



**FCC CFR47 PART 22 SUBPART H  
AND PART 24 SUBPART E**

**CERTIFICATION  
TEST REPORT**

***FOR***

**850/900/1800/1900 MHz QUADBAND MODULE**

**MODEL NUMBER: MC8765**

**FCC ID: N7NMC8765**

**REPORT NUMBER: 05U3778-1**

**ISSUE DATE: NOVEMBER 23, 2005**

*Prepared for*  
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**LAB CODE:200065-0**

Revision History

| Rev. | Issue<br>Date | Revisions     | Revised By |
|------|---------------|---------------|------------|
| A    | 11/23/05      | Initial Issue | Thu Chan   |

## TABLE OF CONTENTS

|  |           |
|--|-----------|
| <b>1. ATTESTATION OF TEST RESULTS.....</b>     | <b>4</b>  |
| <b>2. TEST METHODOLOGY .....</b>               | <b>5</b>  |
| <b>3. FACILITIES AND ACCREDITATION .....</b>   | <b>5</b>  |
| <b>4. CALIBRATION AND UNCERTAINTY.....</b>     | <b>5</b>  |
| 4.1. MEASURING INSTRUMENT CALIBRATION.....     | 5         |
| 4.2. MEASUREMENT UNCERTAINTY.....              | 5         |
| <b>5. EQUIPMENT UNDER TEST.....</b>            | <b>6</b>  |
| 5.1. DESCRIPTION OF EUT .....                  | 6         |
| 5.2. MAXIMUM OUTPUT POWER .....                | 6         |
| 5.3. SOFTWARE AND FIRMWARE .....               | 6         |
| 5.4. WORST-CASE CONFIGURATION AND MODE.....    | 6         |
| 5.5. DESCRIPTION OF TEST SETUP .....           | 7         |
| <b>6. TEST AND MEASUREMENT EQUIPMENT .....</b> | <b>10</b> |
| <b>7. LIMITS AND RESULTS .....</b>             | <b>11</b> |
| 7.1. FIELD STRENGTH OF SPURIOUS RADIATION..... | 11        |
| <b>8. SETUP PHOTOS .....</b>                   | <b>18</b> |

## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** SIERRA WIRELESS INC.  
13811 WIRELESS WAY  
RICHMOND, BC V6V 3A4, CANADA

**EUT DESCRIPTION:** 850/900/1800/1900 MHZ QUADBAND MODULE

**MODEL:** MC8765

**SERIAL NUMBER:** S2128751117E2

**DATE TESTED:** NOVEMBER 09, 2005

| APPLICABLE STANDARDS  |                         |
|-----------------------|-------------------------|
| STANDARD              | TEST RESULTS            |
| FCC PART 22 SUBPART H | NO NON-COMPLIANCE NOTED |
| FCC PART 24 SUBPART E | NO NON-COMPLIANCE NOTED |

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

**Note:** The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:

Tested By:



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THU CHAN  
EMC SUPERVISOR  
COMPLIANCE CERTIFICATION SERVICES

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WILLIAM ZHUANG  
EMC ENGINEER  
COMPLIANCE CERTIFICATION SERVICES

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA/EIA 603B (2002), ANSI C63.4-2003, FCC CFR 47 Part 2, FCC CFR 47 Part 15 and FCC CFR 47 Part 22H and 24E.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### 4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| PARAMETER                           | UNCERTAINTY    |
|-------------------------------------|----------------|
| Radiated Emission, 30 to 200 MHz    | +/- 3.3 dB     |
| Radiated Emission, 200 to 1000 MHz  | +4.5 / -2.9 dB |
| Radiated Emission, 1000 to 2000 MHz | +4.5 / -2.9 dB |
| Power Line Conducted Emission       | +/- 2.9 dB     |

Uncertainty figures are valid to a confidence level of 95%.

## **5. EQUIPMENT UNDER TEST**

### **5.1. DESCRIPTION OF EUT**

The EUT is an 850/900/1800/1900 Quad-Band Module and manufactured by Sierra Wireless, Inc.

### **5.2. MAXIMUM OUTPUT POWER**

Please refer to the RF conducted report.

### **5.3. SOFTWARE AND FIRMWARE**

The test utility software used during testing was Hyperterminal / ProcommPlus for GSM and EDGE modulations, and the link test with communication tester for WCDMA modulation.

### **5.4. WORST-CASE CONFIGURATION AND MODE**

The worst-case channel is determined as the channel with the highest output power. Please refer to the RF conducted report.

## 5.5. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

| PERIPHERAL SUPPORT EQUIPMENT LIST |              |             |                  |        |
|-----------------------------------|--------------|-------------|------------------|--------|
| Description                       | Manufacturer | Model       | Serial Number    | FCC ID |
| AC Adpter                         | IBM          | PA-1900-171 | 530002520D       | DoC    |
| Laptop                            | IBM          | Thinkpad    | S1VBW1B400000074 | DoC    |

