

Timco Engineering Inc.  
FCC Authorized Telecommunications  
Certification Body (TCB)

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February 26, 2019

**Bruno Clavier – General Manager**  
Timco Engineering Inc.  
849 N.W. State Road 45  
P.O. Box 370  
Newberry, Florida 32669

Dear Mr. Clavier

The **Nokia Flexi Zone Multiband Indoor Pico BTS CBRS MBI Band 48 (FW2QADPM01)** is the subject of this request for this original filing Part 96 FCC Product Certification under **FCC ID: 2AD8UFW2QADPM01**. The **MBI-B48** is a 150 MHz bandwidth LTE Transceiver with a nominal total power output capability of 1.5W EIRP for all ports. This 2x 0.75 W EIRP MIMO transmitter operates in the **Part 96 Citizens Band Radio Service (CBRS)** spectrum utilizing LTE-TDD technology. **Nokia Solutions and Networks - OY**, hereby requests this Original Limited Modular Filing for Part 96 Certification with multiple emissions designators and multicarrier operation. This filing application for Part 96 operation follows the procedural requirements specified in FCC Part 2 Subpart J – Equipment Authorization Procedures. We understand that FCC pre-approval guidance (PAG Request) will be required. This application for Part 96 operation includes Spectrum Allocation Server (SAS) operation certified under FCC and WINN-Forum- CBRS Alliance test requirements.

The **Nokia Flexi Zone Multiband Indoor Pico BTS CBRS Band 48 (MBI-B48)** is a small cell that consists of a common digital system module (host) and up to two LTE (Long Term Evolution) RF transceiver modules. Each RF transceiver module supports 2 Tx/Rx branches. Additionally, the product supports a Bluetooth module FCC ID: 2AD8UNBTM01 which has previously been certified.

The **FW2QADPM01 B48 CBRS RF Module (MBI-B48)** LTE-TDD Transceiver supports nominal 10, 15 and 20 MHz carrier bandwidths and multicarrier operation. The **MBI-B48** transceiver module, the subject of this application, is always co-located in a MBI digital system (host) module, and

- is housed in the MBI enclosure and is designed for indoor Category A use only.
- is equipped with the internal antennas of the **MBI-B48** module.
- is limited to be factory installed and operate only in the common Nokia Flexi Zone MBI system module (host) unit where the model numbers reflect the actual RF Module configuration
- has its own permanently affixed FCC ID and label under **FCC ID: 2AD8UFW2QADPM01**;
- is verified to be compliant with FCC Part 15 Subpart B Class B Compliance for radiated emissions and AC power port conducted emissions as installed in the final system module/host maximum configuration
- complies with the RF exposure requirements with the minimum safety distances provided in RF exposure exhibit for the **MBI-B48** module and in the user's manual for various system configurations.

The Modular terminology as used here is not the same as the classical FCC viewpoint. The RF Transmit modules, as Nokia uses them in this product, are simply internally mounted parts of the overall product. Nokia ships a completely assembled and tested product. The transmit modules are never sold to another vendor or installed in another vendor's product. The complete product is a single indoor unit which is comprised of a baseband unit, one or two primary band RF Transmit modules and a Bluetooth module. The complete product or parts thereof are never installed inside another host as defined by the FCC. The complete product is marketed, sold, and serviced as a unit.

This application for CBRS Category A operation under Part 96 is for the full 3550-3700 MHz CBRS band. The **MBI-B48 CBRS** will use 2x MIMO operation using nominal 10, 15 and 20 emissions designators in the **Citizens Band Radio Service** spectrum (3550-3700 MHz). Two test reports are in the exhibits. The first is the Part 2.1033 (c) Technical Report for radio operation over the full 3550-3700 MHz Part 96 frequency range. The second is the Spectrum Allocation Server - Citizens Band Radio Service - Device Conformity Assessment Test Report.

The measurement exhibits attached to this application demonstrate full compliance with FCC Part 96 following the procedural requirements specified in FCC Part 2 Subpart J – Equipment Authorization Procedures and FCC pre-approval guidance (PAG Request) is hereby requested. The data, summarized below, is in the form presently used by the Commission’s Radio Equipment List.

