

Response from B.Copsey to Ofcom on :

Coexistence of new services in the 800 MHz band with digital terrestrial television

Overview

Ofcom have been diligent in pursuing the change from Broadcast use to mobile use of the band 790-862MHz both within Europe and the UK, unfortunately they have not been as diligent in pursuing answers to the many interference (and cost) problems to citizens, consumers and industry which this change will generate.

In the initial stages of the CEPT committee and subsequent ECC Decision, Administrations (including Ofcom) totally rejected any consideration of interference to a wide range of consumer and industrial equipment, it was only after strong lobbying from Cable Europe backed by their compatibility studies (which should have been part of the original CEPT SE 42/Ofcom work) that the European Commission requested the European Standardisation Organisation's (ESO's i.e. ETSI, CENELEC and CEN) to investigate the issues.

The Joint Working Group (JWG) formed by the ESO's rapidly found that there will be problems with a wide range of television reception and other equipment including:

- Domestic Television
- Domestic televisions with various amplifiers
- Other domestic equipment containing a TV tuner (hard disk recorders, VHS etc.)
- Cordless audio
- Radio microphones
- Social alarms
- Medical devices
- Communal aerial systems
- Cable network consumer equipment (uses a TV tuner)
- Baby Alarms

The JWG reports can be seen at:

[\(http://docbox.etsi.org/Etsi_Cenelec/PUBLIC%20FOLDER%20on%20DD/CENELEC-ETSI%20Joint%20Working%20Group%20Published%20reports/Main%20Report%20Agreed%20by%20TC210%20May%202011/](http://docbox.etsi.org/Etsi_Cenelec/PUBLIC%20FOLDER%20on%20DD/CENELEC-ETSI%20Joint%20Working%20Group%20Published%20reports/Main%20Report%20Agreed%20by%20TC210%20May%202011/)

Belatedly Ofcom commissioned some compatibility reports that in the main have only been published some 7-10 days after the Technical License Conditions consultation started with the field trial report only published about the 3rd July, None of these reports have been reviewed and commented upon by stakeholders and interested parties. A group chaired by Ofcom looked at the “protection clause” but was restricted to individual TV reception using a good external aerial; even this group was abruptly shut down by Ofcom in March 2011 without the members reaching conclusions.

Section 4.28 states: *Regular meetings have been held between May 2010 and March 2011 with technical representatives to share latest results and ideas and to obtain feedback and critical appraisal of the ongoing work* This suggests that Ofcom shared its results. This is **not** the case: the reports on amplifiers, field trials, communal aerial systems and SRD were not shared with the group and, whilst they were carried out in the first few months of 2011 were only made publicly available after the start of the consultations.

Throughout this process Ofcom has refused to carry out a full impact assessment on the total costs and problems that will be faced by citizen’s and industry. Nor has it clearly indicated who will pay the considerable cost of resolving these problems, except in the case of some individual TV receivers, where it has been indicated that the winning mobile operators will foot the bill.

It is interesting to note that a representative of Vodafone in a recent speech indicated that if the licences were too expensive, it would impact negatively on rural roll out, which was the original reason given by EC and Administrations for the new mobile services!

It should be borne in mind that many problems will only be apparent when the networks are fully deployed and loaded, which may not be for 4-5 years.

Facts and Figures produced by Ofcom within this consultation do not appear to coincide with the reality of the situation for a number of reasons,

1. A major problem is that the Technical conditions proposed by Ofcom have vastly increased the potential output power of base stations to 64dBm compared with the powers used for their modelling and testing. i.e.

*Section 4.53 (of the condoc) The higher the power of a mobile base station, the more likely it is to cause interference to DTT. In our analysis we have modelled all base stations as operating at **59 dBm**. In practice, base stations in a mobile network operate at different powers, but with the majority operating close to the **maximum permitted** power level.*

This new level will increase the interference factor by 2.4, Even using Ofcom’s underestimated figure of 760,000 this becomes: **1,824,000 households**

And hence even the underestimated costs become: instead of £100 million become **£240 million**

