

*Response to the Dutch consultation  
on the Digital Dividend*

*in the UHF frequency band (470-862 MHz)*

Respondent: Association of Professional Wireless Production Technologies ([www.apwpt.org](http://www.apwpt.org)).  
Mr. Dré Klaassen, National Dutch Ambassador to the APWPT.

**Forword:**

**Our opinion on the Digital Dividend.**

The explanation of the digital dividend that the switch over of analogue public and regional public TV broadcast (4 TV channels) can be explored in one DVB-T multiplex of 1 TV channel wide gives a positive digital dividend of +3 TV channels is just too simple. Due to the program offer the DSO takes 6 till 7 multiplexes giving a negative digital dividend of -2 till -3 TV channels. Due to the difference of TV program content in the different European countries, the country borderline regions suffer from a cumulated negative digital dividend (Austrian BMVIT input paper to TG4 on the problems related to the "Bregenzer Festspiele" which explains this phenomenon\*1). France is planning to move from 7 DVB-T layers to 13 layers, which is an increase of 100 % of active DVB-T transmitters. This will influence and change the Geneva channel plan completely. In other words: No one can tell how many interleaved spectrum will be available in the future for PMSE equipment.

Any political point of view based on a positive digital dividend is in the basis a wrong assumption.

Ongoing liberalization of spectrum as propagated by professor dr. Martin Cave, Chris Doyle and others\*2 shall, to our opinion, lead to a spectrum crunch. Globally the greed of governments had the result that within the world of spectrum management engineers have been replaced by economists who promise politicians on the basis of business models, financial benefits, whilst the politicians

forget, or in worst case neglect, their public obligation towards a good RF spectrum infrastructure (on political level it has been said "off-line", users of spectrum should accept some interference in order to sell off as much as possible spectrum). Meanwhile the IMT and IT industry are thinking and developing products of which they themselves hardly (want to) see the impact on spectrum (e.g. White Space Devices). Markets that are not monitored and are being determined by and for the highest bidder will lead to crisis. A comparison with the credit crunch in the financial world is rather appropriate.

## **Consultation questions and answers**

### **1. Do you agree to the policy intention to make the upper part (790-862 MHz) of the UHF band also available for electronic telecommunication networks and services? Can you illustrate your possible objections closely qualitative and quantitative?**

We cannot agree on the intention to allocate the 790-862 MHz to IMT, because it will mean the loss of the only TV channel (63) that gives a nationwide coverage for Professional Wireless Microphone Systems. As user of the so called "White Spaces" the loss will not be limited to these 72 MHz. Due to the reallocation of the DVB-T multiplexes out of the 790-862MHz (TV channels 61 till 69) to below 790 MHz, there will be less available "White Spaces" left for wireless microphones. The total loss for wireless microphones will be closer to 100MHz or even more (differences per region). In TV channel 63, a couple of ten thousands of professional musicians, presenters, theatres, Electronic News Gathering teams are depending on a TV channel with nationwide coverage. How will this be compensated? The costs of the side effects for all these productions are very difficult to quantify (higher costs of personnel, extra time, new investments, new production methods). How will the politician tour during his election campaign? How will the bank manager present his investment plans? What will the reverent do with his service, how will the band tour, what will happen with the school musical?

The number of radio microphones becoming redundant is estimated on 100.000 channels with an estimated value of € 1.000,00 per channel which means a direct loss for these users of € 100 mln. When there will be no alternative TV channel with nationwide coverage available, the replaced equipment has to be more sophisticated (on every location, white spaces must be scanned and a frequency plan must be calculated). The estimated price of future equipment will only be higher (2x till 3x). As alternative spectrum is still not yet defined, manufacturers have no idea for which spectrum to produce. It is disappointing Analysys Mason didn't do any effort to quantify this direct material loss and only revert to models from UK Ofcom (In UK is a license regime and since it is estimated the licensed use reflects only 3% of the real use, these models are far from realistic). It would be worthwhile to calculate the losses of the Dutch "event" industry, the tourist industry, congress industry, broadcast, musical industry (which industry does not use radio microphones), churches,

social and cultural clubs, etc. due to this policy intention. It would be preferable the Ministry of Economic Affairs appoints a Dutch independent research institute like TNO (they know the Dutch situation best) to make a realistic research to the implications this policy intention has on the Dutch PMSE industry.

