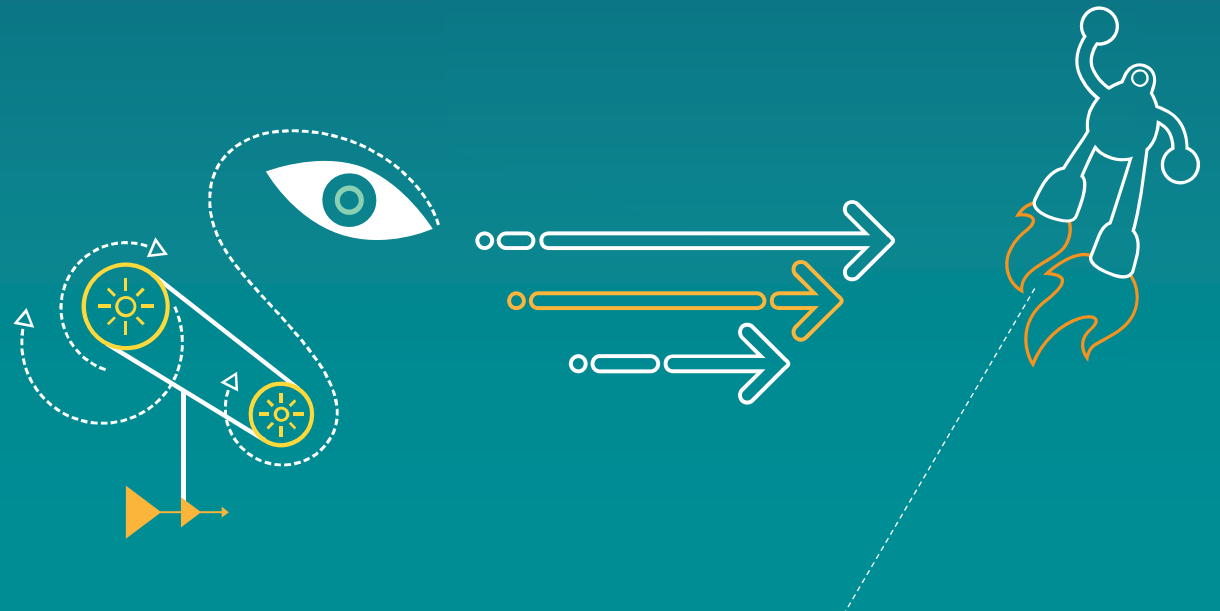

FCC Panel on Protecting GPS – Mobile Device Perspective

QUALCOMM®

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Cormac Conroy, PhD
Vice President Engineering and Product Management



In-Device Interference to GPS

- Self-interference is a classical GPS problem
- Much more challenging in mobile devices due to multiple concurrent radio systems in the same device, and proximity of antennas
 - A-GPS tracking sensitivity is below -160 dBm
 - Maximum WWAN (cellular) uplink transmitter level is 33 dBm for GSM and 25 dBm for 3G/4G
 - WWAN uplink frequency can be as close as 1710 MHz (Band 4 from 3GPP bands), only 135 MHz from GPS
 - Systematic RF HW & systems design approach needed
- In addition, extraneous interference – (1) *downlink* from 3G/4G cell towers, (2) *uplink* from other mobiles, and (3) other jammers – must be considered too



Thank you

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