2. A second problem is the proposal for “fixed mobile” use which has not been considered in the compatibility work
3. A third issue arises if beam steering is used and how long the peak power will be allowed and its time domain effect on TVs
4. A fourth problem which has not been considered that the latest ETSI standards, allow higher Out of Band (OOB) emissions from LTE equipment modelled by Ofcom. ***This will have a massive effect on the interference level and invalidates the Ofcom modelling results***
5. A major problem with the LTE signal is that it has been excellently designed to be flexible and each licensee will probably have a different implementation, whereas all testing has been carried out with either simulated signals or a single vendor specific signal
6. Ofcom has taken no account of multiple TV sets and recorders which will likely be affected in households, no practical solution (or funding) for resolving the interference issues for these devices has been given or offered.
7. No clear information has been provided on who will “pay” for the communal aerial system cures below the head end; Ofcom has suggested that DTI has this responsibility as Ofcom has regarded this as an EMC issue. As this will affect some 5.7 million homes (Ofcom figure) surely this should be more clearly addressed?
8. In France legislation has required the mobile operators to bear the costs of resolving **any** interference from the 4G bands on digital terrestrial broadcasting. Bouygues Telecom have indicated that the cost will be EUR 500 million to EUR 1.7 billion, with interference affecting up to 20 per cent of households, ***A very different set of figures from Ofcom’s.***

Ofcom should re-evaluate all their conclusions in light of these points and clarify how interference issues will be resolved and at what cost to citizen’s and industry so that a more considered view can be taken on the cost implications of their proposals to the population of the UK. In a period of low economic growth and “downsizing” by Government and industry citizens will not welcome costs which may well exceed some £300-£500 just too partially restore their broadcast reception. In some cases, such as services from short range devices (SRDs), it will not be possible to restore the original level of service at any cost.

Parliament and citizen’s should be given a clear briefing on the looming costs and the reduction in their DTT reception (including it would appear, loss of reception on any TV sets

that do not have an external aerial) that these proposals will generate, not just the “good bits” about increased broadband for rural areas

Consultation question

1: Do you have any comments on our modelling approach and assessment of numbers of households affected?

Yes, they grossly underestimate or ignore the numbers of households and equipment that will be affected and ignore some of the obvious effects.

1. The modelling approach was based on an individual TV set with an external aerial and base station only interference; this is not the case for a great number of households where indoor aerials and amplifiers will be subject to handset interference. Nor has it taken into consideration second sets and other devices containing a TV tuner
2. The modelling approach was based on an individual TV set with an external aerial and from base station interference **only**, it is clear from a range of reports that terminal units will cause interference to:
 - Amplified aerial systems
 - Cable TV STBs
 - Communal aerial systems at domestic and floor level
 - SRDs in the 863-870MHz band
3. A statement in section 2.10 states with reference to UE interference:
Such interference would be transient and could be simply resolved by moving away from the TV.
Again this ignores results from a range of reports that highlight that with a 3-5m interference range the UE (handset) could be in an adjacent premises or street. How would an elderly couple identify that their TV interference was coming from next door?

4. With the increase in BS EIRP to 64dBm the model needs to be recalibrated and the numbers recalculated.
5. Within the field trial report it is stated that: *Further work is required to fully understand the interference effects on amplifiers given the number of amplifiers in use. This work needs to be done **prior** to the technical licence conditions and protection clause being finalised as it will be expensive and labour intensive to carry out work on these systems.*
6. No consideration has been given nor the numbers of households identified, that will be affected that use systems receiving TV stations outside their area, either because they cannot receive the main station, or as an additional service i.e. English people living in Wales wanting English programs or where physical shielding makes it impossible to receive the main station or the reduction in choice where two main stations are presentably received
7. Table 4.2 provides estimates of numbers affected which appear to be in total contradiction to Ofcom's own reports and caveat's within the consultation document. To give but one example; in the case of the communal aerial systems report it states in the conclusions, section 7, that *75-80% of launch amplifiers have no filtering*, if we translate this into households affected the figure becomes some 4,168,000 a substantial increase!

This one example completely dwarfs the number of 760,000 which Ofcom presents as the affected households. This type of increases applies across the whole range of identified "affected" households, therefore the whole financial model is inaccurate and "real" numbers should be used.

2: Do you agree with our high level conclusions on mitigation options?

No:

- Whilst agreeing with the measurers outlined in table 5.2 many have been omitted, especially those required for communal aerial systems and cable networks.

