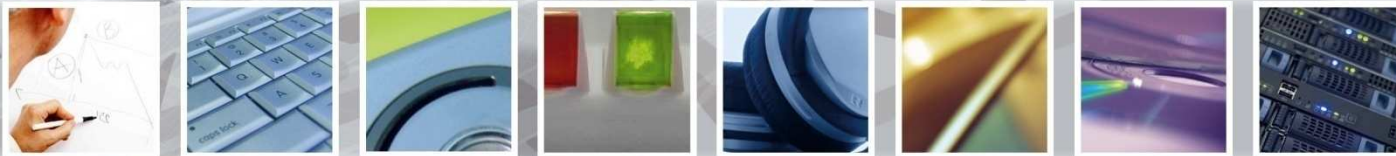


The European UWB Regulation and Standardization

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Tutorial objectives

✓ Questions:

- **How does the UWB regulation and standard looks like?**
 - **CEPT/ECC**
 - **EU Commission**
 - **ETSI**
 - **Generic UWB regulation and standards in Europe**



The European Regulatory and Standardization Framework



European Regulatory Framework - CEPT -

CEPT (*Conférence Européenne des Postes et Télécommunications*)

- 48 administration members
- Electronic Communications Committee (ECC)
- Harmonisation of the use of radio frequencies in Europe
- **Implementation of Decisions and Recommendations on a voluntary basis**





European Regulatory Framework - EU Commission -

EU Commission (EC)

