

700 MHz Workshop – 2014-12-12 – Brussels

CLC/TC 209 'Cable networks for television signals,
sound signals and interactive services'

CLC/TC 210 'Electromagnetic Compatibility (EMC)'

Günther Manhart, CENELEC TC 209

Bernd Woerl, CENELEC TC 210

CENELEC TC 209



Standardisation activities of **CENELEC TC 209**

concerning:

New EMC environment in the 800 MHz band

Request of the European Commission
to draft immunity requirements for equipment,
to protect against disturbance from the new
wireless service in the 790-862 MHz band

EN 50083-2: 2012



EMC Product Standard: **EN 50083-2**

"Cable networks for television signals, sound signals and interactive services - Part 2: Electromagnetic compatibility for equipment"

last (updated) version: March 2012

specifying:

emission and immunity requirements and methods of measurement for active and passive cable network equipment

Update of EN 50083-2



Adaption of immunity requirements:
(to LTE signals)

Limits of in-band immunity were specified for analogue and additionally for digital wanted signals in the frequency range 790 – 862 MHz

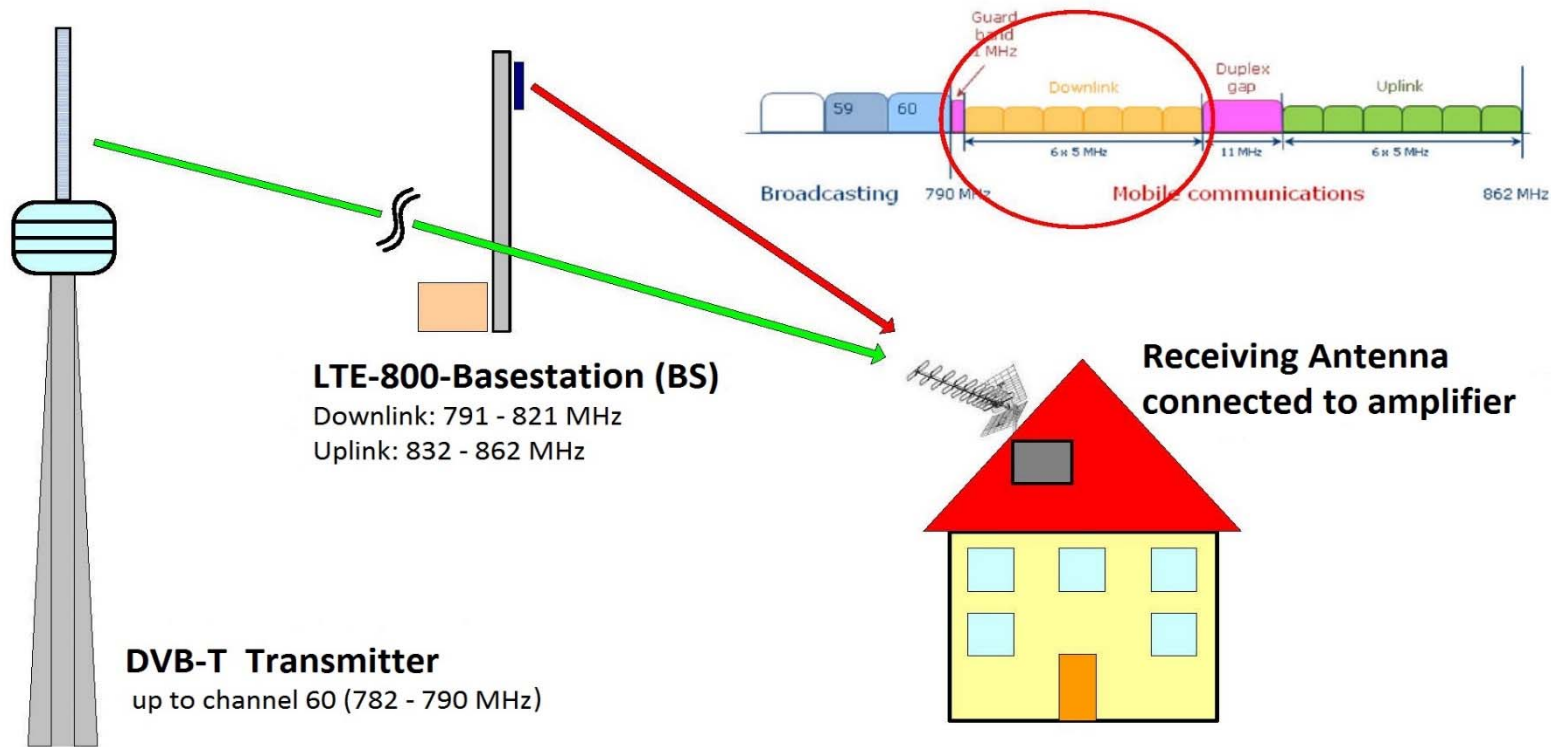
Recommendation, where cable networks and wireless networks coexist, only the transmission of digitally modulated signals should be used in the frequency range 790 MHz to 862 MHz.

