

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

November 22, 2021

**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 **AWGUC/D AirScale mmWave 2T2R n258 60dBm EIRP** is the subject of this request for an initial Product Certification under **FCC ID: 2AD8UAWGUCD01**.

The **AWGUC/D AirScale mmWave 2T2R n258 60dBm EIRP** is part of our 24 GHz ASMR family of products. This system is composed of either AC or DC powered base units. The Radio Base Unit, an **AWGUC** (AC version) or an **AWGUD** (DC version) incorporate identical mmWave 5G LTE / New Radio Transceiver modules. The transceiver modules implement dual polarized 12x16 active element phased arrays. These 1400 MHz instantaneous downlink bandwidth units have a total power output capability of 57 dBm EIRP per polarization for a total combined power of 60 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 57 dBm EIRP per polarization for a total combined power of 60 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 hardware design is unchanged and all of 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>2AD8UAWGUCD01</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>57 dBm EIRP per polarization, 60 dBm EIRP Total Output for 2 polarizations operating in a 2x2 MIMO configuration</b>
	<b>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 **AWGUC/D AirScale mmWave 2T2R n258 60dBm EIRP**. 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,



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Att. Table of Contents for the **AWGUC/D AirScale mmWave 2T2R n258 60dBm EIRP** Product Certification Report

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**Cover Letter**  
**Agent Letter**  
**Request for Confidentiality**

<b>Exhibit</b>			
<b>Number</b>	<b>FCC Rule Number</b>	<b>Description</b>	
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(b)(5)	Block Diagram, (by request)	(Confidential)
7	Section 2.1033(c)(10,13)	Operational Description, Circuitry for Determining Frequency	(Confidential)
8	Section 2.1033(c)(10)	Complete Circuit Diagrams	(Confidential)
9	Section 2.1033(c)(12,3)	Instruction Book (Installation Manual or User's Manual)	(Confidential)
10	Section 2.1033(c)(12)	Internal Photographs of the Equipment	(Confidential)
11	KDB 726920 D01 v01r02	Non-Disclosure Agreement (NDA)	(Confidential)
12	Section 2.1033(c)(12)	External Photographs of the Equipment	
13	Section 2.1033(c)(10, 13)	Description of Modulation System,	
14	Section 2.1033(c)(21)	Photographs of the Test Setups	

### **Test Report**

<b>Section</b>			
<b>Number</b>	<b>FCC Rule Number</b>	<b>Description of Test Report Exhibits</b>	
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	