

900 MHz SRD Spectrum

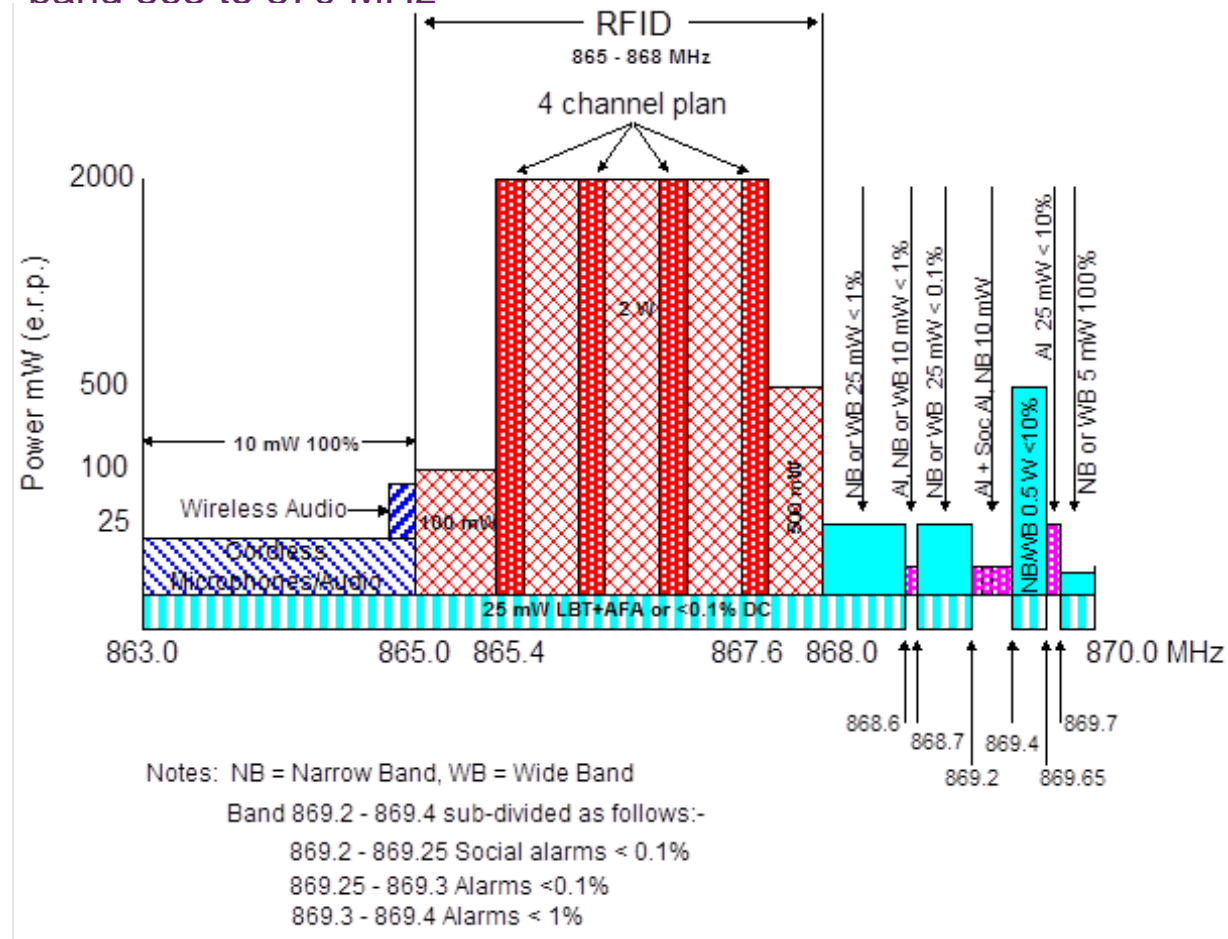
870-876 MHz & 915-921 MHz, New SRD Bands for Europe

900 MHz SRD Spectrum

- Why have we done this? - World Regions
- What have we done!
- Sharing with Extended GSM-R
- Benefits of 870-876 MHz and 915-921 MHz
- Harmonisation

Why have we done this?

