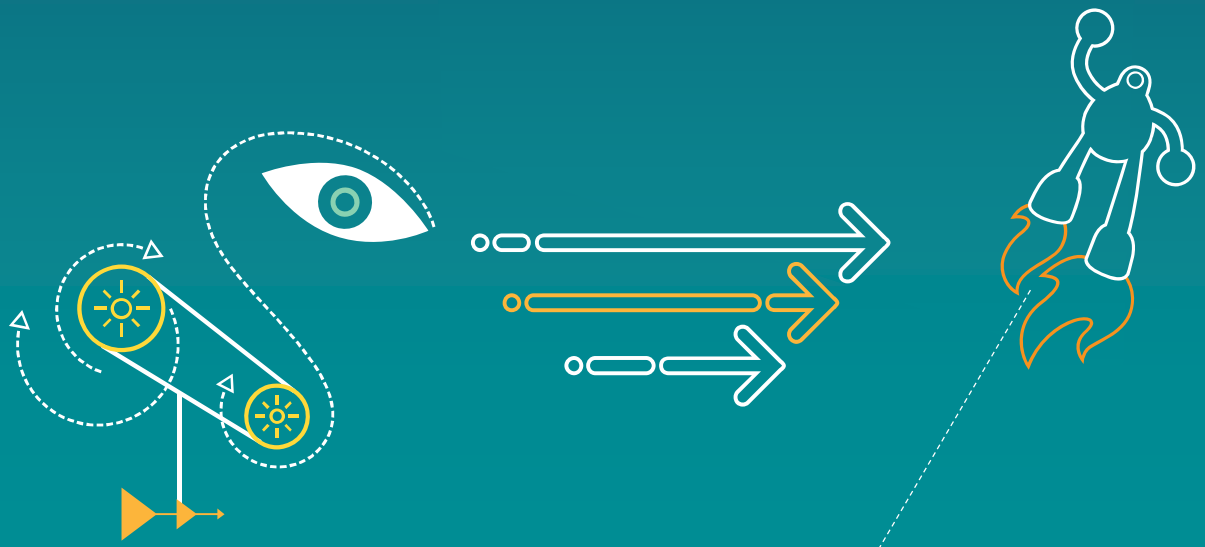
5 January 2015

eCall Evaluation

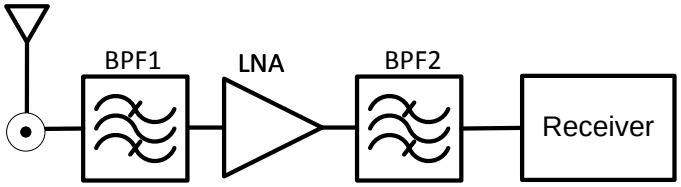
QUALCOMM®



Summary

Evaluation of effects of out-of-band CW jammers on GNSS

- Measurement set up:
  - All measurements performed in a set up with SAW-eLNA-SAW



  - Single tone (CW) Out of band jammer degrading GNSS performance based on following criteria
    - CW Jammer levels increasing noise figure by 3dB
    - CW Jammer levels resulting saturation in receive path
- Signal level assumption: 8 SV, > -131 dBm

Harmonic Interference Tolerance --- the Existing Table

Table 1 — Threshold values of harmonic interference at use of GLONASS standard accuracy signals

Frequency, MHz	Threshold values of harmonic interference, dBW
$F < 1540$	Minus 15
$1540 < F \leq 1562$	From minus 15 to minus 50
$1562 < F \leq 1583$	From minus 50 to minus 90
$1583 < F \leq 1593$	From minus 90 to minus 140
$1593 < F \leq 1609$	Minus 140
$1609 < F \leq 1613$	From minus 140 to minus 80
$1613 < F \leq 1626$	From minus 80 to minus 60
$1626 < F \leq 1670$	From minus 60 to minus 15
$F > 1670$	Minus 15

Table 2 — Threshold values of harmonic interference at use of GPS signals

Frequency, MHz	Threshold values of harmonic interference, dBW
$F < 1525$	Minus 15
$1525 < F \leq 1565$	From minus 50 to minus 140
$1565 < F \leq 1585$	Minus 140
$1585 < F \leq 1610$	From minus 140 to minus 60
$1610 < F \leq 1626$	From minus 60 to minus 50
$1626 < F \leq 1670$	From minus 50 to minus 15
$F > 1670$	Minus 15

Specification implies separate RF chains for GPS and GLONASS.

Most commercial GNSS receivers, including QCOM implement a single RF chain

Harmonic Interference Tolerance --- Recommendation

Frequency, MHz	Interference level threshold values (dBm)
$F \leq 1510$	-25dBm
$1510 < F \leq 1540$	-34dBm
$1540 < F \leq 1559$	-83dBm
$1559 < F \leq 1565$	-110dBm
$1565 < F \leq 1585$	-110dBm
$1585 < F \leq 1593$	-100dBm
$1593 < F \leq 1610$	-110dBm
$1610 < F \leq 1626$	-83dBm
$1626 < F \leq 1640$	-42dBm
$1640 < F \leq 1710$	-34dBm
$F > 1710$	15 dBm

Thank you

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