



GT-Y3400 Installation Guide and User Manual

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SAMSUNG ELECTRONICS.LTD.

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1 Introduction

1.1 Overview

This manual is intended to be a complete technical reference and integration guide for the GT-Y3400 module product.

1.1.1 Product description

The GT-Y3400 module described in this manual are PCI Express Mini Cards support WWAN (UMTS/HSPA+/HSUPA & GSM/GRPS/EDGE) connectivity to SAMSUNG notebooks.

The module is manufactured and installed by SAMSUNG. It includes diversity receiver and equalization.

1.1.2 Key features and specifications

RF subsystem	-2G GPRS / EDGE / 3GPP WCDMA HSPA+/HSUPA
Platform	-ICERA Platform
Band	2G (850/900/1800/1900), 3G (BAND1/BAND2/BAND5/BAND8)
Size (mm)	- 30.0 x 26.8 x 4.72 mm
Weight (g)	-5.5g
Modem	-ICERA ICE8060T
Memory	-MCP 1Gb/512Mb (Nand/SDRAM)
RF	-ICERA ICE8260B
General Features	Mini PCI Express Card for Samsung Mini PC. (Half Type) GSM/GPRS/EDGE/UMTS/HSPA+ & HSUPA Support. Main Power is 3.3V and Rated Power Consumption is 900mA. UART, USB2.0 and Nexus IF Support (ICERA IF)
Modem	- High data rate (HSUPA 5.76Mbps, HSPA+ 21Mbps) - Dual antenna Rx diversity
Micro processor	- Embedded DXP Processor - Support Multi-mode EDGE,WCDMA,HSPA etc.
Interface	- High-speed USB functionality (2.0) - USIM controller - General Purpose I/O pins, UARTs.

2. Mechanical specifications

2.1 Specifications

2.1.1 Mechanical dimensions

Mechanical drawings of the GT-Y3400 module following one.

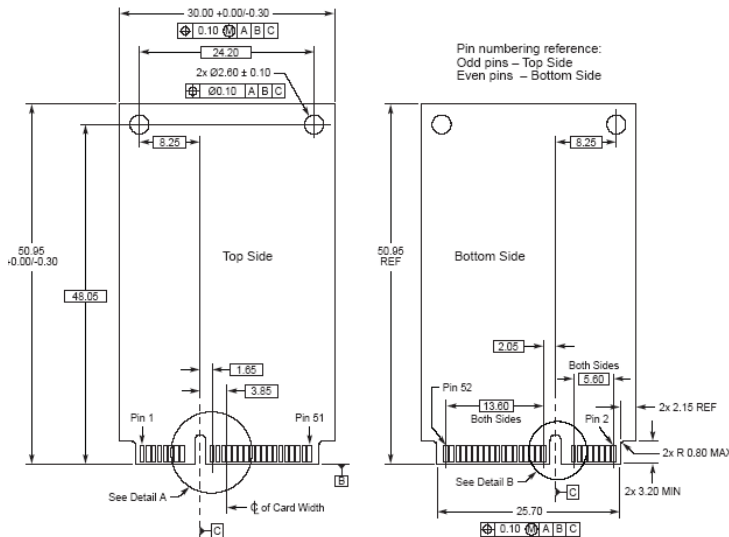


Figure 3. Mechanical dimensions of the GT-Y3400 module

2.1.2 Mini PCI Express interface

The card edge connector of the GT-Y3400 module complies with the PCI Express Mini Card specification and mates with a 52 pin Mini PCI Express connector.

This specification defines an implementation for small form factor PCI Express cards. The specification uses a qualified sub-set of the same signal protocol, electrical definitions, and configuration definitions as the *PCI Express Base Specification, Revision 1.1*. Where this specification does not explicitly define PCI Express characteristics, the *PCI Express Base Specification* governs.

The primary differences between a PCI Express add-in card (as defined by the *PCI Express Card Electromechanical Specification*) and a PCI Express Mini Card add-in card is a unique card form factor optimized for mobile computing platforms and a card-system interconnection optimized for communication applications. Specifically, PCI Express Mini Card add-in cards are smaller and have smaller connectors than standard PCI Express add-in cards.

Figure 4 shows a 52 pin PCI Express Mini Card connector.

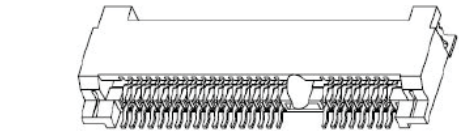


Figure 5 shows a conceptual drawing of this form factor as it may be installed in a mobile platform. Figure 5 does not reflect the actual dimensions and physical characteristics as those details are specified elsewhere in this specification. However, it is representative of the general concept of this specification to use a single system connector to support all necessary system interfaces by means of a common edge connector. Communications media interfaces may be provided via separate I/O connectors and RF connectors each with independent cables as illustrated in Figure 5.

