



TEST REPORT

Reference No. : WTX23X05117108W001
Manufacturer : Xontel Technology Company
Address : Kuwait City Aladel Tower,F21 QIBLA
Product Name : WIFI Phone
Model No. : XT-16W
Standards : ETSI EN 301 511 V12.5.1 (2017-03)
Date of Receipt sample : 2023-05-30
Date of Test : 2023-05-30 to 2023-07-04
Date of Issue : 2023-07-04
Test Report Form No. : WTX_ESI EN 301 511_2017W
Test Result : Pass

Remarks:

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

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Report version

Version No.	Date of issue	Description
Rev.00	2023-07-04	Original
/	/	/

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT	
Product Name:	WIFI Phone
Trade Name:	Xontel
Model No.:	XT-16W
Adding Model(s):	/
Rated Voltage:	DC3.7V
Battery Capacity:	2000mAh
Adapter Model:	CT-083 Input:AC110-240 50/60Hz 0.2A Output:DC5V1.0A
Software Version:	/
Hardware Version:	/
<i>Note: The test data is gathered from a production sample provided by the manufacturer.</i>	

Technical Characteristics of EUT	
2G	
Support Networks:	GSM, GPRS, EDGE
Support Bands:	GSM900, DCS1800
Frequency Range:	GSM900: Tx: 880-915MHz, Rx: 925-960MHz DCS1800: Tx: 1710-1785MHz, Rx: 1805-1880MHz
RF Output Power:	GSM900: 32.34dBm, GSM1800: 29.20dBm EDGE900: 27.20dBm, EDGE1800: 25.92dBm
Modulation Type:	GMSK, 8PSK
Type of Antenna:	Integral Antenna
Antenna Gain:	GSM900: 0.48dBi, DCS1800: 1.17dBi
GPRS/EDGE Class:	Class 12
<i>Note: The Antenna Gain is provided by the customer and can affect the validity of results.</i>	



1.2 Test Standards

The tests were performed according to following standards:

ETSI EN 301 511 V12.5.1 (2017-03): Global System for Mobile communications (GSM); Mobile Stations (MS) equipment; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU.

ETSI TS 151 010-1 V13.4.0 (2017-08): Digital cellular telecommunications system (Phase 2+) (GSM); Mobile Station (MS) conformance specification; Part 1: Conformance specification (3GPP TS 51.010-1 version 13.4.0 Release 13).

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product which maybe results in lowering the emission/immunity should be checked to ensure that compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ETSI EN 301 511, the equipment under test (EUT) was configured to measure its highest possible emission level. For more detail refer to the Operating Instructions.

1.4 Test Facility

Address of the test laboratory

Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.

Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China

FCC – Registration No.: 125990

Waltek Testing Group (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A

The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A.



1.5 EUT Setup and Test Mode

The EUT has been tested under typical operating condition. The Applicant provide software to control the EUT for staying in continuous transmitting and receiving mode for testing.

Test Mode List		
Test Mode	Description	Remark
TM1	GSM900	Transmitting/ Receiving/Idle
TM2	DCS1800	Transmitting/ Receiving/Idle
Note: The Test EUT support two SIM card(SIM1, SIM2),so all the tests are performed at each SIM card (SIM1, SIM2) mode, the datum recorded is the worst case for all the mode at SIM1 Card mode.		

Test Conditions					
	NTNV	LTLV	LTHV	HTHV	HTLV
Temperature (°C)	25	-10	-10	40	40
Voltage (V)	3.7	3.5	4.2	4.2	3.5
Relative Humidity:					55%.
ATM Pressure:		1019 mbar			

Test Channel			
Test Mode	Low	Middle	High
GPRS900	975	60	124
GPRS1800	513	698	880

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Accessories Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
/	/	/	/



1.6 Measurement Uncertainty

3GPP TS 51.010-1	Test Description	Uncertainty
12.1.1	Conducted spurious emissions-MS Allocated a Channel Emissions@100kHz<f<2GHz Emissions@2GHz <f<12.75GHz	1.0dB 1.0dB
12.1.2	Conducted spurious emissions- MS in Idle Mode Emissions@100kHz<f<2GHz Emissions@2GHz <f<12.75GHz	1.0dB 1.0dB
12.2.1 12.2.2	Radiated spurious emissions Emissions@30-200MHz Emissions@0.2-1GHz Emissions@1-6GHz Emissions@6-18GHz	4.52dB 5.56dB 3.84dB 3.92dB
13.1 13.2 13.16.1 13.17.1 13.17.2	Frequency error and phase error Frequency error under multipath and interference conditions Frequency error and phase error in GPRS multislot configuration Frequency error and Modulation accuracy in EGPRS Configuration Frequency error under multipath and interference conditions in EGPRS Configuration	Freq Err<5Hz RMS Phase Err 1.0degrees Peak Phase Error 5.0degrees
13.3.4.1 13.16.2.4.1 13.17.3.4.1	Transmitter output power and burst timing Transmitter output power in GPRS multislot configuration EGPRS Transmitter output power	0.6dB
13.4 13.16.3 13.17.4	Output RF spectrum Transmitter output power in GPRS(or EGPRS)multislot configuration	0.6dB
14.7.1 14.18.5	Receiver Blocking and spurious response - speech channels Blocking and spurious response in EGPRS Configuration Wanted Signal@f<2GHz Blocking Signal@100kHz<f<2GHz Blocking Signal@2GHz<f<12.75GHz	0.6 dB 1.7 dB 1.7 dB

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.



1.7 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal Date	Due Date
MXG Vector Signal Generator	Agilent	N5182A	MY47420108	2023-02-25	2024-02-24
DC Power Supply	Agilent	E3634A	MY40009294	2023-02-25	2024-02-24
EXG Analog Signal Generator	KEYSIGHT	N5173B	MY61252892	2023-02-25	2024-02-24
Spectrum Analyzer	Rohde&Schwarz	FSV40-N	101559	2023-02-25	2024-02-24
Band Reject Filter Group	Tonscend	JS0806-F	23A806F0658	2023-02-25	2024-02-24
Universal Radio Communication Tester	Rohde & Schwarz	CMU200	114403	2023-02-25	2024-02-24
Universal Radio Communication Tester	Rohde & Schwarz	CMW500	148650	2023-02-25	2024-02-24
<input type="checkbox"/> Chamber A: Below 1GHz					
Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2023-02-25	2024-02-24
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2023-02-25	2024-02-24
Amplifier	HP	8447F	2805A03475	2023-02-25	2024-02-24
Loop Antenna	Schwarz beck	FMZB 1516	9773	2021-03-20	2024-03-19
Trilog Broadband Antenna	Schwarz beck	VULB9163	9163-333	2023-03-20	2026-03-19
<input type="checkbox"/> Chamber A: Above 1GHz					
Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2023-02-25	2024-02-24
Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2023-02-25	2024-02-24
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2023-02-25	2024-02-24
Amplifier	C&D	PAP-1G18	14918	2023-02-25	2024-02-24
Horn Antenna	ETS	3117	00086197	2021-03-19	2024-03-18
DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2021-03-19	2024-03-18
Pre-amplifier	Schwarzbeck	BBV 9721	9721-031	2023-02-25	2024-02-24
<input checked="" type="checkbox"/> Chamber B:Below 1GHz					
Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-635	2021-04-09	2024-04-08
Amplifier	Agilent	8447D	2944A10179	2023-02-25	2024-02-24
EMI Test Receiver	Rohde & Schwarz	ESPI	101391	2023-02-25	2024-02-24
<input checked="" type="checkbox"/> Chamber C:Below 1GHz					
EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2023-02-25	2024-02-24
Trilog Broadband Antenna	Schwarz beck	VULB 9168	1194	2021-05-28	2024-05-27



Amplifier	HP	8447F	2944A03869	2023-02-25	2024-02-24
<input type="checkbox"/> Chamber C: Above 1GHz					
EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2023-02-25	2024-02-24
Horn Antenna	POAM	RTF-11A	LP228060221	2023-03-10	2026-03-09
Amplifier	Tonscend	TAP01018050	AP22E806235	2023-02-25	2024-02-24

Software List			
Description	Manufacturer	Model	Version
EMI Test Software (Radiated Emission)*	Farad	EZ-EMC	RA-03A1

*Remark: indicates software version used in the compliance certification testing.

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2. SUMMARY OF TEST RESULTS

Test Item	Test Requirement ESTI EN301 511	Test Method ETSI TS151010-1	Verdict
GSM			
Transmitter - Frequency error and phase error	Section 4.2.1	Clause 13.1	PASS
Transmitter - Frequency error under multipath and interference conditions	Section 4.2.2	Clause 13.2	PASS
Transmitter output power and burst timing	Section 4.2.5	Clause 13.3	PASS
Transmitter - Output RF spectrum	Section 4.2.6	Clause 13.4	PASS
Conducted spurious emissions - MS allocated a channel	Section 4.2.12	Clause 12.1.1	PASS
Conducted spurious emissions - MS in idle mode	Section 4.2.13	Clause 12.1.2	PASS
Receiver Blocking and spurious response - speech channels	Section 4.2.20	Clause 14.7.1	PASS
Intermodulation rejection – speech channels	Section 4.2.32	Clause 14.6.1	PASS
AM suppression - speech channels	Section 4.2.35	Clause 14.8.1	PASS
Adjacent channel rejection – speech channels (TCH/FS)	Section 4.2.38	Clause 14.5.1	PASS
Reference sensitivity - TCH/FS	Section 4.2.42	Clause 14.2.1	PASS
Reference sensitivity - FACCH/F	Section 4.2.43	Clause 14.2.3	PASS
GPRS			
Frequency error and phase error in GPRS multislot configuration	Section 4.2.4	Clause 13.16.1	PASS
Transmitter output power in GPRS multislot configuration	Section 4.2.10	Clause 13.16.2	PASS
Output RF spectrum in GPRS multislot configuration	Section 4.2.11	Clause 13.16.3	PASS
Intermodulation rejection – control channels	Section 4.2.33	Clause 14.6.2	PASS
AM suppression - control channels	Section 4.2.36	Clause 14.8.2	PASS
Adjacent channel rejection – control channels	Section 4.2.39	Clause 14.5.2	PASS
Minimum Input level for Reference performance - GPRS	Section 4.2.44	Clause 14.16.5	PASS
EGPRS			
Frequency error and Modulation accuracy in	Section 4.2.26	Clause 13.17.1	PASS



EGPRS Configuration				
Frequency error under multipath and interference conditions in EGPRS Configuration		Section 4.2.27	Clause 13.17.2	PASS
EGPRS Transmitter output power		Section 4.2.28	Clause 13.17.3	PASS
Output RF spectrum in EGPRS configuration		Section 4.2.29	Clause 13.17.4	PASS
Blocking and spurious response in EGPRS configuration		Section 4.2.30	Clause 14.18.5	PASS
Intermodulation rejection - EGPRS		Section 4.2.34	Clause 14.18.4	PASS
AM suppression - packet channels		Section 4.2.37	Clause 14.8.3	PASS
Adjacent channel rejection - EGPRS		Section 4.2.40	Clause 14.18.3	PASS
Minimum Input level for Reference performance - EGPRS		Section 4.2.45	Clause 14.18.1	PASS
Radiated spurious emissions				
Radiated spurious emissions - MS allocated a channel		Section 4.2.16	Clause 12.2.1	PASS
Radiated spurious emissions - MS in idle mode		Section 4.2.17	Clause 12.2.2	PASS



3. Essential radio test suites

3.1 Frequency error and phase error

Clause 13.1 of TS 151 010-1 applies.

3.1.1 Definition and applicability

The frequency error is the difference in frequency, after adjustment for the effect of the modulation and phase error, between the RF transmission from the MS and either:

- the RF transmission from the BS, or
- the nominal frequency for the ARFCN used.

The phase error is the difference in phase, after adjustment for the effect of the frequency error, between the RF transmission from the MS and the theoretical transmission according to the intended modulation.

The requirements and this test apply to GSM900 and DCS1800 MS.

3.1.2 Conformance requirements

Frequency error

For all measured bursts, the frequency error, derived in step c.6), shall be less than 0,1 ppm, except for GSM 400 MS where a value of 0,2 ppm shall be used.

Phase error

For all measured bursts, the RMS phase error, derived in step c.8), shall not exceed 5 degrees.

For all measured bursts, each individual phase error, derived in step c.7), shall not exceed 20 degrees.

3.1.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 13.1.4 for the measurement method.

3.1.4 Test result

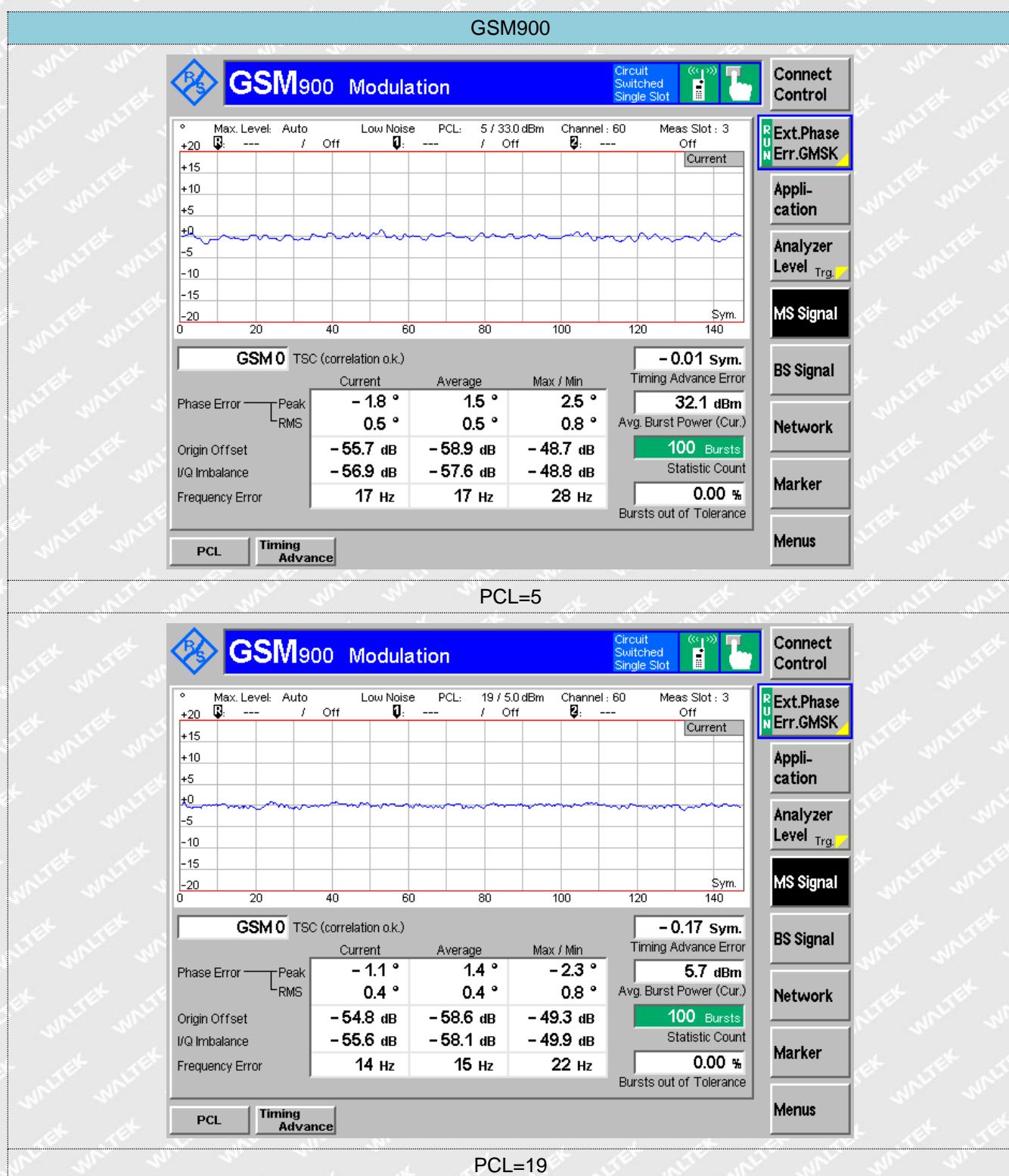
Test Mode	Test Channel	NTNV	HTHV	HTLV	LTHV	LTLV
GSM900	60	PASS	PASS	PASS	PASS	PASS
DCS1800	698	PASS	PASS	PASS	PASS	PASS

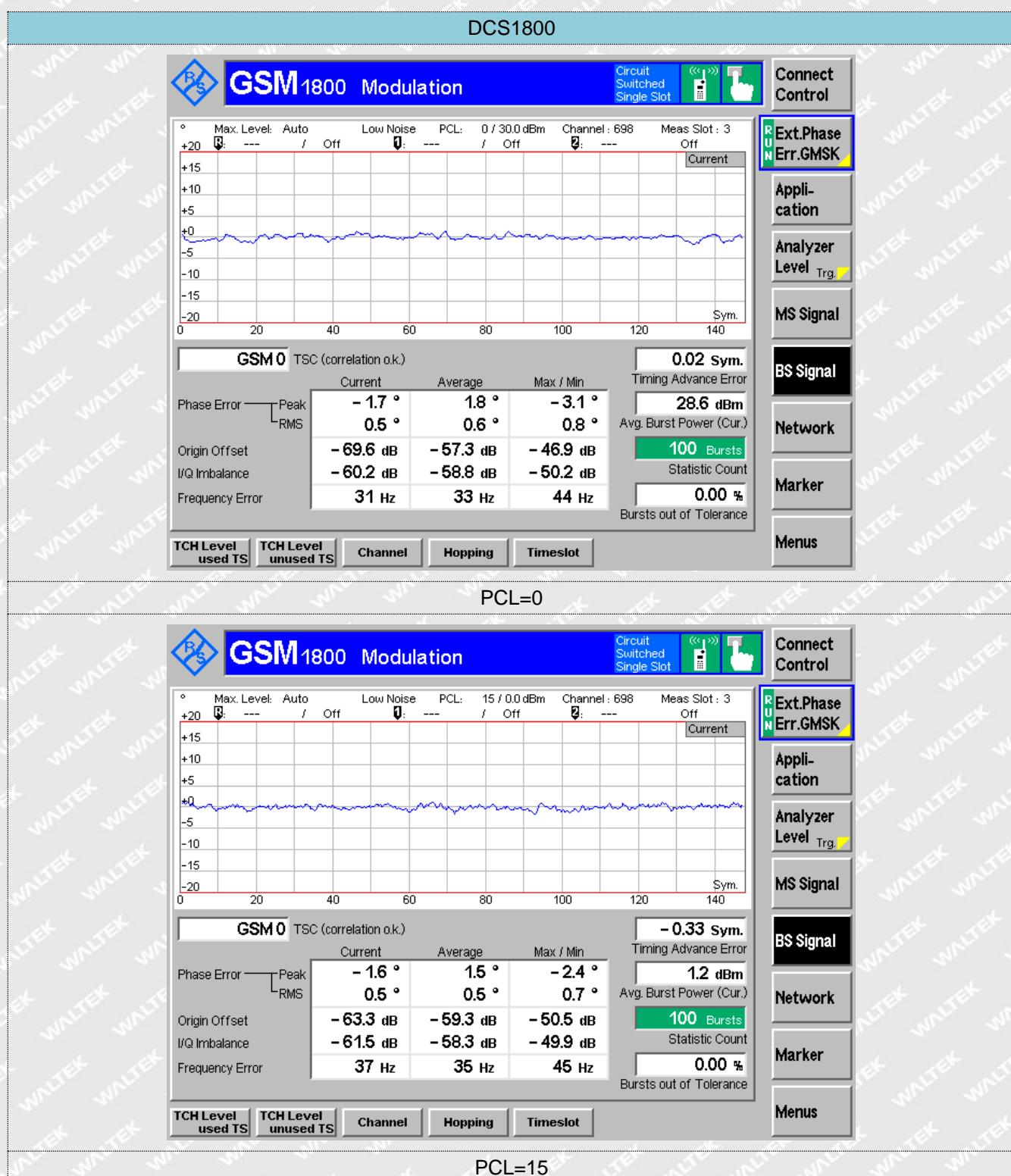


Worst case at NTV Condition Test Data as below:

Mode	PCL	Frequency Error (Hz)	Limit (Hz)	Result	Phase error (degree)		Limit (degree)	Result
GSM900	5	25	89.7	PASS	RMS	0.8	5	PASS
	19	24	89.7		Peak	2.5	20	PASS
	0	43	174.7		RMS	0.8	5	PASS
	15	45	174.7		Peak	-2.3	20	PASS
DCS1800	0	43	174.7	PASS	RMS	0.8	5	PASS
	15	45	174.7		Peak	-3.1	20	PASS
	0	43	174.7	PASS	RMS	0.7	5	PASS
	15	45	174.7		Peak	2.6	20	PASS

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3.2 Frequency error under multipath and interference conditions

Clause 13.2 of TS 151 010-1 applies.

3.2.1 Definition and applicability

The frequency error under multipath and interference conditions is a measure of the ability of the MS to maintain frequency synchronization with the received signal under conditions of Doppler shift, multipath reception and interference.

The requirements and this test apply to GSM900 and DCS1800 MS.

3.2.2 Conformance requirements

1. The MS carrier frequency error for each burst shall be accurate to within 0,1 ppm (0,2 ppm for GSM 400), or 0,1ppm (0,2 ppm for GSM 400) compared to signals received from the BS for signal levels down to 3 dB below the reference sensitivity level.
 - 1.1 Under normal conditions; 3GPP TS 05.10, subclauses 6 and 6.1.
 - 1.2 Under extreme conditions; 3GPP TS 05.10, subclauses 6 and 6.1; 3GPP TS 05.05 annex D in subclauses D.2.1 and D.2.2.
2. The MS carrier frequency error for each burst shall be accurate to within 0,1 ppm (0,2 ppm for GSM 400), or 0,1 ppm (0,2 ppm for GSM 400) compared to signals received from the BS for 3 dB less carrier to interference ratio than the reference interference ratios (3GPP TS 05.10, subclauses 6 and 6.1).

3.2.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 13.2.4 for the measurement method.

3.2.4 Test result

Test Mode	Test Channel	NTNV	HTHV	HTLV	LTHV	LTLV
GSM900	60	PASS	PASS	PASS	PASS	PASS
DCS1800	698	PASS	PASS	PASS	PASS	PASS



Worst case at NTVN Condition Test Data as below:

Test Conditions	GSM900 Middle			
	TU3(Hz)	TU50(Hz)	HAT100(Hz)	RA 250(Hz)
Normal	62.59	63.38	64.48	63.62
HTHV	61.74	62.54	63.47	62.63
HTLV	61.59	62.96	63.56	61.65
LTHV	60.23	61.32	63.84	62.68
LTLV	61.61	62.18	62.19	61.47
Limit (Hz)	±230	±160	±180	±300
Test Result	PASS	PASS	PASS	PASS

Test Conditions	DCS1800 Middle			
	TU1.5(Hz)	TU50(Hz)	HT100(Hz)	RA 130(Hz)
Normal	63.59	65.38	63.24	62.56
HTHV	62.52	64.64	62.34	61.54
HTLV	62.20	63.32	62.51	61.62
LTHV	62.38	63.91	62.28	61.31
LTLV	61.64	64.57	61.23	60.38
Limit (Hz)	±320	±260	±350	±400
Test Result	PASS	PASS	PASS	PASS



3.3 Transmitter output power and burst timing

Clause 13.3 of ETSI TS 151 010-1 applies.

3.3.1 Definition and applicability

The transmitter output power is the average value of the power delivered to an artificial antenna or radiated by the MS and its integral antenna, over the time that the useful information bits of one burst are transmitted.

The transmitting burst timing is the envelope of the RF power transmitted with respect to time. The timings are referenced to the transition from bit 13 to bit 14 of the Training Sequence ("midamble") before differential decoding. The timing of the modulation is referenced to the timing of the received signal from the SS.

The requirements and this test apply to GSM900 and DCS1800 MS.

