NOKIA Bell Labs

FCC ID: AS5BBTRX-28

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

Alcatel-Lucent USA Inc.
Building 5B-111
600 Mountain Avenue
Murray Hill, NJ 07974

January 12, 2017

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

Dear Mr. Sanders:

The Alcatel-Lucent **AWS LTE B66a RRH 4x45W** was previously authorized for both single and dual 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 three-carrier operation 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 (2T4R), with a total composite RF power of 180 W (52.55 dBm). With this Class II Permissive Change, both single carriers and dual carriers (contiguous and non-contiguous), with bandwidths (BW) of 5, 10, 15 and 20 MHz; and three carriers (contiguous and non-contiguous) with BW of 5 MHz, 10 MHz and 15 MHz, are supported with corresponding emission designators 5M00F9W, 10M0F9W, 15M0F9W and 20M0F9W, respectively. Supported operation is under the 3GPP Long Term Evolution (LTE) communication standard (ETSI TS 36.104). Three LTE modulation schemes are also supported: QPSK (Quadrature Phase-Shift Keying), 16QAM and 64QAM (Quadrature Amplitude Modulation).

This authorization request is for AWS LTE B66a RRH 4x45W operation with three carriers 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 2T4R; and 45 W for 4T4R**
Frequency Tolerance:	**± 0.05 ppm**
Emission Designator:	**5M00F9W, 10M0F9W, 15M0F9W and 20M0F9W**

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Attached are the FCC Form 731 (Application for Equipment Authorization – Radio Frequency Devices), the required measurement data and exhibits specific to this **request for three-carrier authorization** of the **AWS LTE B66a RRH 4x45W**. The technical or non-technical contact at Alcatel-Lucent 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.

The notes on the Grant of Equipment Authorization should include:

> *This Class II Change authorizes three-carrier operation over the AWS spectrum 2110 – 2180 MHz, for both 2x90W MIMO (2T4R) and 4x45W MIMO (4T4R) configurations.*

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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