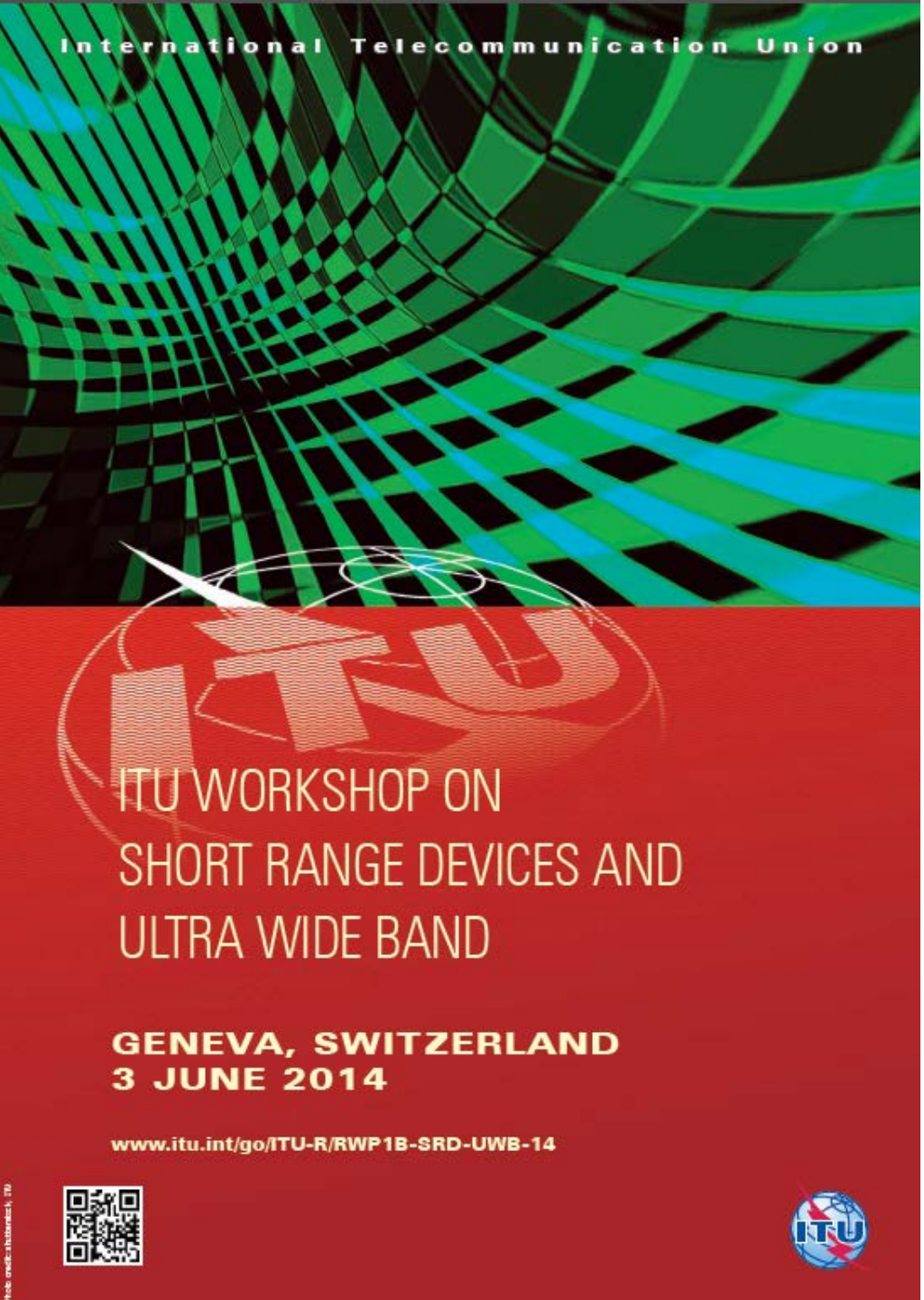

ITU WORKSHOP on
SHORT RANGE DEVICES (SRDs)
AND ULTRA WIDE BAND (UWB)
(Geneva, 3 June 2014*)

Global Harmonization Possibilities of SRDs in the UHF bands

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** in conjunction with the June 2014 block of meetings of ITU-R Study Group 1*