3.3.2 Conformance requirements

1. The MS maximum output power shall be as defined in 3GPP TS 05.05, subclause 4.1.1, table for GMSK modulation, according to its power class, with a tolerance of ± 2 dB under normal conditions; 3GPP TS 05.05, subclause 4.1.1, table for GMSK modulation.
2. The MS maximum output power shall be as defined in 3GPP TS 05.05, subclause 4.1.1, table for GMSK modulation, according to its power class, with a tolerance of ± 2.5 dB under extreme conditions; 3GPP TS 05.05, subclause 4.1.1, table for GMSK modulation; 3GPP TS 05.05 annex D in subclauses D.2.1 and D.2.2.
3. The power control levels shall have the nominal output power levels as defined in 3GPP TS 05.05, subclause 4.1.1, from the lowest power control level up to the maximum output power corresponding to the class of the MS (for tolerance on maximum output power see conformance requirements 1), with a tolerance of ± 3 dB, ± 4 dB or ± 5 dB under normal conditions; 3GPP TS 05.05, subclause 4.1.1.
4. The power control levels shall have the nominal output power levels as defined in 3GPP TS 05.05, 4.1.1, from the lowest power control level up to the maximum output power corresponding to the class of the MS (for tolerance on maximum output power see conformance requirements 2), with a tolerance of ± 4 dB, ± 5 dB or ± 6 dB under extreme conditions; 3GPP TS 05.05, subclause 4.1.1; 3GPP TS 05.05 annex D subclauses D.2.1 and D.2.2.
5. The output power actually transmitted by the MS at consecutive power control levels shall form a monotonic sequence and the interval between power control levels shall be 2 ± 1.5 dB (1 ± 1 dB between power control level 30 and 31 for PCS 1 900); 3GPP TS 05.05, subclause 4.1.1.
6. The transmitted power level relative to time for a normal burst shall be within the power/time template given in 3GPP TS 05.05, annex B in figure B.1:
 - 6.1 Under normal conditions; 3GPP TS 05.05, subclause 4.5.2.
 - 6.2 Under extreme conditions; 3GPP TS 05.05, subclause 4.5.2, 3GPP TS 05.05 annex D in subclauses D.2.1 and D.2.2.
7. When accessing a cell on the RACH and before receiving the first power command during a communication on a DCCH or TCH (after an IMMEDIATE ASSIGNMENT), all GSM, class 1 and class 2 DCS 1 800 and PCS 1 900 MS shall use the power control level defined by the MS_TXPWR_MAX_CCH



parameter broadcast on the BCCH of the cell, or if MS_TXPWR_MAX_CCH corresponds to a power control level not supported by the MS as defined by its power class, the MS shall act as though the closest supported power control level had been broadcast. A Class 3 DCS 1 800 MS shall use the POWER_OFFSET parameter.

8. The transmissions from the MS to the BS, measured at the MS antenna, shall be 468,75 - TA bit periods behind the transmissions received from the BS, where TA is the last timing advance received from the current serving BS. The tolerance on these timings shall be ± 1 bit period:

8.1 Under normal conditions; 3GPP TS 05.10, subclause 6.4.

8.2 Under extreme conditions; 3GPP TS 05.10, subclause 6.4, 3GPP TS 05.05 annex D in subclauses D.2.1 and D.2.2.

9. The transmitted power level relative to time for a random access burst shall be within the power/time template given in 3GPP TS 05.05, annex B in figure B.3:

9.1 Under normal conditions; 3GPP TS 05.05, subclause 4.5.2.

9.2 Under extreme conditions; 3GPP TS 05.05, subclause 4.5.2, 3GPP TS 05.05 annex D in subclauses D.2.1 and D.2.2.

10. The MS shall use a TA value of 0 for the Random Access burst sent:

10.1 Under normal conditions; 3GPP TS 05.10, subclause 6.6.

10.2 Under extreme conditions; 3GPP TS 05.10, subclause 6.6, 3GPP TS 05.05 annex D in subclauses D.2.1 and D.2.2.

11. In addition, if the network indicates support for MS power reduction by broadcasting parameter INIT_PWR_RED (see 3GPP TS 44.018) and if the latest RLA-value, RLA_C or RLA_P (see section 6.1) for the measured signal strength from the BTS the MS is accessing is -48 dBm or higher immediately before the access attempt, the MS power shall not exceed.

$PRED = \min\{\text{MS_TXPWR_MAX_CCH}, (\text{LB_MS_TXPWR_MAX_CCH} + \text{Band_offset}), (\text{P5-INIT_PWR_RED})\}$ for GSM 400, GSM 700, T-GSM 810, GSM 850 and GSM 900 and

$PRED = \min\{\text{MS_TXPWR_MAX_CCH}, (\text{P0+2-INIT_PWR_RED})\}$ for DCS 1800 and PCS 1900, where P5 and P0 are the power control levels for respective band in 3GPP TS 45.005.

The power reduction only applies for the first transmission of the access burst on the RACH. If the initial transmission fails due to no response from the network, the MS shall not apply power reduction in remaining transmissions. The power reduction also applies for DCCH or TCH (after an IMMEDIATE ASSIGNMENT) under the same received signal strength conditions until the ordered power control level in the SACCH L1 header differs from MS_TXPWR_MAX_CCH or LB_MS_TXPWR_MAX_CCH + Band_offset, whichever is applicable or a L3 message with a valid power control command is received. If INIT_PWR_RED is not broadcast, no power reduction shall apply.

3GPP TS 45.008, subclause 4.2, 3GPP TS 44.018, subclause 10.5.2.33b.11.1 Under normal conditions; 3GPP TS 05.10, subclause 6.6.

3.3.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 13.3.4 for the measurement method.



3.3.4 Test result

Test Mode	Test Channel	NTNV	HTHV	HTLV	LTHV	LTLV
GSM900	975	PASS	PASS	PASS	PASS	PASS
	60	PASS	PASS	PASS	PASS	PASS
	124	PASS	PASS	PASS	PASS	PASS
DCS1800	513	PASS	PASS	PASS	PASS	PASS
	698	PASS	PASS	PASS	PASS	PASS
	880	PASS	PASS	PASS	PASS	PASS

Worst case at NTV Condition Test Data as below:

WALTEK



GSM900



GSM 900 Power

Circuit
Switched
Single SlotConnect
ControlRUN
P/PCLApplie. 1
Applie. 2Analyzer
Level Trg.

MS Signal

BS Signal

Network

Menus

PCL/Channel	1st	975	2nd	60	3rd	124
5 (33.0 dBm)	32.2	32.0	31.9			
6 (31.0 dBm)	31.1	30.8	30.7			
7 (29.0 dBm)	29.4	28.9	28.8			
8 (27.0 dBm)	27.5	27.0	26.8			
9 (25.0 dBm)	25.6	25.1	24.9			
10 (23.0 dBm)	23.7	23.1	22.9			
11 (21.0 dBm)	21.5	21.2	20.8			
12 (19.0 dBm)	19.5	19.2	18.9			
13 (17.0 dBm)	17.5	17.2	16.8			
14 (15.0 dBm)	15.5	15.1	14.7			
15 (13.0 dBm)	13.6	13.1	12.7			
16 (11.0 dBm)	11.7	11.2	10.7			
17 (9.0 dBm)	9.9	9.2	8.6			
18 (7.0 dBm)	8.1	7.3	6.5			
19 (5.0 dBm)	6.3	5.4	4.6			

all results in dBm



GSM 1800 Power

Circuit
Switched
Single SlotConnect
ControlRUN
P/PCLApplie. 1
Applie. 2Analyzer
Level Trg.

MS Signal

BS Signal

Network

Menus

PCL/Channel	1st	512	2nd	698	3rd	885
0 (30.0 dBm)	29.6	29.7	29.7			
1 (28.0 dBm)	28.1	28.2	28.3			
2 (26.0 dBm)	26.1	26.2	26.3			
3 (24.0 dBm)	24.1	24.2	24.3			
4 (22.0 dBm)	22.1	22.2	22.3			
5 (20.0 dBm)	20.1	20.2	20.3			
6 (18.0 dBm)	18.0	18.1	18.3			
7 (16.0 dBm)	16.0	16.1	16.2			
8 (14.0 dBm)	14.0	14.1	14.3			
9 (12.0 dBm)	12.0	12.1	12.3			
10 (10.0 dBm)	10.0	10.2	10.3			
11 (8.0 dBm)	7.9	8.1	8.2			
12 (6.0 dBm)	6.1	6.2	6.4			
13 (4.0 dBm)	4.3	4.5	4.7			
14 (2.0 dBm)	2.6	2.7	2.9			
15 (0.0 dBm)	0.9	1.0	1.2			

all results in dBm



GSM 1800 Power

Circuit
Switched
Single SlotConnect
ControlRUN
P/PCLApplie. 1
Applie. 2Analyzer
Level Trg.

MS Signal

BS Signal

Network

Menus



3.4 Transmitter output RF spectrum

Clause 13.4 of TS 151 010-1 applies.

3.4.1 Definition and applicability

The output RF spectrum is the relationship between the frequency offset from the carrier and the power, measured in a specified bandwidth and time, produced by the MS due to the effects of modulation and power ramping.

The requirements and this test apply to GSM900 and DCS1800.

3.4.2 Conformance requirements

1. The level of the output RF spectrum due to the modulation shall be no more than the following lowest measurement limits:

- 36dBm below 600kHz offset from the carrier,
- 51dBm for E-GSM900 or -56dBm for DCS1800 from 600kHz out to less than 1800kHz offset from carrier,
- 46dBm for E-GSM900 or -51dBm for DCS1800 at and beyond 1800kHz offset from the carrier, but with the following exceptions at up to -36dBm:
 - up to three bands of 200kHz width centered on a frequency which is an integer multiple of 200kHz in the combined range 600kHz to 6000kHz and below the carrier,
 - up to 12 bands of 200kHz width centered on a frequency which is an integer multiple of 200kHz at more than 6000kHz offset from the carrier.

1.1 Under normal conditions.

1.2 Under extreme conditions.

2. The level of the output RF spectrum due the switching transient shall be no more than given in table 13.9 and table 13.10 of TS 151 010-1 clause 13.4.

2.1 Under normal conditions.

2.2 Under extreme conditions.

3. When allocated a channel the power emitted by the MS, in the band 935MHz to 960MHz shall be no more than -79dBm, in the band 925 to 935MHz shall be no more than -67dBm and in the band 1805 to 1880MHz shall be no more than -71dBm except in five measurements in each of the bands 925 to 960MHz and 1805 to 1880MHz where exceptions at up to -36dBm are permitted.

3.4.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 13.3.4 for the measurement method.

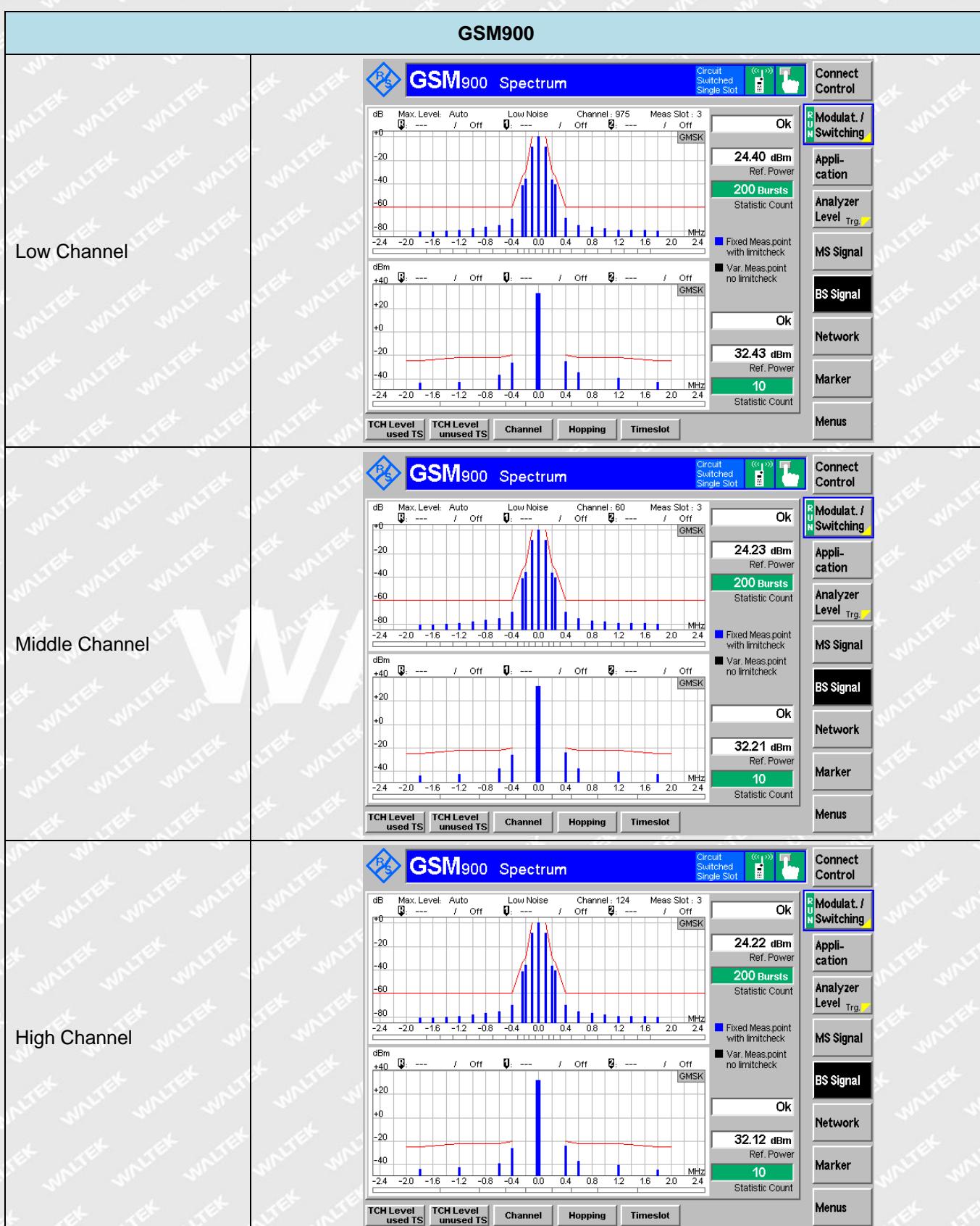


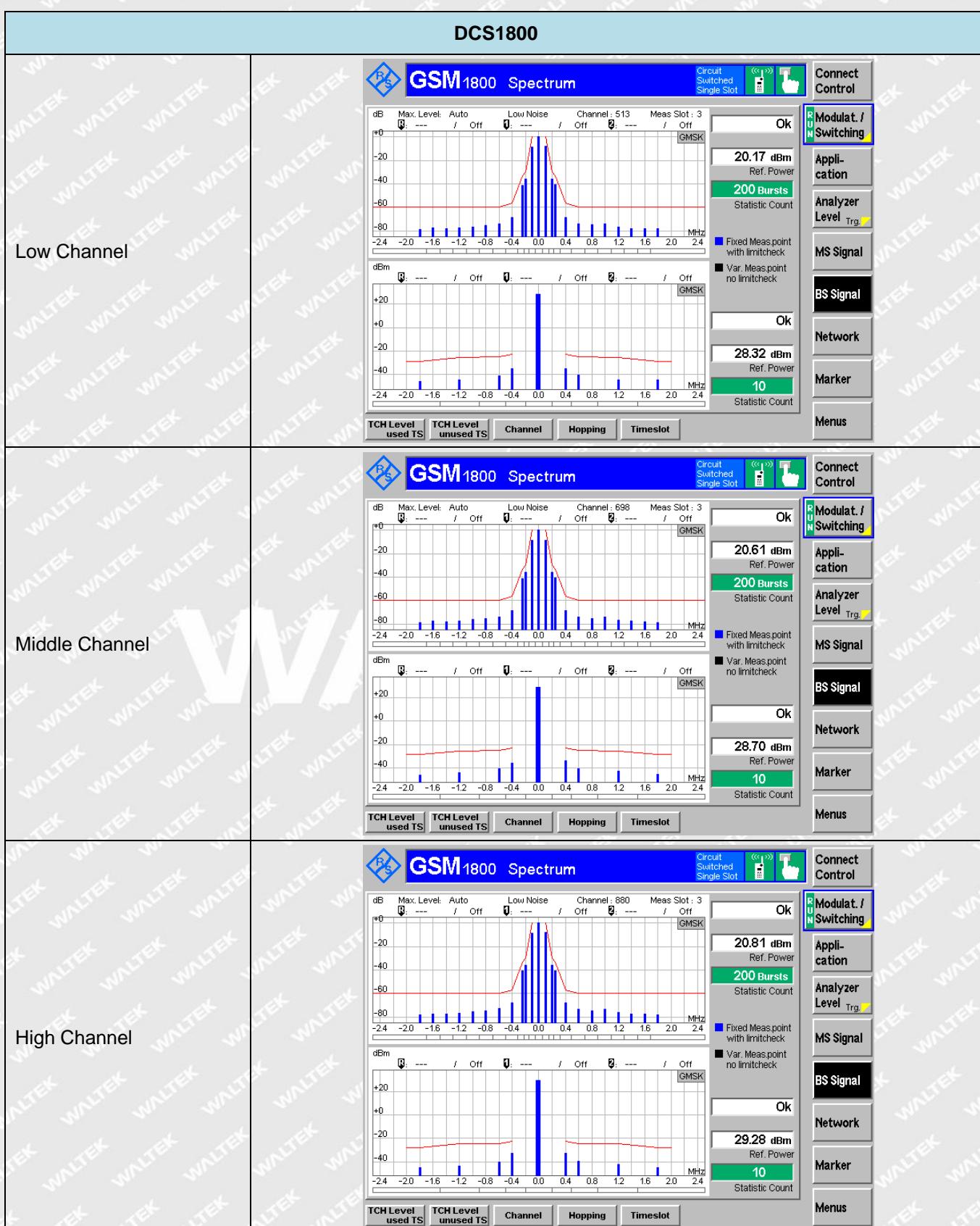
3.4.4 Test result

Test Mode	Test Channel	NTNV	HTHV	HTLV	LTHV	LTLV
GSM900	975	PASS	PASS	PASS	PASS	PASS
	60	PASS	PASS	PASS	PASS	PASS
	124	PASS	PASS	PASS	PASS	PASS
DCS1800	513	PASS	PASS	PASS	PASS	PASS
	698	PASS	PASS	PASS	PASS	PASS
	880	PASS	PASS	PASS	PASS	PASS

Worst case at NTV Condition Test Data as below:

WALTEK







3.5 Conducted spurious emissions – MS allocated a channel

Clause 12.1.1 of TS 151 010-1 applies.

3.5.1 Definition and applicability

Conducted spurious emissions, when the MS has been allocated a channel, are emissions from the antenna connector at frequencies other than those of the carrier and sidebands associated with normal modulation.

The requirements and this test apply to GSM900 and DCS1800 MS with a permanent antenna connector.

3.5.2 Conformance requirements

The conducted spurious power emitted by the MS, when allocated a channel, shall be no more than the levels in following table:

Frequency range	Power level in dBm	
	E-GSM900	DCS1800
9kHz to 1GHz	-36	-36
1GHz to 12.75GHz	-30	
1GHz to 1.71GHz		-30
1.71GHz to 1.785GHz		-36
1.785GHz to 12.75GHz		-30

- 1.1 Under normal voltage conditions.
- 1.2 Under extreme voltage conditions.

3.5.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 12.1.1 for the measurement method.

3.5.4 Test result

Test Mode	Test Channel	NTNV	NTLV	NTHV
GSM900	60	PASS	PASS	PASS
DCS1800	698	PASS	PASS	PASS

Worst case at NTVN Condition Test Data as below:



GSM900 Middle Channel				
Frequency Bandwidth (MHz)	RBW	Result Level (dBm)	Limit (dBm)	Result
0.009-0.1	1k	-63.33	-36	PASS
0.1-50	10k	-50.95	-36	PASS
50-500	100k	-51.90	-36	PASS
500-850	3M	-66.67	-36	PASS
850-860	1M	-47.62	-36	PASS
860-870	300k	-60.95	-36	PASS
870-880	100k	-42.86	-36	PASS
915-925	100k	-54.29	-36	PASS
960-1000	3M	-70.95	-30	PASS
1000-1805	3M	-55.71	-30	PASS
1805-12750	3M	-52.38	-36	PASS
1.8MHz-6MHz offset from the carrier frequency	30k	-69.52	-36	PASS
more than 6MHz offset from the carrier frequency	100k	-69.52	-36	PASS

DCS1800 Middle Channel				
Frequency Bandwidth (MHz)	RBW	Result Level (dBm)	Limit (dBm)	Result
0.009-0.1	1k	-57.62	-36	PASS
0.1-50	10k	-53.81	-36	PASS
50-500	100k	-45.24	-36	PASS
500-925	3M	-51.90	-36	PASS
960-1000	3M	-48.57	-36	PASS
1000-1680	3M	-65.71	-30	PASS
1680-1690	1M	-51.90	-30	PASS
1690-1700	300k	-71.43	-30	PASS
1700-1710	100k	-58.57	-30	PASS
1785-1795	100k	-54.29	-30	PASS
1795-1805	300k	-52.38	-30	PASS
1880-12750	3M	-45.71	-30	PASS
1.8MHz-6MHz offset from the carrier frequency	30k	-69.05	-36	PASS
more than 6MHz offset from the carrier frequency	100k	-57.62	-36	PASS



3.6 Conducted spurious emissions – MS in idle mode

Clause 12.1.2 of TS 151 010-1 applies.

3.6.1 Definition and applicability

Conducted spurious emissions are any emissions from the antenna connector when the MS is in idle mode.

3.6.2 Conformance requirements

1. The conducted spurious power emitted by the MS, when in idle mode, shall be no more than the levels in following table:

Frequency range	Power level in dBm
9kHz to 880MHz	-57
880MHz to 915MHz	-59
915MHz to 1GHz	-57
1GHz to 1.71GHz	-47
1.71GHz to 1.785GHz	-53
1.785GHz to 12.75GHz	-47

- 1.1 Under normal voltage conditions.
- 1.2 Under extreme voltage conditions.

3.6.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 12.1.2 for the measurement method.

3.6.4 Test result

Test Mode	Test Channel	NTNV	NTLV	NTHV
GSM900	60	PASS	PASS	PASS
DCS1800	698	PASS	PASS	PASS

Worst case at NTVN Condition Test Data as below:



GSM900 Middle Channel				
Frequency Bandwidth (MHz)	RBW	Result Level (dBm)	Limit (dBm)	Result
0.009-0.1	1k	-68.57	-57	PASS
0.1-50	10k	-63.33	-57	PASS
50-880	100k	-70.00	-57	PASS
880-915	100k	-70.95	-59	PASS
915-1000	100k	-63.81	-57	PASS
1000-1710	100k	-64.76	-47	PASS
1710-1785	100k	-64.29	-53	PASS
1785-12570	100k	-62.38	-47	PASS

DCS1800 Middle Channel				
Frequency Bandwidth (MHz)	RBW	Result Level (dBm)	Limit (dBm)	Result
0.009-0.1	1k	-63.33	-57	PASS
0.1-50	10k	-69.52	-57	PASS
50-880	100k	-68.10	-57	PASS
880-915	100k	-62.86	-59	PASS
915-1000	100k	-65.24	-57	PASS
1000-1710	100k	-62.86	-47	PASS
1710-1785	100k	-70.00	-53	PASS
1785-12570	100k	-65.71	-47	PASS



3.7 Radiated spurious emissions – MS allocated a channel

Clause 12.2.1 of TS 151 010-1 applies.

3.7.1 Definition and applicability

Radiated spurious emissions, when the MS has been allocated a channel, are any emissions radiated by the cabinet and structure of the mobile station, including all interconnecting cables.

The requirements and this test apply to GSM900 and DCS1800 MS.

3.7.2 Conformance requirements

1. The radiated spurious power emitted by the MS, when allocated a channel, shall be no more than the levels in following table under normal voltage conditions.
2. The radiated spurious power emitted by the MS, when allocated a channel, shall be no more than the levels in following table under extreme voltage conditions

Frequency range	Power level in dBm	
	E-GSM900	DCS1800
30MHz to 1GHz		-36
1GHz to 4GHz	-36	
1GHz to 1.71GHz	-30	-30
1.71GHz to 1.785GHz		-36
1.785GHz to 4GHz		-30

- 1.1 Under normal voltage conditions.
- 1.2 Under extreme voltage conditions.

