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| **Plenary** | | **Doc. ECC(18)056** |
| **48th Meeting** | | |
| **Rome, 3-6 July 2018** | | |
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| **Date issued:** | **27 June 2018** | |
| **Source:** | **ECO** | |
| **Subject:** | **ECO Bulletin on on-going/new issues in other regions or organisations** | |
| Group membership required to read? (Y/N)  N | | |
|  | | |
| **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. Update from APT AWG (new and revised APT Recommendations and Reports, questionnaires and further on-going work, work on strategic plan); 2. BB-DA2GC: China finally continues network buildout; 3. First LTE-Railway service on a high-speed train goes live in South Korea – additional information; 4. Unmanned Aircraft Systems: new regulation in the United Arab Emirates and a test report from China Civil Aviation Authorities on Drones/UAS via the MFCN; 5. 5G Phase 1 specifications finalised by 3 GPP; 6. Third Report and Order for mobile spectrum above 24 GHz in the USA; 7. Update on plans for satellite NGSO constellations (FCC and presentations to the ITU Regional Seminar for CIS and Europe); 8. FCC new proposed rulemaking on “smallsats”; 9. C-Band (3.7-4.2 GHz) developments in the USA- expanding flexible use; 10. FCC proceeds on 2.5 GHz; 11. Competing studies in the USA about WAS/RLAN use in the 6 GHz range. 12. CITEL: questionnaire on unwanted emissions in the OOB domain of LTE equipment and development of a new report with an overview of satellite broadband systems, current and planned use, in the Americas. | | |
| **Proposal:** | | |
| ECC is invited to note this bulletin. More detailed input on some of the subjects covered is being input to the groups dealing with the respective subjects.  Several of the issues covered in this bulletin should be noted or discussed in detail at the respective WG/ PT level.  This includes information related to satellite issues for FM44 (items 7, 8, and 12), for CPG (items 1, 3, 6, 7, 9 and11), for items in relation to SRD or SRD/MG activities (items 1), for ECC PT1 (items 1, 4, 5, 9, 10, and 12). Item 3 may be for information in FM56. Several items may be of interest in WG FM (items 1, 2, 4, and 12), some elements may be of interest for WG SE. | | |
| **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. **News from APT**

The Asia-Pacific Telecommunity (APT) organised the 23rd Meeting of the APT Wireless Group (AWG-23) from 9 to 13 April 2018 in Da Nang City, Socialist Republic of Viet Nam.

**New or revised APT Reports (approved and published in 04/2018)**

| **Reference** | **Topic** |
| --- | --- |
| [APT/AWG/REP-81](https://www.apt.int/sites/default/files/Upload-files/AWG/APT-AWG-REP-81_APT_Report_on_FWS_link_under_severe_weather_condiions.docx) | New APT Report on FWS link performance under severe weather conditions |
| [APT/AWG/REP-82](https://www.apt.int/sites/default/files/Upload-files/AWG/APT-AWG-REP-82_4800-4900_MHz_Survey_Report_.docx) | New APT Report on Survey the usage and the usage and future plan of the band 4800-4990 MHz in the Asia Pacific region |
| [APT/AWG/REP-83](https://www.apt.int/sites/default/files/Upload-files/AWG/APT-AWG-REP-83_3300_3400_MHz_Survey_Report.docx) | New APT Report on Survey the usage and the usage and future plan of the band 3300-3400 MHz in the Asia Pacific region |

APT AWG also adopted an updated [Workplan of AWG](https://www.apt.int/sites/default/files/2018/04/AWG_Work_Plan_2018_April.docx):

This workplan includes, amongst others:

* Finalise APT/AWG Recommendation/Report on harmonised frequency arrangement for IMT in the band 3300-3400 MHz until 2019;
* Finalise new APT/AWG Recommendation/Report on harmonised frequency arrangement for IMT in the band 4800-4990 MHz until 2019;
* Finalise a new APT/AWG Report on studies on frequency arrangement(s) for IMT in the band 1427-1518 MHz until 2019;
* Finalise the draft new Report on sharing and compatibility studies for IMT above 24 GHz by end of 2018;
* Work on a new APT Report on studies related to techniques and technical conditions for Licensed-Assisted Access (LAA) and 5G New Radio - Shared Spectrum (5G NR-SS) as national solutions for accessing shared spectrum by 2020;
* Work on a new APT Report on a ‘Survey of Usage and Future Plan of Frequency Bands in relation to Studies on WRC-19 Agenda Item 1.13 in Asia-Pacific Region’ by end of 2018;
* Work on a new APT Report on minimum recommended technical conditions to support technology neutrality and spectrum efficiency for implementation of IMT networks in bands identified for IMT by 2019;
* Current status and future plan of implementation and deployment of IMT-2020 (5G) in Asia-Pacific region – update by 2019;
* Wireless Power Transmissions (WPT): studies on spectrum impact of WPT to radiocommunication services. Summarise the regulatory status in APT member countries for non-beam WPT for mobile devices. Finalise the revision of an APT Recommendation for mobile devices by end of 2018;
* Survey for 100 to 300 kHz band non-beam WPT – a survey report is expected in September 2018;
* Radio Frequency Beam WPT: work towards contributions to ITU-R and a final report in 2019;
* AWG also studies the impact of non-beam WPT used in mobile devices by 2019;
* Work on a new APT Report on the implementation of Public Safety LTE (PS-LTE) Networks by end of 2018;
* Current Status and Future Plan of Implementation and Deployment of IoT in APT Countries – new APT Report by end of 2018;
* The usage of ITS in APT countries (Revision 2) – update – in a new APT Report by September 2018;
* Work on the ‘Integration of Satellite Technology into the Next Generation Access Technologies Ecosystem’ by end of 2018;
* Study the ‘Current and Future Usage of Unmanned Aircraft’ by 209;
* Broadband Wireless Air-to-Ground Communications Links with Passenger Aircraft; new report expected before end of 2018;
* Two new APT Reports on ‘System Deployment and Relevant Testing Studies of Railway Radiocommunication System between Train and Trackside (RSTT) in APT Countries’ and ‘Railway Radiocommunication System for Passengers’ Access to Information and Internet Services’ expected by 2019.

