

# CETECOM ICT Services GmbH

Radio Satellite Communication

Untertürkheimer Straße 6-10 . D-66117 Saarbrücken

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RSC11

issue test report consist of 37 Pages

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Recognized by the  
Federal Communications Commission  
**FCC-Identification Number: 90462**  
**TCB ID: DE 001**



Accredited by the  
German Accreditation Council  
**DAR-Registration Number**  
**TTI-P-G 166/98**



Independent ETSI  
compliance test house



**Accredited Bluetooth™ Test Facility (BQTF)**

**Test report no.: 2\_3244-01-02/03**

**Additional measurement**

**T310**

**FCC ID: PY71130602**

CETECOM – ICT Services GmbH

Untertürkheimerstr. 6-10

66117 Saarbrücken, Germany

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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 CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalizations 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 publication of extracts from the report requires the prior written approval of the CETECOM ICT Services GmbH.**

#### 1.2 Testing laboratory

CETECOM ICT Services GmbH

Untertürkheimer Straße 6 - 10

66117 Saarbrücken

Germany

Telephone : + 49 681 598 - 9100

Telefax : + 49 681 598 - 9075

E-mail : Harro.Ames@ict.cetecom.de

Internet : www.cetecom-ict.de

#### Accredited testing laboratory

**The Test laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025.**

**DAR registration number: TTI-P-G-166/98**

**Listed by : Federal Communications Commission (FCC)**

**Identification/Registration No : 90462**

**Accredited Bluetooth™ Test Facility (BQTF)**

***BLUETOOTH™ is a trademark owned by Bluetooth SIG, Inc. and licensed to CETECOM***



# CETECOM ICT Services GmbH

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## 2      Technical test

This additional measurement was made to show compliance of the band edge at the six different frequency blocks for PCS1900.

### 2.1      Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests performed.

### FINAL VERDICT: PASS

Technical responsibility for area of testing :

2003-05-16                      RSC 8414   Ames.H

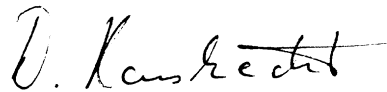


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Date	Section	Name	Signature
------	---------	------	-----------

Technical responsibility for area of testing :

2003-05-16                      RSC8412   Hausknecht D.



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Date	Section	Name	Signature
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## 2.2 Testreport

**TEST REPORT**

**Test report no. : 2\_3244-01-02/03**

# CETECOM ICT Services GmbH

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TEST REPORT REFERENCE

LIST OF MEASUREMENTS

PARAMETER TO BE MEASURED

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Part PCS 1900

CONDUCTED SPURIOUS EMISSIONS

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## CONDUCTED SPURIOUS EMISSIONS

### Measurement Procedure:

The following steps outline the procedure used to measure the conducted emissions from the mobile station.

1. Determine frequency range for measurements: From CFR 2.1057 the spectrum should be investigated from the lowest radio frequency generated in the equipment up to at least the 10th harmonic of the carrier frequency.

For the mobile station equipment tested, this equates to a frequency range of 13 MHz to 19.1 GHz, data taken from 10 MHz to 20 GHz.

2. Determine mobile station transmit frequencies: below outlines the band edge frequencies pertinent to conducted emissions testing.

### USPCS Transmitter

#### Channel Frequency

512 1850.2 MHz

661 1880.0 MHz

810 1909.8 MHz

### Measurement Limit:

Sec. 24.238 Emission Limits.

(a) On any frequency outside frequency band of the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least  $43+10\log(P)$  dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

EMISSION LIMITATIONS					
f (MHz)		amplitude of emission (dBm)	limit max. allowed emission power (dBm)	actual attenuation below frequency of operation (dBc)	results
<b>CH 512</b>					
1850.20		29.7	-13.0 (42.7 dBc)		carrier
1849.98		-19.29		48.99	complies
1932.71		-22.52		52.27	complies
<b>CH 661</b>					
1880.00		29.3	-13.0 (42.3dBc)		carrier
1879.00		-29.17		58.47	complies
1917.31		-22.47		51.77	complies
<b>CH 810</b>					
1909.80		29.2	-13.0 (42.2 dBc)		carrier
1910.02		-18.31		47.51	complies
1920.00		-22.88		52.08	complies
Measurement uncertainty		± 0.5dB			


REFERENCE NUMBER(S) OF TEST EQUIPMENT USED  
(for reference numbers see test equipment listing)

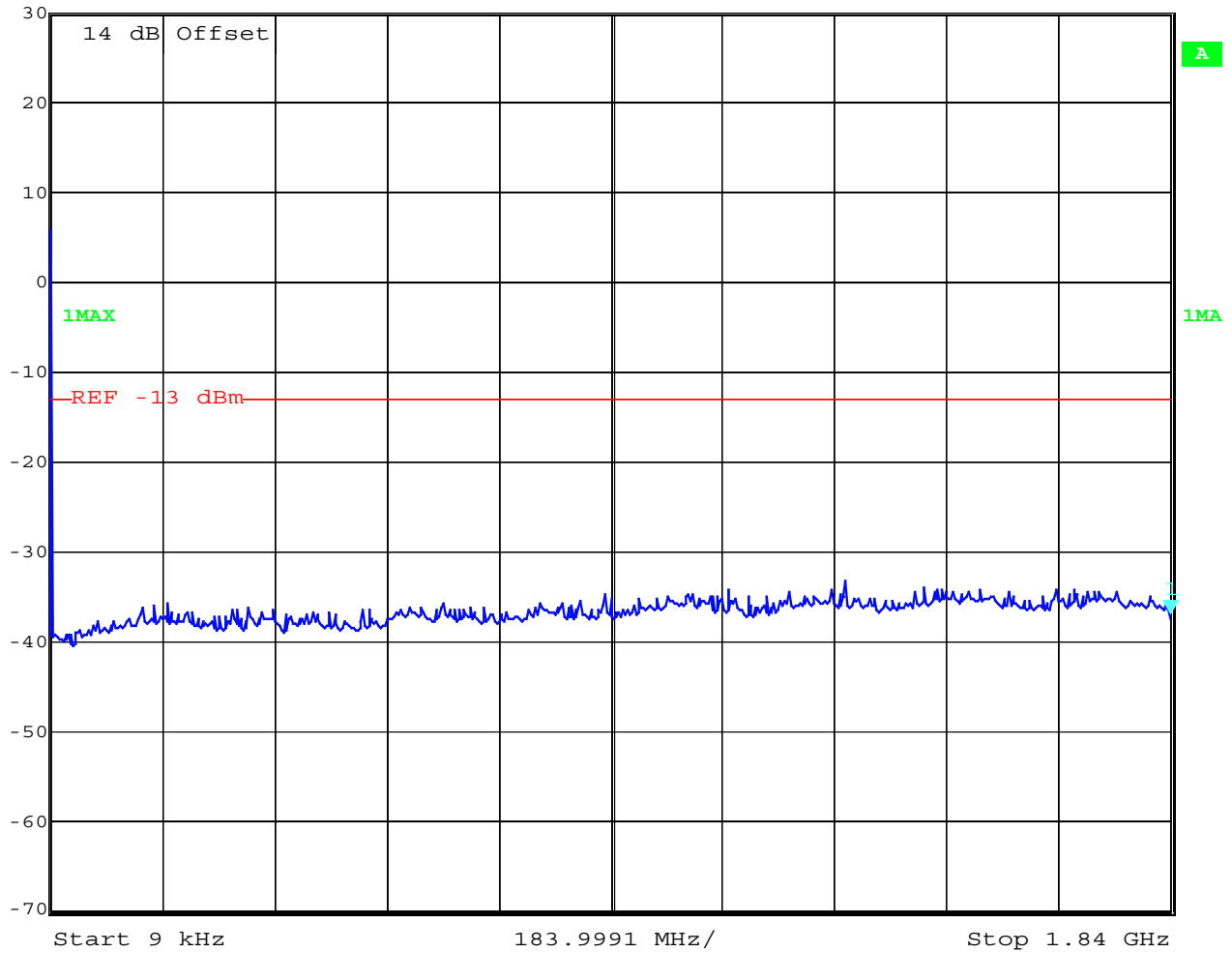
# CETECOM ICT Services GmbH

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## Measurements:

### Channel: 512

	Ref Lvl	Marker 1 [T1]	RBW	100 kHz	RF Att	40 dB
	30 dBm	-36.77 dBm	VBW	100 kHz		
		1.84000000 GHz	SWT	460 ms	Unit	dBm



Date: 7.MAY.2003 06:59:34


**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**  
(for reference numbers see test equipment listing)

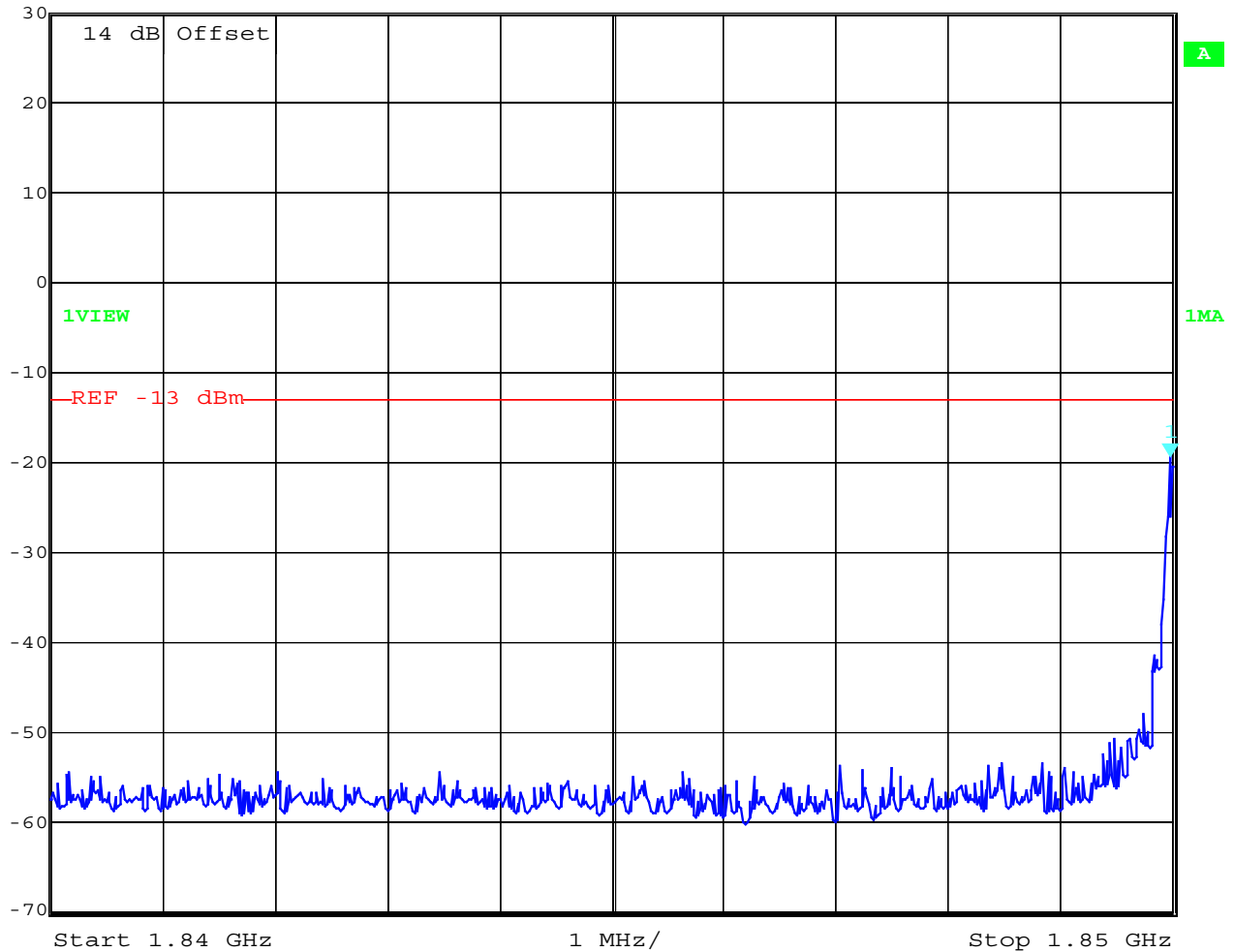


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## Channel 512

 Marker 1 [T1]      RBW      3 kHz      RF Att      40 dB  
Ref Lvl      -19.29 dBm      VBW      3 kHz  
30 dBm      1.84997996 GHz      SWT      2.8 s      Unit      dBm



