

# Welcome to the World of Standards



## Changes for 2.4 GHz and 5 GHz

Workshop – 53 shades of RE-D – 4 November 2015

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## Work Item Scope (summary):

### 1. Test methods

- review existing ones / add new alternative methods

### 2. Adaptivity - Equal Access

- improve politeness of existing methods and/or to add alternative methods

### 3. RE-Directive alignment

- To include new requirements and to make other changes as required by RE-D

# Changes for 2.4 GHz – EN 300 328



## 1. Test Methods (item1 of WI)

### Test Methods - Power Density

- An alternative (simplified) test method for PD was added
  - Only for equipment with Continuous Transmission Capability

### Test Methods – Total Power

- Could do something similar for Total Power for (adaptive) equipment with Continuous Transmission Capability

### Test Methods - Receiver Requirements (to be added)

- Receiver Blocking
  - Latest proposal based on a verification of Performance Criteria during the application of the Blocking Signals (rather than a PER/BER rate based test)
  - Same approach as used for EMC standards (EN 301 489-1 / -17)
- (Receiver Adjacent Selectivity)

### Adaptivity

- Under this Work Item, so far only, one proposal was received (June 2015).
  - To create a new category for a hybrid FHSS systems using both Direct Sequence and Frequency Hopping techniques.
  - ETSI ERM TG11 reviewed the proposal and provided feedback
- A revised proposal was received by end September
  - Uncertainty whether this proposal complies with the Medium Utilisation and the Spectrum Regulation
- Final proposal is expected for the November meeting of ERM TG11

### RE-D alignment – RX Requirements

- The following RX requirements were considered by ERM TG11:
  - Receiver Blocking
  - Receiver Adjacent Channel Selectivity
  - Receiver Sensitivity
- ERM TG11 investigated the possibility for one common set of RX requirements and corresponding limits
- Due to the wide range of technologies/applications within the scope of EN 300 328, defining different categories seems unavoidable

### RE-D alignment – RX Requirements

- RX Categories included in current draft
  - Category 1: Adaptive Equipment
    - High potential spectrum load (max power / max duty cycle)
  - Category 2: Non-Adaptive Equipment with MU up to 10%
    - Medium spectrum load
  - Category 3: Non-Adaptive Equipment with MU below 1%
    - (Very) Low spectrum load
- This approach avoids additional measurements to be performed, or declarations to be made, to define the category that applies to the equipment

### RE-D alignment – RX Requirements

- Requirements linked to each Category
  - **Receiver Blocking**
    - Category 1 blocking levels to facilitate coexistence between e.g. WIFI and LTE deployments in adjacent bands
    - Levels will be relaxed for Category 2 and 3 Receivers
    - Additional relaxation for Category 3 receivers in the test conditions
  - **Adjacent Channel Selectivity (ACS)**
    - Including ACS is going to be very challenging, if not impossible
    - ERM TG11 will continue to consider, but may decide it cannot be done
  - **Receiver Sensitivity**
    - Is no longer being considered by ERM TG11



# Changes for 2.4 GHz – EN 300 328

## Anticipated Completion date



### **(provisional) Timeline for completion:**

- ERM TG11 Mtg # 45: 16th – 19th November
  - Objective is to complete most of the work
- ERM TG11 Mtg # 46: 19th – 22nd January 2016
  - Work on outstanding items, and prepare the final draft 4 weeks in advance of the February TC ERM meeting (23 – 26 Feb 2016)
- ENAP period to start mid February 2016 (after ERM# 58)
- Resolution meeting in June 2016
- Final national vote August/September 2016?
- Standard could be available for OJEU publication before end 2016



## Work Item Scope (summary):

### 1 & 2. **RE-Directive alignment**

- To include new requirements and to make other changes as required by RE-D

### 3. Test methods

- Review and/or improve the test methods

### 4. Adaptivity for Load Based

- Develop a single mechanism for Adaptivity that ensures equal access to spectrum for multiple technologies