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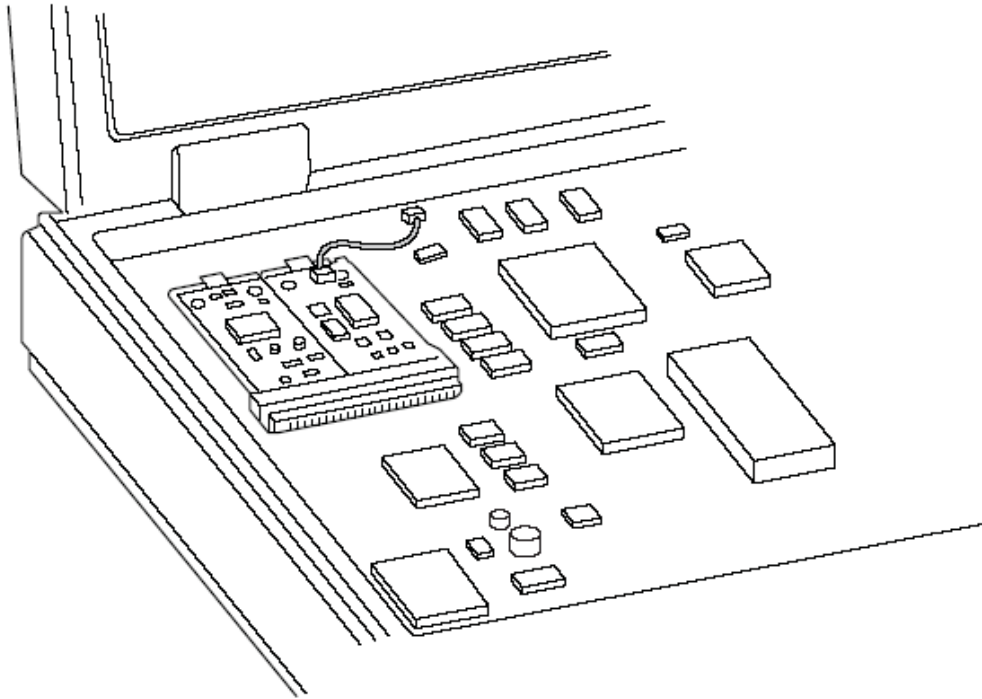


Figure 5. PCI Express Mini Card Add-in Card Installed in a Mobile Platform

2.1.3 Antenna connectors

The SMD connectors used for the antenna connections on the GT-Y3400 module are delivered by Hirose Ltd.

