TIMCO Engineering Inc.

FCC Authorized Telecommunications Certification Body (TCB)

Nokia Bell Labs
Nokia, Global Product Compliance Laboratory
600-700 Mountain Avenue
Room 5B-108
Murray Hill, NJ 07974

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SUBJECT:: TIMCO-TCB/Request for additional info - NOKIA SOLUTIONS AND NETWORKS, OY - **FCC ID: 2AD8UAEWDAEWE01 - JOB #: 2351UC19 , KDB Tracking Number 267367**

Dear FCC Examiner

Thank you for your thorough review of the product filing for **FCC ID: 2AD8UAEWDAEWE01** TIMCO Job # **2351UC19 - KDB Tracking Number 267367.** The Responses to your request for additional information are attached to this letter and changes to all exhibits have been uploaded with this letter.

Should there be any questions or procedural issues please feel free to contact me or the filing engineer 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@alcatel-lucent.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

Filing Engineer
W. Steve Majkowski NCE
Filing Lead Engineer
Nokia, Global Product Compliance Laboratory
Building 5B-103
600 Mountain Avenue
Murray Hill, NJ 07974
Phone +1 908 608 8004
email: steve.majkowski@nokia-bell-labs.com

Dear FCC Examiner
Thank you for your review of the filing application for **FCC ID: 2AD8UAEWDAEWE01**. Per your letter our responses are listed.

1- The method to subtract the realized gain of the EUT antenna from its measured radiated power to arrive at theoretical conducted power is only allowed for the band edge measurements. For devices subject to part 30, the band edge is defined as the frequency range removed from the edge of the block by 10% of the transmitted signal bandwidth. You are not allowed to extend this region by an arbitrary amount simply because the realized gain of the EUT antenna is simulated beyond its in-band range.

Previous Nokia Response: Nokia respects that the FCC can and will declare this interpretation however it deems fit. However, the interpretation as stated above does not mirror the understanding of the mmWave Joint Technical group rewriting ANSI C63.26. I also do not believe it is in the FCC's overall interest to restrict OOBE measurements to 10% beyond the transmitted signal bandwidth from bands edge. I would be happy to discuss this by phone or in person at the OET Lab at the FCC's convenience. The ramifications are significant and beyond the discussion for this specific application.

FCC Response: Please understand this argument is not about the OOB measurement requirements of Part 30 devices. The frequency range to be investigated is already defined by the rule. In accordance with 2.1057, the emissions of licensed devices are to be investigated from the lowest radio frequency generated in the equipment , without going below 9 kHz, up to a specified upper limit which in your case is set to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower. We are not asking you to restrict OOB measurements to 10% beyond the transmitted signal bandwidth from the band edge. Obviously, the OOB measurement investigation has to comply with the requirements stated above. However, we draw your attention to the fact that converting radiated power to conducted power by subtracting gain of the EUT antenna from the measured radiated power is currently only allowed for the band edge. Please refer to section 4.4.2.5 of FCC KDB publication 842590 D01 for further information. This method was suggested by the FCC representatives to the mmW JTG and was agreed upon by the group. That being said, the OOB emissions beyond the band edge is still needed to be investigated by other appropriate methods.
Nokia Response: The term argument is far too strong a word to describe this discussion. We are happy to comply with the directions contained herein. OOBE has not been an issue with our mmWave product. It should be noted that the mmWave JTG antenna gain relaxation discussions were agreed to without any mention that this would only be applicable for the 10% bandwidth. All of those discussions were OOBE discussions and not Edge of band discussions. Is it the FCC's position that TRP measurements are only applicable for the Tx band +/- the 10% bandwidth?

2- It is stated in the response that " So even if one was to assume that an equivalent signal source was radiating from an isotropic radiator and discounted the 20 dB of EUT gain correction it would still result in 6 dB margin to the limit. " If that is in fact the case, please provide two separate plots, one that shows the radiated emission at the band edge (corrected by EUT antenna gain), and another plot that shows the radiated emission from the band edge down to 36 GHz (without subtracting the EUT antenna gain) that shows the device still meets the emission limit. The other plots showing the emission levels below 36 GHz appear to meet the OOB limit of -13 dBm/MHz, and no further action is required.

Nokia Response: The originally requested radiated emissions plot of the product was performed at 1m for the 35-37 GHz frequency range. This measurement is a standard radiated emissions measurement and it is not corrected for product gain. It was performed without a preamplifier and with a low pass filter to reduce the transmit carriers effect on the analyzers front end. The formal measurements document a minimum 6.29 dB of margin to the limit. The data is attached.

FCC Response: Please incorporate the attached plot in the report at an appropriate location with detailed description of the methodology and RF equipment used including the notch filter.
Nokia Response: The previously requested test results plot, a detailed description of the measurement methodology and a plot of the "notch" filter were added to the report. The specific details of the measurement are in paragraph 4.10.1 - Low Pass filter for E-Field Measurements between 26.5 GHz – 37 GHz on page 39, the T15 Radiated Emissions on page 48 and the Test Equipment Lists starting on page 72.

Kind Regards
Steve

W. Steve Majkowski NCE
NOKIA Bell Labs
Global Product Compliance Laboratory
Office: +1.908.608.8004
Cell: +1.732.259.1458
email: steve.majkowski@nokia-bell-labs.com