



**ELECTRONIC TECHNOLOGY SYSTEMS
DR. GENZ GMBH**

GSM PHASE II TEST - REPORT

**EN 301 419-1
EN 301 420**

Test report no.: G0M20103-4279-T-51



**ELECTRONIC TECHNOLOGY SYSTEMS
DR. GENZ GMBH**

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1 General Information

1.1 Notes

The test results of this test report relate exclusively to the test item specified in 1.5. The Electronic Technology Systems Dr. Genz GmbH does not assume responsibility for any conclusions and generalisations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publications of extracts from the test report requires the prior written approval of the Electronic Technology Systems Dr. Genz GmbH.

- Only applicable to protocol testing services -

The purpose of conformity testing is to increase the probability of adherence to essential requirements or conformity specifications, as appropriate. The complexity of the technical specifications, however, means that the full and thorough testing is impracticable for both technical and economic reasons. Furthermore, there is no guarantee that a test sample which has passed all the relevant tests conforms to a specification. Neither is there any guarantee that such a test sample will interwork with other genuinely open systems. The existence of the test nevertheless provides the confidence that the test sample possess the qualities as maintained and that its performance generally conforms to representative cases of communications equipment.

A declaration by the manufacturer has to be submitted for all non tested required parameters and technical procedures which certifies the conformation to the corresponding subclauses of the EN 301 419-1 and EN 301 420.

Tester:

14.03.2001

B. Kramer

A handwritten signature in black ink, appearing to read 'B. Kramer', written over a horizontal line.

Date

Name

Signature

Technical responsibility for area of testing:

14.03.2001

Dr. D. Genz

A handwritten signature in black ink, appearing to read 'Dr. D. Genz', written over a horizontal line.

Date

Name

Signature



1.2 Testing laboratory

1.2.1 Location

ELECTRONIC TECHNOLOGY SYSTEM DR. GENZ GMBH (ETS)

Storkower Straße 38c

D-15526 Reichenwalde b. Berlin

Germany

Telefon : +49 33631 888-0

Telefax : +49 33631 888-66

1.2.2 Details of accreditation status

ACCREDITED TESTING LABORATORY

Accredited by: Bundesamt für Post und Telekommunikation (BAPT)

DAR-REGISTRATION NUMBER: TTI-P-G 126/96-00

ACCREDITED COMPETENT BODY

Accredited by: Bundesamt für Post und Telekommunikation (BAPT)

DAR-REGISTRATION NUMBER: BPT-ZE-026/96-00

1.2.3 Test location, where different from ETS

1.3 Details of applicant

Name : WAVECOM S.A.
Street : rue du Gouverneur Général Eboué, 39
Town : ISSY les MOULINEAUX
Country : France
Telephone : +33 1 46 29 08 00
Fax : +33 1 46 29 08 08

Contact : Mr. Pierre-Jean Severin
Telephone : +33 1 46 29 08 00

1.4 Application details

Date of receipt of application : 23.02.2001
Date of receipt of test item : 23.02.2001
Date of test : 23.02.2001-08.03.2001
Date of re-test : --

1.5 Test item

Description of test item : WAVECOM Dual Band External Modem
Phase Identification : Phase II
Type identification : WMO 2 G0919
Serial number : without serial number
Software : 402bm11b.56 / 411bm11b.59
Hardware :



Manufacturer : (if applicable)

Name :
Street :
Town :
Country :

Photos of the test item: see annex I

1.6 Test standard

- EN 301 419-1, (GSM 13.01) April 2000 version 4.1.1
- EN 301 420, (GSM 13.02) December 1999 version 4.0.1
- ETS 300 607-1, (GSM 11.10-1) September 2000 version 4.28.1
- GT.01, December 2000, version 4.7.0
- ETS 300 607-1 (PCS 11.10-1),
- GSM N.A. permanent reference document NATWG.03
- FCC Rules Part 2

1.7 Additional information

This test report is not a complete one and therefore not all test cases of EN 301 419-1, EN 301 420 and NATWG.03 are listed. The test cases listed within this report are those which the customer has requested for.



1.8 Abbreviations used for the test results

- PASS EUT passed this test case
- PASS(*) EUT passed this test case, but verdict passed by the test engineer
- FAIL EUT failed this test case
- INC. EUT did not pass and did not fail this test case, therefore the verdict "INCONCLUSIVE"
- n.a. Test case not applicable for the EUT
- M1 Either GSM 900 or 1900 testing should be performed for multiband testing
- M2 Both GSM 900 and 1900 testing should be performed for multiband testing
- C Manufactures declaration with evidence
- D Manufactures declaration without evidence



2 Technical Test

2.1 Summary of test results

No deviations from the requirements were ascertained in the course of the test performed.

The deviations from the requirements as shown in clause 3 were ascertained in the course of the test performed.

2.2 Test environment

- Temperature : 18 ... 25 °C
- Relative humidity content : 20 ... 75 %
- Air pressure : 860 ... 1030 hPa
- Details of power supply : 220 ... 240 V AC
- Other parameter :
- Extreme test conditions : Operating voltage of the mobile
 $V_{nom} = 12.00 \text{ V DC}$

2.3 Measurement and test set-up

GSM/ PCN/ PCS Test System TS8916B by Rohde&Schwarz

Test configuration and procedures in accordance to the GSM 11.10

2.4 Test equipment utilized

1. Type: GSM/PCN/PCS TS8916B
Software: CRTC System SW CR02PH2 Rev. 2.02
TS8916B Operation SW Rev. 1.45
Hardware: 1108.4183.00
Manufacturer: Rohde&Schwarz
Applied standard: MoU permanent reference document GT.01
GSM N.A. permanent reference document NATWG.03

2. Type: GSM/PCN/PCS Standalone Tester CRTC02
Software: D02PH2 Rev 1.45
Hardware: DU 848202/003 / AU 848228/003
Manufacturer: Rohde&Schwarz
Applied standard: MoU permanent reference document GT.01
GSM N.A. permanent reference document NATWG.03

3. Type: GSM SIM Simulator
Software: V 2.05
Hardware: V 2.03 Rev. 01
Manufacturer: Orga Kartensysteme
Applied standard: MoU permanent reference document GT.01
GSM N.A. permanent reference document NATWG.03

4. Anechoic chamber by the ETS Dr. Genz GmbH



3 Test Results

3.1 Test group overview

- 12 Transceiver
- 13 Transmitter
- 14 Receiver
- 26 Tests of layer 3 functions
- 27 Testing of the SIM/ME interface
- 34 Short messages services

3.2 Tests under normal test conditions

3.2.1 Software version 402bm11b.56

Test case	DESCRIPTION	Category			Verdict			Comments
		GSM 900	GSM 1900	MULTI Band	GSM 900	GSM 1900	MULTI Band	
12								
12.1.1	Conducted spurious emissions - MS allocated a channel - NTC	A	A	M2	passed	passed		
12.2.1	Radiated spurious emissions - MS allocated a channel - NTC	A	A	M2	passed	passed		
12.2.2	Radiated spurious emissions - MS in idle mode - NTC	A	A	M2	passed	passed		
13								
13.1	Transmitter - Frequency error and phase error - NTC	A	A	M2	passed	passed		
13.3-1	Transmitter output power and burst timing - MS with permanent antenna connector - NTC	A	A	M2	passed	passed		
14								
14.2.1	Receiver / Reference sensitivity - TCH/FS - NTC	A	A	M2	passed	passed		
14.3	Receiver / Usable receiver input level range - NTC	A	A	M2	passed	passed		
14.5.1	Adjacent channel rejection - speech channels - NTC	A	A/C	M2	passed	passed		
27								
27.3	MS Identification by long TMSI	A	A	M1	passed			
27.4	MS Identification by long IMSI, TMSI updating and cipher key sequence number assignment.	A	A	M1	passed			
27.5	Forbidden PLMN's, Location Updating and undefined cipher key.	A	A	M1	passed			
27.6	MS updating forbidden PLMN's.	A	A	M1	passed			
27.7	MS deleting forbidden PLMN's.	A	A	M1	passed			
27.11.1.1	Character Transmission - Bit / Char. duration during transmission to the SIM	A	A	M1		passed		
27.11.1.2	Bit / Character duration during the transmission from the SIM Simulator to the ME	A	A	M1		passed		
27.11.1.3	Inter-character delay	A	A	M1		passed		
27.11.1.4	Error handling during the transmission from the ME to the SIM Simulator	A	A	M1		passed		
27.11.1.5	Error handling during the transmission from the SIM Simulator to the ME	A	A	M1		passed		
27.11.2.1	Acceptance of SIMs with internal RST.	A	A	M1		passed		

