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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. Developments with DA2GC (AT&T backs off, FCC New Proposed Rulemaking Process on-going, and other information) 2. ITU-R SG1 (WP1A, 1B, 1C) 2014 Overview 3. Industry Canada - on policy changes in the 3500 MHz Band (3475-3650 MHz) 4. 17th Meeting of the APT Wireless Group (AWG-17) - several new APT Reports approved, mostly in relation to MFCN, but also MSS/CGC 5. FCC delays start of 600 MHz incentive auction to early 2016 and also started a consultation (NPRM) on unlicensed use (part 15 modification) 6. IEEE: Spectrum co-existence studies between ITS and WAS/RLAN 7. 3GPP SA6 - new Working Group to undertake specification work for mission critical communications such as BB-PPDR 8. FCC: 700 MHz Narrowbanding Deadline Eliminated 9. LTE in ‘unlicensed’ spectrum in 5 GHz | | | | |

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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.  On DA2GC: the ECC is requested to consider whether it is appropriate to assign a task to investigate more thoroughly the use of frequencies above 6 GHz, such as the ones under the NPRM of the FCC (13-66).  The development on LTE in licence-exempt spectrum in 5 GHz should be noted with regard to the future activities under the 5GHz mandate;  Several of the issues covered in this bulletin should be noted or discussed at the respective WG/ PT level. This includes information related to DA2GC, MFCN related, BB-PPDR related, PMR related, TVWS related, 3.5 GHz FWA related, ITS-WAS/RLAN in 5.8 GHz 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. **Developments in Direct-Air-to-Ground Communications**

There has been a succession of related but seemingly contradictory developments in relation to DA2G in the USA. Firstly, an agreement made between AT&T in relation to its proposed DA2G service at 2.3 GHz, and then a reported cooling of AT&T’s intention to launch.

Paul/Weiss – Lawyers in Washington DC informed on 26 September 2014 that AT&T and Sirius XM reached an agreement on the use of 2.3 GHz WCS (Wireless Communication Service – equivalent to MFCN in Europe) - Spectrum for Air-to-Ground Service. Below we reproduce the significant parts of their statement, interesting for three reasons: (i) covering how a specrum sharing agreement was cconcluded between two parties, (ii) how it was presented as beneficial by its proponents, and (iii) how it was received by other parties in the market.

*This week, AT&T and Sirius XM Radio filed a coordination agreement with the FCC to facilitate AT&T’s proposal to use wireless communications service (WCS) spectrum in the 2.3 GHz band in support of AT&T’s planned LTE in-flight connectivity service. The agreement corresponds to a rulemaking petition in which AT&T recently asked the FCC to modify Part 27 of the agency’s rules to permit usage of 2.3 GHz WCS C- and D-block spectrum for in-flight connection services. Comments on the petition were due to be filed at the FCC on Monday.*

*To protect the satellite digital audio radio service transmissions of Sirius XM, which uses channels adjacent to the 2.3 GHz band, AT&T proposed rules to "include restrictions on transmitter power levels, limits on out-of-band emissions, and specific requirements for coordination with Sirius." As such, AT&T claimed that a grant of the petition "will serve the public interest by permitting a robust, nationwide deployment of AT&T’s innovative in-flight connectivity service using currently fallow spectrum while at the same time preserving adequate interference protection to users of adjacent bands."*

*In their joint filing, AT&T and Sirius explained that their agreement "reflects the results of joint testing recently conducted to determine the technical and operational environment in which AT&T’s proposed air-to-ground service in the WCS band is predicted not to interfere with Sirius XM’s satellite radio service." Adding that the agreement also "provides a framework for coordination and cooperation between AT&T and Sirius XM," the parties asked the FCC to "revise its rules in a manner consistent with the agreement to ensure that Sirius XM service will be adequately protected."*

*Comments filed by other parties, however, struck a cautious tone. Warning that a grant of the petition could allow AT&T "to become the exclusive means to backhaul wireless traffic from aircraft," the Competitive Carriers Association urged the FCC to "consider the competitive concerns that AT&T’s likely exclusive arrangement plus its status as a dominant provider of terrestrial services will create both with respect to its provision of access to Wi-Fi and carrier provided services." While taking "no position as to whether . . . [AT&T] spectrum should be used for in-flight connectivity," Gogo, Inc., a provider of in-flight communications services, recommended that "all proposed new rules . . . should be consistent with those (already) adopted earlier”. These were rules about competition.*

The last hint/statement may point to the on-going NPRM process at the FCC (already reported in a previous ECO bulletin), Air-Ground Mobile Broadband NPRM, FCC 13-66, see also:[*http://apps.fcc.gov/ecfs/document/view?id=7520957401*](http://apps.fcc.gov/ecfs/document/view?id=7520957401)(a document from Qualcomm, the original proposal maker, on the on-going studies to use Ku-Band FSS frequencies also for DA2GC in the future.

