

TEST NUMBER - 186-05

TEST REPORT TO

INDUSTRY CANADA RSS 210 SECTION 6.2.2  
FEDERAL COMMUNICATIONS COMMISSION CFR47 PART15.249

Low Power License-Exempt Radio Communication Devices  
Intentional Radiators

Radiated testing only

for

Opticon, Inc.  
8 Olympic Drive  
Orangeburg, NY 10962-2511  
845.365.0090

of

Bluetooth enabled bar code scanner

Model OPL 9724

FCC ID: S6GOPL9724

on

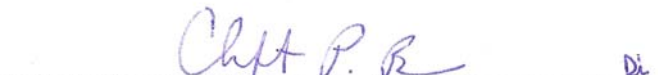
4/22/2005

Tested by



Andrew Mertinooke

Reviewed by

  
Clifton P. Brick

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TEST DESCRIPTION

1. TEST OBJECTIVE

To test the Bluetooth portable data collector/ bar code reader OPL 9724 to RSS 210 / Part 15 Subpart C Rules and write a report.

2. E.U.T. DESCRIPTION

GENERAL

The OPL 9724 is a Bluetooth portable data collector/ bar code reader that operates in the 2400-2483.5 MHz Frequency Band. The OPL 9724 uses FHSS modulation using channels on a 1MHz spacing on 79 channels from 2402 to 2480 MHz with approximately 1MHz occupied bandwidth per channel.

SERIAL NUMBERS:

production prototype

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### TEST RESULTS AND CONCLUSIONS

PRODUCT TESTED - Bluetooth portable data collector/ bar code reader

MODEL NUMBER - OPL 9724

#### RADIATED TEST RESULTS

The test results show that the emissions radiated from this equipment are in compliance with IC Rules RSS 210 / FCC Rules Part 15 Subpart C.

#### OCCUPIED BANDWIDTH & OUTPUT POWER

The test results show that the occupied bandwidth and output power of this equipment are in compliance with IC Rules RSS 210 / FCC Rules Part 15 Subpart C .

#### CONDUCTED TEST RESULTS

See Notes.

#### ANALYSIS AND CONCLUSIONS

Based upon the radiated measurements we find that this equipment is within the limits of the IC Rules RSS 210 / FCC Rules Part 15 Subpart C. All results are based on a test of one sample, and represent other production units, only in as much as a sample represents other production units. If any significant changes are made to the unit, the changes shall be evaluated and a retest may be required.

#### NOTES (Special conditions unique to this test)

Testing was only carried out on the intentional radiation and related spurious and harmonic emissions under the scope of this investigation.

Conducted emission measurements and a radiated investigation of the digital portion of the device were carried out by Diversified Technologies.

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## TEST PROCEDURES

### 1. TEST EQUIPMENT

- A. HP 8593E (9 kHz - 26.5 GHz) Spectrum Analyzer, S/N 3829A03887.  
Calibration Date 1-17-2005, calibrated annually.
- B. Com-Power Biconilog Antenna, Model AC220, S/N 25509.  
Calibration Date 7-16-2004, calibrated annually.
- C. Electro-Metrics Double Ridged Guide Antenna, Model EM-6961, S/N 6337.  
Calibration Date: 7-30-2004, calibrated annually.
- D. Com-Power Double Ridged Guide Antenna, Model AH840, S/N 3075.  
Calibration Date: 7-30-2004, Calibrated annually.
- E. HP 1 - 26.5 GHz Preamplifier, Model 08449B, S/N 3008A01323.  
Calibration Date: 8-3-2004, calibrated annually.

### 2. FREQUENCY RANGE TO BE SCANNED.

- A. Radiated Test from 30 MHz to 40 GHz (or the 10<sup>th</sup> harmonic of the highest frequency whichever is lower).

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### 3. TEST PROCEDURES.

#### **Radiated test procedure:**

The EUT, associated cables and peripheral devices are placed on the supporting table and any support equipment is placed off the site. The EUT is turned on and any necessary operating or test software installed and allowed to warm up. The EUT is pre-scanned in our ferrite tile lined chamber where it is rotated 360 degrees and examined in both horizontal and vertical polarization, the equipment was examined in three orthogonal planes, examined at 85 and 115 percent of input voltage or if battery operated new batteries were used. all emission frequencies are identified and recorded. The EUT is then moved to the OATS and the frequency band from 30 MHz to 40 GHz is scanned, all frequencies identified in the chamber are investigated, as well as harmonic frequencies of the EUT. When an emission is found the emission is maximized by varying the bundle position of the connecting cables, the antenna height, the antenna polarization (vertical and horizontal) and the table orientation (360 degrees). The maximum reading is recorded and the next signal is searched for.