Date:      7.MAY.2003      07:00:34

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**  
(for reference numbers see test equipment listing)  
17 - 24, 64

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## Channel 512




Date: 7.MAY.2003 07:01:29

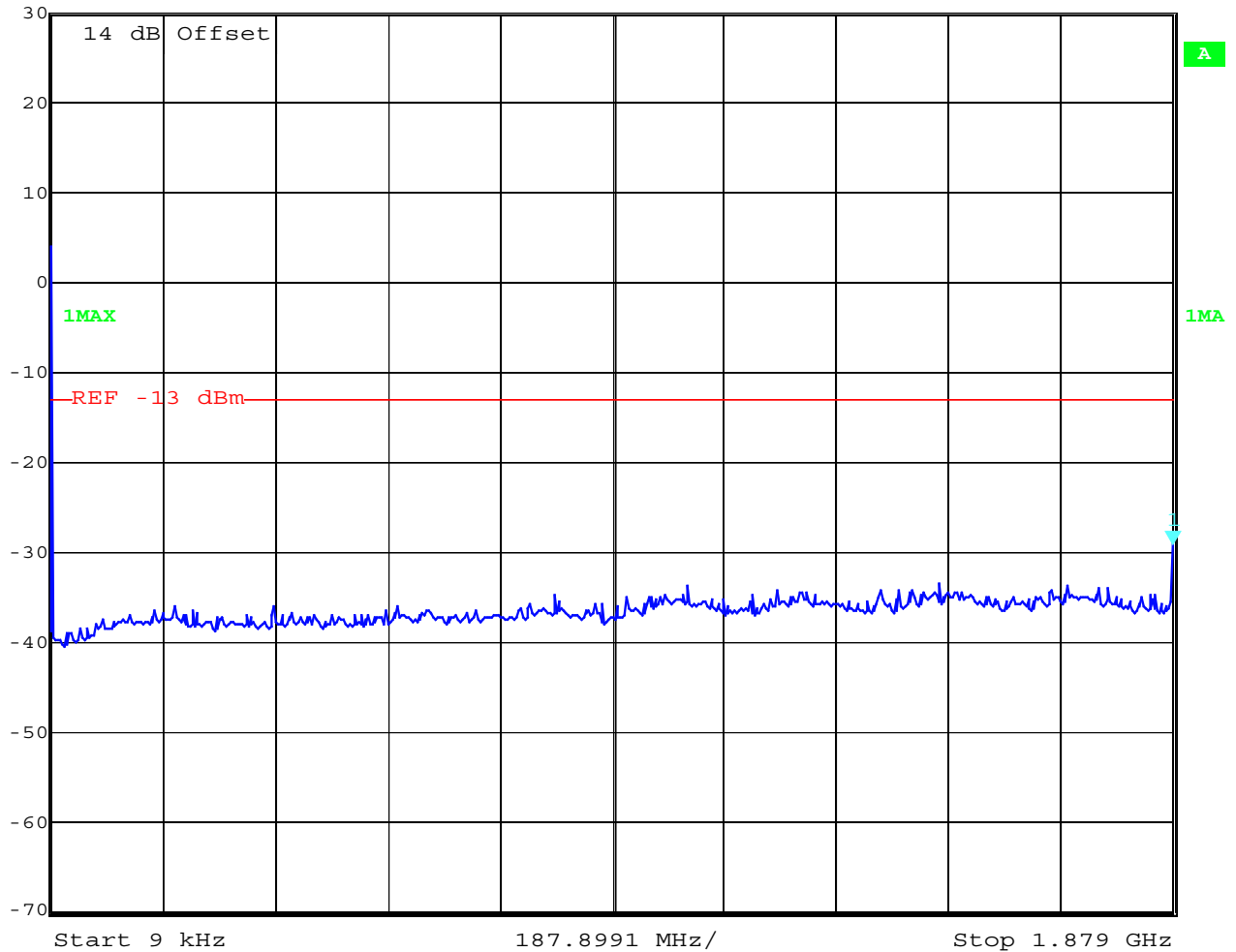
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(for reference numbers see test equipment listing)  
17 - 24, 64

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## Channel 661

 Marker 1 [T1]      RBW 100 kHz      RF Att 40 dB  
Ref Lvl -29.17 dBm      VBW 100 kHz  
30 dBm      1.87900000 GHz      SWT 470 ms      Unit dBm



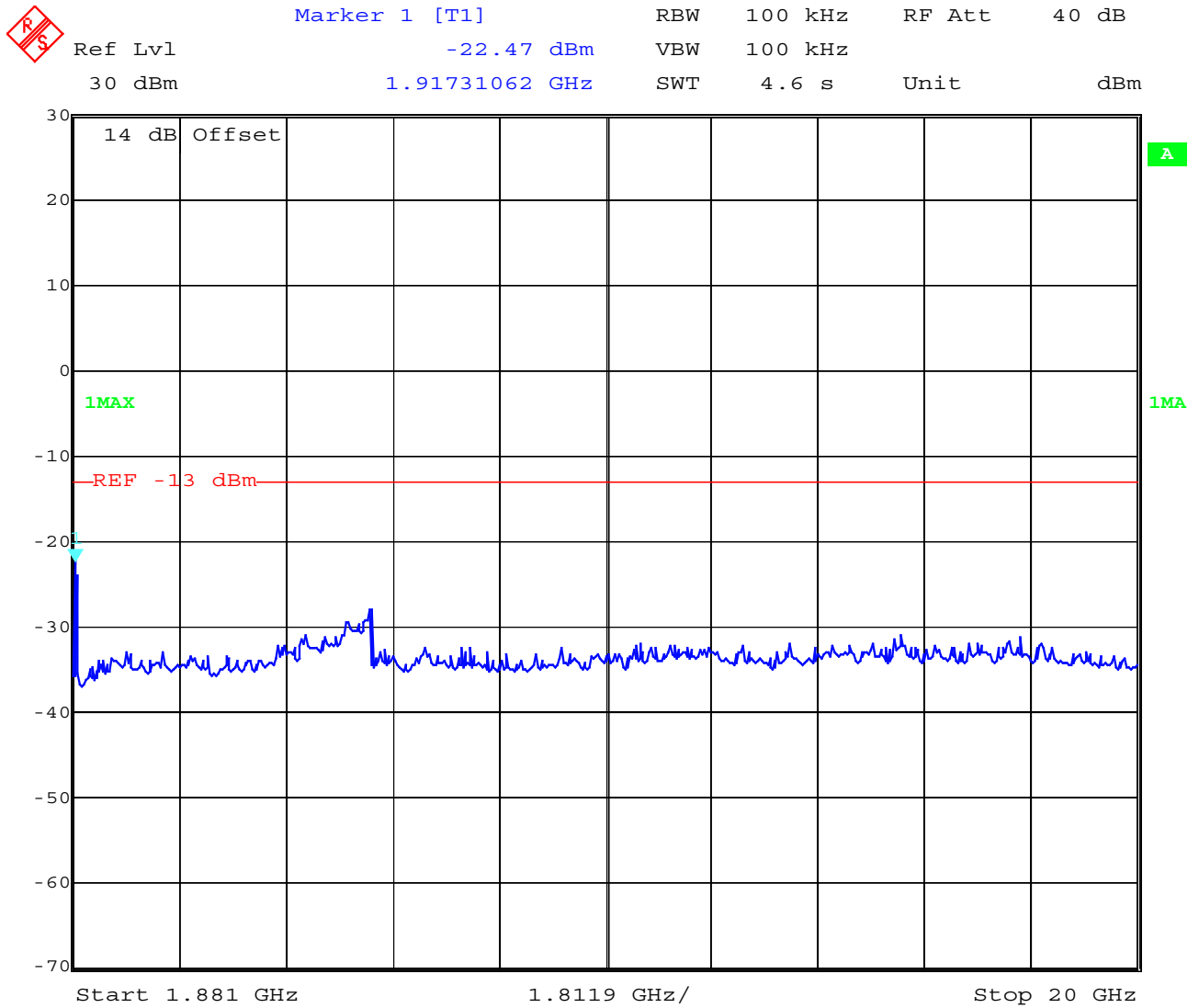
Date: 7.MAY.2003 07:02:21

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**  
(for reference numbers see test equipment listing)  
17 - 24, 64

