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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. AT&T seeks regulatory approval for DA2GC (Direct Air To Ground Communications) in the USA; 2. DA2GC testing in China and Australia; 3. Update from APT (new APT Reports, questionnaires etc.); 4. FCC - 5 GHz U-NII - existing U-NII bands – with regards to changes; 5. FCC/IEEE actions concerning new proposed ‘UNII-4’ band 5850-5925 MHz, also with regard to coexistence specifications; 6. FCC unveils framework for the spectrum incentive auction - 600 MHz band plan; 7. FCC actions regarding 3550-3650 MHz (Spectrum Access System ‘SAS’); 8. Australian Spectrum Review; 9. FCC – Report and Order on Rules for Upcoming Auctions; 10. FCC Workshop on GPS Protection and Receiver Performance; 11. CITEL – Status of Preparations for WRC-15 12. Worldwide activities on Short Range Device usage harmonisation | | | | |

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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.  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, GNSS jammers, and the US proposed ‘UNII-4 band’ 5850-5925 MHz.  The concept of the FCC for a new Part 96 on SAS (Spectrum Access Systems) is proposed to give some consideration in the ECC since it combines priority access (similar to LSA) and general authorised use in a way that could possibly lead to more efficient use of the spectrum.  Some presentations from the workshop on SRD/UWB on 3 June 2014 (as per CEPT initiative) revealed activities e.g. in Korea, and the USA, for which no activity is noted so far in the ECC: e.g. on high power wireless charging such as for electric cars with and without communications, or UWB medical applications.  Some topics were covered in the ECC-ECC-IC liaison meeting in September 2013, but this bulletin provides more comprehensive detail and an update (e.g. on 600 MHz incentive auction in the US). |
| 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. **AT&T seeks regulatory approval for DA2GC in the USA**

Telecom operator AT&T announced on 5 May 2014 that it seeks to use frequencies in its ownership in the 2.3 GHz Wireless Communication Service (WCS) band in the USA for a nation-wide Direct-Air-to-Ground Communications System. AT&T will need permission from the FCC to make use of the spectrum in that way.

In addition, an FAA approval process applies. AT&T wants to use 2x5 MHz of spectrum (4G LTE, FDD mode) and plans to build ≥ 1 000 towers (ground stations) for such a system in the USA. The system would be a second DA2GCS in the USA, after the existing Gogo-system.

AT&T has a partnership with Honeywell and indicates that the high-speed 4G LTE-based in-flight connectivity service is for airlines and passengers in commercial, business and general aviation, and that AT&T sees a significant market opportunity for such services.

The AT&T announcement is in the following: [Link](http://about.att.com/story/mobilizing_the_sky_att_building_4g_lte_in_flight_connectivity_service.html)

AT&T bought the 2.3 GHz US-nationwide spectrum from Nextwave in 2012, including more than the 2x5 MHz of spectrum, for 600 M$US. Although this purchase included more items, the spectrum opportunity costs may be significant for 2x5 MHz of nationwide available spectrum. The decision to use this spectrum for DA2GC therefore may be surprising, but it is certainly deliberate.

1. **DA2GC testing in China and Australia**

DA2GC testing was performed in China and Australia based on 4G LTE technology.

China (announced in April 2014):

[http://wwwen.zte.com.cn/en/press\_center/news/201404/t20140418\_422565.html (18](http://wwwen.zte.com.cn/en/press_center/news/201404/t20140418_422565.html%20(18)

Australia (announced in May 2014):

<http://delimiter.com.au/2014/05/12/telstra-testing-flight-4g-broadband/>

In response to an APT questionnaire on DA2GC, the Chinese administration indicated that more than 50% of the future market size (percentage of all airplanes in a country) are expected to use the DA2GC applications. TELSTRA (Australia) referred in their response to the investigations/ developments in Europe, which they are monitoring.

1. **16th Meeting of the APT Wireless Group (AWG-16)**

The Asia-Pacific Telecommunity (APT) organised the 16th Meeting of the APT Wireless Group (AWG-16) from 18 – 21 March 2014, Pattaya, Thailand.