Letter of the EC

Request of the European Commission (Feb. 2013)
for additional EMC and radio standardisation
work supporting the implementation of the
800 MHz decision:

*"Improved immunity and related specifications of
other equipment relevant in the reception of
digital terrestrial TV services, i.e. amplifiers,
passive equipment and filters, especially the
immunity of equipment operating below 790
MHz to LTE signals in the 800 MHz band"*

Coexistence DVB-T / LTE



Technical Report



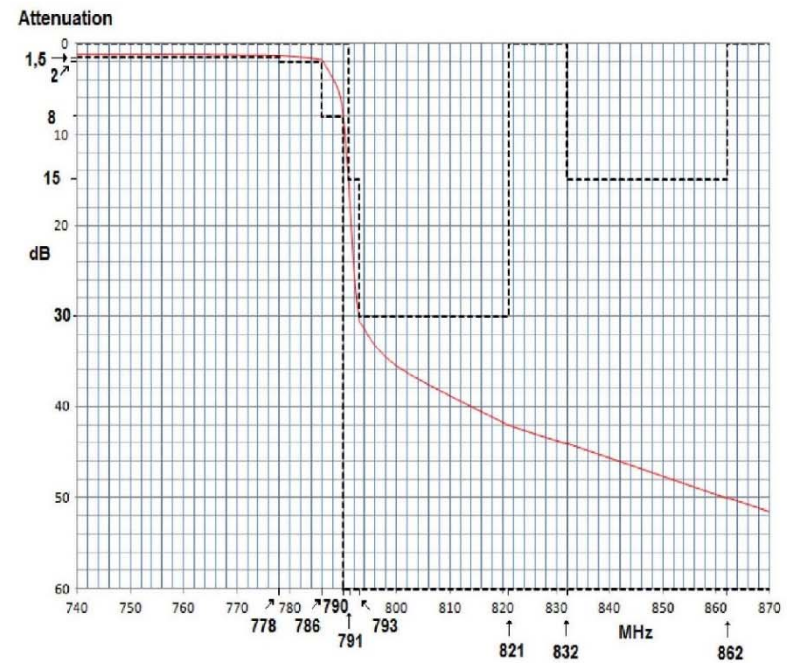
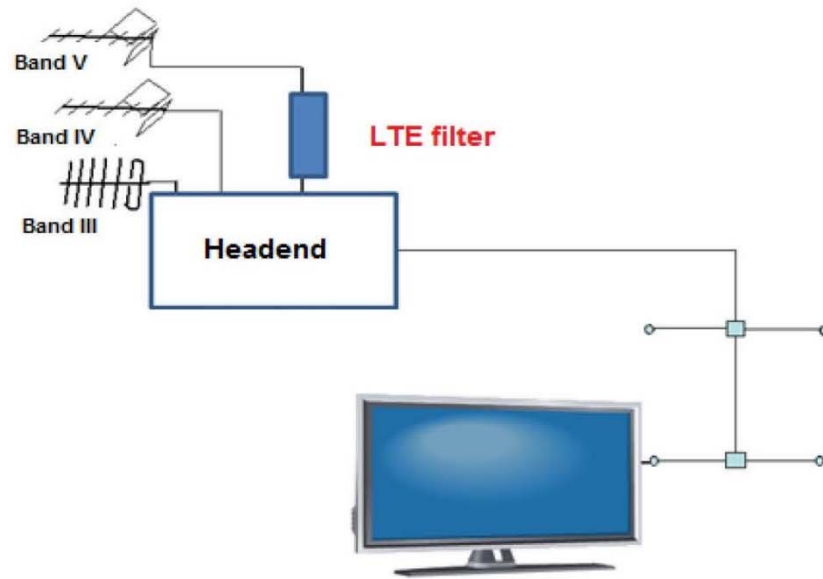
Technical Report CLC/TR 50083-2-2:

"Interference situation for DVB-T reception in the presence of LTE base station signals"

- published in October 2014
- providing technical solutions for the coexistence (especially: LTE filter)

LTE filter specification will be added to EN 60728-4 *"Passive equipment for cable networks"* (in progress)

Application of LTE Filter



Further activities on EN 50083-2



Adaption of clause 'internal immunity' concerning DVB-T signals (in progress)

New Amendment to EN 50083-2: 2012

=> EN 50083-2: 2012 / A1: 20xx

to be published in 2015

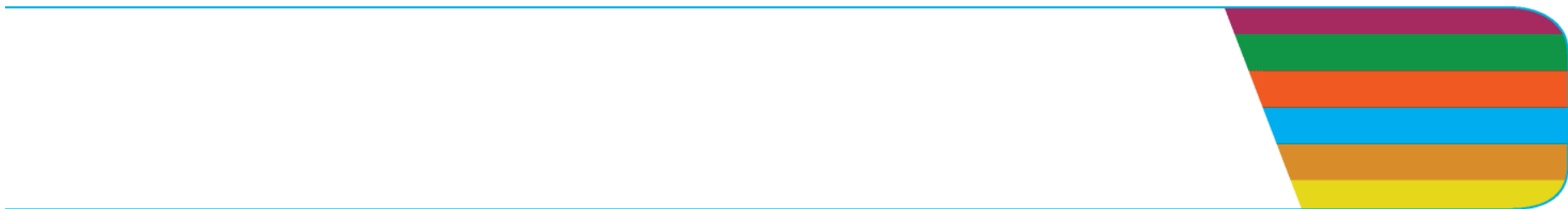
Further activities / LTE 700



For the 700 MHz band, TC209 will extend the applicable frequency range for the requirements currently covering the 800 MHz band, if necessary.

TC209 has a strong cooperation with TC46X in the area of communication cables.

Any adaptation of the regulatory environment in this area has to be technology neutral.



Questions ?

Thank you for your attention.

Content



TC 210: standardization work done on harmonized standard EN55020 following DD1

- Revision of EN 55020

Commission standardization request (13.02.2013) for additional EMC work supporting implementation of the 800 MHz Decision

- standardization activities
- Progress/ items to be reported

Revision of EN 55020



Finding of the Concise report

“the radiated immunity test level for equipment containing DVB tuners for the frequency range 790 – 862 MHz for the tuned channel is proposed as 1 V/m” and “for other than the tuned channel in the 790 – 862 range 3 V/m is proposed”

resulted in a rework of Table 15 of EN 55020:2007
European Common Modification A11: 2011

Parameter	Test specification	Test set-up	Applicability	Performance criteria
RF e.m. field AM modulated carrier	790-862 MHz: 3 V/m AM: 1 kHz, 80 % depth Except the tuned channel $\pm 0,5$ MHz: 1 V/m AM: 1 kHz, 80 % depth	EN 61000-4-3 With measurement conditions from I.5 using a tuned channel within the frequency range 790-862 MHz. Digital Cable TV mode only. For this test, I.7.2 does not apply.	Equipment with tuners suitable for reception of Digital Cable TV signals.	A

EC request (12.03.2013)

request for additional EMC and radio standardization work supporting implementation of the 800 MHz Decision. Work assigned mainly under the responsibility of TC210

1. Improved immunity of all broadcast receivers operating in the whole frequency bands 174-230 MHz and 470 – 862 MHz including in particular digital terrestrial TV and satellite TV receivers. This implies a new revision of EN 55020 including reconsideration of the scope of the so-called "exclusion band" in the context of new uses of spectrum, and should cover in particular immunity against signals with discontinuous transmission such as the «idle mode»⁵ of LTE equipment operating in the 800 MHz band (*see below under b*). A European modification of the future EN 55035⁶ improving immunity at enclosure and antenna ports is also to be considered.