We estimate the real costs, the necessary investments and the direct losses by the side effects will run into billions of Euro's.

The "Duplex Centre Gap" is not a realistic alternative to the loss of 100 MHz. The deployment of radio microphones with current technology in the Duplex Centre Gap will be limited to the 4 MHz in the centre of the gap. In the other parts the front end of the radio microphone receivers will suffer from an overload from the LTE bands. The development of very professional and sophisticated systems for only a band of 4 MHz bandwidth, which can accommodate only 4 radio microphone channels simultaneously, intermodulation free, and in a band that does not connect with bands with [possible available white spaces and with a cost price of € 2.000 till € 5.000 per channel, is not realistic. Our industry also functions on the basis of "economy of scales".

It is disappointing to conclude all "benefits" for the government due to the extra income on auctions and the quick "return on investments" and the revenues for the IMT industry are being paid by the PMSE industry. Apparently the Ministry seems to sell a house, free of charges, whilst this house is well inhabited for more than 50 years, very well decorated and its inhabitants, by their very efficient use of spectrum, are hardly recognized. These losses need to be compensated. In realistic usable alternative spectrum and financially.

**2. What is your vision on the expectation that the need for spectrum for electronic telecommunication, among which mobile broadband applications, will increase in the nearby future? Does this expected increase justify that additional spectrum in the 800 MHz frequency band will be allocated for that purpose?**

We are not against wireless broadband internet access. We are also consumers and users of the internet. Our industry is increasingly using broadband internet for example to control sound systems. We welcome user friendliness also. Because broadband transmission is limited to the number of bytes per MHz, this band is not suitable for wireless broadband. To promise wireless broadband internet in this band will lead in our opinion to customer disappointment, because of the speed of the up- and download that will be achieved. It will lead to more demand for bandwidth in the UHF. It would have been better to allocate spectrum above 900 MHz (higher frequency, more MHz is higher bit rate). Also the UMTS bands are far from complete in operation yet. There are many different ways to

provide wireless broadband internet. Different technologies need to be investigated. Moreover best auction income might not lead to best economic and social value.

The policy intention concerning 790-862 MHz is therefore premature and opportune.

**3. Do you expect that the financial crisis possibly has impact on the investments? Can you indicate which impact this could have on the political intention?**

We expect 3 effects:

- a. Based on the incomplete Analysys Mason report (the losses for the PMSE industry are hardly been qualified and quantified), on the possible revenues for the treasury, politicians are very willing to believe this could be a realistic benefit to the economic development, and could result in an acceleration of this "wrong process".
- b. It is expected the IMT industry will downsize its investments and also consumers are not really willing to upgrade, unless their financial future is more secure.
- c. Providers will find more difficulties to gain credit for their promised investments and therefore will hardly reach the "worst case scenario".

**4. What problems do you foresee in relation to this political intention as a current, respectively as possible future, user of the UHF frequency band? Can you quantify these problems and can you indicate if, and if so, how, these problems can be overcome within the framework of this proposal?**

We refer to the answer on question 1. An answer how to overcome the results of this political intention can only be given after a solid investigation to all possibilities and consequences for the PMSE industry. We would like to emphasize again it would be appropriate to have a study initialized by the Ministry of Economic Affairs conducted by TNO. The scope of this study should be determined in close co-operation with the PMSE industry.

**5. Do you expect problems for consumers? These problems could for example possibly be related to readjusting set top boxes and the risk of jamming on the reception of broadcast programs, both concerning the air and cable reception. Can you quantify these problems? How can these problems be solved?**

The implications for consumers concerning the redundancy of DVB-T set-top boxes are evident. Implications not yet determined are:

- a. In our opinion wireless audio applications like baby-phones, hifi wireless headphones living in the European harmonized band 863-865 MHz and other SRD's in this band

(garage door openers, etc.) will suffer from interference from LTE coming out of 862, especially when LTE is not given a guard band to protect this band from LTE interference. ENG teams often use this band because of its availability in Europe. Many museums have tour guide systems and in a lot of congresses interpreter systems use this band as well. The European manufacturer Group concluded this after calculating the effects of the filtering from LTE on the basis of a Vodafone input paper to ECC sub commission SE42\*<sup>3</sup>. SRD's are secondary and therefore do not benefit protection from interference from a primary user, but in this case millions of devices of plain consumers and professionals will suffer from unacceptable interference and in the worst case become redundant.

