

Gyration, Inc.



DE02559-001

Revision 1.0A DRAFT

Product Specification

RF-only Transceiver Dongle

(in GyroTransport plastic)

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1 Introduction

This document is the specification for the RF-only Transceiver dongle, built in GyroTransport plastic. This design is based off of the hardware design of the Gyration "Gen II" receiver but is placed in the small form factor of the GyroTransport transceiver. Some components changed from the Gen II design (smaller IC package) to allow the design to shrink in size. This transceiver design is intended to be used with (but is not limited to) the MusicLCD remote.

1.1 *Referenced Documents*

TBD

2 Transceiver External Controls and Displays

2.1 "Connect" (momentary push button)

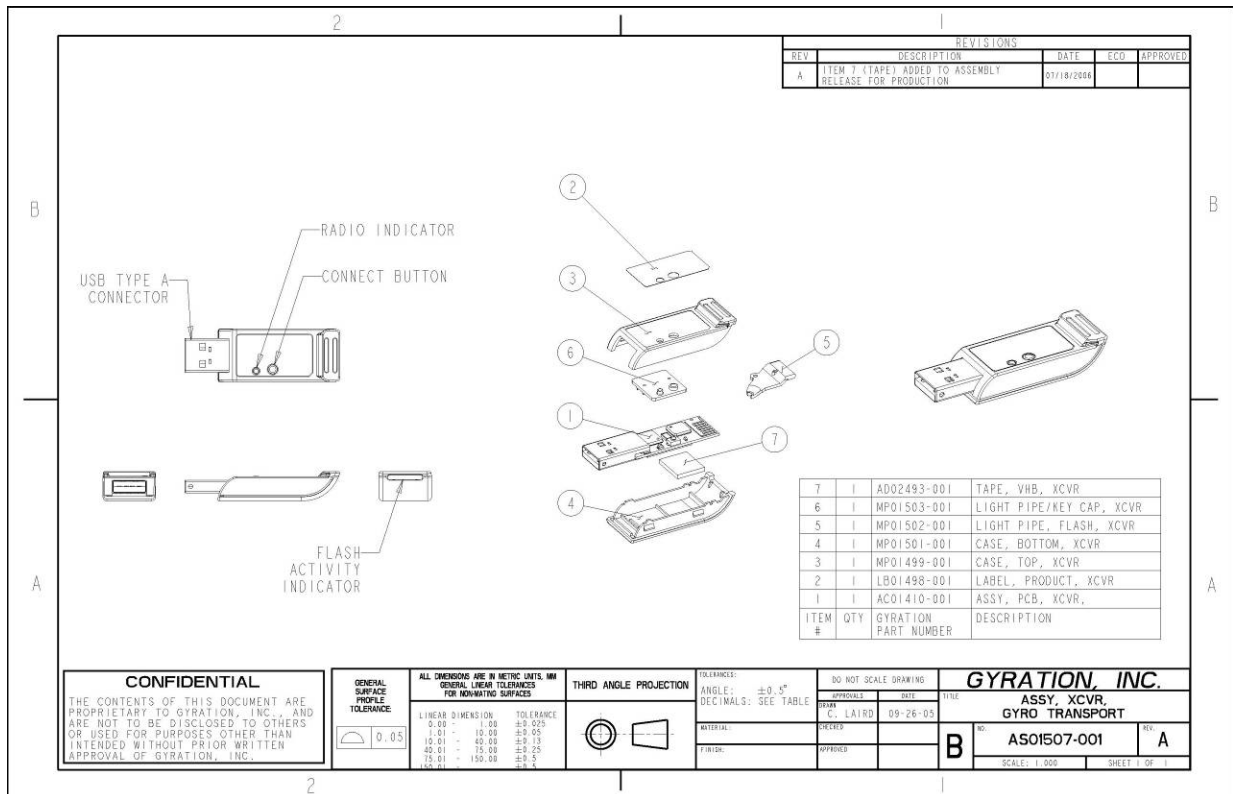
For engineering use only; not installed for production.

2.2 "Status" (LED, orange)

The LED indicates when there is radio traffic on this device.