- Decision n° 676/2002/EC of the European Parliament and of the Council of 7 March 2002 (the “Radio Spectrum Decision”)
- EC mandates to CEPT
- **“Technical implementing measures” mandatory for EU Member States**





EU regulation and the role of ETSI

✓ R&TTE Directive (1999/5/CE)

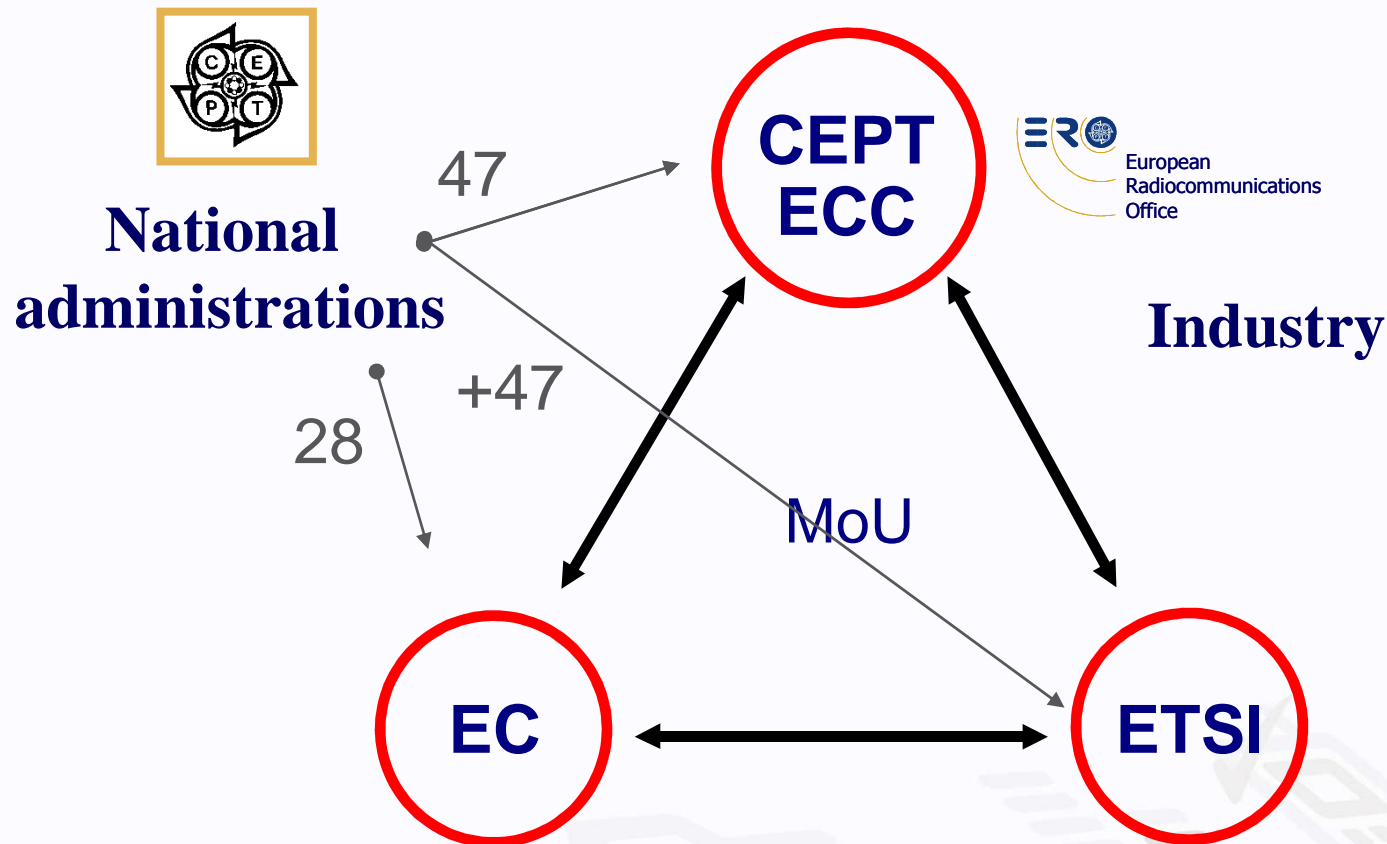
- Conditions for the placing on the market of radio equipment
- Replaces various national type approval regimes by a harmonised ex-post control regime
- Article 3.2
 - *“Radio equipment shall be so constructed that it effectively uses the spectrum allocated to terrestrial/space radio communication and orbital resources so as to avoid harmful interference”*
- Harmonised standards
 - Give presumption of conformity to the essential requirements referred to in Article 3 of the R&TTE Directive

