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| Summary: | | | | |
| This ECO Bulletin provides a summary update on aspects of progress in spectrum management outside the CEPT. The items in this bulletin include:   1. FCC redefines broadband 2. Industry Canada's Radio Standards Specifications RSS-222 on White Space Devices (WSDs) published on 5 February 2015 3. Activities in 3GPP RAN (RAN4) with regard to 2 GHz MSS CGC (1980-2010 MHz and 2170-2200 MHz) 4. FCC: DA2GC Draft Order Taken Off Circulation (14-14.5 GHz) 5. FCC Auction on Advanced Wireless Services (AWS-3) 6. Argentina auctioned spectrum for 3G and 4G (including 700 MHz) 7. FCC Order on a Petition from Hotel Industry 8. FCC and FDA to hold a Joint Workshop on Wireless Medical Device Test Beds 9. LTE in ‘unlicensed’ spectrum in 5 GHz 10. Unmanned Aircraft Systems (Drones) 11. FCC: Spectrum Frontiers - Notice of Inquiry - Spectrum Bands above 24 GHz for Mobile Radio Services (for 5G and more) | | | | |

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| Proposal: |
| This bulletin is to note by the ECC Plenary. More detailed input on some of the subjects covered is being input to the groups dealing with the respective subjects.  The FCC re-definition of broadband may be of interest in WG NaN for two work streams within PT TRIS on migration from PSTN/ISDN to Next Generation Networks and provision of comparable information on the quality of retail internet access services)  Several items could potentially be considered for the draft agenda of the next ECC-FCC-IC meeting. Activities in 3GPP RAN (RAN4) with regard to 2 GHz MSS CGC may need to be clarified further.  Several of the issues covered in this bulletin should be noted or discussed at the respective WG/ PT level. This includes information related to TVWS, DA2GC, unlicensed applications, UAS/drones, and 5GHz related. |
| Background: |
| The Office brings to each ECC meeting a bulletin on activities in radio communications in other world regions, where a regulatory dimension is raised (e.g. by innovative services or technology).  The primary objective is to identify whether the ECC needs to investigate further or consider possible new actions. A secondary but more frequently addressed objective is to enable comparison to be made with the regulatory approach in other regions to subjects already treated by the ECC (including, where relevant, to the work of the CPG). |

1. **FCC redefines broadband**

In recent months the FCC has been signalling its intent to revise its benchmark broadband speeds. It moved in that direction at the end of January by dramatically increasing its existing benchmarks from 4 Mbps downlink/1 Mbps uplink to 25 Mbps downlink/3 Mbps uplink.

This move by the FCC determines what it says and does about the status of the country’s broadband in its periodical Broadband Progress reports. Section 706 of the Telecommunications Act of 1996 requires the FCC to report annually on whether broadband “is being deployed to all Americans in a reasonable and timely fashion and to take “immediate action” if it is not. Congress defined broadband as “high quality” capability that allow users to “originate and receive high quality voice, data, graphics and video” services.

If the FCC decides that the country is not deploying broadband in a “reasonable and timely fashion”, it could take action and that could include measures on the industry to increase broadband quality, coverage and speed. The announcement places the spotlight firmly on some of the problems relating to availability. Under the old definition large parts of the country had what commentators considered poor coverage with a choice between very expensive or very slow services.

Under the old definition, just over 6 percent of households could not get access to "broadband” which satisfied these criteria. That figure jumps to nearly 20% under the new definition. In terms of incentivising further investment in the supply-side the FCC emphasised that subsidies are only available to network deployments offering at least 10Mbps.

Reaction to the announcement was mixed with consumer groups predictably responding positively to the announcement while the industry criticised the move. The NCTA, the cable industry's chief lobbying organisation, issued a press release calling the 25 Mbps metric "arbitrary" and unrealistic. NCTA noted that cable network Internet speeds already meet and exceed the FCC’s new broadband description, but considered the Commission’s definition of broadband in its Section 706 report was arbitrary and not related to how millions of consumers currently access the Internet.

Those service providers offering slower speeds will no longer be able to refer to their products as “Broadband” It is hoped that this move will shake up competition in the market and encourage further investment in network deployments right across the country.

The full FCC statement is available at: <http://www.fcc.gov/document/fcc-finds-us-broadband-deployment-not-keeping-pace>.

