**Comments on Call for Input**

**ECC(14)008 Annex06**

**Sources**

1. Deutsche Telekom
2. TriaGnoSys (affiliated to aircraft cabin manufacturer Zodiac Aerospace)
3. Riedel (provider of PMSE solutions)
4. NPO (Nederlandse Publieke Omroep; Netherlands Public Broadcasting)
5. Vislink (provider of PMSE solutions)
6. IRT (research institute of the public broadcasters of Germany, Austria, and Switzerland)
7. France
8. DECT Forum
9. Sweden
10. Lufthansa Systems
11. Netherlands
12. Selex ES (inter-alia provider of PPDR solutions)
13. British Airways
14. Telefónica S.A.
15. Multi-operators’ response from Bouygues Telecom, Orange, and SFR
16. Germany
17. British Telecom

**Views were invited on the following:**

1. General questions
   1. **What is your view on the preferred scenarios / uses for the bands 1900-1920 MHz and 2010-2025 MHz as set out in the outline of the response to the Commission? Please, justify your answer by indicating the associated economic and other benefits of your preference.**

| **Comment number** | **Type of comment** | **COMMENTS** | **Proposed resolution/handling/action by WGFM in response to the comment** |
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| DT/1  TriaGnoSys/1 | Support of DA2GCS  Since 2010 DTAG strongly supports the activities of the ECC to designate spectrum for a Direct-Air-to-Ground (DA2G) service in part of the bands 1900 – 1920 MHz and 2010 – 2025 MHz. DA2G would enable to deploy a Europe-wide network to supply broadband services to passengers travelling in some 5000 commercial airplanes in European airspace. | Studies of spectrum availability in Europe based on the results of a recent ECO questionnaire have shown that spectrum to be designated in the sub-bands 1900 – 1910 MHz paired with 2010 – 2020 MHz would offer the most suitable solution in order to allow for a DA2G service introduction in a reasonable time frame. The designation of these 2 x 10 MHz of harmonised spectrum throughout Europe would enable to license such a new and innovative broadband service in a technologically neutral manner. | Support of DA2GCS reflected in Annex 2 to document FM(14)037 Annex1.  Indication of the suitability/preference of this solution (1900-1910/2010-2020 MHz) reflected in section 3.1 of the outline of CEPT’s response. |
| Riedel /1 | Support for PMSE in the Unpaired bands | *Most of the equipment already allocated for PMSE uses in the 2 GHz band covers the mentioned frequency ranges. The 2010 – 2025 MHz range is already included in the tuning ranges of most transmitters. The 1900 – 1920 MHz range is adjacent to this range and could technically easily be made accessible with given equipment. Video spectrum allocation within these ranges is already possible on a geographical short term licensed basis for some countries in Europe.*  *Wireless video applications rely on the propagation in this frequency range especially for the uplink of video signals from a mobile (motor cycle) or stationary camera to an airborne vehicle. In obstructed applications higher frequencies mean higher power for the same coverage areas, which is not possible because of battery limitations or health safety regulations for cameramen.*  *Video PMSE faces a large loss of spectrum allocations in the upper 2 GHz band. An allocation of the unpaired 2 GHz bands would enable 2 – 3 video applications (8/10 MHz channel).* | Support of PMSE reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response).  Indication of the tuning ranges for video PMSE applications reflected in section 3.2 of the outline of CEPT’s response. |
| NPO/1  IRT/1 | Support for PMSE in the Unpaired bands | An allocation of the unpaired 2 GHz bands to PMSE is advisable and can easily be implemented. The frequency range is already in the tuning range of most of the equipment used in Europe and in some cases already allocated to PMSE on a geographical short term licensed basis. The 2010 – 2025 MHz range is adjacent to existing PMSE video spectrum allocation. In general NPO advocates the allocation of spectrum based on its propagation characteristics. The use of UHF frequencies for applications that are always within line if sight is ill advised. The subject frequencies bands are capable of usage without line of sight and should therefore be allocated to applications that require line of sight.  Wireless video applications rely on the non-line-of-sight propagation in this frequency range especially for the uplink of video signals from a mobile (motor cycle) or stationary camera to an airborne vehicle. Apart from that in non-line-of-sight applications the usage of higher frequencies mean higher  power, which is not possible because of battery limitations or health safety regulations for the cameraman.  Video PMSE already faces a large loss of spectrum allocations in the upper 2 GHz band. An allocation of the unpaired 2 GHz bands would enable 2 – 3 video applications (10 MHz channel). | Support of PMSE reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response).  Indication of the tuning ranges for video PMSE applications reflected in section 3.2 of the outline of CEPT’s response. |
| Vislink/1 | Support for PMSE in the Unpaired bands | These unpaired bands are premium bands for PMSE. PMSE has already lost many channels between 2.0 to 2.6GHz and is currently unable to sustain satisfactory coverage of major national and international events.  These frequencies are within the tuning range of existing PMSE equipment.  The 2 GHz band is used by PMSE for mobile operations; cordless cameras; mobiles on-boards for motor and motorbike racing; rallying; camera motor bike to terrestrial receivers, to helicopters and to fixed wing aircraft. Where possible sited to achieve direct line of sight transmission but in many situations line of sight is not possible. Current equipment is operating extremely close to theoretical optimum performance and therefore offers no opportunity for improvement. Increasing power is not an option because of battery life and EMC and safety considerations. Increasing antenna gain and therefore size is also not an option.  Some events are viewed by massive worldwide audiences, some as many as 500M or more. | Support of PMSE reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response).  Indication of the tuning ranges for video PMSE applications reflected in section 3.2 of the outline of CEPT’s response. |