- Europe's UHF band 863 to 870 MHz



Why have we done this? - World Regions

- There is not much European alignment with the World regions, just below 1 GHz.
- Most of the world permits SRD in the Internationally recognised ISM band 902-928 MHz
- There are clear cost and inter-operability benefits to Producers, Suppliers, Maintainers, but most of all consumers, to having common spectrum access across the world.

Why have we done this? - World Regions

- In Europe, much of the 900 MHz band was allocated to Mobile telephones.
- However, the 915-921 MHz, along with its paired band 870-876 MHz was not.
- Higher power devices would have been very unlikely to have been able to operate so close in frequency to Mobile Base and Handsets without causing interference (unless radical filtering was added to the Mobile infrastructure to protect it).

Why have we done this? - History

- Consequently;
- The 870-876 MHz and 915-921 MHz bands had been largely fallow for several years.
- The opportunity was seen for SRD and RFID.
- So TR 102 649 -2 first developed the proposal here in ETSI back in 2008.

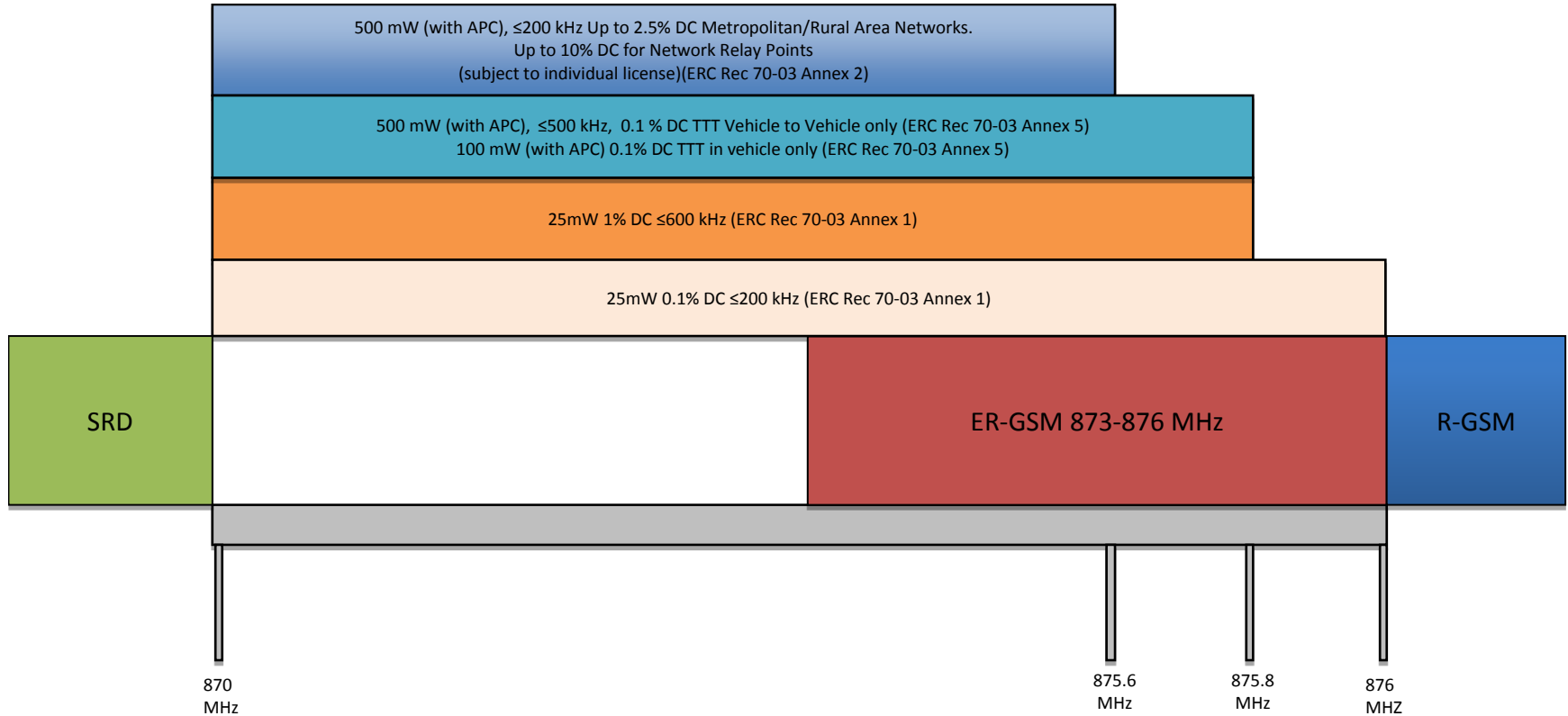
What have we done - CEPT

- CEPT looked at the compatibility issues
 - With adjacent bands and with primary national services
 - Between a range of SRD and RFID in the band.
- CEPT delivered;
- a technical compatibility report,
- a second report proposing a band plan
- and finally a recommendation.
 - ECC Report 200 - *Co-existence studies for proposed SRD and RFID applications in the frequency 870-876 MHz/915-921 MHz (September 2013)*
 - ECC Report 189 - *Future Spectrum Demand for Short Range Devices in the UHF frequency bands (February 2014)*
 - ERC Recommendation 70-03 amendments of February 2014.

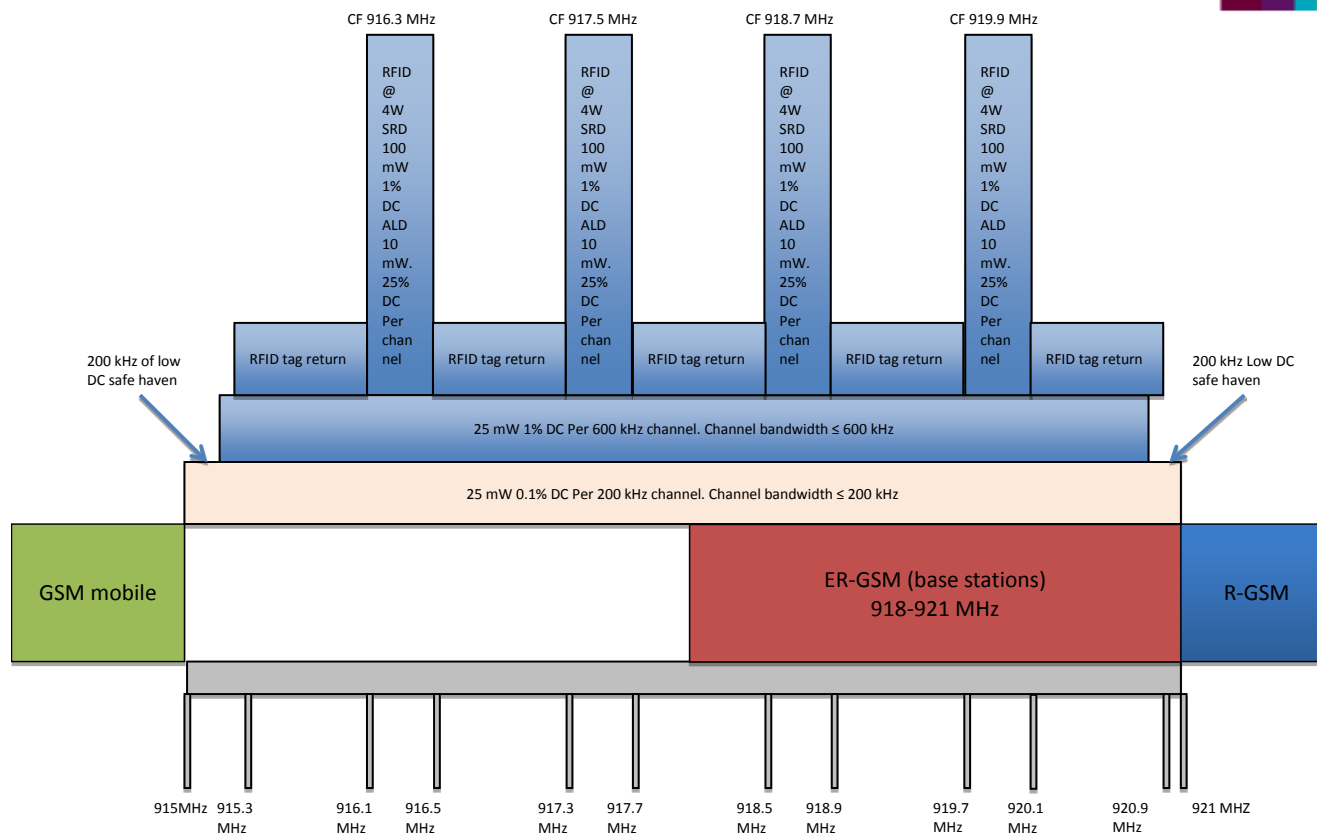
What have we done! – A range of user needs

