



# **FCC CLASS A COMPLIANCE TEST REPORT**

**CFR 47, Part 15, Subpart B**

for

**Electromagnetic Emissions**

of

**DAS 8M-4-W**

**Model Number:** DAS 8M-4-W

**Serial Number:** Prototype

**MJO#:** SN9K-013.1

Prepared for:

**LGC WIRELESS**

585 E. Brokaw Road  
San Jose, CA 95112

Prepared by:

**EMC Technology Services, Incorporated**

49000 Milmont Drive  
Fremont, CA 94538  
(510) 440-3838

**REPORT DATE:** NOVEMBER 24, 1999

**FCC CLASS A  
COMPLIANCE TEST REPORT  
CFR 47, Part 15, Subpart B**

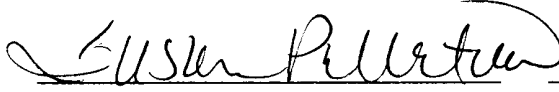
FOR

**DAS 8M-4-W  
MODEL DAS 8M-4-W**

**Prepared for:**

**LGC WIRELESS  
San Jose, CA 95112**

**Prepared by:** EMC Technology Services, Inc.

|                                | <b>Signature</b>                                                                                                 | <b>Date</b>    |
|--------------------------------|------------------------------------------------------------------------------------------------------------------|----------------|
| TEST TECHNICIAN                | <br>_____<br>For Jack Plotner | <u>12-7-99</u> |
| TEST SUPERVISOR                | <br>_____<br>Daryl Smith      | <u>12-7-99</u> |
| Q.C. MANAGER/<br>FINAL RELEASE | <br>_____<br>Susan Pelletier | <u>12-7-99</u> |

## LIST OF REVISIONS

**REVISION  
NUMBER  
AND DATE**

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CHANGED**

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## VERIFICATION OF COMPLIANCE

**Equipment Under Test:** DAS 8M-4-W

**Model Number:** DAS 8M-4-W

**Serial Number:** Prototype

**Company:** LGC Wireless  
585 E. Brokaw Rd.  
San Jose, CA 95112

**Test Standard:** CFR 47, Part 15, Subpart B-1998 (ANSI C63.4-1992), Class A

**Type of Test:** Conducted 450 kHz - 30 MHz  
Radiated 30 MHz - 1 GHz

**Performance Criteria:** For Line Conducted test, emissions must not exceed the limits stated in CFR 47, Part 15, Subpart B, Section 107-(b).  
For Radiated test, emissions must not exceed the limits stated in CFR 47, Part 15, Subpart B, Section 109-(b).

**Date Tested:** July 27, 1999

**Test Technician:** Jack Plotner

The above equipment was tested by EMC Technology Services, Inc., for compliance with the requirements set forth in the CFR 47, Class A Rules and Regulations. This said equipment in the configuration described in the report, shows that maximum emission levels emanating from the equipment are within the compliance requirements.

## GENERAL INFORMATION

**Customer:** LGC Wireless  
585 E. Brokaw Rd.  
San Jose, CA 95112

**Contact Person:** John Dorsey

**Phone Number:** (408) 487-2431

**Equipment Under Test:** DAS 8M-4-W

**Model Number:** DAS 8M-4-W

**Serial Number:** Prototype

**Test Standard:** CFR 47, Part 15, Subpart B-1998 (ANSI C63.4-1992), Class A

**Type of Test:** Conducted 450 kHz - 30 MHz  
Radiated 30 MHz - 1 GHz

**Performance Criteria:** For Line Conducted test, emissions must not exceed the limits stated in CFR 47, Part 15, Subpart B, Section 107-(b).  
For Radiated test, emissions must not exceed the limits stated in CFR 47, Part 15, Subpart B, Section 109-(b).

**Deviation:** Signal generator was turned off for radiated.

**Test Results:** Line Conducted--Line conducted scans ranged from 450 kHz to 30 MHz on both Line 1 (hot side) and Line 2 (neutral side) in accordance with CFR 47 Class A test standard. All line conducted emissions were within the CFR 47 Class A requirements for compliance.  
Radiated--Radiated scans ranged from 30 MHz to 1 GHz in both the horizontal and the vertical antenna polarization. All radiated emissions were within the CFR 47 Class A requirements for compliance.

## SYSTEM DESCRIPTION

### Equipment Under Test

DAS 8M-4-W

### Support Equipment

Signal Generator

**EUT Test Program:** EUT was turned on with no input signal.

## PRODUCT INFORMATION

**Description Equipment Under Test:** The unit consists of a main hub, expansion hub, and four antennas.

The EUT and/or support equipment was received at EMC Technology Services, Inc., in good condition, on November 17, 1999.