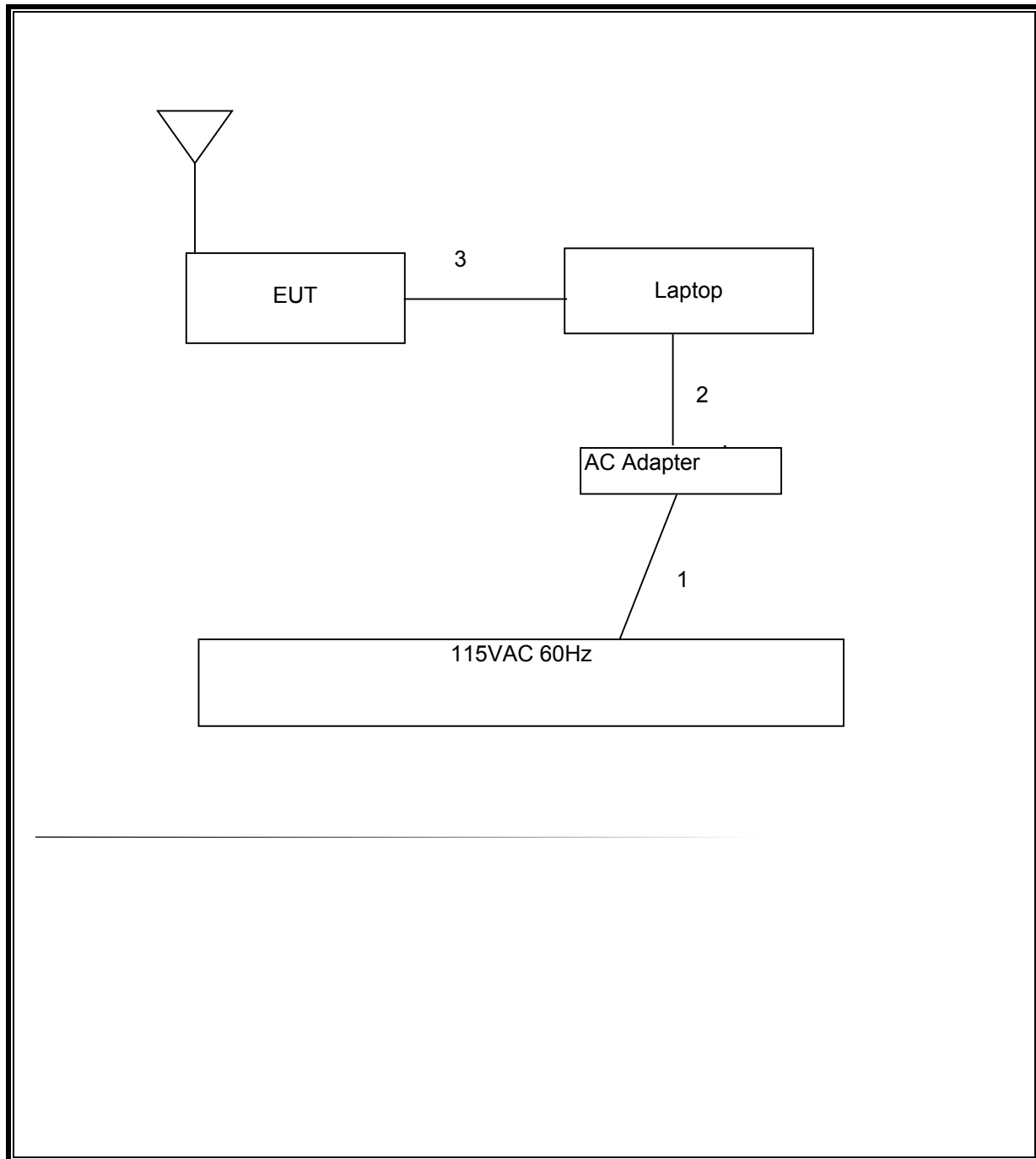
### I/O CABLES FOR WCDMA TEST MODE

| I/O CABLE LIST |      |                      |                |             |              |                              |
|----------------|------|----------------------|----------------|-------------|--------------|------------------------------|
| Cable No.      | Port | # of Identical Ports | Connector Type | Cable Type  | Cable Length | Remarks                      |
| 1              | AC   | 1                    | US 115V        | Un-shielded | 2m           | NA                           |
| 2              | DC   | 1                    | DC             | Un-shielded | 1m           | NA                           |
| 3              | USB  | 1                    | USB            | Un-shielded | 1m           | Connected to EUT from Laptop |