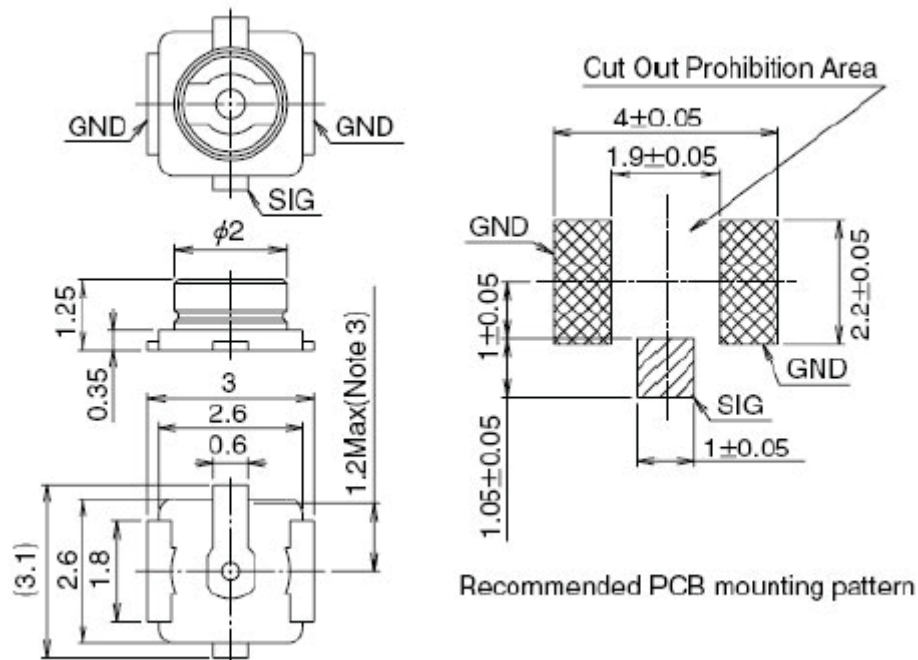


Figure 6. 2D Detail of the antenna connector

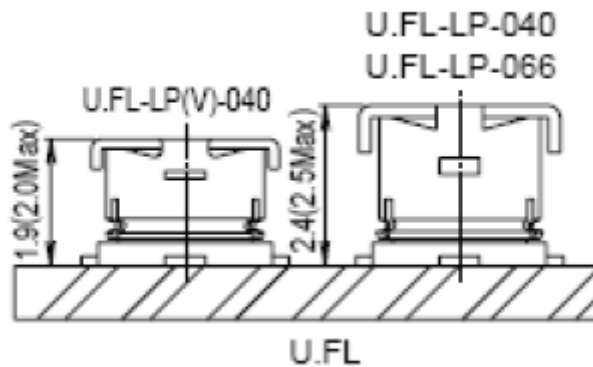


Figure 7. Detail of mated height

2.1.4 Connector location

The GT-Y3400 module supports receiver diversity. Both require a secondary antenna connection. The antenna connectors can be identified by the letters “M” for the main antenna and “D” for the Diversity, printed on the PCB.

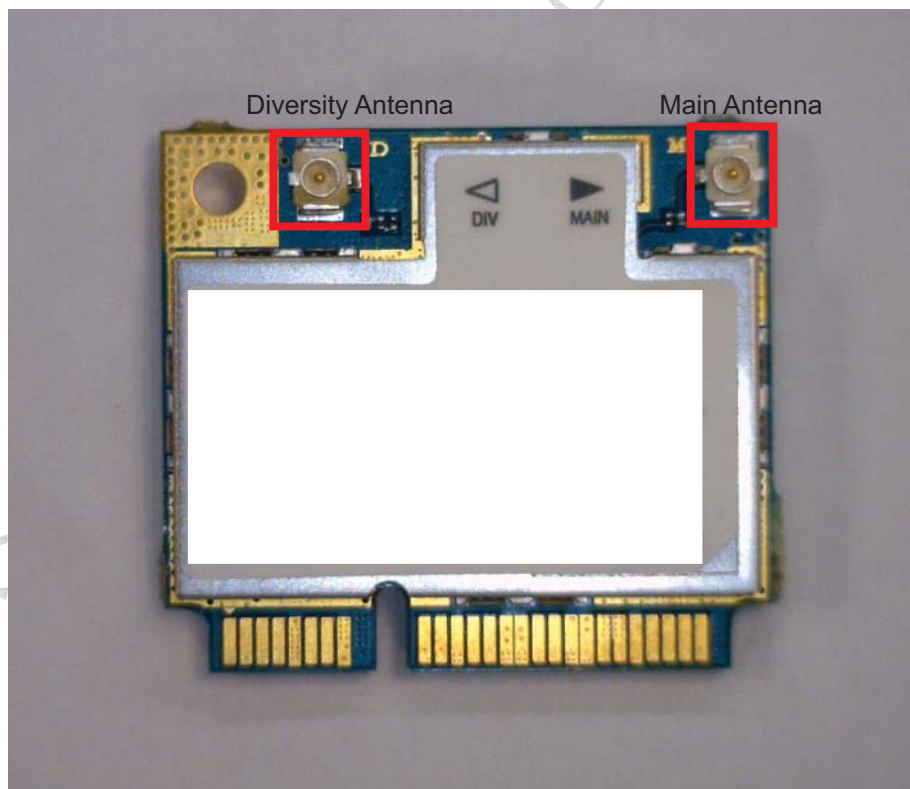


Figure 8. placement of the antenna connectors for the GT-Y3400

2.1.5 Conducted RF measurement

HSUPA / HSPA+ / UMTS

- . Multi-bands variants / 850 / 900 / 1900 / 2100 MHz
- . UMTS Power Class 3 (24 dBm)
- . HSUPA mode: 5.76 Mbps: category 6
- . HSPA+ mode: 21 Mbps: Category 14

EDGE / GPRS

- . 850 / 900 / 1800 / 1900 MHz
- . GSM Power Class 4 (32dBm) for 850 / 900 bands
- . GSM Power Class 1 (28.5dBm) for 1800 / 1900 bands
- . EDGE class E2 (26.5 dBm in 850 / 900 bands, 25.8 dBm in 1800 / 1900 bands)
- . GPRS / EDGE Multi-slot Class 12 (4 slots Rx, 4 slots Tx)

2.1.6 RFx information

The RF field strength of the wireless device or devices that may be embedded in your notebook are well below all international RF exposure limits as known at this time. Because the wireless devices (which may be embedded into your notebook) emit less energy than is allowed in radio frequency safety standards and recommendations, manufacturer believes these devices are safe for use. Regardless of the power levels, care should be taken to minimize human contact during normal operation.