3 Physical / Mechanical External – Plastic assembly

For reference only – mechanical drawing shown is for GyroTransport with Flash assembly



3.1 External – Plastic assembly – color definition

TBD

4 Functionality - Transceiver

4.1 USB Compatibility

The transceiver uses a standard USB Type A connector for connection to any standard USB port of a computer. The transceiver is a certified USB compatible 2.0 device, running at low speed. It is certified to run on Windows XP and XP Media Center operating systems. Vista-Compliance is TBD (as of August 31, 2006)

4.1.1 USB Wake from S3 State

When the host system has been configured to wake from the S3 state (Standby) from external device activity, the transceiver will produce a standard USB wake pulse (10 ms) on the D- data line upon reception of valid radio traffic (radio transmissions from bound units). This will wake the host system from Standby.

4.2 USB Enumeration

When the transceiver is plugged into the host system, it will be recognized and enumerated as a composite device; mouse and keyboard.

The Product ID code (PID) of this device is (TBD).

4.3 Functional Behavior Specifications:

The functional behavior of this product is completely specified in the following table:

The transceiver is a USB 2.0 device that enumerates as follows:

- I. Composite device with:
 - a. HID mouse - interrupt type at 10 ms intervals interfaced to
 - i. Generic desktop page (01)
 - ii. Consumer page (0C)
 - iii. Media Center page (FFBC)
 - b. HID keyboard - interrupt type at 10 ms intervals interfaced to
 - i. Generic desktop page (01)
 - ii. Consumer page (0C)

4.4 Connectivity

4.4.1 Proximity Binding

The transceiver has a unique feature which allows it to automatically bind with a compatible device in close proximity, thereby avoiding the need to press a "connect" button on the actual transceiver. This feature enables users to pair devices by simply holding them close together. This proximity binding distance is approx 12 inches +/- 6 inches and could be fully adjustable in firmware for any application. The actual distance may vary based on the user's position relative to the computer.

The transceiver also has the capability to bind using the standard Gyration "connect" button method where a connect button on each of the connecting devices is pressed to initiate and complete a bind sequence. (the firmware in the transceiver has both algorithms).

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The physical plastic contains a hole for a connect button but can be covered with a product label if a proximity bind configuration is desired, thus saving the need for different plastic parts based on the bind algorithm chosen.

4.5 Multiple transceivers in a system

When multiple transceivers are installed by plugging them into different USB slots of the same computer, the following operation is noticed.

When both transceivers are proximity-bind transceivers:

When a proximity bind is attempted by moving 1 “proximity-bind enabled controller” (like a remote control) close to the computer, that controller may bind to any of the transceivers. The proximity bind algorithm relies on the controller and transceiver to be in close proximity and a bind process would be started with the closest combination at that time, and maybe wont be the pair desired. To prevent this, only 1 proximity-bind receiver should be installed in the computer at a time while doing the bind sequence.

When in a Dell XPS2010 system (Greenland with an internal daughter card)

TBD

4.6 Compatibility matrix with Gyration products

This is a matrix that describes the compatibility of this proximity-bind RF-only transceiver with all other Gyration products.

TBD

Gyration Go Mouse

Gyration Go Mobile keyboard

Gyration Go Full size keyboard

Gyration Media Center Universal Remote Control

Gyration GyroTransport

Gyration GyroTools software application

Dell MusicLCD Remote (RMT5)

Dell internal daughter card (Orc)

5 Windows Media Player Software Service Application

The Windows Media Player (WMP) software service application is an add-on user installed program that interfaces in the background to the Windows Media Player (version 10 or greater). This service application transfers music metadata information to the transceiver. This feature is extra on the transceiver and does not interfere with the standard USB operation of the transceiver. The transceiver would take that information and send it via the Gyration RF link to the attached MusicLCD remote and then would be displayed on the LCD screen of the remote. This information is only intended for the Gyration / Dell products that support the Music LCD.

The service application has the following features / limitations:

- limited to only the Windows Media Center Operating system.
- Installs into a default directory unless selected differently during installation
- During installation, has a selection for multiple languages
- Is supplied on a mini-CD or a downloadable application
- Full HTML-based help (TBD)

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6 Specifications

6.1 Material

The following materials are to be used for the product:

Part(s)	Material	Color
Printed circuit board (PCB)	FR4	Green

6.2 Labels and Graphics

The following labels and graphics shall be applied to the product:

Name of Label or Graphic	Material of Label or Graphic	Placement Example
External graphics	silkscreen	
External product label	Label	

6.3 Actuation Life Specification

The product should still function correctly after the following number of cycles of each of the following:

Description	Symbol	Min	Nom	Max	Units
Number of times the transceiver can be removed and inserted without degradation of electrical reliability. Standard USB Type A connector			TBD		cycles