(Relates to WG NaN; to two work streams within PT TRIS on migration from PSTN/ISDN to Next Generation Networks and provision of comparable information on the quality of retail internet access services)

1. **Industry Canada's Radio Standards Specifications RSS-222 on White Space Devices (WSDs)**

Industry Canada published on 5 February 2015 the new RSS-222 on White Space Devices (WSDs) [Link](http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf10930.html). Industry Canada's Radio Standards Specifications RSS-222 describes the various technical and operational requirements and processes to be followed when demonstrating compliance of the white space radio apparatus.

Industry Canada emphasises that the TVWS technology uses available television frequencies to deliver improved, Wi-Fi–like services in rural regions. TVWS devices will initially provide broadband Internet, similar to Wi-Fi, but with relatively expanded coverage. This move will allow these devices to be used in Canada without interfering with existing TV broadcasts. Industry Canada follows with this step the policy permitting the use of TVWS devices in 2012 with a similar approach to that which The United States has taken.

The policy approach for TVWS includes:

* Initial focus on geo-location database concept;
* TVWS devices permitted on a no-protection, no interference basis to licensed users in the band;
* Only licensed users will receive protection from TVWS devices;
* No limits on number of database administrators;
* Spectrum sensing is permitted by policy but initial implementation of rules will focus on a geo-location database;
* Licence-exempt TVWS devices will require type approval certification.

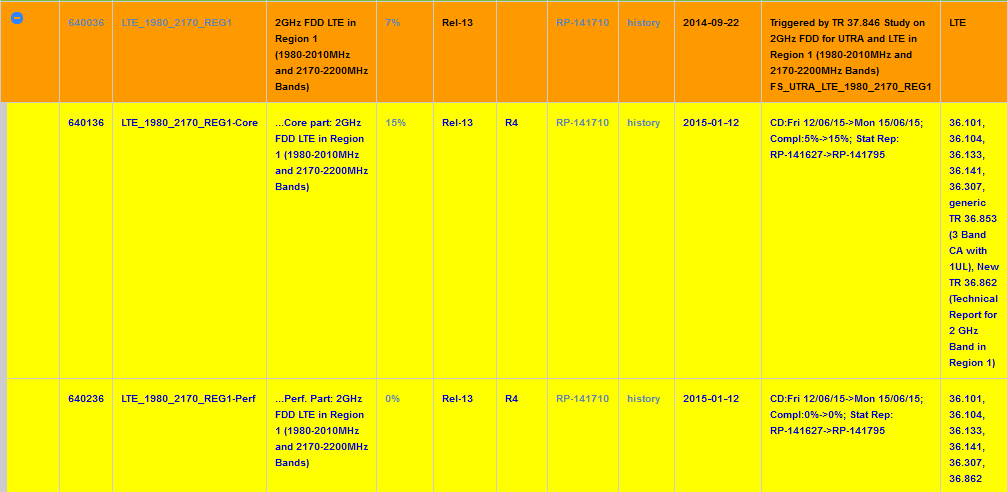
(to be taken into account by PT FM53, also section 4.5 (possible update) of Draft ECC Report 236 in public consultation – information of TVWS approaches outside of Europe)

1. **Activities in 3GPP RAN (RAN4) with regard to 2 GHz MSS CGC (1980-2010 MHz and 2170-2200 MHz)**

At the 3GPP TSG-RAN WG4 Meeting #72bis in Singapore, 6 – 10 Oct, 2014, a contribution was made; currently in 3GPP/RAN4 there is a study item to have a new band considering B1 (2.1 GHz cellular band) + MSS band.

See e.g.: [RP-141710](http://www.3gpp.org/ftp/tsg_ran/tsg_ran/TSGR_65/Docs/RP-141710.zip) (<http://www.3gpp.org/ftp/tsg_ran/tsg_ran/TSGR_65/Docs/>)

The following extract from 3GPP work database shows the relation to 3GPP specifications:





The MSS band for Complementary Ground Components (CGCs) deployment in Region 1 was studied in 3GPP TR 37.846. A new WID was started in RAN #65 for MSS + B1 with 2 x 90 MHz introduction in Europe. The input at the 3GPP TSG-RAN WG4 Meeting #72bis raised a question on the MSS complementary ground component usage, the 2 x 90 MHz MSS + B1 seems not to follow current regulations, i.e. MSS band operation independent of satellite operation.

