BASIC DETAILS

Consultation title: Consultation on the way forward for the future use of the band 872-875 MHz paired with 917-921 MHz

To (Ofcom contact): Mark Austin

Name of respondent: Henry Parker

Representing (self or organisation/s): Intellect: The Trade Association for the UK Technology Sector.

Address (if not received by email):

CONFIDENTIALITY

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

Nothing ■

Whole response ☐

Part of the response ☐

Name/contact details/job title ☐

Organisation ☐

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If you want part of your response, your name or your organisation not to be published, can Ofcom still publish a reference to the contents of your response (including, for any confidential parts, a general summary that does not disclose the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

DECLARATION

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Name

Signed (if hard copy)

intellect
REPRESENTING THE UK TECHNOLOGY INDUSTRY

Consultation on the way forward for the future use of the band 872-875 MHz paired with 917-921 MHz

Intellect Response

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Russell Square House
10-12 Russell Square
London WC1B 5EE

T 020 7331 2000
F 020 7331 2040
www.intellectuk.org

Information Technology Telecommunications & Electronics Association

About Intellect

Intellect is the trade association for the UK technology industry. In 2007, the industries Intellect represents accounted for 8% of UK GDP, £92bn of Gross Added Value and employed 1.2m people.

Intellect provides a collective voice for its members and drives connections with government and business to create a commercial environment in which they can thrive. Intellect represents over 750 companies ranging from SMEs to multinationals. As the hub for this community, Intellect is able to draw upon a wealth of experience and expertise to ensure that its members are best placed to tackle challenges now and in the future.

Our members' products and services enable hundreds of millions of phone calls and emails every day, allow the 60 million people in the UK to watch television and listen to the radio, power London's world leading financial services industry, save thousands of lives through accurate blood matching and screening technology, have made possible the Oyster system, which Londoners use to make 28 million journeys every week, and are pushing Formula One drivers closer to their World Championship goal.

In the past 12 months 14,500 people have visited Intellect's offices to participate in over 550 meetings and 3,900 delegates have attended the external conferences and events we organise.

1) Do you believe that the uses listed in this section (Section 3) are possible candidates of the 872/917 MHz bands?

Intellect agrees that the listed uses are all possible candidates of the 872/917 MHz bands (although we are surprised that guard bands have not been considered as a means of mitigating the potential interference risk into GSM and GSM-R), with some notable exceptions These are as follows:

Consultation Document 3.18/3.19: The potential need to extend GSM-R (sometime termed eGSM-R) is partly driven by interference issues which may result in a stronger imperative for this application to be needed in the UK and elsewhere on a harmonised basis. Should this prove to be the case, it would have a substantial impact on plans for the band.

Consultation Document Section 3.38: The remote meter reading might best be one of the ISM bands where a "meter reader" attends the premises. The other methods mentioned are also valid, although the potential for interference to communications from metering over power-line should be fully investigated.

Consultation Document Section 3.44: Ofcom should take particular note of the three variants of UAVs in terms of height/range characteristics.

1) Those that fly within line of sight (LOS) but below controlled airspace (all airspace is managed but only that above a certain height is controlled).
2) Those that fly Beyond LOS (BLOS) below controlled airspace.
3) Those that fly in controlled airspace whether LOS or BLOS.

The spectrum allocation for 3) above is currently being considered by the ITU as an WRC12 Agenda Item and is outside the scope of this consultation. However, there a number of key uses of this spectrum by LOS and BLOS UAV's. These applications need access to frequencies

for test & development, and possibly operational use, in the UK. Intellects preference would be for international harmonisation of the required spectrum. Currently this kind of harmonisation appears unlikely. As such, some form of national allocation that allows continued use of these bands for UAVs is necessary.