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6.4 Absolute Minimum/Maximum Parameters

Description	Symbol	Min	Nom	Max	Units
Supply Voltage	+5.0V		-		Volts

6.5 Operating Voltage

Description	Symbol	Min	Nom	Max	Units
Supply Voltage	+5.0V				Volts

6.6 Current Consumption

Description	Symbol	Min	Nom	Max	Units
Operating Current Consumption: product functioning normally, but all LED's off (Supply V = 5.0V)	I_Oper	-			mA
Standby Current Consumption (when USB bus goes inactive) (Supply V = 5.0V)	I_Standby	-			mA
Current prior to enumeration (Supply V = 5.0V)	I_Prior	-			mA

6.7 Radio Frequency Specifications

The radio transceiver operates in the unlicensed Industrial, Scientific, and Medical (ISM) band.

- Frequency band: 2.4 GHz to 2.483 GHz
- Modulation type: Direct Sequence Spread Spectrum (DSSS)
- Maximum transmitted power: 0 dBm
- FCC emitter designator: 866KF1D
- Data code type: Pseudo Noise (PN) Code
- Antenna Type: integrated printed trace wiggler

7 Environmental Ratings and Reliability Test

7.1 Environmental Parameters

SYM	PARAMETER	MIN	TYP	MAX	UNITS
Toper	Operating Temp	0	25	85	°C
Tstore	Storage Temp	-40	-	70	°C
Hrel	Relative Humidity (non-condensing) @ 60°C	10	-	90	Percent
Ss	Shock Survivability	75	-	-	cm
Alt_op	Altitude, Operating	0	-	3,000	m
Alt_st	Altitude, Storage	0	-	12,000	m

The unit should not be subjected to direct sunlight for extended periods of time.

7.2 Reliability Test Criteria [A]

#	PARAMETER	MIN	Reference
A1	Appearance & Size	Any conspicuous deformation, crack, loose joint is not allowed.	
A2	Functional Test over Voltage Range	Unit must be functional over the voltage range: Operating Voltage	6.5
A4	Standby Current	Must meet I Standby	5.6
A5	RF Frequency	Must meet RF frequency specification	6.7

7.3 Electrostatic Discharge (ESD) Requirements

The transceiver will be tested at the system level to the CE testing specifications.

8 Compliance

The transceiver will comply with the following agencies and standards:

Agency or Standard	Reference
FCC (US)	15.247 (2400-2483.5)
IC (Canada)	RSS-210
CE (European Community)	EN 301 489-17 Emissions & Immunity EN 300 328 wireless testing EN 60950 Safety
RoHS	Will be independently verified
OTHER STANDARDS TO BE DETERMINED AT A LATER TIME	
Telec (Japan)	Japan Wireless Device
Australia / New Zealand	EMC
Singapore	Singapore Approval

9 Testing

9.1 Qualification / Reliability Testing

Any changes in design or selection of parts or component, or new design release, will require a qualification test with units built using finished (tooled) parts prior to placing in production. Tests will confirm that product will conform to performance and reliability requirements outlined in this specification. Minimum sample size is 10 units. Manufacturer must provide report of qualification /reliability test to Gyration.

9.2 Production Testing

Each unit is to be tested during the build process according to the applicable specification, approved by Gyration. Only units that conform to this document are shippable product.

9.3 Lot Sampling Testing

Lot sampling testing must be performed at the manufacturer according to the applicable specification, approved by Gyration, prior to shipment. Lot Sampling Testing will form the basis for acceptance or rejection of production lots.

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10 Packaging Requirements

10.1 Bulk Packaging Requirement

Manufacturer must propose design of bulk packaging for product. Design of bulk packaging must be approved by Gyration, and must pass 10.2 - Bulk Packaging Qualification Testing.

10.2 Bulk Packaging Qualification Testing

The design for Bulk Packaging Cartons should be qualified by the manufacturer by the following method: Each carton should be subjected to a six side/four corner drop test (1 meter) with no product damage. Manufacturer must provide report of qualification test to Gyration.

Cartons will be designed to withstand normal banding or strapping without damage when a band or strap is positioned at the midpoint of a longest edge. Minimum sample size for Bulk Packaging Testing is 5 cartons.

Bulk packaging diagram to be placed here

11 Revision History

Rev	Date	Description	Initials
1.0	0/28/06	Initial draft	BKL
1.0A	09/14/06	Initial draft - Special for CCS	GRD