Related activities: The draft ECC Report 233 on “Adjacent band compatibility studies for aeronautical CGC systems operating in the bands 1980-2010 MHz and 2170-2200 MHz” was brought to my attention (WGSE / PT SE40, also PT FM44 monitoring 2GHz MSS activities).

There may be a need to clarify this issue.

1. **FCC: DA2GC Draft Order Taken Off Circulation**

In the last bulletin, we already informed about the new proposed rulemaking process in the USA to establish DA2GC in the 14-14.5 GHz range as a secondary application to the FSS (i.e. DA2GC networks should not interfere with satellite receiver front-ends (uplinks) in the geostationary orbit in this case).

A draft order on establishing air-ground (ATG) (‘DA2GC’) mobile broadband service for aircraft passengers in the 14.0 to 14.5 GHz band was removed from circulation on 6 February 2015 amid national security concerns. It was circulated on 23 January 2015, according to the agency's public [list](http://www.fcc.gov/fcc-items-circulation) of circulated items. The Association of Flight Attendants raised concerns in docket [13-114](http://apps.fcc.gov/ecfs/proceeding/view?name=13-114) that the system could increase the risk of terrorism and cyber-warfare. Law enforcement also raised concerns.

The order was pulled from circulation “to facilitate further discussions with ourselves, other federal agencies and interested parties,” said an FCC official. Interestingly, this is a technology and frequency-neutral problem.

The agencies include the Department of Transportation, the Federal Aviation Administration, the Department of Justice, the FBI, the Department of Homeland Security, the Transportation Security Administration and the FCC.

Gogo will comply with the regulations, it said in an [ex parte notice](http://apps.fcc.gov/ecfs/comment/view?id=60001015305) (i.e. seems interested in this new regulation). Another proponent seems to be SmartSky Networks, which is working to form ATG services for private aircraft, and is working together with Harris to design its radios.

Singling out ATG from other networks that connect to the internet, including Ku- and Ka-band satellites, “doesn’t seem logical,” a Gogo spokesman said.

The ‘incumbent’ provider Gogo in North America meanwhile has provided recently two press releases informing about:

* [Gogo has now Installed on more than 1700 Commercial Aircraft](http://gogoair.mediaroom.com/2015-01-29-Gogo-Vision-Now-Installed-on-More-than-1700-Commercial-Aircraft) (February 2015)
* [Gogo Receives Blanket License from the FCC to Operate up to 1 000 Ku-band Satellite Aircraft](http://ir.gogoair.com/phoenix.zhtml?c=251827&p=irol-newsArticle&ID=1823375) (January 2015)

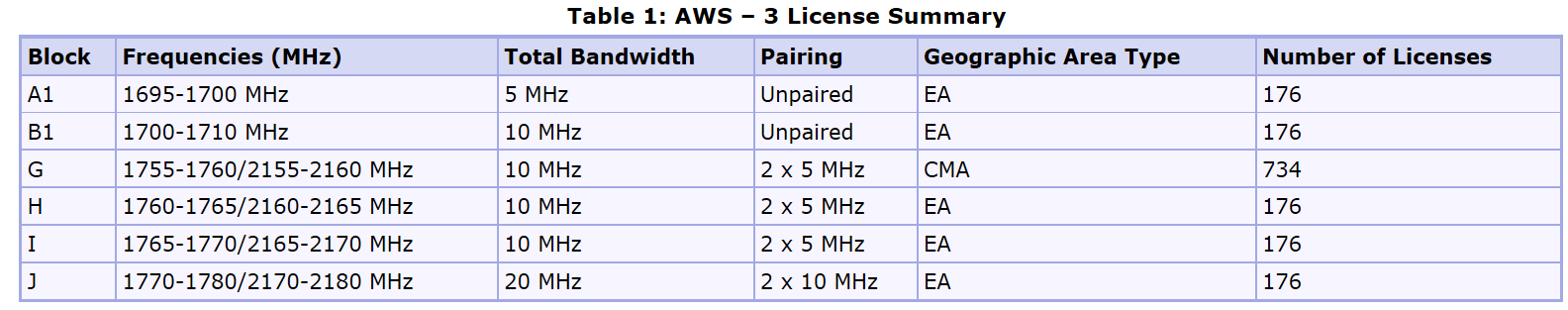
(Of interest for WGFM and PT FM48; further proceedings under FCC 13-114 could be a subject for information exchange about DA2GC at the next ECC-IC-FCC meeting)

1. **FCC Auction on Advanced Wireless Services (AWS-3)**

Auction 97 (AWS-3 frequencies) offered 1 614 licenses on a geographic area basis; 880 are Economic Area ("EA") licenses, and 734 are Cellular Market Area (“CMA”) licenses. The AWS-3 frequencies were licensed in 5 MHz and 10 MHz blocks, with each license having a total bandwidth of 5, 10, or 20 MHz.

