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License Free Wireless Guide

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Introduction

Wireless microphones often operate on UHF frequencies, that is, between 300MHz and 3GHz. That's a lot of space, and not all of it is available for microphones to use. In the UK, you can operate between 470-694MHz with a license purchased via Ofcom, to allow you to use your systems legally and without interference (assuming coordinated license).

For some installations, this recurring charge can be inconvenient, so we've broken down ways you can legally use microphones, license free, and the approaches we recommend:

2.4 GHz

Latency: **4-7 ms**
Recommended: **Certain circumstances**

With the expansion of everything wireless, 2.4GHz has become a very affordable approach to digital technology. These tend to be advanced digital systems that can be put into the hands of consumers for much less than other systems because they cohabitate with Wi-Fi.

The limiting factor here can also be Wi-Fi, of course. With densely populated networks and access points in abundance, microphones using 2.4GHz can struggle to find their place. That said, they can be a great problem solver when using systems of 1-3 channels.

CH 70

Latency: **No additional when using analogue systems**
Recommended: **Not typically**

TV Channel 70 is available for unlicensed use in the UK which makes it unique. It covers 863-865MHz which is a reduced band (2MHz) and is also used by other consumer electronics, leading to limited free spectrum. With this limited bandwidth you can theoretically support up to 4 systems, but this is highly dependent on equipment.

The major drawback of Channel 70 is that it is surrounded on either side by mobile broadband traffic – both uplink and downlink. As a result, this has been known to cause interference with microphone systems using this range – there is a saying "works fine during soundcheck, but not during the show." When a room is full of mobile-phone users these systems can be vulnerable, though for some the benefit of using license-free outweighs this risk.

DECT

Latency: **18-20 ms system dependant**
Recommended: **Yes, outside of live performance**

Digital Enhanced Cordless Telecommunications, more commonly known as DECT, has picked up popularity in the wireless microphone world lately. You'll already know this technology from cordless landline phones, baby monitors, and some emergency services rely on this too. We have often found DECT systems to not only offer more flexibility with form factor (such as gooseneck and boundary) but also can be easier to deploy as many receivers are networked/PoE based, saving coax cable runs.

Wireless systems using DECT sit on 1.9GHz and tend to be more intelligent than other microphone systems, as they monitor interference and jump frequencies without loss of audio. Because of this, they are great for installations as end users do not have to worry about frequency coordination or problems related to this; they pick up the microphone and it "just works." These functions are necessary for systems using DECT due to priority for emergency services, but they do come at the price of latency and DECT systems are not suitable for live performance where in-ear monitoring is present. Similarly, we would recommend a site visit to rule out interference from other DECT sources.

System density varies from manufacturers – from 20-100 channels.

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