Test case	DESCRIPTION	Category			Verdict			Comments
		GSM 900	GSM 1900	MULTI Band	GSM 900	GSM 1900	MULTI Band	
27.11.2.2	Acceptance of SIMs with active low RST.	A	A	M1		passed		
27.11.2.3	Characters of the answer to Reset.	A	A	M1		passed		
27.11.2.4	PTS Procedure	A	A	M1		passed		
27.11.3	Command Processing Procedure bytes ACK	A	A	M1		passed		
27.12.1	Evaluation of Directory Characteristics Operating Speed in Authentication Procedure	A	A	M1		passed		
27.12.2	Evaluation of Directory Characteristics / Clock Stop	A	A	M1		passed		
27.14.3	Disabling the PIN	A	A	M1		passed		
27.14.4	PUK entry	A	A	M1		passed		
27.14.5	Entry of PIN2		D	M1		passed		
27.14.7	PUK2 entry		D	M1		passed		
27.17.1.1	Electrical tests - Phase preceding ME power on	A	A	M1		passed		
27.17.1.2	Electrical tests - Phase during SIM power on	A	A	M1		passed		
27.17.1.3	Electrical tests - Phase during ME power off with clock stop forbidden	A	A	M1	n.a.	n.a.		
27.17.1.4	Electrical tests - Phase during ME power off with clock stop allowed	A	A	M1		passed		
27.17.1.5.1	SIM Type Recognition and Voltage Switching, Reaction of 3V only MEs on SIM type recognition failure	A	A	M1		passed		
27.17.1.5.2	SIM Type Recognition and Voltage Switching, Reaction of 3V only MEs on type recognition of 5V only SIMs	A	A	M1		passed		
27.17.1.5.3	SIM Type Recognition and Voltage Switching, Reaction of MEs with 3V/5V SIM interface on recognition of a 5V only SIM	A	A	M1	n.a.	n.a.		
27.17.1.5.4	SIM Type Recognition and Voltage Switching, Reaction of MEs with 3V/5V SIM interface on recognition of a 3V only SIM	A	A	M1	n.a.	n.a.		
27.17.2.1.1	Electrical tests on contact C1 / test 1	A	A	M1		passed		
27.17.2.1.2	Electrical tests on contact C1 / test 2	A	A	M1		passed		
27.17.2.2	Electrical tests on contact C2	A	A	M1		passed		
27.17.2.3	Electrical tests on contact C3	A	A	M1		passed		
27.17.2.5	Electrical tests on contact C7	A	A	M1		passed		
27.18.1	ME and SIM with fixed number dialling activated	A	A	M1		passed		
27.18.2	ME and SIM with fixed number dialling deactivated	A	A	M1		passed		
27.19	Phase identification	A	A	M1		passed		
27.20	SIM presence detection	A	A	M1		passed		
27.21.1	AoC not supported by SIM	A	A	M1		passed		
27.21.3	Call terminated when ACM greater than ACMM	A	A	M1		passed		
27.21.4	Response codes of increase command	A	A	M1		passed		

3.2.2 Software version 411bm11b.59

Test case	DESCRIPTION	Category			Verdict			Comments
		GSM 900	GSM 1900	MULTI Band	GSM 900	GSM 1900	MULTI Band	
13								
13.1	Transmitter - Frequency error and phase error - NTC	A	A	M1		passed		
13.3-1	Transmitter output power and burst timing - MS with permanent antenna connector - NTC	A	A	M1		passed		
13.4	Transmitter - Output RF spectrum	A	A	M1		passed		
26								
26.6.3.1	Measurement / no neighbours	A	A	M1		passed		
26.6.3.2	Measurement / all neighbours present	A	A	M1		passed		
26.6.3.3	Measurement / barred cells and non-permitted NCCs	A	A	M1		passed		
26.6.3.4	Measurement / DTX	A	A	M1		passed		
26.6.3.6	Measurement / Multiband environment	A	A	N		passed		
26.6.5.1-1	Handover / successful / active call / non-synchronized / procedure 1	A	A	M1		passed		
26.6.5.1-3	Handover / successful / active call / non-synchronized / procedure 3	A	A	M1		passed		
26.6.5.2-1	Handover / successful / cell under establishment / non-synchronized / procedure 1	A	A	M1		passed		
26.6.5.2-4	Handover / successful / cell under establishment / non-synchronized / procedure 4	A	A	M1		passed		
26.6.5.2-8	Handover / successful / cell under establishment / non-synchronized / procedure 8	A	A	M1		passed		
26.6.5.3-1	Handover / successful / active call / finely synchronized / procedure 1	A	A	M1		passed		
26.6.5.4-2	Handover / successful / call under establishment / finely synchronized / procedure 2	A	A	M1		passed		
26.6.5.5.1	Handover / successful / active call / pre-synchronized / Timing Advance IE not included.	A	A	M1		passed		
26.6.5.9	Handover / L1-failure	A	A	M1		passed		
26.8.1.2.2.2	Outgoing call / U0:1 MM connection pending / CM service accepted	A	A	M1		passed		
26.8.1.2.3.6	Outgoing call / U1 call initiated / entering state U10	A	A	M1		passed		
26.8.1.2.4.4	Outgoing call / U3 MS originating call proceeding / PROGRESS with in band information	A	A	M1		passed		
26.8.1.2.5.3	Outgoing call / U4 call delivered / DISCONNECT with in band tones	A	A	M1		passed		
26.8.1.2.6.3	U10 call active / DISCONNECT with in band tones	A	A	M1		passed		
26.8.1.2.7.3	U11 disconnect request / timer T305 timeout	A	A	M1		passed		
26.8.1.3.1.1	Incoming call / U0 null state / SETUP received with a non supported bearer capability	A	A	M1		passed		
26.8.1.3.4.2	Incoming call / U7 call received / termination requested by the user	A	A	M1		passed		
26.8.1.3.5.2	Incoming call / U8 connect request / timer T313 timeout	A	A	M1		passed		
26.8.1.4.5.1	In-call functions / MS originated in-call modification / A successful case of modifying	A	A	M1	n.a.	n.a.		
26.8.2.1	Call Re-establishment / Call Present, re-establishment allowed.	A	A	M1		passed		
26.8.2.2	Call Re-establishment / Call Present, re-establishment not allowed.	A	A	M1		passed		

