

Cover sheet for response to an Ofcom consultation

BASIC DETAILS

Consultation title: **Low power licence-exemption limits above 10GHz**

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CONFIDENTIALITY

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Whole response Organisation

Part of the response If there is no separate annex, which parts?

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Name **Chris Cheeseman**

Signed (if hard copy)

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**BT Response to the Ofcom Consultation:
Low power licence-exemption limits above 10GHz**

BT Responses to Ofcom consultation document: Low power licence-exemption limits above 10GHz

1 Introduction

BT is pleased to respond to this consultation on low power Licence-Exemption (LE) limits above 10 GHz.

BT understands and agrees with the general principles contained in the consultation document, in terms of consideration of the increased path loss at higher frequencies and the introduction of licence exemption where the transmitter power is so low as not to cause interference to other primary services in the shared frequency band. However, BT has some significant concerns on the proposed e.i.r.p. limits in Sec.8.4 of the consultation document, in terms of their potential impact on fixed service (FS) radio links.

BT is of the opinion that assessment of the potential impact on licensed FS links requires some further study, taking into account, in particular, the fixed link antenna gain at higher frequencies; the impact of peak rather than mean EIRP of licence-exempt devices; and the possible urban deployments for fixed links and licence-exempt devices.

Our detailed concerns are explained in the answers to the questions raised by Ofcom that we provide in Section 2 below.

2 Answers to the Consultation Questions

Q1: Do you agree with this assessment of the services that do not need further analysis?

BT is of the opinion that more studies are required on the potential impact of licence-exempt devices on fixed links. The reason that we hold this view is explained in the answer to Q5 below.

We would also draw Ofcom's attention to the fact that the table in section 4.3 omits the extensive fixed service use in the ranges 18.1 – 18.4 GHz and 18.4 – 18.8 GHz. We are also unaware of EESS use of the range 18.4 – 16.6 GHz.

Q2: Is this analysis of the risk of interference to broadcasting satellite correct?

No comment.

Q3: Is this analysis of the risk of interference to radionavigation and location correct?

No comment.

Q4: Is this approach to meteorological aids appropriate?

No comment.

Q5: Do you agree with the proposed licence-exemption limits set out above?

BT does not agree with the limits in Sec.8.4 at this stage, as there is concern on the potential impact of LE devices above 10GHz on fixed links.

As the number and location of LE devices will be unregulated, it is justifiable to be conservative in the assumptions used in the sharing scenario.

The assumptions in Table 1 below have been used in a very basic sharing study in the 18GHz band, which is heavily used for FS links in the UK, taking into account only 1 LE device with average e.i.r.p.

Table 1: FS receiver and LE transmitter characteristics

FS	
Frequency	18GHz
Antenna gain	32, 48 dBi
Antenna pattern	Rec. ITU-R F.1245-1
Noise level N	-140 dB(W/MHz)
Elevation	0°
Free path loss	Rec. ITU-R P.525-2
Feeder losses	0 dB
Building penetration loss	0dB, 5dB
LE	
Average LE eirp	$-95+20 \log(f_{\text{GHz}}/10.6)$ dB(W/MHz)
Number of LE devices	1

Considering that LE devices will not share spectrum on a co-primary basis, $I/N < -20\text{dB}$ has been considered as a long term protection criterion for the FS. We concede that this is quite stringent and a slightly higher value might be considered in further studies.

The two plots below provide, for a given distance from the FS receiver, the minimum vertical distance below the FS line of sight in order for the LE device not to exceed the FS protection criteria for an FS antenna gain of 32 and 48dBi and building loss of 0 and 5dB respectively.

As it can be seen, interference in excess of the FS protection criteria cannot be discarded entirely and needs further evaluation.