3.7.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 12.2.1 for the measurement method.

3.7.4 Test result

Test Mode	Test Channel	NTNV	NTLV	NTHV
GSM900	60	PASS	PASS	PASS
DCS1800	698	PASS	PASS	PASS

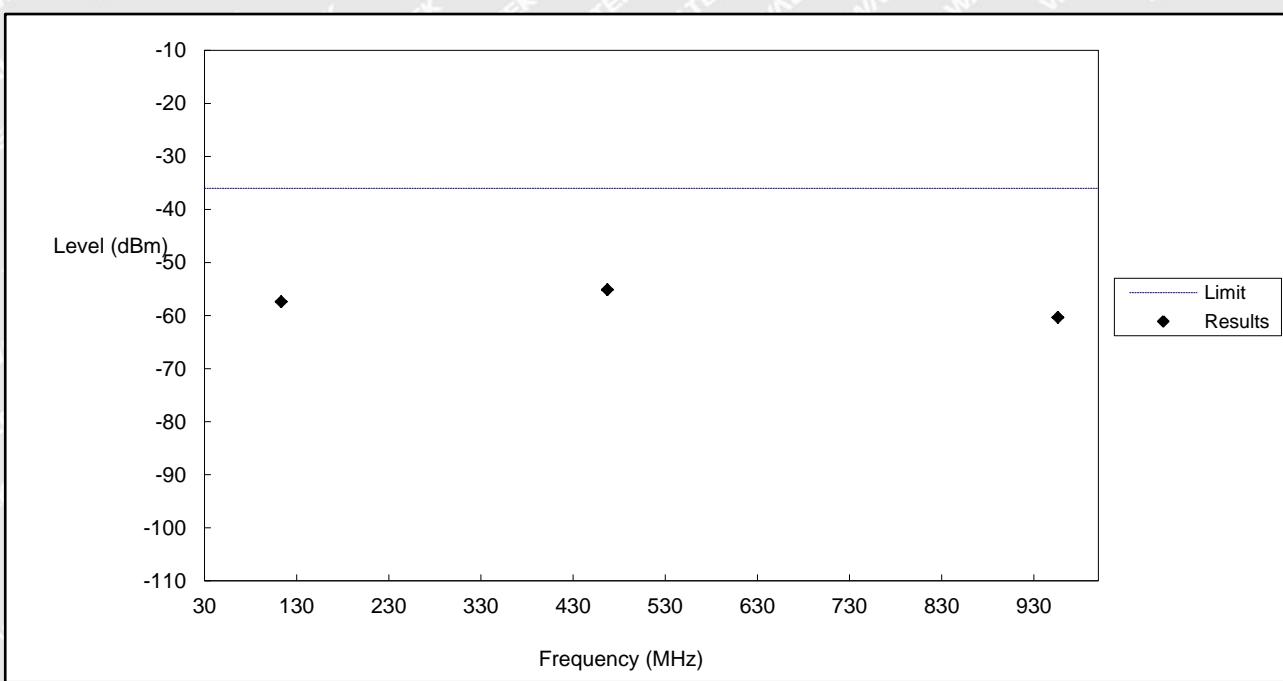
Worst case at NTVN Condition Test Data as below:



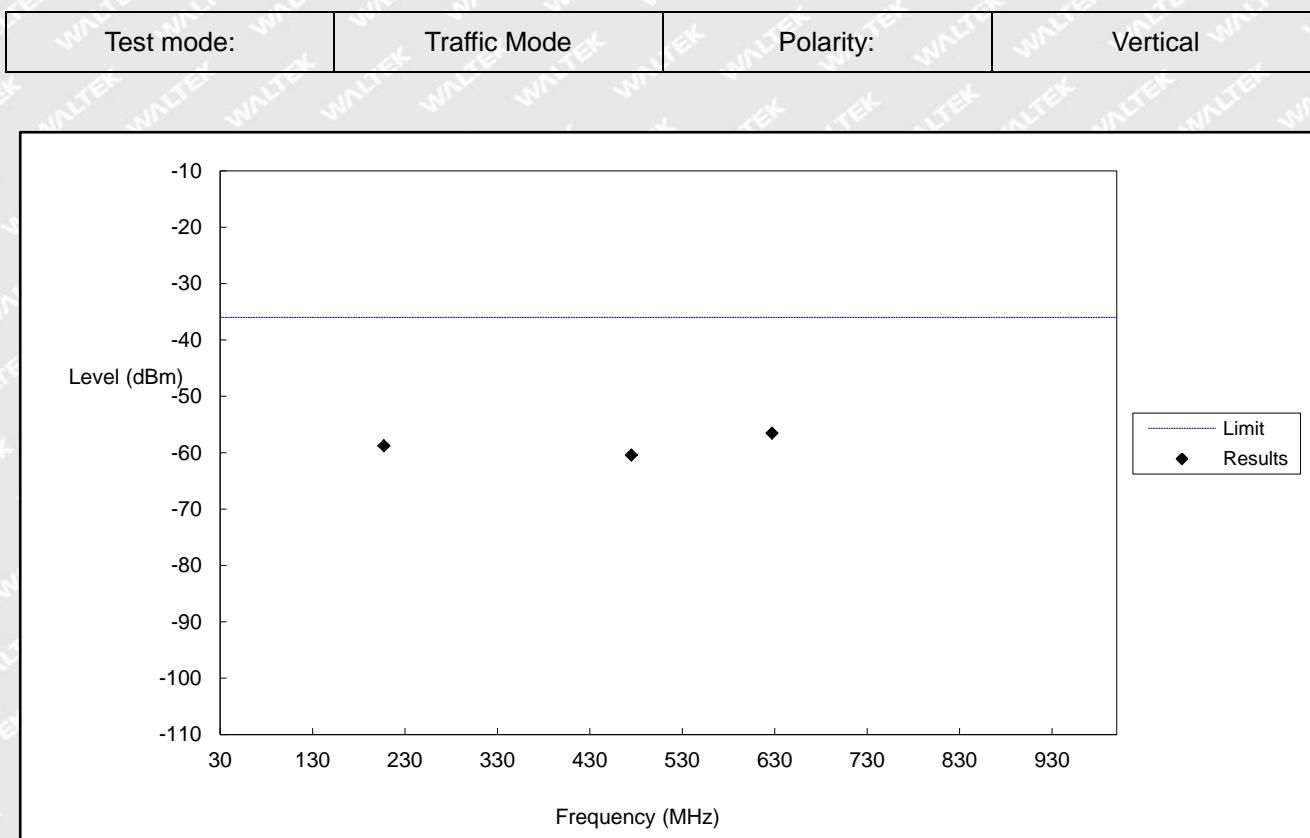
➤ Radiated Spurious Emissions(30MHz-1GHz)

GSM900

Test mode:	Traffic Mode	Polarity:	Horizontal
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No.	Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	113.33	-57.40	-36.00	-21.40	RMS
2	467.20	-55.12	-36.00	-19.12	RMS
3	956.15	-60.33	-36.00	-24.33	RMS

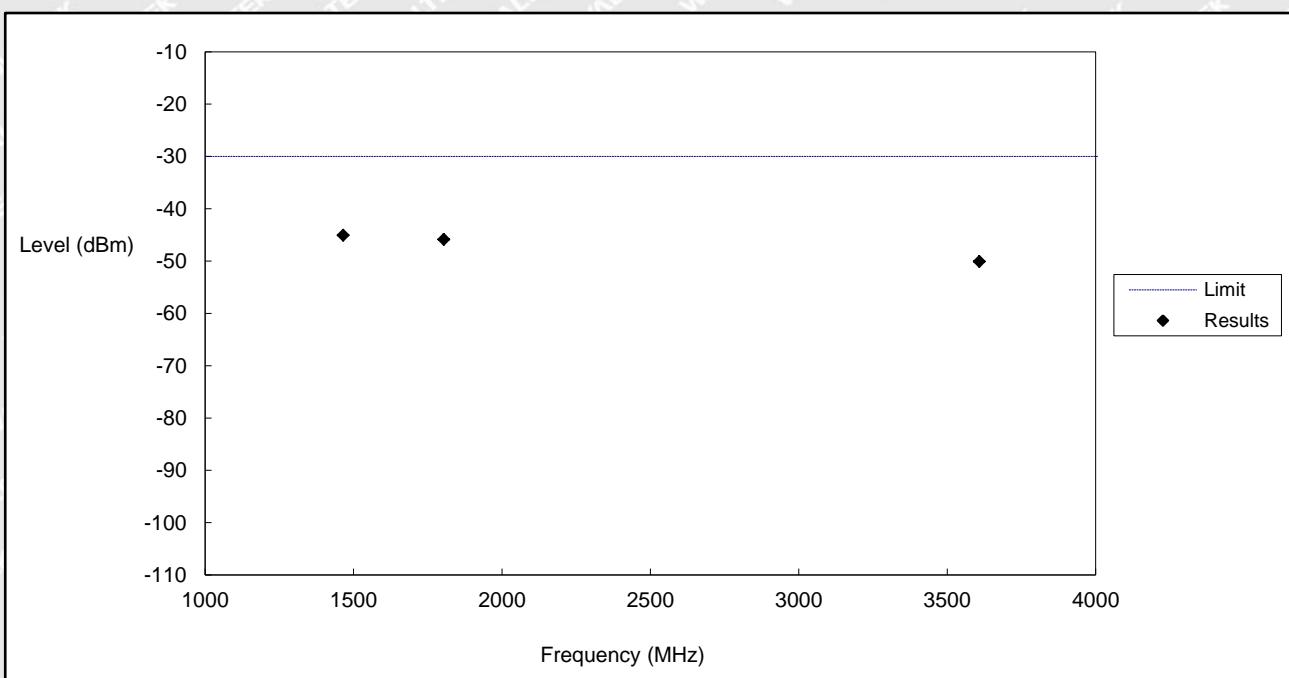


No.	Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	207.27	-58.78	-36.00	-22.78	RMS
2	475.00	-60.42	-36.00	-24.42	RMS
3	627.14	-56.53	-36.00	-20.53	RMS



➤ Radiated Spurious Emissions(Above 1GHz)

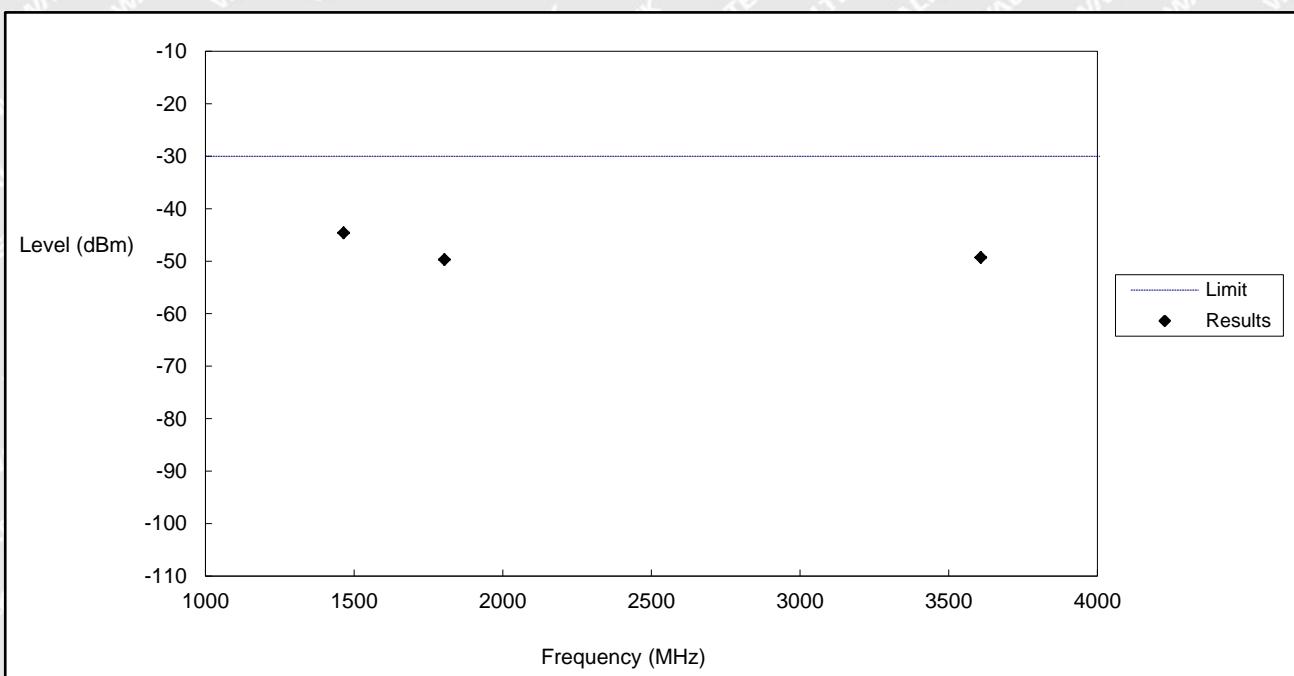
Test mode:	Traffic Mode	Polarity:	Horizontal
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No.	Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1464.91	-45.05	-30.00	-15.05	RMS
2	1804.0000	-45.85	-30.00	-15.85	RMS
3	3608.0000	-50.07	-30.00	-20.07	RMS



Test mode:	Traffic Mode	Polarity:	Vertical
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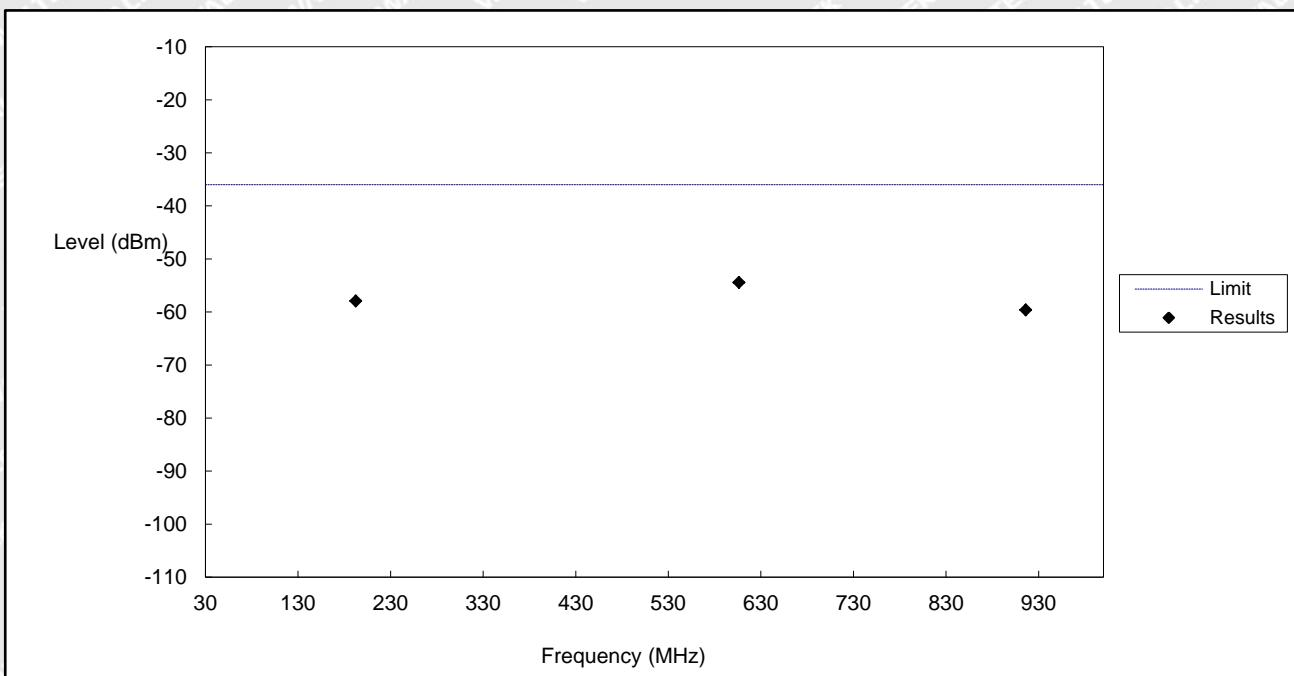
No.	Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1464.65	-44.59	-30.00	-14.59	RMS
2	1804.0000	-49.70	-30.00	-19.70	RMS
3	3608.0000	-49.28	-30.00	-19.28	RMS



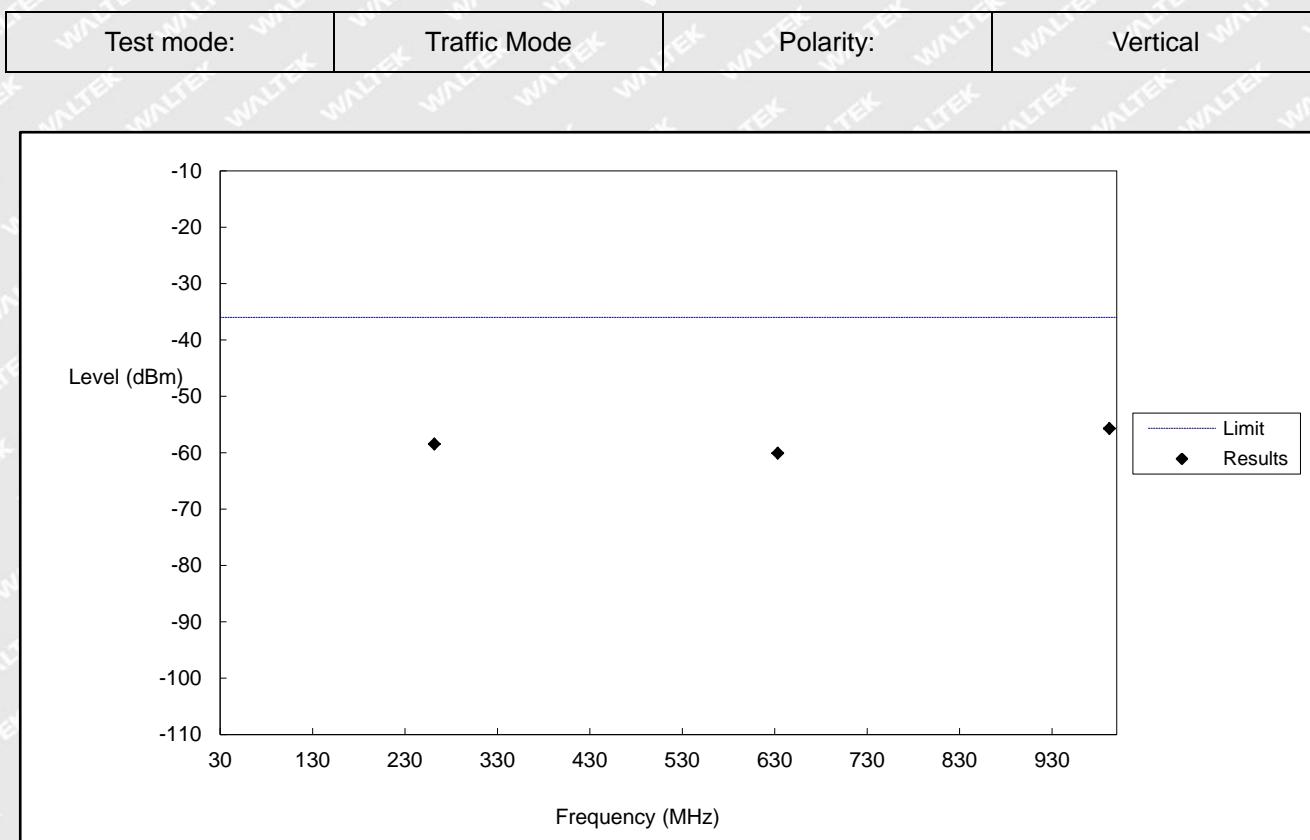
➤ Radiated Spurious Emissions(30MHz-1GHz)

DCS1800

Test mode:	Traffic Mode	Polarity:	Horizontal
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No.	Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	192.50	-57.94	-36.00	-21.94	RMS
2	606.40	-54.44	-36.00	-18.44	RMS
3	916.15	-59.62	-36.00	-23.62	RMS

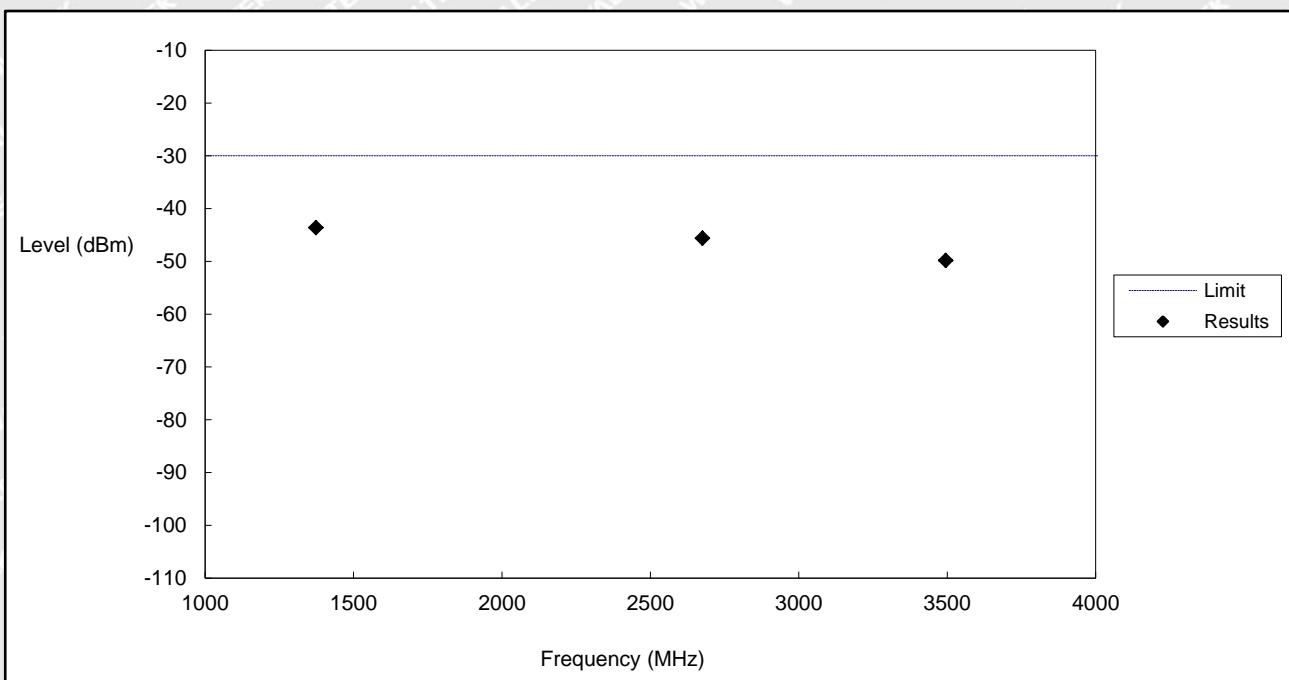


No.	Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	261.82	-58.45	-36.00	-22.45	RMS
2	633.33	-60.07	-36.00	-24.07	RMS
3	992.14	-55.72	-36.00	-19.72	RMS



➤ Radiated Spurious Emissions(Above 1GHz)

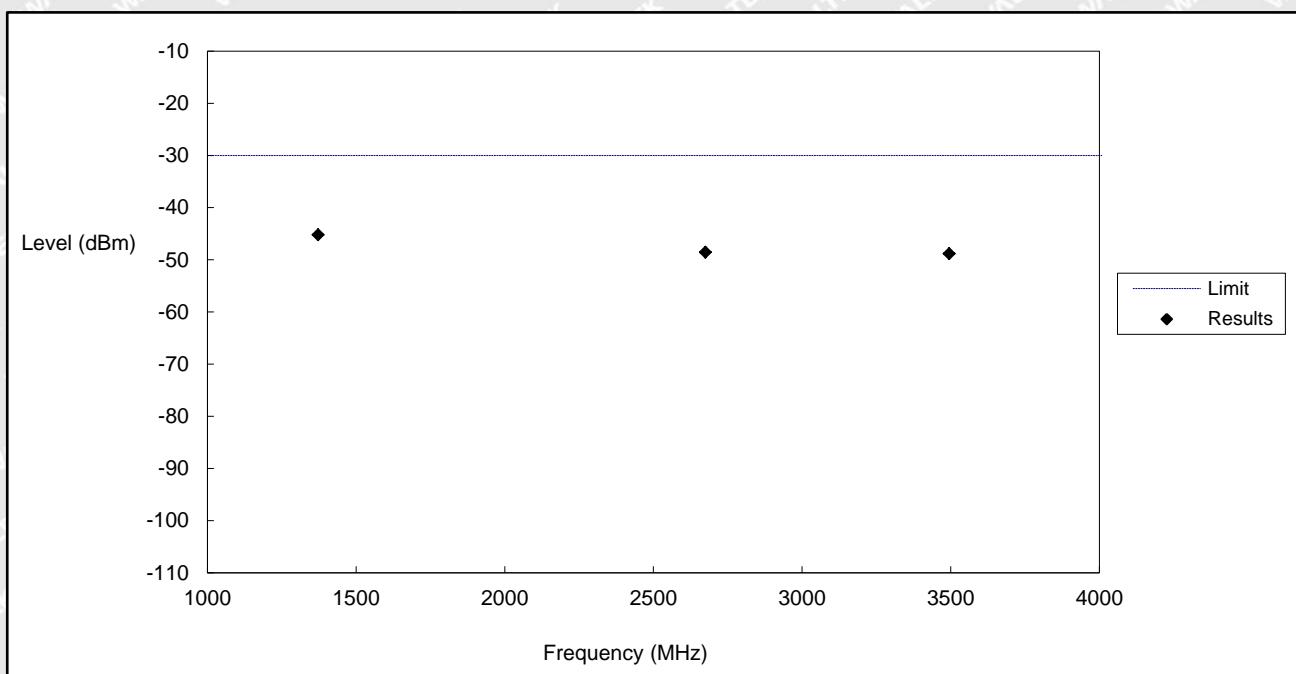
Test mode:	Traffic Mode	Polarity:	Horizontal
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No.	Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1373.3400	-43.62	-30.00	-13.62	RMS
2	2675.2600	-45.63	-30.00	-15.63	RMS
3	3494.8000	-49.83	-30.00	-19.83	RMS



Test mode:	Traffic Mode	Polarity:	Vertical
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No.	Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1372.5300	-45.21	-30.00	-15.21	RMS
2	2674.9700	-48.56	-30.00	-18.56	RMS
3	3494.8000	-48.84	-30.00	-18.84	RMS



3.8 Radiated spurious emissions – MS in idle mode

Clause 12.2.2 of TS 151 010-1 applies.

