

On the Regulation of Civil Millimeterwave Technology in USA

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The views in this presentation are those of the author and are not necessarily those of
the FCC or US Government.

Basic Physics

- Above 30 GHz,
molecular resonances
have a large impact on
propagation - unlike
lower frequencies
- Path loss can be quite
large!

QuickTime™ and a
TIFF (LZW) decompressor
are needed to see this picture.

Some Bands Have Very High Loss

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TIFF (LZW) decompressor
are needed to see this picture.

Japanese 50 GHz Developments

- About 1985 Japanese MPT “urges” Fujitsu and NEC to develop “simplified radio system” at 50 GHz to open this part of spectrum for commercial use.
- Special simple licensing procedures effectively subsidize users
- Models developed for T1 and NTSC video

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TIFF (LZW) decompressor
are needed to see this picture.

UK Radiocommunications Agency 1987 Analysis

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FCC Docket 94-124

- NPRM adopted 10/20/94
- Addressed possible unlicensed use of 59-64 GHz (and automotive radar at 76-77 GHz)
- R&O adopted 12/15/95
- Comments focused on indoor use although outdoor also allowed
 - Indoor systems have yet to be sold
 - Outdoor systems are available but performance limited by rules that focus on indoor

A Commercial 60 GHz System

“If you permit it, they will build it” - *The Field of Dreams* doctrine

- First FCC Part 15.255-certified millimeter wavelength system operating in the 57.05 to 64 GHz band
- Fast Ethernet (100 Mbps), OC-3/STM-1 (155 Mbps), OC-12/STM-4 (622 Mbps) and Gigabit Ethernet (1 Gbps) full-duplex bandwidths
- Extremely high link availability
- Narrow beam width increases security and enables virtually interference-free operation•

Third-generation, mature product line

Simple one-person installation and alignment

<http://www.terabeam.com/products/equip/mmw.shtml>

Docket 02-146

70/80/90 GHz

- Started with 7/14/00 public workshop on 92-95 GHz band
- Workshop attracted public interest in this field and Loea Communications announced interest in 71-76 GHz and 81-86 GHz
- 2002 International Microwave Symposium lunch session on commercial mmW attracts 200 paid attendees

Docket 02-146

70/80/90 GHz

- 6/28/02 NPRM adopted
 - Several policy options considered for spectrum use: licensed (with and without auctions) & unlicensed
- 11/04/03 R&O adopted
 - Licensed only in 71-76 and 81-86
 - Both licensed and unlicensed in 92-95
 - Several manufacturers still seek mandatory *a priori* coordination