The NPRM process in the USA may lead to a spectrum auction process at a later stage (e.g. close to the end of the ‘first generation ‘Gogo license’ in 2016) with implementations to arrive in the market some time later (but most likely not before or by the end of 2017 as indicated as crucial for example in CEPT Report 52). Provided positive conclusions of the on-going studies are in place in the future, be the subject of 2x250 MHz or even up to 4 x 125 MHz of such a decision. The ‘incumbent’ Gogo service’s position was released in

<http://www.runwaygirlnetwork.com/2014/07/22/qualcomm-gogo-disagree-spectrum-auction-play/>

*‘Gogo wants the FCC to split the band into four 125 MHz-wide spectrum licenses, arguing that there are enough interested parties to support a four-license auction****.’***

<http://smartskynetworks.com/> might be one of the new interested parties.

Then shortly afterwards:

This development, investor constellations and the prospect ofmore competition in the future in the DA2GC market may have caused **AT&T to back off from using the 2.3 GHz WCS frequencies for DA2GC, only a month later after reaching agreement with XM Radio** :

<http://www.bbc.com/news/business-30011133>

(please note that some statements in this article are not confirmed, e.g. the position of British Airways who also responded at the PC process for CEPT Report 52 – keeping their opens open with regard to the future D2GC solutions and certainly not fixed to one system at this stage)

The situation in the USA would have AT&T left in a very risky situation with a limited time advantage as the ‘second operator’ before other competition may come in using more sophisticated solutions and based on higher capacity bandwidth in Ku-band – a time and capacity ‘trap’.

It should be noted that AT&T also has the possibility to use the 2.3 GHz WCS spectrum terrestrially since modifications of the spectrum utilisation rules have enabled also MS usage subject to some restrictions (FCC eliminated the power spectral density limit for WCS mobile devices operating in WCS Blocks under certain circumstances, and eliminating the duty cycle requirements for WCS mobile, e.g. AT&T could also use for home nodes and mobile with some remaining DC restrictions (consider that satellite radios are mostly in cars and not homes and a smart duty cycling may provide for improved co-existence).

Regarding the usage of the 2 GHz MSS band, the following statements from Inmarsat were noted on 29 September; Inmarsat article in Satellite Today (29 September) <http://www.satellitetoday.com/telecom/2014/09/29/air-to-ground-essential-for-inmarsats-ifc-plans/>

To amplify the information about future use of higher frequencies (> 6 GHz) for Air-To-Ground usage, a document from the ICAO was noted to include information about test trials, even at frequencies > 40 GHz; ‘Millimeter wave broadband wireless direct communication between air and ground’. This paper provides information of experiments of broadband communication systems for airplanes in which frequencies over 40 GHz serve to facilitate broadband wireless communications between air and ground.



***Should ECC investigate higher frequency options for DA2G?***

The information from the USA as well as ICAO demonstrate that some technology developments are on-going which may in the future make it possible to use higher frequencies for DA2GC, though this is unlikely to be before 2017. Nevertheless this may be a point for consideration at the ECC whether a task should be assigned to investigate this issue further. In this regard, the discussion about protection requirements of the incumbent services in the FCC NPRM process is noted (again, see <http://apps.fcc.gov/ecfs/document/view?id=7520957401> ). e.g. Sweden provided a comment during the PC of CEPT Report 52 that such investigations into higher frequency alternatives could be helpful.

Usage of frequencies above 6 GHz was originally ruled out by the ETSI SR Docs. which triggered the current investigations in the ECC. The main arguments provided were that the technology was not ready for this and the Doppler effect increase with higher frequencies. However, technology advances may find solutions. On the other side, there is no confirmation/indication that such technology might be available by 2017. In this regard, capital expenditure considerations for DA2GC in comparison to solutions at lower frequencies such as 2GHz or 5.8 GHz are also an important point to enquire further.