Test case	DESCRIPTION	Category			Verdict			Comments
		GSM 900	GSM 1900	MULTI Band	GSM 900	GSM 1900	MULTI Band	
26.8.2.3	Call Re-establishment / Call under establishment, transmission stopped.	A	A	M1		passed		
26.8.3	User to user signalling	A	A	M1		passed		
26.9.3	Structured procedures / MS originated call / late assignment	A	A	M1		passed		
26.9.4	Structured procedures / MS terminated call / early assignment	A	A	M1		passed		
26.9.6.1.1	Structured procedures / emergency call / idle updated / preferred channel rate	A/C	A	M1		passed		
26.9.6.1.2	Structured procedures / emergency call / idle updated, non-preferred channel rate	A	A	M1		passed		
26.9.6.2.1	Structured procedures / emergency call / idle, no IMSI / accept case	A	A	M1		passed		
26.9.6.2.2	Structured procedures / emergency call / idle, no IMSI / reject case	A	A	M1		passed		
27								
27.3	MS Identification by long TMSI	A	A	M1	passed			
27.4	MS Identification by long IMSI, TMSI updating and cipher key sequence number assignment.	A	A	M1	passed			
27.5	Forbidden PLMN's, Location Updating and undefined cipher key.	A	A	M1	passed			
27.6	MS updating forbidden PLMN's.	A	A	M1	passed			
27.7	MS deleting forbidden PLMN's.	A	A	M1	passed			
27.12.1	Evaluation of Directory Characteristics / Operating Speed in Authentication Procedure	A	A	M1		passed		
27.12.2	Evaluation of Directory Characteristics / Clock Stop	A	A	M1		passed		
27.14.3	Disabling the PIN	A	A	M1		passed		
27.14.4	PUK entry	A	A	M1		passed		
27.14.5	Entry of PIN2		D	M1		passed		
27.14.7	PUK2 entry		D	M1		passed		
27.17.1.1	Electrical tests - Phase preceding ME power on	A	A	M1		passed		
27.17.1.2	Electrical tests - Phase during SIM power on	A	A	M1		passed		
27.17.1.3	Electrical tests - Phase during ME power off with clock stop forbidden	A	A	M1	n.a.	n.a.		
27.17.1.4	Electrical tests - Phase during ME power off with clock stop allowed	A	A	M1		passed		
27.17.1.5.1	SIM Type Recognition and Voltage Switching, Reaction of 3V only MEs on SIM type recognition failure	A	A	M1		passed		
27.17.1.5.2	SIM Type Recognition and Voltage Switching, Reaction of 3V only MEs on type recognition of 5V only SIMs	A	A	M1		passed		
27.17.1.5.3	SIM Type Recognition and Voltage Switching, Reaction of MEs with 3V/5V SIM interface on recognition of a 5V only SIM	A	A	M1	n.a.	n.a.		
27.17.1.5.4	SIM Type Recognition and Voltage Switching, Reaction of MEs with 3V/5V SIM interface on recognition of a 3V only SIM	A	A	M1	n.a.	n.a.		
27.17.2.1.1	Electrical tests on contact C1 / test 1	A	A	M1		passed		
27.17.2.1.2	Electrical tests on contact C1 / test 2	A	A	M1		passed		
27.17.2.2	Electrical tests on contact C2	A	A	M1		passed		
27.17.2.3	Electrical tests on contact C3	A	A	M1		passed		
27.17.2.5	Electrical tests on contact C7	A	A	M1		passed		
34								

Test case	DESCRIPTION	Category			Verdict			Comments
		GSM 900	GSM 1900	MULTI Band	GSM 900	GSM 1900	MULTI Band	
34.2.1	Short message service / SMS point to point - SMS mobile terminated	A	A	M1		passed		
34.2.2	Short message service / SMS point to point - SMS mobile originated	A	A	M1		passed		
34.2.3	Short message service / SMS point to point - Test of memory full condition and memory available notification:	A	A	M1		passed		
34.2.5.3	Short message service / Test of message class 0 to 3 - Test of Class 2 Short Messages	A	A	M1		passed		
34.3	Short message service cell broadcast	A	A	M1		passed		

3.3 Additional FCC requirements

2.1046 Measurements required: RF power output

RF power output was tested with the test case 13.3.4.1 Transmitter output power and burst timing - MS with permanent antenna (PRD NATWG.03).

2.1047 Measurements required: Modulation characteristics

d) Transmitter: Output RF spectrum was tested with the test case 13.4 Transmitter - Output RF spectrum (PRD NATWG.03).

2.1049 Measurements required: Occupied bandwidth

The occupied bandwidth was measured on channel 512 (1850.2 MHz), 661 (1880MHz) and 810 (1909.8MHz).

limit: 0.5 % of the total mean power

Channel	max. power /dBm	limit /dBm	measurement /dBm
512	30.01	0.15	<-25
661	30.07	0.15	<-25
810	29.90	0.15	<-25

see measurement diagrams



2.1055 Measurements required: Frequency stability

The frequency stability was tested with the test case 13.1 Transmitter – Frequency error and phase error (PRD NATWG.03).

2.1057 Frequency spectrum to be investigated

The frequency stability was tested with the test cases 12.1.1 Conducted spurious emissions - MS allocated a channel and 12.1.2 Conducted spurious emissions - MS in idle mode (PRD NATWG.03) up to 20 GHz.

see measurement diagrams

 Rohde & Schwarz TS8916 V2V02 D02PH2 V1.45 GSM1900 test case

Test: 12.1.1 - GSM 11.10-1 Version 4.28.0

Transceiver: Conducted Spurious Emissions - Allocated Mode

 Test 12.1.1 - Ciphering OFF

Test 12.1.1 - TC - Revision: 1.15

FSM - Span		FSM - Bandwith		Measurement Results			Level --> Verdict
Start [MHz]	Stop [MHz]	Resol. [kHz]	Video [kHz]	Frequency [MHz]	Limit [dBm]	Level [dBm]	
0.1	30.0	10	30	0.100	-36.0	-61.4	--> INSIDE
30.0	50.0	10	30	43.591	-36.0	-84.8	--> INSIDE
50.0	500.0	100	300	326.007	-36.0	-57.3	--> INSIDE
500.0	960.0	3000	3000	862.324	-36.0	-57.2	--> INSIDE
960.0	1000.0	3000	3000	977.904	-36.0	-57.2	--> INSIDE
1000.0	1500.0	3000	3000	1485.385	-30.0	-55.7	--> INSIDE
1500.0	1820.0	3000	3000	1556.744	-30.0	-50.8	--> INSIDE
1820.0	1830.0	1000	3000	1827.003	-30.0	-54.6	--> INSIDE
1830.0	1840.0	300	1000	1839.888	-30.0	-56.4	--> INSIDE
1840.0	1874.0	100	300	1874.180	-30.0	-49.0	--> INSIDE
1874.0	1878.2	30	100	1878.111	-30.0	-40.4	--> INSIDE
1881.8	1886.0	30	100	1881.885	-30.0	-43.3	--> INSIDE
1886.0	1920.0	100	300	1886.049	-30.0	-51.7	--> INSIDE
1920.0	1930.0	300	1000	1926.411	-30.0	-46.4	--> INSIDE
1990.0	2800.0	3000	3000	2206.699	-30.0	-49.6	--> INSIDE
2800.0	3380.0	3000	3000	3261.359	-30.0	-44.7	--> INSIDE
3380.0	3880.0	3000	3000	3762.018	-30.0	-37.4	--> INSIDE
3880.0	4380.0	3000	3000	4239.547	-30.0	-42.8	--> INSIDE
4380.0	4880.0	3000	3000	4726.626	-30.0	-41.0	--> INSIDE
4880.0	5380.0	3000	3000	4997.982	-30.0	-38.0	--> INSIDE
5380.0	5880.0	3000	3000	5641.236	-30.0	-34.5	--> INSIDE
5880.0	6380.0	3000	3000	5953.040	-30.0	-42.1	--> INSIDE
6380.0	6880.0	3000	3000	6837.296	-30.0	-42.3	--> INSIDE
6880.0	7380.0	3000	3000	6982.814	-30.0	-42.3	--> INSIDE
7380.0	7880.0	3000	3000	7521.015	-30.0	-41.0	--> INSIDE
7880.0	8380.0	3000	3000	7899.109	-30.0	-42.8	--> INSIDE
8380.0	8880.0	3000	3000	8849.655	-30.0	-40.6	--> INSIDE
8880.0	9380.0	3000	3000	9172.695	-30.0	-41.1	--> INSIDE
9380.0	9880.0	3000	3000	9739.547	-30.0	-41.6	--> INSIDE
9880.0	10380.0	3000	3000	10066.519	-30.0	-41.3	--> INSIDE
10380.0	10880.0	3000	3000	10881.676	-30.0	-39.8	--> INSIDE
10880.0	11380.0	3000	3000	10999.668	-30.0	-38.9	--> INSIDE
11380.0	11880.0	3000	3000	11503.038	-30.0	-38.2	--> INSIDE
11880.0	12380.0	3000	3000	12183.369	-30.0	-36.5	--> INSIDE
12380.0	12880.0	3000	3000	12718.761	-30.0	-36.5	--> INSIDE
12880.0	13380.0	3000	3000	13204.716	-30.0	-36.0	--> INSIDE
13380.0	13880.0	3000	3000	13691.796	-30.0	-36.5	--> INSIDE
13880.0	14380.0	3000	3000	14221.570	-30.0	-36.7	--> INSIDE
14380.0	14880.0	3000	3000	14719.884	-30.0	-36.6	--> INSIDE
14880.0	15380.0	3000	3000	15213.705	-30.0	-36.7	--> INSIDE
15380.0	15880.0	3000	3000	15690.672	-30.0	-36.5	--> INSIDE
15880.0	16380.0	3000	3000	16199.660	-30.0	-36.5	--> INSIDE