# CETECOM ICT Services GmbH

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## Channel 661



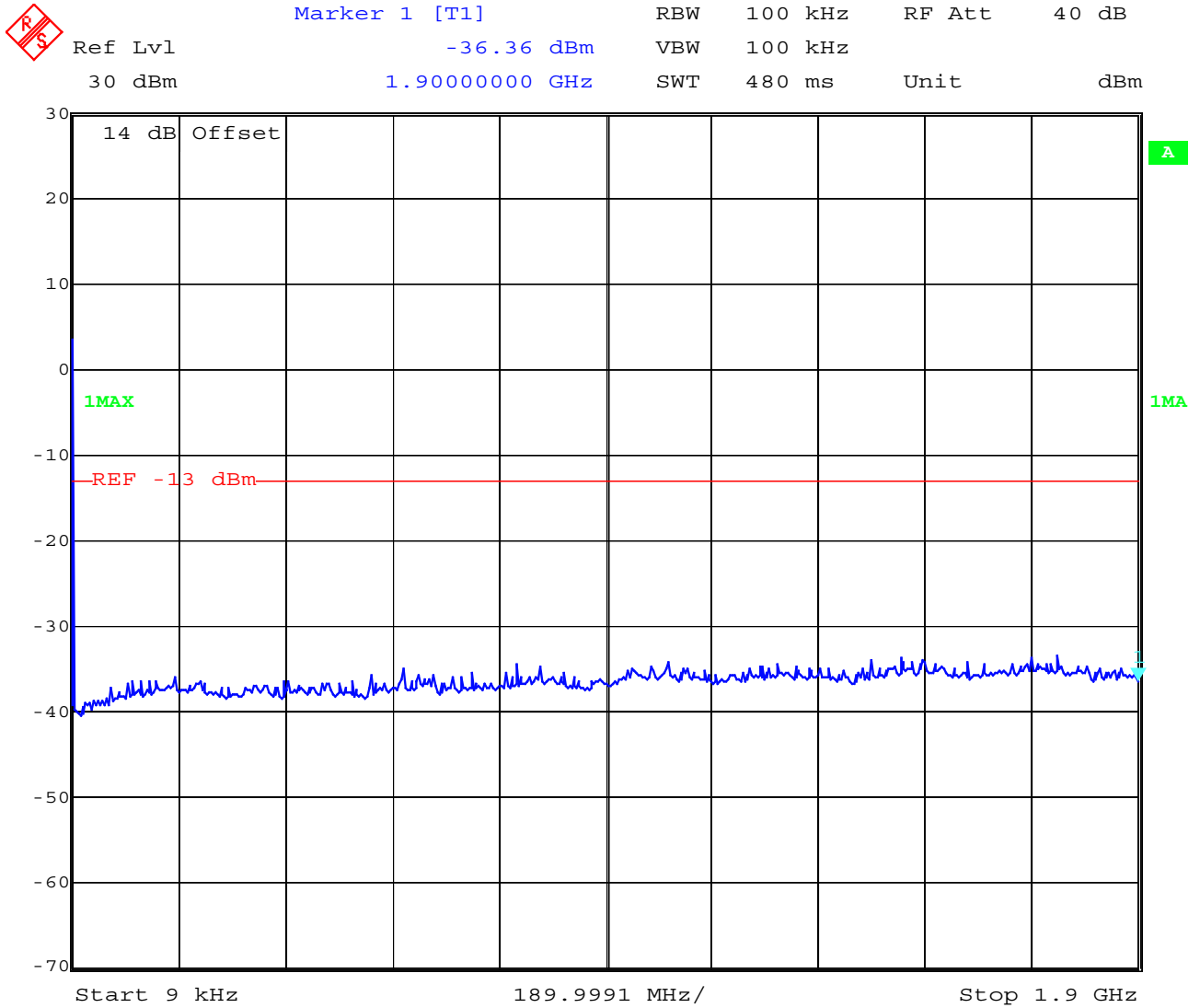
Date: 7.MAY.2003 07:03:05

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**  
(for reference numbers see test equipment listing)  
17 – 24, 64

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## Channel 810



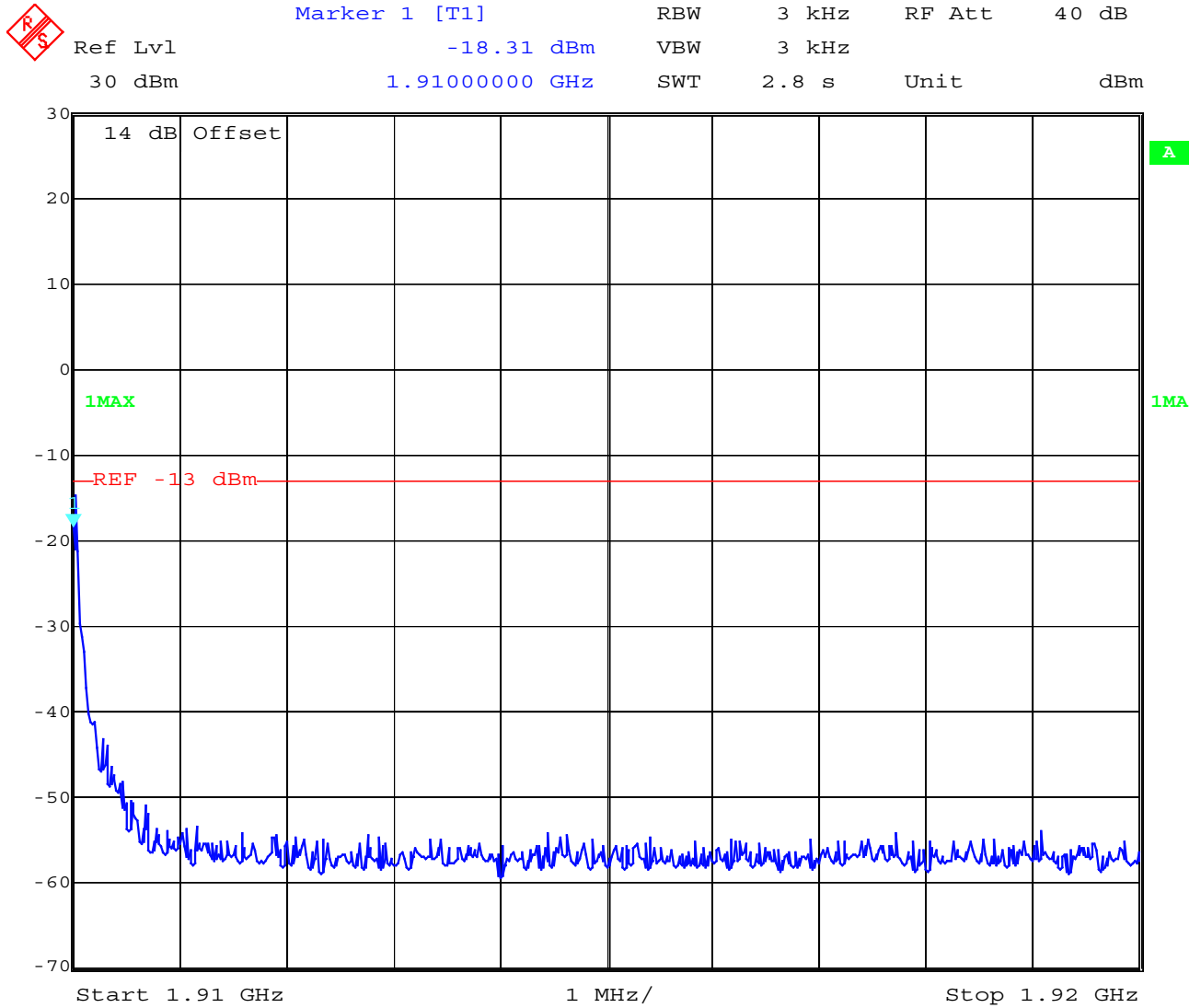
Date: 7.MAY.2003 07:04:04

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**  
(for reference numbers see test equipment listing)  
17 – 24, 64

# CETECOM ICT Services GmbH

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## Channel 810



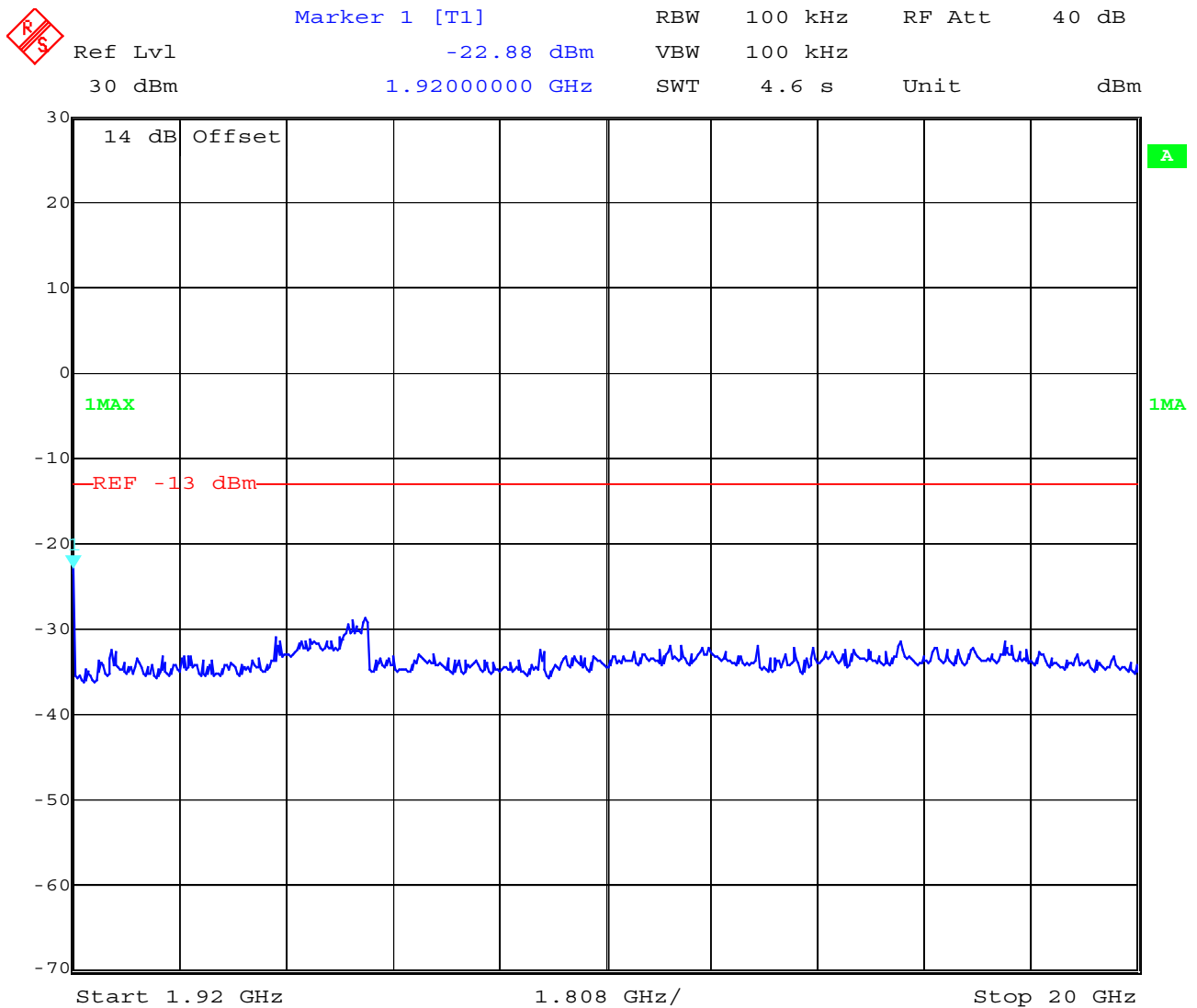
Date: 7.MAY.2003 07:04:55

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**  
(for reference numbers see test equipment listing)  
17 - 24, 64

