

Response From: Brian Copsey

Response to Condoc

2.9.1 Rural broadband □ This involves the use of TVWSs to provide fixed wireless broadband communications to rural communities. In this application a communications provider would deliver radio coverage by deploying so called “master”¹³ WSDs in the form of base stations. The communications provider would also provide so called “slave”¹³ WSDs in the form of consumer premises equipment (CPE) which would connect to the master WSDs over the UHF TV band. The communications provider would have the option of developing its own WSDB to qualify for inclusion in Ofcom list of qualifying WSDBs or it might enter into a commercial agreement with a third party WSDB provider

Whilst this is one of the most promising services, there has been no discussion of the issues raised by amplifiers both at the masthead and possibly communal systems. It is of concern that at the 3 December workshop it was stated that higher powers would be allowed for rural broadband. If strictly controlled this is to be welcomed, but rural arrears as their name suggests are likely to be far away from the TV transmitter and using high gain aerials and amplifiers, as WSD will be in the same frequency band as the amplifiers severe interference which is unlikely to be cured by filters can occur.

Ofcom should address these issues before starting any rural service, it is unreasonable to expect the viewer to either suffer interference or pay for changes to their installation. Providers of any new service should have a clear responsibility to pay any costs.

2.9.3 In-home broadband □ This involves the use of TVWSs to provide in-home wireless communications, in the same way that WiFi technology and mobile network femto-cells are used today. In this application both the master and slave WSD would be consumer equipment. The master would be in the form of a wireless router similar to today's broadband routers, and the slave in the form of a wireless card or dongle in a PC, laptop, mobile phone, or other consumer device. In this application the master WSDs would most likely be supported by a commercial WSDB provider

As with the previous comment (2.9.1) the issue of TV viewing and cable TV consumer equipment should be considered with no additional costs borne by the viewer.

2.13 In summary, we expect that the availability of TV white spaces will spawn a host of new applications and services from which consumers and citizens will benefit.

Whilst agreeing with the sentiment expressed, there could be a major issue if there is no white space available, either for TV reception reasons such as interference to a communal aerial system or PMSE use. How will citizens or companies react if their internet access is not available? Whilst an extreme example the Olympics used all available “white space” for

some three months and with an increasing number of large sporting event in the pipeline including the Tour de France, PMSE will need all available spectrum.

It must be **made crystal clear to service providers and users** that the service cannot be guaranteed and considered in the same way as licenced spectrum.

The irony of the situation is that the £16billion PMSE industry provides the very content that citizens will watch over their internet connections and in many cases they may not be able to have both WSD and content

3.11 WSDs operating in the UHF TV band will be licence exempt equipment that share spectrum with the DTT and PMSE services. These two licensed services are the primary users of the band, and as such, WSDs must not cause harmful interference to these services²²

However there has been no consideration of those citizens' receiving their TV reception via communal systems or with aerial amplifiers, how will this be dealt with and who will pay for any remedies?

3.13 The WSDB will respond to the WSD with a set of parameters indicating the frequencies²³ and maximum powers at which the WSD can transmit without causing harmful interference to the primary users.

Will these calculations for WSD power take into account the overload/interference to aerial amplifies and communal systems? If not why not, as it conflicts with first bullet point of 3.14

3.14 The following are the key elements of the regulatory framework that we have Developed

A WSDB must provide frequency/power parameters to WSDs on a non-discriminatory basis. This means that a WSDB must provide the same frequency/power parameters to all WSDs which have the same device characteristics and are in the same geographic location

The number of qualifying WSDBs will not be capped.