- b. Most productions and big events will be more complicated and more expensive to produce. Tickets will become more expensive. Big special events like Olympic Games, Tour de France, European and World Football championships will not be broadcasted and recorded as before due to the lack of enough production frequencies (Olympic Games will not be possible anymore in the Netherlands). Consumers will have to miss these events on TV or experience these events in a much slimmed way. For further information on special events we refer to the ETSI system reference document TR 102.546 V.1.1.1.
- c. The promised bite rate of 5Mb/sec. on the consumer side will in practice never been achieved and will lead to customer dissatisfaction.
- d. Cable Europe also stated within ECC SE42, LTE will interfere in cabled set-top boxes as well and this will also lead to a lot of consumer products receiving unacceptable interference and/or becoming redundant. In the input paper to SE 42\*<sup>4</sup>, Cable Europe quantifies the costs of this problem on a European level on € 7.8 billion at the minimum.

**6. What is your vision on an increased placement of disposal of frequency spectrum for, among others, mobile broadband in rural areas? Are there other possibilities to fulfill this need to your opinion and if so, which?**

What are rural areas in the Netherlands? In our opinion it is meant to have wireless broadband internet access on the highways (loaded with consumers) en not because of any social principle to open up the connectivity of Dutch rural areas. These are already connected by telephone cable (ISDN/ADSL) and mostly by TV cable as well. And as stated already in answer 2; there are many different possibilities providing broadband internet to rural areas. Different technologies need to be investigated. Moreover best auction income might not lead to best economic and social value.

**7. Suppose the spectrum will become available in 2012, when to your opinion is then the best moment to execute the several parts of the policy intention (allocation, clear the upper frequency band, distribution of the available spectrum)?**

It would be wise not to implement it. We refer to the answer on question 2: use frequencies higher than 900 MHz en first use the full potential of the UMTS bands. We understand the international obligations the Netherlands agreed on and because of the implications on the PMSE industry, implementation should be on the earliest being 16 June 2015 (The Netherlands would meet their obligations towards the Radio Regulation 5.316) but definitely not sooner. Alternatives for our industry should be clear and addressed as soon as possible! We would be grateful when the Dutch authorities would accept the interest of the PMSE industry and would support its interest on the international arena. The Dutch entertainment industry is an important export product.

**8. What are the advantages and disadvantages of an eventual later reallocation of the channels after 2012, for instance reallocation at the moment of termination of the present licenses for UHF spectrum at 31 January 2017?**

Especially the date of January 31, 2017 is a pleasant surprise, in the sense to the answer on the previous question referred date of June 16, 2015. This gives some respite. If we had to choose we would, in the worst case, choose for the policy intention 1; to grant the "not existing" positive digital dividend to expand the DVB-T (we would in this case still have some "white spaces").

**9. What would be a reasonable way of compensation in case of termination of the present licenses before the official termination date?**

It would be wrong to compensate only licensees. We think ALL users that will have material damage (great or small) should be compensated. This means, realistic usable spectrum and a financial compensation for all equipment becoming redundant. The quantification of redundant PMSE equipment and the amount it represents could best be carried out in co-operation with the association PMSE.NL.

**10. Do you see advantages or disadvantages when the issue of the so-called 800 MHz band will be coupled to the issue of other available frequency spectrum? What comes in relation to this to your mind?**

Within the framework of the "Digital Dividend" our PMSE industry already suffered a lot. The auction of the 2,6 GHz band has caused a huge damage to the use of wireless cameras. The auctions of the

L-band makes future alternative spectrum for wireless microphones and in ear monitor systems almost out of reach. White space Devices in the lower UHF band are a severe threat. Our thoughts on auctions and spectrum management are clear in our foreword. This question fits in the tendency of the Cave/Doyle doctrine (how can we sell more spectrum?).

