

RD-1/RD-2 Handling Guidelines for PC OEMs

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1 Introduction

The purpose of this guideline is to enable mechanical and electrical installation of the RD-1/RD-2 WWAN module into a host laptop with the minimum of risk of damage to the module. Possible misuse cases are identified and mitigation defined. Failure to observe these guidelines at all times during the unpacking, handling and assembly processes may result in avoidable damage to the module. This document provides the minimum handling requirements for satisfactory handling.

2 FCC part 15 notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: 1. This device may not cause harmful interference; and 2. This device must accept any interference received, including interference that may cause undesired operation. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: Reorient or relocate the receiving antenna. Increase the separation between the equipment and receiver. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. Consult the dealer or an experienced radio/TV technician for help.

NOTE: FCC Radiation Exposure Statement: This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. Antenna to be used with this equipment should be dipole type with 3 dBi maximum gain.

NOTE: Modifications not expressly approved by Nokia could void the user's authority to operate the equipment.

NOTE: Required Minimum distance between antenna and the user is 20cm.

The FCC requires that a label must be placed on the outside of the final product stating:

“Contains FCC ID: LJPRD-1” or “Contains FCC ID: LJPRD-2” depending of the module to be integrated.

3 ESD/Static Sensitive Device

The RD-1/RD-2 WWAN module is a static sensitive device. Charges and discharges in excess of $\pm 1000V$ may result in irreparable damage to the module. Ambient relative humidity (RH) should be considered, lower humidity may result in the possibility for higher electrostatic potentials to accumulate resulting in higher discharges to or from the module. Consequently operators should take all necessary electrostatic precautions before and during handling of the module. These include, but are not limited to

- The use of grounded wrist straps when handling the module or the packaging
- Temporary storage (if required) in ESD approved trays
- The use of protective hand and/or finger covering where during the complete unpacking and assembly process
- The use of static protective mats
- After removal from protective packaging modules should remain physically isolated from each other.

4 Unpacking

The modules are shipped in either single module clamshell or 100 module trays

4.1 Individual Module Clamshell



Figure 1: Representative* example of individual module Single clamshell with RD-1/RD-2 module

The module should only be removed from the clamshell package directly before insertion into the host laptop. The packaging is opened by holding the middle tab in between the thumb and forefinger of one hand and gently prising one of the outer tabs using the other thumb and forefinger. This process should be repeated for the other outer tab. Once both of the outer tabs have been freed from the centre tab then the packing should be bent back along the hinge line until flat. Holding one hand out flat the packaging can be place open side down on the palm of the hand and gentle pressure applied to the back of the package until the module pops out into the palm, the packaging should then be place to one side. The module should then be held prior to installation in accordance with the General Handling guidance given in paragraph 5.1

4.2 100 Module Trays

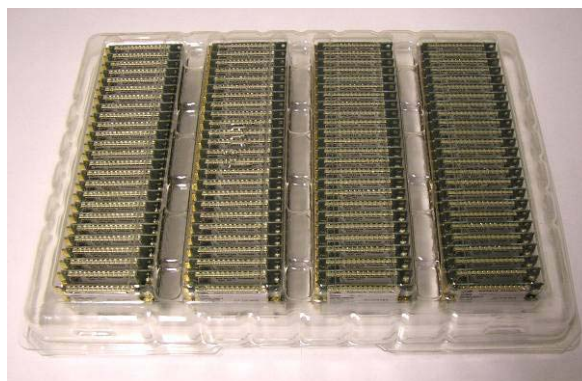


Figure 2: Representative* example of 100 module clamshell with RD-1/RD-2 modules

The module should only be removed from the clamshell package directly before insertion into the host laptop. Before opening the packaging the correct orientation of the package top side must be checked and set from the package markings. The packaging is opened by placing the thumb in bottom of package bevelled slot, located each corners in package cover, and gently prising package cover and bottom off using the other thumb. This process should be repeated for the opposite corner. Once two or more corners from the package coverage have been freed from the package bottom the cover of the package can be removed. The package cover should be place to one side. The module is removed from the package by gripping the corner with the PWB hole between the thumb and forefinger and lifting module gently off from the package. The module should then be held prior to installation in accordance with the General Handling guidance given in paragraph 4.2

*Figures 1 and 2 are intended to be representative of the packaging discussed and should not be considered as constituting a description of the actual module(s) and/or packaging delivered.