The issue of very large numbers of WSD's operating and arguing about spectrum access between themselves in one geographical area and therefore generating interference outside the allocated channels has not been fully clarified, this should have urgent attention before any final SI and VNS are issued

*3.17 **Co-existence with incumbent services.** Over the course of the past six months we have engaged closely with stakeholders, primarily via the technical working group, to discuss the technical parameters for co-existence between WSDs and incumbent users of the TV band, namely DTT and PMSE. These discussions have been informed by various measurements of protection ratios for DTT receivers when subjected to interference from WSDs and stakeholder contributions relating to the modelling of interferer-victim geometries.*

These discussions are on-going, but are expected to be completed in early 2013. We intend subsequently to consult on our proposals.

At what point will information on the protection criteria for aerial amplifiers, communal systems and PMSE be available?

*□ **Making information on DTT and PMSE available to databases.** Our proposal in the 2011 Statement was that the databases would calculate TVWS availability, using the DTT and PMSE data as input. We are considering whether this should be the case or whether Ofcom should instead calculate TVWS availability in-house and then pass it on to the databases. The main reason for the latter alternative is the complexity of the calculations and the need to ensure a consistent output from all databases. We will address this issue in the co-existence consultation mentioned above.*

Given the complex nature of the multiple calculations and the probable requirement for urgent changes as information is gathered on the commercial WSD activities it would be better for Ofcom to run this, at least for the first 18 months

Response to Questions

Question 1: Do you agree with our approach to defining the various categories of WSDs?

In general yes, but the height factor needs further consideration

Question 2: Do you agree with our proposed sequence of operations for WSDs?

Yes, however the issue of WSD congestion causing interference to licenced users' needs careful monitoring and a safety factor built into the early database calculations

Question 3: Do you agree with our proposed additional operational requirements for master WSDs?

No, whilst section 5.54(below) clearly gives 60sec for implementation of the kill switch, Ofcom has not provided details of who and how the decision to stop transmission will be implemented, if it takes a number of phone calls and discussions before a decision is taken this could take in excess of one or two hours, which is unacceptable to viewers and especially time critical PMSE events.

Whilst the term "harmful interference" has been used but not defined, in the case of a concert or sporting event any interference is catastrophic as they cannot be repeated. Will the DB provider or the WSD user be responsible for the considerable costs involved?

A clear quick and viewer/PMSE friendly system must be put in place and published prior to any transmissions by WSD.

5.54 A master WSD (and its served slave WSDs) must cease transmission within 60 seconds of receiving instructions to do so by the WSDB. This implements a so-called WSDB "kill switch" to rapidly disable individual WSDs. The "kill switch" will be applied

by the WSDB in appropriate circumstances, such as for example, in the event of interference to the DTT and PMSE services.

Question 4: Do you agree with our proposed additional operational requirements for slave WSDs?

Provisionally Yes, however all work on the interference issues has either been theoretical or using first generation, hand built WSD,s, once further information is available on actual mass produced devices a review will be necessary to fine tune the protection criteria

Question 5: Do you agree with the proposed device parameters, operational parameters and channel usage parameters?

Provisionally Yes, however all work on the interference issues has either been theoretical or using first generation, hand built master WSD,s, once further information is available on actual mass produced devices a review will be necessary to fine tune the protection criteria

Question 6: Do you agree with our approach of implementing the requirements in the example SI and the draft IR and VNS?

SI: Yes

IR: No there is no reference to height, which is a major factor in interference to licenced services, accepting that GPS does not provide a satisfactory method of providing height information a very clear statement must be made on how this will be dealt with by any of the databases

VNS: No

Please also see detailed comments in attached VNS

Section 1.5 clearly states that the VNS :
gives no presumption of conformity to the R&TTE Directive. Manufacturers shall consult annexes II, III, IV and V in the directive which detail the various routes to the directive's conformance.

Who will be checking that the device actually conforms; will a Notified body opinion be mandatory under the VNS structure? If so the NB number should be provided as part of the deceleration

Section 6.7

Normal and extreme test conditions

6.7 Unless otherwise stated in the test procedures for essential test suites, the tests defined in the present document shall be carried out at representative points within the boundary limits of the declared operational environmental profile (see 6.54).

