

BBC Response to Ofcom Consultation:

Authorisation of terrestrial mobile networks complementary to 2 GHz mobile satellite systems

The BBC welcomes the opportunity to respond to this consultation. In particular, we welcome any approach that will give greater certainty on the terms for new mobile services being introduced into the 2 GHz mobile satellite spectrum band.

Nevertheless we must reiterate our concerns about protecting existing PMSE operations in the increasingly scarce 2 GHz spectrum that is required for the successful operation of wireless cameras. The CGC spectrum allocations are adjacent to the popular PMSE band (2200-2300 MHz) which is essential to programme making and ENG operations for UK broadcasters. This spectrum is becoming increasingly congested given the loss of the 2500-2690MHz band resulting from the forthcoming 2.6GHz spectrum award. We believe that the technical licence conditions proposed in this consultation document would pose a threat to PMSE operations and we urge Ofcom to address this issue by reducing the proposed CGC out-of-band emissions.

Question 1: Do you agree with our proposals for the detailed terms and conditions of the CGC Licence set out in this document or have any other comments on the issues raised in this document?

We are concerned by the interference levels to PMSE receivers that would be permitted by the proposed technical licence conditions (TLCs). Ofcom has already acknowledged that the channel from 2200-2210 MHz will be lost, which in itself is a concern, but we are further concerned that interference is likely to extend even further into the PMSE band.

Question 2: Do you agree with our proposed approach for including the conditions imposed by Decision No 626/2008/EC in the CGC Licence?

From recent discussions with Ofcom, we now understand that Ofcom does indeed have authority to permit local variation from the EC decision to the technical licence conditions within member states and we therefore would seek to propose alternative licence conditions based on the decisions taken in connection with the 2.6 GHz spectrum award.

Question 3: Do you believe that the technical parameters used to define transmission rights should be based on spectrum usage rights or spectrum masks?

For terrestrial mobile networks complementary to 2 GHz mobile satellite systems, we favour the use of spectrum masks as this simplifies transmitter compliance testing and allows interference levels to be calculated easily given the transmitter locations. The SUR approach requires a detailed analysis of the network and compliance testing is considerably more complex.

Question 4: Do you agree with our proposed SUR parameters for CGC?

The network parameters for CGC deployments are unknown and hence in-band SUR parameters cannot be reliably calculated. However, the out of band SUR parameters which are needed to protect PMSE reception can be calculated. The following parameters would be appropriate:

Offset from channel C5 edge [MHz]	Out of Band PFD into PMSE at 1.5m [dBW/m²/ MHz]	Out of Band PFD into PMSE at 10m [dBW/m²/ MHz]
+5.0 > $\Delta_F \geq +0.0$ (upper edge)	-118	-116
+10.0 > $\Delta_F \geq +5.0$ (upper edge)	-121	-119
+100.0 > $\Delta_F \geq +10.0$ (upper edge)	-122	-122

The SUR level of up to -88.8dBW/m²/MHz proposed in the consultation would result in a loss of PMSE receiver sensitivity of 27dB. Wireless camera antennas are routinely deployed above 1.5m height, and reduced PFD levels are essential to protect such installations. The degradation in receiver sensitivity as a function of out-of-band PFD level, assuming a receiver noise figure of 3dB and an antenna gain of 3dBi, is tabulated below.

Out of Band PFD [dBW/m²/ MHz]	PMSE receiver Sensitivity degradation [dB]
-122	0.9
-121	1.1
-120	1.4
-119	1.7
-118	2.0
-117	2.4
-116	2.9
-115	3.4
-114	3.9
-113	4.6
-112	5.2
-111	6.0
-110	6.7
-109	7.5
-108	8.4
-107	9.3
-106	10.1
-105	11.1
-104	12.0
-103	12.9
-102	13.9
-101	14.8
-100	15.8
-99	16.8
-98	17.8
-97	18.8
-96	19.7
-95	20.7
-94	21.7
-93	22.7
-92	23.7
-91	24.7
-90	25.7
-89	26.7

Question 5: Do you agree with the spectrum masks parameters proposed?

Use of the proposed spectrum masks will result in severe interference to the PMSE allocation in 2200-2210 MHz which would make this channel unusable. The out-of-band performance of CGC transmitters for frequencies above 2210 MHz has not been unspecified, which could risk further damage to other 2.2 GHz PMSE allocations. In our discussions with Ofcom regarding the 2.6 GHz award, the level of out-of-band emissions was reduced from +4dBm/MHz (3GPP mask) to -38dBm/MHz. This reduction was necessary to protect PMSE allocations from 2025MHz – 2110MHz. This was discussed with stakeholders and is technically achievable using improved base-station filtering. We recommend a similar reduction in out-of-band emissions for the CGC award to protect PMSE allocations between 2200-2300MHz.

Question 6: Do you agree with the proposed changes to the other standard technical licence terms and conditions?

Yes.

Question 7: We have assumed that the CGC base station and user terminal characteristics will be similar to those for equivalent 3GPP equipment. Specifically, we have assumed a maximum transmitted power of 31 dBm/5 MHz for CGC handsets, and a maximum transmitted power of 61 dBm/5 MHz for the CGC base stations. Do you agree these are reasonable assumptions?

These assumptions may not be appropriate for CGC services, in which case the derived SUR parameters will be incorrect.

Question 8: We have based our analysis of compatibility between CGC and other radio systems on studies of analogous scenarios conducted for the 2.6 GHz award – do you agree with this assumption?

and

Question 9: Do you have any comments on the assumptions of the deployed network modelled for the SUR parameters?

We are concerned that the decisions made in the 2.6 GHz award have not been applied to the CGC licence proposals. We strongly support a reduction in out-of-band levels and recommend that technical licence conditions similar to those for the 2.6 GHz award be applied to the CGC award (i.e. OOB <-38dBm/MHz).