**11. What alternatives do you see to facilitate the application of program supporting services and events (wireless microphones, report connections and others) when the upper part of the 790-860 MHz band will be used for electronic telecommunication networks? On what timescale can these alternatives be used?**

Our industry is under severe pressure and in future it has to make more possible with less spectrum, in quality and quantity. Within ECC sub commission TG4, Digital Dividend, the European Manufacturer Group and the Association of Professional Wireless Production Technologies send in proposals on alternative spectrum \*<sup>5</sup>. These proposals are, giving the circumstances, the most realistic. In relation to digital wireless microphones we refer to the report of CSMG consultancy by order of Ofcom, which makes clear that acceptable professional audio with acceptable latency rates are not expected within the coming 8 till 10 years and spectrum efficiency will not be an effect of digital radio microphones, because the intermodulation problems not differ with the analogue systems. We fear also a lot of reporter sets, audio links and wireless intercom will become redundant. We need a proper analysis of available spectrum in the 'UHF TV band'. It is obvious that additional spectrum for PMSE is needed in future.

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Notes:

\*1: Doc TG4 (10) 205: National Frequency Authority BMVIT: PMSE usage in AUT in the UHF band, September 5, 2008

\*2: Essentials of Modern Spectrum Management by Martin Cave, Chris Doyle

\*3: Doc SE42 (09)005: Characteristics of emissions in the centre gap: Vodafone UK, January 15, 2009

\*4: Doc SE42 (09): The Digital Dividend Unforeseen problems for the Viewer and Cable Network Operators: Cable Europe, May 14, 2009

\*5: Doc TG4 (09)247: PMSE Frequency Bands-rating: EU PWMS manufacturer Group (AKG, Audio Technica, Beyer Dynamic, Shure & Sennheiser), February 25, 2009.

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Association of Professional Wireless Production Technologies e. V.  
c/o Matthias Fehr  
Erlanger Str. 9, D-91083 Baiersdorf, Germany  
Tel.: +49 (0) 9133 60 76 864 / Fax: +49 (0) 9133 60 76 865  
E-Mail: info@apwpt.org

## *Additional information on the APWPT*

### **Who we are?**

APWPT is an international non-profit organisation, which is representing the needs of all user of the PMSE sector. Members of APWPT include PMSE organisations, users and manufacturers.

### **What do we do?**

The PMSE sector is critical to the production of content for live entertainment of all genres. This sector extensively utilises wireless equipment such as Wireless Microphones, Wireless In-Ear Monitor Systems, Wireless Talk Back Systems and Wireless Instrument Systems.

For over fifty years wireless products have been used in the entertainment industry. In the past thirty years there have been vast improvements in production value and safety levels as a result of advances in wireless technology.

### **How do we do it?**

The PMSE sector currently relies on the spectrum interleaved between existing TV broadcasts, to enable the use of Radio Microphones, In-Ear- Devices and other short-range wireless devices. This equipment is an essential component of the European Entertainment Industry. Due to their efficient use of spectrum, radio microphones (they do not cause harmful interference and engineers create very defined frequency plans) are hardly noticed.

### **Who benefits from our activities?**

On a daily basis this sector is responsible for the production of content that has received world-wide acclaim and continues to attract a global audience. A vast array of organisations are reliant on radio spectrum for the production of content for **Performing Arts, Broadcasting, News Gathering, Independent Film and TV Production, Corporate Events, Concerts, Night Venues, Sports Events, Churches...** In addition, other sectors that utilise the current UHF spectrum include the Health Service, Education, Local Government, Political Programming and Conferencing.

In addition these technologies play a vital role in helping to improve security and safety levels within the Entertainment Industry and other sectors. Their benefits include improving the management of electrical safety, the reduction of noise levels, the development of safety in communications and reducing trip hazards as well as providing an essential tool for the security orientated services.

Its wireless equipment and the spectrum it operates on are crucial to the European Entertainment Industry.