The 1695-1710 MHz band has been licensed in an unpaired configuration. The 1755-1780 MHz band has been licensed paired with the 2155-2180 MHz band.

Auction 97 began on 13 November 2014 and closed on 29 January 2015.



The AWS-3 bands are currently being used by Federal and non-Federal incumbents for a variety of government and non-government services. AWS-3 licensees are subject to various requirements related these incumbent users, including Federal and non-Federal relocation, sharing, and cost-sharing obligations, coordination requirements, and protection of Federal and non-Federal incumbent operations.

The auction raised a total of more than 41 billion USD, with 31 winning bidders winning a total of 1,611 licenses.

Later on, a statement of a commissioner was published on 5 February 2015 saying that one ‘big’ operator (in connection with affiliated companies) abused the rules of the auction designed to make it easier for smaller operators tom get spectrum [Statement](http://transition.fcc.gov/Daily_Releases/Daily_Business/2015/db0202/DOC-331802A1.pdf).

(Generally of interest for administrations, e.g. in PT1)

1. **Argentina auctioned spectrum for 3G and 4G**

Argentina's communications ministry revealed the results from its 3G/4G auction held at the end of October 2014.

The Argentinian government sold national licences for 4G spectrum in the AWS bands (1.7/2.1 GHz) and the 700 MHz band (45 MHz duplex in 703-748/758-803 MHz), a bit of 3G spectrum in 830.25-834/ 875.25-879MHz and 1.9 GHz bands for three areas: the north (Region I), the south (Region III), and Buenos Aires (Region II). The auction raised around 2 billion Euros, resulting in a benchmark value for spectrum below 1 GHz to roughly 1 Euro/inhabitant/1MHz duplex. Four bidders took part in the auction.

(Generally of interest for administrations, e.g. in PT1)

1. **FCC Order on a Petition from Hotel Industry**

On 13 February 2015, the FCC dismissed a petition asking the Commission to declare that a network operator may, consistent with Section 333 of the Communications Act of 1934, as amended, “mitigate” threats to the operator’s network, even when doing so results in interference to guests’ Wi-Fi hotspots. In the alternative, the Petition asks the Commission to address these issues in an industry-wide rulemaking proceeding. This followed an action from the petitioners’ side withdrawing the petition.

[Link](http://transition.fcc.gov/Daily_Releases/Daily_Business/2015/db0213/DA-15-219A1.pdf) (the FCC docket number is RM-11737)

The expressed concern is about guests setting up Wi-Fi access points of their own, bringing either technical problems to the intended purpose of their own networks (a consequence of using licence-exempt networks) or a means to engage in damaging criminal activity.  In the latter case the means of dealing with it seems, by implication, similar to the idea of using GSM jammers to stop criminals from using the GSM network in a sensitive location, for example by using jammers.

The following article sets out pro’s and con’s of such an approach: [Link](http://www.commlawmonitor.com/2014/11/articles/wireless-2/fcc-faces-propriety-of-management-of-wi-fi-systems-to-guard-against-radio-frequency-interference/?repeat=w3tc). The CEPT was approached to comment on the issue. Our response noted that harmonisation at the European level did not generally address allegations and motives such as those raised in this case.

(of interest for groups dealing with unlicensed applications such as SRD/MG and PT SE24)

1. **FCC and FDA (Food and Drug Administration) to hold a Joint Workshop on Wireless Medical Device Test Beds**

This public workshop is announced for the 31 March 2015. It is about development of converged medical technology for clinical and non-clinical settings. A wireless test bed is an environment where devices can be evaluated across a range of interference scenarios. As the rapid pace of innovation blurs traditional boundaries between consumer health technology, medical devices, and communications, the agencies seek to better understand how wireless test beds can be used and configured to meet the challenges and to take advantage of the opportunities this convergence presents. Consumers are increasingly using wireless health and care management tools at home; indeed, the emergence of the “hospital in the home” concept opens new areas of medical technology innovation that must take into account the need for wireless co-existence. Topics may include the need for and scope of wireless medical device test beds, an overview of current public and private test bed programs and initiatives, a discussion of ideal features, functions and gaps of such programs, and how best to drive innovation and safe co-existence of wireless medical technologies (FCC DA 15-239).