Meanwhile China has completed their DQ2GC test trials: <http://www.policychargingcontrol.com/1341-air-china-pilot-in-flight-internet-services-using-zte-ground-air-solutions>

1. **ITU-R SG1 (WP1A, 1B, 1C) 2014 Overview**

A complete overview of the activities of ITU-R Study Group 1 in 2014 (including the working parties 1A, 1B, 1C and all correspondence activities) has been provided by the SG1 Chairman and is included here for information:



1. **Industry Canada - on policy changes in the 3500 MHz Band (3475-3650 MHz)**

Industry Canada started on 19 August 2014 a consultation on policy changes in the 3500 MHz Band (3475-3650 MHz) and a new licensing process in rural areas. This concept shows a method on how to deal with existing FWA licenses, new FWA licenses in so-called rural areas as well as the complete re-allocation of the band to the mobile service and how to deconflict the two aforementioned licence classes.

<http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/sf10841.html>

1. **17th Meeting of the APT Wireless Group (AWG-17)**

The 17th Meeting of APT Wireless Group was completed successfully in Macao, China from 23 to 26 September 2014.

The Meeting finalised and approved the following APT Reports:

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| [APT/AWG/REP-50](http://www.apt.int/sites/default/files/Upload-files/AWG/APT-AWG-REP-50-APT_Report_on_AI_1.1.docx) | APT Survey Report on Frequency Bands in relations to Study on WRC-15 Agenda Item 1.1 | 09/2014 |
| [APT/AWG/REP-51](http://www.apt.int/sites/default/files/Upload-files/AWG/APT-AWG-REP-51-APT_Report_on_EESS.docx) | APT Report on Usage of the Bands 8 700 – 9 300 MHz and 9 900 – 10 500 MHz in Asia-Pacific Region | 09/2014 |
| [APT/AWG/REP-52](http://www.apt.int/sites/default/files/Upload-files/AWG/APT-AWG-REP-52-APT_Report_on_WAIC.docx) | APT Report on Usage of the Bands 2 700 - 2 900 MHz, 4 200 - 4 400 MHz and 5 350 - 5 460 MHz in Asia-Pacific Region | 09/2014 |
| [APT/AWG/REP-53](http://www.apt.int/sites/default/files/Upload-files/AWG/APT-AWG-REP-53-APT_Report_on_GSM_Migration.docx) | APT Report on Migration Strategy of GSM to Mobile Broadband | 09/2014 |
| [APT/AWG/REP-54](http://www.apt.int/sites/default/files/Upload-files/AWG/APT-AWG-REP-54-APT_Report_on_FWS.docx) | APT Survey Report on Fixed Wireless Systems | 09/2014 |
| [APT/AWG/REP-55](http://www.apt.int/sites/default/files/Upload-files/AWG/APT-AWG-REP-55-APT_Report_on_Embedded_Narrow_Band_M2M.docx) | APT Report on Study on Embedded Narrow Band M2M | 09/2014 |
| [APT/AWG/REP-56](http://www.apt.int/sites/default/files/Upload-files/AWG/APT-AWG-REP-56-APT_Report_on_service_and_application_onboard_aricraft_and_vessel.docx) | APT Report on Possible Radio Services and Applications onboard Aircraft and Vessels | 09/2014 |
| [APT/AWG/REP-57](http://www.apt.int/sites/default/files/Upload-files/AWG/APT-AWG-REP-57-APT_Report_on_Integrated_MSS__Hybrid_Satellite_Terrestrial_System_20140926_0-2_0.docx) | APT Report on Studies within the Architecture and Performance of Integrated MSS System and Hybrid Satellite/ Terrestrial Systems below the 3GHz Band | 09/2014 |

The recent **APT e-Newsletters** are available under: <http://www.apt.int/Publications> (at the bottom of the page)

The following circulation of questionnaires has been approved by AWG-17 (September 2014)

* + [◦Questionnaire on Small Cell Cloud Services](http://www.apt.int/sites/default/files/Upload-files/AWG/AWG-17-Circulars/AWG-17-OUT-14-R1-Q-SCCS.docx) (on developments with regard to Femto/small cells/cloud services)

Please note that the AFIS (APT Frequency Information System) is live now: <http://www.aptafis.org/> . First information uploaded includes the ITU-R Region 3 allocations and footnotes, APT Reports and SRD implementation in some APT countries.