| France/1 | Support of the concept | In France, we have identified a need for additional spectrum for PMSE (video) applications. The first benefit of this frequency band is that is the band 2010-2025 MHz is adjacent to an existing PMSE allocation used for video links. As a result, the upper part of the new designation is seen as an extension of the existing band and the technology for an immediate implementation is available. This would allow a certain level of economic benefits too. To some extent, video/PMSE technology can be comparable to PPDR technologies. Both users would need similar operation criteria and would be able to operate under similar spectrum regulation as long as they are not co-located. With regard to different scenarios, it seems that, based on the use of appropriate mitigation techniques and restrictions, DA2GC could also operate on these frequency bands on a shared basis with video application. This scenario is considered as an optimized one, noting that a SRD regulation could be also introduced on a non-protection, non-interference basis without impacting the above identified services.  France is of the view that this optimizes the use of the band and accommodates all candidates. | Support of the concept reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response).  Indication of the tuning ranges for video PMSE applications reflected in section 3.2 of the outline of CEPT’s response. |
| DECT/1 | Support of DECT in the band 1900-1920 MHz | COMBINE 1880-1900 MHZ (DECT BAND) WITH 1900-1920 MHZ, MAKING AVAILABLE A 40 MHZ BLOCK FOR DECT  The Digital Enhanced Cordless Telecommunications (DECT) system has started its operation in Europe in the designated frequency band 1 880 MHz – 1 900 MHz. It has spread around the globe and has become the dominating digital cordless telephone system in the world. DECT has also been approved by the ITU as one of the International Mobile Telecommunications (IMT) systems.  The possible allocation of adjacent band 1900 – 1920 MHz to DECT will provide a single continuous block of 40 MHz. The carrier numbers and positions for the use of DECT in the 1900 – 1920 MHz band are already defined (see EN 300 175-2 annex F) as consequence of the IMT allocation. The Harmonized standard for DECT over this band, ETSI EN 301 908-10, is already available as part of the ETSI set of IMT-2000 standards.  Two additional carriers can be obtained from the guard space around 1900 MHz. Therefore, twelve new carriers, instead of ten, could be added with the 20 MHz extension.  Immediate implementation is possible. It should be noted that the frequencies 1900 – 1930 MHz are already in use by DECT in non EU countries and that there are already products (> 100 million of devices) in operation over these frequencies. With the proposed license exempt regime, real usage by the public of the band 1900-1920 MHz will be possible in the very short term.  Today the majority of the applications are speech focused and are used in two different market segments with licence exempt provision. One is the domestic home market where low cost single cell devices are used. The other is the business market, which requires multi-cell systems with more complex functionality. Besides speech, many products provide low to medium rate data services and machine to machine communications.  The extension band would provide the possibility of the further evolution of the standard towards broadband services with higher bandwidth than today. See ETSI TR 103 149.  DECT operating in the 1900-1920 MHz provides a comprehensive overview of the services that would benefit from the extension band. Examples are the DECT New Generation that now also offers wideband 7 kHz voice transmission, a super-wideband 14 kHz service, higher rate data services, video surveillance and general home automation services (ULE). It should be noted that these example services are complements to the basic speech services and that these enhanced services will be implemented in the fixed line operator infrastructures.  Market information:  Extract from TR 103 149:  Start of citation:  With over 820 million devices installed throughout the world, ETSI’s DECT specification is the leading standard worldwide for digital cordless telecommunications for both cordless voice and broadband home communication. The system has been adopted in over 110 countries and every year more than 100 million new devices are sold. DECTproducts now account for more than 80 % of the world market.  “The M2M market is growing very fast but its development is not spread out homogeneously over the verticals markets,” says Samuel Ropert, project manager and senior consultant at IDATE. He adds: “Take the automotive industry worldwide: in volume we predict an average growth rate (AGR) of 40 % until 2016. In parallel, the Consumer Electronics industry has an AGR of 15 % and will represent barely a third of the M2M volume for the automotive industry in 2016”.  The M2M market is growing very fast. In 2012, the cellular market is expected to represent 140 million modules worldwide for a total market of 22 billion EUR (of which 5,1 billion EUR for connectivity). The annual growth of the M2M market was around 14 % in value and 36 % in volume. Most revenues will come from software and IT services(around two-thirds of total market value). The world M2M market should grow by 30 % in volume, to represent almost 370 million modules in 2015. Asia-Pacific should dominate Europe and North America in volume only. Europe should still lead in value, followed by North America.  According to oneM2M the number of worldwide M2M connections is growing exponentially, with some forecasts as high as 50 billion by 2020. These connections will reside within virtually every major market category, and oneM2M will play a vital role to ensure that these industries – from healthcare to transportation and energy to agriculture – can benefit fully from the economic growth and innovation opportunities that M2M communications presents  End of citation. | Support of DECT reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response). |