3.8.1 Definition and applicability

Radiated spurious emissions, when the MS is in idle mode, are any emissions radiated by the cabinet and structure of the mobile station, including all interconnecting cables.

The requirements and this test apply to GSM900 and DCS1800 MS.

3.8.2 Conformance requirements

1. The radiated spurious power emitted by the MS, when in idle mode, shall be no more than the levels in following table under normal voltage conditions.
2. The radiated spurious power emitted by the MS, when allocated a channel, shall be no more than the levels in following table under extreme voltage conditions.

Frequency range	Power level in dBm
30MHz to 880MHz	-57
880Mhz to 915MHz	-59
915MHz to 1GHz	-57
1GHz to 1.71GHz	-47
1.71GHz to 1.785GHz	-53
1.785GHz to 4GHz	-47

- 1.1 Under normal voltage conditions.
- 1.2 Under extreme voltage conditions.

3.8.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 12.2.2 for the measurement method.

3.8.4 Test result

Test Mode	Test Channel	NTNV	NTLV	NTHV
GSM900	60	PASS	PASS	PASS
DCS1800	698	PASS	PASS	PASS

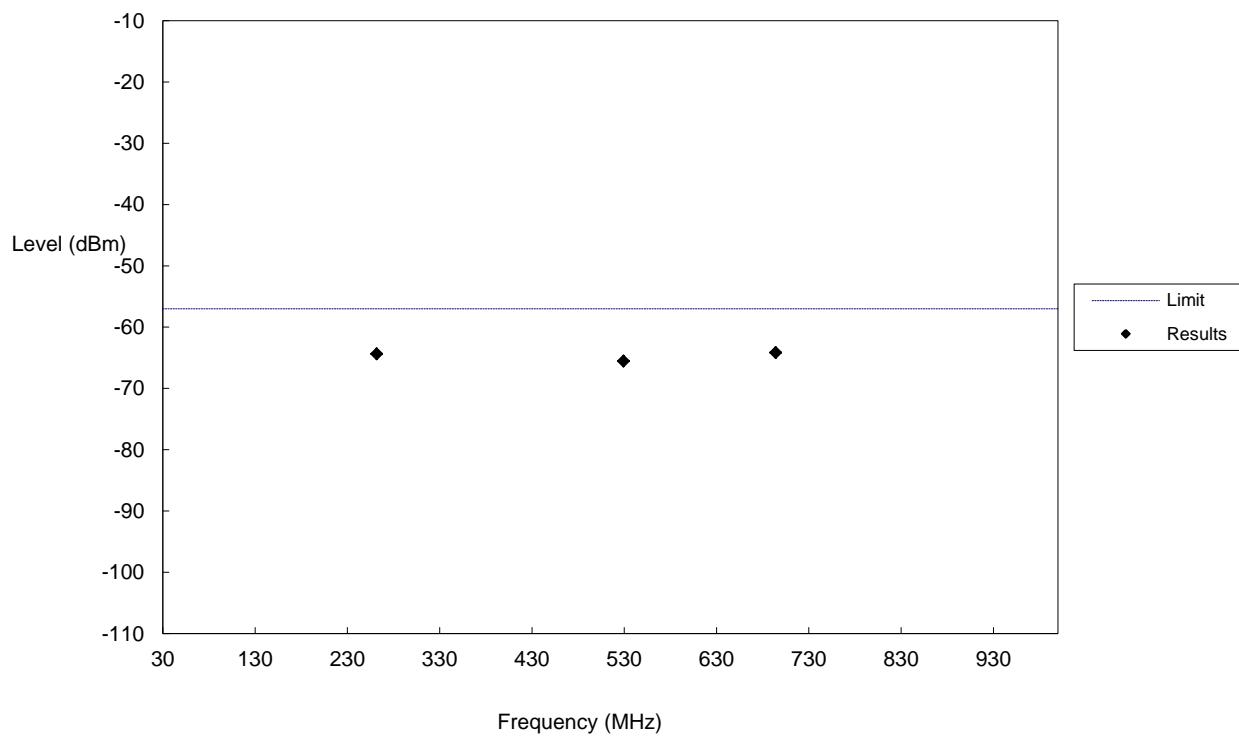
Worst case at NTVN Condition Test Data as below:



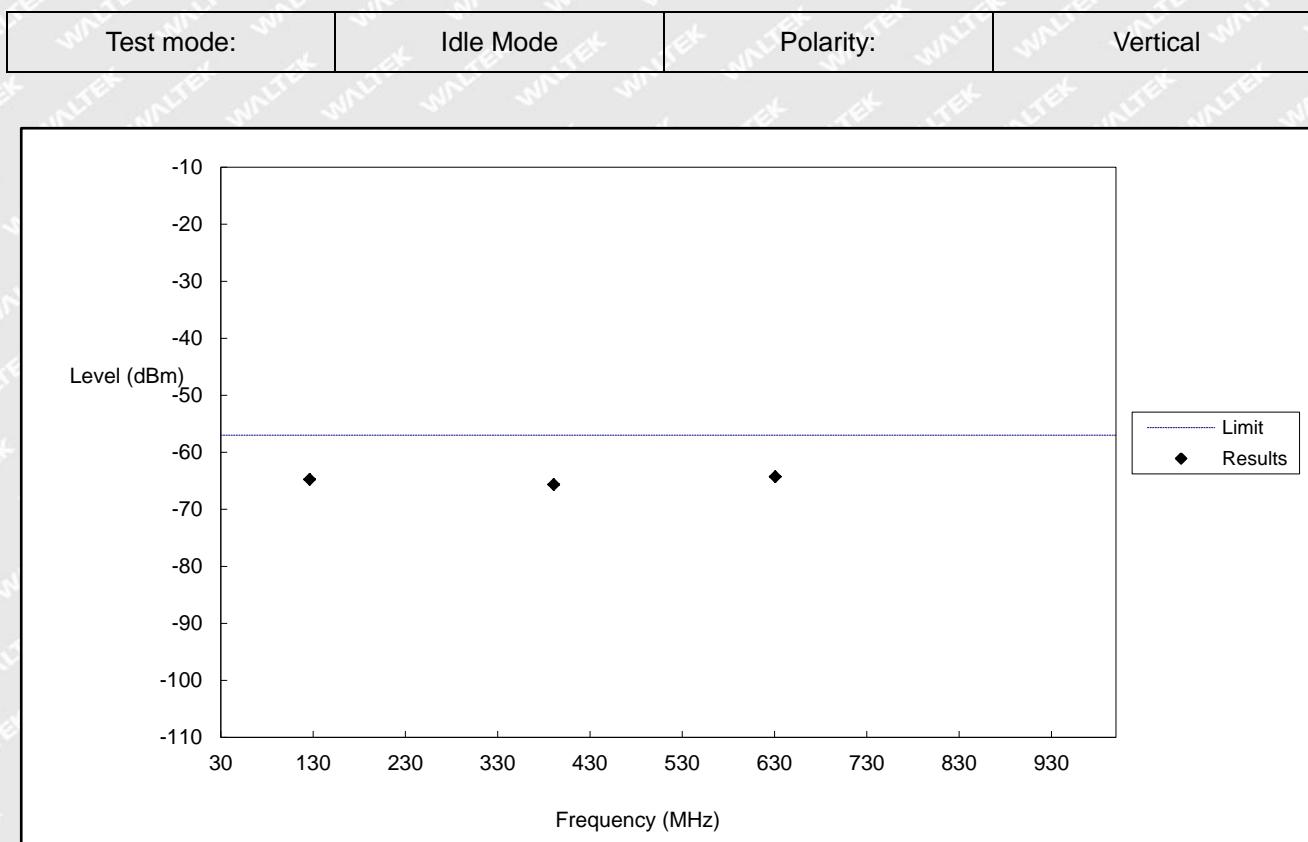
➤ Radiated Spurious Emissions(30MHz-1GHz)

GSM900

Test mode:	Idle Mode	Polarity:	Horizontal
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No.	Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	261.82	-64.37	-57.00	-7.37	RMS
2	529.17	-65.54	-57.00	-8.54	RMS
3	694.17	-64.14	-57.00	-7.14	RMS

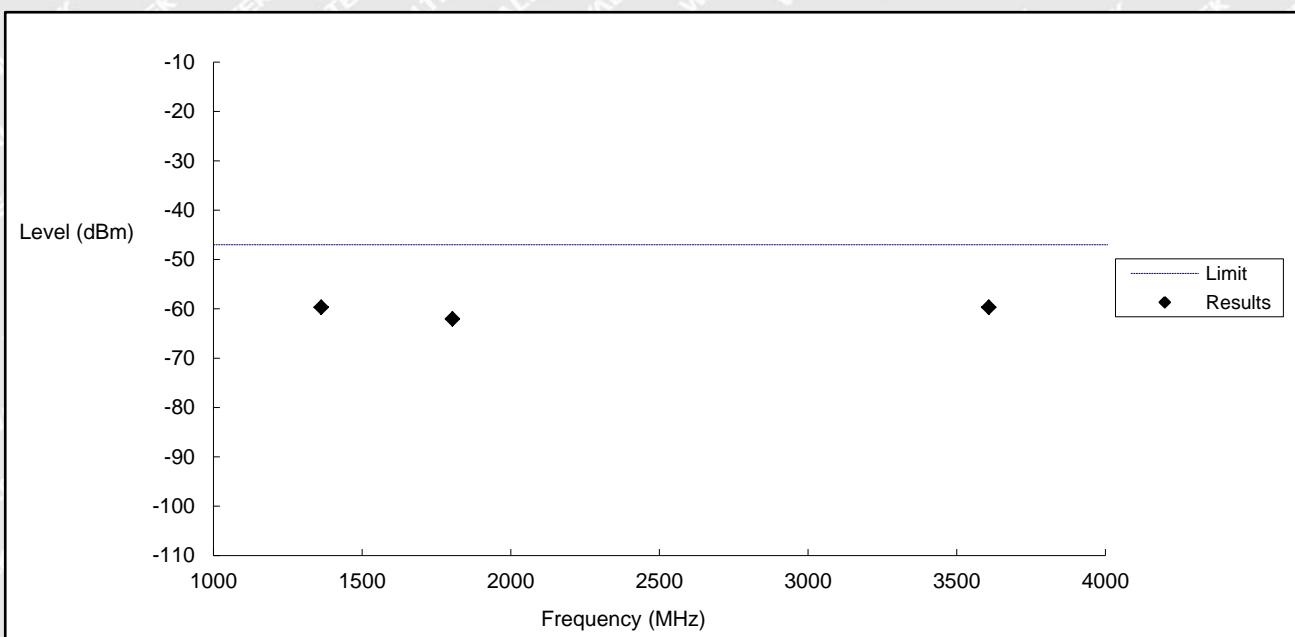


No.	Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	126.36	-64.76	-57.00	-7.76	RMS
2	390.83	-65.64	-57.00	-8.64	RMS
3	630.83	-64.29	-57.00	-7.29	RMS



➤ Radiated Spurious Emissions(Above 1GHz)

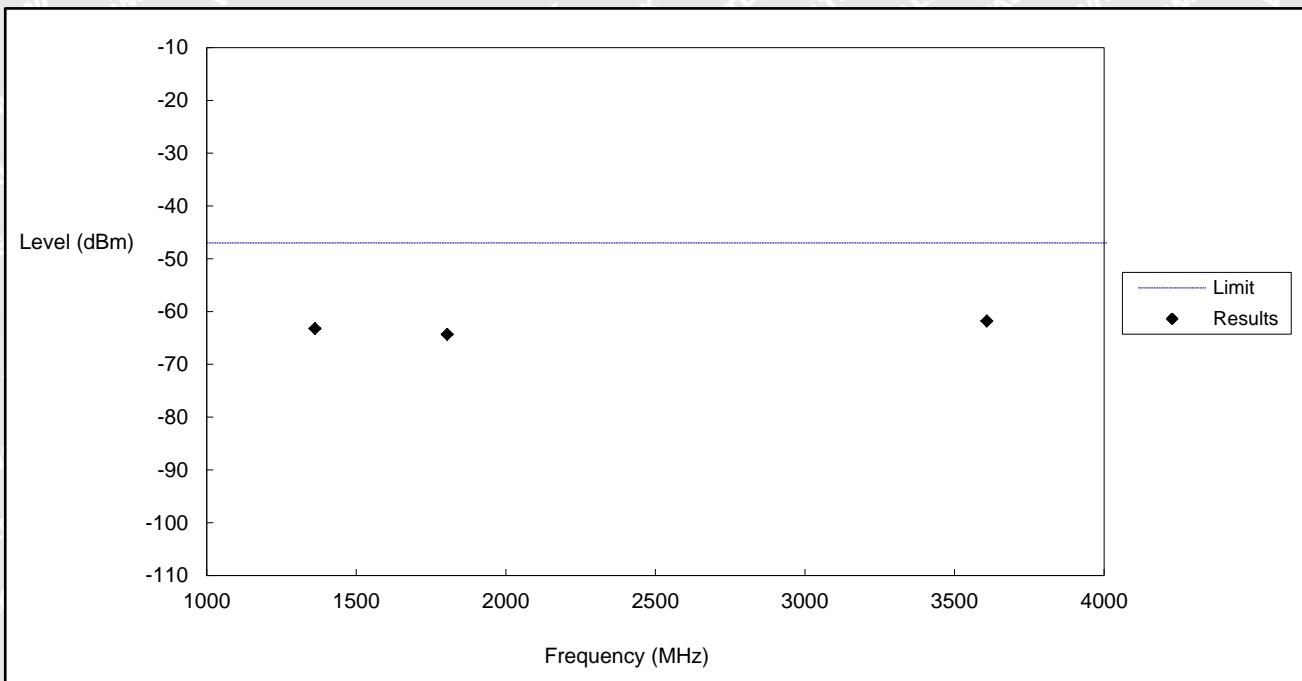
Test mode:	Idle Mode	Polarity:	Horizontal
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No.	Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1362.4800	-59.69	-47.00	-12.69	RMS
2	1804.0000	-62.04	-47.00	-15.04	RMS
3	3608.0000	-59.69	-47.00	-12.69	RMS



Test mode:	Idle Mode	Polarity:	Vertical
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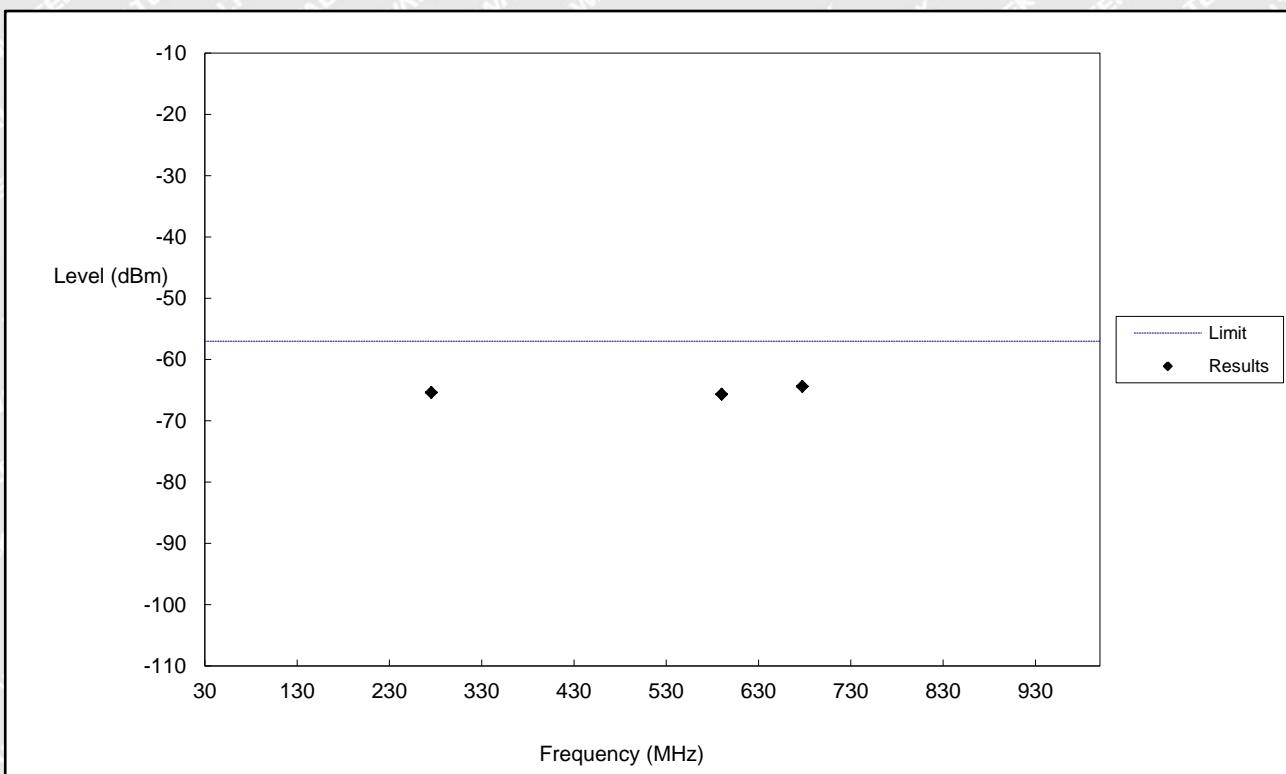
No.	Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1362.2800	-63.23	-47.00	-16.23	RMS
2	1804.0000	-64.32	-47.00	-17.32	RMS
3	3608.0000	-61.80	-47.00	-14.80	RMS



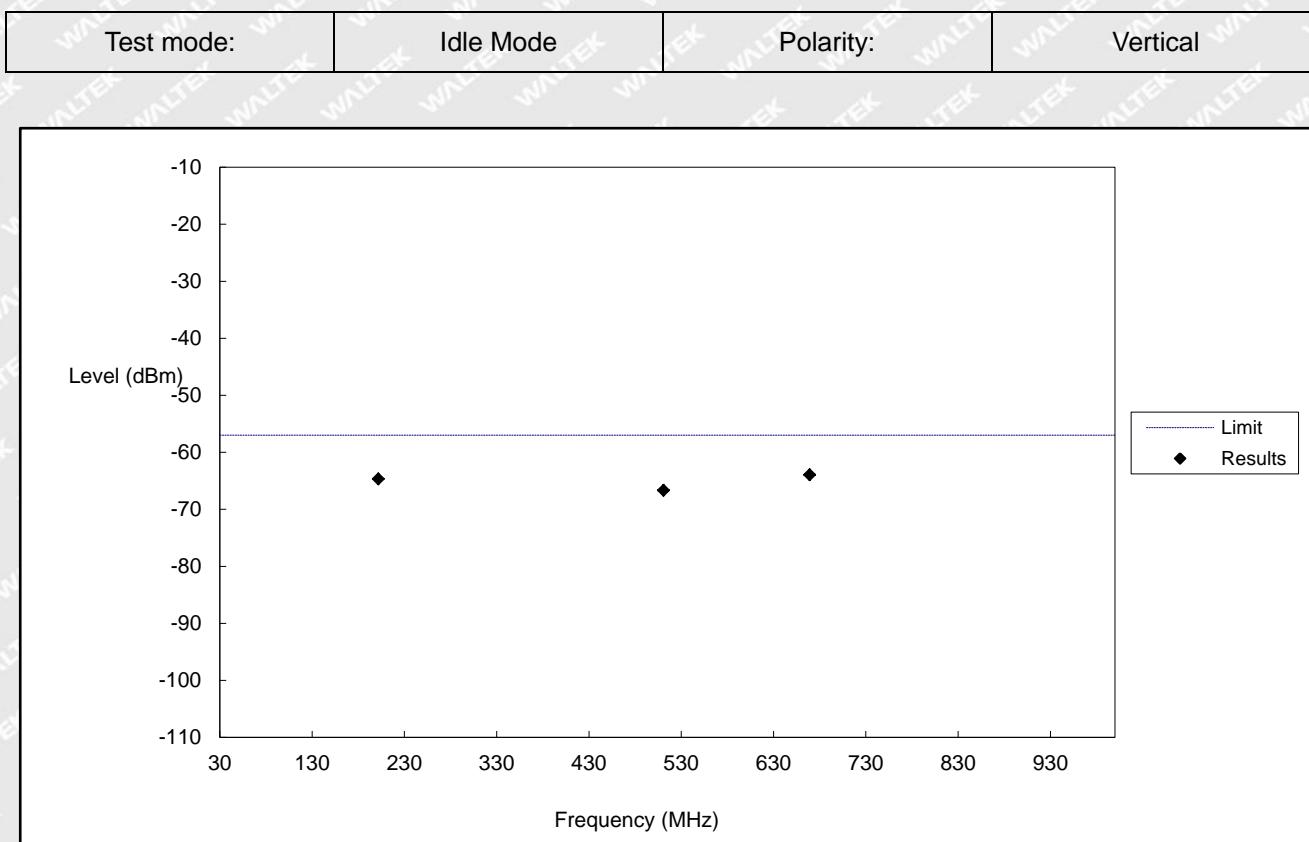
➤ Radiated Spurious Emissions(30MHz-1GHz)

DCS1800

Test mode:	Idle Mode	Polarity:	Horizontal
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No.	Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	275.45	-65.38	-57.00	-8.38	RMS
2	590.00	-65.66	-57.00	-8.66	RMS
3	677.50	-64.38	-57.00	-7.38	RMS