✓ European Telecommunications Standards Institute (ETSI)

- Responsible for the development of harmonized standards



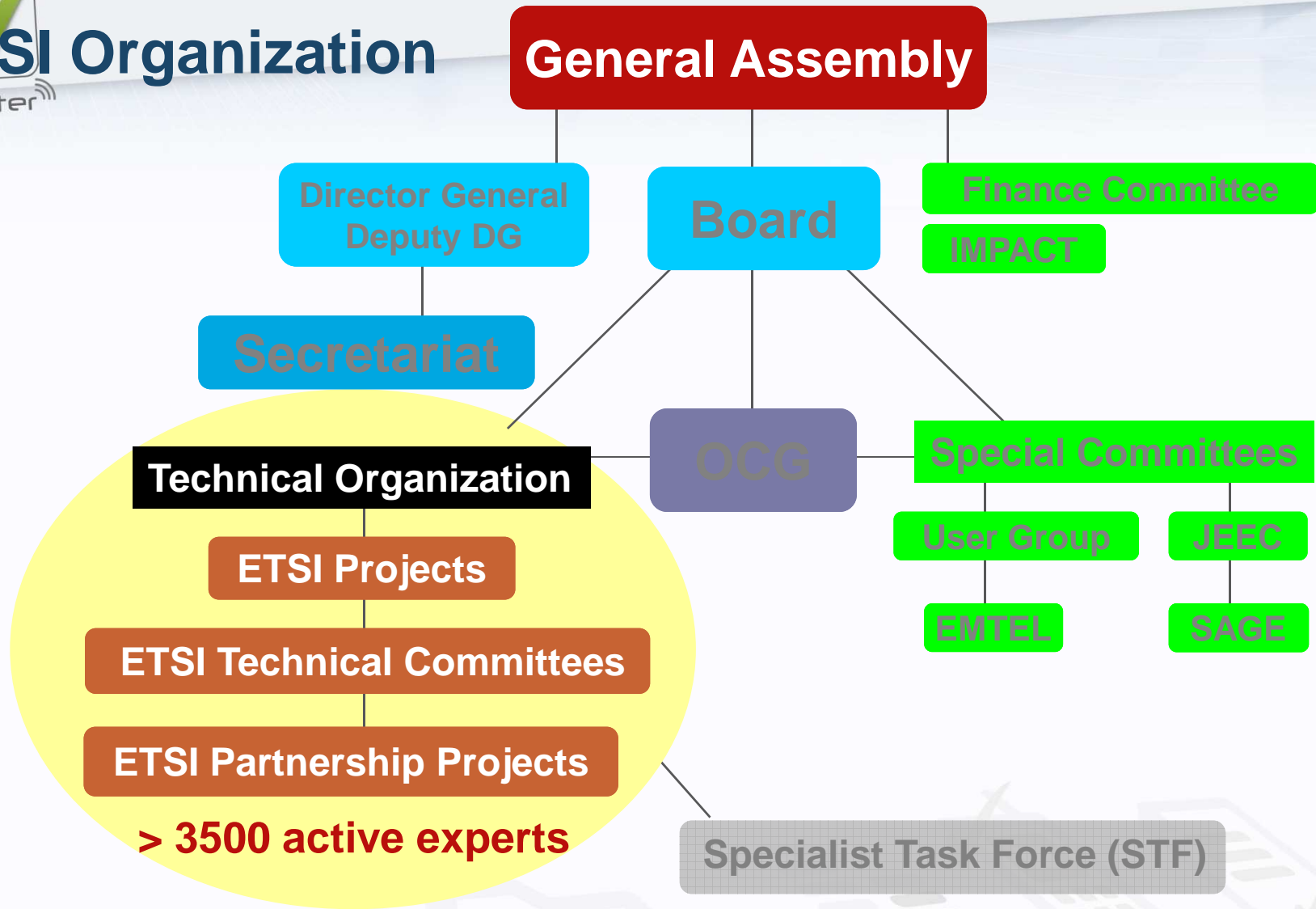
Separated / divided responsibility with formal collaboration