| Sweden/1 | Outline of the present difficulties and expectations | **Broadband Direct Air to Ground Communications**  Sweden finds it difficult to judge about economic benefits or other benefits that could be associated from an introduction of BDA2GC due to the following reasons:  • A credible and well founded business case for a European BDA2GC system is still to be presented and objectively reviewed.  • Sweden has doubts about system performance. Theoretical studies have not been objectively reviewed and Sweden believes that several assumptions regarding technical solution (e.g. technical specifications and performance on adaptive antennas) may be questioned. Even if assumptions are valid, capacity and system performance may not be sufficient to meet the QoS that can be expected from users.  • Even if situation with current licences in the 2 GHz Unpaired band is solved, Sweden has concerns regarding the possibility to issue some sort of European wide license that may be required for a successful introduction of BDA2GC in Europe.  • It may be possible from a technical point of view to implement BDA2GC in a higher frequency range than 2 GHz. A European solution for 5 GHz is being studied, and 14-14.5 GHz is being considered in US as a complement to current 700MHz solution. Generally a higher frequency band would be preferred due to a lower opportunity cost (lower demand from other services and applications in higher frequencies). In a higher frequency range, it may also be possible to harmonise a wider spectrum which could potentially increase capacity and performance.  • When judging on possible economic and other benefits, Sweden finds that it would be relevant to compare BDA2GC with a possible large scale European wide implementation of satellite systems providing this service. Commercial satellite solutions are already in service (e.g. Norwegian Airlines which offers free WiFi on most European flights). Such a comparison would include a long term analysis on economy, system performance and capacity for both solutions (satellite and terrestrial).  • Considering all of the above, Sweden finds it premature to evaluate the economic benefits that could be expected from a harmonisation of BDA2GC in Europe.  **DECT**  Sweden does not predict a long term growth of the DECT market, and estimates the benefits associated to a harmonization of additional frequency spectrum are therefore limited.  **SRD**  Although industry has showed limited interest, Sweden believes that with the right regulatory and technical conditions, an introduction of SRD in these bands potentially have a very high contribution on economical benefits in Europe. Additional SRD spectrum could provide additional capacity to 2.4 GHz WLAN. Depending on technical conditions and mitigation techniques, the 2 GHz Unpaired bands may also provide improved conditions (compared to 2.4GHz) for some applications regarding for example range or QoS. **PPDR**  Sweden finds it difficult to evaluate the potential benefits for PPDR broad band services other than Wide Area Networks (which are believed to be better suited in frequency bands below 1GHz). Limited information is provided regarding technical solutions as well as needs and demands from PPDR users.  **PMSE**  Sweden favours in general an expansion of current tuning ranges for PMSE equipment. However, the temporary nature of this usage can only motivate access to spectrum on secondary bases. | Concerns on any judgment about the economic benefits or other benefits associated to BDA2GC, as well as the Swedish view on DECT, SRD, PPDR and PMSE, reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response). |
| Lufthansa Systems/1 | Support for DA2GCS  Include TDD option for DA2GCS | Lufthansa Systems believes that all options should be explored in order to make best use of this valuable spectrum. As written in Section 3.1 of the draft Report, “A future spectrum designation for Broadband DA2GC should be technology-neutral as far as possible by taking into account the three different system descriptions as developed by ETSI (TR 103 054 [31], TR 101 599 [32] and TR 103 108 [33])”. We therefore find it hard to understand why a decision was taken to no longer study the option of TDD in the upper band (2010-2025 MHz). We believe this is directly contrary to the principle of technology neutrality expressed above and would urge that this decision is reconsidered.  As a potential provider of direct air-to-ground services, we see Broadband Air-to-Ground as a valuable future service for which there is a clear market demand and tangible economic benefits, as explained in the draft Report. Clearly, we therefore support a designation to BDA2GC in parts of the 2GHz bands including the option to make sufficient spectrum available for a TDD implementation. The nature of the technology employed in the Beamforming TDD BDA2GC system (TR 101 599) allows for operation in variable bandwidths whilst still providing a very acceptable level of performance. We recognize that other applications may also need to be facilitated in parts of the spectrum under consideration and would like to emphasise that this flexibility in bandwidth requirements for this BDA2GC system opens more possibilities for shared use  .  No technically feasible option should be ruled out when ocusedd the possible configurations within the lower and upper 2GHz bands. This could include, for example, the entire 20MHz of spectrum in the lower band (1900 – 1920MHz) designated to BDA2GC for TDD usage, leaving the upper band (2010 – 2025MHz) free for designation to one or more of the other applications under consideration (PMSE, PPDR, DECT or SRD). This would be the preferred solution for Lufthansa Systems in these 2GHz bands. Alternatively, BDA2GC could operate adjacent to PMSE, for example, in the lower band, with a lower bandwidth at a reduced (but still acceptable) level of performance. Finally, as stated earlier, we firmly believe that there is no logical reason to exclude the possibility for BDA2GC TDD operation in the upper band, using up to 15MHz of spectrum, although the initial studies need to be completed before the precise technical conditions for such usage could be harmonised.  In summary, Lufthansa Systems would like to emphasise the high value of BDA2GC services, the importance of designating sufficient spectrum to BDA2GC to allow for at least one TDD system to be deployed and the need for a flexible approach to encompass all technically feasible combinations of applications within these two frequency bands. | Lufthansa Systems urges the reconsideration of the decision to no longer study the TDD option in 2010-2025 MHz. WGFM#79 is invited to present its view on it. |