There are also activities in Europe (MBANs, Smart BANs, eHealth) going in this direction and monitoring this activity in the USA could be worthwhile, also asking the FCC about follow-on actions during the next ECC-FCC-IC meeting.

(Of interest for SRD/MG)

1. **LTE in ‘unlicensed’ spectrum in 5 GHz**

The Wi-Fi Alliance recently issued a position statement relating to ‘unlicensed LTE’ that might be of interest – see [WFA position statement](https://www.wi-fi.org/news-events/newsroom/wi-fi-alliance-statement-on-license-assisted-access-laa). It highlights the desire of the Wi-Fi Alliance to work with all stakeholders to achieve a good outcome. Its very existence highlights a fear by many in the industry that ‘unlicensed LTE’ will not share fairly with Wi-Fi.

There has been quite a lot of related press:

* CIO, "Wi-Fi backers warn about unlicensed LTE while Ericsson claims speed boost," February 10, 2015
  + <http://www.cio.com/article/2882873/wifi-backers-warn-about-unlicensed-lte-while-ericsson-claims-speed-boost.html>
* PCWorld, "Wi-Fi backers warn about unlicensed LTE while Ericsson claims speed boost," February 10, 2015
  + <http://www.pcworld.com/article/2882872/wifi-backers-warn-about-unlicensed-lte-while-ericsson-claims-speed-boost.html>
* InfoWorld, "Wi-Fi backers warn about unlicensed LTE while Ericsson claims speed boost," February 11, 2015
  + <http://www.infoworld.com/article/2882623/mobile-technology/wifi-backers-warn-about-unlicensed-lte-while-ericsson-claims-speed-boost.html>
* Wireless Federation Blog, "Wi-Fi Alliance warns of risks of Licensed Assisted Access," February 11, 2015
  + <http://www.wirelessfederation.com/news/143020-wi-fi-alliance-warns-of-risks-of-licensed-assisted-access>
* FierceWireless, Phil Goldstein: [Verizon, SK Telecom join T-Mobile in testing unlicensed LTE, but Wi-Fi Alliance urges caution](http://www.fiercewireless.com/story/verizon-sk-telecom-join-t-mobile-testing-unlicensed-lte-wi-fi-alliance-urge/2015-02-10)
* PCWorld, Mikael Ricknas (: [Verizon, T-Mobile and SK Telecom hit 450-Mbit speeds over LTE](http://www.pcworld.com/article/2882392/verizon-tmobile-and-sk-telecom-have-the-hots-for-lte-on-wifi-spectrum.html)
  + Also on [Computerworld](http://www.computerworld.com/article/2882024/verizon-t-mobile-and-sk-telecom-eye-lte-on-wi-fi-spectrum.html)
* Android  Headlines, David Steele:
  + [Work Progressing For Unlicensed “Fair Sharing” 5 GHz Spectrum](http://androidheadlines.com/2015/02/work-progressing-unlicensed-fair-sharing-5-ghz-spectrum.html)
* TeleAnalysis, Staff:
  + [License Assisted Access is live in Ericsson labs](http://www.teleanalysis.com/infrastructure/license-assisted-access-is-live-in-ericsson-labs-12675.html)
* LightReading, Sarah Thomas:
  + [Ericsson Preps LTE-U for Verizon, T-Mob & SK Telecom](http://www.lightreading.com/mobile/small-cells/ericsson-preps-lte-u-for-verizon-t-mob-and-sk-telecom/d/d-id/713636)

In addition, some announcements of pre-3GPP standards deployments and demonstrations of working equipment were noted, however it may be still for the near future to see revealed the Wi-Fi/’unlicensed LTE’ sharing mechanism to the industry or regulators, despite.