# CETECOM ICT Services GmbH

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## Channel 810



Date: 7.MAY.2003 07:05:30

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**  
(for reference numbers see test equipment listing)  
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## BLOCK EDGE COMPLIANCE FOR BLOCK A, B, C, D, E AND F

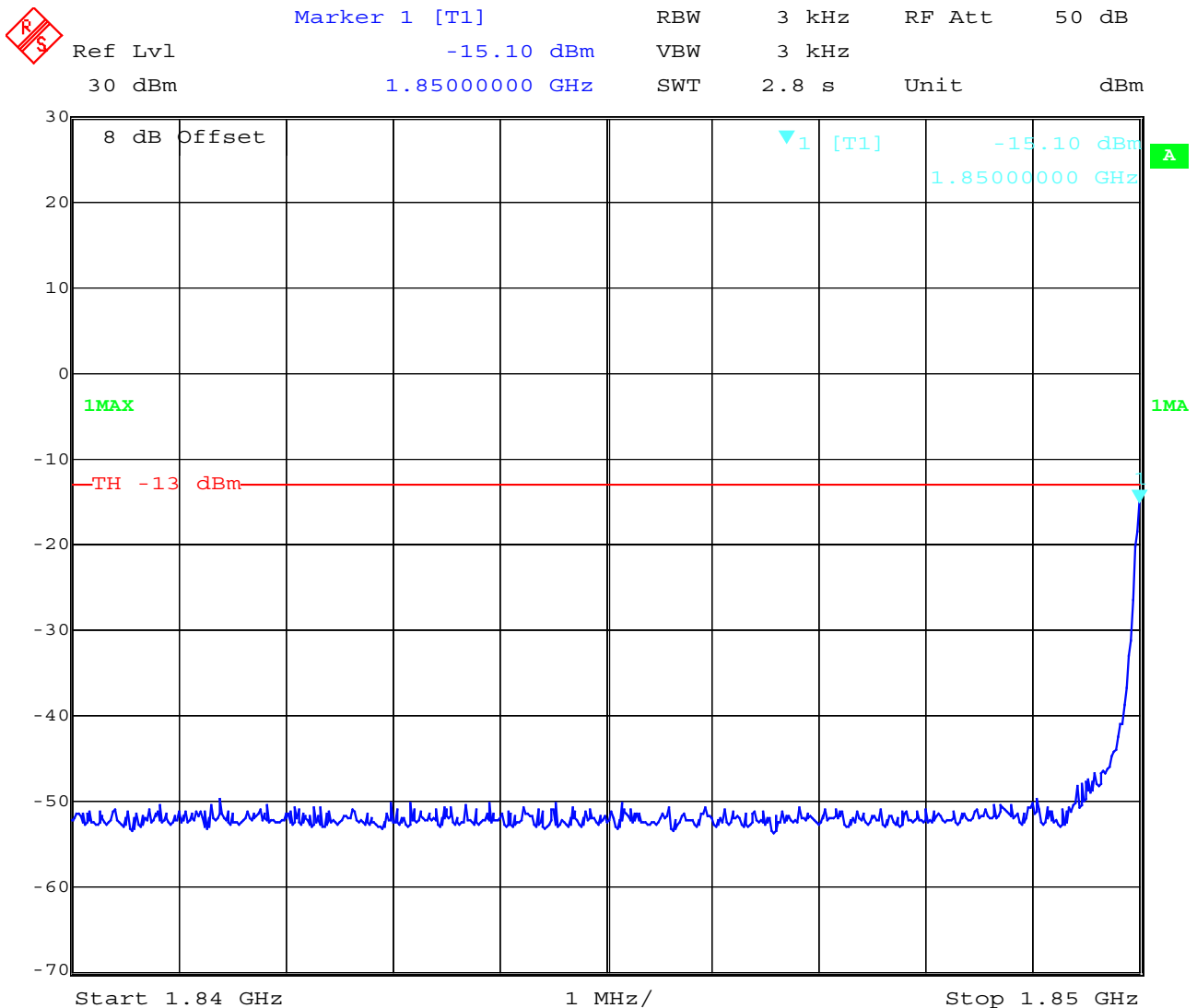
### Measurement Limit:

Sec. 24.238 Emission Limits.

(a) On any frequency outside frequency band of the USPCS spectrum, the power of any emission shall be attenuated below the transmitter power (P, in Watts) by at least  $43+10\log(P)$  dB. For all power levels +30 dBm to 0 dBm, this becomes a constant specification limit of -13 dBm.

### Measurements:

#### Block A Channel 512



Date: 16.MAY.2003 08:09:54

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**  
(for reference numbers see test equipment listing)



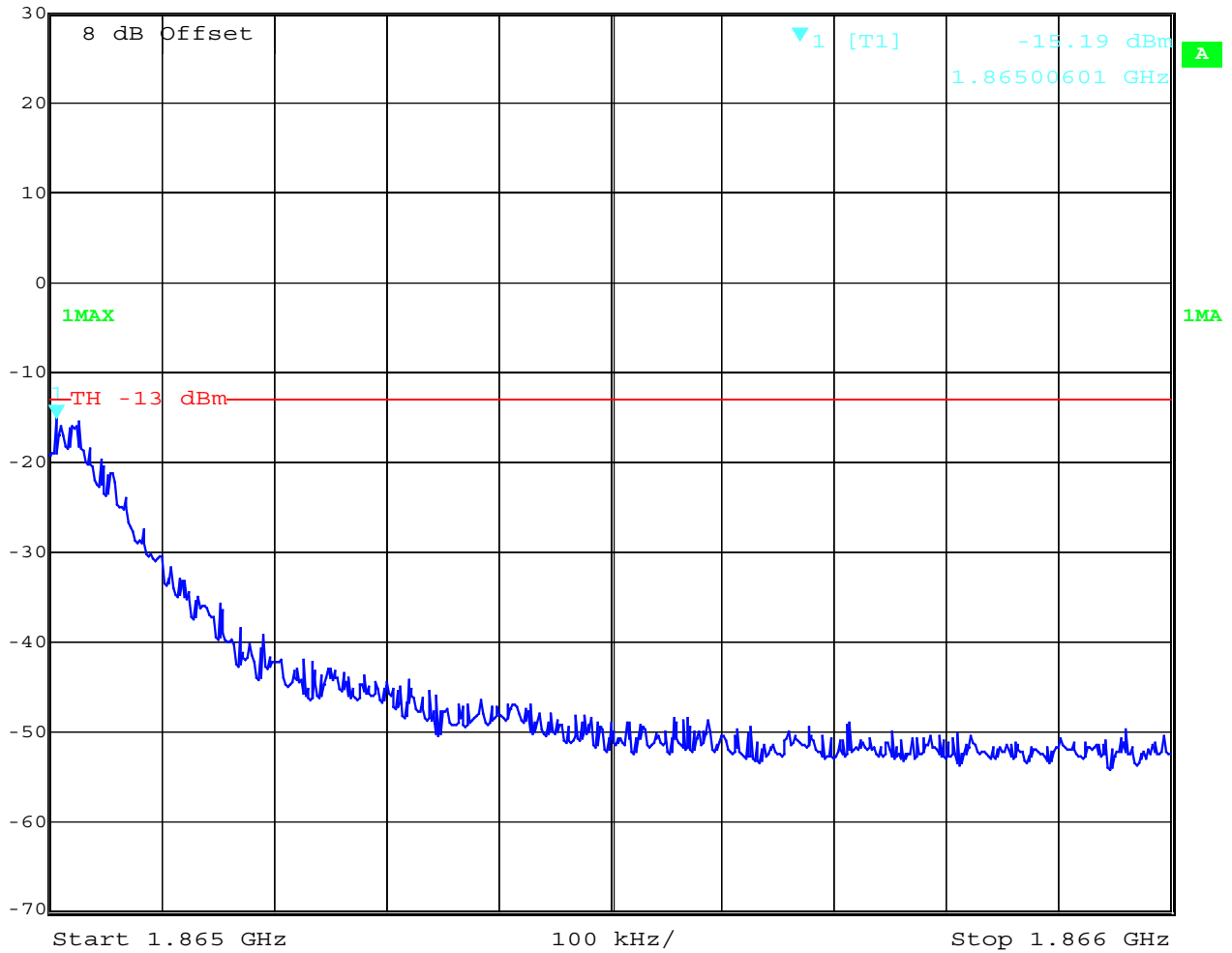
# CETECOM ICT Services GmbH

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## Block A Channel 585



Ref Lvl	Marker 1 [T1]	RBW	3 kHz	RF Att	50 dB
30 dBm	-15.19 dBm	VBW	3 kHz		
	1.86500601 GHz	SWT	280 ms	Unit	dBm



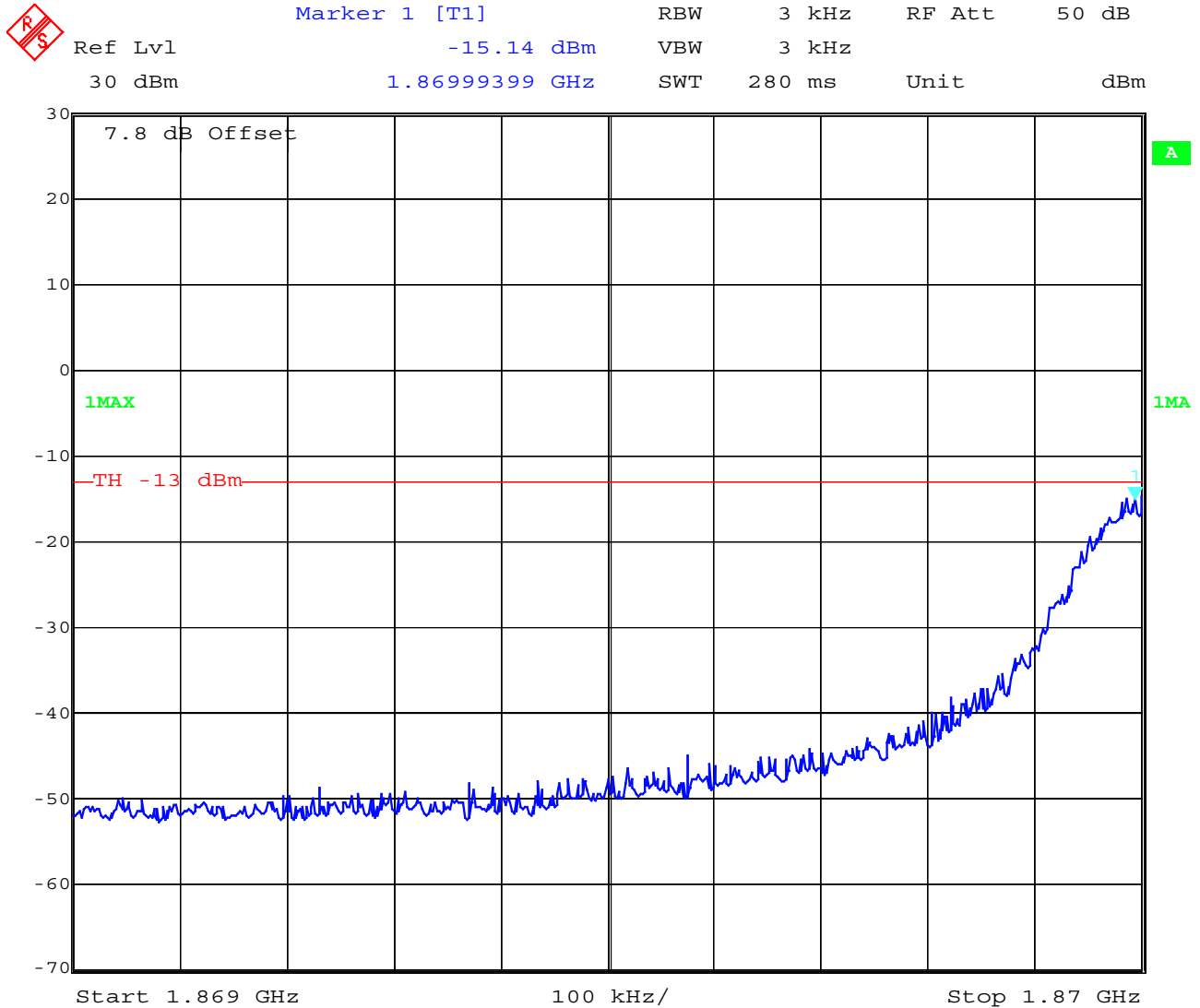
Date: 16.MAY.2003 08:11:00

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**  
(for reference numbers see test equipment listing)