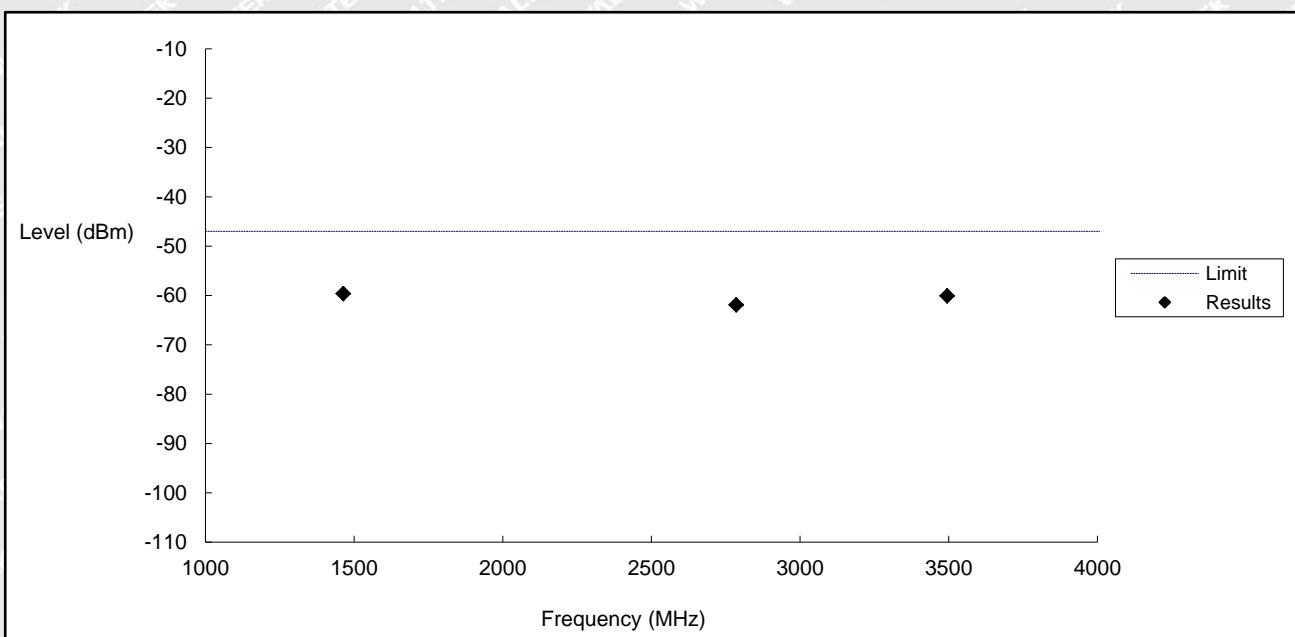


No.	Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	201.82	-64.66	-57.00	-7.66	RMS
2	510.83	-66.67	-57.00	-9.67	RMS
3	669.17	-63.94	-57.00	-6.94	RMS



➤ Radiated Spurious Emissions(Above 1GHz)

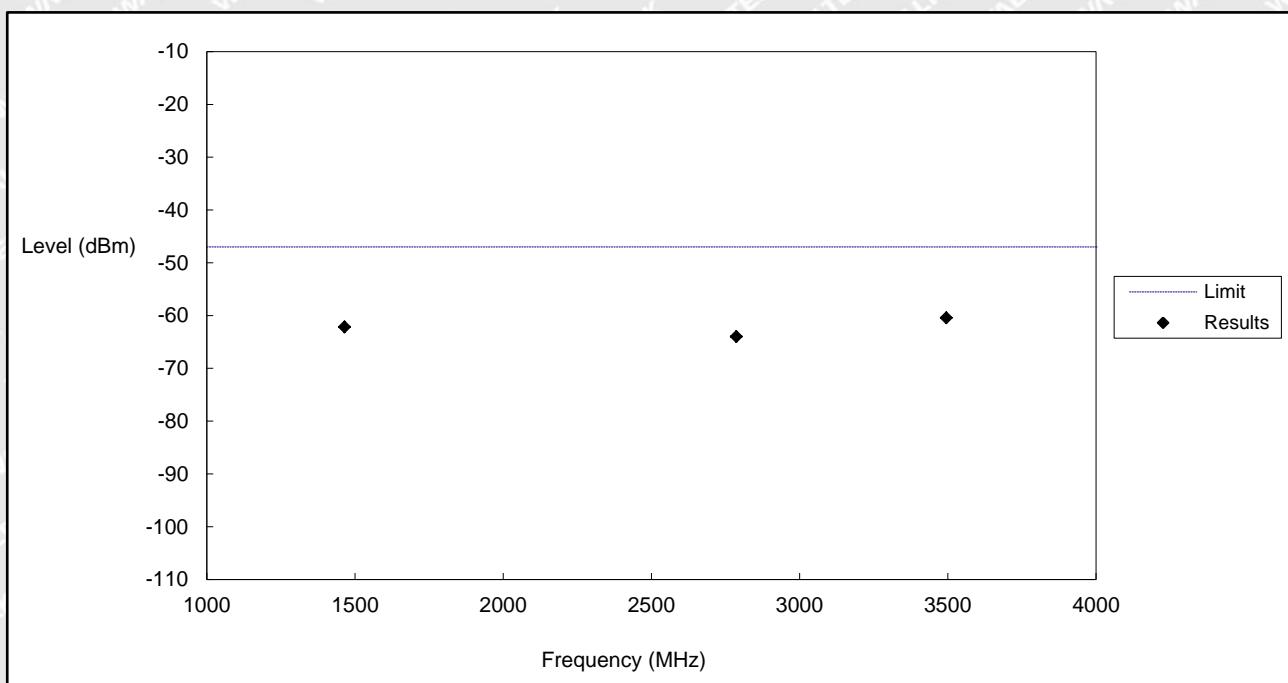
Test mode:	Idle Mode	Polarity:	Horizontal
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No.	Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1463.6900	-59.62	-47.00	-12.62	RMS
2	2785.6300	-61.89	-47.00	-14.89	RMS
3	3494.8000	-60.07	-47.00	-13.07	RMS



Test mode:	Idle Mode	Polarity:	Vertical
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No.	Frequency (MHz)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	1464.5700	-62.17	-47.00	-15.17	RMS
2	2786.4200	-64.00	-47.00	-17.00	RMS
3	3494.8000	-60.46	-47.00	-13.46	RMS



3.9 Receiver blocking and spurious response – Speech channels

Clause 14.7.1 of TS 151 010-1 applies.

3.9.1 Definition and applicability

Blocking is a measure of the ability of the receiver to receive a modulated wanted signal in the presence of an unwanted input signal, on frequencies other than those of the spurious response or the adjacent channels, without exceeding a given degradation.

The requirements and this test apply MS supporting speech.

3.9.2 Conformance requirements

1. The blocking characteristics of the receiver are specified separately for in-band and out-band performance as identified in GSM 05.05 clause 5.1.

The reference sensitivity performance as specified in table 1 of GSM 05.05 shall be met when the following signals are simultaneously input to the receiver:

- a useful signal at frequency f_0 , 3dB above the reference sensitivity level as specified in GSM 05.05 clause 6.2;
- a continuous, static sine wave signal at a level as in the table of GSM 05.05 clause 5.1 and at a frequency (f) which is integer multiple of 200kHz.

With the following exceptions, called spurious response frequencies:

- a) E-GSM900: in band, for a maximum of six occurrences (which if grouped shall not exceed three contiguous occurrences per group);
- b) out of band, for a maximum of 24 occurrences (which if below f_0 and grouped shall not exceed three contiguous occurrences per group).

Where the above performance shall be met when the continuous sine wave signal (f) is set to a level –43dBm.

3.8.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 14.7.1 for the measurement method.



3.9.4 Test result

Worst case Test Data as below:

Test Mode	Test Channel	FBER(%)	Number of test samples	Limit(%)	Result
GSM900	975	0.68	10000	2.439	PASS
	60	0.74	10000	2.439	PASS
	124	0.86	10000	2.439	PASS
DCS1800	513	0.84	10000	2.439	PASS
	698	0.92	10000	2.439	PASS
	880	0.82	10000	2.439	PASS

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3.10 Frequency error and phase error in GPRS multisolt configuration

Clause 13.16.1 of TS 151 010-1 applies.

3.10.1 Definition and applicability

The frequency error is the difference in frequency, after adjustment for the effect of the modulation and phase error, between the RF transmission from the MS and either:

- the RF transmission from the BS, or
- the nominal frequency for the ARFCN used.

The phase error is the difference in phase, after adjustment for the effect of the frequency error, between the RF transmission from the MS and the theoretical transmission according to the intended modulation.

The requirements and this test apply to GPRS 900 and GPRS 1800 MS.

3.10.2 Conformance requirements

1. MS carrier frequency shall be accurate to within 0,1 ppm compared to signals received from the BS.
2. The RMS phase error (difference between the phase error trajectory and its linear regression on the active part of the time slot) for each burst shall not be greater than 5 degrees.
3. The maximum peak deviation during the useful part of each burst shall not be greater than 20 degrees.

All this requirements apply for normal test conditions, vibration test conditions and under extreme test conditions.

3.10.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 13.16.1 for the measurement method.

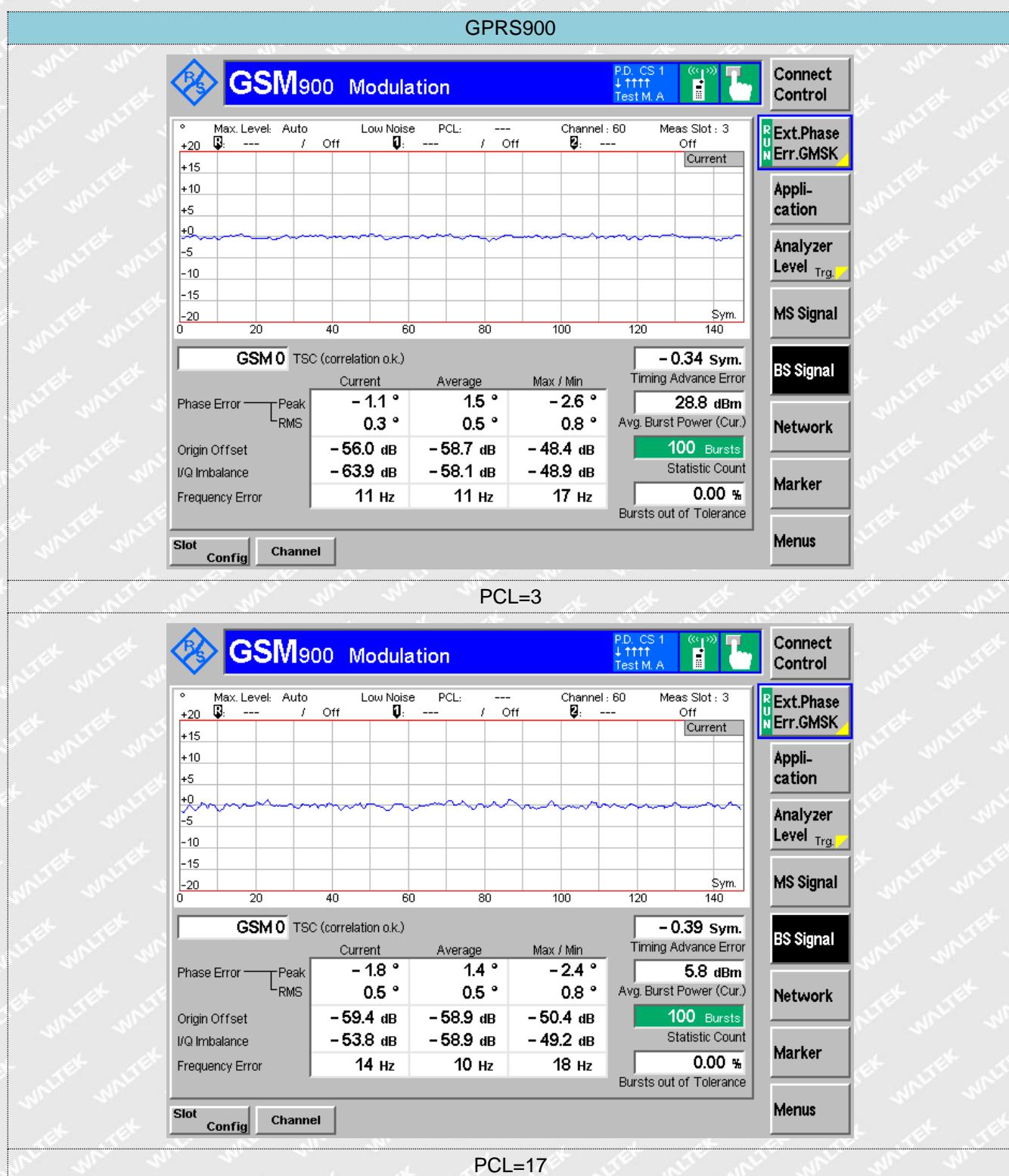
3.10.4 Test result

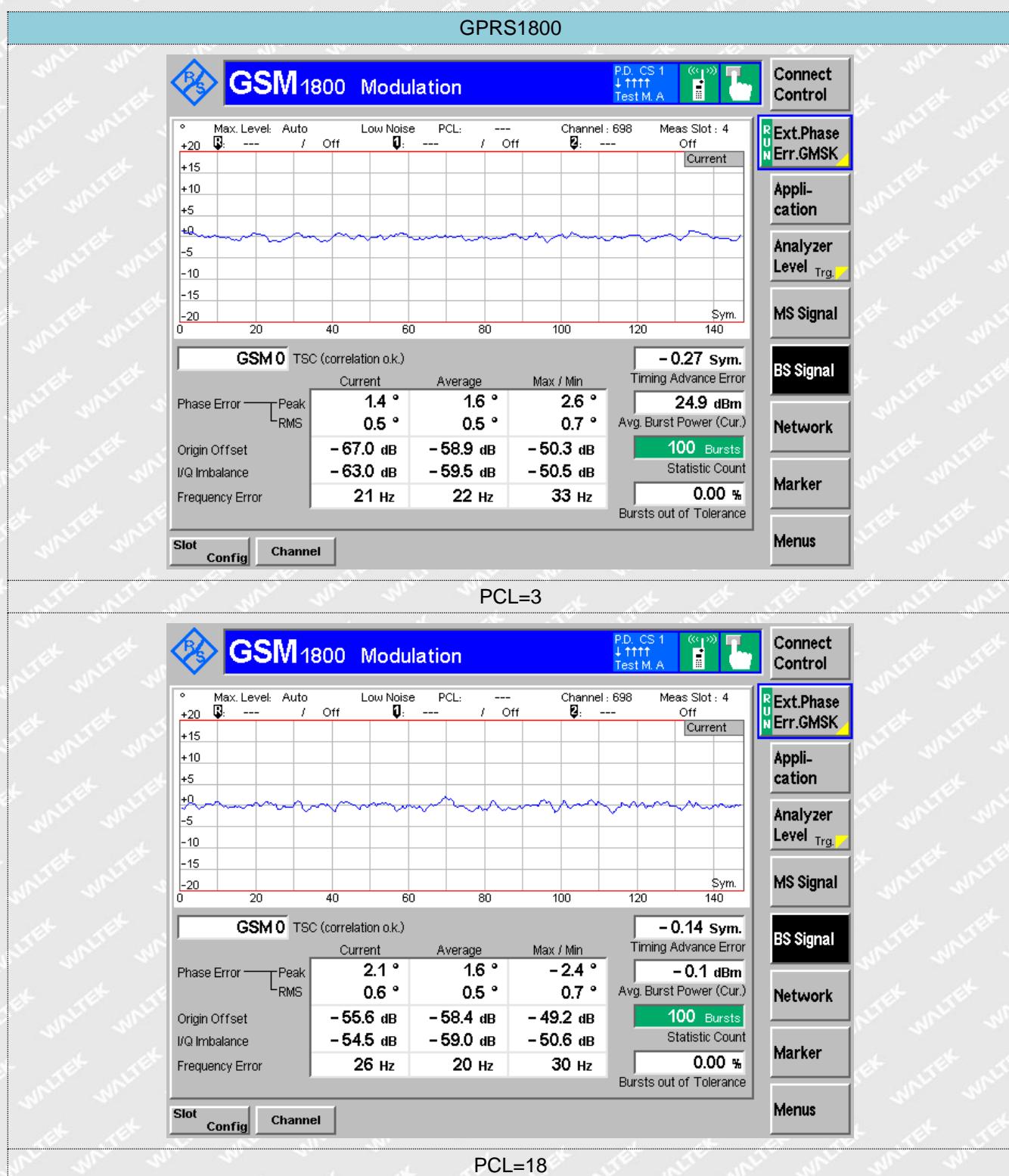
Test Mode	Test Channel	NTNV	HTHV	HTLV	LTHV	LTLV
GPRS900	60	PASS	PASS	PASS	PASS	PASS
GPRS1800	698	PASS	PASS	PASS	PASS	PASS



Worst case at NTV Condition Test Data as below:

Mode	PCL	Frequency Error (Hz)	Limit (Hz)	Result	Phase error (degree)		Limit (degree)	Result
GPRS900	3	17	89.7	PASS	RMS	0.8	5	PASS
	17	18	89.7		Peak	-2.6	20	PASS
	3	33	174.7	PASS	RMS	0.8	5	PASS
	18	30	174.7		Peak	-2.4	20	PASS
GPRS1800	3	33	174.7	PASS	RMS	0.7	5	PASS
	18	30	174.7		Peak	2.6	20	PASS
	3	33	174.7	PASS	RMS	0.7	5	PASS
	18	30	174.7		Peak	-2.4	20	PASS







3.11 Transmitter output power in GPRS multisolt configuration

Clause 13.16.2 of ETSI TS 151 010-1 applies.

3.11.1 Definition and applicability

The transmitter output power is the average value of the power delivered to an artificial antenna or radiated by the MS and its integral antenna, over the time that the useful information bits of one burst are transmitted.

The transmitting burst timing is the envelope of the RF power transmitted with respect to time. The timings are referenced to the transition from bit 13 to bit 14 of the Training Sequence ("midamble") before differential decoding. The timing of the modulation is referenced to the timing of the received signal from the SS.

The requirements and this test apply to GPRS 900 and GPRS 1800 MS.

3.11.2 Conformance requirements

1. The MS maximum output power shall be according to its power class, with a tolerance of +/- 2dB under normal conditions.
2. The MS maximum output power shall be according to its power class, with a tolerance of +/- 2.5dB under extreme conditions.
3. The power control level shall have the nominal output power levels from the lowest power control level up to the maximum output power corresponding to the class of the MS, with a tolerance of +/- 3, 4 or 5dB under normal conditions.
4. The power control level shall have the nominal output power levels from the lowest power control level up to the maximum output power corresponding to the class of the MS, with a tolerance of +/- 4, 5 or 6dB under extreme conditions.
5. The output power actually transmitted by the MS at consecutive power control levels shall form a monotonic sequence and the interval between power control levels shall be 2 +/- 1,5dB.
6. The transmitted power level relative to time for a normal burst shall be within the power/time template under normal and extreme conditions.
7. When accessing a cell on the RACH and before receiving the first power command during a communication on a DCCH or TCH (after an IMMEDIATE ASSIGNMENT), all GSM and class 2 DCS1800 MS shall use the power control level defined by the MS_TXPWR_MAX_CCH parameter broadcast on the BCCH of the cell, or if MS_TXPWR_MAX_CCH corresponds to a power control level not supported by the MS as defined by its power class, the MS shall act as though the closest supported power control level had been broadcast. A class 3 DCS1800 MS shall use the POWER_OFFSET parameter.
8. The transmission from the MS to the BS, measured at the MS antenna, shall be 468,75 – TA bit periods behind the transmission received from the BS, where TA is the last timing advance received from the current serving BS. The tolerance on these timings shall be +/- 1 bit period.
9. The transmitted power level relative to time for a random access burst shall be within the power/time template under normal and extreme conditions.
10. The MS shall use a TA value 0 for the Random Access burst sent under normal and extreme conditions.



3.11.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 13.16.2 for the measurement method.

3.11.4 Test result

Test Mode	Test Channel	NTNV	HTHV	HTLV	LTHV	LTLV
GPRS900	60	PASS	PASS	PASS	PASS	PASS
GPRS1800	698	PASS	PASS	PASS	PASS	PASS

Worst case at NTNV Condition Test Data as below:

Power Control Level	Output power(dBm)			Result
	Low channel	Middle Channel	High Channel	
1 uplink slot				
3	32.34	32.09	32.01	PASS
4	30.28	30.67	30.46	PASS
5	28.34	28.48	28.59	PASS
6	26.61	26.95	26.51	PASS
7	24.29	24.29	24.28	PASS
8	22.54	22.65	22.57	PASS
9	20.68	20.15	20.12	PASS
10	18.32	18.23	18.63	PASS
11	16.61	16.94	16.59	PASS
12	14.20	14.13	14.26	PASS
13	12.69	12.20	12.38	PASS
14	10.28	10.95	10.47	PASS
15	8.76	8.12	8.52	PASS
16	7.23	7.56	6.09	PASS
17	6.56	5.74	4.88	PASS
2 uplink slot				
3	31.83	31.51	31.41	PASS
4 uplink slot				
3	29.24	28.89	28.72	PASS



GPRS1800		Output power(dBm)			
Power Control Level		Low channel	Middle Channel	High Channel	Result
1 uplink slot					
3		28.22	28.60	29.17	PASS
4		26.59	26.47	26.69	PASS
5		24.62	24.82	24.54	PASS
6		22.38	22.63	22.81	PASS
7		20.51	20.54	20.32	PASS
8		18.49	18.96	18.60	PASS
9		16.65	16.3	16.35	PASS
10		15.32	15.26	15.74	PASS
11		13.59	13.85	13.36	PASS
12		11.48	11.17	11.92	PASS
13		9.15	9.59	9.18	PASS
14		7.69	7.32	7.54	PASS
15		6.85	6.95	6.62	PASS
16		4.54	4.41	4.30	PASS
17		2.29	2.27	2.44	PASS
18		-0.24	-0.02	0.47	PASS
2 uplink slot					
3		27.45	27.82	28.47	PASS
4 uplink slot					
3		24.51	24.86	25.53	PASS



3.12 Transmitter output RF spectrum in GPRS multisolt configuration

Clause 13.16.3 of TS 151 010-1 applies.

3.12.1 Definition and applicability

The output RF spectrum is the relationship between the frequency offset from the carrier and the power, measured in a specified bandwidth and time, produced by the MS due to the effects of modulation and power ramping.

The requirements and this test apply to GPRS 900 and GPRS 1800.

3.12.2 Conformance requirements

1. The level of the output RF spectrum due to the modulation shall be no more than the following lowest measurement limits:

- 36dBm below 600kHz offset from the carrier,
- 51dBm for E-GSM900 or -56dBm for DCS1800 from 600kHz out to less than 1800kHz offset from carrier,
- 46dBm for E-GSM900 or -51dBm for DCS1800 at and beyond 1800kHz offset from the carrier, but with the following exceptions at up to -36dBm:
 - up to three bands of 200kHz width centered on a frequency which is an integer multiple of 200kHz in the combined range 600kHz to 6000kHz and below the carrier,
 - up to 12 bands of 200kHz width centered on a frequency which is an integer multiple of 200kHz at more than 6000kHz offset from the carrier.

1.1 Under normal conditions.

1.2 Under extreme conditions.

2. The level of the output RF spectrum due the switching transient shall be no more than given in table 13.9 and table 13.10 of TS 151 010-1 clause 13.4.

2.1 Under normal conditions.

2.2 Under extreme conditions.

3. When allocated a channel the power emitted by the MS, in the band 935MHz to 960MHz shall be no more than -79dBm, in the band 925 to 935MHz shall be no more than -67dBm and in the band 1805 to 1880MHz shall be no more than -71dBm except in five measurements in each of the bands 925 to 960MHz and 1805 to 1880MHz where exceptions at up to -36dBm are permitted.

3.12.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 13.16.3 for the measurement method.