The summary records are here embedded:



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

The following new (or newly revised) APT Reports have been approved:

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| [APT/AWG/REP-37 (Rev.1)](http://www.apt.int/sites/default/files/Upload-files/AWG/APT-AWG-REP-37-R1-APT_Report_on_3400-3600MHz.docx) | APT Report on "Frequency Usage of the Band 3400-3600 MHz"  (may be of interest in PT1) | Revised 03/2014 |
| [APT/AWG/REP-43](http://www.apt.int/sites/default/files/Upload-files/AWG/APT-AWG-REP-43-APT_Report_on_Visualization_Spec_Monitoring.docx) | APT Report on "Visualization Spectrum Monitoring and DF/ Location System"  (subject discussed at recent ITU-R WP1C meeting, may be of interest for FM22) | 03/2014 |
| [APT/AWG/REP-44](http://www.apt.int/sites/default/files/Upload-files/AWG/APT-AWG-REP-44-APT_Report_on_Spec_Coexistence_between_services_at_the_700_MHz_and_800_MHz_boundary.docx) | APT Report on "Coexistence between Services at the Boundary of the 700 MHz and 800 MHz Bands"  (may be of interest in PT1 and WGSE) | 03/2014 |
| [APT/AWG/REP-45](http://www.apt.int/sites/default/files/Upload-files/AWG/APT-AWG-REP-45-APT_Report_on_FSS.docx) | APT Report on "Studies in addressing the Inefficiency associated with the Asymmetry of existing unplanned FSS Uplink/ Downlink Spectrum in the 10-15 GHZ Band"  (FM44 for information) | 03/2014 |
| [APT/AWG/REP-46](http://www.apt.int/sites/default/files/Upload-files/AWG/APT-AWG-REP-46-APT_Report_on_2_1GHz_Survey_Study.docx) | APT Report on "APT Frequency Usage of the Bands 1 980-2 010 MHZ AND 2 170 - 2 200 MHz in Asia Pacific Region"  (mostly planned for future broadband mobile in Asia) | 03/2014 |
| [APT/AWG/REP-47](http://www.apt.int/sites/default/files/Upload-files/AWG/APT-AWG-REP-47-APT_Report_on_Future_IMT_Technologies.docx) | APT Report on "Future IMT Technologies"  (Tech paper; may be of interest for several groups) | 03/2014 |
| [APT/AWG/REP-48](http://www.apt.int/sites/default/files/Upload-files/AWG/APT-AWG-REP-48-APT_Survey_Report_on_WPT.docx) | APT Survey Report on "Wireless Power Transmission"  (subject was recently discussed in ITU-R WP1A) | 03/2014 |
| [APT/AWG/REP-49](http://www.apt.int/sites/default/files/Upload-files/AWG/APT-AWG-REP-49-APT_Report_on_Maritime_VHF_band_usage.docx) | APT Survey Report on Maritime VHF Band Usage and consideration of New Applications in the Region of APT  (Subject of interest for FM FG Maritime) | 03/2014 |

The following circulation of questionnaires has been approved by AWG-16 (March 2014)

* + **Circulation of Questionnaires approved by AWG-16 (March 2014)** [Circular Letter](http://www.apt.int/sites/default/files/Upload-files/AWG/AWG-16-Circulars/AWG-Q-April-2014.docx)
  + [Questionnaire on Usage of the Frequency Band 13.75-14 GHz in the Asia-Pacific Region](http://www.apt.int/sites/default/files/Upload-files/AWG/AWG-16-Circulars/AWG-16-OUT-07-SPEC-FSS_Questionnaire_in_13%2075-14_GHz-editorial.docx)
  + [Questionnaire on Fixed Wireless System](http://www.apt.int/sites/default/files/Upload-files/AWG/AWG-16-Circulars/AWG-16-OUT-15-APT_SURVEY_QUESTIONNAIREON_FIXED_WIRELESS_SYSTEMS.docx) (similarities with ECC Report 173 in WGSE/SE19)
  + **Circular Letters to update APT Reports approved by AWG-16 (March 2014)**
  + [Request for update information on APT/AWG/REP-07(Rev.2) and APT/AWG/REP-35](http://www.apt.int/sites/default/files/Upload-files/AWG/AWG-16-Circulars/AWG-Circular-Rep7-35-April-2014.docx)
  + [Request of update information in APT/AWG/REP-15 (Rev.1)](http://www.apt.int/sites/default/files/Upload-files/AWG/AWG-16-Circulars/AWG-Circular-Rep15-April-2014.docx)

