



The

# Broadcasters' Desktop Resource

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... edited by Barry Mishkind – the Eclectic Engineer

## Broadcast Operations

### The C-Band Challenge An Executive Summary, Plus



**By Mark Johnson**

*[May 2018] At this time, there is a freeze in effect on new FSS (receive dishes) applications until July, while the FCC determines if there will be band sharing with the 5G industry. Mark Johnson puts out the reasons why this is bad – and why you should tell the FCC how you feel.*

**RE: FCC GN DOCKET NOS. 17-183, 18-122**

#### **C-Band Satellites Provide Listeners – An Indispensable Link Which Connects Local Radio and Television Stations + Networks + Ministries + American People**

We have grave concerns about possible changes to the Federal Communication Commission's Rules regarding the use and licensing of C-band spectrum (3.7-4.2 GHz), on which the broadcast satellite systems in the US depend for reliable distribution of programming to radio, television stations and cable providers.

Together, these groups broadcast programming to hundreds of millions of Americans each week. Most of the broadband proposals set forth

for re-allocating or implementing co-frequency sharing of spectrum are technically impractical or would take years to implement given the interests at stake.

#### **WHY THIS IS CRITICAL AND URGENT**

The FCC has made identifying additional spectrum for 5G services a national priority.

In 2017, the FCC announced a notice of inquiry regarding 5G and possible use of the frequencies (C-band spectrum/ 3.7-4.2 GHz) used by broadcast tv, radio and cable nationwide. The FCC has seemingly had the impression that the spectrum in question was under-utilized. Yet, quietly and steadily over the last several years, C-band spectrum has become quite popular.

In fact, it is now a limited and highly valuable commodity. Due to its propagation characteristics — including the signal's resistance to rain fade — it has proven an attractive target for mobile operators who seek

additional spectrum to leverage for future 5G networks.

## **THE C-BAND PROBLEM**

There are a lack of available, cost-effective alternatives to satellite for reliable radio and television program distribution to broadcast stations across the country.

Radio stations cannot afford alternative means of program distribution - such as terrestrial/fiber networks - which are significantly more expensive than satellite distribution. These stations also include rural and remote areas of the country where fiber does not reach and, regardless of cost, there are no alternatives to satellite distribution.

Because C-band receive-only antennas must be highly sensitive in order to communicate with Geostationary satellites 22,300 miles in orbit, these earth stations are very vulnerable to interference from nearby terrestrial transmitters.

We have witnessed first-hand similar interference caused by adjacent channel WiMax facilities near rural C-band downlinks. These WiMax transmissions produce interference similar to what we expect 5G facilities will produce. Wimax interference issues are proving difficult to mitigate and have even sometimes left locations with little or no C-band capability.

### **KEY POINT: THE BIG PROBLEM WITH 5G**

**It is our firm belief that the high power and density proposed by 5G broadband supporters would be even more destructive than WiMax, causing severe interference with the operations of free broadcast radio and tv as well as pay cable systems.**

5G has the potential to be a valuable commodity to the broadband players. Yet, this “gold rush” should not come at the expense of local radio and television broadcasters. Populations in smaller, more rural communities could lose

access to free and local content, including news, sports, entertainment and religious content. Due to this expected interference from 5G, a small, rural community's access to C-band programming may vanish immediately - their providers fiscally unable to provide a viable alternative.

Then, when and if 5G arrives in their area, many of the population in these small, rural communities will not be able to afford the services 5G would offer at a monthly cost.

## **DETAILS ON WHY SATELLITE DELIVERY IS ESSENTIAL FOR BROADCAST RADIO AND TELEVISION**

Any plan to use 5G near the nation’s C-band frequency must demonstrate a lack of interference with the delivery of free radio and television programming to broadcast locations anywhere in the United States, Puerto Rico and Guam.