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ERC Recommendation 70-03

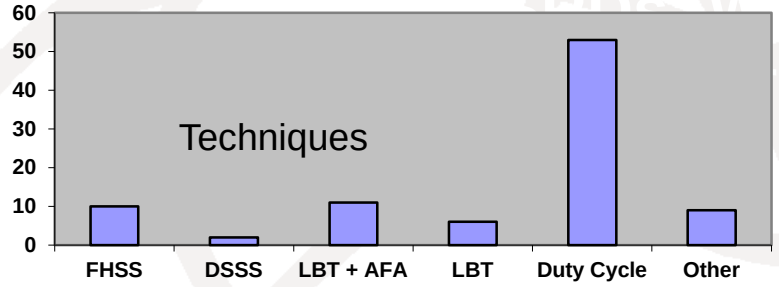
- Relating to the use of Short Range Devices (SRD) in Europe
- ERC/REC 70-03 includes:
  - spectrum management requirements and technical specifications for SRDs;
  - links to all applicable reference documentation such as CEPT/ECC Reports, CEPT/ECC and EC Decisions, and harmonized European Standards;
  - National implementation information;
  - available in data format in www.efis.dk.

863-870 MHz in Europe

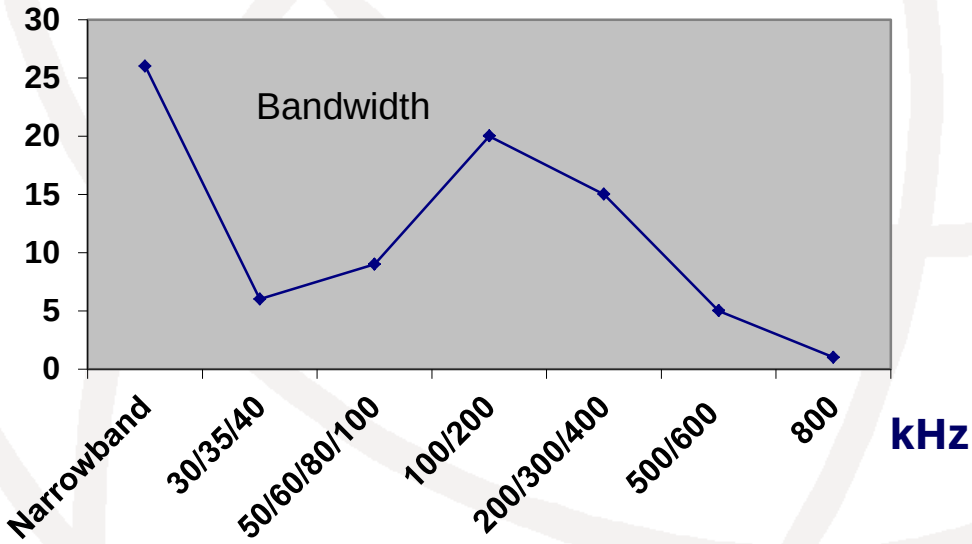
- Survey in ECC Report 182
  - All kinds of Metering: > 10 million
  - Home automation > 10 million
  - Alarms (incl. intrusion sensing) > 10 million
  - Automotive > 5 million
  - Industrial > 2 million
  - Audio > 2 million
  - RFID > 100 000 readers
  - Social/personal alarms > 100 000 units
  - **Annual growth of equipment population (very conservative estimate, only based on survey feedback).**

Survey: Some Technical Aspects

(Low) Duty Cycle still dominates and for a large number of SRD applications!



Responses



Application	Max Cumulated TxON time over 1 second [in seconds]	Max equivalent DC with current definition (per 1 h)
Automotive	100ms	
remote keyless entry	0.15	0.002%
convertible roof	1	0.139%
TPMS	0.03	0.001%
ITS CAM	0.015	0.125%
Home & building control	10ms	
Mains powered devices	0.025	0.003%
	0.2	0.005%
Battery powered devices	0.6	0.007%
	1	0.012%
Repeaters	0.025	0.001%
Smoke detectors	1	0.00139%
Low cost point to point devices	1	0.012%
Telemetry, telecomand	350ms to 1s	
	1	1.620%
Metering	25ms to 1s	
without in home display	0.025	0.000029%
with in home display	0.025	0.003%
Repeaters	0.025	0.001%
EN13753 Mode R2	1	0.023%
Alarms	25ms to 1s	
Intrusion alarm	0.025	0.001%
Social alarm	0.15	0.001%
Battery power devices	1	0.028%
Imaging	1	0.007%
Referee voice system	0.1	0.417%