(for FM22, FM44, SRD/MG, CPG, PT1, WGSE/SE19 and also other groups in the ECC to note)

1. **FCC - 5 GHz U-NII (Report and Order) - FCC 14-30**

<http://www.fcc.gov/document/5-ghz-u-nii-ro>

The FCC has revised Part 15 of the Commission’s Rules (ET Docket No. 13-49) to permit Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band, adopted 31 March 2014.

In this First Report and Order, the FCC increases the utility of the 5 GHz band for  
U-NII devices in the ranges where they are currently permitted to operate, and modify certain U-NII rules and testing procedures to ensure that U-NII devices do not cause harmful interference to authorised users of these bands. Specifically:

* For U-NII devices in the 5.15-5.25 GHz band, removal of the indoor-only restriction and increase of the permitted power, thus increasing the utility of spectrum and accommodating the next generation of Wi-Fi technology.
* Extension of the upper edge of the 5.725-5.825 GHz band up to 5.85 GHz and consolidate the Part 15 rules applicable to all digitally modulated devices operating across this 125 MHz of spectrum to ensure that all such devices comply with U-NII requirements intended to protect authorised users from harmful interference.
* It is required that all U-NII device software be secured to prevent its modification to ensure that the devices will operate as authorised by the FCC, thus reducing the potential for harmful interference to authorised users.
* To protect Terminal Doppler Weather Radar (TDWR) systems and other radar systems operating in the 5.250-5.350 GHz and 5.470-5.725 GHz bands from harmful interference, hence a modification of certain technical rules and compliance measurement procedures for U-NII devices operating in these bands.

The Report & Order does not address the use of U-NII devices into the 5.35-5.47 GHz and 5.85-5.925 GHz bands, pending additional technical analyses of those bands. These bands are the subject of further study and will be addressed in a separate future order.

(for WGFM, FM55, SRD/MG, WGSE, SE24)

1. **FCC and IEEE – 5 GHz – New UNII-4 Band (5850-5925 MHz)**

The following document gives an overview on the IEEE activities, especially in the so-called DSRC ‘Tiger Team’ (The term DSRC is equivalent to ITS – Intelligent Transport Services – in Europe)



Participants in the Tiger Team have a variety of perspectives, including the WLAN and automotive industries, government, and academia. Since its inception, the group has engaged in extensive discussions about the status and performance of ITS systems, explored requirements for band sharing, and had presentations on some preliminary proposals for sharing techniques. Various entities are working on simulation and modelling of these proposals as well as testing of prototypes as they are developed. The goal is to reach some level of consensus about the viability of one or more techniques for protecting DSRC systems from harmful interference, as stated in the NPRM. Modelling and simulation efforts are underway, and there is the possibility that more coexistence methods may be proposed in the coming months that would also be incorporated into the analysis. Initial results from these simulation efforts are anticipated by mid-2014. Prototype development is also underway, and initial results from tests of these prototypes are anticipated to begin in the latter part of 2014. IEEE 802.11-sponsored technical activities will continue to explore ITS coexistence techniques through 2014 and beyond. If viable candidates for sharing are identified as part of this effort, it is anticipated that extensive field testing will be conducted by WLAN and ITS stakeholders outside of IEEE 802.11. The actions are considered to yield credible technical proposals that will eventually garner industry support and assist the FCC in moving forward with this NPRM.