### TEST SETUP

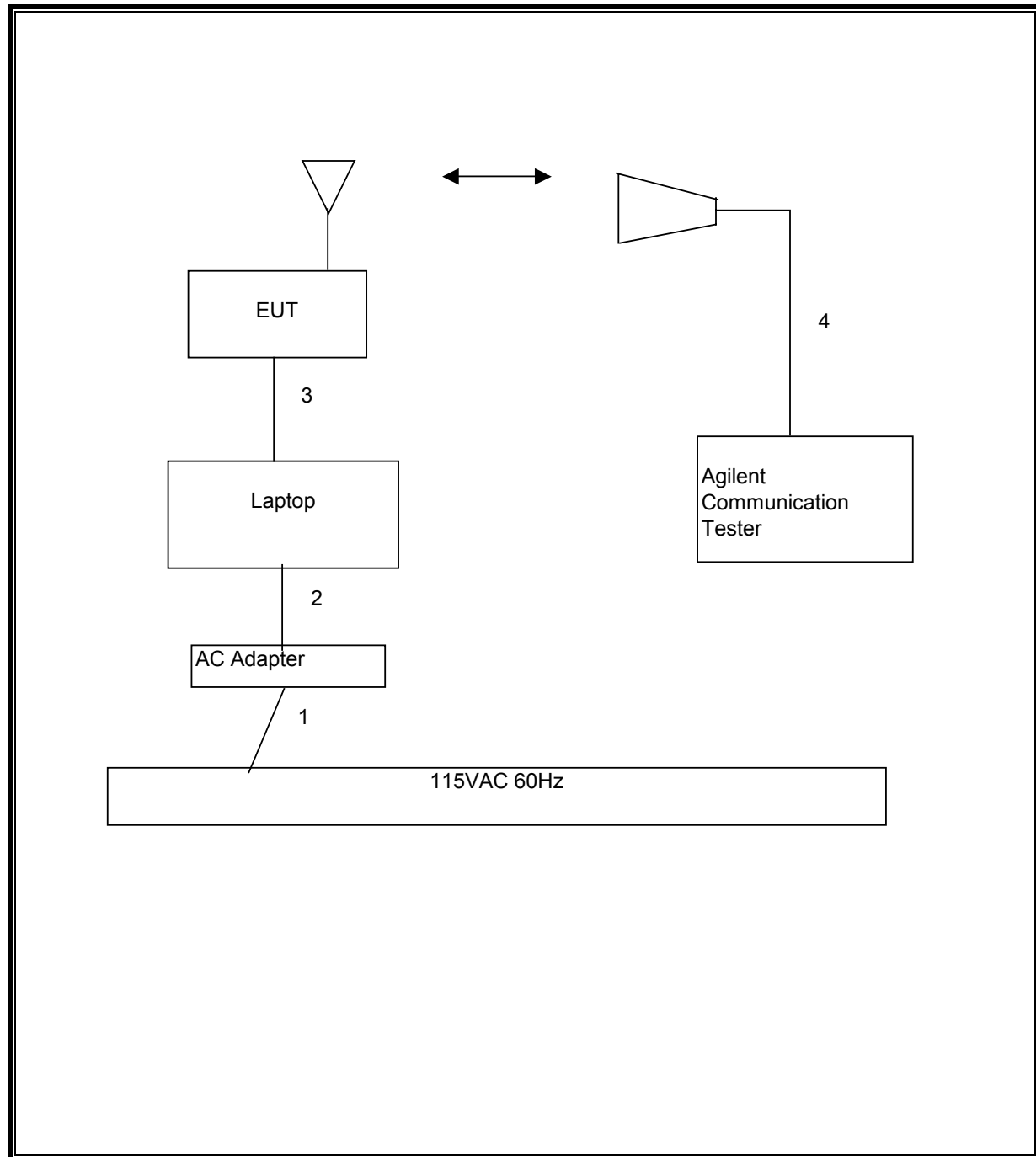
The EUT is connected to Laptop via a USB cable during the tests. Test software exercised the radio card. For WCDMA test mode, a communication tester was used to link EUT during test.

**SETUP DIAGRAM FOR GSM AND EDGE TESTS**





**SETUP DIAGRAM FOR WCDMA TEST**



## 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

| TEST EQUIPMENT LIST         |                |             |               |          |
|-----------------------------|----------------|-------------|---------------|----------|
| Description                 | Manufacturer   | Model       | Serial Number | Cal Due  |
| 30MHz-2GHz                  | Sunol Sciences | JB1 Antenna | A121003       | 12/22/05 |
| Antenna, Horn 1 ~ 18 GHz    | EMCO           | 3117        | 29301         | 9/12/06  |
| Antenna, Horn 1 ~ 18 GHz    | EMCO           | 3115        | 6717          | 9/12/06  |
| Amplifier 1-26GHz           | MITEQ          | NSP2600-SP  | 924341        | 8/17/06  |
| Spectrum Analyzer, 26.5 GHz | HP             | 8593EM      | 3710A00205    | 1/6/06   |
| Dipole                      | EMCO           | 3121C-DB2   | 22435         | 3/25/06  |
| Signal Generator 2 -40 GHz  | R & S          | SMP04       | DE 34210      | 5/2/06   |
| Peak Power Meter            | Agilent        | E4416A      | GB41291160    | 2/9/06   |
| Peak / Average Power Sensor | Agilent        | E9327A      | US40440755    | 2/10/06  |
| Communication Tester        | Agilent        | 8960        | GB43344837    | 9/3/06   |

## 7. LIMITS AND RESULTS

### 7.1. FIELD STRENGTH OF SPURIOUS RADIATION

#### LIMIT

§22.917 (a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

§24.238 (a) Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

#### TEST PROCEDURE

ANSI / TIA / EIA 603 Clause 3.2.12 & FCC 22.917 (b)

ANSI / TIA / EIA 603 Clause 3.2.12 & FCC 24.238 (b)

#### RESULTS

No non-compliance noted.

**GSM850 Spurious & Harmonic (ERP)**

|  |  |              |  |   |  |  |  |  |  |  |
|--|--|--------------|--|---|--|--|--|--|--|--|
| 11/08/05 <b>High Frequency Substitution Measurement</b><br>Compliance Certification Services, Morgan Hill 5m Chamber Site  |  |              |  |   |  |  |  |  |  |  |
| Test Engr: William Zhuang<br>Project #: 05U3778<br>Company: Sierra Wireless<br>EUT Descrip.: UMTS Module<br>EUT M/N: MC8765 (Modular Approval)<br>Test Target: FCC22<br>Mode Oper: Transmit, GSM850 Mode |  |              |  |   |  |  |  |  |  |  |
| <b>Test Equipment:</b>   |  |              |  |   |  |  |  |  |  |  |
| EMCO Horn 1-18GHz<br>T73; S/N: 6717 @3m  |  | Horn > 18GHz |  | Limit<br>FCC 22                           |  | <input checked="" type="checkbox"/> High Pass Filter |  |  |  |  |
| Hi Frequency Cables<br><input checked="" type="checkbox"/> (2 ft) <input type="checkbox"/> (2 ~ 3 ft) <input type="checkbox"/> (4 ~ 6 ft) <input checked="" type="checkbox"/> (12 ft)                    |  |              |  | Pre-amplifier 1-26GHz<br>T87 Miteq 924342 |  | Pre-amplifier 26-40GHz                               |  |  |  |  |

