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Autograph Sound Recording Ltd response to

Ofcom consultation

Managing the effects of 700 MHz clearance on PMSE and DTT viewers

Date: 13th May 2016

Autograph is an audio rental company that specialises in designing and supplying sound systems for theatre and live performance events across the UK and parts of Europe.

Founded in 1973, Autograph is market leader in this field and as such is one of the largest owners, suppliers and operators of PMSE equipment in its field.

It is important to recognise that although we supply whole sound systems, the radio equipment that we own and supply is critical to the past, present and future success of our business.

Therefore it is of paramount importance to us that Ofcom recognise the principle that the PMSE sector, and companies like Autograph are no worse off as a consequence of Ofcom's or Government's actions.

I would stress that although we are aware of, and appreciate the significant work Ofcom has put into protecting PMSE's needs, not least in identifying alternative spectrum as we (and BEIRG) have requested, Autograph are seriously concerned by the political agenda behind some of the recent actions and events, together with their unknown consequences. There is a real concern that despite announcing new spectrum availability in March, there has been insufficient testing to prove its suitability with any certainty. In addition, there is no certainty that it will be adopted in other countries and therefore no certainty that manufacturers will produce equipment in the newly released spectrum. This gives rise to a real risk that 700MHz will be cleared on a seemingly quicker timetable, but that new equipment to operate in 960-1164MHz won't exist, at all, or in time or be affordable.

With that in mind it is essential that Ofcom's advice to Government is to ensure that a funding scheme is put in place that is sufficient to allow companies such as Autograph to continue to operate without any added cost or burden. It should be considered that the scheme should include incentives for users to migrate to new spectrum rather than as a last resort which in turn will build a bigger market place for products that operates in new spectrum, thus indirectly incentivising the manufacturer to build it. In addition Ofcom should consider direct industry incentives to manufacturers to encourage development of the new equipment. It is also important that the scheme suits all affected owners/users/suppliers and therefore a 'one size fits all' compromise scheme should be avoided.



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The scheme should be structured to cover ANY equipment in full that is affected (directly or indirectly) by the 700MHz clearance. There are many complex issues to do with the transient use of PMSE equipment, especially in touring theatre, with regard to planning and sharing from venue to venue according to the interleaved spectrum availability. This situation will become more prevalent post 700MHz clearance as the remaining spectrum gets more congested and we have only seen partial information on what that white space map looks like. In addition due to complexities of sharing DME spectrum, this patchwork white space map will be even more convoluted, and we have not seen this information to date. So the total amount of spectrum available to us in any given venue/location is as yet unknown. Again due to the likely complexities and geographical variations the frequency planning and therefore equipment availability planning will get harder and is very likely to lead to more equipment, of a likely more expensive type, being required for the large, more complex productions that the PMSE sector produce. This is highly significant to Autograph as the vast majority of our work falls into that category. This will impact on our costs, the producers costs and in some extreme touring cases render certain venues unviable for touring and therefore significantly impact the theatre's finances and the economy in that location. (Based on information to date the most obvious example being Bristol.)

If the funding scheme does not adequately address the real world requirements then the PMSE sector, and its component parts will be 'worse off' and therefore the principle of 'ensuring that the sector is no worse off' will have failed.

Therefore we would request that following this consultation there is further engagement with BEIRG and some key users to discuss the framework for any scheme PRIOR to Ofcom forwarding any suggestions to Government.

Autograph agrees with the categories of equipment that have been identified but points out the significant differences between this clearance and the situation with 800MHz clearance as this will require a more wholesale approach to replacing whole systems as opposed to just changing modules or units for like for like. This is because it will be technically hard (or perhaps impossible), and creatively unacceptable, to mix and match old (and possibly obsolete) technology with new, and in order to adopt the new spectrum fully, we will need to ensure the new product is also produced in the remaining 470MHz to 694MHz range and that the scheme covers racks, antenna systems, splitters, capsules, paired devices such as base stations and belt packs of duplex comms systems and all ancillary items associated with the whole system.

As previously mentioned, without the full white space picture, it is not possible to fully identify all affected equipment at this stage. Equally, for the same reason it should be recognised that some companies, Autograph included, have to continue buying new equipment right up to the point at which we know where we can operate (i.e. subject to full online planning portals showing whitespace in all areas of spectrum), that new equipment will exist, at what price and technically how it will be used.