The following Circulars and questionnaires were distributed following AWG-23:

Three new APT Recommendations:

1. [Circular Letter](https://www.apt.int/sites/default/files/2018/04/Circulation_letter_Recommendation_WPT_signed.pdf) - [Draft APT Recommendation on frequency ranges for non-beam WPT for mobile devices](https://www.apt.int/sites/default/files/2018/04/AWG-22-OUT-22_DNR_REC_WPT_Freq_mobiledevices.docx) – for final adoption of the new draft APT Recommendation including the 6765-6795 kHz range for magnetic resonant technology for mobile devices.
2. [Draft APT Recommendation on Licensed Shared Access (LSA)](https://www.apt.int/sites/default/files/Upload-files/AWG/AWG-23-Circulars/AWG-23-OUT-16_LSA-Recommendation-rev_0.docx)
3. [Draft APT Recommendation on Frequency Arrangement in the Range 694-894 MHz for Broadband Public Protection and Disaster Relief (PPDR)](https://www.apt.int/sites/default/files/Upload-files/AWG/AWG-23-Circulars/AWG-21-REC1_PPDR.docx)

Five questionnaires

1. [Questionnaire on current status and future plan of implementation of IMT-2020 (5G) in APT Countries;](https://www.apt.int/sites/default/files/Upload-files/AWG/AWG-23-Circulars/Questionnaire_on_5G_status_and_plan_0.docx)
2. [Questionnaire on current status and future plan related to HAPS in APT Countries;](https://www.apt.int/sites/default/files/Upload-files/AWG/AWG-23-Circulars/Questionnaire_on_HAPS.docx)
3. [Questionnaire on non-beam WPT in non-ISM band.](https://www.apt.int/sites/default/files/Upload-files/AWG/AWG-23-Circulars/Recirculation_of_WPT_Questionnaire.docx)
4. [Questionnaire on the status of implementation of APT700 Band Plan](https://www.apt.int/sites/default/files/Upload-files/AWG/AWG-23-Circulars/APT700_Questionnaire.docx)
5. Request for information to update APT Report 15 (APT/AWG/REP-15 (Rev.4) (30 April 2018) (MNO licensing similar to ECO Report 03)

It has been noted that the APT frequency information system <http://www.aptafis.org/> is now included on the APT webpages and that first APT administrations have started to use the tool for their frequency allocation tables. AFIS also includes information about all APT Reports and SRD implementation information in APT countries. This information tool is now operated by the APT office independently from the ECO.

From the AWG-23 output documentation, a draft APT working document on ITS is embedded here. It does include information about ITS communication solutions and also about automotive radar implementation in APT countries.



The recent APT e-Newsletters are available under: <http://www.apt.int/Publications> (last edition from May 2018).

**(for information in ECC PT1, WG FM (incl. PTs and SRD/MG), WG SE, and CPG)**

1. **China – BB-DA2G**

The Civil Aviation Administration of China (CAAC) announced in October 2012 that China’s Civil Aviation Air-ground Broadband Communications System project will be able to provide individualized communications services to more than 300 million travellers per year. It was stressed that the connection of satellite links and terrestrial communications networks can be employed, and ground-based dedicated base-stations can be used to cover the sky, directly achieving mobile communications between base-stations and aircraft.

It was noted that while the satellite communications method is more mature, the bandwidth is severely limited and communication costs are high. The announcement said that using the ground-to-air base-station method requires constructing a network of base-stations covering each flight route, which can better ensure communications bandwidth and lower communications costs. It can also solve problems with the simultaneous use of multiple systems (GSM, CDMA, TD-SCDMA, WCDMA, etc) on the same plane.