- Statements relating to “platform change” ignore the fact that both cable and satellite platforms will/may also suffer interference.
- No reference has been made to the proposed introduction of White Space Devices (WSD) which are likely to impact on reception in all the media platforms, this should be taken into account when considering the mitigation required.
- Table 5.2 gives a result of 30,000 households, which will remain after mitigation methods are implemented, this totally ignores the incorrect starting point of only 760,000 households affected (it also only appears to reference a single piece of equipment in each household). If we consider real figures in light of the millions of homes which may be affected plus the multiple equipment in use within these households the figure of 30,000 is a **vast** underestimate.

One example:

If we look at the Ofcom report on launch amplifiers which states that 75-80% of systems will be affected we get a figure of **4,480,600 households** not 550,000.

Costs

The information and amount of costs does not add up even using data contained in Ofcom’s reports. Dealing with each section in order:

5.33: this relates only to the interference from base stations into the head end. If this measure only is carried out the majority of systems will still suffer interference from base or UE into the distribution amplifiers, therefore the figure of 95% is not proven. No consideration anywhere in the technical reports or consultation documents identifies the use of other LTE transmitters that will include:

- Fixed mobile
- Pico cells
- Micro cells

All of which will be close to domestic installations and impact on wide band amplifiers.

5.34 The costs in this section suggest that filters will solve the problem, in many cases this will not be the case. There is no reference to the technical backup costs per household. This will need to be a physical presence not just a call centre. Large communal systems may well need up to 50 or 60 filters if the distribution amplifiers are taken into account, in some cases each TV may also require an individual filter.

5.36 No time scales have been quoted for the distribution of filters, given that the LTE networks will take many years to stabilise i.e. the expansion from base stations at existing GSM sites to micro and Pico cells. Will the provision of filters and paying for their installation be guaranteed for say 10 years?

The figures do not appear to take into account the work required to re-align the levels throughout the communal systems. It is not a simple case of “plugging in a filter” re-cabling will be required in many cases along with masthead amplifier and aerial work (or even replacement).

The amount of work is further increased by the fact that it will have to be scheduled around the re-farming of the TV frequencies. Some DTT transmissions are still in the 790-862 MHz band and it is expected that some areas will have their frequencies re-farmed in stages. Some installations will require repeat visits.

Again referring back to “real figures” the costs of mitigation are a gross underestimate.

5.37 The average of only 16 households per communal system appears low, however if we look at the Ofcom report on launch amplifiers which states that 75-80% of systems will be affected.

Using Ofcom’s figure of 16 households per system this gives some 325,625 systems, if we use an average figure of £500 (Ofcom states between £10-£700) per filter for the head end (no labour included) we get a figure of: £162,812,500.

If in addition 50% households require individual TV filters at £10 each we arrive at a figure of £22,403,000.

5.38 Whilst “plugging in” a filter may solve part of the problem this may not achieve the restoration of acceptable viewing and further remedial action may be needed

5.39 The figure of £200 presumes that the job is straightforward and all nuts, bolts and cable are in good condition. This is rarely the case and a maximum figure of between £500-£600 would be more realistic. Also if the aerial is damaged in this process (as anyone who has worked on aerials will verify is very easy to achieve) who pays for the new installation? Given the customer had good reception before the LTE introduction it should be Ofcom.

5.40 This is another area where Parliament and citizens should be fully informed before the technical conditions and licences are finalised

5.41 Unfortunately the cash costs do not appear to reflect either the number of households or systems affected and again have been based on the lower base station powers. Full assessments of Ofcom’s new technical conditions need to take place along with discussions with all stakeholders (in this case without prematurely closing down the group).

Giving but one example of the discrepancy between Ofcom's report data, information in the condoc and table 5.3 on communal aerial systems:

Using Ofcom's figure of 5,210,000 households using communal aerial systems and 16 households per system this gives some 325,625 systems. Using 80% of launch amplifiers affected (Ofcom report) if we use an average figure of £500 per filter (no labour included) we get a figure of: £162,812,500.

If in addition 50% of households also require individual filters at £10 each we arrive at a figure of £20,840,000.

Also many systems at present using locally injected signals for additional services **will** suffer a loss of these services.

5.42 Again this damages the DTT platform and removes features previously enjoyed by households and will be worse for communal aerial system users.

5.43 In light of:

- Increases in base station power
- Underestimate of affected households and communal aerial systems
- Uncertainty as to the configuration of the LTE networks

These statements need **urgently readdressing**

5.45 In light of the increase in base station powers and out of band emissions, tight filtering would not only reduce the DTT interference but also the SRD problems. Such filtering needs to be in place for all forms of LTE transmitters

5.48 Agree and should be implemented for all LTE transmitters

5.49 / 5.50 whilst agreeing with the sentiment, the reality is that immune TV and reception equipment is unlikely to be available for at least 2-3 years; therefore which equipment should they purchase? Will Ofcom publish a league table?