5 Handling

5.1 General Handling

PCI Express Mini Card circuit boards are significantly thinner than standard PC motherboards. A consequence of this is that solder joints on the PCI Express Mini Card circuit boards are more susceptible to cracking and damage resulting from bowing and flexing of the circuit board material during handling. Accordingly the RD-1/RD-2 WWAN module should be treated with significantly more care to avoid damage.

The module should not be intentionally bent along any axis. When inserting the module into the host PC pressure should only be applied along the axes and at the points prescribed in this document.

The module should be lightly gripped between the thumb and forefinger of the same hand touching only the edge areas shown below in red.

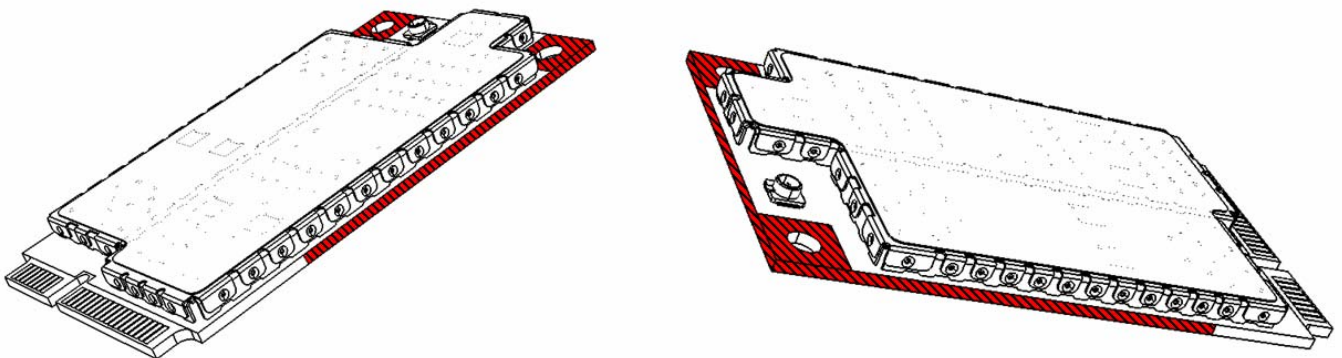


Figure 3: Safe module gripping areas highlighted in red and diagonal lines

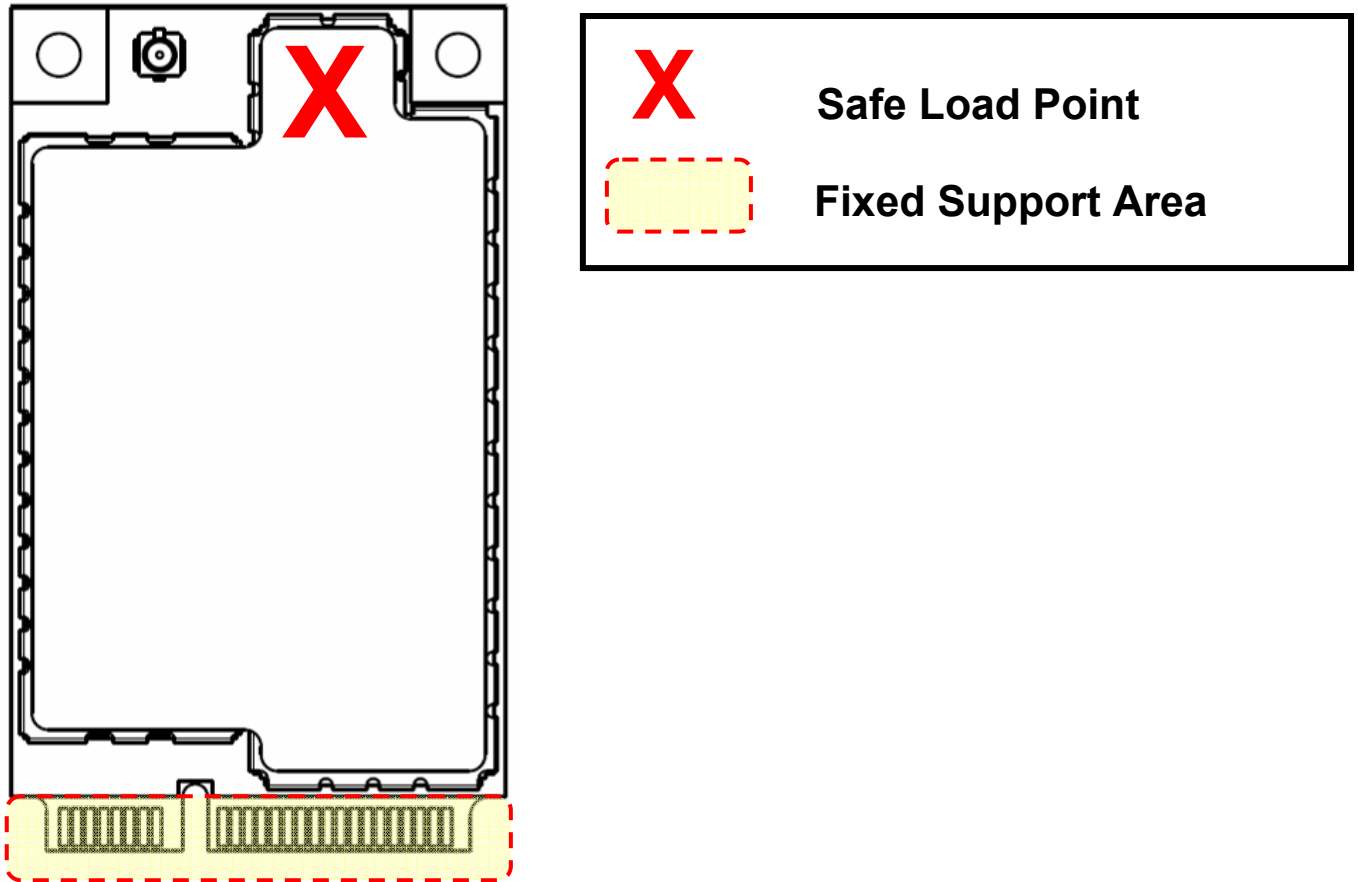


Figure 5: Safe Load and Support Points (Module Installation)

6.1.1 Maximum Safe Load (Module Insertion)

The maximum pressure applied to the point shown in Figure 5 and the resulting deformation shall not exceed that shown in the table below:

Maximum Safe Load (N)	Corresponding Maximum Safe Deflection (mm)
15	< 0.35

Table 1: Maximum Safe Load and Resulting Deformation (Module Insertion)

6.2 Antenna Connection

The antenna coaxial shall be connected only after the module has been seated in the host laptop and according to the following steps below:

1. Offer the female plug up to the module socket ensuring that the barrels of both connecting parts are parallel.
2. Press gently on the back plate of the female plug in the same plane as the barrels of both connecting parts.
3. Remove pressure as soon as the connection is made. The connection is made when a click is felt.

NOTE: Excessive twisting moments during connection may result in damage to the internal conductors.

NOTE: No strain should be placed upon the antenna coaxial or female plug.