| f<br>GHz   | SA reading<br>(dBuV/m) | Ant. Pol.<br>(H/V) | SG reading<br>(dBm) | CL<br>(dB) | Gain<br>(dBi) | Gain<br>(dBd) | ERP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes |
|--|------------------------|--------------------|---------------------|------------|---------------|---------------|--------------|----------------|----------------|-------|
| <b>GSM850 Low Ch</b>   |                        |                    |                     |            |               |               |              |                |                |       |
| 1.648  | 76.6                   | V                  | -34.8               | 1.6        | 7.5           | 5.4           | -31.0        | -13.0          | -18.0          |       |
| 2.473  | 68.8                   | V                  | -39.3               | 1.9        | 8.6           | 6.4           | -34.8        | -13.0          | -21.8          |       |
| 3.297  | 52.1                   | V                  | -53.9               | 2.3        | 9.3           | 7.2           | -49.1        | -13.0          | -36.1          |       |
| 1.648  | 71.9                   | H                  | -38.8               | 1.6        | 7.5           | 5.4           | -35.0        | -13.0          | -22.0          |       |
| 2.473  | 69.9                   | H                  | -37.9               | 1.9        | 8.6           | 6.4           | -33.5        | -13.0          | -20.5          |       |
| 3.297  | 49.6                   | H                  | -56.3               | 2.3        | 9.3           | 7.2           | -51.5        | -13.0          | -38.5          |       |
| <b>GSM850 Mid Ch</b>   |                        |                    |                     |            |               |               |              |                |                |       |
| 1.674  | 67.8                   | V                  | -43.5               | 1.6        | 7.6           | 5.4           | -39.6        | -13.0          | -26.6          |       |
| 2.511  | 61.9                   | V                  | -46.1               | 1.9        | 8.6           | 6.4           | -41.6        | -13.0          | -28.6          |       |
| 3.348  | 53.2                   | V                  | -52.8               | 2.3        | 9.3           | 7.2           | -47.9        | -13.0          | -34.9          |       |
| 1.674  | 71.2                   | H                  | -39.4               | 1.6        | 7.6           | 5.4           | -35.6        | -13.0          | -22.6          |       |
| 2.511  | 67.1                   | H                  | -40.6               | 1.9        | 8.6           | 6.4           | -36.1        | -13.0          | -23.1          |       |
| 3.348  | 51.7                   | H                  | -54.2               | 2.3        | 9.3           | 7.2           | -49.4        | -13.0          | -36.4          |       |
| <b>GSM850 High Ch</b>  |                        |                    |                     |            |               |               |              |                |                |       |
| 1.698  | 70.5                   | V                  | -40.6               | 1.6        | 7.6           | 5.5           | -36.7        | -13.0          | -23.7          |       |
| 2.546  | 65.4                   | V                  | -42.5               | 2.0        | 8.6           | 6.5           | -38.0        | -13.0          | -25.0          |       |
| 3.395  | 50.6                   | V                  | -55.3               | 2.3        | 9.4           | 7.2           | -50.4        | -13.0          | -37.4          |       |
| 1.698  | 74.7                   | H                  | -35.7               | 1.6        | 7.6           | 5.5           | -31.9        | -13.0          | -18.9          |       |
| 2.546  | 71.4                   | H                  | -36.2               | 2.0        | 8.6           | 6.5           | -31.7        | -13.0          | -18.7          |       |
| 3.395  | 50.2                   | H                  | -55.6               | 2.3        | 9.4           | 7.2           | -50.7        | -13.0          | -37.7          |       |
| Note: No other emissions were detected above the system noise floor. |                        |                    |                     |            |               |               |              |                |                |       |
|  |                        |                    |                     |            |               |               |              |                |                |       |
|  |                        |                    |                     |            |               |               |              |                |                |       |

