

The Case of 6G and Beyond

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ABSTRACT

Following the commercialization of 5G technologies, both academia and industry are initiating research activities to shape the next-generation communication system, namely 6G. Considering the general trend of successive generations of communication systems introducing new services with more stringent requirements, it is reasonable to expect 6G to satisfy unprecedented requirements and expectations that 5G cannot meet. We expect that 6G will provide ultimate experience for all through hyper-connectivity involving humans and everything. In this research, we aim to provide readers with a comprehensive overview of various aspects related to 6G, including technical and societal trends, services, requirements, and candidate technologies.

Keywords: Keywords: 6G, Bandwidth, satellite communications, frequency, Satellite Bands

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1. SUMMARY

For 6G, it should be pointed out that many frequency bands spanning from 28GHz to 90GHz (and beyond) are also under consideration. This spectrum has already been extensively used for decades, mostly for satellite communications in the Table below:

Table 1: Spectrum Used for Satellite Communications

Frequency	Low GHz	High GHz
C	3.7	4.2
Ku	12	18
K	18	26
Ka	26	40
V	40	75
W	75	110

Satellite Bands

These Bands are with the Radio and Microwave Frequency Bands

Table 2: Bands for Radio and Microwave Frequency Bands

Nomenclature	Frequency Range	Available Band
Low-Band	600 – 705MHz	20MHz
Mid-Band	3.7 – 4.2 GHz or share the 500MHz spectrum with intelligent resource sharing	20MHz
High-Band	24.26 – 24.45GHz 24.75 – 25.25GHz 27.5 – 28.35GHz	200MHz 500MHz 850MHz

Low, Mid and High Band at a Glance