Joint Effort on Mitigating Interference:

A Cable Perspective

European Commission Workshop
“Cable TV Receivers affected by new radio services in the 800 MHz band”

Brussels, 30 June 2010

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Setting the scene

- **Cable operators have already invested to build hybrid fibre-coax (HFC) networks that operate up to 862MHz.** They are either providing services in the band today or have plans to expand into the band in the near term.
- Re-use of the 800MHz band for LTE presents two possible scenarios:
  - Loss of use of capacity in the 800MHz band as a result of being required to clear all current services from the band
  - Loss of use as a result of being unable to co-exist with new LTE services due to in-home interference with customer equipment (including set top boxes, cable modems and in-home cabling and connectors).
- Clearance of the band would significantly impair our status as a viable challenger in the market. **Cable needs capacity for existing and new services as much as other telcos, including mobile.**
- **Co-existence with new LTE services has to be achieved to protect customers' interests** - but this is likely to require design changes for CPE to improve immunity from interference as well as other in-home cabling improvements.
- Above scenarios come with commercial impact in a difficult economic context … and viable solutions require time

What some may be saying

"Interference is not really a problem" (Or, the total opposite, "It's a massive problem")

- No one actually knows for sure where the problem lies between these two extremes.
- We rely on testing carried out in some other Member States following our lab testing (based on parameters in the Commission's Technical Decision & drawn from CEPT work)
- Testing clearly suggests that there is a problem -- and action is required. **In the interests of many millions of consumers across Europe, the issue must be taken seriously and fully assessed. There is currently no plan for eventualities.**

"It only affects TV services"

- Not correct – **interference affects high speed broadband modems** too. We have only tested cable customer equipment but other consumer equipment needs to be assessed.

"This is just a problem for cable - and more specifically its networks"

- Not correct - it is primarily an in-home issue. Cable customer equipment with tuners is susceptible to interference. TVs and other non-cable equipment will be affected while the external networks are actually relatively unaffected.

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What others have said

"Cable should just clear the 800MHz band"

- Cable operators have made significant infrastructure investments (to provide fixed network infrastructure competition). Around 73 million Europeans rely on our services on a daily basis for personal and business use.
- We are actually NOT unique. **We are just as 'bandwidth hungry' as those providing other fixed and mobile services.**
- Where would it locate the displaced services? (And who would pay for it?)

"Cable identified the issue as a defensive (blocking) manoeuvre"

- Our industry flagged the problem to CEPT in 2007. We raised concerns with the Commission in May '09 -- not to block the re-use of the 800MHz band for LTE -- but simply to pass on initial results from testing.
- Better to develop potential solutions before problems are experienced by consumers.
- **We are *also* interested in the potential of LTE** – testing last year was carried out to check impact on current services (broadband internet & existing and new TV services).

What you might have heard

"This is just a technical issue"

- No - it is a policy issue with technical implications. Getting it right is central to the goals in the Commission's Digital Agenda.

"Consumers will accept some interference"

- This is *not* just a bit of picture deterioration on TVs but total loss of picture when interference occurs – broadband connections fail and TV screens go blank.

"The polluter shouldn't pay – but maybe consumers should"

- We simply don't know enough about the potential costs. **It would be unwise to proceed without a plan to cover the costs of mitigating harmful interference.** The Commission should help coordinate (via RSPP?) what could be a multitude of Member State responses to the interference problem.

"Just shield future set top boxes and the problem is solved"

- **It is not just new customer equipment that is impacted but also in-home cabling**. Whilst shielding for new boxes is possible, it will take time to introduce
- Current equipment remains susceptible
- We have a considerable standardisation challenge and shorter term issues for legacy equipment.

Where are we now?

- Although the interference threat has been identified and the problem has been recognised by the Commission and national administrations, more comprehensive answers are still needed to a number of key questions such as:
  - What is the full extent of interference?
  - What solution(s) exist to avoid any interference?
  - How much it could cost to overcome?
  - Who is responsible for resolving the problem (i.e. who pays)?