Improvements in internal cabling would greatly assist the interference mitigation but this requires an individual (and costly) approach to households. Costs of £200 appear too low for the assessment and installation of this type of work.

5.52 This ignores both UE interference and increased base station power.

5.53 Again this presumes that the aerial and mountings will not be damaged, *would it not be more cost effective to provide new bandwidth limited aerals for a similar cost along with a filtered head end amplifier if required?*

5.54 Again a reduction in service to that household!!

5.55/6 This may be an integral part of restoring DTT reception and should be high up on the mitigation list.

5.57- 60 Also, realignment of On Channel Repeaters and household equipment would probably be needed each time the LTE network configuration changed.

5.61- 65 opposite polarisation is good in theory or for a specific case, but in a wide geographical area it rarely give consistent results, agree with Ofcom.

5.66 Why then has Ofcom increased the base station power?

5.68 This would also bring them close to domestic premises increasing the interference risk.

5.73 IPTV quality depends on the “quality” of the broadband connection in many cases this is inadequate to provide these services for viewing on large screen TV.

5.77 The costs in table 5.4 appear very low. To purchase and install free sat for an individual set would be nearer £200-£300, for cable the average monthly bill is £47.35 (source Times 28 July page 42).

5.78-81 If these equipment and platform changes (including on-going charges) are required to restore DTT reception to a household it is reasonable that Ofcom pays for these, for at least 10 years, possible out of the increased profits they predicted for the use of LTE. This also ignores the interference to cable and satellite reception.

What does Ofcom propose if none of these platforms are useable?

5.82

“but we consider that on average consumers should be in a broadly equivalent position if DTT services are replaced with an alternative platform”.

Does this include the cost to the household budget?

5.83 does this mean that households will not require a TV licence?

5.85 Yes from a technical perspective, but from a household budget perspective?

5.86-89 This totally ignores the interference to these platforms, therefore the figures quoted are unreliable and at best a guess.

5.91 This must be part of the licence conditions and a system put in place to test interference in the real world with instead of simply modelling.

5.93 With a bias towards the TV viewer!

5.98 The figure of 30,000 is over optimistic.

5.100 disagree with the costs identified for reasons previously stated.

5.101 disagree you have been optimistic.

5.102 When will that decision be made and why should Ofcom remove DTT viewing which is free (other than licence fee) and cause households a considerable cost in these lean times? If the advantages and profit predicted by the EC and Ofcom are “real “figures why not upgrade the households to restore their viewing?

5.103 Given these will consist of labour costs they may well dwarf the proposed costs of £100 million which Ofcom have identified.

5.105 The numbers identified are a gross underestimate and therefore are not usable or credible, even using the information within the Ofcom reports and this condoc.

5.106 For all the reasons previously identified these costs are a gross underestimate. To look at only two aspects:

1. Ofcom has presumed that sending a filter (or filters) out to a household will resolve the interference. From personal experience this is unlikely to work in more than 45% of cases, this means that personal intervention by an engineer will be required to resolve the issue.
2. No account has been taken of the administrative costs incurred when dealing with irate members of the public who will complain to MPs and anybody they think can help them, plus dealing with Charities and organisations that will represent their member's interests.

Also consider the costs suggested by France of EUR 500 million to EUR 1.7 billion, with 20% of households affected.

5.108 This optimistic review is not borne out by the information belatedly provided in the very limited Ofcom interference reports and should be thoroughly re-evaluated.

3: Do you have any comments, views or evidence that you would wish to be considered in our further work looking at the appropriate level of consumer support?

YES

- Reconsider the numbers affected using your own data and reports.
- Reconsider and recalculate all costs.
- Consider how restoration of DTT and cable reception to the level before LTE can be achieved and paid for.

- Reconvene the protection clause group with a realistic remit.
- Reconsider the replacement of aerials, with its reduced labour cost plus the good will that will be generated.
- Accept the recommendations of your Interference reports and consider the real issue and method's to solve them.
- Reconsider the time lines to finalise the technical conditions and auctions in view of the above.

