

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

October 2, 2019

**SUBJECT::** TIMCO-TCB/Request for additional info - NOKIA SOLUTIONS AND NETWORKS, OY -  
**FCC ID: 2AD8UAEWDAAEWE01 - JOB #: 2351UC19 , KDB Tracking Number 267367**

Dear FCC Examiner

Thank you for your thorough preliminary review of the product filing for **FCC ID: 2AD8UAEWDAAEWE01** 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. Please also carefully consider the information outlined in the cover letter as it clearly identifies the restrictions governing the integration, installation and operation of the product.

Should there be any questions or procedural issues please feel free to contact me or the filing engineer by email and/or phone.

Sincerely,



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Dear FCC Examiner

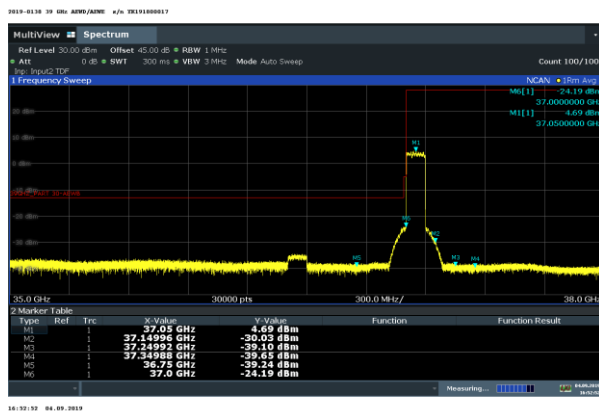
Thank you for your review of the filing application for **FCC ID: 2AD8UAEWDAEWE01**. Per your letter our responses are listed.

Your application is currently being reviewed. Please provide response to the following questions and comments:

- 1- Please provide emission plots for the range 36 GHz to 37 GHz. On page 40 of the test report it is stated that emissions between 36 GHz and 40 GHz were evaluated as out of band emissions and addressed in section 4.3.2 of the test report.

Please provide justifications as to why you extend the OOB region from lower edge of the block (37 GHz) to 36 GHz.

**Nokia Response:** The product was tested from 26.5 to 40 GHz with the unit on but transmitter disabled against the Part 15 Class B limit (plot attached) and from 26.5 GHz to 36 GHz with the transmitter on at full power. When attempting to scan from 36 to 37 GHz with the standard radiated emissions configurations the preamplifier is overloaded by the presence of the +51 dBm transmit carriers. Therefore overlapping measurements of Out of Band Emissions were performed from 35 to 41 GHz using a high gain antenna, no preamplifier and invoking the noise reduction capabilities of the FSW Analyzer (plot below). The radiated measurement of Out of Band Emissions from 35 to 41 GHz are corrected for the products realized gain as documented in Confidential Exhibit 6. The exhibit shows that for the 30-50 GHz frequency range the gain is consistent, well behaved and is therefore appropriate for evaluation of emissions from the transmitter. For the 35-37 GHz frequency range in question, the Realized Gain of the product is only 2 dB below the peak gain of the product inside the transmit band. The Out of Band plots, as shown in the example below, clearly show that there are no emissions within 26 dB of the -13 dBm limit. 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 6dB margin to the limit. There are no detectable emission from 36-37 GHz that are above the measurement noise floor and within 6 dB of the -13 dBm / 82.23 dBuV/m/MHz which is the Part 30 limit.



- 2- Please note that subtracting the antenna gain from measured radiated power (EIRP) to arrive at equivalent conducted power is only allowed at the band edges. The band edge in this case is the frequency range that is removed from the edge of the block by 10% of the channel bandwidth.

**Nokia Response:** Although the Band Edge is considered to be removed from the edge of block/band by 10% of the channel bandwidth, the Out-Of-Band-Emissions must be evaluated far beyond that point. The spurious regrowth for a single 100 MHz Carrier can extend 100 MHz beyond the edge of block. When the aggregated carrier is 400 MHz, 800 MHz or 1200 MHz wide, the regrowth and spurious emissions outside the band are far beyond the 10% relaxation range of the limit. The OOB measurement provides the best data for this evaluation of possible interference and it is performed for multiple carrier configurations. It is for that reason that all of the OOB plots for band n260 were evaluated from 35-41 GHz and this data is key to the FCC's mission in mmWave spectrum control(1). Nokia supported the recent FCC OET's evaluations of OOB emissions from 28 GHz products. These were evaluated at 250 MHz outside the band and beyond as an indication of performance for the determination of the necessary emissions control for the 23 GHz mmWave spectrums effect on spacecraft microwave instruments such as the NASA Advanced Microwave Scanning Radiometer (ASMR/J/2), GPM Microwave Imager, MSU/AMSU and Advanced Technology Microwave Sounder (ATMS).

(1) Likewise band N261 evaluations were performed from 26-30 GHz.