It is worth to observe that one proposed approach for WAS/RLAN vs ITS coexistence is the modification of IEEE 802.11ac to perform carrier sensing to detect the ITS protocol (802.11p) preamble (i.e. a technology-specific approach). This can pose questions concerning the technology-neutrality of a potential future regulatory approach, if it would be the only technical option (e.g. how to protect other technologies used by the same radio service/application?).

(for WGFM, FM55, SRD/MG, WGSE, SE24)

1. **FCC unveils framework for the spectrum incentive auction - 600 MHz band plan**

The Federal Communications Commission (FCC) issued on 15 May 2014 the report and order on the main rules for the broadcast TV spectrum incentive auction determining many significant issues and policy decisions. [Report and Order FCC 14-50](http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0602/FCC-14-50A1.pdf) , released 2 June 2014.

The report and order proposes a band plan for the 600 MHz band with specific paired uplink and downlink bands, enabling two-way communications, comprised of 5 MHz “building blocks”, consistent with the wireless industry's technical standards. The report and order allows for variation in the amount of spectrum recovered from broadcasters in different geographic areas to prevent the “least common denominator market” from limiting the quantity of spectrum that can be offered in the auction.

The proposal also adopts partial economic areas (PEAs) as the licensing area for the 600 MHz band to permit entry by providers that want to offer localised wireless broadband services while also allowing providers planning to offer service on a broader geographic scale to aggregate PEAs. It sets technical and services rules akin to those governing the adjacent 700 MHz band, and requires interoperability across the whole of the new 600 MHz band.

The report and order makes the 600 MHz guard band and channel 37 available for unlicensed use, thus making spectrum available for unlicensed devices nationwide. There could be 12-30 MHz of spectrum in the guard band and 6 MHz in channel 37 freed up, depending on how much spectrum broadcasters relinquish. There is likely to be a separate rulemaking proceeding shortly after the adoption of the report and order to consider changes to existing technical rules to govern the use of unlicensed devices in the 600 MHz band and channel 37 while protecting other users on the same or adjacent frequencies.

**Auction process – key elements**

The reverse auction for broadcasters and subsequent forward auction for wireless providers will be integrated in a series of stages, each of which will consist of a reverse auction and forward auction bidding process aimed at a specific spectrum-clearing goal.

The reverse auction will use a descending clock format in which the price offered for each station for the participation option it chooses – go off air, channel share or move from UHF to VHF – will be adjusted downward as the rounds progress. The price offered to broadcasters will drop with each successive bidding round.

The forward auction will use a multiple round ascending clock format in which prices will generally rise from round to round as the demand for licences exceeds the amount available, it said. When the clock price stops rising, the bidders still seeking licences will be the winners.

However, if that price does not meet a specific reserve price determined by the FCC, the agency would reduce the clearing goal and start another stage of the auction.

**Repacking and transition**

TV stations opting to remain on air will be assigned new channels after the incentive auction. The proposed repacking methodology makes all reasonable efforts to preserve a station's coverage area and population.

The report and order commits to clearance and implementation of new channels no later than 39 months after repacking becomes effective with each station assigned a transition deadline tailored to its individual circumstances. Broadcasters that successfully bid to relinquish their licences or share channels must cease operations on their pre-auction channels three months from the date they receive their auction proceeds.

The auction is expected to take place later on in 2015.

(for TG6, PT1, CPG, WGFM. The principles applied may also be of more general interest to administrations)

1. **FCC actions regarding 3550-3650 MHz (Spectrum Access System ‘SAS’)**

The 3.5 GHz Band is identified in the USA as potentially suitable for commercial broadband use, subject to significant geographic restrictions to protect existing Department of Defense (DoD) radar and FSS operations and to protect new commercial systems from co-channel interference from high-powered military in-band shipborne and adjacent band DoD ground-based radar systems. This has already been reported in the last ECO bulletin.

