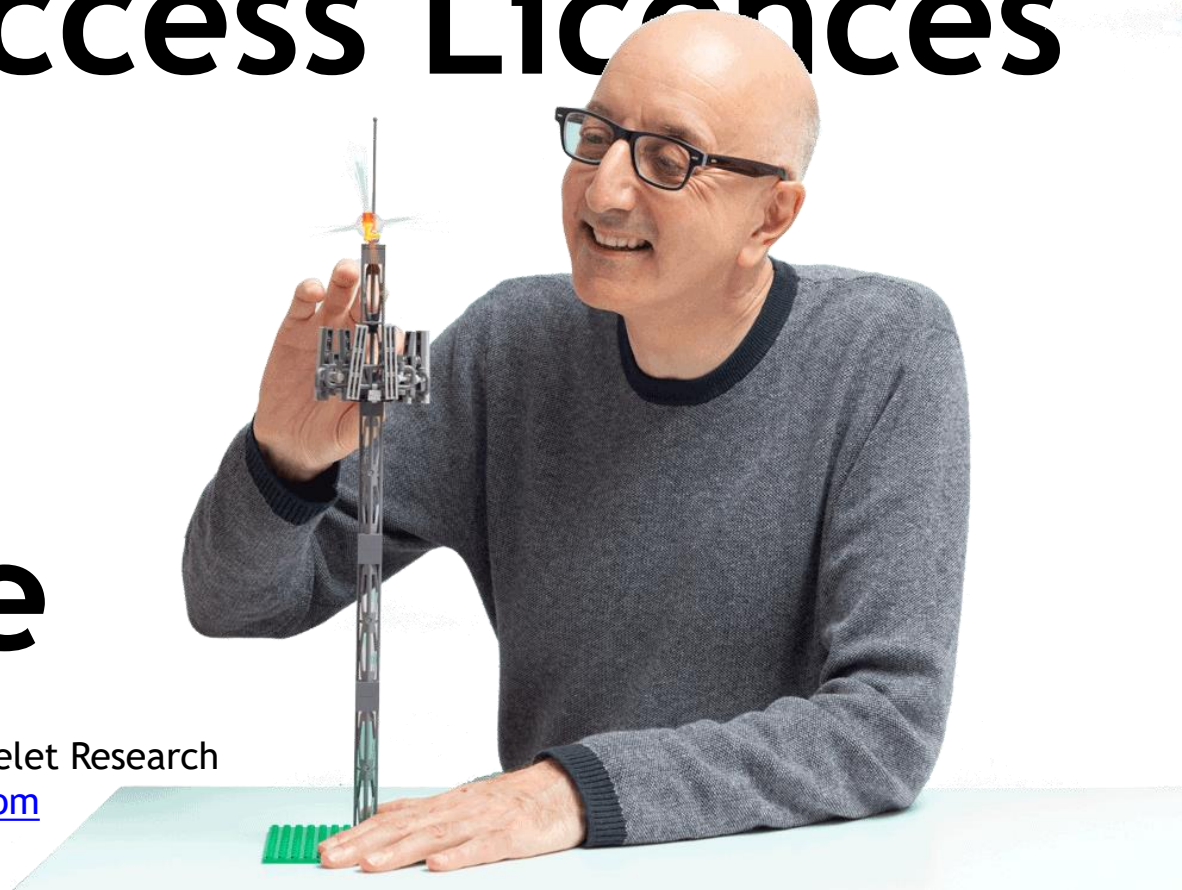


# Local Access Licences Theory and practice

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## Process 1

Identify location  
Identify frequency  
Identify licence holder  
Fill in OfW 588  
Receive rejection

## Process 2

Identify location  
Identify candidate frequencies  
Identify licence holder  
Speak to licence holders  
Agree frequencies & special terms  
Fill in OfW 588  
Receive Licence