# CETECOM ICT Services GmbH

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## Block B Channel 612



Date: 16.MAY.2003 08:14:51

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**  
(for reference numbers see test equipment listing)

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## Block B Channel 685



Marker 1 [T1]

RBW      3 kHz      RF Att      50 dB

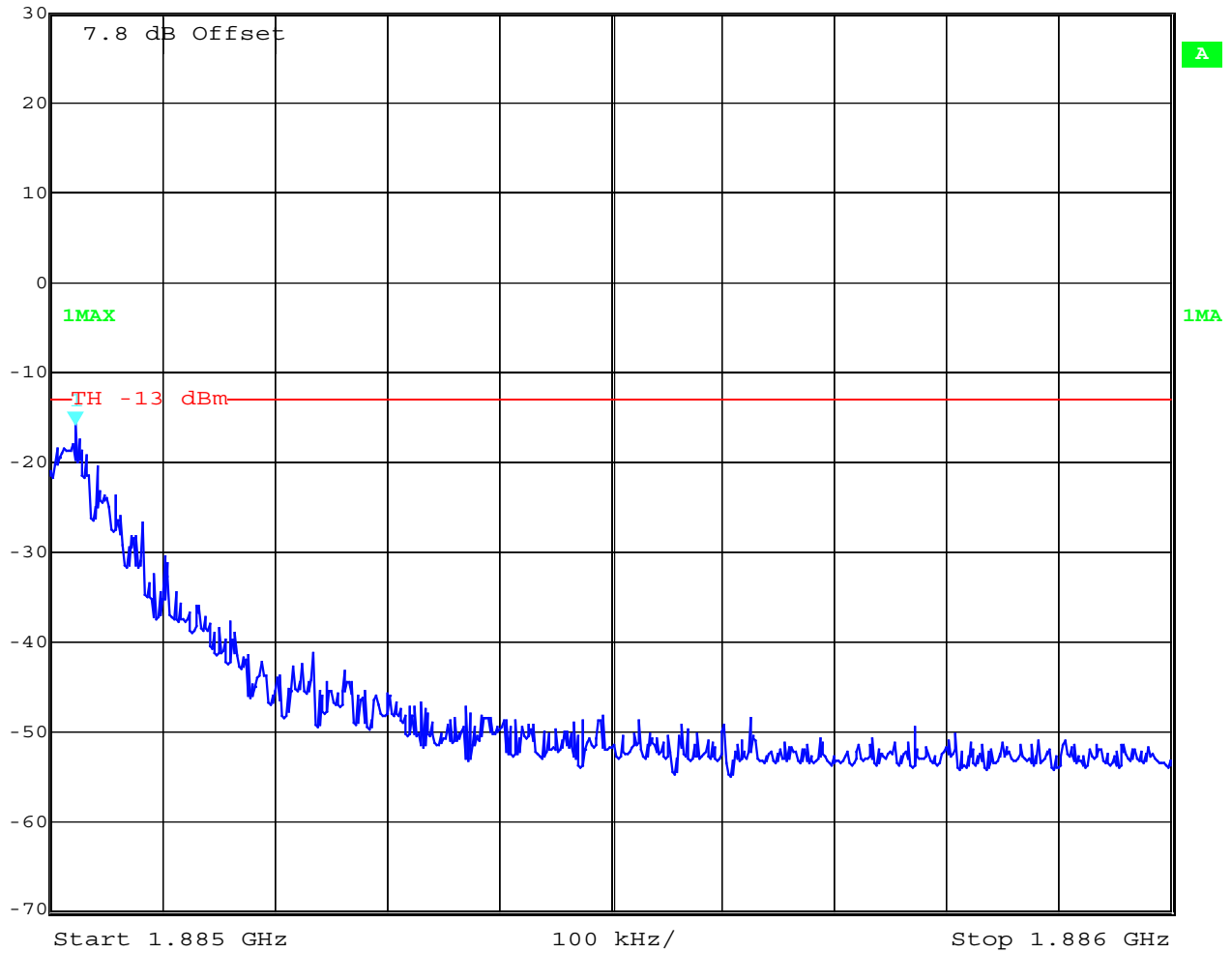
Ref Lvl      -15.90 dBm

VBW      3 kHz

30 dBm      1.88502204 GHz

SWT      280 ms

Unit      dBm



Start 1.885 GHz

100 kHz/

Stop 1.886 GHz

Date:      16.MAY.2003      08:15:33

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**  
(for reference numbers see test equipment listing)

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## Block C Channel 737



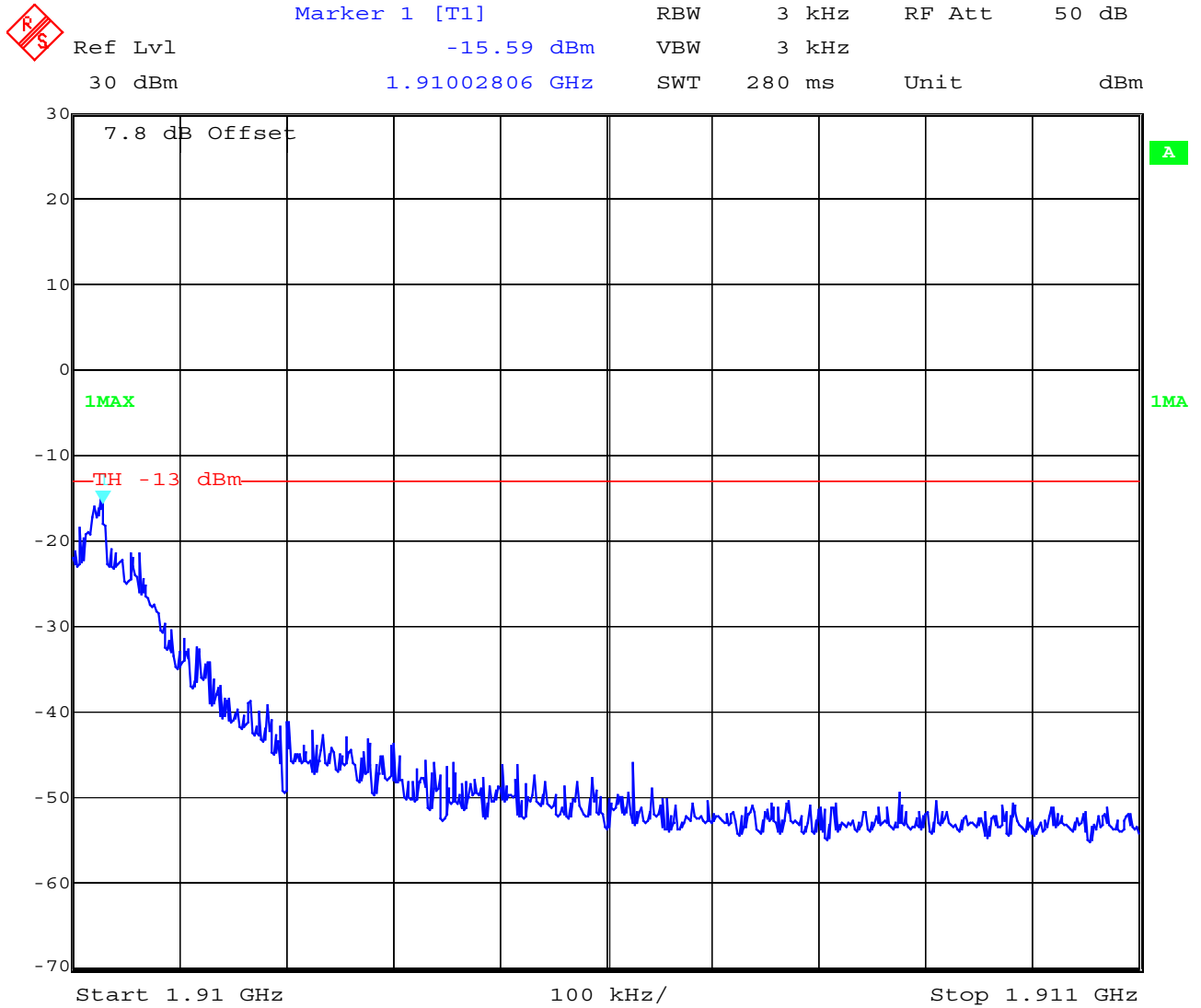
Date: 16.MAY.2003 08:16:25

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**  
(for reference numbers see test equipment listing)