- Efficient use of spectrum is probably best served if “like” transmissions are corralled.
- Long transmissions and high activity devices have very different spectrum needs to low activity devices.
- The different types of transmission included;
 - Network Relay Points
 - RFID at 400 kHz bandwidth
 - Specialist Automotive applications at up to 500 mW
 - Wide band (600 kHz) generic SRD with 1% duty cycle
 - Narrow band (<200 kHz) generic SRD with 0.1% duty cycle. These almost benign transmissions have the use of the whole band, including some *safe harbours* where no other transmission can operate.
- So how does this look;

What have we done! 870-876 MHz



What have we done! 915-921 MHz



Sharing with other Radio Services

- In several European Member States there remain “Government Services”
- These include UAV and Military Tactical Radio.
- Half the spectrum is also allocated to the potential expansion band for GSM-R (873-876 MHz and 918-921 MHz)
- Today, the regulations for SRD and RFID stipulate very stringent and costly mitigation (Sensing) mechanisms to protect the E-GSM-R

Sharing with other Radio Services E-GSM-R

- GSM for Railways (GSM-R) is the European mandated rail communication system
- It is unsurprisingly based on GSM technology! As such it is likely to be obsolescent by 2030. Any replacement is unlikely to be a GSM based technology.
- Presently and despite the designation, E-GSM-R has yet to come into commercial use in the EU. Given the timescales for public acquisition, there is clearly uncertainty about the likelihood of any widespread use of Rail GSM in these frequency bands, within these timescales.
- ETSI TC RT will shortly reveal plans for a GSM-R replacement. Using what technology in which band remains unknown.

Sharing with other Radio Services E-GSM-R

- What is needed is clarity on the future of E-GSM-R
- Uncertainty as to whether expensive (to users and manufacturers) mitigation mechanism will remain in regulations, is already acting as a barrier to investment for RFID.
- Why invest today if the kit will be cheaper tomorrow!

Benefits of 870-876 MHz and 915-921 MHz

- The benefits of aligning EU/USA 6 MHz within the 902-928 MHz band are clear.
- Clear cost reductions can be made where a product has global reach
- For RFID, the benefits are even greater.
 - Tagged goods travel globally. Where the Tag is optimised for the 900 MHz band, the return signal will always be lower at 866 MHz. This leads to a poorer RF performance and potentially a lower chance of a correct tag read. Operating in the 915-921 MHz band eliminates this.
 - The wider bandwidth and higher power allowed for RFID in 915-921 MHz further enhances the RF and tag read performance.

Harmonisation

- The bands 870-876 MHz and 915-921 MHz are NOT harmonised by the EC Decision for SRD
- They are listed in the European Recommendation for SRD ERC/Rec 70-03.
- To date regulations allowing the use of SRD in these bands have been made in;
 - Albania
 - Moldova
 - Slovak Republic
 - Slovenia
 - Sweden
 - United Kingdom
- If you want other administrations to make regulations; - go lobby them!

Questions?