6.54 The manufacturer shall declare the normal and the extreme operating conditions (e.g. voltage and temperature) that apply to the UUT.

This does not appear to a reasonable approach to ***Normal and extreme test conditions.***

And should be brought in line with other RF device testing developed by ETSI to ensure the WSD will perform correctly under extreme conditions

Clear instructions should be inserted by at least inserting ETSI Standard: EN 300 086-1 V 1.4.1 section 5 either completes or as a reference

Testing at **Normal and extreme test conditions** should apply to all RF emission characteristics

Detailed Comments on the VNS

Paragraph 1.4 - A statement needs to be clearly made of the position of equipment placed on market using the VNS after the ETSI standard becomes available. Will such equipment need to be removed from market if they do not conform to the ETSI harmonised standard and if so how will this be achieved?

Paragraph 1.5 - Who will oversee this, will a Notified Body opinion be mandatory?

Paragraph 4.1 - k needs defining.

Figure 1 - Check if this is mandatory or voluntary.

Paragraph 5.25 - The 'above requirement' must be further clarified, ie, is it possible to transmit maximum power from of each of several antennas, or reference 5.29.

Paragraph 5.56 - A requirement for the WSD to shut down until the master can communicate with the database must be placed in this section. It is reasonable to require the WSD to shut down in conformance with 5.98 through 5.100.

Paragraph 5.57 - It should be mandatory that if this communication is not available, no transmissions in the 470-790 MHz band can take place.

Paragraph 5.61.1 - Outside of the 470-790 MHz band.

Paragraph 5.90 - A definition of the time source needs to be inserted in order that all databases and devices from a single source.

Paragraph 5.100 - Need to define the shut down time, ie is this referencing 5.99?

Paragraph 5.112 - It is not clear within this statement, exactly how often the horizontal position of a WSD should be checked/determined, in order to ascertain when the device has exceeded its 50m radius. A reasonable refresh rate would be no more than every 30 seconds.

Paragraph 5.112 - It should shut down in accordance with 5.98 through 5.100.

Paragraph 5.118 - A definition of maximum gain should be included, in line with CPT reports 185 and 186.

Paragraph 6.7 - In order to ensure equipment operates correctly over the range of power supply variation, temperature ranges and humidity, section 5 of EN 300 086-1 V 1.4.1 should be inserted here and be applicable for all RF *emission* characteristics,

Paragraph 6.10 - Replace last sentence with: 'For testing, the UUT maybe provided with a temporary connector or a test jig.'

Paragraph 6.13 - These tests should be carried out at both normal and extreme temperatures, in line with ETSI EN 300 086.

Paragraph 6.14 - Integral antenna gain shall be in line with reports 185 and 186.

Paragraph 6.15 - A permanent record of the test setup shall be retained for future reference, along with the losses in the system and MU.

Paragraph 6.19 - For clarity, the sentence should read: 'A test site as described in EN 300 328 Annex B [4]' and be repeated for 'Annex C'.

Table 7 - Table 13, page 43 of EN 300 086 should be inserted here. A range of factors have been excluded.

Paragraph 6.67 - The results of many of the tests defined within this document are dependent upon specialist test databases and equipment presumably provided by the manufacturer. However, there does not appear to be any method of confirming the ability of these test systems to conform to the requirements identified in the VNS. Either the VNS needs to carefully define the method of achieving these communications and activities or some form of calibration of these units is required. Ideally, Ofcom should provide a trial database to be used with these tests. Unless the reader of this document has been party to the Ofcom or CEPT work, it is extremely difficult to understand the complexities of the test systems. Consideration should be given to a separate document describing these in a basic way for both test houses and new equipment providers.

Paragraph 6.125 - Power meter or Power sensor? Or combination of the two? Clarification and consistency required throughout the document.

Paragraph 6.128 - The objective here must include a reference to section 5.99, ie the timing for shut down of a slave.