

Bell Labs

Timco Engineering Inc. FCC Authorized Telecommunications Certification Body (TCB) Nokia, Global Product Compliance Laboratory 600-700 Mountain Avenue Room 5B-108 Murray Hill, New Jersey 07974-0636 USA

December 26, 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 **AirScale 39 GHz Radio Unit (AEWF)** is the subject of this request for a new FCC Product Certification under **FCC ID: VBNAEWF-01.** The **AEWF** is an 800 MHz bandwidth LTE / New Radio Transceiver with a total power output capability of 54 dBm EIRP per polarization for a total power of 57 dBm EIRP. It operates as a 2x2 MIMO transmitter in the **Part 30 Upper Microwave Flexible Use Service** spectrum utilizing **5G New Radio (NR)** technology. Nokia Bell Labs, part of the Nokia family of companies, hereby requests certification for single carrier operation utilizing this **5G New Radio** OFDM based air interface. This is a new design and all of the required supporting exhibits are attached.

This application is for certification under Part 30 in the 37 – 40.0 GHz portion of the Upper Microwave Flexible Use Service spectrum. The **AEWF AirScale 39 GHz Radio Unit** implements two 16x16 active element phased array transmit modules to provide 2x2 MIMO operation using **100M0G7W** emissions designators in the **Upper Microwave Flexible Use Service** spectrum (37– 40 GHz) as allowed under **47CFR Part 30**.

The measurement exhibits attached to this application demonstrate full compliance with FCC Part 30 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:	VBNAEWF-01
Rules Part Number:	Part 30
Emissions Designator:	100M0G7W (5G-NR) (LTE-TDD Based)
Frequency Range:	Transmit/ Receive: 37– 40 GHz
Output Power:	54 dBm EIRP per polarization, 57 dBm EIRP Total Output for 2 polarizations operating in a 2x2 MIMO configuration
Frequency Tolerance:	± 0.05 ppm

Because of the developmental nature of **5G-NR** and planned multicarrier operation, a FCC Class II change at a later date is planned. At that time additional emissions designators, multi carrier operation and the latest release of **5G New Radio (NR)** will be addressed.

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 **AirScale 39 GHz Radio Unit (AEWF)** under **FCC ID: VBNAEWF-01**. 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. Included is a formal letter requesting confidentiality for the following exhibits:

List of Confidential Exhibits

FCC Rule Section	<u>Exhibit Title</u>
Section 2.1033(c)(8,9)	Active Circuit Devices Drive Levels, Tune-Up procedure
Section 2.1033(c)(10,13)	Block Diagram, System Description, Circuitry for Determining Frequency
Section 2.1033(c)(10)	Complete Circuit Diagrams)
Section 2.1033(c)(12,3)	Instruction Book (Installation Manual or Users Manual)
Section 2.1033(c)(12)	Internal Photographs of the Equipment
	FCC Rule Section Section 2.1033(c)(8,9) Section 2.1033(c)(10,13) Section 2.1033(c)(10) Section 2.1033(c)(12,3) Section 2.1033(c)(12)

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

Kaymond f. Johnor

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Att. Table of Contents for the AirScale 39 GHz Radio Unit (AEWF) Product Certification Report

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Cover Letter Request for Confidentiality Request for Short Term Confidentiality Agent Letter

Exhibit <u>Number</u> 1 2 3 4	FCC Rule Number Section 2.1033(a) Section 2.911(d) Section 2.1033(c)(1,2, 4-7) Section 2.1033(c)(11)	Description FCC Form 731 Qualifications and Certifications Manufacturers, FCC Identifier, Emission, Range of RF Power & Frequency Drawing of the Identification Label	
5	Section 2.1033(c)(8,9)	Active Circuit Devices Drive Levels, Tune-Up procedure	(Confidential)
6	Section 2.1033(c)(10,13)	Block Diagram, System Description, Circuitry for Determining Frequency	(Confidential)
7	Section 2.1033(c)(10)	Complete Circuit Diagrams	(Confidential)
8	Section 2.1033(c)(12,3)	Instruction Book (Installation Manual or Users Manual)	(Confidential)
9	Section 2.1033(c)(12)	Internal Photographs of the Equipment	(Confidential)
10	Section 2.1033(c)(12)	External Photographs of the Equipment	
11	Section 2.1033(c)(10, 13)	Description of Modulation System,	
12	Section 2.1033(c)(21)	Photographs of the Test Setups,	
	Section 30.207	RF Exposure Report (Maximum Permissible Exposure (MPE)	

Part 30 Test Report

Section Number	FCC Rule Number	Description of Test Report Exhibits
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
4.8	Section 2.1041(b)	List of Test Equipment
4.9	Section 2.1033(c)(21)	Photographs of the Test Setups
4.10	Section 2.948(e)	Facilities and Accreditation