**Housing Type:** Metal

**Power Supply:** Internal

**AC Power Requirements:** 120 VAC/  
60 Hz

**AC Line Cord from Outlet to Supply:** Unshielded

**Length:** 6 ft

**Gauge:** 18

| <u>I/O PORT TYPE</u> | <u>QTY</u> | <u>TESTED WITH</u> |
|----------------------|------------|--------------------|
| <b>Main Hub</b>      |            |                    |
| 1) Duplex N-Type     | 1          | 1                  |
| 2) Forward N-Type    | 1          | 0                  |
| 3) Reverse N-Type    | 1          | 0                  |
| 4) Up Optical        | 4          | 1                  |
| 5) Down Optical      | 4          | 1                  |
| <b>Expansion Hub</b> |            |                    |
| 1) Up Optical        | 1          | 1                  |
| 2) Down Optical      | 1          | 1                  |
| 3) Antenna RJ45      | 4          | 4                  |
| <b>Antenna</b>       |            |                    |
| 1) RJ45              | 1          | 1                  |
| 2) Antenna           | 1          | 1                  |

## SUPPORT EQUIPMENT

**Equipment Type:** Signal Generator

**Model Number:** SMIQ 03

**Serial Number:** DE 22093

**FCC ID Number:** None

**Manufacturer:** Rohde and Schwarz

**Power Line Cord Type:** Unshielded

### I/O PORT TYPE

RF Out

### TERMINATED TO

EUT (Main Hub)

**Note:** This device was used to provide the EUT with a signal.

## PRODUCT CABLING INFORMATION

**Equipment Under Test (EUT):** DAS 8M-4-W

**Cable:** Cat 5 (×4)

**Unshielded**

**Used From:** Antenna Ports 1,2,3,4 **Port On:** Expansion Hub (EUT)

**To:** Antenna

**Port On:** Antenna (×4) (EUT)

**Connector Type:** RJ45

**Length:** 50 ft (15.3 meters)

**Cable used during test was coiled.**

**Cable:** Optical

**Unshielded**

**Used From:** Down

**Port On:** Main Hub (EUT)

**To:** Up

**Port On:** Expansion Hub (EUT)

**Connector Type:** Optical

**Length:** 100 ft (30.6 meters)

**Cable used during test was coiled.**

**Cable:** Optical

**Unshielded**

**Used From:** Up

**Port On:** Main Hub (EUT)

**To:** Down

**Port On:** Expansion Hub (EUT)

**Connector Type:** Optical

**Length:** 100 ft (30.6 meters)

**Cable used during test was coiled.**

## PRODUCT CABLING INFORMATION

**Equipment Under Test (EUT):** DAS 8M-4-W

**Cable:** SMA

**Shielded**

**Used From:** RF Out

**Port On:** Signal Generator

**To:** Duplex

**Port On:** Main Hub (EUT)

**Connector Type:** SMA

**Length:** 5 ft (1.5 meters)

**Cable used during test was unbundled.**

## SUMMARY

**Company:** LGC Wireless

**Equipment Under Test:** DAS 8M-4-W

**Model Number:** DAS 8M-4-W

**Test Standard:** CFR 47, Part 15, Subpart B, Class A

**Test Type:** Line Conducted

**Location:** Test Site #4

**Test Technician:** Jack Plotner

**Assistant:** Leonides Agbayani

**EUT was scanned in the following setup(s): Mode:** Standard **Configuration:** Standard

**Support Equipment:** Signal Generator

**EUT Power:** 120 VAC/60 Hz

**Power Cord:** Unshielded

**Modification(s) made to EUT:** None

**Test Results:** Passed

(The chart below shows the six highest readings taken from the final data)

| FREQ<br>MHz | CORR'D<br>dBμV | SITE<br>CF | LIMIT |     | MARGIN |     | LINE |
|-------------|----------------|------------|-------|-----|--------|-----|------|
|             |                |            | QP    | AVG | QP     | AVG |      |
| 0.468       | 26.8 PK        | 6.0        | 60.0  |     | -33.2  |     | L1   |
| 0.551       | 21.0 PK        | 6.0        | 60.0  |     | -39.0  |     | L1   |
| 23.410      | 25.0 PK        | 6.0        | 69.5  |     | -44.5  |     | L1   |
| 0.466       | 27.1 PK        | 6.0        | 60.0  |     | -32.9  |     | L2   |
| 0.550       | 19.8 PK        | 6.0        | 60.0  |     | -40.2  |     | L2   |
| 20.000      | 24.0 PK        | 6.0        | 69.5  |     | -45.5  |     | L2   |