(of interest in PT SE24, PT FM55, and some other groups in the ECC dealing with the relevant 5 GHz spectrum)

1. **Unmanned Aircraft Systems (Drones)**

On 18 February 2015, the Department of Transportation’s Federal Aviation Administration in the USA proposed a framework of regulations (PDF) that would allow routine use of certain small unmanned aircraft systems (UAS) in today’s aviation system, while maintaining flexibility to accommodate future technological innovations. It is using the following categories:

Public Operations (Governmental)

Civil Operations (Non-Governmental)

Model Aircraft (Hobby or Recreation Only)

See: <https://www.faa.gov/uas/>

By law, all UAS require certification from the FAA in the USA and the website contains the information on how to apply. As part of this process, the petitioner should describe the Radio Frequency (RF) spectrum used for control of the UAS and associated equipment that is part of the UAS (i.e., sensors, cameras, etc.), and whether it complies with Federal Communications Commission (FCC) or other appropriate government oversight agency requirements.

(of interest for the WGFM CG activities and perhaps also a subject for enquiry about the FCC considerations with regard to UAS spectrum use (control as well as payload, such as cameras) for civil operations and model aircraft) at the next ECC-FCC-IC meeting)

1. **FCC: Spectrum Frontiers Notice of Inquiry - Spectrum Bands above 24 GHz for Mobile Radio Services (for 5G and more)**

The FCC had extended the period for responses under a questionnaire until 17 February 2015. Until the deadline, Docket No. 14-177, 136 responses were received.

It seems that there is a lot of interest in this spectrum from just about every segment of the communications industry—except from broadcast and public safety/land mobile representatives. Originally it was thought this spectrum would not be suitable to reach indoor devices. For those wondering how such spectrum could be useful for mobile communications, comments on the FCC's “Spectrum Frontiers Notice of Inquiry” (NOI)—which have been posted on the commission's Electronic Comment Filing System (ECFS)— from the [New York Polytechnic University](http://apps.fcc.gov/ecfs/document/view?id=60001013322) and [attachments](http://apps.fcc.gov/ecfs/document/view?id=60001013346) outline their research showing how it worked in Manhattan and Brooklyn. Comments from [Samsung](http://apps.fcc.gov/ecfs/document/view?id=60001013807) highlight that company's research and studies on sharing and compatibility between mobile broadband and fixed systems using the bands above 24 GHz.

One underlying assumption is that 5G deployments could start in 2020, only five years from now. There is some debate about what constitutes 5G; some see it as multi-Gbps data using spectrum above 10 GHz while others see it as an assortment of technologies that will include spectrum below 3 GHz. Obviously, how 5G is defined will determine how the rollout date is determined.

The ECC intends to consider the subject of 5G in a future edition of the ECC Newsletter.

The comments filed in the NOI do not encourage the impression that widespread commercial deployment could begin five years from now. Most of the commenters say lower frequency (and, consequently, lower bandwidth/data rate) wireless networks will still be needed for wide area coverage. We highlight some of these below.

The ECC may decide whether similar considerations are useful, in line with the Strategic Plan. ERC/DEC/(99)15 on the designation of the harmonised frequency band 40.5 to 43.5 GHz for the introduction of Multimedia Wireless Systems (MWS) and Point-to-Point (P-P) Fixed Wireless Systems comes under regular review in WGFM, WGFM has already identified already review actions concerning applications under general authorisations at 60 GHz). This item too, may be a subject to enquire further information at the next opportunity with the FCC).

*Summary of NOI Comments:*

[Ericsson's comments](http://apps.fcc.gov/ecfs/document/view?id=60001013857) urge the FCC to maintain focus on bands below 24 GHz as well as considering bands above 24 GHz for 5G.

[Qualcomm's comments](http://apps.fcc.gov/ecfs/document/view?id=60001013664) state, “These millimeter wave bands can be used as part of the 5G solution, but 5G services will encompass much more than just operations in these bands. Qualcomm envisions 5G services using low-band, mid-band, and high-band spectrum, all in concert with one another to deliver unparalleled forms of connectivity, not just in terms of capacity, data rates, and latency, but also in terms of the mode of connectivity (i.e., device to device, mesh, etc.), and the support of new device types, including drones, robots, and other industrial machines.”

CTIA, “the Wireless Association” representing wireless carriers, in its [filing](http://apps.fcc.gov/ecfs/document/view?id=60001013926) recommended use of an exclusive licensing framework as much as practicable. “Exclusive use licensing has proven to attract investment in mobile broadband while also sparking wide-spread innovation.” CTIA said that where spectrum is not easily used for mobile wireless services, it could be made available on an unlicensed basis. CTIA also asked the FCC to adopt out-of-band emission (“OOBE”) rules that are technology neutral and do not penalize carriers for using wider bandwidth technologies.

