Cover sheet for response to an Ofcom consultation

BASIC DETAILS

Consultation title: Consultation on 870-876 MHz and 915-921MHz Update and Way Forward

To (Ofcom contact): stephen.jones@ofcom.org.uk

Name of respondent: Rosie McGlynn

Representing (self or organisation/s): Energy UK

Address (if not received by email):

CONFIDENTIALITY

Please tick below what part of your response you consider is confidential, giving your reasons why

Nothing	✓	Name/contact details/job title	
Whole response		Organisation	
Part of the response		If there is no separate annex, which parts?	

If you want part of your response, your name or your organisation not to be published, can Ofcom still publish a reference to the contents of your response (including, for any confidential parts, a general summary that does not disclose the specific information or enable you to be identified)?

DECLARATION

I confirm that the correspondence supplied with this cover sheet is a formal consultation response that Ofcom can publish. However, in supplying this response, I understand that Ofcom may need to publish all responses, including those which are marked as confidential, in order to meet legal obligations. If I have sent my response by email, Ofcom can disregard any standard e-mail text about not disclosing email contents and attachments.

Ofcom seeks to publish responses on receipt. If your response is non-confidential (in whole or in part), and you would prefer us to publish your response only once the consultation has ended, please tick here. ☐

Name Signed (if hard copy)

Energy UK is the new trade association for the gas and electricity sector, representing a wide range of interests and driving forward the debates on the UK's strategy for achieving a low carbon, secure and affordable energy future. It includes small, medium and large companies working in electricity generation, energy networks and gas and electricity supply, as well as a number of businesses that provide equipment and services to the industry. Energy UK welcomes the opportunity to respond to this consultation on behalf of the members of its Supplier Requirements for Smart Metering project group.

Question 1. What other developments, in addition to the international and public sector developments we have identified, are relevant to our identification and assessment of options for release?

Energy Suppliers are mandated to roll out smart metering to all GB properties by the end of 2019. The smart metering devices within premises will communicate with each other over a home area network, this communication is essential to the operation of smart metering systems and is fundamental to achieving the benefits of the smart metering programme.

The current specification for smart metering equipment, as notified to the EU, is based on the use of ZigBee at 2.4 GHz for the home area network. However, the results of an extensive DECC run RF propagation trial show that a radio solution at 2.4 GHz may provide HAN coverage for around 70% of properties. The propagation trial has also shown that an 868 MHz radio solution will have better propagation and ensure coverage of most of GB properties. Hence DECC's smart metering programme has recognised the need for development of a ZigBee solution using the 868 MHz band solution and this development to close the HAN gap is underway.

We strongly believe that if Smart Metering were additionally able to make use of the 870 – 876 MHz bands through these being released for licence exempt for SRD application, rollout of smart metering would be more effective as a result.

There would be benefits in improved customer experience and reduced cost through:

- More first time successful installations
- Fewer revisits to install, maintain or upgrade equipment
- A better proportion of provision of full functionality to consumers
- Potentially fewer comms hubs installed or replaced and
- Less need to develop and deploy potentially expensive alternative solution sets to close the Smart Metering HAN gap

This will ultimately provide better value and facilitate optimising the benefits to consumers, energy market participants and to GB.

Question 2. Do you have any additional information or analyses that could help to inform our assessment of the value that could be created through different uses of the spectrum?

As stated in answer to Question 1, we see great value in smart metering use of 870 – 876 MHz bands for the Smart Metering HAN. Assuming smart metering will have access to these bands, the rules of use in that band would impact the value to smart metering.

Analysis of the existing 863-870 MHz SRD band indicates that the coverage can be increased to 95% with the currently permitted 25mW transmit power. Propagation trial results predict that coverage increases from 95% to 99% of GB properties using 500mW

rather than 25mW transmit power. The adjacent 870-876 MHz band could provide greatly improved coverage, capacity and interference immunity for the Home Area Network system if it were made available in the right timescales and with the right spectrum access rules.

The DECC SMETS requirements define the need for updates to In Home Displays every 10 seconds. These requirements together with the spectrum access rules defined in EN 300 220 restrict our usage of the 863-870 MHz band to a few channels between 868 and 870 MHz. The impact of this is to limit the number of HAN devices that can be connected in a property.