# EDGE850 Spurious & Harmonic (ERP)

| 11/08/05 <b>High Frequency Substitution Measurement</b><br>Compliance Certification Services, Morgan Hill 5m Chamber Site<br><br>Test Engr: William Zhuang<br>Project #: 05U3778<br>Company: Sierra Wireless<br>EUT Descrip.: UMTS Module<br>EUT M/N: MC8765 (Modular Approval)<br>Test Target: FCC22<br>Mode Oper: Transmit, EDGE850 Mode |                        |                    |                     |            |               |   |              |  |                |       |  |
|--|------------------------|--------------------|---------------------|------------|---------------|---|--------------|--|----------------|-------|--|
| <b>Test Equipment:</b>   |                        |                    |                     |            |               |   |              |  |                |       |  |
| EMCO Horn 1-18GHz<br>T73; S/N: 6717 @3m  |                        |                    | Horn > 18GHz        |            |               | Limit<br>FCC 22                           |              | <input checked="" type="checkbox"/> High Pass Filter |                |       |  |
| Hi Frequency Cables<br><input checked="" type="checkbox"/> (2 ft) <input type="checkbox"/> (2 ~ 3 ft) <input type="checkbox"/> (4 ~ 6 ft) <input checked="" type="checkbox"/> (12 ft)  |                        |                    |                     |            |               | Pre-amplifier 1-26GHz<br>T87 Miteq 924342 |              | Pre-amplifier 26-40GHz                               |                |       |  |
| f<br>GHz   | SA reading<br>(dBuV/m) | Ant. Pol.<br>(H/V) | SG reading<br>(dBm) | CL<br>(dB) | Gain<br>(dBi) | Gain<br>(dBd)                             | ERP<br>(dBm) | Limit<br>(dBm)                                       | Margin<br>(dB) | Notes |  |
| <b>EDGE850, Low Ch</b>   |                        |                    |                     |            |               |   |              |  |                |       |  |
| 1.648  | 67.8                   | V                  | -43.6               | 1.6        | 7.5           | 5.4                                       | -39.8        | -13.0  | -26.8          |       |  |
| 2.473  | 63.1                   | V                  | -44.9               | 1.9        | 8.6           | 6.4                                       | -40.5        | -13.0  | -27.5          |       |  |
| 3.297  | 50.5                   | V                  | -55.5               | 2.3        | 9.3           | 7.2                                       | -50.7        | -13.0  | -37.7          |       |  |
| 1.648  | 68.5                   | H                  | -42.2               | 1.6        | 7.5           | 5.4                                       | -38.4        | -13.0  | -25.4          |       |  |
| 2.473  | 63.8                   | H                  | -44.0               | 1.9        | 8.6           | 6.4                                       | -39.5        | -13.0  | -26.5          |       |  |
| 3.297  | 50.8                   | H                  | -55.2               | 2.3        | 9.3           | 7.2                                       | -50.3        | -13.0  | -37.3          |       |  |
| <b>EDGE850, Mid Ch.</b>  |                        |                    |                     |            |               |   |              |  |                |       |  |
| 1.674  | 61.8                   | V                  | -49.4               | 1.6        | 7.6           | 5.4                                       | -45.6        | -13.0  | -32.6          |       |  |
| 2.511  | 56.4                   | V                  | -51.5               | 1.9        | 8.6           | 6.4                                       | -47.0        | -13.0  | -34.0          |       |  |
| 3.348  | 49.7                   | V                  | -56.3               | 2.3        | 9.3           | 7.2                                       | -51.4        | -13.0  | -38.4          |       |  |
| 1.674  | 66.7                   | H                  | -43.8               | 1.6        | 7.6           | 5.4                                       | -40.0        | -13.0  | -27.0          |       |  |
| 2.511  | 61.5                   | H                  | -46.3               | 1.9        | 8.6           | 6.4                                       | -41.7        | -13.0  | -28.7          |       |  |
| 3.348  | 49.1                   | H                  | -56.8               | 2.3        | 9.3           | 7.2                                       | -52.0        | -13.0  | -39.0          |       |  |
| <b>EDGE850 High Ch</b>   |                        |                    |                     |            |               |   |              |  |                |       |  |
| 1.698  | 66.4                   | V                  | -44.8               | 1.6        | 7.6           | 5.5                                       | -40.9        | -13.0  | -27.9          |       |  |
| 2.546  | 59.9                   | V                  | -47.9               | 2.0        | 8.6           | 6.5                                       | -43.4        | -13.0  | -30.4          |       |  |
| 3.395  | 49.0                   | V                  | -56.9               | 2.3        | 9.4           | 7.2                                       | -52.0        | -13.0  | -39.0          |       |  |
| 1.698  | 70.2                   | H                  | -40.2               | 1.6        | 7.6           | 5.5                                       | -36.3        | -13.0  | -23.3          |       |  |
| 2.546  | 63.9                   | H                  | -43.7               | 2.0        | 8.6           | 6.5                                       | -39.2        | -13.0  | -26.2          |       |  |
| 3.395  | 49.7                   | H                  | -56.1               | 2.3        | 9.4           | 7.2                                       | -51.3        | -13.0  | -38.3          |       |  |
| Note: No other emissions were detected above the system noise floor.   |                        |                    |                     |            |               |   |              |  |                |       |  |

**WCDMA850 Spurious & Harmonic (ERP)**

| 11/09/05 <b>High Frequency Substitution Measurement</b><br>Compliance Certification Services, Morgan Hill 5m Chamber Site  |                        |                    |                     |            |               |   |              |  |                |       |  |
|--|------------------------|--------------------|---------------------|------------|---------------|---|--------------|--|----------------|-------|--|
| Test Engr: William Zhuang<br>Project #: 05U3778<br>Company: Sierra Wireless<br>EUT Descrip.: UMTS Module<br>EUT M/N: MC8765 (Modular Approval)<br>Test Target: FCC22<br>Mode Oper: Transmit, WCDMA850 Mode |                        |                    |                     |            |               |   |              |  |                |       |  |
| <b>Test Equipment:</b>   |                        |                    |                     |            |               |   |              |  |                |       |  |
| EMCO Horn 1-18GHz<br>T73; S/N: 6717 @3m  |                        |                    | Horn > 18GHz        |            |               | Limit<br>FCC 22                           |              | <input checked="" type="checkbox"/> High Pass Filter |                |       |  |
| Hi Frequency Cables<br><input checked="" type="checkbox"/> (2 ft) <input type="checkbox"/> (2 ~ 3 ft) <input type="checkbox"/> (4 ~ 6 ft) <input checked="" type="checkbox"/> (12 ft)                      |                        |                    |                     |            |               | Pre-amplifier 1-26GHz<br>T87 Miteq 924342 |              | Pre-amplifier 26-40GHz                               |                |       |  |
| f<br>GHz   | SA reading<br>(dBuV/m) | Ant. Pol.<br>(H/V) | SG reading<br>(dBm) | CL<br>(dB) | Gain<br>(dBi) | Gain<br>(dBd)                             | ERP<br>(dBm) | Limit<br>(dBm)                                       | Margin<br>(dB) | Notes |  |
| <b>WCDMA850 Low Ch</b>   |                        |                    |                     |            |               |   |              |  |                |       |  |
| 1.652  | 60.7                   | V                  | -50.7               | 1.6        | 7.5           | 5.4                                       | -46.9        | -13.0  | -33.9          |       |  |
| 2.479  | 52.2                   | V                  | -55.9               | 1.9        | 8.6           | 6.4                                       | -51.4        | -13.0  | -38.4          |       |  |
| 1.652  | 52.5                   | H                  | -58.2               | 1.6        | 7.5           | 5.4                                       | -54.4        | -13.0  | -41.4          |       |  |
| 2.479  | 52.8                   | H                  | -55.1               | 1.9        | 8.6           | 6.4                                       | -50.6        | -13.0  | -37.6          |       |  |
| <b>WCDMA850 Mid Ch</b>   |                        |                    |                     |            |               |   |              |  |                |       |  |
| 1.673  | 60.2                   | V                  | -51.1               | 1.6        | 7.6           | 5.4                                       | -47.3        | -13.0  | -34.3          |       |  |
| 2.509  | 57.9                   | V                  | -50.0               | 1.9        | 8.6           | 6.4                                       | -45.5        | -13.0  | -32.5          |       |  |
| 1.673  | 67.0                   | H                  | -43.6               | 1.6        | 7.6           | 5.4                                       | -39.7        | -13.0  | -26.7          |       |  |
| 2.509  | 62.2                   | H                  | -45.6               | 1.9        | 8.6           | 6.4                                       | -41.1        | -13.0  | -28.1          |       |  |
| <b>WCDMA850 High Ch</b>  |                        |                    |                     |            |               |   |              |  |                |       |  |
| 1.693  | 61.1                   | V                  | -50.1               | 1.6        | 7.6           | 5.5                                       | -46.2        | -13.0  | -33.2          |       |  |
| 2.540  | 54.7                   | V                  | -53.2               | 2.0        | 8.6           | 6.5                                       | -48.7        | -13.0  | -35.7          |       |  |
| 1.693  | 52.9                   | H                  | -57.6               | 1.6        | 7.6           | 5.5                                       | -53.7        | -13.0  | -40.7          |       |  |
| 2.540  | 52.8                   | H                  | -54.8               | 2.0        | 8.6           | 6.5                                       | -50.3        | -13.0  | -37.3          |       |  |
| Note: No other emissions were detected above the system noise floor.   |                        |                    |                     |            |               |   |              |  |                |       |  |
|  |                        |                    |                     |            |               |   |              |  |                |       |  |