| Netherlands/1 | NL proposes to consider also 1) radio amateur satellite service and 2) metering  NL proposes to also consider higher frequencies for DA2GCS in the future such as the FCC in the 14 GHz range, e.g. in a first step as a reservation | General  The preferred scenarios / uses for the bands 1900-1920 MHz and 2010-2025 MHz as set out in the outline of the response to the Commission are strongly focused on mobile/broadband use. We are of the opinion that a number of possible uses are underexposed, for example:  **Radio amateurs**  Frequency use for the radio amateur service is currently under pressure. We propose therefore to consider that the radio amateur (satellite) service use the unpaired bands for cognitive radio experiments under controlled conditions.  Radio amateur always have been on the edge of developments in radio and major technologies have been developed by them such as microsats, sat mailbox systems and weak signal propagation protocols, just to name some examples. As such, their economic and scientific value should not be ignored.  We propose the whole frequency band under a detailed licencing regime only available for amateurs and universities with a full (F) licence. Also the possibility for experimental licences could be considered.  **Metering**  The benefits of smart metering, smart grids and smart cities are understood and accepted’. Needed frequency ranges are dependent on a country’s geography and the average construction of houses and buildings. Also a number of bands proposed for metering, such as the 870-876 MHz, are not available in a substantial number of countries.  Metering equipment in the EU is equipped with a replaceable radio module, therefore this band, in addition to the existing one as an alternative, is a logic choice.  **DA2CG**  Direct air to ground currently focusses on frequencies in the 5GHz range. These bands are heavily used by primary Radar and will in future be heavily used by RLAN and other SRD applications. The unpaired band could partly be used for DA2CG. Although we are of the opinion the available bandwidth in both 5 GHz and the bands around 2 GHz might not be enough to facilitate DA2CG after the initial phase. Preferably frequencies above 13 GHz should be made available for DA2CG.  Economic benefits are not really clear yet but a reservation for this application may be advisable. | Proposals on Radio amateur service, metering and DA2GC reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response).  WGFM#79 is invited to consider the following proposals:   * Radio amateurs   It can be seen from the RR Article 5 and the ECA Table that the amateur-satellite service always follows an amateur service allocation. As no amateur service allocation exists at the moment for the 2 GHz Unpaired Bands, it may be a long process to introduce such an allocation. Therefore, any activity within CEPT on this matter is considered to need sufficient support and a clear description of the demand, so as to conduct all necessary studies. It is as well to note that amateur-satellite service allocations already exist for the bands 1260-1270 MHz and 2400-2450 MHz, therefore it is suggested not to consider the proposed amateur-satellite usage in the 2 GHz Unpaired Bands.   * Metering   In line with the SRD strategy set out in CEPT Reports 14, 43 and 44 for metering applications, as well as the recent RSPG Report on Sectoral Needs, metering devices should be covered by a non-specific SRD regulatory approach. This request is therefore already included in the DECT/SRD usage block (section 3.6).   * DA2GC   It is suggested that the unpaired bands be partly used for DA2GC (indication of the three preferred options mentioned in section 3.1 seem to fulfil this requirement). |
| Netherlands/2 | Support for PMSE | The unpaired bands could be partially made available for PMSE | Support of PMSE in part of the unpaired spectrum reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response). |
| Selex/1 | Support for ad-hoc PPDR and PPDR capacity hot spots in the 2 GHz ranges | Selex ES supports the uses of ad-hoc PPDR networks for the bands 1900-1920 MHz and 2010-2025  MHz.  Taking into account the ECC Report 199 it is assumed that future European BB PPDDR systems  will consist of the following two basic elements:  • BB PPDR Wide Area Network (WAN), and  • BB PPDR temporary additional capacity (ad-hoc networks).  BB PPDR WAN should have a coverage level that meets the national requirements and which supports PPDR users with high mobility.  BBB PPDR temporary additional capacity (also known as “hot-spot” or “local area” networks) are supposed to provide additional local coverage at the scene of the incident in order to provide the necessary communication facilities to PPDR users in addition to those provided through the WAN or where the WAN radio communications are limited or not available. This additional capacity may be provided by ad-hoc networks or other means ((such as additional temporary base stations of the WAN) and are supposed to have high capacity and support PPDR users with low mobility.  Both BB PPDR WAN and temporary additional capacity are supposed to provide radio communications to PPDR users in mission critical as well as in non-miss ion critical situations. Mission critical communication requirements are assumed to be more stringent than those in non-mission critical situations.  The approach of BB PPDDR Wide Area Network (WAN), and BB PPDRR temporary additional capacity (ad-hoc networks)) could be similar to that used for the commercial networks,  • Frequencies below 1GHz for WAN to ensure the coverage  • Frequencies around 2GHz for ad-hoc networks to deliver capacity:     * to deliver enough capacity in some specific dense urban area , where several PPDR organizations may have to cooperate on the same event (police, fire-fighters, utilities, transport agencies…) by implementing “capacity-spot” (e.g. permanent additional capacity in dense urban areas), * to provide extra temporary resources/capacity such as those required to cover large emergencies, large public events as well as disasters by implementing temporary ad-hoc solutions.   Depending on national implementation of the Wide Area Network and the possible limited availability of frequency bands below 1 GHz, the unpaired terrestrial 2 GHz bands should be a complementary option to fulfill existing and future PPDR requirements for “capacity-spots” or temporary ad-hoc network s.  The use of the unpaired terrestrial 2 G Hz bands BB PPDR temporary additional capacity (ad-hoc  networks) solutions has thee following significant advantages:   * Coverage: Already cited above. * Eco-System: The 2GHz TDD frequency solutions are already included in the large LTE eco-system then benefitting of economics of scale. * Europe an Harmonization: It will be possible to have a European harmonized solution for the unpaired 2 GHz frequency band. | Support of ad-hoc PPDR reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response). |