China then undertook testing of CDMA EV-DO to cover all of China’s air routes, and the industry was studying the use of 4G technology (LTE), to provide higher data-rates. Trials for DA2G communications were undertaken by CAAC and other government agencies in the 1784-1805 MHz band using TD-LTE technology, involving four base-stations constructed by China Telecom along the Beijing-Chengdu route. New subsequent reports noted that 17 base-stations had been built, and that China is now intending construction of up to a thousand DA2G base-stations over the following years, to cover all routes of the major domestic airlines.

Within APT, in response to some notes and suggestions from Australia (TELSTRA), China indicated that the frequency bands 1980–2010MHz and 2170–2200MHz should not be considered as candidate bands for DA2G communications throughout the Asia Pacific region in a recent input to AWG-23.

**(for information in WG FM)**

1. **First LTE-Railway Service on a High-speed Train Goes Live in South Korea**

As reported in the last ECO Bulletin, the first LTE-Railway (LTE-R) network for a new high-speed train line in South Korea is in operation. The activation represents the world’s first application of LTE technology to a high-speed train, with the new line traveling up to 250km/h. The network includes key features such as Mission-Critical Push-to-talk (MCPTT) based on the 3GPP standards Release 13, group calls and VoLTE – between train personnel and control centers.

South Korea was invited to provide a detailed presentation to the recent ITU Regional Seminar CIS/Europe in St. Petersburg on 7 June 2018. The presentation is available under: [Link](https://www.itu.int/dms_pub/itu-r/oth/0a/0E/R0A0E0000C40001PDFE.pdf).

South Korea remarked in response to questions, that it had not been found to be difficult to achieve some arrangements in South Korea between the PPDR and the railway communities about the sharing of the network resources since the basic application requirements were found to be very similar. The network is also shared with some maritime communications close to shores (e.g. ferries). Since it was recently assessed by the South Korean authorities that the 10 MHz duplex capacity of the radio network still has some capacity left, further plans foresee an extension of the sharing to include also some IoT applications.

**(for information in WG FM, FM56, CPG)**

1. **Unmanned Aircraft Systems: New Regulation in the United Arab Emirates and Test Report from the Civil Aviation Administration of China (CAAC)**

The UAE has released on 14 March 2018 a new regulation about Unmanned Aircraft (UA) radio systems. With regard to the MFCN bands there is one sentence saying “..., UAS may also operate on IMT networks using service provided by authorised operators in the UAE.”

This means that the UAE obviously do not distinguish between bands allocated to the mobile service and those allocated to the “mobile service except aeronautical mobile service”, at least not in this context. ITU Region 1 has allocations to the mobile service except aeronautical mobile service in the 700 MHz, 800 MHz, 900 MHz and 2.6 GHz bands (ECA Table: for the 900 MHz band, the European column is to the mobile service without any exception). The point has been raised by several speakers at the CEPT workshop on spectrum for Drones/UAS recently.

It needs to be clarified on how to deal with allocations to mobile except aeronautical mobile service in the MFCN bands. This seems from the perspective of MNO a major obstacle when considering the MFCN bands for drones. The definition of “MFCN” or of “ECS” does not prevent the usage of MFCN bands for drones. National MFCN licences could have conditions which would not be appropriate for drones. Services in adjacent countries may need to be protected.



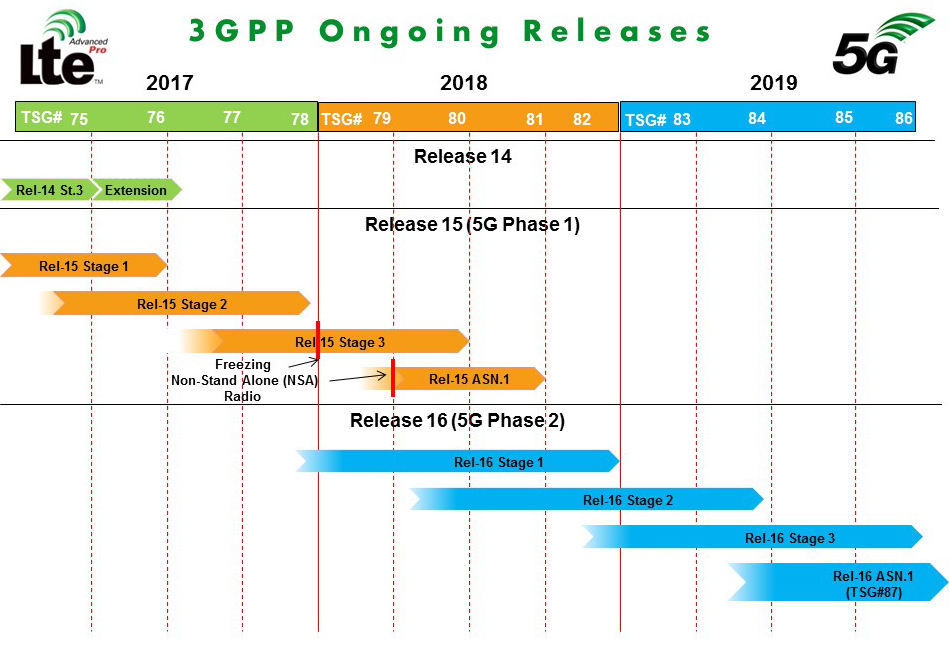
The Civil Aviation Administration of China (CAAC) released on 31 January 2018 a test report including interesting details about their findings about drones/UAS flown over the MFCN. See [Link](http://www.caac.gov.cn/en/HYYJ/NDBG/201802/t20180227_52630.html).