The FCC has published on 23 April 2014 a NPRM (Notice of Proposed Rulemaking), [Link](http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0425/FCC-14-49A1.pdf)., with specific proposals for the 3550-3650 MHz band, for a new Citizens Broadband Radio Service in the 3.5 GHz Band The 3.5 GHz Band is considered as an ‘innovation band’, to explore new methods of spectrum sharing and promote diverse network technologies, with a focus on relatively low-powered applications. If successful, the spectrum sharing model proposed for this band could ultimately be expanded to other spectrum bands.

Specifically, the proposed rules would implement a framework to authorise a variety of small cell and other broadband uses of the 3.5 GHz Band on a shared basis with incumbent federal and non-federal users of the band, with oversight and enforcement through a “Spectrum Access System”(SAS). The FCC proposes to establish a three-tiered authorisation framework – Incumbent Access, Priority Access, and General Authorised Access (GAA) tiers.

Under this framework, existing primary operations – including authorised federal users and grandfathered Fixed Satellite Service (FSS) earth stations - would compose the Incumbent Access tier and would receive protection from harmful interference from Citizens Broadband Radio Service users. At this time, the FCC proposes to establish geographic exclusion zones.

A SAS is intended to be implemented using databases, conceptually similar to, but more advanced than those used to manage Television White Spaces (TVWS) devices.

There is a variation to Europe’s LSA concept, and also to Europe’s existing licence-exempt enviroment. The FCC foresees to define Priority Access Licenses (PALs) as authorisations to use for one-year a 10 MHz channel in a single defined area. PALs would be open to any prospective licensee that meets basic FCC qualifications and mutually exclusive applications for PALs would be subject to competitive bidding. PAL channels would be dynamically coordinated by the SAS and the exact spectral location of a given PAL authorisation could shift from time to time as directed by the SAS during its licence term.The GAA tier would be licensed-by-rule to permit open, flexible access to the band to the widest possible group of potential users. The FCC proposes also to reserve at all times for GAA use, a minimum of 50 percent of the band that is not encumbered by Incumbent Access tier users in any given location.

(WGFM, FM53, PT1, SRD/MG)

1. **Australian Spectrum Review**

The Australian government has issued a consultation concerning the issues it should address in its forthcoming comprehensive review of its spectrum management framework.

The review seeks to modernise the framework, which was put in place in 1992, within the government's wider deregulation agenda. It shall be jointly carried out by the government and the country's independent spectrum regulator, ACMA.

[Link](http://www.communications.gov.au/__data/assets/pdf_file/0017/230165/Spectrum_Review_issues_paper.pdf)

In a first step, in a questionnaire, respondents are asked to indicate issues they like see to be addressed or prioritised as well as issues that should be put off the table.

(General development of a strategic plan in Australia, may lead to a new 5-10 years’ Report on spectrum issues)

1. **FCC – Report and Order on Rules for Upcoming Auctions**

The FCC updates the spectrum screen used in their competitive review of secondary market spectrum acquisitions to reflect the current suitability and availability of spectrum for the provision of mobile telephony/broadband services.



The document also provides a good overview of the current spectrum issues in the USA for mobile broadband services:

 40 MHz of AWS-4;

 10 MHz of H Block;

 65 MHz of AWS-3,

 12 MHz of BRS;

 89 MHz of EBS; and

 The total amount of the 600 MHz spectrum auctioned in the Incentive Auction.

Subtract from FCC’s spectrum screen:

 12.5 MHz of SMR; and

 10 MHz that was the Upper 700 MHz D Block.

The FCC also establishes a market-based spectrum reserve of up to 30 MHz in the Incentive Auction in each licence area that is designed to ensure against excessive concentration in holdings of low-band spectrum (sub 1GHz) while including safeguards to ensure that all bidders bear a fair share of the cost of the Incentive Auction. In addition, it adopt limits on secondary market transactions of 600 MHz spectrum licenses.