**L1** = Line One (hot side)/**L2** = Line Two (neutral side)

## SUMMARY

**Company:** LGC Wireless

**Equipment Under Test:** DAS 8M-4-W

**Model Number:** DAS 8M-4-W

**Test Standard:** CFR 47, Part 15, Subpart B, Class A

**Test Type:** Radiated

**Location:** 10 Meter Test Site #4

**Test Technician:** Jack Plotner

**Assistant:** Leonides Agabayni

**EUT was scanned in the following setup(s):** Mode: Standard Configuration: Standard

**Support Equipment:** Signal Generator

**EUT Power:** 120 VAC/60 Hz

**Power Cord:** Unshielded

**Modification(s) made to EUT:** None

**Test Results:** Passed

(The chart below shows the six highest readings taken from the final data)

| FREQ<br>MHz | CORR'D<br>dBμV/m | SITE<br>CF | LIMIT |     | MARGIN |     | NOTE       |
|-------------|------------------|------------|-------|-----|--------|-----|------------|
|             |                  |            | QP    | AVG | QP     | AVG |            |
| 120.25      | 22.4 PK          | +13.4      | 43.5  |     | -21.1  |     | Horizontal |
| 125.00      | 24.6 PK          | +12.6      | 43.5  |     | -18.9  |     | Horizontal |
| 125.00      | 12.6 PK          | +21.6      | 43.5  |     | -17.9  |     | Vertical   |
| 374.90      | 26.00 PK         | +21.5      | 46.5  |     | -20.5  |     | Vertical   |
| 375.00      | 24.5 PK          | +21.5      | 46.5  |     | -22.0  |     | Horizontal |
| 400.00      | 24.7 PK          | +22.5      | 46.5  |     | -21.8  |     | Horizontal |

## **APPENDIX A**

# **PHOTOGRAPHS AND BLOCK DIAGRAM**

SN9K-013



Figure A-1



Figure A-2



Figure A-3



SN9K-013

Figure A-4

Bottom View  
Equipment Under Test (EUT)



Figure A-5  
Electromagnetic Conducted Emissions

Test Setup:

Line Conducted Configuration



Figure A-6  
Electromagnetic Radiated Emissions  
Test Setup:



Figure A-7



# **APPENDIX B**

## **TEST FACILITY**

## TEST FACILITY

**Location:** 11825 Niles Canyon Road  
Sunol, CA 94586

**Description:** At the Sunol facility, there are four 3/10 m open area test sites, two line conducted labs and two indoor conducted/radiated engineering labs. The OATS and the LC labs are constructed and calibrated to meet the FCC requirements in documents OST-55/MP-4 and ANSI C63.4 1992.

**Accreditation:** EMC Technology Services, Inc. has been accredited by A2LA to do EMC testing, including FCC DoC testing on personal computers and their peripherals.

FCC has also accepted EMC Technology Services, Inc. facility site for filing applications for certification and notification.

**Certification:** EMC Technology Services, Inc. has the following test/lab sites certified by VCCI and Industry Canada (IC):

Open Area Test Site #1: VCCI No. R-802 and IC 2816-1

Open Area Test Site #2: VCCI No. R-376 and IC 2816-2

Open Area Test Site #3: VCCI No. R-377 and IC 2816-3

Open Area Test Site #4: VCCI No. R-378 and IC 2816-4

Line Conducted Lab #1: VCCI No. C-392

Line Conducted Lab #2: VCCI No. C-427

# APPENDIX C

## TEST EQUIPMENT

## MEASURING INSTRUMENT SETTINGS

| TEST TYPE | DETECTOR    | FREQUENCY RANGE | RESOLUTION BANDWIDTH | VIDEO BANDWIDTH |
|-----------|-------------|-----------------|----------------------|-----------------|
| Conducted | Peak/Avg    | 10 kHz-150 kHz  | 300 Hz/3 kHz         | 100 kHz/3 kHz   |
| Conducted | Peak/QP/Avg | 150 kHz-30 MHz  | 10 kHz/100 kHz       | 100 kHz         |
| Radiated  | Peak/Avg    | 60 Hz-1 kHz     | 10 Hz                | 100 kHz         |
| Radiated  | Peak/Avg    | 1 kHz-10 kHz    | 100 Hz               | 100 kHz         |
| Radiated  | Peak/Avg    | 10 kHz-150 kHz  | 300 Hz               | 100 kHz/300 Hz  |
| Radiated  | Peak/QP/Avg | 150 kHz-30 MHz  | 10 kHz               | 100 kHz/10 kHz  |
| Radiated  | Peak/QP/Avg | 30 MHz-1 GHz    | 100 kHz              | 100 kHz/10 kHz  |
| Radiated  | Peak/Avg    | Above 1 GHz     | 1 MHz                | 1 MHz/300 kHz   |