| British Airways/1 | Support for harmonised solution for DA2GCS | As a leading global premium airline, British Airways already operates satellite in-flight connectivity to enable our customers to connect whilst on-board. The services allow our customers to use their personal devices to access email, text messages and the Internet. Given the success of these services, British Airways wishes to highlight our support for a harmonised spectrum for Broadband Direct Air To Ground Connectivity within Europe.  As more customers use Personal Electronic Devices on our aircraft and with regulations on their use relaxed, enabling Direct Air To Ground Connectivity in Europe will allow travelers to keep pace with those in North America and other regions where this is, or soon to be, a reality.  British Airways encourages all parties to concentrate efforts to deliver the European Direct Air To  Ground Connectivity solution by designating the required frequency bands.  We look forward to a successful conclusion. | Support of harmonised spectrum for BDA2GC reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response). |
| Telefonica/1 | Support of DA2GCS, FDD option | Telefónica shares the identification of the shortlist of potential harmonized uses for PPDR, PMSE, SRD, DECT and BDA2GC in principle. From the spectrum efficiency perspective, a common usage of the two TDD bands under discussion (1900-1920 and 2010-2025 MHz) would be recommended. This could be achieved by an FDD-usage of the two bands, leading to a possible preference for the BDA2GC service. | Support of the concept / shortlist (PPDR, PMSE, SRD, DECT, BDA2GC) as well as support for a common usage reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response).  Preference for an FDD usage of both bands for BDA2GC (note: the indication of the three preferred options mentioned in section 3.1 seem to fulfil this requirement). |
| Bouygues Telecom, Orange, SFR/1 | The current allocation of the unpaired terrestrial 2 GHz bands to the mobile network operators shall remain as part of the possible alternatives  Note ECO: The main point of the contribution is the recent availability of mass-market handsets on the 2.1 GHz TDD bands. Such handsets are the same as those which also include the 2.3 GHz TDD band and the 2.6 GHz TDD band, in addition to all European FDD LTE bands). | Part of 1900-1920 MHz band have been licensed to mobile operators (each 5 MHz). The allocated TDD spectrum has not been used until now, mainly due to a lack of handset ecosystem on this band. The situation is changing now: the most recent versions of the iPhones 5c and 5s (at least the Asian version) include band 39, 1880-1920 MHz, in addition to all other FDD bands used in European handsets (bands 1, 2, 3, 5, 7, 8, 20), plus two other D bands (bands 38 and 40)***,*** in addition, the aggregation of TDD and FDD has been developed by 3GPP in release 12, this TDD-FDD aggregation and the availability of LTE terminals allow the possible use of these two bands or at least part of these two bands by LTE, since TDD can be deployed as hot spot solution to complement (hot spot data capacity enhancement) the national FDD networks which is declared as primary cell to terminals supporting both FDD and TDD.  In addition, the increasing M2M Smart City traffic need specific frequency band, part of these unpaired frequency bands are expected to be used for some smart city applications, for example parking places monitoring, public lighting control, smart metering, air quality control, etc. These types of smart city applications are deployed from a specific area in a city to the entire city, even a group of cities, depending the applications/services, using LTE or alternative systems. A licensed band such as the 2.1 GHz TDD spectrum can ensure the expected quality of service which cannot be provided by the SRD spectrum at shared basis  It is our view that the current allocation of the unpaired terrestrial 2 GHz bands to the mobile network operators shall remain as part of the possible alternatives, other alternative uses should not create interference to these licensed sub-bands. | Desire to maintain mobile as an option reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response). In addition, it is considered that each potential harmonised use in the shortlist should be assessed against the use of the unpaired 2GHz bands for TDD-FDD aggregation on hotspots and for M2M.  As the purpose of the Mandate on the “Unpaired terrestrial 2 GHz bands” is to assess and identify alternative uses of the unpaired terrestrial 2 GHz band other than for the provision of mobile electronic communications services, it is proposed not to study further this option within the scope of this Mandate. |
| Germany/1 | Support approach | The preferred scenarios / uses as set out in the outline are supported. This is in line with the position of the German administration already provided during the relevant meetings (WG FM Correspondence Group, WG FM, ECC). | Support for the preferred scenarios / uses reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response). |
| British Telecom/1 | Support for DA2GCS in 1900-1920 MHz | We prefer that the band 1900 – 1920 MHz is made available for DA2GC applications. CEPT SE44 has identified that there are three candidate DA2GC technologies all of which are able to use this band for that purpose (as indicated in Draft ECC Report 209), and FM48 is currently preparing to draft regulations which would enable any of those three DA2GC technologies to operate in this band.  DA2GC is a new application in Europe, although it has proved to be successful in the USA, and we believe that it presents the best solution for providing internet connectivity for passengers on board commercial aircraft. Although there are currently systems operating using satellite connectivity, the use of a DA2GC system would enable higher data rates to be provided to each aircraft, at a lower cost, more efficiently (using frequency re-use across Europe). | Support for DA2GC in 1900-1920 MHz reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response). |

