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LS on twinkling replacement antennas

In addition to the measurement results presented in earlier LS Tdoc SMG2 2000/99 for twinkling antennas interfering in the DCS1800 Band, SMG2 provides additional measurements on interference into Air Traffic Control (ATC) Band 2.7-2.9 GHz.

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REPORT

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Spurious emission measurement on 2.7 GHz on twinkling antennas for handheld GSM mobiles

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Summary

Today there is several pirate antennas for handheld mobiles available on the market. Some of these antennas have one or two built-in light-emitting diodes. The diodes are twinkling when the mobile is transmitting.

In order to investigate the spurious emission on 2.7 GHz from these twinkling antennas have we performed a spurious emission measurement. The measurements have been performed at four GSM 900 mobiles equipped with twinkling antennas.

The test results for the spurios emission measurement shows that there is possible with a level of + 5 dBm on the second harmonic in 2700 MHz from mobiles in GSM 900 band. This may cause a strong interference signal betwen 2670.6- 2744.4 MHz.

Abbreviation

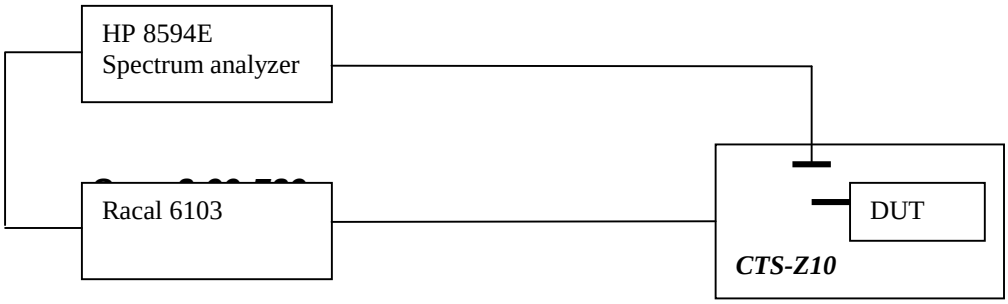
AFRCN	Absolute Radio Frequency Channel Number
DUT	Device Under Test
MS	Mobile Station
Reference signal	Dipole-antenna in free space with an carrier power as the nominal power for the highest power level that is applicable to the mobile classmark

Spurious emission measurement

Test Equipment

Racal 6103 GSM test simulator
Hewlet Pacard Spectrum analyzer 8594E
Rohde&Schwarz Antenna coupler 900/1800/1900 MHz CTS-Z10

Test Performance



The DUT was brought i conversation mode at ARFCN 50 by using a Racal GSM MS TEST SET 6103 and a antenna CTS-Z10.

A measuring dipole antenna for 2700 MHz is connected to the HP 8594E spectrum analyzer. The spectrum analyzer is synchronised to the GSM-timeslot with the GSM tester Racal 6103.

The spectrum analyzer measures the transmitted level of the second harmonic in 2700 MHz.

Test Result

Mobile	Original antenna	**Twinkling antenna Red/Blue**	**Twinkling antenna Red**
DUT 1	-35 dBm	**+5 dBm**	
DUT 2	-40 dBm	**+0 dBm**	
DUT 3	-35 dBm	**-2 dBm**	**-5 dBm**
DUT 4	-35 dBm	**+0 dBm**	

Conclusion

Cf. <2-99-K00>: Confirmation that handheld 0.9 GHz GSM900 MS equipped with twinkling replacement antenna can on 3*0.9 GHz interfere with Air Traffic Control (ATC) with significantly higher spurious radiation than from original antenna. However, the twinkling antenna radiation was measured to be at still higher level on 2*0.9 GHz (DCS1800) .