The Consumer Electronics Association in its [comments](http://apps.fcc.gov/ecfs/document/view?id=60001013615) recommended the FCC should provide adequate protection to incumbents. CEA urged developing an ITU-R agenda item for the WRC-18/19 conference at this year's WRC-15, noting that while there is wide support for an agenda item to identify spectrum for 5G mobile services, the focus has been on spectrum below 6 GHz.

[Comments from the Fixed Wireless Communications Coalition (FWCC)](http://apps.fcc.gov/ecfs/document/view?id=60001013871) point out “The implementation of '5G' services and the growing use of small cell technologies for data delivery will only further demand for Fixed Service wireless backhaul solutions.” Fixed Service wireless backhaul is already being utilized in millimeter wave (mmW) bands.” The comments point out that 71-76 GHz and 81-86 GHz bands are well suited for wireless backhaul and are already being used nationwide. FWCC also points out that FWCC filed a Petition for Rulemaking and revision requesting Fixed Service rules at 42-43.5 GHz band. FWCC notes, “In urban settings, backhaul antennas often must be small enough for installation on crowded building tops and towers. The 42/43 GHz band, with its short wavelength and correspondingly small antennas, is ideal for this application through a link-by-link licensing scheme with prior frequency coordination.”

The [National Cable & Telecommunications Association](http://apps.fcc.gov/ecfs/document/view?id=60001013853) urged the FCC to “ explicitly propose to permit unlicensed operations in a variety of bands above 24 GHz because: (1) unlicensed users are well-positioned to share with incumbents and new mobile licensees; (2) the millimeter wave bands have the potential to help existing networks meet growing demand and ease congestion; and (3) new unlicensed frequencies will foster new innovations and generate value for the U.S. economy.” NCTA is careful to point out that spectrum above 24 GHz would be an addition, not a replacement, for access to unlicensed spectrum at lower frequencies.

The WI-FI Alliance [makes the case](http://apps.fcc.gov/ecfs/document/view?id=60001013785) for extending the existing Part 15 rules to operations in the 64-71 GHz band and to add authorization for Part 15 devices to operate in the 70, 80, and 90 GHz bands and in the bands above 95 GHz where consistent with international allocations. The Alliance notes that there is work underway by an IEEE 802 task group to study the development of technologies that would target the use of 100 Gbps wireless communications for a variety of applications in the 60 GHz to 300 GHz frequency range, including server-to-server communications in data centers, wireless backhaul and front haul, chip-to-chip communications for multi-chip modules, and closed proximity point-to-point applications such as kiosk downloading and file exchange. See the [Comments of IEEE 802](http://apps.fcc.gov/ecfs/document/view?id=60001013646) for more information the work IEEE is doing at mmW frequencies.

In its comments, the European Satellite Operators Association (ESOA) [outlined](http://apps.fcc.gov/ecfs/document/view?id=60001013874) why the FCC should focus on spectrum above 31 GHz for 5G mobile, away from the Ka-band spectrum used by satellite operators. The ESOA comments include graphs from the European METIS that show more opportunities exist for future mobile 5G services in spectrum above 31.0 GHz than in the lower sub-mmW bands between 6.0 and 31.0 GHz. See the [Comments of the Satellite Industry Association (SIA)](http://apps.fcc.gov/ecfs/document/view?id=60001013898) for details on use of the spectrum above 24 GHz by satellites today and what's proposed for the future.

[4G Americas](http://apps.fcc.gov/ecfs/document/view?id=60001013849) notes that “global harmonisation will be key in 5G deployment.” 4G Americas takes a close look at the challenges involved in 5G deployment in spectrum above 24 GHz, carefully noting that lower frequency spectrum is still required for wide area coverage and will be a key part of 5G. 4G Americas said “the FCC and NTIA must continue to collaborate with the industry to make more spectrum available in the mid-bands of 1-6 GHz.”

Many more comments can be seen in the FCC's [Electronic Comment Filing System – Proceeding Number 14-177 filings](http://apps.fcc.gov/ecfs/comment_search/paginate?proceeding=14-177&pageNumber=1&pageSize=100&sortColumn=dateDisseminated&sortDirection=DESC&pageView=Tabular).