16380.0	16880.0	3000	3000	16713.705	-30.0	-36.1	-->	INSIDE
16880.0	17380.0	3000	3000	17203.031	-30.0	-35.7	-->	INSIDE
16880.0	17380.0	3000	3000	17206.964	-30.0	-35.8	-->	INSIDE
17380.0	17880.0	3000	3000	17698.537	-30.0	-36.2	-->	INSIDE
17880.0	18380.0	3000	3000	18191.234	-30.0	-35.4	-->	INSIDE
17880.0	18380.0	3000	3000	18205.278	-30.0	-35.8	-->	INSIDE
17880.0	18380.0	3000	3000	18219.323	-30.0	-35.8	-->	INSIDE
17880.0	18380.0	3000	3000	18229.996	-30.0	-35.9	-->	INSIDE
18380.0	18880.0	3000	3000	18731.682	-30.0	-35.8	-->	INSIDE
18380.0	18880.0	3000	3000	18698.537	-30.0	-35.9	-->	INSIDE
18880.0	19380.0	3000	3000	19223.817	-30.0	-35.5	-->	INSIDE
18880.0	19380.0	3000	3000	19214.828	-30.0	-35.8	-->	INSIDE
18880.0	19380.0	3000	3000	19211.458	-30.0	-36.0	-->	INSIDE
19380.0	19880.0	3000	3000	19714.828	-30.0	-35.2	-->	INSIDE
19380.0	19880.0	3000	3000	19735.052	-30.0	-35.5	-->	INSIDE
19380.0	19880.0	3000	3000	19712.581	-30.0	-35.7	-->	INSIDE
19380.0	19880.0	3000	3000	19722.693	-30.0	-35.7	-->	INSIDE
19380.0	19880.0	3000	3000	19688.987	-30.0	-35.8	-->	INSIDE
19380.0	19880.0	3000	3000	19707.525	-30.0	-35.9	-->	INSIDE
19380.0	19880.0	3000	3000	19710.334	-30.0	-35.9	-->	INSIDE
19380.0	19880.0	3000	3000	19718.199	-30.0	-35.9	-->	INSIDE
19380.0	19880.0	3000	3000	19728.311	-30.0	-35.9	-->	INSIDE
19380.0	19880.0	3000	3000	19747.412	-30.0	-35.9	-->	INSIDE
19380.0	19880.0	3000	3000	19696.852	-30.0	-36.0	-->	INSIDE
19880.0	20000.0	3000	3000	19880.318	-30.0	-36.1	-->	INSIDE

