

Shenzhen Embest Technology Co., Ltd.  
Tower B 4/F, Shanshui Building  
Yungu Innovation Industry Park  
Nanshan District  
Shenzhen, China  
Date: Oct 10, 2014

RE: LIMITED MODULAR APPROVAL REQUEST

To Whom It May Concern:

We, Shenzhen Embest Technology Co., Ltd., Tower B 4/F, Shanshui Building, Yungu Innovation Industry Park, Nanshan District, Shenzhen, China, hereby requests for part 15 unlicensed limited modular transmitter approval of our device, described as follows:

Brand name:

Model name: Near Field Communications add-on board for the Raspberry Pi

Type number: Explore-NFC

FCC ID: 2AASNEXPLORE-NFC-WW

In FCC Public Notice DA 00-1407 released June 26, 2000 there are eight numbered requirements that our device complies with:

**1. The modular transmitter must have its own shielding.**

Near field communications add-on board for the Raspberry Pi alias Explore-NFC has no extra shielding covering all critical RF components. This can be seen in the photographs included in the accompanying test report. But Explore-NFC board has passed spurious emissions test without shielding. Under FCC part 15.212(b), shielding is not required. As noted in integration manual, the module is intended for professional and development use only and cannot be used in final products. The module is tested to comply with relevant part 15 rules without shielding and in the same configuration as it is intended to be used by developer.

**2. The modular transmitter must have buffered modulation/data inputs to ensure that the device will comply with Part 15 requirements with any type of input signal.**

Explore-NFC is in compliance with ISO 14443A and ISO 14443B mode, Felica mode and NCIP-1 mode and has buffered, ASK modulated output.

**3. The modular transmitter must have its own power supply regulation. This is intended to ensure that the module will comply with Part 15 requirements regardless of the design of the power supplying circuitry in the device into which the module is installed.**

Explore-NFC is powered via Raspberry Pi computer and has power supply filter in front of IC PN512. Supply voltage from Raspberry Pi must be between 2.5 V to 3.6 V DC (current consumption is up to 150 mA). All other power supply voltages are generated internally inside IC PN512.

**4. The modular transmitter must comply with the antenna requirements of Section 15.203 and 15.204c. The antenna must either be permanently attached or employ a “unique” antenna coupler (at all connections between the module and the antenna, including the cable). Any antenna used with the module must be approved with the module, either at the time of initial authorization or through Class II permissive change. The “professional installation” provision of Section 15.203 may not be applied to modules.**

Explore-NFC board has a unique antenna coupler (matching capacitors) - at all connections between the module PN512 and the pcb antenna. PCB antenna is in the same board with the reader IC PN512 and it is permanently attached, without cable, to the reader IC via matching capacitors.

**5. The modular transmitter must be tested in a stand-alone configuration**

Explore-NFC board is tested with Raspberry Pi computer and it is powered from Raspberry Pi computer too. Explore-NFC is complying with Part 15 emissions. Explore-NFC module does not contain any ferrites. The module is provided as an evaluation module only and a grant note will restrict the usage to development and prohibit the use of the module in a finale product without further certification on the final assembly.

**6. The modular transmitter must be labelled with its own FCC ID number, and, if the FCC ID is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: “Contains Transmitter Module FCC ID: “XYZMODEL1” or “Contains FCC ID: XYZMODEL1.” Any similar wording that expresses the same meaning may be used. The Grantee may either provide such a label, an example of which must be included in the application for equipment authorization, or, must provide adequate instructions along with the module which explain this requirement. In the latter case, a copy of these instructions must be included in the application for equipment authorization.**

Explore-NFC board is fitted with his own labels (and printed marks), including the FCC ID label (printed on pcb). Integration manual has instructions for host labeling on page #28.

**7. The modular transmitter must comply with any specific rule or operating requirements applicable to the transmitter and the manufacturer must provide adequate instructions along with the module to explain any such requirements.**

Explore-NFC board has been tested to comply with all rules under Part 15. The compliance is assured by the design of this device. The user must be able to operate with device correctly (must follow integration manual). The grantee has provided instructions to explain that the device is only to be used for development and cannot be used in final assembly.

**8. The modular transmitter must comply with any applicable RF exposure requirements.**

Explore-NFC board operates in the 13.56 MHz (+/- 7 kHz) ISM unlicensed band and is suitable for worldwide use. The frequency is not adjustable. This device complies with Part 15 FCC Rules.

## 9. Comment

This is a limited modular approval since the device is intended for development purposes and cannot be used in a final assembly.

A handwritten signature in black ink, appearing to be 'Tao ZHU', written above a horizontal line.

Signature

Name: Tao ZHU

Title: Global Compliance Specialist