

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

**In the Matter of
Expanding Flexible Use of the
3.7 GHz to 4.2 GHz Band**

GN Docket No. 18-122

Reply Comments of iPosi, Inc.

Introduction

In its Public Notice of May 1, 2018 (“PN”), the Commission’s Office of Engineering and Technology (“OET”) pursuant to the Section 605(b) of the MOBILE NOW Act asks for public comment to use or share the frequencies between 3.7 and 4.2 GHz. The object of this Bill’s Section is to provide definitive information regarding feasible new operations with either outright cleared and re-purposed licensed operations as well as same-channel (“co-channel”) sharing.

The PN provides three guidance seeking questions for comment which were addressed by most Commenters. iPosi, Inc. (“iPosi”) respectfully provided Comments and again provides the following Reply Comments.

I. Most Comments Fall into Distinct Policy Recommendations Regarding C Band Re-Purposing

We observe comments in this 3.7 to 4.2 GHz (“C Band”) proceeding tend to fall into relatively distinct categories. These can be categorized within the following policy positions:

- Instead of permitting active sharing, clear the 500 MHz C Band at once or over time
- Share outright or Clear-and-Share the C Band. Do so in a mutually aware, coordinated fashion that protects legacy services
- Do not change, maintain current rules and C Band service allocations
- If re-purposed, make express rules protecting radio altimetry, allocated between 4.2 and 4.4 GHz

Justifications for fully clearing we believe disregards proper consideration of definitive methods to share spectrum -- currently in certification and standards. These share in a fashion that is consistent with protection of critical legacy services, notably CBRS protection of other vital services, such as US Naval radars which operate co-channel, at or near 3.55 GHz. Similar to C Band receivers, US Navy shipboard radar protection must follow heightened interference protection standards. There are equally compelling reasons to protect C Band. These can exist within the CBRS dynamic sharing intelligence and measurements platform. Arguments against intelligent sharing were not present by those advocating unconditional band clearance with equipment and spectrum equity

reimbursements other than to say or imply spectrum sharing is inadequate or does not work. We submit that this as an under-estimation of CBRS dynamic sharing.

Co-channel interference standards incorporated by CBRS can address C Band following insights set forth by this and other Commenters. Maintaining robust C Band operations also requires attending to limit interference below earth station OOB and LNB saturation limits. These conditions can be simultaneously managed within the CBRS dynamic spectrum sharing architecture. iPosi stresses that co-channel C Band sharing will be extremely valuable by confining most terrestrial operations to indoor CBRS installations – where at least 80% of 5G service will operate. Partially cleared C Band band segment(s) may be intelligently shared between in- and outdoor operations. iPosi emphasized it and other measurement techniques that accurately determine through-building transmission measurements once added to inverse square-law and fixed earth station antenna site information assure interference-free co-channel and adjacent band sharing to the stringent standards of high definition video programming through a geostationary relay path.

Certain interests recommend the C Band remain “as-is”. These Commenters include video programming C Band client interests. They view the C Band service as irreplaceable with other satellite transmission bands or fiber transmission alternatives. They also cite business and operational efficiency reasons to maintain the status quo.

They oppose the view held by analysts that reduction in C Band operations necessarily should be interpreted as certain obsolescence. Their reasons to oppose wholesale clearing the C Band are quite plausible, and by our read did not specifically rule out partial C Band clearing. These interests also did not address, compare or consider state of the art sharing via CBRS terrestrial systems as a policy setting alternative. They did cite interference concerns which sharing must demonstrate it can reliably prevent.

The As-Is comments also present increasing stringent interference criteria present by higher definition video formats along with existing video carriage of signals relayed over distant geostationary satellites. As all appreciate, link margins are quite limited thus stringent protection is essential to high operational uptime and reliability. The As-Is advocates contend C Band cannot be displaced significantly by fiber and there is no indication that it will be thoroughly displaced or replaced in the foreseeable future. They contend relocating to higher satellite bands brings more operational uncertainty. C Band as it exists is simply too versatile, proven and ingrained as an efficient and vital video relay solution which also ties to an informed public. We concur, and we further assert dynamic sharing enables both video programming signals and terrestrial systems to co-exist, co-channel, and will rationally and dynamically share scarce spectrum resources.

Summarizing partial clearing rationale: For those that presented partial clearing as an option or feature, partially cleared C Band spectrum offers an alternative toward occupying the future C Band on a best use basis and avoids negative outcomes associated with more extreme options (that is, entirely clear or leave completely and

indefinitely unchanged). Proponents of intelligent sharing advance the CBRS architecture as one that is capable of sharing today's high performance legacy video services.

Adjacent radio altimetry interference concerns: Shared spectrum management if deployed and operating along the upper C Band border in the fashion presented by iPosi, which contains the impact of measured indoor 5G transmissions and addresses and avoids interference posed by radio altimetry interests. Partial clearing should account for higher power operations that once cleared transmit terrestrial signals well separated from the upper 4.2GHz band boundary shared by radio altimetry.

Conclusions

This proceeding exposed important views by C Band occupants, video programming clients, new entrants who all become responsible stakeholders by respecting legacy rights to interference-free operation while operating high performance shared systems co-channel within the C Band. Dynamic high performance sharing is not "fire and forget", it is a vigilant spectrum surveillance and management system capable of continually protecting and adapting to increase mutual system protection from co- and adjacent channel transmissions under intelligent control and procedures.

In view of the diverse array of comments, iPosi continues respectfully to recommend the Commission seriously consider a blended "Clear & Share" approach to best balance the nation's future C Band operations. We believe dynamic high performance sharing addresses the principled concerns set forth by a vast majority of GN 18-122 Commenters.

iPosi based on this latest record sees no reason not to continued advocacy to clear 100MHz initially of C Band spectrum to begin a reasonable transition and all-interest compromise. This gains vitally needed 5G service and continues reliable C Band operations. We recommend 5G share with existing C Band the other 400 MHz spectrum primarily confined to indoor (as these provide much higher in-building loss measurements thus reliably protecting legacy services) to avoid transition time and costs. This increases 5G operations nationally, it's globally competitive, near term, and consistent with the Commission's public interest objectives.

Respectfully submitted,

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