**(for information in WG FM (incl. WG FM CG Drones) and ECC PT1)**

1. **5g phase 1 specifications finalised by 3GPP**

The 3GPP TSG #80 Plenary Meeting in La Jolla, USA, June 2018 approved the completion of the standalone (SA) Release 15, 5G NR (New Radio) specifications (‘5G Phase 1’). This follows the release of the 5G NR specifications for non-standalone (NSA) operation in December 2017. The completion of SA specifications allows for independent 5G deployment (whereas NSA relies on the LTE core network and air interface) and is a key step towards 5G commercialisation.

3GPP is now continuing work on Release 16 (‘5G Phase 2’) which aims to meet the ITU IMT-2020 submission requirements and the time-plan. The ITU submission is planned for June 2019 and the finalisation of the Release for December 2019.



<http://www.3gpp.org/news-events/3gpp-news/1965-rel-15_news>

<http://www.3gpp.org/release-16>

**(for information in ECC PT1, WG FM and CPG)**

1. **Third Report and Order FOR MOBILE spectrum above 24 GHz in the USA**

The FCC is considering making available the upper parts of the 26 GHz band (25.25 – 27.5 GHz) for mobile usage in the US, as part of a [Third Further Notice of Proposed Rulemaking](https://docs.fcc.gov/public/attachments/DOC-350768A1.pdf) on spectrum bands above 24 GHz.

Upper Microwave Flexible Use Service (UMFUS) licences in most of the lower part of the 26 GHz band (24.25 – 24.45 + 24.75 – 25.25), referred to as the ‘24 GHz band’ in the US, will be auctioned in late 2018/ early 2019 (current plan date November 2018) immediately after an auction of the 28 GHz band (27.5 – 28.35 GHz), as part of the Spectrum Frontiers initiative reported in previous editions of the ECO Bulletin. In addition the FCC is now seeking comment on the possibility of making available the remaining spectrum from 25.25-27.5 GHz

As justification for this possibility the FCC notes the growing international interest in the band, including the CEPT position, as well as the opportunity for a single equipment tuning range with 24 GHz and 28 GHz.

Sharing and protection issues with incumbent users still need to be addressed. These include adopting an operability requirement for the entire 24 GHz band, a sharing framework to allow use of a portion of the 24 GHz band for terrestrial wireless operations and Fixed Satellite Service (FSS) earth stations, a band plan for the lower 37 GHz band, and spectrum aggregation rules applicable to certain bands. In addition, the FCC is rejecting petitions for reconsideration which ask for geographic area licensing in the Lower 37 GHz band and to allocate the 42 GHz band for satellite use, in order to provide additional certainty for other innovative uses for these bands.

Finally, the item seeks comment on making 2.75 GHz of additional spectrum in the 26 GHz and 42 GHz bands available for next-generation wireless services; proposes coordination mechanisms to facilitate shared use of the Lower 37 GHz band between Federal and non-Federal users, and among non-Federal users; and solicits feedback on potential rules for FSS use of the 50 GHz band for a limited number of earth stations.

Press Release in <https://docs.fcc.gov/public/attachments/DOC-351388A1.pdf>, Third Report and Order in FCC 18-73: <https://docs.fcc.gov/public/attachments/FCC-18-73A1.pdf>

**(for information in ECC PT1, CPG and FM44)**

1. **UPdate on plans for Satellite NGSO constellations**

A number of new developments have been noted since the last ECC bulletin with regard to new NGSO satellite constellations:

On 29 March 2018, the FCC, in an order, authorised SpaceX to construct, deploy, and operate a proposed non-geostationary orbit (NGSO) satellite system comprising 4,425 satellites for the provision of fixed-satellite service (FSS) around the world. See [FCC SpaceX authorisation FCC 18-38](https://www.fcc.gov/document/fcc-authorizes-spacex-provide-broadband-satellite-services)

SpaceX intends to start launching operational satellites as early as 2019, with the goal of reaching the full capacity of 4,425 satellites in 2024. The FCC approval just requires SpaceX to launch 50 percent of the satellites by March 2024, and all of them by March 2027. SpaceX said in the past it plans to start service with 800 to 900 satellites. SpaceX is not totally content with the FCC order. The deadlines however are not absolutely fixed as it may seem because the ruling also allows SpaceX to re-submit a waiver request in the future.