The sector's requirements in terms of functionality and performance of equipment can vary from one area to another. I.e. theatre users requirements differ from broadcast users and therefore the time for



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products to be launched, demonstrated, tested and trialled by the users and specifiers is a long and somewhat subjective process.

As a result there can be no 'cut-off' point for new equipment to be dis-allowed.

In addition it is important that the scheme recognises the additional costs of the changeover programme. In the case of 800MHz clearance, the planning, programming, administration and logistics cost in the region of 7.5% of the claim value. It is anticipated that due to some of the complexities outlined above, the costs associated with 700MHz clearance will be higher.

Answers to Questions

Q14: Have there been any developments since 2014 which would affect our estimate of the amount of equipment that PMSE users will need to replace as a result of 700 MHz clearance?

Autograph agrees with the categories of equipment that have been identified but point out the significant differences between this clearance and the situation with 800MHz clearance as this will require a more wholesale approach to replacing whole systems as opposed to just changing modules or units for like for like. This is because it will be technically hard (or perhaps impossible), and creatively unacceptable to mix and match old (and possibly obsolete) technology with new, and in order to adopt the new spectrum fully, we will need to ensure the new product is also produced in the remaining 470MHz to 694MHz range and that the scheme covers racks, antenna systems, splitters, capsules, paired devices such as base stations and belt packs of duplex comms systems and all ancillary items associated with the whole system.

I believe that the volume of equipment affected at the higher end of the scale (i.e. large events, theatre productions) will be greater than estimated because of the knock-on effects associated with planning, compatibility of technologies etc. The scheme should be structured to cover ANY equipment in full that is affected (directly or indirectly) by the 700MHz clearance. There are many complex issues to do with the transient use of PMSE equipment, especially in touring theatre, with regard to planning and sharing from venue to venue according to the interleaved spectrum availability. This situation will be come more prevalent post 700MHz clearance as the remaining spectrum gets more congested and we have only seen partial information on what that white space map looks like. In addition due to complexities of sharing DME spectrum, this patchwork white space map will be even more convoluted, and we have not seen this information to date. So the total amount of spectrum available to us in any given venue/location is as yet unknown. Again due to the likely complexities and geographical variations the frequency planning and therefore equipment availability planning will get harder and is very likely to lead to more equipment, of a likely more expensive type, will be required for the large more complex productions that the PMSE sector produce. This is highly significant to Autograph as the vast majority of our work falls into that category. This will impact on our costs, the producers costs and in some extreme touring cases render certain venues unviable for touring and therefore significantly impact the theatre's



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finances and the economy in that location. (Based on information to date the most obvious example being Bristol.)

Q15: Are you aware of any developments since the 2014 Statement that would affect our cost estimates?

Autograph disagrees with the assumption that no new 700MHz equipment has been, or needs to be purchased since 2014.

As previously mentioned, without the full white space picture, it is not possible to fully identify all affected equipment at this stage. Equally, for the same reason it should be recognised that some companies, Autograph included, have to continue buying new equipment right up to the point at which we know where we will can operate (i.e. subject to full online planning portals showing Whitespace in all areas of spectrum) and that new equipment will exist, at what price and technically how it will be used. The sectors requirements in terms of functionality and performance of equipment can vary from one area to another. I.e. theatre users requirements differ from broadcast users and therefore the time for products to be launched, demonstrated, tested and trialled by the users and specifiers is a long and somewhat subjective process.

As a result there can be no 'cut-off' point for new equipment to be dis-allowed.

We believe there are some inaccuracies in the cost assumptions of the cost per channel of the high end equipment we use. Clearly different companies may buy more than others so there will be variance for volume or purchasing power, but the average price of systems we buy with wide tuning ranges, etc would be closer to £4,000 per channel in use. That allows for a 'large user' discount on existing technology and includes a significant investment in spare equipment to maintain the productions, amortised over the number actually used in the show and therefore actual numbers of licensed frequencies – i.e. a show with 36 radios in use in performance, might have 36 frequencies licensed but perhaps 40 units actually on the show but our assumptions are based on total equipment based on the show divided by 36 in use. These costs also include peripherals required to make the system work – antennas, splitters, cables, etc

Q16: Do you have any information or evidence of the likely unit cost of new equipment which operates in the 960-1164 MHz band?

