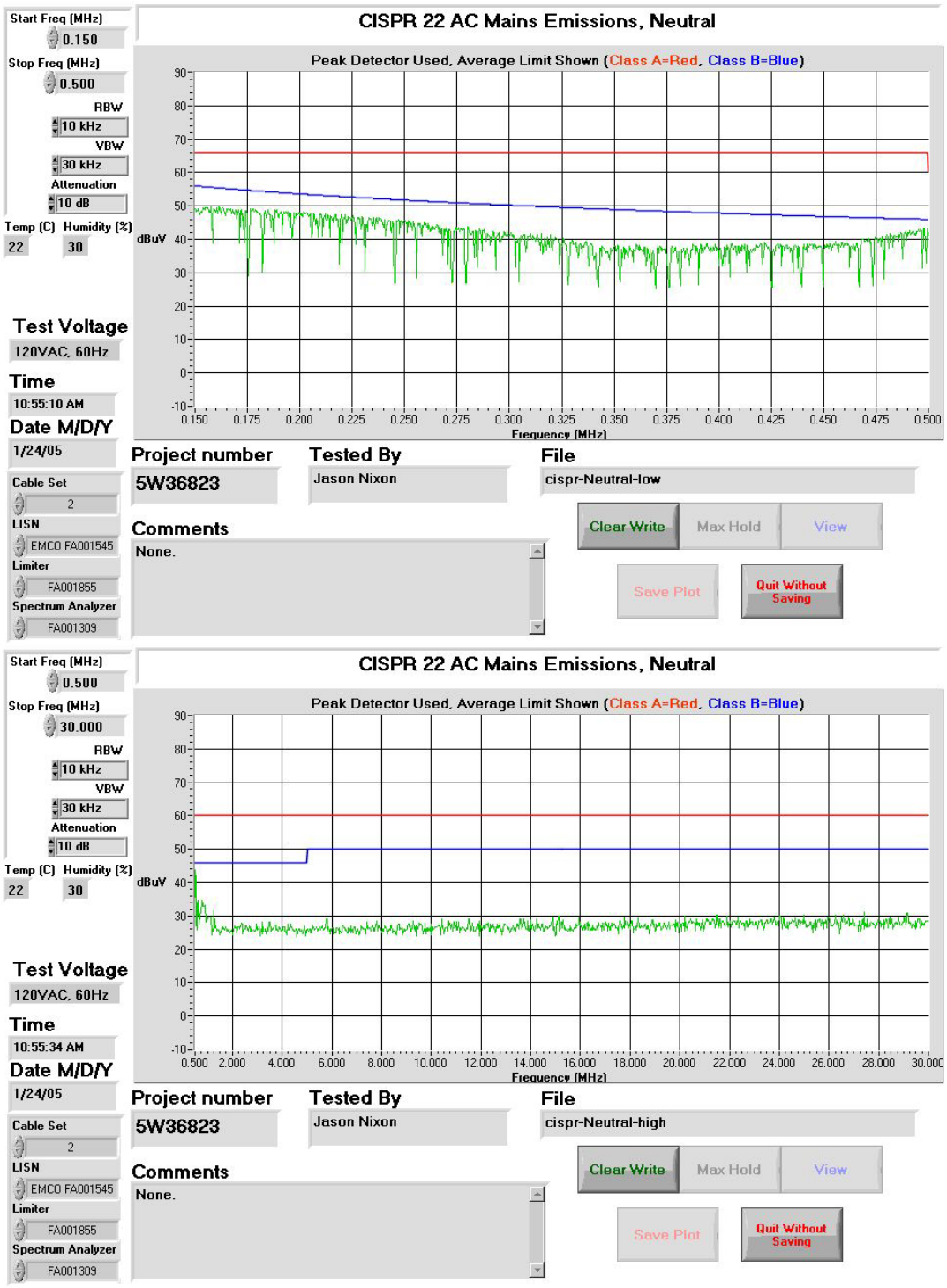
| **Frequency (MHz)** | **Maximum Powerline Conducted RF Voltage (dBμV)** | |
|---|---|---|
| | **Quasi-peak** | **Average** |
| 0.15 – 0.5 | 66 to 56 | 56 to 46 |
| 0.5 – 5 | 56 | 46 |
| 5 – 30 | 60 | 50 |