Selectivity of TV receivers has been covered by existing test suites already developed in Europe (e.g. DTG D-Book 7, Nordig, E-book), and these could be used as the basis for improved antenna port immunity requirements in both EN 55020 and the future EN 55035.

Activities started

Established WG12 within TC210

- Title: Future EMC Environment and Digital Dividend
Terms of reference specify 4 detailed work items
 - Develop modification to EN55020 regarding screening effectiveness; include all DVB modes
 - Extension of frequency range; consider Idle mode
 - Consider output of JWG
 - Co-ordination with TC 209

Participation of CENELEC/ TC210 members in JWG ETSI CENELEC to support the work

Progress WG 12



prepared a revised Table 15 for EN55020

- Extends the radiated immunity test for 790 – 862MHz to cover DVB-T & DVB-S tuners as well

formulated and requested details from JWG regarding

- “idle mode” vs 1kHz AM 80%
- details on E-TM2 test modes, utilization of recorded/synthesized signals

Further items



RF/ tuner related tests no more relevant for revision

- for TC210 it is important to clearly distinguish between RF/ tuner related issues and EMC issues (JWG TG2)
- Broadcast receivers now fall under the Radio Equipment Directive 2014/53, whereas they did not fall under the RTTE Directive 1999/5. With this change, ETSI has set up ERM TG17 WG1 to develop a radio performance standard for Broadcast TV. Therefore any work/ revision done on this area by TC210 WG 12 is not necessary

Further items

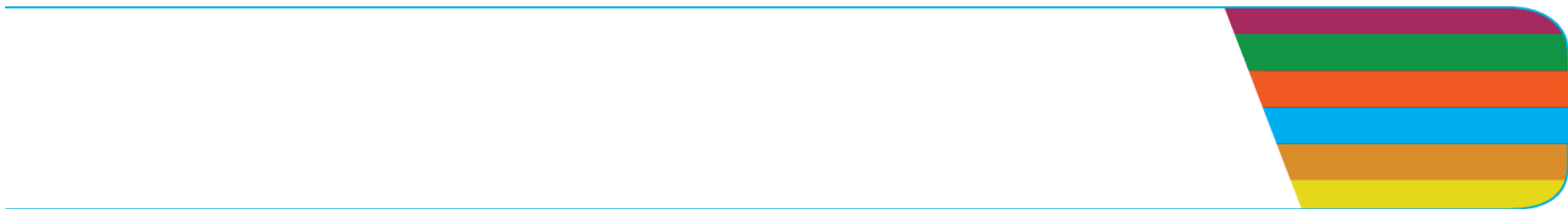


Further technical items/ inconsistencies on Idle mode

- An assumption was made after early experiments, that idle mode is more aggressive than any other signals. No verifiable data has been produced to support this. However, this assumption has led to a lot of work being done to try to develop a test that may not be necessary. This type of scenario must be avoided in future
- “The JWG confirmed that disturbance from LTE operation can be adequately simulated by the above 80% amplitude-modulated test, with the exception of Idle Mode operation.”

Further items, continued ..

- Confusion about the term “Idle Mode”. UE idle or BS idle? If UE is meant, then what is the signal? The JWG initially advised TC210 WG 12 that the E-TM2 BS signal should be used to simulate “idle mode”. However, at its last meeting the JWG changed this advice and now states that a recorded I/Q signal used in the DTG D-Book/ NorDig specs should be used
- Cost of test equipment for EMC testing should be considered. It is not acceptable/ economical worthwhile to specify test signals that can only be generated by expensive mobile technology test equipment not available at average EMC test laboratory. WG 12 has questioned whether a simpler pulse modulated signal can be used to simulate the interference from LTE (idle) signals
- To Note: Associated cable including attached connectors play an important role for the overall shielding efficiency. Poor quality cables nullify/ foil all receiver immunity improvements.



Questions ?

Thank you for your attention.