As a general guideline, a separation of 20 cm (8 inches) between the wireless device and the body, for use of a wireless device near the body (this does not include extremities) is typical. This device should be used more than 20 cm (8 inches) from the body when wireless devices are on and transmitting.

This transmitter must not be collocated or operate in conjunction with any other antenna or transmitter.

The Part 15 radio device operates on a non-interference basis with other devices operating at this frequency. Any changes or modification to said product not expressly approved by Intel could void the user's authority to operate this device.

For more information, refer the attached document, please.

2.2 Antenna_Spec

2.2-1 Frequency Band

Service Band	GSM 850	GSM 1900	WCDMA 2.1G
Tx (MHz)	824 ~ 849	1850 ~ 1910	1920 ~ 1980
Rx (MHz)	869 ~ 894	1930 ~ 1990	2110 ~ 2170

2.2-2 Impedance

2.2.1 Normal Value

50Ω ± Normal

2.2.1 Measuring Method

The impedance over the frequency bands shall be as close as possible to 50Ω after matching. Both free space and talk position are considered.

2.3 VSWR

The impedance matching should be optimized in the more critical talk position.

2.3.1 Maximum values in free space

SERVICE	GSM 850		GSM 1900		WCDMA 2.1G	
	TX	Rx	TX	RX	Tx	Rx
VSWR	2.7	2.0	2.9	3.4	2.7	1.9

2.3.2 Measuring Method

A 50Ω coaxial cable is connected(soldered) to the 50Ω point, at the duplex-filter on the main PCB. The connection of the coaxial cable shall be done to introduce a minimum of mismatch. As much as possible the coaxial cable arrangement shall prevent influences from induced currents on the cable. In the other end, the coaxial cable is connected to a network analyzer. The measurement is performed at room temperature. The handset, including the PCB, must not in any significant way differ from the mass production, i.e. the antenna feeding network has to be equivalent to the feeding network in mass production. The specification shall be met in the entire frequency band.

2.4 Gain(dBi)

2.4.1 Measuring Method

The connection is done according to 2.3.2.

Radiation patterns are measured at 3 different Plane

The antenna measured according to the figure 1 below.

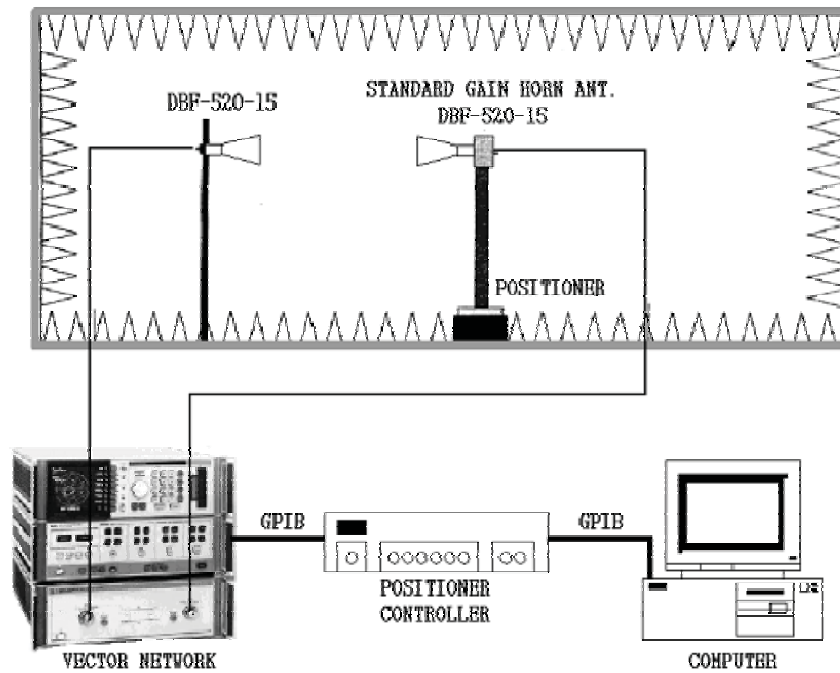


figure 1

2-4-2. Radiation Pattern Measure

Radiation Pattern Measure according to figure2(a), figure2(b),
Scale and Range set up 5dB ,30dB(each).