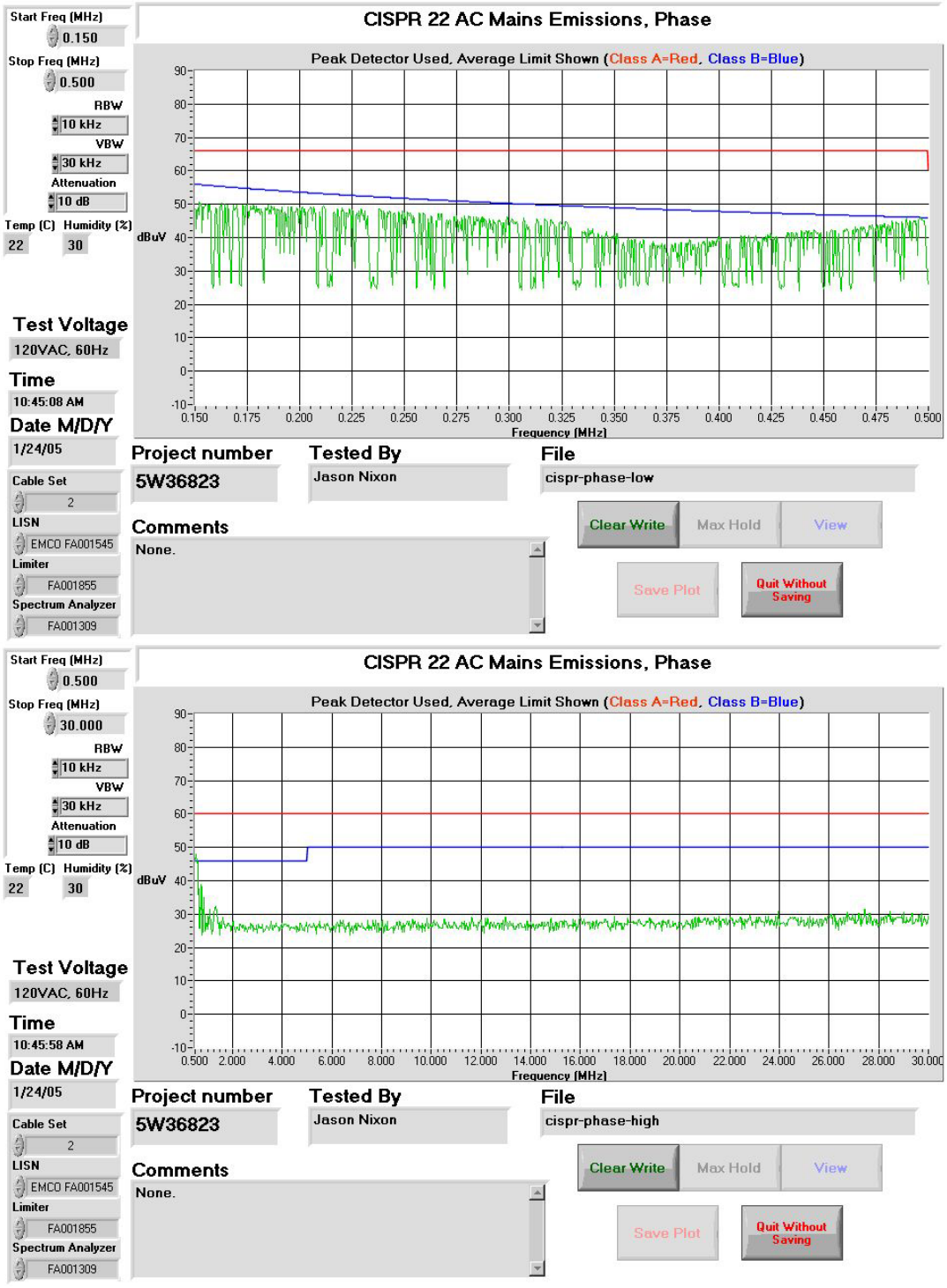
**Test Results:** Complies
These test results were achieved using a representative 12VDC power supply (M/N: DV-1250)

**Measurement Data:** See attached graphs and tabulated data.

Emissions in the graphs are measured using a Peak detector and compared to the Average limit. Any emission found to be above the limit using the Peak detector was remeasured using an Average and Quasi-peak detector and recorded in the Table below.