Additional Spectrum

- CEPT has reached a major milestone in the development and management of frequencies in the favored range just below 1 GHz for a whole range of SRDs applications
- A pair of reports is setting out a roadmap for a major upgrade of 19 MHz of spectrum;
- Rising spectrum demands for generic SRD, UHF RFID, Home Automation & Sub Metering, automotive SRD, Smart Meters and Smart Grids, Metropolitan Mesh Machine Networks (M3N) applications, Alarm and Social Alarm systems, and Assistive Listening Devices (including hearing aids) reported from ETSI

ETSI Proposals to CEPT

- The European Telecommunication Standards Institute (ETSI) published five system reference documents:
  - Generic SRD, RFID, Home Automation & Sub Metering and Automotive SRD in ETSI TR 102-649-2;
  - Smart Meters and Smart Grids, ETSI TR 102 886 ;
  - Metropolitan Mesh Machine Networks (M3N) applications, ETSI TR 103 055;
  - Alarm and Social Alarm systems, ETSI TR 103 056; and
  - Assistive Listening Devices, ETSI TR 102 791.
- Proposal to use under-utilized spectrum in many European countries; notably 870 - 876 MHz, and 915 - 921 MHz

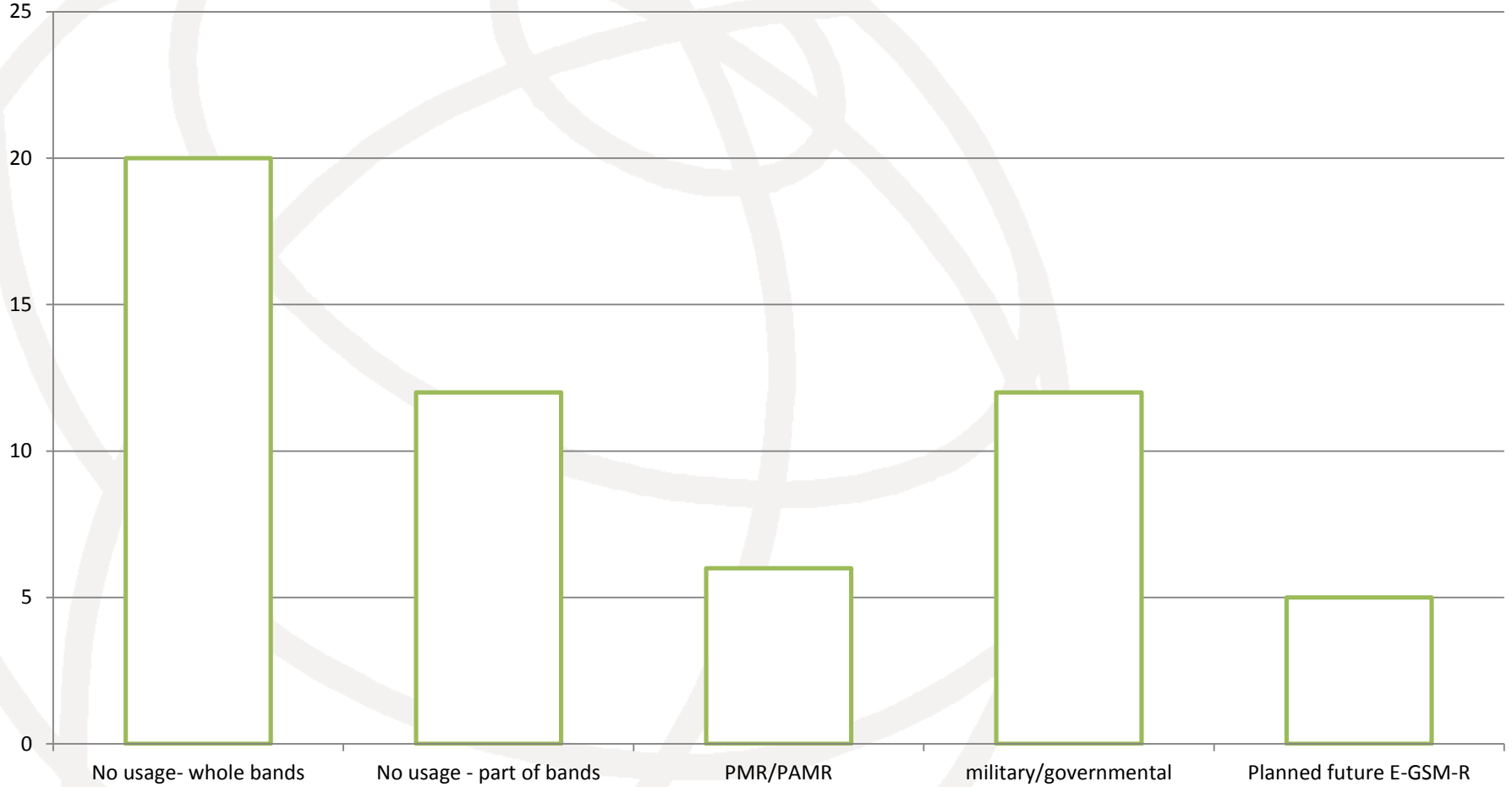
Main motivations

1. In addition to capacity constraints the bandwidth of the existing plans restricts the development of applications;
2. e.g. a wider bandwidth for individual RFID devices will improve their performance and the utility;
3. With machine mesh networks the required bandwidth of the systems would not fit in the existing narrow bandwidths available;
4. More proposals to come, e.g. in draft IEEE 802.11ah to use sub 1GHz frequencies;
5. Building attenuations: extensive studies showed a great advantage of sub 1GHz frequencies.

Against this background

1. Region 2 has an allocation of nearby frequencies (902 to 928 MHz) to ISM, which is a convenient basis for using SRDs, and therefore a lot of equipment is being developed to operate in this range;
2. For Europe, as part of the ITU-R Region 1, no ISM band was identified at the World Radio conference in 1977 in this part of the spectrum;
3. Severe under-utilization in 870-876 MHz/915-921 MHz in many European Countries.

