

# Thanks to Hedy Lamarr

Inspiration and innovation in the Golden Age of Hollywood.

[Peter Scott](#)



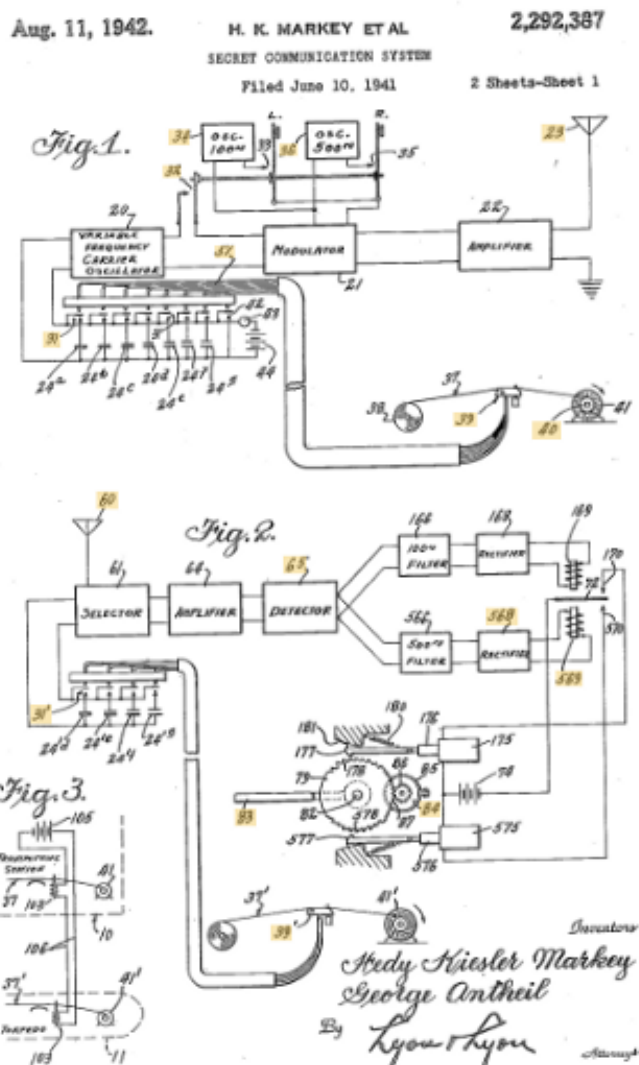
Promotional photo of Hedy Lamarr from the 1944 MGM film '*The Heavenly Body*'. (image: )

On my transmitter I have put a printed strip saying 'Thanks to Hedy Lamarr'. For those who don't know the reason I thought it would be good to describe this remarkable woman.

Born Hedwig Keisler in Vienna in 1914, she made a name as a beautiful and talented film and stage actor. In the late 1930s, she fled an oppressive husband and, having a Jewish background, the Nazis, ending in the US.

But that isn't why her name is on my transmitter. She was also an inventor. She worked with Howard Hughes and suggested he change the shape of his aircraft from square to a more rounded streamline shape. However it isn't

aviation that put her on my transmitter either.



Hughes was so impressed by her talent that he gave her a team of scientists and engineers and free rein to do what she wanted. During World War Two a new generation of radio controlled torpedoes was being developed, but the Germans found that they could jam the signals. Lamarr devised a system for changing transmitter frequencies using a device based on a piano roll player

that she patented in 1942 (US Patent 2,292,387). The system became known as frequency hopping.

As is so often the case, establishments, in this case the US Navy, are resistant to ideas from outside and did not take it up until the early 1960's. Her achievement was eventually recognised in 2014 when she was inducted, after her death, into the US National Inventors Hall of Fame.

Frequency hopping allows transmitter and receiver to switch frequencies when connection is lost due to interference or a block. This is why we never worry about switching our transmitters on when others are flying. Ours will simply not connect using frequencies currently in use.

For those who have never used 27, 35, 53 and 72 MHz equipment, the large frequency channel board sometimes found on a flying field will be a mystery. Switching on your transmitter without checking whether someone else was already on your frequency was the greatest crime. Transmitters were often kept in a pound. Each frequency had a colour. You put a coloured ribbon on your transmitter aerial and had to register that you were using that frequency on the board. You could change frequency by changing crystals in the transmitter and the receiver.

Want to hear Hedy Lemarr in her own words? Here's the trailer for Zeitgeist Films' 2017 film 'Bombshell: The Hedy Lamarr Story'

Frequency hopping goes by a number of names depending on the manufacturer, most centring on FHSS (Frequency Hopping Spread Spectrum). FrSky calls its version ACCST (Advanced Continuous Channel Shifting Technology). Hitec is AFHSS (Advanced FHSS). Futaba has FFAST (Futaba Advanced Spread Spectrum Technology). Multiplex has M-LINK which is FHSS. In the European Union all systems must also check for a clear frequency before transmitting using LBT (Listen Before Talk/Transmit). The technology is also found in Bluetooth connections and many other radio-based wireless networks.

And all 'Thanks to Hedy Lamarr'.

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