* 1. In the outline of the response to the Commission it is suggested placing the shortlist of potential harmonised uses of the 1900-1920 MHz and 2010-2025 MHz frequency bands, proposed for further study in the EC Mandate (as detailed in Annex 4), into 3 defined categories (see section 3.6 of the outline of the response to the Commission on Synergies between the proposed short list of selected use). **Do you agree with this approach? (Yes/No) If not please explain in detail why.**

| **Comment number** | **Type of comment** | **COMMENTS** | **Proposed resolution/handling/action by WGFM in response to the comment** |
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| DT/2  TriaGnoSys/2 | Support the approach.  Support of sharing of DA2GCS with PMSE, DECT and SRDs | Compatibility of a LTE-based DA2G system according to ETSI TR 103 054 employing 2 x 10 MHz with radio services in adjacent bands have been proven by studies published in Draft ECC Report 209. In addition studies in PT SE7 have shown that sharing of the DA2G forward link (ground-to-air) with PMSE cordless camera links is feasible under specific conditions. Such sharing feasibility is also expected to be valid for applications like SRD and DECT, in particular if low power, low duty cycle, DCS (Dynamic Channel Selection) and/or a restriction to in-house-only operation would apply for these applications. | Support of sharing of DA2GC with PMSE, DECT and SRD reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response). |
| Riedel/2  NPO/2  IRT/2 | Support the approach.  Difficult to coordinate between PMSE and ad hoc PPDR | The proposed categories for further study seem to be a good approach because of  similar system characteristics of the pooled systems.  But for the actual sharing it should be noted that especially for the PMSE, PPDR pool  the same tech characteristic but the usage by different stakeholders makes a sharing difficult (but not impossible). See answer to question 3 for more. | Support of the proposed categories reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response). |
| Vislink/2 | Support the approach. | PMSE generally supports sharing frequencies with other users where these occur and where difference usage can be separated time wise, geographically, or with sufficient frequency separation.  We support the principle of examining a shortlist of potential harmonised users although we have concerns about the time scale for such a review as the problem exists now, and what is PMSE to do in the meantime? | Support of the approach (sharing between PMSE and other users) reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response). |
| France/2 | Be more precise on synergies, especially between PPDR and PMSE | Yes partially. The approach should clarify with a clear description on what are exactly the synergies and for which application this synergy is identified. In particular, with regard to the synergy between PPDR and Video/PMSE (see answer to question 3).  Therefore, it could be beneficial and clearer for the reader to define which type of application of PPDR system could be covered by the regulation based on PMSE video link. | To clarify the concept, it is suggested to define which type of application of PPDR system could be covered by the regulation based on PMSE video link. It is therefore proposed to consider to add this information. |
| DECT/2 | Lack of information about SRDs is a concern | No, because without having a clear definition about the SRD transmitter, antenna and receiver parameters and a clear description about the services using SRDs this question cannot be answered satisfactory.  Details about the concern are found in the answer concerning Question 2. Furthermore a detailed paper was presented recently to CEPT ECC SE7 (Document SE7(13)100r2 ). | Additional information on SRDs was provided and, consequently, was reflected in document FM(14)037 Annex1 (The outline of CEPT’s response). Can be taken into account for further considerations on DECT/SRD sharing and DECT/SRD vs DA2GCS sharing. |
| Sweden/2 | Support approach, however insufficient information seen at this time. | Yes.  Comment: Approach supported by Sweden given the prerequisites that this spectrum needs to be harmonised for one or several of the proposed uses. However, Sweden finds it premature to at this stage harmonise this spectrum due insufficient information provided on the proposed uses, as well as proven demand for these uses:  • BDA2GC: Insecurity on system performance, business case, licensing and possibility to use higher frequency ranges or satellite solutions  • PPDR: Very limited interest from industry and user community  • SRD: No active support from industry  • DECT: Uncertain long term market development. Technology neutrality a prerequisite for a European harmonisation.  • PMSE: Temporary nature of use only motivates access to spectrum on secondary bases | Support of the approach reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response).  Considered premature to harmonise this spectrum due to insufficient information provided on the proposed uses and corresponding demand. WGFM#79 is invited to consider this proposal. |
| Selex/2 | Support approach | Yes. | Support of the approach reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response). |
| Telefonica/2 | Support approach but needs also proper consideration of existing licenses and socio-economic studies detailing the synergies  and  Protection of the adjacent services | In addition to the potential direct FDD-usage by BDA2GC, the combination of “PMSE and PPDR” and/or “DECT and SDR” could provide synergies in the usage of both TDD-bands under discussion. Hence, Telefónica shares the approach / definition of the three usage blocks and proposes that detailed studies regarding the compatibility / sharing scenarios of the shortlist as defined in section 3.6 (five potential harmonized uses in three usage blocks), should be accompanied by according socio-economic studies detailing the synergies of the three usage blocks (including proper consideration/compensation of existing licenses).  The licenses which are currently in force for the frequency bands 1900-1920 MHz and 2010-2025 MHz are either related to radio systems capable of providing Electronic Communications Service (ECS) or, if still related to specific technologies (such as UMTS TDD), can be liberalized to radio systems capable of providing ECS. The rights of the current licensees in those bands (more than 120 across the CEPT countries) and the according financial investments for that spectrum have to be protected, as current licenses run up to the year 2025 and beyond.  If the TDD-bands 1900-1920 / 2010-2025 MHz are identified for any other services (any option mentioned in section 3 of the draft CEPT report) prior to the end of the existing licenses, compensation mechanism and / or migration scenarios have to be considered appropriately in separate, additional pan-European considerations. These considerations should include economic and social aspects and the work should be undertaken on a pan-European basis.  Protection of the adjacent services (e.g. 1920-1980/2110-2170 MHz)  Telefónica has various licenses in these bands and networks providing ECS across Europe with licenses running up to the year 2025 and beyond. These services have to be protected appropriately by any other services (any option mentioned in section 3 of the draft CEPT report) possibly deployed in the bands 1900-1920 / 2010-2025 MHz prior to the end of the existing licenses. | Support of the approach reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response), as well as requirement for additional socio-economic studies detailing the synergies, need to account for current licenses and need to protect adjacent services. |
| Bouygues Telecom, Orange, SFR/2 | Alternative usage should be assessed vs TDD-FDD aggregation on hotspots and for M2M applications as described answer Bouygues Telecom, Orange, SFR/1 | Each potential harmonised use in the shortlist should be assessed against the use of the unpaired 2GHz bands for TDD-FDD aggregation on hotspots and for M2M applications as described in 1a | See the above proposal “Bouygues Telecom, Orange, SFR/1”. |
| Germany/2 | Support approach however, DECT usage should be further clarified | The grouping into the three different categories (Direct air to ground communications, Video links and cordless cameras (PMSE / ad-hoc PPDR), Applications under general authorisation (DECT / SRD)) is supported and they should be the basis for the on-going work. However, the industry interested in a spectrum extension for DECT should be invited to clarify the expected DECT usage. I.e. should DECT further be considered together with SRD (low power) applications and/or together with PMSE (video) applications? | Support of the approach reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response), albeit DECT usage should be clarified by industry. |
| British Telecom/2 |  | Yes, we agree with this approach. | Support of the approach reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response). |