Existing Primary Usage in Europe



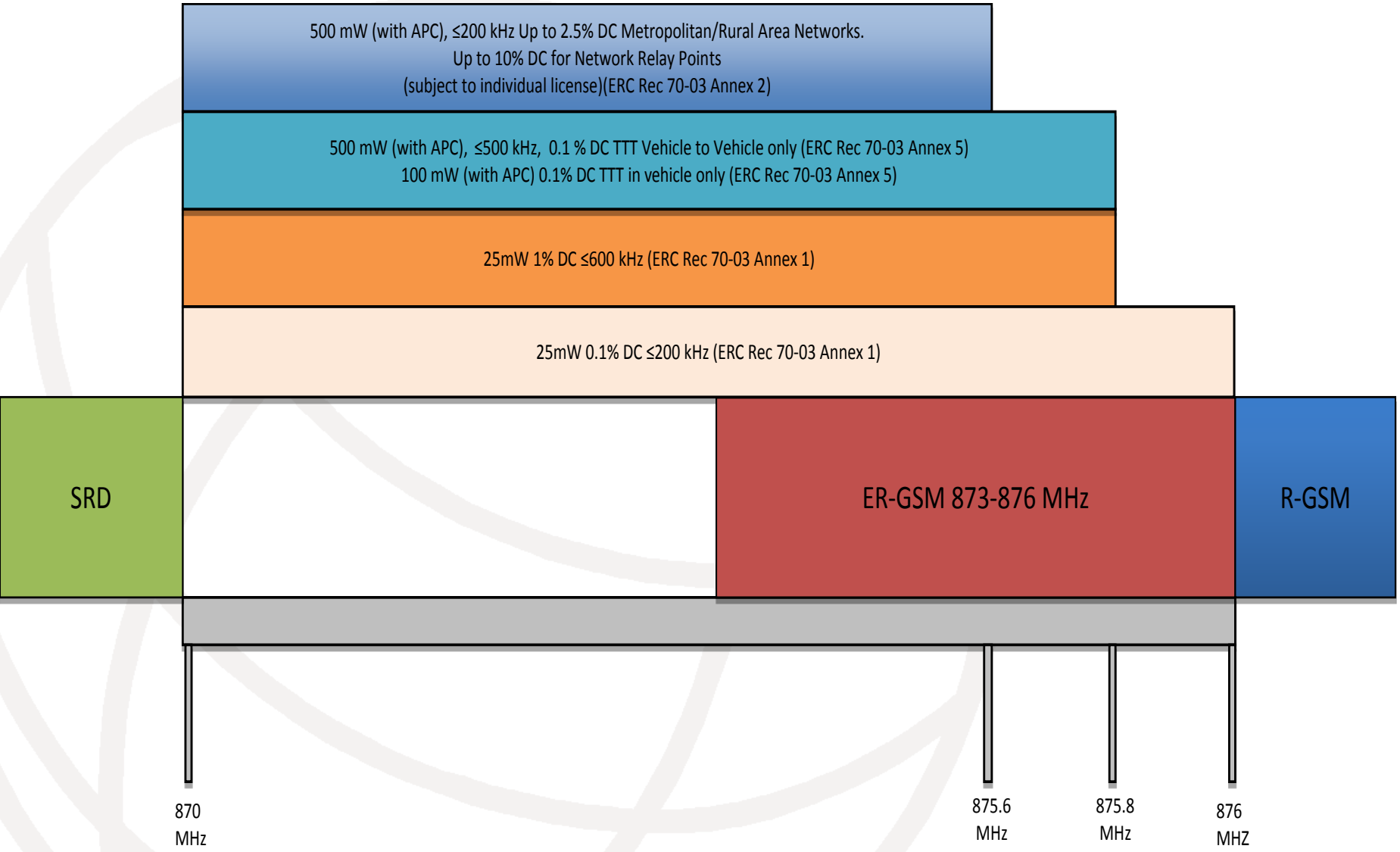
Results

- ECC Report 200 gives the background and conclusions to a comprehensive set of coexistence studies in these under-utilized UHF bands in Europe. Some of these used the ECC's SEAMCAT analysis tool, developed and maintained by the ECO in Copenhagen.
- The related ECC Report 189 used these conclusions to define recommended regulatory parameters for SRDs.
- Finally Recommendation 70-03 was agreed in February 2014 with new entries in the 870-876/915-921 MHz frequency bands ('soft harmonization approach')

