



The

Broadcasters' Desktop Resource

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... edited by Barry Mishkind – the Eclectic Engineer

Transmitter Site Operations

Deeper Into the FM vs LTE Problem

[August 2016] A few years back, we discussed a major problem for Broadcasters: cellular sites locating close to an FM station, then making claims of interference, even making demands at the FCC. We continue to learn more on this topic.

As we have previously noted, some cellular companies are installing super-hot receivers ever closer to FM stations – and then complaining that the FM's 7th, 8th, or 9th harmonic is interfering with them.

The cellular companies are asking for harmonic suppression well below -100 dBc (dB below carrier) – as far as -138dBc. This has come as a bit of a shock to broadcasters who have lived for decades with the standards set in Section 73.317, which basically says that harmonics should be limited to -80 dBc.

Can they get away with this?

NOVs

Clearly the cell companies feel their cellular operations trump broadcast.

For example, the FCC has issued several NOVs (Notices of Violations), including one in 2013 to WKZE-FM in Salsbury, CT.

There, a new Verizon LTE installation was approximately 500 feet from WKZE (on the site for over 20 years).

A little digging by Gary Cavell of Cavell, Mertz and Associates unearthed some other NOVs, one dating back to 2011, where two Nevada

stations ([KFWP and KURK in Reno, NV](#)) were cited for “interference” to an AT&T installation installed 150 feet from the FM transmitters.

Another example: in last 2012, [WANC in Ticonderoga, NY was cited](#) after a complaint from AT&T, which located an LTE receiver approximately 125 feet from the WANC transmitter building.

COOPERATION OR CONFRONTATION?

Over the years, the vast majority of broadcasters usually have been – and are – happy to work with the cellular companies or any other entity – the FAA for example – to ensure their transmitters are as clean as possible.

And they have done so, often even when they are sure problem is not theirs.

Consider, for example, the interference problems with one of the FAA's Air Traffic Control (ATC) frequencies. This is not an insignificant issue – lives can easily be endangered. Everyone should want to do everything possible to get a quick fix.

Yet many times when agencies perceive there is interference, they turn first to the station they hear – and sometimes make some rather heavy-handed accusations. But that is not always the right approach to solve matters.

Resolution has to start by overcoming the power structure: the matter of a large government agency, with a lot of power, putting the burden on an FM station, which may be a part of a very small company.

SEEKING THE SOLUTION

Cavell has seen many such cases where agencies such as the FAA have demanded a particular station immediately “stop interference” to one of their Air Traffic Control (ATC) frequencies.

Sometimes the station is at fault, but much more often the problem is an intermod product which may come from an overloaded receiver, a third site miles away from the FM station, or sometimes merely from a metal structure that has an oxidized joint creating a non-linear junction (diode) and mixing all the signals that strobe it. Sometimes all that is needed to fix things is [an experienced engineer with a 2 x 4](#).

But when the FCC shows up with NOVs, the only thing that is sure is that it will be a costly experience, whether or not the end result is a fine. Engineers, good test gear, and lawyers do not come cheap.

DEALING WITH HARMONIC ISSUES

For now, let us just focus on the harmonic issues that are being driven by current cellular installations.

As mentioned in the [prior report](#), a large part of the problem is the way stations are being approached by the cellular folks.

With the press at the FCC to identify cellular service as “emergency communications,” the cellular companies take the tack that no one can interfere with them, even if they are “last in” to a site – referring to the decades old policy that

says the last occupant of a site must bear the responsibility to remediate any interference issues. Some have referred to the situation as “confrontational” and “bullying.”

Fortunately, there is a growing body of research to help stations large and small deal with this alleged interference issue.

WKZE’s response to the FCC’s NOV is quite detailed in its reasoning and the tests run by communications engineer David Groth show the station is well within the terms of its operating authorization. You can [read the legal and technical submission here](#).

The NAB is aware of the situation and Dennis Wharton, NAB Executive Vice President, Communications, notes, “NAB is working with the FCC to assess any problems occurring in the field. We have always encouraged members to work cooperatively with other operators to sort out interference issues to the extent feasible FM stations operating within the Rules should not be forced to alter their operation or modify their equipment.”

So, no station should feel like they are forced to undertake the entire burden of facing the cellular companies, their lawyers, and the FCC by themselves. Indeed, if your station is an NAB member, it would be wise to make use of your membership and discuss the situation as it develops.

We continue to keep our eyes on the FCC, hoping they will act soon to prevent the anxiety levels from rising further. As we said last time, broadcasters need to speak up now with a loud, unified voice to get the FCC’s attention. - **BDR**

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