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Marlene H. Dortch, Secretary
Federal Communications Commission
445 Twelfth Street, SW
Washington, D.C. 20554

Re: **Notice of *Ex Parte* Presentation**
Radio frequency interference related to digital technology in the cable business, its interaction with LTE technology in the wireless business and its impact on public safety networks
Cable *Television Technical and Operational Requirements*, MB Docket No. 12-217 – *Ex Parte* Notice

Dear Ms. Dortch:

On Wednesday, January 23, 2013, Daryl Rosenberger, President of Martech Engineering LLC (Martech) and Donald Bishop, Vice President, and Peter Tenerelli, Sr. Technical Specialist from ICF Incorporated, LLC (ICF) met with John Wong, Jeffrey Neumann, Alison Neplokh, Wayne McKee, Nancy Murphy, Sean Mirzadegan, Sean Yun, Walid Kassem, John Gabyrsch and John Keifer of the Federal Communications Commission's Media Bureau to discuss the current state of the art in signal leakage measurement measuring and reporting technology.

Martech described its experience conducting aerial Cumulative Leakage Index (CLI) testing, with its fleet of 10 airplanes, for the cable telecommunications industry since 1989 and ICF described its experience developing a technology and measurement approach that is an extension to the airborne CLI services provided by Martech. This capability offers the advantage of revealing signal leakage levels in sensitive overlapping off-air bands and offers the potential of much greater accuracy pinpointing the leak source.

Martech and ICF discussed how the increased demand for spectrum needs have pushed cable systems to operate in bands that overlap with commercial broadband wireless operators. And while, in principle, the cable signals do not propagate into the open air, whenever leakage occurs, these stray signals directly interfere with lawful off-air signals. This is particularly important to the portion of radio spectrum that lies just above 700MHz through just below 900MHz which are used by commercial wireless operators as well as for critical government safety services like the new national public safety broadband network which is being deployed in the 750MHz band.

Cable operates signals in this same portion of the spectrum with signals that have RF characteristics that are similar to those used by LTE and can be quite confusing to an LTE handset if they are present off-air. Besides operating in the same frequency bands and using formats that are confusingly similar to LTE downlink formats, the power levels that are present from leaky cable plant are quite competitive with

good signals from an LTE base station. For example, LTE handsets are designed to operate with nominal signal levels in the -70 to -90dBm range. Signals that leak from a cable plant, even what may be considered to be low-level leaks are in this power range.

Martech and ICF next discussed why we believe that detecting these leaks can continue to be performed from the air as with existing CLI detection. Technicians performing leak detection from the ground will continue to have a difficult time estimating leak distances which has a major impact on calculations due to ground testing. Additionally, ground test methods are not optimal for detecting and measuring leaks in vertical structures such as hotels, commercial buildings and apartment complexes, or in rear easements plants where physical access is limited.

Martech and ICF then discussed our enhanced CLI measurement system. Present CLI testing uses a tuned receiver listening intermittently for a narrow band market tone that has been injected into a cable system. ICF has developed a signal monitoring and recording system that makes high-speed recordings of up to 110MHz continuously, and can tune from 9KHz to 4GHz. Available antennas currently constrain the overall spectrum to 100MHz to 4000MHz. Leaks can be identified anywhere throughout this spectrum and the methods used for triangulation of emission source locations greatly improves leak location accuracy.

By recording the spectrum, "not detecting" radio signals in the classic sense, rather signal demodulating and decoding is done as a post-recording process which is far more powerful and can produce more extensive signal processing than static live measurement systems. The spectrum is recorded and preserved with high fidelity. Recordings can be replayed and reanalyzed limitless times. Analyzed signals can be correlated according to their content, RF signatures, signal formats, and spectral organization. This allows us to produce a report identifying all interference sources according to their type at each point of origin and each specific power levels within a geographic area.

Improvements to the receiver sensitivity and antenna system over the older analog system allow the digital system to recognize QAM channels. We are currently upgrading antennas to cover the entire range of frequencies covered by cable networks (all planes are currently configured to capture 108-140MHz and 700-4000MHz). All signals are recorded regardless of modulation type or signal bandwidth. As such, traditional leakage signal marker tones are not strictly necessary, if present, they will be recorded and identified as before.

Martech and ICF next discussed the potential difficulties facing the market. Considering signal leaks from the perspective of wireless operators, cable signals can be effectively impossible to detect without implementing their own cable signal leakage detection programs. Wireless operators understand their own systems and have purchased equipment for testing their systems but the equipment is not capable of detecting signals leaking from cable systems. This is especially likely for the public safety operators. Likewise, cable operators face a similar dilemma. Older fixed-frequency beacon-based detection systems are now outmoded. Newer technologies designed to monitor higher frequencies are proving to be expensive, complicated and inflexible. While these types of systems will prove their worth over the coming years, the capital costs will likely translate to a long roll-out schedule, especially to rural areas where 700MHz LTE deployments are being used to provide lifeline telephony, telehealth services, and public safety communications.

Martech, with ICF's wideband spectrum measurement system, provides enhanced CLI testing reports. Clients have instant access to their Signal Leakage Performance Reports for reproduction and online filing, complying with the FCC's intent for online filings of Form 320. These reports can be used to communicate with third party leak originators such as cable TV companies to help them quickly identify problem areas. Systems can be flown annually, semi-annually, quarterly or monthly depending on the severity of the leak issues.

Martech and ICF believe that this airborne wideband capture technology represents an excellent platform for performing signal leakage compliance monitoring across the entire range of cable frequencies. CLI flyovers have proven to be an invaluable method for CLI monitoring programs. Wideband capture and post-processing analysis adds near continuous frequency coverage (strong off-air signals do need to be avoided). This enhanced CLI capability detection avoids the potentially prohibitive capital costs associated with nation-wide ground-based system retooling. This approach has the advantage of providing industry more time to acquire enhanced ground based monitoring systems but still provides compliance with existing signal leakage requirements. Please direct any questions or clarifications to the undersigned at 904-923-5497 or Don Bishop at 703-225-2125.

Sincerely,

Daryl Rosenberger

Daryl Rosenberger
President
Martech Engineering, LLC

cc: John Wong
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