

Workshop

'Coexistence challenges of LTE deployment – the readiness of equipment standards and related issues'

Organised by European Commission, DG Enterprise and Industry Unit F5 DG Connect Unit B4

18th October 2012, Hosted by DG Enterprise and Industry avenue d'Auderghem, 45, Brussels

Chairman's summary

Disclaimer: the views expressed may not in any circumstances be regarded as stating an official position of the European Commission

The workshop was attended by more than fifty representatives from regulators, manufacturers, telecommunication and railway operators, and standardisation bodies.

The workshop was opened by Mr Luis Filipe Girao, Head of Unit ENTR/F5, and was moderated by Mr Octavian Popescu of Unit ENTR/F5.

In his initial intervention, Mr Girao explained that the Commission Services had decided to organize this workshop in order to facilitate the coexistence between existing technology and new communications services in the UHF band such as LTE, and in particular regarding the possible need to update equipment standards. The workshop intended to share views among the participants on this issue and clarify further steps.

On behalf of DG CNECT, Mr Bart Schaap highlighted the need for appropriate standardisation as a contribution to achieve efficient use of spectrum, taking into account inter alia promoting the shared use of radio spectrum as resource in the internal market. Also in the presentation from CNECT it was shown that equipment standards are important to define technical requirements for radio equipment and receivers to cope with harmful interference and immunity requirements for all kinds of equipment that are susceptible to the reception of radio waves.

The morning session started with three presentations by stakeholders.

Mr Liebler of BNetzA from Germany gave a presentation on the sustainable coexistence in the UHF band 470-862 MHz. He mentioned that after putting into operation more than 4600 LTE 800 base stations up to now only few interference cases are reported in Germany. Possible causes of this absence were lined out: (1) the individual and careful frequency assignments for LTE base stations, (2) the low DVB-T penetration in Germany, (3) a limited usage of the 800 MHz spectrum in CATV Networks (DVB-C) and (4) the low number of LTE devices in use (low traffic).

Nevertheless he concluded that the equipment standards are not "future safe". An overall increase of usage intensity of the UHF range is expected. Various studies and field tests demonstrated compatibility problems, which show a need for further standardisation activities. In this regard BNetzA is of the opinion that EN 55020 is required to change with respect to immunity requirements to cover the entire UHF band and requests European modification to CISPR35/prEN 55035 with respect to DVB antenna ports. Moreover attention was drawn to the CATV networks (EN 80083-2,-8). Proposals for a way ahead were discussed.

Mr Gowans of Ofcom, UK, addressed the readiness of equipment standards and related issues to tackle future coexistence challenges in the 470-870 MHz. The presentation focused on the relevant standards with regard to broadcast receivers and SRD and the required on-going activities. In this respect questions were addressed like the need for a revision of standards covering broadcast receivers and SRDs in order to increase robustness.

Mr Weber, representative of the European Communication Office, provided information on the on-going work in the ECC regarding coexistence with LTE, which included inter alia SRD applications, GSM-R operations and PMSE.

After the coffee break representatives of CENELEC, ETSI and GSMA gave presentations.

Mr Jones of CENELEC highlighted CENELEC responsibilities, mentioned relevant standards and addressed future developments and challenges. He took the view that the concept should be based on function rather than products. He stressed that input from the radio community is absolutely necessary for the work of CENELEC.

On behalf of ETSI Mr De Brito and Mr Barck focused on the framework of the R&TTE Directive and the EMC Directive, especially with regard to the television broadcast receivers, the antennas, amplifiers and installations. Consequences of the different regulatory frames with regard to time and life-cycles were mentioned. The changing environment due to LTE equipment in operation and considerations were discussed. It was proposed to review the harmonised standards published under both EMC and R&TTE directives. It was also suggested to keep in mind that 'radio' standards might need to be updated more frequently and with a view to ensure the coexistence between 'EMC' only devices and radio services. The example of European Standards for TV equipment and associated amplifiers, including adjacent channel selectivity and blocking (in particular of the associated amplifiers) in the radio (receiver) characteristics was also mentioned.

Mr Pike of Vodafone (representing GSMA) provided an overview of 800 MHz deployments and trials in Germany, Sweden, France and the USA. He mentioned that there are fewer cases of DTT interference than forecasted, depending on the portion of the population using the DTT platform and the DTT network topology. No interference to cable networks has been reported. In his opinion, appropriate RF filters in TV reception chains can prevent almost all cases of interference, whereas RF amplifiers are a more significant factor than anticipated. Standards for TV equipment should incorporate requirements for antenna port immunity and the RF amplifiers.

After the lunch break Mr Ratkaj of EBU discussed the impact of LTE deployment on DTT reception, referring to studies and measurements. In the process of roll-out of LTE networks cooperation between administrations, mobile network operators, DTT network operators and

local technicians is required as well as adequately informing the public. Inter alia the improvement of the immunity of future DVB receivers must be given further attention.

Mr Li of Orange also addressed the issue of LTE and DTT coexistence and concluded that adequate standards need to be developed for TV receivers and TV power amplifiers.