**Note:** All readings on data pages are taken with the detector in peak mode unless otherwise stated.

## TEST EQUIPMENT LIST

| EQUIPMENT TYPE              | * MFR             | MODEL NUMBER | SERIAL NUMBER | LAST ** CAL. | CAL. DUE |
|-----------------------------|-------------------|--------------|---------------|--------------|----------|
| Biconical Antenna           | Compliance Design | B100         | 109           | 09-20-99     | 09-20-00 |
| Biconical Antenna           | Compliance Design | B200         | 128           | 08-24-99     | 09-04-00 |
| Receiver RF Section/Display | HP                | 85462A       | 3807A00456    | 06-02-99     | 06-02-00 |
| Horn Antenna                | EMCO              | 3115         | 9104-3647     | 08-16-99     | 08-16-00 |
| LISN                        | FCC               | LISN-2       | VDE 5/FCC 5   | 05-05-99     | 03-05-00 |
| Log Periodic Antenna        | Schwarzbeck       | UHALP 9107   | 9107384       | 09-04-99     | 09-04-00 |
| Preamplifier                | HP                | 8449B        | 3008A00272    | 02-17-99     | 02-17-00 |
| RF Filter Section           | HP                | 85460A       | 3704A00424    | 06-02-99     | 06-02-00 |
| Spectrum Analyzer           | Tektronix         | 2782         | B020370       | 06-18-99     | 06-18-00 |

\* **MFR** = Manufacturer

\*\* **CAL.** = Calibration

# **APPENDIX D**

## **TEST METHODS**

## TEST METHODS (LINE CONDUCTED TEST)

- 1) The equipment will be set up according to the test standard to simulate typical actual usage. When the EUT is a table-top system, a wooden table with a height of 0.8 meters is used which is placed on the ground plane according to the test standard. When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm covering to insulate the EUT from the ground plane.
- 2) Support equipment, if needed, will be placed according to the test standard.
- 3) All I/O cables are positioned to simulate typical actual usage according to the test standard.
- 4) The EUT receives AC power through a Line Impedance Stabilization Network (LISN) which is grounded to the ground plane.
- 5) Support equipment, if used, will receive AC power through a second LISN.
- 6) Emissions are measured on each current carrying line of the EUT using a spectrum analyzer connected to the LISN powering the EUT.
- 7) During the emission measurement, the I/O cable placement position is adjusted in order to maximize the emission measurement level.
- 8) Emission frequency and amplitude are recorded into a computer in which correction factors are used to calculate the emission level and compare the reading to the applicable limit.

### Data Sample:

| Freq.<br>MHz | Corr'd<br>dBμV | Site<br>CF | Limit<br>dBμV | Margin<br>dBμV | Line |
|--------------|----------------|------------|---------------|----------------|------|
| 2.47         | 46.0           | 6.0        | 48.0          | -2.0           | L1   |

Freq. = Emission frequency in MHz  
 Corr'd dBμV = RAW reading converted to dBμV and CF added  
 Site CF = Correction Factors for pad/cable losses  
 Limit dBμV = Limit stated in standard  
 Margin dBμV = Reading in reference to limit  
 Note = Current carrying line of reading

## TEST METHODS (RADIATED TEST)

- 1) The equipment will be set up according to the test standard to simulate typical actual usage. When the EUT is a table-top system, a wooden table with a height of 0.8 meters is used which is placed on the ground plane according to the test standard. When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm covering to insulate the EUT from the ground plane.
- 2) Support equipment, if needed, will be placed according to the test standard.
- 3) All I/O cables are positioned to simulate typical actual usage according to the test standard.
- 4) The antenna is placed at some given distance away from the EUT as stated in the test standard. The antenna connects to the analyzer via a cable and at times a preamp is used.
- 5) Emissions are scanned and measured rotating the EUT to 360 degrees, positioning cable placement, and positioning the antenna 1 to 4 meters above the ground plane, in both the vertical and the horizontal polarizations in order to maximize the emission reading level.
- 6) Emission frequency, amplitude, antenna position, polarization, and table position are recorded into a computer in which correction factors are used to calculate the emission level and compare the reading to the applicable limit.