| | **Conductor** | **Frequency (MHz)** | **Detector** | **Emission Level (dBuV)** | **LISN Loss (dB)** | **Cable Loss (dB)** | **Result (dBuV)** | **Limit (dBuV)** | **Margin (dB)** |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Phase | 0.5439 | Quasi Peak | 37.6 | 0.00 | 0.11 | 37.71 | 56.0 | 18.3 |
| | | | Average | 9.6 | 0.00 | 0.11 | 9.71 | 46.0 | 36.3 |
| 2 | Neutral | 0.5230 | Quasi Peak | 34.2 | 0.00 | 0.15 | 34.35 | 56.0 | 21.6 |
| | | | Average | 7.1 | 0.00 | 0.15 | 7.25 | 46.0 | 38.7 |


Start Freq (MHz)
0.150
Stop Freq (MHz)
0.500
RBW
10 kHz
VBW
30 kHz
Attenuation
10 dB
Temp (C)
22
Humidity (%)
30
Test Voltage
120VAC, 60Hz
Time
10:55:10 AM
Date M/D/Y
1/24/05
Cable Set
2
LISN
EMCO FA001545
Limiter
FA001855
Spectrum Analyzer
FA001309
CISPR 22 AC Mains Emissions, Neutral
Peak Detector Used, Average Limit Shown (Class A=Red, Class B=Blue)
dBuV
Frequency (MHz)
Project number
5W36823
Tested By
Jason Nixon
File
cispr-Neutral-low
Comments
None.
Clear Write
Max Hold
View
Save Plot
Quit Without Saving
Start Freq (MHz)
0.500
Stop Freq (MHz)
30.000
RBW
10 kHz
VBW
30 kHz
Attenuation
10 dB
Temp (C)
22
Humidity (%)
30
Test Voltage
120VAC, 60Hz
Time
10:55:34 AM
Date M/D/Y
1/24/05
Cable Set
2
LISN
EMCO FA001545
Limiter
FA001855
Spectrum Analyzer
FA001309
CISPR 22 AC Mains Emissions, Neutral
Peak Detector Used, Average Limit Shown (Class A=Red, Class B=Blue)
dBuV
Frequency (MHz)
Project number
5W36823
Tested By
Jason Nixon
File
cispr-Neutral-high
Comments
None.
Clear Write
Max Hold
View
Save Plot
Quit Without Saving


Start Freq (MHz)
0.150
Stop Freq (MHz)
0.500
RBW
10 kHz
VBW
30 kHz
Attenuation
10 dB
Temp (C) Humidity (%)
22 30
Test Voltage
120VAC, 60Hz
Time
10:45:08 AM
Date M/D/Y
1/24/05
Cable Set
2
LISN
EMCO FA001545
Limiter
FA001855
Spectrum Analyzer
FA001309
CISPR 22 AC Mains Emissions, Phase
Peak Detector Used, Average Limit Shown (Class A=Red, Class B=Blue)
dBuV
Frequency (MHz)
Project number
5W36823
Tested By
Jason Nixon
File
cispr-phase-low
Comments
None.
Clear Write
Max Hold
View
Save Plot
Quit Without Saving
Start Freq (MHz)
0.500
Stop Freq (MHz)
30.000
RBW
10 kHz
VBW
30 kHz
Attenuation
10 dB
Temp (C) Humidity (%)
22 30
Test Voltage
120VAC, 60Hz
Time
10:45:58 AM
Date M/D/Y
1/24/05
Cable Set
2
LISN
EMCO FA001545
Limiter
FA001855
Spectrum Analyzer
FA001309
CISPR 22 AC Mains Emissions, Phase
Peak Detector Used, Average Limit Shown (Class A=Red, Class B=Blue)
dBuV
Frequency (MHz)
Project number
5W36823
Tested By
Jason Nixon
File
cispr-phase-high
Comments
None.
Clear Write
Max Hold
View
Save Plot
Quit Without Saving

## Section 4. Radiated Emissions

**Para. No.: 15.109**

| **Test Performed By: Jason Nixon** | **Date of Test: January 26, 2005** |
|---|---|

**Minimum Standard:**

| **Fundamental (MHz)** | **Field Strength (μV/m)** | **Field Strength (dBμV)** |
|---|---|---|
| 0.009 - 0.490 | 2400/F(kHz) @ 300m | — |
| 0.490 - 1.705 | 24000/F(kHz) @ 30m | — |
| 1.705 - 30 | 30 @ 30m | — |
| 30 - 88 | 100 | 40.0 |
| 88 - 216 | 150 | 43.5 |
| 216 - 960 | 200 | 46.0 |
| Above 960 | 500 | 54.0 |

**Test Results:** Complies

**Measurement Data:** See attached table.

All measurements were performed using a Peak Detector with 100kHz RBW below 1GHz and a 1MHz RBW above 1GHz.