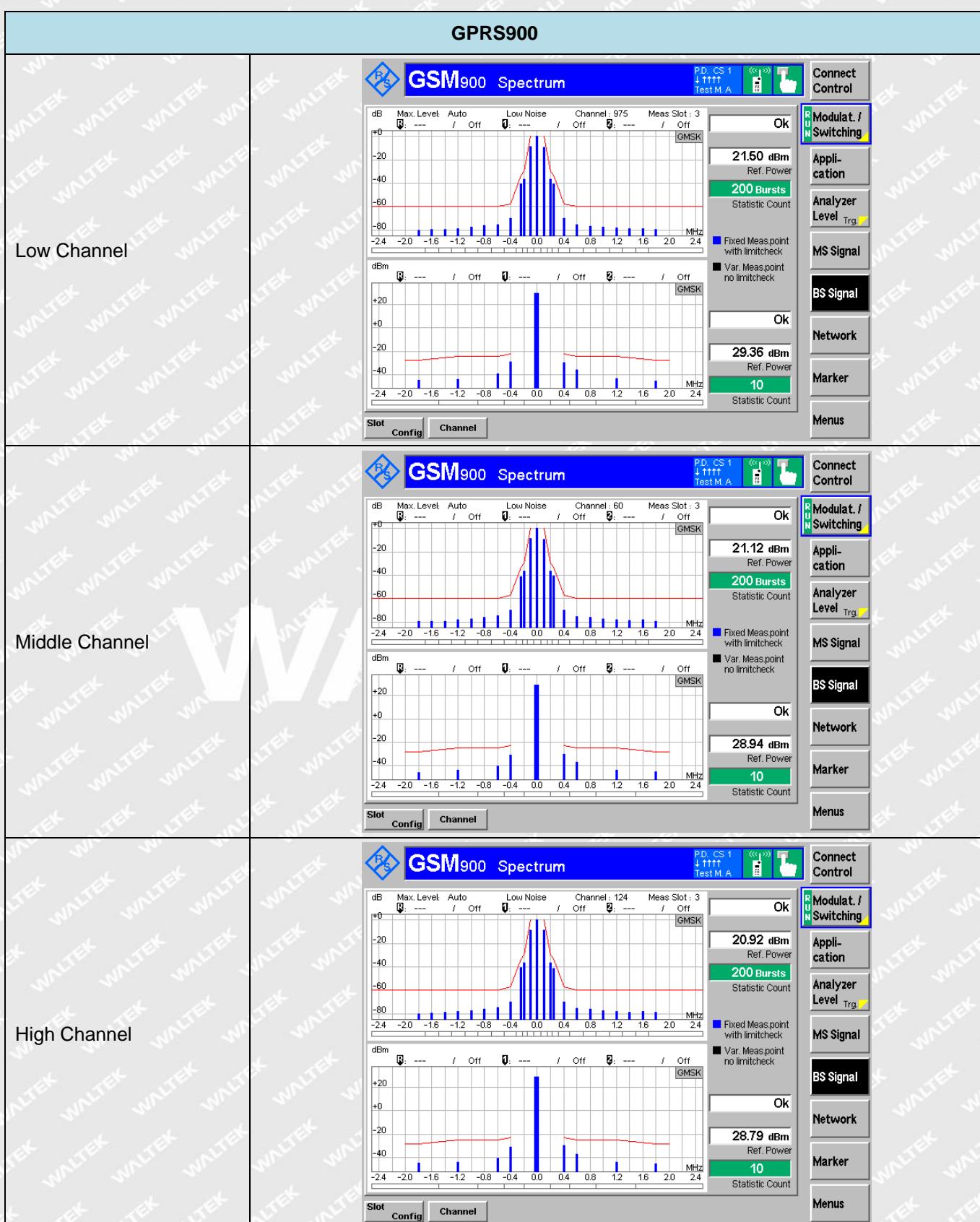


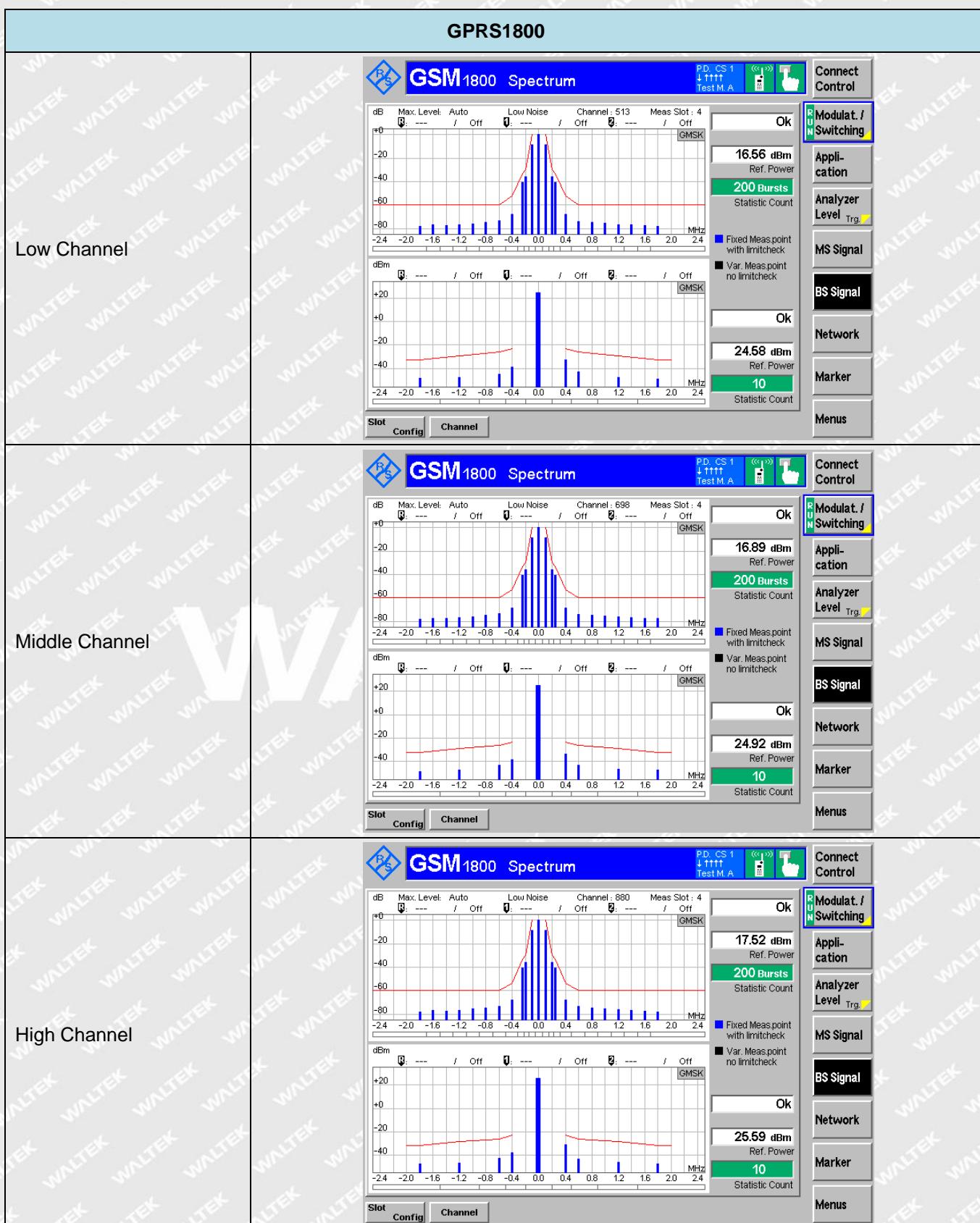
3.12.4 Test result

Test Mode	Test Channel	NTNV	HTHV	HTLV	LTHV	LTLV
GPRS900	513	PASS	PASS	PASS	PASS	PASS
	60	PASS	PASS	PASS	PASS	PASS
	124	PASS	PASS	PASS	PASS	PASS
GPRS1800	513	PASS	PASS	PASS	PASS	PASS
	698	PASS	PASS	PASS	PASS	PASS
	880	PASS	PASS	PASS	PASS	PASS

Worst case at NTNV Condition Test Data as below:

WALTEK



**GPRS1800**



3.13 Frequency error and Modulation accuracy in EGPRS Configuration

Clause 13.17.1 of TS 151 010-1 applies.

3.13.1 Definition and applicability

The frequency error is the difference in frequency, after adjustment for the effect of the modulation and phase error, between the RF transmission from the MS and either:

- the RF transmission from the BS, or
- the nominal frequency for the ARFCN used.

The phase error is the difference in phase, after adjustment for the effect of the frequency error, between the RF transmission from the MS and the theoretical transmission according to the intended modulation.

The requirements and this test apply to EGPRS 900 and EGPRS 1800 MS.

3.13.2 Conformance requirements

1. The carrier frequency under 8PSK modulation shall be accurate to within 0,2 ppm for GSM 400 and 0,1 ppm for all other bands compared to signals received from the BS.

1.1 Under normal conditions; 3GPP TS 05.10, subclause 6.1.

1.2 Under extreme conditions; 3GPP TS 05.10, subclause 6.1; 3GPP TS 05.05, subclause 4.4; 3GPP TS 05.05, annex D subclauses D.2.1 and D.2.2.

2. The RMS EVM over the useful part of any burst of the 8-PSK modulated signal shall not exceed.

2.1 9,0% Under normal conditions; 3GPP TS 05.05, subclause 4.6.2.1

2.2 10,0% Under extreme conditions; 3GPP TS 05.05, subclause 4.6; 3GPP TS 05.05, annex D subclauses D.2.1 and D.2.2.

3. The peak EVM values averaged over at least 200 bursts of the 8PSK modulated signal shall be \leq 30 %.

3.1 Under normal conditions; 3GPP TS 05.05, subclause 4.6.2.3.

3.2 Under extreme conditions; 3GPP TS 05.05, subclause 4.6.2.3; 3GPP TS 05.05, annex D subclauses D.2.1 and D.2.2.

4. The 95:th-percentile value of any burst of the 8-PSK modulated signal shall be \leq 15 %.

4.1 Under normal conditions; 3GPP TS 05.05, subclause 4.6.2.4.

4.2 Under extreme conditions; 3GPP TS 05.05, subclause 4.6.2.4; 3GPP TS 05.05, annex D subclauses D.2.1 and D.2.2.

5. The Origin Offset Suppression for any 8PSK modulated signal shall exceed 30 dB.

5.1 Under normal conditions; 3GPP TS 05.05, subclause 4.6.2.2.

5.2 Under extreme conditions; 3GPP TS 05.05, subclause 4.6.2.2; 3GPP TS 05.05, annex D subclauses D.2.1 and D.2.2.

3.13.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 13.17.1 for the measurement method.

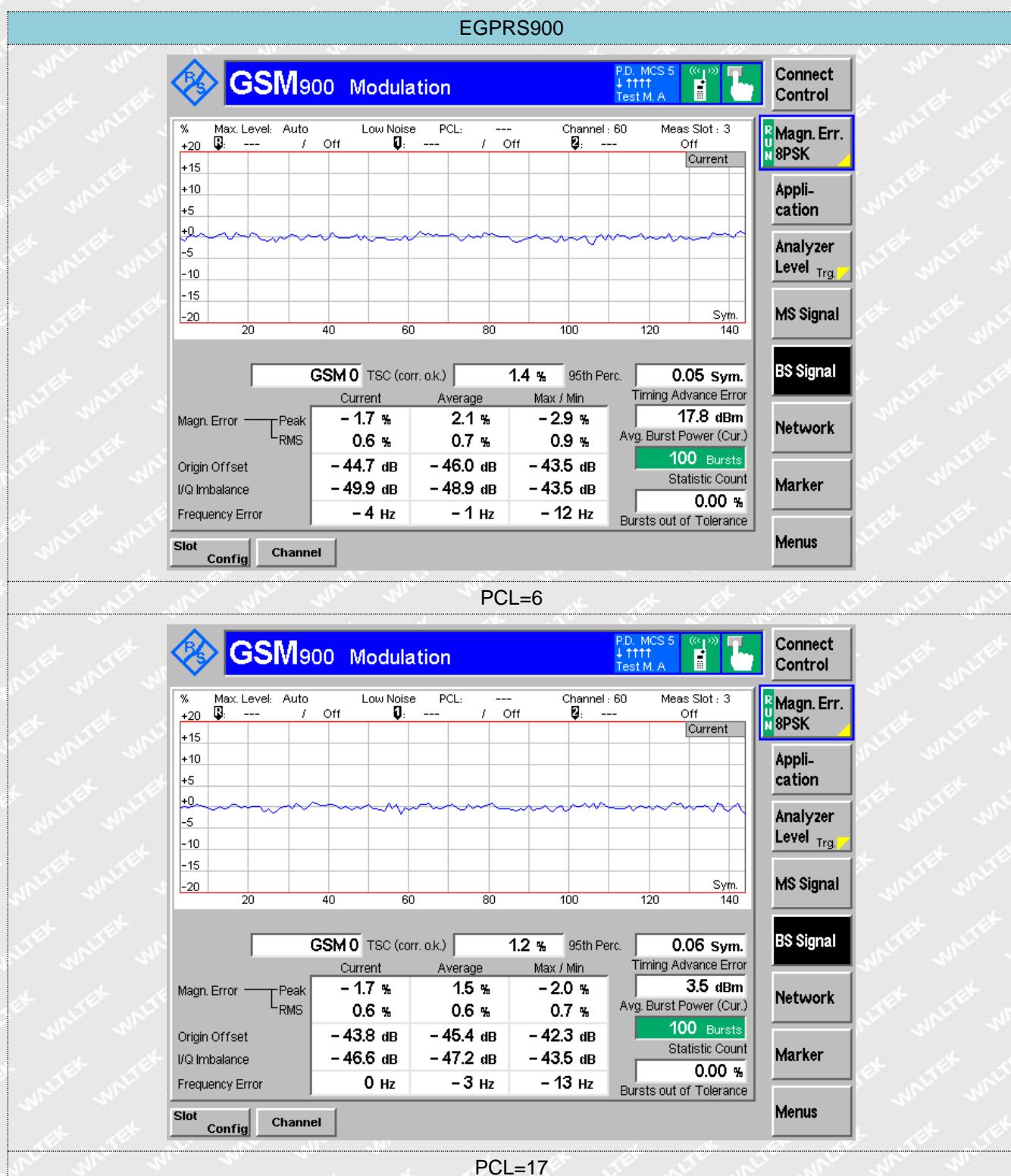


3.13.4 Test result

Test Mode	Test Channel	NTNV	HTHV	HTLV	LTHV	LTLV
EGPRS900	60	PASS	PASS	PASS	PASS	PASS
EGPRS1800	698	PASS	PASS	PASS	PASS	PASS

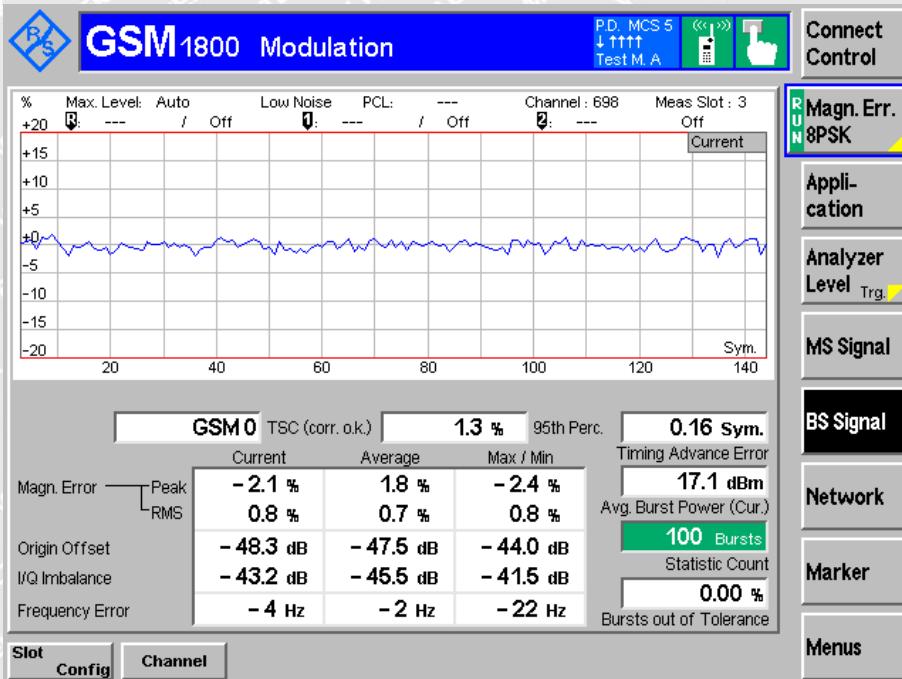
Worst case at NTV Condition Test Data as below:

Mode	PCL	Frequency Error (Hz)	Limit (Hz)	Result	EVM (%)		Limit (%)	Result
EGPRS900	6	-12	89.7	PASS	RMS	0.9	9	PASS
					Peak	-2.9	30	PASS
	17	-13	89.7	PASS	RMS	0.7	9	PASS
					Peak	-2.0	30	PASS
EGPRS1800	5	-22	174.7	PASS	RMS	0.8	9	PASS
					Peak	-2.4	30	PASS
	18	-23	174.7	PASS	RMS	0.8	9	PASS
					Peak	-2.6	30	PASS

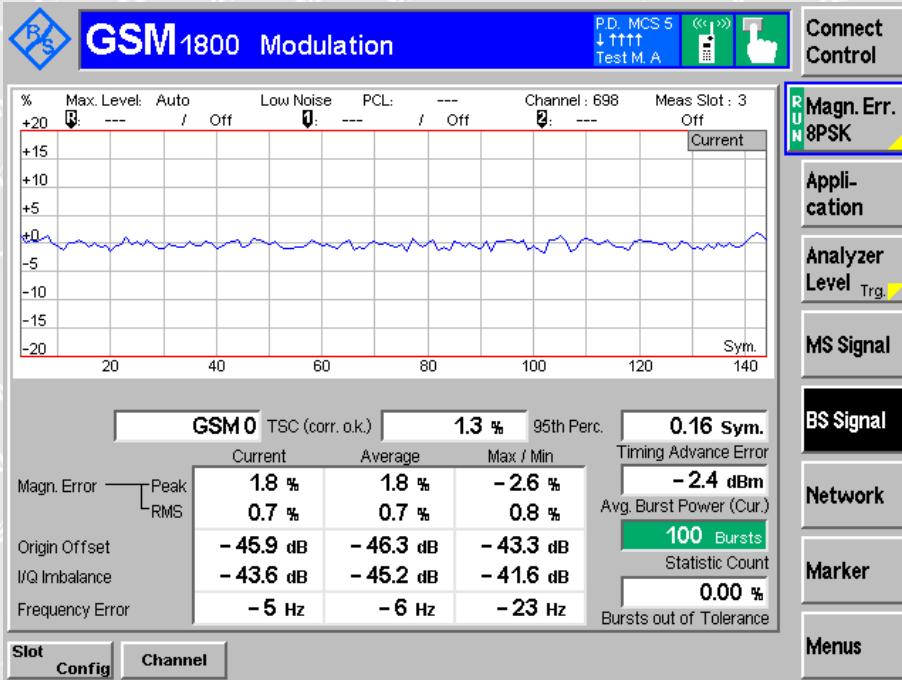




EGPRS1800



PCL=5



PCL=18



3.14 Frequency error under multipath and interference conditions in EGPRS Configuration

Clause 13.17.2 of TS 151 010-1 applies.

3.14.1 Definition and applicability

The frequency error under multipath and interference conditions is a measure of the ability of the MS to maintain frequency synchronization with the received signal under conditions of Doppler shift, multipath reception and interference.

The requirements and this test apply to GSM900 and DCS1800 MS.

3.14.2 Conformance requirements

1. The MS carrier frequency error for each burst shall be accurate to within 0,1 ppm, or 0,1 ppm compared to signals received from the BS for signal levels down to 3 dB below the reference sensitivity level.
2. The MS carrier frequency error for each burst shall be accurate to within 0,1 ppm, or 0,1 ppm compared to signals received from the BS for 3 dB less carrier to interference ratio than the reference interference ratios.

3.14.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 13.17.2 for the measurement method.

3.14.4 Test result

Test Mode	Test Channel	NTNV	HTHV	HTLV	LTHV	LTLV
EGPRS900	60	PASS	PASS	PASS	PASS	PASS
EGPRS1800	698	PASS	PASS	PASS	PASS	PASS

Worst case at NTVN Condition Test Data as below:



Test Conditions	GSM900 Middle channel			
	TU3(Hz)	TU50(Hz)	HAT100(Hz)	RA 250(Hz)
Normal	58.58	54.76	53.27	54.46
HTHV	57.46	53.68	51.46	53.49
HTLV	56.35	53.74	51.52	53.51
LTHV	57.19	52.32	52.67	53.32
LTLV	56.27	52.68	52.78	52.19
Limit (Hz)	±230	±160	±180	±300
Test Result	PASS	PASS	PASS	PASS

Test Conditions	DCS1800 Middle Channel			
	TU1.5(Hz)	TU50(Hz)	HT100(Hz)	RA250(Hz)
Normal	57.68	56.21	55.37	54.68
HTHV	56.26	54.47	54.49	53.74
HTLV	56.54	55.68	54.62	53.65
LTHV	55.18	54.23	53.38	52.23
LTLV	56.63	55.54	53.51	53.81
Limit (Hz)	±320	±260	±350	±400
Test Result	PASS	PASS	PASS	PASS



3.15 Transmitter output power in EGPRS multisolt configuration

Clause 13.17.3 of ETSI TS 151 010-1 applies.

3.15.1 Definition and applicability

The transmitter output power is the average value of the power delivered to an artificial antenna or radiated by the MS and its integral antenna, over the time that the useful information bits of one burst are transmitted. Since the conformance requirement, test procedure and test requirement of GSMK modulated signal's output power are defined in subclause 13.17.3 for GPRS MS, being thereby defined also for all EGPRS MS in that section, only 8PSK modulated signal's output power conformance requirement, test procedure and test requirements are defined in this subclause.

The requirements and this test apply to EGPRS 900 and EGPRS 1800 MS.

3.15.2 Conformance requirements

1. The MS maximum output power for 8-PSK modulated signal shall be as defined in 3GPP TS 05.05, subclause 4.1.1, second table, according to its power class, with a tolerances of ± 2 dB, ± 3 dB, $+3/-4$ dB defined under normal conditions in the 3GPP TS 05.05, subclause 4.1.1, second table. From R99 onwards, the MS maximum output power in an uplink multislot configuration shall be as defined in 3GPP TS 05.05 subclause 4.1.1, sixth table, according to its power class, with a tolerance of ± 3 dB under normal conditions; 3GPP TS 05.05, subclause 4.1.1, second and sixth table. In case the MS supports the same maximum output power in an uplink multislot configuration as it supports for single slot uplink operation, the tolerance shall be ± 2 dB.
2. The MS maximum output power for 8-PSK modulated signal shall be as defined in 3GPP TS 05.05, subclause 4.1.1, second table, according to its power class, with a tolerances of ± 2.5 dB, ± 4 dB, $+4/-4.5$ dB defined under extreme conditions in the 3GPP TS 05.05, subclause 4.1.1, second table. From R99 onwards, the MS maximum output power in an uplink multislot configuration shall be as defined in 3GPP TS 05.05 subclause 4.1.1, sixth table, according to its power class, with a tolerance of ± 4 dB under extreme conditions; 3GPP TS 05.05, subclause 4.1.1, second and sixth table; 3GPP TS 05.05 annex D in subclauses D.2.1 and D.2.2. In case the MS supports the same maximum output power in an uplink multislot configuration as it supports for single slot uplink operation, the tolerance shall be ± 2.5 dB.
3. The power control levels for 8-PSK shall have the nominal output power levels as defined in 3GPP TS 05.05, subclause 4.1.1, third table (for GSM 400, GSM 700, GSM 850 and GSM 900), fourth table (for DCS 1 800) or fifth table (for PCS 1 900), from the lowest power control level up to the maximum output power corresponding to the class of the MS (for tolerance on maximum output power see conformance requirement 1), with a tolerance of ± 2 dB, ± 3 dB, 4 dB or 5 dB under normal conditions; 3GPP TS 05.05, subclause 4.1.1, third, fourth or fifth table.
4. The power control levels for 8-PSK shall have the nominal output power levels as defined in 3GPP TS 05.05, subclause 4.1.1, third table (for GSM 400, GSM 700, GSM 850 and GSM 900), fourth table (for DCS 1 800) or fifth table (for PCS 1 900), from the lowest power control level up to the maximum output power corresponding



to the class of the MS (for tolerance on maximum output power see conformance requirements 2), with a tolerance of $\pm 2,5$ dB, ± 4 dB, 5 dB or 6 dB under extreme conditions; 3GPP TS 05.05, subclause 4.1.1, third, fourth or fifth table; 3GPP TS 05.05 annex D subclauses D.2.1 and D.2.2.

