SOME CURRENT SPECTRUM REGULATORY ISSUES

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Two 2020 FCC Spectrum Decisions: Aftermath

3.7-3.98 GHz Flexible Use Licenses and 4.2-4.4 GHz Radar Altimeters (FCC Docket No. 18-122)

- March 2020 FCC C-Band Order made 3.7-3.98 GHz available for commercial flexible fixed and mobile use, such as 5G, transitioning fixed satellite service and fixed wireless out of 3.7-4.0 GHz
- 3.7-3.98 GHz auction (December 2020/January 2021) raised 80+ billion U.S. dollars
- The aviation industry had raised concerns about potential interference from 5G to onboard radar altimeters used by fixed wing aircraft and helicopters without appropriate measures
  - Aviation organizations in May 2020 filed for reconsideration of Order seeking license conditions or rules to ensure protection of radar altimeters; concerns contested by commercial wireless
  - RTCA (Radio Technical Commission for Aeronautics) completed a further study (September 2020) finding the presence of an interference threat to existing radar altimeters under the adopted rules; the study and its results are challenged by the commercial wireless industry
- As flexible use licensees were about to turn up deployments in the lower 100 megahertz in December 2021, major airlines and FAA doubled down; AT&T and Verizon adopted *voluntary, temporary* measures for deployments near a number of airports
- Discussions among FAA, FCC, and the wireless and aviation industries ongoing as airline industry races to implement fleet retrofits and develop new altimeter standards for the long term
  - Nineteen other auction winners (in 3.8-3.98 GHz) soon plan to become operational
  - 5G licensees planning to end voluntary measures while aviation industry seeks their continuation until new altimeter standards adopted and implemented

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Two 2020 FCC Spectrum Decisions: Aftermath (cont'd)

Ligado Networks License Modification and GPS Receivers (FCC Docket No. 11-109 et al.)

- April 2020 Order modified Ligado's Mobile Satellite Service license and granted Ligado Ancillary Terrestrial Component ("ATC") authority to deploy terrestrial services in its satellite spectrum in the 1.5 and 1.6 GHz Bands ("L-Band") subject to multiple conditions
- Numerous concerns about potential for harmful interference in L-Band from planned Ligado operations to GPS and SATCOM used by federal government (i.e., Department of Defense) and private sector users from multiple industries despite the conditions in the Order
  - Eight petitions for reconsideration of the Order were filed and are still pending (and an NTIA petition for stay which was denied by the FCC in January 2021)
- The 2021 National Defense Authorization Act ("NDAA") (January 2021) imposed several obligations and conditions on the Department of Defense indirectly targeting Ligado
  - Per the NDAA, the National Academy of Sciences stood up an independent panel to review the FCC's Order and the potential for interference from Ligado's planned operations
  - The panel's report was released in September 2022 and found harmful interference would likely be caused to some GPS receivers, most especially some precision GPS receivers (as well as interference to Iridium's satellite comms)
- Ligado has not yet deployed any terrestrial systems, and there are new calls for a stay until the reconsideration petitions resolved

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Spectrum Receiver Performance Inquiry (FCC Docket No. 22-137)

The primary source of the interference threats to incumbent receivers in the above situations are signals within the new entrants' channel bandwidths, not out-of-band emissions

In part prompted by developments following the 3.7 GHz and Ligado Orders, and the recognition that spectrum allocation and rules decisions will get more challenging in increasingly congested radiofrequency bands, the FCC launched an Inquiry Proceeding in the second quarter 2022 to gather information and consider the more active use of receiver standards as a spectrum management tool

- Traditional spectrum management has focused on regulating transmitters
- New entrants in the spectrum bands discussed above asserted that incumbents claiming interference were "not staying in their lane"

Essentially, the FCC proceeding is an inquiry into expanding the tools of spectrum management and what constitutes harmful interference (especially among coequal parties)

- FCC last looked at potential broader use of receiver standards formally two decades ago – a 2003 Inquiry proceeding was terminated in 2007 without action
- Limited history of FCC use of receiver standards, principally in repurposing/transition cases or safety services

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Spectrum Receiver Performance Inquiry (cont'd)

The FCC has two definitions of harmful interference depending on whether the victim service is a safety service or not, namely interference that

- endangers the functioning of a radionavigation service or of other safety services *or*
- seriously degrades, obstructs, or repeatedly interrupts a radiocommunication service operating in accordance with [the ITU] Radio Regulations

Objective regulation carries risks of being either too conservative or not conservative enough to achieve protection of one service without unduly restricting the operations of another

- Adopting bright lines is in tension with fact that harmful interference in particular situations depends upon a host of parameters, but lines must be drawn when managing spectrum

Basic thrust behind the *Receiver Performance Inquiry* is notion that regulating transmitters alone can lead to inefficient use of spectrum – unless there is knowledge of receiver characteristics of services and agreement concerning the extent they are to be protected

Prospective alternate approaches the FCC outlines in its *Notice of Inquiry*

- Industry-led voluntary measures
- Policy statement or general guidance
- General rules
- Band-specific actions

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Overview of Comments in Response to *Spectrum Receiver Performance Inquiry*

*Inquiry c*omment cycle closed in late July.