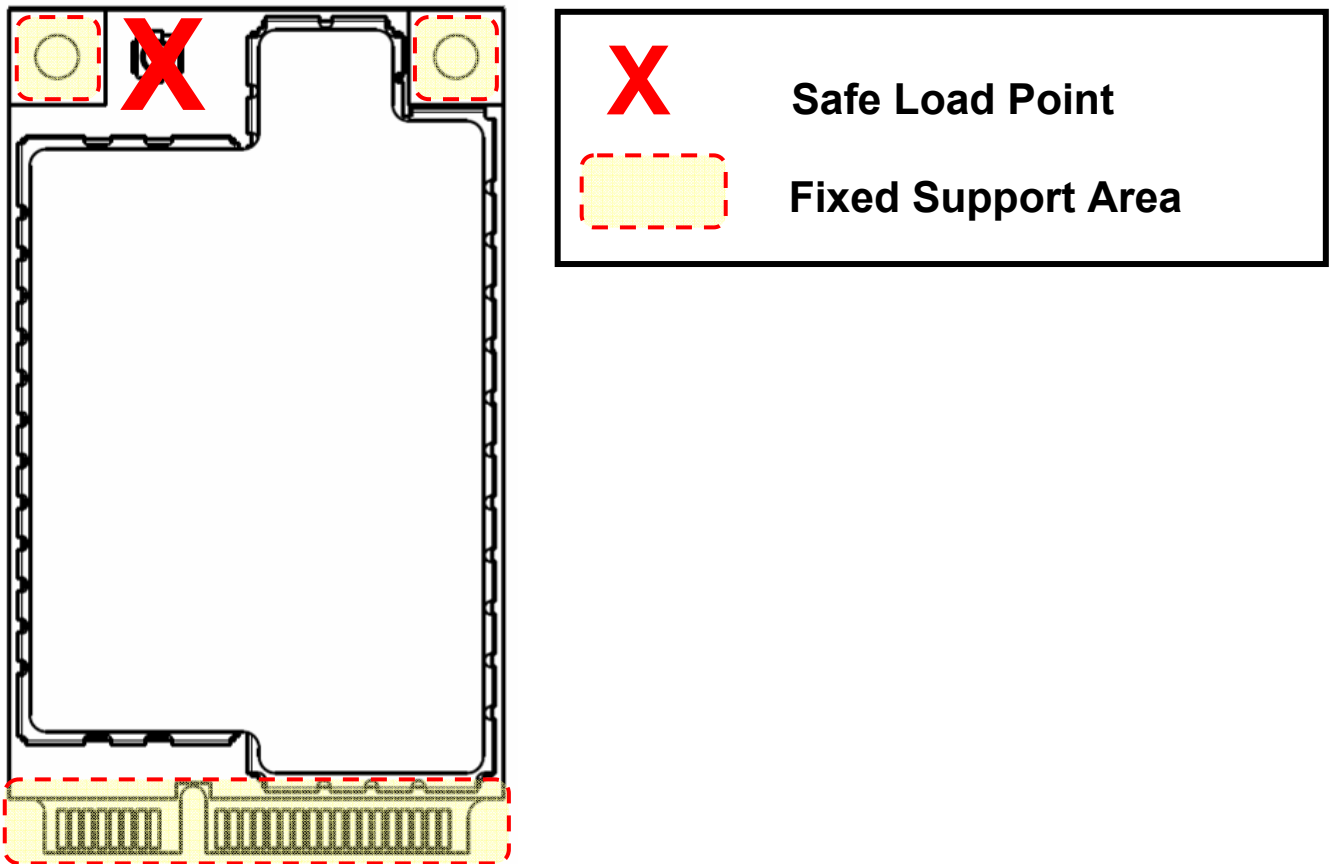


Figure 6: Safe Load and Support Points (Antenna Connection)

6.2.1 Maximum Safe Load (Antenna Connection)

The maximum pressure applied to the point shown in Figure 6 and the resulting deformation shall not exceed that shown in the table below:

Maximum Safe Load (N)	Corresponding Maximum Safe Deflection (mm)
30	< 0.55

Table 2: Maximum Safe Load and Resulting Deformation (Antenna Connection)

6.3 Antenna Disconnection

The antenna shall be disconnected according to the following steps:

1. Hook the u-shaped end of the Antenna Extraction Tool* under the female plug.
2. Gentle apply tension to the tool.
3. As soon as disconnection is noted relax the tension on the tool
4. Carefully withdraw the female plug ensuring that no load is place upon the coaxial cable.

* The Antenna Extraction Jig is a commercially available item see Figure 9



Figure 7: Antenna Extraction Jig



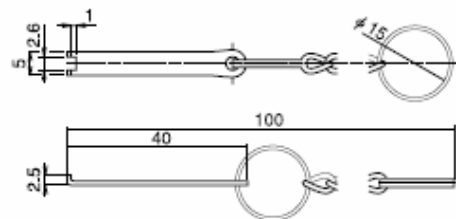
Figure 8: Antenna Disconnection

■ Extraction Jig

This jig is used for extraction from a coupled condition.



NOTE: The extraction jig is the same one used with the E.F.L Series



HRS No.	Product No.
CL331-0441-9	E.F.L-LP-N

Figure 9: Hirose Electric Company Ltd Extraction Jig