4a. From R99 onwards, the supported maximum output power for each number of uplink timeslots shall form a monotonic sequence. The maximum reduction of maximum output power from an allocation of n uplink timeslots to an allocation of n+1 uplink timeslots shall be equal to the difference of maximum permissible nominal reduction of maximum output power for the corresponding number of timeslots, as defined in 3GPP TS 05.05, subclause 4.1.1, sixth table.

5. For 8-PSK, the output power actually transmitted by the MS at consecutive power control levels shall form a monotonic sequence and the interval between power control levels shall be $2 \pm 1,5$ dB; 3GPP TS 05.05, subclause 4.1.1, from R99 onwards, in a multislot configuration, the first power control step down from the maximum output power is allowed to be in the range 0...2 dB

6. The transmitted power level relative to time for a normal burst shall be within the power/time template given in 3GPP TS 05.05, annex B bottom figure for 8PSK modulated signal. In the case of Multislot Configurations where the bursts in two or more consecutive time slots are actually transmitted at the same frequency, the template of annex B shall be respected during the useful part of each burst and at the beginning and the end of the series of consecutive bursts. The output power during the guard period between every two consecutive active timeslots shall not exceed the level allowed for the useful part of the first timeslot, or the level allowed for the useful part of the second timeslot plus 3 dB, whichever is the highest.

6.1 Under normal conditions; 3GPP TS 05.05, subclause 4.5.2.

6.2 Under extreme conditions; 3GPP TS 05.05, subclause 4.5.2, 3GPP TS 05.05 annex D subclauses D.2.1 and D.2.2.

3.15.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 13.17.3 for the measurement method.



3.15.4 Test result

Test Mode	Test Channel	NTNV	HTHV	HTLV	LTHV	LTLV
EGPRS900	60	PASS	PASS	PASS	PASS	PASS
EGPRS1800	698	PASS	PASS	PASS	PASS	PASS

Worst case at NTV Condition Test Data as below:

Power Control Level	Output power(dBm)			Result
	Low channel	Middle Channel	High Channel	
1 uplink slot				
6	27.20	27.16	27.05	PASS
7	25.68	25.59	25.45	PASS
8	23.59	23.62	23.68	PASS
9	21.25	21.34	21.21	PASS
10	19.39	19.51	19.56	PASS
11	17.56	17.28	17.34	PASS
12	15.21	15.36	15.59	PASS
13	13.54	13.22	13.62	PASS
14	11.85	11.21	11.37	PASS
15	9.26	9.59	9.41	PASS
16	7.30	7.36	7.63	PASS
17	4.48	4.78	4.72	PASS
2 uplink slot				
6	24.94	25.14	25.17	PASS
4 uplink slot				
6	21.77	21.78	21.78	PASS



EGPRS1800	Output power(dBm)			
Power Control Level	Low channel	Middle Channel	High Channel	Result
1 uplink slot				
5	25.91	25.92	24.70	PASS
6	23.64	23.48	22.74	PASS
7	21.95	21.56	20.85	PASS
8	19.23	19.21	18.61	PASS
9	17.58	17.30	16.32	PASS
10	15.16	15.65	14.56	PASS
11	13.21	13.32	12.95	PASS
12	11.23	11.54	10.61	PASS
13	9.68	9.84	8.32	PASS
14	7.32	7.15	6.03	PASS
15	5.65	5.62	4.58	PASS
16	3.47	3.16	2.48	PASS
17	1.59	1.22	0.59	PASS
18	-1.05	-1.07	-2.21	PASS
2 uplink slot				
5	23.51	23.73	23.96	PASS
4 uplink slot				
5	21.25	21.57	21.84	PASS



3.16 Transmitter – output RF spectrum in EGPRS multisolt configuration

Clause 13.17.4 of TS 151 010-1 applies.

3.16.1 Definition and applicability

The output RF spectrum is the relationship between the frequency offset from the carrier and the power, measured in a specified bandwidth and time, produced by the MS due to the effects of modulation and power ramping.

Since the conformance requirement, test procedure and test requirement of GSMK modulated signal's output RF spectrum are defined in subclause 13.17.4 for GPRS MS, being thereby defined also for all EGPRS MS in that section, only 8PSK modulated signal's RF output spectrum conformance requirement, test procedure and test requirements are defined in this subclause.

The requirements and this test apply to EGPRS 900 and EGPRS 1800.

3.16.2 Conformance requirements

1. The level of the output RF spectrum due to 8PSK modulation shall be no more than that given in 3GPP TS 05.05, subclause 4.2.1, with the following lowest measurement limits:

- -36 dBm below 600 kHz offset from the carrier;
- -51 dBm for GSM 400, GSM 700, GSM 850 and GSM 900 or -56 dBm for DCS 1 800 and PCS 1 900 from 600 kHz out to less than 1 800 kHz offset from the carrier;
- -46 dBm for GSM 400, GSM 700, GSM 850 and GSM 900 or -51 dBm for DCS 1 800 and PCS 1 900 at and beyond 1 800 kHz offset from the carrier;

but with the following exceptions at up to -36 dBm:

- up to three bands of 200 kHz width centred on a frequency which is an integer multiple of 200 kHz in the combined range 600 kHz to 6 000 kHz above and below the carrier;
- up to 12 bands of 200 kHz width centred on a frequency which is an integer multiple of 200 kHz at more than 6 000 kHz offset from the carrier.

1.1 Under normal conditions; 3GPP TS 05.05, subclause 4.2.1.

1.2 Under extreme conditions; 3GPP TS 05.05, subclause 4.2.1; 3GPP TS 05.05, annex D subclauses D.2.1 and D.2.2.

2. The level of the output RF spectrum due to switching transients shall be no more than given in 3GPP TS 05.05, subclause 4.2.2, table "a) Mobile Station".

2.1 Under normal conditions; 3GPP TS 05.05, subclause 4.2.2.

2.2 Under extreme conditions; 3GPP TS 05.05, subclause 4.2.2; 3GPP TS 05.05 annex D subclauses D.2.1 and D.2.2.

3. When allocated a channel, the power emitted by the GSM 400, GSM 900 and DCS 1800 MS, in the band 935 MHz to 960 MHz shall be no more than -79 dBm, in the band 925 MHz to 935 MHz shall be no more than -67 dBm and in the band 1 805 MHz to 1 880 MHz shall be no more than -71 dBm, except in five measurements in each of the bands 925 MHz to 960 MHz and 1 805 MHz to 1 880 MHz, where exceptions at up to -36 dBm are permitted. For GSM 400 mobiles, in addition, a limit of -67 dBm shall apply in the frequency



bands 460,4 MHz to 467,6 MHz and 488,8 MHz to 496 MHz.

For GSM 700, GSM 850 and PCS 1 900, the power emitted by MS, in the band of 747 MHz to 757 MHz shall be no more than -79 dBm, in the band of 757 MHz to 762 MHz shall be no more than -73 dBm, in the band 869 MHz to 894 MHz shall be no more than -79 dBm, in the band 1 930 MHz to 1 990 MHz shall be no more than -71 dBm except in five measurements in each of the bands 747 MHz to 762 MHz, 869 MHz to 894 MHz and 1 930 MHz to 1 990 MHz where exceptions up to -36 dBm are permitted; 3GPP TS 45.005, subclause 4.3.3.

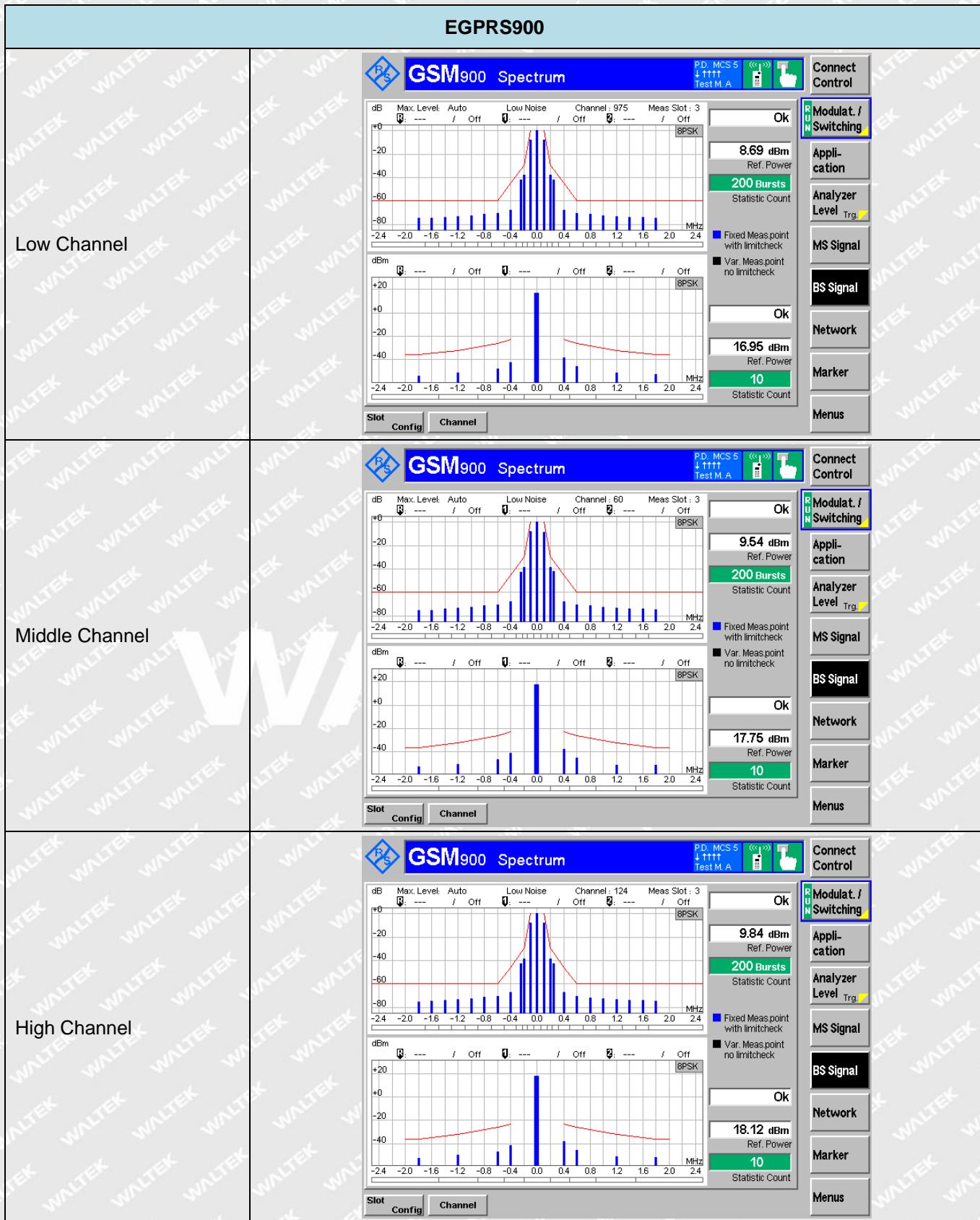
3.16.3 Test procedure

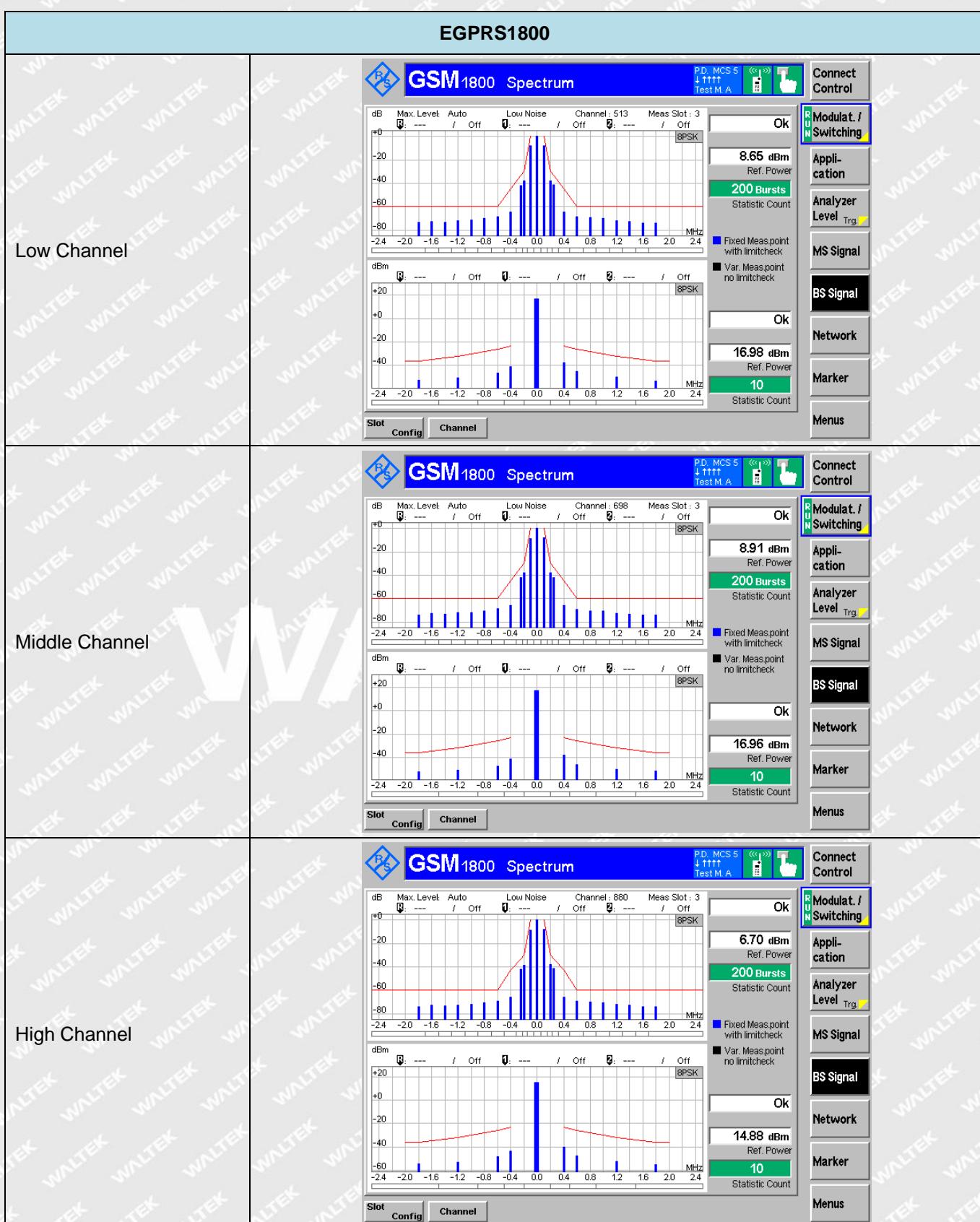
Please refer to ETSI TS 51.010-1 Sub-clause 13.17.4 for the measurement method.

3.16.4 Test result

Test Mode	Test Channel	NTNV	HTHV	HTLV	LTHV	LTLV
GSM900	975	PASS	PASS	PASS	PASS	PASS
	60	PASS	PASS	PASS	PASS	PASS
	124	PASS	PASS	PASS	PASS	PASS
DCS1800	513	PASS	PASS	PASS	PASS	PASS
	698	PASS	PASS	PASS	PASS	PASS
	880	PASS	PASS	PASS	PASS	PASS

Worst case at NTVN Condition Test Data as below:







3.17 Receiver blocking and spurious response in EGPRS configuration

Clause 14.18.5 of TS 151 010-1 applies.

3.17.1 Definition and applicability

Blocking is a measure of the ability of the receiver to receive a modulated wanted input signal in the presence of an unwanted input signal, on frequencies other than those of the spurious responses or the adjacent channels, without exceeding a given degradation. "Wanted signal" in this test is the signal generated by the transmitted RLC data blocks.

3.17.2 Conformance requirements

1. The blocking characteristics of the receiver are specified separately for in-band and out-of-band performance as identified in 3GPP TS 05.05 subclause 5.1
2. The block error rate (BLER) performance for PDTCH/MCS1 to 4 shall not exceed 10 % and for PDTCH/MCS5 to 9 shall not exceed 10 % or 30 % depending on Coding Schemes and for USF/MCS1 to 9 shall not exceed 1 %

when the following signals are simultaneously input to the receiver; 3GPP TS 05.05, subclause 6.2:

- a useful signal at frequency f_0 , 3 dB above the reference sensitivity level specified in table 14.18-3a for GMSK modulation and table 14.18-3b for 8-PSK modulation for PDTCH channels; and in tables 14.18-4a for GMSK modulation and 14.18-4b for 8-PSK modulation for USF channel with correction values as specified in 3GPP TS 05.05 subclause 6.2;
- a continuous, static sine wave unwanted signal at a level as in the table 14.18-9 below and at a frequency (f) which is an integer multiple of 200 kHz.

with the following exceptions, called spurious response frequencies:

- a) E-GSM900: in band, for a maximum of six occurrences (which if grouped shall not exceed three contiguous occurrences per group). 3GPP TS 05.05, subclause 5.1.
DCS 1800: in band, for a maximum of twelve occurrences (which if grouped shall not exceed three contiguous occurrences per group). 3GPP TS 05.05, subclause 5.1.
- b) out of band, for a maximum of 24 occurrences (which if below f_0 and grouped shall not exceed three contiguous occurrences per group). 3GPP TS 05.05, subclause 5.1.

where the above performance shall be met when the continuous sine wave signal (f) is set to a level of 70 dB μ V (emf) (i.e. -43 dBm). 3GPP TS 05.05, subclause 5.1.

3.17.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 14.7.1 for the measurement method.



3.17.4 Test result

Worst case Test Data as below:

Test Mode	Test Channel	FBER(%)	Number of test samples	Limit(%)	Result
EGPRS900	975	0.68	10000	2.439	PASS
	60	0.61	10000	2.439	PASS
	124	0.53	10000	2.439	PASS
EGPRS1800	513	0.60	10000	2.439	PASS
	698	0.71	10000	2.439	PASS
	880	0.76	10000	2.439	PASS

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3.18 Intermodulation rejection - speech channels

Clause 14.6.1 of TS 151 010-1 applies.

3.18.1 Definition and applicability

The intermodulation rejection is a measure of the capability of the receiver to receive a wanted modulated signal without exceeding a given degradation due to the presence of two or more unwanted signals with a specific frequency relationship to the wanted signal frequency.

For E-GSM 900, R-GSM 900 and ER-GSM 900 MS this test is only performed in the P-GSM band.

3.18.2 Conformance requirements

In the presence of two unwanted signals with a specific frequency relationship to the wanted signal frequency the Class II RBER for TCH/FS shall meet the reference sensitivity performance of table 1 in 3GPP TS 05.05 subclause 5.3.

3.18.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 14.6.1 for the measurement method.

3.18.4 Test result

Test Mode	Test Channel	NTNV	HTHV	HTLV	LTHV	LTLV
GSM900	60	PASS	PASS	PASS	PASS	PASS
GSM1800	698	PASS	PASS	PASS	PASS	PASS

Worst case Test Data as below:

Test Mode	Test Channel	RBER(%)	Number of test samples	Limit(%)	Result
GSM900	60	0.000	10000	2.439	PASS
DCS1800	698	0.000	10000	2.439	PASS



3.19 Intermodulation rejection – control channels

Clause 14.6.2 of TS 151 010-1 applies.

3.19.1 Definition and applicability

The intermodulation rejection is a measure of the capability of the receiver to receive a wanted modulated signal without exceeding a given degradation due to the presence of two or more unwanted signals with a specific frequency relationship to the wanted signal frequency.

For E-GSM 900, R-GSM 900 and ER-GSM 900 MS this test is only performed in the P-GSM band.

3.19.2 Conformance requirements

In the presence of two unwanted signals with a specific frequency relationship to the wanted signal frequency the FER for FACCH/F shall meet the reference sensitivity performance of table 1 in 3GPP TS 05.05 subclause 5.3.

3.19.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 14.6.2 for the measurement method.

3.19.4 Test result

Test Mode	Test Channel	NTNV	HTHV	HTLV	LTHV	LTLV
GSM900	60	PASS	PASS	PASS	PASS	PASS
GSM1800	698	PASS	PASS	PASS	PASS	PASS

Worst case Test Data as below:

Test Mode	Test Channel	FER(%)	Number of test samples	Limit(%)	Result
GSM900	60	0.000	6 696	8.961	PASS
DCS1800	698	0.000	13736	4.368	PASS



3.20 Intermodulation rejection - EGPRS

Clause 14.18.4 of TS 151 010-1 applies.

3.20.1 Definition and applicability

The intermodulation rejection is a measure of the capability of the receiver to receive a wanted modulated signal without exceeding a given degradation due to the presence of two or more unwanted signals with a specific frequency relationship to the wanted signal frequency. "Wanted signal" in this test is the signal generated by the transmitted RLC data blocks

3.20.2 Conformance requirements

In the presence of two unwanted signals with a specific frequency relationship to the wanted signal frequency in both GMSK and 8-PSK modulations

1. The block error rate (BLER) performance for PDTCH/MCS1 to 4 shall not exceed 10 % and for PDTCH/MCS5 to 9 shall not exceed 10 % or 30 % depending on Coding Schemes; 3GPP TS 05.05, subclause 6.2.
2. The block error rate (BLER) performance for USF/MSC-1 to 9 shall not exceed 1 %; 3GPP TS 05.05, subclause 6.2.
3. The BLER shall not exceed the conformance requirements given in 1. - 2. under extreme conditions; 3GPP TS 05.05, subclause 6.2 and annex D subclauses D.2.1 and D.2.2.

3.20.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 14.18.4 for the measurement method.

3.20.4 Test result

Test Mode	Test Channel	NTNV	HTHV	HTLV	LTHV	LTLV
GSM900	60	PASS	PASS	PASS	PASS	PASS
GSM1800	698	PASS	PASS	PASS	PASS	PASS

Worst case Test Data as below:

Test Mode	Test Channel	BLER(%)	Limit(%)	Result
GSM900	60	0.000	10	PASS
DCS1800	698	0.000	10	PASS



3.21 AM suppression - speech channels

Clause 14.8.1 of TS 151 010-1 applies.

3.21.1 Definition and applicability

AM suppression is a measure of the ability of the receiver to receive a modulated wanted input signal in the presence of an unwanted TDMA modulated interferer.

3.21.2 Conformance requirements

The reference sensitivity performance as specified in table 1 shall be met when the following signals are simultaneously input to the receiver:

- a useful signal at frequency f_0 , 3 dB above the reference sensitivity level as specified in 3GPP TS 05.05 subclause 5.2.
- a single frequency (f), in the relevant receive band, $|f - f_0| > 6\text{MHz}$, which is an integer multiple of 200 kHz, a GSM TDMA signal modulated by any 148-bits subsequence of the 511-bits pseudo random bit sequence, defined in ITU-T Recommendation O.153 fascicle IV.4, at a level as defined in the table below. The interferer shall have one timeslot active and the frequency shall be at least 2 channels separated from any identified spurious responses. The transmitted bursts shall be synchronized to but, delayed in time between 61 and 86 bit periods relative to the bursts of the wanted signal. 3GPP TS 05.05, subclause 5.2.

3.21.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 14.8.1 for the measurement method.

3.21.4 Test result

Worst case Test Data as below:

Test Mode	Test Channel	RBER(%)	Number of test samples	Limit(%)	Result
GSM900	60	0.000	10000	2.439	PASS
DCS1800	698	0.000	10000	2.439	PASS



3.22 AM suppression - control channels

Clause 14.8.2 of TS 151 010-1 applies.

3.22.1 Definition and applicability

AM suppression is a measure of the ability of the receiver to receive a modulated wanted input signal in the presence of an unwanted TDMA modulated interferer.

3.22.2 Conformance requirements

The reference sensitivity performance as specified in table 1 shall be met when the following signals are simultaneously input to the receiver:

- a useful signal at frequency f_0 , 3 dB above the reference sensitivity level as specified in 3GPP TS 05.05 subclause 5.2.
- a single frequency (f), in the relevant receive band, $|f - f_0| > 6\text{MHz}$, which is an integer multiple of 200 kHz, a GSM TDMA signal modulated by any 148-bits subsequence of the 511-bits pseudo random bit sequence, defined in ITU-T Recommendation O.153 fascicle IV.4, at a level as defined in the table below. The interferer shall have one timeslot active and the frequency shall be at least 2 channels separated from any identified spurious responses. The transmitted bursts shall be synchronized to but, delayed in time between 61 and 86 bit periods relative to the bursts of the wanted signal. 3GPP TS 05.05, subclause 5.2.