1. DECT and SRD

Two of the potential uses of the 1900-1920 MHz and 2010-2025 MHz frequency bands proposed for study in the EC Mandate are DECT (1900-1920 MHz) and SRDs. Both uses would normally employ adequate mechanisms to access the spectrum equitably and operate under a general authorisation framework. The approach is application-neutral and technology-neutral as much as possible and in line with the principles set out in CEPT Report 14 and CEPT Report 44.

**Do you agree that SRD and DECT may be deployed and share the spectrum under a common technical and regulatory framework to foster a more efficient use of spectrum and future innovation? (Yes/No) If not, please indicate why.**

| **Comment number** | **Type of comment** | **COMMENTS** | **Proposed resolution/handling/action by WGFM in response to the comment** |
| --- | --- | --- | --- |
| Riedel/3  NPO/3 | No answer to the question but no support expressed for DECT/SRD sharing with PMSE/PPDR block | No.  Both – PMSE and PPDR applications share some technical similarities. Nevertheless it’s crucial for both applications to use a designated frequency spectrum free of interference and cross-usage.  No  Usage of these license free devices in the same band where essential professional services (PMSE/PPDR) are being deployed impairs the error free use of these essential professional services. | No support expressed for DECT/SRD sharing with PMSE/PPDR block reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response). |
| France/3 | DECT should operate under a generic SRD regulation on a shared basis with other technology on a non-protected non-interfered basis. | Yes this is also our opinion noting that caution has to be applied when referring to DECT. DECT is known to many as the [cordless phone](http://en.wikipedia.org/wiki/Cordless_phone) systems. However in this case, DECT is understood to be referring to the technology and not the application. This could impact the use cases for the compatibility studies affecting mainly the density of usage of these possible devices using DECT technology. DECT should operate under a generic SRD regulation on a shared basis with other technology on a non-protected non-interfered basis. | Support for DECT to operate under a generic SRD regulation on a shared basis with other technologies, on a non-protection non-interference basis, reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response). |
| Netherlands/2 | NL does not support a full technology neutral use but rather propose a number of technologies and access techniques mutually compatible and compatible with the other services in order to use the spectrum efficiently. Frequency segmentation and unintelligent SRD applications should be avoided. | For DECT and SRD we like to see full sharing possibilities between these applications and other users. We therefore do not support a full technology neutral use but rather propose a number of technologies and access techniques mutually compatible and compatible with the other services in order to use the spectrum efficiently as outlined in ECC Report 181.  To be precise we do not support frequency segmentation and unintelligent SRD applications. | Support for DECT/SRD sharing with other uses reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response). Frequency segmentation not supported. |
| DECT/3 | Lack of information about SRDs is a concern | See also answer to question 1b and contribution SE7(13)100r2 which was presented recently to CEPT ECC SE7.  SRDs working in 1GHz up to 40GHz are described in EN 300 440-1 V1.6.1 (2010-08) and EN 300 440-2 V1.4.1 (2010-08). The main spectrum access mechanisms applied are LBT (Listen Before Talk) and DAA (Detect And Avoid) combined with AFA (Adaptive Frequency Agility). These mechanisms are comparable to RSSI (Receiver Signal Strength Indication) measurement, LIF (Least Interfered Frequency) use and DCS (Dynamic Channel Selection) of DECT equipment.  The Harmonized SRD Radio Standards are prepared as generic ones, ready to be amended with technical parameters for new allocated frequency bands, totally different to the already existing parameters. With that the current published version of EN 300 440 is already a collection of very different numbers for radio parameters. E.g. it is understood the transmitted power can be a number in the range of 10mW to 4W.  It is also understood from the Harmonized EMC Standard EN 301 489-3 that different types of receiver are foreseen. One of them offers a wide range of receiver bandwidth. The resulting exclusion band for immunity testing equals +- 75MHz! Furthermore very different services are supported by SRDs.  Without having a clear definition about th SRD transmitter, antenna and receiver parameters and a clear description about the service using SRDs this question cannot be answered satisfactory.  If it will be decided to introduce in the band 1900-1920 MHz a technology that is totally incompatible with DECT, then one rather simple solution is to modify the DECT channel selection rules as follows:  A. Only use the base band 1880-1900 MHz for RFP beacon transmissions.  B. Use the Least Interfered Channel within the entire 1880-1920 MHz for initial traffic bearer set up. If the setup is made on a channel within the extended band 1900-1920 MHz, and if the radio link is interfered, then the Least Interfered Channel selection for the intra-cell handover shall be limited to the DECT base band 1880-1900 MHz. | See the above proposals “DECT/1” and “DECT/2”.  Indicated solution to a) only use the base band 1880-1900 MHz for RFP beacon transmissions and b) Use the Least Interfered Channel within the entire 1880-1920 MHz for initial traffic bearer set up. If the setup is made on a channel within the extended band 1900-1920 MHz, and if the radio link is interfered, then the Least Interfered Channel selection for the intra-cell handover shall be limited to the DECT base band 1880-1900 MHz can be taken into account for sharing the spectrum with other applications such as SRD and DA2GCS/ further discussions. |
| Sweden/3 | Regulation on a shared basis with other technology on a non-protected non-interfered basis. | Yes.  Comment: Even if a harmonisation enabling DECT services is realised under application-neutral and technology-neutral principles, Sweden believes that it is important that the regulation also in practice provide an opportunity for alternative technologies to use the spectrum so that a competitive market is created. | Support for DECT/SRD sharing with other technologies, on a non-protected non-interfered basis, reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response). |
| Selex/3 | No interest in DECT and SRD | Selex does not support the potential uses of DECT and SRD in the 1900-1920 MHz and 2010-2025 MHz frequency bands. | No interest on DECT/SRD. |
| Germany/3 | Support approach.  Need to clarify DECT usage.  Future regulation should not be DECT technology-specific. | To consider SRD applications and DECT applications within the scope of one single category is supported in principle. However, ETSI TR 103 149 (System Reference Document on DECT operating in the 1900 - 1 920 MHz band) also refers to video applications. Clarification is needed with that regard (see answer to Q 1.b above).  A future regulation should not exclude technologies other than DECT. | See the above proposal “Germany/2”. |
| British Telecom/3 | Support approach | Yes, we agree | Support for DECT/SRD approach reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response). |

