

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of)	
)	
Expanding Flexible Use of the 3.7-4.2 GHz Band)	GN Docket No. 18-122
)	
Petition for Rulemaking to Amend and Modernize Parts 25)	RM-11791
and 101 of the Commission's Rules to Authorize and)	
Facilitate the Deployment of Licensed Point-to-Multipoint)	
Fixed Wireless Broadband Service in the 3.7-4.2 GHz)	
Band)	
)	
Fixed Wireless Communications Coalition, Inc., Request)	RM-11778
for Modified Coordination Procedures in Band Shared)	
Between the Fixed Service and the Fixed Satellite Service)	

REPLY COMMENTS OF NOKIA

Nokia submits these Reply Comments in the above-captioned proceeding to highlight certain technical parameters recently submitted by the C-Band Alliance (CBA).¹ CBA deserves great credit for its revised technical proposal, which goes a long way toward facilitating robust 5G services in the 3.7 GHz band. Specifically, Nokia is pleased that CBA has now adopted proposed power limits and emissions limits for 5G base stations in the 3.7 GHz band that are consistent with Nokia's recommendations. As further discussed below, CBA also proposed new parameters for protection of earth stations using protection zones, which Nokia finds promising, but needs additional time to independently verify through access to more information regarding FSS base stations. Nokia remains optimistic that the industry can work

¹ Reply Comments of the C-Band Alliance, GN Docket No. 18-122 *et al.*, Technical Annex at 5 (filed Dec. 7, 2018) ("CBA Reply").

together to reach a definitive consensus on a full slate of technical rules that will facilitate robust 5G services while protecting any remaining FSS operations in the 3.7-4.2 GHz band.

I. POWER LIMITS

In Nokia's Comments, we proposed the following power limits for base stations, consistent with the Commission's proposal in this proceeding:

- 1640 watts EIRP for emission bandwidths less than one megahertz and to 1640 watts per MHz EIRP for emission bandwidths greater than one megahertz; and
- 3280 watts EIRP for emission bandwidths less than one megahertz and 3280 watts per MHz EIRP for emission bandwidths greater than one megahertz in rural areas.²

Nokia is pleased that CBA supports the following in their Reply Comments: 3280 watts/MHz (65 dBm/MHz); in rural areas and 1640 watts/MHz (62 dBm/MHz) in other areas.³ This is identical to Nokia's original submission, and Nokia requests that the Commission adopt these parameters.

II. OUT OF BAND EMISSIONS

With respect to out of band emissions limits, Nokia proposed the following in its Comments:

- -3dBm/1MHz from 0 to 20MHz offset from the 5G spectrum block
- -40dBm/1MHz from 20MHz to 40MHz offset from the 5G spectrum block
- -50dBm/1MHz for frequency offset greater than 40MHz.⁴

CBA confirms in its Reply Comments that the out-of-band emissions levels proposed by Nokia

² Comments of Nokia, GN Docket No. 18-122 *et al.*, at 11-12 (filed Oct. 29, 2018).

³ CBA Reply, Technical Annex at 1-2.

⁴ See Letter from Brian Hendricks, Nokia, to Marlene Dortch, FCC, GN Docket No. 18-122, *et al.* (filed Dec. 3, 2018) (restating and correcting Nokia's proposal in its Comments).

are acceptable.⁵ As such, Nokia respectfully requests that the Commission's rules reflect these out of band emissions limits.

III. ADDITIONAL CBA PROPOSALS DEPENDENT ON EARTH STATION RECEIVER CHARACTERISTICS

In its Reply Comments, CBA proposes certain service rules dependent on earth station receiver characteristics, including the actual earth station antenna and filter performance.⁶ Specifically, CBA proposes power spectral density limits for 5G licensee emissions within 40 kilometers of FSS earth stations operating between 3900-4200 MHz (different limits protecting generic earth stations and earth stations used for telemetry, tracking and control (TT&C), respectively). CBA also proposes power spectral density limits for 5G licensee emissions within 150 MHz of the 14 earth stations operating between 3700-3900 MHz used for TT&C.

These parameters (coordination distances and spectral density limits) may prove to be reasonable, but Nokia needs additional time to verify these proposals as they depend on access to parameters of the relevant FSS earth stations (for example, antenna pattern and interference-to-noise ratio of the earth station receivers), and what is feasible in terms of any filtering potentially needed to protect the FSS earth stations. Nokia looks forward to working with CBA and industry to verify these parameters and bring these technical issues to closure.

⁵ CBA Reply, Technical Annex at 6.

⁶ *Id.* Technical Annex at 3, 5, 7.

IV. CONCLUSION

Nokia is pleased that the CBA has agreed to Nokia's proposals regarding power limits and out of band emissions limits. Nokia looks forward to further coordination with the CBA and others in the industry to review the additional proposals in CBA's Reply Comments to facilitate robust 5G services while protecting FSS earth stations from harmful interference.

Respectfully submitted,

Nokia

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