<b>Equipment Identification:</b>	<b>2AD8UFW2QADPM01</b>
<b>Rules Part Number:</b>	<b>Part 96</b>
<b>Frequency Range:</b>	<b>Transmit/ Receive 3550-3700 MHz (LTE-TDD)</b>
<b>Output Power EIRP:</b>	<b>1.46 Watts Maximum Total Output EIRP for 2 Ports operating as 2x MIMO</b>
<b>Frequency Tolerance:</b>	<b>± 0.05 ppm</b>
<b>Emission Designators:</b>	<b>8M96G7D, 8M98D7W, 13M5G7D, 13M5D7W, 17M9G7D, 17M9D7W</b>
<b>Grant Notes:</b>	<b>EP, MO, Multicarrier MIMO Operation</b>

Limited Modular Approval, not to be marketed or available to public and limited for use with Nokia Flexi Zone host system. Grantee is responsible to ensure that the final host product complies with section 2.947 (f) as a composite device such that each individual device complies with its rule standards and that no emissions exceeds the highest level permitted for any individual device with all the individual devices in the system intended to operate simultaneously functioning and emitting. Output power listed is the maximum EIRP. Professional installation required. This transmitter must be installed to provide a separation distance of at least 20-cm from all persons. Unless otherwise addressed, internal antenna gain is limited to no more than 6.36 dBi to ensure compliance with 96.41 (b) EIRP limits for Category A CBSD, and must not be co-located or operating in conjunction with any other antenna or transmitter, except as described in this filing, or in accordance with FCC multi-transmitter product guidelines. The grantee must provide installers and operators, with installation and operating instructions for satisfying FCC multi-transmitter product guidelines. This device supports LTE of 10, 15, and 20 MHz bandwidth modes for TDD LTE Band 48. 1.5 W EIRP total for 2 ports. Multicarrier MIMO

Attached are the FCC Form 731 (Application for Equipment Authorization – Radio Frequency Devices), the required measurement data and exhibits specific to this request for authorization of the **MBI-CBRS FCC ID: 2AD8UFW2QADPM01**. The technical or non-technical contact at Nokia Bell Labs will comply with any request for additional information should the need arise. The attached exhibits with the applicable FCC Rule section are assembled and presented in accordance with the *Table of Contents* attachment.

Should there be any questions or procedural issues please feel free to contact me by email and/or phone.  
Sincerely,



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Att. Table of Contents for the Nokia **Flexi Zone Multiband Indoor Pico BTS CBRS Band 48 (FW2QADPM01) FCC ID: 2AD8UFW2QADPM01** Product Certification Report

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**Cover Letter**

**Cover Letter - Confidentiality Letter - Permanent**

**Cover Letter - Confidentiality Letter – Short Term**

**Cover Letter - Agent Authorization Letter**

**Cover Letter - Test Laboratory MRA Letter**

<u>Exhibit #</u>	<u>FCC Rule Number</u>	<u>Description</u>	
Exhibit 1	Section 2.1033(a)	FCC Form 731	
Exhibit 2	Section 2.911 (d)	Qualifications and Certifications	
Exhibit 3	Section 2.1033(c)(1,2 & 4-7)	Manufacturers, FCC Identifier, Emission, Range of RF Power & Frequency	
Exhibit 4	Section 2.1033(c)(11)	Drawing of the Identification Label	
Exhibit 5	Section 2.1033(c)(9, 8)	Tune-Up Procedure and Drive Levels	(Confidential)
Exhibit 6	Section 2.1033(c)(10, 13)	Operational Description, Circuitry for Determining Frequency	(Confidential)
Exhibit 7	Section 2.1033(c)(10)	Complete Circuit Diagrams	(Confidential)
Exhibit 8	Section 2.1033(c)(12,3)	Instruction Book (Installation Manual or User’s Manual)	(Confidential)
Exhibit 9	Section 2.1033(c)(12)	Internal Photographs of the Equipment	(Confidential)
Exhibit 10	Section 2.1033(c) (12)	External Photographs of the Equipment, Test Setup Photographs	(Short Term)
Exhibit NDA	KDB 726920 D01	Operational Description, Non Disclosure Agreement	(Confidential)

**Part 2 Part 96 Test Report**

**WINN-Forum Test Report**

Winn Forum Spectrum Allocation Server-Citizens Band Radio Service Device Conformity Assessment Test Report