1. PMSE and ad-hoc PPDR

Two of the potential uses of the 1900-1920 MHz and 2010-2025 MHz frequency bands proposed for study in the EC Mandate are PMSE and ad-hoc PPDR. Both proposed uses of the band are to provide temporary links both fixed and mobile (incl. airborne such as video links from/to helicopters or unmanned air vehicles), where these frequency bands would be included in an extended harmonised tuning range for video cameras and video links. The proposal in the outline of the response to the Commission is that the same technical framework and same equipment can be used to meet the operational needs of both PMSE and PPDR users.

**Do you agree that PMSE and ad-hoc PPDR show sufficient similarities to share the same technical framework to foster a more efficient use of spectrum and future innovation? (Yes/No). If not, please indicate why.**

| **Comment number** | | **Type of comment** | **COMMENTS** | **Proposed resolution/handling/action by WGFM in response to the comment** |
| --- | --- | --- | --- | --- |
| Riedel/4  IRT/3  Vislink/3 | Support the categories but PMSE/PPDR actual sharing might be difficult to achieve | | *But for the actual sharing it should be noted that especially for the PMSE, PPDR pool the same tech characteristic but the usage by different stakeholders makes a sharing difficult.*  *Both – PMSE and PPDR applications share some technical similarities. Nevertheless*  *it’s crucial for both applications to use a designated frequency spectrum free of interference*  *and cross-usage.*  *Most likely PMSE and PPDR applications will take place at the same time and location.*  *Nearly all major events (regardless if sport events, elections …) will surely require*  *the usage of frequencies for public protection as well as for TV broadcast purposes.*  *Especially in the event of disaster relief a quick coordination of both services is not practical. Therefore both applications should be allocated to different frequency domains*  *in advance.*  Addressing Section 3, PMSE and PPDR do share some technical and operational commonality; they are also very likely to be called into action at the same event, a breaking news story or a disaster site. Such situations by their very nature are unplanned, happen at short notice and therefore don’t offer any opportunity for pre-planning or coordination. | Support for PMSE/PPDR category reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response).  A coordination example between PMSE and PPDR reflected in section 3.6 of The outline of CEPT’s response. |
| NPO/4 | PMSE/PPDR require coordination; should be done on a national level | | *Yes.*  *PMSE and PPDR do share technical similarities and characteristics. Actual usage might conflict in case of large scale disasters. In such cases PPDR needs spectrum for their relief actions and the broadcaster (especially the Public Service broadcaster with an obligation of informing the public in case of a disaster) requires the same spectrum for their activities. Coordination is of vital importance. When both organisation use the same technology and infrastructure sharing of that technology and infrastructure is possible and advised. Coordination should be done on a national level where minimal capacity to both application should be guaranteed.* | Support for PMSE/PPDR category reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response).  A coordination example between PMSE and PPDR reflected in section 3.6 of The outline of CEPT’s response. |
| France/4 | Clarify synergies between PPDR and PMSE  DVB-T vs LTE  1-way/2-way  PPDR: not only video | | *It is believed that there is some synergy between PMSE video and PPDR video application. However, it should be noted that PMSE video use DVB-T technology (COFDM) while PPDR could use other technology such as LTE which may create compatibility issues.*  *Additionally, ECC Report 199 on User requirements and spectrum needs for future European broadband PPDR systems (Wide Area Networks) defines ad-hoc networks as :*  *“A temporary local network for extra capacity to support the additional traffic caused by mass events or disasters and to avoid local overload of the wide area networks. It can also be used for temporary provision of network services in an area where there is no coverage”.*  *Therefore, PPDR services may not be limited to video. Some other PPDR use cases are describing Voice communications, situation awareness (enabler of emergency forces’ own security) and wireless broadband intranet and internet access for examples.*  *To conclude, the principle of the synergy should be clarified accordingly.* | Support for PMSE/PPDR category reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response); principle of synergy should be clarified. It is noted that PPDR services may not be limited to video. |
| Sweden/4 | Support. National use and licensing should be decided on national level. | | *Yes.*  *Comment: Given that spectrum is harmonised for PMSE use, there is no reason not to also include PPDR as another possible application if same or similar equipment is used. National use and licensing should be decided on national level.* | Support for PMSE/PPDR category reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response), but considered that national use and licensing should be decided on a national level. |
| Selex/4 | Support approach | | *Yes. The sharing between PPDR ad-hoc networks in the unpaired 2 GHz bands and PMSE applications is acceptable. Selex agrees that PMSE and ad-hoc PPPDR show sufficient similarities to share the same technical framework to foster a more efficient use of spectrum and future innovation.* | Support for PMSE/PPDR category reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response). |
| Germany/4 | Support approach, however additional technical information is considered to be needed for the on-going studies | | *To consider PMSE (cordless cameras and video links) and ad-hoc PPDR within the scope of one single category is supported. The interested parties (user, industry) should be invited to provide additional information especially for the on-going compatibility and sharing studies.* | Support for PMSE/PPDR category reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response), although additional technical information is considered to be needed for the on-going studies. |
| British Telecom/4 | Support approach | | *Yes, we agree* | Support for PMSE/PPDR category reflected in Annex 2 to document FM(14)037 Annex1 (The outline of CEPT’s response). |