3.22.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 14.8.2 for the measurement method.

3.22.4 Test result

Worst case Test Data as below:

Test Mode	Test Channel	FER(%)	Number of test samples	Limit(%)	Result
GSM900	60	0.000	10000	2.439	PASS
DCS1800	698	0.000	15000	2.439	PASS



3.23 AM suppression - packet channels

Clause 14.8.3 of TS 151 010-1 applies.

3.23.1 Definition and applicability

AM suppression is a measure of the ability of the receiver to receive a modulated wanted input signal in the presence of an unwanted TDMA modulated interferer.

3.23.2 Conformance requirements

The reference sensitivity performance as specified in tables 1, 1a, 1c and 1e, adjusted by the correction factors of table 6.2-4, shall be met when the following signals are simultaneously input to the receiver.

- A useful signal, modulated with the relevant supported modulation (GMSK or 8-PSK) and symbol rate, at frequency f_0 , 3 dB above the reference sensitivity level or input level for reference performance, whichever applicable, as specified in sub clause 6.2
- A single frequency (f), in the relevant receive band, $|f - f_0| > 6\text{MHz}$, which is an integer multiple of 200 kHz, a GSM TDMA signal modulated by any 148-bits subsequence of the 511-bits pseudo random bit sequence, defined in ITU-T Recommendation O.153 fascicle IV.4, at a level as defined in the table below. The interferer shall have one timeslot active and the frequency shall be at least 2 channels separated from any identified spurious responses. The transmitted bursts shall be synchronized to but, delayed in time between 61 and 86 bit periods relative to the bursts of the wanted signal.

3.23.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 14.8.3 for the measurement method.

3.23.4 Test result

Worst case Test Data as below:

Test Mode	Data rate	Test Channel	BLER(%)	Number of test samples	Limit(%)	Result
GSM900	MCS-5	60	0.000	2000	10	PASS
	USF/MCS-5		0.000	20000	1	PASS
DCS1800	MCS-5	698	0.000	2000	10	PASS
	USF/MCS-5		0.000	20000	1	PASS



3.24 Adjacent channel rejection - speech channels (TCH/FS)

Clause 14.5.1 of TS 151 010-1 applies.

3.24.1 Definition and applicability

The adjacent channel selectivity is a measure of the capability of the receiver to receive a wanted modulated signal without exceeding a given degradation due to the presence of an unwanted signal in the adjacent channel.

The adjacent channel can be adjacent in the RF spectrum or in time. There are therefore two types of adjacent channel selectivity:

- 1) Adjacent RF channel selectivity which is specifically tested in this subclause.
- 2) Adjacent Time Slot selectivity, which is implicitly tested in test 14.2.1.

3.24.2 Conformance requirements

1. With adjacent channel interference at 200 kHz above and below the wanted signal and signal level 9 dB above the wanted signal level:

1.1 For a TUhigh faded wanted signal and a TUhigh adjacent channel interferer, the FER for TCH/FS shall be within the requirements of table 2 in 3GPP TS 05.05 subclause 6.3.

1.2 For a TUhigh faded wanted signal and a TUhigh adjacent channel interferer, the Class Ib RBER shall be within the requirements of table 2 in 3GPP TS 05.05 subclause 6.3.

1.3 For a TUhigh faded wanted signal and a TUhigh adjacent channel interferer, the Class II RBER shall be within the requirements of table 2 in 3GPP TS 05.05 subclause 6.3.

1.4 For a TUhigh faded wanted signal and a TUhigh adjacent channel interferer, the Class II RBER shall be within the requirements of table 2 in 3GPP TS 05.05 under extreme test conditions; 3GPP TS 05.05 subclause 6.3 and annex D subclauses D.2.1 and D.2.2.

2. For adjacent channel interference at 400 kHz above and below the wanted signal frequency and signal level 41 dB above the wanted signal level:

2.1 For a TUhigh faded wanted signal and a TUhigh adjacent channel interferer, the FER for TCH/FS shall be within the requirements of table 2 in 3GPP TS 05.05 subclause 6.3.

2.2 For a TUhigh faded wanted signal and a TUhigh adjacent channel interferer, the Class Ib RBER shall be within the requirements of table 2 in 3GPP TS 05.05 subclause 6.3.

2.3 For a TUhigh faded wanted signal and a TUhigh adjacent channel interferer, the Class II RBER shall be within the requirements of table 2 in 3GPP TS 05.05 subclause 6.3.

2.4 For a TUhigh faded wanted signal and a TUhigh adjacent channel interferer, the Class II RBER shall be within the requirements of table 2 in 3GPP TS 05.05 under extreme test conditions; 3GPP TS 05.05 subclause 6.3 and annex D subclauses D.2.1 and D.2.2.

If a system simulator does not support the faded interferer, a static adjacent interferer has to be used. The following requirements apply. 2.5 For a TUhigh faded wanted signal and a static adjacent channel interferer, the FER for TCH/FS shall be better than:

GSM 400, GSM 700, GSM 850 and GSM 900: 10,2*a %; 3GPP TS 05.05, subclause 6.3;

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DCS 1800 and PCS 1900: 5,1* α %; 3GPP TS 05.05, subclause 6.3.

2.6 For a TUhigh faded wanted signal and a static adjacent channel interferer, the Class Ib RBER shall be better than:

GSM 400, GSM 700, GSM 850 and GSM 900: 0,72/ α %; 3GPP TS 05.05, subclause 6.3;

DCS 1800 and PCS 1900: 0,45/ α %; 3GPP TS 05.05, subclause 6.3.

2.7 For a TUhigh faded wanted signal and a static adjacent channel interferer, the Class II RBER shall be better than:

GSM 400, GSM 700, GSM 850 and GSM 900: 8,8 %; 3GPP TS 05.05, subclause 6.3;

DCS 1800 and PCS 1900: 8,9 %; 3GPP TS 05.05, subclause 6.3.

2.8 For a TUhigh faded wanted signal and a static adjacent channel interferer, the Class II RBER shall be better than:

GSM 400, GSM 700, GSM 850 and GSM 900: 8,8 %;

DCS 1800 and PCS 1900: 8,9 %.

under extreme test conditions; 3GPP TS 05.05, subclause 6.3, annex D subclauses D.2.1 and D.2.2.

3GPP TS 45.05 subclause 2:

For T-GSM 810 the requirements for GSM 900 shall apply, apart for those parameters for which a separate requirement

3.24.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 14.5.1 for the measurement method.

3.24.4 Test result

Test Mode	Test Channel	NTNV	HTHV	HTLV	LTHV	LTLV
GSM900	60	PASS	PASS	PASS	PASS	PASS
GSM1800	698	PASS	PASS	PASS	PASS	PASS

Worst case Test Data as below:

Test Mode	Interference at	Test Channel	FER/BLER(%)	Number of test samples	Limit(%)	Result
GSM900	200 kHz	60	0.000	10000	8.333	PASS
	400 kHz Interferer TUheight		0.000	1000000	8.333	PASS
	400 kHz Interferer Static		0.000	600000	9.167	PASS
DCS1800	200 kHz	698	0.000	100000	8.333	PASS
	400 kHz Interferer TUheight		0.000	2000000	8.333	PASS
	400 kHz Interferer Static		0.000	1000000	9.167	PASS



3.25 Adjacent channel rejection - control channels

Clause 14.5.2 of TS 151 010-1 applies.

3.25.1 Definition and applicability

The adjacent channel selectivity is a measure of the capability of the receiver to receive a wanted modulated signal without exceeding a given degradation due to the presence of an unwanted signal in the adjacent channel.

The adjacent channel can be the adjacent in the RF spectrum or in time. There are therefore two types of adjacent channel selectivity:

- 1) Adjacent RF channel selectivity which is specifically tested in this subclause.
- 2) Adjacent Time Slot selectivity, which is implicitly tested in test 14.2.1.

3.25.2 Conformance requirements

1. For adjacent channel interference at 200 kHz above and below the wanted signal frequency and signal level 9 dB above the wanted signal level:

1.1 For a TUhigh faded wanted signal and a TUhigh adjacent channel interferer, the FER for the FACCH/F does not exceed the requirements of table 2 in 3GPP TS 05.05 subclause 6.3.

1.2 For a TUhigh faded wanted signal and a TUhigh adjacent channel interferer, the FER for the FACCH/F does not exceed the requirements of table 2 in 3GPP TS 05.05 under extreme test conditions; 3GPP TS 05.05 subclause 6.3, annex D subclauses D.2.1and D.2.2.

2. For adjacent channel interference at 400 kHz above and below the wanted signal frequency and signal level 41 dB above the wanted signal level:

2.1 For a TUhigh faded wanted signal and a TUhigh adjacent channel interferer, the FER for the FACCH/F does not exceed the requirements of table 2 in 3GPP TS 05.05 subclause 6.3.

2.2 For a TUhigh faded wanted signal and a TUhigh adjacent channel interferer, the FER for the FACCH/F does not exceed the requirements of table 2 in 3GPP TS 05.05 under extreme test conditions; 3GPP TS 05.05 subclause 6.3, annex D subclauses D.2.1and D.2.2.

If a system simulator does not support the faded interferer, a static adjacent interferer has to be used. The following requirements apply;

2 :

2. 3 For a TUhigh faded wanted signal and a static adjacent channel interferer, the FER for the FACCH/F shall be better than:

GSM 400, GSM 700, GSM 850 and GSM 900: 17,1 %; 3GPP TS 05.05, subclause 6.3;

DCS 1 800 and PCS 1 900: 6,1 %; 3GPP TS 05.05, subclause 6.3.

2. 4 For a TUhigh faded wanted signal and a static adjacent channel interferer, the FACCH/F shall be better than:

GSM 400, GSM 700, GSM 850 and GSM 900: 17,1 %;

DCS 1 800 and PCS 1 900: 6,1 %.

under extreme test conditions; 3GPP TS 05.05, subclause 6.3, annex D subclauses D.2.1 and D.2.2.

3GPP TS 45.05 subclause 2:



For T-GSM 810 the requirements for GSM 900 shall apply, apart for those parameters for which a separate requirement exists.

3.25.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 14.5.2 for the measurement method.

3.25.4 Test result

Test Mode	Test Channel	NTNV	HTHV	HTLV	LTHV	LTLV
GSM900	60	PASS	PASS	PASS	PASS	PASS
GSM1800	698	PASS	PASS	PASS	PASS	PASS

Worst case Test Data as below:

Test Mode	Interference at	Channel	Test Channel	FER (%)	Number of test samples	Limit(%)	Result
GSM900	200 kHz	FACCH	60	0.000	16000	10.640	PASS
		F		0.000	16000	3.808	
	400 kHz Interferer faded	FACCH		0.000	16000	10.640	PASS
		F		0.000	16000	3.808	
	400 kHz Interferer Static	FACCH		0.000	16000	19.152	PASS
		F		0.000	16000	6.832	
DCS1800	200 kHz	FACCH	698	0.000	16000	10.640	PASS
		F		0.000	16000	3.808	
	400 kHz Interferer faded	FACCH		0.000	16000	10.640	PASS
		F		0.000	16000	3.808	
	400 kHz Interferer Static	FACCH		0.000	16000	19.152	PASS
		F		0.000	16000	6.832	



3.26 Adjacent channel rejection - EGPRS

Clause 14.18.3 of TS 151 010-1 applies.

3.26.1 Definition and applicability

The adjacent channel selectivity is a measure of the capability of the receiver to receive wanted data packets without exceeding a given degradation due to the presence of an interfering signal (I_{11}) in the adjacent channel.

"Wanted signal" in this test is the signal generated by the transmitted RLC data blocks.

The adjacent channel can be the adjacent in the RF spectrum or in time. There are therefore two types of adjacent channel selectivity:

- 1) Adjacent RF channel selectivity which is specifically tested in this subclause.
- 2) Adjacent Time Slot selectivity, which is implicitly tested in test 14.18.2.

3.26.2 Conformance requirements

1. For GMSK modulation, under adjacent channel interference at 200 kHz above and below the wanted signal frequency and at the adjacent interference ratio (C/I_{a1}) exceeding $C/I_c - 18\text{dB}$ where C/I_c is the co-channel interference ratio specified in table 14.18-5a for PDTCH and table 14.18-6a for USF channels.

1.1 For a TUhigh faded wanted signal and a TUhigh adjacent channel interferer, The block error rate (BLER) performance for PDTCH/MCS-1 to 4 shall not exceed 10 %; 3GPP TS 05.05, subclause 6.2.

1.2 For a TUhigh faded wanted signal and a TUhigh adjacent channel interferer, The block error rate (BLER) performance for USF/MSC-1 to 4 shall not exceed 1 %; 3GPP TS 05.05, subclause 6.2.

For 8-PSK modulation, under adjacent channel interference at 200 kHz above and below the wanted signal frequency and at the adjacent interference ratio (C/I_{a1}) specified in table 14.18-7a.

1.3 For a TUhigh faded wanted signal and a TUhigh adjacent channel interferer, The block error rate (BLER) performance for PDTCH/MCS-5 to 9 shall not exceed 10 % or 30 % depending on Coding Scheme; 3GPP TS 05.05, subclause 6.2.

1.4 For a TUhigh faded wanted signal and a TUhigh adjacent channel interferer, The block error rate (BLER) performance for USF/MSC-5 to 9 shall not exceed 1 %; 3GPP TS 05.05, subclause 6.2.
3GPP TS 05.05, table 2g and subclause 6.3.

2 For both GMSK and 8-PSK modulations, under adjacent channel interference conditions with interfering signals at 400 kHz above and below the wanted signal frequency and at the adjacent interference ratio (C/I_{a2}) exceeding $C/I_c - 50\text{dB}$.

2.1 For a TUhigh faded wanted signal and a TUhigh adjacent channel interferer, The block error rate (BLER) performance for PDTCH/MCS-1 to 4 shall not exceed 10 % for GMSK modulation; and for PDTCH/MCS-5 to 9 shall not exceed 10 % or 30 % depending on Coding Schemes; 3GPP TS 05.05, subclause 6.2.

2.2 For a TUhigh faded wanted signal and a TUhigh adjacent channel interferer, The block error rate (BLER) performance for USF/MSC-1 to 9 shall not exceed 1 %; 3GPP TS 05.05, subclause 6.2.

C/I_c is the co-channel interference ratio. For a PDTCH with GMSK modulation C/I_c is specified in table 14.18-5a; for a PDTCH with 8-PSK modulation C/I_c is specified in table 14.18-5b, for a USF with GMSK modulation C/I_c is specified in tables 14.18-6a; and for USF with 8-PSK modulation C/I_c is specified in table 14.18-6b. 3GPP TS 05.05, subclause 6.3.



3. The BLER shall not exceed the conformance requirements given in 1. and 2. under extreme conditions;
3GPP TS 05.05, subclause 6.2 and annex D subclauses D.2.1 and D.2.2.

3GPP TS 45.05 subclause 2:

For T-GSM 810 the requirements for GSM 900 shall apply, apart for those parameters for which a separate requirement exists.

3.26.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 14.18.3for the measurement method.

3.26.4 Test result

Test Mode	Test Channel	NTNV	HTHV	HTLV	LTHV	LTLV
GSM900	60	PASS	PASS	PASS	PASS	PASS
GSM1800	698	PASS	PASS	PASS	PASS	PASS

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3.27 Reference sensitivity - TCH/FS

Clause 14.2.1 of TS 151 010-1 applies.

3.27.1 Definition and applicability

The reference sensitivity is the signal level at the MS receiver input at which a certain BER and FER must be achieved. For E-GSM 900 MS this test is only performed in the P-GSM band

3.27.2 Conformance requirements

1. At reference sensitivity level, the TCH/FS FER shall meet the reference sensitivity performance of table 1 in 3GPP TS 05.05 subclause 6.2.
- 2 At reference sensitivity level, the TCH/FS class I RBER shall meet the reference sensitivity performance of table 1 in 3GPP TS 05.05 subclause 6.2.
- 3 At reference sensitivity level, the TCH/FS class II RBER shall meet the reference sensitivity, performance of table 1 in 3GPP TS 05.05 subclause 6.2.
4. At reference sensitivity level, the TCH/FS class II RBER shall meet the reference sensitivity, performance of table 1 in GSM under extreme conditions; 3GPP TS 05.05 subclause 6.2 and annex D subclauses D.2.1 and D.2.2.

3.27.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 14.2.1 for the measurement method.

3.27.4 Test result

Test Band	Type of measurements	Propagation conditions TUhigh	Propagation conditions RA	Propagation conditions HT	Static conditions	Result
		Test limit error rate (%)	Test limit error rate (%)	Test limit error rate (%)	Test limit error rate (%)	
GSM900	FER	6,742*a			0.122*a	Pass
	RBER	0.420/a			0.41/a	
	RBER	8333	7.5	9333	2439	
GSM1800	FER	4478*a			0.122*a	Pass
	RBER	0.320/a			0.41/a	
	RBER	8333	7.5	9333	2439	



3.28 Reference sensitivity - FACCH/F

Clause 14.2.3 of TS 151 010-1 applies.

3.28.1 Definition and applicability

The reference sensitivity for control channels is the signal level at the MS receiver input at which a certain FER must be achieved.

3.28.2 Conformance requirements

At reference sensitivity level, the FACCH/F FER shall meet the reference sensitivity performance of table 1 in 3GPP TS 05.05 subclause 6.2.

3.28.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 14.2.3 for the measurement method.

3.28.4 Test result

Test Mode	Test Channel	FER(%)	Number of test samples	Limit(%)	Result
GSM900	60	0.000	10000	8.961	PASS
DCS1800	698	0.000	15000	4.368	PASS



3.29 Minimum Input level for Reference Performance - GPRS

Clause 14.16.1 of TS 151 010-1 applies.

3.29.1 Definition and applicability

The minimum input level is the signal level at the MS receiver input at which a certain BLER is met.

3.29.2 Conformance requirements

Please refer to ETSI TS 51.010-1 Sub-clause 14.16.1.2

3.29.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 14.16.1 for the measurement method.

3.29.4 Test result

Test Band	Data rate	Result
GPRS900	CS-1	Pass
	CS-2	Pass
	CS-3	Pass
	CS-4	Pass
	USF/CS-1	Pass
	USF/CS-2 to 4	Pass
GPRS1800	CS-1	Pass
	CS-2	Pass
	CS-3	Pass
	CS-4	Pass
	USF/CS-1	Pass
	USF/CS-2 to 4	Pass



3.30 Minimum Input level for Reference Performance - EGPRS

Clause 14.2.9 of TS 151 010-1 applies.

3.30.1 Definition and applicability

The reference sensitivity is the signal level at the MS receiver input at which a certain BER and FER must be achieved.

3.30.2 Conformance requirements

Please refer to ETSI TS 51.010-1 Sub-clause 14.16.9.2

3.30.3 Test procedure

Please refer to ETSI TS 51.010-1 Sub-clause 14.2.9 for the measurement method.

3.30.4 Test result

Test Band	Type of channel	Result
EGPRS900	P PDTCH/MCS -1 dBm	Pass
	P PDTCH/MCS -2 dBm	Pass
	P PDTCH/MCS -3 dBm	Pass
	P PDTCH/MCS -4 dBm	Pass
	P PDTCH/MCS -5 dBm	Pass
	P PDTCH/MCS -6 dBm	Pass
EGPRS1800	P PDTCH/MCS -1 dBm	Pass
	P PDTCH/MCS -2 dBm	Pass
	P PDTCH/MCS -3 dBm	Pass
	P PDTCH/MCS -4 dBm	Pass
	P PDTCH/MCS -5 dBm	Pass
	P PDTCH/MCS -6 dBm	Pass



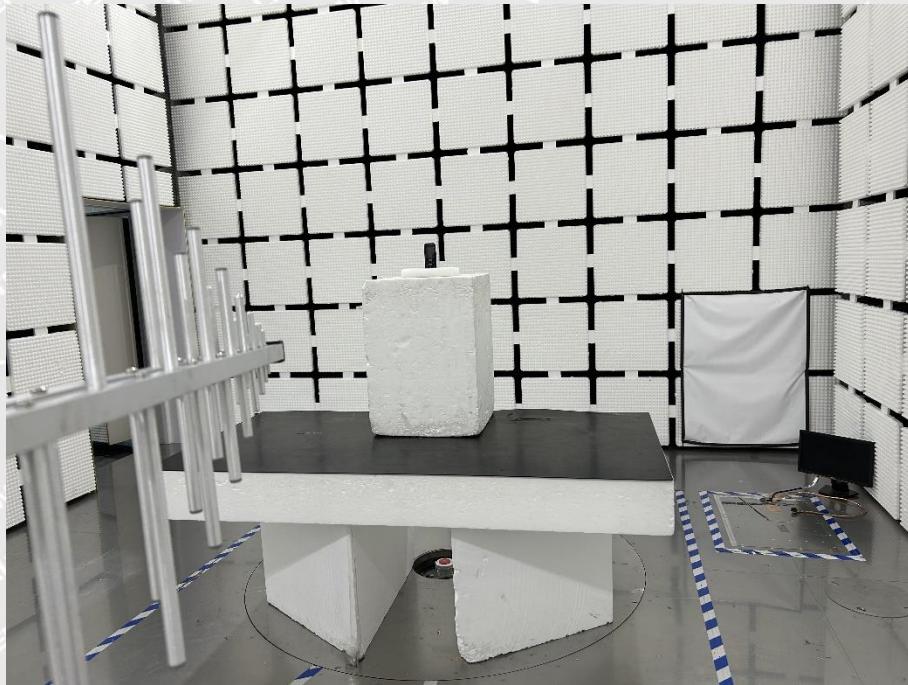
EXHIBIT 1 - EUT PHOTOGRAPHS

Please refer to "ANNEX".

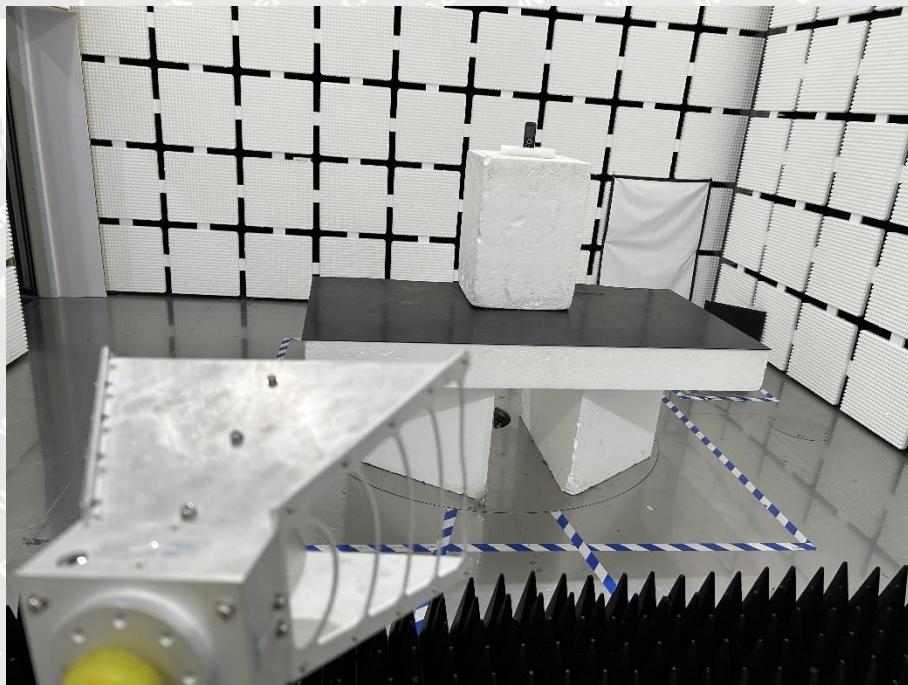
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EXHIBIT 2 - TEST SETUP PHOTOGRAPHS

**Spurious Emission
Test Setup (Below
1GHz)**



**Spurious Emission
Test Setup (Above
1GHz)**



***** END OF REPORT *****