

MEASUREMENT/TECHNICAL REPORT

FCC Part 15 Section 15-209-15.249

Datalogic

FCC ID: OMJ0002

June 7th, 2001

This report concerns (check one): Original grant ☒ Class II change ☐

Equipment type: CORDLESS BARCODE READER
(ex.: computer, printer, modem, etc.)

Deferred grant request per 47 CFR 0.457(d)(1)(ii)? yes ☐ no ☒

If yes, defer until: _____
date

Company Name agrees to notify the Commission by _____
date
of the intended date of announcement of the product so that the grant can be issued
on that date.

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1 GENERAL INFORMATION

1.1 Product Description

The EUT was a Datalogic GRYPHON M series cordless bar code reader. The unit is an hand held gun which uses a charge coupled device (ccd) to scan barcodes, then transmits the information to a base station using a radio link. The radio link operates at 910 MHz.

The device is therefore considered as an intentional radiator (CFR47 part 15 sub-section C – section 15.249) and also a class B digital device.

The EUT is powered from internal batteries and normally operates at some distance from the base station. The batteries may be recharged by placing the gun in the base station cradle. This report therefore covers both operating modes.

This EUT is produced in two versions:

- 1 **GRYPHON M200 910MHz USA** capable of decoding two dimensional pdf barcodes.
2. **GRYPHON M100 910MHz USA** capable to decode linear barcodes.

The main difference between the two versions is a memory integrated circuit present only in the first version and some components which differs the analog amplifier of the ccd output signal. Also they differs by the type of ccd sensor.

1.2 Related Submittal(s)/Grant(s)

FCC ID: OMJ0003

1.3 Tested System Details

The FCC IDs for all equipment, plus descriptions of all cables used in the tested system (including inserted cards, which have grants) are:

Model & Serial No.	FCC ID	Description	Cable Descriptions
GRYPHON M200 USA (1) S/n EMC-2001-120	OMJ0002	Gun	none
OM GRYPHON USA s/n EMC-2001-121	OMJ0003	Cradle	Unshielded power cord Shielded signal cable
FPS1 Model A30907G S/n 0399C	None	AC adapter for cradle	Unshielded power cords
Compaq Contura 430C S/n 7606HUC21843	CNT75MB2CC	Notebook	Unshielded power cord Shielded signal cables
Series 2862 S/n E4514234399T	None	AC adapter for notebook	Unshielded power cords
DM 119 S/n 3031602	DYKDM119	Printer, parallel I/F	Unshielded power cord Shielded signal cable

(1) EUT submitted for grant.

1.4 Test Methodology

Both conducted and radiated testing were performed according to the ANSI C63.4-1992 test procedures . Radiated testing was performed at an antenna to EUT distance of 3 meters.

1.5 Test Facility

TÜV QSL test site No. 3 (semi-anechoic chamber)

The semi-anechoic chamber test site and conducted measurement facility used to collect the radiated data are located at Via Montalenghe 12, Scarmagno, Italy. This site has been fully described in a report dated May 12, 2000 submitted to your office, and accepted in a letter dated May 30, 2000 (registration Number: 90860)

1.6 Test equipment list:

Test receiver/spectrum anal.	HP 8568B+QP adapter	s/n 2601A02134
Biconical antenna	Tensor 4104	s/n 2222
Log-periodic antenna	Electro-metrix LPA-25	s/n 1117
Spectrum analyzer	HP 8562A	s/n 3043A05627
Horn antenna	EMCO 3115	s/n 3572

3 SYSTEM TEST CONFIGURATION

3.1 Justification

The EUT was configured for testing in a typical fashion (as a customer would normally use it).

The two versions of Gryphon M have been prescanned :the unit GRYPHON M200 USA was producing the higher emission levels and therefore the full set of tests was performed on this unit.

IT has been tested first in stand alone mode, transmitting and receiving data from and to a remote OM GRYPHON USA (FCC ID: OMJ0003).

A Base/charger unit (FCC ID: OMJ0003) has been placed in the chamber, at a convenient distance, in order to operate the EUT, but not to interfere with testing.

Testing has also been performed with with the barcode reader placed in the base station cradle. This report also cover emissions of the barcode reader during charging by the base station.

Test conditions:

- a new battery has been installed
- modulation and operational frequency were fixed (no regulation are permitted by the operator or factory settings)
- during tests EUT has been rotate through the three ortogonal axes to determine which condition produces the highest emission with reference to the limits.

3.2 EUT Exercise Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the various system components in a manner similar to a typical use.

The EUT has been tested in continuous transmission of data in both direction from GRYPHON M200 USA to OM GRYPHON USA and return, in order to activate respectively the transmit and the receive section of EUT.

3.3 Special Accessories

None.