1. **FCC Workshop on GPS Protection and Receiver Performance**

As part of the FCC’s ongoing efforts to protect Global Positioning System (GPS) operations, the FCC’s Office of Engineering and Technology, in conjunction with the International Bureau, Public Safety and Homeland Security Bureau, and Wireless Telecommunications Bureau, hosted a workshop on GPS Protection and Receiver Performance, with an emphasis on Critical Infrastructure and Public Safety uses of GPS. The workshop was held on Friday, June 20, 2014.



In this context, it should be worth to note that also in Europe with the first Galileo satellites in space, the GNSS community is becoming now more aware of interference, particularly from illegal GNSS jammers. This was clearly expressed during the annual satellite navigation summit in March 2014 in Munich. The annual interference statistics (collected information via a WGFM questionnaire) also provided evidence that problems exist and are growing with the advent of more and more applications and systems using satellite positioning information (also wireless solutions such as ITS). One aspect is to find enforcement strategies against mobile GNSS jammers. FM22 will discuss this subject at the next FM22 meeting.

(WGFM, FM22)

1. **CITEL – Status of Preparations for WRC-15 (March 2014)**

The embedded document provides an overview on CITEL positions for AIs of the WRC-15



1. **Worldwide activities on Short Range Device usage harmonisation**

ITU hosted a workshop in Geneva on 3 June 2014 in response to an initiative from the Electronic Communications Committee (ECC) of the CEPT. It focused on the harmonisation process for the global use of short range devices (SRD) and Ultra Wide Band (UWB) technologies, and attracted key players from the radiocommunications industry, regulators, operators, manufacturers and research institutions.

Here included are some links with regard to the activities in other regional organisations and countries, as presented at this workshop:

[APT Activities](http://www.itu.int/en/ITU-R/study-groups/workshops/RWP1B-SRD-UWB-14/Presentations/APT%20Activities%20on%20SRD%20Frequency%20Usage%20Harmonization.pdf) [Overview (Haim Mazar, Israel)](http://www.itu.int/en/ITU-R/study-groups/workshops/RWP1B-SRD-UWB-14/Presentations/International,%20regional%20and%20national%20regulation%20of%20SRDs.pdf) [Korea](http://www.itu.int/en/ITU-R/study-groups/workshops/RWP1B-SRD-UWB-14/Presentations/Roles%20of%20SRD%20Spectrum%20Harmonization%20in%20the%20development%20of%20WPT%20and%20ITS.pdf) [China](http://www.itu.int/en/ITU-R/study-groups/workshops/RWP1B-SRD-UWB-14/Presentations/SRD%20and%20its%20Challenge%20-%20SRD%20Management%20in%20China.pdf) [RCC](http://www.itu.int/en/ITU-R/study-groups/workshops/RWP1B-SRD-UWB-14/Presentations/SRD%20spectrum%20utilization%20and%20harmonization%20in%20RCC.pdf)

[(US) UWB in Health Monitoring Products](http://www.itu.int/en/ITU-R/study-groups/workshops/RWP1B-SRD-UWB-14/Presentations/UWB%20Radar%20in%20Health%20Monitoring%20Products.pdf)

Please note that the presentations from Korea and China also include information about activities on ITS in these countries. The Korean presentation includes some information about high power wireless charging (e.g. for electric cars) and related frequency use for this for wireless charging with and without communications. The activities in the USA on medical applications using UWB technology could also be of interest in the ECC with regard to a future potential complementation of the UWB regulation since deployment scenarios and requirements for such applications clearly deviate from the generic UWB scenario.

Discussions during the workshop centred on the need for regional and worldwide harmonisation, in particular the identification of suitable frequency ranges for these devices and new technologies along with international and national regulations to govern the conditions for their use. First follow-up actions were agreed in Working Party 1B after the workshop such as a questionnaire to administrations regarding the SRD categories and definitions for further harmonisation. The activity in ITU-R WP1B is led by a correspondence group chaired by the SRD/MG chairman.

(WGFM, SRD/MG, WGSE, SE24)