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ETSI Organization



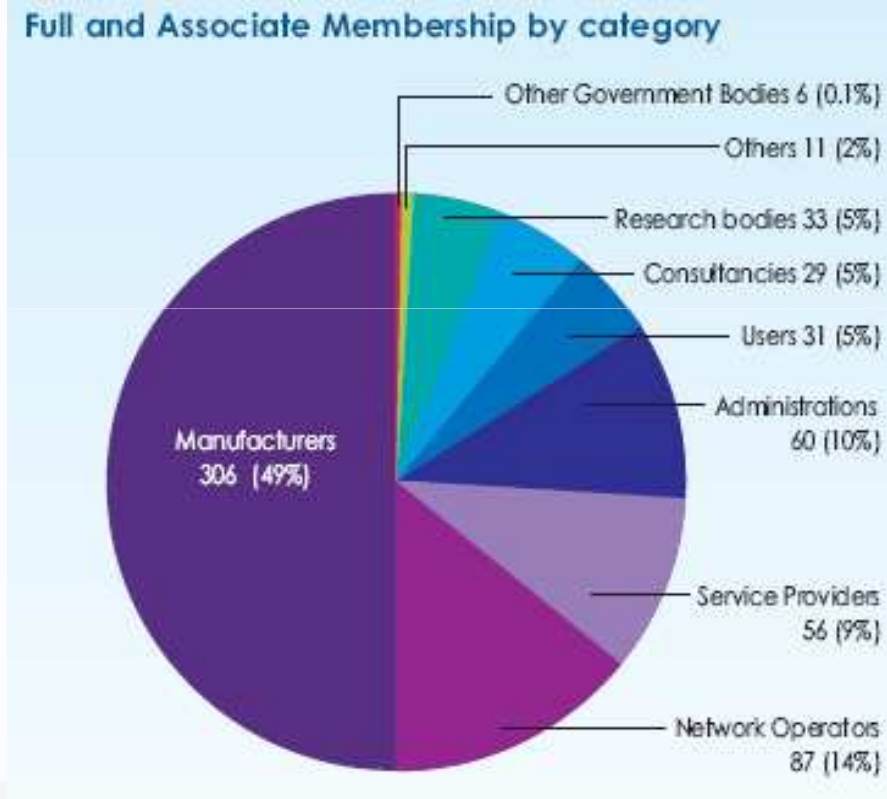
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ETSI funding and Members