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### Special terms

Point and radius

Duration

Admin fees

## What Works Well

The process exists

Ofcom is easy to deal  
with

Flexibility in licences

## What Works Poorly

Operators slow to respond

Highly manual

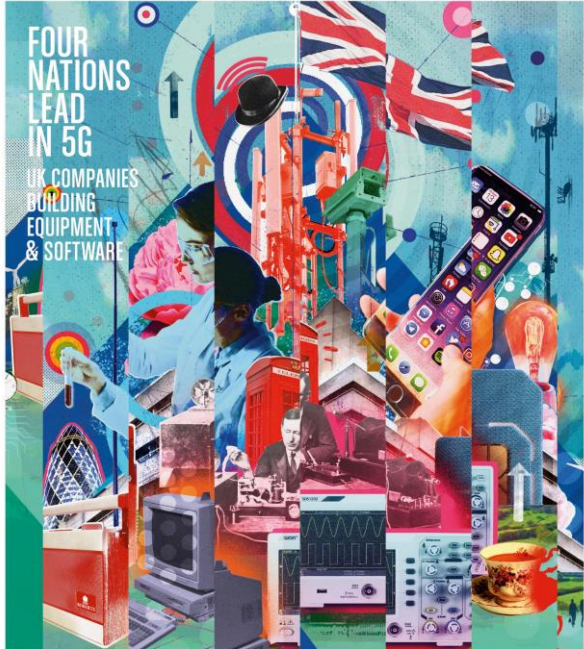
Ofcom slow on billing

## Recommendations

- Operators given one month to respond to OFW588
- Penalties for operators which refuses access to spectrum and then fail to use it themselves
- Interference modelling to take into account time as well as frequency





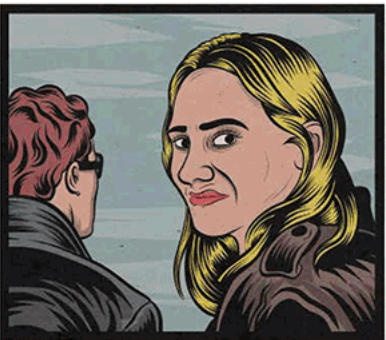


MAPPING MOBILE TECHNOLOGIES BEING DEVELOPED AROUND THE UK

# Band of Others

The mobile network operators have licensed spectrum, but if you are not one of them, you have other options. Peter Gradwell looks at shared-access licences.

Illustration Pat Higgins  
phiggins80



## LOCAL ACCESS LICENCES

**W**HEN MANOOR Hanif, then Chief Technical Officer at Ofcom, announced that new spectrum bands would be made available for use by organisations other than the major mobile network operators, the reaction was mixed. Today this model is seen around the world as revolutionary and one to follow.

Three bands were announced: bands 3, 77 and 258. By far the most interesting was band 77, which runs from 3.8 to 4.2 GHz. That mixed reaction ranged from delight that there was so much spectrum available to disappointment that it was in a frequency range with no device support.

Two years on both these reactions hold but to lesser extents. The initial enthusiasm for a band that was 400MHz wide, and the promise of exceptionally fast fixed-mobile access, have been moderated by Ofcom's restricted allowance of only 100MHz per applicant, while devices that support the frequencies are starting to appear.

The announcement of these bands was made at the Cambridge Wireless International Conference, in June 2019. Hanif said then that releasing the spectrum was a first step, and that once it was available devices would appear, particularly since this spectrum was licensed in Japan and that America looked likely to follow. This has proved to be true, with other countries joining in. Hanif has since left Ofcom to work on Neom, a fabulously ambitious smart city project in the Middle East.

### DEVICE DROUGHT

As more and bigger markets supported Band 77, there was an incentive for device manufacturers to supply relevant kit, but it's important to understand why many handsets may say Band 77 on the spec sheet but might not actually work.

Band 77 is non-operator spectrum. Operators buy the vast majority of handsets. Most people get a new phone free or discounted when they sign a contract. The major handset manufacturers have three top priorities when they consider which features to include. Overwhelmingly the most important of these is what the operators have specified. Meeting the requirements of customers with very exacting specifications is tough, and often leads to internal battles between sales people, who are responsible for different operators, to get their work done first. As band 77 spectrum is not on any of the operators' lists, it won't be in the requirements.

As shipping deadlines are very tight, manufacturers may never get to the second priority, which is the addition of features that



Much is made of 5G's support for millimetre wave, so called because the wavelength is less than one centimetre. In truth, the frequency that is used for band 258 is over 120m, but in common parlance anything that is of a high frequency is known as millimetre wave.

Band 258, which Ofcom licenses in the UK, runs from 24.25 to 26.5 GHz – a huge 2.25GHz of contiguous spectrum. That opens the possibility for significant data throughput; if you used all the spectrum, you could, theoretically, have speeds of over 20 Gbps. In practice you are more likely to have a tenth of that, but still amazingly fast.

It's the right solution in the right place. To Ofcom that place is indoors. Band 258 licences are only currently available for internal use. The regulator envisages the key applications to be in factory automation.

As frequencies climb, the range drops, so millimetre wave is of inherently short range. This can be mitigated with extra cells and proper radio planning. Less solvable is the inability of this wavelength to penetrate walls.

But perhaps the biggest problem is device availability. The band was chosen as part of European harmonisation. Unfortunately, none of the major operators is using it. As a result, devices that support it are next to non-existent.

Millimetre wave is different in the US, because it's 28GHz and there are devices that support it. Verizon runs 28GHz in the US and only centres that are drawn by the enormously fast speeds have the radios. In turn, some who live in these cities have the devices.



There is plenty of 28GHz kit like this, made by Sony for US bands, but hardly any for European 26GHz