



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

**Nokia Solutions and Network, OY**  
1455 W Shure Drive  
Arlington Heights, IL 60004

May 9, 2017

**Sid Sanders - President**  
**Timco Engineering Inc.**  
849 N.W. State Road 45  
P.O. Box 370  
Newberry, Florida 32669

Dear Mr. Sanders:

The Nokia Flexi Zone Multiband Outdoor Micro Base Station (MBO) is a small cell that consists of a common digital system module (host) and up to two 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 branches.

The FW2FMBOM1 B2 RF Module (MBO B2) is a new LTE Transceiver supporting a carrier bandwidth of 5/10/15/20 MHz and a maximum RF power output capability of 5W at each of its 2 MIMO transmit port outputs. The MBO B2 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 B2 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 2AD8UFW2FMBOM1;
- is verified to be compliant with FCC Part 15 Subpart B 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 B2 module and in the user's manual for various system configurations, evaluated with the highest available antenna gain of Nokia authorized antennas;
- the MBO B2 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 B2 transceiver, under FCC ID: 2AD8UFW2FMBOM1, operating with the 5M00F9W, 10M00F9W,

15M00F9W and 20M00F9W Emissions designators in the Broadband PCS spectrum from Blocks A through F.

All the required supporting exhibits are attached. The measurement exhibits attached to this application demonstrate full compliance with FCC Part 24 following the procedural requirements specified in FCC Part 2 Subpart J – Equipment Authorization Procedures.

The data, summarized below, is in the form presently used by the Commission’s Radio Equipment List.

**Equipment Identification:** 2AD8UFW2FMBOM1  
**Rules Part Number:** Part 24 Sub Part E – Broadband PCS  
**Frequency Range:** Transmit 1930-1990 MHz (PCS Blocks A-D-B-E-F-C)  
**Output Power:** 0.079 to 5 Watts per output  
**Frequency Tolerance:** ± 0.05 ppm  
**Emission Designators:** 5M00F9W, 10M00F9W, 15M00F9W, 20M00F9W

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 B2 transceiver. The technical or non-technical contact at Nokia will comply with any request for additional information should the need arise. The attached exhibits with the applicable FCC Rule sections are assembled and presented in accordance with the *Table of Contents* attachment. Included is a formal letter requesting confidentiality for the following exhibits:

| <u>Exhibit #</u> | <u>FCC Rule Section</u>             | <u>Exhibit Title</u>       |
|------------------|-------------------------------------|----------------------------|
| Exhibit 5        | Section 2.1033(c) (6, 8, 9, 10, 13) | Operational Description    |
| Exhibit 6        | Section 2.1033(c) (10)              | Block Diagram              |
| Exhibit 7        | Section 2.1033(c) (10)              | Circuit Schematic Diagrams |
| Exhibit 8        | Section 2.1033(c) (3)               | User’s Manual              |
| Exhibit 9        | Section 2.1033(c) (12)              | Internal Photographs       |

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

Sincerely,



Terry Schwenk

R&D Engineer  
Nokia Solutions and Networks  
Phone: 847-809-6952  
email: [terry.schwenk@nokia.com](mailto:terry.schwenk@nokia.com)

Primary Administrative Contact

Raymond J. Johnson  
Technical Manager  
Global Product Compliance Laboratory  
Building 5B-111  
600 Mountain Avenue  
Murray Hill, NJ 07974  
Phone: 908-582-5575  
email: [ray.johnson@nokia-bell-labs.com](mailto:ray.johnson@nokia-bell-labs.com)

Filing Engineer

Qin Yu  
Global Product Compliance Laboratory  
Building 5B-111  
600 Mountain Avenue  
Murray Hill, NJ 07974  
Phone 614-718-3718  
email: [q.yu@nokia-bell-labs.com](mailto:q.yu@nokia-bell-labs.com)

Att. Table of Contents for the Nokia Flexi Zone Multiband Outdoor Base Station Band 2 RF Transceiver Product Certification Application.

## TABLE OF CONTENTS

### Cover Letter

### Requests for Permanent and Short-Term Confidentiality with NDA (Non-Disclosure Agreement)

| <u>Exhibit #</u> | <u>FCC Rule Number</u>              | <u>Description</u>   | <u>Notes</u> |
|------------------|-------------------------------------|--|--------------|
| Exhibit 1        | Section 2.1033(a)                   | FCC Form 731   |              |
| Exhibit 2        | Section 2.911 (d)                   | Qualifications   |              |
| Exhibit 3        | Section 2.1033(c) (1,2,4,5,7)       | Manufacturer, FCC Identifier, Emission Types, Frequency Range and Maximum Power Rating |              |
| 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  | Confidential |
| Exhibit 6        | Section 2.1033(c) (10)              | Block Diagram  | Confidential |
| Exhibit 7        | Section 2.1033(c) (10)              | Circuit Schematic Diagrams   | Confidential |
| Exhibit 8        | Section 2.1033(c) (3)               | User's Manual  | Confidential |
| Exhibit 9        | Section 2.1033(c) (12)              | Internal Photographs   | Confidential |
| Exhibit 10       | Section 2.1033(c) (12)              | External Photographs of the Equipment  |              |
| Exhibit 11       |                                     | Setup Drawings or Photographs  |              |
| Exhibit 12       | 2.1033 (c)(14)                      | Test Report  |              |
| Exhibit 13       | Section 1.1310                      | RF Exposure  |              |

### Test Report Exhibit 12

| <u>SubExhibit #</u> | <u>FCC Rule Number</u>     | <u>Description of Test Report Exhibits</u>                          |
|---------------------|----------------------------|---|
| 12.1                | Section 2.1033(c) (14)     | Listing of Required Measurements                                    |
| 12.2                | Section 2.1046             | Measurements Required: RF Power Output                              |
| 12.3                | Section 2.1047             | Modulation Characteristics  |
| 12.4                | Sections 2.1049 and 24.238 | Measurements Required: Occupied Bandwidth and Out-of-Band Emissions |
| 12.5                | Sections 2.1051 and 24.238 | Measurements Required: Spurious Emissions at Antenna Terminals      |
| 12.6                | Sections 2.1053 and 24.238 | Measurements Required: Field Strength of Spurious Radiation         |
| 12.7                | Sections 2.1055 and 24.235 | Measurements Required: Frequency Stability                          |
| 12.8                | Section 2.947              | List of Test Equipment Used   |
| 12.9                | Section 2.948              | Test Facilities   |