

## Electrosmog on Cruise Ships - August 19, 2021

The Diamond Princess, along with many other advanced cruise ships, does seem to have been an absolute nightmare for electrosmog though, and most of us know to behave way more cautiously with our home gateways and mobile devices than this Carnival operator. They subject their passengers to multiple powerful transmissions from their golf ball masts, and then internally to 2G and 5G access point signals, plus all the client device energy. It's not pretty, and I've summarised it here.

### **Summary:**

There is a huge amount of electrosmog on a cruise ship.

Offboard - The golf balls atop the ship are alive with four types of connection (two types of up to six satellites, high powered 40 mile range 4G/5G terrestrial signals, and local wireless while in port). It is unknown how much of the golf-ball signals leak into the ship's interior instead of reaching the satellites, etc.

Inboard - The interior is a series of steel cabins which resist Wi-Fi penetration. So, the number of access points on board is now over 1,000 with thousands of smartphones, surveillance cameras, wireless crew phones, portable Wi-Fi wristbands and MedallionNet wearable brooches or neck pendants, wireless touchscreens and so on. These client devices comprise a cacophony of Wi-Fi noise within the ship as their antenna gains compete for bandwidth wherever passengers cluster together. The Wi-Fi access points have been increased to almost one in every cabin, and security and logistics demand that five different SSIDs **S**ervice **S**et **I**Dentifiers (frequencies) are used across 2.4 GHz (domestic microwave) and 5 GHz bands so that perhaps fifteen carrier frequencies are in constant use.

Diamond Princess is being constantly upgraded to improve its internet connections. It is not clear why there should have been a sudden outbreak of sickness from 5 GHz signals except that the operator is

constantly trying out new technologies and possibly the latest upgrade went wrong. Unless more details of the very latest changes become available from an onboard Communications Engineer, this is all circumstantial evidence.

Another possibility is to find out if all of the cruise ships affected by coronavirus worldwide, and all of those ships that were not affected, form a closer correlation with another influence, such as recently alighting at an infected port.

## **References:**

Cruise ships are nightmare Wi-Fi environments with metal shells that require high power levels to penetrate all areas, 1,000+ Wi-Fi surveillance cameras, 5 clashing SSIDs with partially overlapping frequencies, all crew and 6,000 passengers using mobile telephony. Satellite connections used to be rubbish in 2010 at 4Mbps for whole ship:

<https://www.networkworld.com/article/2241329/world-s-biggest-cruise-ship-sails-through-wireless-challenges.html>

In some cases, wireless access points are installed in every guest room:

<https://www.belden.com/blog/smart-building/cruise-ship-technology>

MEO (Medium Earth Orbit) satellites in 2019 use directed energy beam that focuses transmission energy on a client cruise ship:

<https://thepointsguy.com/guide/cruise-ship-internet-wifi/>

Carnival Princess ships from 2014 intend to use three comms sources - long range land (40 miles), regular 3-5G terrestrial in port, and satellite:

<https://www.digitaltrends.com/cool-tech/carnival-launches-new-wi-fi-network-internet-at-sea/>

Wi-Fi access points on cruise ships using 2.4 and 5 GHz signals in 802.11ac and 802.11n protocols. 5G is more easily absorbed by flesh than 2.4G:

<https://www.royalcaribbeanblog.com/boards/index.php?/topic/9084-voom-technology-24ghz-or-5ghz/>

SES Networks announces plans in 2018 to test latest Internet standards on cruise ships, with 1500 passengers simultaneously streaming video at 1Mbps each:

<https://advanced-television.com/2018/02/26/carnivals-medallionnet-to-set-industry-apex-for-wi-fi-bandwidth-capacity-at-sea-powered-by-ses-networks/>

Princess Cruises state that the MedallionNet system is installed with 1.5Gbps second MEO Medium Earth Orbit satellite connections on the Diamond Princess:

<https://www.princess.com/ships-and-experience/ocean-medallion/medallionnet/>

Carnival (Princess Cruises fleet) use radio frequency golf balls atop the vessel to transmit simultaneously to land and to satellites to maintain a fast internet connection:

<https://www.satellitetoday.com/mobility/2018/02/26/watch-ses-ceo-setting-new-bandwidth-capacity-record>

2G, 3G, 4G and now 5G cellular network connections to be used on cruise ships after 2019:

<https://www.cruiseandferry.net/articles/how-wireless-maritime-services-is-leading-innovation-1>

Review by critics of how Wi-Fi and cellular signals are built into Princess Cruises ships, with stunning numbers of Wi-Fi devices all running within one steel "container":

<http://emrabc.ca/?p=17235>