EFFECTS OF LTE SIGNALS ON CABLE TV DEVICES

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Personal phones and computing tablets are being widely deployed with 4G/LTE wireless communication capability. Some of the frequencies allocated for these devices are also used by cable TV multiple-system operators (MSOs) to deliver video and data services to homes. This raises the question of how susceptible the cable TV system is to interference from LTE signals. Set top boxes and cable modems are used as end point devices in an MSO cable plant. These devices are fed the RF signals over coaxial cable. To investigate the possible interactions between radiated LTE signals and cable systems, a number of tests were developed and conducted at NIST (National Institute of Standards and Technology).

These tests were conducted inside a reverberation chamber using an LTE signal, contrary to the popular IEC 61000-4-3 standard, which utilizes an anechoic chamber and an amplitude modulated signal. Reverberation chambers have the advantage of stirring the field to expose a device under test (e.g. set top box, cable modem) to an electric field that arrives from all incidence angles and polarizations. This provides a fast and accurate assessment of the device shielding performance.

A test method will be outlined, along with generalized results of LTE immunity measurements performed on set top boxes, cable modems and coaxial cable. Several different device configurations will be shown to illustrate the impact common cabling configurations utilized by the end user. These include the use of splitters, and various coaxial cables.