Rohde & Schwarz TS8916 V2V02 D02PH2 V1.45 GSM1900 test case

Test: 12.1.2 - GSM 11.10-1 Version 4.28.0

Transceiver: Conducted Spurious Emissions - Idle Mode

Test 12.1.2 - Ciphering OFF

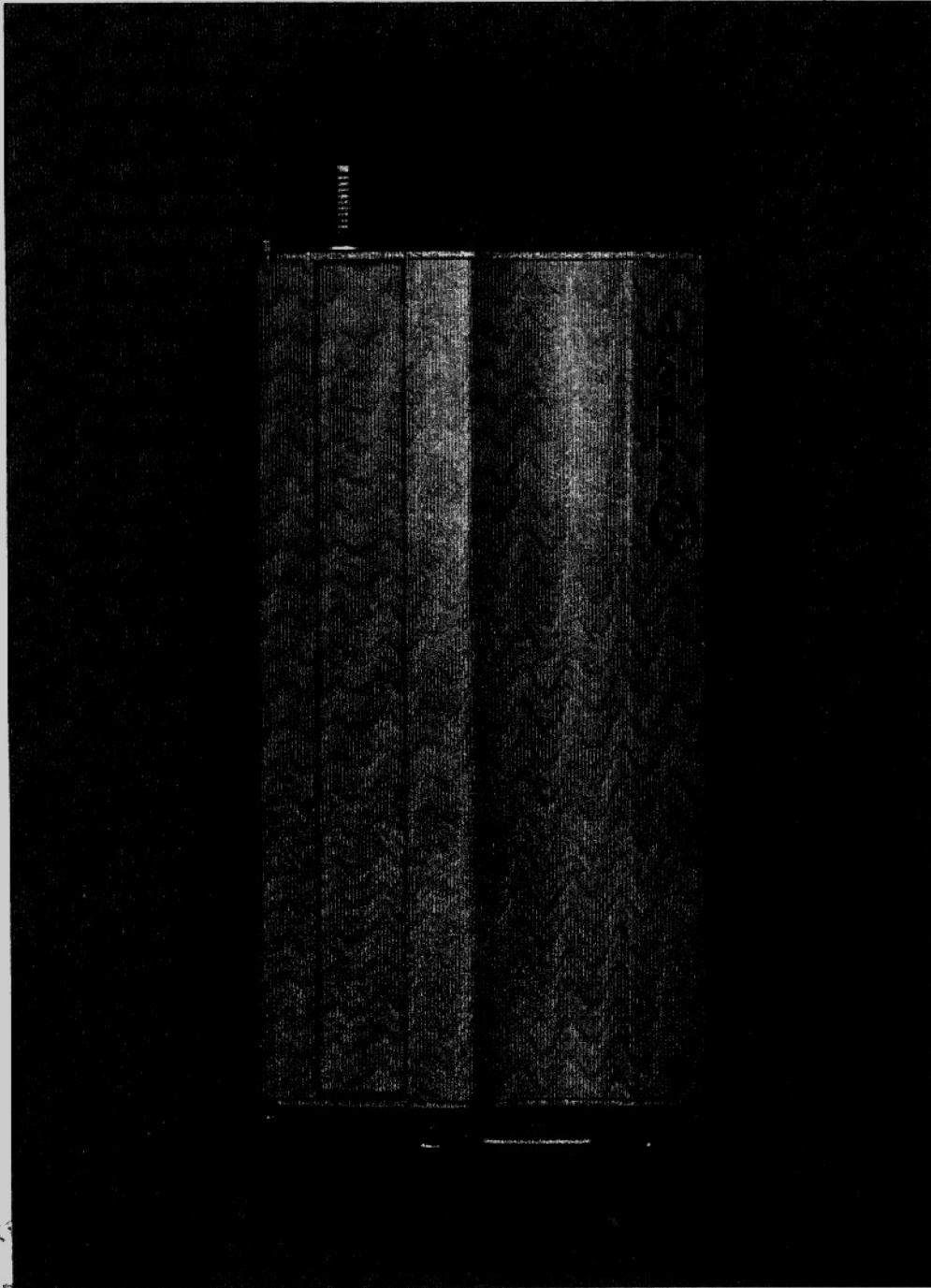
Test 12.1.2 - TC - Revision: 1.15

FSM - Span		FSM - Bandwidth		Measurement Results			Verdict
Start [MHz]	Stop [MHz]	Resol. [kHz]	Video [kHz]	Frequency [MHz]	Limit [dBm]	Level [dBm]	
0.1	1.0	10	30	0.102	-57.0	-71.7	--> INSIDE
1.0	50.0	10	30	1.139	-57.0	-74.2	--> INSIDE
50.0	200.0	100	300	176.517	-57.0	-76.5	--> INSIDE
200.0	500.0	100	300	481.309	-57.0	-73.7	--> INSIDE
500.0	750.0	100	300	595.539	-57.0	-72.8	--> INSIDE
750.0	1000.0	100	300	983.864	-57.0	-72.5	--> INSIDE
1000.0	1300.0	100	300	1207.237	-47.0	-71.4	--> INSIDE
1300.0	1850.0	100	300	1376.247	-47.0	-69.4	--> INSIDE
1850.0	1910.0	100	300	1884.984	-53.0	-70.7	--> INSIDE
1910.0	2300.0	100	300	1946.557	-47.0	-60.5	--> INSIDE
2300.0	2800.0	100	300	2731.807	-47.0	-66.6	--> INSIDE
2800.0	3300.0	100	300	3250.325	-47.0	-65.8	--> INSIDE



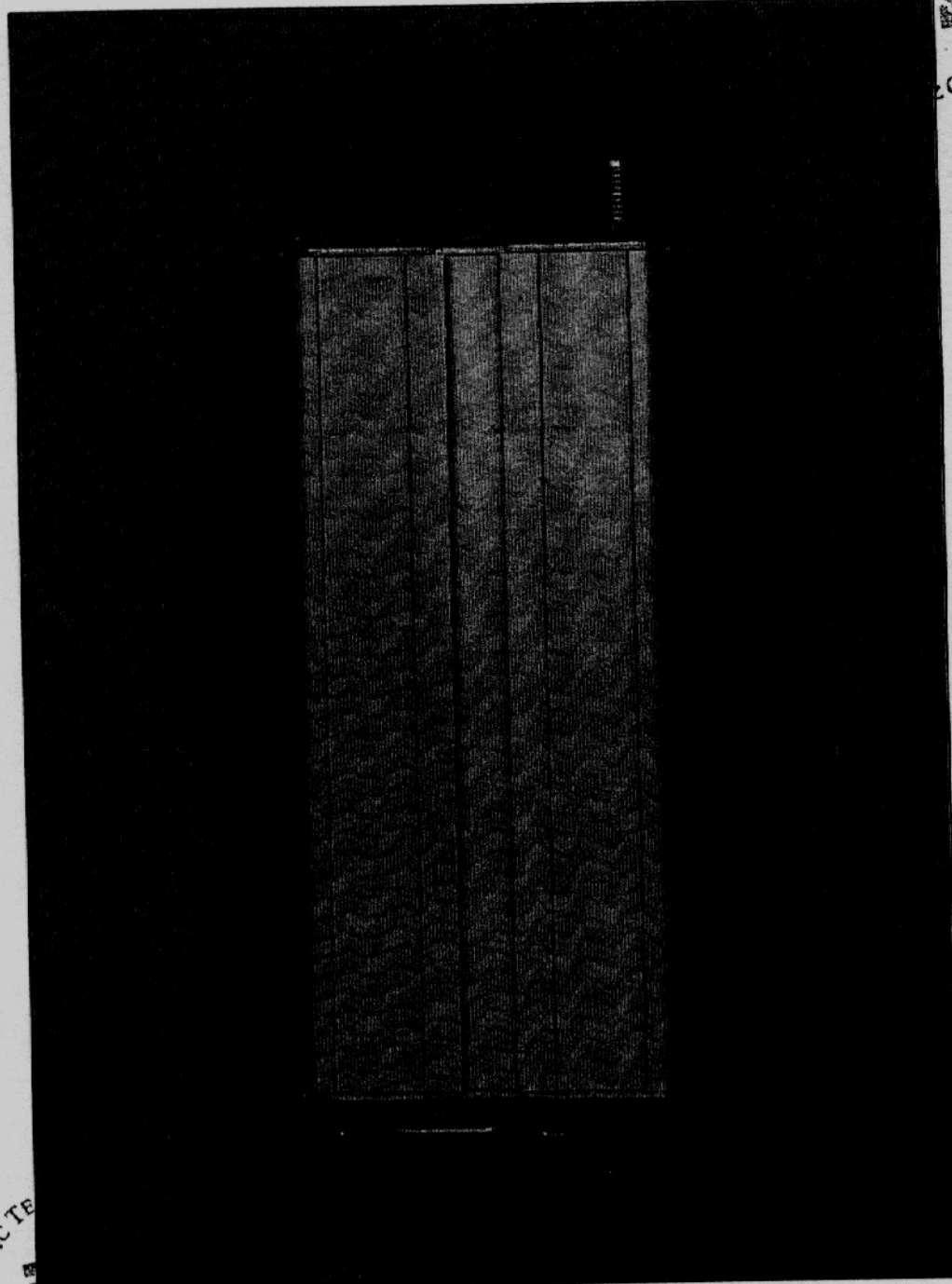
3300.0	3800.0	100	300	3324.424	-47.0	-66.1 -->	INSIDE
3800.0	4000.0	100	300	3974.972	-47.0	-66.1 -->	INSIDE
4000.0	4300.0	100	300	4235.519	-47.0	-65.1 -->	INSIDE
4300.0	4800.0	100	300	4727.318	-47.0	-61.9 -->	INSIDE
4800.0	5300.0	100	300	5014.649	-47.0	-56.6 -->	INSIDE
5300.0	5800.0	100	300	5501.181	-47.0	-55.3 -->	INSIDE
5800.0	6300.0	100	300	6024.188	-47.0	-59.1 -->	INSIDE
6300.0	6800.0	100	300	6431.040	-47.0	-60.6 -->	INSIDE
6800.0	7300.0	100	300	6985.470	-47.0	-60.4 -->	INSIDE
7300.0	7800.0	100	300	7681.866	-47.0	-61.0 -->	INSIDE
7800.0	8300.0	100	300	7810.957	-47.0	-60.1 -->	INSIDE
8300.0	8800.0	100	300	8414.767	-47.0	-60.7 -->	INSIDE
8800.0	9300.0	100	300	8839.014	-47.0	-59.3 -->	INSIDE
9300.0	9800.0	100	300	9330.036	-47.0	-60.5 -->	INSIDE
9800.0	10300.0	100	300	10109.480	-47.0	-60.5 -->	INSIDE
10300.0	10800.0	100	300	10688.600	-47.0	-58.8 -->	INSIDE
10800.0	11300.0	100	300	11188.600	-47.0	-59.1 -->	INSIDE
11300.0	11800.0	100	300	11483.225	-47.0	-58.0 -->	INSIDE
11800.0	12300.0	100	300	12188.039	-47.0	-56.5 -->	INSIDE
12300.0	12800.0	100	300	12703.751	-47.0	-55.9 -->	INSIDE
12800.0	13300.0	100	300	13243.030	-47.0	-54.2 -->	INSIDE
13300.0	13800.0	100	300	13698.700	-47.0	-54.1 -->	INSIDE
13800.0	14300.0	100	300	14217.218	-47.0	-54.7 -->	INSIDE
14300.0	14800.0	100	300	14716.657	-47.0	-54.9 -->	INSIDE
14800.0	15300.0	100	300	15193.089	-47.0	-56.3 -->	INSIDE
15300.0	15800.0	100	300	15705.995	-47.0	-56.7 -->	INSIDE
15800.0	16300.0	100	300	16221.146	-47.0	-56.7 -->	INSIDE
16300.0	16800.0	100	300	16783.993	-47.0	-54.5 -->	INSIDE
16800.0	17300.0	100	300	17213.290	-47.0	-53.8 -->	INSIDE
17300.0	17800.0	100	300	17740.785	-47.0	-54.4 -->	INSIDE
17800.0	18300.0	100	300	18231.807	-47.0	-53.8 -->	INSIDE
18300.0	18800.0	100	300	18708.801	-47.0	-53.9 -->	INSIDE
18800.0	19300.0	100	300	19199.261	-47.0	-55.0 -->	INSIDE
19300.0	19800.0	100	300	19717.218	-47.0	-54.8 -->	INSIDE
19800.0	20000.0	100	300	19850.393	-47.0	-55.6 -->	INSIDE