ETSI's funding is derived from:

- Member contributions**
- EC/EFTA Grants**
- Services provided by ETSI**
- Revenue from its assets**

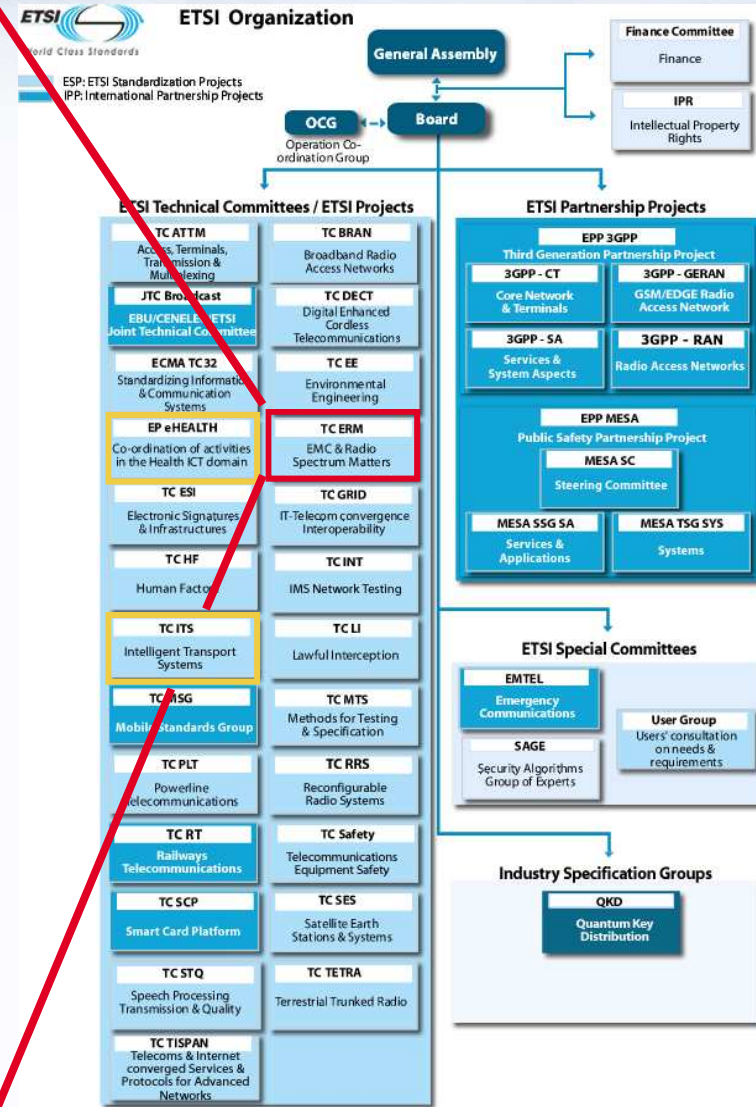


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ETSI TC ERM

- Liaison Body to non ETSI Organisation (CEN, CENELEC)
- Approval of EN, TR and TS
- LS to EC and ECC

TG11 Wideband data systems	TG28 Generic Short-range devices	TG34 UHF RFID	TG RM
TG17 Broadcast and ancillary equip.	TG30 Wireless medical devices	TG37 ITS	TG TFES
TG25 Aeronautical Radio	TGUWB UWB applications	TG-RX Receiver Parameter	TG GSMOBA
TG26 Maritime Radio		TG-TLRP Level Probing Radar	TG DMR
TG27 Radio Side Engineering	TG SRR radar application	TG-EMC	





