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**ENGINEERING COMMITTEE
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SCTE OPERATIONAL PRACTICE

SCTE 221 2015

**Field Strength & Calculation of LTE User Equipment
Field Strength**

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1. INTRODUCTION AND SCOPE

In late 2010, a new wireless technology called long term evolution (LTE) was introduced in the United States. LTE service operates in several frequency bands, including the 698 MHz to 806 MHz band, which overlaps the frequency spectrum used by many cable operators to deliver services to their customers. As LTE service providers continue to deploy LTE service, the radio frequency (RF) signal emanating from LTE user equipment (UE) represents another source of potential interference to services carried on cable systems.

This operational practice provides a tutorial on RF signal field strength and a method for calculating field strength emanating from LTE UE.

2. INFORMATIVE REFERENCES

The following documents might provide valuable information to the reader but are not required when complying with this document.

1. Hranac, R. (2012, July). The Antenna Factor. *Communications Technology*. Retrieved October 14, 2014, from www.scte.org/TechnicalColumns/12-07-01%20the%20antenna%20factor.pdf
2. Kraus, J. (1988). *Antennas* (2nd. ed.). New York: McGraw-Hill
3. SCTE 209 2015: Technical Report - UHF Leakage, Ingress, Direct Pickup

3. ABBREVIATIONS AND DEFINITIONS

3.1. Abbreviations

$\mu\text{V/m}$	microvolt per meter
A_e	effective aperture
A_{em}	maximum effective aperture
dB	decibel
dB _i	decibel isotropic
dB _m	decibel milliwatt
dB _{mV}	decibel millivolt
dB $\mu\text{V/m}$	decibel microvolt per meter
e.g.	for example (<i>exempli gratia</i>)
FCC	Federal Communications Commission
km	kilometer
LTE	long term evolution
m	meter
MHz	megahertz
mW	milliwatt
NOS	[SCTE] Network Operations Subcommittee
NOS WG1	[SCTE] Network Operations Subcommittee Working Group 1
P_d	power density
P_t	source power