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Client: Fleetwood Group, Inc.
Model: USB240D
Standards: FCC 15.249/IC RSS-210
FCC/IC ID: FBRUSB240D/1859A-USB240D
Report #: 2008013

Appendix L: Manual

Please refer to the following pages.

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USER MANUAL

USB240D RF Module



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Revision History:

Rev	Date	Description
A	1/14/2008	Original

Table of Contents

1.0 USB240D RF MODULE.....	4
1.1 DESCRIPTION	4
1.2 FCC, IC, AND EU COMPLIANCE INFORMATION	4
1.3 STANDARDS AND GUIDELINES	4
1.4 FCC/IC COMPLIANCE	5
1.5 EU COMPLIANCE	5
1.6 EXPLANATION OF EU RESTRICTIONS	5
1.7 TECHNICAL SPECIFICATIONS.....	6

1.0 USB240D RF Module

1.1 Description

The USB240D is a low power wireless response base module. The USB240D module is used to interact with an audience so they can provide real time feed back to questions. It communicates at 2.4GHz, GFSK to multiple keypads. The base module polls keypads, and displays result.

The overall operation of the USB240D module is controlled by a microcontroller. This microcontroller is powered from the USB interface through a 3V linear regulator, and uses a 20 MHz crystal oscillator. The microcontroller handles control of the RF communications, LEDs, and USB interface.

RF communications use the Nordic 2.4 GHz transceiver. The Nordic chip uses a 16 MHz reference crystal oscillator for TX/RX, and is also powered from the 3V linear regulator. The Nordic transceiver uses an integral inverted F antenna on the PCB board.

1.2 FCC, IC, and EU Compliance Information

N240D RF Module

Responsible Party Pertaining to the Declaration of Conformity

Fleetwood Group, Inc.
11832 James Street
Holland, MI 49424
Attn: Product Service Coordinator
Phone: 888-467-3759

1.3 Standards and Guidelines

This device complies with the following European Directives and USA/Canada Regulations:

- Directive 1999/5/EC on radio equipment and telecommunication terminal equipment and the mutual recognition of their conformity
- Directive 2006/95/EC on the harmonization of laws of member states related to electrical equipment designed for use within certain voltage limits
- The USA Federal Communications Commission (FCC) Rules and Regulations
- Industry Canada Rules and Regulations

This device complies with the following national and international standards:

- EN 301 489-1 V1.6.1: 2005: EMR; EMC standard for radio equipment and services. Part 1: Common technical requirements.
- EN 301 489-3 V1.4.1: 2002 Part 3: Specific conditions for SRD operating on frequencies between 9 kHz and 40 GHz
- EN 300 440-1 V1.4.1: 2007: EMR, SRD. Radio equipment to be used in the 1 GHz to 40 GHz frequency range. Part 1: Technical characteristics and test methods
- EN 300 440-2 V1.2.1: 2007: Part 2: Harmonized EN under article 3.2 of the R&TTE Directive
- EN 301 489-17 V1.2.1: 2002: Part 17: Specific conditions for 2.4 GHz wideband transmission systems and 5 GHz high performance RLAN equipment.
- EN 300 328 V1.7.1: 2006: Electromagnetic compatibility and Radio spectrum Matters (ERM);Wideband transmission systems; Data transmission equipment operating in the 2,4 GHz ISM band and using wide band modulation techniques.
- EN 60950-1: 2006: Information Technology Equipment- Safety. Part 1: General requirements.
- FCC Part 15B, 15.247: 10-01-2006: Radio Frequency devices: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.
- FCC Part 15.249: 10-01-2006: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz.

- IC RSS-210 Issue 7: 2007: Low power license-except radio-communications devices (all frequency bands): Category 1 equipment.

1.4 FCC/IC Compliance

This device complies with Part 15 of the FCC Rules and RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions: (1) this device may not cause interference and (2) this device must accept any interference, including interference that may cause undesired operation of the device. The user is cautioned that changes or modifications to the device that are not approved by the manufacturer could void the user's authority to operate the device.

1.5 EU Compliance

This device is a 2.4 GHz low power response system controller intended for residential and commercial use in all EU and EFTA member states except in Bulgaria, France, Italy, Luxembourg, Norway and Romania where restrictive use applies. See table below for explanation of restrictions.

1.6 Explanation of EU Restrictions

Country:	Restriction:	Reason/remark
Bulgaria		General authorization required for outdoor use and public service.
France	Outdoor use limited to 10 mW E.I.R.P. within the band 2454-2483.5 MHz. Derogation in French overseas departments of Guyane and La Réunion: outdoor use not allowed in band 2400-2420 MHz	Military Radiolocation and Fixed Service use
Italy		If used outside of own premises, general authorization is required.
Luxembourg	None	General authorization required for public service
Norway	Implemented	This subsection does not apply for the geographical area within a radius of 20 km from the centre of Ny-Alesund
Romania	On a secondary basis. Individual license required. T/R 22-06 not implemented	

Notice

The module may be susceptible to Electrostatic Discharge (ESD) and other similar fast transient events causing system interruption. Should system interruption occur, remove and replace battery to reset the module.

This equipment shall only be installed and operated with the antenna types shown in this application with gains not more than those shown for each of the antennas, respectively.

1.7 Technical Specifications

Enclosure

Symbol	Parameter	Value			Unit
		Min	Typ	Max	
d_l	Length	-	3.1	-	in.
d_w	Width	-	.9	-	in.
d_h	Height (Thickness)	-	..5	-	in.
Symbol	Parameter	Value			Unit
		Min	Typ	Max	
V_{DD}	Supply Voltage USB	4.75	5	5.25	V
$Op\ temp$	Operating Temperature	0		30	Deg C

2.0 Safety-related information

Safety of the RF Module could be violated if a user connects the EUT to a computer that:

- Has no approval in product safety.
- Provides an USB interface to the EUT that does not belong to the limited power source in the meaning of EN 60590-1.
- Has transients at the USB port for connection to the EUT that exceed 71 V peak.