MEASUREMENT/TECHNICAL REPORT

FCC Part 15 Sections 15.207-15.209-15.249

Datalogic

FCC ID: OMJ0007

June 16th, 2003

This report concerns (check one): Original grant __X__ Class II change____

Equipment type: RADIO BASE STATION (ex.: computer, printer, modem, etc.)

Deferred grant request per 47 CFR 0.457(d)(1)(ii)? yes _____ no __X__

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.

Report prepared by: Giuseppe MECCHIA

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1 GENERAL INFORMATION

1.1 Product Description

OPERATING DESCRIPTION of STARGATE™ RF910MHz BASE STATION

STARGATE™ is a Radio Base Station that enables a 910 MHz wireless network allowing data transmission between several Datalogic RF devices and an host system (standard PC, Windows based).

The media access protocol used to manage the shared RF channel is called Carrier Sense Multiple Access Collision Avoidance (CSMA/CA). The CSMA/CA protocol manages the data transmission between STARGATE™ and the radio device. Once the sequences are received by STARGATE™, the base station stores them in its internal memory until they are requested by the PC.

STARGATE™ allowed to build point-to-point configuration (in RS232 connection) or multipoint configuration (in RS485 network connection with roaming).

STARGATE™ can be connected to the PC through an RS232 or an RS485 line. If the required coverage area is supplied by a single STARGATE™, it is possible to connect it to a PC through an RS232 interface (default connection). The hardware system is composed by a PC, one STARGATE™, a serial cable, a power supply connected to the base station and a given number of RF devices.

Several STARGATE™ base stations can be chained together in an RS485 network can be connected. The 485 network is connected to the PC through a commercial RS232/485 converter.

1.2 Related Submittal(s)/Grant(s)

None.

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
STARGATE RF910MHz (1) s/n EMC03-192	**OMJ0007**	**Radio base station**	**Unshielded power cord Unshielded signal cables**
Datalogic PG 220 S/n none	None	AC adapter for stargate	Unshielded power cords
GRYPHON M200 USA S/n none	OMJ0002	Gun	none
STARGATE s/n none	OMJ0007	Auxiliary Radio base station RS 485 I/F	Unshielded signal cables
Dell Latitude Mod. PP01L S/n 06P823-48155-244-2320	DoC	Notebook	Unshielded power cord Shielded signal cables
Dell AA20031 S/n CN-09364U-16291-225-02X6	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-anechoich 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 14, 2003 submitted to your office, and accepted in a letter dated May 16, 2003 (registration Number: 90860)

1.6 Test equipment list:

Description	Model	serial No.	Cal due date
Test receiver	Rohde & Sch.ESH3	s/n 881364/012	10/03
Spectrum analyzer	HP 8568B+QP adapter	s/n 2601A02134	04/04
Spectrum analyzer	HP 8562A	s/n 3043A05627	10/03
LISN	Schwarzbeck NNLA8120	s/n 8120471A	02/04
Biconical antenna	Tensor 4104	s/n 2222	04/04
Log-periodic antenna	Electro-metrix LPA-25	s/n 1117	04/04
Double ridged guide horn antenna	EMCO 3115	s/n 3572	11/03

2 PRODUCT LABELING

See exhibit

3 SYSTEM TEST CONFIGURATION

3.1 Justification

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

In order to simulate a real application, its interface port has been connected to a Personal Computer (Notebook); two conditions have been scanned:
- EUT connected to the serial port of the PC (RS 232) and
- EUT connected tthrough a RS485/232 adapter to a serial port of a PC.

Worst case was RS 485 interface, therefore final testing was performed in this way; an auxiliary Stargate was connected to the second RS 485 port of EUT in order to simulate a complete network connection.
EUT was placed in a vertical position since this position generates the highest emissions, it is also the most common installation used: hanged to a wall.
A cordless barcode reader (FCC ID: OMJ0002) has been placed in the chamber, at a convenient distance, in order to operate the EUT, but not to interfere with testing.

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.

Note:
- ✓ transmission frequency was fixed
- ✓ modulation was fixed

(no regulation are permitted by the operator or factory settings)

Software used:
- ✓ In normal operation, STARGATE is waiting for a message from radio link.
- ✓ When a correct radio frame is received, cradle replay with an acknowledge message and send the data received via the output interface to a personal computer.

3.3 Special Accessories

None.