- As Commissioner Kroes said last week, we need to "inject economic and social sensitivities into this debate" and not allow technical and legal arguments to have more influence than they deserve" - BUT **we need a "regime that safeguards competition, encourages innovation" and "avoids favouring a particular technology."**

- In the interests of its millions of customers, we need to co-exist; no one can afford to follow the "no problem" route. Co-operation with other stakeholders to find solutions is the way forward to guard against the potential threat to existing customers

- More needs to be done - and this must be set against the background of difficult economic times. The JWG 10 was just a beginning.

- **A coordinated approach from Europe is needed to help tackle this before it becomes a real problem rather than one we can plan to avoid**

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Scope of mitigation measures

- Ongoing analysis of the EMC environment is required to:
  - Characterise the interferer in the 800MHz band in respect of criteria such as transmit power, signal structure, time characteristics, geographic parameters of cells and other design parameters of mobile networks.
  - Distinguish between commercial and technical limitations.
  - Characterise the screening efficiency of current equipment for HFC networks and in-home installations, including customer equipment.

- Reliable and documented requirements for screening efficiency in the relevant frequency band are required.
  - The relevant frequency range is not covered in all harmonised standards.
  - Measurement methods for immunity limits as defined in harmonised standards do not cover the relevant co-existence scenario.

Potential Solutions

- The most promising mitigation approach appears to be a combination of:
  - Improvement of immunity of cable installations (by gradual deployment of new equipment with increased immunity) and
  - Power control/reduction in LTE in areas where interference occurs.

- Mitigation measures must:
  - Address both new and legacy equipment
  - **Be technically AND commercially viable**

- For legacy equipment, cable is already assessing options for protection

- For new equipment, cable operators are already in discussion with their vendors and, in parallel, will participate in the relevant standards bodies.

- **Alignment of roll-out plans** of mobile networks and deployment plans of improved equipment in HFC networks would help to address economic and technical pressures.

Co-existence: A sustainable approach

- The ultimate goal must be a co-existence of mobile networks and HFC networks in all concurrently used frequency ranges bearing in mind that:
  - The initial focus has to be on the frequency range from 790-862 MHz
  - Further liberalisation of the usage of 'former' broadcast spectrum is under consideration
  - The specifics of varying co-existence scenarios for different users must be understood (e.g. co-channel and adjacent channel effects in HFC networks, timing effects in terrestrial networks etc.)
- **Setting / updating of appropriate standards for radio and electromagnetic compatibility must respect all stakeholders' positions.**
- Definition of test signals and measurement methods to verify compliance of future equipment is required.
- This will require close cooperation of standardisation bodies (e.g. CENELEC CLC/TC 210 and CLC/TC 209, ETSI ATTM AT3) with administrations (CEPT)
- All stakeholders, including operators, vendors and national administrations, have to engage.

Standardisation: The work starts now

- Standardisation bodies responsible for the development of the relevant standards need to review the changes required to improve the performance of equipment immunity and screening efficiency in order to cope with the changed EMC environment.
- For cable operators, relevant standards include:
  - EN 55024, EN 55020 and EN 61000-4-3 for which the responsible body is CENELEC TC210
  - EN 50083-2 for which the responsible body is CENELEC TC209
  - Installation and cabling standards as maintained by CLC/TC 206, CLC/TC 209, CLC/TC 215 and ETSI ATTM AT3
- There is also a need to develop a framework for more practical measurements, including laboratory and field testing, as well as monitoring results from field trials.
- Cable operators are already working with equipment vendors to determine requirements for new and existing equipment.
- **Cable Europe is currently working with operators and vendors -- both in Europe & US -- as well as US CableLabs, on various mitigation options**.

- **Cable Europe has published a technical position paper today** (www.cable-europe.eu)

- **We are also releasing further technical data & analysis this July**

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Next steps

- All stakeholders should recognise that development and implementation of mitigation solutions will require time. If we all co-operate, we probably have enough time.
- **The Commission should ensure that Member States take all necessary steps to avoid harmful interference.** The recent RSPG opinion (para 16) refers to the need to avoid harmful interference.
- Member States need to clarify how the responsibility for protecting consumers and existing users could be addressed in auction guidelines and in licences.
- **The Commission should encourage / undertake more independent and comprehensive impact assessments in relation the political, economic, commercial and operational consequences for existing users of the 800MHz band.**
- It is vital that the new electromagnetic environment is characterised prior to making decisions on mitigation techniques which will have long lasting consequences for European competitiveness and its citizens

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