



## What is Millimetre Wave Transmission?

Millimetre Wave Transmission concerns the use of millimetre wave spectrum for radio transmission. Millimetre wave spectrum lies in the 30GHz to 300GHz range (with wavelengths from 10mm to 1mm).

This spectrum is of interest for a number of reasons:

- Lots of spectrum available: There is one order of magnitude of more spectrum available in this band than in lower bands
- Larger bandwidth channels are possible, of 2GHz, 4GHz, 10GHz or even 100GHz. This allows for fibre-like capacity
- The spectrum can be made available quickly, and can be reused easily with the limited propagation range in this band
- Lower spectrum license costs lead to a lower total cost of ownership and lower cost per bit of radio systems using this spectrum

However there are barriers to using this spectrum. Regulations for millimetre wave radio differ greatly from country to country, ranging from no regulation to full regulation. There is a lack of key components leading to high equipment costs, a huge variety in the types of equipment and applications using this spectrum and still a lack of confidence in the technology.

## ETSI Millimetre Waveband Standardization

ETSI has established a millimetre Wave Transmission (mWT) Industry Specification Group (ISG) to provide a platform and opportunity for companies and organizations involved in the microwave and millimetre-wave industry chain to address the challenges involved in using this spectrum.

ETSI ATTM TM4, ETSI BRAN and ETSI ERM have already developed Harmonized Standards in the mm wave range to allow Fixed Radio Link products to be placed on the market in Europe:

- EN 302 217 multipart standard for point-to-point links: This includes fixed links up to 86GHz.
- EN 302 326 multipart standard for multipoint links: It covers frequencies roughly up to 35GHz.

ETSI has developed standards for automotive radar systems in the 77GHz and 79GHz bands. Automatic cruise control 'long-range radar' operates at 77 GHz while anti-collision 'short-range radar' operates at 79 GHz (as well as a temporary frequency of 24GHz). bands.

# ETSI millimetre Wave Transmission ISG

ETSI's mWT Industry Specification Group aims to be a worldwide initiative with global reach and will address the whole industry: national regulators, standards organizations, telecom operators, product vendors and key component vendors.

The mWT ISG aims to facilitate the use of:

- V-band (57 to 66 GHz)
- E-band (71 to 76 & 81 to 86 GHz) and
- in the future higher frequency bands (up to 300 GHz)

for large volume applications in back-hauling and front-hauling to support mobile network implementation, wireless local loop and any other service benefitting from high speed wireless transmission.

## High Priority Topics

- 60 GHz band regulation: the very fragmented approach in terms of spectrum allocation and licensing model (despite its unlicensed band) is preventing small cell backhaul applications in some countries
- Enhance the confidence in the use of millimetre-wave technologies: sharing the amount of information derived by trials and early roll-outs on E-band regarding propagation impairments and availability calculation methods can improve operators' confidence
- Definitions of key requirements for most important transmission applications: macro backhaul, small cell back-haul, front-haul, etc.
- Identification of most suitable (target) millimetre wave bands for most important transmission applications

## Initial Activities

The group will produce a set of white papers and reports on the technology: surveying current deployments, sharing results from trials and early roll-outs, defining suitable use-cases, identifying the most suitable millimetre wavebands, and examining the situation related to semiconductor component availability.

For further details on ETSI's current activities on millimetre wave transmission, please visit:

[www.etsi.org/mwt](http://www.etsi.org/mwt)

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