The FCC said its approval is conditioned on "SpaceX receiving a favourable or 'qualified favourable' rating of its EPFD (equivalent power flux-density limits) demonstration by the ITU prior to initiation of service.

Like other operators, SpaceX will have to comply with FCC spectrum-sharing requirements. Outside the US, coexistence between SpaceX operations and other companies' systems "are governed only by the ITU Radio Regulations as well as the regulations of the country where the earth station is located.

SpaceX satellites are planned to orbit at altitudes of 1,110km to 1,325km. A demonstration launch earlier this year included two experimental non-geostationary orbit satellites, Microsat-2a and -2b from SpaceX. Those are the two satellites that SpaceX previously said would be used in its first phase of broadband testing.

The FCC previously approved requests from OneWeb, Space Norway, and Telesat to offer broadband in the US from low-Earth orbit satellites. SpaceX is the first US-based operator to get FCC approval for such a system, the FCC said in an [announcement](https://transition.fcc.gov/Daily_Releases/Daily_Business/2018/db0329/DOC-349998A1.pdf).

In addition to the 4,425 satellites approved by the FCC, SpaceX has also proposed an [additional 7,500 satellites](https://arstechnica.com/legal-narrative/) operating even closer to the ground, saying that this will boost capacity and reduce latency in heavily populated areas. It's not clear when those satellites will launch. These satellites would be operating at altitudes from 335 km to 346 km, using V-band spectrum for all links to and from associated earth stations.

The advent of SpaceX and OneWeb broadband satellites, as well as other NGSO constellations raise fears about space debris, and the US senate asked questions to the FCC, fearing a “cascade” of collisions, then asked FCC to work with NASA and FAA. The FCC review process also considers space-debris mitigation. In addition, other operators such as OneWeb, Spire, SES and Space Norway all expressed concern about how SpaceX will protect the space environment when operating so many satellites.

SpaceX told the FCC that it will implement an operations plan for the orderly de-orbit of satellites nearing the end of their useful lives (roughly five to seven years). SpaceX satellites "will de-orbit by propulsively moving to a disposal orbit from which they will re-enter the Earth's atmosphere within approximately one year after completion of their mission. Separately, for SpaceX's very low-Earth orbit (VLEO) satellites operating at altitudes of 335 km to 346 km, normal operations should not generate any debris. But if any problems arise in the VLEO satellites, atmospheric drag will ensure that such debris will quickly disintegrate in the atmosphere and pose no further danger to space operations.

OneWeb told the FCC that its satellites are designed for mission lives of at least five years, and the post-mission disposal operation is anticipated to take less than one year. OneWeb also said it has designed its satellite network to avoid collisions with space stations and debris, and that OneWeb will actively and regularly screen for conjunctions between its own satellites and other objects in the Joint Space Operations Center's published catalogue. The risk of a OneWeb satellite becoming a source of debris by collisions with small debris causing a loss of control and preventing post-mission disposal has been assessed and determined to be compliant with NASA's Technical Standard, which requires this probability to be <1%.

Boeing told the FCC that each satellite would need to perform 3.3 collision avoidance maneuvers each year. The probability of a failed Boeing satellite is less than one percent, the company also said that the probability of impact with any of the failed vehicles was less than 2.7 percent per decade.

The process on this aspect has not finished yet and it can be expected that NASA is likely to set up a more stringent standard than what is currently recommended for de-orbit reliability.

On 19 March 2018, OneWeb asked the FCC that the company be permitted another 1,260 satellites, bringing the total number to 1,980 spacecraft. OneWeb said the FCC’s September 2017 decision to give companies more time to fully deploy their constellations enables OneWeb to plan a larger fleet. The FCC previously required companies to launch 100 percent of their satellites within six years of authorization. Under the new rules, companies have six years to deploy half their fleet. The new regulations require full constellation deployment in nine years. If an operator fails to reach full deployment in that time, its authorised number of satellites shrinks to the number already in orbit. OneWeb spoke against the FCC modifying constellation deployment deadlines during last year’s rulemaking procedure.

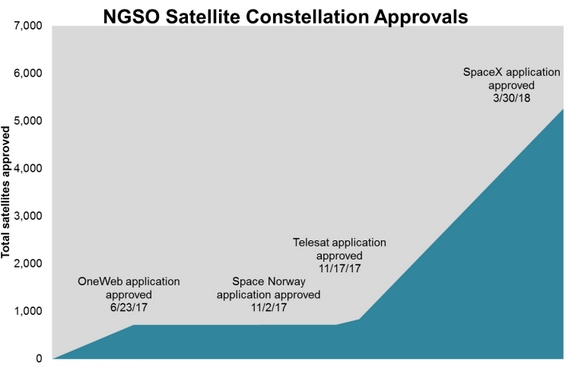
OneWeb said the new satellites will use the same Ku- and Ka-band spectrum as the first 720 satellites. To accommodate the additional 1,260, OneWeb said it would double the number of orbital planes from 18 to 36, and increase the maximum number of satellites per plane from 40 to 55.