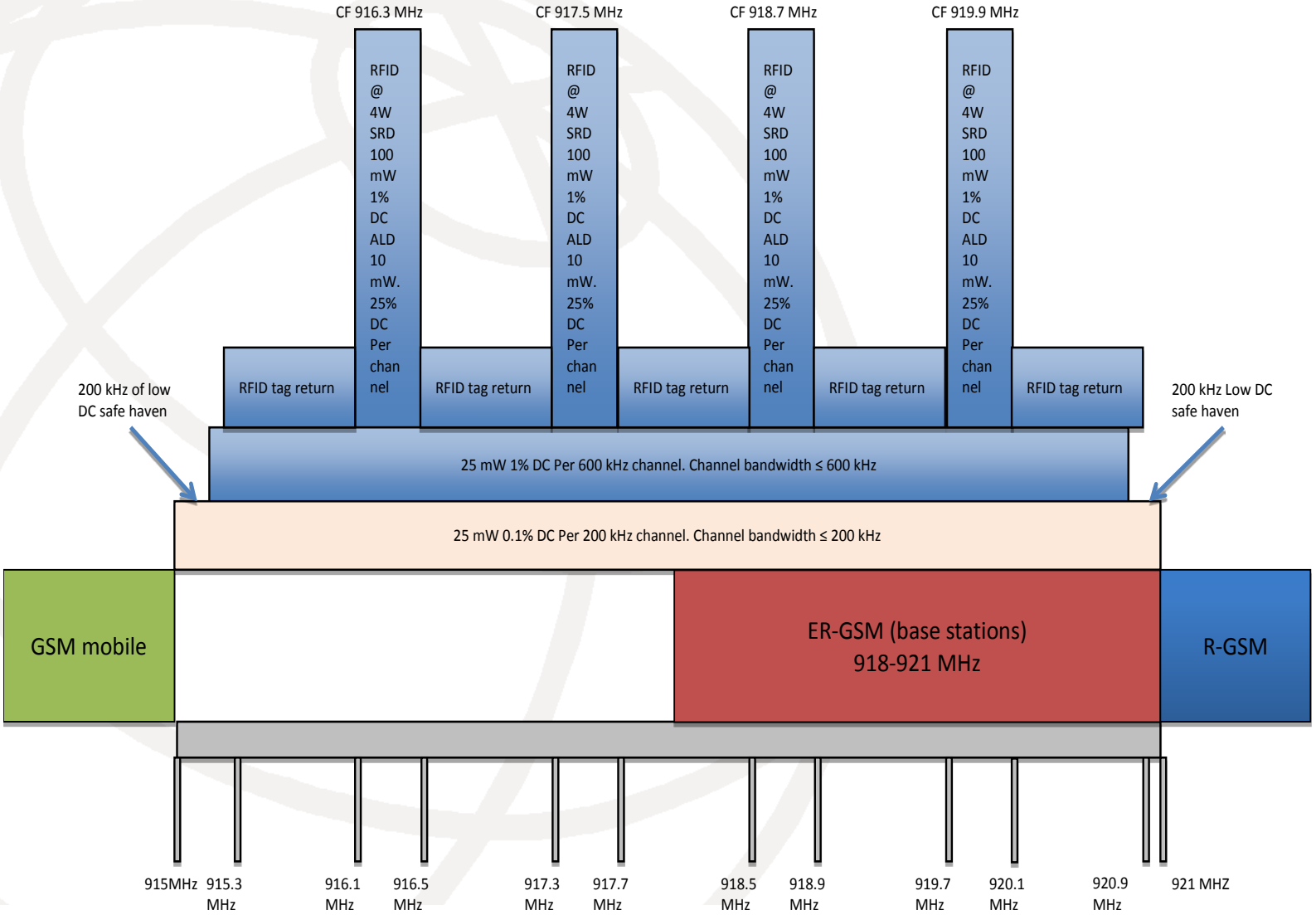
Conditions in 870-876/915-921 MHz

- The review included an audit of these existing and planned uses, which revealed not only some of the military tactical systems in use in this spectrum, but also some new uses such as remote control of unmanned aircraft (UAV).
- Some other countries anticipate needing to use the spectrum in some specific locations for an extension of the existing GSM-R bands.
- The studies in the ECC have covered this utilization to provide a solution for spectrum sharing with GSM-R.

870-876 MHz


500 mW (with APC), ≤200 kHz Up to 2.5% DC Metropolitan/Rural Area Networks.
Up to 10% DC for Network Relay Points
(subject to individual license)(ERC Rec 70-03 Annex 2)
500 mW (with APC), ≤500 kHz, 0.1 % DC TTT Vehicle to Vehicle only (ERC Rec 70-03 Annex 5)
100 mW (with APC) 0.1% DC TTT in vehicle only (ERC Rec 70-03 Annex 5)
25mW 1% DC ≤600 kHz (ERC Rec 70-03 Annex 1)
25mW 0.1% DC ≤200 kHz (ERC Rec 70-03 Annex 1)
SRD
ER-GSM 873-876 MHz
R-GSM
870 MHz
875.6 MHz
875.8 MHz
876 MHZ

915-921 MHz


CF 916.3 MHz
CF 917.5 MHz
CF 918.7 MHz
CF 919.9 MHz
RFID @ 4W SRD 100 mW 1% DC ALD 10 mW. 25% DC Per chan nel
RFID tag return
200 kHz of low DC safe haven
200 kHz Low DC safe haven