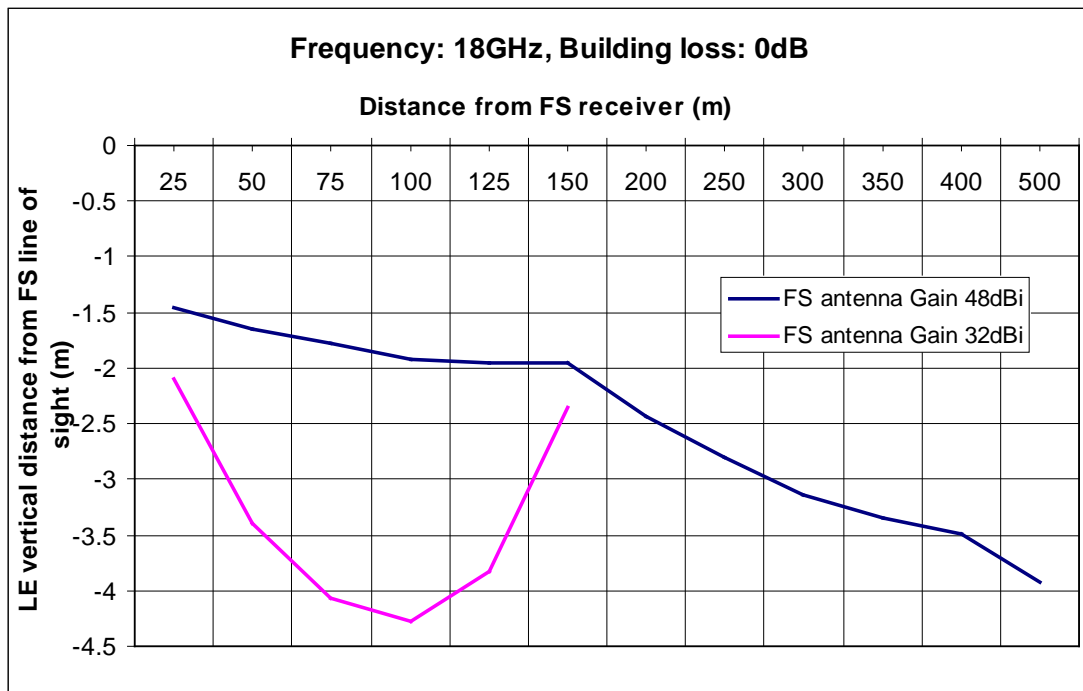


Figure 1: Minimum vertical distance below the FS line of sight, as a function of distance from the FS receiver, in order for the LE device not to exceed the FS protection criteria for an FS antenna gain of 32 and 48dBi and building loss of 0dB.

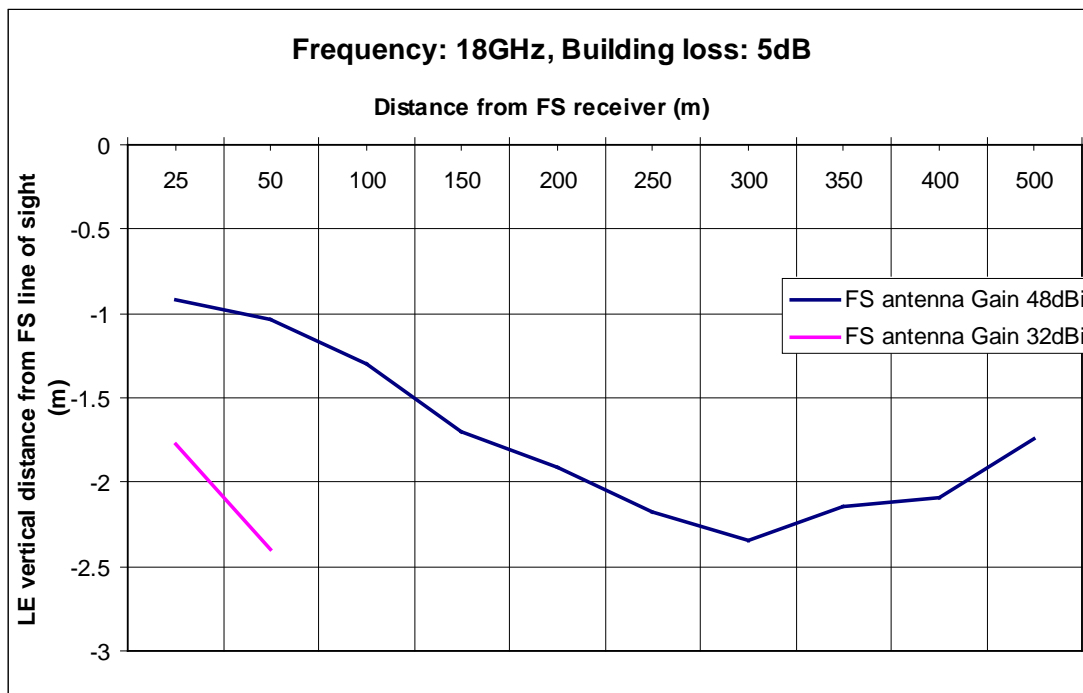


Figure 2: Minimum vertical distance below the FS line of sight, as a function of distance from the FS receiver, in order for the LE device not to exceed the FS protection criteria for an FS antenna gain of 32 and 48dBi and building loss of 0dB.

This preliminary analysis for one frequency band raises some concern as there appears to be a small risk of interference with the mean e.i.r.p. levels currently proposed by Ofcom. However, our greater concern is with **the peak e.i.r.p.** limits in sec.8.4 of the consultation document. We note these are 23dB higher than the average e.i.r.p. and this effect needs careful evaluation. The conditions of LE deployments and activity factor under which they would operate need some further clarification.

We encourage Ofcom to further investigate the above concerns and to accordingly review the proposed eirp limits for LE devices in bands above 10GHz.

3 Conclusions

In general, BT agrees with the approach proposed by Ofcom in relation to low power licence-exemption limits above 10GHz. However, BT is of the opinion that, before a conclusion can be reached on the limits in Sec.8.4 of the consultation document, further studies and more information are required. BT's views on the consultation questions have been provided and we would be pleased to discuss any point in greater detail with Ofcom.