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# **Notice: In-band restriction zones around satellite earth stations in the 3.6-3.8 GHz band**

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# 1. Introduction

- 1.1 The notice sets out the procedure that 3.6-3.8 GHz spectrum access licensees must follow prior to transmitting from base stations in the frequency band 3.6-3.8 GHz in order to respect the in-band restriction zones around specific satellite earth stations in 3.6-3.8 GHz.
- 1.2 In December 2017, Ofcom varied PES licences and grants of RSA, such that we will no longer take satellite earth stations with a receiver component in the band into account for frequency management purposes. These variations are currently in effect.
- 1.3 In October 2017<sup>1</sup> we told the operators of satellite earth stations that they could continue to operate in the band on a licence exempt basis following the end of the periods indicated above (noting that their ability to continue to receive without suffering interference, that might adversely affect their service, could vary between sites), and that we would explore the possibility of applying localised restrictions in future licences to facilitate continuing operation of satellite services in the 3.6-3.8 GHz band, where these would not have a material impact on mobile deployment.
- 1.4 Four satellite earth station operators have expressed an interest in restriction zones around their sites and we have concluded that a restriction zone with a radius of 1km around each site would be appropriate to ensure new mobile base stations will not be situated directly next to their SES sites, while meeting the objective to ensure that constraints to mobile deployment be kept to a minimum and whilst not preventing MNOs from offering mobile services in the area affected.
- 1.5 This notice applies to 3.6-3.8 GHz spectrum access licences and is effective from 1 June 2020.

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<sup>1</sup> <https://www.ofcom.org.uk/consultations-and-statements/category-1/future-use-at-3.6-3.8-ghz>

## 2. Procedure

- 2.1 When planning its network deployments, a 3.6-3.8 GHz spectrum access licensee must check whether any of its base stations are located within the satellite earth station (SES) restriction zones defined in Annex A1 of this notice.
- 2.2 For any base station within a restriction zone, the 3.6-3.8 GHz spectrum access licensee must ensure that the calculated signal power at the centre point of restriction zone within any 5 MHz portion of the 3.6-3.8 GHz band is no greater than -43 dBm/5 MHz.
- 2.3 The 3.6-3.8 GHz spectrum access licensee must calculate the power level at the centre point of restriction zone, assuming free space path loss, according to the following formula:

$$P_{Rx} = P_{Tx} - L_{fs} \quad (\text{dBm/5 MHz})$$

where:

$P_{Rx}$ :	Power received at the centre point of restriction zone (dBm/5 MHz)
$P_{Tx}$ :	Equivalent isotropically radiated power from the base station in the direction of the centre point of restriction zone (dBm/5 MHz) including accounting for base station antenna downtilt
$L_{fs}$ :	Free space path loss between the base station and centre point of restriction zone (dB)

and where:

$$L_{fs} = 32.4 + 20 \log f + 20 \log d \quad (\text{dB})$$

where:

$f$ :	frequency of transmission (MHz)
$d$ :	distance between the base station and the centre point of restriction zone (km).

- 2.4 The 3.6-3.8 GHz spectrum access licensee must maintain records demonstrating that the requirements of this notice have been met for all base stations deployed within each satellite earth station restriction zone and must make these records available to Ofcom on request.
- 2.5 For the avoidance of doubt, 3.6-3.8 GHz spectrum access licensees do not need to apply the procedure in this notice to any base station located outside the restriction zones defined in Annex A1 of the notice.

## A1. Restriction zones

1 km from the locations specified below:

Name Station	NGR location
Goonhilly	SW 72270 21070
Madley 1	SO 42106 37742
Madley 2	SO 42730 36967
Whitehill	SP 47862 18634
Woofferton	SO 50964 68171