GSM1900 Spurious & Harmonic (EIRP):

11/08/05 **High Frequency Substitution Measurement**  
Compliance Certification Services, Morgan Hill 5m Chamber Site  
Test Engr: William Zhuang  
Project #: 05U3778  
Company: Sierra Wireless  
EUT Descrip.: UMTS Module  
EUT M/N: MC8765 (Modular Approval)  
Test Target: FCC24  
Mode Oper: Transmit, GSM1900 Mode  
Test Equipment:

EMCO Horn 1-18GHz  
T73; S/N: 6717 @3m

Horn > 18GHz

Limit  
FCC 24

☒ High Pass Filter

Hi Frequency Cables  
☒ (2 ft)    ☐ (2 ~ 3 ft)    ☐ (4 ~ 6 ft)    ☒ (12 ft)

Pre-amplifier 1-26GHz  
T87 Miteq 924342

Pre-amplifier 26-40GHz

| f<br>GHz   | SA reading<br>(dBuV/m) | Ant. Pol.<br>(H/V) | SG reading<br>(dBm) | CL<br>(dB) | Gain<br>(dBi) | Gain<br>(dBd) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes |
|--|------------------------|--------------------|---------------------|------------|---------------|---------------|---------------|----------------|----------------|-------|
| <b>GSM1900 Low Ch</b>  |                        |                    |                     |            |               |               |               |                |                |       |
| 3.700  | 53.6                   | V                  | -46.9               | 2.5        | 10.1          | 8.0           | -41.4         | -13.0          | -28.4          |       |
| 5.550  | 57.9                   | V                  | -39.6               | 3.3        | 10.9          | 8.8           | -34.1         | -13.0          | -21.1          |       |
| 3.700  | 54.7                   | H                  | -45.7               | 2.5        | 10.1          | 8.0           | -40.2         | -13.0          | -27.2          |       |
| 5.550  | 56.8                   | H                  | -39.7               | 3.3        | 10.9          | 8.8           | -34.2         | -13.0          | -21.2          |       |
| <b>GSM1900 Mid Ch</b>  |                        |                    |                     |            |               |               |               |                |                |       |
| 3.760  | 52.4                   | V                  | -47.9               | 2.5        | 10.2          | 8.0           | -42.4         | -13.0          | -29.4          |       |
| 5.640  | 57.0                   | V                  | -40.5               | 3.3        | 11.1          | 8.9           | -34.9         | -13.0          | -21.9          |       |
| 3.760  | 54.6                   | H                  | -45.5               | 2.5        | 10.2          | 8.0           | -40.0         | -13.0          | -27.0          |       |
| 5.640  | 54.6                   | H                  | -42.0               | 3.3        | 11.1          | 8.9           | -36.4         | -13.0          | -23.4          |       |
| <b>GSM1900 High Ch</b>   |                        |                    |                     |            |               |               |               |                |                |       |
| 3.820  | 54.9                   | V                  | -45.3               | 2.5        | 10.2          | 8.0           | -39.8         | -13.0          | -26.8          |       |
| 5.730  | 52.9                   | V                  | -44.6               | 3.4        | 11.2          | 9.0           | -39.0         | -13.0          | -26.0          |       |
| 7.645  | 54.3                   | V                  | -40.4               | 3.7        | 11.5          | 9.4           | -34.7         | -13.0          | -21.7          |       |
| 3.820  | 56.3                   | H                  | -43.7               | 2.5        | 10.2          | 8.0           | -38.2         | -13.0          | -25.2          |       |
| 5.730  | 53.5                   | H                  | -43.1               | 3.4        | 11.2          | 9.0           | -37.4         | -13.0          | -24.4          |       |
| 7.645  | 52.5                   | H                  | -41.4               | 3.7        | 11.5          | 9.4           | -35.7         | -13.0          | -22.7          |       |
| Note: No other emissions were detected above the system noise floor. |                        |                    |                     |            |               |               |               |                |                |       |

