



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

**Nokia Global Product Compliance Laboratory
600-700 Mountain Avenue, Room 5B-111**

August 26, 2020

Timco Engineering Inc.
849 N.W. State Road 45
P.O. Box 370
Newberry, Florida 32669

Dear Examiner:

The Nokia **AWS LTE B66a RRH 4x45W** was previously authorized for single, dual carrier and three-carrier operation over the AWS-1/AWS-3 spectrum 2110 – 2180 MHz. **The purpose of this Class II Permissive Change application, under AS5BBTRX-28, is to obtain FCC authorization to add 5G-NR operation for 5 MHz, 10 MHz, 15 MHz and 20 MHz bandwidths over the 2110 – 2180 MHz spectrum.** This change is by software only.

The LTE B66a RRH (Remote Radio Head) can operate either as 4x45W MIMO (4T4R) or as 2x90W MIMO (2T2R), with a total composite RF power of 180 W (52.55 dBm). This Class II Permissive Change, 5G-NR operation, with bandwidths (BW) of 5, 10, 15 and 20 MHz will have corresponding emission designators 5M00G7W, 10M0G7W, 15M0G7W and 20M0G7W, respectively. The LTE B66a RRH also supports Concurrent 5G-NR and LTE operation with two and three carriers (contiguous and non-contiguous) for BW of 5 MHz, 10 MHz, 15 MHz and 20 MHz. Four modulation schemes are also supported: QPSK (Quadrature Phase-Shift Keying), 16QAM, 64QAM and 256QAM (Quadrature Amplitude Modulation).

This authorization request is for AWS LTE B66a RRH 4x45W Concurrent operation with 5G-NR and LTE utilizing the bandwidths (BW), modulations and emission designators previously cited, and over the AWS-1/AWS-3 spectrum 2110 – 2180 MHz (AWS Blocks A, B, C, D, E, F, G, H, I, J) , subject to PART 27—MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES, Subpart C—Technical Standards, §27.53 Emission Limits, (h) AWS Emission Limits. The measurement exhibits attached to this application demonstrate full compliance with FCC Part 27, Subpart C, 27.53 (h), 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:	AS5BBTRX-28
Rules Part Number:	Part 27 Subpart C, Part 27.53 (h) AWS Emission Limits
Frequency Range:	Transmit 2110-2180 MHz (Blocks A-B-C-D-E-F-G-H-I-J)
Output Power:	90 Watts Maximum per Antenna Port 2T2R; and 45 W for 4T4R
Frequency Tolerance:	± 0.05 ppm
Emission Designator:	5M00G7W, 10M0G7W, 15M0G7W and 20M0G7W

Attached are the FCC Form 731 (Application for Equipment Authorization – Radio Frequency Devices), the required measurement data and exhibits specific to this **request for 5G-NR Concurrent operation of the AWS LTE B66a RRH 4x45W**. 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 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 **AWS LTE B66a RRH 4x45W** Product Certification Report

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Cover Letter

<u>Exhibit #</u>	<u>FCC Rule Number</u>	<u>Description</u>
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Exhibit 10		Test Report
Exhibit 11		Test Setup Photographs