Access to the right spectrum is imperative if the UK is to compete in the growing UAV market. Intellect believes that there are two potential routes to providing this access on a long-term basis:

a) The MOD guaranteeing ongoing access by UAVs to 915-917 MHz as a part of its ongoing Recognised Spectrum Access (RSA) spectrum divestment process. Intellect is making representations of this nature to the Ministry of Defence.
b) Ofcom splitting the spectrum under consultation such that 917-921 MHz is offered as a licence for a designated area around Parc Aberfoth and a near-national wide-area licence.

In addressing these options, it is key that Ofcom takes into account the current market growth of the outlines the possible growth of the US and global markets for these technologies. Some trends of these trends are shown in Annex One to this response. There is real potential for the UK to gain significant economic benefits from UAV development and export. Retaining access to spectrum for UAV Test Development is of key importance in the successfully fulfilling this potential.

Consultation Document Section 3.47:

Making UAV applications license-exempt (or at the very least light-licensed to minimise burdens) in the UK would further assist development and deployment. It is highly likely that UAVs will find roles in security, police, traffic, agriculture, high voltage power-line monitoring, search and rescue and many more individual applications. The balance between operating costs of helicopter vs. UAVs must swing sufficiently in favour of the UAVs to secure sales and cover start-up costs. If the regulatory burden and spectrum costs of UAVs are low, the UK economy will benefit substantially through the growth of the UAV industry and cost savings brought about by the use of the UAVs within whichever field they are deployed.

2) Are there additional applications/services (not listed above (from Section 3)) that could make viable use of the 872/917 MHz bands that Ofcom should be aware of?

No comment

3) What services do you believe should be authorised to use this band? Could you supply relevant information supporting your preference and include any economic data relating to the value of the spectrum in providing these services?

The market value of goods/platforms that RFID supports is major potential use. There are many high value transport/logistics related situations where the destination or interrogator frequencies for RFID cannot be pre-determined, making a truly globally harmonised band such as around 915MHz-921MHz hugely valuable for both commercial and governmental purposes (and far easier to design for). In that respect we disagree with the Ofcom view expressed in ConDoc Para 3.32/3/33 that the incremental value is modest, as our members view is that

harmonised RFID could support easier design test, trade, lower operating costs and high value exports thus effectively be worth billions in terms of added value to the UK.

As noted in our response to Question 1, UAV development and operations are also particularly suited to this band and, other than the immediately adjoining MOD spectrum (which has an uncertain future), has no obvious substitute spectrum available.

Harmonisation with the USA UAV spectrum would simplify designs and reduce costs. The fledgling market is at risk where spectrum is not allocated ahead of the UAV design since the cost of acquisition for operational purposes is prohibitive.

UK Market investment in non-military UAV amounts to approximately £40M plus the "commercial" fraction of operating costs over the last four or five years. Potential returns in the UK are particularly unclear in the current spectrum regulation situation. However, Intellect believes that UK could potentially benefit from a 15% share of this $38bn market over ten years if the right conditions are put in place for UAV development- in particular availability of spectrum.

The value of UK spectrum for operational use of UAV is somewhat a circular argument, in that the take up of commercial UAV depends on the value placed upon the occupied spectrum and when the charges are levied.

4) Do you agree with the methods used to assess the potential to interfere with adjacent band services in a full licensed approach?

No Comment

5:) Do you consider that the proposed technical license conditions would be justified and appropriate.

No Comment

6) Do you agree with the methods used to assess the likelihood of services interfering with adjacent band services under the light regulatory approach?

No Comment

7) We would like stakeholder views on the cost and performance impact of the UMTS900 filters described above.

No Comment

8) Are there any other methods that would give the same protection as the filters? What costs and performance impacts would these have?

No Comment

9) What are your views on the need for and justification of such mitigation

No Comment

10) Stakeholders views are sought on whether the spectrum should be awarded as a single lot by frequency, or whether it should be split in to smaller frequency lots.

No Comment

11) We would like stakeholder's views on whether the packaging should be split GB/NI or if we should proceed with UK wide packages.