OneWeb’s modified LEO plans follow a 4 January 2018 request to revise a pending application before the FCC for a medium-Earth-orbit constellation of 1,280 satellites, also for broadband. The company asked the FCC for twice as many satellites — 2,560 total — for MEO, and to expand its frequencies from the scarcely used V-band to include Ku-, Ka-, and E-band.

OneWeb made no mention of the impact these changes may have on a move by Boeing to transfer one of its V-band constellation filings to OneWeb founder Greg Wyler. Boeing asked the FCC in December to swap ownership of its 1,396- to 2,956-satellite V-band filing to a company under Wyler’s name called SOM1101 LLC.

The FCC has not yet authorised any of the six V-band constellations submitted in 2016 and 2017.

Other constellation proposals are still under consideration by the FCC. The existing approvals are as follows (source: FCC):



The FCC is still going through the application backlog. A total of 12 companies applied with the FCC. The FCC also wants the ITU to change their rules on NGSO constellations in line with the ‘milestone’ rulings in the USA for NGSO constellations.

Recently, at the FCC Open Meeting on 7 June 2018, the FCC granted a spectrum licence to the Audacy Corporation Application for authority to launch and operate a NGSO medium earth orbit satellite system in the fixed- and inter-satellite services (IBFS File No. [SAT-LOA-20161115-00117](https://docs.fcc.gov/public/attachments/DOC-350771A1.pdf)  to provide continuous, high-speed, low-latency relay services to other NGSO spacecraft operators through Audacy’s proposed satellites and gateway earth stations. Audacy plans to send large satellites into medium Earth orbit and to begin providing services in 2020 for satellite, human spaceflight and launch vehicle operators including data downlink, continuous monitoring and command services.

A number of presentations about satellite constellations were provided recently at the ITU Regional Seminar for CIS and Europe "Development of modern radiocommunication ecosystems", 6 to 8 June 2018, St. Petersburg, Russian Federation. These are in the public domain and links are provided here:

[WorldVu satellites (O3B)](https://www.itu.int/dms_pub/itu-r/oth/0a/0E/R0A0E0000D70001PDFE.pdf)

[Telesat Canada](https://www.itu.int/dms_pub/itu-r/oth/0a/0E/R0A0E0000B90001PDFE.pdf)

[SES/O3B](https://www.itu.int/dms_pub/itu-r/oth/0a/0E/R0A0E0000CD0001PDFE.pdf)

[Iridium](https://www.itu.int/dms_pub/itu-r/oth/0a/0E/R0A0E0000D20001PDFE.pdf)

**(for information in WG FM and FM44, WG SE and SE40)**

1. **FCC NPRM on smallsats**

On 27 March 2018, the FCC released its [Notice of Proposed Rulemaking](https://thedcoffice.com/late_releases_files/03-27-2018/DOC-349939A1.pdf) (NPRM) (which was [adopted on 17 April 2018](https://transition.fcc.gov/Daily_Releases/Daily_Business/2018/db0417/FCC-18-44A1.pdf)) seeking comments on proposals to streamline the licensing process for “small satellites”, more commonly known as “smallsats”. By initiating this proceeding, the FCC is recognising the growing role of smallsat systems in commercial space activities and that greater flexibility in the FCC’s “[Part 25](https://www.gpo.gov/fdsys/granule/CFR-2010-title47-vol2/CFR-2010-title47-vol2-part25)” satellite licensing rules would be helpful in facilitating the development of smallsat systems. The draft NPRM follows closely on the heels of other recent FCC orders to [streamline](https://apps.fcc.gov/edocs_public/attachmatch/FCC-15-167A1_Rcd.pdf) and [modernise](https://apps.fcc.gov/edocs_public/attachmatch/FCC-17-122A1.pdf) its rules and its efforts (e.g. [here](https://apps.fcc.gov/edocs_public/attachmatch/FCC-17-77A1.pdf) and [here](https://transition.fcc.gov/Daily_Releases/Daily_Business/2018/db0329/FCC-18-38A1.pdf)) to facilitate development and innovation in the satellite industry.

The primary benefits of qualifying for the new proposed streamlined processing would be the significant reduction in the FCC’s current satellite application fee (from US$454,705 to US$30,000) and in the time required for preparation and FCC processing of license applications. The FCC proposes, *inter alia*, that smallsat systems qualifying for streamlined processing be limited to ones that: 1) have 10 or fewer satellites; 2) deploy satellites below the orbital altitude of the International Space Station or possess propulsion systems; 3) have a total on-orbit lifetime of five years or less; and 4) be able to share a frequency band without precluding future entrants. Smallsat systems not meeting the qualifications could still seek authorisation under the more generally applicable Part 25 rules.