# CETECOM ICT Services GmbH

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## Block C Channel 810



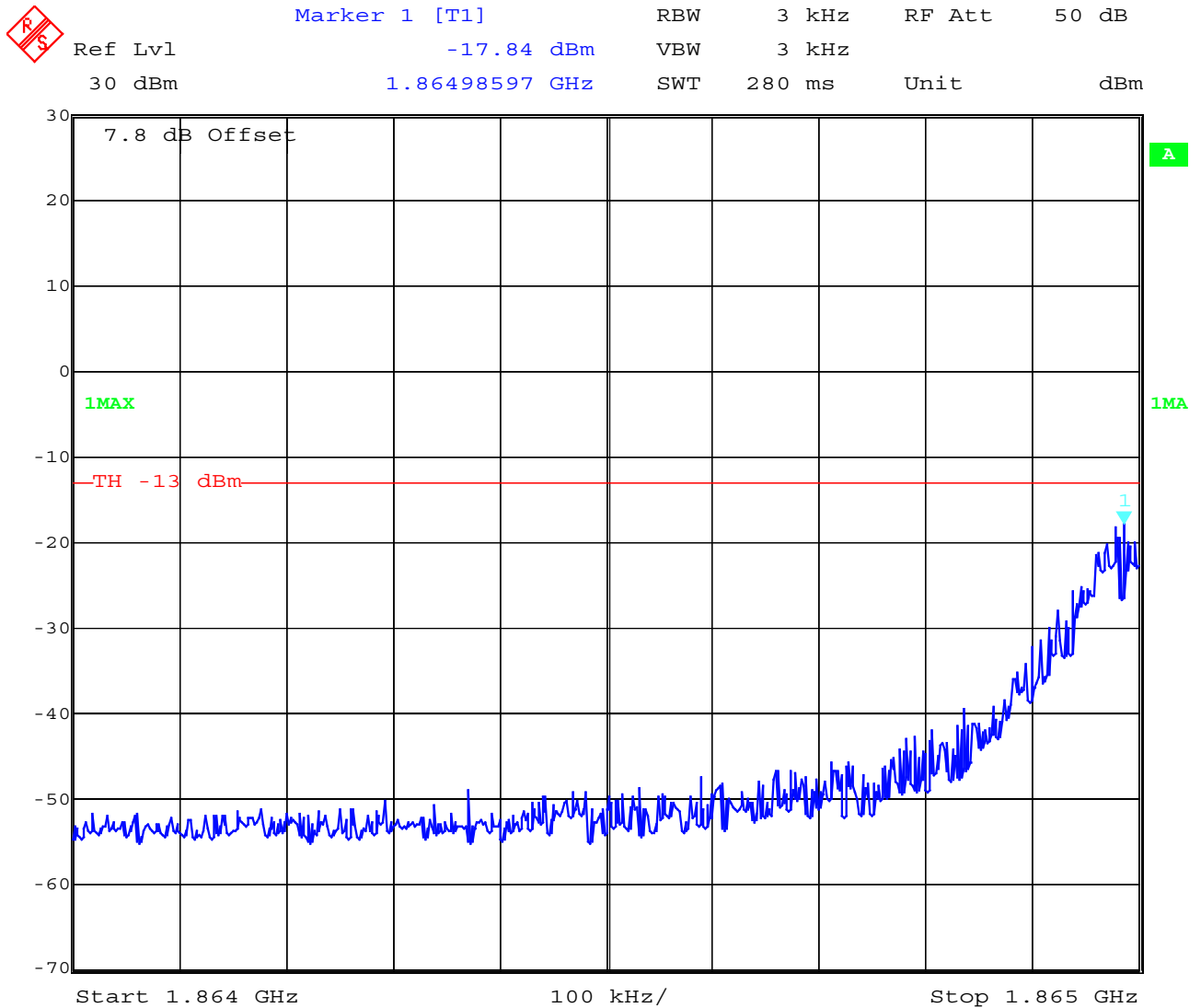
Date: 16.MAY.2003 08:17:01

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**  
(for reference numbers see test equipment listing)

# CETECOM ICT Services GmbH

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## Block D Channel 587



Date:            16.MAY.2003    08:17:39

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**  
(for reference numbers see test equipment listing)

# CETECOM ICT Services GmbH

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## Block D Channel 610



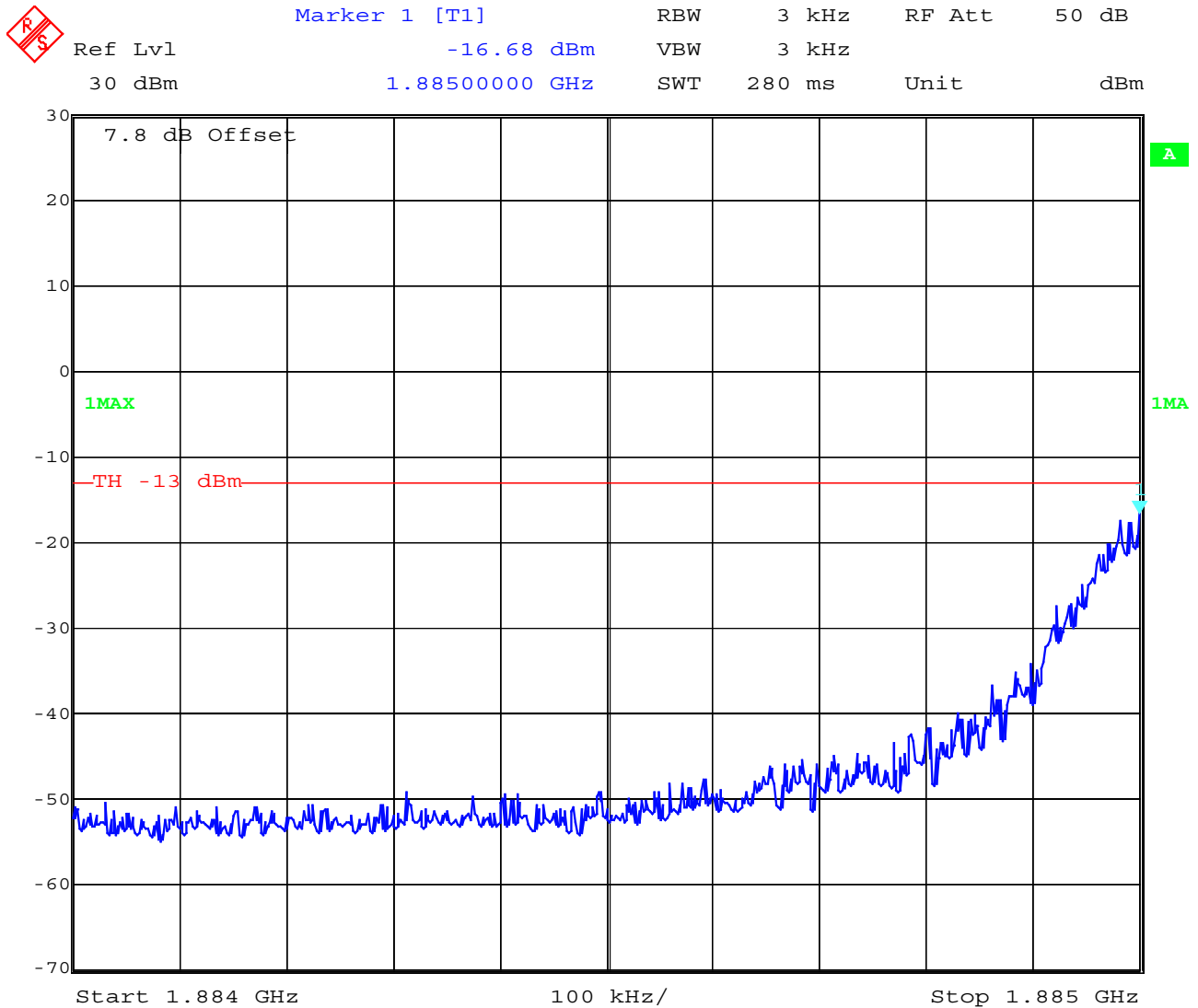
Date: 16.MAY.2003 08:18:18

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**  
(for reference numbers see test equipment listing)

# CETECOM ICT Services GmbH

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## Block E Channel 687



Date: 16.MAY.2003 08:18:58

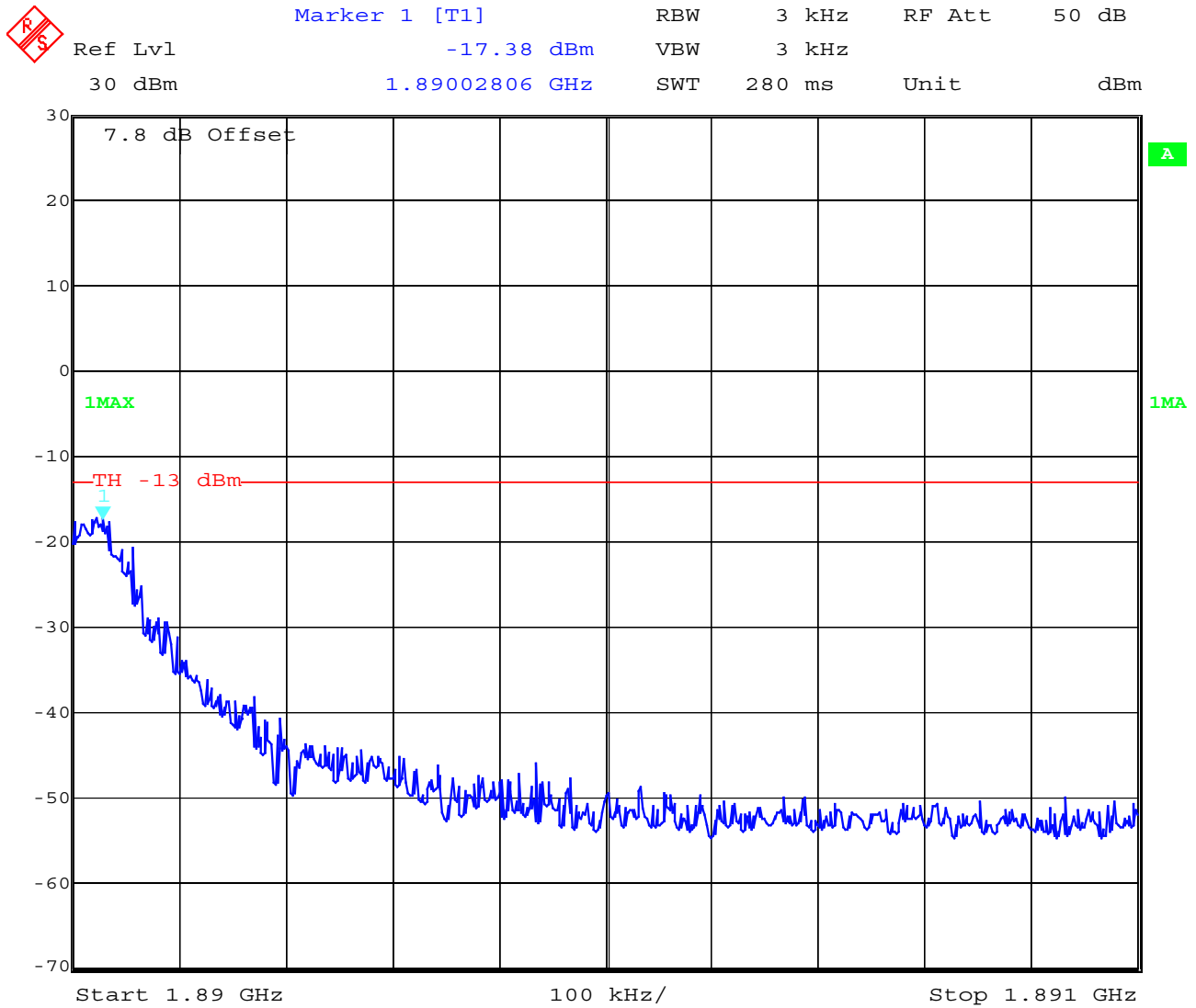
**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**  
(for reference numbers see test equipment listing)