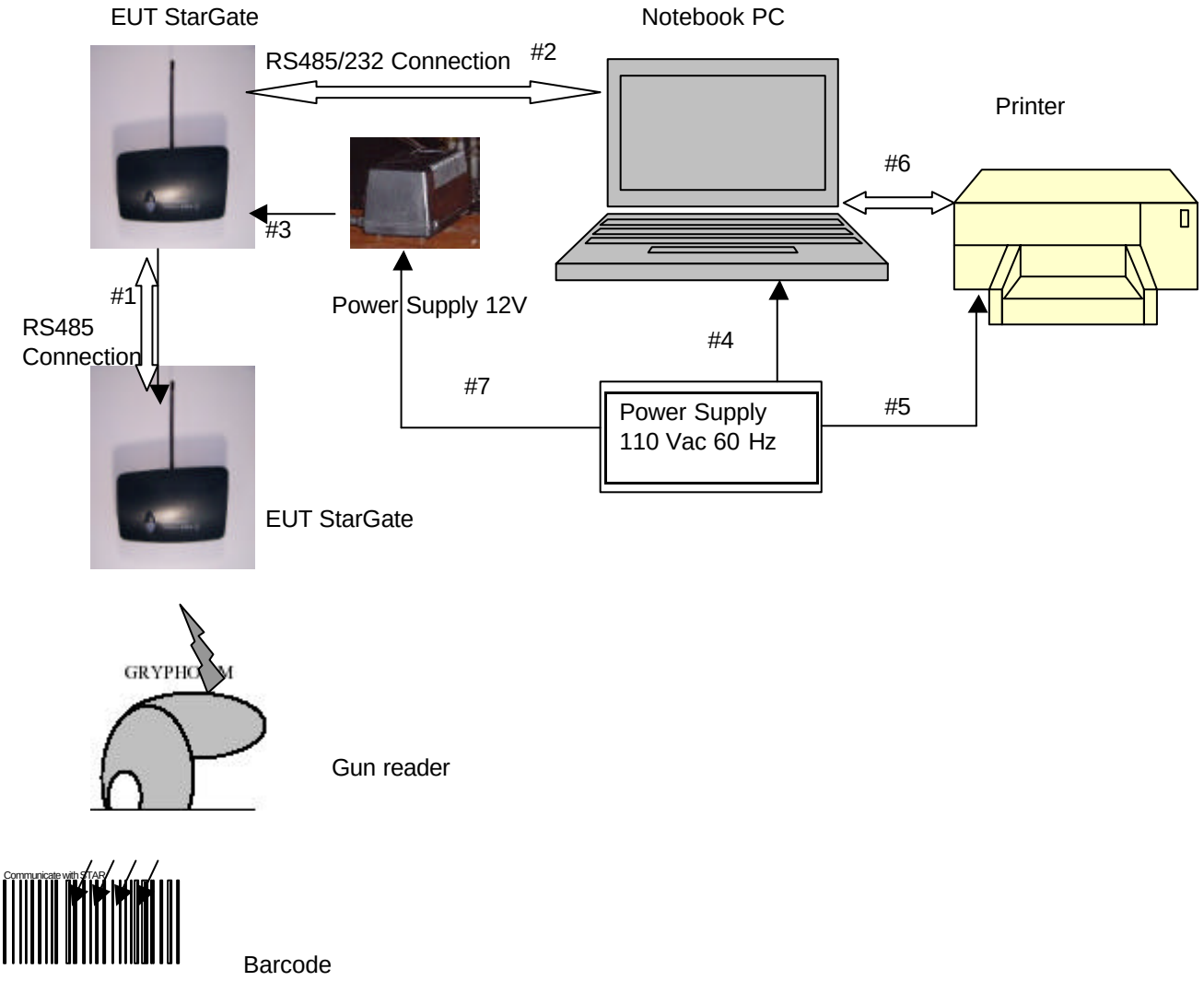
As shown in Figure 3.1 all interface cables used for compliance testing are unshielded as normally supplied by Datalogic Company. These cable models and part numbers are marketed with the Datalogic peripherals to the end users, and appear on related product price lists supplied to customers.

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 2 m. unscreened RS485 connection cable from RS485 Stargate port to other RS485 Stargate port
#2 Unscreened RS485/RS232 connection cable from RS485 Stargate port to Host serial port
#3 Power unscreened Stargate cable
#4 Power unscreened PC cable
#5 Power unscreened printer cable
#6 Screened printer cable
#7 Unscreened Power supply cable

4 BLOCK DIAGRAM(S) OF THE EUT

See exhibit

5 CONDUCTED AND RADIATED MEASUREMENT PHOTOS

See exhibit

6 CONDUCTED EMISSION DATA – section 15.207

6.1 Tests of the worst case configuration.

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

	Frequency (MHz)	Measured* (dBµV)	QP limit (dBµV)	AV Limit (dBµV)
Neutral	0.15	46	66	56
	0.25	43	61.6	51.6
	0.29	43	60.4	50.4
	0.57	43	56	46
	3.14	33	56	46
	8.1	41	60	50
Line	0.15	45	66	56
	0.25	44	61.6	51.6
	0.29	42	60.4	50.4
	0.57	42	56	46
	3.14	32	56	46
	8.1	40	60	50

* All readings are quasi-peak

Test Personnel:

Tester Signature  Date May 28, 2003

Typed/Printed Name Giuseppe MECCHIA .

7 RADIATED EMISSION DATA – sections 15.209 and 15.249

- 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 strenght calculation is given in paragraph 7.2.

Judgement: Passed by 1 dB

Spurious emissions (limits according to section 15.209).

Frequency (MHz)	Polarity (V/H)	Receiver* Reading (dBµV)	Correction Factor (dB/m)	Corrected Reading (dBµV/m)	3 Meter Limit (dBµV/m)
125.9	V	29	13.5	42.5	43.5
143.9	V	25.9	14.7	40.6	43.5
265.6	H	24.9	16.3	41.2	46
309.6	H	27	18	45	46
353.6	H	22.3	18.5	40.8	46
899.3	V	11.7	30.1	41.8	46

Fundamental and harmonics (limits according to section 15.249).

910	V	59.6	30.4	90	94
1820	V	19.6	30	49.6	54
2730	V	14.3	32.9	47.2	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 _ G. Mecchia Date May 27, 2003

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 dBμV is obtained. The Antenna and Cable Factor of 18 is added, giving a field strength of 45 dBμV/m. The 45 dBμV/m value was mathematically converted to its corresponding level in μV/m.

FS = 27 + 18 = 45 dBμV/m

Level in μV/m = Common Antilogarithm [(45 dBμV/m)/20]= 178 μV/m

8 PHOTOS OF TESTED EUT

See exhibit

User Manual

See exhibit