All measurements are made according to the procedures defined in:  
"ANSI C63.4-1992 Standard Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronics Equipment in the Range of 9 kHz to 40 GHz, American National Standard for (ISBN 1-55937-215-5).

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### RSS 210 TEST LIMITS

1. RSS 210 Section 6.2.2, Table 3 Radiation Limits (Quasi-Peak):  
FCC Part 15.209, 15.235, 15.249 Radiation Limits (Quasi-Peak):

Frequency MHz	Distance meters	Limit dBμV/m	Limit μV/m
1.705 - 30	30	29.5*	30*
30 - 88	3	40.0	100
49.82 - 49.90	3	80.0*	10,000*
88 - 216	3	43.5	150
216 - 960	3	46.0	200
902 - 928	3	94.0	50,000
2400 - 2483.5	3	94.0	50,000
960 - 1000	3	54.0	500
1000 - 40000	3	54.0*	500*

\*NOTE: Average Limits

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### TEST FACILITY DESCRIPTION

Compliance Worldwide is located on 357 Main Street in Sandown, New Hampshire. The conducted and radiated test sites, located at C.W. are used for Federal Communications Commission (FCC) testing and Industry Canada Testing. A site description is on file with the FCC in Columbia, MD USA. Site information is also on file with Industry Canada, anyone wishing to review this Test Facility Description is referred to file number **IC 3023**. This is currently on file at Industry Canada, 1241 Clyde Avenue, Ottawa, ON K2C 1Y3.

The radiated site is a 3/10 meter indoor site with an enclosure for the product and a basement for the personnel, support equipment and test equipment.

The conducted site is part of a 16' x 20' x 12' ferrite tile chamber and uses one of the walls for the vertical metal wall required by EN 55022.

Both sites are designed to test products or systems 1.5 meter x 1.0 meter, floor standing or table top.



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**TEST SET UP  
AND  
PERIPHERAL CONNECTION INFORMATION**



EUT

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PLEASE NOTE - EUT (equipment under test) is OPL 9724 3 channel video baby monitor.

The cables directly connected to this equipment are listed below.

No cables were associated with this test.

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### **RADIATED TEST RESULTS**

Frequency Range: 30 - 25,000 MHz.

Measurement Distance: 3.0 Meters.

Bandwidth: 120 kHz, Per ANSI C63.4-1992.\*

Detector Functions: Peak, Quasi Peak, Average

Video Filter: 300 kHz

Table Height: 0.8 meters

Antenna Height Variation: 1 - 4 Meters.

Horizontal and Vertical Polarization Measurements Taken.

\*Measurement Bandwidth is 1 MHz above 1 GHz

**PLEASE SEE NEXT PAGE FOR RADIATED TEST DATA**

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### Radiated Tabular Data

Data was taken at 1 Meter measurement distance.

Pol. (H/V)	Frequency (GHz)	Peak Amplitude (dBuV/m)	Avg Limit (dBuV/m)	Peak Margin (dBuV/m)
V	7.4073	50.31	64	-13.69

All other spurious were greater than 15dB below the limit using a peak detector.

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**RADIATED OUTPUT POWER & OCCUPIED BANDWIDTH TEST RESULTS**

Frequency Range: 2400 - 2483.5 MHz.

Measurement Distance: 3.0 Meters.

Bandwidth: As Noted, Per ANSI C63.4-1992.

Detector Functions: Peak, Quasi Peak, Average.