1. **FCC delays start of 600 MHz incentive auction to early 2016**

The FCC has decided to delay the start of the 600 MHz broadcast TV spectrum incentive auction from mid-2015 to early 2016. The delay marks the second time in less than a year the FCC has pushed back the start date of the auction[[1]](#footnote-1). and is an indication of the both the complexity in designing the auction and the problems stemming from a legal challenge against the auction by the National Association of Broadcasters.

The NAB (National Association of Broadcasters) sued the FCC in August, arguing that the agency's rules would diminish broadcasters' coverage areas and could result in a loss in viewership. One of the broadcasters' main arguments against the FCC is that the Commission has changed how it calculates TV station coverage areas, using a methodology known as OET-69, (OET = the FCC's Office of Engineering and Technology). The NAB has said it did not intend that its lawsuit would derail the auction.

Under the basic auction structure, after broadcasters give up their spectrum, it will be "repacked" so that broadcasters that do not give up their spectrum can stay on the air, but typically on different frequencies. Then the FCC will conduct a traditional "forward" auction in which wireless carriers will bid for the freed spectrum; how much freed spectrum is available will depend on how much broadcasters are prepared to relinquish in return for the fees they offer to receive in order to do so..

The FCC adopted basic rules for the auction in May 2014 and then set about writing more detailed rules for how the auction would be governed.

By the end of the year the Commission is expected to vote on a public notice that will propose and seek comment on the detailed directions for how the auction will be conducted, including the methodology to be used to establish opening bids for the reverse and forward auctions; how to define "impaired" markets subject to interference; and the components of determining when final bidding conditions have been met. The FCC will also consider a proposed rule-making to preserve one vacant TV channel post-auction for use by licence-exempt devices.

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[**http://www.fcc.gov/blog/incentive-auction-progress-report**](http://www.fcc.gov/blog/incentive-auction-progress-report) ***(24 October 2014)***

***Other spectrum users in UHF***

In addition, on 30 September 2014, the FCC started a NPRM (new proposed rulemaking/ consultation) for modification of the Part 15 rules (unlicensed devices). The Commission’s Part 15 rules permit devices to operate on unused “white space” spectrum between TV stations. The Notice of Proposed Rulemaking considers changes to its existing Part 15 rules to facilitate unlicensed use of the television bands, 600 MHz Band guard bands and channel 37.

Following the incentive auction, with the repacking of the television band and the repurposing of current television spectrum for wireless services, there will be fewer frequencies in the UHF band available for use by unlicensed fixed and personal/portable white space devices and wireless microphones. The proposed changes to Part 15 rules are designed to allow for more robust service and efficient spectral use in the frequency bands that are now and will continue to be allocated and assigned to broadcast television services, while continuing to protect authorised users from harmful interference.

[**http://www.fcc.gov/document/fcc-proposes-modify-rules-unlicensed-use-tv-600-mhz-bands**](http://www.fcc.gov/document/fcc-proposes-modify-rules-unlicensed-use-tv-600-mhz-bands)

Docket (see views):[**http://apps.fcc.gov/ecfs/proceeding/view?name=14-144**](http://apps.fcc.gov/ecfs/proceeding/view?name=14-144)

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The FCC comment deadline was 45 days after the date of publication.

1. **IEEE: Spectrum co-existence studies between ITS and WAS/RLAN**

The Regulatory Standing Committee of IEEE 802.11 created already in 2013 a “Tiger Team” to bring together interested participants to exchange technical ideas and explore possible solutions to the band sharing issue as proposed in the FCC NPRM.

Documents are available on the IEEE document server called “Mentor” (this may be of interest/ for information to those active in FM55 and SE24).

[**https://mentor.ieee.org/802.11/documents?is\_dcn=DCN%2C%20Title%2C%20Author%20or%20Affiliation&is\_group=0reg**](https://mentor.ieee.org/802.11/documents?is_dcn=DCN%2C%20Title%2C%20Author%20or%20Affiliation&is_group=0reg)

IEEE 802.11 technical activities will continue to explore ITS vs WAS/RLAN coexistence techniques through 2014 and beyond. It is said that extensive field testing will be conducted by WLAN and DSRC stakeholders outside of IEEE 802.11, if suitable technical options are identified.