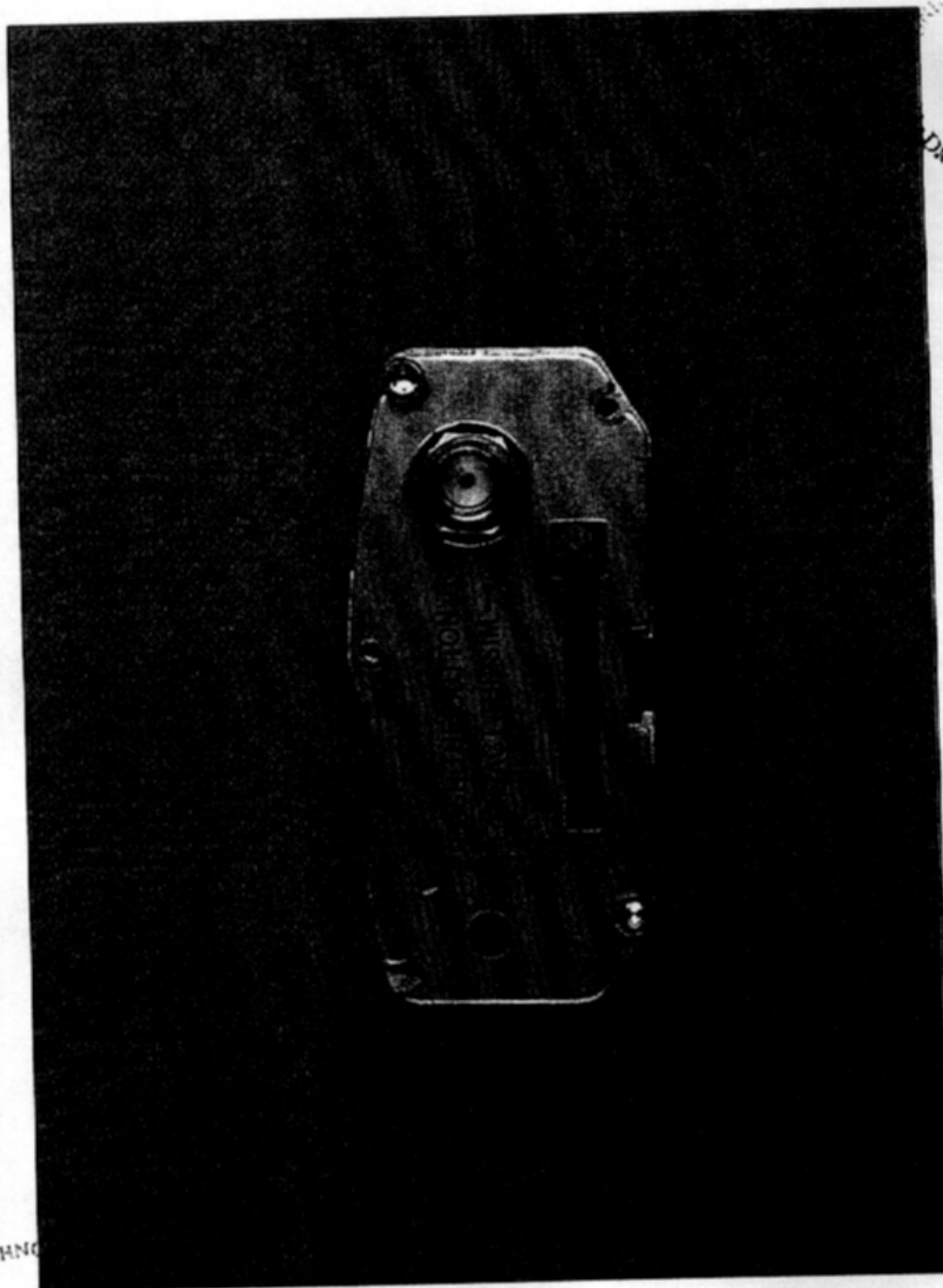
Annex I: Photos of the EUT

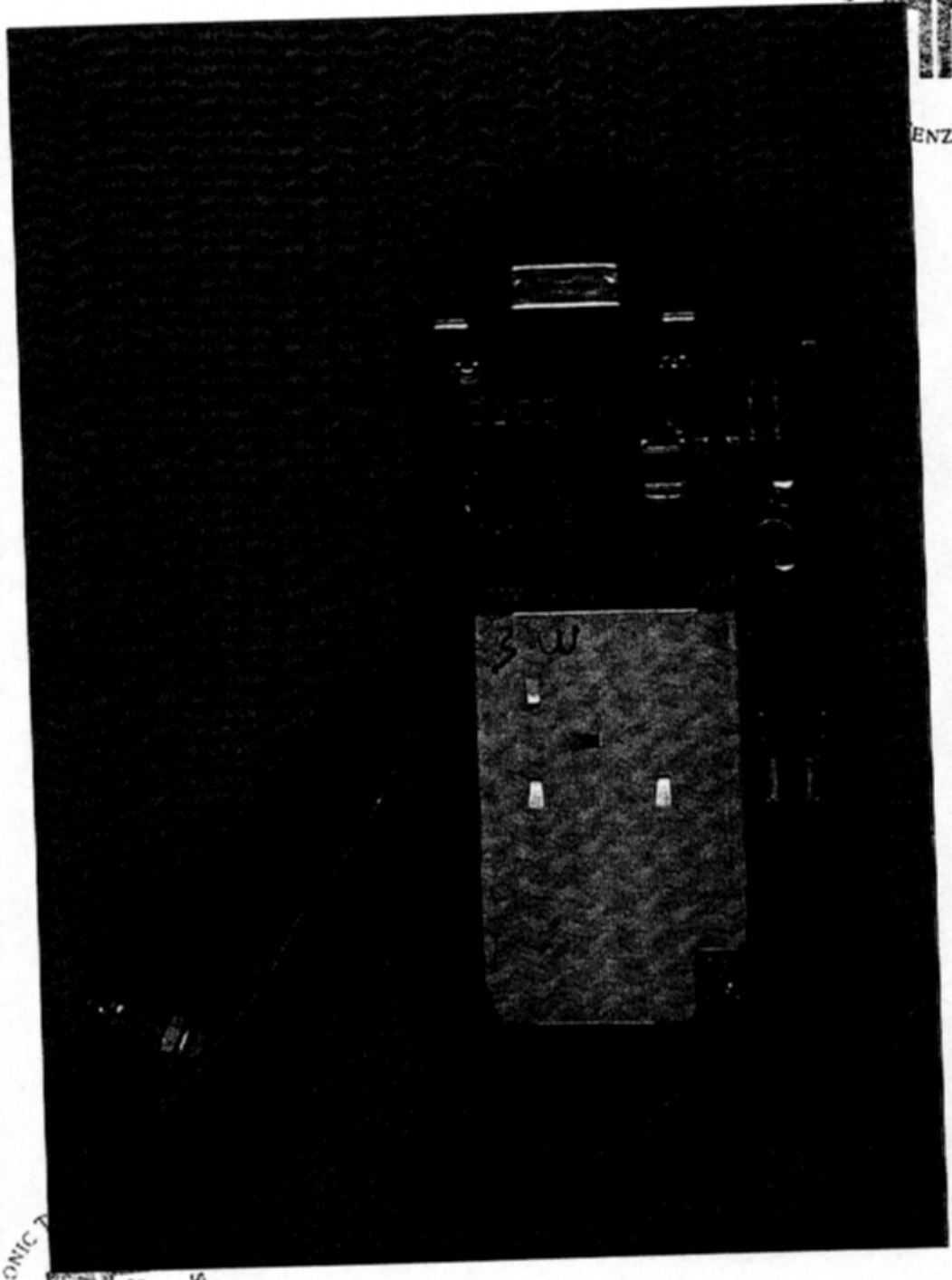


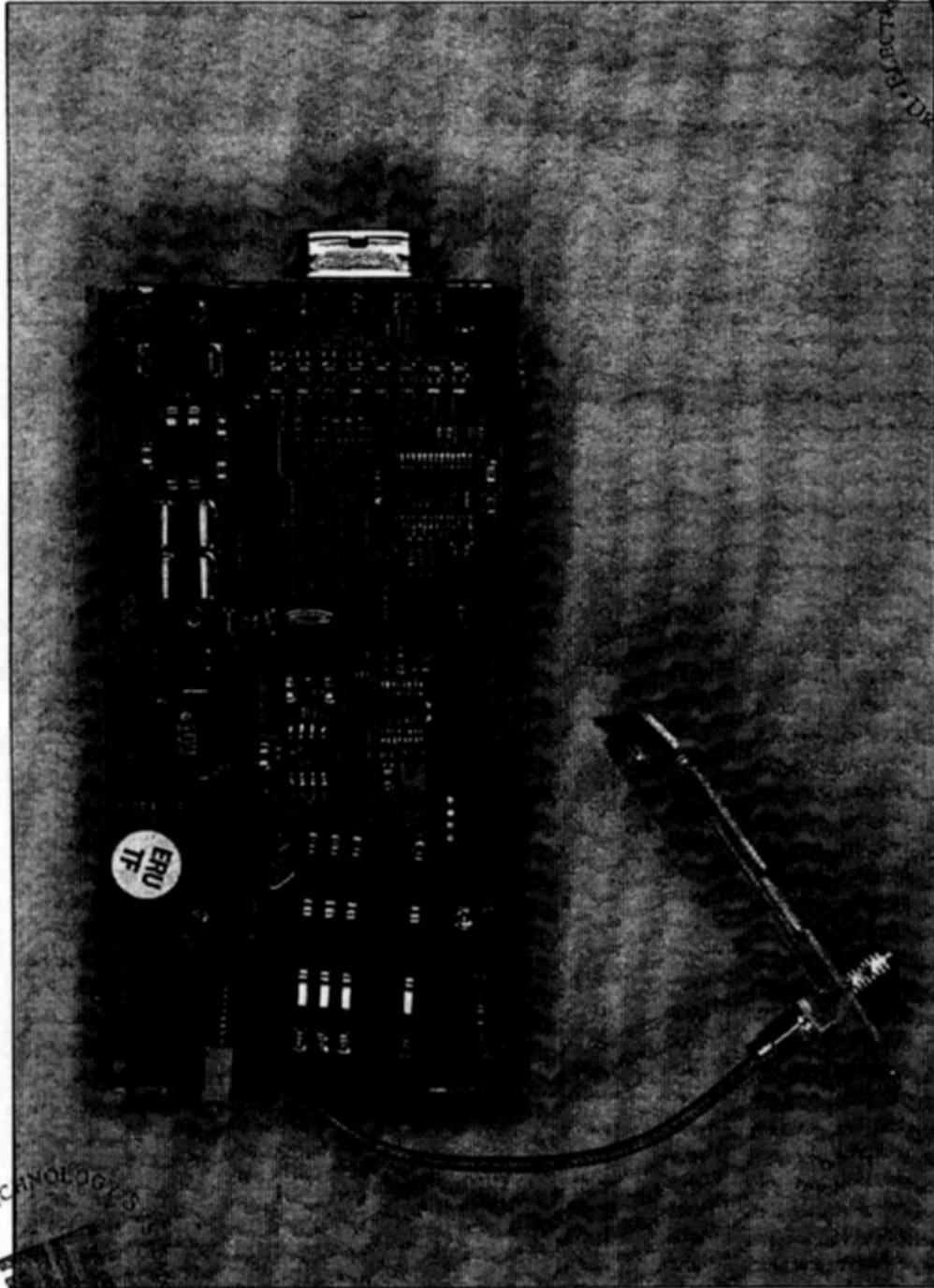
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Annex II: PLIXIT Information of the EUT

Mobile type E-GSM / PCS Modem WMO 2 G0919

TYPES OF MOBILE STATION (Table A.1)

1)	Standard GSM Band	Y
2)	Extended GSM Band	Y
3)	PCS 1900	N
4)	GSM Power Class 2	N
5)	GSM Power Class 3	Y
6)	GSM Power Class 4	N
7)	GSM Power Class 5	Y
8)	PCS Power Class 1	N
9)	PCS Power Class 2	N
10)	PCS Power Class 3	N
11)	Small Mobile Station	N

MOBILE STATION FEATURES (Table A.2)

1)	Display of Called Number	Y
2)	Indication of Call Progress Signals	N
3)	Country / PLMN Indication	Y
4)	Country / PLMN Selection	N
5)	Keypad	Y
6)	IMEI	Y
7)	Short Message Overflow	Y
8)	DTE / DCE Interface	N
9)	ISDN 'S' Interface	Y
10)	International Access Function	Y
11)	Service Indicator	Y
12)	Autocalling restriction capabilities	Y
13)	Dual Tone Multi Frequency function	Y
14)	Subscription Identity Management	Y
15)	On / Off Switch	N
16)	Sub-address	Y
17)	Support of Encryption A5/1	Y
18)	Support of Encryption A5/2	Y
19)	Short Message Service Cell Broadcast DRX..	Y
20)	Abbreviated Dialling	Y