Video Filter: as shown

Table Height: 0.8 meters

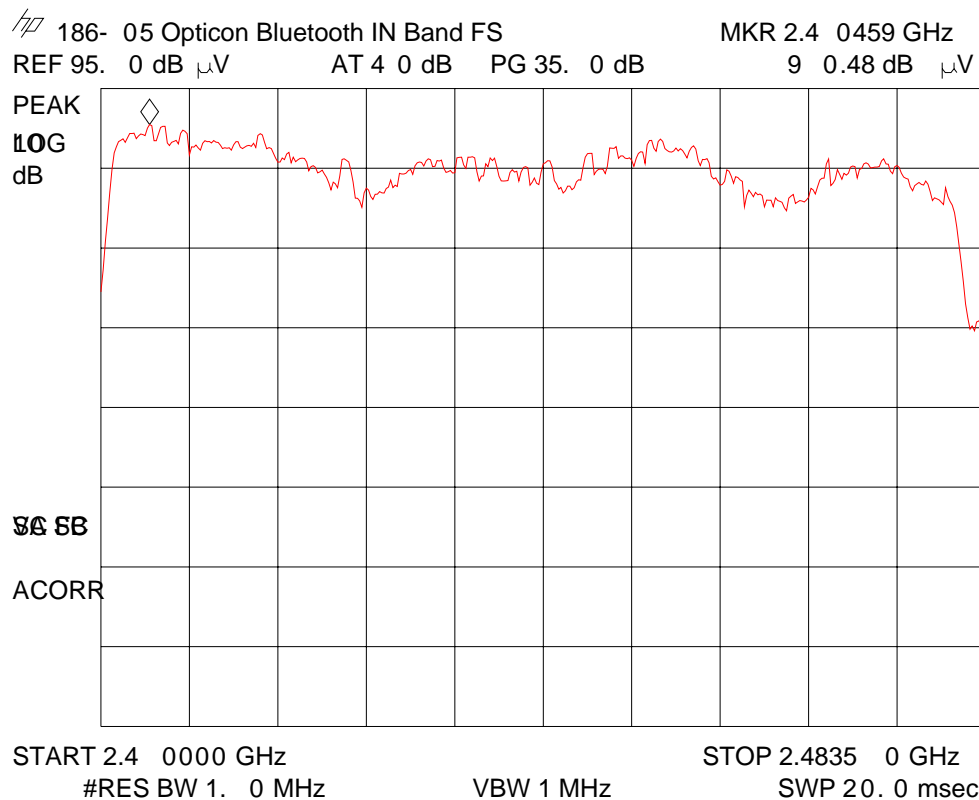
Antenna Height Variation: 1 - 4 Meters.

Horizontal and Vertical Polarization Measurements Taken, Worst Case Reported.

**PLEASE SEE NEXT PAGE(S) FOR OCCUPIED BANDWIDTH RADIATED TEST DATA**

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**Output Power Plot**  
(at max. modulation EUT transmission is within the band)