- Over four dozen commenters from multiple industries

General concurrence that, as spectrum allocations continue to evolve, increased receiver interference immunity performance is key to effective spectrum management

Most commenters asked the FCC to avoid adopting broad receiver mandates – instead rely generally on voluntary standards plus FCC guidance

- Receiver standards, if any, should be band-specific in appropriate cases
- No clear emergence of an objective standard of what "a poorly-performing receiver" is

General consensus that any band-specific standards should be founded on an exchange of information and multi-stakeholder working groups

- The comments were divided on what the role for the FCC and other agencies should be in any working group

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Overview of Comments on *Receiver Performance Inquiry* (cont'd)

Disparate views on the scope of any information exchange needed in a specific band

- New entrants' perspective: incumbents' receiver characteristics cover most of need
  - Understand incumbent receivers' susceptibility to interference from contemplated operations and the range of incumbent deployments seeking and/or whether modification of incumbent equipment to strengthen receiver interference immunity performance would be justified – pre-disposed to establishment of an interference protection criterion or IPC as a precondition to claiming harmful interference
- Incumbents' perspective: information on new entrant transmitters *and* incumbent receivers, and the likely variety of deployments of both are required
  - Incumbents and supporting manufacturers need to know characteristics of new entrant operations to determine how, if necessary, to modify deployments and equipment to better protect their operations

Core question: Is it possible to generate an agreed-upon factual basis for decision making across all interested industry groups in an allocation proceeding?

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Overview of Comments on *Receiver Performance Inquiry* (cont'd)

Commenters generally concur that implementing any new new receiver standards would require an appropriate transition: but devil in details considering factors such as incumbent equipment life cycles and any applicable requirements of the incumbent service

- Retrofits and costs for the same – is a reimbursement scheme appropriate?

Status: the FCC has not taken any further action on the record developed in the NOI – comments ended in Q3 2022 and little recent *ex parte* activity

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Recently Launched FCC Spectrum Band Proceedings

Notice of Rulemaking on Spectrum Rules for Unmanned Aircraft Systems (Jan. 2023)

FCC proposing to adopt service and licensing rules in the 5030-5091 MHz for UAS use of the Aeronautical Mobile (Route) Service ("AM(R)S")

- FCC seeks comment on how to protect adjacent-band AeroMACS service (surface AM(R)S operations at airports for which rules are not yet adopted) and whether special measures are necessary to ensure compatibility – exclusion zones and guard bands are mentioned (i.e., standard fare) but not possible AeroMACS receiver standards

Notice of Inquiry re Mobile Broadband/Other Expanded Use in 12.70-13.25 GHz (Oct. 2022)

The FCC solicits information on how it might encourage more intensive use of this satellite and fixed services band, for example by permitting flexible mobile broadband or other expanded use while ensuring coexistence with incumbent in-band and adjacent band services

- The FCC seeks "detailed information on the receiver, antenna, and operational characteristics for services operating in the adjacent bands," including DBS, NGSO satellites, MVDDS, active spaceborne sensors, and ARNS
- The FCC requests information or assumptions concerning out-of-band receiver blocking performance for receivers in the adjacent bands

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FINAL THOUGHTS

Early days, but FCC not necessarily rushing into the breach in the wake of the *Receiver Standards NOI* to adopt an overarching receiver performance policy but continues to look at the full arsenal of traditional spectrum management tools in latest proceedings

However, FCC may choose to be more deliberate in specific band proceedings to obtain timely information on incumbent operations in the wake of the 2020 orders discussed above and ongoing aftermath

- For example, depending on circumstances, it may be more inclined to, at an earlier stage, convene and in certain cases actively participate in/oversee multi-stakeholder groups and facilitate information exchanges

Might the FCC consider more extensive use of negotiated rulemakings in the spectrum allocations context?

- Agency convenes a committee of stakeholders under a neutral facilitator with the goal of reaching a consensus outcome on the text of a proposed rule
- Meant as a supplement not substitute for notice-and-comment rulemaking procedures in appropriate cases where there is a reasonable likelihood of consensus

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