21)	Fixed Number Dialling	N
22)	Barring of Outgoing Calls	N
23)	DTMF Control Digits Separator	N
24)	Selection of Dir. No in Short Messages	N
25)	Last Numbers Dialed	N
26)	At least one Autocalling Feature	N
27)	Human interface provided	N

TELESERVICES (Table A.3)

1)	Telephony	Y
2)	Emergency Call	Y
3)	Short Message MT/PP	Y
4)	Short Message MO/PP	Y
5)	SMS Cell Broadcast	Y
6)	Teles. Alternate Speech and G3 fax	N
7)	Teles. Automatic G3 fax	Y

BEARER SERVICES (Table A.4)

1)	Data cct. duplex async. 300 bit/s	Y
2)	Data cct. duplex async. 1200 b/s	Y
3)	Data cct. duplex async. 1200/75b/s	Y
4)	Data cct. duplex async. 2400 b/s	Y
5)	Data cct. duplex async. 4800 b/s	Y
6)	Data cct. duplex async. 9600 b/s	Y
7)	Data cct. duplex sync. 1200 b/s	N
8)	Data cct. duplex sync. 2400 b/s	N
9)	Data cct. duplex sync. 4800 b/s	N
10)	Data cct. duplex sync. 9600 b/s	N
11)	PAD Access 300 b/s	N
12)	PAD Access 1200 b/s	N
13)	PAD Access 1200/75b/s	N
14)	PAD Access 2400 b/s	N
15)	PAD Access 4800 b/s	N
16)	PAD Access 9600 b/s	N
17)	Packet Access 2400 b/s	N
18)	Packet Access 4800 b/s	N
19)	Packet Access 9600 b/s	N
20)	Alternate Speech/Data	N
21)	Speech Followed by data	N

SUPPLEMENTARY SERVICES (Table A.5)