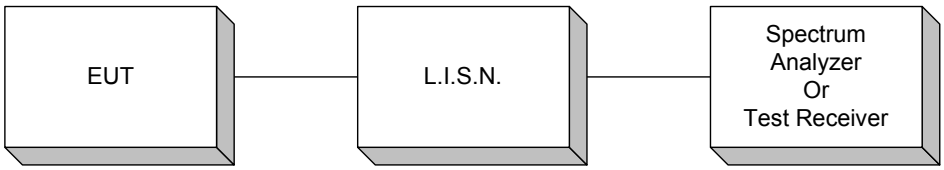
All emissions were searched from 30MHz up to the $10^{th}$ harmonic of the receiver.

| Frequency (MHz) | Antenna | Polarity | RCVD Signal (dBuV) | Ant. Factor (dB) | Cable Loss (dB) | Emission Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) |
|---|---|---|---|---|---|---|---|---|
| 197.0264 | BC1 | V | 8.3 | 14.1 | 1.7 | 24.1 | 43.5 | 19.4 |
| 197.0264 | BC1 | H | 8.7 | 13.8 | 1.7 | 24.2 | 43.5 | 19.3 |
| 162.0222 | BC1 | V | 21.3 | 13.1 | 1.5 | 35.9 | 43.5 | 7.6 |
| 162.0222 | BC1 | H | 26.2 | 12.4 | 1.5 | 40.1 | 43.5 | 3.4 |
| 182.0206 | BC1 | V | 13.0 | 13.2 | 1.7 | 27.9 | 43.5 | 15.6 |
| 182.0206 | BC1 | H | 13.1 | 12.5 | 1.7 | 27.3 | 43.5 | 16.2 |
| 210.0288 | BC1 | V | 12.5 | 15.2 | 1.8 | 29.5 | 43.5 | 14.0 |
| 210.0288 | BC1 | H | 13.8 | 14.4 | 1.8 | 30.0 | 43.5 | 13.5 |
| 95.2631 | BC1 | V | 15.4 | 9.1 | 1.2 | 25.7 | 43.5 | 17.8 |
| 95.2631 | BC1 | H | 14.4 | 8.4 | 1.2 | 24.0 | 43.5 | 19.5 |
| 70.0013 | BC1 | V | 20.2 | 8.8 | 1.0 | 30.0 | 40.0 | 10.0 |
| 300.0047 | BC1 | V | 13.5 | 17.7 | 2.3 | 33.5 | 46.4 | 12.9 |
| 300.0047 | BC1 | H | 13.9 | 18.2 | 2.3 | 34.4 | 46.4 | 12.0 |
| 158.0209 | BC1 | V | 23.8 | 13.0 | 1.5 | 38.3 | 43.5 | 5.2 |
| 158.0209 | BC1 | H | 26.3 | 12.5 | 1.5 | 40.3 | 43.5 | 3.3 |
| 129.5180 | BC1 | V | 20.9 | 12.8 | 1.5 | 35.2 | 43.5 | 8.4 |
| 129.5180 | BC1 | H | 12.2 | 12.3 | 1.5 | 26.0 | 43.5 | 17.6 |
| 435.0069 | LP1 | V | 10.5 | 16.1 | 2.7 | 29.3 | 46.4 | 17.1 |
| 435.0069 | LP1 | H | 11.6 | 16.7 | 2.7 | 31.0 | 46.4 | 15.5 |