EDGE1900 Spurious & Harmonic (EIRP):

| 11/08/05 <b>High Frequency Substitution Measurement</b><br>Compliance Certification Services, Morgan Hill 5m Chamber Site  |                        |                    |                     |   |               |  |               |                |                |       |  |
|--|------------------------|--------------------|---------------------|---|---------------|--|---------------|----------------|----------------|-------|--|
| Test Engr: William Zhuang<br>Project #: 05U3778<br>Company: Sierra Wireless<br>EUT Descrip.: UMTS Module<br>EUT M/N: MC8765 (Modular Approval)<br>Test Target: FCC24<br>Mode Oper: Transmit, EDGE1900 Mode |                        |                    |                     |   |               |  |               |                |                |       |  |
| <b>Test Equipment:</b>   |                        |                    |                     |   |               |  |               |                |                |       |  |
| EMCO Horn 1-18GHz<br>T73; S/N: 6717 @3m  |                        | Horn > 18GHz       |                     | Limit<br>FCC 24                           |               | <input checked="" type="checkbox"/> High Pass Filter |               |                |                |       |  |
| Hi Frequency Cables<br><input checked="" type="checkbox"/> (2 ft) <input type="checkbox"/> (2 ~ 3 ft) <input type="checkbox"/> (4 ~ 6 ft) <input checked="" type="checkbox"/> (12 ft)                      |                        |                    |                     | Pre-amplifier 1-26GHz<br>T87 Miteq 924342 |               | Pre-amplifier 26-40GHz                               |               |                |                |       |  |
| f<br>GHz   | SA reading<br>(dBuV/m) | Ant. Pol.<br>(H/V) | SG reading<br>(dBm) | CL<br>(dB)                                | Gain<br>(dBi) | Gain<br>(dBd)  | EIRP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes |  |
| <b>EDGE1900 Low Ch</b>   |                        |                    |                     |   |               |  |               |                |                |       |  |
| 3.700  | 53.3                   | V                  | -47.2               | 2.5                                       | 10.1          | 8.0  | -41.7         | -13.0          | -28.7          |       |  |
| 5.550  | 57.7                   | V                  | -39.9               | 3.3                                       | 10.9          | 8.8  | -34.4         | -13.0          | -21.4          |       |  |
| 3.700  | 54.7                   | H                  | -45.7               | 2.5                                       | 10.1          | 8.0  | -40.2         | -13.0          | -27.2          |       |  |
| 5.550  | 57.3                   | H                  | -39.3               | 3.3                                       | 10.9          | 8.8  | -33.8         | -13.0          | -20.8          |       |  |
| <b>EDGE1900 Mid Ch</b>   |                        |                    |                     |   |               |  |               |                |                |       |  |
| 3.760  | 51.8                   | V                  | -48.4               | 2.5                                       | 10.2          | 8.0  | -42.9         | -13.0          | -29.9          |       |  |
| 5.640  | 55.9                   | V                  | -41.7               | 3.3                                       | 11.1          | 8.9  | -36.1         | -13.0          | -23.1          |       |  |
| 3.760  | 54.1                   | H                  | -46.0               | 2.5                                       | 10.2          | 8.0  | -40.5         | -13.0          | -27.5          |       |  |
| 5.640  | 54.1                   | H                  | -42.5               | 3.3                                       | 11.1          | 8.9  | -36.9         | -13.0          | -23.9          |       |  |
| <b>EDGE1900 High Ch</b>  |                        |                    |                     |   |               |  |               |                |                |       |  |
| 3.820  | 53.3                   | V                  | -46.8               | 2.5                                       | 10.2          | 8.0  | -41.3         | -13.0          | -28.3          |       |  |
| 5.730  | 54.6                   | V                  | -42.9               | 3.4                                       | 11.2          | 9.0  | -37.3         | -13.0          | -24.3          |       |  |
| 7.645  | 55.9                   | V                  | -38.8               | 3.7                                       | 11.5          | 9.4  | -33.1         | -13.0          | -20.1          |       |  |
| 3.820  | 55.0                   | H                  | -45.0               | 2.5                                       | 10.2          | 8.0  | -39.5         | -13.0          | -26.5          |       |  |
| 5.730  | 52.2                   | H                  | -44.3               | 3.4                                       | 11.2          | 9.0  | -38.7         | -13.0          | -25.7          |       |  |
| 7.645  | 56.8                   | H                  | -37.1               | 3.7                                       | 11.5          | 9.4  | -31.4         | -13.0          | -18.4          |       |  |
| Note: No other emissions were detected above the system noise floor.   |                        |                    |                     |   |               |  |               |                |                |       |  |
|  |                        |                    |                     |   |               |  |               |                |                |       |  |
|  |                        |                    |                     |   |               |  |               |                |                |       |  |



WCDMA1900 Spurious & Harmonic (EIRP):

11/09/05
High Frequency Substitution Measurement  
Compliance Certification Services, Morgan Hill 5m Chamber Site

Test Engr: William Zhuang  
Project #: 05U3778  
Company: Sierra Wireless  
EUT Descrip.: UMTS Module  
EUT M/N: MC8765 (Modular Approval)  
Test Target: FCC24  
Mode Oper: Transmit, WCDMA1900 Mode

