



Nokia Solutions and Network, OY  
2000 W. Lucent Lane  
Naperville, IL 60563

**February 13, 2019**

**Timco Engineering Inc.**  
**FCC Authorized**  
**Telecommunication Certification Body (TCB)**  
849 N.W. State Road 45  
P.O. Box 370  
Newberry, Florida 32669

**Subject: Application for Original Equipment Certification for Nokia Flexi Zone FW2RMBOM1 LAA RF Module under FCC ID: 2AD8UFW2RMBOM1**

**Dear Examiner:**

The Nokia Flexi Zone Multiband Outdoor Micro BTS (MBO) is a small cell that consists of a common digital system module (host) and up to three LTE (Long Term Evolution) RF transceiver modules in various combinations. Additionally, an optional WiFi AP (Access Point) RF module. Each RF transceiver module supports 2 Tx/Rx.

The FW2RMBOM1 LAA RF Module (MBO LAA) is a new LTE Transceiver operating under the regulations of FCC Title 47 Part 15 Subpart E, Unlicensed National Information Infrastructure (UNII) Devices or RSS-247 License-Exempt Local Area Network (LE-LAN) in the Band 46 unlicensed spectrum of 5.735-5.835 MHz (UNII-3). The MBO LAA supports LTE (Long Term Evolution) License Assisted Access (LAA) technology and operates in UNII-3 frequency spectrums as a Point-to-Multipoint Master Device. MBO LAA supports one-20MHz and two-20MHz carriers and a maximum RF power of 0.5W at each of its two MIMO transmit ports. MBO LAA has obtained its Industry Canada certification on January 15, 2019 under IC: 109D-FW2RMBOM1.

The MBO LAA transceiver module, the subject of this application, is always co-located with an MBO digital system (host) module, and

- is housed in a sealed enclosure;
- contains its own power supply DC-DC regulation on the module;
- is equipped with the antennas that are only permitted to be directly connected to the MBO B46 module and are specifically offered by Nokia for direct attachments;
- is limited to be installed and operate only on the common Nokia Flexi Zone MBO system module (host) unit where the model numbers reflect the actual RF Module configuration;
- has its own permanently affixed FCC ID and label under 2AD8UFW2RMBOM1;
- is verified to be compliant with FCC Part 15 Subpart B/ICES-003 Class B Compliance for radiated emissions and AC power port conducted emissions when 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 MBO LAA module and in the user's manual for various system configurations, evaluated with the highest available antenna gain of the authorized antennas;



- the MBO LAA and its end product is a non-consumer product, certified and housed in a sealed enclosure, and is only accessible and installed by trained/approved maintenance personnel. This product is not marketed or available to the general public.

Per KDB 996369 D01 Clause III, Nokia hereby requests a Limited Single Modular certification for the MBO LAA transceiver under FCC ID: 2AD8UFW2RMBOM1. Per FCC 2.1041(a), the technical requirements specified in FCC Part 15 Subpart E Section 15.407 were evaluated. The guidelines and guidance provided in the KDB 789033 D02 v02r01 (Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices, Part 15, Subpart E), KDB 662911 D01 v02r01 (Emissions Testing of Transmitters with Multiple Outputs in the Same Band), KDB 353028 D01 v01 (Basic Equipment Authorization Guidance for Antennas Used with Part 15 Intentional Radiators), KDB 594280 D01 v02r01 (Guidance on Software or Network Configuration of Non-SDR Devices to Ensure Compliance) and KDB 594280 D02 v01r03 (Software Security Requirements for U-NII Devices) were followed for the application and evaluation for compliance. The ANSI C63.10-2013 was followed for measurement methods and procedures.

The key data of the subject equipment are summarized below:

IC ID	2AD8UFW2RMBOM1
Manufacturer	Nokia Solutions and Network
Subject Equipment	FW2RMBOM1
Equipment Type	Transceiver
Frequency Band	E-UTRAN Band 46: 5.745-5.825 GHz (UNII-3)
Output Power	50mW (17dBm) to 500mW (27 dBm) per Tx path
Frequency Tolerance	$\pm 0.05$ ppm
Operation Mode	Master Mode, Point to Multipoint
Carriers	One-20MHz and Two-20 Carriers
FCC Rules	Part 15 Subpart E Section 15.407 – UNII Devices

Enclosed in this application package are FCC 731 Form, a letter of Request for Confidentiality, the required measurement data and other required exhibits specific to this request for authorization of the subject product. The measurement exhibits attached to this application demonstrate full compliance with FCC Part 15.407 following the procedural requirements specified in FCC Part 2 Subpart J – Equipment Authorization Procedures.

The detailed descriptions about the subject product including the antennas to be authorized per 1.1033(b)(4), 15.203 and KDB 353028 D01 requirements and guidelines, and its operation including the security procedures per 2.1033(b)(13), 15.202, 15.407(i)(1) and KDB 594280 D02 requirements are provided in Exhibit 5.

The supporting exhibits are assembled and presented in accordance with the *Table of Contents* attached below.

Should there be any questions or procedural issues, please feel free to contact me by email and/or phone. The contacts at Nokia will comply with any request for additional information should the need arise.

Sincerely,



Terry Schwenk

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## TABLE OF CONTENTS

<b>Cover Letter</b>		
<b>Confidentiality Request Letter with NDA (Non-Disclosure Agreement)</b>		
<b>Required Exhibits:</b>		
<b>EXHIBIT</b>	<b>FCC RULES</b>	<b>CONTENTS</b>
Exhibit 1	Section 2.1033(a)	TCB Application Form 731
Exhibit 2	Sections 2.911 (d)(1, 2) & 2.911 (e)	Certifications and Qualification
Exhibit 3	Section 2.1033 (b)(1, 2)	Manufacturer, Applicant and Identifier
Exhibit 4	Section 2.1033 (b)(3)	Installation and Operating Instructions → <b>Confidential</b>
Exhibit 5	Sections 2.1033 (b)(4)(13), 15.202, 15.203, 15.407(i)(1) & KDB 594280 D02	Description of Operation, Antennas, and Software Security and Configuration → <b>Confidential</b>
Exhibit 6	Section 2.1033 (b)(5)	Block Diagrams → <b>Confidential</b>
Exhibit 7	Section 2.1033 (b)(5)	Schematics → <b>Confidential</b>
Exhibit 8	Section 2.1033 (b)(7)	Internal Photograph of the Equipment → <b>Confidential</b>
Exhibit 9	Section 2.1033 (b)(7)	External Photograph of the Equipment
Exhibit 10	Section 2.1033 (b)(7)	Equipment Identification Label
Exhibit 11	Section 2.1033 (b)(14)	Setup Drawings or Photographs
Exhibit 12	Sections 2.1033 (b)(6), 2.911 (e) & 15.407	Test Report
Exhibit 13	Sections 1.1307 & 1.1310	RF Exposure Assessment