MitCo

6.18- 6.21 The thinking behind this appears to consider this an administrative excise, I doubt from previous experience that it will be, engineers will be a major component. Their used to be an organisation within the RA and Ofcom called the Radio Investigation Service; they could handle the interference issues not solved by a simple filter.

Role of MitCo

6.22 – 6.25 There is no mention of involvement of the consumer, Broadcaster or any of those affected. New licensees in the 800 MHz band will want to keep costs down. Their priority will not be to restore media viewing to current levels.

Options for TOR etc.

6.26 None of the three options are acceptable without the involvement of the consumer, Broadcasters or any of those affected.

6.31 It is shown above that the affected households and costs have been grossly underestimated. How will this approach deal with interference when the proposed tariff income is spent? Will this tariff be based on a single TV per household, if so who pays for the other problems?

Tariff Mechanism

This appears to be skirting around a commitment to restore media viewing to the condition a household enjoyed prior to interference. A tariff should be an on-going commitment for the licensee(s) to solve any interference problems that they have caused. Plus any changes they make should incur additional tariffs.

Assessment of Approaches

6.39 – 6.44 Again there is no involvement of those affected, the strongest comparison is *“turkeys voting for Christmas”*

4: Do you have any comments or views on how we have assessed the approaches and our preference for the hybrid approach?

Yes

Given Ofcom’s prejudiced approach to the problems of consumers and their bias towards relieving the new service providers of full responsibility, it is imperative that consumers, broadcasters and others affected (e.g. SRD, s) are given an equal status to the licensees.

Funding

6.49 – 6.50

At present Ofcom’s objectives are unclear. Is it Ofcom’s intention to restore media reception in a form similar to now or restore only to the main TV in a household?

The present situation is one of reasonable media reception to households, introduction of the new mobile system will create interference to all media platforms and if Ofcom’s objective is:

Placing costs on parties most able to control or predict them will be the principal way of achieving this.

Surly the new licensees are the only ones to be able *control or predict* and should bear all the costs.

The fact that costs of restoring media reception are “uncertain” is largely due to the inability of EC, CEPT and Ofcom to investigate and fully quantify the problem during the initial work on LTE which started in 2008

In spite of Ofcom’s attempts to downplay the problems prospective bidders are well aware of the issues and there is, and will be considerable “uncertainty”. Removing responsibility for the interference problem appears to be an attempt to push up the licence income at the consumer’s expense.

The statement: *Distortion of bids in the auction could lead to spectrum being inefficiently awarded.*

This presumably is a euphemism for too cheap?

5: Do you agree with the options, the assessment approach and our initial conclusions? What are your views on cost risks and how to deal with them?

No

Ofcom has been well aware of the problems posed by use of a passive household reception band for a mobile service for a number of years; it belatedly started commissioning very limited testing in January this year, publishing the majority of results after the consultation started. It has not taken the information from these reports into account with its modelling and now wishes to protect the licensees from costs at the expense of the general public.

Ofcom has stated it subscribes to the statement that “the polluter pays” in this case it looks as if those on the receiving end of the pollution will pay.

If Ofcom truly believes the advantages it has indicated to the UK economy from the new service then it should be able to provide funding to ensure that households have their media reception restored to its original performance.

TLCs

Will Ofcom impose the limits in table 6.2 or those in the latest ETSI Standard, if they do not use table 6.2 how many more interference cases will there be and how is this “efficient use of spectrum”?

6.63 Impose restrictions such that media viewing is restored.

6.67 MitCo should be in business until the licensee's state that there will be no further changes.

6.72 In siting a base station the backhaul (fibre or radio) should be large enough to provide alternative means of media reception to those affected by interference.

6.73 From condoc:

We consider that the above licence conditions are appropriate to mitigate the interference which would otherwise be likely to occur, and proportionate to meeting that aim. We further consider that they are consistent with the relevant provisions of the Communications and Wireless Telegraphy Acts and the underlying EU legislation, including in particular the Authorisation Directive which expressly envisages the inclusion in licences of conditions covering such matters as:

- *the effective and efficient use of frequencies;*
- *technical and operational conditions necessary for the avoidance of harmful interference;*
and
- *commitments which an undertaking obtaining the usage right under a licence has made in the course of a competitive selection procedure.*

From the information contained within this and the TLC consultation I do not believe Ofcom has demonstrated that: ***licence conditions are appropriate to mitigate the interference.***