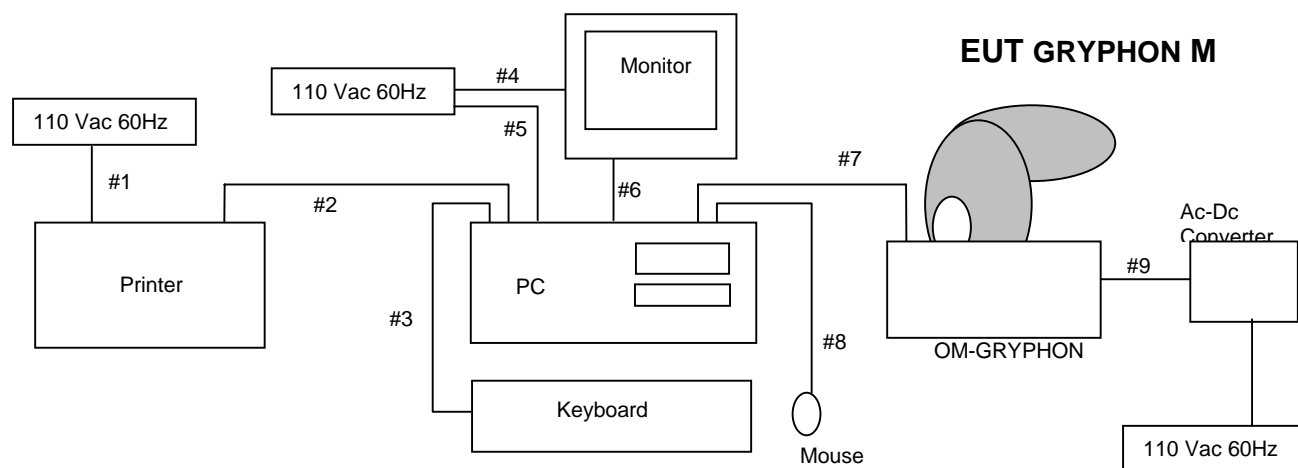
EUT is housed in a plastic box,
No interface cable are provided.

3.4 Equipment Modifications

To achieve compliance to Class B levels, no changes were made during compliance testing.

3.5 Configuration of the Tested System

Figure 3.1 Configuration of the Tested System



- #1 : Power unscreened printer cable
- #2 : Screened Printer Cable
- #3 : Screened Keyboard Cable
- #4 : Unscreened Monitor Power Cable
- #5 : Unscreened PC Power Cable
- #6 : Screened Video Cable
- #7 : 2 m screened cable from cradle to serial port
- #8 : Screened Mouse Cable
- #9 : 1.5 m unscreened power cable

5 CONDUCTED AND RADIATED MEASUREMENT PHOTOS

- **Complete configuration**

See attached file : setup_photo.doc

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- **Stand alone equipment**

See attached file : setup_photo.doc

6 CONDUCTED EMISSION DATA

6.1 Tests of the worst case configuration.

The conducted tests are performed with a receiver in quasi-peak mode.

Tested on OM GRYPHON USA power line cable.

	Frequency (MHz)	Measured* (dBμV)	Limit (dBμV)
neutral	0.46	35	48
	0.7	37	
	0.8	38	
	0.94	36	
	20.5	36	
	25.2	36	
line	0.46	34	48
	0.7	36	
	0.8	37	
	0.94	35	
	20.5	36	
	25.2	37	

* All readings are quasi-peak

Test Personnel:

Tester Signature  Date March 12, 2001

Typed/Printed Name Giuseppe MECCHIA

7 RADIATED EMISSION DATA

- frequency range 30 MHz – 10 GHz (10th Harmonic of highest fundamental frequency generated).

7.1 Tests of the worst case configuration

The following data list the significant emission frequencies, measured levels, correction factors (including cable and antenna corrections), the corrected reading, plus the limit. Field strength calculation is given in paragraph 7.2.

Judgement: Passed by 2.5 dB

Spurious emissions (limits according to section 15.209).(complete configuration)

Frequency (MHz)	Polarity (V/H)	Receiver* Reading (dBμV)	Correction Factor (dB/m)	Corrected Reading (dBμV/m)	3 Meter Limit (dBμV/m)
121.1	V	25.4	13.2	38.6	43.5
130.6	V	27	14	41	43.5
233.6	H	26.6	14.3	40.8	46
300	H	25.3	17.8	43.1	46
400	H	22.6	20.1	42.7	46
467	H	20.8	22	42.8	46

Fundamental and harmonics (limits according to section 15.249)
(GRYPHON M 200 USA stand alone equipment)

910	H	59.6	30.4	90	94
1820	H	19.8	26.9	46.7	54
2730	H	14.4	29.4	43.8	54
3640	H	14.7	31.1	45.8	54
4550	V	0.2	35.5	35.7	54

* below 1 GHz readings are quasi-peak, with an IF bandwidth of 120 kHz,
above 1 GHz are peak with an IF bandwidth of 1 MHz.

Test Personnel:

Tester Signature



Date March 12, 2001

Typed/Printed Name Giuseppe MECCHIA

7.2 Field Strength Calculation

7.2.1 The field strength is calculated by adding the Antenna and Cable Factor to the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF$$

where

FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Attenuation Factor

Assume a receiver reading of 27 dB μ V is obtained. The Antenna and Cable Factor of 14 is added, giving a field strength of 41 dB μ V/m. The 41 dB μ V/m value was mathematically converted to its corresponding level in μ V/m.

$$FS = 27 + 14 = 41 \text{ dB}\mu\text{V/m}$$

$$\text{Level in } \mu\text{V/m} = \text{Common Antilogarithm } [(41 \text{ dB}\mu\text{V/m})/20] = 112 \mu\text{V/m}$$

1.6 Test equipment list:

Description	Model	serial No.	Cal due date
Spectrum analyzer	HP 8568B+QP adapter	s/n 2601A02134	10/01
Biconical antenna	Tensor 4104	s/n 2222	03/02
Log-periodic antenna	Electro-metrix LPA-25	s/n 1117	03/02
Spectrum analyzer	HP 8562A	s/n 3043A05627	10/01
Horn antenna	EMCO 3115	s/n 3572	11/01