EMCO Horn 1-18GHz  
T73; S/N: 6717 @3m

Horn > 18GHz

Limit  
FCC 24

☒ High Pass Filter

Hi Frequency Cables  
☒ (2 ft)
☐ (2 ~ 3 ft)
☐ (4 ~ 6 ft)
☒ (12 ft)

Pre-amplifier 1-26GHz  
T87 Miteq 924342

Pre-amplifier 26-40GHz

| f<br>GHz   | SA reading<br>(dBuV/m) | Ant. Pol.<br>(H/V) | SG reading<br>(dBm) | CL<br>(dB) | Gain<br>(dBi) | Gain<br>(dBd) | EIRP<br>(dBm) | Limit<br>(dBm) | Margin<br>(dB) | Notes |
|--|------------------------|--------------------|---------------------|------------|---------------|---------------|---------------|----------------|----------------|-------|
| <b>WCDMA1900 Low Ch</b>  |                        |                    |                     |            |               |               |               |                |                |       |
| 3.704  | 52.7                   | V                  | -47.8               | 2.5        | 10.1          | 8.0           | -42.3         | -13.0          | -29.3          |       |
| 5.557  | 59.3                   | V                  | -38.2               | 3.3        | 11.0          | 8.8           | -32.7         | -13.0          | -19.7          |       |
| 3.704  | 52.8                   | H                  | -47.6               | 2.5        | 10.1          | 8.0           | -42.1         | -13.0          | -29.1          |       |
| 5.557  | 58.5                   | H                  | -38.1               | 3.3        | 11.0          | 8.8           | -32.6         | -13.0          | -19.6          |       |
| <b>WCDMA1900 Mid Ch</b>  |                        |                    |                     |            |               |               |               |                |                |       |
| 3.760  | 53.8                   | V                  | -46.5               | 2.5        | 10.2          | 8.0           | -41.0         | -13.0          | -28.0          |       |
| 5.640  | 56.5                   | V                  | -41.1               | 3.3        | 11.1          | 8.9           | -35.5         | -13.0          | -22.5          |       |
| 3.760  | 52.8                   | H                  | -47.3               | 2.5        | 10.2          | 8.0           | -41.8         | -13.0          | -28.8          |       |
| 5.640  | 56.0                   | H                  | -40.5               | 3.3        | 11.1          | 8.9           | -34.9         | -13.0          | -21.9          |       |
| <b>WCDMA1900 High Ch</b>   |                        |                    |                     |            |               |               |               |                |                |       |
| 3.815  | 59.7                   | V                  | -40.5               | 2.5        | 10.2          | 8.0           | -34.9         | -13.0          | -21.9          |       |
| 5.723  | 55.5                   | V                  | -42.1               | 3.4        | 11.2          | 9.0           | -36.4         | -13.0          | -23.4          |       |
| 3.815  | 56.1                   | H                  | -43.9               | 2.5        | 10.2          | 8.0           | -38.4         | -13.0          | -25.4          |       |
| 5.723  | 54.0                   | H                  | -42.5               | 3.4        | 11.2          | 9.0           | -36.9         | -13.0          | -23.9          |       |
| Note: No other emissions were detected above the system noise floor. |                        |                    |                     |            |               |               |               |                |                |       |

## 8. SETUP PHOTOS

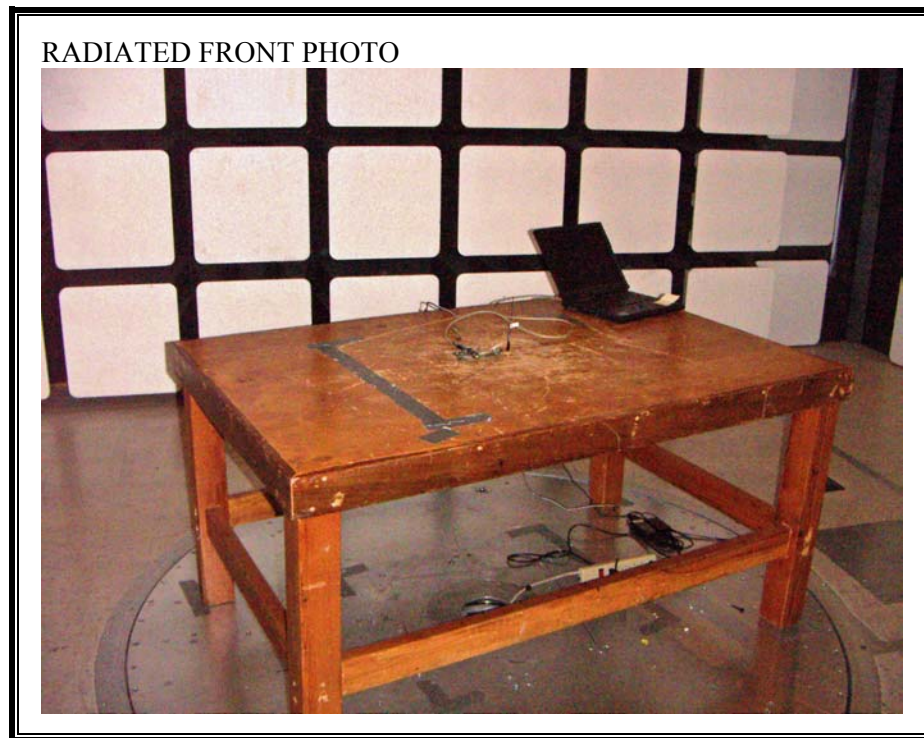
### RADIATED RF MEASUREMENT SETUP FOR GSM & EDGE MODULATIONS



RADIATED BACK PHOTO



**RADIATED RF MEASUREMENT SETUP FOR WCDMA MODULATION**



RADIATED BACK PHOTO



**END OF REPORT**