No Comment

12) Would it be practical for RFID users and adjacent operators (e.g. GSM, UMTS, GSM-R) to co-ordinate locally on a case by case basis? The answers to this will help Ofcom develop its views on whether a database would be required.

No Comment

13) Do you agree with Ofcom's preliminary proposal that the separation distances suggest a light licensing regime if SRD/RFID use in this band were to be supported? If not, how should the interference into adjacent bands be managed?

With respect to both Q12 and Q13, It is important to remember that the vast majority of SRD/RFID will be generally low duty cycle, low power or entirely passive until interrogated (or could be exempted easily on that basis). Thus the emphasis should only be on higher power equipment such as long range RFID interrogators which are more substantial and capable of incorporating adequate mitigation measures, or are more suited to local coordination. Investigations of non-compliant high power shipping container interrogators causing harmful interference in other UHF bands may provide the basis for drafting effective regulations. It should be possible to distinguish between systems with minimal potential for problems and other classes of equipment.

ANNEX ONE

Additional Information and Market Forecasts for Unmanned Aerial Vehicle Systems

Line of Sight (LOS) UAV's can in principle operate on any frequency as they are not particularly dependant on propagation conditions. However, 36MHz and above is preferred to minimise antenna size and to improve radio efficiency. Beyond Line of Sight (BLOS) UAVs, below controlled airspace, require spectrum that can provide BLOS radio links to a 15-20km radius. This requires power levels around +17dBWeirp (although this may vary) ground-to-air. Downlinks are often on another band – e.g. 2.4GHz which has just been opened up to airborne "WiFi" use where steerable antennas are used on the UAV – although this downlink can require a license if it exceeds the permitted radiated powers.

North and South America and Australia, led by the USA, are using the band 902MHz- 928MHz for UAV / UAS control, both to upload data to the self-piloting unit and to directly control of the UAV. If UK industry is to be able to compete and sell UAV/UAS into these markets, access to compatible spectrum is required for test, development and demonstration.

In the UK the only spectrum within bands used within by the US for these purposes, and which is not already allocated or "sold" are the bands 915-917 MHz, currently allocated to MoD and the 917-921 MHz, the continued use of which would be sufficient for test & development, trials, demonstrations etc. It should be noted that the World UAV market is significant and is likely to grow exponentially.

The UK Government, and the devolved regions, have already anticipated the potential economic benefit to the UK of becoming a leader in this market. The conversion of Parc Aberporth from an ex-RAF airfield, and MoD test range, into a regional airport and UAV Trials Centre has been a success, and was assisted by £35m of public money and substantial additional investment from the participating companies. It has an 8 mile, 5000 foot, restricted airspace for flying UAVs – but currently does not control, or have any assured access to, spectrum needed for UAV uplinks /downlinks. It is understood that the UAV Centre is privately owned and currently managed by QinetiQ under contract.

As noted in the figures below, the world market for UAV is now predicted as $36bn. The UK is in a prime position to take advantage of and access this market. To do so, the facilities to test, develop, trial and demonstrate UAV/UAS must be maintained. If not at Parc Aberporth, at least one designated area of the UK that has attributes similar to those of Parc Aberporth and has authorised spectrum access for all frequencies used worldwide for UAVs.

($ Billions)

(Units, Air Vehicles)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Mini-UAVs	2,670	2,445	2,425	1,219	889	2,270	2,357	2,112	2,393	2,481	21,261
Tactical UAVs	262	129	245	241	178	343	290	173	107	104	2,072
Naval UAVs	4	6	18	42	45	69	66	69	77	50	446
MALE	77	77	110	110	91	90	82	69	80	49	835
HALE	8	9	8	8	12	16	20	21	23	21	146
UCAVs	—	2	3	1	1	—	5	5	11	10	38
Civil	307	323	317	380	375	389	391	437	483	485	3,887
Total	**3,328**	**2,991**	**3,126**	**2,001**	**1,591**	**3,177**	**3,211**	**2,886**	**3,174**	**3,200**	**28,685**

