

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

**Nokia, Global Product Compliance Laboratory
600-700 Mountain Avenue
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Murray Hill, New Jersey 07974-0636 USA**

July 24, 2018

**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 Outdoor (MBO) Micro BTS CBRS (FW2QMBOM1)** is the subject of this request for a Part 96 Original Filing as applied to its Part 90Z FCC Product Certification under **FCC ID: 2AD8UFW2QMBOM1**. The **MBO-CBRS** is a 150 MHz bandwidth LTE Transceiver with a total power output capability of 4 Watts for all ports. It previously received a Limited Single Modular Certification as a 2x2W MIMO transmitter in the **Part 90Z Citizens Band Radio Service (CBRS)** spectrum utilizing LTE-TDD technology. Nokia Bell Labs, part of the Nokia family of companies, hereby requests this Original Filing under the existing FCC ID for Part 96 Certification with multiple emissions designators and multicarrier operation. As stated in the original filing under 90Z that application for Part 96 operation would follow utilizing the procedural requirements specified in FCC Part 2 Subpart J – Equipment Authorization Procedures and FCC pre-approval guidance (PAG Request) (Tracking Number 349452). This application for Part 96 operation is possible now that Spectrum Allocation Server (SAS) operation can be certified under FCC and WINN-Forum- CBRS Alliance test requirements.

This application is for CBRS Class B operation under Part 96 for the full 3550-3700 MHz CBRS band. The **MBO-CBRS** will continue to use 2x2W MIMO operation using 10M0F9W, 15M0F9W and 20M0F9W 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 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) (Tracking Number 349452). The data, summarized below, is in the form presently used by the Commission’s Radio Equipment List.

Equipment Identification: 2AD8UFW2QMBOM1
Rules Part Number: Part 96
Frequency Range: Transmit/ Receive 3550-3700 MHz (LTE-TDD)
Output Power: 4 Watts Total Output for 2 Ports operating in a 2x2W configuration
Frequency Tolerance: ± 0.05 ppm
Emission Designators: 10M0F9W, 15M0F9W, 20M0F9W
Grant Notes: MO, 4W total for 2 ports, Multicarrier MIMO Operation

Limited Modular Approval. Output power listed is the maximum combined tuned conducted power. Professional installation required. This transmitter must be installed to provide a separation distance of at least 50-cm from all persons. Unless otherwise addressed, antenna gain is limited to no more than 10.98 dBi to ensure compliance with 96.41 (b) EIRP limits for Category B 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.

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 **MBO-CBRS FW2QMBOM1**. 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 Outdoor (MBO) Micro BTS CBRS (2AD8UFW2QMBOM1)**
Product Certification Report

TABLE OF CONTENTS

Cover Letter

Confidentiality Letter

<u>Exhibit #</u>	<u>FCC Rule Number</u>	<u>Description</u>	<u>Confidentiality</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)(6,8,9,10,13)	Operational Description Active Devices Drive Levels, PAG Response	(Permanent)
Exhibit 6	Section 2.1033(c)(10)	Block Diagram	(Permanent)
Exhibit 7	Section 2.1033(c)(10)	Complete Circuit Diagrams	(Permanent)
Exhibit 8	Section 2.1033(c)(3)	Manual	(Permanent)
Exhibit 9	Section 2.1033(c)(12)	Internal Photographs of the Equipment	(Permanent)
Exhibit 10	Section 2.1033(c)(12)	External Photographs of the Equipment	(Short Term)
Exhibit 11	Section 2.1033(c)(21)	Test Setup Photographs	(Short Term)

Part 2 Part 96 Test Report

<u>Paragraph#</u>	<u>FCC Rule Number</u>	<u>Description of Test Report Exhibits</u>
4	Section 2.1033(c)(14)	Listing of Required Measurements
4.1	Section 2.1046	Measurement of Radio Frequency Power Output
4.2	Section 2.1047	Measurement of Modulation Characteristics
4.3	Section 2.1049	Measurement of Occupied Bandwidth and Edge of Band Emissions
4.4	Section 2.1051	Measurement of Spurious Emissions at Antenna
4.5	Section 2.1053	Field Strength of Spurious Radiation
4.6	Section 2.1055	Measurement of Frequency Stability
4.7		List of Test Equipment
4.8		Photographs of the Test Setups
4.9		Facilities and Accreditation

WINN-Forum Test Report

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