Intra- IEEE 802.11 technical co-existence solutions may trigger questions about the technical neutrality potential of a specific approach.

1. **3GPP SA6 - new Working Group to undertake specification work for mission critical communications such as BB-PPDR**

3GPP has created a new Working Group to undertake specification work for applications in the mission critical communications space.

The 3GPP SA Plenary meeting (TSG SA#65), in Edinburgh in September 2014, approved the creation of WG SA6, to initially focus on the Mission Critical Push to Talk (MCPTT) application in Release 13 while developing in to the generic home for all future 3GPP mission critical application work - as defined by stage 1 service requirements, on top of a common architecture.

The goal is an organisational setup that is equally attractive for all relevant stakeholders of this industry. To emphasise this, a liaison statement has been sent out by TSG SA, outlining the main tasks that have been identified for SA6 and noting the relationships between ongoing



SA6 webside: <http://www.3gpp.org/specifications-groups/sa-plenary/sa6-mission-critical-applications>

These activities are considered to support the future interoperability requirements for BB-PPDR services, though further analysis about the precise work in SA6 might be required to fully understand whether SA6 will also produce protocol conformance and interoperability specifications (interoperability recognised as important feature for BB-PPDR by many stakeholders).

Side note: Concerning BB-PPDR, it was noted that within ITU-R SG5, the United Arab Emirates and Jordan indicated for BB-PPDR the use of 703-713/758-768 MHz in the future.

1. **FCC: PPDR: 700 MHz Narrowbanding Deadline Eliminated**

The FCC issued a report and order eliminating requirements associated with the planned deadline to transition 700 MHz public-safety narrowband systems from 12.5 kHz to 6.25 kHz channels by Dec. 31, 2016, as well as designating some channels in the band for voice communications for current T-Band licensees and others for communications with helicopters and other aircraft. This elimination is only for the 700 MHz frequencies and public-safety narrowband systems. It also allows public-safety entities to submit applications for 12.5 kHz-channel systems after Dec. 31, 2014, which was prohibited under the previous rules.

Another key aspect of the FCC’s report and order is its decision to designate former secondary trunking channels in the 700 MHz band for air-ground communication with aircraft such as public-safety helicopters that are operating at an altitude of 1,500 feet or lower (because they are not used for their originally intended purpose).

Despite this move of the FCC, it should be noted that the narrowbanding rules in the USA and also in China (similar regulations) impose practically that only digital PMR equipment can be placed on these markets.

<http://www.fcc.gov/document/700-mhz-narrowband-ro>

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

A 3GPP workshop was held at ETSI on 19 June 2014 (nearly 180 participants) to share ideas on LTE in unlicensed spectrum. It has been described as a “fruitful contribution to the start of work in the project” as it is considered by cellular operators as an important complement to meet future traffic demands.

Major observations:

* Early focus to be on license-exempt operation in 5 GHz. However, the core technology should be as frequency agnostic as possible;
* While different regional requirements emerged from the discussion, most of the companies prefer 3GPP to focus on the standardization of a global solution that can work across regions;
* Strong interest to study both indoor and outdoor deployments;
* Initial focus will likely be on Licensed-Assisted Carrier Aggregation operation to aggregate a primary cell, using licensed spectrum, to deliver critical information and guaranteed Quality of Service, and a co-located secondary cell, using unlicensed spectrum, to opportunistically boost datarate;
* Two available options: (1) Secondary cell on unlicensed spectrum used for supplemental downlink capacity only, (2) Secondary cell on unlicensed spectrum used for both supplemental downlink and uplink capacity. Many companies propose to start working on (1) and then follow with (2)
* Fair coexistence between LTE and other technologies such as WiFi as well as between LTE operators is seen necessary.

In September 2014, a new work item was approved in 3GPP RAN with a lot of support from individual members in the 3GPP (see under item 13 –support in the document under the following link):

<ftp://ftp.3gpp.org/tsg_ran/TSG_RAN/TSGR_65/Docs/RP-141664.zip>

1. In December 2013, the FCC pushed back the start of the auction to mid-2015 from sometime in 2014 [↑](#footnote-ref-1)