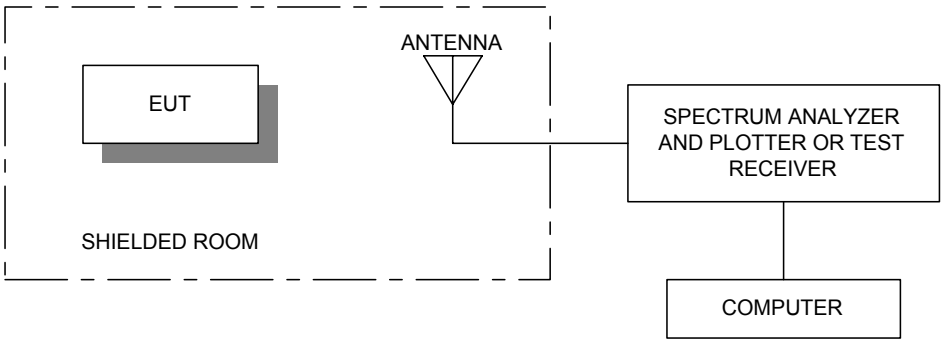
Legend:
Antenna Legend: BC = Biconical, BL = Bilog, LP = Log-Periodic, Horn = Horn, ED = EMCO Dipole

# Section 5. Block Diagrams

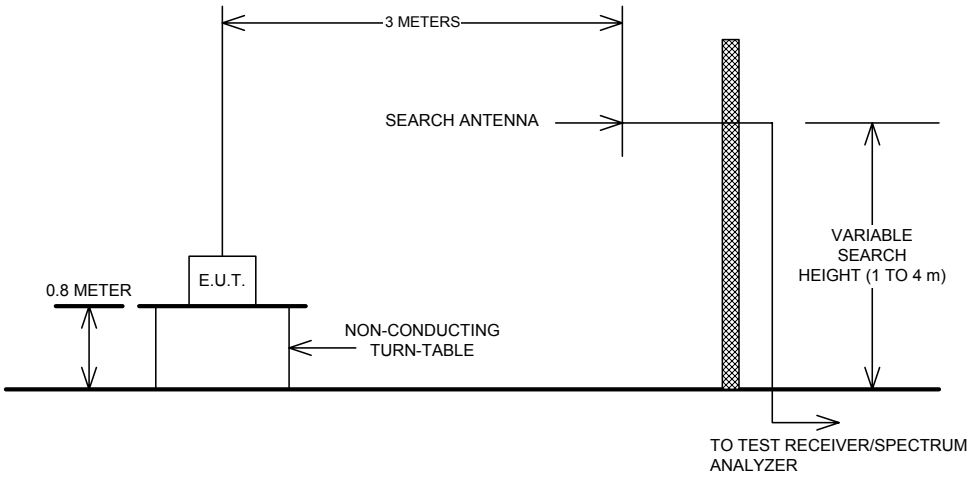
## Conducted Emissions




## Radiated Prescan




## Test Site For Radiated Emissions



## Section 6. Test Equipment List

| *Radiated Emissions Test Equipment Used* | | | | | | |
|---|---|---|---|---|---|---|
| CAL Cycle | Equipment | Manufacturer | Model No. | Asset/Serial No. | Last Cal. | Next Cal. |
| 1 Year | Receiver | Rohde & Schwarz | ESVS-30 | FA001437 | July 26/04 | July 26/05 |
| 1 Year | Spectrum Analyzer | Hewlett-Packard | 8566B | FA001309 | May 28/04 | May 28/05 |
| 1 Year | Spectrum Analyzer Display | Hewlett-Packard | 85662A | FA001309 | May 28/04 | May 28/05 |
| 1 Year | Dipole Antenna Set | EMCO #1 | 3121C | FA000814 | April 21/04 | April 21/05 |
| 1 Year | Log Periodic Antenna #1 | EMCO | LPA-25 | FA000477 | Aug. 26/04 | Aug. 26/05 |
| 1 Year | Horn Antenna #2 | EMCO | 3115 | FA000825 | Dec. 14/04 | Dec. 14/05 |
| 1 Year | 1.0 – 2.0 GHz Amplifier | JCA | 12-400 | FA001498 | June 18/04 | June 18/05 |
| 1 Year | 2.0 – 4.0 GHz Amplifier | JCA | 24-600 | FA001496 | June 18/04 | June 18/05 |
| 1 Year | 4.0 – 8.0 GHz Amplifier | JCA | 48-600 | FA001497 | June 18/04 | June 18/05 |

Note: N/A = Not Applicable, NCR = No Cal Required, COU = CAL On Use