### Data Sample:

| Freq.<br>MHz | Corr'd<br>dBμV | Site<br>CF | Limit<br>dBμV | Margin<br>dBμV | Table<br>Pos. | Ant<br>Pos. |
|--------------|----------------|------------|---------------|----------------|---------------|-------------|
| 76.57        | 44.2           | -12.8      | 40.0          | -5.3           | 180           | 1.5V        |

Freq. = Emission frequency in MHz  
 Corr'd dBμV = RAW reading converted to dBμV and CF added  
 Site CF = Correction Factors for pad/cable losses  
 Limit dBμV = Limit stated in standard  
 Margin dBμV = Reading in reference to limit  
 Table Position = EUT placement in reference to antenna  
 Antenna Position = Antenna polarization and height above ground plane

## **APPENDIX E**

### **CLASS TYPES AND LIMITS**

## FCC CLASS TYPES AND LIMITS

### CLASS A COMPUTING DEVICE

A computing device which is marketed for use in a commercial or business environment; exclusive of a device which is marketed for use by the general public, or which is intended to be used in the home. Reference: Section 15.3 (h).

### CLASS B COMPUTING DEVICE

A computing device that is marketed for use in a residential environment notwithstanding use in a commercial, business, or industrial environment. Examples of such devices include, but are not limited to: electronic games, personal computers, calculators, and similar devices that are marketed for the general public. Reference: Section 15.3 (i).

**NOTE:** A manufacturer may also qualify a device intended to be marketed in a commercial, business, or industrial environment as a Class B computing device, and in fact is encouraged to do so, provided the device complies with the technical standards for a Class B computing device. In the event that a particular type of device has been found to repeatedly cause harmful interference to radio communications, the Commission may classify such a computing device as a Class B computing device, regardless of its intended use.

# **APPENDIX F**

## **LABELING REQUIREMENTS**

## FCC CLASS A LABELING REQUIREMENT

### Section 15.19 of the Code of Federal Regulation

- A) The Class A computing device subject to **verification** by the Commission shall be identified pursuant to par. 2.925 et seq of this Chapter. In addition, the label shall include the following statement:

THIS DEVICE COMPLIES WITH PART 15 OF THE  
FCC RULES. OPERATION IS SUBJECT TO THE  
FOLLOWING TWO CONDITIONS:  
(1) THIS DEVICE MAY NOT CAUSE HARMFUL  
INTERFERENCE, AND (2) THIS DEVICE MUST  
ACCEPT ANY INTERFERENCE RECEIVED,  
INCLUDING INTERFERENCE THAT MAY CAUSE  
UNDESIRE OPERATION.

- B) Where a device is constructed in two or more sections connected by wires and marketed together, the statement specified in this section is required to be affixed only to the main control unit.
- C) When the device is so small or for such use that it is not practicable to place the statement specified in this section on it, the information required by these paragraphs shall be placed in a prominent location in the instruction manual or pamphlet supplied to the user or, alternatively, shall be placed on the container in which the device is marketed. However, the FCC identifier or the unique identifier, as appropriate, must be displayed on the device.
- D) The label shall not be a stick-on paper label. The label on these products shall be permanently affixed to the product and shall be readily visible to the purchaser at the time of purchase. "Permanently affixed" means that the label is etched, engraved, stamped, silkscreened, indelibly printed, or otherwise permanently marked on a permanently attached part of the equipment or a nameplate of metal, plastic, or other material fastened to the equipment by welding, riveting, or use of a permanent adhesive. The label must be designed to last the expected lifetime of the equipment in the environment in which the equipment may be operated and must not be readily detachable.

## FCC CLASS B LABELING REQUIREMENT

### Section 15.19 of the Code of Federal Regulation

- A) The Class B computing device subject to **certification** by the Commission shall be identified pursuant to par. 2.925 et seq of this Chapter. In addition, the label shall include the following statement:

**FCC ID: XXXXXXXXXXXXXXXXXXXX**

THIS DEVICE COMPLIES WITH PART 15 OF THE  
FCC RULES. OPERATION IS SUBJECT TO THE  
FOLLOWING TWO CONDITIONS:

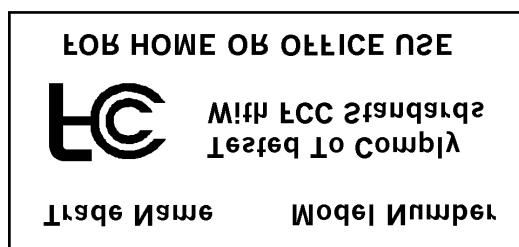
(1) THIS DEVICE MAY NOT CAUSE HARMFUL  
INTERFERENCE, AND (2) THIS DEVICE MUST  
ACCEPT ANY INTERFERENCE RECEIVED,  
INCLUDING INTERFERENCE THAT MAY CAUSE  
UNDESIRE OPERATION.