The European Generic UWB Regulation and Standards



Generic UWB Regulation and Standards in Europe

- ✓ Minimum Bandwidth of UWB $> 50\text{MHz}$
 - FCC: Bandwidth larger than 500MHz
 - Rest of the world similar
- ✓ Main operational band with -41.3dBm/MHz mean e.i.r.p. is 6.0GHz to 8.5GHz
 - No DAA defined/needed in this band
 - LDC allowed in car as alternative to TPC

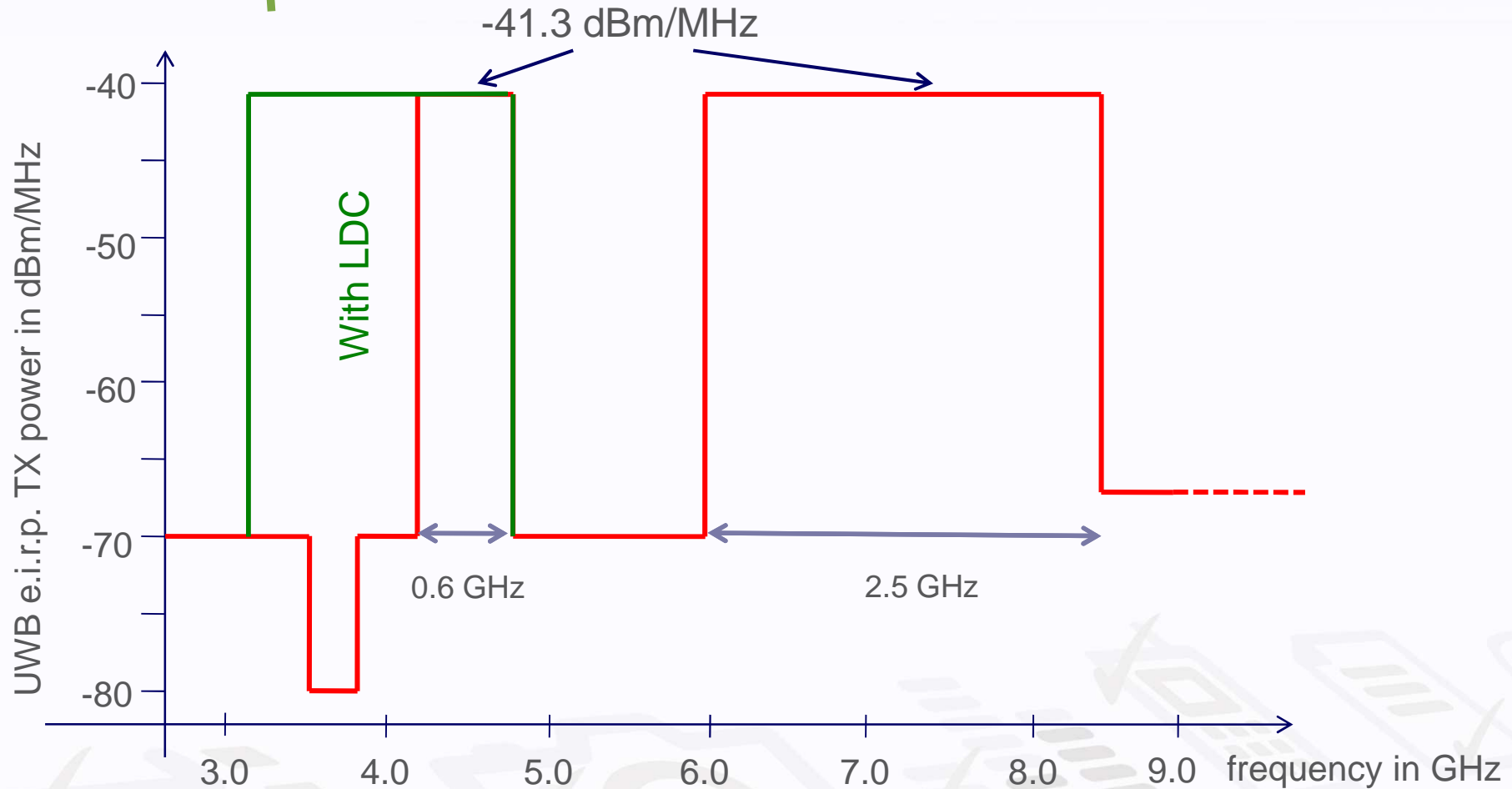


Generic UWB Regulation and Standards in Europe

- ✓ Restricted operation possible in the band 3.1GHz to 4.8GHz
 - Low Duty Cycle operation in the band 3.1GHz to 4.8GHz with -41.3dBm/MHz
 - Band 4.2GHz to 4.8GHz open (-41.3dBm/MHz) until the end of 2010