25 mW 1% DC Per 600 kHz channel. Channel bandwidth ≤ 600 kHz
25 mW 0.1% DC Per 200 kHz channel. Channel bandwidth ≤ 200 kHz
GSM mobile
ER-GSM (base stations) 918-921 MHz
R-GSM
915MHz
915.3 MHz
916.1 MHz
916.5 MHz
917.3 MHz
917.7 MHz
918.5 MHz
918.9 MHz
919.7 MHz
920.1 MHz
920.9 MHz
921 MHZ

Related Standardization

- As a result of the decision by CEPT to make additional spectrum available, ETSI will introduce revisions to the standards EN 300 220 for SRDs and EN 302 208 for UHF RFIDs. It is hoped that the new versions of the standards will become available during 2015

- Additional new harmonized European standards are under development in ETSI, e.g. EN 303 204 for Network Based SRDs which are SRDs intended to operate in association with other SRDs to form topologies for metropolitan/rural area networks

Proposal

- Resolution ITU-R 54-1 invites the ITU-R membership to consider study results with a view to take necessary action in relation with the administrations' national regulations for SRDs, as appropriate.

- Potential candidate for amended inclusion in Recommendation ITU-R SM.1896

Thank you for you attention

Questions??

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www.cept.org/eco

www.cept.org/ecc