LTE Band 20 has a significant negative impact on the usability of the lower part of the 863-870 MHz band for the Smart Meter HANs. We are concerned about future licensing of LTE in band 8 since this would have a similar impact on the 870-876 MHz band.

Duty cycle constraints of 0.1% limit the amount of spectrum in the 863-870 MHz that we can easily use. To attain the best throughput for the band, we suggest a duty cycle in the range 1% to 2.5% per device and a maximum power level of 500mW. Specifically, it would allow the addition of more devices to the HAN which would facilitate the migration from smart metering to smart grid and demand side management. We should emphasise that the suggested power and duty cycle limits are peak and the average activity would be much less than this. If there are technologies that cannot operate in this type of environment (such as Alarms) then it may be more effective use of spectrum for these applications to have an appropriate amount of spectrum reserved either in the 915 – 921 MHz or perhaps in the 870 - 876 MHz bands.

These issues are discussed further in the annex.

Question 3. Do you agree with our proposal to release 870-876 MHz / 915 -921 MHz for licence exempt SRD and RFID applications if Government releases 870-872 MHz / 915-917 MHz?

Yes, we agree and believe that 870-876 MHz should be released for SRDs and 915-921 MHz for RFIDs.

Question 4. Do you agree with our proposal to release 872-876 MHz / 917-921 MHz for licence exempt SRD and RFID applications if Government does not release 870-872 MHz / 915-917 MHz?

Yes, we agree 872-876 MHz should be allocated for licence exempt SRDs and 917-921 MHz for RFID. In this scenario we assume that the 870-872 MHz band is retained for MoD use and we would be interested in radio co-existence issues with the users of that band. We prefer the scenario of the full 6 MHz becoming licence exempt.

Question 5. Do you have a view on the sequencing and timing of Ofcom's next steps if the spectrum is released for licence exempt SRD and RFID applications?

We are happy with the proposed for technical details of the exemption to be consulted on by Autumn 2013. In order that the equipment can be available for Smart meter rollout we would not like to see it slip much beyond that.

Annex: Additional Analysis of Smart Meter HAN Coverage and Capacity

A1.1 Power and Duty Cycle

1.1.1 Our understanding of the current discussions in CEPT SE 24 Work Item 41 is that 500mW transmit power is accepted. However the simulations in v18.1 of the draft WI 41 report show a 0.1% duty cycle limit for smart meters. Assuming that a class II solution were adopted for the band as proposed by Ofcom in document M69_22R0_SE24, then in the UK the residual users would be Smart Meters, Automotive, M3N and Alarm Systems. All but the last of these can use similar technology.

1.1.2 Intra SRD SEAMCAT simulations in the Work Item 41 draft report version 18.1 section 4.4.3 show that Smart Meters transmitting at 500mW and at a density of 2000 devices/sq.km should not operate above a duty cycle of 0.1% with portable alarms as victims. These simulations assume a 5% maximum interference probability which corresponds to a very low usage of the spectrum (the throughput is around 2.5% of the channel bit rate). Smart Meter systems for the WAN and HAN are able to operate with an order of magnitude higher level of traffic using CSMA (or Listen Before Talk) or even ALOHA techniques including stability measures which have been known for 40 years. They are also available in the IEEE 802.15.4 standard recently also adopted in ETSI TS 102 887 for this 870-876MHz band. Smart meter systems can also benefit from adaptive power control so that high powers are only used where needed (in the case of the HAN about 4% of the properties need more than 25mW). This means that the density of high power devices is very much lower than the density of devices.

1.1.3 The duty cycle constrains the peak level of activity of any device in the system. In the case of smart meters this is considerably higher than the activity of the average device. However, it is the average which determines the usage of the band. We recommend that the per device duty cycle be set somewhere in the 1% to 2.5% range to get the full use of the band without significantly risking congestion in dense deployments.

A1.2 Out of Band Interference from LTE Band 8 if it were licensed.

1.2.1 Our Studies show that Smart meters in the lower part of the 863-870 MHz band will suffer significant interference from LTE mobiles using the recently licensed Band 20 spectrum. To avoid this happening to the new 870-876MHz band, if Ofcom licence LTE in Band 8 we request that the following measures be considered before doing so. (1) Require new tighter out of band emission limits should these become available from ETSI in response to the recent European commission letter on the subject; (2) Require that an appropriate LTE network signalling mode be used to reduce the out of band emissions (3) limit the bandwidth of the LTE uplink to 5MHz.