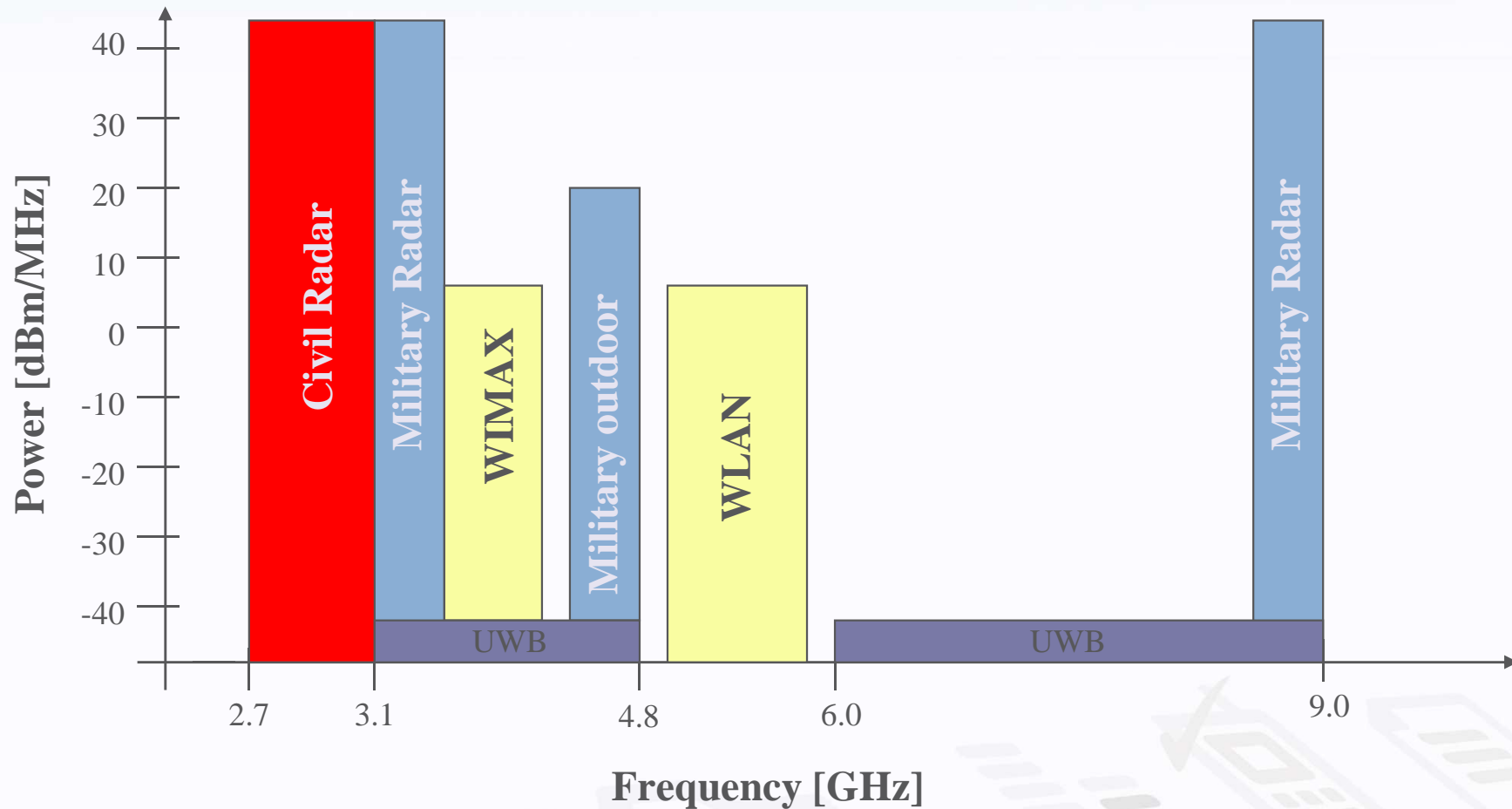


European generic UWB Spectrum Mask without DAA





UWB Spectrum map (EU)





EU flexible DAA UWB regulation

- ✓ Goal:
Guarantee an equivalent protection of potential victim systems against harmful interference
- ✓ Approach:
 - The UWB device with DAA senses the environment
 - The device estimates the isolation towards a potential victim devices like WIMAX terminal or Radar Systems
 - Based on the estimated isolation the DAA device will switch to the corresponding protection mode (Avoid mode) to guarantee an equivalent protection
 - A continues sensing of the spectrum can guarantee a dynamic protection
- ✓ The active mitigation approach is called flexible detect and avoid



Regulation Status in Europe towards flexible DAA

- ✓ ECC decision (amended ECC decision ECC/DEC/(6)12) published
- ✓ EC decision 2009/343/EC from the 21.04.2009 regulates the deployment of DAA enabled UWB devices in the EU
- ✓ The main parameters:
 - LDC in car in the Band 6GHz to 8.5GHz
 - Power of -41.3dBm/MHz in the band 3.1GHz to 4.8GHz for devices implementing a flexible DAA technique defined by ETSI
 - No DAA tests defined in the band 3.8GHz to 4.8GHz, since no BWA systems to be protected by DAA are allocated to this bands!
→ The test definition is under the responsibility of ETSI
 - Threshold level in band 3.1GHz to 3.4GHz: -38dBm
 - Threshold level in band 3.4GHz to 3.8GHz: -38dBm and -61dBm
 - Threshold level in band 8.5GHz to 9.0GHz: -61dBm