# CETECOM ICT Services GmbH

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## Block E Channel 710



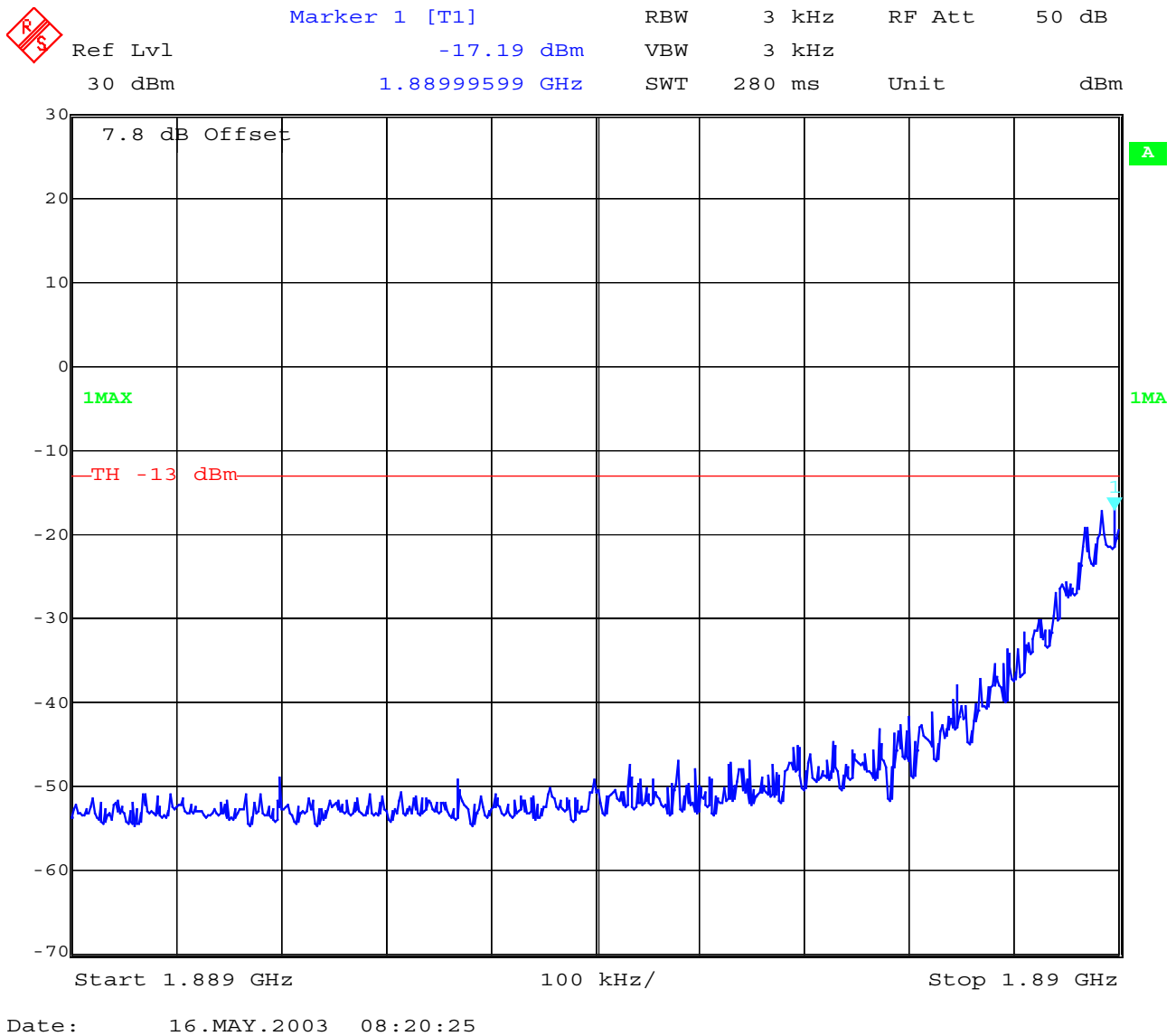
Date: 16.MAY.2003 08:19:41

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**  
(for reference numbers see test equipment listing)

# CETECOM ICT Services GmbH

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## Block F Channel 712



**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**  
(for reference numbers see test equipment listing)

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## Block F Channel 735



Marker 1 [T1]

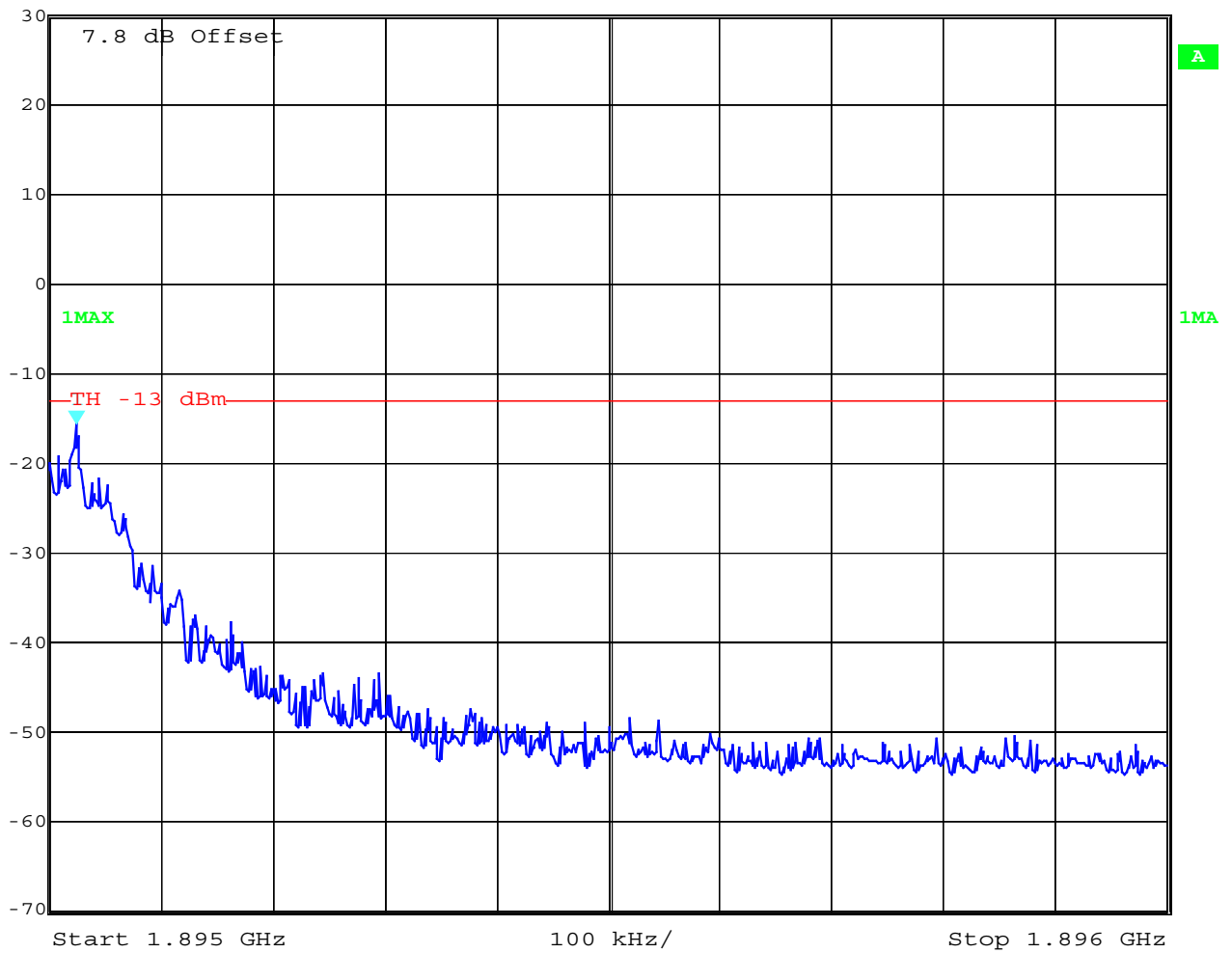
RBW      3 kHz      RF Att      50 dB

Ref Lvl      -15.53 dBm

VBW      3 kHz

30 dBm      1.89502405 GHz

SWT      280 ms      Unit      dBm



Date:      16.MAY.2003      08:21:00

**REFERENCE NUMBER(S) OF TEST EQUIPMENT USED**  
(for reference numbers see test equipment listing)

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## TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

To simplify the identification on each page of the test equipment used, on each page of the test report, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory, below.

No	Instrument/Ancillary	Type	Manufacturer	Serial No.
01	Spectrum Analyzer	8566 A	Hewlett-Packard	1925A00257
02	Analyzer Display	8566 A	Hewlett-Packard	1925A00860
03	Oscilloscope	7633	Tektronix	230054
04	Radio Communication Analyzer	CMTA 54	Rohde & Schwarz	894 043/010
05	System Power Supply	6038 A	Hewlett-Packard	2848A07027
06	Signal Generator	8111 A	Hewlett-Packard	2215G00867
07	Signal Generator	8662 A	Hewlett-Packard	2224A01012
08	Function Generator	AFGU	Rohde & Schwarz	862 480/032
09	Regulating Transformer	MPL	Erfi	91350
10	LISN	NNLA 8120	Schwarzbeck	8120331
11	Relay-Matrix	PSU	Rohde & Schwarz	893 285/020
12	Power-Meter	436 A	Hewlett-Packard	2101A12378
13	Power-Sensor	8484 A	Hewlett-Packard	2237A10156
14	Power-Sensor	8482 A	Hewlett-Packard	2237A00616
15	Modulation Meter	9008	Racal-Dana	2647
16	Frequency Counter	5340 A	Hewlett-Packard	1532A03899
17	Anechoic Chamber	---	MWB	87400/002
18	Spectrum Analyzer	85660 B	Hewlett-Packard	2747A05306
19	Analyzer Display	85662 A	Hewlett-Packard	2816A16541
20	Quasi Peak Adapter	85650 A	Hewlett-Packard	2811A01131
21	RF-Preselector	85685 A	Hewlett-Packard	2833A00768
22	Biconical Antenna	3104	Emco	3758
23	Log. Per. Antenna	3146	Emco	2130
24	Double Ridged Horn	3115	Emco	3088
25	EMI-Testreceiver	ESAI	Rohde & Schwarz	863 180/013
26	EMI-Analyzer-Display	ESAI-D	Rohde & Schwarz	862 771/008
27	Biconical Antenna	HK 116	Rohde & Schwarz	888 945/013
28	Log. Per. Antenna	HL 223	Rohde & Schwarz	825 584/002
29	Relay-Switch-Unit	RSU	Rohde & Schwarz	375 339/002
30	Highpass	HM985955	FSY Microwave	001
31	Amplifier	P42-GA29	Tron-Tech	B 23602
32	Anechoic Chamber		Frankonia	
33	Control Computer	PSM 7	Rohde & Schwarz	834 621/004
34	EMI Test Receiver	ESMI	Rohde & Schwarz	827 063/010
35	EMI Test Receiver	Display	Rohde & Schwarz	829 808/010