- B) Where a device is constructed in two or more sections connected by wires and marketed together, the statement specified in this section is required to be affixed only to the main control unit.
- C) When the device is so small or for such use that it is not practicable to place the statement specified in this section on it, the information required by these paragraphs shall be placed in a prominent location in the instruction manual or pamphlet supplied to the user or, alternatively, shall be placed on the container in which the device is marketed. However, the FCC identifier or the unique identifier, as appropriate, must be displayed on the device.
- D) The label shall not be a stick-on paper label. The label on these products shall be permanently affixed to the product and shall be readily visible to the purchaser at the time of purchase. "Permanently affixed" means that the label is etched, engraved, stamped, silkscreened, indelibly printed, or otherwise permanently marked on a permanently attached part of the equipment or a nameplate of metal, plastic, or other material fastened to the equipment by welding, riveting, or use of a permanent adhesive. The label must be designed to last the expected lifetime of the equipment in the environment in which the equipment may be operated and must not be readily detachable.

## DoC LABELING REQUIREMENTS

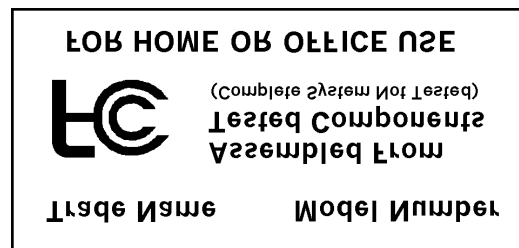
- A) The Class B computing device, subject to authorization under a **Declaration of Conformity (DoC)**, shall be labeled in a conspicuous location on the device and shall contain the following information:

Use the following label if product is authorized based on testing of the product or system:



## DoC LABELING REQUIREMENTS (continued)

Use the following label if product is based on assembly using separately authorized components and the resulting product is not separately tested:



- B) When a device is so small or for such use that it is not practicable to place the statement specified on it, such as for a CPU board or plug-in circuit board peripheral device, the text associated with the logo may be placed in a prominent location in the instruction manual or pamphlet supplied to the user. However, the unique identification (trade name and model number) and the logo must be displayed on the device.
- C) The label shall not be a stick-on paper label. The label on these products shall be permanently affixed to the product and shall be readily visible to the purchaser at the time of purchase. "Permanently affixed" means that the label is etched, engraved, stamped, silkscreened, indelibly printed, or otherwise permanently marked on a permanently attached part of the equipment or a nameplate of metal, plastic, or other material fastened to the equipment by welding, riveting, or use of a permanent adhesive. The label must be designed to last the expected lifetime of the equipment in the environment in which the equipment may be operated and must not be readily detachable.

# **APPENDIX G**

## **DATA READINGS**

## FCC CLASS A LINE CONDUCTED DATA

COMPANY: LGC Wireless  
EQUIP. UNDER TEST: DAS 8M-4-W  
MODEL NUMBER: DAS 8M-4-W  
TEST PROCEDURE: FCC Part 15 Class A  
MEASUREMENT SETUP: LISN #942 120Vac 60Hz  
SUPPORT EQUIPMENT: Signal Generator

TEST SITE:  
TESTED BY: Jack Plotner  
DATE: November 17 1999 4:14pm

Control Rm Temp: 72 Deg.F Humidity: 31 %RH  
EUT Room Temp: 66 Deg.F Humidity: 42 %RH

| FREQ<br>MHz   | RAW<br>dBuV | SITE<br>CF | CORR'D<br>dBuV | LIMIT |      | EUT MARGIN |       | NOTE |
|---------------|-------------|------------|----------------|-------|------|------------|-------|------|
| ----          | ----        | ----       | -----          | A     | B    | A          | B     | ---- |
| Expansion Hub |             |            |                |       |      |            |       |      |
| 0.468         | +20.8PK     | 6.0        | 26.8           | 60.0  | 48.0 | -33.2      | -21.2 | L1   |
| 0.551         | +15.0PK     | 6.0        | 21.0           | 60.0  | 48.0 | -39.0      | -27.0 | L1   |
| 23.410        | +19.0PK     | 6.0        | 25.0           | 69.5  | 48.0 | -44.5      | -23.0 | L1   |
| 0.466         | +21.1PK     | 6.0        | 27.1           | 60.0  | 48.0 | -32.9      | -20.9 | L2   |
| 0.550         | +13.8PK     | 6.0        | 19.8           | 60.0  | 48.0 | -40.2      | -28.2 | L2   |
| 5.210         | +12.0PK     | 6.0        | 18.0           | 69.5  | 48.0 | -51.5      | -30.0 | L2   |
| 14.600        | +10.3PK     | 6.0        | 16.3           | 69.5  | 48.0 | -53.2      | -31.7 | L2   |
| 20.000        | +18.0PK     | 6.0        | 24.0           | 69.5  | 48.0 | -45.5      | -24.0 | L2   |
| 29.990        | +10.0PK     | 6.0        | 16.0           | 69.5  | 48.0 | -53.5      | -32.0 | L2   |