### 5. Adaptivity for Frame Based

- To revise or remove the clause for Frame Based

## 1. RE-D alignment (item 1 & 2 of WI)

### RE-D alignment – RX Requirements

- TC BRAN may consider two receiver categories
  - Category 1: Devices operating as a MASTER
  - Category 2: Devices operating as a SLAVE
- The following RX requirements were considered by TC BRAN:
  - Receiver Blocking & Receiver Adjacent Channel Selectivity

### Receiver Blocking

- TC BRAN discussed the approach taken by ERM TG11
  - Blocking Levels and Test Frequencies not finalised
    - Input contributions expected for next meeting

### Receiver Adjacent Channel Selectivity

- Situation is similar to EN 300 328
  - Including ACS is very challenging. It may be deferred to a later revision.

### Test Methods - Receiver Requirements

- Receiver Blocking
  - TC BRAN will consider the proposal also submitted to ERM TG11
  - This is a test method that verifies the Performance Criteria during the application of the Blocking Signals (rather than a PER/BER rate based test)
  - The Performance Criteria are declared by the manufacturer for the intended use of the equipment
  - Same approach as used for EMC standards (EN 301 489-1 / -17)
- (Receiver Adjacent Channel Selectivity)

### Adaptivity for Load Based Equipment

- Many contributions on how to move forward w.r.t. Adaptivity
  - The two most represented communities are the LTE-LAA community and the Wi-Fi community
  - TC BRAN need to come to a consensus on a common approach for Adaptivity which provides equal access to both (and possible future) technologies
  - Slow progress, issue is contentious
  - Work continues in between f2f meetings (GotoMeetings, etc..)
  - Seems to be agreement to use a LBT mechanism with Exponential Back-off
  - A few of the remaining issues to be resolved are
    - Energy Detection Threshold to be used by LBT
    - Maximum Transmission Time
    - Multi-channel operation

### **Adaptivity for Frame Based Equipment**

- TC BRAN considered a proposal to remove Frame Based Equipment from the standard, but it was considered useful to keep it in.

# Changes for 5 GHz – EN 301 893

## Anticipated Completion date



### **(provisional) Timeline for completion:**

- BRAN # 85: 14th – 18th December
- BRAN # 86: 8th – 12th February 2016
- The objective is to agree on the Adaptivity section (clause 4) during the December meeting
- The remaining work afterwards will make it hard to complete it all in the February 2016 meeting
- Almost sure we will not complete within the same timeline as for EN 300 328
- It was explained several times that a failure to finish this revision in time will result in no HS being available for Industry.
  - From 13 June 2017 onwards, using the current EN 301 893 is NO option!!
  - If by that date, the new EN 301 893 is not listed in the OJEU (RE-D listing), the only route left for manufacturers is the Notified Body Route

# Changes for 2.4 GHz and 5 GHz

## Impact of revision of EMC standards



### Impact of revision of EMC standards

- ERM WG EMC is preparing a revision of EN 301 489-17
  - This is the relevant EMC standard for equipment within scope of EN 300 328 and EN 301 893
- Proposals are made to reduce the 'RF Exclusion Bands' to improve coexistence with services in adjacent bands
  - E.g. LTE in 2300 MHz to 2400 MHz and 2 500 MHz to 2 690 MHz
- Will be discussed in next ERM TG 11 and TC BRAN meetings
- Stakeholders are requested to participate this work within ERM WG EMC



# Changes for 2.4 GHz and 5 GHz

## Conclusion



- ETSI ERM TG11 and TC BRAN are working on MAJOR revisions of both EN 300 328 and EN 301 893
- Products placed on the market under the current R&TTE Directive will be impacted by the addition of the receiver requirements in these standards (and by other changes required in the RE-D)
  - This could range from only new testing required to the extreme case where product re-design will be required
- If you are an ETSI member, you have a voice, you can influence this work.
- Participation in ERM TG11 and TC BRAN is open to ANY ETSI member

# Changes for 2.4 GHz and 5 GHz

Thank you!



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Thank you!