1)	Calling Line Identification Presentation	Y
2)	Calling Line Identification Restriction	Y
3)	Connected Line Identification Presentation	Y
4)	Connected Line Identification Restriction	Y
5)	Call Forwarding Unconditional	Y
6)	Call Forwarding on Mobile Subscriber Busy	Y
7)	Call Forwarding on No Reply	Y
8)	Call Forw. on Mobile Subscr. Not Reachable	Y
9)	Call Waiting	Y
10)	Call Hold	Y
11)	Multi Party Service	Y
12)	Closed User Group	Y
13)	Advice of Charge (Info)	Y
14)	Advice of Charge (Charging)	Y
15)	Barring of All Outgoing Calls	Y
16)	Barring of Outgoing International Calls	Y
17)	Barring of Outgoing International Calls except those directed to Home PLMN Country	Y
18)	Barring of All Incoming Calls	Y
19)	Barring of Incoming Calls when Roaming Outside Home PLMN Country	Y
20)	Unstructured SS Data	Y

GROUPS FOR POSSIBLE BEARER CAPABILITIES (Table A.6)

1)	Bearer Service 21..26, unrestricted dig. Info Transfer Capability	Y
2)	B.S. 21..26, 3.1 kHz audio ex-PLMN Info Transfer Capability	Y
3)	B.S. 31..34, unrestr. digital Info Transfer Capability; Non-X.32 Cases (BS 31..BS 34)	N
4)	B.S. 31..34, unrestr. digital Info Transfer Capability; X.32 Cases	N
5)	B.S. 31..34, 3.1 kHz audio ex-PLMN Info Transf. Capab.; Non-X.32 Cases (BS 31..BS 34)	N
6)	B.S. 31..34, 3.1 kHz audio ex-PLMN Info Transf. Capab.; X.32 Cases	N
7)	B.S. 41..46, PAD Access Async	N
8)	B.S. 51..53, Data Paket Dupl. Sync	N
9)	Alternate Speech/Data, "Speech"	N
10)	Alt. Speech/Data, 3.1 kHz audio ex-PLMN Info Transf. Cap.; Asynchronous	N
11)	Alt. Speech/Data, 3.1 kHz audio ex-PLMN Info Transf. Cap.; Synchronous	N
12)	Speech followed by Data, "Speech"	N
13)	Speech fol. by Data, 3.1 kHz audio ex-PLMN Info Transf. Cap.; Asynchronous	N
14)	Speech fol. by Data, 3.1 kHz audio ex-PLMN Info Transf. Cap.; Synchronous	N
15)	Teleservice 11..12, Speech	Y
16)	Alternate Speech and Facsimile group 3; Speech	N
17)	Alternate Speech and Facsimile group 3; Facsimile group 3	N

Bearer Service 21..26, UDI (Table A.7)

1)	Signalling Access Protocol (SAP)	Y
2)	Connection Element (CE)	Y
3)	User Info Layer 2 Protocol (UIL2P)	Y
4)	Number of Data Bits(NDB)	Y
5)	Parity Information (NPB)	Y
6)	Number of Stop Bits (NSB)	Y
7)	Radio Channel Requirement (RCR)	Y
8)	Intermediate Rate (IR)	Y
9)	User Rate (UR)	Y
10)	all allowed combinations according to GSM 07.01 B.1.2.1 implemented (if not, provide detailed description)	Y

Bearer Service 21..26, 3.1 kHz (Table A.8)

1)	Signalling Access Protocol (SAP)	Y
2)	Connection Element (CE)	Y
3)	User Info Layer 2 Protocol (UIL2P)	Y
4)	Number of Data Bits(NDB)	Y
5)	Parity Information (NPB)	Y
6)	Number of Stop Bits (NSB)	Y
7)	Radio Channel Requirement (RCR)	Y
8)	Intermediate Rate (IR)	Y
9)	User Rate (UR)	Y
10)	Modem Type (MT)	Y
11)	all allowed combinations according to GSM 07.01 B.1.2.2 implemented (if not, provide detailed description)	Y

Teleservice 11..12, Speech (Table A.21)

1)	Radio Channel Requirement (RCR)	Y
----	---------------------------------	---

Teleservice 62, Automatic G3 fax (Table A.24)

1)	Connection Element (CE)	Y
2)	User Info Layer 2 Protocol (UIL2P)	Y
3)	Intermediate Rate (IR)	Y
4)	User Rate (UR)	Y
5)	all allowed combinations according to GSM 07.01 B.1.11 implemented (if not, provide detailed description)	Y

ADDITIONAL INFORMATION (Table A.25)

1)	At least one half Rate Service	Y
2)	Full Rate Speech Mode	Y
3)	Half Rate Speech Mode	Y
4)	At least one Data Service	Y
5)	At least one Full Rate Data Service	Y
6)	At least one Half Rate Data Service	Y
7)	At least one Non Transparent Data Service.	Y
8)	At least one Transparent Data Service	Y
9)	Only Transparent Data Service	N
10)	At least one asyn. Data Service	Y
11)	At least one asyn. non Transp. Data Serv	Y
12)	2.4k full Rate Data Mode	Y
13)	2.4k half Rate Data Mode	Y
14)	4.8k full Rate Data Mode	Y
15)	4.8k half Rate Data Mode	Y
16)	9.6k full Rate Data Mode	Y
17)	Non transp. Serv. with full Rate Channel at a User Rate of 4.6kbit/s	N
18)	At least one Bearer Capability	Y
19)	At least one MT cct. switched basic Service	Y
20)	At least one MO cct. switched basic Service	Y
21)	Only SDCCH	N
22)	At least one Service on Traffic Channel	Y
23)	Dual Rate Channel Types	Y
24)	Only Full Rate Channel Type	N
25)	At least one Teleservice	Y
26)	CC Protocol for at least one BC	Y
27)	Only cct. switched basic Serv. supported by the Mobile is Emergency Call	N
28)	Fax Error Correction Mode	N
29)	At least one Supplementary Service	Y
30)	Non Call Related Supplementary Service	N
31)	At least one Short Message Service	Y
32)	(SMS) Reply Procedure	N
33)	Replace SMS	N
34)	Display of Received SMS	Y
35)	SMS Status Report Capabilities	Y
36)	Storing of Short Messages in the SIM	Y
37)	Storing of Short Messages in the ME	N
38)	Detach on Power Down	Y



39)	Detach on SIM Remove	Y
40)	SIM removable without Power down	Y
41)	ID-1 SIM	N
42)	Plug-In SIM	Y
43)	Disable PIN Feature	Y
44)	PIN2 Feature	Y
45)	Feature Requiring Entry of PIN2	Y
46)	Chars 0-9, *, #	Y
47)	A, B, C, D Chars	N
48)	Autom. Enter Automatic Sel. of PLMN Mode	N
49)	Alerting Indication to the User	Y
50)	Appl. Layer is always Running	Y
51)	Immediate Connect	N
52)	In-Call Modification	Y
53)	Follow-On Request Procedure	Y
54)	Refusal of Call	Y
55)	RF amplification	N
56)	No. of B-party no. for Autocalling is greater than no. of Entries in Blacklist	N
57)	Handset MS supporting Speech	Y
58)	MT2 Configuration	Y
59)	MT2 Conf. or any other Possibility to send Data over Um Interface	Y
60)	Permanent Antenna Connector	Y
61)	Pseudo HO synchronization capability	Y
62)	5V only SIM/ME interface	N
63)	3V only SIM/ME interface	Y
64)	5V/3V SIM/ME interface	N
65)	Enhanced full rate speech supported	Y
66)	Controlled Early Classmark Sending	Y
67)	Round Trip Delay for loop C 0 .. 25 bursts	1

Receiver Intermediate Frequencies

	PCS 1900	GSM 900
Flo - oscillator frequency applied to first receiver mixer	1	0
{ 0 = Flo variable and > FR }		
{ 1 = Flo variable and < FR }		
Number of intermediate frequencies	1	1
1. IF	440 MHz	440 MHz
2. IF	0 MHz	0 MHz
3. IF	0 MHz	0 MHz
4. IF	0 MHz	0 MHz