

Source: SMG2

Title: LS on Twinkling replacement antennas (dispatched on 20 Jan 2000)
(To: TCAM, GSM Association-TWG, GTAAB, Copy: ETSI SMG, ETSI ERM, GSM Association, CEPT/ERC, ECTEL TMS 3GPP TSG RAN, 3GPP TSG T, 3GPP TSG SA)

Agenda item: 5

Document for: Information, Discussion

Attached you may find a further LS to the previous one on this topic ([TP-99228](#))

See below an excerpt from the DRAFT Report of TSG#6 meeting, Nice

Quote:

TP-99228: LS on "replacement antennas" from ETSI SMG2 to TCAM, GSM Association-TWG, GTAAB (copy to TSG-T) was noted.

The use of replacement antennas (ex. "twinkling replacement antennas") increases the interference, which may have a significant impact on the performance of a network. Regulatory bodies see the antenna as a passive device that does not need regulation. This assumption can no longer be seen as valid, as the measurements show a significant impact of these on the efficient use of spectrum, and causing serious harm to other operators and services. TCAM (Telecommunication Conformity Assessment and Market Surveillance committee under the European R&TTE Directive articles 13, 14, 15), which is an EU Member States Consultative Committee, was asked to consider which regulatory means exist or can be developed to solve these problems. In parallel other ETSI Technical Bodies were asked to use their influence to minimise the problem created by "twinkling replacement antennas". So far there were no comments from the regulatory side.

Unquote.

ETSI STC SMG2
Aalborg, Denmark
10 - 14 January 2000

Tdoc SMG2 462/00
A.I.: 7.2.6.5

To: TCAM, GSM Association-TWG, GTAAB

Copy: ETSI SMG, ETSI ERM, GSM Association, CEPT/ERC,
3GPP TSG RAN, 3GPP TSG T, 3GPP TSG SA, ECTEL TMS

From: ETSI SMG2

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.



REPORT

Uppgjord (även faktaansvarig om annan) Prepared (also subject responsible if other)	Nr No.			
TM UKM Stig-Åke Larsson	TM UKM 99:0096			
Dokumentansvarig/Godkänd Document responsible/Approved	Datum Date	Rev	Tillhör/File	S-kl
TM UKMC Mikael Schmidt	1999-12-16	A		I

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

Table of contents	Sida
Summary	2
Abbreviation	2
Spurious emission measurement	3
Test Equipment	3
Test Performance	3
Test Result	3

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 spurious 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 between 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

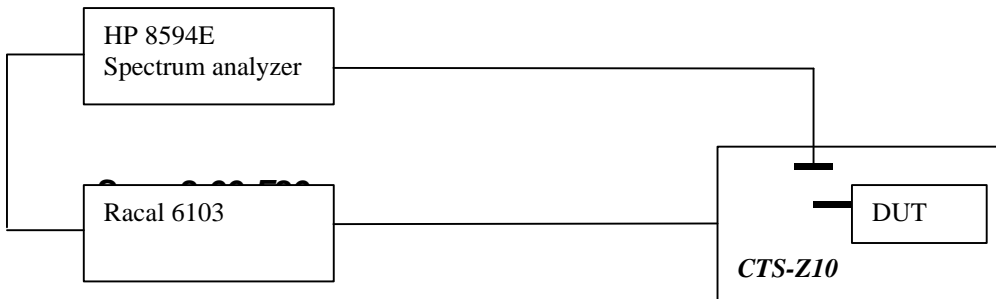
Test Equipment

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) .