Next, Mr. de Cuetos from the Direction Générale de la Compétitivité, de l'Industrie et des Services (DGCIS), France, presented the results from 2011 French experiments. The performance of DTT receivers in the presence of interference from LTE signals in the 800 MHz band was tested in the rural area close to Laval and in the urban area of Laval. Based on the outcome of these tests the proposal is brought forward to mandate ETSI to publish a Technical Specification for a test apparatus simulating signals from measured LTE traffic and to initiate a revision of EN55020 in order to improve immunity of DVB-T receivers in the presence of interference from LTE traffic, on the receiver envelope and antenna port.

Mr. Madsen from the Danish Business Authority spoke about the letter sent by the regulatory authorities of Norway, Iceland, Finland, Sweden and Denmark calling for improved requirements for TV receivers and associated equipment in EN 55020 and urge the Commission to issue a request for further standardisation to the ESO's to prepare a revised harmonised standard for TV receivers and associated equipment with the aim to improve TV receiver immunity towards possible interference from mobile services in the 800 MHz and in the 700 MHz band in the future.

Mr Klaassen and Mr Fehr on behalf of the APWPT (Association of Professional Wireless Production Technologies) presented the outcome of interference scenarios of LTE UE in real time operation in the duplex gap 822 to 832 MHz and 863 to 865 MHz band, which show significant interference during parallel LTE and PMSE operation. This presentation asked for the coexistence matters to be addressed also through LTE hardware design and improved technical standards.

In his presentation Mr Copsey addressed SRD issues related to LTE deployment. He also called for monitoring and coordination in order to match the requirements in standards between types of equipment.

The representative of International Union of Railways (UIC), Mr Schattschneider presented the current situation drawing attention to the interferences on GSM-R due to LTE 800 and LTE 900 deployments. While filtering could partly solve problems, the presentation asked for harmonised emission limits and improved LTE spectrum emission masks.

Mr Nogues gave a presentation on behalf of Cable Europe. In his opinion there is not enough coordination between regulation and standardisation, this would affect radio services and equipment. A more balanced and collaborative approach is required.

The last presentation of this workshop was given by Mr Robijns and Mr Cnossen representing the Radiocommunications Agency of the Netherlands and NLkabel. In their presentation they highlighted the Dutch initiative of introducing a voluntary quality mark by industry for inhouse cable material to diminish possible in-house cabling problems due to interference. This is a collaboration between Dutch cable operators and manufacturers. It was discussed if this initiative could be an example of best practise on a European scale.

Some prominent points raised during the workshop were the following:

- The need to revise upwards the immunity requirements of specific product standards, to be reflected in the corresponding EN/harmonised standards norms covering receivers, tuners, short-range devices, etc;
- The Commission was invited to issue a request to the ESO's for a revision of EN55020 in order to improve immunity of DVB-T receivers in the presence of interference from LTE traffic;
- Amplifier products on the receive side of the TV broadcast chain must be updated to bring the technical requirements in line with the requirements of the new environment resulting from the technology evolution. This may fall under the legal requirements of the EMC Directive relative to installations;
- Some of the coexistence challenges raised seem to be solvable through filtering, like GSM-R and TV receiver filters, which require further revision of specifications. Network planning and frequency management also need to address these challenges;
- Improvement of quality of consumer TV installations from reception amplifiers to inhouse cabling might help to solve some of the possible problems for TV reception voluntary measures such as cable quality certification schemes and quality labelling may be helpful here

The following actions are to be considered by the Commission services:

- A short-term request to the ESO's to revise some standards relevant for ongoing deployments in the 800 Mhz band;
- A future standardisation mandate addressing the possible future evolution of frequency allocations below 800 Mhz;
- The promotion of a voluntary European scheme for improving quality of cabling and installations on an EU wide scale.

The Commission will continue to discuss with all stakeholders involved issues arising from changes of use in the UHF band and related solutions.

Annex 1 : workshop agenda

Annex 1. Workshop Agenda

8.45- 9	Registration	
9 - 9.15	Welcome and introduction to the objectives of the workshop	ENTR
9.15 - 9.30	The spectrum policy perspective	CNECT
9:30 – 9:45	LTE 800 Deployment & Coexistence in Germany	BNetzA
9:45 - 10	The UK perspective	OFCOM
10 – 10:15	Presentation ECC actions	ECO
10 – 10:30	Coffee Break	
10:30 – 11:20	Progress made by the ESOs (Overview of current situation)	CENELEC ETSI
11:20 – 11:35	LTE deployment	GSMA
11:35 – 12	Interactions LTE - DTT receivers	EBU Orange
12 – 13:30		Lunch Break
13.30 – 14.00	LTE - DTT	ANFR, France
14 -14.25	Wireless microphones and SRD applications	APWPT
	GSM-R	UIC – International Union of Railways
14:45 - 15	Open Discussion	Discussion: Moderator EC
15.00- 15.20	Coffee Break	
15.20-	Cable Open Discussion	Cable Europe

15:40		Discussion: Moderator EC
15.40- 16:00	The Dutch Cable quality System	Presentation "A voluntary certification scheme for in-house coax cable material in the Netherlands"
16.15 – 16.30	The way forward Discussion on challenges and possible actions or tasks	ECC ETSI/CENELEC Stakeholders Moderator: Commission
16.30	Conclusion	Commission