

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

March 20, 2024

**Bruno Clavier- General Manager**  
**Timco Engineering Inc.**  
13146 NW 86th Drive Suite 400  
Alachua, FL 32615

Dear Mr. Clavier

The Nokia **AWKUC/D 5G AirScale 24 GHz mmWave Radio** is the subject of this request for an initial Product Certification under **FCC ID: 2AD8UAWKUCD01**.

The **AWKUC/D AirScale mmWave 4T4R n258 24G** is part of our high powered family of mmWave products. The Radio Unit, an **AWKUC** (AC version) or an **AWKUD** (DC version) are deployed as required to form complete transceiver system coverage. The AC and DC versions incorporate identical mmWave 5G LTE / New Radio Transceiver modules. The transceiver module implements a dual polarized active element phased array. This 3200 MHz instantaneous downlink bandwidth unit has a total power output capability of 69 dBm EIRP per polarization for a total combined power of 72 dBm EIRP. It can be configured to provide one to seven carriers of **97M5G7W** emissions designator in the in the **Upper Microwave Flexible Use Service** spectrum (24.25 – 25.25 GHz) as allowed under **47CFR Part 30**. The US n258 operational parameters are one or two 97M5G7W carriers in the 24.25-24.45 GHz portion of the US n258 spectrum and one to five 97M5G7W carriers in the 24.75 – 25.25 GHz portion of the spectrum.

The total RF power will be divided among the one to seven carriers anywhere in the two portions of the spectrum. Thus, any carrier configuration can provide up to the specified power of 69 dBm EIRP per polarization for a total combined power of 72 dBm EIRP

Nokia Bell Labs, part of the Nokia family of companies, hereby requests certification for Multicarrier operation with up to seven carriers utilizing this **5G New Radio** OFDM based air interface. The required supporting exhibits are attached.

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.

<b>Equipment Identification:</b>	<b>2AD8UAWKUCD01</b>
<b>Rules Part Number:</b>	<b>Part 30</b>
<b>Emissions Designators:</b>	<b>97M5G7W, 198MG7W and 498MG7W (5G-NR LTE-TDD Based)</b>
<b>Frequency Range:</b>	<b>Transmit/ Receive: 24.25-24.45 GHz and 24.75-25.25 GHz</b>
<b>Output Power:</b>	<b>69 dBm EIRP per polarization, 72 dBm EIRP Total Output for 2 polarizations operating in a 2T/2R MIMO configuration. The 4T4R and 8T8R operational configurations are also supported. One through Seven Carrier MIMO Operation</b>
<b>Frequency Tolerance:</b>	<b>± 0.05 ppm</b>

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 **AWKUC/D AirScale 24 GHz Radio Unit**. This request also authorizes TIMCO Engineering Inc. to submit a **KDB PAG** request for processing of this filing. 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,



Raymond J. Johnson  
Technical Manager  
FCC Compliance Test Group  
Nokia, Global Product Compliance Laboratory  
Phone: +1 908 679 6220  
email: [ray.johnson@nokia-bell-labs.com](mailto:ray.johnson@nokia-bell-labs.com)

Primary Administrative Contact

Raymond J. Johnson  
Technical Manager  
FCC Compliance Test Group  
Nokia, Global Product Compliance Laboratory  
Building 5A-127  
600 Mountain Avenue  
Murray Hill, NJ 07974  
Phone: +1 908 679 6220  
email: [ray.johnson@nokia-bell-labs.com](mailto:ray.johnson@nokia-bell-labs.com)

Filing Engineer

W. Steve Majkowski NCE  
Filing Lead Engineer  
Nokia, Global Product Compliance Laboratory  
Building 5B-103  
600 Mountain Avenue  
Murray Hill, NJ 07974  
email: [steve.majkowski@nokia-bell-labs.com](mailto:steve.majkowski@nokia-bell-labs.com)

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**Permanent Confidentiality Request Letter**

**Attestation Statements Part 2.911(d)(5)(i) Filing**

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**Attestation Statements Part 2.911(d)(7) Filing**

**Required Exhibits:**

<u>Exhibit</u>	<u>FCC Rule Number</u>	<u>Description</u>	
1	Section 2.1033(a)	FCC Form 731	
2	Section 2.911(d)	Qualifications and Certifications	
3	Section 2.1033(c)(1,2, 4-7)	Manufacturers, FCC Identifier, Emission, Range of RF Power & Frequency	
4	Section 2.1033(c)(11)	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, Operational 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 User's Manual)	(Confidential)
9	Section 2.1033(c)(12)	Internal Photographs of the Equipment	(Confidential)
NDA	KDB 726920 D01 Sect. II 3) b)	Non-Disclosure Agreement	(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	

### Test Report

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<u>Section</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	Section 2.1041(b)	List of Test Equipment
4.8	Section 2.1033(c)(21)	Photographs of the Test Setups
4.9		Facilities and Accreditation
5.0		Appendix A Calibration Certificates