Kind Regards

Steve

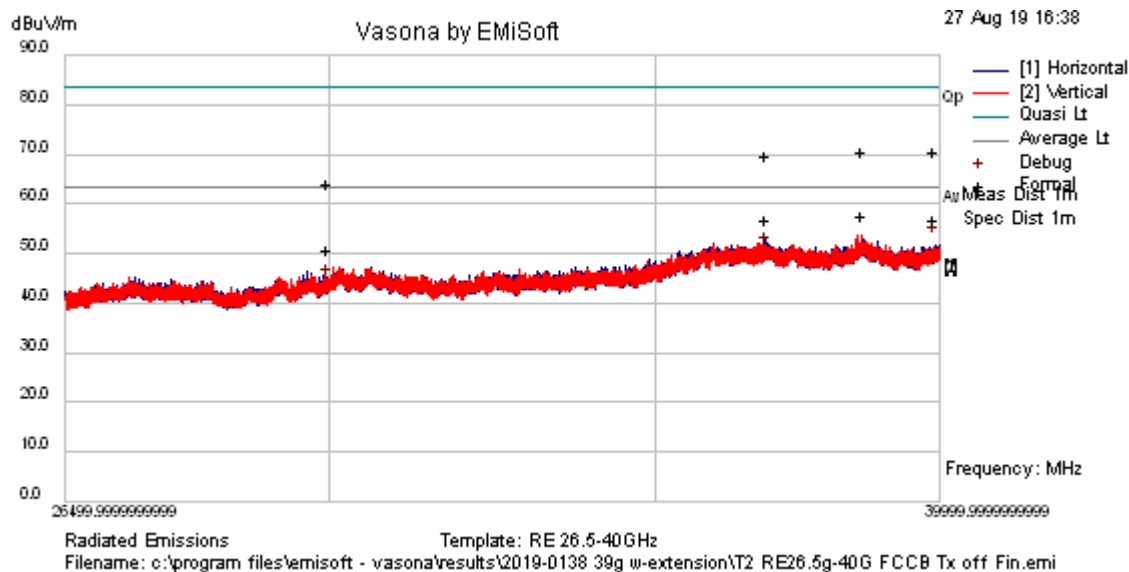
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## T2 Radiated Emissions 26.5G – 40 GHz FCC part 15 B Tx off Final



<b>Results Title:</b>	RE 26.5-40GHz
<b>File Name:</b>	c:\program files\emisoft - vasona\results\2019-0138 39g w-extension\T2 RE26.5g-40G FCCB Tx off Fin.emi
<b>Test Laboratory:</b>	AR8 MH 25C, 27% RH 1016mB
<b>Test Engineer:</b>	JY / MJS
<b>Test Software:</b>	Vasona by EMISoft, version 2.161
<b>Equipment:</b>	Nokia Wireless Group
<b>EUT Details:</b>	AEWD SN-YK191800017 AEWE-SN-YK192100004 Powered by -48Vdc, 6 amps.
<b>Configuration:</b>	Powered by -48VDC. Tested to FCC Class B, RE 26.5GHz - 40GHz, ESU IH69, Ant-E526. Internal attenuation 0 dB, RBW-30kHz, VBW-3MHz.,Formals RBW-1MHz, VBW-3MHz.
<b>Date:</b>	2019-08-27 16:38:30

FORMAL DATA												
Freq. MHz	Raw dBuV	Cable dB	Factor dB	Level dBuV/m	Emission Type	Pol H/V	Ht. cm	Az. Deg.	Limit dBuV/m	Margin dB	Pass /Fail	Comments
38569.4	26.57	0	27.29	53.86	AvgMax	V	144	336	63.5	-9.64	Pass	
39923.1	25.83	0	27.31	53.15	AvgMax	H	205	44	63.5	-10.35	Pass	
36860.9	24.6	0	28.51	53.11	AvgMax	H	102	179	63.5	-10.39	Pass	
29996.4	24.03	0	22.84	46.86	AvgMax	V	155	146	63.5	-16.64	Pass	
39923.1	39.53	0	27.31	66.84	Peak	H	205	44	83.5	-16.66	Pass	
38569.4	39.52	0	27.29	66.81	Peak	V	144	336	83.5	-16.69	Pass	
36860.9	37.67	0	28.51	66.18	Peak	H	102	179	83.5	-17.32	Pass	
29996.4	37.71	0	22.84	60.55	Peak	V	155	146	83.5	-22.95	Pass	

PREVIEW DATA												
Freq. MHz	Raw dBuV	Cable dB	Factor dB	Level dBuV/m	Emission Type	Pol H/V	Ht. cm	Az. Deg.	Limit dBuV/m	Margin dB	Pass /Fail	Comments
38569.4	26.42	0	27.29	53.72	Preview	V	200	315	63.5	-9.78	Pass	
39923.1	24.6	0	27.31	51.91	Preview	H	100	225	63.5	-11.59	Pass	
36860.9	21.52	0	28.51	50.03	Debug	H	105	317	63.5	-13.47	Pass	
29996.4	20.52	0	22.84	43.36	Debug	V	105	317	63.5	-20.14	Pass	

Note: Preview data was measured using a peak detector to identify frequencies of interest for formal measurement. Formal data consist of all frequencies in the preview list within 6 dB of specification limit or the top six frequencies. Failure in preview data does not necessarily constitute failure in formal data.