L1 = LINE ONE (HOT SIDE)  
L2 = LINE TWO (NEUTRAL SIDE)

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===== END OF CONDUCTED TEST =====

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## FCC CLASS A LINE CONDUCTED DATA

COMPANY: LGC Wireless  
EQUIP. UNDER TEST: DAS 8M-4-W  
MODEL NUMBER: DAS 8M-4-W  
TEST PROCEDURE: FCC Part 15 Class A  
MEASUREMENT SETUP: LISN #942 120Vac 60Hz  
SUPPORT EQUIPMENT: Signal Generator

TEST SITE:  
TESTED BY: Jack Plotner  
DATE: November 17 1999 3:55pm

Control Rm Temp: 74 Deg.F Humidity: 31 %RH  
EUT Room Temp: 66 Deg.F Humidity: 42 %RH

| FREQ<br>MHz | RAW<br>dBuV | SITE<br>CF | CORR'D<br>dBuV | LIMIT |      | EUT MARGIN |       | NOTE |
|-------------|-------------|------------|----------------|-------|------|------------|-------|------|
| -----       | ----        | -----      | -----          | A     | B    | A          | B     | ---  |
| Main Hub    |             |            |                |       |      |            |       |      |
| 5.230       | +2.0PK      | 6.0        | 8.0            | 69.5  | 48.0 | -61.5      | -40.0 | L1   |
| 20.000      | +22.0PK     | 6.0        | 28.0           | 69.5  | 48.0 | -41.5      | -20.0 | L1   |
| 28.478      | +10.5PK     | 6.0        | 16.5           | 69.5  | 48.0 | -53.0      | -31.5 | L1   |
| 29.999      | +7.5PK      | 6.0        | 13.5           | 69.5  | 48.0 | -56.0      | -34.5 | L1   |
| 4.000       | +3.0PK      | 6.0        | 9.0            | 69.5  | 48.0 | -60.5      | -39.0 | L2   |
| 20.000      | +22.5PK     | 6.0        | 28.5           | 69.5  | 48.0 | -41.0      | -19.5 | L2   |
| 29.988      | +16.0PK     | 6.0        | 22.0           | 69.5  | 48.0 | -47.5      | -26.0 | L2   |

L1 = LINE ONE (HOT SIDE)  
L2 = LINE TWO (NEUTRAL SIDE)

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===== END OF CONDUCTED TEST =====

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# FCC CLASS A RADIATED EMISSION DATA

COMPANY: LGC Wireless  
EQUIP. UNDER TEST: DAS8M-4-W  
MODEL NUMBER: DAS8M-4-W  
TEST PROCEDURE: FCC Class A  
SUPPORT EQUIPMENT: Signal Generator

TESTED BY: Jack Plotner TEST SITE 4  
DATE: November 18 1999

TIME: 9:59am Control RM Temp: 64 Deg.F Humidity: 60 %RH  
EUT Room Temp: 62 Deg.F Humidity: 62 %RH

## 30MHz TO 200MHz Biconical Antenna at 10 meters Horz.

| FREQ<br>MHz                                          | RAW<br>dBuV | SITE<br>CF | CORR'D<br>dBuV/m | LIMIT<br>A | LIMIT<br>B | EUT MARGIN<br>A | EUT MARGIN<br>B | POSITION<br>TBL | POSITION<br>ANT |
|------------------------------------------------------|-------------|------------|------------------|------------|------------|-----------------|-----------------|-----------------|-----------------|
| ----                                                 | ---         | ----       | -----            | ---        | ---        | ---             | ---             | ---             | ---             |
| 30MHz TO 200MHz Biconical Antenna at 10 meters Horz. |             |            |                  |            |            |                 |                 |                 |                 |
| 50.00                                                | +2.0PK      | +10.9      | 12.9             | 39.0       | 29.5       | -26.1           | -16.6           | 195             | 4.00            |
| 75.00                                                | +10.0PK     | +6.8       | 16.8             | 39.0       | 29.5       | -22.2           | -12.7           | 180             | 4.00            |
| 83.94                                                | +8.0PK      | +8.5       | 16.5             | 39.0       | 29.5       | -22.5           | -13.0           | 345             | 4.00            |
| 120.25                                               | +9.0PK      | +13.4      | 22.4             | 43.5       | 33.0       | -21.1           | -10.6           | 65              | 4.00            |
| 125.00                                               | +12.0PK     | +12.6      | 24.6             | 43.5       | 33.0       | -18.9           | -8.4            | 125             | 4.00            |
| 125.00                                               | +12.0PK     | +12.6      | 24.6             | 43.5       | 33.0       | -18.9           | -8.4            | 125             | 4.00            |
| 150.00                                               | +2.0PK      | +13.7      | 15.7             | 43.5       | 33.0       | -27.8           | -17.3           | 180             | 4.00            |

