

Project: IEEE P802.15 Working Group for Wireless Personal Area Networks (WPANs)

Submission Title: [European Low Rate PHY]

Date Submitted: [11 November 2013]

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Re: [802.15.4 WNG Standing Committee.]

Abstract: [This contribution identifies a European Low Rate PHY defined for coexistence with E-GSM-R.]

Purpose: [To suggest new project proposal to endorse European Low Rate PHY for coexistence with E-GSM-R]

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Summary

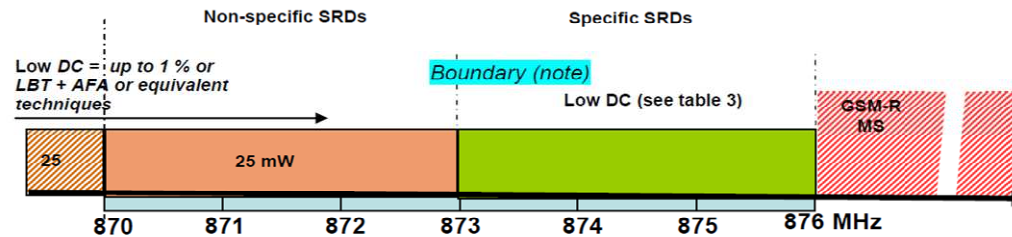
- CEPT SRD regulation procedure for 870-876/915-921MHz is completing
 - Public Consultation on proposed updates to REC 70-03 ends on 3 Dec '13
 - Coexistence analysis and Impact Assessment reports completed (ECC Reports 189 & 200)
 - Good consensus on regulation and sharing parameters
 - Specific mitigation for E-GSM-R in 873-876/918-921MHz
- In support of the regulation effort
 - 802.15.4g PHYs have been endorsed in ETSI TS 102 887-1
 - 200kHz channel for optimum sharing with E-GSM-R channel raster
 - Short transmission bursts preferred (cf GSM channel codec)
 - Low Rate, 200kHz channel, short burst PHY specified for improved sharing
 - 802.15.4/4e MAC subset has been endorsed in TS 102 887-2
 - Relevant structure definitions included for European Low Rate O-QPSK PHY

Background

Spectrum Study

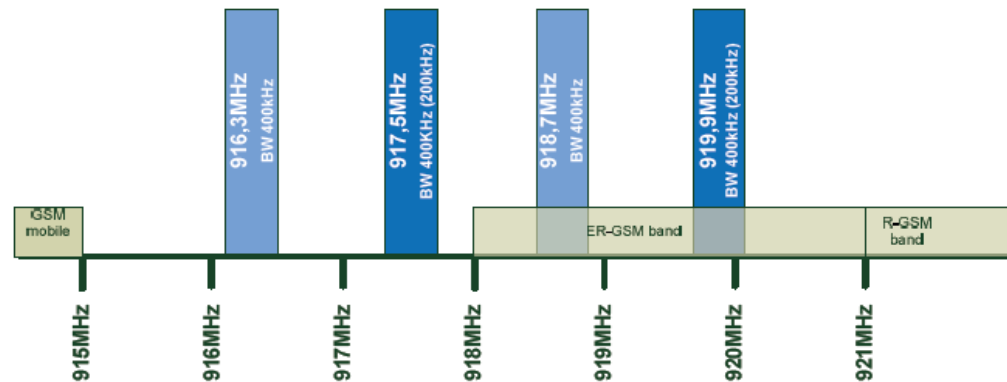
- CEPT SE24 carried out detailed spectrum sharing analyses
- Concluded spectrum sharing possible for the mix of applications requested
- Upper half of duplex band is allocated to Mobile Service and assigned to E-GSM-R
- Sharing with E-GSM-R more restrictive

E-GSM-R in 870/915 MHz Bands



NOTE: It is expected that the boundary between non-specific and specific SRDs will lie somewhere between 873 MHz and 874 MHz. The exact frequency will be determined following the compatibility study when the impact of GSM-R on the upper part of the band has been quantified. It should be noted that specific SRDs have a minimum requirement for 2 MHz of usable spectrum.

Tentative band plan for 870-876 MHz originally proposed in TR 102 649-2 **Error! Reference source not found.**



Tentative band plan for 915-921 MHz, based on amended TR 102 649-2 [2] proposal

ETSI TS 102 887

- In support of the spectrum sharing effort ETSI developed TS 102 887
 - 887-1 PHY based on 15.4g
 - 887-2 MAC based on 15.4/4e & ANSI/TIA-4957.200
- Objective was to define good sharing properties with GSM-R to support regulation
 - 200kHz channel spacing
 - Short transmission burst capability
 - 50+ kbps rates from 15.4g
 - New 6.25/12.5 kbps rate O-QPSKPHY
- Endorses 200kHz and 400kHz PHY Types and corresponding modes from 15.4g
- Defines Low Rate 200kHz O-QPSK PHY Type and PHY Modes
 - Fixed format minimum overhead PPDU for 6.25 & 12.5 kbps O-QPSK PHY
 - Variable length with PHR

New Project Proposal

- To rationalise the European Low Rate PHYs with 15.4g PHY set
 - Reserve the next unused PHY Type value for the ETSI European Low Rate PHY
 - Add an Informative Reference to TS 102 887-1 or specifically to the O-QPSK specification
 - Add 870-876 & 915-921MHz to the list of European frequency bands
 - Optional extra definitions - if of interest to IEEE 802.15.4 members
 - Define PHY Mode IDs for fixed and variable format 6.25 & 12.5kbps PHYs
 - Add options for European Low Rate PHY to the Channel Page structures

Alternative Proposal

- Add the previously listed amendments to the revision of 802.15.4 in response to the Liaison Statement from ETSI TC ERM