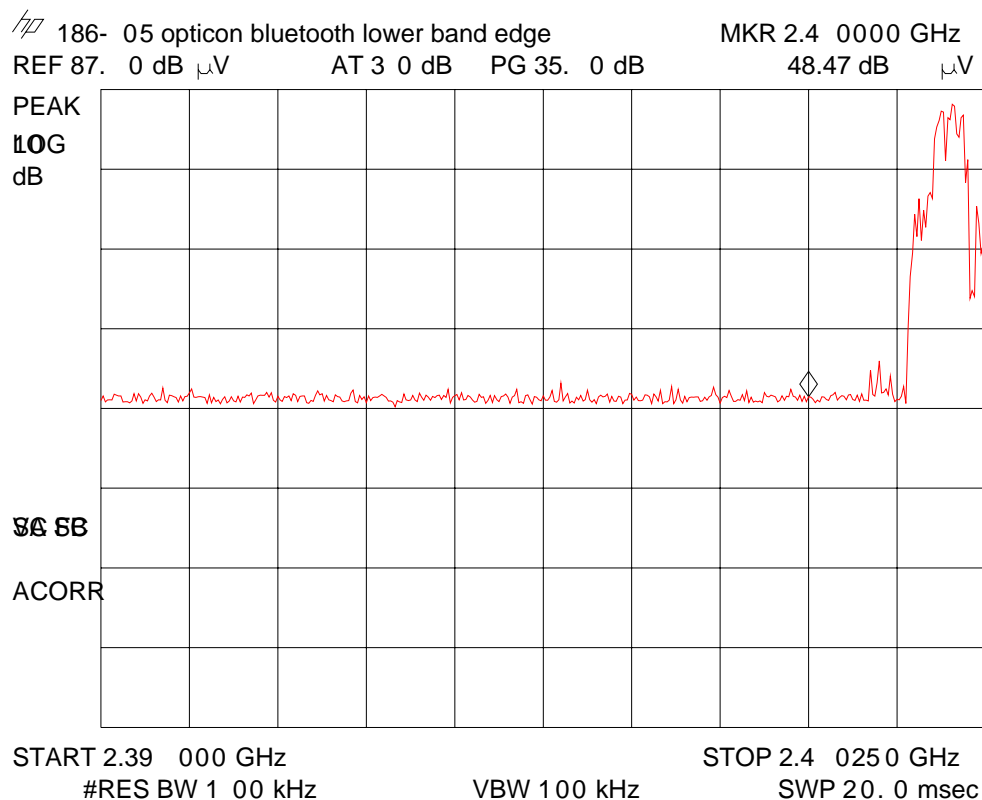


Frequency (MHz)	Pol. (H/V)	Peak Amplitude (dBuV/m)	Avg Limit (dBuV/m)	Peak Margin (dBuV/m)
2404.59	V	90.48	94.0	-3.52

Plot show EUT emission maximized and then max held until trace stabilized.

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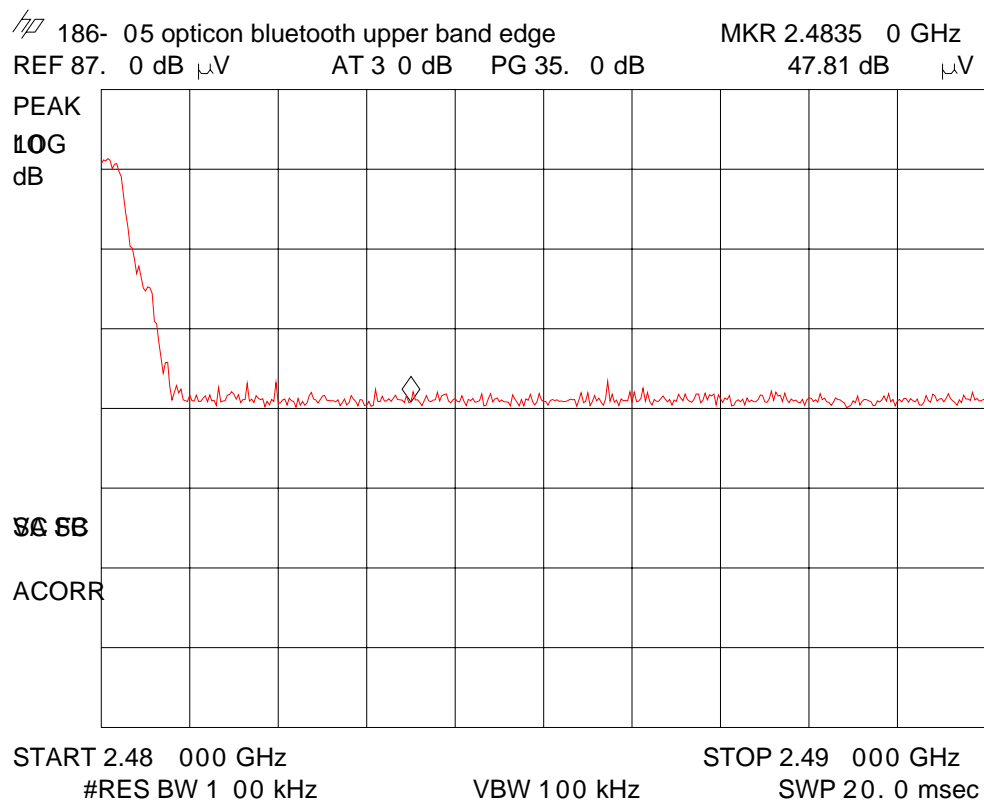
**Lower Band Edge**  
(at max. modulation EUT transmission is within the band)



Marker is at the band edge 2400MHz, the limit is 54 dBuV/m at 3m, EUT meets this limit by 5.53dB using a peak detector.

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**Upper Band Edge**  
(at max. modulation EUT transmission is within the band)



Marker is at the band edge 2483.5MHz, the limit is 54 dBuV/m at 3m,  
EUT meets this limit by 6.19dB using a peak detector.



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#### NOTES AND COMMENTS

(Special conditions unique to this test)

Testing was only carried out on the intentional radiation and related spurious and harmonic emissions under the scope of this investigation.

Conducted emission measurements and a radiated investigation of the digital portion of the device were carried out by Diversified Test Technologies, Inc.

EUT was examined with and without its power supply/ charger base as well as in 3 orthogonal planes. Worst case is as shown in the setup photos.