|                                                      |         |       |      |      |      |       |       |     |      |
|------------------------------------------------------|---------|-------|------|------|------|-------|-------|-----|------|
| 30MHz TO 200MHz Biconical Antenna at 10 meters Vert. |         |       |      |      |      |       |       |     |      |
| 50.00                                                | +2.0PK  | +10.9 | 12.9 | 39.0 | 29.5 | -26.1 | -16.6 | 180 | 1.50 |
| 83.78                                                | +1.0PK  | +8.5  | 9.5  | 39.0 | 29.5 | -29.5 | -20.0 | 145 | 1.50 |
| 120.25                                               | +5.0PK  | +13.4 | 18.4 | 43.5 | 33.0 | -25.1 | -14.6 | 90  | 1.50 |
| 125.00                                               | +13.0PK | +12.6 | 25.6 | 43.5 | 33.0 | -17.9 | -7.4  | 180 | 1.50 |
| 150.00                                               | +4.0PK  | +13.7 | 17.7 | 43.5 | 33.0 | -25.8 | -15.3 | 180 | 1.50 |

|                                                       |        |       |      |      |      |       |       |     |      |
|-------------------------------------------------------|--------|-------|------|------|------|-------|-------|-----|------|
| 200MHz to 400MHz Biconical Antenna at 10 meters Vert. |        |       |      |      |      |       |       |     |      |
| 200.00                                                | +2.0PK | +15.6 | 17.6 | 43.5 | 33.0 | -25.9 | -15.4 | 145 | 1.50 |
| 250.00                                                | +3.0PK | +17.8 | 20.8 | 46.5 | 35.5 | -25.7 | -14.7 | 145 | 1.75 |
| 374.98                                                | +4.5PK | +21.5 | 26.0 | 46.5 | 35.5 | -20.5 | -9.5  | 180 | 1.50 |

|                                                       |        |       |      |      |      |       |       |     |      |
|-------------------------------------------------------|--------|-------|------|------|------|-------|-------|-----|------|
| 200MHz to 400MHz Biconical Antenna at 10 meters Horz. |        |       |      |      |      |       |       |     |      |
| 200.00                                                | +1.0PK | +15.6 | 16.6 | 43.5 | 33.0 | -26.9 | -16.4 | 100 | 4.00 |

# FCC CLASS A RADIATED EMISSION DATA

COMPANY: LGC Wireless  
EQUIP. UNDER TEST: DAS 8M-4-W

MODEL NUMBER: DAS 8M-4-W  
TEST PROCEDURE: FCC Part 15 Class A  
SUPPORT EQUIPMENT: Signal Generator

TESTED BY: Jack Plotner TEST SITE 4  
DATE: November 17 1999

TIME: 12:15pm Control RM Temp: 71 Deg.F Humidity: 38 %RH  
EUT Room Temp: 66 Deg.F Humidity: 46 %RH

200MHz to 400MHz Biconical Antenna at 10 meters Horz.

| FREQ<br>MHz | RAW<br>dBuV | SITE<br>CF | CORR'D<br>dBuV/m | LIMIT<br>A | B    | EUT MARGIN<br>A | B     | POSITION<br>TBL | ANT  |
|-------------|-------------|------------|------------------|------------|------|-----------------|-------|-----------------|------|
| 250.00      | +4.5PK      | +17.8      | 22.3             | 46.5       | 35.5 | -24.2           | -13.2 | 180             | 4.00 |
| 375.00      | +3.0PK      | +21.5      | 24.5             | 46.5       | 35.5 | -22.0           | -11.0 | 270             | 4.00 |
| 400.00      | +2.5PK      | +22.2      | 24.7             | 46.5       | 35.5 | -21.8           | -10.8 | 195             | 4.00 |

END OF RADAITED TEST

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===== END OF RADIATED TEST =====

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# **APPENDIX H**

## **TEST PROCEDURES**

**For a Copy, Contact John Dorsey:**

**LGC WIRELESS**  
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San Jose, CA 95112