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## TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

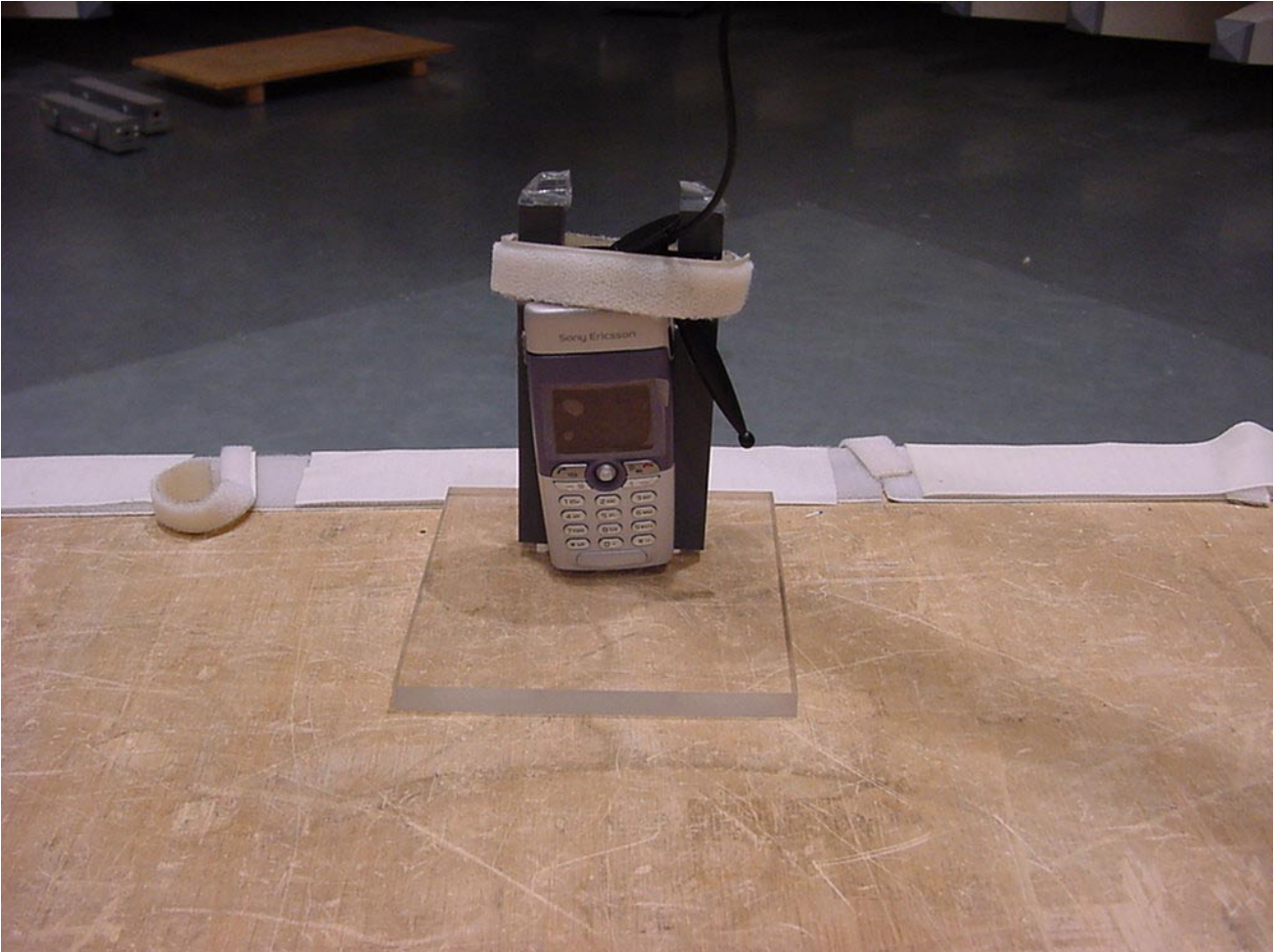
To simplify the identification on each page of the test equipment used, on each page of the test report, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory, below.

No	Instrument/Ancillary	Type	Manufacturer	Serial No.
36	Control Computer	HD 100	Deisel	100/322/93
37	Relay Matrix	PSN	Rohde & Schwarz	829 065/003
38	Control Unit	GB 016 A2	Rohde & Schwarz	344 122/008
39	Relay Switch Unit	RSU	Rohde & Schwarz	316 790/001
40	Power Supply	6032A	Hewlett Packard	2846A04063
41	Spectrum Monitor	EZM	Rohde & Schwarz	883 720/006
42	Measuring Receiver	ESH 3	Rohde & Schwarz	890 174/002
43	Measuring Receiver	ESVP	Rohde & Schwarz	891 752/005
44	Bicon Ant. 20-300MHz	HK 116	Rohde & Schwarz	833 162/011
45	Logper Ant. 0.3-1 GHz	HL 223	Rohde & Schwarz	832 914/010
46	Amplifier 0.1-4 GHz	AFS4	Miteq Inc.	206461
47	Logper Ant. 1-18 GHz	HL 024 A2	Rohde & Schwarz	342 662/002
48	Polarisation Network	HL 024 Z1	Rohde & Schwarz	341 570/002
49	Double Ridged Horn Antenna 1-26.5 GHz	3115	EMCO	9107-3696
50	Microw. Sys. Amplifier 0.5- 26.5 GHz	8317A	Hewlett Packard	3123A00105
51	Audio Analyzer	UPD	Rohde & Schwarz	1030.7500.04
52	Controler	PSM 7	Rohde & Schwarz	883 086/026
53	DC V-Network	ESH3-Z6	Rohde & Schwarz	861 406/005
54	DC V-Network	ESH3-Z6	Rohde & Schwarz	893 689/012
55	AC 2 Phase V-Network	ESH3-Z5	Rohde & Schwarz	861 189/014
56	AC 2 Phase V-Network	ESH3-Z5	Rohde & Schwarz	894 981/019
57	AC-3 Phase V-Network	ESH2-Z5	Rohde & Schwarz	882 394/007
58	Power Supply	6032A	Rohde & Schwarz	2933A05441
59	RF-Test Receiver	ESVP.52	Rohde & Schwarz	881 487/021
60	Spectrum Monitor	EZM	Rohde & Schwarz	883 086/026
61	RF-Test Receiver	ESH3	Rohde & Schwarz	881 515/002
62	Relay Matrix	PSU	Rohde & Schwarz	882 943/029
63	Relay Matrix	PSU	Rohde & Schwarz	828 628/007
64	Spectrum Analyzer	FSIQ 26	Rohde & Schwarz	119.6001.27
65	Spectrum Analyzer	HP 8565E	Hewlett Packard	3473A00773
66				
67				
68				

## Test site



## Test site



## Test site





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## Photographs of the equipment



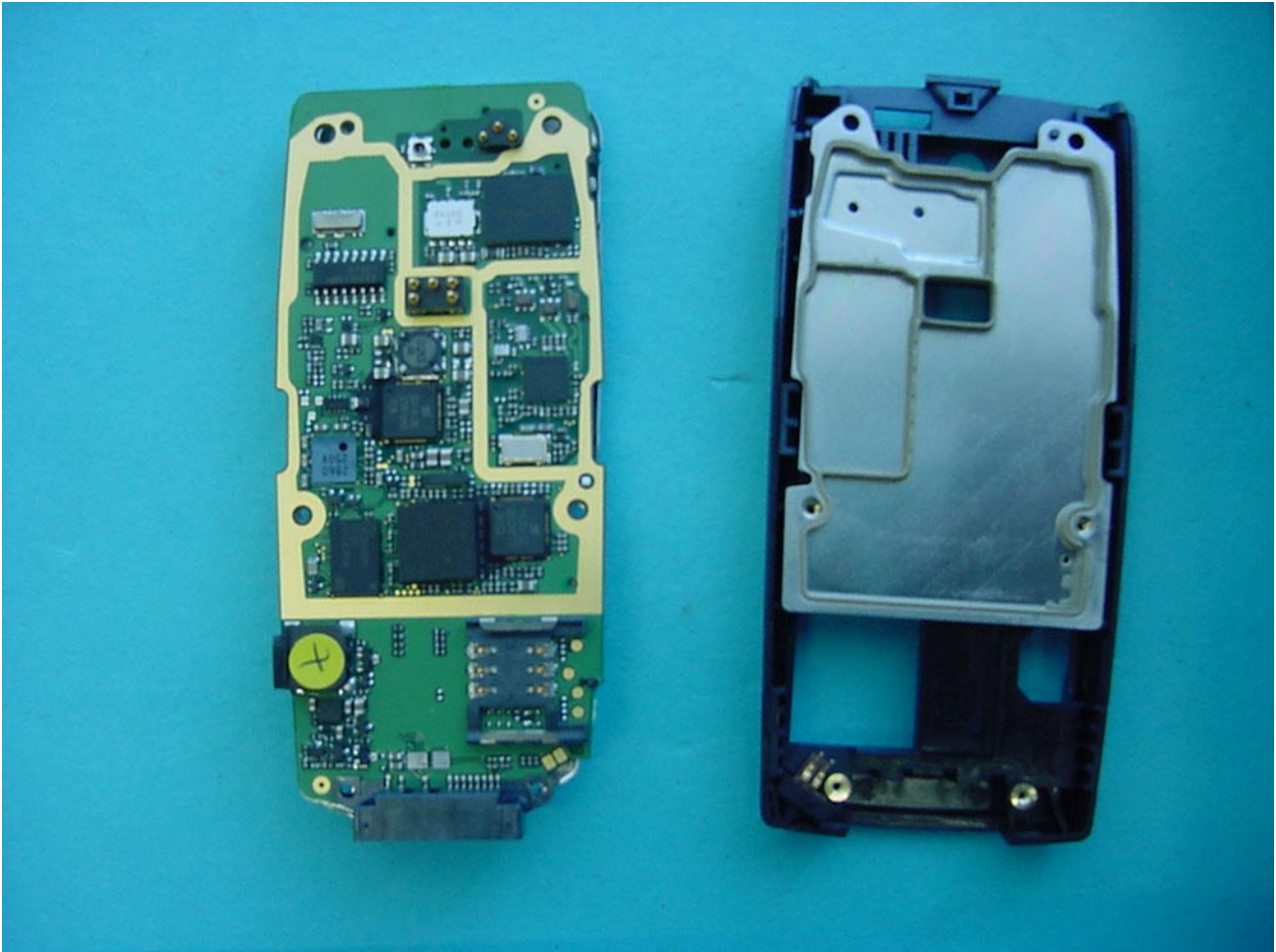
## Photographs of the equipment



## Photographs of the equipment



## Photographs of the equipment



## Photographs of the equipment