Here are some key reasons why degradation of C-Band should not be allowed:

- Universal and free service for the American people relies on C-Band.
- All of broadcast TV and Radio’s infrastructure relies on satellite distribution to deliver content to and among its affiliate and owned and operated stations. From news, talk, sports, entertainment and religious programming; satellite delivers programming to nearly every one of the more than 15,499 radio stations and 1,765 UHF and VHF television stations nationwide.\*
- Without satellite delivery for the country's broadcast radio stations, nationwide radio and public safety information distribution systems could, for all intents and purposes, cease to exist. Thousands of rural radio stations

could not afford to stay on the air without programming provided by C-band. Without C-band, smaller market TV stations would be left with an insurmountable financial burden.

- Broadcast TV and radio's infrastructure system provides Americans with timely, critical information before, during, and after emergencies.
- Satellite delivery is the most cost-effective, secure, and reliable technology currently available to serve this national infrastructure. It is unparalleled in reaching even the most rural and remote regions of the U.S.

### **ESTIMATING THE SIZE OF IMPACT**

Please note an example of typical population and C-band usage.

Panama City (Bay County), FL has a population of 183,563 people. There are 9 radio groups with C-band downlinks, 4 TV groups with multiple C-band downlinks each and 2 cable headend locations with multiple downlinks. That is nearly one C-band downlink site for every 12,000 people in the county.

If we apply this average nationwide and one could assume that there are actually over 27,000 C-band downlink locations nationally.

### **AND THE NEED IS GROWING**

To demonstrate how the use of C-band continues to expand, one needs to look no further than our recent work orders.

LinkUp Communications has provided more new C-band facilities and upgrades in the last 24 months than we had in the preceding 15 years (operating under the previous name, Ka You Communications).

- New C-band uplink facilities: 3 new fully redundant uplinks.
- New C-band downlink facilities: 50 new downlink installations.
- Update to existing C-band downlinks: 32 updated facilities.

And that is just from one satellite service company.

### **A SPECIAL AREA OF NEED**

Satellite delivery is essential for faith-based radio and television.,

- The Christian radio and television infrastructure relies heavily on satellite distribution to deliver content to and among its affiliates, as well as owned and operated stations.
- There are over 2000 Christian radio stations across the US.
- Christian radio has over 69 million listeners daily\*\*



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- Christian Radio Programming is broadcast live, and connects to local listeners daily
- The typical Christian radio listener is a female between the ages of 18-54. \*\*
- There are more than 100 Christian television stations and dozens of Christian cable networks across the US.

## UNDERSTANDING THE NEEDS

At LinkUp Communications, we are very familiar with the needs of the Christian broadcaster.

- The majority of our space segment is used to deliver the 24/7 content for Christian radio networks. Without reliable satellite delivery for these small networks, many stations will be forced to go dark.
- Due to reliability issues, several of our customers in the last several years have recently migrated away from Ku-band to C-band.
- Christian radio stations in rural areas could not afford to stay on the air without programming provided by C-band. Even Christian television will suffer; without C-band, smaller market Christian stations would be left with an insurmountable financial burden.
- Ministries served by LinkUp Communications:
  - Are broadcast to 144 communities with C-band downlinks at transmitters and studio sites.
  - Are heard by 14 million Americans daily.

## WHAT MAKE C-BAND SO IMPORTANT?

Satellite, particularly C-Band, is our most reliable form of communications before, during & after national disasters

- Broadcast TV and radio's infrastructure system provides Americans with timely, critical information before, during, and after emergencies.
- Satellite delivery is THE most cost-effective, secure, and reliable technology currently available to serve our national infrastructure. It is unparalleled in reaching even the most rural and remote regions of the U.S.
- Because of its unparalleled reliability, regional emergency networks operate almost exclusively through C-Band.
- Radio keeps local residents informed when disaster strikes and power grids, Internet & other communications systems are down. A C-band downlink and a fully fueled generator are all a broadcaster may need to continue operations following a natural disaster, especially in rural and remote areas.
- No other alternative discussed or examined – including commercially available options – is as cost effective or as likely to result in success.

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Notes:

[\\*https://apps.fcc.gov/edocs\\_public/attachm atch/DOC-350110A1.pdf](https://apps.fcc.gov/edocs_public/attachm atch/DOC-350110A1.pdf)

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<https://www.dunhamandcompany.com/2008/05/attitudes-behaviors-towards-christian-radio/>

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<https://www.census.gov/quickfacts/fact/table/baycountyflorida/PST045216>

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