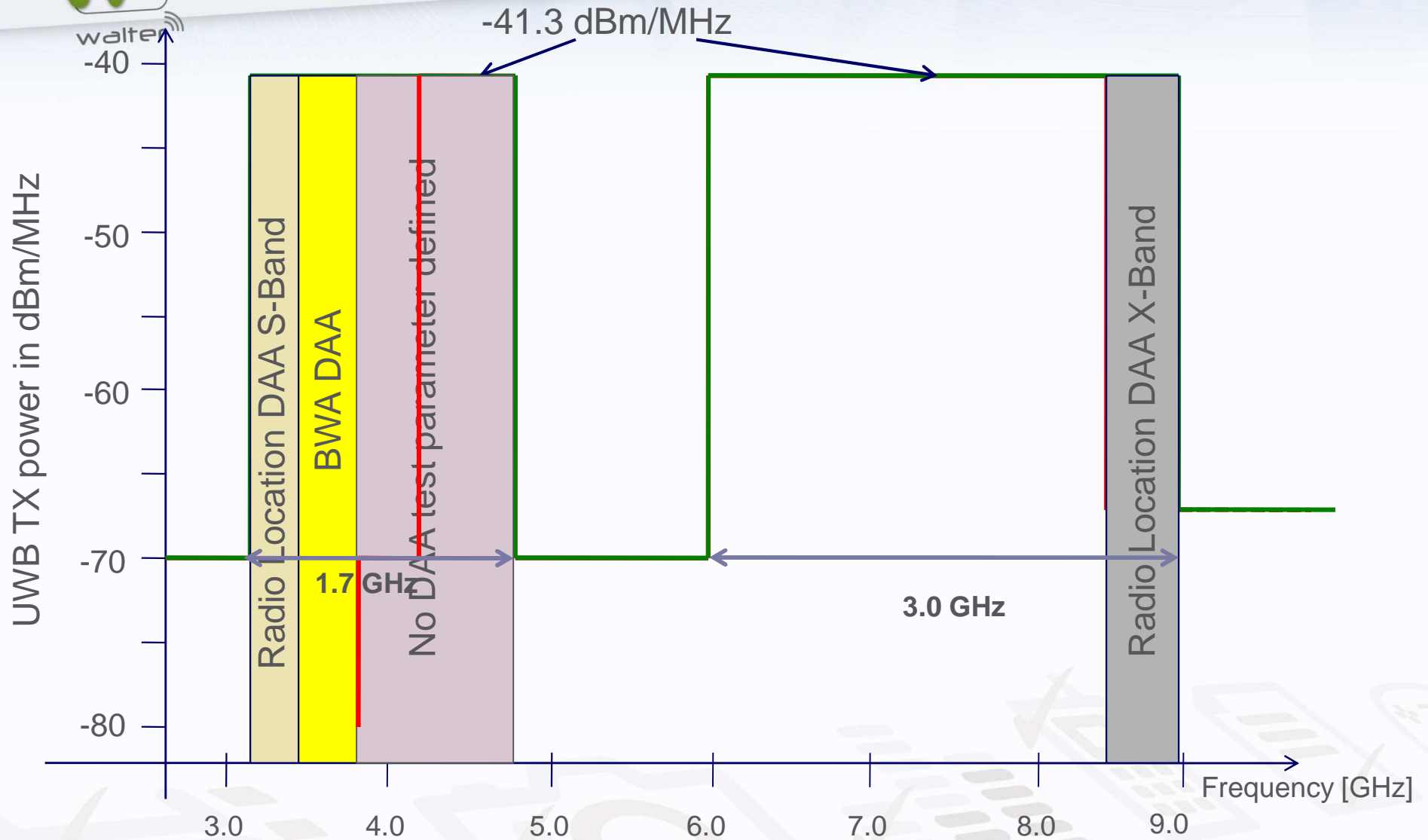


Standardization Status in Europe towards flexible DAA

- ✓ ETSI harmonized standard for non DAA devices with and without LDC ready and in place:
 - HEN 302 065 V1.1.1
- ✓ Technical Specification on flexible DAA ready and published:
 - TS 102 754 V1.1.1.
- ✓ Technical Report on test procedures for DAA enabled UWB devices ready for publication in Q1/2009
 - TR 102 763 V1.1.1.
- ✓ ETSI harmonized standard in progress planned release in Q2/2010
 - ETSI ERM TGUWB responsible for harmonized standard
 - Supported by ETSI STF 350 on DAA enabled UWB devices
 - Evaluation measurements needed using real DAA enabled UWB devices in order to validate the test procedures before inclusion into the updated harmonized standard HEN 302 065



European DAA Spectrum Mask





Conclusion

- ✓ European generic UWB regulation including DAA fully implemented and legally in place
- ✓ Specific regulations are implemented or under discussion in CEPT and in ETSI TGUWB
 - LAES
 - Level Probing
 - BMA/ODC
 - Airborne UWB
 -
- ✓ Initial harmonized ETSI standard available without DAA
- ✓ Harmonized ETSI standard including DAA in final stage
 - Input into ERM in 11/2009
 - PE until 2/2009
 - Final version available in Q3/2009



Outlook

European generic UWB regulation including DAA could pave the way towards a worldwide harmonized UWB regulation

- o Interest from China, Singapore, Canada and USA

WALTER will support transfer of knowledge to interested countries like China

A working DAA standard including test procedures could be the bases for further extension of DAA operation into other bands

The UWB DAA concept is under discussion to be used in other frequency bands like 2.4GHz (ETSI TG11) and

870MHz (ETSI TC28) band