The FCC’s draft NPRM also identifies certain frequency bands for potential use by smallsat systems on a shared basis: 137-138 MHz (space-to-Earth); 148-150.05 MHz (Earth-to-space); and 1610.6-1613.8 MHz (Earth-to-space). And the draft NPRM proposes to allow inter-satellite service in the Big LEO frequency bands assigned to Globalstar and Iridium (1615-1617.75 MHz, 1618.725-1626.5 MHz, and 2483.5-2495 MHz bands) as part of the Mobile-Satellite Service allocation in those bands.

The draft NPRM has been [adopted](https://transition.fcc.gov/Daily_Releases/Daily_Business/2018/db0417/FCC-18-44A1.pdf) and [published](https://www.gpo.gov/fdsys/pkg/FR-2018-05-24/pdf/2018-10943.pdf) in the Federal Register. Parties interested in commenting on the eligibility criteria for smallsat systems, the proposed frequency allocations, and/or other matters raised in the NPRM will have until July 9 to submit comments and until August 7 to submit reply comments.

One point of criticism raised on the new rules for smallsat is that existing educational smallsats which were able to get FCC licenses via the amateur or experimental process, may in future be seen as a commercial undertaking and forced to pay a US$135,350 annual fee - plus a $30,000 application fee for the first year - to get the federal license required for a U.S. organisation to operate satellite communications. Those interested stakeholders state that the existing educational “cubesats” should be able to get FCC licenses via the amateur or experimental process, and those processes should remain unchanged. They state that the proposed FCC ruling could effectively stop many university cubesat launches.

**(for information in CPG, CPG PTA, WG FM and FM44)**

1. **C-Band (3.7-4.2 GHz) developments in the USA - Expanding Flexible Use of the 3.7 GHz to 4.2 GHz Band**

On 12 July the FCC will vote on a Notice of Proposed Rulemaking (NPRM; [FCC 18-122](https://www.fcc.gov/ecfs/search/filings?proceedings_name=18-122&sort=date_disseminated,DESC)) that seeks more detailed feedback on how to make better use of the 3.7-4.2 GHz band. This follows the Notice of Inquiry on the band issued last year, where stakeholders were invited to submit proposals for re-organisation of the band.

One of those ideas is a proposal by satellite companies to make 100 MHz of C-Band spectrum available for 5G by negotiating directly through a satellite consortium with wireless operators (as reported in the previous edition of the ECO Bulletin). However terrestrial wireless vendors and operators are seeking 100 MHz per operator nationwide.

Another proposal from Google promotes shared use of the band with suitable mitigation to protect satellite earth stations. This approach mainly applies to fixed wireless, rather than mobile for which sharing would be more difficult.

In April the FCC issued a public notice imposing a temporary freeze on applications to add or modify fixed-satellite service (FSS) earth station licenses, receive-only registrations and fixed microwave licenses in the 3.7-4.2 GHz band. The FCC also created a 90-day window during which operators of existing FSS stations can register or license a station that is currently in use.

Intelsat and SES have raised concerns in a recent [filing](https://ecfsapi.fcc.gov/file/10618094828460/Final%20as-filed%20SES%20and%20Intelsat%20Request%20for%20Batch%20Filing.pdf) that adhering to the FCC’s current registration procedure is challenging and costly for operators of receive-only earth stations.

Cable operators who use C-band earth stations for distribution of content have also raised a [series of questions](https://ecfsapi.fcc.gov/file/10615344709012/061518%2017-183%2018-122%20ACA%20NAB%20NCTA%20NPR%20ex%20parte.pdf) on how the repacking of the band could work, and the effectiveness of mitigation techniques.

The NPRM would:

* Seek comment on various aspects of the future of incumbent use in the band.
* Request input on how to properly define different classes of incumbents and on steps regarding the future of incumbents, including appropriate protections for existing satellite operators and potentially sun-setting or grandfathering the existing fixed microwave point-to-point licenses in the band.
* Ask whether the FCC should amend its rules to codify temporary freezes the Bureaus have placed on certain applications for satellite licenses and registrations.
* Propose to expand terrestrial use of the band.
* Propose to add a mobile allocation to the 3.7-4.2 GHz band.
* Seek comment on various proposals for expanding flexible use in the band, including whether to transition all or part of the band through a market-based mechanism, auction mechanisms, or alternative mechanisms.
* Seek comment on potentially allowing point-to-multipoint use on a shared basis in a portion of the band.
* Invite feedback on what service and technical rules should be changed or adopted if the Commission decides to expand flexible use or allow point-to-multipoint use in the band.

Intelsat provided a reaction to FCC issuance of the NPRM and indicated to be pleased with the positioning of the joint proposal (Intelsat, SES global, Intel) in the C-band NPRM released on June 21 by the FCC.