We believe that the timing of the statement confirming the intention to make the 960-1164MHz band available for PMSE being 10th March 2016, makes it far too early to know the cost of any new equipment that may be developed to operate in this new band.



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We think it is likely to be more expensive because it will need to be much more sophisticated than current UHF equipment in order to operate successfully in the band. The 960-1164MHz band presents a harsher and more challenging spectrum environment than the current UHF bands, and will require more advanced filtering techniques which will entail greater costs, as well as more testing and set up time as it will be a new system/technology.

In order to fully realise the needs of the sector and fulfil Ofcom's goals for efficiency of use, we expect that equipment will need to cover the entire 200MHz spectrum range in order to be usable in different parts of the country. Unless Ofcom is offering incentives or grants to manufacturers to produce equipment across 470MHz to 1164MHz it will be a narrow market and therefore prices will be higher.

Finally, manufacturers do not yet know how equipment will be configured in order to coexist with DME and other services already in the band. It is clearly essential that safety-of-life services operating in the band are protected from harmful interference, which may necessitate the use of safeguards against unlicensed use of PMSE equipment. Depending on the complexity of any such systems, the price of equipment may increase further.

In order to co-exist with DME the systems may be more complex in terms of filtering and antenna systems so it is very likely that any new equipment will be more expensive to produce than traditional UHF equipment and that this additional cost will, by necessity, be passed on to consumers. In addition the implementation may be more complex so require time and expertise, so funds should be set aside for training of personnel or engagement of specialist RF engineers on a short term and possibly long term basis

Q17: Have we correctly identified the main categories of PMSE user that 700 MHz clearance will affect? If not, please provide examples of stakeholders which do not fit broadly into any of the groups mentioned.

Broadly yes, but some further analysis of who is in which sector may be worthwhile to ensure no one is missed.

Q18: Do you have any comments on our assessment of the proportion of equipment the different user types account for?

Its very hard for us to know, but many of the others points raised within this response might suggest that the overall amounts of affected equipment might be higher than your assumptions so far.

Q19: In addition to any information provided in response to the survey, do you have any other evidence as to how clearance may financially affect each of the different categories of PMSE equipment owner identified above?



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It is important that the scheme recognises the additional costs of the changeover programme. There are a number of ways that the process affects business. Autograph employed additional staff for nearly two years to process the 800MHz clearance and there were other time costs involved for existing staff. In the case of 800MHz clearance, the planning, programming, administration and logistics cost in the region of 7.5% of the claim value. It is anticipated that due to some of the complexities outlined above, the costs associated with 700MHz clearance will be higher.

However until we have more information on some of the prior points raised this is hard to quantify. I would anticipate a figure closer to double that of last time. From the producers point of view there were very few costs incurred last time. Autograph made a notional charge to its clients for some of our indirect costs in re-arranging licences, etc and liaising with theatre staff to schedule changeover. In this instance due to the more complex changes being made to each system, there will be more technical time in making changes and testing and this is likely to extend to cast and orchestra rehearsals that have some significant costs attached to them.

An orchestra rehearsal can cost between £2,500 and £3,500 depending on the size of the orchestra, and a full cast rehearsal will likely cost around £2,500. Whilst this is not actually a supplier or Autograph cost, it is a very real consequence of changeover and must be factored in.

Other costs are the potential finance costs as there is an investment in some new equipment required to facilitate the switchover process. Broadly speaking, last time the process was fit for purpose and worked well, after some initial difficulties. Last time we had to spend approximately £200,000 on new equipment to start a 'leap-frog' programme for our systems as the vast majority are out on long-term rental so we don't see many systems return to us 'off-hire' for many months or years at a time. This clearly has a finance cost, and indeed in some cases companies may not have the credit so Ofcom should consider some form of advance payment on account to start this process rolling, or factor in an overage amount to cover finance costs.

Given the nature of the industry and the fact that many users are either not regular consumers of Ofcom matters or even the audio press, it's possible that some users won't be aware of this consultation or the financial survey, so some error allowance should be made in the estimates put forward to Government.

Autograph would also like to state that it fully supports the response form BEIRG

Autograph would like to recognise the time and effort taken by both Ofcom and DCMS to ensure that companies such as ours are able to continue to operate and stress the fact that there is no revenue or growth opportunity or motive in our requests, but simply the desire to continue to operate and serve the industry as we current d

Duncan Bell