US Production Forecast by Type

(Units, Air Vehicles)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Mini-UAV	2,130	1,590	1,500	600	150	1,500	1,500	1,500	1,500	1,500	13,470
Tactical UAVs	70	5	75	40	20	130	110	25	25	25	525
Naval UAVs	4	6	6	21	23	25	25	25	25	25	185
MALE	57	55	94	75	54	40	40	40	40	28	523
HALE	6	6	7	7	9	10	11	11	13	13	93
UCAVs	—	1	3	—	—	—	4	5	10	10	33
USG	2	2	2	5	5	5	5	5	5	5	41
Civil UAVs	5	5	5	30	60	60	75	100	150	150	640
Total	**2,274**	**1,670**	**1,692**	**778**	**321**	**1,770**	**1,770**	**1,711**	**1,768**	**1,756**	**15,510**

(Value, $ Millions)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Mini-UAVs	25.0	25.0	25.0	5.0	5.0	35.0	35.0	35.0	45.0	45.0	280.0
Tactical UAVs	400.0	295.0	90.0	150.0	160.0	350.0	330.0	130.0	130.0	140.0	2,175.0
Naval UAVs	40.0	55.0	75.0	75.0	95.0	105.0	100.0	100.0	100.0	130.0	875.0
MALE	320.0	780.0	900.0	815.0	575.0	515.0	515.0	385.0	420.0	550.0	5,775.0
HALE	605.0	765.0	575.0	620.0	970.0	890.0	900.0	900.0	900.0	970.0	8,095.0
UCAVs	200.0	75.0	375.0	—	—	—	300.0	300.0	400.0	800.0	2,450.0
Civil UAVs	65.0	65.0	65.0	270.0	290.0	300.0	310.0	320.0	350.0	350.0	2,385.0
Total	**1,655.0**	**2,060.0**	**2,105.0**	**1,935.0**	**2,095.0**	**2,195.0**	**2,490.0**	**2,170.0**	**2,345.0**	**2,985.0**	**22,035.0**

RoW Production Forecast by Type

(Units, Air Vehicles)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Mini-UAVs	540	855	925	619	739	770	857	612	893	981	7,791
Tactical UAVs	192	124	170	201	158	213	180	148	82	79	1,547
Navy UAVs	—	—	12	21	22	44	41	44	52	25	261
MALE	20	22	16	35	37	50	42	29	40	21	312
HALE	2	3	1	1	3	6	9	10	10	8	53
UCAVs	—	1	—	1	1	—	1	—	1	—	6
Civil	300	316	310	343	310	324	311	332	328	330	3,206
Total	**1,054**	**1,321**	**1,434**	**1,223**	**1,270**	**1,407**	**1,441**	**1,175**	**1,406**	**1,444**	**13,176**

(Value, $ Millions)	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Mini-UAVs	25.7	34.80	41.90	31.20	37.80	38.80	42.90	30.30	45.7	50.10	379.20
Tactical UAVs	467.5	261.5	415.0	477.0	392.0	519.5	465.5	424.5	217.5	187.5	3,827.5
Naval UAVs	—	—	72.0	126.0	132.0	264.0	246.0	264.0	306.0	138.0	1,548.0
MALE	260.0	287.0	172.0	377.0	412.0	570.0	475.0	360.0	480.0	260.0	3,653.0
HALE	110.0	165.0	75.0	55.0	205.0	390.0	575.0	630.0	650.0	480.0	3,335.0
UCAVs	—	75.0	—	75.0	75.0	—	75.0	—	75.0	—	375.0
Civil	45.0	61.0	75.0	110.0	75.0	93.0	138.0	105.0	178.0	135.0	1,015.0
Total	**908.2**	**884.3**	**850.9**	**1,251.2**	**1,328.8**	**1,875.3**	**2,017.4**	**1,813.8**	**1,952.2**	**1,250.6**	**14,132.7**

UAV Market Profile and Forecast 2009 (Teal Corporation)