XRAI NFC MOUDULE

USER MANUAL & SPECIFICATION

I. Introduction

XRAI is one kind of NFC module that could be embedded in one IT system by simply connecting the module to his target microcontroller and start developing his application software.
Note that this module is also used for the NXP PN544/PN65O standard Evaluation Kit software.
It is recommended that this user guide be read in conjunction with the XRAI datasheet.

II. DESIGN REFERENCE

As illustrated in Figure 1 below, the XRAI reference design module consists of the following:
 ・ Reference Design: This section includes the NXP PN544C3 chip but also all the external components in an optimized BOM and form factor. When the user wishes to incorporate the XRAI to PCB, it is strongly recommended that this reference design (i.e. schematics, placement, layout, BOM, etc...) is copied "as is" in the final application board to guarantee optimum performance, regulatory compliance and lowest development time and design effort.

Figure 1: Overview (Top View)

 ・ MCU FPC/FFC Connector: Enables the user to connect the XRAI control and interface pins to the host microcontroller (please refer to the XRAI datasheet for further information).
 ・ IPEX Connector: Provided for COXIAL Cable or antenna connection.
 ・ Hardware Block Diagram: Connection rule: user could refer the block diagram in Figure 2

Figure 2 NFC module Major Component and System Interface

The pin-out of the MCU connector is tabulated below in Table 1.

Pin number	Name	Direction	Description
1	PVDD	Power	1.8V
2	VBAT	Power	3.3V
3	GPIO4	I	Reserved for FW download
4	GND	--	
5	IRQ	--	IRQ output
6	NFC_EN	I	Enable signal
7	USB_5V	Power	USB power
8	DP	--	USB D+
9	DM		USB D-
10	GND	--	

III.   FEATURE

■   Contactless protocols:

• ISO14443 A/B

• ISO15693

• ISO18092

IV.   Environmental Requirement

Item	Feature	Description
5.1	Operating Temperature	0 to 40 deg.C
5.2	Storage Temperature	-10 to 70 deg.C
5.3	Operating Humidity	10 to 90 % (Non-condensing)
5.4	MTBF	TBD
5.5	ROHS	TBD

V. Certifications and Regulatory

Item	Feature	Description
6.1	FCC	RF: FCC part 15C EMI: FCC part 15B FCC grant: TCB Filing fee
6.2	CE	RF: EN302291 EMC: EN301489-1/-3 Safety: EN 60950-1:2006/A11:2009
6.3	TBD	TBD

Federal Communication Commission Interference Statement

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 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.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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.

IMPORTANT NOTE:

Radiation Exposure Statement:

The product comply with the US portable RF exposure limit set forth for an uncontrolled environment and are safe for intended operation as described in this manual. The further RF exposure reduction can be achieved if the product can be kept as far as possible from the user body or set the device to lower output power if such function is available.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This device is intended only for OEM integrators under the following conditions:

The transmitter module may not be co-located with any other transmitter or antenna.

As long as 1 conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed

IMPORTANT NOTE: In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and

obtaining a separate FCC authorization.

End Product Labeling

The final end product must be labeled in a visible area with the following: "Contains FCC ID: NKR-XRAI".

Manual Information To the End User

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's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.