

# EC-ECC WORKSHOP ON WRC-15

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ESOA

Brussels, 10 December 2013

# Satellite Communications using C Band

- Around 180 satellites with C-band payloads operate in GEO today.
- More than 55 satellites with C-band payloads operate over Europe; another 7 are under procurement; 40 operate over Africa.
- This spectrum is extensively used in Europe and elsewhere because of the global footprint.
- In Europe, the C-band supports critical services such as aviation (AMS(R)S), emergency (emergency.lu, UNHCR), navigation (GDDN), maritime (GMDSS), meteorology (WMO) and public (e.g. EBU) services.
- Delivery of TV programmes to Latin American or Asian expatriates living in Europe also rely on satellite C-band. There are around 20 C-band satellites covering Europe capable of providing TV reception for people using a 1.8 metre dish.
- In neighboring Africa & Russia, as part of ITU Region 1, C Band is even more intensively used. Africa relies on links with Europe and FSS Earth stations located in Europe for e.g. civil aviation (ASECNA), TV contribution & distribution links, backhaul to terrestrial wireless systems and other data links.
- Due to the special characteristics of the C band, such as low rain fade and high availability, most of these services cannot be migrated to higher frequency bands

# Key Issues

- **3400-3800 MHz** – Even if the band might be used for BWA or MFCN in Europe, it is extensively used in other Regions and therefore the European frequency plan should not be exported to the rest of the world. No change to RR required.
- **3800-4200 MHz** – Will need to be maintained for FSS in Europe and the rest of the world. High density of Earth stations make sharing in Europe impractical. No Change to RR required.
- **5725-5925 MHz** (possible RLAN band) – In the absence of RLAN parameters & deployment scenarios, sharing & compatibility studies still need to be conducted before concluding if a change to the RR is required.
- **5925-6425 MHz** (possible IMT band) – Will need to be maintained for FSS in Europe and the rest of the world. High density of Earth stations and required separation distances around FSS Earth stations make sharing in Europe impractical. No Change to RR required.

## 3400-3800 MHz (suggested by CEPT as potential IMT band)

- This band was discussed at WRC-07 and not agreed as an IMT band.
- In the meantime, more satellites have been launched and more Earth stations deployed.
- Sharing studies with new IMT-Advanced characteristics have shown similar results to those determined before WRC-07 (as contained in ITU-R Report M.2109.) Separation distances of 10s or 100s of km.
- Demand for this band for IMT is in doubt:
  - Other (lower frequency) bands for IMT are being used more efficiently (e.g. transition to LTE, small cells) and other bands are still being brought into use.
  - Uptake of WiMAX in C-band so far has been very limited.
  - Few manufacturers support - very limited range of LTE equipment available for C-band.
  - In theory, it might be good for small cells/indoor coverage, but WiFi does a similar thing much cheaper.
- Given the higher use of C-band FSS in developing countries, there is little scope for international harmonisation.
- Therefore, ESOA continues to oppose allocating this band for IMT.

## 5725-6425 MHz (possible IMT / RLAN band)

- The frequency band 5850-6425 MHz is heavily used for FSS uplinks, usually paired with the downlink band 3 625-4 200 MHz.
- Deployment of FSS Earth stations in this band is ubiquitous in most geographical areas of the world. Given the required separation distances around each FSS Earth station (regarding interference from FSS into IMT), IMT deployment in this band raises serious sharing difficulties and would not be practicable, even for indoor use.
- ITU-R studies have demonstrated that the aggregate interference from IMT base stations into FSS space stations would cause unacceptable interference, even when considering *indoor* use, and this cannot be controlled on the long term. Interference into FSS space stations could cause the loss of service to users throughout the beam.
- There are serious concerns about how to implement regulatory means in order to enforce the protection of FSS space stations. Therefore, ESOA continues to oppose allocating this band for IMT / RLAN.