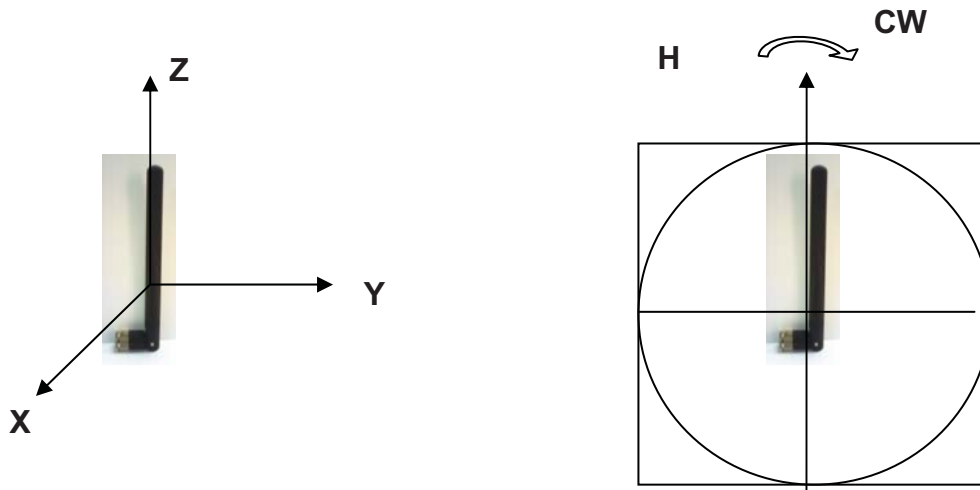


Figure 2 (a)

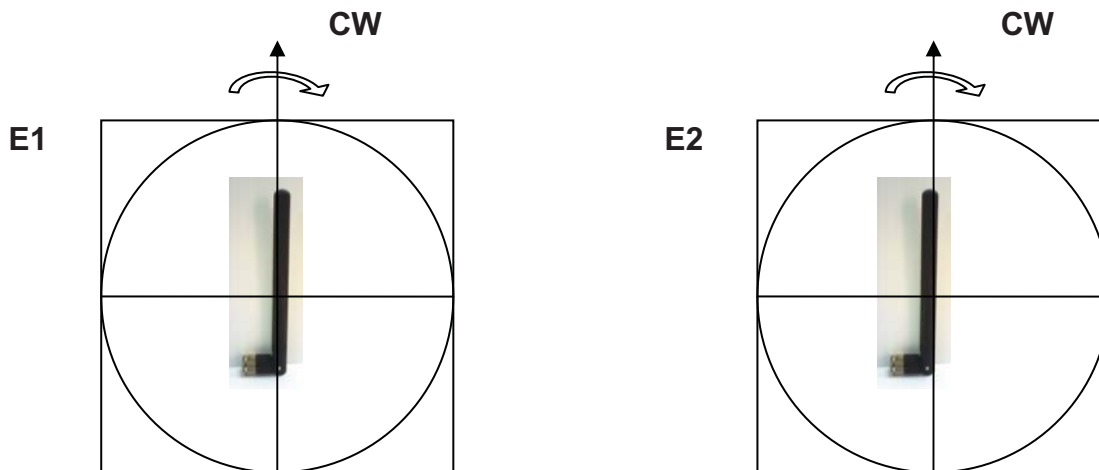


Figure 2 (b)

IC: 649E-GTY3400X

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.

Le present appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

*** Information for OEM integrator**

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user manual of the end product.

The user manual which is provided by OEM integrators for end users must include the following information in a prominent location.

To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter."

Label for end product must include "Contains FCC ID: A3LGTY3400X, IC: 649E-GTY3400X" or "A RF transmitter inside, FCC ID: A3LGTY3400X, IC: 649E-GTY3400X".

*** Information pour les OEM intégrateur**

L'intégrateur OEM doit être conscient de ne pas fournir des informations à l'utilisateur final concernant la façon d'installer ou de retirer ce module RF dans le manuel utilisateur du produit final.

Le manuel de l'utilisateur qui est fourni par les intégrateurs OEM pour les utilisateurs finaux doivent inclure les renseignements suivants dans un endroit bien en vue.

«Pour se conformer aux exigences de conformité d'exposition RF de la FCC, l'antenne utilisée pour ce transmetteur doit être installée pour fournir une distance de séparation d'au moins 20 cm de toute personne et ne doit pas être co-localisés ou fonctionnant en conjonction avec une autre antenne ou transmetteur. "

Étiquette pour le produit final doit inclure "Contient FCC ID: A3LGTY3400X, IC: 649E-GTY3400X" ou "A l'intérieur du transmetteur RF, FCC ID: A3LGTY3400X, IC: 649E-GTY3400X".