**(for information in ECC PT1, WG FM and FM44)**

1. **FCC proceeds on 2.5 GHz**

In its May 10, 2018 [Notice of Proposed Rulemaking](https://transition.fcc.gov/Daily_Releases/Daily_Business/2018/db0511/FCC-18-59A1.pdf" \t "_blank) (FCC 18-59), the FCC acknowledges that the 2.5 GHz band (2496-2690 MHz) constitutes the single largest band of contiguous spectrum below 3 GHz, and identifies it as prime spectrum for next generation mobile operations, including 5G uses. The FCC proposes to allow more efficient and effective use of this spectrum band by providing greater flexibility to current EBS (Educational Broadband Service) licensees, as well as providing new opportunities for additional entities to obtain unused 2.5 GHz spectrum to facilitate improved access to next generation wireless broadband, including 5G. The FCC also seeks comment on additional approaches for transforming the 2.5 GHz band, including moving directly to an auction for some or the entire spectrum.

**(for information in ECC PT1)**

1. **Competing studies in the US about WAS/RLAN use in 6 GHz**

Last year the FCC has called for comments on expanding flexible use in spectrum between 3.7 and 24 GHz, including the 3.7-4.2 GHz, 5.925-6.425 GHz, and 6.425-7.125 GHz bands.

The **Fixed Wireless Communications Coalition (FWCC)** – this is a coalition of stakeholders from the fixed service - says a study backed by the likes of Apple, Facebook, Google, Microsoft, Intel, Qualcomm and others is badly flawed and should not be relied upon to allow for an array of unlicensed devices in the 6 GHz band.

Earlier in 2018, representatives from Apple, Broadcom, Cisco Systems, Hewlett Packard Enterprise, Facebook, Google, Intel, MediaTek, Microsoft and Qualcomm met with FCC representatives where they presented a [study](https://ecfsapi.fcc.gov/file/101261169015803/6%20GHz%20Ex%20Parte%20(Bureaus).pdf) (PDF), prepared by RKF Engineering Solutions, that analysed sharing between unlicensed operations in the 6 GHz band and existing services. This study shows that unlicensed services can successfully coexist with the primary services present in the 6 GHz band.

On the opposite hand, the FWCC’s analysis shows that the uncontrolled distribution of unlicensed devices, in the numbers and at the power levels studied, would indeed cause widespread harmful interference to fixed links. The analysis was filed to the FCC on 13 March 2018. [Filing](https://ecfsapi.fcc.gov/file/1031332563829/17-183%202018-03-13%206GHz%20Mid%20Band%20Response%20AS%20FILED%20(01170454xB3D1E).PDF) (PDF)

In the US, in the 6 GHz bands at issue, about 90 000 FS links are used nationwide, in operating range (tens of kilometres) and technical parameters very similar to those in Europe.

The FWCC is a coalition of companies, associations and individuals involved in terrestrial fixed microwave communications. Its website doesn’t list individual companies, but its filing says its membership includes manufacturers of microwave equipment, fixed microwave engineering firms, licensees of terrestrial fixed microwave systems and communications service providers. Membership also includes railroads, public utilities, petroleum and pipeline entities, public safety agencies, cable TV providers and backhaul providers.

**(for information in WG FM, FM57 and WG SE, SE45)**

1. **CITEL: questionnaire on unwanted emissions in the OOB domain of LTE equipment and development of a new report with an overview of satellite broadband systems, current and planned use, in the Americas**

In the embedded document below, two items from the 30th meeting of the permanent consultative Committee PCC.II of CITEL (November 27 to December 1, 2017) on radiocommunications are noted:

1. Questionnaire for the preparation of a report on the monitoring of the power levels of unwanted emissions in the OOB domain by BS providing IMT services with LTE radio interfaces. The questionnaire invites the CITEL Member States to propose possible next steps to the next meeting of PCC.II (31st Meeting of PCC.II: 16-20 July 2018) on the procedure for measuring unwanted emissions in the out-of-band domain by base stations providing IMT services using LTE (E-UTRA) interfaces;

**(for information of ECC PT1, FM22, SE21)**

1. Development of an informational Report on the Satellite Broadband Systems in the Americas. PCC.II established an electronic Correspondence Group (CG) within the Satellite Working Group 3.3 for the development of an informational Report on the Satellite Broadband Systems in the Americas.3) The CG Coordinator is tasked to contact Members States of CITEL in order to provide information regarding their respective activities on the construction, deployment and operation of satellite broadband systems in the Americas and then, the CG Coordinator is requested to prepare the Report on the Satellite Broadband Systems in the Americas, based on input contributions received from Members States of CITEL, and to submit such Report, and any subsequent updates, to the PCC.II meeting, as appropriate. The aim is to get an overview of the satellite market and its current and planned use of the C, Ku, and Ka bands and in the future, additional bands including the V and Q bands.



**(for information in FM44)**

The meeting report of the 30th PCC.II meeting of CITEL (November 27 to December 1, 2017) is available under: <https://www.citel.oas.org/en/SiteAssets/PCCII/Final-Reports/CCPII-2017-30-4500r1_i.pdf> and also includes additional information about some other subjects.